Derivatives: tribromide, melting point 121–122°;[1] semicarbazone,[2] melting point 186–188° (from methyl alcohol); tanacetone keto carbonic acid,[3] melting point 75–76°.

The reaction with hydroxylamine gave an oily oxime which crystallized only partially after standing for several months, which fact, together with the observed laevo rotation—a rotation, it may be noted, slightly higher than any previously recorded—further characterized the substance as α-thujone.

The fraction boiling from 100–103°/40 mm. ($D_{20°}$, 0.8975; $n_D^{20°}$, 1.4549; $[\alpha]_D^{20°}$, —0.62°) was tested for fenchone, since that ketone has been isolated from the oil of *thuja occidentalis*. Using Wallach's method—oxidation with potassium permanganate, steam distillation, further oxidation with concentrated nitric acid, and recovery of the unaltered fenchone by distillation in steam—only a few drops of oil were obtained which were heavier than water and in which no fenchone was found. An attempt to prepare the oxime of the ketone after removal of the thujone by oxidation was equally unsuccessful. The authors conclude, therefore, that fenchone is not present as stated by Brandel.[4]

The residue (about 5%) boiling above 110°/40 mm. ($D_{20°}$, 0.980) was dark brown in color and had an odor of stewed prunes. This was hydrolyzed with alcoholic potash, steam distilled, and fractionated. A light yellow oil was obtained whose constants show it to be tanacetyl alcohol ($D_{25°}$, 0.9266; $n_D^{25°}$, 1.46207; $[\alpha]_D^{25°}$, +29.8; boiling point at 757 mm., 210–220°), probably present as acetate in the original oil.

From the above results, the authors conclude that the volatil oil of *thuja plicata* is composed of 80–85% thujone, 3–5% pinene, 1–2% tanacetyl acetate, 1–3% tanacetyl alcohol, leaving about 10% to be accounted for by loss due to formation of resin during distillation and experimental losses.

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[CONTRIBUTION FROM THE CONTRACTS LABORATORY, BUREAU OF CHEMISTRY, UNITED STATES DEPARTMENT OF AGRICULTURE.]

THE UNIFICATION OF REDUCING SUGAR METHODS. (A CORRECTION.)

BY PERCY H. WALKER.

Mr. M. N. Straughn, of the sugar laboratory of this bureau, has recently called attention to certain errors in the tables for lactose given in the

[1] Wallach, *Ann.*, **275**, 179; **286**, 109.

[2] Wallach, *Ibid.*, **336**, 251.

[3] Wallach, *Ibid.*, **272**, 113; **275**, 164. Semmler, *Ber.*, **25**, 3307. Tiemann and Semmler, *Ber.*, **30**, 431.

[4] *Loc. cit.*

article published in THIS JOURNAL, **29**, 541–554. Table III, on page 544, giving a comparison of determined and calculated figures on cuprous oxide for definit amounts of sugar, is correct, while Table IV, beginning on page 545 and giving the amounts of sugar for each milligram of cuprous oxide from 10–490, contains errors in the lactose column, the figures disagreeing with the preceding table. These tables were used in compiling the tables given in Bureau of Chemistry, *Bull.* **107**, revised,[1] pages 243–251, which have been used quite generally for several years, and Mr. Straughn has been the first to call attention to this discrepancy. A careful examination of the original notes showed that there are two misprints in the values given in the Journal for a, b, and c, to be substituted in the equation $y = a + bx + cx^2$ where y = cuprous oxide and x = reducing sugar, the values of a, b, and c being calculated from the determinations made by the method of least squares as used by Allihn.[2] The original article gives the accepted values for lactose as follows:

$$a = 4.1759$$
$$b = 1.148697$$
$$c = 0.00009$$

The true values which were actually used in making the calculations are:

$$a = 4.1759$$
$$b = 1.48697$$
$$c = -0.00009$$

As before stated, the calculations appearing in Table III are correct, but in Table IV errors occur in the figures in columns 3, 4, and 5, while the figures in columns 6 and 7 are correct. The values in column 4 were calculated from the equation for certain fixed weights of cuprous oxide, and the intermediate values obtained by interpolation, columns 3 and 5 being then derived in a similar manner from column 4. Table I of this article shows a comparison of the values as given in Tables III and IV of the original article and also the corresponding values taken from the recalculated table.

It is impossible to say how the errors occurred, since the sheets on which the calculations were made were destroyed shortly after the article was published. It is obvious, however, that such errors are entirely too great to appear in a table of this character; the figures have, therefore, been recalculated from the original data, and in Table II the corrected values for anhydrous lactose ($C_{12}H_{22}O_{11}$), and crystallized lactose[3]

[1] The final tables as given in Bureau of Chemistry, *Bull.* 107, revised, Official and Provisional Methods of Analysis, pp. 243–251, also call for the corrections as shown in Table II.

[2] *J. prakt. Chem.*, **22**, 46 (1880).

[3] The lactose actually used in determining the values from which these tables are calculated was crystallized lactose of the composition $C_{12}H_{22}O_{11}{}^1/_2H_2O$.

($C_{12}H_{22}O_{11}{}^{1}/_{2}H_2O$), and crystallized lactose ($C_{12}H_{22}O_{11}H_2O$) are given for each milligram of cuprous oxide from 10 to 490.

TABLE I.—SHOWING MILLIGRAMS OF CUPROUS OXIDE AS DETERMINED, AS ORIGINALLY CALCULATED, AND AS RECALCULATED.

	Milligrams of Cu_2O.			
(1) Milligrams of lactose ($C_{12}H_{22}O_{11}+\frac{1}{2}H_2O$).	(2) Actually obtained in work.	(3) Calculated from equation $y=a+bx+cx^2$.	(4) As given in original table.	(5) As given in recalculated table.
20.....	33.0	33.9	33.9	33.9
40.....	63.2	63.5	63.7	63.5
60.....	92.9	93.1	93.4	93.0
80.....	123.9	122.6	123.1	122.6
100.....	154.1	152.0	153.0	152.0
120.....	180.6	181.3	182.7	181.3
140.....	210.7	210.6	212.6	210.6
160.....	239.4	239.8	242.3	239.7
180.....	268.0	269.0	272.1	268.9
200.....	297.1	298.0	302.0	298.0
220.....	326.8	327.0	331.7	326.9
240.....	356.1	355.9	361.6	355.9
260.....	384.4	384.7	391.4	384.7
280.....	413.9	413.5	421.3	413.4
300.....	443.1	442.2	451.1	442.1
320.....	470.3	470.8	481.0	470.7

Columns 1, 2, and 3 are taken from Table III, original article, THIS JOURNAL, **29**, 544 (1907).

Column 4 is taken from Table IV of the original article and as given in Bureau of Chemistry, *Bull.* 107, revised, pp. 243–251.

Column 5 is taken from Table II of this article.

TABLE II.—TABLE FOR CALCULATING LACTOSE.

[Expressed in milligrams.]

Cuprous oxide (Cu_2O).	Copper (Cu).	Lactose. ($C_{12}H_{22}O_{11}$).	Lactose. ($C_{12}H_{22}O_{11}\frac{1}{2}H_2O$).	Lactose. ($C_{12}H_{22}O_{11}H_2O$).	Cuprous oxide (Cu_2O).	Copper (Cu).	Lactose. ($C_{12}H_{22}O_{11}$).	Lactose. ($C_{12}H_{22}O_{11}\frac{1}{2}H_2O$).	Lactose. ($C_{12}H_{22}O_{11}H_2O$).
10	8.9	3.8	3.9	4.0	25	22.2	13.7	14.0	14.4
11	9.8	4.5	4.6	4.7	26	23.1	14.3	14.7	15.1
12	10.7	5.1	5.3	5.4	27	24.0	15.0	15.4	15.8
13	11.5	5.8	5.9	6.1	28	24.9	15.6	16.1	16.5
14	12.4	6.4	6.6	6.8	29	25.8	16.3	16.7	17.1
15	13.3	7.1	7.3	7.5	30	26.6	16.9	17.4	17.8
16	14.2	7.8	8.0	8.2	31	27.5	17.6	18.1	18.5
17	15.1	8.4	8.6	8.9	32	28.4	18.3	18.7	19.2
18	16.0	9.1	9.3	9.5	33	29.3	18.9	19.4	19.9
19	16.9	9.7	10.0	10.2	34	30.2	19.6	20.1	20.6
20	17.8	10.4	10.7	10.9	35	31.1	20.2	20.8	21.3
21	18.7	11.0	11.3	11.6	36	32.0	20.9	21.4	22.0
22	19.5	11.7	12.0	12.3	37	32.9	21.5	22.1	22.7
23	20.4	12.3	12.7	13.0	38	33.8	22.2	22.8	23.4
24	21.3	13.0	13.4	13.7	39	34.6	22.8	23.5	24.1

TABLE II (*Continued*).

Cuprous oxide (Cu_2O).	Copper (Cu).	Lactose. $(C_{12}H_{22}O_{11})$.	Lactose. $(C_{12}H_{22}O_{11}\frac{1}{2}H_2O)$.	Lactose. $(C_{12}H_{22}O_{11}H_2O)$.	Cuprous oxide (Cu_2O).	Copper (Cu).	Lactose. $(C_{12}H_{22}O_{11})$.	Lactose. $(C_{12}H_{22}O_{11}\frac{1}{2}H_2O)$.	Lactose. $(C_{12}H_{22}O_{11}H_2O)$.
40	35.5	23.5	24.1	24.8	85	75.5	53.1	54.6	56.0
41	36.4	24.2	24.8	25.4	86	76.4	53.8	55.2	56.6
42	37.3	24.8	25.5	26.1	87	77.3	54.5	55.9	57.3
43	38.2	25.5	26.2	26.8	88	78.2	55.1	56.6	58.0
44	39.1	26.1	26.8	27.5	89	79.1	55.8	57.3	58.7
45	40.0	26.8	27.5	28.2	90	79.9	56.4	58.0	59.4
46	40.9	27.4	28.2	28.9	91	80.8	57.1	58.6	60.1
47	41.7	28.1	28.9	29.6	92	81.7	57.8	59.3	60.8
48	42.6	28.7	29.5	30.3	93	82.6	58.4	60.0	61.5
49	43.5	29.4	30.2	31.0	94	83.5	59.1	60.7	62.2
50	44.4	30.1	30.9	31.7	95	84.4	59.7	61.3	62.9
51	45.3	30.7	31.5	32.4	96	85.3	60.4	62.0	63.6
52	46.2	31.4	32.2	33.0	97	86.2	61.1	62.7	64.3
53	47.1	32.1	32.9	33.7	98	87.0	61.7	63.4	65.0
54	48.0	32.7	33.6	34.4	99	87.9	62.4	64.0	65.7
55	48.9	33.4	34.3	35.1	100	88.8	63.0	64.7	66.4
56	49.7	34.0	34.9	35.8	101	89.7	63.7	65.4	67.1
57	50.6	34.7	35.6	36.5	102	90.6	64.4	66.1	67.8
58	51.5	35.4	36.3	37.2	103	91.5	65.0	66.7	68.5
59	52.4	36.0	37.0	37.9	104	92.4	65.7	67.4	69.1
60	53.3	36.7	37.6	38.6	105	93.3	66.4	68.1	69.8
61	54.2	37.3	38.3	39.3	106	94.2	67.0	68.8	70.5
62	55.1	38.0	39.0	40.0	107	95.0	67.7	69.5	71.2
63	56.0	38.6	39.7	40.7	108	95.9	68.3	70.1	71.9
64	56.8	39.3	40.3	41.4	109	96.8	69.0	70.8	72.6
65	57.7	40.0	41.0	42.1	110	97.7	69.7	71.5	73.3
66	58.6	40.6	41.7	42.8	111	98.6	70.3	72.2	74.0
67	59.5	41.3	42.4	43.5	112	99.5	71.0	72.8	74.7
68	60.4	41.9	43.1	44.2	113	100.4	71.6	73.5	75.4
69	61.3	42.6	43.7	44.8	114	101.3	72.3	74.2	76.1
70	62.2	43.3	44.4	45.5	115	102.1	73.0	74.9	76.8
71	63.1	43.9	45.1	46.2	116	103.0	73.6	75.6	77.5
72	64.0	44.6	45.8	46.9	117	103.9	74.3	76.2	78.2
73	64.8	45.2	46.4	47.6	118	104.8	75.0	76.9	78.9
74	65.7	45.9	47.1	48.3	119	105.7	75.6	77.6	79.6
75	66.6	46.6	47.8	49.0	120	106.6	76.3	78.3	80.3
76	67.5	47.2	48.5	49.7	121	107.5	76.9	79.0	81.0
77	68.4	47.9	49.1	50.4	122	108.4	77.6	79.6	81.7
78	69.3	48.5	49.8	51.1	123	109.3	78.3	80.3	82.4
79	70.2	49.2	50.5	51.8	124	110.1	78.9	81.0	83.1
80	71.1	49.9	51.2	52.5	125	111.0	79.6	81.7	83.8
81	71.9	50.5	51.9	53.2	126	111.9	80.3	82.4	84.5
82	72.8	51.2	52.5	53.9	127	112.8	80.9	83.0	85.2
83	73.7	51.8	53.2	54.6	128	113.7	81.6	83.7	85.9
84	74.6	52.5	53.9	55.3	129	114.6	82.2	84.4	86.6

TABLE II (*Continued*).

Cuprous oxide (Cu_2O).	Copper (Cu).	Lactose. $(C_{12}H_{22}O_{11})$.	Lactose. $(C_{12}H_{22}O_{11}\frac{1}{2}H_2O)$.	Lactose. $(C_{12}H_{22}O_{11}H_2O)$.	Cuprous oxide (Cu_2O).	Copper (Cu).	Lactose. $(C_{12}H_{22}O_{11})$.	Lactose. $(C_{12}H_{22}O_{11}\frac{1}{2}H_2O)$.	Lactose. $(C_{12}H_{22}O_{11}H_2O)$.
130	115.5	82.9	85.1	87.3	175	155.4	112.8	115.7	118.7
131	116.4	83.6	85.7	88.0	176	156.3	113.4	116.4	119.4
132	117.2	84.2	86.4	88.7	177	157.2	114.1	117.1	120.1
133	118.1	84.9	87.1	89.4	178	158.1	114.8	117.8	120.8
134	119.0	85.5	87.8	90.1	179	159.0	115.4	118.4	121.5
135	119.9	86.2	88.5	90.8	180	159.9	116.1	119.1	122.2
136	120.8	86.9	89.1	91.5	181	160.8	116.7	119.8	122.9
137	121.7	87.5	89.8	92.1	182	161.7	117.4	120.5	123.6
138	122.6	88.2	90.5	92.8	183	162.5	118.1	121.2	124.3
139	123.5	88.9	91.2	93.5	184	163.4	118.7	121.8	125.0
140	124.4	89.5	91.9	94.2	185	164.3	119.4	122.5	125.7
141	125.2	90.2	92.5	94.9	186	165.2	120.1	123.2	126.4
142	126.1	90.8	93.2	95.6	187	166.1	120.7	123.9	127.1
143	127.0	91.5	93.9	96.3	188	167.0	121.4	124.6	127.8
144	127.9	92.2	94.6	97.0	189	167.9	122.1	125.3	128.5
145	128.8	92.8	95.3	97.7	190	168.8	122.7	125.9	129.2
146	129.7	93.5	95.9	98.4	191	169.7	123.4	126.6	129.9
147	130.6	94.2	96.6	99.1	192	170.5	124.1	127.3	130.6
148	131.5	94.8	97.3	99.8	193	171.4	124.7	128.0	131.3
149	132.3	95.5	98.0	100.5	194	172.3	125.4	128.7	132.0
150	133.2	96.1	98.7	101.2	195	173.2	126.1	129.4	132.7
151	134.1	96.8	99.3	101.9	196	174.1	126.7	130.0	133.4
152	135.0	97.5	100.0	102.6	197	175.0	127.4	130.7	134.1
153	135.9	98.1	100.7	103.3	198	175.9	128.1	131.4	134.8
154	136.8	98.8	101.4	104.0	199	176.8	128.7	132.1	135.5
155	137.7	99.5	102.1	104.7	200	177.6	129.4	132.8	136.2
156	138.6	100.1	102.8	105.4	201	178.5	130.0	133.5	136.9
157	139.5	100.8	103.4	106.1	202	179.4	130.7	134.1	137.6
158	140.3	101.5	104.1	106.8	203	180.3	131.4	134.8	138.3
159	141.2	102.1	104.8	107.5	204	181.2	132.0	135.5	139.0
160	142.1	102.8	105.5	108.2	205	182.1	132.7	136.2	139.7
161	143.0	103.4	106.2	108.9	206	183.0	133.4	136.9	140.4
162	143.9	104.1	106.8	109.6	207	183.9	134.0	137.6	141.1
163	144.8	104.8	107.5	110.3	208	184.8	134.7	138.3	141.8
164	145.7	105.4	108.2	111.0	209	185.6	135.4	138.9	142.5
165	146.6	106.1	108.9	111.7	210	186.5	136.0	139.6	143.2
166	147.4	106.8	109.6	112.4	211	187.4	136.7	140.3	143.9
167	148.3	107.4	110.3	113.1	212	188.3	137.4	141.0	144.6
168	149.2	108.1	110.9	113.8	213	189.2	138.0	141.7	145.3
169	150.1	108.8	111.6	114.5	214	190.1	138.7	142.4	146.0
170	151.0	109.4	112.3	115.2	215	191.0	139.4	143.0	146.7
171	151.9	110.1	113.0	115.9	216	191.9	140.0	143.7	147.4
172	152.8	110.8	113.7	116.6	217	192.7	140.7	144.4	148.1
173	153.7	111.4	114.3	117.3	218	193.6	141.4	145.1	148.8
174	154.6	112.1	115.0	118.0	219	194.5	142.0	145.8	149.5

TABLE II (*Continued*).

Cuprous oxide (Cu_2O).	Copper (Cu).	Lactose. ($C_{12}H_{22}O_{11}$).	Lactose. ($C_{12}H_{22}O_{11}\frac{1}{2}H_2O$).	Lactose. ($C_{12}H_{22}O_{11}H_2O$).	Cuprous oxide (Cu_2O).	Copper (Cu).	Lactose. ($C_{12}H_{22}O_{11}$).	Lactose. ($C_{12}H_{22}O_{11}\frac{1}{2}H_2O$).	Lactose. ($C_{12}H_{22}O_{11}H_2O$).
220	195.4	142.7	146.5	150.2	265	235.4	172.8	177.3	181.9
221	196.3	143.4	147.2	150.9	266	236.3	173.5	178.0	182.6
222	197.2	144.0	147.8	151.6	267	237.2	174.1	178.7	183.3
223	198.1	144.7	148.5	152.3	268	238.0	174.8	179.4	184.0
224	199.0	145.4	149.2	153.0	269	238.9	175.5	180.1	184.7
225	199.8	146.0	149.9	153.7	270	239.8	176.1	180.8	185.4
226	200.7	146.7	150.6	154.4	271	240.7	176.8	181.5	186.1
227	201.6	147.4	151.3	155.1	272	241.6	177.5	182.1	186.8
228	202.5	148.0	152.0	155.8	273	242.5	178.1	182.8	187.5
229	203.4	148.7	152.6	156.5	274	243.4	178.8	183.5	188.2
230	204.3	149.4	153.3	157.2	275	244.3	179.5	184.2	188.9
231	205.2	150.0	154.0	157.9	276	245.1	180.2	184.9	189.6
232	206.1	150.7	154.7	158.6	277	246.0	180.8	185.6	190.3
233	207.0	151.4	155.4	159.3	278	246.9	181.5	186.3	191.0
234	207.8	152.0	156.1	160.0	279	247.8	182.2	187.0	191.7
235	208.7	152.7	156.7	160.7	280	248.7	182.8	187.7	192.4
236	209.6	153.4	157.4	161.4	281	249.6	183.5	188.3	193.1
237	210.5	154.0	158.1	162.1	282	250.5	184.2	189.0	193.9
238	211.4	154.7	158.8	162.8	283	251.4	184.8	189.7	194.6
239	212.3	155.4	159.5	163.5	284	252.3	185.5	190.4	195.3
240	213.2	156.1	160.2	164.3	285	253.1	186.2	191.1	196.0
241	214.1	156.7	160.9	165.0	286	254.0	186.9	191.8	196.7
242	214.9	157.4	161.5	165.7	287	254.9	187.5	192.5	197.4
243	215.8	158.1	162.2	166.4	288	255.8	188.2	193.2	198.1
244	216.7	158.7	162.9	167.1	289	256.7	188.9	193.8	198.8
245	217.6	159.4	163.6	167.8	290	257.6	189.5	194.5	199.5
246	218.5	160.1	164.3	168.5	291	258.5	190.2	195.2	200.2
247	219.4	160.7	165.0	169.2	292	259.4	190.9	195.9	200.9
248	220.3	161.4	165.7	169.9	293	260.2	191.5	196.6	201.6
249	221.2	162.1	166.3	170.6	294	261.1	192.2	197.3	202.3
250	222.1	162.7	167.0	171.3	295	262.0	192.9	198.0	203.0
251	222.9	163.4	167.7	172.0	296	262.9	193.6	198.7	203.7
252	223.8	164.1	168.4	172.7	297	263.8	194.2	199.3	204.4
253	224.7	164.7	169.1	173.4	298	264.7	194.9	200.0	205.1
254	225.6	165.4	169.8	174.1	299	265.6	195.6	200.7	205.8
255	226.5	166.1	170.5	174.8	300	266.5	196.2	201.4	206.6
256	227.4	166.8	171.1	175.5	301	267.4	196.9	202.1	207.3
257	228.3	167.4	171.8	176.2	302	268.2	197.6	202.8	208.0
258	229.2	168.1	172.5	176.9	303	269.1	198.3	203.5	208.7
259	230.0	168.8	173.2	177.6	304	270.0	198.9	204.2	209.4
260	230.9	169.4	173.9	178.3	305	270.9	199.6	204.9	210.1
261	231.8	170.1	174.6	179.0	306	271.8	200.3	205.5	210.8
262	232.7	170.8	175.3	179.8	307	272.7	201.0	206.2	211.5
263	233.6	171.4	176.0	180.5	308	273.6	201.6	206.9	212.2
264	234.5	172.1	176.6	181.2	309	274.5	202.3	207.6	212.9

TABLE II (*Continued*).

Cuprous oxide (Cu_2O).	Copper (Cu).	Lactose. ($C_{12}H_{22}O_{11}$).	Lactose. ($C_{12}H_{22}O_{11}\frac{1}{2}H_2O$).	Lactose. ($C_{12}H_{22}O_{11}H_2O$).	Cuprous oxide (Cu_2O).	Copper (Cu).	Lactose. ($C_{12}H_{22}O_{11}$).	Lactose. ($C_{12}H_{22}O_{11}\frac{1}{2}H_2O$).	Lactose. ($C_{12}H_{22}O_{11}H_2O$).
310	275.3	203.0	208.3	213.7	355	315.3	233.3	239.4	245.6
311	276.2	203.6	209.0	214.4	356	316.2	233.9	240.1	246.3
312	277.1	204.3	209.7	215.1	357	317.1	234.6	240.8	247.0
313	278.0	205.0	210.4	215.8	358	318.0	235.3	241.5	247.7
314	278.9	205.7	211.1	216.5	359	318.9	236.0	242.2	248.4
315	279.8	206.3	211.8	217.2	360	319.8	236.7	242.9	249.1
316	280.7	207.0	212.5	217.9	361	320.6	237.3	243.6	249.8
317	281.6	207.7	213.1	218.6	362	321.5	238.0	244.3	250.5
318	282.5	208.4	213.8	219.3	363	322.4	238.7	245.0	251.2
319	283.3	209.0	214.5	220.0	364	323.3	239.4	245.7	252.0
320	284.2	209.7	215.2	220.7	365	324.2	240.0	246.4	252.7
321	285.1	210.4	215.9	221.4	366	325.1	240.7	247.0	253.4
322	286.0	211.0	216.6	222.2	367	326.0	241.4	247.7	254.1
323	286.9	211.7	217.3	222.9	368	326.9	242.1	248.4	254.8
324	287.8	212.4	218.0	223.6	369	327.8	242.7	249.1	255.5
325	288.7	213.1	218.7	224.3	370	328.6	243.4	249.8	256.2
326	289.6	213.7	219.4	225.0	371	329.5	244.1	250.5	256.9
327	290.4	214.4	220.1	225.7	372	330.4	244.8	251.2	257.7
328	291.3	215.1	220.7	226.4	373	331.3	245.4	251.9	258.4
329	292.2	215.8	221.4	227.1	374	332.2	246.1	252.6	259.1
330	293.1	216.4	222.1	227.8	375	333.1	246.8	253.3	259.8
331	294.0	217.1	222.8	228.5	376	334.0	247.5	254.0	260.5
332	294.9	217.8	223.5	229.2	377	334.9	248.1	254.7	261.2
333	295.8	218.4	224.2	230.0	378	335.7	248.8	255.4	261.9
334	296.7	219.1	224.9	230.7	379	336.6	249.5	256.1	262.6
335	297.6	219.8	225.6	231.4	380	337.5	250.2	256.8	263.4
336	298.4	220.5	226.3	232.1	381	338.4	250.8	257.5	264.1
337	299.3	221.1	227.0	232.8	382	339.3	251.5	258.1	264.8
338	300.2	221.8	227.7	233.5	383	340.2	252.2	258.8	265.5
339	301.1	222.5	228.3	234.2	384	341.1	252.9	259.5	266.2
340	302.0	223.2	229.0	234.9	385	342.0	253.6	260.2	266.9
341	302.9	223.8	229.7	235.6	386	342.9	254.2	260.9	267.6
342	303.8	224.5	230.4	236.3	387	343.7	254.9	261.6	268.3
343	304.7	225.2	231.1	237.0	388	344.6	255.6	262.3	269.0
344	305.5	225.9	231.8	237.8	389	345.5	256.3	263.0	269.8
345	306.4	226.5	232.5	238.5	390	346.4	256.9	263.7	270.5
346	307.3	227.2	233.2	239.2	391	347.3	257.6	264.4	271.2
347	308.2	227.9	233.9	239.9	392	348.2	258.3	265.1	271.9
348	309.1	228.5	234.6	240.6	393	349.1	259.0	265.8	272.6
349	310.0	229.2	235.3	241.3	394	350.0	259.6	266.5	273.3
350	310.9	229.9	235.9	242.0	395	350.8	260.3	267.2	274.0
351	311.8	230.6	236.6	242.7	396	351.7	261.0	267.9	274.7
352	312.7	231.2	237.3	243.4	397	352.6	261.7	268.6	275.5
353	313.5	231.9	238.0	244.1	398	353.5	262.3	269.3	276.2
354	314.4	232.6	238.7	244.8	399	354.4	263.0	269.9	276.9

TABLE II (*Continued*).

Cuprous oxide (Cu_2O).	Copper (Cu).	Lactose. ($C_{12}H_{22}O_{11}$).	Lactose. ($C_{12}H_{22}O_{11}\frac{1}{2}H_2O$).	Lactose. ($C_{12}H_{22}O_{11}H_2O$).	Cuprous oxide (Cu_2O).	Copper (Cu).	Lactose. ($C_{12}H_{22}O_{11}$).	Lactose. ($C_{12}H_{22}O_{11}\frac{1}{2}H_2O$).	Lactose. ($C_{12}H_{22}O_{11}H_2O$).
400	355.3	263.7	270.6	277.6	445	395.3	294.2	302.0	309.7
401	356.2	264.4	271.3	278.3	446	396.1	294.9	302.7	310.5
402	357.1	265.0	272.0	279.0	447	397.0	295.6	303.4	311.2
403	358.0	265.7	272.7	279.7	448	397.9	296.3	304.1	311.9
404	358.8	266.4	273.4	280.4	449	398.8	297.0	304.8	312.6
405	359.7	267.1	274.1	281.1	450	399.7	297.6	305.5	313.3
406	360.6	267.8	274.8	281.9	451	400.6	298.3	306.2	314.0
407	361.5	268.4	275.5	282.6	452	401.5	299.0	306.9	314.7
408	362.4	269.1	276.2	283.3	453	402.4	299.7	307.6	315.5
409	363.3	269.8	276.9	284.0	454	403.3	300.4	308.3	316.2
410	364.2	270.5	277.6	284.7	455	404.1	301.1	309.0	316.9
411	365.1	271.2	278.3	285.4	456	405.0	301.7	309.7	317.6
412	365.9	271.8	279.0	286.2	457	405.9	302.4	310.4	318.3
413	366.8	272.5	279.7	286.9	458	406.8	303.1	311.1	319.0
414	367.7	273.2	280.4	287.6	459	407.7	303.8	311.8	319.8
415	368.6	273.9	281.1	288.3	460	408.6	304.5	312.5	320.5
416	369.5	274.6	281.8	289.0	*461	409.5	305.1	313.2	321.2
417	370.4	275.2	282.5	289.7	462	410.4	305.8	313.9	321.9
418	371.3	275.9	283.2	290.4	463	411.2	306.5	314.6	322.6
419	372.2	276.6	283.9	291.2	464	412.1	307.2	315.3	323.4
420	373.1	277.3	284.6	291.9	465	413.0	307.9	316.0	324.1
421	373.9	277.9	285.3	292.6	466	413.9	308.6	316.7	324.8
422	374.8	278.6	286.0	293.3	467	414.8	309.2	317.4	325.5
423	375.7	279.3	286.7	294.0	468	415.7	309.9	318.1	326.2
424	376.6	280.0	287.4	294.7	469	416.6	310.6	318.8	326.9
425	377.5	280.7	288.1	295.4	470	417.5	311.3	319.5	327.7
426	378.4	281.3	288.8	296.2	471	418.4	312.0	320.2	328.4
427	379.3	282.0	289.4	296.9	472	419.2	312.6	320.9	329.1
428	380.2	282.7	290.1	297.6	473	420.1	313.3	321.6	329.8
429	381.0	283.4	290.8	298.3	474	421.0	314.0	322.3	330.5
430	381.9	284.1	291.5	299.0	475	421.9	314.7	323.0	331.3
431	382.8	284.7	292.2	299.7	476	422.8	315.4	323.7	332.0
432	383.7	285.4	292.9	300.5	477	423.7	316.1	324.4	332.7
433	384.6	286.1	293.6	301.2	478	424.6	316.7	325.1	333.4
434	385.5	286.8	294.3	301.9	479	425.5	317.4	325.8	334.1
435	386.4	287.5	295.0	302.6	480	426.3	318.1	326.5	334.8
436	387.3	288.1	295.7	303.3	481	427.2	318.8	327.2	335.6
437	388.2	288.8	296.4	304.0	482	428.1	319.5	327.9	336.3
438	389.0	289.5	297.1	304.7	483	429.0	320.1	328.6	337.0
439	389.9	290.2	297.8	305.5	484	429.9	320.8	329.3	337.7
440	390.8	290.9	298.5	306.2	485	430.8	321.5	330.0	338.4
441	391.7	291.5	299.5	306.9	486	431.7	322.2	330.7	339.1
442	392.6	292.2	299.9	307.6	487	432.6	322.9	331.4	339.9
443	393.5	292.9	300.6	308.3	488	433.5	323.6	332.1	340.6
444	394.4	293.6	301.3	309.0	489	434.3	324.2	332.8	341.3
					490	435.2	324.9	333.5	342.0