

1885

## Meteorological Statistics

William Cheney

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## METEOROLOGICAL STATISTICS.

BY WM. CHENEY.\*

The following statistics are the result of personal observations, taken daily, at 7 a. m. and 2 and 9 p. m., and extend over a period of more than eighteen years, beginning with November 1st, 1864.

Minneapolis is in Lat. 45° N., Long. 93°10' W., height above the sea 856 feet.

### YEARLY TEMPERATURES.

Mean temperature year	1865,	44.82	
"	"	" 1866,	42.12
"	"	" 1867,	40.56
"	"	" 1868,	41.64
"	"	" 1869,	41.53
"	"	" 1870,	44.79
"	"	" 1871,	42.30
"	"	" 1872,	40.67
"	"	" 1873,	40.75
"	"	" 1874,	42.79
"	"	" 1875,	43.05
"	"	" 1876,	40.98
"	"	" 1877,	44.73
"	"	" 1878,	46.51
"	"	" 1879,	43.19
"	"	" 1880,	42.30
"	"	" 1881,	42.97
"	"	" 1882,	43.27

Average yearly mean temperature for eighteen years, 42.72.

\*Correspondent of the Smithsonian Institute, and Voluntary Observer Signal Service U. S. Army.

SPRING TEMPERATURES.

Mean	Temp'ture	Spring	Year	Temperature
		1865,		42.68
"	"	"	1866,	43.78
"	"	"	1867,	34.16
"	"	"	1868,	44.48
"	"	"	1869,	39.49
"	"	"	1870,	45.73
"	"	"	1871,	46.11
"	"	"	1872,	39.86
"	"	"	1873,	41.27
"	"	"	1874,	40.37
"	"	"	1875,	38.24
"	"	"	1876,	40.77
"	"	"	1877,	41.98
"	"	"	1878,	48.96
"	"	"	1879,	45.35
"	"	"	1880,	44.11
"	"	"	1881,	43.91
"	"	"	1882,	41.52

Average mean spring temperature for eighteen years, 42.37.

## SUMMER TEMPERATURES.

Mean Temp'ture	Summer	1865,	69.23
"	"	" 1866,	70.95
"	"	" 1867,	68.56
"	"	" 1868,	70.87
"	"	" 1869,	66.90
"	"	" 1870,	69.77
"	"	" 1871,	68.58
"	"	" 1872,	69.92
"	"	" 1873,	71.90
"	"	" 1874,	71.42
"	"	" 1875,	66.04
"	"	" 1876,	68.86
"	"	" 1877,	67.91
"	"	" 1878,	68.97
"	"	" 1879,	69.44
"	"	" 1880,	68.91
"	"	" 1881,	71.83
"	"	" 1882,	67.15

Average mean summer temperature for eighteen years, 69.29.

AUTUMN TEMPERATURE.

Mean Temp'ture Autumn 1865,	50.88
“ “ “ 1866,	46.31
“ “ “ 1867,	47.52
“ “ “ 1868,	41.24
“ “ “ 1869,	41.20
“ “ “ 1870,	49.13
“ “ “ 1871,	42.78
“ “ “ 1872,	42.15
“ “ “ 1873,	39.29
“ “ “ 1874,	45.88
“ “ “ 1875,	40.19
“ “ “ 1876,	43.73
“ “ “ 1877,	46.36
“ “ “ 1878,	46.45
“ “ “ 1879,	47.17
“ “ “ 1880,	39.50
“ “ “ 1881,	43.70
“ “ “ 1882,	47.45

Average mean autumn temperature for eighteen years, 44.49.

## WINTER TEMPERATURE.

Mean Temp'ture	Winter	1864-5,	15.54
"	"	"	1865-6, 7.70
"	"	"	1866-7, 12.46
"	"	"	1867-8, 10.54
"	"	"	1868-9, 16.89
"	"	"	1869-70, 14.20
"	"	"	1870-1, 15.50
"	"	"	1871-2, 11.48
"	"	"	1872-3, 5.36
"	"	"	1873-4, 15.94
"	"	"	1874-5, 3.60
"	"	"	1875-6, 16.75
"	"	"	1876-7, 13.54
"	"	"	1877-8, 26.87
"	"	"	1878-9, 13.37
"	"	"	1879-80, 17.43
"	"	"	1880-1, 8.59
"	"	"	1881-2, 21.37

Average mean winter temperature for eighteen years, 13.73.

## MAXIMUM TEMPERATURES.

Maximum temperature	1865, June 2d,	95
"	" 1866, July 12th,	98
"	" 1867, Aug. 7th,	87
"	" 1868, July 16th,	101
"	" 1869, July 2d,	92
"	" 1870, June 29th,	96
"	" 1871, July 12th,	93
"	" 1872, June 25th,	
	and July 14th,	94
"	" 1873, June 25th,	96
"	" 1874, May 27th	
	and Sept. 7th,	94
"	" 1875, Sept. 8th,	91
"	" 1876, July 7th,	94
"	" 1877, July 7th	
	and Sept. 13th,	91
"	" 1878, July 15th,	93
"	" 1879, Aug. 29th,	93
"	" 1880, Aug. 13th,	94
"	" 1881, Aug. 11th,	94
"	" 1882, July 25th,	91

## MINIMUM TEMPERATURES.

Minimum temperature	1865, Dec. 21st,	*—33
"	" 1866, Feb. 15th,	—31
"	" 1867, Jan. 29th,	—32
"	" 1868, Jan. 12th,	—40
"	" 1869, Mar. 4th,	—23
"	" 1870, Jan. 18th,	—30
"	" 1871, Dec. 27th,	—29
"	" 1872, Dec. 24th,	—38
"	" 1873, Jan. 28th,	—34
"	" 1874, Feb. 24th,	—28
"	" 1875, Jan. 8th,	—33
"	" 1876, Feb. 4th	
	and Dec. 16th,	—22
"	" 1877, Jan. 28th,	—24
"	" 1878, Jan. 6th,	—16
"	" 1879, Dec. 25th,	—38
"	" 1880, Dec. 28th,	—32
"	" 1881, Jan. 9th,	—28
"	" 1882, Dec. 7th,	—23

Average minimum temperature for eighteen years. \*—29

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\*—Below zero.



*Record of Meteorological observations made at Minneapolis, Minn., by Wm. Cheney, Correspondent of the Smithsonian Institution, Washington, D. C., and Voluntary Observer U. S. Signal Service, for the years 1876 to 1882 inclusive.*

1876	Thermometer in open air				Barometer reduced to freezing point				Rain and Snow		Cl'd in's	Relative humidity in 10ths (W being complete saturation.)	Prevailing Winds.
	Months.	Max.	Min.	Mean.	R'ge	Max.	Min.	Mean.	R'ge	Amt rain & melted snow in inches.	Depth of Snow in inches.		
January . . . . .	43	*—20	13.50	63	29.242	28.184	28.812	1.058	1.250	12½	5.7	.81	NW & SE
February . . . . .	48	*—22	14.10	70	29.364	28.217	28.835	1.147	0.800	8	6.1	.67	NW & SE
March . . . . .	45	*—10	21.56	55	29.287	28.334	28.853	0.953	1.600	13	5.6	.71	SE & N
April . . . . .	74	23	42.72	51	29.215	28.402	28.763	0.813	3.299	14	5.7	.62	S & NW
May . . . . .	88	34	58.02	54	29.146	28.399	28.762	0.747	3.663	0	5.1	.62	S & NW
June . . . . .	80	43	64.46	46	28.908	28.309	28.662	0.599	2.726	0	5.6	.70	NW
July . . . . .	94	58	72.72	36	28.928	28.454	28.712	0.474	2.138	0	4.3	.71	S
August . . . . .	88	53	69.39	35	28.878	28.336	28.639	0.542	5.935	0	5.3	.75	S & W
September . . . . .	77	40	56.85	37	29.851	28.794	29.477	1.057	2.670	0	4.5	.84	S & NW
October . . . . .	70	26	44.74	44	28.886	28.777	29.420	1.109	2.880	0	4.6	.72	N & NW
November . . . . .			29.60						0.930				
December . . . . .	42	*—22	4.12	64	29.330	28.396	28.843	0.934	0.850	8½	5.2	.61	NW
Total for year . . . . .									28.741	56			
Mean for year . . . . .			40.98				28.889				5.2	.70	

\*—Below zero.

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1877	Thermometer in open air				Barometer reduced to freezing point				Rain and Snow		Cl'd in's 0 to 3 clear 4 to 7 fair, 8 to 10 cloudy.	Relative hum- idity in 100ths 100 being com- plete natur in.	Prevailing Winds.
	Months.	Max	Min.	Mean.	R'ge	Max.	Min.	Mean.	R'ge	Amt. rain & melted snow in inches.			
January . . . . .	45	*-24	6.57	69	29.335	28.535	28.883	0.800	0.920	5½	4.9	.62	N W & N
February . . . . .	52	5	29.94	47	29.410	28.342	28.946	1.068	0	0	3.9	.75	N
March . . . . .	53	*-8	21.43	61	29.143	28.234	28.855	0.909	1.932	15½	5.5	.68	N W
April . . . . .	73	12	44.50	61	29.228	28.297	28.796	0.931	2.423	3	5.8	.60	S W
May . . . . .	83	36	60.01	47	29.088	28.274	28.770	0.814	3.997	0	5.3	.60	S E & S
June . . . . .	83	39	61.92	44	28.953	28.329	28.703	0.624	5.092	0	5.1	.71	N W
July . . . . .	91	57	71.72	34	29.057	28.484	28.756	0.573	0.429	0	3.9	.67	N W & S
August . . . . .	87	53	70.09	34	29.007	28.639	28.789	0.368	2.024	0	3.3	.62	N W & S E
September . . . . .	91	43	62.64	48	29.008	28.504	28.774	0.504	2.509	0	3.8	.71	S E & N W
October . . . . .	70	30	45.95	40	29.054	28.553	28.819	0.501	3.425	0	5.5	.76	N W
November . . . . .	54	7	30.50	47	29.217	28.459	28.818	0.758	1.421	8	5.8	.77	N & N W
December . . . . .	52	9	31.55	43	29.178	28.290	28.850	0.888	1.036	6	7.2	.84	S & N
Total for year . . . . .									25.208	37¼			
Mean for year . . . . .			44.73				28.813				5.0	.69	

\*—Below zero.

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1878	Thermometer in open air				Barometer reduced to freezing point				Rain and Snow		CP'd in's	Relative humidity in 100ths 100 being complete saturation.	Prevailing Winds.
	Months.	Max	Min.	Mean.	R'ge	Max.	Min.	Mean.	R'ge	Amt. rain & melted snow in inches.	Depth of snow in inches.		
January.....	36	*-16	19.39	52	29.228	28.464	28.838	0.764	0.875	8 $\frac{3}{4}$	6.4	.78	N & N W
February....	53	1	29.68	52	29.199	28.329	28.765	0.870	0.525	5 $\frac{1}{4}$	6.8	.78	N & S E
March.....	65	19	43.60	67	29.042	28.319	28.730	0.723	1.526	0	5.5	.68	S E
April.....	76	30	50.18	46	28.859	27.799	28.546	1.060	2.312	0	5.8	.66	S E
May.....	75	37	53.09	38	28.974	28.399	28.703	0.575	3.404	0	6.0	.64	N W
June.....	87	49	64.23	38	28.961	28.392	28.709	0.569	3.004	0	5.3	.71	S E
July.....	93	62	72.23	31	28.980	28.537	28.765	0.443	3.632	0	5.1	.77	S E
August.....	90	55	70.45	35	28.923	28.534	28.707	0.389	1.809	0	3.7	.73	N W
September...	89	36	59.27	53	29.201	28.284	28.778	0.917	2.711	0	4.6	.73	N W & S E
October.....	70	15	44.10	55	29.254	28.202	28.715	1.052	1.520	2	4.8	.70	N W
November...	65	15	35.99	50	29.114	28.464	28.814	0.650	0.311	1 $\frac{3}{4}$	4.3	.72	S E
December....	41	*-13	15.93	54	29.254	28.349	28.856	0.905	0.524	5 $\frac{1}{4}$	6.2	.72	N W
Total for year	.....	.....	.....	.....	.....	.....	.....	.....	22.153	22 $\frac{3}{4}$	.....	.....	.....
Mean for year	.....	.....	46.51	.....	.....	.....	28.744	.....	.....	.....	5.4	.72	.....

\*—Below zero.

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1879	Thermometer in open air				Barometer reduced to freezing point				Rain and Snow		CF'd in's		Prevailing Winds.
	Months.	Max.	Min.	Mean.	R'ge	Max.	Min.	Mean.	R'ge	Amt. rain & melted snow in inches.	Depth of Snow in inches.	Days clear 4 to 7 fair 8 to 10 cloudy.	
January	45	*-25	12.76	70	29.230	28.304	28.848	0.926	0.137	1 $\frac{3}{8}$	3.7	.62	N W
February	33	*-24	11.42	57					1.700	17	5.4	.66	N W
March	67	0	29.90	67	29.360	28.359	28.817	1.001	1.167	2 $\frac{1}{2}$	5.0	.71	N W
April	79	13	48.42	66	29.087	28.332	28.802	0.755	0.885	1 $\frac{1}{4}$	3.3	.57	N
May	82	37	57.72	45	29.143	28.334	28.783	0.809	6.206	0	6.5	.66	S E
June	86	50	66.67	36	29.105	28.244	28.741	0.861	1.614	0	4.1	.67	S E
July	89	59	72.42	30	28.937	28.481	28.714	0.456	6.264	0	4.5	.74	SE & N W
August	93	52	69.23	41	28.958	28.494	28.704	0.464	1.267	0	4.2	.71	S E
September	78	35	55.51	43	29.098	28.324	28.785	0.774	1.910	0	4.6	.71	SE & N W
October	86	18	56.09	68	29.287	28.379	28.788	0.908	2.516	0	3.3	.66	S E
November	61	6	29.91	55	29.335	28.279	28.789	1.056	1.207	2 $\frac{3}{8}$	5.3	.70	S E & N
December	35	*-38	8.26	73	29.231	28.289	28.829	0.942	2.237	22 $\frac{3}{8}$	6.7	.60	N W & N
Total for year	.....	.....	.....	.....	.....	.....	.....	.....	27.110	47 $\frac{1}{4}$	.....	.67	.....
Mean for year	.....	.....	43.19	.....	.....	.....	28.782	.....	.....	.....	4.7	.....	.....

\*—Below zero.

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1880	Thermometer in open air.				Barometer reduced to freezing point.				Rain and Snow.		Cl'din's.	Relative humidity in 100ths, 100 being complete saturation.	Prevailing Winds.
	Months.	Max.	Min.	Mean.	R'ge	Max.	Min.	Mean.	R'ge.	Am't rain & melted snow in inches.	Depth of snow in inches.		
January.....	48	*-6	23.22	54	29.281	28.250	28.719	1.031	0.937	9 $\frac{1}{4}$	5.9	.71	SE, S
February....	54	*-19	17.80	73	29.433	28.046	28.726	1.387	1.000	10	5.2	.62	NW
March.....	56	*-8	26.57	64	29.408	28.091	28.779	1.317	2.705	8 $\frac{3}{8}$	5.1	.66	SE
April.....	74	22	43.48	52	29.179	28.034	28.663	1.145	1.660	5 $\frac{1}{8}$	5.8	.61	SE, NW
May.....	87	44	62.29	43	28.998	28.234	28.624	0.764	3.109	0	4.5	.62	SE
June.....	85	52	67.32	35	29.080	28.220	28.614	0.860	4.799	0	4.7	.70	SE
July.....	90	57	70.90	33	28.867	28.439	28.687	0.428	2.483	0	3.9	.70	NW, SE
August.....	94	54	68.51	40	28.992	28.449	28.728	0.543	2.767	0	4.7	.77	SE, NW
September...	86	36	57.81	50	29.140	28.409	28.688	0.731	0.700	0	3.7	.69	SE
October.....	78	20	43.26	58	29.117	27.821	28.033	1.296	0.590	1 $\frac{3}{8}$	4.8	.70	N, S
November...	50	*-22	17.44	72	29.229	28.326	28.784	0.903	1.635	7	5.1	.67	W
December...	40	*-32	9.07	72	29.218	28.126	28.839	1.092	0.745	6 $\frac{1}{4}$	6.2	.62	NW
Total for year.....									23.130	42 $\frac{3}{4}$			
Mean for year.....			42.30				28.657				4.9	.67	

\*- Below zero.

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1881	Thermometer in open air.				Barometer reduced to freezing point.				Rain and Snow.		Cl'din's.	Relative humidity in 100ths, 100 being complete saturation.	Prevailing Winds.
	Months.	Max.	Min.	Mean.	R'ge.	Max.	Min.	Mean.	R'ge.	Am't rain & melted snow in inches.	Depth of snow in inches.		
January . . . . .	31	*—28	3.00	59	29.592	28.496	29.106	1.096	1.487	14 $\frac{1}{2}$	5.5	.57	NW
February . . . . .	35	*—12	13.11	47	29.444	28.586	29.066	0.858	2.450	21 $\frac{1}{2}$	5.9	.63	SE
March . . . . .	44	0	26.71	38	29.311	28.601	28.964	0.710	0.925	9 $\frac{1}{2}$	4.8	.69	N
April . . . . .	78	7	41.77	71	29.330	28.588	28.994	0.742	0.533	13-16	5.1	.64	SW & E
May . . . . .	86	37	63.25	49	29.401	28.597	28.976	0.804	4.597	0	6.5	.68	SE
June . . . . .	84	54	66.87	30	29.138	28.512	28.880	0.626	3.713	0	5.3	.73	E, SE & NE
July . . . . .	91	59	72.32	32	29.208	28.672	29.000	0.536	1.481	0	3.5	.75	S
August . . . . .	94	58	72.27	36	29.173	28.619	28.949	0.554	4.000	0	3.1	.75	S
September . . . . .	88	39	58.07	49	29.246	28.414	28.875	0.832	9.895	0	6.1	.80	SE
October . . . . .	74	25	46.25	49	29.513	28.359	29.015	1.154	3.044	0	6.7	.78	SW
November . . . . .	54	*—2	26.78	54	29.653	28.327	28.962	1.326	2.200	6 $\frac{1}{2}$	6.4	.71	W
December . . . . .	44	*—3	24.71	47	29.364	28.537	29.032	0.827	0.350	3 $\frac{1}{2}$	4.8	.70	SE
Total for year . . . . .									34.675	56 11-16			
Mean for year . . . . .			42.97				28.985				5.5	.70	

\*—Below zero.

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1882	Thermometer in open air				Barometer reduced to freezing point				Rain and Snow		Cl'd'n's 0 to 3 clear 4 to 7 fair 8 to 10 cloudy.	Relative hum- idity in 100th 100 below com- plete saturati.	Prevailing Winds.
	Months.	Max.	Min.	Mean.	R'ge	Max.	Min.	Mean.	R'ge	Amt. rain & melted snow in inches.			
January . . . . .	37	*-18	14.44	55	29.736	28.467	29.032	1.269	0.500	5	5.5	.65	S W
February . . . . .	54	*-9	24.97	63	29.500	28.477	28.913	1.023	1.425	14	5.5	.69	S E
March . . . . .	49	*-7	28.02	56	29.612	28.377	28.977	1.235	1.100	0 $\frac{1}{2}$	7.1	.72	E
April . . . . .	78	23	43.72	55	29.314	28.442	29.013	0.872	2.694	0	4.8	.60	S E & S
May . . . . .	79	32	52.83	47	29.322	28.503	28.944	0.819	3.986	0	5.3	.58	E & N E
June . . . . .	83	45	65.97	38	29.131	28.267	28.860	0.864	2.688	0	5.3	.63	S E
July . . . . .	91	55	65.79	36	29.240	28.502	28.955	0.738	2.458	0	5.2	.73	N W
August . . . . .	90	55	69.68	35	29.181	28.619	28.984	0.562	2.234	0	4.6	.74	S E & S
September . . . . .	87	36	61.49	51	30.298	29.513	29.927	0.785	0.147	0	4.2	.74	E
October . . . . .	75	29	49.83	46	30.216	29.295	29.814	0.921	1.906	0	6.9	.78	S E
November . . . . .	53	4	31.02	49	30.571	29.598	30.020	0.973	1.796	7 $\frac{3}{8}$	6.2	.68	S E
December . . . . .	34	*-23	11.50	57	30.768	29.501	30.036	1.267	2.012	20 $\frac{1}{8}$	6.7	.60	W & N W
Total for year . . . . .	.....	.....	.....	.....	.....	.....	.....	.....	22.946	56 $\frac{3}{8}$	.....	.68	.....
Mean for year . . . . .	.....	.....	43.27	.....	.....	.....	29.289	.....	.....	.....	5.6	.....	.....

\*—Below zero.