NEW FORMULAE AND TABLES FOR STEAM.
(Report 2)

BY

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IV. A NEW EQUATION FOR THE ENTROPY OF SUPERHEATED AND DRY SATURATED STEAM.

An equation for the entropy of steam can be deduced thermodynamically from its characteristic equation by taking suitable constants. We have a well known thermodynamical relation between the entropy S and the specific volume v,

$$\left(\frac{\partial S}{\partial p}\right)_T = -A\left(\frac{\partial v}{\partial T}\right)_p$$

Integrating both sides of this equation with respect to p, we get the following expression for the entropy :—

$$S=\psi(T)-A\int_{T=\text{const.}}\left(\frac{\partial v}{\partial T}\right)_p dp \quad \text{(17)}$$

Between the function $\psi(T)$ and $\varphi(T)$ of Equation (11) there exists the relation :—

$$\psi'(T)=\frac{\varphi'(T)}{T},$$

whence

$$\psi(T)=K+\int\frac{\varphi'(T)}{T}dT \quad \text{(18)}$$

Combining Equation (17) with Equation (18), we have

$$S=K+\int\frac{\varphi'(T)}{T}dT-A\int_{T=\text{const.}}\left(\frac{\partial v}{\partial T}\right)_p dp \quad\text{..................} \quad (19)$$

The constant K is to be determined by the boundary condition.

Now since the entropy of saturated liquid water at 0°C is agreed to be naught, that of dry saturated steam at the same temperature must be equal to the quotient of the latent heat of evaporation at the same temperature divided by the absolute temperature. From this consideration we can find the numerical value of the constant K.

If we use the author's new equations, i.e. Equations (III) and (IV_a), and apply them to Equation (19), we have

$$S=K+\int\frac{0.456}{T}dT+22.2\cdot 10^{-8}\int\frac{(T-273.20)^2}{T}dT-A\Bigg[\int\frac{47.05}{p}dp$$

$$-\int_{T=\text{const.}}\frac{-1.56\cdot 10^{-2}}{\left(\frac{T}{100}\right)^{3.6}}dp-\int_{T=\text{const}}\frac{-5.88\,p}{\left(\frac{T}{100}\right)^{15}}dp$$

$$-\int_{T=\text{const.}}\frac{-2.268\cdot 10^{-8}p^3+1.4688\cdot 10^{-34}p^7}{\left(\frac{T}{100}\right)^{19}}dp\Bigg]$$

or

$$S=K+0.47257\log_e T-1.213\cdot 10^{-4}T+1.11\cdot 10^{-7}T^2$$

$$-\Bigg[\frac{3.653\cdot 10^{-5}\,p}{\left(\frac{T}{100}\right)^{3.6}}+\frac{6.884\cdot 10^{-3}\,p^2}{\left(\frac{T}{100}\right)^{15}}+\frac{1.3276\cdot 10^{-11}\,p^4-4.299\cdot 10^{-38}\,p^8}{\left(\frac{T}{100}\right)^{19}}$$

$$+0.11017\log_e p\Bigg].$$

At the temperature of 0°C, the numerical value of the heat content of dry saturated steam, H_s, calculated by the author's formulae, is 596.216 int. kcal/kg and that of saturated liquid water, H_w, is practically O; the value of the latent heat L is 596.216 int. kcal/kg and therefore $\frac{L}{T}=\frac{596.216}{273.20}$ $=2.1824$ int. kcal/°K kg. This value must be equal to the value of the entropy of dry saturated steam S_s at 0°C. Putting $T=273.20$, $p=62.25$

and $S=2.1824$ in the above equation for S, we find that K must be equal to 0.0112 int. kcal/°K kg.

Then we have the equation for the entropy :—

$$S=S_0-\left[\frac{3.6527\cdot10^{-5}p}{\left(\frac{T}{100}\right)^{3.6}}+\frac{6.884\cdot10^{-3}p^2}{\left(\frac{T}{100}\right)^{15}}+\frac{1.3276\cdot10^{-11}p^4-4.299\cdot10^{-38}p^8}{\left(\frac{T}{100}\right)^{19}}+0.25367\log_{10}p\right] \quad \text{.........(V)}$$

where

$$S_0=0.0112+1.08813\log_{10}T-1.213\cdot10^{-4}T+1.11\cdot10^{-7}T^2$$

Table 21. shows the comparison of the values of the entropy of dry saturated steam calculated by Equation (V) with those given in the tables of various authorities.

Table 21. Comparison of the Entropy of Dry Saturated Steam S_s in int. kcal/°K kg.

t	by Eq. (V)	Mollier(1)	Knoblauch(2) &c.	Callendar(3)	Osborne(4) &c.	Keenan(5)
0	2.1824	2.1790	2.1844	2.1755		2.1842
50	1.9271	1.9259	1.9269	1.9244		1.9292
100	1.7565	1.7574	1.7558	1.7569	1.7572	1.7570
150	1.6326	1.6356	1.6325	1.6365	1.6331	1.6327
200	1.5346	1.5376	1.5339	1.5411	1.5359	1.5354
250	1.4486	1.4451	1.4459	1.4586	1.4503	1.4492
300	1.3593	1.3448	1.3595	1.3744		1.3611
350	1.2479	1.2244	1.2424	1.2580		1.2492

Reduced from the units used in the originals into int. kcal/°K kg, using the conversion factors as given by the first International Steam Table Conference.

(1) R. Mollier "Neue Tabellen und Diagramme für Wasserdampf" 1930.

(2) O. Knoblauch, E. Raisch, H. Hausen, W. Koch "Tabellen und Diagramme für Wasserdampf" 1932.

(3) For temperatures between 0°C and 150°C, H.L. Callendar "Properties of Steam" 1924, and for temperatures between 200°C and 350°C, H.L. Callendar "Extended Steam Tables" Proc. of the Institution of Mechanical Fngineers, 1929 Vol. 1, p. 519.

(4) N.S. Osborne, H.F. Stimson, E.F. Fiock, "Report on Progress in Steam Research at the Bureau of Standards &c" Mechanical Engineering, Feb. 1930.

(5) J. Keenan "Steam Tables and Mollier Diagram" 1930.

From this comparison we see that the values calculated by Equation (V) fall between the values given by these authorities and they are pretty near to those of J. Keenan.

V. FORMULAE FOR SATURATED LIQUID WATER.

In the Standard Skeleton Tables, mean values and tolerances for the specific volume and the heat content of saturated liquid water are given. The author tried to construct such formulae expressing the said quantities in terms of temperatures so as to give values which shall fall inside the region of tolerances of the Standard Skeleton Tables.

A) AN EQUATION FOR THE SPECIFIC VOLUME OF SATURATED LIQUID WATER.

The specific volume of saturated liquid water does not change much for the range of temperatures up to a moderate limit and it is not very important for our engineering purposes to trace its variation very accurately, but near the critical point it increases very rapidly. It is well known that the specific volume of water is minimum and has a value of 0.001 m^3/kg at 4°C. From this fact the author assumed the following form for the equation of the specific volume of saturated liquid water :—

$$10^3 v_w = 1 + (t-4)^2 \cdot f(t)$$

from which

$$f(t) = \frac{10^3 v_w - 1}{(t-4)^2}$$

where v_w denotes the specific volume of saturated liquid water in m^3/kg.

In order to determine the function $f(t)$, the author applied the values of v_w given in the Standard Skeleton Tables to the above equation, and treating the values of $f(t)$ so obtained as ordinates and the corresponding temperatures as absissae, plotted a curve, and he found that the form of the curve so obtained was something like a parabola, but not exactly. From the form of this curve he assumed $f(t) = a + b(t-t')^2$, and instead of assuming b to be a constant, he put $b=\frac{1}{a+\beta(t-t')^2}$.

Thus he obtained an equation of the following form:—

$$f(t)=a+\frac{(t-t')^2}{\alpha+\beta(t-t')^2}=a+\frac{1}{\frac{\alpha}{(t-t')^2}+\beta},$$

from which

$$10^3 v_w=1+(t-4)^2\left[a+\frac{1}{\frac{\alpha}{(t-t')^2}+\beta}\right],$$

or using the absolute temperature T instead of t

$$10^3 v_w=1+(T-277.20)^2\left[a+\frac{1}{\frac{\alpha}{(T-T')^2}+\beta}\right] \quad \text{...........} \quad (\text{VI})^{(6)}$$

In Fquation (VI), a, α, β and T' are constants and their values were obtained by trial, and found to be as follows:—

$$\left.\begin{aligned} &T'=273.20+210.00=483.20, \\ &a=\frac{4.06}{10^6}, \\ \text{and} \quad &\alpha=2.1\cdot10^{10}, \quad \beta=-2.0\cdot10^5 \quad \text{for } t=0°\text{C to } 210°\text{C} \\ &\alpha=1.89\cdot10^{10}, \quad \beta=-5.0\cdot10^5 \quad \text{for } t=210°\text{C to } 350°\text{C} \end{aligned}\right\} \text{......} \quad (\text{VI}_a)$$

In Table 22 the values calculated by Equation (VI), using the constants given in Equation (VI_a) are given and compared with those of the Standard Skeleton Tables and those given by several authorities.

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(6) Equation (VI) is applicable only in the region covered by the Standard Skeleton Tables i.e. from the temperature of 0°C to 350°C. Above 350°C the specific volume changes very rapidly and the form of equation for v_w may be more complicated. Since no standard values at the critical point are given, the author did not attempt to make any equation which would be applicable over 350°C.

Table 22. Comparison of the Specific Volume of Saturated Liquid Water v_w in m^3/kg.

t	Skeleton Tables	Sugawara	Keyes & Smith (7)	Hütte (8)	Hirn (9)
0	0.001000±0.000000	0.001000		0.001000	0.001000
10		0.001000		0.001000	0.001001
20		0.001002		0.001002	0.001003
30		0.001004		0.001004	0.001006
40		0.001008		0.001008	0.001009
50	0.001012±0.000000	0.001012		0.001012	0.001013
60		0.001017		0.001017	0.001018
70		0.001023		0.001023	0.001023
80		0.001029		0.001029	0.001029
90		0.001036		0.001036	0.001036
100	0.001043±0.000000	0.001043	0.001043	0.001043	0.001043
110		0.001052	0.001052	0.001052	0.001051
120		0.001060	0.001060	0.001060	0.001060
130		0.001070	0.001070	0.001069	0.001069
140		0.001080	0.001080	0.001080	0.001079
150	0.001090±0.000000	0.001090	0.001090	0.001090	0.001090
160		0.001102	0.001102	0.001102	0.001101
170		0.001114	0.001114	0.001115	0.001114
180		0.001127	0.001127	0.001128	0.001126
190		0.001141	0.001141	0.001143	0.001140
200	0.001156±0.000001	0.001156	0.001156	0.001159	0.001154
210		0.001172	0.001173	0.001177	0.001169
220		0.001190	0.001190	0.001195	0.001184
230		0.001208	0.001209	0.001215	0.001201
240		0.001229	0.001230	0.001236	0.001217
250	0.001252±0.000003	0.001251	0.001252	0.001259	0.001235
260		0.001275	0.001276	0.001283	
270		0.001302	0.001303	0.001308	
275	0.001317±0.000004	0.001317			
280		0.001332	0.001332	0.00134	
290		0.001365	0.001365	0.00138	
300	0.001403±0.000005	0.001404	0.001403	0.00142	
310		0.001448	0.001447	0.00146	
320		0.001499	0.001498	0.00151	
325	0.00153 ±0.00001	0.001529			
330		0.001562	0.001560		
340		0.001641	0.001637		
350	0.00174 ±0.00001	0.001744	0.001739		

(7) Smoothed values by L.B. Smith and F.G. Keyes, in "Some Final Values for the Properties of Saturated and Superheated Water" Mechanical Engineering, Feb. 1931. page 133.

(8) Hütte 25th edition. Vol. 1 page 440, from Thiesen, Scheel, Diesselhorst, Hirn, Ramsay-Young, Waterson &c.

(9) In "Technische Thermodynamik" of G. Zeuner, the following equation is given as Hirn's formula for the specific volume of saturated liquid water,

$$v_w = 0.001 \cdot (1 + 0.00009t + 0.0000034t^2) \text{ in } m^3/kg.$$

We see by this comparison that the values given by Equation (VI) and (VI_a) not only fall within the region of tolerance of the Standard Skeleton Tables but also agree very well with the values derived from the new experiments made by Keyes and Smith.

The values given by Hütte are tolerable up to the temperature of 200°C but above 200°C they lie outside the region of tolerance. Hirn's empirical formula, which is very simple, does not give values within the region of tolerance for some temperatures.

B) AN EQUATION FOR THE HEAT CONTENT OF SATURATED LIQUID WATER.

The author attempted to construct a simple equation for the heat content of saturated liquid water and assumed the form of it as follows :—

$$H_w = a\,t + b\,t^{n_1} + c\,t^{n_2} \quad \text{.................................} \quad \text{(VII)}$$

where H_w is the heat content of saturated liquid water in int. kcal/kg,

t, the temperature of water in °C

and a, b, c, n_1 and n_2 are constants.

In order that all the values calculated by Equation (VII) should fall in the region of tolerance of the Standard Skeleton Tables, he took the numerical values of these constants as follows :—

$$\left.\begin{array}{l} a = 1.0026, \quad b = -1.16\cdot10^{-4}, \quad c = 9.4\cdot10^{-7}, \quad n_1 = 2, \\ n_2 = 3, \quad \text{for } t = 0°\text{C to } 100°\text{C} \\ \text{and} \\ a = 0.998, \quad b = 0.24\cdot10^{-8}, \quad c = 6.8\cdot10^{-25}, \quad n_1 = 4, \\ n_2 = 10, \quad \text{for } t = 100°\text{C to } 350°\text{C}. \end{array}\right\} \text{......} \; (\text{VII}_a)$$

In Table 23 the values calculated by Equations (VII) and (VII_a) are given and compared with those of the Standard Skeleton Tables. The values given by Osborne and Stimson and H. Callendar are also compared.

Table 23. Comparison of the Heat Content of Saturated Liquid Water H_w in int. kcal/kg.

t	Skeleton Tables	Sugawara	Osborne &c.(10)	Callendar(11)
0	0	0	0	
10		10.02	10,04	
20		20.01	20.03	
30		30.00	30.00	
40		39.98	39.98	
50	49.95±0.02	49.96	49.96	
60		59.94	59.94	
70		69.94	69.94	
80		79.95	79.96	
90		89.98	89.98	
100	100.04±0.04	100.04	100.04	
110		110.13	110.13	
120		120.26	120.23	
130		130.43	130.41	
140		140.64	140.64	
150	150.92±0.05	150.92	150.91	
160		161.26	161.25	
170		171.68	171.69	
180		182.18	182.20	
190		192.79	192.81	
200	203.55±0.10	203.51	203.54	203.6
210		214.36	214.36	214.4
220		225.36	225.32	225.5
230		236.54	236.43	236.7
240		247.91	247.73	248.1
250	259.2 ±0.5	259.5	259.2	259.7
260		271.4	270.9	271.5
270		283.6	282.8	283.7
275	289.0 ±1.0	289.9		
280		296.2		296.2
290		309.3		309.0
300	322 ± 2	322.9		322.3
310		337.1		336.2
320		352.2		350.8
325	360 ± 3	360.1		
330		368.2		366.3
340		385.4		383.1
350	404 ± 5	404.1		402.0

We see from this comparison that Equations (VII) and (VII_a) not only give values within the range of tolerance of the Standard Skeleton

(10) See foot note (4). The unit is changed from int. joule/g to int. kcal/kg.
(11) See foot note (3). The unit is changed from mean kcal/kg to int. kcal/kg.

Tables, but also coincide pretty well with the experimental values of Osborne, Stimson and Fiock up to the temperature of 240°C and with the values of H. Callendar above that temperature.

VI. COMPARISON OF THE LATENT HEAT OF EVAPORATION.

There are three ways of calculating the latent heat of evaporation.

1) It can be given as the difference between the heat content of dry saturated steam and that of saturated liquid water.

2) It can be calculated by Clapeyron's equation $L=AT(v_s-v_w)\frac{dp}{dT}$, where v_s is the specific volume of dry saturated steam at the temperature T, v_w, the specific volume of saturated liquid water at the same temperature and $\frac{dp}{dT}$, the pressure gradient along the saturation line.

3) It can also be calculated from the relation $L=T(S_s-S_w)$, where S_s is the entropy of dry saturated steam at the temperature T, and S_w, that of saturated liquid water at the same temperature.

Taking the first way, the author calculated the heat content of dry saturated steam H_s by Equations (IV) and (IV$_a$) and that of saturated liquid water H_w by Equations (VII) and (VII$_a$). The differences were calculated and are given in the third column in Table 24.

In making the calculation by the second method he used the values of v_s, v_w and $\frac{dp}{dT}$, obtained from Equations (III), (VI) & (VI$_a$) and (II) respectively, and the results thus calculated are given in the fourth column in Table 24.

The entropy of dry saturated steam S_s required in taking the third method was calculated by Equation (V) and for the entropy of saturated liquid water S_w we have the fundamental equation of thermodynamics, $dS_w=\frac{dH_w}{T}-A\frac{v_w}{T}dp$. Integrating this equation along the saturated liquid line from 0°C to t°C, we have

$$S_w=\int_{H_{w_0}}^{H_w}\frac{dH_w}{T}-A\int_{p_0}^{p}\frac{v_w}{T}dp \quad \text{..............................} \quad (20)$$

As the author has his own equations for H_w and v_w and $p-t$ relation along the saturated liquid line, he could find the values of S_w by merely using these equations and Equation (20) without any other data. The values of S_w found in this way were subtracted from the corresponding values of S_s and the values of L as given in the fifth column in Table 24 were obtained by multiplying by the corresponding absolute saturation temperatures.

In addition to these values, the figures obtained as the differences between H_s and H_w from the Standard Skeleton Tables are given in the second column for the purpose of comparison.

Table 24. Comparison of the Latent Heat of Evaporation L in int. kcal/kg. (No. 1)

t	Skeleton Tables	$L=H_s-H_w$	$L=AT(v_s-v_w)\frac{dp}{dT}$	$L=T(S_s-S_w)$
0	595.5 ±1.0	596.2	597.0	596.2
50	568.55±1.2	568.7	569.1	568.6
100	539.16±0.54	539.3	539.3	539.1
150	505.08±1.55	505.0	504.4	504.9
200	463.45±2.60	463.0	462.6	462.9
250	409.8 ±4.5	408.8	409.9	408.7
275	377.0 ±6.0	374.4	375.6	374.2
300	335 ±7	332.2	333.6	332.0
325	283 ±9	279.1	281.1	278.8
350	211 ±13	210.6	214.0	210.1

We seen from this comparison that all the values except one lie in the region of tolerance of the Standard Skeleton Tables, the only exception being the value at 0°C calculated by using Clapeyron's equation. The cause for this discrepancy is perhaps that the value of $\frac{dp}{dT}$ at 0°C is not accurate enough for this purpose, although the value of $\frac{dp}{dT}$ itself lies slightly inside the limit of tolerance as shown in Table 8.

In comparing the third and fifth columns, we see that the values calculated by the first and third methods coincide very well, the maximum difference between them being 0.5 int. kcal/kg at 350°C which amounts only to $\frac{1}{4}$% of the standard value. The difference between the third and the fourth column is not so small as that between the third and the fifth column and the maximum difference is at 350°C, amounting to 3.4 int. kcal/kg or 1.7 percent of the standard value.

Now for the latent heat of evaporation there are reliable experimental data obtained in Germany and U.S.A. F. Henning gives the experimental values of L between 0°C and 180°C in Wärmetabllen der P.T.R., and recently M. Jakob and W. Fritz[12] published their experimental results which cover the temperature between 180°C and 310°C.

Osborne, with Stimson and Fiock, constructed the following formula from the results of their own experiment:—

$$L=0.00061204(374-t)^2-1.4054(374-t)+59.699(374-t)^{\frac{1}{2}}$$
$$-26.9946(374-t)^{\frac{1}{4}} \qquad \ldots\ldots\ldots\ldots\ldots\ldots\ldots (21)$$[13]

In this equation the latent heat of evaporation L is given in int. kcal/kg and it is said to be applicable for temperatures between 50°C and 270°C.

In Table 25 the values of the latent heat obtained by the above mentioned authorities are compared with those calculated by the author's formulae for H_s and H_w.

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(12) M. Jakob and W. Fritz, "Die Verdampfungswärme des Wassers u.s.w." Technische Mechanik und Thermodynamik. June 1930. page 237.

(13) Equation (21) is used by Keyes and Smith in their paper in Mechanical Engineering Feb. 1931, p. 133.

Table 25. Comparison of the Latent Heat of Evaporation L in int. kcal/kg. (No. 2.)

t	Sugawara ($H_s - H_w$)	L. Holborn &c.	M. Jakob &c.	N. Osborne &c.
0	596.2	594.6		
10	590.7	589.7		
20	585.3	584.7		
30	579.8	579.5		
40	574.2	574.2		
50	568.7	568.7		569.0
60	563.0	563.1		563.3
70	557.3	557.3		557.5
80	551.4	551.3		551.6
90	545.4	545.2		545.5
100	539.3	538.8		539.2
110	532.9	532.3		532.8
120	526.3	525.5		526.2
130	519.5	518.5		519.4
140	512.4	511.2		512.3
150	505.0	504.0		505.0
160	497.3	496.8		497.3
170	489.3	489.6		489.4
180	480.9	482.5	480.3	481.2
190	472.2		471.6	472.5
200	463.0		462.6	463.4
210	453.3		453.1	453.9
220	443.2		443.0	443.8
230	432.4		432.5	433.2
240	421.0		421.2	421.9
250	408.8		409.2	409.8
260	395.8		396.4	396.9
270	381.8		382.7	383.1
280	366.6		367.9	
290	350.2		352.0	
300	332.2		334.6	
310	312.5		315.6	

For the values of Holborn and Jakob the units are properly converted to int. kcal/kg and the values of Osborne are calculated by Eq. (21).

From this comparison we see that the author's values coincide very well with those obtained by the experiments up to the temperature of 250°C. Above that temperature his values lie somewhat below the experimental results and the maximum deviation which is at 310°C, amounts to about one per cent.

VII. NEW STEAM TABLES AND MOLLIER DIAGRAM.

A) TABLES FOR SATURATED CONDITION.

Tables I and II annexed at the end of this paper give the principal quantities relating to dry saturated steam and saturated liquid water in the whole range of temperatures given in the Standard Skeleton Tables, that is, from the temperature of 0°C to 350°C. To construct these tables the author had only to make calculations by the equations which he himself constructed and which are given in the preceding articles and no graphical or other methods were used.

Table I is arranged according to the temperature, taken as base, and Table II, according to the pressure. In these tables the values of saturation pressure, saturation temperature, heat content of dry saturated steam, that of saturated liquid water, latent heat of evaporation, internal energy of dry saturated steam, that of saturated liquid water, entropy of dry saturated steam, that of saturated liquid water, the increase of entropy due to evaporation, specific volume of dry saturated steam, that of saturated liquid water and specific weight of dry saturated steam are given, the international units as agreed upon by the first International Steam-Table Conference being exclusively used. The values contained in these tables lie all inside the region of tolerance of the Standard Skeleton Tables.

The saturation pressure corresponding to every temperature given in column 1 of Table I and also the saturation temperature corresponding to every pressure given in column 1 of Table II were calculated by Equation (I), and they are given in column 2. The heat content of dry saturated steam H_s was calculated by Equation (IV), combined with Equation (IV_a), giving to p and T in these equations the corresponding values of the saturation pressure and temperature and it is given in column 3. The heat content of saturated liquid water H_w was calculated by Equation (VII), combined with Equation (VII_a) and it is given in column 4. As the latent heat of evaporation L, the difference between the heat content of dry saturated steam given in column 3 and that of saturated liquid water given in column 4 was taken and it is given in column 5. The entropy of dry saturated steam S_s was calculated by Equation (V) giving to p and T in the equation the corresponding values of saturation pressure and temperature and it is given in column 8. The increase of entropy due to evaporation $\frac{L}{T}$, obtained as the quotient of the latent heat of evaporation divided by the corresponding absolute temperature, is given in column 10. The entropy of saturated liquid water S_w was obtained by subtracting the increase of entropy due to evaporation $\frac{L}{T}$ given in column 10, from the entropy of dry saturated steam S_s given in column 8 and it is given in column 9, The specific volume of dry saturated steam v_s was calculated by Equation (III) giving to p and T in the equation the corresponding values of saturation pressure and temperature and it is given in column 11. The specific volume of saturated liquid water v_w was calculated by Equation (VI) and (VI_a) and it is given in column 12. The specific weight of dry saturated steam γ_s, which is given in column 13 is, of course, the reciprocal of the specific volume v_s. For the calculation of the internal energy of dry saturated steam U_s and that of saturated liquid water U_w, the following fundamental relations were used

$$\left.\begin{aligned} U_s &= H_s - Apv_s \\ U_w &= H_w - Apv_w \end{aligned}\right\} \qquad (22)$$

and they are given in columns 6 and 7, respectively.

In finding all these figures the author carried his calculations down to one more place of decimals than those given in these tables, and for the calculation of other quantities in case of necessity, these original values were used; for example, for the calculation of the quantities H_s, S_s etc. in Table I, where it is necessary to know not only the temperature but also the saturation pressure, the original value of saturation pressure was used and not the rounded up value given in the table. For practical purposes in steam engineering the values of H_s and L with one figure beyond the decimal point seem to be sufficient, but as in the Standard Skeleton Tables some values of H_w are given down to two figures beyond the decimal point, the author gives in the present tables all valves of H_s, L

and H_w to two figures beyond the decimal point, simply for the sake of harmony with some values of H_w in the Standard Skeleton Tables.

B) TABLES FOR SUPERHEATED STEAM.

The specific volume, heat content and entropy of superheated steam can be calculated by Equations (III), (IV) and (V) respectively. In these equations the unit of pressure is kilogrammes per square metre, but in practice it is more convenient to use kilogrammes per square contimetre as the unit of pressure. Using this unit the equations for the specific volume, heat content and entropy may be written in the following forms :—

$$v=\frac{47.05}{10^4}\frac{T}{p}-\left[\varphi_1(T)+\varphi_2(T)p+f_1(T)\Phi_1(p)+\Phi_2(p)\right], \quad \text{(A)}$$

$$H=H_0-\left[\psi_1(T)p+\psi_2(T)p^2+f_1(T)\Psi_1(p)+\Psi_2(p)\right], \quad \text{(B)}$$

$$S=S_0-\left[\theta_1(T)p+\theta_2(T)p^2+f_2(T)\Theta_1(p)+\Theta_2(p)\right], \quad \text{(C)}$$

where

p=absolute pressure in kg/cm^2,

t=temperature in °C,

$T=t+273.20$=absolute temperature in °K,

v=specific volume in m^3/kg,

H=heat content in int. kcal/kg,

S=entropy in int. kcal/°K kg,

$$\varphi_1(T)=\frac{0.60}{\left(\frac{T}{100}\right)^{2.6}}, \qquad \varphi_2(T)=\frac{4.2\cdot10^5}{\left(\frac{T}{100}\right)^{14}},$$

$$\psi_1(T)=\frac{50.576}{\left(\frac{T}{100}\right)^{2.6}}, \qquad \psi_2(T)=\frac{7.376\cdot10^7}{\left(\frac{T}{100}\right)^{14}},$$

$$\theta_1(T)=\frac{0.36527}{\left(\frac{T}{100}\right)^{3.6}}, \qquad \theta_2(T)=\frac{6.8840\cdot 10^5}{\left(\frac{T}{100}\right)^{15}},$$

$$f_1(T)=\frac{1}{\left(\frac{T}{100}\right)^{18}}, \qquad f_2(T)=\frac{1}{\left(\frac{T}{100}\right)^{19}},$$

$$H_0=596.6+0.456\,t+7.4\cdot 10^{-8}\,t^3,$$

$$S_0=0.0112+1.08813\log_{10}T-1.213\cdot 10^{-4}\,T+1.11\cdot 10^{-7}T^2,$$

$$\Phi_1(p)=1.26\cdot 10^5 p^3-8.16\cdot 10^{-6}p^7,$$

$$\Phi_2(p)=\frac{22}{10^4\,p+1000},$$

$$\Psi_1(p)=1.4014\cdot 10^7 p^4-4.538\cdot 10^{-4}p^8,$$

$$\Psi_2(p)=0.119\log_{10}(10^4 p+1000),$$

$$\Theta_1(p)=1.3276\cdot 10^5 p^4-4.299\cdot 10^{-6}p^8,$$

$$\Theta_2(p)=0.25367\log_{10}(10^4 p).$$

In Table III the values of $\varphi_1(T)$, $\varphi_2(T)$, $\psi_1(T)$, $\psi_2(T)$, $\theta_1(T)$, $\theta_2(T)$, $f_1(T)$, $f_2(T)$, H_0 and S_0 for the temperatures from 0°C to 550°C at intervals of 5°C are given. In Table IV the values of $\Phi_1(p)$, $\Phi_2(p)$, $\Psi_1(p)$, $\Psi_2(p)$, $\Theta_1(p)$ and $\Theta_2(p)$ for the pressures from 0.01 kg/cm² to 250 kg/cm² with suitable intervals are given. By Equations (A), (B) and (C), combined with Tables III and IV, we can calculate the specific volume, heat content and entropy of superheated steam at any pressure and temperature quite easily.

Table V gives the specific volume, heat content and entropy of superheated steam in certain conditions.

C) MOLLIER DIAGRAM.

Mollier diagram annexed at the end of this paper were drawn using the values calculated by the author's formulae. In this diagram the lines of constant pressure in the saturated and superheated regions are drawn in full lines and lines of constant quality in the saturated region and lines of constant temperature in the superheated region are also drawn in full lines. The lines of constant volume in both region are drawn in dotted lines. Some extrapolations were made for the conditions near the critical point and drawn in broken lines. The critical point shown in the diagram was provisionally found in a very simple manner as follows. The line of constant pressure of 225 kg/cm^2 was drawn in accordance with the author's formulae, by way of extrapolation, down to temperatures below 400°C on the one hand, and the line of constant quality of 50% dryness was prolonged suitably taking into consideration some other lines of constant quality in the neighborhood, on the other hand, and the point of intersection of these two lines was supposed to be the critical point in the diagram. Concerning the critical point there exist some disagreements among authorities and the point thus found is of course only for provisional purposes but it coincides pretty well with that of J. Keenan.

In conclusion the present author wishes to express his cordial thanks to Mr. I. Yoshigi who has zealously assisted him in the present work.

Table I

Temperature °C t	Saturation Pressure kg/cm² p_s	Heat Content of Steam int. kcal/kg H_s	Heat Content of Water int. kcal/kg H_w	Latent Heat of Evaporation int. kcal/kg L	Internal Energy of Steam int. kcal/kg U_s	Internal Energy of Water int. kcal/kg U_w
0	0.006225	596.22	0	596.22	566.13	0
5	0.008886	598.49	5.01	593.48	567.85	5.01
10	0.01251	600.75	10.02	590.73	569.57	10.02
15	0.01737	603.01	15.02	587.99	571.29	15.02
20	0.02381	605.27	20.01	585.26	573.00	20.01
25	0.03227	607.52	25.01	582.51	574.71	25.01
30	0.04323	609.76	30.00	579.76	576.41	30.00
35	0.05730	611.99	34.99	577.00	578.11	34.99
40	0.07517	614.22	39.98	574.24	579.80	39.98
45	0.09767	616.43	44.97	571.46	581.48	44.97
50	0.1257	618.62	49.96	568.66	583.14	49.96
55	0.1605	620.81	54.95	565.86	584.80	54.95
60	0.2031	622.97	59.94	563.03	586.44	59.94
65	0.2549	625.11	64.94	560.17	588.06	64.93
70	0.3177	627.23	69.94	557.29	589.67	69.93
75	0.3927	629.32	74.94	554.38	591.26	74.93
80	0.4828	631.39	79.95	551.44	592.82	79.94
85	0.5893	633.42	84.96	548.46	594.36	84.95
90	0.7148	635.42	89.98	545.44	595.88	89.96
95	0.8619	637.39	95.01	542.38	597.36	94.99
100	1.0332	639.32	100.04	539.28	598.82	100.02
105	1.232	641.20	105.08	536.12	600.25	105.05
110	1.461	643.04	110.13	532.91	601.64	110.10
115	1.724	644.84	115.19	529.65	603.00	115.15
120	2.025	646.59	120.26	526.33	604.32	120.21
125	2.367	648.28	125.34	522.94	605.60	125.28
130	2.755	649.93	130.43	519.50	606.84	130.36
135	3.193	651.52	135.53	515.99	608.04	135.45
140	3.686	653.05	140.64	512.41	609.19	140.55
145	4.238	654.52	145.77	508.75	610.30	145.67
150	4.855	655.94	150.92	505.02	611.37	150.80
155	5.542	657.30	156.08	501.22	612.39	155.94
160	6.304	658.59	161.26	497.33	613.37	161.10
165	7.148	659.82	166.46	493.36	614.29	166.27
170	8.079	660.98	171.68	489.30	615.17	171.47
175	9.103	662.08	176.92	485.16	615.99	176.68
180	10.227	663.11	182.18	480.93	616.77	181.91
185	11.46	664.07	187.47	476.60	617.50	187.17
190	12.80	664.95	192.79	472.16	618.16	192.45
195	14.27	665.75	198.13	467.62	618.78	197.75
1	**2**	**3**	**4**	**5**	**6**	**7**

Table I

Entropy of Steam int. kcal/°K kg S_s	Entropy of Water int. kcal/°K kg S_w	$S_s - S_w$ int. kcal/°K kg $\frac{L}{T}$	Specific Volume of Steam m³/kg v_s	Specific Volume of Water m³/kg v_w	Spec. Weight of Steam kg/m³ γ_s	Temperature °C t
2.1824	0	2.1824	206.4	$1.000 \cdot 10^{-3}$	0.004844	**0**
2.1514	0.0181	2.1333	147.2	1.000 ,,	0.006792	**5**
2.1218	0.0359	2.0859	106.5	1.000 ,,	0.009391	**10**
2.0936	0.0534	2.0402	78.02	1.001 ,,	0.01282	**15**
2.0666	0.0705	1.9961	57.87	1.002 ,,	0.01728	**20**
2.0408	0.0874	1.9534	43.43	1.003 ,,	0.02303	**25**
2.0161	0.1040	1.9121	32.95	1.004 ,,	0.03035	**30**
1.9924	0.1202	1.8722	25.26	1.006 ,,	0.03959	**35**
1.9697	0.1363	1.8334	19.56	1.008 ,,	0.05114	**40**
1.9480	0.1521	1.7959	15.28	1.010 ,,	0.06543	**45**
1.9271	0.1676	1.7595	12.05	1.012 ,,	0.08297	**50**
1.9070	0.1829	1.7241	9.584	1.014 ,,	0.1043	**55**
1.8877	0.1979	1.6898	7.683	1.017 ,,	0.1302	**60**
1.8691	0.2128	1.6563	6.206	1.020 ,,	0.1611	**65**
1.8512	0.2274	1.6238	5.049	1.023 ,,	0.1981	**70**
1.8341	0.2419	1.5922	4.140	1.026 ,,	0.2415	**75**
1.8175	0.2562	1.5613	3.411	1.029 ,,	0.2932	**80**
1.8014	0.2703	1.5311	2.831	1.032 ,,	0.3533	**85**
1.7860	0.2842	1.5018	2.363	1.036 ,,	0.4233	**90**
1.7710	0.2979	1.4731	1.984	1.040 ,,	0.5041	**95**
1.7565	0.3115	1.4450	1.674	1.043 ,,	0.5974	**100**
1.7425	0.3249	1.4176	1.420	1.047 ,,	0.7044	**105**
1.7288	0.3381	1.3907	1.210	1.052 ,,	0.8262	**110**
1.7156	0.3512	1.3644	1.037	1.056 ,,	0.9648	**115**
1.7028	0.3642	1.3386	0.8916	1.060 ,,	1.1216	**120**
1.6903	0.3770	1.3133	0.7701	1.065 ,,	1.299	**125**
1.6782	0.3897	1.2885	0.6680	1.070 ,,	1.497	**130**
1.6664	0.4023	1.2641	0.5816	1.075 ,,	1.720	**135**
1.6549	0.4148	1.2401	0.5082	1.080 ,,	1.968	**140**
1.6436	0.4271	1.2165	0.4456	1.085 ,,	2.244	**145**
1.6326	0.4393	1.1933	0.3921	1.090 ,,	2.551	**150**
1.6219	0.4514	1.1705	0.3460	1.096 ,,	2.890	**155**
1.6114	0.4633	1.1481	0.3064	1.102 ,,	3.264	**160**
1.6012	0.4753	1.1259	0.2720	1.108 ,,	3.676	**165**
1.5911	0.4871	1.1040	0.2422	1.114 ,,	4.129	**170**
1.5813	0.4988	1.0825	0.2162	1.120 ,,	4.625	**175**
1.5716	0.5104	1.0612	0.1935	1.127 ,,	5.168	**180**
1.5621	0.5220	1.0401	0.1736	1.134 ,,	5.761	**185**
1.5528	0.5335	1.0193	0.1561	1.141 ,,	6.407	**190**
1.5436	0.5448	0.9988	0.1407	1.149 ,,	7.110	**195**
8	**9**	**10**	**11**	**12**	**13**	**14**

Table I

Temperature °C t	Saturation Pressure kg/cm² p_s	Heat Content of Steam int. kcal/kg H_s	Heat Content of Water int. kcal/kg H_w	Latent Heat of Evaporation int. kcal/kg L	Internal Energy of Steam int. kcal/kg U_s	Internal Energy of Water int. kcal/kg U_w
200	15.86	666.48	203.51	462.97	619.32	203.08
205	17.59	667.12	208.92	458.20	619.81	208.44
210	19.46	667.68	214.36	453.32	620.23	213.83
215	21.48	668.15	219.84	448.31	620.59	219.25
220	23.66	668.51	225.36	443.15	620.88	224.70
225	26.01	668.78	230.93	437.85	621.08	230.20
230	28.54	668.94	236.54	432.40	621.21	235.73
235	31.25	668.98	242.20	426.78	621.26	241.31
240	34.16	668.90	247.91	420.99	621.21	246.93
245	37.27	668.69	253.68	415.01	621.06	252.60
250	40.59	668.35	259.52	408.83	620.84	258.33
255	44.13	667.85	265.43	402.42	620.45	264.13
260	47.91	667.21	271.41	395.80	619.98	269.98
265	51.92	666.40	277.47	388.93	619.37	275.90
270	56.19	665.41	283.62	381.79	618.64	281.90
275	60.72	664.22	289.86	374.36	617.76	287.99
280	65.52	662.85	296.21	366.64	616.72	294.16
285	70.61	661.26	302.67	358.59	615.53	300.44
290	75.99	659.46	309.26	350.20	614.17	306.83
295	81.68	657.40	315.98	341.42	612.62	313.33
300	87.69	655.09	322.86	332.23	610.87	319.97
305	94.03	652.52	329.90	322.62	608.92	326.76
310	100.7	649.66	337.12	312.54	606.75	333.70
315	107.8	646.49	344.54	301.95	604.34	340.83
320	115.2	643.01	352.18	290.83	601.68	348.14
325	123.0	639.21	360.07	279.14	598.77	355.66
330	131.3	635.03	368.22	266.81	595.56	363.42
335	139.9	630.51	376.6[illegible]	253.85	592.08	371.42
340	149.0	625.61	385.43	240.18	588.30	379.70
345	158.6	620.31	394.56	225.75	584.17	388.28
350	168.7	614.62	404.07	210.55	579.74	397.18
1	**2**	**3**	**4**	**5**	**6**	**7**

Table I

Entropy of Steam int. kcal/°K kg S_s	Entropy of Water int. kcal/°K kg S_w	$S_s - S_w$ int. kcal/°K kg $\frac{L}{T}$	Specific Volume of Steam m³/kg v_s	Specific Volume of Water m³/kg v_w	Spec. Weight of Steam kg/m³ γ_s	Temperature °C t
1.5346	0.5562	0.9784	0.1270	$1.156 \cdot 10^{-3}$	7.875	**200**
1.5256	0.5674	0.9582	0.1149	1.164 "	8.705	**205**
1.5168	0.5786	0.9382	0.1041	1.172 "	9.604	**210**
1.5081	0.5898	0.9183	0.09454	1.181 "	10.577	**215**
1.4995	0.6010	0.8985	0.08598	1.190 "	11.631	**220**
1.4910	0.6121	0.8789	0.07830	1.199 "	12.77	**225**
1.4824	0.6231	0.8593	0.07141	1.208 "	14.00	**230**
1.4739	0.6341	0.8398	0.06521	1.218 "	15.33	**235**
1.4654	0.6451	0.8203	0.05963	1.229 "	16.77	**240**
1.4570	0.6561	0.8009	0.05459	1.240 "	18.32	**245**
1.4486	0.6672	0.7814	0.05002	1.251 "	19.99	**250**
1.4401	0.6782	0.7619	0.04587	1.263 "	21.80	**255**
1.4315	0.6892	0.7423	0.04211	1.275 "	23.75	**260**
1.4229	0.7003	0.7226	0.03868	1.288 "	25.85	**265**
1.4142	0.7114	0.7028	0.03555	1.302 "	28.13	**270**
1.4054	0.7225	0.6829	0.03269	1.317 "	30.59	**275**
1.3966	0.7338	0.6628	0.03007	1.332 "	33.26	**280**
1.3875	0.7451	0.6424	0.02766	1.348 "	36.15	**285**
1.3783	0.7565	0.6218	0.02545	1.365 "	39.29	**290**
1.3689	0.7680	0.6009	0.02342	1.384 "	42.70	**295**
1.3593	0.7797	0.5796	0.02153	1.404 "	46.43	**300**
1.3496	0.7916	0.5580	0.01980	1.425 "	50.50	**305**
1.3395	0.8036	0.5359	0.01819	1.448 "	54.96	**310**
1.3292	0.8158	0.5134	0.01671	1.472 "	59.86	**315**
1.3186	0.8283	0.4903	0.01532	1.499 "	65.26	**320**
1.3077	0.8411	0.4666	0.01404	1.529 "	71.24	**325**
1.2964	0.8541	0.4423	0.01284	1.562 "	77.88	**330**
1.2848	0.8674	0.4174	0.01173	1.599 "	85.25	**335**
1.2729	0.8812	0.3917	0.01069	1.641 "	93.52	**340**
1.2606	0.8954	0.3652	0.009730	1.689 "	102.78	**345**
1.2479	0.9101	0.3378	0.008831	1.744 "	113.2	**350**
8	**9**	**10**	**11**	**12**	**13**	**14**

Table II

Pressure kg/cm² p	Saturation Temperature °C t_s	Heat Content of Steam int. kcal/kg H_s	Heat Content of Water int. kcal/kg H_w	Latent Heat of Evaporation int. kcal/kg L	Internal Energy of Steam int. kcal/kg U_s	Internal Energy of Water int. kcal/kg U_w
0.01	6.69	599.25	6.71	592.54	568.43	6.71
0.015	12.75	601.99	12.76	589.23	570.52	12.76
0.02	17.21	604.01	17.23	586.78	572.04	17.23
0.025	20.79	605.62	20.80	584.82	573.27	20.80
0.03	23.78	606.97	23.79	583.18	574.29	23.79
0.04	28.65	609.16	28.65	580.51	575.95	28.65
0.05	32.56	610.90	32.55	578.35	577.28	32.55
0.06	35.84	612.37	35.83	576.54	578.39	35.82
0.08	41.17	914.74	41.15	573.59	580.19	41.14
0.10	45.46	616.63	45.43	571.20	581.63	45.42
0.12	49.06	618.21	49.02	569.19	582.83	49.02
0.15	53.60	620.20	53.55	566.65	584.34	53.55
0.20	59.67	622.83	59.62	563.21	586.33	59.61
0.25	64.56	624.92	64.50	560.42	587.92	64.50
0.30	68.68	626.67	68.62	558.05	589.25	68.61
0.35	72.26	628.18	72.19	555.99	590.39	72.19
0.40	75.42	629.50	75.36	554.14	591.39	75.35
0.50	80.87	631.74	80.81	550.93	593.09	80.80
0.60	85.46	633.61	85.42	548.19	594.50	85.41
0.70	89.45	635.21	89.43	545.78	595.72	89.41
0.80	92.99	636.61	92.99	543.62	596.77	92.97
0.90	96.18	637.85	96.19	541.66	597.72	96.17
1.0	99.09	638.97	99.12	539.85	598.56	99.10
1.1	101.76	639.99	101.82	538.17	599.33	101.79
1.2	104.25	640.92	104.32	536.60	600.04	104.29
1.3	106.56	641.78	106.66	535.12	600.69	106.63
1.4	108.74	642.59	108.86	533.73	601.30	108.82
1.5	110.79	643.33	110.93	532.40	601.87	110.89
1.6	112.73	644.03	112.89	531.14	602.39	112.85
1.8	116.33	645.31	116.53	528.78	603.36	116.49
2.0	119.61	646.45	119.86	526.59	604.22	119.81
2.2	122.64	647.49	122.94	524.55	605.01	122.88
2.4	125.45	648.43	125.79	522.64	605.71	125.73
2.6	128.08	649.30	128.47	520.83	606.37	128.40
2.8	130.54	650.10	130.98	519.12	606.97	130.91
3.0	132.87	650.84	133.35	517.49	607.53	133.28
3.2	135.07	651.54	135.60	515.94	608.05	135.52
3.4	137.17	652.19	137.75	514.44	608.54	137.66
3.6	139.17	652.80	139.79	513.01	609.00	139.70
3.8	141.08	653.37	141.75	511.62	609.44	141.66
4.0	142.91	653.92	143.63	510.29	609.85	143.53
4.5	147.19	655.15	148.02	507.13	610.78	147.91
5.0	151.10	656.25	152.05	504.20	611.60	151.93
5.5	154.71	657.22	155.78	501.44	612.34	155.64
6.0	158.07	658.10	159.26	498.84	613.00	159.10
6.5	161.21	658.89	162.51	496.38	613.59	162.34
7.0	164.16	659.62	165.58	494.04	614.14	165.40
1	**2**	**3**	**4**	**5**	**6**	**7**

Table II

Entropy of Steam int. kcal/°K kg S_s	Entropy of Water int. kcal/°K kg S_w	$S_s - S_w$ int. kcal/°K kg $\frac{L}{T}$	Specific Volume of Steam m³/kg v_s	Specific Volume of Water m³/kg v_w	Spec. Weight of Steam kg/m³ γ_s	Pressure kg/cm² p
2.1412	0.0241	2.1171	131.6	$1.000 \cdot 10^{-3}$	0.007597	**0.01**
2.1062	0.0456	2.0606	89.63	1.001 ,,	0.01116	**0.015**
2.0815	0.0610	2.0205	68.26	1.001 ,,	0.01465	**0.02**
2.0625	0.0732	1.9893	55.27	1.002 ,,	0.01809	**0.025**
2.0470	0.0833	1.9637	46.52	1.003 ,,	0.02150	**0.03**
2.0226	0.0995	1.9231	35.45	1.004 ,,	0.02821	**0.04**
2.0038	0.1123	1.8915	28.72	1.005 ,,	0.03482	**0.05**
1.9885	0.1229	1.8656	24.19	1.006 ,,	0.04135	**0.06**
1.9646	0.1400	1.8246	18.44	1.008 ,,	0.05422	**0.08**
1.9460	0.1535	1.7925	14.95	1.010 ,,	0.06689	**0.10**
1.9309	0.1647	1.7662	12.59	1.012 ,,	0.07941	**0.12**
1.9125	0.1786	1.7339	10.21	1.014 ,,	0.09794	**0.15**
1.8890	0.1970	1.6920	7.793	1.017 ,,	0.1283	**0.20**
1.8707	0.2115	1.6592	6.321	1.020 ,,	0.1582	**0.25**
1.8559	0.2236	1.6323	5.328	1.022 ,,	0.1877	**0.30**
1.8434	0.2340	1.6094	4.611	1.024 ,,	0.2169	**0.35**
1.8327	0.2432	1.5895	4.069	1.026 ,,	0.2458	**0.40**
1.8147	0.2587	1.5560	3.301	1.030 ,,	0.3029	**0.50**
1.8000	0.2716	1.5284	2.783	1.033 ,,	0.3593	**0.60**
1.7876	0.2826	1.5050	2.409	1.036 ,,	0.4151	**0.70**
1.7769	0.2924	1.4845	2.127	1.038 ,,	0.4703	**0.80**
1.7675	0.3011	1.4664	1.904	1.041 ,,	0.5251	**0.90**
1.7591	0.3090	1.4501	1.726	1.043 ,,	0.5795	**1.0**
1.7515	0.3162	1.4353	1.579	1.045 ,,	0.6335	**1.1**
1.7446	0.3229	1.4217	1.455	1.047 ,,	0.6873	**1.2**
1.7382	0.3291	1.4091	1.350	1.049 ,,	0.7408	**1.3**
1.7322	0.3348	1.3974	1.260	1.050 ,,	0.7940	**1.4**
1.7267	0.3402	1.3865	1.181	1.052 ,,	0.8470	**1.5**
1.7216	0.3453	1.3763	1.112	1.054 ,,	0.8996	**1.6**
1.7122	0.3547	1.3575	0.9954	1.057 ,,	1.005	**1.8**
1.7038	0.3632	1.3406	0.9019	1.060 ,,	1.109	**2.0**
1.6962	0.3710	1.3252	0.8249	1.063 ,,	1.212	**2.2**
1.6892	0.3782	1.3110	0.7602	1.065 ,,	1.315	**2.4**
1.6828	0.3849	1.2979	0.7052	1.068 ,,	1.418	**2.6**
1.6769	0.3911	1.2858	0.6579	1.070 ,,	1.520	**2.8**
1.6714	0.3970	1.2744	0.6166	1.072 ,,	1.622	**3.0**
1.6662	0.4025	1.2637	0.5804	1.075 ,,	1.723	**3.2**
1.6613	0.4077	1.2536	0.5482	1.077 ,,	1.824	**3.4**
1.6567	0.4127	1.2440	0.5196	1.079 ,,	1.925	**3.6**
1.6524	0.4174	1.2350	0.4938	1.081 ,,	2.025	**3.8**
1.6482	0.4219	1.2263	0.4705	1.083 ,,	2.125	**4.0**
1.6387	0.4324	1.2063	0.4211	1.087 ,,	2.375	**4.5**
1.6302	0.4419	1.1883	0.3813	1.092 ,,	2.622	**5.0**
1.6225	0.4507	1.1718	0.3485	1.096 ,,	2.869	**5.5**
1.6154	0.4587	1.1567	0.3210	1.100 ,,	3.115	**6.0**
1.6089	0.4662	1.1427	0.2976	1.103 ,,	3.360	**6.5**
1.6028	0.4732	1.1296	0.2775	1.107 ,,	3.604	**7.0**
8	**9**	**10**	**11**	**12**	**13**	**14**

Table II

Pressure kg/cm² p	Saturation Temperature °C t_s	Heat Content of Steam int. kcal/kg H_s	Heat Content of Water int. kcal/kg H_w	Latent Heat of Evaporation int. kcal/kg L	Internal Energy of Steam int. kcal/kg U_s	Internal Energy of Water int. kcal/kg U_w
7.5	166.95	660.28	168.49	491.79	614.64	168.30
8.0	169.60	660.89	171.26	489.63	615.10	171.05
8.5	172.12	661.45	173.89	487.56	615.53	173.67
9.0	174.52	661.98	176.41	485.57	615.92	176.18
9.5	176.82	662.46	178.83	483.63	616.29	178.58
10	179.03	662.91	181.16	481.75	616.63	180.89
11	183.19	663.73	185.56	478.17	617.23	185.27
12	187.07	664.44	189.67	474.77	617.77	189.35
13	190.70	665.06	193.54	471.52	618.25	193.19
14	194.12	665.62	197.19	468.43	618.67	196.82
15	197.35	666.10	200.66	465.44	619.04	200.26
16	200.42	666.54	203.97	462.57	619.37	203.53
17	203.35	666.92	207.13	459.79	619.66	206.66
18	206.14	667.26	210.15	457.11	619.92	209.66
19	208.81	667.55	213.06	454.49	620.14	212.54
20	211.38	667.82	215.87	451.95	620.34	215.32
22	216.23	668.25	221.19	447.06	620.67	220.58
24	220.74	668.56	226.18	442.38	620.92	225.52
26	224.97	668.78	230.90	437.88	621.09	230.17
28	228.96	668.92	235.37	433.55	621.20	234.58
30	232.74	668.98	239.63	429.35	621.25	238.78
32	236.32	668.97	243.70	425.27	621.26	242.79
34	239.74	668.91	247.61	421.30	621.22	246.63
36	243.00	668.79	251.37	417.42	621.13	250.33
38	246.13	668.63	255.00	413.63	621.01	253.90
40	249.14	668.42	258.51	409.91	620.86	257.34
42	252.04	668.17	261.91	406.26	620.69	260.67
44	254.82	667.88	265.21	402.67	620.47	263.91
46	257.51	667.55	268.42	399.13	620.23	267.06
48	260.12	667.19	271.55	395.64	619.96	270.12
50	262.65	666.80	274.60	392.20	619.67	273.10
55	268.64	665.70	281.93	383.77	618.85	280.26
60	274.22	664.42	288.88	375.54	617.90	287.04
65	279.47	663.01	295.53	367.48	616.84	293.50
70	284.42	661.46	301.90	359.56	615.68	299.70
75	289.10	659.79	308.06	351.73	614.42	305.67
80	293.55	658.02	314.02	344.00	613.08	311.44
85	297.80	656.14	319.81	336.33	611.67	317.03
90	301.85	654.16	325.44	328.72	610.17	322.47
95	305.74	652.11	330.95	321.16	608.61	327.78
100	309.47	649.[illegible]7	336.35	313.62	606.98	332.96
110	316.53	645.46	346.85	298.61	603.55	343.04
120	323.10	640.69	357.04	283.65	599.90	352.78
130	329.25	635.68	366.98	268.70	596.06	362.24
140	335.05	630.47	376.74	253.73	592.06	371.50
150	340.52	625.08	386.36	238.72	587.89	380.58
160	345.70	619.53	395.86	223.67	583.57	389.51
1	**2**	**3**	**4**	**5**	**6**	**7**

Table II

Entropy of Steam int. kcal/°K kg S_s	Entropy of Water int. kcal/°K kg S_w	$S_s - S_w$ int. kcal/°K kg $\frac{L}{T}$	Specific Volume of Steam m³/kg v_s	Specific Volume of Water m³/kg v_w	Spec. Weight of Steam kg/m³ γ_s	Pressure kg/cm² p
1.5972	0.4799	1.1173	0.2599	$1.110 \cdot 10^{-3}$	3.848	**7.5**
1.5919	0.4861	1.1058	0.2445	1.114 "	4.091	**8.0**
1.5869	0.4920	1.0949	0.2308	1.117 "	4.334	**8.5**
1.5822	0.4977	1.0845	0.2186	1.120 "	4.576	**9.0**
1.5777	0.5030	1.0747	0.2076	1.123 "	4.817	**9.5**
1.5735	0.5082	1.0653	0.1977	1.126 "	5.059	**10**
1.5655	0.5178	1.0477	0.1805	1.131 "	5.539	**11**
1.5582	0.5267	1.0315	0.1661	1.137 "	6.022	**12**
1.5515	0.5350	1.0165	0.1538	1.142 "	6.502	**13**
1.5452	0.5428	1.0024	0.1432	1.147 "	6.983	**14**
1.5393	0.5502	0.9891	0.1340	1.152 "	7.462	**15**
1.5338	0.5571	0.9767	0.1259	1.157 "	7.943	**16**
1.5286	0.5638	0.9648	0.1187	1.161 "	8.423	**17**
1.5236	0.5700	0.9536	0.1123	1.166 "	8.903	**18**
1.5189	0.5760	0.9429	0.1066	1.170 "	9.384	**19**
1.5144	0.5817	0.9327	0.1014	1.175 "	9.863	**20**
1.5060	0.5926	0.9134	0.09244	1.183 "	10.82	**22**
1.4982	0.6026	0.8956	0.08478	1.191 "	11.79	**24**
1.4910	0.6120	0.8790	0.07834	1.199 "	12.77	**26**
1.4842	0.6208	0.8634	0.07278	1.206 "	13.74	**28**
1.4778	0.6292	0.8486	0.06794	1.214 "	14.72	**30**
1.4717	0.6371	0.8346	0.06369	1.221 "	15.70	**32**
1.4659	0.6446	0.8213	0.05991	1.228 "	16.69	**34**
1.4604	0.6518	0.8086	0.05654	1.235 "	17.69	**36**
1.4551	0.6586	0.7965	0.05351	1.242 "	18.69	**38**
1.4500	0.6653	0.7847	0.05077	1.249 "	19.70	**40**
1.4451	0.6716	0.7735	0.04829	1.256 "	20.71	**42**
1.4404	0.6778	0.7626	0.04602	1.262 "	21.73	**44**
1.4358	0.6837	0.7521	0.04394	1.269 "	22.76	**46**
1.4313	0.6895	0.7418	0.04202	1.276 "	23.80	**48**
1.4270	0.6951	0.7319	0.04026	1.282 "	24.84	**50**
1.4166	0.7083	0.7083	0.03638	1.298 "	27.49	**55**
1.4068	0.7208	0.6860	0.03311	1.314 "	30.20	**60**
1.3975	0.7326	0.6649	0.03033	1.330 "	32.97	**65**
1.3886	0.7438	0.6448	0.02793	1.346 "	35.80	**70**
1.3800	0.7545	0.6255	0.02584	1.362 "	38.71	**75**
1.3717	0.7647	0.6070	0.02399	1.378 "	41.69	**80**
1.3636	0.7746	0.5890	0.02235	1.395 "	44.75	**85**
1.3557	0.7841	0.5716	0.02088	1.411 "	47.90	**90**
1.3481	0.7934	0.5547	0.01956	1.428 "	51.14	**95**
1.3406	0.8024	0.5382	0.01836	1.445 "	54.47	**100**
1.3260	0.8196	0.5064	0.01627	1.480 "	61.46	**110**
1.3119	0.8362	0.4757	0.01452	1.518 "	68.88	**120**
1.2982	0.8522	0.4460	0.01302	1.557 "	76.83	**130**
1.2848	0.8676	0.4172	0.01172	1.600 "	85.33	**140**
1.2717	0.8827	0.3890	0.01059	1.646 "	94.43	**150**
1.2588	0.8974	0.3614	0.009599	1.696 "	104.2	**160**
8	**9**	**10**	**11**	**12**	**13**	**14**

Table III

t °C	T °K	$\varphi_1(T)$	$\varphi_2(T)$	$\psi_1(T)$	$\psi_2(T)$	$\theta_1(T)$	$\theta_2(T)$	$f_1(T)$
0	273.20	0.044	$3.3 \cdot 10^{-1}$	3.7	$5.7 \cdot 10$	$9.8 \cdot 10^{-3}$	$2.0 \cdot 10^{-1}$	
5	278.20	0.042	2.5 "	3.5	4.4 "	9.2 "	1.5 "	
10	283.20	0.040	2.0 "	3.4	3.5 "	8.6 "	1.1 "	
15	288.20	0.038	1.5 "	3.2	2.7 "	8.1 "	$8.8 \cdot 10^{-2}$	
20	293.20	0.037	1.2 "	3.1	2.1 "	7.6 "	6.8 "	
25	298.20	0.035	$9.6 \cdot 10^{-2}$	3.0	1.7 "	7.2 "	5.3 "	
30	303.20	0.034	7.6 "	2.8	1.3 "	6.8 "	4.1 "	
35	308.20	0.032	6.0 "	2.7	1.1 "	6.4 "	3.2 "	
40	313.20	0.031	4.8 "	2.6	8.4	6.0 "	2.5 "	
45	318.20	0.030	3.9 "	2.5	6.8	5.7 "	2.0 "	
50	323.20	0.0284	3.09 "	2.40	5.4	5.35 "	1.57 "	
55	328.20	0.0273	2.50 "	2.30	4.4	5.06 "	1.25 "	
60	333.20	0.0262	2.02 "	2.21	3.6	4.80 "	$9.94 \cdot 10^{-3}$	
65	338.20	0.0253	1.64 "	2.13	2.9	4.55 "	7.95 "	
70	343.20	0.0243	1.34 "	2.05	2.3	4.31 "	6.38 "	
75	348.20	0.0234	1.09 "	1.97	1.91	4.09 "	5.13 "	
80	353.20	0.0226	$8.93 \cdot 10^{-3}$	1.90	1.57	3.89 "	4.15 "	
85	358.20	0.0217	7.31 "	1.83	1.29	3.70 "	3.36 "	
90	363.20	0.0210	6.04 "	1.77	1.06	3.52 "	2.73 "	
95	368.20	0.0202	4.99 "	1.71	$8.76 \cdot 10^{-1}$	3.35 "	2.22 "	
100	373.20	0.0195	4.13 "	1.65	7.25 "	3.19 "	1.81 "	
105	378.20	0.0189	3.43 "	1.59	6.02 "	3.04 "	1.49 "	
110	383.20	0.0182	2.85 "	1.54	5.01 "	2.90 "	1.22 "	
115	388.20	0.0176	2.38 "	1.49	4.18 "	2.77 "	1.00 "	
120	393.20	0.0171	1.99 "	1.44	3.49 "	2.64 "	$8.29 \cdot 10^{-4}$	
125	398.20	0.01652	1.67 "	1.39	2.93 "	2.525 "	6.86 "	$1.6 \cdot 10^{-11}$
130	403.20	0.01599	1.40 "	1.35	2.46 "	2.414 "	5.69 "	1.3 "
135	408.20	0.01548	1.18 "	1.31	2.07 "	2.309 "	4.73 "	1.0 "
140	413.20	0.01500	$9.93 \cdot 10^{-4}$	1.26	1.74 "	2.210 "	3.94 "	$8.1 \cdot 10^{-12}$
145	418.20	0.01454	8.39 "	1.23	1.47 "	2.117 "	3.29 "	6.5 "
150	423.20	0.01410	7.11 "	1.188	1.25 "	2.028 "	2.752 "	5.3 "
155	428.20	0.01367	6.03 "	1.153	1.06 "	1.944 "	2.308 "	4.3 "
160	433.20	0.01327	5.12 "	1.118	$9.00 \cdot 10^{-2}$	1.865 "	1.939 "	3.5 "
165	438.20	0.01288	4.36 "	1.085	7.66 "	1.789 "	1.632 "	2.8 "
170	443.20	0.01250	3.72 "	1.054	6.54 "	1.717 "	1.377 "	2.3 "
175	448.20	0.01214	3.18 "	1.024	5.59 "	1.649 "	1.163 "	1.88 "
180	453.20	0.01180	2.72 "	$9.945 \cdot 10^{-1}$	4.78 "	1.585 "	$9.851 \cdot 10^{-5}$	1.54 "
185	458.20	0.01147	2.34 "	9.665 "	4.10 "	1.524 "	8.356 "	1.26 "
190	463.20	0.01115	2.01 "	9.396 "	3.52 "	1.465 "	7.101 "	1.04 "
195	468.20	0.01084	1.73 "	9.137 "	3.03 "	1.410 "	6.044 "	$8.56 \cdot 10^{-13}$
200	473.20	0.01054	1.49 "	8.888 "	2.613 "	1.357 "	5.154 "	7.07 "
205	478.20	0.01026	1.28 "	8.649 "	2.256 "	1.307 "	4.402 "	5.85 "
210	483.20	0.00999	1.11 "	8.418 "	1.950 "	1.258 "	3.766 "	4.85 "
215	488.20	0.00972	$9.61 \cdot 10^{-5}$	8.196 "	1.688 "	1.212 "	3.228 "	4.03 "
220	493.20	0.00947	8.34 "	7.981 "	1.464 "	1.169 "	2.770 "	3.35 "
225	498.20	0.009224	7.238 "	7.775 "	1.271 "	1.127 "	2.381 "	2.797 "
230	503.20	0.008987	6.293 "	7.576 "	1.105 "	1.087 "	2.050 "	2.337 "
235	508.20	0.008759	5.480 "	7.383 "	$9.624 \cdot 10^{-3}$	1.049 "	1.767 "	1.956 "
240	513.20	0.008539	4.778 "	7.198 "	8.391 "	1.013 "	1.526 "	1.640 "
245	518.20	0.008326	4.171 "	7.019 "	7.326 "	$9.782 \cdot 10^{-4}$	1.319 "	1.377 "
250	523.20	0.008121	3.647 "	6.846 "	6.404 "	9.449 "	1.142 "	1.159 "
255	528.20	0.007923	3.192 "	6.678 "	5.606 "	9.131 "	$9.905 \cdot 10^{-6}$	$9.764 \cdot 10^{-14}$
260	533.20	0.007731	2.798 "	6.517 "	4.913 "	8.827 "	8.600 "	8.241 "
265	538.20	0.007546	2.455 "	6.360 "	4.311 "	8.535 "	7.476 "	6.966 "
270	543.20	0.007366	2.157 "	6.209 "	3.788 "	8.256 "	6.508 "	5.898 "
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

Table III

$f_2(T)$	H_0	S_0	t °C
	596.6_0	2.6375_5	**0**
	598.8_8	2.6458_3	**5**
	601.1_6	2.6539_5	**10**
	603.4_4	2.6619_3	**15**
	605.7_2	2.6697_7	**20**
	608.0_0	2.6774_8	**25**
	610.2_8	2.6850_7	**30**
	612.5_6	2.6925_3	**35**
	614.8_4	2.6998_8	**40**
	617.1_3	2.7071_0	**45**
	619.4_1	2.7142_2	**50**
	621.6_9	2.7212_3	**55**
	623.9_8	2.7281_4	**60**
	626.2_6	2.7349_4	**65**
	628.5_5	2.7416_5	**70**
	630.8_3	2.7482_6	**75**
	633.1_2	2.7547_8	**80**
	635.4_1	2.7612_1	**85**
	637.6_9	2.7675_6	**90**
	639.9_8	2.7738_2	**95**
	642.2_7	2.7800_0	**100**
	644.5_7	2.7861_0	**105**
	646.8_6	2.7921_2	**110**
	649.1_5	2.7980_7	**115**
	651.4_5	2.8039_4	**120**
$4.0 \cdot 10^{-12}$	653.7_4	2.8097_5	**125**
3.1 ”	656.0_4	2.8154_8	**130**
2.5 ”	658.3_4	2.8211_5	**135**
2.0 ”	660.6_4	2.8267_5	**140**
1.6 ”	662.9_5	2.8322_9	**145**
1.3 ”	665.2_5	2.8377_7	**150**
1.0 ”	667.5_6	2.8431_9	**155**
$8.0 \cdot 10^{-13}$	669.8_6	2.8485_4	**160**
6.3 ”	672.1_7	2.8538_4	**165**
5.2 ”	674.4_8	2.8590_9	**170**
4.19 ”	676.8_0	2.8642_8	**175**
3.39 ”	679.1_1	2.8694_1	**180**
2.75 ”	681.4_3	2.8745_0	**185**
2.24 ”	683.7_5	2.8795_3	**190**
1.83 ”	686.0_7	2.8845_2	**195**
1.49 ”	688.3_9	2.8894_5	**200**
1.22 ”	690.7_2	2.8943_4	**205**
1.00 ”	693.0_5	2.8991_8	**210**
$8.25 \cdot 10^{-14}$	695.3_8	2.9039_8	**215**
6.80 ”	697.7_1	2.9087_3	**220**
5.61 ”	700.0_4	2.9134_5	**225**
4.64 ”	702.3_8	2.9181_1	**230**
3.85 ”	704.7_2	2.9227_4	**235**
3.20 ”	707.0_6	2.9273_3	**240**
2.66 ”	709.4_1	2.9318_8	**245**
2.215 ”	711.7_6	2.9363_9	**250**
1.849 ”	714.1_1	2.9408_6	**255**
1.546 ”	716.4_6	2.9452_9	**260**
1.294 ”	718.8_2	2.9496_9	**265**
1.086 ”	721.1_8	2.9540_5	**270**
10	**11**	**12**	**13**

Table IV

p kg/cm²	$\Phi_1(p)$	$\Phi_2(p)$	$\Psi_1(p)$	$\Psi_2(p)$	$\Theta_1(p)$	$\Theta_2(p)$
0.01		$2.0 \cdot 10^{-2}$		0.3_6		0.5073_4
0.015		1.9 ”		0.3_6		0.5520_1
0.02		1.8 ”		0.3_7		0.5837_0
0.025		1.8 ”		0.3_7		0.6082_9
0.03		1.7 ”		0.3_7		0.6283_7
0.04		1.6 ”		0.3_7		0.6600_6
0.05		1.5 ”		0.3_8		0.6846_5
0.06		1.4 ”		0.3_8		0.7047_3
0.08		1.2 ”		0.3_9		0.7364_3
0.10		1.1 ”		0.3_9		0.7610_1
0.12		1.0 ”		0.4_0		0.7811_0
0.15		$8.8 \cdot 10^{-3}$		0.4_0		0.8056_8
0.20		7.3 ”		0.4_1		0.8373_7
0.25		6.3 ”		0.4_2		0.8619_6
0.30		5.5 ”		0.4_3		0.8820_4
0.35		4.9 ”		0.4_4		0.8990_2
0.40		4.4 ”		0.4_4		0.9137_3
0.50		3.7 ”		0.4_5		0.9383_2
0.60		3.1 ”		0.4_6		0.9584_0
0.70		2.8 ”		0.4_6		0.9753_9
0.80		2.4 ”		0.4_7		0.9901_0
0.90		2.2 ”		0.4_8		1.0030_7
1.0		2.0 ”		0.4_8		1.0146_8
1.1		1.8 ”		0.4_9		1.0251_8
1.2		1.7 ”		0.4_9		1.0347_7
1.3		1.6 ”		0.4_9		1.0435_8
1.4		1.5 ”		0.5_0		1.0517_5
1.5		1.4 ”		0.5_0		1.0593_5
1.6		1.3 ”		0.5_0		1.0664_6
1.8		1.2 ”		0.5_1		1.0794_3
2.0		1.1 ”		0.5_1		1.0910_4
2.2		$9.6 \cdot 10^{-4}$		0.5_2		1.1015_4
2.4	$1.7 \cdot 10^{6}$	8.8 ”	$0.5 \cdot 10^{9}$	0.5_2	$0.4 \cdot 10^{7}$	1.1111_3
2.6	2.2 ”	8.1 ”	0.6 ”	0.5_3	0.6 ”	1.1199_5
2.8	2.8 ”	7.6 ”	0.9 ”	0.5_3	0.8 ”	1.1281_1
3.0	3.4 ”	7.1 ”	1.1 ”	0.5_3	1.1 ”	1.1357_1
3.2	4.1 ”	6.7 ”	1.5 ”	0.5_4	1.4 ”	1.1428_2
3.4	5.0 ”	6.3 ”	1.9 ”	0.5_4	1.8 ”	1.1495_0
3.6	5.9 ”	5.9 ”	2.4 ”	0.5_4	2.2 ”	1.1558_0
3.8	6.9 ”	5.6 ”	2.9 ”	0.5_5	2.8 ”	1.1617_5
4.0	8.1 ”	5.4 ”	3.6 ”	0.5_5	3.4 ”	1.1674_0
4.5	$1.1 \cdot 10^{7}$	4.8 ”	5.7 ”	0.5_6	5.4 ”	1.1803_8
5.0	1.6 ”	4.3 ”	8.8 ”	0.5_6	8.3 ”	1.1919_9
5.5	2.1 ”	3.9 ”	$1.3 \cdot 10^{10}$	0.5_7	$1.2 \cdot 10^{8}$	1.2024_9
6.0	2.7 ”	3.6 ”	1.8 ”	0.5_7	1.7 ”	1.2120_7
6.5	3.5 ”	3.3 ”	2.5 ”	0.5_7	2.4 ”	1.2208_9
7.0	4.3 ”	3.1 ”	3.4 ”	0.5_8	3.2 ”	1.2290_6
7.5	5.3 ”	2.9 ”	4.4 ”	0.5_8	4.2 ”	1.2366_6
8.0	6.5 ”	2.7 ”	5.7 ”	0.5_8	5.4 ”	1.2437_7
8.5	7.7 ”	2.6 ”	7.3 ”	0.5_9	6.9 ”	1.2504_5
9.0	9.2 ”	2.4 ”	9.2 ”	0.5_9	8.7 ”	1.2567_4
9.5	$1.1 \cdot 10^{8}$	2.3 ”	$1.1 \cdot 10^{11}$	0.5_9	10.8 ”	1.2627_0
1	**2**	**3**	**4**	**5**	**6**	**7**

Table III

t °C	T °K	$\varphi_1(T)$	$\varphi_2(T)$	$\psi_1(T)$	$\psi_2(T)$	$\theta_1(T)$	$\theta_2(T)$	$f_1(T)$
275	548.20	0.007193	$1.897\cdot10^{-5}$	$6.063\cdot10^{-1}$	$3.332\cdot10^{-3}$	$7.988\cdot10^{-4}$	$5.672\cdot10^{-6}$	$5.002\cdot10^{-14}$
280	553.20	0.007025	1.671 ,,	5.922 ,,	2.934 ,,	7.731 ,,	4.950 ,,	4.247 ,,
285	558.20	0.006863	1.473 ,,	5.785 ,,	2.587 ,,	7.485 ,,	4.325 ,,	3.612 ,,
290	563.20	0.006705	1.300 ,,	5.652 ,,	2.283 ,,	7.248 ,,	3.784 ,,	3.077 ,,
295	568.20	0.006553	1.149 ,,	5.524 ,,	2.017 ,,	7.021 ,,	3.314 ,,	2.624 ,,
300	573.20	0.006406	1.016 ,,	5.399 ,,	1.785 ,,	6.803 ,,	2.906 ,,	2.241 ,,
305	578.20	0.006263	$8.998\cdot10^{-6}$	5.279 ,,	1.580 ,,	6.594 ,,	2.551 ,,	1.917 ,,
310	583.20	0.006124	7.976 ,,	5.162 ,,	1.401 ,,	6.393 ,,	2.242 ,,	1.642 ,,
315	588.20	0.005989	7.078 ,,	5.049 ,,	1.243 ,,	6.199 ,,	1.972 ,,	1.408 ,,
320	593.20	0.005859	6.287 ,,	4.939 ,,	1.104 ,,	6.013 ,,	1.737 ,,	1.209 ,,
325	598.20	0.005733	5.590 ,,	4.832 ,,	$9.817\cdot10^{-4}$	5.834 ,,	1.532 ,,	1.039 ,,
330	603.20	0.005610	4.975 ,,	4.729 ,,	8.737 ,,	5.662 ,,	1.352 ,,	$8.947\cdot10^{-15}$
335	608.20	0.005491	4.432 ,,	4.628 ,,	7.783 ,,	5.496 ,,	1.194 ,,	7.712 ,,
340	613.20	0.005375	3.952 ,,	4.531 ,,	6.941 ,,	5.336 ,,	1.056 ,,	6.655 ,,
345	618.20	0.005263	3.527 ,,	4.436 ,,	6.195 ,,	5.183 ,,	$9.352\cdot10^{-7}$	5.750 ,,
350	623.20	0.005154	3.151 ,,	4.344 ,,	5.534 ,,	5.035 ,,	8.288 ,,	4.974 ,,
355	628.20	0.005048	2.818 ,,	4.255 ,,	4.948 ,,	4.892 ,,	7.351 ,,	4.308 ,,
360	633.20	0.004945	2.522 ,,	4.168 ,,	4.428 ,,	4.754 ,,	6.527 ,,	3.735 ,,
365	638.20	0.004845	2.259 ,,	4.084 ,,	3.967 ,,	4.622 ,,	5.801 ,,	3.242 ,,
370	643.20	0.004747	2.025 ,,	4.002 ,,	3.556 ,,	4.494 ,,	5.160 ,,	2.817 ,,
375	648.20	0.004653	1.817 ,,	3.922 ,,	3.191 ,,	4.370 ,,	4.594 ,,	2.450 ,,
380	653.20	0.004561	1.632 ,,	3.844 ,,	2.865 ,,	4.251 ,,	4.094 ,,	2.134 ,,
385	658.20	0.004471	1.466 ,,	3.769 ,,	2.575 ,,	4.136 ,,	3.652 ,,	1.860 ,,
390	663.20	0.004384	1.319 ,,	3.695 ,,	2.310 ,,	4.025 ,,	3.260 ,,	1.623 ,,
395	668.20	0.004299	1.187 ,,	3.624 ,,	2.085 ,,	3.917 ,,	2.912 ,,	1.418 ,,
400	673.20	0.004217	1.070 ,,	3.554 ,,	1.878 ,,	3.8132 ,,	2.604 ,,	1.240 ,,
405	678.20	0.004136	$9.644\cdot10^{-7}$	3.487 ,,	1.694 ,,	3.7130 ,,	2.331 ,,	1.085 ,,
410	683.20	0.004058	8.701 ,,	3.421 ,,	1.528 ,,	3.6161 ,,	2.088 ,,	$9.509\cdot10^{-16}$
415	688.20	0.003982	7.857 ,,	3.356 ,,	1.380 ,,	3.5224 ,,	1.871 ,,	8.339 ,,
420	693.20	0.003908	7.100 ,,	3.294 ,,	1.247 ,,	3.4318 ,,	1.679 ,,	7.321 ,,
425	698.20	0.003835	6.420 ,,	3.233 ,,	1.127 ,,	3.3442 ,,	1.507 ,,	6.432 ,,
430	703.20	0.003765	5.810 ,,	3.174 ,,	1.020 ,,	3.2593 ,,	1.354 ,,	5.657 ,,
435	708.20	0.003696	5.261 ,,	3.116 ,,	$9.239\cdot10^{-5}$	3.1773 ,,	1.218 ,,	4.980 ,,
440	713.20	0.003629	4.768 ,,	3.059 ,,	8.373 ,,	3.0978 ,,	1.096 ,,	4.387 ,,
445	718.20	0.003564	4.323 ,,	3.004 ,,	7.593 ,,	3.0209 ,,	$9.866\cdot10^{-8}$	3.869 ,,
450	723.20	0.003500	3.923 ,,	2.950 ,,	6.890 ,,	2.9463 ,,	8.891 ,,	3.415 ,,
455	728.20	0.003438	3.562 ,,	2.898 ,,	6.256 ,,	2.8742 ,,	8.018 ,,	3.016 ,,
460	733.20	0.003377	3.237 ,,	2.847 ,,	5.685 ,,	2.8042 ,,	7.236 ,,	2.667 ,,
465	738.20	0.003318	2.943 ,,	2.797 ,,	5.169 ,,	2.7365 ,,	6.535 ,,	2.360 ,,
470	743.20	0.003260	2.678 ,,	2.748 ,,	4.703 ,,	2.6708 ,,	5.906 ,,	2.090 ,,
475	748.20	0.003204	2.438 ,,	2.701 ,,	4.281 ,,	2.6071 ,,	5.340 ,,	1.852 ,,
480	753.20	0.003149	2.221 ,,	2.654 ,,	3.900 ,,	2.5453 ,,	4.833 ,,	1.643 ,,
485	758.20	0.003095	2.024 ,,	2.609 ,,	3.555 ,,	2.4854 ,,	4.376 ,,	1.458 ,,
490	763.20	0.003043	1.846 ,,	2.565 ,,	3.243 ,,	2.4273 ,,	3.965 ,,	1.296 ,,
495	768.20	0.002992	1.685 ,,	2.522 ,,	2.959 ,,	2.3709 ,,	3.595 ,,	1.152 ,,
500	773.20	0.002941	1.539 ,,	2.480 ,,	2.702 ,,	2.3161 ,,	3.262 ,,	1.025 ,,
505	778.20	0.002893	1.406 ,,	2.438 ,,	2.469 ,,	2.2630 ,,	2.961 ,,	$9.128\cdot10^{-17}$
510	783.20	0.002845	1.285 ,,	2.398 ,,	2.257 ,,	2.2114 ,,	2.690 ,,	8.134 ,,
515	788.20	0.002798	1.176 ,,	2.359 ,,	2.065 ,,	2.1613 ,,	2.445 ,,	7.253 ,,
520	793.20	0.002753	1.076 ,,	2.320 ,,	1.890 ,,	2.1127 ,,	2.224 ,,	6.473 ,,
525	798.20	0.002708	$9.855\cdot10^{-8}$	2.283 ,,	1.731 ,,	2.0654 ,,	2.024 ,,	5.781 ,,
530	803.20	0.002664	9.031 ,,	2.246 ,,	1.586 ,,	2.0195 ,,	1.843 ,,	5.166 ,,
535	808.20	0.002622	8.279 ,,	2.210 ,,	1.454 ,,	1.9750 ,,	1.679 ,,	4.620 ,,
540	813.20	0.002580	7.594 ,,	2.175 ,,	1.334 ,,	1.9315 ,,	1.531 ,,	4.135 ,,
545	818.20	0.002539	6.970 ,,	2.140 ,,	1.224 ,,	1.8894 ,,	1.396 ,,	3.703 ,,
550	823.20	0.002499	6.400 ,,	2.107 ,,	1.124 ,,	1.8484 ,,	1.274 ,,	3.318 ,,
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

Table III

$f_2(T)$	E_0	S_0	t °C
$9.123 \cdot 10^{-15}$	723.5_{4}	2.9583_{8}	**275**
7.678 "	725.9_{0}	2.9626_{8}	**280**
6.471 "	728.2_{7}	2.9669_{4}	**285**
5.463 "	730.6_{4}	2.9711_{7}	**290**
4.618 "	733.0_{2}	2.9753_{7}	**295**
3.910 "	735.4_{0}	2.9795_{4}	**300**
3.315 "	737.7_{8}	2.9836_{7}	**305**
2.815 "	740.1_{6}	2.9877_{8}	**310**
2.393 "	742.5_{5}	2.9918_{6}	**315**
2.038 "	744.9_{4}	2.9959_{1}	**320**
1.737 "	747.3_{4}	2.9999_{3}	**325**
1.483 "	749.7_{4}	3.0039_{2}	**330**
1.268 "	752.1_{4}	3.0078_{8}	**335**
1.085 "	754.5_{5}	3.0118_{2}	**340**
$9.302 \cdot 10^{-16}$	756.9_{6}	3.0157_{3}	**345**
7.981 "	759.3_{7}	3.0196_{3}	**350**
6.857 "	761.7_{9}	3.0235_{0}	**355**
5.898 "	764.2_{1}	3.0273_{4}	**360**
5.079 "	766.6_{4}	3.0311_{5}	**365**
4.380 "	769.0_{7}	3.0349_{5}	**370**
3.780 "	771.5_{0}	3.0387_{2}	**375**
3.267 "	773.9_{4}	3.0424_{6}	**380**
2.826 "	776.3_{8}	3.0461_{9}	**385**
2.448 "	778.8_{3}	3.0498_{9}	**390**
2.122 "	781.2_{8}	3.0535_{7}	**395**
1.8419 "	783.7_{4}	3.0572_{3}	**400**
1.6003 "	786.2_{0}	3.0608_{7}	**405**
1.3918 "	788.6_{6}	3.0645_{0}	**410**
1.2118 "	791.1_{3}	3.0681_{0}	**415**
1.0561 "	793.6_{0}	3.0716_{8}	**420**
$9.2126 \cdot 10^{-17}$	796.0_{8}	3.0752_{4}	**425**
8.0445 "	798.5_{6}	3.0787_{8}	**430**
7.0313 "	801.0_{5}	3.0823_{1}	**435**
6.1516 "	803.5_{4}	3.0858_{2}	**440**
5.3869 "	806.0_{4}	3.0893_{1}	**445**
4.7216 "	808.5_{4}	3.0927_{8}	**450**
4.1423 "	811.0_{5}	3.0962_{3}	**455**
3.6372 "	813.5_{6}	3.0996_{7}	**460**
3.1966 "	816.0_{8}	3.1030_{9}	**465**
2.8118 "	818.6_{0}	3.1065_{0}	**470**
2.4755 "	821.1_{3}	3.1098_{9}	**475**
2.1812 "	823.6_{6}	3.1132_{6}	**480**
1.9236 "	826.2_{0}	3.1166_{2}	**485**
1.6977 "	828.7_{5}	3.1199_{6}	**490**
1.4996 "	831.3_{0}	3.1232_{9}	**495**
1.3257 "	833.8_{5}	3.1266_{1}	**500**
1.1729 "	836.4_{1}	3.1299_{1}	**505**
1.0385 "	838.9_{8}	3.1332_{0}	**510**
$9.2026 \cdot 10^{-18}$	841.5_{5}	3.1364_{7}	**515**
8.1607 "	844.1_{2}	3.1397_{3}	**520**
7.2423 "	846.7_{1}	3.1429_{8}	**525**
6.4321 "	849.3_{0}	3.1462_{1}	**530**
5.7167 "	851.8_{9}	3.1494_{3}	**535**
5.0845 "	854.4_{9}	3.1526_{4}	**540**
4.5255 "	857.1_{0}	3.1558_{3}	**545**
4.0309 "	859.7_{1}	3.1590_{2}	**550**
10	**11**	**12**	**13**

Table IV

p kg/cm^2	$\Phi_1(p)$	$\Phi_2(p)$	$\Psi_1(p)$	$\Psi_2(p)$	$\Theta_1(p)$	$\Theta_2(p)$
10	$1.3 \cdot 10^{8}$	$2.2 \cdot 10^{-4}$	$1.4 \cdot 10^{11}$	0.6_{0}	$1.33 \cdot 10^{9}$	1.2683_{5}
11	1.7 "	2.0 "	2.1 "	0.6_{0}	1.94 "	1.2788_{5}
12	2.2 "	1.8 "	2.9 "	0.6_{1}	2.75 "	1.2884_{4}
13	2.8 "	1.7 "	4.0 "	0.6_{1}	3.79 "	1.2972_{5}
14	3.5 "	1.6 "	5.4 "	0.6_{1}	5.10 "	1.3054_{2}
15	4.3 "	1.5 "	$0.71 \cdot 10^{12}$	0.6_{2}	6.72 "	1.3130_{2}
16	5.2 "	1.4 "	0.92 "	0.6_{2}	8.70 "	1.3201_{3}
17	6.2 "	1.3 "	1.17 "	0.6_{2}	$1.11 \cdot 10^{10}$	1.3268_{1}
18	7.3 "	1.2 "	1.47 "	0.6_{3}	1.39 "	1.3331_{0}
19	8.6 "	1.2 "	1.83 "	0.6_{3}	1.73 "	1.3390_{6}
20	$1.01 \cdot 10^{9}$	1.1 "	2.24 "	0.6_{3}	2.12 "	1.3447_{1}
22	1.34 "	1.0 "	3.28 "	0.6_{4}	3.11 "	1.3552_{1}
24	1.74 "	$9.1 \cdot 10^{-5}$	4.65 "	0.6_{4}	4.40 "	1.3648_{0}
26	2.21 "	8.4 "	6.40 "	0.6_{5}	6.07 "	1.3736_{2}
28	2.77 "	7.8 "	8.61 "	0.6_{5}	8.16 "	1.3817_{8}
30	3.40 "	7.3 "	$1.13 \cdot 10^{13}$	0.6_{5}	$1.075 \cdot 10^{11}$	1.3893_{8}
32	4.13 "	6.9 "	1.47 "	0.6_{6}	1.392 "	1.3964_{9}
34	4.95 "	6.5 "	1.87 "	0.6_{6}	1.774 "	1.4031_{7}
36	5.88 "	6.1 "	2.35 "	0.6_{6}	2.230 "	1.4094_{7}
38	6.91 "	5.8 "	2.92 "	0.6_{6}	2.768 "	1.4154_{2}
40	$0.806 \cdot 10^{10}$	5.5 "	3.59 "	0.6_{7}	3.398 "	1.4210_{7}
42	0.933 "	5.2 "	4.36 "	0.6_{7}	4.131 "	1.4264_{5}
44	1.073 "	5.0 "	5.25 "	0.6_{7}	4.975 "	1.4315_{7}
46	1.226 "	4.8 "	6.27 "	0.6_{7}	5.943 "	1.4364_{7}
48	1.393 "	4.6 "	7.44 "	0.6_{8}	7.046 "	1.4411_{6}
50	1.574 "	4.4 "	$0.876 \cdot 10^{14}$	0.6_{8}	8.296 "	1.4456_{6}
55	2.095 "	4.0 "	1.282 "	0.6_{8}	$1.214 \cdot 10^{12}$	1.4561_{6}
60	2.719 "	3.7 "	1.815 "	0.6_{9}	1.720 "	1.4657_{4}
65	3.456 "	3.4 "	2.500 "	0.6_{9}	2.368 "	1.4745_{6}
70	4.315 "	3.1 "	3.362 "	0.7_{0}	3.185 "	1.4827_{3}
75	5.305 "	2.9 "	4.430 "	0.7_{0}	4.196 "	1.4903_{3}
80	6.434 "	2.7 "	5.732 "	0.7_{0}	5.431 "	1.4974_{4}
85	7.712 "	2.6 "	7.303 "	0.7_{1}	6.918 "	1.5041_{2}
90	9.146 "	2.4 "	9.175 "	0.7_{1}	8.692 "	1.5104_{1}
95	$1.075 \cdot 10^{11}$	2.3 "	$1.138 \cdot 10^{15}$	0.7_{1}	$1.0785 \cdot 10^{13}$	1.5163_{7}
100	1.252 "	2.2 "	1.397 "	0.7_{1}	1.3233 "	1.5220_{2}
110	1.661 "	2.0 "	2.042 "	0.7_{2}	1.9345 "	1.5325_{2}
120	2.148 "	1.8 "	2.886 "	0.7_{2}	2.7344 "	1.5421_{1}
130	2.717 "	1.7 "	3.965 "	0.7_{3}	3.7567 "	1.5509_{2}
140	3.371 "	1.6 "	5.317 "	0.7_{3}	5.0367 "	1.5590_{9}
150	4.113 "	1.5 "	6.978 "	0.7_{4}	6.6108 "	1.5666_{9}
160	4.942 "	1.4 "	8.989 "	0.7_{4}	8.5159 "	1.5738_{0}
170	5.856 "	1.3 "	$1.139 \cdot 10^{16}$	0.7_{4}	$1.0788 \cdot 10^{14}$	1.5804_{8}
180	6.849 "	1.2 "	1.421 "	0.7_{4}	1.3463 "	1.5867_{7}
190	7.913 "	1.2 "	1.749 "	0.7_{5}	1.6571 "	1.5927_{3}
200	9.036 "	1.1 "	2.126 "	0.7_{5}	2.0141 "	1.5983_{8}
210	10.199 "	1.0 "	2.554 "	0.7_{5}	2.4193 "	1.6037_{6}
220	11.381 "	1.0 "	3.034 "	0.7_{5}	2.8741 "	1.6088_{8}
230	12.552 "	1.0 "	3.566 "	0.7_{6}	3.3785 "	1.6137_{8}
240	13.676 "	0.9 "	4.110 "	0.7_{6}	3.9314 "	1.6184_{7}
250	14.707 "	0.9 "	4.782 "	0.7_{6}	4.5300 "	1.6229_{7}
1	**2**	**3**	**4**	**5**	**6**	**7**

Table V

p kg/cm² / t_s °C		**0.03** 23.8	**0.04** 28.7	**0.05** 32.6	**0.06** 35.8	**0.08** 41.2	**0.10** 45.5	**0.12** 49.1	**0.15** 53.6	**0.20** 59.7
at t_s	v	46.52	35.45	28.72	24.19	18.44	14.95	12.59	10.21	7.793
t °C	H	607.0	609.2	610.9	612.4	614.7	616.6	618.2	620.2	622.8
	S	2.0470	2.0226	2.0038	1.9885	1.9646	1.9460	1.9309	1.9125	1.8890
30	v	47.50	35.61							
	H	609.8	609.8							
	S	2.0565	2.0247							
40	v	49.07	36.79	29.42	24.51					
	H	614.4	614.4	614.3	614.3					
	S	2.0713	2.0395	2.0149	1.9947					
50	v	50.64	37.97	30.37	25.30	18.97	15.17	12.63		
	H	619.0	618.9	618.9	618.9	618.8	618.7	618.6		
	S	2.0856	2.0539	2.0292	2.0091	1.9773	1.9525	1.9323		
60	v	52.21	39.15	31.31	26.09	19.56	15.64	13.03	10.41	7.801
	H	623.5	623.5	623.5	623.5	623.4	623.3	623.3	623.2	623.0
	S	2.0996	2.0679	2.0432	2.0231	1.9913	1.9665	1.9463	1.9215	1.8894
70	v	53.78	40.33	32.26	26.87	20.15	16.11	13.42	10.73	8.040
	H	628.1	628.1	628.1	628.0	628.0	627.9	927.9	627.8	627.6
	S	2.1131	2.0814	2.0567	2.0366	2.0048	1.9801	1.9599	1.9351	1.9031
80	v	55.35	41.51	33.20	27.66	20.74	16.58	13.81	11.05	8.278
	H	632.7	632.7	632.6	632.6	632.6	632.5	632.5	932.4	632.3
	S	2.1263	2.0946	2.0699	2.0498	2.0180	1.9933	1.9732	1.9484	1.9165
90	v	56.92	42.68	34.14	28.45	21.33	17.06	14.21	11.36	8.515
	H	637.3	637.3	637.2	637.2	637.2	637.1	637.1	637.0	636.9
	S	2.1391	2.1074	2.0827	2.0626	2.0308	2.0062	1.9861	1.9613	1.9294
100	v	58.49	43.86	35.08	29.23	21.92	17.53	14.60	11.68	8.752
	H	641.9	641.8	641.8	641.8	641.8	641.7	641.7	641.6	641.5
	S	2.1515	2.1198	2.0951	2.0750	2.0433	2.0187	1.9985	1.9738	1.9419
110	v	60.06	45.04	36.03	30.02	22.51	18.00	15.00	11.99	8.989
	H	646.4	646.4	646.4	646.4	646.4	646.3	646.3	646.2	646.1
	S	2.1636	2.1319	2.1073	2.0871	2.0555	2.0308	2.0107	1.9860	1.9541
120	v	61.63	46.22	36.97	30.80	23.10	18.47	15.39	12.31	9.226
	H	651.0	651.0	651.0	651.0	650.9	650.9	650.9	650.8	650.7
	S	2.1755	2.1438	2.1192	2.0990	2.0673	2.0427	2.0225	1.9978	1.9660
130	v	63.20	47.39	37.91	31.59	23.69	18.94	15.78	12.62	9.462
	H	655.6	655.6	655.6	655.6	655.5	655.5	655.5	655.4	655.4
	S	2.1870	2.1553	2.1307	2.1106	2.0788	2.0543	2.0341	2.0094	1.9776
140	v	64.77	48.57	38.85	32.37	24.27	19.42	16.18	12.94	9.698
	H	660.2	660.2	660.2	660.2	660.2	660.1	660.1	660.1	660.0
	S	2.1983	2.1666	2.1420	2.1219	2.0901	2.0655	2.0454	2.0207	1.9890
150	v	66.34	49.75	39.79	33.16	24.86	19.89	16.57	13.25	9.934
	H	664.8	664.8	664.8	664.8	664.8	664.7	664.7	664.7	664.6
	S	2.2093	2.1776	2.1530	2.1329	2.1012	2.0765	2.0564	2.0318	2.0000
160	v	67.91	50.93	40.74	33.94	25.45	20.36	16.96	13.57	10.17
	H	669.5	669.5	669.4	669.4	669.4	669.4	669.3	669.3	669.2
	S	2.2201	2.1884	2.1638	2.1437	2.1120	2.0873	2.0672	2.0426	2.0108
170	v	69.48	52.10	41.68	34.73	26.04	20.83	17.35	13.88	10.41
	H	674.1	674.1	674.1	674.0	674.0	674.0	674.0	673.9	673.9
	S	2.2306	2.1989	2.1743	2.1542	2.1226	2.0979	2.0778	2.0531	2.0214
180	v	71.05	53.28	42.62	35.51	26.63	21.30	17.75	14.19	10.64
	H	678.7	678.7	678.7	678.7	678.6	678.6	678.6	678.6	678.5
	S	2.2410	2.2093	2.1847	2.1646	2.1329	2.1082	2.0881	2.0635	2.0317
200	v	74.19	55.63	44.50	37.08	27.81	22.24	18.53	14.82	11.11
	H	688.0	688.0	688.0	688.0	687.9	687.9	687.9	687.9	687.8
	S	2.2610	2.2293	2.2047	2.1846	2.1529	2.1283	2.1082	2.0836	2.0518
250	v	82.03	61.52	49.21	41.01	30.75	24.60	20.50	16.39	12.29
	H	711.4	711.4	711.4	711.3	711.3	711.3	711.3	711.3	711.2
	S	2.3080	2.2763	2.2517	2.2316	2.1999	2.1753	2.1552	2.1306	2.0988

Table V

p kg/cm², t_s °C		0.25 64.6	0.30 68.7	0.35 72.3	0.40 75.4	0.50 80.9	0.60 85.5	0.70 89.4	0.80 93.0	0.90 96.2
t °C / at t_s	v	6.321	5.328	4.611	4.069	3.301	2.783	2.409	2.127	1.904
	H	624.9	626.7	628.2	629.5	631.7	633.6	635.2	636.6	637.9
	S	1.8707	1.8559	1.8434	1.8327	1.8147	1.8000	1.7876	1.7769	1.7675
70	v	6.425	5.349							
	H	627.5	627.3							
	S	1.8782	1.8578							
80	v	6.616	5.509	4.717	4.124					
	H	632.1	632.0	631.8	631.7					
	S	1.8916	1.8712	1.8539	1.8388					
90	v	6.807	5.668	4.854	4.244	3.390	2.820	2.413		
	H	636.8	636.6	636.5	636.4	636.1	635.8	635.5		
	S	1.9045	1.8842	1.8670	1.8521	1.8268	1.8061	1.7884		
100	v	6.997	5.827	4.991	4.364	3.487	2.901	2.483	2.170	1.926
	H	641.4	641.3	641.2	641.1	640.8	640.6	640.3	640.0	639.7
	S	1.9171	1.8968	1.8796	1.8647	1.8396	1.8190	1.8015	1.7862	1.7726
110	v	7.187	5.986	5.127	4.484	3.583	2.982	2.553	2.231	1.980
	H	646.0	645.9	645.8	645.7	645.5	645.3	645.1	644.8	644.6
	S	1.9294	1.9091	1.8919	1.8770	1.8520	1.8316	1.8141	1.7989	1.7855
120	v	7.376	6.144	5.263	4.603	3.678	3.062	2.622	2.291	2.034
	H	650.7	650.6	650.5	650.4	650.2	650.0	649.8	649.6	649.4
	S	1.9413	1.9210	1.9039	1.8890	1.8641	1.8437	1.8263	1.8112	1.7978
130	v	7.566	6.302	5.399	4.722	3.774	3.142	2.691	2.352	2.088
	H	655.3	655.2	655.1	655.0	654.9	654.7	654.5	654.3	654.1
	S	1.9529	1.9326	1.9155	1.9007	1.8758	1.8555	1.8381	1.8231	1.8097
140	v	7.755	6.460	5.534	4.841	3.869	3.222	2.759	2.412	2.142
	H	659.9	659.8	659.8	659.7	659.5	659.4	659.2	659.1	658.9
	S	1.9642	1.9440	1.9269	1.9121	1.8872	1.8669	1.8496	1.8346	1.8214
150	v	7.944	6.617	5.670	4.960	3.964	3.301	2.827	2.472	2.196
	H	664.5	664.5	664.4	664.3	664.2	664.0	663.9	663.8	663.6
	S	1.9753	1.9551	1.9380	1.9232	1.8983	1.8781	1.8608	1.8459	1.8327
160	v	8.133	6.775	5.805	5.078	4.059	3.380	2.895	2.532	2.249
	H	669.2	669.1	669.0	669.0	668.8	668.7	668.6	668.4	668.3
	S	1.9861	1.9659	1.9489	1.9340	1.9092	1.8890	1.8718	1.8568	1.8437
170	v	8.322	6.933	5.940	5.196	4.154	3.460	2.963	2.591	2.302
	H	673.8	673.7	673.7	673.6	673.5	673.4	673.3	673.1	673.0
	S	1.9967	1.9765	1.9595	1.9446	1.9199	1.8997	1.8825	1.8675	1.8544
180	v	8.511	7.091	6.076	5.315	4.249	3.539	3.031	2.651	2.355
	H	678.4	678.4	678.3	678.3	678.2	678.0	677.9	677.8	677.7
	S	2.0070	1.9869	1.9698	1.9550	1.9303	1.9101	1.8929	1.8780	1.8648
190	v	8.700	7.248	6.211	5.433	4.344	3.618	3.099	2.710	2.408
	H	683.1	683.0	683.0	682.9	682.8	682.7	682.6	682.5	682.4
	S	2.0171	1.9971	1.9800	1.9652	1.9405	1.9202	1.9031	1.8882	1.8750
200	v	8.889	7.405	6.346	5.551	4.439	3.697	3.167	2.770	2.461
	H	687.8	687.7	687.7	687.6	687.5	687.4	687.3	687.2	687.1
	S	2.0272	2.0070	1.9900	1.9752	1.9504	1.9302	1.9131	1.8982	1.8851
250	v	9.832	8.192	7.020	6.142	4.912	4.092	3.506	3.067	2.725
	H	711.2	711.1	711.1	711.1	711.0	710.9	710.8	710.7	710.7
	S	2.0742	2.0541	2.0370	2.0223	1.9975	1.9774	1.9603	1.9455	1.9325
300	v	10.77	8.978	7.694	6.732	5.384	4.485	3.844	3.363	2.988
	H	734.9	734.8	734.8	734.7	734.7	734.6	734.6	734.5	734.4
	S	2.1174	2.0973	2.0803	2.0655	2.0408	2.0207	2.0037	1.9889	1.9759
350	v	11.72	9.763	8.368	7.321	5.855	4.879	4.181	3.658	3.251
	H	758.9	758.8	758.8	758.8	758.7	758.7	758.6	758.6	758.5
	S	2.1575	2.1374	2.1204	2.1057	2.0810	2.0609	2.0439	2.0291	2.0161
400	v	12.66	10.55	9.041	7.910	6.327	5.272	4.518	3.953	3.513
	H	783.2	783.2	783.2	783.2	783.1	783.1	783.0	783.0	782.9
	S	2.1952	2.1751	2.1581	2.1434	2.1187	2.0986	2.0816	2.0668	2.0538

Table V

p kg/cm² / t_s °C	1.0 / 99.1			1.1 / 101.8			1.2 / 104.2		
	v	H	S	v	H	S	v	H	S
at t_s / t °C	1.726	639.0	1.7591	1.579	640.0	1.7515	1.455	640.9	1.7446
100	1.730	639.4	1.7603						
110	1.780	644.3	1.7733	1.616	644.1	1.7623	1.479	643.8	1.7521
120	1.829	649.2	1.7858	1.661	649.0	1.7749	1.521	648.7	1.7648
130	1.878	654.0	1.7978	1.705	653.8	1.7870	1.562	953.6	1.7770
140	1.926	658.7	1.8095	1.749	658.6	1.7987	1.602	658.4	1.7888
150	1.974	663.5	1.8208	1.793	663.3	1.8100	1.643	663.2	1.8002
160	2.022	668.2	1.8318	1.837	668.0	1.8211	1.683	667.9	1.8113
170	2.070	672.9	1.8426	1.881	672.8	1.8319	1.723	672.6	1.8221
180	2.118	677.6	1.8531	1.925	677.5	1.8424	1.763	677.4	1.8326
190	2.166	682.3	1.8633	1.968	682.2	1.8526	1.803	682.1	1.8429
200	2.214	687.0	1.8734	2.012	686.9	1.8627	1.843	686.8	1.8530
210	2.261	691.7	1.8832	2.055	691.6	1.8726	1.883	691.5	1.8628
220	2.309	696.4	1.8928	2.098	696.3	1.8822	1.923	696.2	1.8725
230	2.357	701.1	1.9023	2.141	701.1	1.8917	1.962	701.0	1.8820
240	2.404	705.9	1.9116	2.185	705.8	1.9010	2.002	705.7	1.8913
250	2.452	710.6	1.9208	2.228	710.5	1.9102	2.042	710.4	1.9005
260	2.499	715.3	1.9297	2.271	715.2	1.9191	2.081	715.2	1.9095
270	2.546	720.1	1.9385	2.314	720.0	1.9279	2.121	719.9	1.9183
280	2.594	724.8	1.9472	2.357	724.8	1.9366	2.160	724.7	1.9270
290	2.641	729.6	1.9558	2.401	729.5	1.9452	2.200	729.5	1.9355
300	2.689	734.4	1.9642	2.444	734.3	1.9536	2.239	734.3	1.9439
310	2.736	739.2	1.9725	2.487	739.1	1.9619	2.279	739.1	1.9522
320	2.783	744.0	1.9806	2.530	743.9	1.9701	2.318	743.9	1.9604
330	2.831	748.8	1.9887	2.573	748.7	1.9781	2.358	748.7	1.9684
340	2.878	753.6	1.9966	2.616	753.6	1.9861	2.397	753.5	1.9764
350	2.925	758.5	2.0045	2.659	758.4	1.9939	2.437	758.4	1.9842
360	2.972	763.3	2.0122	2.702	763.3	2.0016	2.477	763.2	1.9920
370	3.020	768.2	2.0198	2.745	768.1	2.0093	2.516	768.1	1.9997
380	3.067	773.1	2.0274	2.788	773.0	2.0168	2.555	773.0	2.0072
390	3.114	778.0	2.0348	2.831	777.9	2.0243	2.594	777.9	2.0146
400	3.161	782.9	2.0422	2.874	782.9	2.0316	2.634	782.8	2.0220
410	3.208	787.8	2.0495	2.916	787.8	2.0389	2.673	787.8	2.0293
420	3.256	792.8	2.0567	2.959	792.8	2.0461	2.712	792.7	2.0365
430	3.303	797.8	2.0638	3.002	797.7	2.0532	2.752	797.7	2.0436
440	3.350	802.8	2.0708	3.045	802.7	2.0603	2.791	802.7	2.0507
450	3.397	807.8	2.0778	3.088	807.7	2.0673	2.830	807.7	2.0577
460	3.444	812.8	2.0847	3.131	812.8	2.0742	2.870	812.7	2.0646
470	3.492	817.9	2.0915	3.174	817.8	2.0810	2.909	817.8	2.0714
480	3.539	822.9	2.0983	3.217	822.9	2.0878	2.948	822.9	2.0782
490	3.586	828.0	2.1050	3.260	828.0	2.0945	2.988	828.0	2.0849
500	3.633	833.1	2.1117	3.303	833.1	2.1012	3.027	833.1	2.0916
510	3.680	838.3	2.1183	3.345	838.2	2.1078	3.066	838.2	2.0982
520	3.727	843.4	2.1248	3.388	843.4	2.1143	3.106	843.4	2.1047
530	3.774	848.6	2.1313	3.431	848.6	2.1208	3.145	848.5	2.1112
540	3.822	853.8	2.1378	3.474	853.8	2.1273	3.184	853.7	2.1176
550	3.869	859.0	2.1442	3.517	859.0	2.1336	3.223	858.9	2.1240

Table V

p kg/cm² / t_s °C	1.4 108.7			1.6 112.7			1.8 116.3		
	v	H	S	v	H	S	v	H	S
t °C \ at t_s	1.260	642.6	1.7322	1.112	644.0	1.7216	0.9954	645.3	1.7122
110	1.264	643.2	1.7339						
120	1.300	648.3	1.7469	1.135	647.8	1.7311	1.006	647.2	1.7171
130	1.336	653.2	1.7592	1.166	652.8	1.7436	1.034	652.3	1.7300
140	1.371	658.0	1.7711	1.197	657.7	1.7557	1.062	657.3	1.7421
150	1.406	662.9	1.7826	1.228	662.5	1.7674	1.090	662.2	1.7538
160	1.440	667.6	1.7938	1.259	667.3	1.7786	1.117	667.0	1.7651
170	1.475	672.4	1.8047	1.289	672.1	1.7895	1.144	671.9	1.7761
180	1.509	677.1	1.8153	1.319	676.9	1.8002	1.171	676.7	1.7868
190	1.544	681.9	1.8256	1.349	681.7	1.8106	1.198	681.4	1.7972
200	1.578	686.6	1.8357	1.379	686.4	1.8207	1.225	686.2	1.8074
210	1.612	691.3	1.8456	1.409	691.2	1.8306	1.252	691.0	1.8174
220	1.646	696.1	1.8553	1.439	695.9	1.8403	1.278	695.7	1.8272
230	1.681	700.8	1.8648	1.469	700.6	1.8498	1.305	700.5	1.8367
240	1.715	705.5	1.8741	1.499	705.4	1.8592	1.332	705.2	1.8460
250	1.749	710.3	1.8833	1.529	710.1	1.8684	1.358	710.0	1.8552
260	1.783	715.0	1.8923	1.559	714.9	1.8774	1.385	714.8	1.8642
270	1.817	719.8	1.9011	1.589	719.7	1.8863	1.411	719.5	1.8731
280	1.851	724.6	1.9098	1.619	724.5	1.8950	1.438	724.3	1.8818
290	1.885	729.4	1.9184	1.648	729.3	1.9035	1.464	729.1	1.8904
300	1.919	734.1	1.9268	1.678	734.0	1.9120	1.491	733.9	1.8989
310	1.952	738.9	1.9351	1.708	738.8	1.9203	1.517	738.7	1.9072
320	1.986	743.8	1.9433	1.737	743.7	1.9285	1.543	743.5	1.9154
330	2.020	748.6	1.9513	1.767	748.5	1.9365	1.570	748.4	1.9235
340	2.054	753.4	1.9593	1.797	753.3	1.9445	1.596	753.2	1.9314
350	2.088	758.3	1.9671	1.826	758.2	1.9523	1.623	758.1	1.9393
360	2.122	763.1	1.9749	1.856	763.0	1.9601	1.649	763.0	1.9471
370	2.155	768.0	1.9826	1.885	767.9	1.9678	1.675	767.8	1.9547
380	2.189	772.9	1.9901	1.915	772.8	1.9753	1.702	772.7	1.9623
390	2.223	777.8	1.9976	1.945	777.7	1.9828	1.728	777.7	1.9698
400	2.257	782.7	2.0050	1.974	782.7	1.9902	1.754	782.6	1.9771
410	2.290	787.7	2.0123	2.004	787.6	1.9975	1.781	787.5	1.9844
420	2.324	792.6	2.0195	2.033	792.6	2.0047	1.807	792.5	1.9916
430	2.358	797.6	2.0266	2.063	797.6	2.0118	1.833	797.5	1.9987
440	2.392	802.6	2.0336	2.092	802.6	2.0189	1.859	802.5	2.0058
450	2.426	807.6	2.0406	2.122	807.6	2.0259	1.886	807.5	2.0128
460	2.459	812.7	2.0475	2.151	812.6	2.0328	1.912	812.5	2.0197
470	2.493	817.7	2.0544	2.181	817.7	2.0396	1.938	817.6	2.0266
480	2.527	822.8	2.0612	2.211	822.7	2.0464	1.964	822.7	2.0334
490	2.561	827.9	2.0679	2.240	827.8	2.0531	1.991	827.8	2.0402
500	2.595	833.0	2.0745	2.270	833.0	2.0598	2.017	832.9	2.0468
510	2.628	838.1	2.0811	2.299	838.1	2.0664	2.043	838.0	2.0534
520	2.661	843.3	2.0877	2.328	843.3	2.0729	2.069	843.2	2.0599
530	2.695	848.5	2.0942	2.358	848.4	2.0794	2.096	848.4	2.0664
540	2.729	853.7	2.1006	2.387	853.6	2.0859	2.122	853.6	2.0729
550	2.763	858.9	2.1069	2.417	858.8	2.0923	2.148	858.8	2.0793

Table V

p kg/cm² / t_s °C	2.0 119.6			2.5 126.8			3.0 132.9		
	v	H	S	v	H	S	v	H	S
t °C \ at t_s	0.9019	646.5	1.7038	0.7317	648.9	1.6860	0.6166	650.8	1.6714
120	0.9028	646.7	1.7043						
130	0.9286	651.9	1.7173	0.7385	650.6	1.6902			
140	0.9540	656.9	1.7297	0.7593	655.9	1.7031	0.6293	654.8	1.6808
150	0.9790	661.9	1.7416	0.7797	661.0	1.7153	0.6468	660.1	1.6936
160	1.004	666.8	1.7530	0.7999	666.0	1.7270	0.6639	665.2	1.7055
170	1.028	671.6	1.7641	0.8198	670.9	1.7383	0.6807	670.2	1.7170
180	1.053	676.4	1.7748	0.8396	675.8	1.7492	0.6974	675.2	1.7281
190	1.077	681.2	1.7853	0.8592	680.7	1.7598	0.7140	680.1	1.7388
200	1.101	686.0	1.7955	0.8788	685.5	1.7701	0.7304	685.0	1.7492
210	1.125	690.8	1.8055	0.8983	690.3	1.7802	0.7468	689.8	1.7594
220	1.150	695.5	1.8152	0.9177	695.1	1.7900	0.7631	694.7	1.7693
230	1.174	700.3	1.8248	0.9370	699.9	1.7997	0.7793	699.5	1.7789
240	1.198	705.1	1.8342	0.9563	704.7	1.8091	0.7955	704.3	1.7884
250	1.222	709.9	1.8435	0.9756	709.5	1.8183	0.8116	709.1	1.7977
260	1.245	714.6	1.8525	0.9948	714.3	1.8274	0.8277	713.9	1.8069
270	1.269	719.4	1.8614	1.014	719.1	1.8363	0.8438	718.8	1.8158
280	1.293	724.2	1.8701	1.033	723.9	1.8451	0.8598	723.6	1.8246
290	1.317	729.0	1.8787	1.052	728.7	1.8537	0.8758	728.4	1.8333
300	1.341	733.8	1.8871	1.071	733.5	1.8622	0.8918	733.2	1.8418
310	1.365	738.6	1.8955	1.091	738.3	1.8706	0.9078	738.1	1.8501
320	1.389	743.4	1.9037	1.110	743.2	1.8788	0.9238	742.9	1.8584
330	1.412	748.3	1.9118	1.129	748.0	1.8869	0.9397	747.8	1.8665
340	1.436	753.1	1.9197	1.148	752.9	1.8949	0.9556	752.7	1.8745
350	1.460	758.0	1.9276	1.167	757.8	1.9027	0.9715	757.6	1.8824
360	1.484	762.9	1.9354	1.186	762.6	1.9105	0.9874	762.4	1.8902
370	1.507	767.8	1.9430	1.205	767.5	1.9182	1.003	767.3	1.8979
380	1.531	772.7	1.9506	1.224	772.5	1.9258	1.019	772.3	1.9055
390	1.555	777.6	1.9580	1.243	777.4	1.9333	1.035	777.2	1.9130
400	1.578	782.5	1.9654	1.262	782.3	1.9407	1.051	782.1	1.9204
410	1.602	787.5	1.9728	1.281	787.3	1.9480	1.067	787.1	1.9277
420	1.626	792.4	1.9800	1.300	792.3	1.9552	1.083	792.1	1.9349
430	1.649	797.4	1.9871	1.319	797.3	1.9624	1.098	797.1	1.9421
440	1.673	802.4	1.9942	1.338	802.3	1.9694	1.114	802.1	1.9492
450	1.697	807.4	2.0012	1.357	807.3	1.9764	1.130	807.1	1.9562
460	1.720	812.5	2.0081	1.376	812.3	1.9833	1.146	812.2	1.9631
470	1.744	817.5	2.0149	1.395	817.4	1.9902	1.162	817.3	1.9700
480	1.768	822.6	2.0217	1.414	822.5	1.9970	1.177	822.4	1.9768
490	1.791	827.7	2.0284	1.432	827.6	2.0037	1.193	827.5	1.9836
500	1.815	832.8	2.0351	1.451	832.7	2.0104	1.209	832.6	1.9902
510	1.839	838.0	2.0418	1.470	837.9	2.0170	1.225	837.7	1.9968
520	1.862	843.2	2.0483	1.489	843.0	2.0236	1.241	842.9	2.0034
530	1.886	848.3	2.0548	1.508	848.2	2.0301	1.256	848.1	2.0099
540	1.909	853.5	2.0612	1.527	853.4	2.0365	1.272	853.3	2.0164
550	1.933	858.8	2.0675	1.546	858.6	2.0429	1.288	858.5	2.0228

Table V

p kg/cm² / t_s °C	3.5 / 138.2			4.0 / 142.9			4.5 / 147.2		
	v	H	S	v	H	S	v	H	S
t °C / at t_s	0.5335	652.5	1.6590	0.4705	653.9	1.6482	0.4211	655.2	1.6387
140	0.5363	653.6	1.6615						
150	0.5517	659.0	1.6746	0.4803	658.0	1.6578	0.4246	656.8	1.6426
160	0.5667	664.3	1.6869	0.4937	663.4	1.6706	0.4368	662.4	1.6558
170	0.5814	669.5	1.6987	0.5068	668.7	1.6826	0.4487	667.9	1.6682
180	0.5959	674.5	1.7100	0.5196	673.8	1.6941	0.4603	673.1	1.6799
190	0.6102	679.5	1.7209	0.5323	678.9	1.7051	0.4718	678.3	1.6911
200	0.6245	684.4	1.7314	0.5449	683.9	1.7158	0.4831	683.3	1.7019
210	0.6386	689.3	1.7416	0.5574	688.8	1.7262	0.4942	688.3	1.7123
220	0.6526	694.2	1.7516	0.5698	693.7	1.7362	0.5053	693.3	1.7225
230	0.6666	699.1	1.7613	0.5821	698.6	1.7460	0.5163	698.2	1.7324
240	0.6806	703.9	1.7709	0.5944	703.5	1.7556	0.5273	703.1	1.7421
250	0.6945	708.7	1.7803	0.6066	708.4	1.7650	0.5383	708.0	1.7516
260	0.7084	713.6	1.7894	0.6188	713.2	1.7742	0.5492	712.9	1.7608
270	0.7222	718.4	1.7984	0.6309	718.1	1.7832	0.5600	717.8	1.7699
280	0.7360	723.3	1.8072	0.6431	722.9	1.7921	0.5708	722.6	1.7787
290	0.7497	728.1	1.8159	0.6552	727.8	1.8008	0.5816	727.5	1.7874
300	0.7635	733.0	1.8244	0.6672	732.7	1.8094	0.5924	732.4	1.7960
310	0.7772	737.8	1.8328	0.6793	737.5	1.8178	0.6031	737.3	1.8045
320	0.7909	742.7	1.8411	0.6913	742.4	1.8261	0.6139	742.2	1.8128
330	0.8046	747.5	1.8492	0.7033	747.3	1.8342	0.6246	747.1	1.8210
340	0.8183	752.4	1.8572	0.7153	752.2	1.8423	0.6353	752.0	1.8290
350	0.8320	757.3	1.8651	0.7273	757.1	1.8502	0.6460	756.9	1.8369
360	0.8456	762.2	1.8730	0.7393	762.0	1.8580	0.6566	761.8	1.8448
370	0.8593	767.1	1.8807	0.7513	766.9	1.8658	0.6673	766.7	1.8526
380	0.8729	772.1	1.8883	0.7632	771.9	1.8734	0.6779	771.7	1.8602
390	0.8865	777.0	1.8958	0.7752	776.8	1.8809	0.6885	776.6	1.8677
400	0.9001	782.0	1.9032	0.7871	781.8	1.8883	0.6992	781.6	1.8751
410	0.9137	786.9	1.9105	0.7990	786.7	1.8956	0.7098	786.6	1.8825
420	0.9273	791.9	1.9178	0.8109	791.7	1.9029	0.7204	791.6	1.8898
430	0.9409	796.9	1.9250	0.8228	796.7	1.9101	0.7310	796.6	1.8970
440	0.9545	801.9	1.9321	0.8347	801.8	1.9172	0.7416	801.6	1.9041
450	0.9681	807.0	1.9391	0.8466	806.8	1.9242	0.7522	806.7	1.9111
460	0.9816	812.0	1.9460	0.8585	811.9	1.9312	0.7627	811.7	1.9180
470	0.9952	817.1	1.9529	0.8704	817.0	1.9380	0.7733	816.8	1.9249
480	1.009	822.2	1.9597	0.8823	822.1	1.9448	0.7839	821.9	1.9317
490	1.022	827.3	1.9664	0.8941	827.2	1.9516	0.7945	827.1	1.9385
500	1.036	832.4	1.9731	0.9060	832.3	1.9583	0.8050	832.2	1.9452
510	1.049	837.6	1.9797	0.9179	837.5	1.9649	0.8156	837.4	1.9518
520	1.063	842.8	1.9863	0.9297	842.6	1.9715	0.8261	842.5	1.9584
530	1.076	848.0	1.9928	0.9416	847.9	1.9780	0.8367	847.7	1.9649
540	1.090	853.2	1.9993	0.9534	853.1	1.9845	0.8472	853.0	1.9714
550	1.104	858.4	2.0057	0.9653	858.3	1.9908	0.8577	858.2	1.9778

Table V

p kg/cm² / t_s °C	5 151.1			6 158.1			7 164.2		
	v	H	S	v	H	S	v	H	S
at t_s / t °C	0.3813	656.3	1.6302	0.3210	658.1	1.6154	0.2775	659.6	1.6028
160	0.3913	661.4	1.6423	0.3229	659.3	1.6182			
170	0.4022	667.0	1.6550	0.3324	665.2	1.6317	0.2824	663.3	1.6111
180	0.4129	672.4	1.6670	0.3416	670.8	1.6443	0.2905	669.2	1.6243
190	0.4233	677.6	1.6784	0.3505	676.3	1.6561	0.2984	674.8	1.6366
200	0.4336	682.7	1.6894	0.3593	681.5	1.6674	0.3061	680.3	1.6483
210	0.4437	687.8	1.7000	0.3679	686.7	1.6782	0.3137	685.6	1.6595
220	0.4538	692.8	1.7102	0.3764	691.8	1.6886	0.3211	690.8	1.6701
230	0.4638	697.8	1.7202	0.3849	696.9	1.6988	0.3285	696.0	1.6804
240	0.4737	702.7	1.7299	0.3933	701.9	1.7086	0.3358	701.0	1.6904
250	0.4836	707.6	1.7394	0.4016	706.9	1.7182	0.3430	706.1	1.7001
260	0.4934	712.5	1.7487	0.4099	711.8	1.7276	0.3502	711.1	1.7096
270	0.5032	717.4	1.7578	0.4181	716.7	1.7368	0.3573	716.1	1.7189
280	0.5130	722.3	1.7667	0.4263	721.7	1.7458	0.3644	721.0	1.7280
290	0.5228	727.2	1.7755	0.4345	726.6	1.7547	0.3714	726.0	1.7368
300	0.5325	732.1	1.7841	0.4427	731.5	1.7633	0.3785	731.0	1.7456
310	0.5422	737.0	1.7925	0.4508	736.4	1.7718	0.3855	735.9	1.7542
320	0.5519	741.9	1.8009	0.4589	741.4	1.7802	0.3925	740.9	1.7626
330	0.5616	746.8	1.8091	0.4670	746.3	1.7884	0.3995	745.8	1.7708
340	0.5712	751.7	1.8171	0.4751	751.2	1.7965	0.4064	750.8	1.7790
350	0.5808	756.6	1.8251	0.4832	756.2	1.8045	0.4134	755.7	1.7870
360	0.5905	761.6	1.8330	0.4912	761.2	1.8124	0.4203	760.7	1.7949
370	0.6001	766.5	1.8408	0.4993	766.1	1.8202	0.4273	765.7	1.8027
380	0.6097	771.5	1.8484	0.5073	771.1	1.8278	0.4342	770.7	1.8104
390	0.6193	776.4	1.8559	0.5153	776.0	1.8354	0.4411	775.7	1.8180
400	0.6288	781.4	1.8633	0.5233	781.0	1.8429	0.4480	780.7	1.8255
410	0.6384	786.4	1.8707	0.5313	786.0	1.8502	0.4548	785.7	1.8329
420	0.6480	791.4	1.8780	0.5393	791.1	1.8575	0.4617	790.7	1.8402
430	0.6575	796.4	1.8852	0.5473	796.1	1.8648	0.4686	795.8	1.8474
440	0.6671	801.5	1.8923	0.5553	801.1	1.8719	0.4754	800.8	1.8546
450	0.6766	806.5	1.8993	0.5633	806.2	1.8789	0.4823	805.9	1.8617
460	0.6861	811.6	1.9063	0.5712	811.3	1.8859	0.4891	811.0	1.8687
470	0.6957	816.7	1.9132	0.5792	816.4	1.8928	0.4960	816.1	1.8756
480	0.7052	821.8	1.9200	0.5871	821.5	1.8997	0.5028	821.2	1.8824
490	0.7147	826.9	1.9268	0.5951	826.6	1.9065	0.5096	826.4	1.8892
500	0.7242	832.1	1.9335	0.6030	831.8	1.9132	0.5165	831.5	1.8959
510	0.7337	837.2	1.9402	0.6110	837.0	1.9199	0.5233	836.7	1.9026
520	0.7432	842.4	1.9467	0.6189	842.2	1.9264	0.5301	841.9	1.9092
530	0.7527	847.6	1.9532	0.6268	847.4	1.9329	0.5369	847.2	1.9157
540	0.7622	852.8	1.9597	0.6347	852.6	1.9394	0.5437	852.4	1.9222
550	0.7717	858.1	1.9661	0.6427	857.9	1.9458	0.5505	857.6	1.9287

Table V

p kg/cm² / t_s °C	8 / 169.6			9 / 174.5			10 / 179.0		
	v	H	S	v	H	S	v	H	S
at t_s / t °C	0.2445	660.9	1.5919	0.2186	662.0	1.5822	0.1977	662.9	1.5735
170	0.2448	661.2	1.5925						
180	0.2522	667.4	1.6065	0.2223	665.6	1.5902	0.1983	663.6	1.5750
190	0.2593	673.3	1.6193	0.2289	671.8	1.6036	0.2044	670.1	1.5892
200	0.2663	679.0	1.6314	0.2352	677.6	1.6162	0.2103	676.2	1.6022
210	0.2730	684.5	1.6428	0.2413	683.3	1.6280	0.2160	682.0	1.6144
220	0.2796	689.8	1.6538	0.2473	688.7	1.6392	0.2215	687.6	1.6259
230	0.2862	695.0	1.6643	0.2532	694.1	1.6499	0.2269	693.1	1.6368
240	0.2926	700.2	1.6745	0.2591	699.3	1.6602	0.2322	698.4	1.6473
250	0.2990	705.3	1.6844	0.2648	704.5	1.6702	0.2374	703.7	1.6574
260	0.3054	710.4	1.6939	0.2705	709.6	1.6799	0.2426	708.8	1.6672
270	0.3117	715.4	1.7032	0.2762	714.7	1.6894	0.2478	714.0	1.6767
280	0.3179	720.4	1.7124	0.2818	719.7	1.6986	0.2529	719.1	1.6861
290	0.3242	725.4	1.7214	0.2874	724.8	1.7076	0.2579	724.2	1.6952
300	0.3304	730.4	1.7302	0.2929	729.8	1.7164	0.2630	729.2	1.7041
310	0.3365	735.4	1.7388	0.2985	734.8	1.7251	0.2680	734.3	1.7129
320	0.3427	740.3	1.7472	0.3040	739.8	1.7336	0.2730	739.3	1.7214
330	0.3488	745.3	1.7555	0.3095	744.8	1.7420	0.2779	744.3	1.7297
340	0.3550	750.3	1.7637	0.3149	749.8	1.7502	0.2829	749.4	1.7380
350	0.3611	755.3	1.7717	0.3204	754.8	1.7583	0.2878	754.4	1.7461
360	0.3672	760.3	1.7797	0.3258	759.8	1.7663	0.2927	759.4	1.7542
370	0.3732	765.3	1.7876	0.3312	764.8	1.7742	0.2976	764.4	1.7620
380	0.3793	770.3	1.7953	0.3367	769.9	1.7819	0.3025	769.5	1.7698
390	0.3854	775.3	1.8029	0.3421	774.9	1.7895	0.3074	774.5	1.7775
400	0.3914	780.3	1.8104	0.3475	779.9	1.7970	0.3123	779.6	1.7850
410	0.3975	785.3	1.8178	0.3529	785.0	1.8044	0.3172	784.6	1.7925
420	0.4035	790.4	1.8252	0.3582	790.0	1.8118	0.3220	789.7	1.7999
430	0.4095	795.4	1.8324	0.3636	795.1	1.8191	0.3269	794.8	1.8072
440	0.4156	800.5	1.8396	0.3690	800.2	1.8263	0.3317	799.9	1.8144
450	0.4216	805.6	1.8467	0.3743	805.3	1.8334	0.3366	805.0	1.8215
460	0.4276	810.7	1.8537	0.3797	810.4	1.8404	0.3414	810.1	1.8285
470	0.4336	815.8	1.8606	0.3850	815.5	1.8473	0.3462	815.3	1.8355
480	0.4396	821.0	1.8675	0.3904	820.7	1.8542	0.3510	820.4	1.8424
490	0.4456	826.1	1.8743	0.3957	825.9	1.8610	0.3558	825.6	1.8492
500	0.4515	831.3	1.8810	0.4010	831.0	1.8678	0.3606	830.8	1.8559
510	0.4575	836.5	1.8877	0.4064	836.2	1.8745	0.3654	836.0	1.8626
520	0.4635	841.7	1.8943	0.4117	841.4	1.8811	0.3702	841.2	1.8693
530	0.4695	846.9	1.9008	0.4170	846.7	1.8877	0.3750	846.5	1.8759
540	0.4754	852.2	1.9073	0.4223	851.9	1.8942	0.3798	851.7	1.8824
550	0.4814	857.4	1.9138	0.4276	857.2	1.9006	0.3846	857.0	1.8888

Table V

p kg/cm² / t_s °C	12 / 187.1			14 / 194.1			16 / 200.4		
	v	H	S	v	H	S	v	H	S
at t_s / t °C	0.1661	664.4	1.5582	0.1432	665.6	1.5452	0.1259	666.5	1.5338
190	0.1677	666.5	1.5626						
200	0.1729	673.2	1.5768	0.1460	669.8	1.5542			
210	0.1779	679.4	1.5899	0.1505	676.6	1.5683	0.1299	673.5	1.5484
220	0.1827	685.3	1.6021	0.1548	682.9	1.5812	0.1339	680.3	1.5622
230	0.1873	691.0	1.6136	0.1590	688.9	1.5933	0.1377	686.6	1.5750
240	0.1919	696.6	1.6245	0.1630	694.6	1.6046	0.1414	692.6	1.5868
250	0.1964	702.0	1.6349	0.1670	700.2	1.6154	0.1450	698.4	1.5980
260	0.2008	707.3	1.6450	0.1709	705.7	1.6257	0.1484	704.1	1.6087
270	0.2052	712.6	1.6547	0.1747	711.1	1.6357	0.1518	709.6	1.6190
280	0.2095	717.8	1.6642	0.1785	716.4	1.6454	0.1552	715.0	1.6289
290	0.2138	722.9	1.6735	0.1822	721.7	1.6549	0.1585	720.4	1.6385
300	0.2180	728.1	1.6825	0.1859	726.9	1.6640	0.1618	725.7	1.6478
310	0.2223	733.2	1.6913	0.1896	732.0	1.6729	0.1651	730.9	1.6568
320	0.2265	738.3	1.7000	0.1933	737.2	1.6817	0.1683	736.1	1.6657
330	0.2307	743.3	1.7085	0.1969	742.3	1.6903	0.1715	741.3	1.6744
340	0.2348	748.4	1.7168	0.2005	747.5	1.6987	0.1747	746.5	1.6829
350	0.2390	753.5	1.7250	0.2041	752.6	1.7069	0.1779	751.7	1.6912
360	0.2431	758.6	1.7331	0.2077	757.7	1.7151	0.1811	756.8	1.6994
370	0.2472	763.6	1.7410	0.2112	762.8	1.7231	0.1842	761.9	1.7075
380	0.2514	768.7	1.7489	0.2148	767.9	1.7310	0.1874	767.1	1.7154
390	0.2555	773.8	1.7566	0.2183	773.0	1.7388	0.1905	772.2	1.7232
400	0.2595	778.9	1.7642	0.2219	778.1	1.7464	0.1936	777.4	1.7309
410	0.2636	783.9	1.7717	0.2254	783.2	1.7539	0.1967	782.5	1.7385
420	0.2677	789.0	1.7791	0.2289	788.4	1.7614	0.1998	787.7	1.7460
430	0.2718	794.1	1.7864	0.2324	793.5	1.7687	0.2029	792.8	1.7534
440	0.2758	799.3	1.7936	0.2359	798.6	1.7760	0.2060	798.0	1.7607
450	0.2799	804.4	1.8008	0.2394	803.8	1.7832	0.2090	803.2	1.7679
460	0.2839	809.5	1.8079	0.2429	809.0	1.7903	0.2121	808.4	1.7750
470	0.2880	814.7	1.8149	0.2464	814.1	1.7973	0.2152	813.6	1.7821
480	0.2920	819.9	1.8218	0.2498	819.3	1.8043	0.2182	818.8	1.7891
490	0.2960	825.1	1.8286	0.2533	824.5	1.8111	0.2213	824.0	1.7960
500	0.3000	830.3	1.8354	0.2568	829.8	1.8179	0.2243	829.3	1.8028
510	0.3041	835.5	1.8421	0.2602	835.0	1.8247	0.2273	834.5	1.8096
520	0.3081	840.7	1.8488	0.2637	840.3	1.8314	0.2304	839.8	1.8162
530	0.3121	846.0	1.8554	0.2671	845.6	1.8380	0.2334	845.1	1.8228
540	0.3161	851.3	1.8619	0.2706	850.8	1.8445	0.2364	850.4	1.8294
550	0.3201	856.6	1.8684	0.2740	856.1	1.8511	0.2394	855.7	1.8359

Table V

p kg/cm² t_s °C	18 206.1			20 211.4			25 222.9		
	v	H	S	v	H	S	v	H	S
t °C \ at t_s	0.1123	667.3	1.5236	0.1014	667.8	1.5144	0.08144	668.7	1.4945
210	0.1138	670.2	1.5299						
220	0.1176	677.5	1.5447	0.1044	674.5	1.5281			
230	0.1211	684.2	1.5582	0.1078	681.6	1.5425	0.08359	674.6	1.5064
240	0.1245	690.5	1.5706	0.1110	688.3	1.5556	0.08644	682.3	1.5215
250	0.1278	696.6	1.5822	0.1140	694.6	1.5677	0.08912	689.4	1.5352
260	0.1310	702.4	1.5933	0.1170	700.7	1.5792	0.09167	696.0	1.5477
270	0.1341	708.1	1.6038	0.1198	706.5	1.5901	0.09412	702.3	1.5595
280	0.1371	713.6	1.6140	0.1226	712.2	1.6004	0.09650	708.4	1.5706
290	0.1401	719.1	1.6238	0.1254	717.7	1.6103	0.09882	714.3	1.5811
300	0.1431	724.5	1.6332	0.1281	723.2	1.6200	0.1011	720.0	1.5912
310	0.1461	729.8	1.6424	0.1308	728.6	1.6293	0.1033	725.6	1.6010
320	0.1490	735.0	1.6514	0.1334	734.0	1.6384	0.1055	731.2	1.6104
330	0.1518	740.3	1.6602	0.1361	739.3	1.6473	0.1077	736.7	1.6195
340	0.1547	745.5	1.6688	0.1387	744.6	1.6560	0.1098	742.1	1.6285
450	0.1576	750.8	1.6772	0.1413	749.8	1.6645	0.1120	747.5	1.6372
360	0.1604	755.9	1.6855	0.1439	755.1	1.6729	0.1141	752.9	1.6457
370	0.1632	761.1	1.6936	0.1464	760.3	1.6811	0.1162	358.2	1.6541
380	0.1660	766.3	1.7016	0.1490	765.5	1.6892	0.1182	763.5	1.6623
390	0.1688	771.5	1.7094	0.1515	770.7	1.6971	0.1203	768.8	1.6703
400	0.1716	776.7	1.7172	0.1540	775.9	1.7048	0.1224	774.1	1.6782
410	0.1744	781.8	1.7249	0.1565	781.1	1.7125	0.1244	779.4	1.6860
420	0.1772	787.0	1.7324	0.1590	786.3	1.7200	0.1264	784.6	1.6937
430	0.1799	792.2	1.7398	0.1615	791.5	1.7275	0.1285	789.9	1.7012
440	0.1827	797.4	1.7471	0.1640	796.8	1.7349	0.1305	795.2	1.7087
450	0.1854	802.6	1.7543	0.1665	802.0	1.7421	0.1325	800.5	1.7160
460	0.1881	807.8	1.7615	0.1690	807.2	1.7493	0.1345	805.8	1.7233
470	0.1909	813.0	1.7686	0.1715	812.5	1.7564	0.1365	811.1	1.7305
480	0.1936	818.3	1.7756	0.1739	817.7	1.7635	0.1385	816.4	1.7376
490	0.1964	823.5	1.7825	0.1764	823.0	1.7704	0.1405	821.7	1.7446
500	0.1991	828.8	1.7893	0.1789	828.3	1.7773	0.1425	827.0	1.7515
510	0.2018	834.0	1.7961	0.1813	833.5	1.7841	0.1445	832.3	1.7584
520	0.2045	839.3	1.8028	0.1837	838.8	1.7908	0.1464	837.7	1.7651
530	0.2072	844.6	1.8095	0.1862	844.2	1.7975	0.1484	843.0	1.7718
540	0.2099	849.9	1.8161	0.1886	849.5	1.8041	0.1504	848.4	1.7785
550	0.2126	855.3	1.8226	0.1911	854.8	1.8106	0.1523	853.8	1.7851

Table V

p kg/cm² / t_s °C	30 / 232.7			35 / 241.4			40 / 249.1		
	v	H	S	v	H	S	v	H	S
at t_s / t °C	0.06794	669.0	1.4778	0.05818	668.9	1.4631	0.05077	668.4	1.4500
240	0.06988	675.4	1.4904						
250	0.07237	683.5	1.5060	0.06025	676.9	1.4786	0.05097	669.3	1.4517
260	0.07470	690.9	1.5200	0.06246	685.2	1.4944	0.05315	678.9	1.4699
270	0.07691	697.8	1.5329	0.06452	692.9	1.5086	0.05513	687.5	1.4859
280	0.07902	704.4	1.5449	0.06646	700.0	1.5217	0.05698	695.3	1.5002
290	0.08106	710.6	1.5561	0.06832	706.8	1.5337	0.05872	702.6	1.5132
300	0.08304	716.7	1.5667	0.07011	713.2	1.5450	0.06038	709.5	1.5253
310	0.08497	722.6	1.5769	0.07184	719.4	1.5557	0.06197	716.0	1.5366
320	0.08687	728.3	1.5867	0.07353	725.4	1.5660	0.06351	722.3	1.5473
330	0.08874	734.0	1.5962	0.07519	731.3	1.5758	0.06502	728.4	1.5575
340	0.09058	739.6	1.6054	0.07682	737.0	1.5853	0.06649	734.4	1.5673
350	0.09240	745.2	1.6144	0.07842	742.7	1.5945	0.06793	740.3	1.5768
360	0.09420	750.6	1.6231	0.08001	748.3	1.6035	0.06935	746.0	1.5860
370	0.09599	756.0	1.6316	0.08158	753.9	1.6122	0.07076	751.7	1.5949
380	0.09776	761.5	1.6399	0.08312	759.4	1.6207	0.07214	757.4	1.6036
390	0.09951	766.9	1.6481	0.08465	764.9	1.6290	0.07351	763.0	1.6121
400	0.1013	772.3	1.6562	0.08617	770.4	1.6372	0.07486	768.5	1.6204
410	0.1030	777.6	1.6641	0.08769	775.8	1.6452	0.07621	774.0	1.6286
420	0.1047	783.0	1.6718	0.08919	781.2	1.6531	0.07754	779.5	1.6366
430	0.1064	788.3	1.6795	0.09068	786.7	1.6608	0.07887	785.0	1.6445
440	0.1081	793.6	1.6870	0.09216	792.1	1.6685	0.08018	790.5	1.6522
450	0.1098	799.0	1.6945	0.09364	797.5	1.6760	0.08149	796.0	1.6598
460	0.1115	804.3	1.7018	0.09511	802.9	1.6834	0.08280	801.4	1.6673
470	0.1132	809.7	1.7090	0.09657	808.3	1.6907	0.08409	806.9	1.6746
480	0.1149	815.0	1.7162	0.09803	813.7	1.6980	0.08538	812.3	1.6819
490	0.1166	820.4	1.7233	0.09948	819.1	1.7051	0.08667	817.8	1.6891
500	0.1183	825.7	1.7303	0.1009	824.5	1.7121	0.08795	823.2	1.6962
510	0.1199	831.1	1.7372	0.1024	829.9	1.7191	0.08922	828.7	1.7033
520	0.1216	836.5	1.7440	0.1038	835.3	1.7259	0.09049	834.1	1.7102
530	0.1232	841.9	1.7508	0.1052	840.8	1.7327	0.09175	839.6	1.7170
540	0.1249	847.3	1.7575	0.1067	846.2	1.7395	0.09301	845.1	1.7238
550	0.1265	852.7	1.7641	0.1081	851.6	1.7462	0.09427	850.6	1.7305

Table V

p kg/cm² t_s °C	45 256.2			50 262.6			60 274.2		
	v	H	S	v	H	S	v	H	S
at t_s / t °C	0.04495	667.7	1.4380	0.04026	666.8	1.4270	0.03311	664.4	1.4068
260	0.04576	671.8	1.4457						
270	0.04773	681.5	1.4637	0.04170	674.8	1.4418			
280	0.04953	690.2	1.4796	0.04348	684.6	1.4596	0.03416	671.4	1.4195
290	0.05119	698.1	1.4938	0.04511	693.3	1.4753	0.03581	682.2	1.4389
300	0.05276	705.5	1.5069	0.04663	701.3	1.4893	0.03729	691.8	1.4558
310	0.05426	712.5	1.5190	0.04805	708.8	1.5022	0.03865	700.5	1.4708
320	0.05569	719.1	1.5302	0.04941	715.8	1.5142	0.03992	708.5	1.4843
330	0.05708	725.5	1.5408	0.05072	722.5	1.5253	0.04111	715.9	1.4968
340	0.05844	731.7	1.5510	0.05198	728.9	1.5359	0.04225	723.0	1.5084
350	0.05976	737.8	1.5608	0.05321	735.2	1.5461	0.04335	729.8	1.5193
360	0.06106	743.7	1.5703	0.05441	741.3	1.5558	0.04442	736.2	1.5297
370	0.06234	749.5	1.5795	0.05559	747.2	1.5652	0.04546	742.6	1.5396
380	0.06359	755.3	1.5883	0.05675	753.1	1.5743	0.04647	748.8	1.5492
390	0.06483	761.0	1.5969	0.05789	759.0	1.5831	0.04746	754.8	1.5584
400	0.06606	766.6	1.6054	0.05901	764.7	1.5917	0.04844	760.8	1.5674
410	0.06728	772.2	1.6137	0.06013	770.4	1.6001	0.04940	766.7	1.5761
420	0.06848	777.8	1.6218	0.06123	776.1	1.6083	0.05035	772.6	1.5846
430	0.06968	783.4	1.6298	0.06232	781.7	1.6164	0.05129	778.4	1.5929
440	0.07087	788.9	1.6376	0.06341	787.3	1.6243	0.05222	784.1	1.6010
450	0.07205	794.4	1.6453	0.06448	792.9	1.6321	0.05314	789.8	1.6090
460	0.07322	799.9	1.6528	0.06555	798.5	1.6398	0.05406	795.5	1.6168
470	0.07438	805.5	1.6603	0.06662	804.0	1.6473	0.05496	801.2	1.6245
480	0.07554	811.0	1.6677	0.06767	809.6	1.6548	0.05586	806.9	1.6321
490	0.07670	816.5	1.6750	0.06872	815.2	1.6621	0.05675	812.5	1.6395
500	0.07785	822.0	1.6821	0.06976	820.7	1.6693	0.05764	818.2	1.6468
510	0.07899	827.5	1.6891	0.07080	826.2	1.6764	0.05852	823.8	1.6541
520	0.08013	833.0	1.6961	0.07184	831.8	1.6834	0.05940	829.4	1.6612
530	0.08126	838.5	1.7030	0.07287	837.3	1.6904	0.06028	835.1	1.6683
540	0.08239	844.0	1.7099	0.07389	842.9	1.6973	0.06115	840.7	1.6752
550	0.08352	849.5	1.7166	0.07492	848.4	1.7041	0.06202	846.3	1.6821

Table V

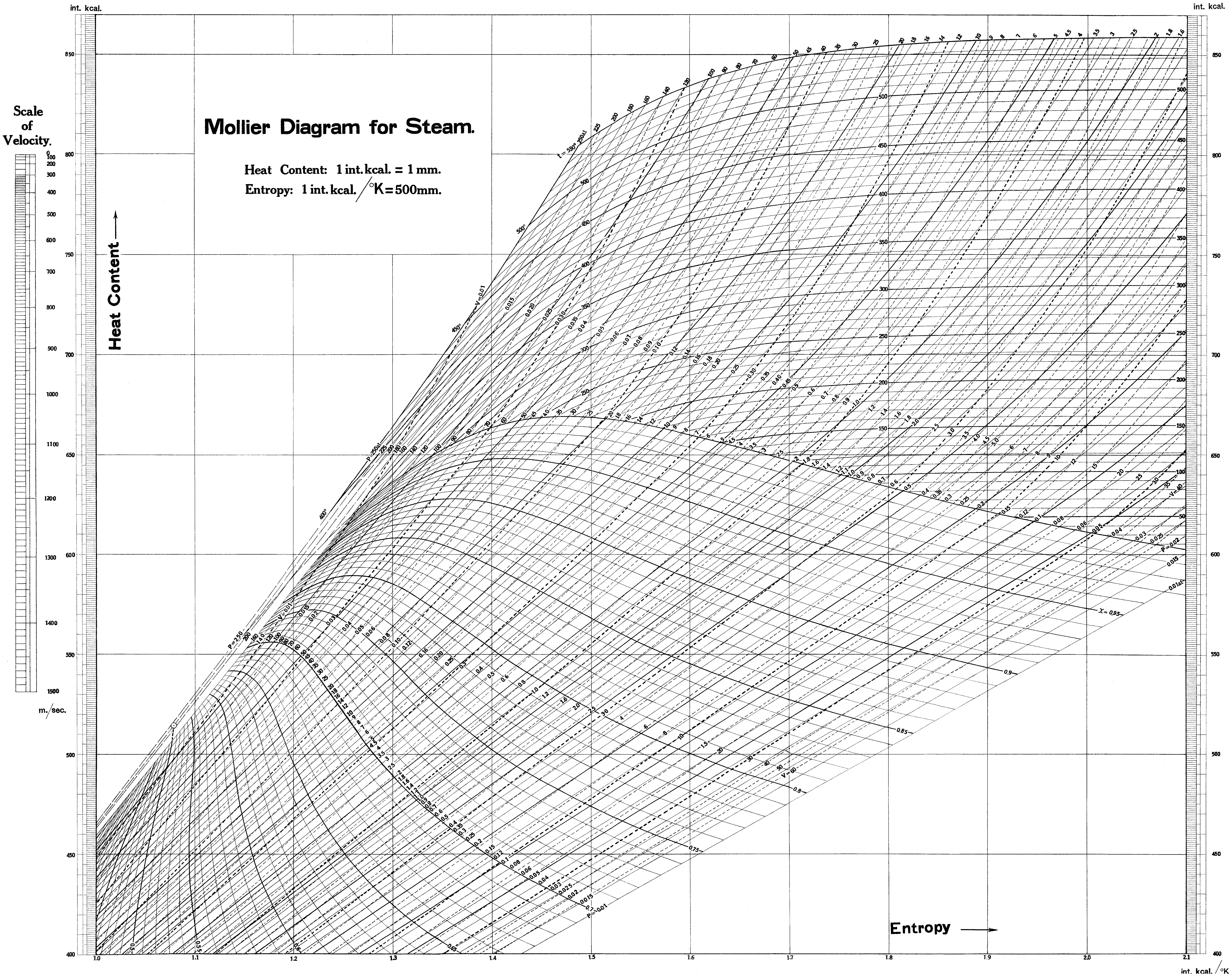
p kg/cm², t_s °C	70, 284.4			80, 293.6			90, 301.9		
	v	H	S	v	H	S	v	H	S
t °C \ at t_s	0.02793	661.5	1.3886	0.02399	658.0	1.3717	0.02088	654.2	1.3557
290	0.02888	668.9	1.4018						
300	0.03041	680.6	1.4225	0.02502	667.3	1.3878			
310	0.03178	691.0	1.4403	0.02645	679.8	1.4096	0.02212	666.6	1.3772
320	0.03302	700.2	1.4560	0.02772	690.7	1.4282	0.02346	679.8	1.3996
330	0.03417	708.7	1.4702	0.02887	700.5	1.4445	0.02463	691.2	1.4187
340	0.03525	716.5	1.4831	0.02992	709.4	1.4590	0.02569	701.3	1.4354
350	0.03627	723.9	1.4951	0.03090	717.6	1.4723	0.02666	710.5	1.4503
360	0.03725	730.9	1.5063	0.03183	725.2	1.4845	0.02756	719.0	1.4637
370	0.03819	737.7	1.5168	0.03271	732.4	1.4959	0.02841	726.9	1.4761
380	0.03911	744.2	1.5269	0.03356	739.4	1.5066	0.02922	734.4	1.4876
390	0.04000	750.6	1.5366	0.03438	746.2	1.5168	0.02999	741.5	1.4985
400	0.04087	756.8	1.5459	0.03518	752.7	1.5266	0.03074	748.4	1.5088
410	0.04173	762.9	1.5550	0.03597	759.1	1.5360	0.03147	755.1	1.5186
420	0.04257	769.0	1.5638	0.03673	765.3	1.5451	0.03218	761.6	1.5281
430	0.04340	775.0	1.5723	0.03748	771.5	1.5540	0.03287	767.9	1.5372
440	0.04423	780.9	1.5807	0.03822	777.6	1.5626	0.03355	774.2	1.5461
450	0.04504	786.7	1.5888	0.03895	783.6	1.5709	0.03422	780.4	1.5547
460	0.04584	792.6	1.5968	0.03967	789.6	1.5791	0.03488	786.5	1.5631
470	0.04664	798.4	1.6047	0.04039	795.5	1.5872	0.03553	792.6	1.5713
480	0.04742	804.2	1.6124	0.04109	801.4	1.5951	0.03617	798.7	1.5793
490	0.04820	809.9	1.6200	0.04179	807.3	1.6028	0.03680	804.6	1.5872
500	0.04898	815.6	1.6275	0.04249	813.1	1.6104	0.03743	810.5	1.5950
510	0.04975	821.4	1.6348	0.04318	818.9	1.6178	0.03806	816.4	1.6026
520	0.05052	827.1	1.6421	0.04386	824.7	1.6252	0.03868	822.3	1.6101
530	0.05128	832.8	1.6492	0.04454	830.5	1.6325	0.03929	828.2	1.6174
540	0.05204	838.5	1.6563	0.04521	836.3	1.6396	0.03990	834.1	1.6247
550	0.05280	844.2	1.6633	0.04588	842.0	1.6467	0.04050	839.9	1.6318

p kg/cm², t_s °C	160, 345.7			180, 355.3			200, 364.1		
	v	H	S	v	H	S	v	H	S
t °C \ at t_s	0.00960	619.5	1.2588						
350	0.01020	630.3	1.2761						
360	0.01141	651.9	1.3105						
370	0.01244	669.9	1.3387						
380	0.01332	685.2	1.3623						
390	0.01409	698.5	1.3825						
400	0.01478	710.2	1.4001	0.01233	695.3	1.3686	0.01028	678.1	1.3351
410	0.01541	720.7	1.4157	0.01298	707.9	1.3871	0.01097	693.2	1.3574
420	0.01599	730.4	1.4297	0.01357	719.2	1.4035	0.01159	706.4	1.3767
430	0.01653	739.4	1.4425	0.01411	729.4	1.4181	0.01214	718.2	1.3936
440	0.01704	747.8	1.4544	0.01461	738.8	1.4314	0.01265	728.9	1.4087
450	0.01752	755.8	1.4655	0.01509	747.6	1.4437	0.01312	738.8	1.4224
460	0.01799	763.4	1.4761	0.01554	755.9	1.4552	0.01356	748.0	1.4350
470	0.01844	770.8	1.4861	0.01596	763.9	1.4660	0.01397	756.6	1.4467
480	0.01887	778.0	1.4957	0.01637	771.6	1.4762	0.01437	764.8	1.4577
490	0.01929	785.0	1.5049	0.01677	779.0	1.4859	0.01475	772.7	1.4680
500	0.01971	791.8	1.5138	0.01716	786.2	1.4953	0.01511	780.3	1.4779
510	0.02011	798.6	1.5224	0.01754	793.2	1.5044	0.01547	787.6	1.4874
520	0.02051	805.2	1.5309	0.01791	800.1	1.5131	0.01582	794.8	1.4966
530	0.02090	811.8	1.5391	0.01827	806.9	1.5216	0.01616	801.9	1.5054
540	0.02129	818.2	1.5471	0.01862	813.6	1.5299	0.01649	808.8	1.5140
550	0.02167	824.6	1.5550	0.01897	820.2	1.5380	0.01681	815.6	1.5224

Table V

p kg/cm² / t_s °C	100 / 309.5			120 / 323.1			140 / 335.0		
	v	H	S	v	H	S	v	H	S
at t_s / t °C	0.01836	650.0	1.3406	0.01452	640.7	1.3119	0.01172	630.5	1.2848
310	0.01844	650.9	1.3422						
320	0.01989	666.9	1.3694						
330	0.02113	680.5	1.3921	0.01550	653.9	1.3339			
340	0.02223	692.3	1.4115	0.01675	670.3	1.3608	0.01242	641.4	1.3027
350	0.02321	702.8	1.4284	0.01782	684.2	1.3834	0.01366	660.6	1.3336
360	0.02411	712.2	1.4434	0.01876	696.3	1.4027	0.01471	676.6	1.3592
370	0.02494	720.8	1.4570	0.01961	707.1	1.4195	0.01562	690.3	1.3808
380	0.02572	728.9	1.4695	0.02038	716.8	1.4345	0.01643	702.4	1.3994
390	0.02646	736.6	1.4811	0.02109	725.8	1.4481	0.01716	713.2	1.4158
400	0.02717	743.9	1.4920	0.02176	734.1	1.4606	0.01782	723.0	1.4304
410	0.02786	750.9	1.5024	0.02240	741.9	1.4722	0.01844	732.0	1.4437
420	0.02852	757.7	1.5123	0.02301	749.4	1.4831	0.01903	740.4	1.4559
430	0.02917	764.3	1.5218	0.02360	756.6	1.4934	0.01958	748.4	1.4674
440	0.02980	770.8	1.5309	0.02417	763.6	1.5033	0.02011	756.0	1.4781
450	0.03042	777.2	1.5398	0.02472	770.4	1.5128	0.02062	763.4	1.4883
460	0.03103	783.5	1.5484	0.02526	777.1	1.5219	0.02111	770.5	1.4981
470	0.03163	789.7	1.5568	0.02579	783.6	1.5307	0.02159	777.4	1.5075
480	0.03222	795.9	1.5650	0.02630	790.1	1.5393	0.02206	784.2	1.5166
490	0.03281	801.9	1.5730	0.02681	796.4	1.5477	0.02252	790.8	1.5253
500	0.03339	807.9	1.5809	0.02732	802.7	1.5559	0.02297	797.3	1.5338
510	0.03396	813.9	1.5887	0.02781	808.9	1.5639	0.02342	803.8	1.5421
520	0.03453	819.9	1.5963	0.02830	815.1	1.5717	0.02385	810.2	1.5502
530	0.03509	825.9	1.6037	0.02879	821.3	1.5794	0.02428	816.5	1.5582
540	0.03565	831.8	1.6111	0.02927	827.4	1.5870	0.02471	822.8	1.5660
550	0.03620	837.7	1.6183	0.02974	833.4	1.5944	0.02513	829.1	1.5736

p kg/cm² / t_s °C	225 / 374.0			250		
	v	H	S	v	H	S
at t_s / t °C						
400	0.008125	652.7	1.2894	0.006353	623.1	1.2392
410	0.008885	671.9	1.3178	0.007175	647.3	1.2750
420	0.009542	688.3	1.3416	0.007875	667.7	1.3046
430	0.01012	702.6	1.3621	0.008483	685.0	1.3294
440	0.01064	715.3	1.3800	0.009018	700.1	1.3507
450	0.01112	726.7	1.3959	0.009502	713.4	1.3692
460	0.01156	737.1	1.4102	0.009940	725.3	1.3856
470	0.01196	746.8	1.4233	0.01034	736.2	1.4003
480	0.01234	755.8	1.4354	0.01072	746.3	1.4137
490	0.01271	764.4	1.4467	0.01107	755.6	1.4261
500	0.01306	772.6	1.4574	0.01141	764.5	1.4377
510	0.01340	780.4	1.4675	0.01173	773.0	1.4486
520	0.01372	788.1	1.4772	0.01204	781.1	1.4589
530	0.01404	795.5	1.4865	0.01234	788.9	1.4687
540	0.01435	802.8	1.4955	0.01264	796.5	1.4781
550	0.01465	809.9	1.5042	0.01292	804.0	1.4872



Mollier Diagram for Steam.
Heat Content: 1 int. kcal. = 1 mm.
Entropy: 1 int. kcal./°K = 500mm.
Scale of Velocity.
m./sec.
Heat Content
Entropy
int. kcal.
int. kcal./°K