

1905

## Meteorological Statistics

William Cheney

T. S. Outram

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departure of the ice. Then the river built up its floodplain of modified drift to a height that coincided closely with that of the limestone terrace, causing the mighty stream to flow there in rapids, carrying the limestone masses and finer debris short distances from their original beds, and in some places undermining and toppling down the very large limestone blocks.

This peculiar formation is well seen near the north end of the High Bridge, for a third of a mile thence westward, at numerous other places on that northeast side of the river through this city, and on the opposite side near the Edison school in West St. Paul. It is of very unusual and surprising character and aspect, quite unlike any other formation which I have ever found in much exploration of glacial and valley drift. Therefore the probable conditions of its origin have been sought, with the results here presented, and with the hope that other Minnesota students of glacial geology will more fully investigate the many interesting questions connected with the history of this valley during the Ice age.

December 5, 1905.

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[*Paper N.*]

METEOROLOGICAL STATISTICS.

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By William Cheney and T. S. Outram.

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These statistics are a continuation of the personal Meteorological Observations began in 1864 by William Cheney, for many years a member of this Academy. The first table published by the Academy is in *Bulletins* vol. I, 1873-1879 pp. 174-186; the second in *Bulletins* vol. II, 1880-1882, pp. 422-435; the third, this volume, ante, pp. 123-130.

	Mean Height of Barometer	THERMOMETER						PRECIPITATION IN INCHES		Percentage of Cloudiness	Relative Humidity	Prevailing Winds.
		Monthly Mean	Maximum	Minimum	Monthly range	90° or above	32° or below	Monthly	Total Snowfall			
1895												
January		4.7	32	-25	57	0	31	1.68	10.80			N. W.
February	30.186	9.8	49	-30	79	0	26	.45	4.30			N. W.
March	30.039	28.	58	-9	67	0	28	.51	.70			N. W.
April	29.968	52.1	80	25	55	0	4	1.59	0.			S. & S. E.
May	29.892	59.2	94	28	56	1	3	2.67	0.			S. & N. W.
June	29.928	67.4	87	41	46	0	0	3.40	0.			S. E.
July	29.922	70.	100	44	56	4	0	4.15	0.			W.
August	29.870	69.	93	46	47	4	0	2.27	0.			N. W.
September	29.850	65.1	94	30	64	7	1	4.69	0.			S.
October	30.025	43.1	71	14	57	0	16	.09	.50			N. W.
November	30.073	30.1	67	-7	74	0	26	.94	3.70			S.
December	29.990	20.3	40	-6	46	0	31	.23	1.00			S.
Total for Year			100	-30	130	16	166	22.07	21.00			
Mean for Year	29.977	43.23										N. W.
1896												
January	30.176	15.	43	-21	64	0	31	.85	6.55			N. W.
February		20.4	61	-15	76	0	29	.26	2.60			N. W.
March	30.077	24.5	59	-11	70	0	30	3.02	11.80			N. W.
April	29.929	47.1	81	11	70	0	10	5.22	7.60			S. E.
May	29.825	63.3	90	39	51	2	0	3.92	0.			W. & S. E.
June	29.916	68.1	90	44	46	2	0	3.76	0.			S. E.
July	29.951	71.1	94	47	47	6	0	1.73	0.			S.
August	29.937	68.9	96	42	54	5	0	4.15	0.			N. W.
September	29.991	56.3	84	31	53	0	2	2.42	0.			N. W.
October	30.007	44.5	73	16	57	0	11	3.94	0.20			N. W.
November	30.110	21.1	50	-11	61	0	30	4.17	9.90			N. W.
December	30.128	22.3	44	-12	56	0	31	.83	4.70			N. W.
Total for Year			96	-21	117	15	174	34.27	43.35			
Mean for Year	30.004	43.5										N. W.
1897												
January	30.15	8.6	46	-29	75	0	30	1.66	16.6			N. W.
February	30.06	19.2	38	-24	62	0	28	1.05	10.5			N. W.
March	30.08	23.5	60	-12	72	0	25	3.23	14.1			N. W.
April	30.02	45.2	78	20	58	0	11	1.61	.9			N. W.
May	30.02	56.6	90	30	60	1	3	1.92	.0			N. W.
June	29.92	64.7	100	31	69	1	2	9.40	.0			S. E.
July		73.8	97	53	44	6	0	4.93	.0			S. E.
August		66.8	86	47	39	0	0	1.84	.0			N. W.
September	30.10	66.3	91	33	58	3	0	1.97	.0			S. E.
October	30.05	51.8	84	24	60	0	5	1.67	.0			N. W.
November	30.15	28.5	69	-10	79	0	27	.97	4.9			N. W.
December	30.17	15.2	46	-15	61	0	31	.18	1.8			N. W.
Total for Year			100	-29	129	11	162	30.43	48.8			
Mean for Year	30.072	43.4										N. W.



	Mean Height of Barometer	THERMOMETER						PRECIPITATION IN INCHES		Percentage of Cloudiness	Relative Humidity	Prevailing Winds.
		Monthly Mean	Maximum	Minimum	Monthly range	90° or above	32° or below	Monthly	Total Snowfall			
1898												
January	30.10	21.5	42	— 5	47	0	31	.08	.8			N. W.
February	30.16	19.2	44	—15	59	0	28	1.79	9.9			N. W.
March	30.06	33.6	60	7	53	0	28	1.65	13.1			N. W.
April	30.11	44.2	76	16	60	0	13	1.49	1.0			N. W.
May	29.94	67.2	83	35	48	0	0	5.53	.0			N. E.
June	29.92	68.2	93	46	47	1	0	4.82	.0			N. W.
July	29.96	71.5	92	48	44	3	0	.51	.0			S. E.
August	29.94	68.3	95	44	51	3	0	2.01	.0			S. W.
September	29.94	62.1	92	36	56	2	0	.81	.0			N. W.
October	30.00	45.	81	24	57	0	9	6.22	T			N. W.
November	30.00	28.7	58	—15	73	0	27	1.56	13.			N. W.
December	30.11	10.4	37	—25	62	0	31	.07	.7			N. W.
Total for Year			95	—25	120	9	167	27.54	38.5			
Mean for Year	30.05	44.2										N. W.
1899												
January	30.09	10.6	40	—31	71	0	31	.81	7.5			N. W.
February	30.12	5.8	47	—36	83	0	25	1.21	11.9			W.
March	30.08	16.6	34	—14	48	0	31	2.39	22.2			N. W.
April	29.96	46.7	85	11	74	0	8	1.15	T			N. W.
May	29.95	58.0	86	33	53	0	0	3.52	.0			S.
June	29.93	67.9	88	46	42	0	0	6.55	.0			S.
July	29.93	72.3	95	45	50	5	0	2.13	.0			S. W.
August	29.91	71.4	96	52	44	4	0	2.45	.0			S.
September	30.05	57.4	89	23	67	0	4	1.35	T			S.
October	30.04	49.8	80	27	53	0	3	3.54	T			S.
November	30.05	39.0	60	18	42	0	18	.38	.5			W.
December	30.12	18.5	49	—12	61	0	31	1.44	1.3			N. W.
Total for Year			96	—36	132	9	151	27.92	43.4			
Mean for Year	30.02	42.8										S.
1900												
January	30.11	18.9	47	—20	67	0	31	.55	5.1			N. W.
February	30.16	6.2	35	—21	56	0	28	1.00	10.			N. W.
March	30.11	24.1	53	—11	64	0	31	1.53	15.3			N. W.
April	30.06	50.7	82	22	60	0	11	2.06	1.2			S. E.
May	29.94	62.	92	29	63	4	3	.35	.0			S. W.
June	29.92	69.4	98	43	55	7	0	2.41	.0			N. W.
July	29.89	71.6	96	51	45	5	0	9.10	.0			N. E.
August		76.3	95	54	41	12	0	7.07	.0			S. W.
September		60.	92	33	59	1	0	7.53	.0			S. E.
October	29.98	56.1	79	31	48	0	1	4.81	.0			S.
November	30.15	27.4	61	7	54	0	24	.73	.7			N. W.
December	30.04	19.9	42	—13	55	0	30	.42	4.2			N. W.
Total for Year			98	—21	119	29	159	37.56	42.8			
Mean for Year	30.036	45.2										N. W.

	Mean Height of Barometer	THERMOMETER						PRECIPITATION IN INCHES		Percentage of Cloudiness	Relative Humidity	Prevailing Winds.
		Monthly Mean	Maximum	Minimum	Monthly range	90° or above	32° or below	Monthly	Total Snowfall			
1901												
January		12.5	41	-15	56	0	31	.40	4.			N. W.
February	30.10	9.5	37	-15	52	0	28	.36	3.6			N. W.
March	29.93	26.8	53	- 8	61	0	30	1.93	13.7			N. E.
April	30.11	48.4	88	22	66	0	14	1.82	.0			N. E.
May	29.94	59.7	91	31	60	1	1	1.89	.0			N. E.
June	29.85	69.2	96	36	60	5	0	6.67	.0			S. E.
July		77.4	102	53	49	13	0	1.64	.0			N. E.
August		72.2	93	48	45	6	0	2.65	.0			S.
September		60.	90	36	54	1	0	3.80	.0			W.
October		51.6	82	30	52	0	4	.94	.0			S. E.
November		31.	58	12	46	0	27	1.00	3.2			N. W.
December		15.9	44	-27	71	0	31	.46	7.2			N. W.
Total for Year			102	-27	129	26	166	23.56	31.7			N. W.
Mean for Year	29.986	44.5										
1902												
January		18.7	46	-17	63	0	31	.44	5.3			N. W.
February		18.2	52	-15	67	0	26	.47	4.4			N. W.
March		36.2	63	- 7	70	0	17	.30	1.5			S. E.
April		44.6	84	16	68	0	14	2.70	.8			S. E.
May		60.2	86	34	52	0	0	4.33	.0			S. E.
June		64.1	86	44	42	0	0	2.00	.0			W.
July		71.1	88	54	34	0	0	6.05	.0			S.
August		66.5	86	48	38	0	0	5.94	.0			S.
September		57.2	82	36	46	0	0	4.03	.0			S.
October		49.6	74	30	44	0	1	1.40	T			S. E.
November		36.	62	17	45	0	17	1.74	2.4			N. W.
December		15.6	39	-20	59	0	30	2.61	24.			N. W.
Total for Year			88	-20	108	0	136	32.01	38.4			
Mean for Year		44.9										N. W.
1903												
January		14.6	40	-14	54	0	31	.22	4.2			N. W.
February		14.8	42	-24	66	0	27	.50	2.5			W.
March		33.6	60	8	52	0	26	2.05	4.1			N. W.
April		45.1	73	24	49	0	12	3.02	1.5			N.
May		59.1	83	32	51	0	1	4.40	T			N.
June		65.4	85	40	45	0	0	1.02	.0			N. E.
July		69.4	92	51	41	1	0	7.29	.0			N.
August		65.1	88	48	40	0	0	4.61	.0			N. W.
September		58.2	82	37	45	0	0	7.77	.0			S.
October		50.	73	30	43	0	1	4.36	.0			S. E.
November		29.8	66	0	66	0	24	.37	2.5			N. W.
December		12.6	35	-19	54	0	31	.64	8.3			N. W.
Total for Year			92	-24	116	1	153	36.19	23.2			
Mean for Year		43.1										N. W.



	Mean Height of Barometer	THERMOMETER						PRECIPITATION IN INCHES		Percentage of Cloudiness	Relative Humidity	Prevailing Winds.
		Monthly mean	Maximum	Minimum	Monthly range	90° or above	32° or below	Monthly	Total Snowfall			
1904												
January	7.3	38	—33	71	0	31	.43	8.5			N. W.	
February	5.2	36	—19	55	0	29	.75	13.2			N. W.	
March	27.7	53	—4	57	0	29	1.64	5.8			N. W.	
April	41.0	73	21	52	0	17	1.83	7.8			N.	
May	57.6	84	35	49	0	0	3.54	.0			W.	
June	65.6	83	48	35	0	0	3.81	.0			S.	
July	68.4	92	53	39	1	0	4.78	.0			W.	
August	66.2	88	46	42	0	0	5.61	.0			S.	
September	59.7	83	38	45	0	0	3.19	.0			S. E.	
October	48.8	76	29	47	0	4	4.94	T			S. E.	
November	38.6	69	12	57	0	15	.10	.3			N. W.	
December	19.9	50	—11	61	0	30	.61	7.4			S.	
Total for Year					1	155	31.23	43.0				
Mean for Year	42.2			51							N. W.	

\* Minimum temperature —33° Jan. 24th.

† Maximum temperature 92° July 16th.

1905												
January	7.4	36	—18	54	0	31	.71	13.1			W.	
February	11.9	56	—26	82	0	28	.59	9.3			N. W.	
March	35.1	67	3	64	0	21	.73	1.0			S. E.	
April	44.0	72	21	51	0	13	.74	T			N. W.	
May	54.2	77	36	41	0	0	4.47	T			N. E.	
June	64.9	85	45	40	0	0	7.11				S. E.	
July	69.8	93	54	39	3	0	3.02				N. E.	
August	70.8	95	50	45	2	0	4.32				S. E.	
September	63.7	84	43	41	0	0	6.50				S.	
October	45.6	82	17	65	0	8	2.17	5.5			S.	
November	35.2	61	—8	69	0	22	3.07	11.5			W.	
December	23.9	45	—1	46	0	31	.06	1.9			W.	
Total for Year					5	154	33.49	42.3			W-S. E.	
Mean for Year	43.9			53								

\* Minimum temperature —26° Feb. 2nd.

† Maximum temperature 95° Aug. 10th.

*Seasonal Temperature and Total Precipitation for the  
Years 1895 to 1905*

Year	Jan.	Feb.	March	April	May	June	July	August
	TEMPERATURE							
	Dec. Jan. Feb. Winter	Spring	Summer	Autumn	Mean	Maximum	Minimum	Precipitation
1895	15.7	47.5	69.5	47.6	44.6	96 Sept. 17	26 Feb. 5	21.44
1896	20.5	46.1	70.6	42.2	45.0	99 Aug. 4	18 Jan. 3	30.65
1897	18.3	42.6	68.2	50.6	44.1	96 June 13	26 Jan. 25-26	28.37
1898	19.6	46.0	70.5	46.5	45.6	97 Aug. 22	20 Dec. 31	25.92
1899	11.9	41.2	71.1	51.1	44.4	96 Aug. 10	33 Feb. 9	24.93
1900	17.0	46.8	72.1	49.3	46.3	95 July 30	19 Jan. 31	34.89
1901	16.1	45.9	72.9	47.5	45.2	102 July 20	27 Dec. 14	22.30
1902	17.6	47.0	67.4	47.6	44.9	88 July 29	20 Dec. 26	32.01
1903	15.0	45.9	66.6	46.3	43.1	92 July 7	24 Feb. 16	36.19
1904	8.4	42.1	66.7	49.0	42.2	92 July 16	33 Jan. 24	31.23
1905	13.1	44.4	68.5	48.2	43.9	95 Aug. 10	26 Feb. 2	33.49