

EXCHANGE
AUG 31 1920

DEPARTMENT OF MARINE AND FISHERIES
DOMINION OF CANADA.

TORONTO OBSERVATORY

**Results of Meteorological, Magnetical
and Seismological Observations,
1919.**

Published under the direction of
Sir Frederic Stupart, F.R.S.C.,
Director of the Meteorological Service, Toronto.

PRINTED BY THE OBSERVATORY PRESS,
TORONTO, 1920.

DEPARTMENT OF MARINE AND FISHERIES
DOMINION OF CANADA.

TORONTO OBSERVATORY

**Results of Meteorological, Magnetical
and Seismological Observations,
1919.**

Published under the direction of
Sir Frederic Stupart, F.R.S.C.,
Director of the Meteorological Service, Toronto.

**PRINTED BY THE OBSERVATORY PRESS,
TORONTO, 1920.**

CONTENTS.

—o—

Notes.....	v
Monthly Weather Synopsis.....	vi
Monthly Meteorological Tables	1
Yearly Meteorological Summary	25
Wind Summary	26
Absolute Extremes, during 80 years	27
Periodic Events	28
Sunshine—Total Amount.....	29
“ Monthly Tables	31
“ Summary	32
Seismograph Records.....	33
Seismic Disturbances Since 1899.....	40
Marked Quakes in Each Year.....	41
Marked Quakes in Each Month	42
Magnetic Summary.....	43
Phenological Summary.....	44
Harbor Notes	45

TORONTO OBSERVATORY.

Lat. 43° 40' 0".8 N. Long. 5h. 17m. 35.6s. W. The observations are taken at 75th meridian time. Height of barometer cistern 379 feet above sea level. Height at the old Observatory 350 feet.

BAROMETER—Readings given are taken from the photographic barograph, and are the means of the 24-hour readings of each day. A correction has been employed to reduce these readings to the original height of the standard barometer in the old Observatory building, so as to make them comparable with previous Toronto registers. Capillarity and gravity corrections have been omitted.

TEMPERATURE—Adopted means are taken from the max. and min. of the thermometers in the Stevenson Screen. Extremes are also from the same screen. The 24-hour means are taken from the photographic thermograph, where the tubes are four feet above the ground.

On January 1st, 1899, the thermometers were removed from the old shed and placed in a shelter entirely clear of the buildings. This shed had a double back and roof with louvre sides. The height of the thermometers varied little from the old position. Observations were taken at the same hours but at 75th meridian time. The thermometers in January 1907 were placed in the Stevenson shed and subsequent observations are from this shed.

HUMIDITY.—Means are taken from a Julien Friez Hygrometer and are from the 24 hour readings.

WIND—Direction and velocity are from the anemometer at the Eastern Gap on the Island, where the cups revolve at a height of 50 feet above the lake level.

GALE—A velocity of 30 miles and over.

CLEAR DAY—When the mean from six observations is below 0.2.

CLOUDY DAY—When the mean from six observations is above 0.8.

AURORA—Observations have been rendered doubtful owing to the large number of electric lights in the city.

Note

Fracture in vacuum chamber of solar thermometer render readings in 1919 unreliable.

Monthly Weather Synopsis, 1919.

The year 1919 was the warmest on record. Every month except December, showed a marked positive departure from normal, and the mean yearly temperature was $48^{\circ}.3$, being $4^{\circ}.1$ higher than the normal.

JANUARY. The seventh mildest since 1840. The only cold periods were from the 3rd to the 6th and from the 9th to the 12th, with rapid temperature changes during this latter period. There were many bright days from the 13th to the end of the month, the weather being decidedly like spring, mean daily temperatures averaging 12° above normal. Grass showed green and migratory birds were observed flying north. Temperatures of 40° and over were recorded on nine days, and as high as 47° on the 27th. Gales were frequent during the early portion, chiefly from southwest, but after the 18th winds were comparatively light. Total precipitation was considerably below normal. The ground was practically bare of snow after the 10th, and the Toronto Harbour was open throughout, except from the 5th to the 9th.

FEBRUARY. The fourth warmest since 1840. There were no low temperatures, 10.2° being the minimum of the month. On 23 days daily means averaged 8° above normal, only the 10th, 19th, 26th and 27th showing any marked negative departures; 53° was recorded on the 28th, and temperatures exceeded 40° on five days. Bright sunshine was 17 hours more than average. Winds were very strong after the 13th. Rainfall was 0.47 inch above normal, but only five inches of snow fell, and the ground was bare of snow during the greater part of the month.

MARCH. The weather which had been mild, turned sharply cold on the 5th, minimum on the 6th falling to 7.3° . It moderated again on the 8th, and daily means, excepting the 13th and 14th, kept well above normal up to the 27th, when the mercury fell rapidly and winter conditions prevailed to the end of the month, with heavy, continuous northwest winds accompanied by low humidity readings. There were many pleasant days, maximum temperatures exceeding 50° on five days, and reaching 56° on the 28th. Bright sunshine was 23 hours above normal. During a northeast gale on the 9th, 4.4 inches of snow fell; other falls were light, and little snow remained on the ground during the month. Heavy rainfalls of 0.68 and 0.96 inches were recorded on the 16th and 17th. Robins on the 5th, other migratory birds on the 18th. Lilac trees in bud on the 24th. Crocus in bloom in sheltered places on the 15th.

APRIL. Monthly mean temperature was 1.4° above average, due to comparatively mild spring weather prevailing from the 3rd to the 23rd, except on the 15th, 16th and 21st. There were some cold days, notably the 1st and 2nd and in the latter part of the month. Mean daily temperature on the 1st was 15° below normal, the minimum falling to 10° . With a strong northwest wind on the 24th, temperature fell 27° , and the mean next day was 17° below normal, the minimum reaching 24° . High readings of 63° and 62° were recorded on the 20th and 23rd. Day temperatures were fairly high during the last five days, but the early mornings and some nights were decidedly cold. Vegetation, which made fair progress after the 3rd, was considerably retarded by this change to cold weather, and fruit trees suffered severely. Bright sunshine, on account of the large percentage of cloud, was 41 hours in defect. The greater portion of the rainfall occurred during the first 20 days. On the 25th and 26th, 1.5 and 1.0 inches of snow fell. Continuous northwest gales occurred on the 24th, 25th and 26th.

MAY. Mean temperature was 3° above normal. With the exception of the 7th, 13th, 14th and 15th, the weather was unseasonably cool and cloudy up to the 20th, mercury falling to 39°

on the 8th and 11th. Much warmer weather set in for the remainder of the month, and vegetation came on rapidly. 92° was recorded on the 29th, 86° on the 30th and 84° on the 31st. Bright sunshine was 27 hours below normal, but during the last week the percentage was high. There were heavy rainfalls of half an inch on five days and of one inch on the 20th, the total precipitation being 2.2 inches above the average. No rain fell after the 24th. Heavy northeast and southwest winds were prevalent in the first three weeks, and a 42-mile northeast gale was recorded on the 10th.

JUNE. The warmest on record, with a mean temperature 10° above average. Mean daily temperatures up to the 27th averaged 11° more than normal. Cooler conditions then set in continuing for the rest of the month. Midnight reading of the 27th being 54° as compared to 71° on the 26th. The 3rd and 4th, 13th and 14th were the warmest parts of the month, with maximums ranging from 91° to 94°, accompanied by high humidity. 90° or more were recorded on seven days, and on 19 days the thermometer registered over 80°. Bright sunshine was recorded on almost every day, giving a total 62 hours more than normal. 1.1 inch of rain fell in three hours on the 5th, during a thunderstorm, but very little during the remainder of the intensely hot period, until the 25th when the gauge showed 0.72 inch.

JULY. Very warm. Mean temperature 5.5° above normal, and the daily mean went below average on only seven days. It was very hot during the first five days and from the 17th to the 28th. The last three days were much cooler. Mean daily temperature on the 4th was 18° above normal. Temperatures of 93° and over were recorded on six days, 97° on the 3rd, 98° on the 4th, and 96° on the 27th. High humidities prevailed generally throughout this hot period, with unusual humidity ranges of 78 and 65 percent in twelve hours on the 2nd, 3rd and 5th. Temperature minimums during the month were fairly low. Bright sunshine recorded on every day was 45 hours more

than usual. Little rain fell up to the 20th, but on the 21st the prolonged dry spell was broken, 2.70 inches of rain falling up to midnight. As vegetation suffered considerably throughout the hot, dry period, this was much required. Winds were strong on the 10th, 11th and 28th, attaining the force of a gale on the 10th from the northwest.

AUGUST. The first week was warm with a maximum of 92° on the 7th. It was much cooler from the 8th to the 12th, temperature falling to 48° on the 10th. From the 13th to the 24th, fine, warm weather generally prevailed, with some scattered thunderstorms. From the 25th to the 29th and on the 31st it was much cooler, with strong winds from northwest and southwest. Minimums of 51° and 48° were recorded on the 28th and 29th. Temperatures ranged 28.4° on the 7th and 29° on the 29th. The first half of the month was very dry, but during a severe thunderstorm on the 16th, 1.31 inches of rain fell in five hours, the greater portion in the first fifteen minutes; heavy wind squalls, loud thunder and vivid lightning accompanied this storm (one man being killed). Precipitation was well distributed after the 16th.

SEPTEMBER. A very warm month, 4.7° above normal, owing chiefly to the warm periods, 6th to 11th, 19th to 22nd and 27th to 29th. There were some cold intervals with fall temperatures, notably the first two days, 17th, 18th, 26th and 30th, with minimums of 39° on the 18th and 26th. Temperatures of 86° and over were recorded from the 6th to the 9th, and the rather unusual high maximum of 94.7° on the 8th. Although rainfall was fairly well distributed there was a marked deficiency from average. West and northwest gales were recorded on the 22nd, 24th and 25th.

OCTOBER. The third warmest since 1840, the Octobers of 1879 and 1900 being warmer. Very warm weather prevailed from the 2nd to the 6th, 9th-10th, 22nd-26th and on the 30th. 80° was recorded on the 3rd and 10th, and a record temperature of 72.9° for the 31st. There was a tendency for lower temperatures on the 7th and 8th, 12th, 20th and 29th. Cloudy skies and lack of sunshine to the extent of 19 hours were noted. Trees retained their leaves until quite late, and migratory birds were late in leaving. With many rainy days the monthly fall was half an inch greater than usual. Strong easterly winds on the night of the 27th, shifted to a westerly gale on the 28th, with a maximum velocity of 53 miles.

NOVEMBER. The temperature for the month was 2.2° above average. On nine days it exceeded 50°, whilst on seven days 25° or below was recorded. Fluctuations were marked warm and cold waves following one another in rapid succession. Winter weather prevailed from the 13th to the 15th, 19th-20th, and particularly from the 26th to the 28th. Due to the large percentage of cloudy days, bright sunshine was 22.3 hours in defect. Rainfall and snowfall were both below normal. Preceded by a squall averaging 85 miles per hour, a severe southwest gale began at 19.30 of the 29th, and continued all night, the average velocity being 40 to 45 miles, with some squalls possibly 60 miles. Many buildings were unroofed and trees blown down, and one man was killed by a falling tree.

DECEMBER. Cold. Mean daily temperature exceeded the normal on only ten days, the largest departures being 12° and 9° on the 12th and 13th, and 8° on the 26th and 27th. Temperatures on the 30th were again fairly high, a maximum of 30° being recorded. The coldest periods extended

from the 14th to the 20th, 24th-25th and 28th-29th; -7° was recorded on the 18th and 19th and 1° on the 25th. Snowfalls light, but frequent. Heavy southwest to northwest winds, increasing to gales, were also frequent throughout the month, notably from the 13th to the 17th. About two inches of snow remained on the ground at the end of the month.

J. Y.



1

Meteorological Report.

January, 1919.

Results of Observations.		Mean for 70 years.
Mean reading of barometer, 32 F. inches,	29.604	29.647
Highest " " on 12th at 6.11h	30.301	30.271
Lowest " " on 1st at 16.09h	29.058	28.913
Range of barometric readings,	1.243	1.358
Highest temperature on the 22nd	46.9	44.9
Lowest temperature on the 10th	0.5	-6.8
Range for the month,	47.4	51.7
Mean of the highest readings,	36.6	29.1
Mean of the lowest readings,	22.0	15.2
Mean daily range,	14.6	13.9
Mean from max. and min.	29.3	*21.9
Mean from 24 hourly observations	28.6	‡21.8
Highest daily mean temperature, 23rd	39.6	
Lowest " " " 11th	8.5	
Mean humidity,	76	83
Highest solar (black bulb in vacuum) on 6th	115.6	
Lowest (radiation) on the 12th	-4.8	
Monthly range	120.4	
Total fall of rain	inches 0.61	1.14
Heaviest fall (23rd)	" 0.32	
Number of days on which rain fell,	3	4.9
Total fall of snow	inches 4.3	17.3
Heaviest fall (3rd)	" 1.8	
Number of days on which snow fell	9	14.2
Mean amount of cloud (0-10)	.70	.74

No. of hours in the month in which the wind was	N.	N.E.	E.	S.E.	S.	S. W.	W.	N. W.	C.
	47	93	14	27	14	316	110	116	2

Total miles registered	10,664
Mean velocity	14.3
Highest velocity (10th), at noon from southwest,	47
Highest daily average velocity (10th)	25.6
Lowest " " " (22nd)	5.5
Days on which gales occurred	7
*1840-1898	‡1881-1908

2

January, 1919.

Differences.

The signs + and - mean respectively above and below the monthly normal.

Mean barometric pressure	-0.043 inches
Monthly range	-0.115 inches
Mean temperature	+7.4°
Mean of highest temperatures	+7.5°
Mean of lowest " "	+6.8°
Mean daily range	+0.7°
Total rainfall	-0.53 in.
Total snowfall	-13.0 in.
Mean amount of cloud	-.04

Rain on the 1st, 7th, 23rd. Snow on the 1st, 3rd, 5th, 6th, 8th, 9th, 10th, 12th, 31st. Fog on the 1st, 13th, 21st, 22nd, 23rd, 28th. Heavy dew on the 28th. Lunar corona on the 12th. Aurora IV. on 3rd. Clear days 1. Cloudy days 13.

Extreme Readings

DURING 80 YEARS.

Barometer—Highest reading, 1866 (8th)	30.940	inch.
" Lowest reading, 1870 (2nd)	28.166	"
Temperature—Highest, 1874 (4th), 1876 (1st)	57.5°	
" Lowest, 1859 (10th)	-26.5°	
" Highest monthly mean, 1880	32.7°	
" Lowest monthly mean, 1857	12.8°	
Rainfall—Greatest fall, 1843	4.30	in.
" Least fall, 1852-56-1918	0.00	"
" Greatest for 24 hours, 1843 (31st)	2.50	"
" Greatest number of days rain fell, 1890	14	
Snowfall—Greatest fall, 1871	43.6	in.
" Least fall, 1916	3.1	
" Greatest for 24 hours, 1873 (5th)	15.3	"
" Greatest number days snow fell, 1861-71-93	23	
" Least " 1847	5	

February, 1919.

Results of Observations.		Mean for 70 years.
Mean reading of barometer, 32 F. inches,	29.580	29.638
Highest " " on 19th at 18.31h	30.195	30.226
Lowest " " on 14th at 12.48h	28.868	28.945
Range of barometric readings,	1.327	1.281
Highest temperature on the 28th	52.7	44.3
Lowest temperature on the 11th	10.2	-7.1
Range for the month,	42.5	51.4
Mean of the highest readings,	34.9	29.2
Mean of the lowest readings,	21.7	14.1
Mean daily range,	13.2	15.1
Mean from max. and min.	28.3	*22.5
Mean from 24 hourly observations	28.0	†21.0
Highest daily mean temperature, 28th	38.8	
Lowest " " " 10th	18.1	
Mean humidity,	73	81
Highest solar (black bulb in vacuum) on 24th	96.0	
Lowest (radiation) on the 11th	3.0	
Monthly range	93.0	
Total fall of rain	inches 1.41	0.93
Heaviest fall (14th)	" 0.65	
Number of days on which rain fell,	8	4.7
Total fall of snow	inches 5.0	16.5
Heaviest fall (21st)	" 1.6	
Number of days on which snow fell	7	12.4
Mean amount of cloud(0-10)	.58	.76

No. of hours in the month in which the wind was	N.	N.E.	E.	S.E.	S.	S. W.	W.	N. W.	C.
	36	140	61	36	16	94	111	178	2

Total miles registered	10,462
Mean velocity	15.6
Highest velocity (13th), at 22hrs. from northeast,	45
Highest daily average velocity (13th)	27.7
Lowest " " " (2nd)	6.0
Days on which gales occurred	9
*1840-1898	†1881-1908

February, 1919.

Differences.

The signs + and - mean respectively above and below the monthly normal.

Mean barometric pressure	- 0.049 inches
Monthly range	+ 0.046 inches
Mean temperature	+ 5.8°
Mean of highest temperatures	+ 5.7°
Mean of lowest " "	+ 7.6°
Mean daily range	- 1.9°
Total rainfall	+ 0.48 in.
Total snowfall	- 11.5 in.
Mean amount of cloud	- .18

Rain on the 4th, 13th, 14th, 15th, 22nd, 23rd, 25th, 28th. Snow on the 5th, 12th, 15th, 17th, 18th, 21st, 26th. Fog on the 4th, 14th, 15th, 22nd. Clear days 6. Cloudy days 9.

Extreme Readings

DURING 80 YEARS.

Barometer—Highest reading, 1887 (4th)	30.522	inch.
" Lowest reading, 1918 (25th)	28.346	"
Temperature—Highest, 1890 (4th)	53.8°	
" Lowest, 1855 (5th)	- 25.4°	
" Highest monthly mean, 1882	30.3°	
" Lowest monthly mean, 1875	10.2°	
Rainfall—Greatest fall, 1812	3.63	in.
" Least fall, 1841-46-56-73-77-1901-16	0.00	"
" Greatest for 24 hours, 1855 (13th)	1.71	"
" Greatest number of days rain fell, 1857	11	
Snowfall—Greatest fall, 1846	46.1	in.
" Least fall, 1851	2.4	
" Greatest for 24 hours, 1863 (5th)	16.0	"
" Greatest number days snow fell, 1843	21	
" Least " 1851	4	

March, 1919.

Results of Observations.		Mean for 70 years.							
Mean reading of barometer, 32 F. inches,	29.788	29.609							
Highest " " on 14th at 10.23h	30.349	30.129							
Lowest " " on 9th at 17.00h	29.984	28.919							
Range of barometric readings,	1.365	1.210							
Highest temperature on the 26th	56.0	52.1							
Lowest temperature on the 6th	7.3	-2.6							
Range for the month,	48.7	54.7							
Mean of the highest readings,	42.1	36.3							
Mean of the lowest readings,	25.5	21.9							
Mean daily range,	16.6	14.4							
Mean from max. and min.	33.8	*28.7							
Mean from 24 hourly observations	32.8	†29.1							
Highest daily mean temperature, 26th	45.6								
Lowest " " " 6th	15.3								
Mean humidity,	68	78							
Highest solar (black bulb in vacuum) on 6th	109.0								
Lowest (radiation) on the 6th	4.2								
Monthly range	104.8								
Total fall of rain	inches 2.52	1.50							
Heaviest fall (17th)	" 0.96								
Number of days on which rain fell,	6	6.7							
Total fall of snow	inches 6.8	11.5							
Heaviest fall (9th)	" 4.4								
Number of days on which snow fell	7	10.4							
Mean amount of cloud (0-10)	.52	.67							
No. of hours in the month in which the wind was	N. 49	N.E. 207	E. 40	S.E. 16	S. 20	S. W. 103	W. 32	N. W. 274	C. 3
Total miles registered	11,790								
Mean velocity	15.9								
Highest velocity 1st at 4hrs. southwest, (9th) at 5hrs. east, 29th at 16 hrs. northwest	40								
Highest daily average velocity (15th)	27.8								
Lowest " " " (19th)	5.0								
Days on which gales occurred	7								
*1840-1898	†1881-1908								

March, 1919.

Differences.

The signs + and - mean respectively above and below the monthly normal.

Mean barometric pressure	+0.177 inches
Monthly range	+0.155 inches
Mean temperature	+5.1°
Mean of highest temperatures	+5.8°
Mean of lowest " "	+3.6°
Mean daily range	+2.2°
Total rainfall	+1.02 in.
Total snowfall	-4.7 in.
Mean amount of cloud	-1.15

Rain on the 4th, 9th, 15th, 16th, 17th, 27th. Snow on the 1st, 4th, 9th, 14th, 27th, 28th, 29th. Fog on the 17th, 25th. Aurora class IV. on the 19th, 20th. Clear days 6. Cloudy days 8.

Extreme Readings

DURING 80 YEARS.

Barometer—Highest reading, 1906 (24th)	30.508	inches
" Lowest reading, 1859 (19th)	28.286	"
Temperature—Highest, 1910 (28th)	75.2°	
" Lowest, 1868 (3rd)	-15.6°	
" Highest monthly mean, 1903	38.9°	
" Lowest monthly mean, 1885	18.5°	
Rainfall—Greatest fall, 1859	4.05	in.
" Least fall, 1856, 1889	0.00	"
" Greatest for 24 hours, 1881 (19th)	1.72	"
" Greatest number of days rain fell, 1878	17	
" Least number of days, in 1856, 1889	0	
Snowfall—Greatest fall, 1870	62.4	in.
" Least fall, 1858 and 1903	0.2	
" Greatest for 24 hours, 1876 (28th)	16.2	"
" Greatest number days snow fell, 1877	21	
" Least " 1895, 1898	1	

April, 1919.

Results of Observations.	Mean for 70 years.	
Mean reading of barometer, 32 F. inches,	29.624	29.600
Highest " " on 21st at 12.33h	30.037	29.073
Lowest " " on 16th at 15.57h	29.209	29.040
Range of barometric readings,	0.828	1.033
Highest temperature on the 20th	62.8	68.3
Lowest temperature on the 1st	9.9	19.6
Range for the month,	52.9	48.7
Mean of the highest readings,	50.9	49.6
Mean of the lowest readings,	34.3	33.3
Mean daily range,	16.6	16.3
Mean from max. and min.	42.6	41.2
Mean from 24 hourly observations	41.7	42.1
Highest daily mean temperature, 23rd	50.9	
Lowest " " " 1st	19.6	
Mean humidity,	70	70
Highest solar (black bulb in vacuum) on 29th	128.2	
Lowest (radiation) on the 1st	8.0	
Monthly range	120.2	
Total fall of rain inches	2.63	2.15
Heaviest fall (16th) "	1.31	
Number of days on which rain fell,	12	9.9
Total fall of snow inches	2.6	2.5
Heaviest fall (25th) "	1.5	
Number of days on which snow fell	3	3.5
Mean amount of cloud (0-10)	.65	.58

No. of hours in the month in which the wind was	N.	N.E.	E.	S.E.	S.	S. W.	W.	N. W.	C.
	39	174	66	18	32	166	30	193	2

Total miles registered	9,297
Mean velocity	12.9
Highest velocity (15th) at midnight from northeast	39
Highest daily average velocity (16th)	25.8
Lowest " " " (5th)	5.2
Days on which gales occurred	5
*1840-1898	†1881-1908

April, 1919.

Differences.

The signs + and - mean respectively above and below the monthly normal.

Mean barometric pressure	+ 0.024 inches
Monthly range	- 0.205 inches
Mean temperature	+ 1.4°
Mean of highest temperatures	+ 1.3°
Mean of lowest " "	+ 1.0°
Mean daily range	+ 0.3°
Total rainfall	+ 0.48 in.
Total snowfall	- 0.1 in.
Mean amount of cloud	+ .07
Rain on the 3rd, 4th, 6th, 7th, 8th, 10th, 11th, 12th, 15th, 16th, 20th, 28th. Snow on the 24th, 25th, 26th. Fog on the 4th, 7th. Thunderstorm on the 8th, 10th. Hail on the 15th. Auroras class IV. on the 22nd, Clear days 4. Cloudy days 12.	

Extreme Readings

DURING 80 YEARS.

Barometer—Highest reading, 1897 (20th)	30.308	inch.
" Lowest reading, 1863 (2nd), 1887 (28th)	28.704	"
Temperature—Highest, 1842 (22nd)	89.8°	
" Lowest, 1857 (2nd)	5.9°	
" Highest monthly mean, 1878	48.8°	
" Lowest monthly mean, 1874	34.2°	
Rainfall—Greatest fall, 1910	4.90	in.
" Least fall, 1881	0.08	"
" Greatest for 24 hours, 1850 (3rd)	2.35	"
" Greatest number of days rain fell, 1871	17	
" Least number of days, in 1841-81	3	
Snowfall—Greatest fall, 1857	12.9	in.
" Least fall, 1843-56-58 70-87-88-90-91	0.1	
" Greatest for 24 hours, 1901 (20th)	8.3	"
" Greatest number days snow fell, 1857	11	
" Least " 1878-95-1900	0	

May, 1919

Results of Observations		Mean for 70 years.
Mean reading of barometer, 32 F. inches.	29.561	29.577
Highest " " on 6th at 6.37h	30.067	29.967
Lowest " " on 1st at 7.00h	29.166	29.153
Range of barometric readings,	0.901	0.814
Highest temperature on the 29th	91.8	77.9
Lowest temperature on the 8th and 11th	38.8	30.9
Range for the month,	53.0	47.0
Mean of the highest readings,	64.6	62.0
Mean of the lowest readings,	45.8	43.3
Mean daily range,	18.8	18.7
Mean from max. and min.	55.2	*52.4
Mean from 24 hourly observations	54.5	†53.4
Highest daily mean temperature, 29th	73.1	
Lowest " " " 11th	41.7	
Mean temperature of dew point	44	
Mean humidity,	72	70
Mean force of vapour	0.296	0.280
Highest solar (black bulb in vacuum) on 7th	126.0	
Lowest (radiation) on the 13th	33.9	
Monthly range	92.1	
Total fall of rain inches	5.15	2.97
Heaviest fall (20th) "	1.00	
Number of days on which rain fell,	14	12.4
Total fall of snow inches	0	0.1
Number of days on which snow fell	0	0.4
Mean amount of cloud (0-10)	.58	.57

No. of hours in the month in which the wind was	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	C.
	48	252	47	37	36	169	63	89	3

Total miles registered	8,883
Mean velocity	11.9
Highest velocity (10th) at 16 hrs, from northeast	42
Highest daily average velocity (10th)	31.0
Lowest " " " (23rd)	4.7
Days on which gales occurred	4
" 1840-1898	†1881-1908

10

May, 1919.

Differences.

The signs + and - mean respectively above and below the monthly normal.

Mean barometric pressure	- 0.016 inches
Monthly range	+ 0.087 inches
Mean temperature	+ 2.8°
Mean of highest temperatures	+ 2.6°
Mean of lowest "	+ 2.5°
Mean daily range	+ 0.1°
Total rainfall	+ 2.18 in.
Total snowfall	- 0.1 in.
Mean amount of cloud	+ .01

Rain on the 1st, 3rd, 4th, 5th, 7th, 9th, 10th, 11th, 16th, 17th, 20th, 21st, 22nd, 24th. Fog on 1st, 7th, 16th, 21st, 22nd, 23rd, 24th. Aurora III. on the 2nd, class IV. on the 16th. Thunderstorm on the 4th, 5th. Dew on the 8th, 13th, 14th, 16th, 24th, 25th, 26th, 29th. Clear days 6. Cloudy days 11.

Extreme Readings

DURING 80 YEARS.

Barometer—Highest reading, 1849 (2nd)	30.241	inch.
" Lowest reading, 1861 (6th)	28.644	"
Temperature—Highest, 1895 (30th)	93.4°	
" Lowest, 1867 (3rd)	24.6°	
" Highest monthly mean, 1911	61.3°	
" Lowest monthly mean, 1867	46.6°	
Rainfall—Greatest fall, 1894	9.37	in.
" Least fall, 1891	0.50	"
" Greatest for 24 hours, 1894 (21st)	2.70	"
" Greatest number of days rain fell, 1890	23	
" Least number of days, in 1843	5	
Snowfall—Greatest fall, 1875	3.1	in.
" Least fall, 1910, 1913 to 1919	0	
" Greatest for 24 hours, 1875 (1st)	3.0	"
" Greatest number days snow fell, 1905	5	

June, 1919

Results of Observations

		Mean for 70 years.
Mean reading of barometer, 32 F. inches,	29.720	29.572
Highest " " on 12th at 9.00h	30.082	29.900
Lowest " " on 26th at 17.35h	29.409	29.165
Range of barometric readings,	0.673	0.744
Highest temperature on the 14th	94.4	86.4
Lowest temperature on the 28th	47.2	40.1
Range for the month,	47.2	46.3
Mean of the highest readings,	83.4	72.4
Mean of the lowest readings,	61.3	52.9
Mean daily range,	22.1	19.5
Mean from max. and min.	72.4	*62.4
Mean from 24 hourly observations	71.7	†64.0
Highest daily mean temperature, 15th	79.4	
Lowest " " " 28th	57.2	
Mean temperature of dew point	61	
Mean humidity,	72	73
Mean force of vapour	0.549	0.418
Highest solar (black bulb in vacuum) on 15th	129.9	
Lowest (radiation) on the 29th	43.2	
Monthly range	86.7	
Total fall of rain inches	2.72	2.76
Heaviest fall (5th) "	1.11	
Number of days on which rain fell,	8	11.7
Mean amount of cloud (0-10)	.21	.53

No. of hours in the month in which the wind was	N.	N.E.	E.	S.E.	S.	S. W.	W.	N. W.	O.
	82	213	117	82	37	78	36	59	16

Total miles registered	5,743
Mean velocity	8.0
Highest velocity (27th) at 17 hrs, from north	22
Highest daily average velocity (27th)	15.4
Lowest " " " (2nd)	2.1
Days on which gales occurred	0
*1840—1898	†1881—1908

June, 1919

Differences.

The signs + and - mean respectively above and below the monthly normal.

Mean barometric pressure	+0.148 inches
Monthly range	+0.071 inches
Mean temperature	+10.0°
Mean of highest temperatures	+11.0°
Mean of lowest "	+8.4°
Mean daily range	+2.6°
Total rainfall	-0.04 in.
Mean amount of cloud	-.32

Rain on the 5th, 8th, 9th, 14th, 16th, 20th, 25th and 26th. Thunderstorms on the 5th, 8th, 9th, 14th, 16th, 20th, 26th. Lightning on the 4th and 19th. Fog on 6th. Thunder on 24th. Heavy dew on the 7th, 10th, 11th, 15th, 19th, 29th and 30th. Clear days 18. Cloudy days 1.

Extreme Readings

DURING 80 YEARS.

Barometer—Highest reading, 1913 (10th)	30.160 inch.
" Lowest reading, 1902 (25th)	28.875 "
Temperature—Highest, 1901 (27th)	97.1°
" Lowest, 1842 (10th)	28.1°
" Highest monthly mean, 1919	72.4°
" Lowest monthly mean, 1842	56.5°
Rainfall—Greatest fall, 1870	8.00 in.
" Least fall, 1864	0.57 "
" Greatest for 24 hours, 1892 (19th)	2.42 "
" Greatest number of days rain fell, 1869,	22
" Least number of days, in 1864	5
Snowfall—Flurries on two days, 1859.	

July, 1919

Results of Observations		Mean for 70 years.
Mean reading of barometer, 32 F. inches,	29.607	29.585
Highest " " on 8th at 9.19h	29.961	29.889
Lowest " " on 10th at 13.37h	29.183	29.420
Range of barometric readings,	0.778	0.469
Highest temperature on the 4th	98.0	89.8
Lowest temperature on the 11th	52.0	47.5
Range for the month,	46.0	42.3
Mean of the highest readings,	84.9	77.9
Mean of the lowest readings,	61.6	58.2
Mean daily range,	23.3	19.7
Mean from max. and min.	73.3	*67.8
Mean from 24 hourly observations	72.3	†68.9
Highest daily mean temperature, 4th	84.3	
Lowest " " " 11th	64.6	
Mean temperature of dew point	59	
Mean humidity,	68	72
Mean force of vapour	0.505	0.488
Highest solar (black bulb in vacuum) on 4th	134.9	
Lowest (radiation) on the 8th	48.4	
Monthly range	86.5	
Total fall of rain inches	3.20	3.04
Heaviest fall (21st) "	2.70	
Number of days on which rain fell,	8	11.2
Mean amount of cloud (0-10)	.32	.49

No. of hours in the month in which the wind was	N.	N.E.	E.	S.E.	S.	S. W.	W.	N. W.	C.
	36	159	47	52	48	204	54	139	5

Total miles registered	7,130
Mean velocity	9.6
Highest velocity (10th) at 18 hrs, from northwest	32
Highest daily average velocity (10th)	18.8
Lowest " " " (2nd)	3.5
Days on which gales occurred	1
*1840—1898	†1881—1908

July, 1919

Differences.

The signs + and - mean respectively above and below the monthly normal.

Mean barometric pressure	+0.022 inches
Monthly range	+0.309 inches
Mean temperature	+5.5°
Mean of highest temperatures	+7.0°
Mean of lowest "	+3.4°
Mean daily range	+3.6°
Total rainfall	+0.16 in.
Mean amount of cloud	- .17

Rain on the 5th, 6th, 15th, 20th, 21st, 26th and 28th. Thunderstorms on the 5th and 26th. Aurora class III. on the 22nd. Lightning on the 4th. Hail on the 5th. Lunar corona on 11th. Dew on the 1st, 2nd, 13th, 17th, 23rd, 27th and 31st. Clear days 12. Cloudy days 3.

Extreme Readings

DURING 80 YEARS.

Barometer—Highest reading, 1892 (7th)	11.285 inch 30.192
" Lowest reading, 1911 (24th)	29.006 "
Temperature—Highest, 1911 (3rd)	103.2°
" Lowest, 1843 (12th)	38.7°
" Highest monthly mean, 1916	76.0°
" Lowest monthly mean, 1884	64.0°
Rainfall—Greatest fall, 1841	8.15 in.
" Least fall, 1916	0.36 "
" Greatest for 24 hours, 1897 (27th)	3.88 "
" Greatest number of days rain fell, 1861, 1866-70-80, 1902, 1917	16
" Least number of days, in 1849	4

August, 1919.

Results of Observations		Mean for 70 years.
Mean reading of barometer, 32 F. inches,	29.542	29.617
Highest " " on 11th at 20.02h	29.904	29.909
Lowest " " on 7th at 15.38h	29.211	29.257
Range of barometric readings,	0.693	0.652
Highest temperature on the 7th	92.2	87.0
Lowest temperature on the 29th	47.6	45.7
Range for the month,	44.6	41.3
Mean of the highest readings,	77.8	76.1
Mean of the lowest readings,	57.9	57.1
Mean daily range,	19.9	19.0
Mean from max. and min.	67.9	*66.3
Mean from 24 hourly observations	66.4	†66.9
Highest daily mean temperature, 7th	76.1	
Lowest " " " 26th	57.8	
Mean temperature of dew point	57	
Mean humidity,	75	74
Mean force of vapour	0.480	0.483
Highest solar (black bulb in vacuum) on 7th	123.0	
Lowest (radiation) on the 10th	42.9	
Monthly range	80.1	
Total fall of rain	inches 2.17	2.77
Heaviest fall (16th)	" 1.31	
Number of days on which rain fell,	8	10.9
Mean amount of cloud (0-10)	.41	.49

No. of hours in the month in which the wind was	N.	N.E.	E.	S.E.	S.	S. W.	W.	N. W.	C.
	34	172	38	58	39	165	87	148	3

Total miles registered	7,791
Mean velocity	10.5
Highest velocity (7th) at 18 hrs, from northwest	29
Highest daily average velocity (25th)	18.1
Lowest " " " (11th)	3.7
Days on which gales occurred	0
*1840—1898	†1881—1908

August, 1919.

Differences.

The signs + and — mean respectively above and below the monthly normal.

Mean barometric pressure	- 0.075 inches
Monthly range	+ 0.041 inches
Mean temperature	+ 1.6°
Mean of highest temperatures	+ 1.7°
Mean of lowest " "	+ 0.8°
Mean daily range	+ 0.9°
Total rainfall	- 0.60 in.
Mean amount of cloud	- .08

Rain on the 14th, 15th, 16th, 18th, 19th, 21st, 25th and 30th. Thunderstorms on 12th, 16th, 17th, 18th, 19th and 30th. Sky of strong yellowish tinge, moon red from smoke on 3rd, 4th, 9th, 10th, 11th, 12th. Heavy dew on the 7th, 12th, 20th, 21st, 22nd, 23rd, 26th, 27th and 29th. Fog on the 18th and 19th. Clear days 9. Cloudy days 1.

Extreme Readings

DURING 80 YEARS.

Barometer—Highest reading, 1918 (19th)	30.104 inch.
" Lowest reading, 1912 (22nd)	29.028 "
Temperature—Highest, 1918 (13th)	102.2°
" Lowest, 1855 (18th) 1870 (27th)	40.0°
" Highest monthly mean, 1900	72.5°
" Lowest monthly mean, 1866	60.8°
Rainfall—Greatest fall, 1915	8.14 in.
" Least fall, 1876	0 "
" Greatest for 24 hours, 1905 (15th)	3.68 "
" Greatest number of days rain fell, 1872	19
" Least number of days, in 1876	9

September, 1919

Results of Observations		Mean for 70 years.
Mean reading of barometer, 32 F. inches,	29.619	29.667
Highest " " on 30th at 10.02h	29.934	30.037
Lowest " " on 19th at 22.28h	29.154	29.187
Range of barometric readings,	0.780	0.850
Highest temperature on the 8th	94.7	82.7
Lowest temperature on the 18th	38.7	35.7
Range for the month,	56.0	47.0
Mean of the highest readings,	73.9	68.2
Mean of the lowest readings,	53.0	50.2
Mean daily range,	20.9	18.0
Mean from max. and min.	63.4	*58.8
Mean from 24 hourly observations	61.9	†60.5
Highest daily mean temperature, 8th	79.7	
Lowest " " " 26th	49.2	
Mean temperature of dew point	53	
Mean humidity,	78	78
Mean force of vapour	0.410	0.393
Highest solar (black bulb in vacuum) on 8th	128.3	
Lowest (radiation) on the 18th	33.7	
Monthly range	94.6	
Total fall of rain inches	1.91	3.18
Heaviest fall (21st) "	0.79	
Number of days on which rain fell,	10	11.4
Mean amount of cloud (0-10)	.50	.50

No. of hours in the month in which the wind was	N.	N.E.	E.	S.E.	S.	S. W.	W.	N. W.	C.
	41	76	56	72	47	183	69	171	5

Total miles registered	7,143
Mean velocity	9.9
Highest velocity (19th) at 22 and 23 hrs, from south	37
Highest daily average velocity (12th)	18.0
Lowest " " " (2nd)	4.3
Days on which gales occurred	3
*1840-1898	†1881-1908

September, 1919.

Differences.

The signs + and - mean respectively above and below the monthly normal.

Mean barometric pressure	-0.048 inches
Monthly range	-0.070 inches
Mean temperature	+4.6°
Mean of highest temperatures	+5.7°
Mean of lowest "	+2.8°
Mean daily range	+2.9°
Total rainfall	-1.27 in.
Mean amount of cloud	00

Rain on 1st, 2nd, 6th, 10th, 11th, 15th, 19th, 21st, 29th and 30th. Thunderstorms on 11th and 21st. Aurora class IV. on 20th and 24th. Dew on the 2nd, 5th, 13th, 17th, 23rd and 28th. Lunar halo on 9th, 13th. Rainbow on 12th. Clear days 6. Cloudy days 6.

Extreme Readings

DURING 80 YEARS.

Barometer—Highest reading, 1904 (22nd)	30.243 inch.
" Lowest reading, 1848 (29th)	28.863 "
Temperature—Highest, 1898 (2nd)	97.1°
" Lowest, 1896 (23rd)	27.6°
" Highest monthly mean, 1865	64.5°
" Lowest monthly mean, 1848	53.4°
Rainfall—Greatest fall, 1843	9.76 in.
" Least fall, 1897	0.40 "
" Greatest for 24 hours, 1843 (14th)	3.46 "
" Greatest number of days rain fell, 1907	19
" Least number of days, in 1840, 1844	4

October, 1919

Results of Observations		Mean for 70 years.							
Mean reading of barometer, 32 F. inches,	29.688	29.651							
Highest " " on 29th at 9.37h	30.055	30.112							
Lowest " " on 28th at 6.41h	29.104	29.066							
Range of barometric readings,	0.951	1.046							
Highest temperature on the 10th	80.0	70.3							
Lowest temperature on the 8th	31.8	25.5							
Range for the month,	48.2	44.8							
Mean of the highest readings,	61.5	54.9							
Mean of the lowest readings,	44.6	39.1							
Mean daily range,	16.9	15.8							
Mean from max. and min.	53.0	46.6							
Mean from 24 hourly observations	52.1	48.1							
Highest daily mean temperature, 3rd	68.6								
Lowest " " " 29th	39.4								
Mean temperature of dew point	46								
Mean humidity,	82	79							
Mean force of vapour	0.336	0.258							
Highest solar (black bulb in vacuum) on 3rd	112.2								
Lowest (radiation) on the 8th	27.0								
Monthly range	85.2								
Total fall of rain	inches 2.98	2.40							
Heaviest fall (25th)	" 0.81								
Number of days on which rain fell,	16	12.4							
Total fall of snow	inches 0	0.6							
Number of days on which snow fell	0	1.6							
Mean amount of cloud (0-10)	.61	.61							
No. of hours in the month in which the wind was	N. 39	N.E. 136	E. 104	S.E. 72	S. 29	S. W. 149	W. 97	N. W. 118	C. 0
Total miles registered	8,500								
Mean velocity	11.4								
Highest velocity (28th) at 9 hrs, from west	53								
Highest daily average velocity (28th)	26.5								
Lowest " " " (15th)	4.								
Days on which gales occurred	2								
*1840—1898	†1881—1908								

October, 1919

Differences.

The signs + and — mean respectively above and below the monthly normal.

Mean barometric pressure	+ 0.037 inches
Monthly range	- 0.095 inches
Mean temperature	+ 6.4°
Mean of highest temperatures	+ 6.6°
Mean of lowest " "	+ 5.5°
Mean daily range	+ 1.1°
Total rainfall	+ 0.58 in.
Total snowfall	- 0.6 in.
Mean amount of cloud	0

Rain on the 2nd, 3rd, 5th, 6th, 9th, 10th, 14th, 16th, 19th, 21st, 25th, 26th, 27th, 28th, 30th and 31st. Thunderstorms on the 3rd and 26th. Aurora class I. on the 1st, class III. on the 2nd. Fog on the 4th, 5th, 8th, 10th, 14th, 15th, 23rd, 24th. Hoar frost on 8th, 18th and 29th. Heavy dew on the 4th and 13th. Clear days 5. Cloudy days 11.

Extreme Readings

DURING 80 YEARS.

Barometer—Highest reading, 1847 (28th)	30.396 inch.
" Lowest reading, 1893 (14th)	28.227 "
Temperature—Highest, 1897 (15th)	85.7°
" Lowest, 1844 (31st)	15.9°
" Highest monthly mean, 1900	55.7°
" Lowest monthly mean, 1841	41.8°
Rainfall—Greatest fall, 1849	5.97 in.
" Least fall, 1901	0.56 "
" Greatest for 24 hours, 1849 (6th)	3.16 "
" Greatest number of days rain fell, 1864	22
" Least number of days, in 1841	6
Snowfall—Greatest fall, 1844	12.0 in.
" Least fall, 1916-18-19	0 "
" Greatest for 24 hours, 1875 (17th)	3.3 "
" Greatest number days snow fell 1869,	7

November, 1919.

Results of Observations

Results of Observations		Mean for 70 years.
Mean reading of barometer, 32 F. inches,	29.673	29.627
Highest " " on 28th at 5.58h	30.146	30.169
Lowest " " on 29th at 19.55h	28.716	28.975
Range of barometric readings,	1.430	1.194
Highest temperature on the 1st	64.3	57.9
Lowest temperature on the 27th	16.2	13.5
Range for the month,	48.1	44.4
Mean of the highest readings,	45.1	42.5
Mean of the lowest readings,	31.2	30.1
Mean daily range,	13.9	12.4
Mean from max. and min.	38.2	*36.0
Mean from 24 hourly observations	36.9	‡37.1
Highest daily mean temperature, 17th	48.3	
Lowest " " " 27th	21.2	
Mean humidity,	78	80
Highest solar (black bulb in vacuum) on 11th	98.0	
Lowest (radiation) on the 20th and 27th	14.0	
Monthly range	84.0	
Total fall of rain	inches 1.59	2.49
Heaviest fall (29th)	" .86	
Number of days on which rain fell,	8	10.3
Total fall of snow	inches 0.4	4.6
Heaviest fall (25th)	" 0.3	
Number of days on which snow fell	2	7.3
Mean amount of cloud (0-10)	.69	.74

No. of hours in the month in which the wind was	N.	N.E.	E.	S.E.	S.	S. W.	W.	N. W.	O.
	30	122	66	53	9	236	80	124	0

Total miles registered	11,285
Mean velocity	15.7
Highest velocity (00th) at 5 hrs, from southwest	45
Highest daily average velocity (30th)	37.6
Lowest " " " (2nd)	7.0
Days on which gales occurred	4
*1840—1898	‡1881—1908

November, 1919.

Differences.

The signs + and - mean respectively above and below the monthly normal.

Mean barometric pressure	+0.046 inches
Monthly range	+0.236 inches
Mean temperature	+2.2°
Mean of highest temperatures	+2.6°
Mean of lowest " "	+1.1°
Mean daily range	+1.5°
Total rainfall	-0.90 in.
Total snowfall	-4.2 in.
Mean amount of cloud	- .05

Rain on the 4th, 7th, 10th, 11th, 18th, 21st, 25th and 29th. Snow on the 23rd and 25th. Heavy dew on the 10th and 12th. Aurora class IV. on the 24th. Clear days 0. Cloudy days 13.

Extreme Readings

DURING 80 YEARS.

Barometer—Highest reading, 1887 (30th)	30.592	inch.
" Lowest reading, 1913 (9th)	28.327	"
Temperature—Highest, 1903 (3rd)	70.2°	
" Lowest, 1875 (30th)	-5.0°	
" Highest monthly mean, 1902	42.9°	
" Lowest monthly mean, 1873	27.6°	
Rainfall—Greatest fall, 1846	5.80	in.
" Least fall, 1904	0.08	"
" Greatest for 24 hours, 1861 (2nd)	3.13	"
" Greatest number of days rain fell, 1877,	16	
" Least number of days, in 1904	4	
Snowfall—Greatest fall, 1873	19.6	in.
" Least fall, 1847 and 1850		not measureable
" Greatest for 24 hours, 1873 (27th)	9.5	"
" Greatest number days snow fell 1869-73-92,	18	
" Least " 1850 and 1899	1	

December, 1919.

Results of Observations		Mean for 70 years.
Mean reading of barometer, 32 F. inches,	29.687	29.644
Highest " " on 11th at 3.07h	30.324	30.226
Lowest " " on 30th at 4.03h	28.902	28.936
Range of barometric readings,	1.422	1.290
Highest temperature on the 13th	48.8	47.5
Lowest temperature on the 17th	-7.2	-2.3
Range for the month,	56.0	49.8
Mean of the highest readings,	30.0	32.5
Mean of the lowest readings,	15.5	20.0
Mean daily range,	14.5	12.5
Mean from max. and min.	22.7	*26.2
Mean from 24 hourly observations	22.8	†27.6
Highest daily mean temperature, 9th	37.9	
Lowest " " " 17th	-1.9	
Mean humidity,	76	82
Highest solar (black bulb in vacuum) on 2nd	69.0	
Lowest (radiation) on the 17th	-11.0	
Monthly range	80.0	
Total fall of rain inches	0.04	1.53
Heaviest fall (9th) "	0.04	
Number of days on which rain fell,	1	6.3
Total fall of snow inches	9.6	13.0
Heaviest fall (6th) "	2.5	
Number of days on which snow fell	13	13.1
Mean amount of cloud (0-10)	.66	.77

No. of hours in the month in which the wind was	N.	N.E.	E.	S.E.	S.	S. W.	W.	N. W.	C.
	57	61	25	28	17	270	156	130	0

Total miles registered	11,562
Mean velocity	15.5
Highest velocity (15th) at 7 hrs, from west	39
Highest daily average velocity (15th)	33.1
Lowest " " " (18th)	5.2
Days on which gales occurred	7
*1840—1898	†1881—1908

December, 1919.

Differences.

The signs + and - mean respectively above and below the monthly normal.

Mean barometric pressure	+0.043 inches
Monthly range	+0.132 inches
Mean temperature	-3.5°
Mean of highest temperatures	-2.5°
Mean of lowest "	-4.5°
Mean daily range	+2.0°
Total rainfall	-1.49 in.
Total snowfall	-3.4 in.
Mean amount of cloud	-.11

Rain on the 9th. Snow on the 2nd, 6th, 7th, 10th, 13th, 15th, 18th, 23rd, 24th, 27th, 29th, 30th and 31st. Clear days 2. Cloudy days 13.

Extreme Readings

DURING 80 YEARS.

Barometer—Highest reading, 1887 (1st)	30.594	inch.
" Lowest reading, 1855 (9th), 1856 (14th)	28.459	"
Temperature—Highest, 1875 (31st)	61.0°	
" Lowest, 1871 (21st)	-21.0°	
" Highest monthly mean, 1889	34.3°	
" Lowest monthly mean, 1876	17.2°	
Rainfall—Greatest fall, 1841	6.60	in.
" Least fall, 1840, 1845, 1876	0	"
" Greatest for 24 hours, 1870 (6th)	1.95	"
" Greatest number of days rain fell, 1889, 1911	14	
" Least number of days, in 1876	0	
Snowfall—Greatest fall, 1872	38.0	in.
" Least fall, 1877	0.3	
" Greatest for 24 hours, 1898 (4-5)	16.0	"
" Greatest number days snow fell, 1872	24	
" Least " 1895	3	

Summary of Observations, 1919.

READINGS OF BAROMETER IN INCHES.		Mean for 70 years
Mean of the year	29.642	29.619
Highest monthly mean, March	29.786	
Lowest " August	29.542	
Highest reading, March 14th	30.349	30.371
Lowest " November 29th	28.716	28.707
Range	1.633	1.664
THERMOMETER, FAHRENHEIT.		
Highest monthly mean temperature, July	73.3	
Lowest " " " December	22.7	
Highest daily mean temperature, July 4th	84.3	
Lowest " " " December 17th	-1.9	
Highest temperature, July 4th	98.0	91.2
Lowest " December 17th	-7.2	-12.0
Range for the year	105.2	103.2
Mean from max. and min.	48.3	*44.2
Mean from 24 hourly observations	47.5	‡45.0
Mean humidity	74	77
Highest solar (black bulb in vacuum) July 4th	134.9	
Lowest (radiation) on December 17th	-11.0	
Yearly range	145.9	
Total fall of rain inches	26.93	26.86
Greatest monthly rainfall, May	5.15	
Least " " December	0.04	
Greatest rainfall in 24 hrs, July 21st	2.70	
Number of days rain fell	102	112.9
Total fall of snow inches	28.7	66.1
Greatest monthly snowfall, December	9.6	
Greatest snowfall in 24 hrs., March 9th	4.4	
Number of days on which snow fell	41	62.9
Mean amount of cloud (0-10)	.54	.62
*1940-1908		†1881-1908

Wind Summary.

NUMBER OF MILES REGISTERED FROM EACH DIRECTION

Month	Total Miles	Total Hours	Calm.	N.	N.E.	E	S.E.	S.	S.W.	W.	N.W.
Jan.	10,664	744	2	345	823	191	311	166	5394	1685	1749
Feb.	10,462	672	2	277	2526	1105	482	146	1692	2019	2215
Mar.	11,790	744	3	444	3483	730	132	100	1777	490	4634
April	9,297	720	2	359	2631	624	156	329	1555	311	3332
May	8,883	744	3	405	4137	403	205	280	1727	680	1046
June	5,743	720	16	759	1963	873	644	220	497	229	558
July	7,139	744	5	293	1640	455	320	389	1692	351	1999
Aug.	7,791	744	3	193	1913	315	631	395	1393	848	2103
Sept.	7,143	720	5	328	538	503	690	461	1766	759	2098
Oct.	8,500	744	0	384	1375	1410	813	265	1495	1274	1484
Nov.	11,285	720	0	317	1556	1208	754	121	4207	1422	1700
Dec.	11,562	744	0	407	850	381	425	182	4828	2447	2042
Year	110,259	8,760	41	4511	23435	8198	5563	3054	28023	12515	24960

Number of hours from each direction will be found in monthly results.

Total mileage for year 110,259

Greatest mileage in 24 hours (Nov. 30th) 90.3

Greatest mileage in 1 hour (Oct. 28th) 53

Number of gales 49

Average velocity for year 12.6

Prevailing direction, southwest. Mileage, 28,023. Total hours, 2,133.

Absolute Extremes

DURING 80 YEARS

Readings of the barometer, in inches.

Highest yearly mean, 1849,	29.668
Lowest " " 1864,	29.580
Highest monthly mean, February, 1906,	29.819
Lowest " " March, 1859,	29.412
Greatest monthly range January, 1870,	2.046
Least " " June, 1841,	0.425
Highest reading, January 8th, 1866,	30.940
Lowest " January 2nd, 1870,	28.166
Extreme range	2.774

Temperatures.

Highest reading on July 3rd, 1911	103.2
Lowest reading on January 10th, 1859,	-28.5
Highest daily mean temperature, July 3rd, 1911,	90.8
Lowest " " " Jan. 13th, 1914,	-16.5
Highest monthly mean, July, 1916,	76.0
Lowest " " February, 1875,	10.2
Highest yearly " 1919,	48.3
Lowest " " 1875,	40.8

Rainfall, in inches.

Greatest fall in 24 hours, July 27th, 1897,	3.88
Greatest rainfall in a month, September, 1843,	9.76
Greatest rainfall in a year, 1843,	43.56
Least " " " " 1874,	17.57
Greatest number of rainy days in a month, May, 1890,	23
Greatest number of rainy days in a year, 1890,	145
Least " " " " " " " " 1841,	80

Absolute Extremes

DURING 80 YEARS—(Continued)

Snowfall in Inches.

Greatest fall in 24 hours, March 28th. 1876,	16.2
Greatest fall in a month, March, 1870,	62.4
Greatest fall of snow in a year in 1870,	122.9
Least " " " " " " " " 1919,	28.7
Greatest fall in any winter, 1869-70,	123.5
Least fall in any winter, 1877-78 and 1905-06,	30.2
Greatest No. of days of snow in a month, Dec. 1870 and December 1872,	24
Greatest number of days of snow in a year, 1859,	87
Least " " " " " " " " 1848,	33

Dates of Certain Periodic Events.

	EXTREME	1919
Latest snow.....	June 4, 1859	April 26th
Earliest snow.....	Sept. 25, 1860	*Nov 13th
Latest hoar frost.....	June 20, 1862	April 27th
Earliest hoar frost.....	Aug. 23, 1863	Oct. 8th
Earliest thunder & lightning	Jan. 12, 1898	April 8th
Latest thunder and lightning	Dec. 23, 1871	Oct. 23th
*Flurries.		

TOTAL AMOUNT OF SUNSHINE RECORDED ON EACH DAY—1919.

Month.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
January.	0	0	4.0	6.8	3.1	1.3	0	0.4	2.5	2.4	6.9	1.9	3.2	0.9	4.3	7.3	4.0
February.	8.8	8.8	7.7	T.	3.8	3.1	7.7	6.1	5.6	9.3	2.3	0	0	0	0	9.4	0.8
March.	4.5	9.0	7.2	0.1	0.7	9.5	6.1	8.0	0	4.5	8.4	4.4	7.4	6.4	0	0	0
April.	10.8	7.9	2.5	0.7	2.2	3.5	2.9	1.1	1.2	0.7	0.2	0	4.4	9.0	0.3	0	1.7
May.	0	0	1.0	1.4	7.9	11.9	7.7	5.8	4.4	0	0	4.6	13.4	11.7	4.2	0	0.8
June.	12.5	8.8	12.1	11.3	6.4	10.3	9.9	9.8	12.0	14.0	7.7	14.0	10.9	12.1	14.0	5.3	13.9
July.	14.1	13.7	13.1	12.5	8.8	6.1	14.4	13.5	11.1	9.2	13.0	1.8	13.4	8.6	8.9	14.2	13.8
August.	12.3	11.3	1.3	10.1	9.4	6.4	12.2	13.1	11.0	10.7	4.4	1.3	4.1	6.5	5.9	4.1	7.0
September.	5.3	2.7	10.0	11.5	11.0	8.8	8.3	9.6	3.4	T.	5.5	7.8	10.9	7.5	4.0	5.5	11.2
October.	10.0	5.3	3.4	6.1	0.6	9.8	9.2	10.0	0	3.4	0	5.6	8.6	0	8.9	0	6.0
November.	0.1	3.0	1.0	0	6.9	2.1	0	0	2.0	2.7	8.6	3.6	0.1	0.1	6.3	0.5	2.6
December.	3.7	2.3	2.7	4.3	3.0	0	0.6	0	0	6.4	0.7	0	0	5.6	2.5	1.0	3.2

TOTAL AMOUNT OF SUNSHINE RECORDED ON EACH DAY—1919. (Continued).

Month.	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Monthly Total	Monthly Percentage.
January.	3.2	7.6	6.7	1.7	0	0	2.7	3.3	0	1.1	0	2.9	3.9	2.2	84.3	29
February.	8.6	9.7	7.4	0	0	1.5	9.2	0	8.6	4.5	2.1				125.0	43
March.	0.4	9.2	5.8	1.8	10.9	10.4	10.7	9.8	1.5	0	11.0	11.3	9.1	4.6	172.7	44
April.	10.5	8.7	4.7	13.0	10.4	8.4	0	2.5	8.8	9.2	0	13.2	11.0		149.5	37
May.	10.4	8.0	0	0	5.4	3.3	6.8	9.4	13.1	7.9	13.5	12.8	13.1	13.3	191.8	42
June.	13.8	12.7	6.2	14.0	13.2	13.1	11.9	0	0	9.3	14.1	14.5	14.2		322.0	69
July.	13.4	12.8	7.5	1.7	11.0	13.1	12.2	10.3	5.5	9.9	13.7	13.9	11.2	0.7	327.1	70
August.	2.4	5.5	12.8	4.6	12.9	5.3	8.4	11.2	0.9	3.4	11.2	10.0	5.5	8.1	234.2	54
September.	10.1	0.2	8.3	0.3	8.3	3.5	7.8	7.4	9.3	10.0	8.9	2.4	0		199.5	53
October.	9.9	5.3	4.1	0	2.9	3.7	1.2	0	2.4	0	5.2	5.3	0	3.2	130.1	37
November.	0.7	5.0	7.5	0	0.1	4.9	2.3	0	0	0	0	0	3.0		63.0	22
December.	3.2	4.8	0.2	2.7	3.7	0.4	0	3.8	0	0	7.8	0.5	2.3	0	70.4	32

MONTHLY TABLES FOR EACH HOUR OF RECORDED SUNSHINE—1919

HOURS ENDING. Local time	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
January.	0	0	0	0	0	3.5	8.4	12.4	13.3	11.9	12.3	11.5	8.6	2.4	0	0	0
February.	0	0	0	0	2.1	12.0	13.6	13.6	15.1	15.7	15.1	14.6	12.5	9.3	1.4	0	0
March.	0	0	0	1.3	10.0	15.7	16.3	17.5	18.9	19.8	19.6	17.6	16.4	13.5	6.1	0	0
April.	0	0	1.4	8.3	11.1	13.8	11.9	14.6	15.2	14.7	12.7	12.1	10.4	9.3	9.9	3.9	0
May.	0	0	4.8	13.5	14.3	13.4	15.3	15.9	17.9	15.6	16.5	16.7	14.1	12.5	12.0	8.9	0.4
June.	0	0	9.5	19.6	23.5	23.6	24.7	24.5	26.2	26.1	26.0	24.0	24.2	24.9	22.5	18.0	4.7
July.	0	0	9.6	22.3	23.8	25.0	23.7	25.1	25.6	25.4	26.2	25.3	25.0	24.3	22.7	18.6	4.5
August.	0	0	0.9	8.2	15.7	19.1	19.3	17.5	19.5	20.6	22.3	21.7	20.8	20.6	17.8	9.5	0.7
September.	0	0	0	3.9	13.6	17.1	18.5	20.5	22.3	19.8	21.5	20.7	17.9	6.0	0.3	0	0
October.	0	0	0	0.1	8.0	12.3	13.3	14.2	16.2	15.1	13.6	13.6	13.8	9.0	0.9	0	0
November.	0	0	0	0	1.2	5.1	5.7	8.1	9.1	9.3	8.3	9.3	5.6	1.3	0	0	0
December.	0	0	0	0	0.2	4.5	7.4	9.6	11.4	11.4	11.0	8.0	6.8	0.1	0	0	0
Total hours.	0	0	26.2	77.2	123.5	165.1	178.1	193.5	210.7	205.4	205.1	195.1	176.1	133.2	93.6	58.9	10.3

SUMMARY OF SUNSHINE.

BRIGHT SUNSHINE RECORDED.

	1919			Mean from 1882 to 1910.		
	Number of days.	Number of hours	Percentage of sunshine.	Number of days.	Number of hours.	Percentage of sunshine.
January	24	84.3	29	20	77.9	27
February	20	125.0	43	22	108.1	37
March	26	172.7	44	25	150.0	40
April	26	149.5	37	25	190.7	47
May	24	191.8	42	29	218.9	48
June	28	322.0	69	29	260.0	56
July	31	327.1	70	30	282.2	60
August	31	234.2	54	30	252.7	60
September	28	199.5	53	28	207.8	55
October	23	130.1	37	28	149.3	44
November	21	63.0	22	22	85.3	29
December	22	70.4	32	20	65.2	24
Year	304	2069.6	46	308	2048.1	46

EARTHQUAKE RECORDS BY MILNE SEISMOGRAPH.

P.T.—Preliminary Tremors. S.—Secondary Waves. L.W.—Large Waves. Time is Greenwich Civil Mean Time, and is given in hours, minutes, and decimals of minutes; 0 or 24h—Mid.

REGISTER FROM TORONTO, ONTARIO.

No.	Date 1919.	P.T.		S		L.W.		Max		End.		Max. Amplitude. MM.	REMARKS.
		H.	M.	H.	M.	H.	M.	H.	M.	H.	M.		
1949	Jan. 1					2	10.1	2	56.1			1.0	Early phases masked by micros
1950	" 1					2	36.8						
1951	" 6			3	16.2	3	29.4	3	31.9			4.0	P.T & S. masked by 1949.
						23	26.6	23	33.2			0.7	
1952	" 7					23	30.5						
						0	41.9	0	46.0			0.4	
1953	" 8					0	44.0						
						2	3.1	2	8.0			0.3	
						2	5.4						
1954	" 17					12	9.7	12	16.8			0.2	Micros going on.
1955	" 27					21	56.1?	21	58.1?			0.3?	" " "
1956	" 31					23	48.8					0.2	" " "
						23	56.9						
1957	Feb. 2			20	24.4	20	26.8	20	28.4			1.4	" " "
1958	" 12					13	24.9?	13	35.5?			0.3	" " "
1959	" 15					2	39.3	2	42.4	3	0.0	0.6	Marked gradual thickening. Small micros going on.
1960	" 16					16	7.0?			16	12.0?	0.2	
1961	" 22					4	58.9?						" " "
						5	10.2						
1962	Mar 2	3	46.6?	3	50.7	4	7.8	4	40.1	6	9.8	1.8	Real P. possibly not recorded. Times doubtful.
						4	34.0						
1963	" 2	12	1.1?	12	9.3	12	26.2	12	45.6	14	34.2?	1.2	S. fairly large. Times doubtful.
				12	11.0	12	37.4						
1964	" 4					9	18.8?					0.05	
1965	" 9	3	28.7	3	41.0	3	59.6?	4	16.6	5	39.0	0.7	11,920 km. P. very minute. S. fairly large.
						4	10.7						
1966	Mar 16					8	47.6			9	20.8	0.1	Gradual thickening.
1967	" 17					8	31.8			8	37.1	0.05	
1968	" 19					2	42.9	2	44.4	2	55.4	0.3	May not be seismic.
1969	" 21					17	0.5	17	13.3			0.9	Merged into next quake.
						17	3.0						
1970	" 21					18	37.8	18	44.1	19	2.7	0.2	A dual quake.
1971	" 26					10	50.4			10	54.4	0.1	
1972	April 15					23	41.6	23	43.5	0	2.6	0.2	May not be seismic.
1973	" 16					4	9.8			4	34.2	0.1	
1974	" 17	11	40.7?	11	52.1	12	30.3	12	32.2			1.0	10,600 km. Dual quake.
1975	" 17					13	36.9	13	43.5	14	27.8	0.8	P. and S. merged into previous quake.
						13	42.4						
1976	" 17	21	0.0	21	5.6	21	7.7	21	19.4	23	16.6	8.5	3810 km. P. not well defined. S. large amp.
						21	11.7						
1977	" 18					21	20.8	21	21.5	22	1.7	0.8	
1978	" 19			21	15.8	3	12.7?						Barely noticeable.
						3	38.3						
1979	" 21					11	43.7	12	1.1	12	44.5	0.3	
1980	" 21	Light off		when other station records quake								0.1	
1981	" 22					3	24.7						
1981	" 23					3	53.4						
1982	" 27					8	5.6			8	29.1	0.05	
						1	33.9	1	41.6	2	25.3	0.1	Gradual thickening.
1983	" 28			7	0.0?	7	4.1	7	4.5	7	42.3	0.8	San Salvador. P. not recorded.
1984	" 30	7	30.6	7	40.5	7	48.0	8	19.0			Over 25	Lat. 6°48' South. Long. 135° W.?
						8	14.0						
		7	35.2	7	44.3					12	39.7		Lat. 12°40' N.? Long. 129° W.?
				7	44.9								
1985	" 30					17	49.0	17	51.5	18	23.8	0.7	
						17	50.3						
1986	May 1					6	9.0	6	15.9	6	50.3?	0.8	Gradual thickening.
1987	" 2					2	54.7	3	8.7	4	36.9	2.2	
						3	2.7						

No.	Date 1919	P. T. Commence.	S. Commence.	L. W. Commence	Max.	End	Max. Amplitude.	REMARKS
1988	May 3	1 5.3	1 15.9	1 22.0 1 30.0	1 48.8	3 46.7	6.8	9,520 km. Phases clearly marked.
1989	" 4			23 41.4	23 44.5	23 54.2	0.2	
1990	" 6			5 5.3	5 10.9	6 1.0?	0.3	
1991	" 6	20 1.4	20 12.0	20 20.1	21 2.9	0 47.6	8.5	9,520 km. Increase of movement to 21h 56.0m. amp. 3.5.
1992	" 7			5 44.2		5 48.3	0.1	
1993	" 7	5 59.6	6 10.5?	6 23.0	6 31.0	7 46.1	1.4	Repeat 7h 25.9m.
1994	" 7			10 28.3	10 33.4		0.05	
1995	" 8			10 50.5			0.05	
1996	" 8			11 3.0	11 8.7		0.4	Gradual thickening.
1997	" 8				21 11.2		0.05	
1998	" 14			4 49.3		4 55.6	0.05	
1999	" 18			12 44.0	12 44.4	13 8.5	0.4	Possibly off West Coast of Vancouver Island.
2000	" 19			5 1.6?			0.05	
2001	" 20			4 38.7	4 42.1	4 48.5	0.2	
2002	" 22			12 11.3	12 35.4	13 14.2	0.8	
				12 24.6				
2003	" 23			3 33.6	3 40.2	4 5.0?	0.1	
2004	" 23			7 8.6	7 12.0	7 29.6	0.2	Thickening.
2005	" 27			17 51.5	18 8.5	18 18.6	0.1	
				18 3.7				
2006	" 29			6 29.1	6 30.1	6 37.1	0.2	Gradual thickening.
2007	June 1			7 11.8		7 16.5	0.2	Doubtful as to being seismic.
2008	" 10			20 57.9	20 58.6	21 3.8	0.1	
2009	" 15				16 17.9?		0.1	Small micros going on.
2010	" 15				18 5.6		0.1	Small micros going on.
2011	" 29			1 3.3			0.1	Small micros going on.
2012	" 29			1 12.0			0.1	Small micros going on 0h 30.5m. to 1h 13.7m.
				15 39.8	15 43.6	15 50.2	0.1	

								2830km. Possibly W. Indies.
2013	June 29	23 21.9?	23 26.4	23 32.2	23 33.4	0 30.4	2.1	
2014	" 30			8 22.5	8 45.2	9 10.2	0.2	Times doubtful.
2015	July 1			21 49.4		22 23.0	0.2	
2016	" 2			8 1.6		8 22.8	0.05	
	" 4	Micros after 10h to early morning of 5th.						
2017	" 6	7 11.0?	7 15.6	7 17.6	7 23.9	7 38.5	0.2	Micros before P.
2018	" 7		14 57.5?	15 0.9	15 4.9	15 12.9	0.2	Gradual thickening.
2019	" 8	Micros		22 1.0	22 16.1	Micros	5.0	Earlier phases masked by micros
	" 9	Heavy micros	masked	22 10.7				other stations.
2020	" 10			2 40.5			0.2	Micros going on.
2021	" 11			0 46.3	0 56.3	1 26.5	0.1	Small micros going on.
2022	" 12			22 42.1			0.1	
2023	" 14	14 13.9?		14 23.0	14 38.5	15 3.5	0.2	
	" 14			14 31.8				
	" 17	Micros at 11.18						
2024	" 17	16 26.5	16 33.9	16 39.4	16 48.7		0.3	Phases interfered with, inspecting instrument.
2025	" 18			13 25.0?				
2026	" 22	22 8.1?	22 14.0	22 19.8	22 22.2	Micros	0.2	
2027	" 24			2 47.7	3 2.1	3 27.3?	0.2	
	" 25			2 57.1				
2028	" 25			19 13.8?			0.2?	Marked micros going on.
	" 25			19 19.6				
2029	" 31			8 6.6	8 10.5	8 18.3	0.2	Gradual thickening.
	" 31				to 8 12.4			
2030	" 31			22 5.9				
	" 31			22 12.5				
2031	Aug. 18			5 31.4?	5 31.9	5 35.0	0.1	Doubtful as to being seismic,
2032	" 18			17 25.4?	17 33.7?		0.2	Early phases lost; attending instrument.
	" 18			17 31.5				
2033	" 24			5 15.2		5 18.8	0.1	Last phase gradual thickening.
2034	" 24			5 29.3?	5 29.6	6 5.6	0.2	
2035	" 24			12 45.9			0.05	
	" 24			12 58.9				

No.	Date 1919	P.T. Commence.	S. Commence.	L.W. Commence.	Max.	End.	Max. Amplitude.	REMARKS.
2036	Aug 27			5 59.8	6 34.5		0.3	
2037	" 29	5 58.7?		6 23.3			—	
2038	" 29			6 16.3	7 9.5		2.3	Possibly 2 earthquakes overlapping. Small micros make interpretation difficult.
		Micros at 14 34.3		when other station recorded qu'ke				
2039	" 29			14 36.2?			0.1	Micros going on.
2040	" 31			0 39.4			0.1	Micros going on.
2041	" 31		17 51.6?	18 20.4	18 29.2		2.4	Micros going on.
2042	Sept. 1			18 21.5				
2043	" 6		9 36.0?	20 10.2?	9 45.0	10 37.9	0.1	Micros going on.
				9 43.6			1.7	
2044	" 13			11 37.2	11 40.5	11 46.5	0.2	Doubtful as to being seismic.
				11 39.6				
2045	" 13		12 25.3?	12 34.4	12 57.4		0.8	Difficult to read.
				12 53.9				
2046	" 13			14 21.7	14 37.7		0.2	Doubtful as to being seismic.
				14 37.3				
2047	" 15			17 48.8	17 52.5		0.3	
2048	" 19			3 28.7?			0.05	Micros going on.
				3 31.4				
2049	" 22			11 40.1			0.2	Doubtful as to being seismic.
2050	" 26			9 37.1			0.1	Doubtful as to being seismic.
				9 40.7				
2051	" 26			21 7.8	21 11.4		0.3	L. 21 25.6.
				21 10.0				
2052	" 27			3 52.8	3 57.7	4 21.7	0.8	
				3 53.8				
2053	" 30			7 53.5		8 1.3	0.05	

2054	Oct. 1	Micros. going on.							
	" 3		10 12.6?	10 32.2	10 39.7	Micros	1.3	Times doubtful.	
				10 33.6					
2055	" 3			11 51.8	12 5.9?	Micros	0.3	Possibly micros.	
				11 59.3					
2056	" 8			5 43.8	5 58.6	6 58.0?	0.3	Times doubtful, no cut-off.	
				5 52.0					
2057	" 10			1 25.9	1 28.0	2 12.0	1.3	Times doubtful.	
				1 27.4					
2058	" 12			23 10.3	23 14.6		0.2?	Times doubtful.	
	" 12	Sheet discolored, impossible to read				bar. ces		if any.	
	" 14	" " " " " " " "				" "			
2059	" 21			22 32.9	22 35.5		0.1		
2060	" 27	3 51.1?	3 59.3	4 10.5	4 12.5	4 36.5	0.3	6,680 km?. Micros make first phases doubtful.	
2061	" 28			7 41.7	7 49.2	7 54.7	0.2		
				7 48.3					
2062	Nov. 1			5 58.1	5 59.7	6 7.3	0.2	Gradual thickening.	
2063	" 6			7 27.8					
				to 7 33.6			0.1		
2064	" 6			7 39.1		7 45.1	0.1		
2265	" 18			4 31.3			0.05		
				4 45.0					
2066	" 18		22 14.8	22 24.5	22 41.6	23 42.9	1.3	P. not defined.	
2067	" 20			14 41.3			0.1	Small micros going on.	
				14 58.2					
2068	" 20			15 15.0	15 24.2	16 3.0?	0.8	Marked thickening 15;19 to 15;24.	
				15 19.0					
2069	" 20			16 28.9		17 9.8	0.05		
2070	" 23			7 11.7	7 18.3	7 31.9	0.2		
2071	" 28			14 22.5	14 29.7	Micros	0.1	Asia Minor. Micros going on	

No.	Date 1919	P.T. Commence.	S. Commence.	L.W. Commence.	Max.	End.	Max. Amplitude.	REMARKS.
	Dec. 3	Marked	micros	when other station records quake				
2072	" 5			0 47.7				Phases masked by micros. Small micros going on.
2073	" 12			4 32.3			0.1	
				4 34.0				
2074	" 14			0 58.9		1 04.3	0.2	Earthquakes reported from Alaska on the 14th.
2075	" 14			1 37.6			0.1	
2076	" 14			2 13.5	2 17.4	2 35.8	0.3	
				2 15.7				
2077	" 14			3 23.0			0.1	
				3 26.5				
2078	" 15			20 18.5		20 22.5	0.05	9,280 km. Marked micros render measurements doubtful.
2079	" 17			0 21.7		Micros	0.05	
2080	" 20	21 3.5	21 16.1?	21 29.8	21 44.1	Micros	0.5	
		21 5.7?		21 41.0				
2081	" 21			18 48.9?			0.2	Micros going on.
2082	" 23			0 22.6			0.1	Small micros going on.
				0 26.8				
2083	" 26			17 16.2	17 22.3		0.2	Thickening. Light turned down at 17h 37m.
				17 19.6				
2084	" 27			21 21.0	21 23.3	21 34.3	0.4	Gradual thickening.

Period of boom 18 seconds. Pillar inclination 1 mm = 0° 45'.

Number of Seismic disturbances recorded at Toronto from 1899 to 1919 inclusive, and for the complete period of 21 years.

YEAR	Jan	Feb	Mar	Apr	M'y	J'ne	Jul	A'g	Sep	Oct	N'v	Dec	Year.
1899	6	4	6	6	2	9	23	13	31	13	18	9	140
1900	21	5	10	3	3	11	7	9	5	12	8	8	102
1901	8	8	7	3	7	2	3	6	4	6	10	16	85
1902	13	7	9	5	0	2	3	6	5	5	4	4	63
1903	7	9	3	6	2	5	5	5	4	4	4	4	58
1904	3	3	7	4	6	8	3	5	8	2	4	3	56
1905	4	5	8	8	4	5	8	0	4	5	7	10	68
1906	15	17	11	12	1	12	5	8	6	4	3	9	103
1907	5	2	4	9	9	6	2	7	2	4	5	3	58
1908	2	7	4	3	3	1	3	6	4	4	8	3	48
1909	5	4	2	8	9	3	5	5	1	7	4	3	56
1910	6	10	4	5	8	14	4	3	13	8	12	9	96
1911	5	9	3	6	7	8	7	5	7	13	10	10	90
1912	8	2	2	5	8	67	10	7	7	6	11	14	147
1913	8	4	10	9	6	6	13	9	5	14	5	4	93
1914	5	9	15	7	9	6	9	11	6	16	12	7	112
1915	15	4	6	9	19	16	4	8	13	8	7	9	118
1916	13	11	11	14	7	12	3	15	11	13	12	8	130
1917	6	9	6	6	18	20	20	8	3	9	12	13	130
1918	9	15	11	8	10	15	13	9	11	17	12	16	146
1919	8	5	10	12	21	8	16	10	12	8	10	12	132
Total	172	149	149	153	159	236	166	155	162	178	178	174	2031

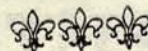
Of the total in June 1912, there were recorded: 6 on the 5th, 6 on the 6th, 17 on the 7th, 14 on the 8th, 9 on the 9th, 6 on the 10th. Total 58. These may not all be different quakes, some may be aftershocks. They were centred in Alaska.

Number of Seismic disturbances with amplitude of 5mm. and over, recorded at Toronto in each year from 1899 to 1919 inclusive.

Year.	5 mm. to 10 mm.	10 mm. to 15 mm.	15 mm. to 25 mm.	25 mm. and over.	Total.
1899	4	2	--	3	9
1900	3	--	2	1	6
1901	4	--	--	--	4
1902	4	--	1	1	6
1903	1	1	--	--	2
1904	2	1	1	--	4
1905	1	1	1	--	3
1906	--	--	4	1	5
1907	2	1	2	--	5
1908	2	--	--	--	2
1909	1	--	--	--	1
1910	1	--	2	--	3
1911	3	1	1	--	5
1912	7	--	1	--	8
1913	1	--	--	--	1
1914	1	--	--	--	1
1915	2	2	--	2	6
1916	4	2	--	1	7
1917	3	2	1	3	9
1918	3	3	--	1	7
1919	4	--	--	1	5
Total.	53	15	17	14	99

Number of Seismic disturbances with amplitude of 5 mm. and over recorded at Toronto from 1899 to 1919 inclusive, showing the months in which they occurred.

Month.	5 mm. to 10 mm.	10 mm. to 15 mm.	15 mm. to 25 mm.	25 mm. and over.
January.	9	--	5	2
February.	2	--	--	1
March.	2	--	1	--
April.	2	3	2	3
May.	3	1	--	1
June.	5	4	2	--
July.	5	1	2	--
August.	3	1	2	3
September.	1	1	1	3
October.	3	--	2	--
November.	6	1	--	--
December.	7	3	--	--



MAGNETIC SUMMARY FOR 1919

Toronto (Agincourt) Observatory. Latitude 43° 47' N. Longitude 79° 16' W.
 Mean values are from hourly measures of the photographic D, H and Z curves. H and Z are given in
 C. G. S. units. I is obtained by formula $H \tan I = Z$.

1919	MEANS.							EXTREMES.					
	D. West		H.		Z		I	D. West		H		Z	
	Mean	Daily range	Mean	Daily range	Mean	Daily range	Mean	Max.	Min.	Max.	Min.	Max.	Min.
January	6 39.0	10.6	.15896	.00036	.58317	.00016	74 45.2	7 27.9	5 52.5	.16001	.15666	.58123	.58143
February	39.6	7.6	.15894	37	.58313	17	45.2	7 11.9	6 06.9	.16158	.15717	.58389	.58117
March	40.2	9.9	.15884	57	.58306	35	45.6	7 15.7	5 46.7	.16238	.15608	.58304	.58167
April	40.4	13.6	.15894	52	.58281	29	44.7	7 07.8	5 55.2	.16041	.15537	.58443	.58062
May	40.2	11.5	.15891	66	.58273	57	44.8	7 54.8	5 32.9	.16170	.15386	.58486	.57946
June	39.9	15.6	.15903	54	.58250	19	43.8	6 59.1	6 12.0	.16001	.15832	.58336	.58160
July	40.2	14.9	.15897	48	.58240	19	43.9	7 00.5	6 10.6	.16018	.15680	.58331	.57978
August	41.8	17.1	.15873	66	.58234	34	45.2	8 45.0	5 01.3	.16248	.15318	.58697	.57718
September	42.2	13.5	.15866	51	.58228	39	45.5	7 34.0	5 56.2	.16122	.15607	.58551	.58077
October	42.5	10.1	.15863	48	.58233	38	45.7	8 17.1	5 50.1	.16346	.15464	.58461	.57844
November	42.5	6.8	.15878	25	.58221	9	44.7	7 07.9	6 15.6	.15922	.15772	.58277	.58154
December	42.9	6.2	.15878	22	.58224	19	44.7	7 35.5	6 08.4	.15916	.15494	.58291	.57904
Year	6 41.0	11.4	.15885	.00047	.58270	.00028	74 44.9						

Phenological Observations, 1919

DATE WHEN FIRST SEEN.

Alder, shedding pollen.	March 24	Plum	"	May 12
Canada Thistle in bloom	June 27	Cherry, wild	"	May 15
Trailing Arbutus	" April 18	Cherry, cultivated	"	May 15
Dandelion	" April 17	Buttercup	"	May 30
Violet, Blue	" May 7	Robins	March	5
Violet, White	" May 14	Meadow Larks	March	18
Columbine	" May 29	Blue Birds.....	March	18
Trees appear green	May 11	Flickers	March	17
Red Clover	" June 6	Song Sparrows.....	March	17
White Clover	" June 5	Bobolinks	May	5
Elm	" April 17	Swallows.....	May	2
Japonica	" May 22	Juncoes (numerous)..	April	5
Pear trees	" May 22	Orioles.....	May	15
Horse Chestnut	" May 30	King Birds	May	18
Canadian Hawthorn	" May 30	Humming Birds.....	May	18
Wild Rose	" June 6	Frogs Piping.....	March	25
Trillium	" May 11	Frost out of ground	March	30
Anemone	" May 18	Rivers open.....	Feb.	15
Maple	" March 26	Ploughing.....	March	20
Strawberry	" May 20	Sowing.....	April	20
Crocus	" March 15	Hay Cutting.....	June	24
Lilac	" May 28	Grain Cutting.....	June	27
Apple trees	" May 26	Potato Planting.....	April	10

Harbor Notes.

The following table gives the dates on which the ice formed
and left Toronto harbor for the past thirty years.

(This table has been kindly furnished by the Toronto Harbor Master.)

Winter	Frozen over	Clear of ice	No. of days
1889-90	March 1st	" 15th	14
1890-91	January 4th	" 20th	75
1891-92	" 5th	" 31st	86
1892-93	December 22nd	April 7th	106
1893-94	" 30th	March 11th	71
1894-95	" 23rd	April 7th	105
1895-96	" 9th	March 28th	110
1896-97	" 22nd	" 11th	79
1897-98	" 24th	" 16th	82
1898-99	" 13th	April 8th	116
1899-00	" 28th	" 8th	101
1900-01	" 14th	" 6th	113
1901-02	" 6th	March 20th	104
1902-03	" 15th	" 15th	90
1903-04	" 14th	April 22nd	130
1904-05	" 11th	" 5th	115
1905-06	January 8th	" 1st	83
1906-07	December 8th	March 28th	110
1907-08	January 28th	" 29th	61
1908-09	" 7th	" 31st	83
1909-10	December 29th	" 20th	81
1910-11	" 10th	" 31st	111
1911-12	January 6th	April 16th	101
1912-13	" 9th	March 20th	70
1913-14	" 14th	April 2nd	78
1914-15	December 15th	" 2nd	108
1915-16	" 27th	" 3rd	98
1916-17	" 11th	March 28th	107
1917-18	" 11th	April 5th	115
1918-19	January 5th	January 9th	4
Longest time frozen, 1831-32		Nov. 10th to Apr. 15th,	162 days
Shortest " " 1918-19		January 5th to 9th.	4 "