

KG
11365
379

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Meteorological Record
of
Harvard College Observatory
1869.

KG11365.379

Cambridge Oh - Eclipse of Aug, th 7869

Beginning by the tables of Delambre & Burdhardt computed
in 1823 (for my Catalogue of all the eclipses
of the Sun between 1824 & 1901) - 5 21 17 0m.
in my 19th year whilst studying Law -

do by Le Verrier & Hansen, computed in
1860, using new Parallax of $\odot$ or $\frac{1}{23}$ - 5 22 23,7 -

" by Dear Hill's occultator (at Paris Almanac) 5 16 -

apparent $\odot$ in Longitude	1823	- 6 16 7 0m
	1860	- 17 29 5
		- 26 5

Greatest Obscuration	1823	6 16 30 0m
	1860	- 17 26 1/2 -
	Occultator	6 14 -

End of Eclipse	1823	- 7 7 28 0m
	1860	- 8 48,0 -

Occultator 7 3 -

Point of beginning $133\frac{1}{4}$ from the Venter to the Right
Orbit visible -

apparent Latitude at ap. $\odot$ in Long - $5'41''.25$

Sault of $\odot$ ap. Lat - Δ high 10.11 = 0,843

Computation of Mr Paine

Stocks by Auction, THIS DAY, WEDNESDAY, - - - - - NOVEMBER 14th, 1868, AT 12 O'CLOCK, M., AT THE NEW MERCHANTS EXCHANGE READING-ROOM, OLD STATE HOUSE. Payable and Transferable on Friday.

No. of Shares.	Description.	Par Value.
10	Globe National Bank,	\$100
15	Banker Hill do	100
5	Union do	100
15	National Bank of Redemption,	100
10	National Bank of Commerce,	100
80	State National Bank,	100
14	Webster do	100
4	State do	100
6	Atlantic Cotton Mills,	100
8	Pemberton Mills,	100
2	Boston Duck Co.,	700
100	Indianapolis and Cincinnati Railroad,	50
20	Metropolitan Railroad,	50
40	Granite Railway Co.,	100
40	Cheshire Railroad,	100
20	Neptune Insurance Co.,	100
7	Eliot Fire Insurance Co.,	100
5	American Insurance Co.,	100
15	National Insurance Co.,	30
25	~~Boston Water Co.,~~	100
2	Boston Gas Light Co.,	500
24	East Boston Gas Light Co.,	25
Also,		
\$2,100 State of Mass. 6s, 1871—Gold—Registered—\$100 each.		
1,000	do do 6s, 1875—do	
3,000	do do 5s, 1893—do	



RG 11365.379

Meteorological Record of Harvard College Observatory Cambridge, Mass.

1869

Minimum temperature of year -2.3, on March 6.

Maximum " " " 90.8, " July 11.

By solar thermometer, maximum " " " 152.6, " August 29.

Auroras numerous and brilliant, that of April 15 especially remarkable.

Many severe gales in the autumn: one somewhat destructive in Cambridge, on Sept. 8. Rain of Sept. 27 very heavy, amounting to 3 inches. Earthquake Oct. 22 not noticed at Observatory.

Reduction of rain-gauge measurements.

1 cubic foot of water weighs 997.137 avoirdupois ounces }
1 cubic inch " " " 0.577047 " " } Rainfall in inches = $\frac{\text{Weight in avoirdupois oz.}}{0.577047 (\text{no. of sq. in. exposed})}$

No. of square inches exposed by Gauge No. 1 assumed to be 103.98

$\therefore$ Rainfall in inches is $\frac{1}{10}$ of weight of water collected, in avoirdupois ounces.

Rim of large rain-gauge (Gauge No. 2) measured in May 1868 and found to be somewhat bent. It seemed to average 15.97 inches in diameter. The surface exposed is then about 200.31 in.
The arithmetical complement of the logarithm of 200.31 $\times$ 0.577 is 7.9370864.
The no. of ounces collected by gauge No. 2 has sometimes been divided by 106 to obtain the no. of inches.

For gauge west of Observatory (Gauge No. 3) the no. of ounces avoirdupois is divided by 29 to obtain the no. of inches.

Aperture of gauge No. 3 measured July 8, 1869, and assumed at $6\frac{5}{8} \times 7\frac{1}{2}$ inches. This gives 52.17 square inches, and 30.1045 for the divisor. 30 may be used for the present.

The column headed "Wind" gives the velocity in miles per hour, estimated when the anemometer was not in order. The formula for the anemometer is as follows, according to a note in memorandum book for 1868, "Circuit formed in anemometer every 30 revolutions; there are 500 revolutions for every mile; hence circuit is formed for every .06 of a mile. Wind blowing n miles per hour forms the circuit n times in .06 of an hour, or 216."

January 1869.

Meteorological Record of

10 A. M.

4 P. M.

Date	Barometer	Attached Therm.	Dry bulb	Wet bulb	Relative humidity Gay's tables	Wind	Clouds	Barometer	Attached Therm.	Dry bulb	Wet bulb	Relative humidity Gay's tables	Wind	Clouds
1	30.346	31.0	23.5	23.0	93	10.5	10 nim.	30.266	32.6	15.0	15.0	100	10	10 snowing
2	30.232	mercury below the scale	14.0			10.	10 nim.	30.138	28.0	17.5	17.4	98	7	10
3	29.966	28.0	31.0	31.0	100			*30.047	*32.3	*37.3	*34.2	70	*7	*6 cir. cir-cu.
4	30.144	32.5	37.0	36.0	90	5.	10 nim.	30.019	35.0	38.7	38.7	100	4	10 rather misty
5	29.462	35.0	41.5	41.0	96	2.	10 nim.	29.432	39.6	41.4	39.2	81	+9	9 mist wreaths apparently dispersing
6	29.880	36.5	30.0	26.0	57	7.	4 cir-cu.	29.906	38.4	34.8	30.4	59	6	7 cu. cir-cu.
7	30.086	33.5	35.0	+34.5	95	3.5	6 light cir-st.	30.009	41.0	44.0	38.0	52	5	0 faint streaks in the South of some haze
8	30.098	39.5	45.0	39.0	53	9.	7 faint cir-st. scattered over sky	30.067	44.9	49.1	42.7	55	0	9 cir.-cu.
9	30.100	40.5	37.5	*37.5	100	3.	10 nim.	29.924	41.9	41.5	39.7	84	3	10
10								29.884	46.8	40.2	34.2	35	9	1 cu. cir. haze
11	30.306	35.0	27.0	24.5	70	0.	10 nim. cu.	30.152	37.8	34.3	32.6	82	4	10 a little rain
12	29.480	38.5	29.0			12.	10 nim.	29.699	39.0	33.4	32.1	86	3	10
13	30.204	34.0	24.5	23.0	81	5.	0 slight stratus round horizon	30.200	39.3	31.6	28.4	67	2	0 cir. in North
14	30.068	34.5	30.5	+30.5	100	5.	0 slight st. in W. horizon.	29.987	40.9	39.0	33.9	54	5	7 cir.
15	29.838	36.5	34.5	32.0	74	2.	{st. and cu. quantity not entered}	29.710	40.1	38.1	35.4	74	+6	10
16	29.880	36.0	26.0	22.0	51	12.	3 cu. cir.	29.988	40.7	32.3	26.5	42	9	0
17								30.170	38.7	30.3	25.9	53	5	9 cir.-cu.
18	30.274	31.5	19.5	18.5	85	8.	8 cu.	30.234	34.6	24.3	22.0	48	7	10 a few snowflakes
19	30.008	29.5	19.0	16.5	62	10	9 cum-st.	29.880	33.8	24.8	21.1	53	8	0 cir. cum.
20	29.648	29.0	27.0	26.0	88	4.	10 nim.	29.548	34.0	33.2	30.2	80	9	9
21	29.780	29.0	21.0	18.5	64	+5.	8 cum.	29.674	32.8	30.3	26.8	63	6	10
22	29.956	mercury below the scale	6.0	5.0	76	14.	7 cir-st.	29.968	29.1	10.0	8.9	79	8	0 cir. in the South.
23	29.758	mercury below the scale	16.0	14.0	66	18.	3 cir-st.	29.601	32.8	32.5	27.8	53	6	0 hazy cloud bank in the N.
24								+29.591	+38.3	*39.5	*34.8	57	99 0	99 1 cir. haze
25	29.600	33.0	30.0	26.5	62	9.	9 cum-st.	29.732	34.0	22.8	19.0	49	12	0 streaks in horizon
26	29.992	25.0	11.0	10.5	90	11.5	5 cir-st.	29.977	29.4	21.3	18.0	53	9	7 cir.
27	30.050	26.0	24.0	21.0	61	5.5	6 cir-st.	29.929	36.4	33.4	26.6	34	11	8 cir. cir-st. thin
28	29.780	33.0	34.5	31.5	71	9.	7 cir.-cum.	29.840	37.1	37.5	33.0	58	13	1 cum.
29	30.104	35.0	34.0	31.0	71	5.	3 cir-st.	30.032	39.6	40.8	35.6	55	7	8 st. haze cir-st.
30	29.572	36.0	36.5	36.5	100	7.	10 nim.	28.490	38.9	39.8	39.3	90	0	9 st. cum.
31								29.718	35.6	28.1	24.1	54	13	10 st. cir-st.
Means	808.612	798.0	714.15		1958	192.0	175	925.812	1143.4	1016.8		2023	203	191
Red. to 32°	29.949	32.1	27.57		78	7.4	7.0	29.865	36.9	32.80		65	6.5	6.2
	29.940							29.842						

† At 11 $\frac{1}{2}$ A. M.
 ** At 11 A. M.
 †† At 11 $\frac{3}{4}$ A. M.

†† 70.0 added to sum of attached thermometer readings to allow for days when it could not be read.

* Observations made at 4 $\frac{1}{2}$ P. M.
 † Estimated - chronograph in use
 ‡ Approximately - mercury under fastening of tube.

†† At 4 $\frac{1}{4}$ P. M.
 ‡ At 4 $\frac{3}{4}$ P. M.

Harvard College Observatory.

January 1869.

Date	External Thermometer No. 4				Mini. Max.		Rain gauges	
	7 A.M.	2 P.M.	9 P.M.	Mean	Read at 10 A.M.	Read at 9 P.M.	No. 1	No. 2

Remarks.

1		20.5			20.5			
2	12.0	*17.6	19.0	16.2	9.5	26.5	\$9.5	
3	22.0	38.0	39.0	33.0	14.5	40.0	3.0	
4	36.5	†40.0			23.0			
5	38.3	†43.0			35.0	43.0		
6	28.3	†35.7	33.0	32.3	28.0	36.5	3.0	
7	28.2	46.2	39.5	38.0	26.0	46.2		
8	39.5	54.3	42.0	44.0	34.0	51.5		
9	36.0	40.1			34.5			
10					37.0			
11			33.0		23.5	45.0		
12	31.5	33.7	29.5	31.6	27.0	33.7		
13	23.8	31.3	26.4	27.2	22.5	35.0		
14	27.3	38.2	31.6	32.4	24.0	40.0		
15	32.0	38.4	36.0	35.5	27.5	38.0		
16	25.0	32.3	27.0	28.1	24.0	41.0		
17	20.0	32.0	25.0	25.7	19.0	34.8		
18	18.5	25.4	22.0	22.0	16.5	25.5		
19	15.5	24.6	20.0	20.0	14.0	24.6		
20	22.5	33.2	32.8	29.5	17.0	34.0		
21	16.0	28.6	33.0	25.5		33.5		
22	7.5	*10.6	6.2	8.1	3.0	34.0		
23	14.0	31.9	28.0	21.3	3.5	32.6		
24	28.0	44.3	30.0	33.1	15.0	44.5		
25	27.0	25.6	13.0	21.9	20.0	32.6		
26	9.0	20.9	19.0	16.3	8.5	21.5		
27	13.5	32.8			13.0			
28	28.5	39.7	33.0	33.7	23.5	39.6		
29	29.0	*42.8						
30	35.0	*39.5	40.0	38.2	33.5	42.0		
31	33.0	30.0						

Sums 686.4 965.2 658.0 613.6 602.0 869.6

Means 24.5 33.3 28.6 27.9 21.5 36.2

(Minimum, Jan. 22, 3.0) (Maximum, Jan. 8, 54.5)

162 ounces of water are said to have been reported at some time from gauge No. 2
 1.40 inches would be the corresponding amount.

From Mr. Wendell's notes it would seem that as much as 3.43 inches of rain or snow (melted) fell during the month.

* Observation made at 2 1/2 P.M.

† Observation made at 2 3/4 P.M.

‡ Observation made at 2 1/2 P.M.

§ Snow - much lost by drifting. This 9.5 must mean inches of snow, found by multiplying the ascertained depth of water at 12. No record of Gauge No. 1 seems to have been kept this month.

February, 1869.

Meteorological Record of

Date	10 A. M.							4 P. M.							Date
	Barometer	Attached Therm.	Dry bulb	Wet bulb	Relative humidity, Gay-Lussac's tables	Wind	Clouds	Barometer	Attached Therm.	Dry bulb	Wet bulb	Relative humidity, Gay-Lussac's tables	Wind	Clouds	
1	30.138	30.0	23.0	19.5	53	24.0	1 cir-cum.	30.289	34.8	25.6	20.6	39	13	0	1
2	30.472	26.0	15.5	13.0	57	5.5	3 cir-st.	30.449	36.5	27.0	22.5	47	3	5 st. haze	2
3	29.924	33.5	31.0	31.0	100	18.0	10 nim. (snowing)	29.667	34.7	33.5	33.1	95	15	10 nim. (raining)	3
4	28.972	35.5	25.0			6.0	10 nim.	28.996	35.5	29.5	29.4	99	0	10 nim. (snowing)	4
5	29.326	28.5	19.5	18.5	85	0.0	10 nim.	29.452	34.2	21.9	19.4	65	20 ^{††}	10 st.	5
6	29.960	30.5	26.0	22.0	51	14.5	1 cir-st.	29.921	35.7	33.0	31.8	88	8 ^{††}	5 cir. cir-cum.	6
7								30.280	38.2	23.0	19.0	47	13 ^{††}	0	7
8	30.306 ^{††}	28.0	22.5	22.0	93	12.0 ^{††}	3 ^{††} st.	30.268	34.9	36.2	31.1	55	9	1 cir-st. cir. cir-cum.	8
9	30.172	33.0	32.5	29.0	65	4.0	4 cir. cum.	30.021	41.6	35.1	32.0	69	7 ^{††}	4 cir. cir-st.	9
10	30.000	36.5	34.0	33.0	89	5.0	10 nim.	29.988	38.8	35.4	33.9	85	9 ^{††}	10 st.	10
11	29.988	35.0	34.0	33.0	89	1.5	10 nim.	29.928	37.3	34.5	34.0	95	0	10 nim. (snowing a little)	11
12	30.200	35.5	35.5	32.5	70	5.0	3 faint stratus clouds scattered over the whole heavens; quantity not given; assumed 3	30.067	41.7	41.9	35.3	45	10 ^{††}	5 cir. cir-st. cir-cum.	12
13	29.938	41.0	44.0			3.0	8 cum.	29.857	49.4	54.8	46.3	47	5 ^{††}	0 haze cir. cir-st.	13
14								30.220	39.0	28.9	25.4	61	5 ^{††}	10 st.	14
15	29.768	36.0	35.0	35.0	100	11.0	10 nim.	29.972	38.9	42.9	42.9	100	6 ^{††}	10 nim. (raining)	15
16	29.414	38.0	39.0	34.0	55	11.0	8 cir-st.	29.411	40.9	38.2	34.0	61	13 ^{††}	10 st. (clear streak in W.N.W.)	16
17	29.556	37.0	32.5	29.0	65	10.0	8 cir-st.	29.569	40.7	37.4	32.9	58	7 ^{††}	10 st.	17
18	29.182	38.5	34.0	33.5	95	0.0	10 nim.	29.139	39.8	33.5	32.0	84	13 ^{††}	10 (some snow) nim.	18
19	29.484	34.5	28.0	27.5	94	4.5	10 heavy cum-st.	29.430	37.2	35.1	32.6	75	3 ^{††}	9 st. cum-st.	19
20	30.034	31.5	28.0	26.0	77	1.5	10 st. nim.	29.999	35.5	33.7	29.9	63	9 ^{††}	10 st. (rather thin)	20
21								30.000	39.3	35.9	33.6	77	6 ^{††}	10 st.	21
22	29.800	37.0	42.0	41.0	91	7.5	10 nim.	29.800	41.4	42.9	40.9	83	4 ^{††}	10 st.	22
23	29.366	37.0	33.0	32.5	95	8.0	10 nim.	29.077	37.3	32.2	32.0	98	0	10 nim. (raining)	23
24	30.000	30.5	23.5	20.0	54	14.0	0 very slight cum.	30.033	38.2	29.6	24.7	47	4 ^{††}	6 cir-st. cir-cum.	24
25								30.340	36.2	35.3	27.8	36	3 ^{††}	3 cir. cir-st.	25
26								29.829	35.5	32.4	32.2	98	11 ^{††}	10 nim. (snowing)	26
27								29.557	35.9	26.2	23.7	70	14 ^{††}	2 {changing rapidly} cum. nim. snow equals	27
28								30.057	33.8	21.9	17.4	38	11 ^{††}	0	28
Sums	626.000	713.0	637.0		1478	166.0	149	835.609	1059.9	967.5		1925	221	180	
Means	29.810	34.0	30.33		78	7.9	7.1	29.843	37.9	34.55		69	7.9	6.4	
Red. to 32°	29.795							29.817							

** Observed at 12 M.

†† Observed at 11 A.M.

†† Observed at 11 A.M.

†† Force of wind estimated. This generally in use for purposes connected with the Smithsonian Institute. Caution: With gusts of much stronger wind.

Harvard College Observatory.

February, 1869.

Date	External Thermometer No. 4				Min.	Max.	Solar therm.	Rain gauges			Remarks.
	7 A.M.	2 P.M.	9 P.M.	Mean	Read at 10 A.M.	Read at 9 P.M.	Read at	No. 1	No. 2	No. 3	
1	20.5	26.7			19.0		83.0				
2	10.5	25.3	23.8	19.9	9.5	39.7	92.5				
3	28.5	32.0	34.5	31.7	15.0	34.5	93.5				
4	28.0	28.4			25.0		45.0				
5	14.0	21.1			13.5		57.0				
6	17.0	33.0			17.0		97.5				
7	16.0	22.0									
8	11.0	36.3	32.0	26.4	10.0	37.5	112.0				
9	28.0	35.7			22.5		110.5				
10	32.5	36.8	33.0	34.1	31.5	36.5	104.0				
11	31.8	35.1	32.0	33.0	31.0	36.5	48.0				
12	28.0	41.1			27.0		92.0				
13	36.8	53.8			35.0		102.5				
14		34.5									
15		40.9	32.0		28.0	46.5	117.0				
16	33.6	40.5			31.0		100.0	104.0	362.0	74.75	
17	28.5	38.9	32.0	33.1	28.0	44.0	108.5				
18	34.0	37.3	31.0	34.1	30.5	37.3	109.0	97.5		4.75	
19	20.5	35.6	25.0	27.0	19.5	35.6	74.5	0.875		0.75	
20	20.5	33.6	27.0	27.0	27.5	33.8	95.0				
21	27.2	37.5	36.0	33.6		38.5					
22	39.6	43.8			26.0		100.5				
23	32.0	31.3			31.0		65.5	14.5		8.5	
24	19.5	28.0	25.5	24.3	18.5	30.5	84.0	10.25		4.5	
25	24.3	31.9	26.0	26.4		35.0					
26	29.0	33.5	25.0	29.2		34.0					
27	25.8	28.7	19.6	24.7	19.0	29.2					
28	15.3	10.6				23.0		8.0		15.0	

649.4 888.8 476.5 404.5 515.0 569.1

25.0 34.2 28.0 28.9 23.4 35.6

(Minimum, Feb. 2, 9.5) (Maximum, Feb. 15, 46.5) (Solar therm., Feb. 15, 117.0)

* Observed at 2 3/4

† Snow blown on the bulb

‡ Observed at 2 1/2

§ Observed at 2 1/4

¶ Observed at 2 1/2

Feb. 3. Began snowing during previous night.
At 11 1/2 A.M. 28. inches of snow had fallen from a
mean of 10 measures.
Gauge No. 3 gave 3.1 inches of snow

Feb. 4. Rain by gauge No. 3 up to 10 A.M. since yesterday's observation
of 0.93 inches.

Total amount of melted snow and rain by No. 3 1.19 inches

" Amount of rain by " No. 2 " " No. 1 4.22 "

" Amount of rain by " No. 2 " " No. 1 0.83 inches.

Feb. 5. Fine aurora with streamers last midnight.

Feb. 15. At 10 o'clock A.M. raining hard.

" " " " gauge No. 1 gave 0.587 inches.

" " " " " " No. 3 " 0.642 "

Feb. 16. Amount of rain since yesterday's measurement by

gauge No. 1 1.73 inches - by gauge No. 3 2.58 inches

Total rainfall by No. 1 2.32 inches - by No. 2 3.13 inches - by No. 3 3.19 in.

Feb. 18. Snow falling all the morning.

At 10 A.M. amount of melted snow, gauge No. 1, 0.163 in.

" " " " " " No. 3, 0.164 in.

Feb. 19. Melted snow since yesterday's observations

by gauge No. 1, 0.015 inches - by gauge No. 2, 0.025 inches.

Total fall by No. 1, 0.178 " " " " 2.0190 "

Sudden snow squall at 4 1/2 P.M. Wind 30 miles an hour

Feb. 23. Rain at 10 A.M. in gauge No. 1, 0.246 inches.

" " " " " " No. 3, 0.283 "

Feb. 24. Rain at 10 A.M. in gauge No. 1, 0.174 inches

" " " " " " No. 3, 0.150 "

Total fall of rain by No. 1, 0.420 "

" " " " " " No. 3, 0.433 "

March 1. Melted snow from snow falls of
Feb. 26 & 27 in gauge No. 1 8 ounces
" " " " " " No. 3 15 "
entered under date of Feb. 28

The records are not sufficient to determine
anything from the rain-gauges with accuracy.

Mr. Wendell's notes make the amount of rain and
snow reduced to water as much as 5.30 inches, and
there may have been about 1/2 an inch more.

Perhaps 5.80 inches should be assumed as the rainfall.
The storm of the 15th was very heavy in the neighborhood.

March, 1869.

Meteorological Record of

1869phae.pr.00

Date	10 A. M.						4 P. M.						Date		
	Barometer	Attached Therm.	Dry bulb	Wet bulb	Relative humidity by tables	Wind	Clouds	Barometer	Attached Therm.	Dry bulb	Wet bulb	Relative humidity by tables	Wind	Clouds	
1								29.936	31.8	18.2	15.0	50	7*	2 cir.	1
2								29.780	31.6	28.0	26.2	77	6*	10 nim. a little snow falling	2
3								30.015	36.1	35.7	30.6	54	5*	1 cir.-st. cum. haze	3
4								29.781	35.6	37.6	35.0	76	4*	10 st.	4
5								29.979	28.4	16.2	13.2	49	9*	0	5
6								29.651	29.9	24.8	23.3	81	14*	10 snowing	6
7								30.195	31.3	23.0	18.9	45	18*	0	7
8								30.072	33.3	31.5	26.4	48	7*	1 cir. small cumuli	8
9															9
10															10
11															11
12															12
13															13
14															14
15								29.916	37.0	28.0	26.8	86	10	{ snowing - quantity not stated assumed 10	15
16	30.222	30.0	20.5	20.0	93			30.208	36.8	26.1	21.0	39	7*	0	16
17	30.100	29.5	26.0	22.0	51			30.025	37.4	31.6	25.4	37	11*	1 cir. cir.-cum. cir.-st.	17
18	30.040	31.0	27.0	23.2	55			30.119	37.1	28.8	24.0	50	11*	4 cum.	18
19	30.119	32.5	32.0	27.3	52			30.078	39.9	37.2	30.8	44	7*	9 st.	19
20	29.490	35.0	34.0	33.5	95	10	{ snowing - quantity not stated assumed 10	29.467	37.0	36.4	34.8	84	5*	10 st.	20
21								30.110	33.3	20.0	16.6	47	13*	0	21
22								30.444	36.1	28.7	25.2	61	6*	8 cir.	22
23	**29.987	**33.2	**33.9	**33.4	95	**10*	**10 nim. { raining and snowing	29.198	34.1	38.1	38.1	100	9*	10 nim. raining	23
24		34.0	38.0	33.2	55			30.048	39.9	41.2	34.8	45	12*	7 cir. cir.-cu. cum.	24
25								30.380	40.1	37.2	30.2	39	6*	0 cir.-st. in west.	25
26								30.222	38.5	38.3	35.0	69	10*	10 nim. raining	26
27								29.889	48.3	56.1	48.9	57	12*	1 cum. cu.-st.	27
28								30.110	48.4	49.1	42.9	56	5*	0 cir. cir.-st.	28
29								29.889	42.8	37.3	37.2	99	12*	10 nim. raining	29
30								29.268	42.4	38.0	37.1	91	13*	10 nim. raining	30
31								29.514	43.2	40.0	37.8	80	15*	10 st. nim. { a little rain falling	31
Sums			2114					748.294	930.3	8271		1564	224	134	
Means			30.20					29.932	37.2	33.08		63	9.3	5.4	
Red. to 32°								29.909							

** At 11 1/2 A. M.

* Estimated - wind from anemometer generally in use for purposes connected with the San Francisco longitude work

Harvard College Observatory.

March, 1869.

Date	External Thermometer No. 4				Mini	Max.	Solar Therm.	Rain gauges			Remarks.
	7 A.M.	2 P.M.	9 P.M.	Mean	Read at 10 A.M.	Read at 9 P.M.	Read at 5 P.M.	No. 1 (on east of chimney)	No. 2 (on roof of shed)	No. 3 (in box against wall)	
1	0.0	+17.4	11.0	9.5	+0.0	18.0					March 1. The minimum thermometer was not read on Feb. 28; but the minimum observed today was that of the night immediately preceding.
2	3.5	+28.9	26.0	19.5	+2.5	29.0					
3	16.5	+35.8	25.0	25.8	+15.0	35.8		31.0	0.1	?	March 3. The water in the gauges was melted snow.
4	26.0	37.9			+22.8						
5	3.2	+15.2	9.0	9.1	+4.3		129.8				March 5. The reading of the Solar Thermometer is the maximum for the period from Feb. 24 to date.
6	3.5	26.0	20.0	16.5	[+2.3]	27.0	99.3				March 6. Thermometer below zero for the only time this winter.
7	15.5	+23.0			+15.0		+100.7				
8	19.3	33.1	27.1	26.5	+14.9	33.1	104.0				
9	23.5										
10	33.0		47.0				47.5				
11	31.5		35.0		23.5	45.0		44.0	144.0	67.0	March 11. The water in gauge No. 2 was partly melted snow. Only rain in the others. Probably gauge No. 3 was left out of its box.
12	25.0		30.0		23.5	34.0					
13	32.0		35.0		28.5	40.0					
14	29.0										
15	26.0		22.0		25.0	48.0					
16	10.0	26.6	18.5	18.4	7.0	26.5	+126.0	27.5		50.0	March 16. The water in the gauges was melted snow. Probably gauge No. 3 was left out of its box.
17	12.5	31.5	24.0	22.7	10.0	32.0	+118.3				
18	21.5	29.9	24.0	25.1	16.5	30.0	+117.8				
19	19.0	36.7	33.0	29.6	17.0	37.0	+102.1				
20	32.5	36.0			28.5	36.0	+71.2				
21	15.3	19.1	15.0	16.5	+14.6	20.0	+104.8	16.5		824.0	March 21. Gauge No. 3 examined at 2 1/2 P.M. The water in both gauges was melted snow.
22		30.2	24.5		+9.8	32.0	+99.0		67.5		March 22. The water in gauge No. 2 was melted snow.
23	31.5	36.2	24.3	30.7	+23.6	39.0	63.8				
24	31.0	43.1	22.0	32.0	29.0	43.5	+112.6	49.0		27.0	March 24. The water in the gauges was from mixed snow and rain which fell from about 9 A.M. to 4 P.M. on March 23. Gauge No. 3 examined at 1 P.M. March 24.
25	26.0	37.0			+24.7		+113.1				
26	29.0	42.3	38.0	36.4	+26.3	43.0	97.7				
27	40.0	57.1	+42.8	46.6	+35.3	+57.9	+123.9	36.0	72.5	20.0	March 27. Gauge No. 3 examined at 3 3/4 P.M. The water in gauges No. 1 and No. 3 was rain which fell March 26 from about noon to 8 P.M.
28	39.5				+37.6	+52.8	+126.0				
29	38.5	38.9	38.5	38.6	+33.5	39.7	83.4				
30	38.0	38.0	37.5	37.8	+36.6	40.5	55.6				
31	36.5	44.8	36.0	38.1	+35.0	44.8	+65.6	121.0	277.5	74.0	March 31. The water in the gauges was rain which fell March 29, 30, 31. The gauges were examined April 1 at 11 A.M. Gauge No. 2 had been found to contain 276 ounces on March 31 at 3 P.M.
	708.3	761.7	665.2	479.4	554.7	929.1		325.0	561.5		ounces
	23.6	33.1	27.7	26.6	19.8	37.2		5.42	4.86	5.72	inches
	(Minimum, March 6, -2.3)				Mean of 3 gauges			5.33 inches.			
	(Maximum, March 27, 57.9)							This is as likely as any number, but must be considered doubtful.			
	(Solar therm., March 5, 129.8)										

† Read at 2 1/2 P.M.

†† Read at 4 P.M.

‡ Read at 2 P.M.

†† Read at 4 1/2 P.M.

††† Read at 9 1/2 P.M.

††† Read at 2 P.M. of the following day.

§ Gauge out of its box during the fall of snow March 19 and 20. Surface exposed $12\frac{1}{2} \times 13\frac{1}{8}$ inches. Probably the same is true of the readings for March 11 and March 16.

April, 1869.

Meteorological Record of

Date	10 A. M.							4 P. M.							Date
	Barometer	Attached Therm.	Dry bulb	Wet bulb	Relative humidity by tables	Wind	Clouds	Barometer	Attached Therm.	Dry bulb	Wet bulb	Relative humidity by tables	Wind	Clouds	
1	29.961	42.4	39.9	34.8	55	9 ⁺	8 st. cir-st. cir.	29.717	44.7	43.3	37.2	50	6 ⁺	5 cir-st. cir	1
2	29.836	41.5	46.6	41.8	63	4 ⁺	4 st. cir-st. haze	29.792	46.0	43.8	39.3	63	6 ⁺	9 st. cir-st.	2
3	29.612	43.0	42.5	40.1	80	8 ⁺	9 st. cir-st.	29.642	45.8	40.3	34.0	45	14 ⁺	0 cum.	3
4								29.671	42.1	36.2	29.7	43	9 ⁺	8 st. cum. cum-st.	4
5								29.551	42.9	49.9	38.9	26	8 ⁺	7 cir-st. cum. cir.	5
6								29.548	46.8	51.5	42.2	38	13 ⁺	6 st. cum.	6
7								29.746	46.3	45.3	42.4	77	2 ⁺	10 {st. cum. cum-st. some clear sky in the north; clouds rather thin; a little rain.	7
8								29.700	47.2	48.4	38.9	33	8 ⁺	10 cum. st. cir-st.	8
9	29.823	41.6	41.2	34.7	67	7 ⁺	1 cum.	29.811	46.1	42.9	35.0	36	12 ⁺	10 cum. st.	9
10								29.884	48.4	44.8	35.5	29	6 ⁺	2 cum.	10
11								29.860	46.2	43.2	37.2	51	3 ⁺	10 cum. st.	11
12	29.851	41.7	45.5	37.3	38	5 ⁺	5 cir. cir-st. cum.	29.850	45.4	42.8	37.1	53	6 ⁺	10 st.	12
13								29.871	44.6	40.0	36.8	72	3 ⁺	10 st. nim. cum.	13
14	29.973	40.2	40.2	37.4	74	4 ⁺	10 cum. cum-st. st. cir-st.	29.987	43.7	38.5	37.0	86	2 ⁺	10 st. cum-st. cir.	14
15								30.126	51.1	50.6	38.9	23	9 ⁺	0 cir-st.	15
16	30.163	44.2	54.9	43.6	32	1 ⁺	0 cir. cir-st.	30.041	50.6	65.4	50.9	29	5 ⁺	1 cir-st. haze	16
17								29.700	51.8	51.3	47.8	76	13 ⁺	10 st. nim. raining	17
18								29.900	55.4	69.1	54.7	33	8 ⁺	1 cir-st. cum.	18
19								29.769	57.2	52.2	47.7	69	4 ⁺	6 st. cir-st.	19
20	29.852	49.5	50.6	48.6	86	2 ⁺	10 st. (thin)	29.780	53.5	65.8	61.3	76	7 ⁺	9 st.	20
21								29.538	58.1	59.8	52.6	58	10 ⁺	9 st. cir-st.	21
22	29.858	51.0	47.9	40.7	49	15 ⁺	9 st. cum-st.	29.950	54.9	54.1	43.6	35	15 ⁺	6 cum.	22
23								30.194	54.9	53.1	45.3	50	4 ⁺	0 cir-st. haze	23
24								29.852	57.4	54.5	51.2	79	1 ⁺	10 {st. cum. cum-st. (mostly thin) cir-st. haze	24
25								29.793	55.8	55.0	46.0	36	14 ⁺	7 {cum. cum-st. cir. cir-st.	25
26								29.752	57.3	69.6	53.7	28	8 ⁺	6 st. cir-st. cum.	26
27	29.989	55.2	61.3	46.4	22	6 ⁺	9 st. (thin)	29.930	58.4	53.4	44.0	40	4 ⁺	5 {cir-st. cir-cum. haze (thin)	27
28								29.759	57.2	53.1	46.6	58	2 ⁺	3 st. cum. haze	28
29	29.766	50.7	42.5	36.5	51	10 ⁺	10 st.	29.803	47.9	40.2	35.7	60	6 ⁺	10 st.	29
30	29.988	45.0	47.0	40.8	54	1 ⁺	4 cum.	29.935	51.6	49.9	42.1	46	2 ⁺	1 cum.	30
Sums	358.672	546.0	560.1		671	72	79	894.452	1509.3	1508.0		1498	210	191	
Means	29.889	45.5	46.68		56	6.0	6.6	29.815	50.3	50.27		50	7.0	6.4	
Red. to 32°	29.844							29.757							

* 4 10 1/2 A. M.

*** 4 11 A. M.

† Estimated — anemometer broken.

Harvard College Observatory.

April, 1869.

Date	External Thermometer No. 4				Min.	Max.	Solar Therm.	Rain gauges			Remarks.
	7 A.M.	2 P.M.	9 P.M.	Mean	Read at 10 A.M.	Read at 9 P.M.	Read at 4 P.M.	No. 1 on east of shed	No. 2 on roof of shed	No. 3 in box on right of shed	
1	33.0	43.4	35.5	37.3	xxx 32.2	44.2	111.0				April 1. The rain gauges were examined today, but the water in them had fallen altogether in March, and has been noted under date of March 31.
2	34.3	45.8	42.4	40.8	xxx 31.8	49.0	117.8				The anemometer was noticed today to have lost one of its arms.
3	36.5	44.9	28.2	36.5	xxx 35.7	46.1	107.6	27.50	59.00	16.75	April 3. Rain gauges examined at 11 A.M. for water from rain of the preceding night.
4	26.8	36.7	31.5	31.7	24.7	47.5	112.6				April 5. Minimum thermometer not set April 4. Minimum of April 5 probably not far above that of April 4.
5		48.4					115.9				
6	40.0	54.4	35.0	43.1	36.1	55.0	122.7				
7	34.7	45.3	36.5	38.8	32.4	47.5	118.0				
8	34.5	48.5	36.0	39.7	32.1	50.2	126.9	20.00	40.50	11.50	April 8. Gauges examined at 11½ A.M. for rain which fell April 7 after 4 P.M. and during the following night.
9	33.5	45.4	35.0	38.0	29.0	47.0	120.7				April 9. Fine aurora at 10 P.M. with strong vertical streamers and very dark sky under the arch. Some auroral light has appeared on several evenings lately.
10	36.4	46.3	34.6	39.1	30.4	47.0	117.8				
11	34.5	47.2	36.5	39.4	28.9	47.5	127.0				
12	36.5	44.1	38.0	39.5	29.8	45.5	117.3				
13	35.7	44.5	34.0	37.1	29.8	44.5	98.2	0.75	3.50	1.00	April 13. Rain gauges examined at 1 P.M. for water from snow (and a little rain) which fell from 11 A.M. to 12½ P.M.
14	31.0	44.4	36.0	36.1	27.6	42.4	114.0	3.25	11.00	2.50	April 14. Rain gauges examined at 11 A.M. for water from snow since 4 P.M. April 13. Probably little snow fell after 6 P.M.
15	35.0	50.6	42.1	42.6	31.4	47.3	123.1	3.50	8.50	2.00	April 15. Rain gauges examined at 11 A.M. for water from snow melt, and rain, which fell between 12 M. and 6 P.M. on April 14. Morning of April 15 favored evaporation and quantity recorded may be too small, especially for gauges No. 1 and 3. A remarkable adroga prevailed all the evening of April 15. Clouds partly cut off the view towards midnight. The stratus covered spirally from all directions to a point S.E. of the zenith. Some rose color at first.
16	38.6	64.9	52.6	52.0	34.7	64.8	126.3				April 16. Moderate aurora noticed about 9 P.M.
17	46.5	62.6	46.5	51.9	43.9	68.0	123.7	0.25	1.50	0.20	April 17. Rain gauges examined at 4½ P.M. for rain between 2 and 4½ P.M.
18	53.7				42.5		127.0				April 21. Rain gauges examined at 1½ P.M. for water from rain fallen between 7 P.M. April 20 & 12 M. April 21.
19	59.0	43.4			49.4	69.5	118.3				
20	45.0	55.8	60.0	53.6	40.7	67.3	115.1				
21	58.0	63.8	56.0	59.3	50.2	63.8	129.5	30.50	67.00	24.00	
22	44.0	55.2	44.7	48.0	42.0	51.6	125.9				
23	44.0	50.9	48.5	47.8	38.6	54.6	118.1				
24	44.0	68.5	49.0	53.8	41.9	68.5	130.0	18.50	36.50	9.50	April 24. Rain gauges examined at 12½ P.M. for water from rain fallen after 7 P.M. April 23 and during the night.
25	44.0		46.0		43.8	57.0	125.7				
26		68.9	61.7		42.8	70.3	144.6				
27	53.6	55.1	46.5	51.7	45.6	56.3	129.7				
28	47.0	55.8	44.6	49.1	45.5	56.6	125.4				
29	44.8	37.7	36.4	39.6	42.3	47.3	98.0	1.00	5.25	0.75	April 29. Rain gauges examined at 4 P.M. for water from rain and snow fallen between 4 A.M. & 3 P.M.
30	35.0	51.5	42.2	42.9	30.7	54.5	118.9				

1080.6 1433.6 1179.4 1089.4 1066.5 1511.8 105.25 232.75 68.20 ounces avoirdupois

40.0 51.2 42.1 43.6 36.8 36.8 1.75 2.01 2.35 inches.
 (Minimum, April 4, 24.7)
 (Maximum, April 26, 70.3)
 (Solar therm., April 26, 111.0)

Mean of three gauges

2.03 inches.

† Read at 10 A.M.

xxx Read at 11 A.M.

†† Read at 9½ P.M.

††† Reading set down from memory

‡ Read at 2½ P.M.

xxx Read at 10½ A.M.

§ Read at 4 P.M.

§§§ The temperature indicated at the time of the reading.

§ Read at 3 P.M.

†† Read at 2½ P.M.

§§ Read at 4 P.M.

§§§ The temperature indicated at the time of the reading.

May, 1869.

Meteorological Record of

Date	10 A. M.							4 P. M.							Date
	Barometer	Attached Therm.	Dry bulb	Wet bulb	Relative humidity Gauss's Tables	Wind	Clouds	Barometer	Attached Therm.	Dry bulb	Wet bulb	Relative humidity Gauss's Tables	Wind	Clouds	
1								29.903	48.6	44.6	40.9	71	1 [†]	10 st. nim.	1
2								29.467	43.6	38.2	38.2	100	13 [†]	10 nim. (raining)	2
3								29.324	48.9	48.4	41.0	47	12 [†]	10 st. cum-st. cum.	3
4								29.466	47.1	41.0	39.6	88	8 [†]	10 nim. (raining)	4
5								29.869	49.6	50.3	44.6	60	3 [†]	6 st. cum.	5
6	30.003	47.7	50.8	45.0	60	6 [†]	10 st. cum.	30.006	50.0	47.5	41.7	57	7 [†]	2 st.	6
7								29.987	52.4	49.9	42.3	47	4 [†]	2 cir-st.	7
8	29.990	47.4	52.0	46.0	60	1 [†]	8 cir-st. haze	29.943	53.6	53.5	44.9	45	3 [†]	9 st. cir-st. haze	8
9								29.716	56.0	56.8	49.3	55	3 [†]	5 st. cir-st. cum.	9
10								29.836	57.1	62.6	50.4	36	4 [†]	1 cum.	10
11								29.789	60.4	75.0	60.7	39	12 [†]	1 cir-st. haze	11
12	29.830	60.6	78.7	67.2	52	2 [†]	0 haze	29.780	66.3	84.9	64.0	33	13 [†]	0 cum. haze	12
13								29.833	61.7	53.7	50.1	76	4 [†]	9 st. cir-st.	13
14								29.493	63.7	60.7	57.9	83	10 [†]	8 st. cum-st. cir-st.	14
15	29.428	55.8	54.5	53.5	93	0 [†]	10 nim. (a little rain)	29.567	59.4	56.5	55.0	90	2 [†]	10 nim. st. cum-st (raining)	15
16								29.502	61.3	64.6	58.4	67	5 [†]	10 st. nim. (beginning to rain)	16
17															17
18	29.717	57.1	58.6	50.8	55	7 [†]	9 st. cum.	29.768	60.6	62.2	53.4	52	5 [†]	10 st. cum.	18
19	29.818	57.8	55.0	49.8	67	6 [†]	10 st.	29.692	58.5	48.1	48.0	99	6 [†]	10 nim. (raining)	19
20	29.715	53.8	57.1	50.6	61	14 [†]	9 st. cum-st.	29.751	58.5	64.8	53.5	42	6 [†]	8 st. cum.	20
21	29.925	57.8	59.8	50.0	45	10 [†]	4 cum. cum-st. cir-st.	29.852	61.0	63.9	53.0	43	4 [†]	9 st. cum.	21
22	29.766	53.5	47.6	45.2	82	8 [†]	10 st. cum.	29.725	58.4	55.4	48.7	58	5 [†]	5 st. cir-st. cum.	22
23	29.887	52.9	57.0	46.3	37	0 [†]	1 uniform haze	29.867	59.2	59.6	47.9	36	4 [†]	0 {haze not so thick as at 10 A. M.	23
24	29.966	55.9	62.5	53.6	52	1 [†]	1 haze	29.944	62.7	59.4	47.3	35	6 [†]	3 haze	24
25	29.900	57.7	72.0	62.0	54	0 [†]	0 cir-st. haze	29.824	64.9	79.0	63.0	37	0 [†]	2 cir-st. haze	25
26	29.769	64.4	78.1	65.8	49	0 [†]	5 cir-st. haze	29.674	69.0	81.9	69.8	52	0 [†]	8 st. cir-cum. cum-st.	26
27	30.091	58.2	53.9	43.9	37	1 [†]	3 st.	30.067	63.5	63.2	50.0	32	4 [†]	5 st.	27
28	30.230	60.0	64.7	55.7	53	1 [†]	4 cir-st. cir-cum. haze	30.131	64.8	66.4	55.0	43	9 [†]	7 st. cir-st. cir-cum.	28
29	29.976	57.4	56.3	54.7	90	0 [†]	10 st. nim.	29.994	59.5	59.2	55.0	60	0 [†]	10 st.	29
30	30.111	60.4	67.1	60.9	68	0 [†]	9 st. cir-st. cum.	30.100	62.7	64.6	59.6	88	7 [†]	10 nim. (raining)	30
31	29.970	59.2	60.4	59.7	96	0 [†]	10 st.	29.930	64.0	67.7	64.7	84	4 [†]	8 st. cir-st. cum-st.	31
Sums	538.092	1017.6	1086.1		1111	57	113	893.500	1747.0	1777.6		1755	161	198	
Means	29.894	56.5	60.34		62	3.2	6.3	29.783	58.2	59.25		58	5.4	6.6	
Red. to 32°	29.819							29.704							

[†] Estimated no. of miles an hour; anemometer broken.

Harvard College Observatory.

May, 1869.

Date	External Thermometer No. 4				Mini.	Max.	Solar Therm.	Rain gauges			Remarks.
	J.A.M.	2 P.M.	9 P.M.	Mean	Read at 10 A.M.	Read at 9 P.M.	Read at 4 P.M.	No. 1 on steps east of house.	No. 2 on roof of out-house.	No. 3 in box west of observatory.	
1	43.0	46.6	35.0	41.5	*33.3	48.0	94.0				May 1. Very slight snow and sleet at 8 P.M.
2	38.0	†39.2	38.2	38.5	†35.2	39.2	51.0	72.00	132.00	37.00	May 2. Gauges examined at 3 P.M. for water from rain (with a few flakes of snow at first) fallen in the last 24 hours.
3	39.0	49.5	42.0	43.5	*36.0	50.5	105.0	23.50	78.00	21.25	May 3. Gauges examined at 1½ P.M. for water from rain fallen since 3 P.M. May 2. Probably little or none fell after midnight.
4	39.8	42.6	41.5	41.3	*35.4	48.0	97.7	6.75	15.00	5.00	May 4. Gauges examined at 6 P.M. for rain between 11 A.M. & 5 P.M.
5	43.5	50.5	43.8	45.9	*39.8	50.9	120.7	0.50	2.50	0.50	May 5. Gauges examined at 11½ A.M. for rain fallen since midnight.
6	42.5	49.4	40.9	44.3	40.7	51.5	117.2				
7	42.0	51.6	†42.3	45.3	*36.0	†54.4	119.1				May 7. Moderate aurora about 9 P.M.
8	39.0	56.2			33.8	57.0	119.7				
9	47.0		52.5		†42.2	63.0	125.4				
10	48.0	60.4	54.6	54.3	*43.9	62.8	123.8				
11	53.4	xx73.1	63.6	63.4	xxx46.4	77.1	128.3				
12	60.5	85.0	62.6	69.4	57.3	85.7	140.3				
13(?)	60.8	55.3	55.0	?	*45.5	60.0	128.4				
14	57.0	64.1	52.0	57.7	*52.0	64.5	131.6	4.00	10.60	2.50	May 14. Gauges examined at 1½ P.M. for rain of the previous night up to 9 A.M.
15	49.5	63.9	52.5	55.3	48.6	64.0	129.2	12.75	43.50	18.50	May 15. Gauges examined at 3 P.M. for rain of the previous night & morning. Thunder with rain between 4 and 5 P.M. Gauges again examined at 6½ P.M.
16	57.0	xx70.2	53.0	60.1	xx50.4	72.4	136.9	4.25	8.50	2.75	
17					†43.0	†63.6	†123.8	2.50	8.75	0.50	May 17. Gauges examined at 6 P.M. for rain of previous evening. Loss by evaporation, especially from No. 3, probably larger.
18	51.6	63.8	57.2	57.5	47.4	64.0	124.6				
19	51.2	51.9	45.7	49.6	49.4	57.9	113.2				
20	47.0	63.4	†55.2	55.2	43.3	†65.4	133.9	30.00	98.50	35.50	May 20. Gauges examined at 10 A.M. for rain of previous afternoon and night.
21	53.0	64.0	57.4	58.1	47.7	64.5	131.9				
22	47.8	56.9	§45.8	50.2	42.2	§58.7	127.3	5.50	30.25	8.50	May 22. Gauges examined at 9 A.M. for rain which began falling during the night.
23		61.5			38.4	§63.1	122.4				
24	47.0	62.7	51.9	53.9	42.9	67.8	124.6				
25	54.3	§79.6	68.4	67.4	45.0	80.3	136.7				
26	66.0	84.0	66.7	72.2	58.0	84.3	140.8	7.00	16.00	6.00	May 26. A few drops of rain about 3 P.M. with occasional gusts of moderate wind. Thunder-showers between 6 and 7 P.M. Gauges examined at 7½ P.M.
27	49.8	§62.0	56.4	56.1	46.6	67.2	132.9				
28	56.0	70.6	50.3	59.0	49.0	71.3	135.8				May 29. Gauges examined at 12½ P.M. for rain which fell mostly before midnight in the previous night; some also in the forenoon. A short shower about 2 P.M. Gauges examined at 6½ P.M. No measurable quantity in No. 1 or No. 3.
29	52.0	58.3	57.0	55.8	48.8	59.8	103.5	24.50	49.00	17.50	
30	57.5	66.8			50.3	70.6	122.5		.75		
31		70.4	57.6		55.0	73.3	124.0	25.75	49.00	17.50	May 31. Gauges examined at 11½ A.M. for rain from several showers between 10 A.M. May 30 and about 9 A.M. May 31. More rain in the evening and night. Gauges examined at 8 A.M. June 1.
	1332.4	1773.5	1399.1	1295.5	1383.5	1960.8		228.75	561.10	179.00	ounces avoided
	May 13 omitted 49.3	61.2	51.8	54.0	44.6	63.2		3.81	4.85	6.17	inches.
	(Minimum, May 1, 33.3) (Maximum, May 12, 85.7) (Solar therm., May 26, 140.8)										Mean of 3 gauges 4.94 inches

† Observations of May 17 made in the evening; all later than the regular time.

* Read at 2 P.M.
 ** Read at 2½ P.M.
 †† Read at 9½ P.M.

††† Read at 3 P.M.
 †††† Read at 4 P.M.
 ††††† Read at 4½ P.M.

§§ Read at 9½ P.M.
 §§§ Read at 8 A.M. May 24, when the temperature was lower than 60.
 § Read at 2½ P.M.
 ¶ Read at 10 A.M. May 31.

June 1869.

Meteorological Record of

1869phae:proj.:380P

Date	10 A.M.							4 P.M.							Date
	Barometer	Attached Therm.	Dry bulb	Wet bulb	Relative humidity by psychrometer	Wind	Clouds	Barometer	Attached Therm.	Dry bulb	Wet bulb	Relative humidity by psychrometer	Wind	Clouds	
1	29.941	63.3	76.3	70.2	72	6 [†]	7 st. cir-st. cum-st.	29.975	69.4	76.4	66.1	58	3 [†]	8 st. cir-st. cum-st. cir-cum	1
2	30.170	66.2	74.1	64.1	55	1 [†]	6 st. haze	30.158	69.5	73.8	66.8	68	1 [†]	10 st.	2
3	29.992	66.9	74.0	65.5	61	0 [†]	2 haze	30.169	74.9	76.9	64.5	48	3 [†]	3 haze	3
4	30.118	68.8	75.1	68.1	68	2 [†]	3 haze cir-st.	30.008	72.4	77.6	65.2	48	7 [†]	0 cir-st.	4
5	29.760	67.7	74.0	74.0	86	5 [†]	10 st.	29.672	71.5	78.2	72.0	73	13 [†]	5 st. cum. haze	5
6	30.084	65.5	63.0	52.3	44	14 [†]	3 cir-cum. cir-st.	30.100	68.2	66.1	53.2	36	6 [†]	1 st. cum.	6
7	30.288	61.0	59.6	51.2	52	1 [†]	2 cir. st. cir-st. cum.	30.229	65.7	60.7	51.0	46	4 [†]	3 haze st. cum-st.	7
8	30.150	60.9	59.5	52.7	61	5 [†]	10 st.	30.172	62.0	54.1	51.1	80	5 [†]	10 nim. (raining)	8
9	30.348	59.4	62.3	52.1	46	1 [†]	0 cum. haze	30.254	64.2	65.0	56.0	53	2 [†]	3 st. cum-st. cum. haze	9
10	30.162	60.5	65.6	55.7	50	1 [†]	5 st. haze	30.058	64.5	68.2	55.1	38	12 [†]	10 st. cum.	10
11															11
12								29.882	63.4	65.0	55.1	49	6 [†]	2 cum. st.	12
13	29.983	59.1	65.5	61.8	80	3 [†]	10 st.	29.907	64.1	72.6	63.2	57	6 [†]	7 st. cir-st. cir-cum. (all thin)	13
14	29.674	64.8	67.3	66.3	56	10 [†]	10 nim. (raining)	29.620	68.7	70.2	68.4	91	9 [†]	10 nim. (raining)	14
15	29.680	66.3	68.3	66.7	92	1 [†]	10 st. nim. (a little rain)								15
16	29.935	64.9	66.7	57.4	54	9 [†]	3 cum. st.	29.928	68.2	68.9	58.4	50	9 [†]	9 st. cum.	16
17	30.150	63.6	66.7	57.0	52	11 [†]	0 cum.	30.124	68.0	72.4	58.9	40	10 [†]	6 cum. st. haze	17
18	30.176	65.1	69.2	59.5	53	5 [†]	10 st. cir-st.	30.037	69.2	77.2	67.5	58	12 [†]	5 st. cir-st.	18
19	29.949	68.4	75.2	68.3	69	3 [†]	9 st. cum-st. cum. } cir-st. cir-cum. cir. }								19
20	30.029	66.4	69.0	61.0	61	1 [†]	10 st.	29.922	65.8	63.4	61.6	89	8 [†]	10 st. nim.	20
21	29.839	67.5	72.5	66.8	73	13 [†]	7 st. cum. cir-st.	29.907	69.5	62.0	58.6	80	9 [†]	10 st. cir-cum.	21
22	29.950	62.1	55.0	54.8	99	6 [†]	10 nim. (raining)	29.949	62.9	56.9	56.0	94	6 [†]	10 st. fog	22
23	30.036	61.0	63.9	61.0	84	2 [†]	10 st.	30.012	66.0	64.4	60.4	78	3 [†]	10 st. haze	23
24	30.140	65.5	72.0	62.5	56	1 [†]	5 st. cir-st. haze	30.062	71.5	76.8	64.3	47	5 [†]	5 cum. st. haze	24
25	30.143	68.1	72.8	62.1	52	10 [†]	2 st. cum. haze	30.149	72.3	76.8	61.0	70	5 [†]	4 st. cum.	25
26	30.148	64.7	57.0	57.9	100	1 [†]	10 nim. (a little rain)	30.057	65.5	63.1	61.9	94	0 [†]	10 st. fog	26
27	30.023	66.4	67.8	64.8	84	1 [†]	10 st. haze	29.963	67.4	66.7	65.7	95	0 [†]	10 nim. (raining)	27
28	29.932	64.4	65.6	64.9	96	0 [†]	10 st. fog	29.824	69.6	75.3	72.0	84	5 [†]	10 st. nim.	28
29	29.868	69.2	77.0	68.9	64	14 [†]	0 st. haze								29
30	29.776	74.4	83.9	73.9	60	10 [†]	2 haze cum.	29.682	73.6	64.8	63.5	93	0 [†]	10 st. nim. (a little rain)	30
Sums	840.444	1822.1	1918.9		1880	137	176	779.820	1768.0	1793.5		1714	149	181	
Means	30.016	65.1	68.53		67	4.9	6.3	29.993	68.0	68.98		66	5.7	7.0	
Red. to 32°	29.917							29.887							

* Observed at 4½ P.M.

† Wind estimated in miles per hour; anemometer broken.

P. Observation made at 3½ P.M.

1869phae.proj..380P

Harvard College Observatory.

June, 1869.

Date	External Thermometer No. 4				Min.	Max.	Polar Therm.	Rain gauges			Remarks.
	7 A.M.	2 P.M.	9 P.M.	Mean	Read at 10 A.M.	Read at 9 P.M.	Read at 4 P.M.	No. 1 on steps East of house	No. 2 on roof out house	No. 3 in box west of observatory	
1		80.2	68.7		56.5	80.3	142.4				
2	64.5	76.0			60.6		119.4				
3	63.4	79.9	66.3	69.9	56.9	80.5	140.5	10.50	20.50	upset	Gauges examined at 8 1/2 A.M. for rain of the early part of the previous night.
4	64.0	79.3	66.1	69.8	57.3	79.7	135.4				
5	61.4	80.4	65.8	69.2	62.1	84.3	144.2	0.75	2.50	0.75	Gauges examined at 8 A.M. for rain during previous night.
6	60.5		59.1		56.7	67.7	135.7				Bright auroral arch at 10 P.M.
7	54.0	59.6	53.3	55.6	45.7	63.8	134.4				
8	51.3	55.6	49.5	52.1	43.9	63.4	119.2				Rain for a little while in the afternoon. Quantity too small for measurement.
9	51.3	64.1	55.4	56.9	45.3	69.2	133.9				
10	54.5	70.2			45.5		132.2				
11	54.0					72.1					
12	54.2	63.9	56.8	58.3	46.9	66.2	137.7	2.50	9.00	1.75	Gauges examined at 2 P.M. for rain from showers since June 10. Some loss no doubt from evaporation.
13	55.7	74.4	66.8	65.6	48.0	75.2	134.2	0.75	2.00	0.75	Gauges examined at 10 A.M. for rain fallen between 9 and 10 A.M.
14		74.2	67.3		63.8	77.8	134.0	9.00	18.50	5.40	Gauges examined at 6 1/2 P.M. for rain from showers during the day.
15	67.0		64.7		64.7	74.7	117.7	1.00	2.00	0.50	Gauges examined at 10 3/4 A.M. for rain from showers of night and morning. A few drops of rain later in the day; too little for measurement.
16	58.4	70.0	58.5	62.3	52.6	71.2	135.0				A shower for five minutes in the afternoon. No measurable quantity.
17	59.0	73.5	62.7	65.1	52.0	74.6	137.7				
18	60.7	68.0	66.8	65.2	52.5	77.6	129.5				
19	62.0	79.1	63.9	68.3	58.7	79.5	139.0				
20	62.0	63.2	62.0	62.4	53.1	73.6	126.2				
21		67.8	56.4		60.5	73.5	138.7	24.75	40.20	14.60	Gauges examined at 8 A.M. for rain of previous day and night.
22	55.0	58.7			54.1		83.0	54.50	109.00	40.50	Gauges examined at 1 1/2 P.M. for rain from showers since 9 P.M. June 21.
23	56.0	69.8	64.8	63.5	53.3	72.4	122.1	4.50	14.00	4.50	Gauges examined at 10 1/4 A.M. for rain from showers between about 5 P.M. June 22 and 5 A.M. June 23.
24	64.5	77.5	66.3	69.4	60.4	78.2	140.0				
25	67.3	77.9	66.6	70.6	61.3	78.3	138.8				
26	59.8	62.7	63.3	61.9	56.7	67.4	104.6	21.75	50.25	19.50	Heavy thunder showers during the forenoon. Gauges examined at 2 P.M.
27	67.5	63.5	61.2	64.1	56.1	69.6	90.0				
28		76.6	69.8	70.5	59.8	79.0	117.2	19.00	26.50	10.50	Gauges examined at noon for rain of yesterday and this morning.
29	69.0			69	65.0	85.3	148.7	26.00	36.75	13.25	Gauges examined at 8 1/2 A.M. for rain of previous afternoon and evening, ending about 10 P.M. Remarkable aurora at 9 P.M. today with mid arch from E. to W. beyond the streamers in the North.
30	72.0	73.7	63.6	69.8	65.0	83.9	138.1	19.50	48.25	19.00	Rain in heavy showers beginning about noon. Gauges examined at 9 1/2 P.M. Come aurora at night 9 to 10 P.M.
1569.0 1839.8 1565.7 1220.0 1615.0 2016.0								194.50	379.45	131.00	avoided for ounces
60.3 70.8 62.6 64.2 55.7 74.7								3.26	3.28	4.37	inches. Gauge No. 3 would indicate about 4.60 inches if allowance were made for the water lost June 5.
(Minimum, June 8, 43.9) (Maximum, June 29, 85.3) (Solar therm., June 29, 148.7)								Mean of 3 gauges 3.64 inches.			

* Observed at 2 1/2 P.M.

† Observation made at 9 1/2 P.M.

** Observation made at 9 1/2 P.M.

†† Observation made at 2 P.M. June 12.

††† Observation made at 2 P.M.

†††† Observation made at 7 1/2 P.M.

*** Observation made at 2 1/2 P.M.

†††† Observation made at 9 1/2 P.M.

††††† Observation made at 7 1/2 P.M.

**** Observation made at 10 P.M.

***** Observation made at 9 A.M. June 29.

†††††† Possibly not set on June 29.

July 1869.

Meteorological Record of

Date	10 A. M.							4 P. M.						
	Barometer	Attached Therm.	Dry bulb	Wet bulb	Relative humidity by wet bulb tables	Wind	Clouds	Barometer	Attached Therm.	Dry bulb	Wet bulb	Relative humidity by wet bulb tables	Wind	Clouds
1	29.960	63.9	62.5	53.0	49	18 ⁺	1 haze	29.964	67.3	65.6	55.1	47	10 ⁺	8 haze
2	29.921	62.9	67.1	60.2	64	8 ⁺	4 haze							
3	29.809	66.8	77.6	68.2	59	7 ⁺	3 haze							
4	29.648	72.7	82.7	74.5	66	12 ⁺	3 st. cum. cum-st. haze	29.683	78.3	83.9	74.1	61	8 ⁺	9 st. cum. cum-st.
5	30.036	67.3	66.0	55.0	45	9 ⁺	1 haze	30.064	69.5	70.8	57.3	39	9 ⁺	0 haze
6	30.252	66.6	69.8	57.8	44	4 ⁺	0 cum. haze	30.206	70.4	74.5	60.5	40	5 ⁺	2 cum. st. haze
7	30.223	67.9	74.9	64.0	52	4 ⁺	0 haze	30.136	74.8	78.4	63.9	41	5 ⁺	4 cum. haze
8	30.092	70.4	75.2	67.5	65	4 ⁺	0 haze	30.017	76.7	80.7	71.3	61	6 ⁺	1 st. haze cum.
9	29.952	70.9	77.2	68.7	63	10 ⁺	10 st.	29.847	72.7	73.0	67.3	73	12 ⁺	10 st.
10	29.942	70.1	75.7	67.2	62	10 ⁺	0 haze	29.938	77.4	80.1	66.9	47	13 ⁺	4 st. haze
11	29.748	77.7	84.2	75.0	63	14 ⁺	1 { st. cir-st. cir. } a little haze	29.710	80.7	72.3	72.1	99	8 ⁺	10 nim. (raining)
12	29.989	71.6	70.9	60.4	51	11 ⁺	1 cum. st.	29.971	74.9	75.8	62.1	42	8 ⁺	1 cum. cir-st. st.
13	30.112	70.3	72.7	61.2	48	3 ⁺	2 st. cir-cum. cir-st.	30.080	75.2	76.1	64.9	52	3 ⁺	10 st. cir-st. cum.
14	30.137	70.3	67.0	61.6	72	0 ⁺	10 st.	30.117	74.1	72.7	65.3	65	4 ⁺	10 st. cir-st. cum. cir.
15	30.032	68.5	66.5	64.0	87	4 ⁺	10 st.	29.973	72.3	73.2	70.2	85	4 ⁺	10 st.
16	29.804	71.8	78.7	75.6	86	3 ⁺	9 st. cir-st. circum.	29.738	78.9	83.3	76.0	70	6 ⁺	10 nim. st. cum. } (a little rain)
17	29.850	74.4	79.0	68.5	56	8 ⁺	4 cum. cir-st.	29.861	74.8	79.0	64.5	32	9 ⁺	1 cir-st. cum.
18	29.874	72.2	75.0	66.8	63	1 ⁺	10 st.	29.840	76.1	78.1	67.6	56	4 ⁺	3 st. cir-st. cum.
19	29.982	72.3	71.0	58.5	43	8 ⁺	6 st. cir-st. cir-cum.	30.004	76.3	71.6	59.1	43	7 ⁺	7 st. cir-st. cir-cum.
20	30.075	69.2	69.5	63.7	71	5 ⁺	6 st. cir-st. cir.	30.036	74.7	68.0	63.0	74	6 ⁺	9 st. cir-st.
21	29.855	68.4	66.6	64.8	90	5 ⁺	10 st. fog	29.828	72.4	72.2	68.0	80	4 ⁺	9 st. cum-st. cir-st.
22	29.964	68.9	69.7	61.7	61	10 ⁺	4 st. cum.	29.986	73.7	69.7	61.2	59	5 ⁺	10 st. cum.
23	30.063	68.0	71.2	65.0	70	2 ⁺	2 cir-st. haze	30.048	74.4	79.0	67.5	52	1 ⁺	2 haze
24	30.107	71.2	75.6	69.5	72	5 ⁺	3 haze							
25	30.109	72.6	77.3	72.0	76	4 ⁺	3 haze	30.072	79.9	84.4	78.9	77	10 ⁺	2 haze cum.
26	30.100	73.6	76.0	72.8	85	7 ⁺	10 st. nim. (a little rain)	30.071	76.2	74.8	70.4	79	4 ⁺	10 nim. (some rain.)
27	29.976	75.6	80.3	74.3	74	5 ⁺	10 st.	29.895	82.2	83.1	75.0	67	9 ⁺	9 st. cum.
28	29.986	75.7	80.9	72.6	65	3 ⁺	5 st. cir-st. haze	29.971	82.6	83.4	69.6	47	6 ⁺	5 { haze st. cir-st. } cum.
29	29.856	75.7	75.6	72.8	87	8 ⁺	10 st. nim. (raining)							
30	29.999	72.5	70.2	62.0	61	4 ⁺	2 haze cir-st. cum.	30.013	75.5	74.1	61.0	43	11 ⁺	4 cum. haze
31	30.320	69.5	71.5	62.5	58	5 ⁺	0 cum.	30.338	76.6	76.9	64.8	49	3 ⁺	{ quantity not stated } cum. haze
Means	29.9773	218.95	227.88		2008	201	140	809.407	2038.6	2054.7		1580	180	160
Means	29.993	70.6	73.51		65	6.5	4.5	29.978	75.5	76.10		59	6.7	6.2
Red. to 32	29.882							29.852						

† Read at 10 1/2 A.M.

† Estimated in miles per hour; anemometer broken.

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

August 1869.

Meteorological Record of

Date	10 A. M.							4 P. M.							Date
	Barometer	Attached Therm.	Dry bulb	Wet bulb	Relative humidity	Wind	Clouds	Barometer	Attached Therm.	Dry bulb	Wet bulb	Relative humidity	Wind	Clouds	
1	30.464	71.2	74.4	67.5	68	4	haze	30.414	76.8	74.5	64.1	54	1	haze.	1
2	30.273	69.8	73.0	65.4	65	10	haze	30.117	75.6	77.0	68.1	61	10	haze	2
3	29.790	73.2	79.0	72.0	70	8	cum.								3
4	29.837	72.4	73.5	62.5	51	7	cir-cum.	29.817	76.9	75.7	62.2	47	1	cum. nim.	4
5	29.856	70.1	68.0	64.1	80	0	st. nim.	29.850	74.6	63.0			2	nim. (raining)	5
6	30.005	64.6	64.7	55.0	50	6	nearly clear cum.	30.031	69.9	68.4	55.8	40	10	6 cum.	6
7	30.120	63.5	62.6	53.7	52	5	9 st. cum. nim.								7
8	30.200	63.0	68.0	54.6	36	10	0 cum.	30.142	69.4	73.1	58.5	36	3	cir. cum. fog in the West.	8
9	30.158	66.2	72.2	61.5	51	7	slight haze	30.099	73.3	76.7	62.2	40	10	haze.	9
10	30.093	69.4	79.9	64.4	39	7	0 cir. st.	30.050	77.2	82.3	68.0	45	6	slight haze in the horizon.	10
11	30.002	72.4	81.1	71.6	63	2	haze cir.	29.971	77.4	82.8	69.0	47	5	3 cir-cum. in the S.E.	11
12	30.168	71.6	72.3	58.7	39	4	0	30.153	75.8	69.6	56.0	37	7	0 haze in the W.	12
13	30.143	67.7	73.9	64.9	59	6	3 haze								13
14	30.136	69.3	69.7	59.2	50	9	8 st. thin	30.100	73.5	75.2	58.8	32	8	1 st. cir-st.	14
15	30.062	68.2	66.4	65.9	97	0	10 nim. (raining)	29.903	69.3	71.2	69.7	92	5	10 st. nim.	15
16	29.958	64.3	57.8	57.3	97	6	10 nim. (fine rain)								16
17	30.152	63.9	61.6	58.6	83	2	10 st.	30.151	66.5	60.6	57.9	84	4	10 st.	17
18	30.171	63.8	65.5	61.8	80	0	10 st.	30.128	67.5	67.6	62.3	73	4	7 st. cir-st. haze	18
19	30.102	67.0	71.0	67.8	84	2	10 st.	30.038	75.4	78.9	71.4	68	3	6 haze	19
20	29.880	73.3	75.8	72.8	86	9	10 st.	29.832	78.9	86.4	78.3	88	16	10 st. (thin)	20
21	29.977	76.6	80.3	73.0	69	3	6 st. cir-st. cir-cum.	29.972	76.0	70.0	64.3	72	7	9 st. cir-cum.	21
22	30.103	69.8	67.0	60.5	67	5	10 st.	30.107	73.6	71.1	63.0	61	1	1 st.	22
23	30.294	66.7	68.5	58.0	49	3	0 cir-st. haze								23
24	30.328	67.2	71.0	62.1	58	4	0 cir-st. haze	30.281	74.2	72.0	60.9	49	5	1 cir-st. { cir-cum. } haze	24
25															25
26															26
27															27
28															28
29	29.829	72.2	77.7	70.2	67	8	10 st. cir-st. cum.	29.812	75.7	80.8	64.1	36	7	1 cir-st. cum.	29
30	29.901	67.9	66.8	56.3	48	8	8 st. cir-st. cir. (thin)	29.881	70.0	70.0	58.0	44	9	8 st.	30
31	29.960	62.8	60.5	49.7	40	14	0 cum.	29.953	65.3	63.2	50.7	35	17	7 { cum-st. cum. } cir-st. st.	31
Sums	811.962	1848.1	1697.2	1698	149	114		660.802	1609.8	1610.1	1121	141	80		
Means	30.073	68.4	62.86	63	5.5	6.0		30.036	73.2	73.19	53	6.4	5.3		
Red. to 32°	29.966							29.916							

* Observed at 40 ft. A.M.
 † Observed at 11 A.M.

† Force of wind estimated in miles per hour; anemometer broken.
 \$\$\$ Observed at 4 1/2 P.M.

Harvard College Observatory.

August 1869.

Date	External Thermometer No. 1	Min.	Max.	Solar Therm.	Rain gauges.	Remarks.
	7 A.M. 2 P.M. 9 P.M. Mean	Read at 10 A.M.	Read at 7 P.M.	Read at 4 P.M.	No. 1 No. 2 No. 3	
		at 10 A.M.	at 7 P.M.	on the ground on the roof in the fore-noon at west end of observatory	at west end of observatory	

1	61.0	79.2	76.0	72.1	56.5	80.5					
2	62.3	78.7	76.4	68.5	57.8	79.5	127.0				
3	68.4	83.9	68.0	73.4	63.5	84.6	143.0				
4	65.0	77.9	68.5	70.5	60.7	78.6	141.0				
5	62.0	68.7	58.0	62.9	61.3	109.5	6.25 12.50 5.00				
6	55.0	69.7	58.0	60.9	54.3	69.7	138.4	1.25	2.50	0.38	
7	53.5	66.0	57.3	58.9	48.8	68.0	138.2				
8	56.2	73.8	63.0	64.3	49.6	74.0	140.2				
9	59.0	78.3	67.3	68.2	53.3	77.8	134.2				
10	60.6	84.3	66.8	70.6	56.6	84.7	142.8				
11	64.7	83.4	76.2	74.8	60.7	84.0	145.7				
12	65.0	71.8	61.0	65.9	62.6	75.5	135.3				
13	64.0	81.8			54.4	82.0	142.5				
14	66.0	74.0	64.4	68.1	60.4	75.8	136.3				
15	65.0	66.8	63.9	65.2	59.1	72.0	120.5				
16	56.7	59.0	58.0	57.9	55.0	63.7	75.2	69.75	91.50	52.25	
17	58.0	62.2			56.7	85.0	4.00	6.50	1.00		
18	59.5	67.7	66.6	64.6	57.3	70.5	128.0	0.00	0.75	0.00	
19	65.2	80.3	71.7	72.4	58.7	80.4	131.7				
20	72.0	85.6	80.5	79.4	67.4	88.2	128.6				
21	76.8	76.3	63.8	72.3	75.0	82.4	139.3				
22	73.0	62.0		62.3	74.0	122.7	5.25	10.50	3.50		
23	64.6	71.3	62.4	66.1	53.8	71.6	131.0				
24	59.5	74.6	65.3	66.5	55.0	74.9	136.6				
25	64.7										
26	67.7							4.50	9.50	3.50	
27	56.0										
28	59.5										
29	73.0	82.6	70.4	75.3	52.0	83.2	152.6				
30	70.7	62.6		59.6	71.7	131.7					
31	53.5	63.7	51.9	56.4	51.6	64.7	140.0				

1811.4 2005.3 1628.0 1355.2 1561.0 1912.0 92.75 156.75 66.75
 62.5 74.3 65.1 67.6 57.8 76.5 1.55 1.36 2.22
 (Minimum, Aug. 7, 48.8) (Maximum, Aug. 20, 88.2) (Solar therm., Aug. 29, 152.6)

Mr. Bradford was in charge of the Observatory for the first twelve days of this month.

Rain morning and afternoon.
 Gauges examined at 10 $\frac{3}{4}$ A.M.; again after 4 $\frac{1}{2}$ P.M.
 August 6. It rained again last evening the clouds breaking about 10 $\frac{3}{4}$ P.M. Aug. 15.
 Gauges examined at 7 $\frac{1}{2}$ A.M. Aug. 6. Gauge No. 3 appears to have lost by evaporation. The wind was N.W., strong and dry.
 The evening of Aug. 6 was clear, with aurora.

August 7. At 5 P.M. it sprinkled for a few minutes. At 5 $\frac{1}{2}$ the clouds broke for a minute or two and exposed the sun, but not long enough to observe the beginning of the eclipse; at 5 $\frac{26}{60}$ the sun was eclipsed; 15 minutes later the sun was completely obscured by stratus clouds, and remained so until 10 $\frac{3}{4}$, when a glimpse was caught of the last of the eclipse. By 8 P.M. it was very clear.

August 13. A slight shower at 5 to 6 P.M.

Rain at intervals during Aug. 15: a smart thunder-storm from the N.W. during the night, succeeded by fine rain from the N.E. Gauges examined at 10 $\frac{3}{4}$ A.M. Aug. 16. In gauge No. 2, 91.50 came in the bottle, and 19.25 in the frail the bottle stood in; supposed to be all rain.

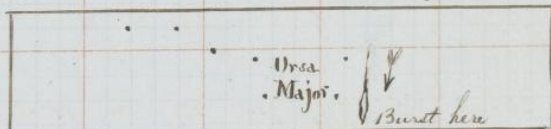
Fine rain most of Aug. 16. Gauges examined at 10 $\frac{3}{4}$ A.M. Aug. 17.

Gauges examined at 10 $\frac{3}{4}$ A.M. Aug. 18 for rain from some very slight showers of the previous evening.

Night of August 20-21 the warmest of this season thus far. Minimum 75.
 A few drops of rain about 6 P.M. Aug. 20.

Rain in the evening of Aug. 21. Gauges examined at 8 $\frac{3}{4}$ A.M. Aug. 22.

Gauges examined about 9 $\frac{3}{4}$ A.M. Aug. 26



Meteor seen as in diagram by G. M. Seale.
 August 30 1869 at about 8 $\frac{1}{4}$ P.M. local time at a point about $\frac{1}{2}$ miles N.E. of Fort William Henry at Caldwell, Warren Co., N.Y.
 Meteor very bright; green; no train.

Gauge No. 1 is considered most trustworthy.

Observed at 10 P.M.
 Observed at 11 P.M.
 Observed at 10 $\frac{3}{4}$ P.M.

Observed at 10 $\frac{3}{4}$ P.M.
 Observed at 10 $\frac{3}{4}$ P.M.
 Observed at 7 P.M.

Observed at 10 $\frac{3}{4}$ P.M.
 Probably the same as after last sitting.
 Reading taken from central thermometer (Green's).
 Observed at 8 P.M.

Observed at 4 $\frac{1}{2}$ P.M.
 Observed at 6 $\frac{1}{2}$ P.M.

Observed at 2 $\frac{1}{2}$ P.M.

September, 1869.

Meteorological Record of

Date	10 A. M.							4 P. M.							Date
	Barometer	Attached Therm.	Dry bulb	Wet bulb	Relative Humidity by tables	Wind	Clouds	Barometer	Attached Therm.	Dry bulb	Wet bulb	Relative Humidity by tables	Wind	Clouds	
1	30.112	59.8	58.6	50.6	53	4 ⁺	8 cum.-st. st. cum.	30.119	63.2	59.0	57.5	56	3 ⁺	7 st. cum.-st.	1
2	30.242	58.9	57.0	52.3	71	13 ⁺	10 st. cum.-st.	30.241	62.4	59.1	54.8	58	11 ⁺	10 st. cum.-st.	2
3	30.234	58.0	59.8	56.0	77	0 ⁺	10 st. cum.-st. cum. cir.-st.	30.181	64.6	67.4	56.9	48	1 ⁺	5 st. cum.-st. cum. cir.-st.	3
4	30.200	61.6	69.5	60.0	54	4 ⁺	1 cir.-st.	30.152	68.8	78.2	62.2	70	4 ⁺	2 cir.-st. haze	4
5	30.200	66.6	74.4	65.4	60	2 ⁺	0 cir. cir.-st.	30.165	76.7	79.9	66.6	46	11 ⁺	1 cir. cir.-st. haze	5
6	30.242	66.3	70.9	65.2	72	6 ⁺	0 cir.-st. haze	30.198	74.4	78.8	67.3	52	9 ⁺	1 cir.-st. st. cir.	6
7	30.171	68.8	75.3	72.8	88	0 ⁺	10 st.	30.100	73.1	77.1	72.6	80	10 ⁺	5 st. cum.-st. cum.	7
8	29.882	72.4	80.1	76.1	82	9 ⁺	10 st. cum.-st.	29.610	78.4	71.3	69.9	93	12 ⁺	10 st. nim. (some rain)	8
9	29.781	71.5	68.5	60.5	60	7 ⁺	0 cum. st.	29.877	73.9	69.6	60.3	55	5 ⁺	10 st.	9
10	30.040	67.0	62.8	57.6	71	4 ⁺	10 st.	30.036	68.9	61.4	57.2	76	6 ⁺	10 st. cum.	10
11	30.100	64.7	64.0	58.2	68	4 ⁺	5 cum. cum.-st.	30.099	69.3	69.2	58.7	50	5 ⁺	2 cum. st.	11
12	30.262	64.2	67.7	59.0	57	3 ⁺	0	30.270	71.1	72.0	60.0	46	1 ⁺	0 cir.-st.	12
13	30.418	65.9	68.0	62.5	72	0 ⁺	2 cir.-st. haze								13
14	30.450	65.8	67.3	59.8	62	0	0	30.363	71.1	68.8	56.8	43	7	0	14
15	30.288	65.9	70.5	63.7	67	6	0								15
16	30.140	65.8	68.6	62.6	70	5	0 cir. cir.-st.	30.133	73.4	68.5	60.7	61	5	8 st. cir.-st. cir.-cum. cir.	16
17	30.353	64.7	62.1	58.1	77	5	10	30.372	67.3	62.5	57.7	73	12	10 st. cum. (cir.-st. cl.)	17
18	30.456	63.2	62.3	56.1	66	4	10 st. cum.	30.422	67.4	62.0	56.3	68	4	10 st.	18
19	30.333	64.4	69.4	64.4	75	6	3 {cir.-st. haze. (thin and uniform)}	30.218	71.7	76.6	69.0	66	8	4 st. cir.-st.	19
20	30.036	69.2	79.6	70.0	60	12	0 st.	30.033	76.1	83.6	69.4	46	12	2 cum.-st. st. cum.	20
21	30.298	67.3	65.3	59.8	71	4	10 st. (thin)	30.273	66.5	59.1	56.4	84	5	10 st.	21
22	30.371	63.2	59.9	56.1	78	6	10 st.	30.327	64.3	58.4	56.2	87	4	10 st. nim. (some rain)	22
23	30.362	63.5	64.8	60.3	76	5	5 cum. st.	30.347	69.4	67.4	59.8	62	6	1 st. cum.-st.	23
24	30.455	62.4	63.4	61.1	87	0	0 st. cir.-st. cum. haze	30.407	68.5	67.4	57.9	53	7	0 cir.-st. haze	24
25	30.375	63.8	67.0	63.0	79	5	10 st. (thin)	30.285	68.8	70.0	65.0	75	4	8 st. cir. cir.-st.	25
26	30.052	65.8	71.4	67.4	80	10	10 st.	29.931	70.7	73.4	68.9	79	15	10 st. cum.-st.	26
27	29.740	63.3	54.8	52.8	87	12	10 st.	29.870	63.9	54.6	47.1	53	19	8 st.	27
28	30.196	54.6	48.4	44.0	47	11	0 st. cir. cir.-st.	30.210	59.2	54.8	44.7	38	10	0	28
29	30.382	54.7	59.4	50.9	51	6 ⁺	0 cir.-st. st.	30.320	62.1	64.6	55.1	51	4 ⁺	0 cir.-st.	29
30	30.349	57.9	62.7	56.7	67	3	0 cir.	30.240	66.8	70.0	58.0	45	6 ⁺	7 cir. st.	30
Sums	906.520	1921.2	1973.5		2085	156	144	844.799	1932.0	1804.7		1714	206	151	
Means	30.217	64.0	65.78		69 $\frac{1}{2}$	5.2	4.8	30.171	69.0	64.45		61	7.4	5.4	
Red. to 32°	30.121							30.062							

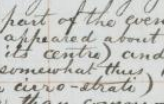
* Observed at 10 $\frac{1}{2}$ A.M. † Observed at 10 $\frac{1}{2}$ A.M.

† Estimated in miles per hour. (New anemometer set up this month.)

* Observed at 4 $\frac{1}{2}$ P.M.

Harvard College Observatory.

September 1869.

Date	External Thermometer No. 4				Solar Therm.			Rain gauges			Remarks.
	7 A.M.	2 P.M.	9 P.M.	Mean	Read at 10 A.M.	Read at 9 P.M.	Read at 4 P.M.	No. 1 on the roof in the evening	No. 2 on roof in forenoon	No. 3 west of house	
1	48.3	† 59.5	54.0	53.9	45.3	60.1	118.6	0.40	1.60	0.12	A shower about 1 P.M. Gauges examined at 3 P.M.
2	52.0	60.4	52.0	54.8	48.5	60.8	124.8				A few drops of rain at times.
3	53.4	67.0	57.8	59.4	49.8	68.7	138.9	2.50	6.25	1.50	Some rain in the night previous and early morning. Gauges examined at 9 ³⁰ A.M.
4	54.5		67.3		49.7	79.6	147.4				Much auroral light in the early part of the evening of Sept. 5. An uncommonly bright streamer appeared about 8 ³⁰ P.M. It was high in the sky (top being about in its centre) and detached from the auroral arch. Its shape was somewhat thus  Detached clouds of auroral light (like cirro-strati) also appeared, remaining stationary longer than common.
5	61.3	82.1	63.9	69.1	58.4	82.5	143.6				Rain during the night of Sept. 6-7. Gauges examined at 10 ¹⁵ A.M.
6		80.7			58.1		140.6				More rain Sept. 7, 12 ¹⁵ P.M. Gauges examined at 4 ¹⁵ P.M.
7	66.2	76.7	† 68.3	70.4	63.4	† 81.7	144.3	7.12	13.75	6.25	Rain during the night of Sept. 7-8, beginning after 11 ¹⁵ P.M. Gauges examined at 10 ¹⁵ A.M. Sept. 8. Some slight showers during the middle of that day. About 4 ¹⁵ P.M., a heavy rain with strong east wind. The wind continued to increase till about 6 ¹⁵ P.M., shifting to the S., and by 6 ¹⁵ P.M. to the S.W., when the rain ceased. Trees were blown down in various places in Cambridge, one on Concord Avenue, near the Observatory. During the gale the barometer is reported to have fallen to about 29.100 inches. At 7 ¹⁵ P.M., it stood at 29.450 inches; therm. 74.0; at 9 P.M. barometer 29.569 inches; thermometer 75.6
8	73.0	83.8	74.7	77.2	65.4	83.8	144.6	5.25	10.50	3.00	
9	68.5	71.7	64.4	68.2	65.3	75.0	136.1	91.00	189.50	67.50	
10	58.3	64.8	57.0	60.0	57.6	65.3	133.9				
11	54.5	69.5	58.5	60.8	57.9	70.6	142.6	3.00	8.50	1.50	Gauges examined at 10 ¹⁵ A.M. Sept. 9 for rain of storm of Sept. 8 and some showers in the following night.
12		74.0	62.6		50.0	74.2	137.9				Gauges examined at 2 ¹⁵ P.M. Sept. 11 for rain of the previous night.
13			59.4		50.0	70.9					Aurora in the evening of Sept. 11: lasting till after midnight.
14	56.7	69.8	59.9	62.1	55.1	72.0	132.3				Aurora in the evening of Sept. 13 lasting till after midnight.
15	54.3		61.9		51.8	74.5					Auroral arch visible at midnight, Sept. 14-15 - not bright.
16	57.0	76.5	59.4	64.3	54.7	76.4	139.0				Some faint auroral light in the evening of Sept. 15.
17	57.5	64.6	58.1	60.1	56.7	65.8	128.6				
18	55.0	64.7	57.0	58.9	56.4	65.9	123.7				
19	57.2	76.0	68.9	67.4	53.3	77.8	132.2				
20	69.0	† 85.4	xx 66.8	73.7	65.3	xx 85.7	147.5				
21	59.3	60.6	56.0	58.6	56.4	67.2	112.7				Some drops of rain during the day; more in the evening.
22	57.2	59.6	57.9	58.2	53.2	61.0	76.7	31.50	66.50	23.50	Gauges examined at 10 ¹⁵ A.M. Rain at intervals in the afternoon and evening.
23	58.0	67.8	58.8	61.5	56.5	70.5	137.0	6.70	13.00	4.30	Gauges examined at 10 A.M.
24	52.2	69.2	58.4	59.9	49.5	71.3	135.0				
25	57.5	71.3	60.4	63.1	54.3	72.8	124.8				
26	62.0	75.8	69.1	69.0	54.7	77.0	116.2				
27	51.5	57.4	45.7	51.5	50.3	69.3	124.3	184.25	333.00	128.75	Cloudy day, with a few drops of rain in the afternoon and showers after dark. Heavy rain before daylight of Sept. 27. Gauges examined at 10 ¹⁵ A.M. Aurora through the evening. Very brilliant white streamers about 9 P.M.
28	57.3	55.5			56.8		120.3				At Mr. Huan Clark's there was frost on the windows on the morning of Sept. 28. Aurora in the evening.
29	42.5	65.1	54.0	53.9	41.2	65.7	125.5				Some aurora in the evening of Sept. 29.
30	48.7	71.0	58.0	59.2	47.3	72.3	130.3				
1522.9 1880.5 1690.2 1495.2 1608.9 2018.4 358.22 690.60 253.17 around 1000 ounces											Month remarkable for generally steady warm weather. Frost appeared better than usual. The gale of the 8 th and the rain of the 27 th were each extraordinary, but the latter had no noticeable effect, the ground being very open.
56.4 69.6 60.4 62.3 53.6 72.1 59.2 5.97 8.44 inches											
(Minimum, Sept. 29, 41.2) (Maximum, Sept. 20, 85.7) (Solar thermometer, Sept. 20, 147.5)											

† Read at 2¹⁵ P.M. § Read at 3¹⁵ P.M.
‡ Read at 10¹⁵ P.M. Weather cloudy and still in the evening.** Read at 9¹⁵ P.M.
*** Setting of previous day.

§§ Recorded from memory a considerable time after observation.

October 1869.

Meteorological Record of

1869phae proj. 380P

Date	10 A. M.							4 P. M.							Date
	Barometer	Attached Therm.	Dry bulb	Wet bulb	Relative humidity	Wind	Clouds	Barometer	Attached Therm.	Dry bulb	Wet bulb	Relative humidity	Wind	Clouds	
1	30.226	60.0	66.3	58.0	58	4	0	30.191	67.9	73.3	62.3	51	0	0 cir-st.	1
2	30.204	61.4	64.2	60.0	77	7	0 st. cir-st.	30.156	67.8	71.2	62.0	57	8	0 cir-st.	2
3	30.040	66.3	73.3	67.8	74	20	10 { cir-st. above } st. cum-st. below }	29.984	67.3	63.4	62.4	94	5	10 st. nim.	3
4	29.531	66.9	69.8	69.3	97	21	10 nim. (raining)	29.206	67.9	62.0	61.7	98	26	10 nim. (raining)	4
5	29.635	61.7	57.0	50.0	58	12	9 st. cum.	29.777	62.5	55.0	48.5	59	10	10 st. cum.	5
6	30.024	56.3	49.1	44.3	45	13	0	30.006	59.5	55.9	44.9	34	7	0 cir. cir-st.	6
7	30.243	53.8	52.5	47.0	63	1	0	30.208	60.2	53.8	48.3	64	4	0 haze	7
8	30.286	54.1	54.7	49.4	66	2	0	30.266	61.4	58.8	51.8	59	3	1 haze st.	8
9	30.299	55.9	60.8	57.1	78	4	0 haze	30.262	64.6	65.7	58.2	61	0	0 haze	9
10	30.172	58.1	58.2	56.7	91	2	10 st. fog	30.020	62.6	59.3	57.1	87	7	10 st. cum-st. circum.	10
11	29.692	60.6	61.4	56.4	72	11	9 st. cum-st.	29.748	63.2	60.8	57.8	50	5	1 cum. cir-st. haze	11
12	29.944	56.6	55.7	52.2	78	1	10 st. cum-st. in S.E.	29.887	62.7	61.2	54.5	62	7	10 st. cir-cum.	12
13	29.578	59.3	59.7	58.0	90	3	10 st. fog	29.412	60.2	58.1	56.9	93	5	10 st. nim. fog a little rain	13
14	29.828	54.3	49.4	42.2	50	11	0	29.850	60.1	54.4	46.9	53	5	2 st. cir. cir-st.	14
15	29.889	57.2	64.1	58.9	87	5	10 st. cum-st.	29.860	62.4	62.9	56.2	63	6	6 st. cum. cir-cum. cir-st.	15
16	29.691	56.4	49.6	48.6	93	14	10 st. nim.	29.600	56.0	46.6	46.1	96	19	10 nim. (raining)	16
17	29.673	52.8	50.1	42.8	49	12	0 st.	29.660	58.4	57.0	48.0	46	11	2 st. cum.	17
18	29.896	52.7	49.8	44.3	61	6	1 cir. cum.	29.898	57.4	50.8	42.8	46	11	10 st. cum.	18
19	30.025	51.1	45.5	39.3	51	9	2 st. cir-st. cum.	29.900	53.7	45.3	41.3	69	0	entry omitted	19
20	29.942	48.9	42.7	37.0	53	6	2 cum.	29.931	53.2	44.4	37.6	47	5	6 cum.	20
21	30.040	47.2	45.7	40.5	60	10	0 cir-st.	29.950	56.3	52.1	45.6	57	6	8 st. cum.	21
22	29.968	53.0	49.5	46.5	78	7	10 st.	30.000	58.6	54.6	45.6	44	8	0	22
23	30.003	50.2	50.2	47.7	82	12	10 st.	29.785	52.4	49.0	49.7	100	11	10 nim. (raining)	23
24	29.768	56.1	52.9	47.9	67	12	10 st.	29.920	57.0	50.3	41.3	39	12	0 cum.	24
25	30.297	47.6	41.0	33.5	37	13	0 st. cum.	30.338	51.0	42.8	35.0	37	6	2 cum. st.	25
26	30.289	46.0	39.6	32.6	39	5	1 st. cum.	30.082	50.9	42.4	35.1	40	4	0 st. cir-cum.	26
27	29.940	45.4	38.0	33.0	54	20	9 st. cum-st. cum.	29.958	48.7	36.0	29.5	42	12	1 st. cum.	27
28	29.862	41.6	30.8	28.8	79	3	10 nim. (snowing)	29.584	44.5	36.5	34.0	76	4	10 st.	28
29	29.714	43.4	37.1	35.3	82	6	10 st.	29.692	44.6	37.4	36.2	89	0	10 st. fog	29
30	29.719	43.9	39.2	36.0	71	8	10 st.								30
31	30.018	42.7	37.4	32.1	50	16	5 st.	30.032	46.3	39.5	33.1	43	13	0 st.	31
Sums	928.436	1661.5	1592.3		2090	276	168	897.153	1739.3	1591.5		1856	220	139	
Means	29.950	53.6	51.36		67	8.9	5.4	29.905	58.0	53.05		62	7.3	4.8	
Red. to 32°	29.883							29.826							

* Observations made about 10 1/2 A. M.

* Observations made at 4 1/2 P. M.

* Bulb wet with rain.

** Observations made about 4 1/2 P. M.

Harvard College Observatory.

October 1869.

	Date	External Thermometer No. 4				Min.	Max.	Solar Therm.	Rain gauges			Remarks.
		7 A.M.	2 P.M.	9 P.M.	Mean				Read at 10 A.M.	Read at 9 P.M.	Read at 4 P.M. on the ground on roof in courtyard out-house observatory	
	1	51.0	73.1	59.6	61.2	50.2	74.4	133.0				Some aurora behind clouds.
	2	53.0	71.9	62.7	62.5	50.8	72.4	137.0				Some aurora behind clouds.
	3	64.7	67.4	61.5	64.5	57.5	75.4	125.4				
	4		70.1	63.0		60.8	72.3	77.0	33.00	63.00	24.50	Gauges examined at 7½ A.M. Otis for rain of previous afternoon, evening, and night. Much wind and rain through the day.
	5	54.3	56.5	48.0	52.9	52.4	63.0	123.5	59.50	125.00	40.25	Gauges examined at 8¼ A.M.
	6	39.8	53.4	44.7	46.6	38.3	56.1	120.4				Aurora this evening; arch distinct; not much appearance of streamers.
	7		57.0	46.0		35.8	56.9	121.9				
	8		62.2	49.5		35.6	62.5	125.2				
	9	44.5	67.5	52.0	54.7	43.4	68.0	123.7				
	10	54.0	61.0	58.4	57.8	46.6	62.2	129.6	0.05	2.80	not measurable	Gauges examined at 9¾ A.M. for rain of previous night.
	11		62.4	49.8		54.5	64.0	134.8	65.00	121.25	45.50	Rain in heavy showers during previous night. Gauges examined at 9 A.M.
	12	46.0	64.4	57.5	56.0	43.6	65.4	120.0				
	13		61.7	48.5		55.0	64.9	79.0				Rain in the previous night and at intervals through the day.
	14	41.0		49.4		40.8	56.1	117.1	6.50	13.50	3.50	Gauges examined at 8 A.M. Morning favored evaporation.
	15		65.8	54.5		40.9	66.2	115.0	3.50	7.50	2.00	Shower in the previous night and during the day.
	16	49.0	47.2	46.7	44.3	48.6	54.3	68.8	42.33	78.00	32.75	Gauges examined at 9¾ A.M. and again at 1½ P.M.
	17	42.0	57.8	48.5	49.4	44.8	58.4	117.0	59.50	97.00	42.50	Gauges examined at 10½ A.M. Rain a great part of the day.
	18		53.7	42.3		39.5	55.5	125.0				Rain ceased in the night. Morning favored evaporation. Gauges examined at 10½ A.M.
	19	34.2	47.4	41.2	40.9	33.1	49.0	105.6				
	20	34.0		36.2		32.0	46.6	114.6				
	21	31.0				29.6	57.1	115.9				
	22	47.3	55.2			45.1	63.7	113.6	1.75	15.25	7.00	(Earthquake throughout this region early in the morning of Oct. 22; not noticed by any one at the Observatory; clock apparently undisturbed according to observations of Oct. 25. Rain during previous night. Gauges examined at 2 P.M. Middle of the day favored evaporation. Gauge No. 1 found on its side; apparently upset during or after the rain.)
	23	39.0	50.9			36.4	52.4	62.9				Much rain during the day of Oct. 23 and the following night.
	24	51.5	53.9	39.4	48.3	48.9	63.0	116.4	16.50	69.50	32.50	Gauges examined at 9 A.M. No. 1 seems to have leaked or to have been upset again.
	25	31.5	44.3	34.4	36.7	30.4	45.0	114.8				Auroral arch formed early in the evening. At 9 P.M. had unusually green, with some appearance of streamers. At 11 P.M. faint, a little yellow; a few streamers.
	26	30.3	44.1	36.7	37.0	27.0	44.5	110.2				
	27	32.3	40.0	29.4	33.9	31.7	40.5	105.5				A few flakes of snow about 11 A.M. Some aurora all the evening.
	28	24.0	36.8	35.9	32.2	21.4	37.6	73.2				
	29		37.0	35.4		30.6	37.7	59.1	0.05	1.50	not measurable	Snow, morning of Oct. 28. Gauges examined at 10½ A.M. Oct. 29.
	30			36.1		33.0	41.0		1.00	2.00	0.50	Snow, morning of Oct. 29 (after 10½ A.M.). Gauges examined at 10½ A.M. Oct. 30.
	31		41.4	30.9		33.9	41.7	112.3				Aurora; double and sometimes triple arch. Some appearance of streamers at 9 P.M. Later, the streamers extended at times nearly to the zenith, and showed rose color.
		894.4	1506.1	1298.2	778.9	1269.2	1758.8		289.68	598.90	231.50	arrived upon curves
		42.6	55.8	46.4	48.7	40.9	56.7		4.83	5.18	7.72	inches
		(Minimum Oct. 28, 21.4) (Maximum Oct. 3, 75.4) (Solar Therm. Oct. 3, 137.0)										

xxx Temperature after last setting.

† Read at 2½ P.M.

‡ Observation not immediately recorded; record made from memory some time later; on Oct. 9, observation made at 9¼ P.M.

†† Read at 10¼ P.M.; evening cloudy, warm, rainy.

††† Read at 2½ P.M.

†††† Read at 9 P.M.

§§ Read at 7 P.M.; at that time Therm. No. 4, Oct. 21, 51.0; 22, 47.0; 23, 54.4

¶¶ Read at 2½ P.M.

November 1869.

Meteorological Record of

Date	10 A. M.							4 P. M.							Date
	Barometer	Attached Therm.	Dry bulb	Wet bulb	Relative humidity	Wind	Clouds	Barometer	Attached Therm.	Dry bulb	Wet bulb	Relative humidity	Wind	Clouds	
1	30.003	40.3	34.4	30.9	67	4	3 cir. cir-st.	29.933	44.7	39.1	34.7	60	3	10 st.	1
2	30.247	43.4	42.0	37.5	62	8	6 cir. cir-st.	30.266	49.4	44.1	40.1	68	4	9 st.	2
3	30.318	44.1	42.7	40.4	80	3	10 st. (thin)	30.200	42.5	49.4	43.6	59	5	10 st. (thin) cir-cum.	3
4	30.075	46.2	52.3	46.5	61	4	4 cir. haze	29.978	53.2	58.5	52.0	62	0	4 st. haze	4
5	29.789	49.3	53.0	49.8	79	7	5 st. cir-st. cir. haze	29.697	53.5	57.2	52.2	72	6	10 st.	5
6	29.740	48.3	43.8	39.5	65	3	9 st. cir-st. cir-cum.	29.670	51.6	49.2	41.8	48	1	10 st.	6
7	29.308	46.1	37.2	33.4	63	17	10 st.	29.310	42.5	36.6	33.0	65	10	6 st. cum.	7
8	29.440	41.9	34.2	29.7	57	13	10 st.	29.452	44.4	34.8	30.1	56	16	8 st. cir-st. cum.	8
9	29.659	41.8	37.4	31.2	46	13	9 cum. st.	29.533	45.9	39.3	33.5	48	13	0 st.	9
10	29.732	42.6	38.7	33.2	50	6 ⁺	0 cum.	29.738	47.0	41.0	33.6	37	10 ⁺	0 st. cum.	10
11	29.818	41.3	35.8	30.3	50	8	1 st. cir-st. haze. cum.	29.781	45.0	38.5	33.3	52	9	7 st. cum. cum-st.	11
12	29.901	40.0	35.7	30.2	50	12	0 st. cum.	29.893	44.5	38.2	33.5	56	6	10 st. cum-st.	12
13	30.040	40.2	34.2	29.4	55	9	0 cir-st.	30.038	45.2	39.0	33.0	46	0	10 st.	13
14	29.864	41.7	32.7	32.2	95	11	10 nim. (snowing)	29.832	42.3	33.1	33.1	100	7	10 nim. (snowing)	14
15	29.932	39.5	33.2	33.2	100	3	10 st. cum.	*29.927	*42.6	*35.5	*33.0	75	*8	*9 st. cum.	15
16	30.160	35.8	26.5	24.0	70	10	1 cum. st.	30.186	41.6	30.7	25.7	48	3	8 cir. st.	16
17	29.784	38.8	38.2	37.5	93	17	10 nim. (raining)	29.408	43.0	54.0	53.5	97	11	10 nim. (a little rain)	17
18	29.604	42.1	39.5	34.5	52	19	0 st. cum.	**29.800	**43.6	**39.0	**33.5	51	**8	*9 st. cum.	18
19	30.157	39.0	34.8	31.3	67	2	0 a little haze	30.156	44.5	41.3	36.4	58	1	5 st. cir-st.	19
20	29.504	46.3	42.0	41.5	96	15	10 nim. (raining)	29.598	49.4	51.8	48.3	79	17	2 st. cum. cum-st.	20
21	29.868	44.6	39.1	38.4	93	5 ⁺	10 st. nim. fog	29.850	48.0	45.1	42.1	76	1 ⁺	10 st. cum-st.	21
22	30.178	40.7	31.0	26.3	51	14 ⁺	0								22
23	30.080	42.1	39.2	38.2	91	2 ⁺	10 st. nim. (raining)	30.040	43.9	40.2	39.4	93	2 ⁺	10 st. nim.	23
24	30.066	42.4	34.3	33.0	87	8 ⁺	10 st. nim.	30.150	65.9	36.4	35.4	90	8 ⁺	10 st.	24
25	30.360	61.7	30.5	28.0	73	13 ⁺	0 st. cum.	30.336	66.1	35.1	31.1	63	11 ⁺	3 cir-cum. cir-st. st.	25
26	30.338	60.8	30.4	28.6	80	3 ⁺	0 cir-st.	**30.251	**66.4	**35.0	**32.0	70	**0 ⁺	10 st.	26
27	29.985	61.5	36.1	34.6	85	1 ⁺	10 st.	29.810	61.6	37.8	36.3	86	2 ⁺	10 st.	27
28	29.974	53.8	33.5	28.3	50	16 ⁺	0 cum. st.						10 ⁺	1 st. cum.	28
29	30.192	66.1	33.6	30.2	67	8	8 st. cir-st. cir.	30.166	75.6	38.3	33.9	60	2	10 st. cir-cum. cir-st.	29
30	29.911	64.2	46.3	45.3	92	11	10 nim. (raining)	29.799	57.8	52.4	49.2	78	8	10 st.	30
Means	898.054	438.36	112.63		212.7	262	166	836.798	1404.7	1170.6		1853	175	221	
Means	29.935	46.1	37.54		71	8.7	5.5	29.886	50.2	41.81		66	6.0	7.6	
Red. to 32°	29.888							29.828							

*** Observed at 10⁵/₁₆ A. M.* Observed at 4¹/₄ P. M.+++ Observed at 4³/₄ P. M.

† Estimated only.

** Observed at 4¹/₂ P. M.

Harvard College Observatory.

November 1869.

Date	External Thermometer No. 4				Min.	Max.	Solar Therm.	Rain gauges			Remarks.
	7 A.M.	2 P.M.	9 P.M.	Mean	Read at 10 A.M.	Read at 9 P.M.	Read at 11 P.M.	No. 1 on ground or on roof or against wall	No. 2 on ground or on roof or against wall	No. 3 on ground or on roof or against wall	
1		40.2	37.7		23.0	40.2	102.1				
2	32.5	46.4	38.7	39.2	32.0	46.8	144.0				
3	33.5		45.4		34.4	50.1	67.5				
4	40.0	64.9	48.6	50.2	39.6	62.9	114.6				
5	45.8	61.9	51.0	52.9	42.8	61.9	114.2				
6	38.0	51.0	44.4	43.5	37.6	51.5	109.2	0.75	2.25	0.20	Shower evening of Nov. 5. Gauges examined 11 A.M. Nov. 6. Prof. Winchell noticed a sudden illumination of his chamber, as if by a flash of lightning, at 2 ²⁰ A.M. Nov. 6. The window was covered by a white shade. The sky, on looking out, was clear. Probably the light was that of a large meteor.
7		39.1	29.4		34.5	41.3	104.0	6.50	46.50	19.50	Rain during night Nov. 6-7. Morning windy. Gauges examined at 10 ¹⁵ A.M. Gauge No. 1 seems to have leaked.
8		36.1	33.9		27.3	36.7	80.9				Aurora behind clouds during evening of Nov. 8.
9	31.5	40.3	35.6	35.8	31.7	40.8	106.4				Aurora Nov. 9: streamers and arch.
10	30.0	43.0	33.1	35.4	29.2	43.4	107.0				
11	28.5	39.6	30.6	32.9	27.8	40.7	102.6				A few flakes of snow in the afternoon of Nov. 11. In the evening, appearance of some aurora behind clouds.
12	25.7	39.6	32.2	32.5	25.4	39.6	107.5				Watch kept for meteors all night Nov. 12-13. About twenty observed and entered in observing book.
13	26.0	39.9	33.8	33.2	26.1	40.0	105.0				Watch kept for meteors all night Nov. 13-14. None seen, night cloudy throughout.
14	31.6	33.1	33.4	32.7	26.2	33.9	144.2				Watch kept for meteors all night Nov. 14-15. About ninety observed and entered in observing book.
15	28.5	35.9	28.1	30.8	27.7	36.3	73.8				
16	48.0	32.5	25.6	25.4	17.9	34.8	99.7	7.25	10.50	5.75	Gauges examined at 2 ¹⁵ P.M. for melted snow from fall of Nov. 14, through the day.
17	32.5	49.0	49.6	43.7	24.3	53.5	56.2				Rain most of the day.
18	35.3	41.3	32.7	36.4	33.7	49.6	107.2	17.00	67.50	30.00	Gauges examined at 9 ³⁰ A.M. (No. 1 perhaps leaked).
19	26.5	43.0	40.0	36.5	25.8	49.7	106.9				
20	45.8	57.1	44.0	49.0	34.4	59.3	115.7	upset	67.50	34.00	Rain and high wind during night of Nov. 19-20 and following morning. Gauges examined at 2 ¹⁵ P.M. Gauge No. 1 found upset and water spilled.
21	35.0	47.4	39.0	40.5	34.7	47.6	109.4				
22	29.0	35.2	28.8	31.0	26.6	39.3					
23	34.6	42.5	35.9	37.7	28.0	43.1	99.6				
24	34.0	35.5	30.4	33.3	33.3	37.3	41.8				
25	23.5	35.9	28.8	29.4	22.9	36.8	100.2	14.50	46.50	21.00	Rain and snow Nov. 23 and 24. Gauges examined at 1 P.M. Nov. 25. Gauge No. 1 evidently deficient, as before. Some aurora light in the evening of Nov. 25.
26	22.3	36.1	33.8	30.7	21.0	36.7	96.0				
27	22.5	37.6	32.6	30.9	27.8	37.7	43.2				
28	29.0	35.5	29.1	31.2	28.1	35.9	101.7		0.25		A little snow during Nov. 27. Gauges examined Nov. 28 at 2 ¹⁵ P.M. Gauges No. 1 and No. 3 contained too little for measurement.
29	28.3	39.7	37.9	35.3	24.6	43.1	101.9				
30	44.0		53.0		32.7	54.1	63.0	10.00	24.50	9.50	Rain in the early part of Nov. 30. Gauges examined at 3 ³⁰ P.M. More rain later in the day and in the following night. Gauges examined at 10 ¹⁵ A.M. Dec. 1.
	851.9	1176.3	1094.1	910.1	878.1	1326.6		61.25	284.50	124.95	avoided rain
	31.6	42.0	36.5	36.4	29.3	44.2		1.02	2.43	4.16	inches.
(Minimum, Nov. 16, 17.9) (Maximum, Nov. 16, 62.9) (Solar therm., Nov. 20, 115.7)											Gauge No. 2 supposed to be nearest right.

† Observed at 9¹⁵ P.M.†† Observed at 10¹⁵ P.M.

‡ This maximum probably belongs to Nov. 22

§ Observed at 2¹⁵ P.M.

††† Recorded from memory some time after observation.

¶ Observed at 2¹⁵ P.M.§§ Observed at 9¹⁵ P.M.†††† Observed at 2¹⁵ P.M.

§§§ Observed at 11 P.M.

December 1869.

Meteorological Record of

1889phae. pr

Date	10 A.M.							4 P.M.							Date	
	Barometer	Attached Therm.	Dry bulb	Wet bulb	Relative humidity	Wind	Clouds	Barometer	Attached Therm.	Dry bulb	Wet bulb	Relative humidity	Wind	Clouds		
1	29.781	66.0	46.8	39.3	44	20	2 st. cir-st. cum.	29.927	68.3	39.1	33.1	46	12	10 st.	1	
2	30.150	53.7	xxx 23.9	xxx 20.1	49	11	10 st.								2	
3	30.110	52.7	17.4	16.9	92	13 ⁺	10 st. nim. (a little snow)	30.180	52.4	18.9	16.9	69	2 ⁺	5 st. cum-st. cir-st.	3	
4	30.369	46.8	15.7	15.1	89	0	10 st. cir-st. (very thin)	30.186	49.2	28.8	27.0	80	3 ⁺	10 st.	4	
5	30.059	52.0	35.4	34.6	92	3 ⁺	10 nim. (snowing)	30.079	52.7	35.1	34.4	93	0	10 st. cir-st.	5	
6	30.201	49.5	20.0	20.0	100	14	10 nim. (snowing)	30.015	50.7	14.3	14.8	100	15 ⁺	10 nim. (snowing)	6	
7	29.914	46.9	20.0	18.0	70	17	9 st. cir-st.	30.070	52.0	24.0	18.0	57	7 ⁺	0 cir-st.	7	
8	30.353	47.7	15.4	13.4	65	5 ⁺	0 st.	30.392	54.8	23.4	19.6	50	5 ⁺	1 st.	8	
9	30.662	43.4	xxx 19.0	xxx 17.0	69	0	0								9	
10	30.598	46.5				1 ⁺	1 st. haze	30.411	46.6	27.0	24.0	64	0	1 st. haze	10	
11	30.199	44.9				2	0 cir. haze	30.231	65.9	41.0	36.6	62	2	0 cir. cir-st.	11	
12	30.216	62.4	34.6	33.6	90	0	10 st.	30.091	58.0	36.3	36.1	98	0	10 st. fog	12	
13	30.280	57.7	34.1	32.3	81	6 ⁺	10 st.	30.369	59.6	35.1	32.6	75	6 ⁺	10 st.	13	
14	30.500	52.9				5 ⁺	0 cir-st.								14	
15	30.473	53.0	18.9	17.4	77	7 ⁺	4 cir-st. cir.	30.400	64.5				0	2 cir-st. cir. st.	15	
16	30.242	57.8				5 ⁺	10 st.	30.100	60.5	39.9	38.4	86	8 ⁺	10 st.	16	
17	30.089	54.4	39.2	37.8	87	3 ⁺	8 st. cir-st.								17	
18	29.980	68.7	38.2	36.8	86	8 ⁺	10 st.	29.579	67.5	37.3	37.1	98	13 ⁺	10 nim. (raining)	18	
19	29.550	62.8	34.0	29.8	60	18 ⁺	3 st. cir-st. cum.	29.788	63.0	32.8	28.3	56	13 ⁺	1 cir-st. st. cum.	19	
20	30.158	55.7	30.0	27.0	67	7 ⁺	10 st. cir-st.	30.195	65.3	34.1	26.6	53	7 ⁺	10 st. cir-st.	20	
21	30.626	58.0	27.7	26.0	80	6 ⁺	1 st. cir-st.	30.668	64.8	30.2	26.2	57	1 ⁺	10 st. cir-st. cir-st. cir.	21	
22	30.214	61.8	37.0	36.5	95	7 ⁺	10 nim. (raining)	29.795	62.7	49.6	49.2	97	14 ⁺	10 nim. (fine rain)	22	
23	30.086	70.3	34.5	29.5	53	12	0 cir-st. st.								23	
24	30.560	56.7	28.0	24.0	54	7	3 cir.	* 30.528	* 66.2	* 33.0	* 32.0	89	* 2	* 0	24	
25	30.612	63.3	33.6	32.0	83	5	3 cir-st.	* 30.556	* 67.8	* 39.0	* 35.3	66	* 3	* 10	25	
26	30.422	64.0	40.6	40.4	98	0	10 fog (raining)	30.230	70.3	43.5	43.0	96	5	10 (raining)	26	
27	30.151	70.5	44.0	44.0	100	8	10 mist and fog	30.108	74.0	43.2	42.7	96	0	10 fog and fine rain	27	
28	29.910	71.0	44.9	44.7	98	1	10 st. fog	29.722	72.0	42.2	42.0	98	7 ⁺	10 fine rain and fog	28	
29	29.869	67.3	39.5	36.0	68	6	10 st. cum.	29.851	64.0	39.5	35.0	60	8	9 st. cum.	29	
30	29.819	61.1	38.0	34.8	70	6	10 st.								30	
31	30.028	62.1	39.4	34.9	60	8	0 st. cum.								31	
Sums	936.181	1784.6	843.8		2077	211	184	723.481	1469.8	781.3			1746	133	169	
Means	30.199	57.5	31.25		77	6.8	5.9	30.145	61.2	33.97			76	5.5	7.0	
Red. to 32°	30.121							30.057								

xxx Read at 10 $\frac{1}{2}$ A.M.
 xxxx Read at 11 A.M.
 * Observations made at 10 $\frac{1}{2}$ A.M.

* Anemometer not in use: force of wind estimated in miles per hour.
 †† Observations made at 2 $\frac{1}{2}$ P.M.
 * Observations made at 10 $\frac{1}{2}$ P.M.

Harvard College Observatory.

December, 1869.

Date	External Thermometer No. 1				Min.			Max.			Solar Therm.			Rain gauges			Remarks.
	7 A.M.	2 P.M.	9 P.M.	Mean	Read at 10 A.M.	Read at 1 P.M.	Read at 4 P.M.	Read at 7 A.M.	Read at 10 A.M.	Read at 1 P.M.	Read at 4 P.M.	Read at 7 A.M.	Read at 10 A.M.	Read at 1 P.M.	Read at 4 P.M.	Read at 7 A.M.	
1	49.0	42.9	34.8	42.2	32.9	59.0	99.0	5.25	16.00	5.00							Rain in the evening and night preceding. Gauges examined at 10 $\frac{1}{2}$ A.M.
2	22.0	22.7	19.3	21.3	21.3	55.4											
3	15.5	19.7	12.9	16.0	15.5	19.9	80.5	3.75		2.50							Snow most of the time from 1 P.M. Dec. 2 to 10 A.M. Dec. 3, but falling very slowly. Depth about 2 $\frac{1}{2}$ inches (mean of three or four) measured in different places west and south of the Observatory. Gauges 1 and 3 examined at 5 P.M. Dec. 3. No. 2 not examined. (as the snow in the funnel on the roof had not melted.)
4	7.0	27.2	32.0	22.1	6.1	31.7	91.2										
5	34.0	38.0	33.6	35.2	15.7	37.4	59.8										
6	21.7	15.6	15.6	17.6	20.0	33.7	38.8										
7	15.7	21.5	14.2	17.1	13.4	22.1	113.2	26.50	19.00	30.00							Snow most of Dec. 6. Measurements on Observatory grounds gave depths at 11 A.M. Dec. 7 as follows: 4 $\frac{1}{2}$, 5, 16, 8, 8, 13 inches. Mean, 8.25 inches. Cylinders of snow cut out at these places with a stove pipe of the mean diameter of 5 $\frac{1}{2}$ inches. Amount of melted snow thus collected 112 ounces. Gauge No. 1 looks badly. The snow in the funnel of gauge No. 2 is but little melted.
8	7.5	24.6	17.4	16.5	6.9	25.5	100.0										
9	10.5		15.3		9.2	24.7											
10	1.5	26.7	16.1	14.8	-0.2	27.6	100.2										
11	15.0	42.6	32.3	30.0	6.6	44.2	108.2										
12	28.5	36.1	34.7	33.1	24.7	37.2	149.7										
13	32.5	36.0	30.9	33.1	31.9	36.2	99.6	5.50	83.25	5.50							Rain on Dec. 12. Gauges examined Dec. 13 at 2 $\frac{1}{2}$ P.M. Water in gauge No. 2 mainly from previous snow.
14	18.5	29.5	19.6	22.5	16.5	33.7											
15	13.5	30.5	22.7	22.2	13.0	32.8	98.8										
16	21.3	40.2	39.9	33.8	17.0	42.8	76.0										
17	36.0	43.0	34.4	37.8	28.3	48.4											
18	35.3	37.3	34.9	35.8	30.8	38.4	106.1										
19	34.2	32.9	30.2	32.4	32.7	36.1	96.5	10.00	154.00	61.50							Rain Dec. 16; also Dec. 18. Gauges examined at 12 $\frac{1}{4}$ P.M. Dec. 19 No. 1 useless from leakage.
20		32.4	27.2		22.9	32.9	99.2										
21	20.5	31.1	28.9	26.8	19.5	31.1	91.7										
22		45.5	50.4		27.0	57.3	53.7										
23		34.8	27.3		31.9	51.0	98.5	6.50	79.00	31.50							Rain Dec. 22. Gauges examined at 1 P.M. Dec. 23 Readings of barometer and attached thermometer Dec. 23 At 1 $\frac{1}{4}$ P.M. 30.101 68.0 At 10 P.M. 30.300 60.8 Readings of wet and dry bulb Dec. 23 at 1 $\frac{1}{4}$ P.M. Dry 34.5 Wet 29.0 Wind and clouds Dec. 23 at 1 $\frac{1}{4}$ P.M. Wind 15 Clouds 1 cirrus.
24	23.5	33.8	28.0	28.4	22.4	34.8	94.8										
25	33.0		37.0		25.0	41.8	93.0										
26	38.6				33.8	43.8	47.0										
27	40.0		41.3		32.0	43.8	55.2	36.00	48.00	72.25							The pipe of gauge No. 2 not being rightly adjusted much water was lost. The last two measures of No. 2 and No. 3 agree in giving 181 ounces as the amount of water probably collected for Dec. 27 by gauge No. 2.
28	39.5	43.4	39.3	40.7	38.8	43.5	50.0										
29	36.0	39.9	37.4	37.8	35.5	41.4	64.0	11.50	55.00	33.50							Rain Dec. 27 and 28. Gauges examined at 11 A.M. Dec. 29.
30	30.3		37.4		35.0	40.8											
31	33.0	42.8	34.7	35.8	34.8	43.6											
	718.6	870.7	876.7	653.0	697.9	1166.3		105.00	454.25	241.75							avoided four ounces.
	25.7	33.5	29.2	28.4	22.5	37.6		1.75	3.93	8.06							inches.
	(Minimum -0.2 Dec. 10) (Maximum 59.0 Dec. 1) (Bar. therm. 113.2 Dec. 7.)																Gauge No. 1 useless from leakage. Gauge No. 2 requires a correction of probably +4.15 inches, for water lost Dec. 27. 5.08 inches may be adopted as the rainfall.

** Read at 2 $\frac{1}{2}$ P.M.
 † Read at 2 $\frac{1}{4}$ P.M.
 ‡ Same reading as after last setting.
 +++ Read at 2 $\frac{1}{2}$ P.M.

†† Maximum of Dec. 17.
 ††† Read at 9 $\frac{1}{2}$ P.M.
 +++ Read at 1 $\frac{1}{4}$ P.M.
 +++ Read at 10 P.M.

The winter set in cold and snowy; but the last half of December was very mild; the snow entirely disappeared, and the frost left the ground. Some of the snow on the roof was ploughed.

Extract from meteorological record of Mr. R. T. Paine,
for January, 1869, furnished in April, 1885.

1869	Barometer in Boston, at sea level; thermometer 50°.	Barometer in Boston, at sea level; thermometer 50°.	Barometer in Boston, at sea level; thermometer 50°.
	Sunrise	2 ^h	10 ^h
Jan. 29	30.15	30.11	30.03
30	29.78	29.56	29.61
31	29.71	29.73	29.91

This makes it probable that the true reading for
Harvard College Observatory, January 30, 1869, 4 P.M. was 29.490.

