

# The 1962 He<sup>3</sup> Scale of Temperatures

## IV. Tables<sup>1, 2</sup>

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The detailed tables of the 1962 He<sup>3</sup> Scale of Temperatures are presented. The vapor pressure of He<sup>3</sup> is tabulated in steps of 1 millidegree from 0.2 to 3.324 °K, the critical temperature. A table giving temperature, to 0.1 millidegree, as a function of pressure is included, as well as the temperature derivative of the vapor pressure.

### 1. Introduction

It is the purpose of this paper to present the detailed tables which comprise the 1962 He<sup>3</sup> Scale of Temperatures. The reader is referred to the other publications in this series for discussions of the apparatus and input vapor pressure data [45, 46];<sup>3</sup> the derivation of the scale [6, 66]; and the evaluation of the scale with gas isotherm and other data [7, 10].

### 2. Description of the Tables

In tables 1a and 1b, He<sup>3</sup> vapor pressures are given as a function of the temperature, designated as  $T_{62}$ . Tables 1a and 1b contain entries every millidegree from 0.2 to 3.324 °K, the critical temperature. The pressure, in millimeters of mercury at 0 °C, and standard gravity (980.665 cm/sec.<sup>2</sup>), is given by the following equation, which defines the 1962 He<sup>3</sup> Scale:

$$\ln P_3 = -2.49174/T + 4.80386 - 0.286001 T \\ + 0.198608 T^2 - 0.0502237 T^3 + 0.00505486 T^4 \\ + 2.24846 \ln T \quad 0.2 < T < 3.324 \text{ °K.} \quad (1)$$

Tables 2a and 2b are inverted tables giving the temperature as a function of the vapor pressure of He<sup>3</sup>. The entries were evaluated by solving eq (1) implicitly by a process of successive iterations. The convergence criterion was set at 0.01 mdeg after which the entries were rounded to the nearest 0.1 mdeg (a 5 was always rounded up). Thus tables 1 and 2 should never show more than a 0.1 mdeg deviation from one another.

Table 3, giving values of the derivative  $dP_3/dT_{62}$  at intervals of 0.01 deg from 0.2 to 3.33 °K, was computed analytically from eq (1) and its first temperature derivative, i.e.,

$$\frac{dP}{dT} = P \frac{d \ln P}{dT}. \quad (2)$$

Certain portions of parts I, II, and III of this series might be particularly useful to users of these tables. For example, a shortened version of tables 1a and 1b appears as table 5 of Part II.

Deviations of the 1962 He<sup>3</sup> Scale from various previous He<sup>3</sup> temperature scales are given in table 6 of Part II.

A compilation of thermodynamic properties of He<sup>3</sup> consistent with the 1962 He<sup>3</sup> Scale is given in table 4 of Part III.

General remarks concerning various needed corrections to a vapor-pressure measurement are given in the section of Part I entitled "Pressure Measurement." Figure 4 of Part I depicts a convenient procedure for making the important thermal transpiration correction. Additional remarks on this latter correction factor are given in section 5 of Part III.

<sup>1</sup> Work performed under the auspices of the United States Atomic Energy Commission.

<sup>2</sup> These tables are the same as those issued as Los Alamos Scientific Laboratory Report LAMS-2701 (July, 1962).

<sup>3</sup> Figures in brackets indicate the literature references at the end of this paper.

TABLE 1a. Vapor pressure of He<sup>3</sup> (1962 Scale) in microns (10<sup>-3</sup> mm) of mercury at 0 °C and standard gravity, 980.665 cm/sec<sup>2</sup>

T <sub>02</sub> , °K	0.000	0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.009
.200	0.0121	0.0130	0.0140	0.0150	0.0161	0.0173	0.0185	0.0199	0.0213	0.0228
.210	.0244	.0260	.0278	.0297	.0317	.0338	.0360	.0384	.0409	.0435
.220	.0463	.0492	.0523	.0555	.0590	.0626	.0664	.0703	.0745	.0789
.230	.0835	.0884	.0935	.0988	.1044	.1103	.1165	.1229	.1296	.1367
.240	.1441	.1518	.1599	.1683	.1772	.1864	.1960	.2060	.2165	.2274
.250	.2388	.2506	.2630	.2759	.2893	.3032	.3178	.3329	.3486	.3649
.260	.3819	.3995	.4179	.4369	.4566	.4771	.4984	.5205	.5434	.5671
.270	.5917	.6172	.6436	.6710	.6993	.7286	.7589	.7903	.8228	.8564
.280	.8911	.9270	.9642	1.0025	1.0421	1.0830	1.1253	1.1689	1.2139	1.2603
.290	1.3082	1.3576	1.4086	1.4612	1.5153	1.5712	1.6287	1.6880	1.7490	1.8119
.300	1.877	1.943	2.012	2.082	2.155	2.230	2.307	2.386	2.467	2.550
.310	2.636	2.724	2.815	2.908	3.004	3.102	3.203	3.306	3.413	3.522
.320	3.633	3.748	3.866	3.987	4.111	4.237	4.368	4.501	4.638	4.778
.330	4.921	5.069	5.219	5.373	5.531	5.693	5.859	6.028	6.202	6.379
.340	6.561	6.747	6.937	7.131	7.330	7.533	7.741	7.954	8.171	8.393
.350	8.619	8.851	9.088	9.330	9.577	9.829	10.087	10.350	10.619	10.893
.360	11.173	11.459	11.750	12.048	12.351	12.661	12.977	13.299	13.628	13.963
.370	14.304	14.653	15.008	15.370	15.739	16.115	16.498	16.889	17.287	17.692
.380	18.105	18.525	18.954	19.390	19.834	20.286	20.747	21.216	21.693	22.179
.390	22.673	23.176	23.688	24.209	24.739	25.278	25.826	26.384	26.952	27.529
.400	28.115	28.712	29.319	29.935	30.562	31.200	31.847	32.506	33.175	33.855
.410	34.546	35.248	35.961	36.686	37.422	38.169	38.929	39.700	40.483	41.278
.420	42.086	42.906	43.738	44.583	45.441	46.312	47.196	48.093	49.003	49.927
.430	50.864	51.815	52.780	53.759	54.753	55.760	56.782	57.818	58.870	59.936
.440	61.017	62.113	63.225	64.352	65.494	66.653	67.827	69.017	70.224	71.447
.450	72.686	73.942	75.215	76.505	77.812	79.136	80.478	81.837	83.214	84.609
.460	86.022	87.453	88.902	90.370	91.857	93.362	94.887	96.431	97.994	99.576
.470	101.179	102.801	104.443	106.105	107.787	109.490	111.214	112.959	114.724	116.511
.480	118.319	120.148	121.999	123.872	125.768	127.685	129.624	131.586	133.571	135.579
.490	137.610	139.664	141.741	143.842	145.967	148.115	150.288	152.485	154.707	156.953
.500	159.224	161.520	163.841	166.188	168.560	170.958	173.381	175.831	178.308	180.810
.510	183.339	185.896	188.479	191.089	193.727	196.392	199.085	201.806	204.556	207.333
.520	210.139	212.974	215.838	218.731	221.653	224.604	227.586	230.597	233.638	236.709
.530	239.811	242.943	246.107	249.301	252.526	255.783	259.072	262.392	265.745	269.129
.540	272.546	275.995	279.478	282.993	286.541	290.123	293.739	297.388	301.071	304.788
.550	308.540	312.326	316.147	320.003	323.895	327.821	331.784	335.782	339.816	343.886
.560	347.992	352.136	356.316	360.533	364.787	369.079	373.408	377.775	382.181	386.624
.570	391.106	395.627	400.187	404.785	409.423	414.100	418.818	423.575	428.372	433.209
.580	438.087	443.006	447.966	452.967	458.009	463.093	468.219	473.387	478.597	483.850
.590	489.145	494.483	499.884	505.288	510.756	516.268	521.824	527.423	533.068	538.756
.600	544.490	550.268	556.092	561.961	567.876	573.837	579.844	585.897	591.997	598.143
.610	604.337	610.577	616.865	623.201	629.584	636.016	642.496	649.024	655.601	662.227
.620	668.902	675.626	682.400	689.224	696.097	703.021	709.996	717.021	724.097	731.224
.630	738.402	745.633	752.914	760.248	767.634	775.073	782.564	790.108	797.705	805.355
.640	813.059	820.817	828.629	836.495	844.416	852.391	860.421	868.506	876.646	884.842
.650	893.094	901.402	909.766	918.186	926.663	935.197	943.789	952.437	961.143	969.907
.660	978.729	987.609	996.548	1005.545	1014.601	1023.717	1032.891	1042.126	1051.420	1060.774
.670	1070.189	1079.664	1089.199	1098.796	1108.446	1118.153	1127.954	1137.796	1147.701	1157.668
.680	1167.698	1177.790	1187.946	1198.164	1208.444	1218.792	1229.202	1239.675	1250.213	1260.816
.690	1271.483	1282.216	1293.013	1303.877	1314.805	1325.800	1336.861	1347.989	1359.183	1370.443
.700	1381.771	1393.167	1404.629	1416.160	1427.758	1439.425	1451.160	1462.964	1474.836	1486.778
.710	1498.789	1510.870	1523.021	1535.241	1547.532	1559.894	1572.326	1584.829	1597.403	1610.048
.720	1622.766	1635.555	1648.416	1661.350	1674.356	1687.434	1700.586	1713.811	1727.110	1740.482
.730	1753.928	1767.449	1781.043	1794.713	1808.457	1822.276	1836.171	1850.141	1864.186	1878.308
.740	1892.506	1906.780	1921.132	1935.559	1950.065	1964.647	1979.307	1994.045	2008.861	2023.755
.750	2038.728	2053.779	2068.909	2084.119	2099.408	2114.776	2130.225	2145.753	2161.362	2177.051
.760	2192.821	2208.673	2224.605	2240.619	2256.715	2272.892	2289.152	2305.494	2321.919	2338.426
.770	2355.017	2371.691	2388.448	2405.289	2422.215	2439.224	2456.318	2473.496	2490.760	2508.108
.780	2525.542	2543.061	2560.667	2578.358	2596.136	2614.000	2631.951	2649.988	2668.113	2686.326
.790	2704.626	2723.014	2741.490	2760.054	2778.707	2797.448	2816.279	2835.199	2854.208	2873.307
.800	2892.496	2911.775	2931.145	2950.605	2970.156	2989.798	3009.531	3029.356	3049.272	3069.280
.810	3089.381	3109.574	3129.860	3150.239	3170.710	3191.275	3211.934	3232.686	3253.533	3274.474
.820	3295.508	3316.638	3337.863	3359.183	3380.598	3402.109	3423.716	3445.419	3467.217	3489.113
.830	3511.105	3533.194	3555.381	3577.665	3600.046	3622.525	3645.103	3667.779	3690.553	3713.426
.840	3736.398	3759.469	3782.640	3805.910	3829.281	3852.751	3876.322	3899.993	3923.765	3947.639
.850	3971.613	3995.689	4019.866	4044.146	4068.528	4093.012	4117.598	4142.288	4167.080	4191.976
.860	4216.976	4242.079	4267.286	4292.597	4318.012	4343.533	4369.158	4394.888	4420.723	4446.664
.870	4472.711	4498.864	4525.123	4551.488	4577.960	4604.539	4631.225	4658.018	4684.919	4711.928
.880	4739.044	4766.269	4793.602	4821.044	4848.595	4876.255	4904.024	4931.903	4959.891	4987.990
.890	5016.198	5044.517	5072.947	5101.488	5130.140	5158.903	5187.778	5216.764	5245.863	5275.073
.900	5304.397	5333.832	5363.381	5393.043	5422.818	5452.707	5482.709	5512.826	5543.057	5573.402
.910	5603.862	5634.436	5665.126	5695.931	5726.852	5757.889	5789.041	5820.310	5851.695	5883.196
.920	5914.815	5946.551	5978.404	6010.374	6042.463	6074.669	6106.994	6139.436	6171.995	6204.679
.930	6237.478	6270.397	6303.435	6336.593	6369.871	6403.269	6436.788	6470.427	6504.182	6538.068
.940	6572.071	6606.195	6640.400	6674.808	6709.297	6743.909	6778.644	6813.502	6848.482	6883.586
.950	6918.813	6954.164	6989.639	7025.238	7060.961	7096.809	7132.781	7168.879	7205.101	7241.450
.960	7277.923	7314.523	7351.249	7388.101	7425.079	7462.185	7499.417	7536.776	7574.263	7611.878
.970	7649.620	7687.490	7725.489	7763.616	7801.872	7840.256	7878.770	7917.413	7956.186	7995.088
.980	8034.121	8073.283	8112.576	8152.000	8191.554	8231.240	8271.057	8311.005	8351.085	8391.297
.990	8431.641	8472.118	8512.727	8553.469	8594.343	8635.352	8676.493	8717.768	8759.177	8800.720

TABLE 1b. Vapor pressure of He<sup>3</sup> (1962 Scale) in millimeters of mercury at 0 °C and standard gravity, 980.665 cm/sec<sup>2</sup>

T <sub>02</sub> , °K	0.000	0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.009
1.000	8.842	8.884	8.926	8.968	9.010	9.053	9.095	9.138	9.181	9.224
1.010	9.267	9.310	9.353	9.397	9.440	9.484	9.528	9.572	9.616	9.660
1.020	9.704	9.749	9.794	9.839	9.884	9.929	9.974	10.019	10.065	10.110
1.030	10.156	10.202	10.248	10.294	10.341	10.387	10.434	10.481	10.528	10.575
1.040	10.622	10.669	10.717	10.765	10.812	10.860	10.908	10.957	11.005	11.054
1.050	11.102	11.151	11.200	11.249	11.298	11.348	11.397	11.447	11.497	11.547
1.060	11.597	11.647	11.698	11.748	11.799	11.850	11.901	11.952	12.003	12.055
1.070	12.106	12.158	12.210	12.262	12.314	12.367	12.419	12.472	12.525	12.577
1.080	12.631	12.684	12.737	12.791	12.845	12.898	12.952	13.007	13.061	13.115
1.090	13.170	13.225	13.280	13.335	13.390	13.446	13.501	13.557	13.613	13.669
1.100	13.725	13.781	13.838	13.894	13.951	14.008	14.065	14.123	14.180	14.238
1.110	14.295	14.353	14.411	14.469	14.528	14.586	14.645	14.704	14.763	14.822
1.120	14.881	14.941	15.001	15.060	15.120	15.180	15.241	15.301	15.362	15.423
1.130	15.484	15.545	15.606	15.667	15.729	15.791	15.853	15.915	15.977	16.039
1.140	16.102	16.165	16.227	16.291	16.354	16.417	16.481	16.544	16.608	16.672
1.150	16.737	16.801	16.865	16.930	16.995	17.060	17.125	17.191	17.256	17.322
1.160	17.388	17.454	17.520	17.586	17.653	17.720	17.787	17.854	17.921	17.988
1.170	18.056	18.124	18.192	18.260	18.328	18.396	18.465	18.534	18.603	18.672
1.180	18.741	18.810	18.880	18.950	19.020	19.090	19.160	19.231	19.301	19.372
1.190	19.443	19.514	19.586	19.657	19.729	19.801	19.873	19.945	20.018	20.090
1.200	20.163	20.236	20.309	20.382	20.456	20.529	20.603	20.677	20.751	20.826
1.210	20.900	20.975	21.050	21.125	21.200	21.275	21.351	21.427	21.503	21.579
1.220	21.655	21.732	21.808	21.885	21.962	22.039	22.117	22.194	22.272	22.350
1.230	22.428	22.507	22.585	22.664	22.743	22.822	22.901	22.980	23.060	23.140
1.240	23.220	23.300	23.380	23.460	23.541	23.622	23.703	23.784	23.866	23.947
1.250	24.029	24.111	24.193	24.276	24.358	24.441	24.524	24.607	24.690	24.774
1.260	24.857	24.941	25.025	25.110	25.194	25.279	25.363	25.448	25.534	25.619
1.270	25.704	25.790	25.876	25.962	26.049	26.135	26.222	26.309	26.396	26.483
1.280	26.571	26.658	26.746	26.834	26.922	27.011	27.099	27.188	27.277	27.366
1.290	27.456	27.545	27.635	27.725	27.815	27.906	27.996	28.087	28.178	28.269
1.300	28.360	28.452	28.544	28.636	28.728	28.820	28.913	29.005	29.098	29.191
1.310	29.285	29.378	29.472	29.566	29.660	29.754	29.849	29.943	30.038	30.133
1.320	30.229	30.324	30.420	30.516	30.612	30.708	30.805	30.901	30.998	31.095
1.330	31.193	31.290	31.388	31.486	31.584	31.682	31.781	31.879	31.978	32.077
1.340	32.177	32.276	32.376	32.476	32.576	32.676	32.777	32.878	32.979	33.080
1.350	33.181	33.283	33.385	33.486	33.589	33.691	33.794	33.897	34.000	34.103
1.360	34.206	34.310	34.414	34.518	34.622	34.726	34.831	34.936	35.041	35.146
1.370	35.252	35.358	35.464	35.570	35.676	35.783	35.889	35.996	36.104	36.211
1.380	36.319	36.427	36.535	36.643	36.751	36.860	36.969	37.078	37.187	37.297
1.390	37.407	37.516	37.627	37.737	37.848	37.958	38.069	38.181	38.292	38.404
1.400	38.516	38.628	38.740	38.853	38.965	39.078	39.191	39.305	39.418	39.532
1.410	39.646	39.761	39.875	39.990	40.105	40.220	40.335	40.451	40.566	40.682
1.420	40.799	40.915	41.032	41.149	41.266	41.383	41.501	41.618	41.736	41.855
1.430	41.973	42.092	42.210	42.330	42.449	42.568	42.688	42.808	42.928	43.049
1.440	43.169	43.290	43.411	43.533	43.654	43.776	43.898	44.020	44.142	44.265
1.450	44.388	44.511	44.634	44.758	44.882	45.006	45.130	45.254	45.379	45.504
1.460	45.629	45.754	45.880	46.006	46.132	46.258	46.385	46.511	46.638	46.765
1.470	46.893	47.020	47.148	47.276	47.405	47.533	47.662	47.791	47.920	48.050
1.480	48.179	48.309	48.439	48.570	48.700	48.831	48.962	49.094	49.225	49.357
1.490	49.489	49.621	49.754	49.886	50.019	50.152	50.286	50.419	50.553	50.687
1.500	50.822	50.956	51.091	51.226	51.361	51.497	51.633	51.769	51.905	52.041
1.510	52.178	52.315	52.452	52.589	52.727	52.865	53.003	53.141	53.280	53.419
1.520	53.558	53.697	53.837	53.976	54.116	54.257	54.397	54.538	54.679	54.820
1.530	54.961	55.103	55.245	55.387	55.529	55.672	55.815	55.958	56.101	56.245
1.540	56.389	56.533	56.677	56.822	56.967	57.112	57.257	57.402	57.548	57.694
1.550	57.840	57.987	58.134	58.281	58.428	58.575	58.723	58.871	59.019	59.168
1.560	59.316	59.465	59.615	59.764	59.914	60.064	60.214	60.364	60.515	60.666
1.570	60.817	60.968	61.120	61.272	61.424	61.576	61.729	61.882	62.035	62.189
1.580	62.342	62.496	62.650	62.805	62.959	63.114	63.269	63.425	63.580	63.736
1.590	63.892	64.049	64.205	64.362	64.519	64.677	64.834	64.992	65.150	65.309
1.600	65.467	65.626	65.785	65.945	66.105	66.264	66.425	66.585	66.746	66.907
1.610	67.068	67.229	67.391	67.553	67.715	67.878	68.040	68.203	68.366	68.530
1.620	68.694	68.858	69.022	69.186	69.351	69.516	69.682	69.847	70.013	70.179
1.630	70.345	70.512	70.679	70.846	71.013	71.181	71.348	71.517	71.685	71.854
1.640	72.022	72.192	72.361	72.531	72.701	72.871	73.041	73.212	73.383	73.554
1.650	73.726	73.897	74.070	74.242	74.414	74.587	74.760	74.934	75.107	75.281
1.660	75.455	75.630	75.804	75.979	76.154	76.330	76.505	76.681	76.858	77.034
1.670	77.211	77.388	77.565	77.743	77.921	78.099	78.277	78.456	78.635	78.814
1.680	78.993	79.173	79.353	79.533	79.714	79.894	80.075	80.257	80.438	80.620
1.690	80.802	80.985	81.167	81.350	81.533	81.717	81.901	82.085	82.269	82.453
1.700	82.638	82.823	83.009	83.194	83.380	83.566	83.753	83.939	84.126	84.314
1.710	84.501	84.689	84.877	85.065	85.254	85.443	85.632	85.821	86.011	86.201
1.720	86.391	86.582	86.773	86.964	87.155	87.347	87.539	87.731	87.923	88.116
1.730	88.309	88.502	88.696	88.890	89.084	89.278	89.473	89.668	89.863	90.059
1.740	90.254	90.450	90.647	90.843	91.040	91.238	91.435	91.633	91.831	92.029
1.750	92.228	92.426	92.626	92.825	93.025	93.225	93.425	93.625	93.826	94.027
1.760	94.229	94.430	94.632	94.834	95.037	95.240	95.443	95.646	95.850	96.054
1.770	96.258	96.462	96.667	96.872	97.077	97.283	97.489	97.695	97.902	98.108
1.780	98.315	98.523	98.730	98.938	99.146	99.355	99.564	99.773	99.982	100.192
1.790	100.402	100.612	100.822	101.033	101.244	101.455	101.667	101.879	102.091	102.304

TABLE 1b. Vapor pressure of He<sup>3</sup> (1962 Scale) in millimeters of mercury at 0 °C and standard gravity, 980.665 cm/sec<sup>2</sup>—Con.

T <sub>62</sub> , °K	0.000	0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.009
1.800	102.516	102.729	102.943	103.156	103.370	103.585	103.799	104.014	104.229	104.444
1.810	104.660	104.876	105.092	105.309	105.526	105.743	105.960	106.178	106.396	106.614
1.820	106.833	107.052	107.271	107.490	107.710	107.930	108.150	108.371	108.592	108.813
1.830	109.035	109.256	109.479	109.701	109.924	110.147	110.370	110.593	110.817	111.042
1.840	111.266	111.491	111.716	111.941	112.167	112.393	112.619	112.846	113.072	113.300
1.850	113.527	113.755	113.983	114.211	114.440	114.669	114.898	115.127	115.357	115.587
1.860	115.818	116.048	116.279	116.511	116.742	116.974	117.206	117.439	117.672	117.905
1.870	118.138	118.372	118.606	118.840	119.075	119.310	119.545	119.781	120.016	120.253
1.880	120.489	120.726	120.963	121.200	121.438	121.676	121.914	122.153	122.391	122.631
1.890	122.870	123.110	123.350	123.590	123.831	124.072	124.313	124.555	124.797	125.039
1.900	125.282	125.525	125.768	126.011	126.255	126.499	126.743	126.988	127.233	127.478
1.910	127.724	127.970	128.216	128.463	128.709	128.957	129.204	129.452	129.700	129.948
1.920	130.197	130.446	130.695	130.945	131.195	131.445	131.696	131.946	132.198	132.449
1.930	132.701	132.953	133.205	133.458	133.711	133.965	134.218	134.472	134.727	134.981
1.940	135.236	135.491	135.747	136.003	136.259	136.515	136.772	137.029	137.287	137.545
1.950	137.803	138.061	138.320	138.579	138.838	139.098	139.358	139.618	139.879	140.140
1.960	140.401	140.662	140.924	141.186	141.449	141.712	141.975	142.238	142.502	142.766
1.970	143.031	143.295	143.560	143.826	144.091	144.357	144.624	144.890	145.157	145.425
1.980	145.692	145.960	146.228	146.497	146.766	147.035	147.305	147.575	147.845	148.115
1.990	148.386	148.657	148.928	149.200	149.473	149.745	150.018	150.291	150.564	150.838
2.000	151.112	151.386	151.661	151.936	152.212	152.487	152.763	153.040	153.316	153.593
2.010	153.870	154.148	154.426	154.704	154.983	155.262	155.541	155.821	156.101	156.381
2.020	156.661	156.942	157.224	157.505	157.787	158.069	158.352	158.635	158.918	159.201
2.030	159.485	159.769	160.054	160.339	160.624	160.910	161.195	161.482	161.768	162.055
2.040	162.342	162.629	162.917	163.205	163.494	163.783	164.072	164.361	164.651	164.941
2.050	165.232	165.523	165.814	166.105	166.397	166.689	166.982	167.275	167.568	167.861
2.060	168.155	168.449	168.744	169.038	169.334	169.629	169.925	170.221	170.518	170.814
2.070	171.112	171.409	171.707	172.005	172.304	172.602	172.902	173.201	173.501	173.801
2.080	174.102	174.403	174.704	175.005	175.307	175.610	175.912	176.215	176.518	176.822
2.090	177.126	177.430	177.735	178.040	178.345	178.651	178.957	179.263	179.570	179.877
2.100	180.184	180.492	180.800	181.108	181.417	181.726	182.035	182.345	182.655	182.965
2.110	183.276	183.587	183.899	184.211	184.523	184.835	185.148	185.461	185.775	186.089
2.120	186.403	186.717	187.032	187.348	187.663	187.979	188.295	188.612	188.929	189.246
2.130	189.564	189.882	190.200	190.519	190.838	191.158	191.477	191.797	192.118	192.439
2.140	192.760	193.081	193.403	193.725	194.048	194.371	194.694	195.018	195.342	195.666
2.150	195.990	196.315	196.641	196.967	197.293	197.619	197.946	198.273	198.600	198.928
2.160	199.256	199.585	199.914	200.243	200.572	200.902	201.233	201.563	201.894	202.226
2.170	202.557	202.889	203.222	203.554	203.888	204.221	204.555	204.889	205.223	205.558
2.180	205.894	206.229	206.565	206.901	207.238	207.575	207.913	208.250	208.588	208.927
2.190	209.266	209.605	209.944	210.284	210.624	210.965	211.306	211.647	211.989	212.331
2.200	212.673	213.016	213.359	213.703	214.046	214.391	214.735	215.080	215.425	215.771
2.210	216.117	216.463	216.810	217.157	217.505	217.852	218.201	218.549	218.898	219.247
2.220	219.597	219.947	220.297	220.648	220.999	221.350	221.702	222.054	222.407	222.760
2.230	223.113	223.467	223.821	224.175	224.530	224.885	225.240	225.596	225.952	226.309
2.240	226.665	227.023	227.380	227.738	228.097	228.455	228.815	229.174	229.534	229.894
2.250	230.255	230.616	230.977	231.339	231.701	232.063	232.426	232.789	233.153	233.516
2.260	233.881	234.245	234.610	234.976	235.342	235.708	236.074	236.441	236.808	237.176
2.270	237.544	237.912	238.281	238.650	239.019	239.389	239.759	240.130	240.501	240.872
2.280	241.244	241.616	241.989	242.361	242.735	243.108	243.482	243.856	244.231	244.606
2.290	244.982	245.357	245.734	246.110	246.487	246.864	247.242	247.620	247.999	248.378
2.300	248.757	249.136	249.516	249.897	250.277	250.658	251.040	251.422	251.804	252.187
2.310	252.570	252.953	253.337	253.721	254.105	254.490	254.876	255.261	255.647	256.034
2.320	256.420	256.808	257.195	257.583	257.971	258.360	258.749	259.139	259.528	259.919
2.330	260.309	260.700	261.092	261.483	261.876	262.268	262.661	263.054	263.448	263.842
2.340	264.236	264.631	265.026	265.422	265.818	266.214	266.611	267.008	267.406	267.804
2.350	268.202	268.601	269.000	269.399	269.799	270.199	270.600	271.001	271.402	271.804
2.360	272.206	272.609	273.012	273.415	273.819	274.223	274.627	275.032	275.437	275.843
2.370	276.249	276.656	277.062	277.470	277.877	278.285	278.694	279.103	279.512	279.921
2.380	280.331	280.742	281.152	281.563	281.975	282.387	282.799	283.212	283.625	284.039
2.390	284.452	284.867	285.281	285.696	286.112	286.528	286.944	287.361	287.778	288.195
2.400	288.613	289.031	289.450	289.869	290.288	290.708	291.128	291.549	291.970	292.391
2.410	292.813	293.235	293.658	294.081	294.504	294.928	295.352	295.777	296.202	296.627
2.420	297.053	297.479	297.906	298.333	298.760	299.188	299.616	300.045	300.474	300.903
2.430	301.333	301.763	302.194	302.625	303.056	303.488	303.920	304.353	304.786	305.219
2.440	305.653	306.087	306.522	306.957	307.392	307.828	308.264	308.701	309.138	309.575
2.450	310.013	310.451	310.890	311.329	311.768	312.208	312.648	313.089	313.530	313.972
2.460	314.414	314.856	315.299	315.742	316.185	316.629	317.074	317.518	317.963	318.409
2.470	318.855	319.301	319.748	320.195	320.643	321.091	321.539	321.988	322.438	322.887
2.480	323.337	323.788	324.239	324.690	325.142	325.594	326.046	326.498	326.953	327.406
2.490	327.861	328.315	328.770	329.226	329.681	330.138	330.594	331.051	331.509	331.967
2.500	332.425	332.884	333.343	333.803	334.263	334.723	335.184	335.645	336.107	336.569
2.510	337.031	337.494	337.957	338.421	338.885	339.350	339.815	340.280	340.746	341.212
2.520	341.679	342.146	342.613	343.081	343.550	344.018	344.487	344.957	345.427	345.897
2.530	346.368	346.840	347.311	347.783	348.256	348.729	349.202	349.676	350.150	350.625
2.540	351.100	351.575	352.051	352.527	353.004	353.481	353.959	354.437	354.915	355.394
2.550	355.874	356.353	356.833	357.314	357.795	358.276	358.758	359.240	359.723	360.206
2.560	360.690	361.174	361.658	362.143	362.628	363.114	363.600	364.086	364.573	365.061
2.570	365.549	366.037	366.526	367.015	367.504	367.994	368.484	368.975	369.466	369.958
2.580	370.450	370.943	371.436	371.929	372.423	372.917	373.412	373.907	374.403	374.899
2.590	375.395	375.892	376.389	376.887	377.385	377.884	378.383	378.882	379.382	379.882

TABLE 1b. Vapor pressure of He<sup>3</sup> (1962 Scale) in millimeters of mercury at 0 °C and standard gravity, 980.665 cm/sec<sup>2</sup>—Con.

T <sub>02</sub> , °K	0.000	0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.009
2.600	380.383	380.884	381.386	381.888	382.390	382.893	383.396	383.900	384.404	384.909
2.610	385.414	385.920	386.426	386.932	387.439	387.946	388.454	388.962	389.471	389.980
2.620	390.489	390.999	391.510	392.020	392.532	393.043	393.555	394.068	394.581	395.094
2.630	395.608	396.122	396.637	397.152	397.668	398.184	398.701	399.218	399.735	400.253
2.640	400.771	401.290	401.809	402.329	402.849	403.369	403.890	404.412	404.933	405.456
2.650	405.978	406.502	407.025	407.549	408.074	408.599	409.124	409.650	410.176	410.703
2.660	411.230	411.758	412.286	412.814	413.343	413.873	414.403	414.933	415.464	415.995
2.670	416.526	417.059	417.591	418.124	418.658	419.192	419.726	420.261	420.796	421.332
2.680	421.868	422.404	422.942	423.479	424.017	424.555	425.094	425.634	426.173	426.714
2.690	427.254	427.795	428.337	428.879	429.422	429.965	430.508	431.052	431.596	432.141
2.700	432.686	433.232	433.778	434.325	434.872	435.419	435.967	436.516	437.064	437.614
2.710	438.164	438.714	439.265	439.816	440.367	440.919	441.472	442.025	442.578	443.132
2.720	443.687	444.242	444.797	445.353	445.909	446.466	447.023	447.580	448.138	448.697
2.730	449.256	449.816	450.375	450.936	451.497	452.058	452.620	453.182	453.745	454.308
2.740	454.872	455.436	456.000	456.565	457.131	457.697	458.263	458.830	459.397	459.965
2.750	460.534	461.102	461.671	462.241	462.811	463.382	463.953	464.525	465.097	465.669
2.760	466.242	466.816	467.390	467.964	468.539	469.114	469.690	470.266	470.843	471.420
2.770	471.998	472.576	473.155	473.734	474.313	474.893	475.474	476.055	476.636	477.218
2.780	477.801	478.384	478.967	479.551	480.135	480.720	481.305	481.891	482.477	483.064
2.790	483.651	484.239	484.827	485.415	486.004	486.594	487.184	487.774	488.365	488.957
2.800	489.549	490.141	490.734	491.327	491.921	492.516	493.110	493.706	494.302	494.898
2.810	495.495	496.092	496.689	497.288	497.886	498.486	499.085	499.685	500.286	500.887
2.820	501.488	502.091	502.693	503.296	503.900	504.504	505.108	505.713	506.318	506.924
2.830	507.531	508.138	508.745	509.353	509.961	510.570	511.180	511.789	512.400	513.010
2.840	513.622	514.234	514.846	515.459	516.072	516.686	517.300	517.915	518.530	519.145
2.850	519.762	520.378	520.996	521.613	522.231	522.850	523.469	524.089	524.709	525.330
2.860	525.951	526.572	527.194	527.817	528.440	529.064	529.688	530.312	530.937	531.563
2.870	532.189	532.816	533.443	534.070	534.698	535.327	535.956	536.585	537.216	537.846
2.880	538.477	539.109	539.741	540.373	541.006	541.640	542.274	542.909	543.544	544.179
2.890	544.815	545.452	546.089	546.726	547.364	548.003	548.642	549.282	549.922	550.562
2.900	551.203	551.845	552.487	553.130	553.773	554.416	555.061	555.705	556.350	556.996
2.910	557.642	558.289	558.936	559.584	560.232	560.880	561.530	562.179	562.830	563.480
2.920	564.131	564.783	565.435	566.088	566.742	567.395	568.050	568.704	569.360	570.016
2.930	570.672	571.329	571.986	572.644	573.302	573.961	574.621	575.281	575.941	576.602
2.940	577.264	577.926	578.588	579.251	579.915	580.579	581.243	581.909	582.574	583.240
2.950	583.907	584.574	585.242	585.910	586.579	587.248	587.918	588.588	589.259	589.930
2.960	590.602	591.275	591.947	592.621	593.295	593.969	594.644	595.320	595.996	596.672
2.970	597.349	598.027	598.705	599.384	600.063	600.743	601.423	602.104	602.785	603.467
2.980	604.149	604.832	605.515	606.199	606.884	607.569	608.254	608.940	609.627	610.314
2.990	611.002	611.690	612.379	613.068	613.758	614.448	615.139	615.830	616.522	617.214
3.000	617.907	618.601	619.295	619.989	620.684	621.380	622.076	622.773	623.470	624.168
3.010	624.866	625.565	626.264	626.964	627.665	628.366	629.067	629.769	630.472	631.175
3.020	631.879	632.583	633.288	633.993	634.699	635.405	636.112	636.820	637.528	638.236
3.030	638.945	639.655	640.365	641.076	641.787	642.499	643.211	643.924	644.638	645.351
3.040	646.066	646.781	647.497	648.213	648.930	649.647	650.365	651.083	651.802	652.521
3.050	653.241	653.962	654.683	655.405	656.127	656.850	657.573	658.297	659.021	659.746
3.060	660.472	661.198	661.924	662.652	663.379	664.108	664.836	665.566	666.296	667.026
3.070	667.757	668.489	669.221	669.954	670.687	671.421	672.155	672.890	673.626	674.362
3.080	675.098	675.836	676.573	677.312	678.051	678.790	679.530	680.271	681.012	681.753
3.090	682.496	683.238	683.982	684.726	685.470	686.215	686.961	687.707	688.454	689.201
3.100	689.949	690.697	691.446	692.196	692.946	693.697	694.448	695.200	695.952	696.705
3.110	697.459	698.213	698.968	699.723	700.479	701.235	701.992	702.750	703.508	704.267
3.120	705.026	705.786	706.546	707.307	708.069	708.831	709.594	710.357	711.121	711.885
3.130	712.650	713.416	714.182	714.949	715.716	716.484	717.252	718.021	718.791	719.561
3.140	720.332	721.104	721.875	722.648	723.421	724.195	724.969	725.744	726.520	727.296
3.150	728.072	728.849	729.627	730.406	731.184	731.964	732.744	733.525	734.306	735.088
3.160	735.871	736.654	737.437	738.222	739.006	739.792	740.578	741.364	742.152	742.939
3.170	743.728	744.517	745.306	746.097	746.887	747.679	748.471	749.263	750.056	750.850
3.180	751.644	752.439	753.235	754.031	754.828	755.625	756.423	757.221	758.020	758.820
3.190	759.620	760.421	761.223	762.025	762.828	763.631	764.435	765.239	766.044	766.850
3.200	767.656	768.463	769.271	770.079	770.888	771.697	772.507	773.317	774.129	774.940
3.210	775.753	776.566	777.379	778.193	779.008	779.824	780.640	781.456	782.274	783.091
3.220	783.910	784.729	785.549	786.369	787.190	788.011	788.833	789.656	790.480	791.304
3.230	792.138	792.953	793.779	794.606	795.433	796.260	797.089	797.918	798.747	799.577
3.240	800.408	801.240	802.072	802.904	803.738	804.571	805.406	806.241	807.077	807.913
3.250	808.750	809.588	810.426	811.265	812.104	812.945	813.785	814.627	815.469	816.311
3.260	817.155	817.999	818.843	819.688	820.534	821.380	822.228	823.075	823.923	824.772
3.270	825.622	826.472	827.323	828.175	829.027	829.879	830.733	831.587	832.442	833.297
3.280	834.153	835.009	835.867	836.724	837.583	838.442	839.302	840.162	841.023	841.885
3.290	842.747	843.610	844.474	845.338	846.203	847.069	847.935	848.802	849.669	850.537
3.300	851.406	852.276	853.146	854.016	854.888	855.760	856.632	857.506	858.380	859.254
3.310	860.130	861.006	861.882	862.759	863.637	864.516	865.395	866.275	867.155	868.037
3.320	868.918	869.801	870.684	871.568	872.452	873.337				

TABLE 2a.  $T_{63} \text{He}^3$  temperatures in  $^{\circ}\text{K}$  as a function of vapor pressure,  $P$ , in microns ( $10^{-3}$  mm) of mercury at  $0^{\circ}\text{C}$  and standard gravity,  $980.665 \text{ cm/sec}^2$

$P$	0	1	2	3	4	5	6	7	8	9
0.01	0.1974 13	1987 12	1999 11	2010 10	2020 10	2030 9	2039 9	2048 8	2056 7	2063 8
.02	.2071 7	2078 7	2085 6	2091 7	2098 6	2104 6	2110 5	2115 6	2121 5	2126 5
.03	.2131 6	2137 4	2141 5	2146 5	2151 4	2155 5	2160 4	2164 4	2168 4	2172 4
.04	.2176 4	2180 4	2184 4	2188 4	2192 3	2195 4	2199 3	2202 4	2206 3	2209 4
.05	.2213 3	2216 3	2219 3	2222 3	2225 3	2228 3	2231 3	2234 3	2237 3	2240 3
.06	.2243 3	2246 2	2248 3	2251 3	2254 3	2257 2	2259 3	2262 2	2264 3	2267 2
.07	.2269 3	2272 2	2274 2	2276 3	2279 2	2281 2	2283 3	2286 2	2288 2	2290 2
.08	.2292 3	2295 2	2297 2	2299 2	2301 2	2303 2	2305 2	2307 2	2309 2	2311 2
.09	.2313 2	2315 2	2317 2	2319 2	2321 2	2323 2	2325 2	2327 1	2328 2	2330 2
.10	.2332 18	2350 16	2366 15	2381 14	2395 13	2408 12	2420 12	2432 11	2443 11	2454 10
.20	.2464 10	2474 9	2483 9	2492 9	2501 8	2509 9	2518 8	2526 7	2533 8	2541 7
.30	.2548 7	2555 7	2562 6	2568 7	2575 6	2581 6	2587 6	2593 6	2599 6	2605 5
.40	.2610 6	2616 5	2621 5	2626 6	2632 5	2637 5	2642 5	2647 4	2651 5	2656 5
.50	.2661 4	2665 5	2670 4	2674 5	2679 4	2683 4	2687 4	2691 4	2695 4	2699 4
.60	.2703 4	2707 4	2711 4	2715 4	2719 3	2722 4	2726 4	2730 3	2733 4	2737 3
.70	.2740 4	2744 3	2747 3	2750 4	2754 3	2757 3	2760 4	2764 3	2767 3	2770 3
.80	.2773 3	2776 3	2779 3	2782 3	2785 3	2788 3	2791 3	2794 3	2797 3	2800 3
.90	.2803 2	2805 3	2808 3	2811 3	2814 2	2816 3	2819 3	2822 2	2824 3	2827 2
1	.2829 25	2854 23	2877 21	2898 20	2918 19	2937 18	2955 17	2972 16	2988 16	3004 14
2	.3018 14	3032 14	3046 13	3059 13	3072 12	3084 12	3096 11	3107 11	3118 11	3129 11
3	.3140 10	3150 10	3160 9	3169 10	3179 9	3188 9	3197 9	3206 8	3214 9	3223 8
4	.3231 8	3239 8	3247 8	3255 7	3262 8	3270 7	3277 7	3284 8	3292 7	3299 6
5	.3305 7	3312 7	3319 6	3325 7	3332 6	3338 6	3344 6	3350 6	3356 6	3362 6
6	.3368 6	3374 6	3380 6	3386 5	3391 6	3397 5	3402 6	3408 5	3413 5	3418 5
7	.3423 5	3428 6	3434 5	3439 4	3443 5	3448 5	3453 5	3458 5	3463 5	3468 4
8	.3472 5	3477 4	3481 5	3486 4	3490 5	3495 4	3499 5	3504 4	3508 4	3512 4
9	.3516 5	3521 4	3525 4	3529 4	3533 4	3537 4	3541 4	3545 4	3549 4	3553 4
10	.3557 37	3594 34	3628 33	3661 30	3691 29	3720 27	3747 26	3773 24	3797 24	3821 23
20	.3844 21	3865 21	3886 21	3907 19	3926 19	3945 18	3963 18	3981 17	3998 17	4015 16
30	.4031 16	4047 15	4062 15	4077 15	4092 15	4107 14	4121 13	4134 14	4148 13	4161 13
40	.4174 13	4187 12	4199 12	4211 12	4223 12	4235 11	4246 12	4258 11	4269 11	4280 11
50	.4291 10	4301 11	4312 10	4322 10	4332 10	4342 10	4352 10	4362 10	4372 9	4381 10
60	.4391 9	4400 9	4409 9	4418 9	4427 9	4436 8	4444 9	4453 8	4461 9	4470 8
70	.4478 8	4486 9	4495 8	4503 7	4510 8	4518 8	4526 8	4534 7	4541 8	4549 7
80	.4556 8	4564 7	4571 7	4578 8	4586 7	4593 7	4600 7	4607 7	4614 7	4621 7
90	.4628 6	4634 7	4641 7	4648 6	4654 7	4661 6	4667 7	4674 6	4680 6	4686 7

TABLE 2b.  $T_{63} \text{He}^3$  temperatures in  $^{\circ}\text{K}$  as a function of vapor pressure,  $P$ , in millimeters of mercury at  $0^{\circ}\text{C}$  and standard gravity,  $980.665 \text{ cm/sec}^2$

$P$	0	1	2	3	4	5	6	7	8	9
0.1	0.4693 60	4753 56	4809 53	4862 50	4912 47	4959 44	5003 43	5046 41	5087 39	5126 37
.2	.5163 37	5200 34	5234 34	5268 33	5301 31	5332 31	5363 30	5393 29	5422 28	5450 27
.3	.5477 27	5504 26	5530 26	5556 24	5580 25	5605 24	5629 23	5652 23	5675 23	5698 22
.4	.5720 21	5741 22	5763 20	5783 21	5804 20	5824 20	5844 19	5863 20	5883 19	5902 18
.5	.5920 19	5939 18	5957 18	5975 17	5992 18	6010 17	6027 17	6044 16	6060 17	6077 16
.6	.6093 16	6109 16	6125 16	6141 15	6156 16	6172 15	6187 15	6202 14	6216 15	6231 15
.7	.6246 14	6260 14	6274 14	6288 14	6302 14	6316 14	6330 13	6343 14	6357 13	6370 13
.8	.6383 13	6396 13	6409 13	6422 12	6434 13	6447 12	6459 13	6472 12	6484 12	6496 12
.9	.6508 12	6520 12	6532 12	6544 12	6556 11	6567 12	6579 11	6590 11	6601 12	6613 11
1.0	.6624 11	6635 11	6646 11	6657 11	6668 10	6678 11	6689 11	6700 10	6710 11	6721 10
1.1	.6731 11	6742 10	6752 10	6762 10	6772 10	6782 10	6792 10	6802 10	6812 10	6822 10
1.2	.6832 10	6842 9	6851 10	6861 9	6870 10	6880 9	6889 10	6899 9	6908 9	6917 9
1.3	.6926 10	6936 9	6945 9	6954 9	6963 9	6972 9	6981 9	6990 8	6998 9	7007 9
1.4	.7016 9	7025 8	7033 9	7042 9	7051 8	7059 9	7068 8	7076 8	7084 9	7093 8
1.5	.7101 8	7109 9	7118 8	7126 8	7134 8	7142 8	7150 8	7158 8	7166 8	7174 8
1.6	.7182 8	7190 8	7198 8	7206 7	7213 8	7221 8	7229 8	7237 7	7244 8	7252 8
1.7	.7260 7	7267 8	7275 7	7282 8	7290 7	7297 8	7305 7	7312 7	7319 8	7327 7
1.8	.7334 7	7341 7	7348 8	7356 7	7363 7	7370 7	7377 7	7384 7	7391 7	7398 7
1.9	.7405 7	7412 7	7419 7	7426 7	7433 7	7440 7	7447 7	7454 6	7460 7	7467 7
2.0	.7474 7	7481 7	7488 6	7494 7	7501 7	7508 6	7514 7	7521 6	7527 7	7534 6
2.1	.7540 7	7547 6	7553 7	7560 6	7566 7	7573 6	7579 7	7586 6	7592 6	7598 7
2.2	.7605 6	7611 6	7617 6	7623 7	7630 6	7636 6	7642 6	7648 6	7654 7	7661 6
2.3	.7667 6	7673 6	7679 6	7685 6	7691 6	7697 6	7703 6	7709 6	7715 6	7721 6
2.4	.7727 6	7733 6	7739 6	7745 5	7750 6	7756 6	7762 6	7768 6	7774 6	7780 5
2.5	.7785 6	7791 6	7797 6	7803 5	7808 6	7814 6	7820 5	7825 6	7831 6	7837 5
2.6	.7842 6	7848 5	7853 6	7859 5	7864 6	7870 6	7876 5	7881 6	7887 5	7892 5
2.7	.7897 6	7903 5	7908 6	7914 5	7919 6	7925 5	7930 5	7935 6	7941 5	7946 5
2.8	.7951 6	7957 5	7962 5	7967 6	7973 5	7978 5	7983 5	7988 6	7994 5	7999 5
2.9	.8004 5	8009 5	8014 5	8019 6	8025 5	8030 5	8035 5	8040 5	8045 5	8050 5

TABLE 2b.  $T_{02}$  He<sup>3</sup> temperatures in °K as a function of vapor pressure, P, in millimeters of mercury at 0 °C and standard gravity 980.665 cm/sec<sup>2</sup>—Continued

P	0	1	2	3	4	5	6	7	8	9
3	0.8055 50	8105 49	8154 48	8202 47	8249 46	8295 45	8340 44	8384 43	8427 43	8470 42
4	.8512 41	8553 40	8593 40	8633 39	8672 38	8710 38	8748 38	8786 36	8822 37	8859 35
5	.8894 36	8930 34	8964 35	8999 33	9032 34	9066 33	9099 32	9131 33	9164 31	9195 32
6	.9227 31	9258 31	9289 30	9319 30	9349 30	9379 29	9408 29	9437 29	9466 29	9495 28
7	.9523 28	9551 28	9579 27	9606 27	9633 27	9660 27	9687 26	9713 27	9740 26	9766 25
8	.9791 26	9817 25	9842 25	9867 25	9892 25	9917 24	9941 25	9966 24	9990 24	0014 24
9	1.0038 23	0061 24	0085 23	0108 23	0131 23	0154 22	0176 23	0199 22	0221 23	0244 22
10	1.0266 22	0288 22	0310 21	0331 22	0353 21	0374 21	0395 21	0416 21	0437 21	0458 21
11	1.0479 21	0500 20	0520 20	0540 21	0561 20	0581 20	0601 19	0620 20	0640 20	0660 19
12	1.0679 20	0699 19	0718 19	0737 19	0756 19	0775 19	0794 19	0813 19	0832 18	0850 19
13	1.0869 18	0887 18	0905 19	0924 18	0942 18	0960 18	0978 18	0996 17	1013 18	1031 18
14	1.1049 17	1066 17	1083 18	1101 17	1118 17	1135 17	1152 17	1169 17	1186 17	1203 17
15	1.1220 17	1237 16	1253 17	1270 16	1286 17	1303 16	1319 16	1335 17	1352 16	1368 16
16	1.1384 16	1400 16	1416 16	1432 15	1447 16	1463 16	1479 15	1494 16	1510 15	1525 16
17	1.1541 15	1556 15	1571 16	1587 15	1602 15	1617 15	1632 15	1647 15	1662 15	1677 15
18	1.1692 15	1707 14	1721 15	1736 15	1751 14	1765 15	1780 14	1794 15	1809 14	1823 14
19	1.1837 14	1851 15	1866 14	1880 14	1894 14	1908 14	1922 14	1936 14	1950 14	1964 14
20	1.1978 13	1991 14	2005 14	2019 13	2032 14	2046 14	2060 13	2073 14	2087 13	2100 13
21	1.2113 14	2127 13	2140 13	2153 13	2166 14	2180 13	2193 13	2206 13	2219 13	2232 13
22	1.2245 13	2258 13	2271 13	2284 12	2296 13	2309 13	2322 13	2335 12	2347 13	2360 13
23	1.2373 12	2385 13	2398 12	2410 13	2423 12	2435 12	2447 13	2460 12	2472 12	2484 12
24	1.2496 13	2509 12	2521 12	2533 12	2545 12	2557 12	2569 12	2581 12	2593 12	2605 12
25	1.2617 12	2629 12	2641 12	2653 11	2664 12	2676 12	2688 12	2700 11	2711 12	2723 11
26	1.2734 12	2746 12	2758 11	2769 12	2781 11	2792 11	2803 12	2815 11	2826 12	2838 11
27	1.2849 11	2861 11	2871 12	2883 11	2894 11	2905 11	2916 11	2927 11	2938 11	2949 11
28	1.2960 11	2971 11	2982 11	2993 11	3004 11	3015 11	3026 11	3037 11	3048 11	3059 10
29	1.3069 11	3080 11	3091 11	3102 10	3112 11	3123 11	3134 10	3144 11	3155 10	3165 11
30	1.3176 11	3187 10	3197 10	3207 11	3218 10	3228 11	3239 10	3249 11	3260 10	3270 10
31	1.3280 10	3290 11	3301 10	3311 10	3321 10	3331 11	3342 10	3352 10	3362 10	3372 10
32	1.3382 10	3392 10	3402 10	3412 10	3422 10	3432 10	3442 10	3452 10	3462 10	3472 10
33	1.3482 10	3492 10	3502 10	3512 10	3522 9	3531 10	3541 10	3551 10	3561 9	3570 10
34	1.3580 10	3590 9	3599 10	3609 10	3619 9	3628 10	3638 9	3647 10	3657 10	3667 9
35	1.3676 10	3686 9	3695 10	3705 9	3714 9	3723 10	3733 9	3742 10	3752 9	3761 9
36	1.3770 10	3780 9	3789 9	3798 10	3808 9	3817 9	3826 9	3835 9	3844 10	3854 9
37	1.3863 9	3872 9	3881 9	3890 9	3899 9	3909 9	3918 9	3927 9	3936 9	3945 9
38	1.3954 9	3963 9	3972 9	3981 9	3990 9	3999 9	4008 8	4016 9	4025 9	4034 9
39	1.4043 9	4052 9	4061 9	4070 8	4078 9	4087 9	4096 9	4105 8	4113 9	4122 9
40	1.4131 9	4140 8	4148 9	4157 9	4166 8	4174 9	4183 9	4192 8	4200 9	4209 8
41	1.4217 9	4226 8	4234 9	4243 8	4251 9	4260 8	4268 9	4277 8	4285 9	4294 8
42	1.4302 9	4311 8	4319 9	4328 8	4336 9	4344 9	4353 8	4361 9	4369 9	4378 8
43	1.4386 8	4394 9	4403 8	4411 8	4419 8	4427 9	4436 8	4444 8	4452 8	4460 8
44	1.4468 9	4477 8	4485 8	4493 8	4501 8	4509 8	4517 8	4525 8	4533 8	4541 9
45	1.4550 8	4558 8	4566 8	4574 8	4582 8	4590 8	4598 8	4606 8	4614 8	4622 8
46	1.4630 7	4637 8	4645 8	4653 8	4661 8	4669 8	4677 8	4685 8	4693 8	4701 7
47	1.4708 8	4716 8	4724 8	4732 8	4740 7	4747 8	4755 8	4763 8	4771 7	4778 8
48	1.4786 8	4794 8	4802 7	4809 8	4817 8	4825 7	4832 8	4840 8	4848 7	4855 8
49	1.4863 7	4870 8	4878 8	4886 7	4893 8	4901 7	4908 8	4916 8	4924 7	4931 8
50	1.4939 74	5013 74	5087 73	5160 72	5232 71	5303 70	5373 69	5442 69	5511 68	5579 67
60	1.5646 66	5712 66	5778 65	5843 64	5907 64	5971 62	6033 63	6096 62	6158 61	6219 60
70	1.6279 60	6339 60	6399 59	6458 58	6516 58	6574 57	6631 57	6688 56	6744 56	6800 56
80	1.6856 55	6911 54	6965 55	7020 53	7073 54	7127 52	7179 53	7232 52	7284 52	7336 51
90	1.7387 51	7438 51	7489 50	7539 50	7589 49	7638 49	7687 49	7736 49	7785 48	7833 48
100	1.7881 47	7928 48	7976 47	8023 46	8069 47	8116 46	8162 46	8208 45	8253 45	8298 45
110	1.8343 45	8388 45	8433 44	8477 44	8521 43	8564 44	8608 43	8651 43	8694 43	8737 42
120	1.8779 43	8822 42	8864 41	8905 42	8947 41	8988 42	9030 41	9071 40	9111 41	9152 40
130	1.9192 40	9232 40	9272 40	9312 39	9351 40	9391 39	9430 39	9469 39	9508 38	9546 39
140	1.9585 38	9623 38	9661 38	9699 38	9737 37	9774 38	9812 37	9849 37	9886 37	9923 36
150	1.9959 37	9996 36	0032 37	0069 36	0105 36	0141 35	0176 36	0212 36	0248 35	0283 35
160	2.0318 35	0353 35	0388 35	0423 35	0458 34	0492 34	0526 35	0561 34	0595 34	0629 34
170	2.0663 33	0696 34	0730 33	0763 34	0797 33	0830 33	0863 33	0896 33	0929 32	0961 33
180	2.0994 33	1027 32	1059 32	1091 32	1123 32	1155 32	1187 32	1219 32	1251 31	1282 32
190	2.1314 31	1345 31	1376 32	1408 31	1439 30	1469 31	1500 31	1531 31	1562 30	1592 31
200	2.1623 30	1653 30	1683 30	1713 30	1743 30	1773 30	1803 30	1833 30	1863 29	1892 30
210	2.1922 29	1951 29	1980 30	2010 29	2039 29	2068 29	2097 29	2126 28	2154 29	2183 29
220	2.2212 28	2240 28	2268 29	2297 28	2325 28	2353 28	2381 28	2409 28	2437 28	2465 28
230	2.2493 28	2521 27	2548 28	2576 27	2603 28	2631 27	2658 27	2685 27	2712 28	2740 27
240	2.2767 26	2793 27	2820 27	2847 27	2874 27	2901 26	2927 27	2954 26	2980 26	3006 27
250	2.3033 26	3059 26	3085 26	3111 26	3137 26	3163 26	3189 26	3215 26	3241 25	3266 26
260	2.3292 26	3318 25	3343 26	3369 25	3394 25	3419 26	3445 25	3470 25	3495 25	3520 25
270	2.3545 25	3570 25	3595 25	3620 25	3645 24	3669 25	3694 24	3718 25	3743 25	3768 24
280	2.3792 24	3816 25	3841 24	3865 24	3889 24	3913 24	3937 24	3961 24	3985 24	4009 24
290	2.4033 24	4057 24	4081 23	4104 24	4128 24	4152 23	4175 24	4199 23	4222 24	4246 23
300	2.4269 23	4292 24	4316 23	4339 23	4362 23	4385 23	4408 23	4431 23	4454 23	4477 23
310	2.4500 23	4523 22	4545 23	4568 23	4591 22	4613 23	4636 22	4658 23	4681 22	4703 23
320	2.4726 22	4748 22	4770 23	4793 22	4815 22	4837 22	4859 22	4881 22	4903 22	4925 22
330	2.4947 22	4969 22	4991 22	5013 21	5034 22	5056 22	5078 21	5099 22	5121 22	5143 21
340	2.5164 21	5185 22	5207 21	5228 22	5250 21	5271 21	5292 21	5313 22	5335 21	5356 21

TABLE 2b.  $T_{02}$  He<sup>3</sup> temperatures in °K as a function of vapor pressure, P, in millimeters of mercury at 0 °C and standard gravity, 980.665 cm/sec<sup>2</sup>—Continued

P	0	1	2	3	4	5	6	7	8	9
350	2.5377 21	5398 21	5419 21	5440 21	5461 21	5482 21	5503 21	5524 20	5544 21	5565 21
360	2.5586 20	5606 21	5627 21	5648 20	5668 21	5689 20	5709 21	5730 20	5750 21	5771 20
370	2.5791 20	5811 20	5831 21	5852 20	5872 20	5892 20	5912 20	5932 20	5952 20	5972 20
380	2.5992 20	6012 20	6032 20	6052 20	6072 20	6092 20	6112 19	6131 20	6151 20	6171 19
390	2.6190 20	6210 20	6230 19	6249 20	6269 19	6288 20	6308 19	6327 19	6346 20	6366 19
400	2.6385 19	6404 20	6424 19	6443 19	6462 19	6481 19	6500 20	6520 19	6539 19	6558 19
410	2.6577 19	6596 19	6615 19	6634 18	6652 19	6671 19	6690 19	6709 19	6728 18	6746 19
420	2.6765 19	6784 18	6802 19	6821 19	6840 18	6858 19	6877 18	6895 19	6914 18	6932 19
430	2.6951 18	6969 18	6987 19	7006 18	7024 18	7042 19	7061 18	7079 18	7097 18	7115 18
440	2.7133 18	7151 19	7170 18	7188 18	7206 18	7224 18	7242 18	7260 18	7278 17	7295 18
450	2.7313 18	7331 18	7349 18	7367 18	7385 17	7402 18	7420 18	7438 17	7455 18	7473 18
460	2.7491 17	7508 18	7526 17	7543 18	7561 17	7578 18	7596 17	7613 18	7631 17	7648 17
470	2.7665 18	7683 17	7700 17	7717 18	7735 17	7752 17	7769 17	7786 17	7803 18	7821 17
480	2.7838 17	7855 17	7872 17	7889 17	7906 17	7923 17	7940 17	7957 17	7974 17	7991 17
490	2.8008 17	8025 16	8041 17	8058 17	8075 17	8092 16	8108 17	8125 17	8142 17	8159 16
500	2.8175 17	8192 17	8209 16	8225 17	8242 16	8258 17	8275 16	8291 17	8308 16	8324 17
510	2.8341 16	8357 16	8373 17	8390 16	8406 17	8423 16	8439 16	8455 16	8471 17	8488 16
520	2.8504 16	8520 16	8536 16	8552 17	8569 16	8585 16	8601 16	8617 16	8633 16	8649 16
530	2.8665 16	8681 16	8697 16	8713 16	8729 16	8745 16	8761 16	8777 15	8792 16	8808 16
540	2.8824 16	8840 16	8856 15	8871 16	8887 16	8903 16	8919 15	8934 16	8950 16	8966 15
550	2.8981 16	8997 15	9012 16	9028 16	9044 15	9059 16	9075 15	9090 16	9106 15	9121 15
560	2.9136 16	9152 15	9167 16	9183 15	9198 15	9213 16	9229 15	9244 15	9259 16	9275 15
570	2.9290 15	9305 15	9320 15	9335 16	9351 15	9366 15	9381 15	9396 15	9411 15	9426 15
580	2.9441 15	9456 15	9471 15	9486 15	9501 15	9516 15	9531 15	9546 15	9561 15	9576 15
590	2.9591 15	9606 15	9621 15	9636 14	9650 15	9665 15	9680 15	9695 15	9710 14	9724 15
600	2.9739 15	9754 15	9769 14	9783 15	9798 14	9812 15	9827 15	9842 14	9856 15	9871 14
610	2.9885 15	9900 15	9915 14	9929 15	9944 14	9958 14	9972 15	9987 14	0001 15	0016 14
620	3.0030 15	0045 14	0059 14	0073 15	0088 14	0102 14	0116 15	0131 14	0145 14	0159 14
630	3.0173 15	0188 14	0202 14	0216 14	0230 14	0244 14	0258 15	0273 14	0287 14	0301 14
640	3.0315 14	0329 14	0343 14	0357 14	0371 14	0385 14	0399 14	0413 14	0427 14	0441 14
650	3.0455 14	0469 14	0483 14	0497 14	0511 13	0524 14	0538 14	0552 14	0566 14	0580 14
660	3.0594 13	0607 14	0621 14	0635 14	0649 13	0662 14	0676 14	0690 13	0703 14	0717 14
670	3.0731 13	0744 14	0758 14	0772 13	0785 14	0799 13	0812 14	0826 13	0839 14	0853 13
680	3.0866 14	0880 13	0893 14	0907 13	0920 14	0934 13	0947 14	0961 13	0974 13	0987 14
690	3.1001 13	1014 13	1027 14	1041 13	1054 13	1067 14	1081 13	1094 13	1107 13	1120 14
700	3.1134 13	1147 13	1160 13	1173 14	1187 13	1200 13	1213 13	1226 13	1239 13	1252 13
710	3.1265 13	1278 14	1292 13	1305 13	1318 13	1331 13	1344 13	1357 13	1370 13	1383 13
720	3.1396 13	1409 13	1422 13	1435 13	1448 12	1460 13	1473 13	1486 13	1499 13	1512 13
730	3.1525 13	1538 12	1550 13	1563 13	1576 13	1589 13	1602 12	1614 13	1627 13	1640 13
740	3.1653 12	1665 13	1678 13	1691 12	1703 13	1716 13	1729 12	1741 13	1754 13	1767 12
750	3.1779 13	1792 12	1804 13	1817 13	1830 12	1842 13	1855 12	1867 13	1880 12	1892 13
760	3.1905 12	1917 13	1930 12	1942 13	1955 12	1967 12	1979 13	1992 12	2004 13	2017 12
770	3.2029 12	2041 13	2054 12	2066 12	2078 13	2091 12	2103 12	2115 13	2128 12	2140 12
780	3.2152 12	2164 13	2177 12	2189 12	2201 13	2213 13	2226 12	2238 12	2250 12	2262 12
790	3.2274 12	2286 12	2298 13	2311 12	2323 12	2335 12	2347 12	2359 12	2371 12	2383 12
800	3.2395 12	2407 12	2419 12	2431 12	2443 12	2455 12	2467 12	2479 12	2491 12	2503 12
810	3.2515 12	2527 12	2539 12	2551 12	2563 11	2574 12	2586 12	2598 12	2610 12	2622 12
820	3.2634 12	2646 11	2657 12	2669 12	2681 12	2693 11	2704 12	2716 12	2728 12	2740 11
830	3.2751 12	2763 12	2775 12	2787 11	2798 12	2810 12	2822 11	2833 12	2845 12	2857 11
840	3.2868 12	2880 11	2891 12	2903 12	2915 11	2926 12	2938 11	2949 12	2961 11	2972 12
850	3.2984 11	2995 12	3007 11	3018 12	3030 11	3041 12	3053 11	3064 12	3076 11	3087 12
860	3.3099 11	3110 11	3121 12	3133 11	3144 12	3156 11	3167 11	3178 12	3190 11	3201 11
870	3.3212 12	3224 11	3235 11	3246						

The correction for He<sup>4</sup> impurity is mentioned briefly in Part I and in more detail in section 3 of Part III. In figure 7 of Part III several correction curves are given which may be used to adjust an uncorrected temperature for the effect of the He<sup>4</sup> impurity content in the liquid. In this connection the experimenter is cautioned that, due to fractionation between vapor and liquid, the actual concentration of He<sup>4</sup> in the liquid probably will be greater than the average concentration of the total gas in the vapor-pressure system by an amount depending on the volume of the vapor space and the experimental technique. For example, if most of the gas is first condensed at very low temperature into the vapor-pressure bulb and then most of that liquid subsequently is evaporated into the vapor space, a large

fraction of the He<sup>4</sup> will remain in the liquid state and a corresponding high value of the impurity correction will be needed. Such considerations may become particularly important if temperature is being measured as the vapor pressure of a bath of He<sup>3</sup>. Tables of equilibrium vapor/liquid concentration ratios, if unavoidably needed, are given in references [38] and [74]. The best technique, of course, is to use only very high purity He<sup>3</sup>. As explained in section 3 of Part III, steps have been undertaken to make He<sup>3</sup> of very high purity available for thermometry.

Remarks concerning the possibility and detection of errors due to gas oscillations are given at the end of Part I.



TABLE 3. The temperature derivative,  $dP_3/dT_{62}$ , in millimeters of mercury per degree Kelvin, for the 1962 He<sup>3</sup> Scale of Temperatures

$T_{62}$ , °K	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.20	0.001	0.002	0.003	0.005	0.008	0.012	0.017	0.025	0.035	0.049
.30	.066	.087	.113	.145	.184	.229	.283	.345	.417	.499
.40	.592	.696	.814	.944	1.089	1.248	1.422	1.612	1.819	2.042
.50	2.283	2.543	2.820	3.117	3.433	3.769	4.125	4.501	4.898	5.317
.60	5.756	6.217	6.700	7.204	7.731	8.280	8.851	9.445	10.061	10.700
.70	11.362	12.046	12.753	13.483	14.236	15.012	15.811	16.632	17.477	18.344
.80	19.234	20.147	21.082	22.041	23.022	24.025	25.051	26.100	27.171	28.264
.90	29.379	30.517	31.677	32.859	34.063	35.289	36.537	37.806	39.097	40.410
1.00	41.745	43.100	44.478	45.876	47.296	48.737	50.199	51.682	53.186	54.711
1.10	56.257	57.823	59.410	61.018	62.646	64.295	65.964	67.653	69.363	71.093
1.20	72.843	74.613	76.403	78.213	80.043	81.893	83.763	85.652	87.561	89.490
1.30	91.438	93.406	95.394	97.400	99.427	101.472	103.537	105.621	107.724	109.847
1.40	111.988	114.149	116.329	118.528	120.745	122.982	125.237	127.512	129.805	132.117
1.50	134.447	136.796	139.164	141.551	143.956	146.380	148.822	151.283	153.762	156.260
1.60	158.776	161.311	163.863	166.435	169.024	171.632	174.257	176.902	179.564	182.244
1.70	184.943	187.659	190.394	193.147	195.918	198.706	201.513	204.338	207.181	210.041
1.80	212.920	215.816	218.730	221.662	224.612	227.579	230.565	233.568	236.589	239.627
1.90	242.684	245.758	248.849	251.959	255.086	258.230	261.393	264.573	267.770	270.985
2.00	274.218	277.468	280.736	284.022	287.325	290.646	293.984	297.340	300.713	304.104
2.10	307.513	310.939	314.383	317.844	321.323	324.820	328.326	331.866	335.416	338.983
2.20	342.568	346.171	349.792	353.430	357.086	360.760	364.451	368.161	371.889	375.634
2.30	379.398	383.179	386.979	390.796	394.632	398.486	402.359	406.250	410.159	414.086
2.40	418.032	421.997	425.980	429.982	434.003	438.042	442.101	446.178	450.275	454.391
2.50	458.526	462.680	466.854	471.048	475.261	479.495	483.748	488.021	492.314	496.628
2.60	500.962	505.317	509.692	514.088	518.505	522.944	527.404	531.885	536.388	540.912
2.70	545.459	550.028	554.619	559.233	563.870	568.530	573.212	577.919	582.649	587.402
2.80	592.180	596.982	601.809	606.661	611.537	616.440	621.367	626.321	631.301	636.307
2.90	641.340	646.401	651.488	656.604	661.747	666.919	672.120	677.349	682.609	687.898
3.00	693.217	698.567	703.948	709.360	714.804	720.281	725.790	731.332	736.908	742.517
3.10	748.162	753.841	759.556	765.306	771.093	776.918	782.779	788.679	794.617	800.595
3.20	806.612	812.670	818.768	824.909	831.091	837.316	843.585	849.898	856.255	862.658
3.30	869.108	875.604	882.148	888.740						

The fit of the 1962 He<sup>3</sup> Scale to the intercomparison He<sup>3</sup> and He<sup>4</sup> vapor-pressure data of Part I and to the 1958 He<sup>4</sup> Scale is given in table 1 and figure 1 of Part II and is discussed in detail in subsection 1.1 of Part III. The fit of the 1962 He<sup>3</sup> Scale to Keller's isotherms is given in figure 2 of Part II and is discussed in detail in subsection 1.5 of Part III.

The 1962 He<sup>3</sup> Scale of Temperatures has been given status similar to that of the 1958 He<sup>4</sup> Scale of Temperatures by the International Committee on Weights and Measures [68, 69]. The pertinent portion of the minutes of that committee's Advisory Committee on Thermometry [67] is given in section 4 of Part III.

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