SPECIAL SERIES OF SOUNDING-BALLOON OBSERVATIONS MADE DURING THE WINTER OF 1929-30.

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Table 1 contains a summary of the results obtained from sounding balloons released from 10 selected Weather Bureau stations. In addition to these observations others were gotten at the same time by kite flights made at frequent intervals at the aerological stations of the Weather Bureau, and by special airplane flights by the United States Navy at several Naval Air Stations. None of the kite or airplane data are published here, but all are available at the Central Office of the Weather Bureau.

Table 2 contains the tabulated data of the sounding-balloon observations.

TABLE 1.—*Summary of sounding-balloon observations*

DECEMBER 1929

Station	Date	Time of release, 75th mer.	Stratosphere: Height of base, meters, M.S.L.	Stratosphere: Temperature at base	Maximum height reached (meters) M.S.L.	Minimum temperature recorded	Meteorograph found at—
				° C.		° C.	
Amarillo, Tex.	27	8:10 p.			10,523	−57.7	Clarendon, Tex.
	28	2:00 a.	Not returned				
	28	8:00 a.			9,740	−49.5	Vinson, Okla.
	28	2:00 p.	Record obliterated				Wellington, Tex.
Cincinnati, Ohio	28	2:13 a.			7,097	−39.2	New Lexington, Ohio.
	28	8:15 a.	10,150	−53.7	20,584	−54.3	Ray, Ohio.
	28	2:09 p.	9,755	−51.6	22,321	−51.6	Crooksville, Ohio.
	28	8:15 p.	Record obliterated				New Concord, Ohio.
Concordia, Kans.	28	2:15 a.			8,135	−53.6	Everest, Kans.
	28		Record obliterated				Alma, Kans.
	28	2:06 p.	Record obliterated				Admire, Kans.
	28	7:56 p.			6,973	−31.0	Lafayette, Ala.
Davenport, Iowa	28	8:16 a.			7,316	−40.2	Sugar Grove, Ill.
	28	2:04 p.	7,792	−52.3	16,293	−52.3	Mendota, Ill.
	28	8:00 p.	Not returned				
	29	2:05 a.			7,624	−49.4	Oakley, Ill.
Denver, Colo.	28	1:49 a.			7,379	−37.1	Eads, Colo.
	28	7:51 a.	Record obliterated				Simla, Colo.
	28	1:43 p.			9,286	−50.6	Colorado Springs, Colo.
	28	7:46 p.			8,179	−35.4	Eastonville, Colo.
Little Rock, Ark.	27	8:06 p.	Record obliterated				Olive Branch, Miss.
	28	1:54 a.	Not returned				
	28	7:57 a.			9,764	−43.5	Martin's Mill, Tenn.
	28	1:50 p.	10,093	−47.1	21,559	−60.2	Michigan City, Miss.
Nashville, Tenn.	28	2:01 a.			8,210	−40.2	Yancey, Ky.
	28	8:07 a.			9,531	−45.5	Glenmary, Tenn.
	28	1:55 p.	10,684	−50.7	18,025	−56.3	Balkan, Ky.
	28	8:02 p.			8,414	−43.1	Bucu, Va.
St. Louis, Mo.	28	2:00 a.	Not returned				
	28	8:00 a.			7,734	−42.8	
	28	2:00 p.	Not returned				
	28	8:00 p.	Not returned				
Sioux City, Iowa	28	8:12 a.	Not returned				
	28	2:12 p.	Not returned				
	28	8:25 p.			8,620	−48.6	Henderson, Iowa.
	29	1:56 a.	9,790	−63.7	19,530	−65.0	Griswold, Iowa.
Vicksburg, Miss.	27	8:04 p.	Record obliterated				Moundville, Ala.
	28	1:58 a.	Not returned				
	28	8:00 a.			6,386	−17.0	Boligee, Ala.
	28	2:00 p.	Not returned				

JANUARY 1930

Station	Date	Time of release, 75th mer.	Stratosphere: Height of base, meters, M.S.L.	Stratosphere: Temperature at base	Maximum height reached (meters) M.S.L.	Minimum temperature recorded	Meteorograph found at—
Amarillo, Tex.	6	2:00 p.	Not returned				
	6	8:00 p.	Not returned				
	7	2:00 a.			9,770	−55.2	Higgins, Tex.
	7	8:02 a.	Not returned				
Cincinnati, Ohio	6	8:03 p.			10,716	−57.0	Asheville, Ohio.
	7	2:05 a.	12,875	−63.9	18,895	−69.9	West Belford, Ohio.
	7	8:00 a.	Not returned				
	7	2:12 p.			3,115	−0.2	Mount Vernon, Ohio.
Concordia, Kans.	6	2:03 p.			8,954	−40.7	Nebraska City, Nebr.
	6	7:55 p.	Record obliterated				Steinauer, Nebr.
	7	2:09 a.			8,732	−49.0	Shambaugh, Iowa.
	7	8:09 a.	11,408	−36.7	18,386	−36.7	Rockport, Mo.
Davenport, Iowa	6	1:59 p.	Record obliterated				New Garden Prairie, Ill.
	6	8:04 p.	Not returned				
	7	2:01 a.	Record obliterated				Zenda, Wis.
	7	8:09 a.			10,559	−61.1	West McHenry, Ill.
Denver, Colo.	6	1:43 p.	8,624	−50.3	11,175	−51.1	Messex, Colo.
	6	7:57 p.	Record obliterated				Hillrose, Colo.
	7	1:51 a.			4,220	−18.3	Fleming, Colo.
	7		No flight made				

TABLE 1.—*Summary of sounding-balloon observations—Continued*

JANUARY 1930

Station	Date	Time of release, 75th mer.	Stratosphere: Height of base, meters, M.S.L.	Stratosphere: Temperature at base	Maximum height reached (meters) M.S.L.	Minimum temperature recorded	Meteorograph found at—
				° C.		° C.	
Little Rock, Ark.	6	2:00 p.	Record obliterated				Osceola, Ark.
	6	8:04 p.	11,406	−62.7	16,597	−66.6	Monette, Ark.
	7	1:54 a.			7,280	−15.1	Osceola, Ark.
	7	7:59 a.	Not returned				
Nashville, Tenn.	6	8:03 p.	Not returned				
	7	2:06 a.			11,563	−57.5	Mabie, W.Va.
	7	7:50 a.	Record obliterated				Cabell, Ky.
	7	2:00 p.	Record obliterated				Munfordville, Ky.
St. Louis, Mo.	6	2:00 p.			9,100	−42.2	Humbolt, Ill.
	6	7:50 p.			7,822	−36.2	
	7	2:00 a.			6,527	−30.1	
	7	8:07 a.	11,810	−73.3	22,750	−74.4	Stone Bluff, Ind.
Sioux City, Iowa	6	2:43 p.	Not returned				
	6	8:08 p.	Not returned				
	7	2:04 a.	Record obliterated				Alden, Minn.
	7	8:03 a.	9,640	−59.6	11,910	−60.2	Burt, Iowa.
Vicksburg, Miss.	6	8:15 p.	Record obliterated				Sturgis, Miss.
	7	1:58 a.	Not returned				
	7	7:58 a.	11,307	−70.0	17,780	−70.0	Brookville, Miss.
	7	2:02 p.	11,540	−60.0	14,083	−62.5	Philadelphia, Miss.

TABLE 2.—*Tabulated data of sounding-balloon observations*

AMARILLO, TEX.

Launched 8:10 p.m., Dec. 27, 1929 (75th mer.)

Time interval from launching	Altitude, M.S.L.	Pressure	Temperature	$\frac{\Delta t}{100\ m.}$	Humidity: Relative	Humidity: Vapor pressure	Wind: Direction	Wind: Velocity	Remarks
m.s.	*M.*	*Mb.*	*°C.*		*Pct.*	*Mb.*		*M.p.s.*	
0 00	1,117	892.3	5.5		34	3.07	sw.	3.6	Cloudless.
0 22	1,220	881.1	5.5	0.00	35	3.16			Isothermal.
0 55	1,324	870.0	7.3	−1.73	34	3.47			Inversion.
	1,500	851.8	6.1		34	3.20			
3 44	1,775	823.4	4.2	.69	34	2.80			
4 52	1,975	803.4	3.7	.25	33	2.63			
	2,000	800.9	3.5		33	2.59			
6 20	2,279	773.7	1.6	.69	33	2.26			
	2,500	752.5	.7		32	2.05			
8 07	2,597	743.8	.3	.41	32	2.00			
9 37	2,865	719.4	−.9	.45	32	1.81			
	3,000	707.3	−2.0		33	1.71			
10 53	3,124	696.3	−3.1	.85	33	1.56			
12 08	3,353	676.5	−3.5	.17	33	1.51			
	4,000	623.2	−7.4		32	1.05			
16 21	4,201	606.9	−8.6	.60	32	.95			
	5,000	548.0	−14.8		30	.51			
24 26	5,832	489.8	−21.2	.77	28	.26			
	6,000	479.1	−22.7		28	.23			
	7,000	416.9	−31.4		26	.09			
30 54	7,116	410.1	−32.4	.87	26	.08			
	8,000	363.4	−37.9		25	.04			
37 32	8,781	323.4	−42.8	.62	25	.02			
	9,000	313.1	−44.6		25	.02			
41 02	9,786	278.3	−51.1	.83	26	.01			
	10,000	267.6	−53.0		25	.01			
44 28	10,523	246.2	−57.7	.90	23	(1)			Adiabatic.

[1] Less than 0.01 mb.

Launched 8 a.m., Dec. 28, 1929 (75th mer.)

0 00	1,117	893.9	−0.5		64	3.75	n.	3.6	Cloudless.
0 30	1,180	888.0	.3	−1.33					Inversion.
0 58	1,240	880.0	1.2	−1.50					Inversion.
2 14	1,440	859.0	3.1	−.95					Inversion.
	1,500	851.0	2.9						
2 58	1,540	847.0	2.7	.40					
	2,000	801.0	3.1						
5 46	2,050	797.0	3.1	−.08					Inversion.
8 24	2,440	756.0	1.0	.54					
	2,500	750.0	1.3						
9 54	2,650	736.0	2.1	−.52					Inversion.
	3,000	705.0	−.3						

TABLE 2.—*Tabulated data of sounding-balloon observations*—Con.

AMARILLO, TEX.—Continued

Launched 8 a.m., Dec. 28, 1929 (75th mer.)—Continued

Time interval from launching	Altitude, M.S.L.	Pressure	Temperature	$\frac{\Delta t}{100 \text{ m.}}$	Humidity: Relative	Humidity: Vapor pressure	Wind: Direction	Wind: Velocity	Remarks
m.s.	*M.*	*Mb.*	*°C.*		*Pct.*	*Mb.*		*M.p.s.*	
14 34	3,470	664.0	−3.7	0.71					
	4,000	621.0	−8.1						
	5,000	545.0	−17.3						
23 06	5,300	522.0	−20.1	.90					
	6,000	476.0	−25.1						
30 24	6,930	419.0	−31.8	.72					
	7,000	414.0	−32.1						
	8,000	358.0	−37.8						
38 00	8,850	317.0	−42.5	.56					
	9,000	310.0	−43.7						
42 24	9,740	277.0	−49.5	.79					

CINCINNATI, OHIO

Launched 2:13 a.m. Dec. 28, 1929 (75th mer.)

Time interval from launching	Altitude, M.S.L.	Pressure	Temperature	$\frac{\Delta t}{100 \text{ m.}}$	Humidity: Relative	Humidity: Vapor pressure	Wind: Direction	Wind: Velocity	Remarks
0 00	229	994.6	1.1		87	5.75	n.	0.9	10 St., NW.
	500	961.0	−.9		91	5.16			
	1,000	902.1	−4.6		99	4.13			
6 29	1,073	894.4	−5.1	0.73	100	4.00			
7 37	1,238	876.2	.6	−3.26	72	4.59			Inversion.
8 58	1,420	856.4	1.1	−.27	48	3.17			Inversion.
	1,500	848.0	.8		46	2.98			
10 36	1,635	833.8	.3	.37	43	2.68			
12 22	1,859	810.7	−.3	.27	30	1.79			
	2,000	796.5	−1.0		30	1.69			
14 53	2,233	773.6	−2.2	.51	30	1.53			
	2,500	747.9	−4.2		29	1.25			
18 16	2,628	735.9	−5.1	.73	28	1.12			
20 46	2,950	706.3	−6.7	.50	28	.98			
	3,000	703.1	−6.8		29	1.00			
22 05	3,215	682.7	−7.1	.15	34	1.15			
	4,000	616.3	−13.3		40	.78			
28 36	4,198	600.7	−14.9	.79	42	.71			
29 04	4,291	593.3	−15.0	.11	42	.70			
32 11	4,824	552.8	−18.9	.73	41	.48			
	5,000	539.8	−20.4		39	.39			
33 21	5,045	536.8	−20.8	.86	38	.37			
35 01	5,359	514.6	−23.7	.92	41	.30			Adiabatic.
	6,000	471.4	−29.4		46	.19			
41 34	6,352	448.6	−32.5	.89	48	.14			
	7,000	409.3	−38.3		48	.08			
46 01	7,097	403.0	−39.2	.90	48	.07			Adiabatic.

Launched 8:15 a.m. Dec. 28, 1929 (75th mer.)

Time interval from launching	Altitude, M.S.L.	Pressure	Temperature	$\frac{\Delta t}{100 \text{ m.}}$	Humidity: Relative	Humidity: Vapor pressure	Wind: Direction	Wind: Velocity	Remarks
0 00	229	994.9	0.7		81	5.20	sw.	1.8	10 St., W.
	500	961.5	−1.3		81	4.45			
	1,000	902.1	−5.1		81	3.24			
4 58	1,083	893.5	−5.7	0.75	81	3.08			
5 45	1,198	880.5	−.2	−4.78	61	3.67			Inversion.
7 08	1,459	852.3	1.0	−.46	42	2.76			Inversion.
	1,500	848.5	.8		42	2.72			
	2,000	797.0	−1.9		38	1.99			
	2,500	747.5	−4.5		34	1.43			
16 28	2,965	704.6	−7.0	.53	30	1.02			
	3,000	701.1	−7.0		28	.95			
18 07	3,285	676.3	−6.7	−.09	25	.87			Inversion.
	4,000	618.0	−11.1		28	.67			
25 19	4,614	569.0	−14.8	.61	30	.51			
	5,000	540.8	−17.8		31	.40			
28 28	5,196	526.6	−19.3	.77	32	.36			
31 54	5,937	476.9	−24.2	.66	27	.19			
	6,000	473.1	−24.7		27	.18			
	7,000	412.1	−32.4		27	.08			
40 30	7,606	377.5	−37.1	.77	27	.05			
	8,000	355.9	−39.9		27	.04			
	9,000	307.4	−47.0		26	.02			
49 35	9,596	281.6	−51.2	.71	25	.01			
	10,000	264.8	−53.0		25	.01			
52 14	10,150	259.1	−53.7	.45	25	.01			Tropopause.
54 55	10,710	237.6	−54.3	.11	25	.01			
	11,000	227.5	−52.0		25	.01			
58 29	11,206	220.6	−50.4	−.79	25	.01			
	12,000	195.7	−48.5		24	.01			
65 08	12,565	179.7	−47.1	−.24	23	.01			
	13,000	168.3	−47.1		23	.01			
69 55	13,480	156.7	−47.1	.00	23	.01			
	14,000	144.9	−49.8		23	.01			
75 07	14,545	133.6	−52.6	.52	22	.01			
	15,000	124.2	−52.8		21	.01			
79 40	15,317	118.5	−53.0	.05	20	(1)			
	16,000	107.1	−51.1		20	.01			
87 56	16,835	94.2	−48.8	−.28	20	.01			
	17,000	92.2	−48.6		20	.01			
	18,000	79.3	−47.4		22	.01			
95 50	18,765	70.4	−46.4	−.12	23	.01			
	19,000	68.3	−45.8		23	.02			
	20,000	59.4	−43.0		21	.02			
104 28	20,584	53.8	−41.4	−27	20	.02			

[1] Less than 0.01 mb.

TABLE 2.—*Tabulated data of sounding-balloon observations*—Con.

CINCINNATI, OHIO—Continued

Launched 2:09 p.m. Dec. 28, 1929 (75th mer.)

Time interval from launching	Altitude, M.S.L.	Pressure	Temperature	$\frac{\Delta t}{100 \text{ m.}}$	Humidity: Relative	Humidity: Vapor pressure	Wind: Direction	Wind: Velocity	Remarks
m.s.	*M.*	*Mb.*	*°C.*		*Pct.*	*Mb.*		*M.p.s.*	
0 00	229	933.2	1.2		80	5.33	SW.	2.2	10 St. SW.
	500	960.5	−1.2		87	4.81			
2 06	937	908.7	−5.1	0.89	98	3.92			
	1,000	902.2	−4.1		91	3.96			
3 10	1,247	873.9	−0.3	−1.55	65	3.87			Inversion.
	1,500	846.5	−1.5		61	3.29			
	2,000	794.8	−3.9		54	2.39			
	2,500	746.5	−6.4		46	1.65			
	3,000	700.2	−8.8		39	1.13			
12 28	3,218	679.9	−9.8	.48	36	.96			
14 34	3,607	646.9	−8.3	−.39	31	.94			Inversion.
15 54	3,875	624.7	−11.3	1.12	29	.68			Superadiabatic.
	4,000	614.9	−12.1		30	.65			
19 40	4,649	564.2	−16.1	.62	36	.54			
	5,000	540.1	−17.2		32	.44			
21 30	5,055	534.7	−17.4	.32	31	.42			
	6,000	471.6	−24.7		31	.20			
30 00	6,787	421.9	−30.8	.77	31	.11			
	7,000	408.9	−32.7		31	.09			
	8,000	355.3	−41.9		31	.03			
38 06	8,273	341.4	−44.4	.92	31	.02			Adiabatic.
	9,000	306.4	−47.9		30	.02			
45 10	9,755	273.7	−51.6	.49	28	.01			Tropopause.
	10,000	263.7	−51.5		28	.01			
	11,000	226.3	−51.0		27	.01			
53 46	11,670	204.5	−50.7	−.05	27	.01			
	12,000	194.9	−50.3		27	.01			
	13,000	168.0	−49.1		27	.01			
62 05	13,380	158.0	−48.6	−.12	27	.01			
	14,000	144.4	−49.0		27	.01			
	15,000	124.0	−49.8		27	.01			
71 35	15,769	110.2	−50.3	.07	27	.01			
	16,000	106.8	−50.3		27	.01			
	17,000	91.8	−50.4		27	.01			
	18,000	78.9	−50.5		27	.01			
80 20	18,273	75.4	−50.5	.01	27	.01			
	19,000	67.8	−49.4		27	.01			
	20,000	58.2	−47.9		27	.01			
88 11	20,135	56.9	−47.7	−.15	27	.01			
	21,000	50.1	−45.2		27	.02			
	22,000	42.9	−42.3		27	.03			
95 10	22,321	40.1	−41.4	−.29	27	.03			

CONCORDIA, KANS.

Launched 2:15 a.m. Dec. 28, 1929 (75th mer.)

Time interval from launching	Altitude, M.S.L.	Pressure	Temperature	$\frac{\Delta t}{100 \text{ m.}}$	Humidity: Relative	Humidity: Vapor pressure	Wind: Direction	Wind: Velocity	Remarks
0 00	418	965.9	1.9		63	4.41	w.	2.7	8 A St., W.
	500	955.6	3.2		63	4.84			
1 24	706	932.2	6.6	−1.63	62	6.04			Inversion.
	1,000	899.4	4.8		62	5.33			
	1,500	845.6	1.7		62	4.28			
8 58	1,965	798.0	−1.1	.61	62	3.46			
	2,000	794.0	−1.4		62	3.37			
	2,500	745.0	−5.0		63	2.54			
13 53	2,846	713.6	−7.6	.74	63	2.03			
	3,000	700.0	−9.1		64	1.81			
17 01	3,490	656.3	−13.8	.96	69	1.28			Adiabatic.
	4,000	614.3	−18.0		74	.93			
21 34	4,331	586.9	−20.7	.82	78	.76			
22 14	4,439	578.6	−20.9	.19	81	.78			
	5,000	536.2	−25.4		86	.53			
	6,000	466.8	−33.5		95	.25			
29 48	6,044	463.7	−33.8	.80	95	.24			
	7,000	404.4	−42.6		96	.09			
35 35	7,277	388.1	−45.2	.92	96	.07			Adiabatic.
	8,000	348.0	−52.3		96	.02			
41 18	8,135	340.6	−53.6	.98	96	.02			Adiabatic.

Launched 7:56 p.m. Dec. 28, 1929 (75th mer.)

Time interval from launching	Altitude, M.S.L.	Pressure	Temperature	$\frac{\Delta t}{100 \text{ m.}}$	Humidity: Relative	Humidity: Vapor pressure	Wind: Direction	Wind: Velocity	Remarks
0 00	418	973.0	0.8		35	2.26	w.	1.3	Cloudless.
	500	962.8	2.5						
1 37	619	949.1	4.9	−2.04					Inversion.
	1,000	904.6	2.8						
6 18	1,075	897.1	2.4	.55					
	1,500	851.5	−1.1						
13 17	1,886	810.4	−4.3	.83					
	2,000	800.4	−4.7						
	2,500	751.3	−6.2						
21 21	2,602	739.9	−6.5	.31					
	3,000	703.7	−7.9						
28 41	3,224	683.2	−8.7	.35					
36 59	3,956	621.1	−13.2	.61					
	4,000	619.2	−13.4						
45 15	4,661	566.1	−16.1	.41					
	5,000	540.5	−17.9						
53 21	5,369	514.8	−19.9	.54					
	6,000	473.4	−23.3						
61 43	6,179	461.1	−24.3	.54					
71 13	6,976	413.3	−31.0	.84					

TABLE 2.—*Tabulated data of sounding-balloon observations*—Con.

DAVENPORT, IOWA

Launched 8:16 a.m. Dec. 28, 1929 (75th mer.)

Time interval from launching	Altitude, M.S.L.	Pressure	Temperature	$\frac{\Delta t}{100\ m.}$	Humidity: Relative	Humidity: Vapor pressure	Wind: Direction	Wind: Velocity	Remarks
m.s.	*M.*	*Mb.*	*°C.*		*Pct.*	*Mb.*		*M.p.s.*	
0 00	178	991.2	−0.6	-------	88	5.11	ssw.	6.7	Few A. Cu. W.; 9 A St., W.
1 03	352	969.6	−.9	0.17	94	5.33	sw.	10.4	
	500	951.5	−.9	-------	90	5.10	wsw.	11.6	
3 32	809	915.2	−.8	−.02	83	4.75	w.	10.7	Inversion.
	1,000	893.9	.3	-------	69	4.31	w.	11.2	
5 16	1,078	885.8	.7	−.56	64	4.11	w.	14.4	Inversion.
7 10	1,386	852.3	−.6	.42	74	4.30	w.	19.1	
	1,500	840.0	−1.2	-------	73	4.04	w.	18.0	
9 46	1,878	801.2	−3.1	.51	69	3.26	w.	16.7	
	2,000	787.8	−4.1	-------	69	3.00	w.	15.8	
	2,500	739.7	−8.0	-------	72	2.25	wsw.	17.7	
15 01	2,857	706.7	−10.8	.79	73	1.78	wsw.	18.8	
	3,000	693.4	−11.6	-------	74	1.68	-------	-------	
	4,000	611.4	−17.5	-------	78	1.03	-------	-------	
	5,000	532.3	−23.4	-------	82	.62	-------	-------	
25 22	5,034	529.1	−23.6	.59	82	.60	-------	-------	
	6,000	458.6	−30.6	-------	78	.28	-------	-------	
	7,000	400.5	−37.9	-------	74	.12	-------	-------	
34 14	7,316	384.2	−40.2	.73	73	.09	-------	-------	

Launched 2:04 p.m. Dec. 28, 1929 (75th mer.)

Time interval from launching	Altitude, M.S.L.	Pressure	Temperature	$\frac{\Delta t}{100\ m.}$	Humidity: Relative	Humidity: Vapor pressure	Wind: Direction	Wind: Velocity	Remarks
0 00	178	989.8	3.0	-------	69	5.23	wnw.	6.7	1 Ci. St., W.; 8 St. Cu., WNW.
	500	951.1	−.7	-------	84	4.85	wnw.	7.2	
3 40	759	920.5	−3.6	1.14	96	4.36	-------	-------	Superadiabatic.
4 22	943	899.2	−2.7	−.49	73	3.57	-------	-------	Inversion.
	1,000	892.3	−3.1	-------	73	3.45	-------	-------	
	1,500	838.6	−6.2	-------	69	2.51	-------	-------	
	2,000	787.4	−9.4	-------	66	1.82	-------	-------	
	2,500	738.0	−12.6	-------	62	1.29	-------	-------	
	3,000	690.0	−15.7	-------	59	.93	-------	-------	
13 42	3,087	681.6	−16.3	.63	58	.86	-------	-------	
	4,000	604.2	−23.4	-------	62	.46	-------	-------	
	5,000	525.7	−31.2	-------	67	.23	-------	-------	
22 24	5,222	509.0	−32.9	.78	68	.19	-------	-------	
	6,000	456.3	−38.8	-------	68	.10	-------	-------	
	7,000	394.2	−46.3	-------	68	.04	-------	-------	
30 04	7,792	349.2	−52.3	.76	68	.02	-------	-------	Tropopause.
	8,000	339.0	−52.1	-------	67	.02	-------	-------	
	9,000	291.6	−51.1	-------	61	.02	-------	-------	
37 16	9,932	252.2	−50.2	−.10	56	.02	-------	-------	
	10,000	250.6	−49.9	-------	56	.02	-------	-------	
	11,000	215.0	−45.5	-------	54	.04	-------	-------	
43 02	11,715	193.3	−42.3	−.44	53	.05	-------	-------	
	12,000	184.7	−42.8	-------	52	.05	-------	-------	
	13,000	159.4	−44.6	-------	49	.04	-------	-------	
52 02	13,523	147.8	−45.5	.18	48	.03	-------	-------	
	14,000	137.5	−45.6	-------	48	.03	-------	-------	
59 08	14,770	122.9	−45.7	.02	48	.03	-------	-------	
	15,000	118.8	−46.2	-------	48	.03	-------	-------	
	16,000	102.3	−48.1	-------	48	.02	-------	-------	
67 08	16,293	97.6	−48.7	.20	48	.02	-------	-------	

Launched 2:05 a.m. Dec. 29, 1929 (75th mer.)

Time interval from launching	Altitude, M.S.L.	Pressure	Temperature	$\frac{\Delta t}{100\ m.}$	Humidity: Relative	Humidity: Vapor pressure	Wind: Direction	Wind: Velocity	Remarks
0 00	178	994.6	−1.0	-------	80	4.50	nw.	4.9	1 St. Cu., NW.
	500	955.2	−3.3	-------	88	4.09	nw.	10.9	
4 04	815	917.6	−5.6	0.72	96	3.68	nw.	18.2	
	1,000	895.6	−7.5	-------	97	3.16	nw.	21.0	
8 29	1,314	860.6	−10.6	1.00	100	2.48	nw.	18.7	Adiabatic.
9 07	1,436	847.0	−7.2	−2.79	96	3.21	-------	-------	Inversion.
	1,500	839.5	−7.5	-------	95	3.10	-------	-------	
	2,000	786.1	−10.1	-------	85	2.21	-------	-------	
	2,500	736.2	−12.8	-------	76	1.55	-------	-------	
18 47	2,735	715.5	−14.0	.52	71	1.30	-------	-------	
	3,000	689.9	−16.0	-------	67	1.02	-------	-------	
28 14	3,946	608.3	−23.0	.74	55	.43	-------	-------	
	4,000	603.3	−23.1	-------	55	.43	-------	-------	
29 38	4,129	593.6	−23.2	.11	55	.42	-------	-------	
	5,000	525.8	−28.8	-------	55	.24	-------	-------	
37 59	5,157	514.8	−29.8	.64	55	.22	-------	-------	
	6,000	457.5	−35.7	-------	57	.12	-------	-------	
46 40	6,295	438.0	−37.7	.69	58	.10	-------	-------	
	7,000	396.8	−43.9	-------	56	.05	-------	-------	
57 29	7,624	360.2	−49.4	.88	55	.02	-------	-------	

DENVER, COLO.

Launched 1:49 a.m. Dec. 28, 1929 (75th mer.)

Time interval from launching	Altitude, M.S.L.	Pressure	Temperature	$\frac{\Delta t}{100\ m.}$	Humidity: Relative	Humidity: Vapor pressure	Wind: Direction	Wind: Velocity	Remarks
0 00	1,620	839.8	4.2	-------	19	1.57	nw.	5.4	Cloudless.
	2,000	801.4	1.7	-------	19	1.31	-------	-------	
	2,500	753.3	−1.5	-------	20	1.08	-------	-------	
7 08	2,794	725.3	−3.4	0.65	20	.92	-------	-------	
	3,000	706.2	−5.0	-------	21	.85	-------	-------	
	4,000	621.7	−12.7	-------	24	.49	-------	-------	
16 27	4,693	567.0	−18.1	.77	27	.34	-------	-------	
	5,000	544.5	−19.8	-------	27	.29	-------	-------	

TABLE 2.—*Tabulated data of sounding-balloon observations*—Con.

DENVER, COLO.—Continued

Launched 1:49 a.m. Dec. 18, 1929 (75th mer.)—Continued

Time interval from launching	Altitude, M.S.L.	Pressure	Temperature	$\frac{\Delta t}{100\ m.}$	Humidity: Relative	Humidity: Vapor pressure	Wind: Direction	Wind: Velocity	Remarks
m.s.	*M.*	*Mb.*	*°C.*		*Pct.*	*Mb.*		*M.p.s.*	
19 13	5,083	537.7	−20.2	0.54	27	.28	-------	-------	
21 25	5,428	513.5	−20.2	.00	27	.28	-------	-------	Isothermal.
	6,000	475.1	−25.1	-------	28	.18	-------	-------	
26 12	6,435	447.5	−28.9	.86	28	.12	-------	-------	
	7,000	412.6	−33.8	-------	29	.07	-------	-------	
30 14	7,379	391.2	−37.1	.87	29	.05	-------	-------	

Launched 1:43 p.m. Dec. 28, 1929 (75th mer.)

Time interval from launching	Altitude, M.S.L.	Pressure	Temperature	$\frac{\Delta t}{100\ m.}$	Humidity: Relative	Humidity: Vapor pressure	Wind: Direction	Wind: Velocity	Remarks
0 00	1,620	841.8	7.7	-------	26	2.73	n.	3.6	8 A. Cu., N.
	2,000	803.2	4.1	-------	39	3.19	nw.	9.3	
2 12	2,226	781.4	1.9	0.96	47	3.29	wnw.	12.5	Adiabatic.
	2,500	754.7	−.1	-------	49	2.97	wnw.	15.7	
	3,000	708.1	−3.8	-------	52	2.32	wnw.	19.9	
9 54	3,745	644.9	−9.3	.74	57	1.58	nw.	15.7	
	4,000	621.8	−11.3	-------	-------	-------	-------	-------	
16 43	4,864	556.7	−17.9	.77	-------	-------	-------	-------	
	5,000	546.7	−18.2	-------	-------	-------	-------	-------	
22 20	5,850	487.8	−20.3	.24	-------	-------	-------	-------	
	6,000	478.3	−22.0	-------	-------	-------	-------	-------	
	7,000	415.4	−33.1	-------	-------	-------	-------	-------	
29 40	7,075	411.6	−33.9	1.11	-------	-------	-------	-------	Superadiabatic.
	8,000	360.3	−41.4	-------	-------	-------	-------	-------	
36 41	8,504	334.8	−45.5	.81	-------	-------	-------	-------	
	9,000	311.1	−48.7	-------	-------	-------	-------	-------	
40 45	9,286	297.6	−50.6	.65	-------	-------	-------	-------	

Launched 7:46 p.m. Dec. 28, 1929 (75th mer.)

Time interval from launching	Altitude, M.S.L.	Pressure	Temperature	$\frac{\Delta t}{100\ m.}$	Humidity: Relative	Humidity: Vapor pressure	Wind: Direction	Wind: Velocity	Remarks
0 00	1,620	841.3	6.4	-------	31	2.98	s.	2.7	Cloudless.
	2,000	804.7	4.4	-------	31	2.59	sw.	3.0	
	2,500	756.8	1.7	-------	32	2.21	wnw.	4.7	
6 35	2,963	712.6	−.8	0.54	32	1.83	nw.	5.2	
	3,000	708.9	−1.0	-------	32	1.80	nw.	5.4	
	4,000	623.3	−5.7	-------	32	1.22	nnw.	8.1	
	5,000	549.5	−10.4	-------	32	.81	-------	-------	
16 25	5,278	530.1	−11.7	.47	32	.72	-------	-------	
	6,000	482.0	−17.9	-------	31	.39	-------	-------	
	7,000	421.0	−26.5	-------	30	.16	-------	-------	
24 55	7,315	403.1	−29.1	.85	30	.13	-------	-------	
	8,000	366.2	−34.1	-------	32	.08	-------	-------	
28 11	8,179	357.0	−35.4	.73	32	.07	-------	-------	

LITTLE ROCK, ARK.

Launched 7:57 a.m. Dec. 28, 1929 (75th mer.)

Time interval from launching	Altitude, M.S.L.	Pressure	Temperature	$\frac{\Delta t}{100\ m.}$	Humidity: Relative	Humidity: Vapor pressure	Wind: Direction	Wind: Velocity	Remarks
0 00	127	1,008.1	1.2	-------	97	6.46	nw.	1.8	Few Ci., W.; 10 Lt. Fog, NW.
0 52	286	988.5	3.5	−1.45	100	7.85	-------	-------	Inversion.
	500	959.6	3.4	-------	91	7.09	-------	-------	
	1,000	902.2	3.0	-------	69	5.23	-------	-------	
7 06	1,481	853.0	2.7	.07	48	3.56	-------	-------	Isothermal.
	1,500	851.0	2.6	-------	48	3.53	-------	-------	
	2,000	800.1	.8	-------	43	2.78	-------	-------	
	2,500	751.2	−1.1	-------	37	2.06	-------	-------	
12 58	2,527	748.8	−1.2	.37	37	2.05	-------	-------	
	3,000	705.6	−1.8	-------	33	1.74	-------	-------	
15 42	3,037	702.5	−1.8	.12	33	1.74	-------	-------	
	4,000	620.8	−8.0	-------	32	1.00	-------	-------	
25 44	4,692	568.3	−12.5	.65	32	.67	-------	-------	
	5,000	545.0	−14.7	-------	32	.55	-------	-------	
	6,000	477.4	−21.8	-------	30	.26	-------	-------	
35 06	6,364	454.9	−24.4	.71	30	.20	-------	-------	
	7,000	417.1	−27.6	-------	30	.15	-------	-------	
	8,000	361.9	−32.6	-------	30	.09	-------	-------	
44 32	8,046	360.3	−32.8	.50	30	.09	-------	-------	
	9,000	313.5	−38.7	-------	30	.04	-------	-------	
54 10	9,764	281.5	−43.5	.62	30	.03	-------	-------	

Launched 1:50 p.m. Dec. 28, 1929 (75th mer.)

Time interval from launching	Altitude, M.S.L.	Pressure	Temperature	$\frac{\Delta t}{100\ m.}$	Humidity: Relative	Humidity: Vapor pressure	Wind: Direction	Wind: Velocity	Remarks
0 00	127	1,006.9	11.0	-------	63	8.27	sw.	2.7	Few Ci., W.
	500	964.0	8.6	-------	64	7.15	-------	-------	
2 12	822	925.8	6.6	0.63	65	6.33	-------	-------	
	1,000	907.3	5.4	-------	63	5.65	-------	-------	
	1,500	852.5	2.7	-------	58	4.30	-------	-------	
	2,000	802.4	−.1	-------	53	3.21	-------	-------	
	2,500	753.6	−3.0	-------	48	2.29	-------	-------	
10 34	2,520	750.2	−3.1	.57	48	2.27	-------	-------	
	3,000	702.2	−5.1	-------	45	1.80	-------	-------	
17 04	3,829	635.2	−8.6	.42	41	1.21	-------	-------	
	4,000	612.9	−9.8	-------	41	1.09	-------	-------	
	5,000	543.2	−16.5	-------	39	.57	-------	-------	
25 06	5,552	506.4	−20.2	.67	38	.39	-------	-------	
	6,000	478.5	−23.1	-------	38	.29	-------	-------	
	7,000	415.9	−29.4	-------	38	.16	-------	-------	
32 38	7,276	399.9	−31.2	.64	38	.13	-------	-------	
	8,000	360.8	−35.4	-------	36	.08	-------	-------	

TABLE 2.—*Tabulated data of sounding-balloon observations*—Con.

LITTLE ROCK, ARK.—Continued

Launched 1:50 p.m. Dec. 28, 1929 (75th mer.)—Continued

Time interval from launching	Altitude, M.S.L.	Pressure	Temperature	$\frac{\Delta t}{100 \text{ m.}}$	Humidity: Relative	Humidity: Vapor pressure	Wind: Direction	Wind: Velocity	Remarks
m.s.	*M.*	*Mb.*	*°C.*		*Pct.*	*Mb.*		*M.p.s.*	
41 24	8,923	316.1	−40.5	0.56	33	.04	------	------	
	9,000	312.7	−40.9	------	33	.04	------	------	
	10,000	270.0	−46.5	------	33	.02	------	------	
45 32	10,093	266.9	−47.1	.56	33	.02	------	------	Tropopause.
46 44	10,306	258.3	−46.6	−.23	33	.02	------	------	
	11,000	232.6	−48.7	------	33	.02	------	------	
	12,000	200.0	−51.8	------	33	.01	------	------	
55 47	12,888	175.0	−54.6	.31	33	.01	------	------	
	13,000	171.8	−54.6	------	33	.01	------	------	
	14,000	147.5	−54.5	------	33	.01	------	------	
63 52	14,386	139.2	−54.4	−.01	33	.01	------	------	
	15,000	126.7	−56.1	------	33	.01	------	------	
	16,000	108.4	−58.9	------	33	(1)	------	------	
72 26	16,451	100.9	−60.2	.28	33	(1)	------	------	
	17,000	92.6	−59.2	------	33	(1)	------	------	
	18,000	79.0	−57.5	------	33	(1)	------	------	
	19,000	67.5	−55.7	------	33	.01	------	------	
83 29	19,349	64.1	−55.1	−.18	33	.01	------	------	
	20,000	57.7	−52.2	------	33	.01	------	------	
	21,000	49.5	−47.7	------	33	.02	------	------	
93 34	21,559	45.9	−45.2	−.45	33	.02	------	------	

[1] Less than 0.01 mb.

NASHVILLE, TENN.

Launched 2:01 a.m. Dec. 28, 1929 (75th mer.)

0 00	149	997.6	5.6	------	96	8.73	nw.	4.5	10 St. Cu., NW.
	500	953.9	3.1	------	96	7.32	------	------	
2 09	647	938.3	2.1	0.70	96	6.82	------	------	
3 09	952	903.8	4.6	−.82	92	7.80	------	------	Inversion.
	1,000	899.7	4.6	------	90	7.63	------	------	
4 47	1,329	863.0	4.4	.05	74	6.19	------	------	Isothermal.
	1,500	844.8	3.4	------	74	5.76	------	------	
	2,000	794.4	.5	------	76	4.81	------	------	
10 13	2,393	756.4	−1.8	.58	77	4.06	------	------	
	2,500	746.0	−2.4	------	71	3.56	------	------	
13 22	2,812	717.1	−4.0	.53	54	2.37	------	------	
14 21	2,980	702.3	−3.8	−.12	45	2.01	------	------	Inversion.
	3,000	699.2	−3.9	------	45	1.99	------	------	
	4,000	615.9	−10.8	------	41	1.00	------	------	
23 38	4,232	598.0	−12.4	.69	40	.85	------	------	
	5,000	540.5	−17.5	------	35	.46	------	------	
27 41	5,045	537.1	−17.8	.66	35	.45	------	------	
28 23	5,211	525.6	−17.8	.00	33	.43	------	------	Isothermal.
	6,000	474.2	−22.6	------	32	.26	------	------	
38 17	6,847	421.1	−27.8	.61	30	.14	------	------	
	7,000	412.2	−29.2	------	30	.13	------	------	
	8,000	357.5	−38.3	------	27	.04	------	------	
45 39	8,210	346.9	−40.2	.91	26	.03	------	------	Adiabatic.

Launched 8:07 a.m. Dec. 28, 1929 (75th mer.)

0 00	149	1,004.0	2.0	------	95	6.70	n.	2.7	10 St., N.
	500	958.4	−.8	------	95	5.43	------	------	
1 58	599	945.8	−1.6	0.80	95	5.09	------	------	
3 14	890	912.2	3.0	−1.58	91	6.90	------	------	Inversion.
	1,000	899.5	3.0	------	93	7.05	------	------	
4 05	1,106	888.3	3.0	.00	95	7.20	------	------	Isothermal.
4 43	1,235	874.2	4.1	−.85	55	4.50	------	------	Inversion.
	1,500	845.2	3.3	------	51	3.95	------	------	
	2,000	794.5	1.7	------	44	3.04	------	------	
	2,500	746.8	.1	------	36	2.21	------	------	
10 16	2,510	746.5	.1	.31	36	2.21	------	------	
	3,000	700.5	−2.2	------	34	1.73	------	------	
16 29	3,839	631.4	−6.2	.47	31	1.13	------	------	
	4,000	618.1	−7.4	------	31	1.02	------	------	
	5,000	541.6	−14.5	------	29	.51	------	------	
25 14	5,887	483.2	−20.9	.72	27	.26	------	------	
	6,000	475.6	−21.7	------	27	.24	------	------	
	7,000	414.6	−28.4	------	26	.12	------	------	
33 37	7,899	365.8	−34.4	.67	26	.06	------	------	
	8,000	360.8	−35.1	------	26	.06	------	------	
	9,000	313.3	−41.8	------	26	.03	------	------	
40 28	9,561	287.7	−45.5	.67	26	.02	------	------	

Launched 1:55 p.m. Dec. 28, 1929 (75th mer.)

0 00	149	999.3	2.9	------	86	6.47	sw.	2.7	10 St. Cu. W.
2 46	500	956.5	.8	0.85	90	5.82	------	------	
4 04	647	939.3	−.1	.00	91	5.51	------	------	Isothermal.
5 25	868	913.9	4.1	−1.90	71	5.81	------	------	Inversion.
	1,000	897.5	3.7	------	68	5.41	------	------	
	1,500	842.3	2.1	------	57	4.05	------	------	
	2,000	793.9	.6	------	46	3.16	------	------	
13 56	2,065	788.0	.4	.31	45	2.83	------	------	
16 52	2,433	752.6	−.1	.14	40	2.42	------	------	
	2,500	746.5	−.6	------	40	2.32	------	------	
18 10	2,648	732.7	−1.7	.74	40	2.12	------	------	
	3,000	700.6	−1.9	------	34	1.78	------	------	

TABLE 2.—*Tabulated data of sounding-balloon observations*—Con.

NASHVILLE, TENN.—Continued

Launched 1:55 p.m. Dec. 28, 1929 (75th mer.)—Continued

Time interval from launching	Altitude, M.S.L.	Pressure	Temperature	$\frac{\Delta t}{100 \text{ m.}}$	Humidity: Relative	Humidity: Vapor pressure	Wind: Direction	Wind: Velocity	Remarks
m.s.	*M.*	*Mb.*	*°C.*		*Pct.*	*Mb.*		*M.p.s.*	
22 35	3,285	676.7	−2.0	0.05	30	1.55	------	------	Isothermal.
	4,000	617.5	−7.1	------	30	1.01	------	------	
33 21	4,886	550.6	−13.5	.72	30	.58	------	------	
	5,000	542.2	−13.7	------	30	.56	------	------	
34 16	5,032	540.3	−13.8	.21	30	.56	------	------	
39 53	5,973	476.7	−21.4	.81	30	.27	------	------	
	6,000	475.6	−21.6	------	30	.27	------	------	
45 48	6,944	417.3	−27.4	.62	30	.15	------	------	
	7,000	414.2	−27.7	------	30	.15	------	------	
	8,000	360.3	−33.5	------	30	.08	------	------	
55 37	8,525	334.6	−36.1	.55	30	.06	------	------	
	9,000	312.6	−39.6	------	30	.04	------	------	
62 19	9,610	286.3	−44.1	.74	30	.02	------	------	
	10,000	270.0	−46.5	------	30	.02	------	------	
68 08	10,684	243.7	−50.7	.61	30	.01	------	------	Tropopause.
	11,000	232.4	−50.7	------	29	.01	------	------	
	12,000	199.4	−50.6	------	26	.01	------	------	
77 46	12,456	186.5	−50.5	−.01	25	.01	------	------	
	13,000	171.6	−50.6	------	25	.01	------	------	
	14,000	147.3	−50.9	------	24	.01	------	------	
87 50	14,327	140.6	−51.0	.03	24	.01	------	------	
91 38	14,969	127.5	−54.7	.58	24	(1)	------	------	
	15,000	126.9	−54.7	------	24	(1)	------	------	
	16,000	108.8	−55.7	------	24	(1)	------	------	
102 05	16,690	97.9	−56.3	.09	24	(1)	------	------	
	17,000	93.5	−56.1	------	24	(1)	------	------	
	18,000	79.7	−55.6	------	24	(1)	------	------	
108 01	18,025	79.6	−55.6	−.05	24	(1)	------	------	

[1] Less than 0.01 mb.

Launched 8:02 p.m., Dec. 28, 1929 (75th mer.)

0 00	149	998.3	2.0	------	87	6.13	s.	1.8	Cloudless.
1 13	305	979.3	6.7	−3.01	79	7.75	------	------	Inversion.
	500	954.9	5.6	------	79	7.18	------	------	
5 00	757	926.6	4.2	.51	79	6.52	------	------	
6 31	910	909.5	5.1	−.59	58	5.09	------	------	Inversion.
	1,000	899.4	4.4	------	57	4.76	------	------	
	1,500	845.1	.6	------	54	3.45	------	------	
	2,000	794.5	−3.2	------	51	2.39	------	------	
16 07	2,178	776.4	−4.6	.76	50	2.08	------	------	
	2,500	745.1	−6.9	------	52	1.78	------	------	
18 59	2,592	736.5	−7.5	.70	53	1.73	------	------	
	3,000	699.1	−10.7	------	69	1.70	------	------	
24 31	3,376	665.4	−13.7	.79	83	1.56	------	------	
27 48	3,789	630.3	−15.1	.34	74	1.22	------	------	
29 19	4,003	612.8	−13.1	−.93	59	1.17	------	------	Inversion.
	5,000	537.0	−19.5	------	58	.64	------	------	
38 57	5,398	508.8	−22.0	.64	57	.49	------	------	
	6,000	469.5	−26.5	------	57	.31	------	------	
46 42	6,789	420.0	−32.4	.75	58	.17	------	------	
	7,000	407.6	−33.8	------	57	.15	------	------	
	8,000	352.7	−40.4	------	53	.06	------	------	
55 52	8,414	332.6	−43.1	.66	51	.05	------	------	

ST. LOUIS, MO.

Launched 8 a.m., Dec. 28, 1929 (75th mer.)

0 00	170	999.0	−2.6	------	99	4.88	s.	3.1	10 Lt. fog; 10 Lt. smoke.
1 39	486	960.2	1.3	−1.23	99	6.64	wsw.	7.7	Inversion.
	500	958.0	1.4	------	98	6.62	wsw.	7.8	
3 55	934	908.5	3.5	−.49	58	4.55	w.	12.8	Inversion.
	1,000	901.3	3.0	------	58	4.40	w.	12.8	
	1,500	845.9	−0.9	------	61	3.46	w.	13.8	
	2,000	792.6	−4.6	------	64	2.67	wnw.	12.5	
	2,500	744.9	−8.4	------	67	2.02	wnw.	12.4	
13 49	2,736	723.4	−10.2	.76	68	1.75	wnw.	12.5	
	3,000	696.0	−10.7	------	63	1.55	wnw.	15.6	
17 23	3,318	671.0	−11.2	.17	58	1.36	------	------	
19 45	3,718	636.8	−13.2	.50	65	1.28	------	------	
	4,000	613.5	−14.3	------	61	1.09	------	------	
23 46	4,558	570.1	−16.5	.39	53	.77	------	------	
	5,000	536.7	−20.4	------	54	.54	------	------	
	6,000	468.7	−29.1	------	56	.24	------	------	
31 04	6,083	463.0	−29.8	.87	56	.22	------	------	
	7,000	407.4	−37.0	------	54	.10	------	------	
38 01	7,734	365.9	−42.8	.79	53	.05	------	------	

SIOUX CITY, IOWA

Launched 8:25 p.m., Dec. 28, 1929 (75th mer.)

0 00	361	977.7	0.9	------	53	3.46	w.	2.7	Few A St., W.
	500	960.0	.5	------	52	3.29	------	------	
1 46	530	955.0	.5	0.24	52	3.29	------	------	
	1,000	903.0	−2.5	------	58	2.88	------	------	

TABLE 2.—*Tabulated data of sounding-balloon observations*—Con.

SIOUX CITY, IOWA—Continued

Launched 8:25 p.m., Dec. 28, 1929 (75th mer.)—Continued

Time interval from launching	Altitude, M.S.L.	Pressure	Temperature	$\frac{\Delta t}{100\ m.}$	Humidity: Relative	Humidity: Vapor pressure	Wind: Direction	Wind: Velocity	Remarks
m.s.	*M.*	*Mb.*	*°C.*		*Pct.*	*Mb.*		*M.p.s.*	
5 20	1,410	859.0	−5.2	0.65	62	2.46	-------	-------	
	1,500	848.0	−5.7	-------	61	2.32	-------	-------	
	2,000	795.0	−8.6	-------	59	1.75	-------	-------	
	2,500	742.0	−11.4	-------	55	1.27	-------	-------	
11 59	2,860	710.0	−13.3	.56	52	1.01	-------	-------	
	3,000	696.0	−14.0	-------	51	.93	-------	-------	
	4,000	608.0	−19.0	-------	49	.56	-------	-------	
22 11	4,960	537.0	−23.2	.47	47	.36	-------	-------	
	5,000	533.0	−23.5	-------	47	.35	-------	-------	
	6,000	463.0	−30.0	-------	47	.18	-------	-------	
	7,000	402.0	−36.5	-------	47	.09	-------	-------	
31 58	7,290	386.0	−38.3	.65	47	.07	-------	-------	
	8,000	347.0	−43.8	-------	48	.04	-------	-------	
37 30	8,620	317.0	−48.6	.77	48	.02	-------	-------	

Launched 1:56 a.m., Dec. 29, 1929 (75th mer.)

0 00	361	975.3	−1.1	-------	68	3.79	s.	3.6	Few A. St., W.
	500	959.0	−1.1	-------	66	3.70	-------	-------	
1 55	806	923.0	−1.1	0.00	62	3.46	-------	-------	Isothermal.
	1,000	901.0	−2.3	-------	63	3.10	-------	-------	
	1,500	843.0	−5.9	-------	66	2.50	-------	-------	
7 56	2,000	793.0	−9.5	.70	68	1.86	-------	-------	
8 46	2,180	772.0	−9.1	−.22	68	1.92	-------	-------	Inversion.
	2,500	742.0	−10.0	-------	70	1.85	-------	-------	
	3,000	695.0	−11.3	-------	73	1.70	-------	-------	
16 07	3,810	622.0	−13.7	.28	75	1.41	-------	-------	
	4,000	608.0	−15.4	-------	78	1.40	-------	-------	
	5,000	531.0	−23.8	-------	80	.90	-------	-------	
	6,000	463.0	−32.6	-------	83	.40	-------	-------	
25 46	6,180	451.0	−34.2	.86	83	.20	-------	-------	
	7,000	402.0	−40.9	-------	80	.10	-------	-------	
	8,000	347.0	−49.1	-------	75	.03	-------	-------	
33 22	8,070	343.0	−49.9	.83	75	.03	-------	-------	
	9,000	296.0	−57.1	-------	73	.01	-------	-------	
40 22	9,790	262.0	−63.7	.80	71	(1)	-------	-------	Tropopause.
	10,000	253.0	−63.5	-------	71	(1)	-------	-------	
	11,000	216.0	−62.8	-------	71	(1)	-------	-------	
	12,000	184.0	−62.0	-------	70	(1)	-------	-------	
50 05	12,260	176.0	−61.7	−.08	70	.01	-------	-------	
	13,000	156.0	−62.2	-------	70	(1)	-------	-------	
	14,000	132.0	−62.8	-------	70	(1)	-------	-------	
59 35	14,400	124.0	−63.2	.07	70	(1)	-------	-------	
	15,000	112.0	−63.2	-------	70	(1)	-------	-------	
	16,000	96.0	−63.5	-------	70	(1)	-------	-------	
69 22	16,730	85.0	−63.5	.01	70	(1)	-------	-------	
	17,000	81.0	−63.5	-------	70	(1)	-------	-------	
	18,000	69.0	−63.4	-------	70	(1)	-------	-------	
79 16	18,510	64.0	−63.3	−.01	70	(1)	-------	-------	
	19,000	59.0	−64.0	-------	69	(1)	-------	-------	
85 56	19,530	54.0	−65.0	.17	68	(1)	-------	-------	

[1] Less than 0.01 mb.

VICKSBURG, MISS.

Launched 8 a.m., Dec. 28, 1929 (75th mer.)

0 00	92	1,011.7	7.8	-------	99	10.47	nw.	2.2	10 Nb., NW.; 10 Lt. fog, NW.
	500	962.5	6.2	-------	100	9.48	-------	-------	
1 19	638	946.9	5.6	0.40	100	9.09	-------	-------	
	1,000	906.8	7.5	-------	92	9.54	-------	-------	
3 32	1,121	892.9	8.2	−.54	89	9.67	-------	-------	Inversion.
5 26	1,446	858.4	7.3	.28	89	9.10	-------	-------	
	1,500	853.0	7.1	-------	87	8.78	-------	-------	
	2,000	802.3	5.5	-------	66	5.96	-------	-------	
	2,500	755.1	3.8	-------	45	3.61	-------	-------	
13 14	2,777	729.3	2.9	.33	33	2.48	-------	-------	
	3,000	709.4	1.4	-------	30	2.03	-------	-------	
16 36	3,283	685.0	−.5	.67	27	1.58	-------	-------	
17 32	3,395	675.6	−.3	−.18	26	1.55	-------	-------	Inversion.
19 11	3,649	654.4	.8	−.43	22	1.42	-------	-------	Inversion.
	4,000	626.5	−.9	-------	20	1.13	-------	-------	
26 13	4,580	582.3	−3.7	.48	18	.81	-------	-------	
	5,000	553.4	−6.8	-------	18	.62	-------	-------	
33 01	5,526	516.0	−10.6	.73	17	.42	-------	-------	
	6,000	485.6	−14.1	-------	16	.29	-------	-------	
39 44	6,386	461.0	−17.0	.74	15	.21	-------	-------	

AMARILLO, TEX.

Launched 2 a.m., Jan. 7, 1930 (75th mer.)

0 00	1,117	886.1	−6.8	-------	47	1.63	ne.	4.0	10 St., NE.
1 38	1,420	851.0	−9.7	0.97	68	1.83	-------	-------	Adiabatic.
	1,500	843.0	−7.5	-------	65	2.12	-------	-------	
	2,000	792.0	3.6	-------	50	3.95	-------	-------	
3 55	2,230	769.0	8.5	−2.24	41	4.55	-------	-------	Inversion.
	2,500	742.0	6.6	-------	42	4.09	-------	-------	
	3,000	699.0	3.2	-------	42	3.23	-------	-------	

TABLE 2.—*Tabulated data of sounding-balloon observations*—Con.

AMARILLO, TEX.—Continued

Launched 2 a.m., Jan. 7, 1930 75th mer.)—Continued

Time interval from launching	Altitude, M.S.L.	Pressure	Temperature	$\frac{\Delta t}{100\ m.}$	Humidity: Relative	Humidity: Vapor pressure	Wind: Direction	Wind: Velocity	Remarks
m.s.	*M.*	*Mb.*	*°C.*		*Pct.*	*Mb.*		*M.p.s.*	
7 47	3,210	680.0	1.9	0.67	43	3.01	-------	-------	
	4,000	614.0	−5.4	-------	54	2.11	-------	-------	
14 19	4,730	560.0	−12.1	.92	63	1.37	-------	-------	
	5,000	540.0	−13.8	-------	59	1.10	-------	-------	
17 29	5,470	507.0	−16.8	.63	47	.66	-------	-------	
	6,000	472.0	−21.6	-------	41	.37	-------	-------	
21 20	6,300	451.0	−24.3	.90	39	.27	-------	-------	
	7,000	411.0	−29.3	-------	37	.15	-------	-------	
27 49	7,970	357.0	−36.5	.73	34	.06	-------	-------	
	8,000	356.0	−36.6	-------	34	.06	-------	-------	
	9,000	306.0	−47.0	-------	36	.02	-------	-------	
35 50	9,770	272.0	−55.2	1.04	39	.01	-------	-------	Superadiabatic.

CINCINNATI, OHIO

Launched 8:03 p.m. Jan. 6, 1930 (75th mer.)

0 00	229	998.3	14.4	-------	56	9.19	sse.	6.3	10 St. Cu.,
	500	968.2	13.1	-------	-------	-------	-------	-------	
	1,000	914.0	10.6	-------	-------	-------	-------	-------	
	1,500	857.8	8.1	-------	-------	-------	-------	-------	
4 56	1,517	855.5	8.0	0.50	-------	-------	-------	-------	
	2,000	806.9	5.3	-------	-------	-------	-------	-------	
8 09	2,276	779.9	3.8	.55	-------	-------	-------	-------	
	2,500	759.6	2.3	-------	-------	-------	-------	-------	
	3,000	713.7	−1.1	-------	-------	-------	-------	-------	
11 10	3,125	701.9	−1.9	.67	-------	-------	-------	-------	
	4,000	626.5	−7.5	-------	-------	-------	-------	-------	
	5,000	550.8	−13.8	-------	-------	-------	-------	-------	
20 15	5,166	539.9	−14.9	.64	-------	-------	-------	-------	
21 03	5,388	527.8	−14.0	−.52	-------	-------	-------	-------	Inversion.
	6,000	485.1	−18.0	-------	-------	-------	-------	-------	
27 39	6,863	431.0	−23.3	.61	-------	-------	-------	-------	
	7,000	423.2	−24.5	-------	-------	-------	-------	-------	
	8,000	368.1	−33.3	-------	-------	-------	-------	-------	
36 10	8,708	332.7	−39.0	.88	-------	-------	-------	-------	
	9,000	318.8	−41.6	-------	-------	-------	-------	-------	
	10,000	274.9	−50.4	-------	-------	-------	-------	-------	
43 34	10,746	246.1	−57.0	.88	-------	-------	-------	-------	

Launched 2:05 a.m. Jan. 7, 1930 (75th mer.)

0 00	229	997.3	13.7	-------	62	9.72	s.	8.0	10 St. Cu., S.
	500	966.0	13.0	-------	63	9.44	-------	-------	
	1,000	910.0	11.7	-------	66	9.08	-------	-------	
3 38	1,138	894.9	11.3	0.26	67	8.97	-------	-------	
	1,500	857.6	9.3	-------	66	7.73	-------	-------	
	2,000	807.8	6.4	-------	66	6.34	-------	-------	
11 19	2,415	766.5	4.1	.56	65	5.32	-------	-------	
	2,500	759.5	3.6	-------	65	5.14	-------	-------	
	3,000	715.0	0.9	-------	66	4.30	-------	-------	
19 30	3,652	657.1	−2.7	.55	67	3.28	-------	-------	
	4,000	630.0	−4.8	-------	69	2.83	-------	-------	
	5,000	553.4	−10.7	-------	75	1.84	-------	-------	
28 49	5,279	533.8	−12.3	.59	77	1.64	-------	-------	
	6,000	485.9	−17.2	-------	77	1.05	-------	-------	
	7,000	424.6	−24.0	-------	77	.54	-------	-------	
38 05	7,343	404.8	−26.3	.68	77	.43	-------	-------	
	8,000	370.4	−30.9	-------	-------	-------	-------	-------	
	9,000	321.3	−37.9	-------	-------	-------	-------	-------	
46 08	9,195	312.1	−39.3	.70	-------	-------	-------	-------	
	10,000	278.2	−45.4	-------	-------	-------	-------	-------	
	11,000	240.0	−53.0	-------	-------	-------	-------	-------	
55 09	11,093	236.2	−53.7	.76	-------	-------	-------	-------	
	12,000	205.6	−61.9	-------	-------	-------	-------	-------	
64 28	12,875	178.6	−69.9	.91	-------	-------	-------	-------	Tropopause.
	13,000	175.2	−69.0	-------	-------	-------	-------	-------	
	14,000	149.4	−62.0	-------	-------	-------	-------	-------	
70 59	14,036	148.2	−61.7	−.71	-------	-------	-------	-------	
	15,000	127.3	−63.5	-------	-------	-------	-------	-------	
80 43	15,982	109.0	−65.3	.18	-------	-------	-------	-------	
	16,000	108.6	−65.3	-------	-------	-------	-------	-------	
	17,000	92.7	−66.9	-------	-------	-------	-------	-------	
90 15	17,650	83.2	−67.9	.16	-------	-------	-------	-------	
	18,000	79.0	−68.3	-------	-------	-------	-------	-------	
96 29	18,418	73.5	−68.7	.10	-------	-------	-------	-------	
102 31	18,896	68.0	−68.3	−.08	-------	-------	-------	-------	

Launched 2:12 p.m. Jan. 7, 1930 (75th mer.)

0 00	229	997.2	12.1	-------	96	13.56	sw.	4.0	10 Nb., SW.
	500	964.3	10.8	-------	96	12.43	-------	-------	
	1,000	908.2	8.3	-------	96	10.51	-------	-------	
5 11	1,038	905.0	8.1	0.49	96	10.37	-------	-------	
	1,500	856.0	6.6	-------	96	9.35	-------	-------	
8 46	1,641	841.0	6.2	.32	96	9.10	-------	-------	
	2,000	805.7	4.4	-------	95	7.94	-------	-------	
	2,500	757.7	2.0	-------	95	6.70	-------	-------	
16 28	2,952	715.5	−.2	.49	94	5.65	-------	-------	
	3,000	710.9	−.2	-------	94	5.65	-------	-------	
19 29	3,115	701.3	−.2	.00	94	5.65	-------	-------	Isothermal.

TABLE 2.—*Tabulated data of sounding-balloon observations*—Con.

CONCORDIA, KANS.

Launched 2:03 p.m. Jan. 6, 1930 (75th mer.)

Time interval from launching	Altitude, M.S.L.	Pressure	Temperature	$\frac{\Delta t}{100\,m.}$	Humidity: Relative	Humidity: Vapor pressure	Wind: Direction	Wind: Velocity	Remarks
m.s.	*M.*	*Mb.*	*°C.*		*Pct.*	*Mb.*		*M.p.s.*	
0 00	418	966.8	−6.8	-------	40	1.38	n.	5.8	3A St. NW.; 4 St. Cu., NW.
	500	956.1	−8.6	-------	43	1.27	-------	-------	
2 12	588	945.8	−10.5	2.18	47	1.18	-------	-------	Superadiabatic.
2 44	629	940.7	−10.6	.24	22	.55	-------	-------	
3 42	761	924.8	−11.8	.91	22	.49	-------	-------	Adiabatic.
	1,000	896.5	−14.8	-------	15	.26	-------	-------	
6 38	1,014	894.4	−15.0	1.26	15	.25	-------	-------	Superadiabatic.
7 17	1,131	880.8	−14.6	−.34	15	.26	-------	-------	Inversion.
8 22	1,312	860.3	−6.5	−4.48	15	.53	-------	-------	Inversion.
	1,500	838.8	−2.8	-------	15	.73	-------	-------	
9 38	1,567	833.0	−1.4	−2.00	15	.82	-------	-------	Inversion.
11 35	1,807	808.2	.3	−.71	15	.94	-------	-------	Inversion.
12 13	1,953	793.5	2.1	−1.23	15	1.06	-------	-------	Inversion.
	2,000	788.9	2.4	-------	15	1.09	-------	-------	
13 40	2,116	777.9	3.1	−.61	15	1.14	-------	-------	Inversion.
15 29	2,433	748.0	3.8	−.22	15	1.20	-------	-------	Inversion.
	2,500	741.7	3.2	-------	15	1.15	-------	-------	
	3,000	697.2	−.9	-------	15	.85	-------	-------	
23 57	3,727	635.7	−7.0	.83	15	.51	-------	-------	
	4,000	614.7	−8.9	-------	15	.43	-------	-------	
	5,000	539.5	−16.1	-------	13	.20	-------	-------	
32 17	5,386	511.4	−18.8	.71	12	.14	-------	-------	
	6,000	471.6	−23.0	-------	12	.09	-------	-------	
40 19	6,976	411.7	−29.6	.68	12	.05	-------	-------	
	7,000	410.3	−29.8	-------	12	.05	-------	-------	
	8,000	356.7	−36.7	-------	12	.02	-------	-------	
48 10	8,954	312.0	−40.7	.56	12	.01	-------	-------	

Launched 2:09 a.m. Jan. 7, 1930 (75th mer.)

Time interval from launching	Altitude, M.S.L.	Pressure	Temperature	$\frac{\Delta t}{100\,m.}$	Humidity: Relative	Humidity: Vapor pressure	Wind: Direction	Wind: Velocity	Remarks
0 00	418	975.3	−14.5	-------	36	0.63	n.	3.1	Cloudless.
	500	963.6	−15.2	-------	36	.59	-------	-------	
	1,000	901.0	−19.4	-------	37	.41	-------	-------	
3 16	1,032	898.5	−19.7	0.85	37	.40	-------	-------	
4 58	1,313	865.9	−8.9	−3.84	35	1.01	-------	-------	Inversion.
	1,500	843.4	−5.5	-------	35	1.35	-------	-------	
6 55	1,559	838.9	−4.4	−1.83	35	1.48	-------	-------	Inversion.
8 41	1,933	800.1	−4.4	.00	33	1.40	-------	-------	Isothermal.
	2,000	793.1	−4.7	-------	33	1.37	-------	-------	
	2,500	745.3	−6.8	-------	34	1.18	-------	-------	
13 33	2,912	706.0	−8.6	.43	35	1.04	-------	-------	
	3,000	697.8	−8.8	-------	36	1.05	-------	-------	
14 52	3,167	682.9	−9.1	.20	38	1.08	-------	-------	
	4,000	611.4	−14.2	-------	43	.77	-------	-------	
20 57	4,315	587.4	−16.2	.62	45	.67	-------	-------	
	5,000	535.6	−21.5	-------	45	.41	-------	-------	
27 05	5,781	481.6	−27.5	.77	44	.22	-------	-------	
	6,000	468.1	−28.0	-------	42	.20	-------	-------	
28 03	6,051	464.1	−28.1	.22	42	.20	-------	-------	
	7,000	407.7	−35.1	-------	40	.09	-------	-------	
35 15	7,788	362.3	−40.9	.74	39	.04	-------	-------	
	8,000	351.9	−42.7	-------	39	.04	-------	-------	
39 47	8,732	315.2	−49.0	.86	38	.02	-------	-------	

(Launched 8:09 a.m. Jan. 7, 1930 (75th mer.)

Time interval from launching	Altitude, M.S.L.	Pressure	Temperature	$\frac{\Delta t}{100\,m.}$	Humidity: Relative	Humidity: Vapor pressure	Wind: Direction	Wind: Velocity	Remarks
0 00	418	975.8	−16.5	-------	40	0.58	ne.	2.7	Few A. St., SW.; 1 A. Cu., SW.; few Cu., SW
0 41	471	968.9	−16.5	0.00	41	.59	-------	-------	Isothermal.
	500	963.6	−16.8	-------	41	.58	-------	-------	
2 58	973	905.6	−21.6	1.02	43	.38	-------	-------	Superadiabatic.
	1,000	903.3	−20.9	-------	43	.41	-------	-------	
	1,500	846.5	−8.6	-------	43	1.27	-------	-------	
6 09	1,685	825.1	−4.1	−2.46	43	1.87	-------	-------	Inversion.
	2,000	793.6	−3.9	-------	40	1.77	-------	-------	
8 55	2,258	767.1	−3.7	−.07	38	1.71	-------	-------	Inversion.
9 47	2,412	752.6	−4.3	.39	41	1.75	-------	-------	
	2,500	744.0	−4.1	-------	42	1.83	-------	-------	
	3,000	698.2	−3.1	-------	49	2.32	-------	-------	
13 03	3,091	690.6	−2.9	−.21	50	2.40	-------	-------	Inversion.
	4,000	614.0	−12.5	-------	69	1.45	-------	-------	
18 08	4,024	612.5	−12.8	1.06	70	1.43	-------	-------	Superadiabatic.
18 31	4,142	603.2	−12.1	−.59	60	1.30	-------	-------	Inversion.
	5,000	537.6	−18.9	-------	48	.56	-------	-------	
25 09	5,221	522.4	−20.7	.80	45	.44	-------	-------	
	6,000	470.4	−23.7	-------	43	.31	-------	-------	
34 54	6,683	428.0	−26.4	.39	41	.23	-------	-------	
	7,000	410.3	−27.2	-------	40	.20	-------	-------	
	8,000	356.5	−29.7	-------	39	.15	-------	-------	
44 25	8,547	330.1	−31.1	.25	38	.13	-------	-------	
	9,000	309.5	−31.9	-------	38	.12	-------	-------	
	10,000	268.7	−33.6	-------	39	.10	-------	-------	
54 20	10,487	250.9	−34.5	.18	39	.09	-------	-------	
	11,000	233.5	−35.7	-------	38	.08	-------	-------	
59 02	11,408	219.9	−36.7	.24	38	.07	-------	-------	Tropopause.

TABLE 2.—*Tabulated data of sounding-balloon observations*—Con.

CONCORDIA, KANS.—Continued

(Launched 8:09 a.m. Jan. 7, 1930 (75th mer.)—Continued

Time interval from launching	Altitude, M.S.L.	Pressure	Temperature	$\frac{\Delta t}{100\,m.}$	Humidity: Relative	Humidity: Vapor pressure	Wind: Direction	Wind: Velocity	Remarks
m.s.	*M.*	*Mb.*	*°C.*		*Pct.*	*Mb.*		*M.p.s.*	
	12,000	202.8	−36.2	-------	38	.08	-------	-------	
	13,000	176.3	−35.5	-------	38	.08	-------	-------	
70 14	13,599	162.2	−35.0	−0.08	38	.09	-------	-------	
	14,000	153.2	−34.8	-------	38	.09	-------	-------	
	15,000	133.0	−34.4	-------	38	.09	-------	-------	
77 42	15,113	130.6	−34.3	−.05	38	.09	-------	-------	
	16,000	115.9	−34.7	-------	38	.09	-------	-------	
85 28	16,945	100.7	−35.2	.05	38	.08	-------	-------	
	17,000	100.5	−35.2	-------	38	.08	-------	-------	
	18,000	87.1	−35.1	-------	38	.08	-------	-------	
92 37	18,386	82.0	−35.0	−.01	38	.09	-------	-------	

DAVENPORT, IOWA

Launched 8:09 a.m. Jan. 7, 1930 (75th mer.)

Time interval from launching	Altitude, M.S.L.	Pressure	Temperature	$\frac{\Delta t}{100\,m.}$	Humidity: Relative	Humidity: Vapor pressure	Wind: Direction	Wind: Velocity	Remarks
0 00	178	1,000.7	−15.6	-------	86	1.36	nw.	4.9	1 Ci. St., W.
	500	958.8	−18.9	-------	92	1.07	nnw.	7.7	
1 52	695	933.7	−20.9	1.02	96	.96	nnw.	8.8	Superadiabatic.
	1,000	896.4	−9.8	-------	80	2.14	nnw.	8.0	
3 32	1,188	875.7	−2.9	−3.65	70	3.37	nnw.	7.8	Inversion.
	1,500	842.1	−1.7	-------	64	3.40	wnw.	7.6	
4 56	1,583	833.2	−1.4	−.38	62	3.37	wnw.	7.6	Inversion.
5 39	1,828	807.8	−2.9	.61	58	2.79	wsw.	7.5	
	2,000	790.2	−2.3	-------	58	2.93	wsw.	6.3	
6 15	2,081	782.6	−2.0	−.36	58	3.00	wsw.	6.0	Inversion.
	2,500	743.2	−4.5	-------	58	2.44	wsw.	8.4	
	3,000	698.3	−7.4	-------	58	1.91	wsw.	13.2	
	4,000	612.4	−13.2	-------	58	1.14	wsw.	29.2	
15 06	4,730	555.3	−17.5	.59	58	.77	sw.	34.2	
	5,000	535.2	−19.7	-------	56	.60	sw.	34.3	
	6,000	467.1	−27.6	-------	49	.24	sw.	47.1	
21 09	6,157	456.9	−28.9	.80	48	.21	wsw.	47.0	
	7,000	405.5	−36.0	-------	48	.10	-------	-------	
26 10	7,277	389.9	−38.4	.85	48	.07	-------	-------	
	8,000	350.0	−44.2	-------	49	.04	-------	-------	
33 02	8,859	308.7	−51.2	.81	51	.02	-------	-------	
	9,000	302.2	−52.0	-------	51	.02	-------	-------	
	10,000	259.3	−57.8	-------	51	.01	-------	-------	
40 26	10,559	237.4	−61.1	.58	51	(1)	-------	-------	

[1] Less than 0.01 mb.

DENVER, COLO.

Launched 1:43 p.m. Jan. 6, 1930 (75th mer.)

Time interval from launching	Altitude, M.S.L.	Pressure	Temperature	$\frac{\Delta t}{100\,m.}$	Humidity: Relative	Humidity: Vapor pressure	Wind: Direction	Wind: Velocity	Remarks
0 00	1,620	829.7	−0.8	-------	44	2.52	ne.	3.6	9 St. Cu., W.
	2,000	791.4	−.8	-------	-------	-------	e.	4.6	
2 32	2,012	789.8	−.8	0.00	-------	-------	e.	4.6	Isothermal.
	2,500	747.5	−3.5	-------	-------	-------	nw.	.6	
5 11	2,520	740.9	−3.6	.55	-------	-------	nnw.	1.4	
6 16	2,800	715.1	−3.4	−.07	-------	-------	nnw.	1.6	Inversion.
	3,000	697.0	−5.0	-------	-------	-------	wsw.	2.5	
	4,000	612.5	−13.1	-------	-------	-------	wsw.	17.0	
16 04	4,563	568.9	−17.7	.81	-------	-------	wsw.	24.2	
17 28	4,881	544.9	−20.0	.72	-------	-------	wsw.	25.9	
	5,000	536.0	−20.1	-------	-------	-------	wsw.	25.2	
19 01	5,153	525.5	−20.3	.11	-------	-------	wsw.	25.1	
21 32	5,477	503.1	−22.1	.56	-------	-------	wsw.	30.8	
	6,000	467.4	−27.0	-------	-------	-------	sw.	32.4	
	7,000	405.6	−36.4	-------	-------	-------	sw.	32.2	
29 54	7,198	395.2	−38.4	.95	-------	-------	sw.	32.2	Adiabatic.
	8,000	351.4	−45.1	-------	-------	-------	sw.	26.6	
36 30	8,624	320.5	−50.3	.83	-------	-------	-------	-------	Tropopause.
	9,000	303.1	−50.8	-------	-------	-------	-------	-------	
39 30	9,206	293.1	−51.1	.14	-------	-------	-------	-------	
	10,000	261.2	−47.9	-------	-------	-------	-------	-------	
	11,000	224.7	−43.8	-------	-------	-------	-------	-------	
49 41	11,175	218.7	−43.1	−.41	-------	-------	-------	-------	

Launched 1:51 a.m. Jan. 7, 1930 (75th mer.)

Time interval from launching	Altitude, M.S.L.	Pressure	Temperature	$\frac{\Delta t}{100\,m.}$	Humidity: Relative	Humidity: Vapor pressure	Wind: Direction	Wind: Velocity	Remarks
0 00	1,620	831.9	−8.2	-------	83	2.55	n.	2.2	10 St., N.
1 20	1,752	817.8	−10.9	2.05	-------	-------	-------	-------	Superadiabatic.
	2,000	790.9	−11.0	-------	-------	-------	-------	-------	
4 14	2,110	780.6	−11.0	.03	-------	-------	-------	-------	Isothermal.
	2,500	740.2	−13.4	-------	-------	-------	-------	-------	
	3,000	692.5	−16.5	-------	-------	-------	-------	-------	
11 37	3,246	671.9	−18.0	.62	-------	-------	-------	-------	
	4,000	606.5	−18.2	-------	-------	-------	-------	-------	
17 49	4,220	589.8	−18.3	.03	-------	-------	-------	-------	Isothermal.

TABLE 2.—*Tabulated data of sounding-balloon observations*—Con.

LITTLE ROCK, ARK.

Launched 8:04 p.m. Jan. 6, 1930 (75th mer.)

Time interval from launching	Altitude, M.S.L.	Pressure	Temperature	$\frac{\Delta t}{100\ m.}$	Humidity: Relative	Humidity: Vapor pressure	Wind: Direction	Wind: Velocity	Remarks
m.s.	*M.*	*Mb.*	*°C.*		*Pct.*	*Mb.*		*M.p.s.*	
0 00	127	1,003.5	16.2	-------	81	14.92	se.	3.6	10 St., SE.
1 03	414	970.1	14.8	0.49	95	16.00	-------	-------	
	500	959.9	15.0	-------	94	16.04	-------	-------	
1 47	642	944.5	15.2	−.18	93	16.07	-------	-------	Inversion.
	1,000	906.0	13.0	-------	94	14.08	-------	-------	
	1,500	851.6	9.9	-------	96	11.71	-------	-------	
	2,000	802.5	6.8	-------	98	9.68	-------	-------	
11 39	2,424	762.3	4.1	.62	100	8.19	-------	-------	
	2,500	755.4	3.9	-------	100	8.07	-------	-------	
13 14	2,632	743.2	3.6	.24	100	7.90	-------	-------	
	3,000	710.0	.8	-------	100	6.47	-------	-------	
15 44	3,053	705.3	.4	.76	100	6.29	-------	-------	
16 23	3,212	691.6	.6	−.13	76	4.85	-------	-------	Inversion.
20 39	3,887	635.4	−4.0	.68	96	4.21	-------	-------	
	4,000	627.6	−4.9	-------	93	3.79	-------	-------	
24 27	4,471	590.0	−8.8	.82	80	2.33	-------	-------	
27 58	4,997	551.0	−13.2	.84	90	1.77	-------	-------	
28 55	5,179	538.2	−14.2	.55	58	1.04	-------	-------	
29 38	5,381	524.3	−13.7	−.25	42	.79	-------	-------	Inversion.
	6,000	482.7	−18.4	-------	51	.62	-------	-------	
37 19	6,830	431.9	−24.8	.77	63	.41	-------	-------	
	7,000	422.3	−26.2	-------	64	.36	-------	-------	
	8,000	367.8	−34.7	-------	67	.16	-------	-------	
46 21	8,361	349.2	−37.7	.84	68	.11	-------	-------	
	9,000	318.3	−42.7	-------	65	.06	-------	-------	
55 48	9,997	275.0	−50.6	.79	61	.02	-------	-------	
	11,000	235.8	−59.2	-------	61	.01	-------	-------	
64 04	11,406	221.2	−62.7	.86	61	(1)	-------	-------	Tropopause.
	12,000	201.6	−62.1	-------	60	(1)	-------	-------	
73 37	12,954	173.8	−61.2	−.10	59	(1)	-------	-------	
	13,000	172.4	−61.3	-------	59	(1)	-------	-------	
	14,000	147.4	−63.3	-------	59	(1)	-------	-------	
83 16	14,582	134.4	−64.4	.20	59	(1)	-------	-------	
	15,000	125.9	−65.1	-------	58	(1)	-------	-------	
90 04	15,825	110.1	−66.4	.16	57	(1)	-------	-------	
	16,000	107.5	−66.4	-------	57	(1)	-------	-------	
96 05	16,597	97.5	−66.6	.03	55	(1)	-------	-------	

[1] Less than 0.01 mb.

Launched 1:54 a.m. Jan. 7, 1930 (75th mer.)

0 00	127	1,002.2	16.0	-------	82	14.92	s.	2.7	10 St., S.
	500	961.0	15.0	-------	82	13.99	-------	-------	
	1,000	904.0	13.5	-------	82	12.69	-------	-------	
4 40	1,160	885.0	13.0	0.29	82	12.28	-------	-------	
	1,500	851.0	11.4	-------	81	10.92	-------	-------	
10 04	1,910	810.0	9.6	.45	80	9.56	-------	-------	
	2,000	800.0	9.0	-------	80	9.18	-------	-------	
	2,500	753.0	5.6	-------	77	7.00	-------	-------	
	3,000	708.0	2.1	-------	74	5.25	-------	-------	
18 08	3,350	678.0	−.5	.70	71	4.16	-------	-------	
	4,000	623.0	−4.6	-------	61	2.54	-------	-------	
25 32	4,790	564.0	−9.4	.62	50	1.38	-------	-------	
	5,000	549.0	−9.9	-------	50	1.32	-------	-------	
	6,000	482.0	−11.7	-------	50	1.12	-------	-------	
31 50	6,030	480.0	−11.8	.19	50	1.12	-------	-------	
	7,000	423.0	−14.5	-------	39	.68	-------	-------	
37 46	7,280	408.0	−15.1	.26	34	.56	-------	-------	

NASHVILLE, TENN.

Launched 2:06 a.m. Jan. 7, 1930 (75th mer.)

0 00	149	1,003.7	13.2	-------	68	10.32	se.	6.7	10 A. Cu., SW.
	500	963.4	11.9	-------	-------	-------	-------	-------	
3 46	964	910.7	10.2	0.37	-------	-------	-------	-------	
	1,000	906.3	10.3	-------	-------	-------	-------	-------	
4 56	1,229	882.1	10.8	−.23	-------	-------	-------	-------	
	1,500	853.9	9.8	-------	-------	-------	-------	-------	Inversion.
7 20	1,815	822.2	8.7	.36	-------	-------	-------	-------	
	2,000	803.2	7.3	-------	-------	-------	-------	-------	
10 44	2,347	770.7	4.6	.77	-------	-------	-------	-------	
	2,500	756.3	4.1	-------	-------	-------	-------	-------	
13 10	2,612	745.9	3.8	.30	-------	-------	-------	-------	
14 14	2,752	733.2	2.9	.64	-------	-------	-------	-------	
	3,000	711.5	2.0	-------	-------	-------	-------	-------	
16 02	3,087	703.5	1.7	.36	-------	-------	-------	-------	
19 18	3,719	650.3	−1.8	.55	-------	-------	-------	-------	
	4,000	627.5	−3.5	-------	-------	-------	-------	-------	
	5,000	553.2	−9.5	-------	-------	-------	-------	-------	
29 06	5,531	515.8	−12.7	.60	-------	-------	-------	-------	
	6,000	485.7	−15.9	-------	-------	-------	-------	-------	
38 42	6,903	430.3	−22.0	.68	-------	-------	-------	-------	
	7,000	425.2	−22.7	-------	-------	-------	-------	-------	
	8,000	369.5	−30.2	-------	-------	-------	-------	-------	
47 14	8,704	335.2	−35.5	.75	-------	-------	-------	-------	
	9,000	321.9	−37.8	-------	-------	-------	-------	-------	
	10,000	279.6	−45.6	-------	-------	-------	-------	-------	
54 18	10,322	264.8	−48.1	.78	-------	-------	-------	-------	
	11,000	239.8	−53.2	-------	-------	-------	-------	-------	
60 19	11,563	219.8	−57.5	.76	-------	-------	-------	-------	

TABLE 2.—*Tabulated data of sounding-balloon observations*—Con.

ST. LOUIS, MO.

Launched 2 p.m. Jan. 6, 1930 (75th mer.)

Time interval from launching	Altitude, M.S.L.	Pressure	Temperature	$\frac{\Delta t}{100\ m.}$	Humidity: Relative	Humidity: Vapor pressure	Wind: Direction	Wind: Velocity	Remarks
m.s.	*M.*	*Mb.*	*°C.*		*Pct.*	*Mb.*		*M.p.s.*	
0 00	170	993.0	12.8	-------	77	11.38	s.	10.7	10 St.Cu., SSW.
	500	957.0	11.2	-------	-------	-------	-------	-------	
	1,000	902.0	8.6	-------	-------	-------	-------	-------	
	1,500	850.0	6.2	-------	-------	-------	-------	-------	
	2,000	799.0	3.5	-------	-------	-------	-------	-------	
9 41	2,310	770.0	1.9	0.51	-------	-------	-------	-------	
	2,500	751.0	3.1	-------	-------	-------	-------	-------	
10 58	2,600	743.0	3.7	−.62	-------	-------	-------	-------	Inversion.
	3,000	708.0	1.4	-------	-------	-------	-------	-------	
	4,000	622.0	−4.5	-------	-------	-------	-------	-------	
20 44	4,490	585.0	−7.2	.58	-------	-------	-------	-------	
	5,000	547.0	−10.9	-------	-------	-------	-------	-------	
	6,000	481.0	−18.4	-------	-------	-------	-------	-------	
30 07	6,020	479.0	−18.6	.75	-------	-------	-------	-------	
	7,000	418.0	−25.0	-------	-------	-------	-------	-------	
38 09	7,640	383.0	−29.1	.65	-------	-------	-------	-------	
	8,000	363.0	−32.4	-------	-------	-------	-------	-------	
	9,000	311.0	−41.3	-------	-------	-------	-------	-------	
45 04	9,100	306.0	−42.2	.90	-------	-------	-------	-------	

Launched 7:50 p.m. Jan. 6, 1930 (75th mer.)

0 00	170	993.9	11.7	-------	90	12.38	ssw.	9.8	10 St.Cu., SSW.
	500	954.2	9.0	-------	98	11.25	-------	-------	
1 47	609	942.7	8.1	0.82	100	10.80	-------	-------	
	1,000	898.3	5.9	-------	100	9.28	-------	-------	
	1,500	843.8	3.2	-------	100	7.68	-------	-------	
	2,000	794.1	.4	-------	100	6.29	-------	-------	
9 17	2,078	787.2	.0	.55	100	6.11	-------	-------	
10 26	2,230	772.2	−.9	.59	100	5.67	-------	-------	
11 13	2,386	757.2	−1.6	.45	77	4.13	-------	-------	
	2,500	746.0	−.2	-------	77	4.63	-------	-------	
11 43	2,532	743.6	.2	−1.23	77	4.77	-------	-------	Inversion.
	3,000	700.4	−3.4	-------	83	3.83	-------	-------	
15 34	3,397	666.8	−6.5	.77	88	3.12	-------	-------	
	4,000	617.0	−10.7	-------	85	2.09	-------	-------	
20 40	4,557	573.7	−14.5	.69	83	1.45	-------	-------	
	5,000	540.5	−16.9	-------	85	1.19	-------	-------	
	6,000	473.6	−22.5	-------	88	.72	-------	-------	
28 20	6,461	444.9	−25.0	.55	90	.58	-------	-------	
	7,000	413.2	−29.4	-------	89	.36	-------	-------	
35 20	7,822	367.9	−36.2	.82	87	.17	-------	-------	

Launched 2 a.m. Jan. 7,1930 (75th mer.)

0 00	170	997.6	0.0	-------	97	5.93	nnw.	3.6	10 Nb., NNW.
	500	955.9	−6.0	-------	-------	-------	-------	-------	
2 23	626	941.6	−8.3	1.82	-------	-------	-------	-------	Superadiabatic.
3 03	735	928.5	−1.1	−6.61	-------	-------	-------	-------	Inversion.
4 11	893	910.2	−.8	−.19	-------	-------	-------	-------	Inversion.
	1,000	897.0	.7	-------	-------	-------	-------	-------	
5 18	1,137	883.1	2.7	−1.43	-------	-------	-------	-------	Inversion.
	1,500	842.3	.8	-------	-------	-------	-------	-------	
	2,000	790.3	−1.9	-------	-------	-------	-------	-------	
	2,500	743.5	−4.5	-------	-------	-------	-------	-------	
14 53	2,756	720.5	−5.9	.53	-------	-------	-------	-------	
	3,000	698.5	−7.3	-------	-------	-------	-------	-------	
24 14	3,863	624.6	−12.3	.58	-------	-------	-------	-------	
	4,000	613.3	−13.3	-------	-------	-------	-------	-------	
33 27	4,692	560.0	−18.2	.71	-------	-------	-------	-------	
	5,000	537.4	−20.3	-------	-------	-------	-------	-------	
42 50	5,461	504.9	−23.5	.69	-------	-------	-------	-------	
	6,000	468.2	−27.0	-------	-------	-------	-------	-------	
51 59	6,072	464.2	−27.5	.65	-------	-------	-------	-------	
58 46	6,527	435.7	−30.1	.57	-------	-------	-------	-------	

Launched 8:07 a.m. Jan. 7, 1930 (75th mer.)

0 00	170	1,003.4	−6.1	-------	85	3.12	n.	4.9	10 St. Cu., NNW.
	500	960.0	−13.2	-------	-------	-------	-------	-------	
2 25	740	931.0	−18.2	2.12	-------	-------	-------	-------	Superadiabatic.
	1,000	901.0	−11.9	-------	-------	-------	-------	-------	
4 57	1,210	878.0	−6.3	−2.53	-------	-------	-------	-------	Inversion.
	1,500	842.0	−6.3	-------	-------	-------	-------	-------	
7 14	1,580	836.0	−6.3	.00	-------	-------	-------	-------	Isothermal.
	2,000	792.0	−7.9	-------	-------	-------	-------	-------	
	2,500	741.0	−9.8	-------	-------	-------	-------	-------	
	3,000	695.0	−11.6	-------	-------	-------	-------	-------	
16 48	3,130	683.0	−12.0	.37	-------	-------	-------	-------	
19 47	3,670	635.0	−14.0	.37	-------	-------	-------	-------	
	4,000	609.0	−15.5	-------	-------	-------	-------	-------	
22 19	4,280	587.0	−16.8	.46	-------	-------	-------	-------	
24 24	4,830	545.0	−21.9	.93	-------	-------	-------	-------	
	5,000	534.0	−23.1	-------	-------	-------	-------	-------	
	6,000	464.0	−30.6	-------	-------	-------	-------	-------	
31 28	6,640	423.0	−35.7	.76	-------	-------	-------	-------	
	7,000	402.0	−38.6	-------	-------	-------	-------	-------	
	8,000	346.0	−47.0	-------	-------	-------	-------	-------	
	9,000	298.0	−55.6	-------	-------	-------	-------	-------	
41 04	9,280	285.0	−58.0	.84	-------	-------	-------	-------	

TABLE 2.—*Tabulated data of sounding-balloon observations*—Con.

ST. LOUIS, MO.—Continued

Launched 8:07 a.m. Jan. 7, 1930 (75th mer.)—Continued

Time interval from launching	Altitude, M.S.L.	Pressure	Temperature	$\frac{\Delta t}{100\ m.}$	Humidity: Relative	Humidity: Vapor pressure	Wind: Direction	Wind: Velocity	Remarks
m.s.	*M.*	*Mb.*	*°C.*		*Pct.*	*Mb.*		*M.p.s.*	
	10,000	254.0	−62.4						
	11,000	215.0	−68.5						
50 08	11,810	189.0	−73.3	0.60					Tropopause.
	12,000	182.0	−73.6						
54 17	12,630	164.0	−74.4	.13					
	13,000	154.0	−73.4						
59 11	13,810	134.0	−71.2	−.27					
	14,000	130.0	−71.3						
	15,000	110.0	−71.7						
	16,000	92.0	−72.1						
68 49	16,340	87.0	−72.2	.04					
	17,000	78.0	−72.3						
75 02	17,910	67.0	−72.5	.02					
	18,000	66.0	−72.3						
	19,000	56.0	−70.7						
	20,000	47.0	−69.2						
83 08	20,400	44.0	−68.5	−.16					
	21,000	40.0	−67.4						
	22,000	34.0	−65.6						
88 17	22,750	30.0	−64.2	−.18					

SIOUX CITY, IOWA

Launched 8:03 a.m. Jan. 7, 1930 (75th mer.)

0 00	361	986.8	−20.4		49	0.49	nw.	4.0	1 A. St., SW.
	500	969.0	−22.2		49	.41			
	1,000	904.0	−27.3		50	.25			
2 38	1,070	896.0	−28.2	1.10	50	.23			Superadiabatic.
	1,500	843.0	−16.4		49	.72			
5 25	1,760	815.0	−8.9	−2.80	48	1.38			Inversion.
	2,000	791.0	−9.0		48	1.37			
7 26	2,300	758.0	−9.1	.04	48	1.36			Isothermal.
	2,500	738.0	−10.4		47	1.19			
	3,000	691.0	−13.2		47	.93			
	4,000	604.0	−19.1		47	.54			
16 56	4,600	559.0	−22.5	.58	46	.38			
	5,000	530.0	−25.8		48	.28			
	6,000	461.0	−34.1		51	.13			
26 12	6,160	449.0	−35.9	.86	52	.11			
	7,000	398.0	−41.6		52	.06			
35 48	7,890	348.0	−48.2	.71	52	.02			
	8,000	343.0	−48.8		51	.02			
	9,000	293.0	−55.5		50	.01			
45 38	9,640	266.0	−59.6	.65	49	(1)			Tropopause.
	10,000	252.0	−59.9		50	.01			
47 43	10,360	238.0	−60.2	.08	50	(1)			
	11,000	215.0	−59.4		51	.01			
51 52	11,350	203.0	−58.9	−.13	52	.01			
54 18	11,910	186.0	−54.9	−.71	52	.01			

[1] Less than 0.01 mb.

VICKSBURG, MISS.

(Launched 7:58 a.m., Jan. 7, 1930, 75th mer.)

0 00	92	1,009.0	17.1		86	16.78	se	4.0	10 Nb., SW.
	500	963.8	14.9						
	1,000	906.5	12.1						

TABLE 2.—*Tabulated data of sounding-balloon observations*—Con.

VICKSBURG, MISS.—Continued

(Launched 7:58 a.m., Jan. 7, 1930, 75th mer.)—Continued

Time interval from launching	Altitude, M.S.L.	Pressure	Temperature	$\frac{\Delta t}{100\ m.}$	Humidity: Relative	Humidity: Vapor pressure	Wind: Direction	Wind: Velocity	Remarks
m.s.	*M.*	*Mb.*	*°C.*		*Pct.*	*Mb.*		*M.p.s.*	
4 31	1,128	892.4	11.4	0.55					
5 17	1,303	874.0	12.0	−.34					Inversion.
	1,500	852.0	10.6						
	2,000	799.9	7.2						
	2,500	751.3	3.8						
	3,000	707.6	.3						
14 58	3,617	657.9	−3.9	.69					
	4,000	625.4	−6.5						
	5,000	550.8	−13.4						
25 00	5,434	520.4	−16.4	.69					
	6,000	483.5	−20.5						
	7,000	421.9	−27.8						
35 02	7,917	371.1	−34.5	.73					
	8,000	367.2	−35.5						
	9,000	317.5	−47.8						
	10,000	273.2	−60.0						
44 35	10,063	270.3	−60.8	1.23					Superadiabatic.
	11,000	233.0	−67.7						
49 00	11,307	221.8	−70.0	.74					Tropopause.
	12,000	198.9	−68.6						
	13,000	169.0	−66.5						
58 41	13,173	164.2	−66.1	−.21					
	14,000	143.7	−66.0						
	15,000	122.6	−65.9						
68 29	15,426	114.8	−65.9	−.01					
	16,000	104.7	−64.8						
78 35	16,759	92.8	−63.3	−.20					
	17,000	89.7	−62.8						
85 35	17,780	78.8	−61.0	−.23					

Launched 2:02 p.m. Jan. 7, 1930 (75th mer.)

0 00	92	1,007.7	20.2		83	19.66	s.	4.5	10 St., S.
	500	960.8	17.7						
	1,000	905.0	14.7						
	1,500	853.7	11.6						
7 26	1,672	836.9	10.6	0.61					
	2,000	804.5	10.4						
10 01	2,149	790.4	10.3	.06					Isothermal.
	2,500	756.5	7.8						
	3,000	712.4	4.3						
20 02	3,699	654.2	−.6	.70					
	4,000	625.9	−2.9						
	5,000	544.8	−10.4						
30 01	5,481	521.2	−14.0	.75					
	6,000	478.5	−17.3						
	7,000	424.4	−23.7						
39 40	7,295	409.5	−25.6	.64					
	8,000	372.5	−31.2						
	9,000	325.0	−39.1						
49 04	9,174	315.0	−40.5	.79					
	10,000	277.7	−48.6						
56 56	10,914	243.1	−57.5	.98					Adiabatic.
	11,000	239.3	−57.8						
60 10	11,540	221.1	−60.0	.40					Tropopause.
	12,000	206.1	−60.5						
	13,000	177.3	−61.4						
	14,000	150.6	−62.4						
75 23	14,089	148.5	−62.5	.10					

SNOW-SURFACE TEMPERATURE

By ROBERT E. HORTON and H. R. LEACH

[Consulting Engineers, Voorheesville, N.Y., Apr. 19, 1934]

(All temperatures in this paper are in Fahrenheit degrees)

On the polar ice shields, on glacier surfaces generally, and above the snow line in mountains, water losses, other than evaporation from snow or ice surfaces, are in general either nil or negligible. Available data on evaporation from snow indicate that it follows the same laws as evaporation from water surfaces if the difference in maximum vapor pressure over ice surfaces is taken into account. The conditions governing evaporation from broad snow surfaces differ from those for water or ground surfaces because the temperature of the latter follows the air temperature closely, with a difference commonly limited to a few degrees and dependent on latitude and elevation. The temperature of a snow or ice surface cannot rise above 32° F. The temperature of the evaporating surface governs the rate of vapor emission. As a result daytime evaporation from snow may be much less than would take place from an unfrozen surface at the same air temperature.

In studying evaporation losses for high latitudes and elevations it becomes important to determine the mean snow surface temperature. There are few data available on this point. Some of those available have been taken by exposing thermometers directly on the snow surface. The cold winter of 1934 at our place, Voorheesville, N.Y., afforded us a favorable opportunity for determining snow-surface temperatures. For this purpose maximum and minimum thermometers were exposed where the snow received full insulation, the entire ther-