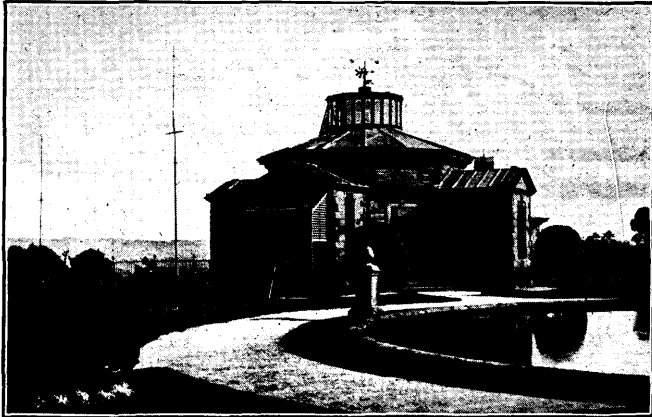


STONYHURST COLLEGE OBSERVATORY.

Lat. $53^{\circ} 50' 40''$ N. Long. $9^{\text{m}} 52^{\text{s}}.68$ W.
Height of the Barometer above the Sea, 381 feet.



(FOUNDED 1838.)

Results of Meteorological and Magnetical Observations,

1920.

With Report and Notes of the Director,

REV. A. L. CORTIE, S.J., F.R.A.S., F. Inst. P.

BLACKBURN:
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1921.

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REPORT AND NOTES.

General.—The Observatory has sustained a very great loss by the death on May 18th of Brother William McKeon. A short obituary notice is appended to these notes.

The Staff, as reconstituted, consists, besides the Director, of Father J. Rowland, S.J., B.Sc. (Lond.), F.R.A.S., and the Rev. H. Macklin, S. J., B.Sc. (Oxon.). Mr. Joseph Burns performs the duties of Meteorological Clerk.

All the instruments, which are under the care of Father Rowland, are in good working order.

Meteorological.—The Meteorological continuous records have been uninterrupted during the year.

The Anemograph stands about 45 feet above the ground. A velocity of the wind of 37 miles per hour and over is called a gale.

Bright sunshine is recorded by a Campbell-Stokes Recorder.

The self-recording Rain Guage is of the Beckley pattern. Its receiving surface is 22 inches above the ground, and 377 feet above sea-level. The daily measures are taken at 10 a.m. for the preceding 24

hours. Heavy rain noted in the monthly tabulations, signifies a fall of $\frac{1}{2}$ inch or over during the day. The rainfall values as printed in the monthly tables were registered not by the Beckley Self-Recorder but by the M.O. 8-inch gauge.

The Barometer is a standard barometer of the pattern approved by the Meteorological Office. It is mounted in the underground Magnetic Chamber. Its cup is 363 feet above sea-level. Its readings in the monthly tables are quoted for the density of mercury at 32° Fahr., and for the original position of the barometer at 381 feet above sea-level; and the mean pressures are corrected for diurnal range.

The Thermometers are the property of the Meteorological Office. They are mounted at 7 feet above the ground on the north side of the Observatory, enclosed in a Stevenson Screen. All the readings are corrected for index errors, as determined by the Office-standards.

The *monthly mean temperature* is derived in two ways: 1st, from the mean of the highest and lowest daily readings corrected by the average difference between this mean and the true mean of the hourly tabulations; and 2nd, from the mean of the readings at 9 a.m. and 9 p.m. corrected in the same manner. Both corrections have been furnished by the Greenwich records, and are taken from the well-known Glaisher's tables. The *Adopted mean temperature* is the mean of these two results.

The photographic barograph and thermograph were installed at Stonyhurst in the year 1866. In that year

the Meteorological Office had been transferred from the Board of Trade to a Committee of the Royal Society. Seven observatories, among them Stonyhurst, were equipped with self-recording instruments of uniform pattern to provide materials for the scientific study of the weather. The experiment terminated in 1884. But the photographic instruments had been retained, and furnished continuous records until the middle of 1918, when they were supplanted by metallic-pen self-recording barograph and thermograph of the M.O. pattern, and a Richard hair hygrometer. The photographic barograph and thermograph were dismantled, and returned to the M.O. in September, 1919.

The weather of the year as a whole was drier and slightly milder than the normal (*see Summary, p. 25*). January and December were the coldest months. There was a very great deficiency of bright sunshine, the hours registered being 218 hours less than the normal. It was deficient from March to September, but most markedly so in the months of April, July, August, and September. The rainfall for the year was 1.2 inches below the average for the last 73 years, or 97 per cent. of the average. The three relatively wettest months were May, July, and January. October was the driest month, with a record for the least number of rainy days.

Temperature in the shade reached 70° or over on seven days only, viz., three days in May, and four in June.

Heavy rainfalls of 1 inch or over in 24 hours occurred on only three days of the year, viz., February 9th, May 5th, and 29th.

Fine dry periods of five days or over were recorded as follows:—January 1st—6th, February 1st—6th, 16th—20th, March 16th—23rd, April 25th—30th, May 1st—4th, 7th—15th, 20th—25th, June 1st—10th, 15th—24th, 26th—30th, July 6th—11th, September 26th—30th, October 5th—14th, 16th—30th, November 18th—26th, December 14th—20th. Total 17 periods, average duration eight days.

Bright sunshine lasting for 10 hours or over was recorded on one day in March, one in April, seven days in May, seven in June, two in July, and two in September. May 24th and June 9th were the sunniest days of the year, each with 15 hours duration.

The prevailing direction of the wind was Westerly. Thirteen gales of wind, 37 miles and over, were registered, as set forth in the Table p. 29. That of December 3rd was the most violent, when a velocity of 50 miles per hour was registered.

Magnetical.—The Differential Photo-Magnetographs are of the same pattern as those at the Kew Observatory, except that the radial distances between the centres of the magnets and the surfaces of the respective cylinders are somewhat shorter. Time marks on the curves are now made at set hours by hand, controlled by the wireless time signals from Paris.

The scale values of the instruments are as follows :

For the Unifilar ...	11·28'	per Cm. of Ordinate.
„ Bifilar ...	·00052 C.G.S.	„ „
„ Balance ...	·00072	„ „

In connection with these, absolute measures of Horizontal Direction and Force have been made regularly ; of the former four times, and of the latter once in each month. These have been corrected by the difference between the curve ordinate at the time of observation and the monthly mean of the four daily readings, according to the rule stated on page xii. of our Report, 1908 ; but the month-means are now taken from the readings on the five quietest days of the month.

The inclination, or Dip, has been observed once each month by two needles with Dover's circle No. 159.

The Vertical and Total Forces are deduced from the measures of the Horizontal Force, and the Angle of Inclination or Dip,

In the table of magnetic disturbances (*page 38*) the intention is that a *calm* (c) shall mean a smooth curve ; *small* (s) a disturbance noteworthy only as opposed to a calm ; *moderate* (m) a disturbance not to be neglected for any comparison with other phenomena, solar or terrestrial, and worth a reference to the original curve ; *greater* (g) a marked disturbance ; and *very great* (v.g.) a decided storm.

Corresponding tabulations are sent quarterly to the Meteorological Institute at De Bilt (Holland), for the International Committee on Terrestrial Magnetism. In these the significant notes are restricted to three—0, 1, 2.

The astronomical day is now suppressed, and the civil day is used for both the international figures, 0, 1, 2, and our own characteristic letters.

The general returns from the Bureau show some discordance between the interpretations of different authorities; and it may be well to state the rule followed at this Observatory.

From the measured ranges of D and H in minutes of arc on the five quietest days of a month a mean value is obtained of D and H combined. Similarly for each day of the month a mean value in minutes of arc of the range of D and H combined is set down. The excess of this mean daily range over the mean for the five quietest days gives the magnetic character of the day. The following values are adopted for the table of magnetic disturbances:—Stonyhurst 0 to 2 calm, 2 to 7 small, 7 to 15 moderate, 15 to 20 great, above 20 very great; International, 0 to 5, 0; 5 to 15, 1; above 15, 2. The magnetic characters therefore depend on the excess amplitudes of the ranges of D and H combined, over the mean amplitude of the range derived from the five quietest days. Further, an inspection of the curves helps to discriminate the character of the disturbance.

There was a decided fall in the mean daily ranges of the Declination and Horizontal Force Magnets, as compared with those for 1919, whether the means be considered for all days, or for the five quiet days of each month. A smoothed curve, for the excess of the ranges for all days in H over those for the quiet days, shows the gradual decrease in amplitude, and a close correspondence with a similar curve for the mean daily disc-areas of sun-spots. In our last report we noted the exceptionally violent magnetic storm of 1919, August 11th—12th. It was exceeded by that of March 22nd—23rd of the present year, a storm of

extreme violence. The ranges in the three magnetic elements were very great, in H over 700 units, as the spot of light went beyond the limits of registration; in V greater than 900 units; and in D the very unusual range of $2^{\circ} 40'$. A full description of this storm was communicated to *Nature* for April 1st, 1920. It was accompanied by a brilliant display of Aurora Borealis.

Astronomical.—The wireless time-signals have been taken regularly during the year from the Eiffel Tower, and the errors and daily rates of the standard chronometer and sidereal clock have been determined by their means. The Brown relay has worked most effectively. The time-service is in charge of Father Rowland, the chief assistant.

Observations of the solar surface were made on 207 days, and include 205 drawings on 202 days, and notes on uncompleted drawings on five other days. Of these drawings 189 on 188 days show all spots and faculæ, and the remaining 16 are complete for the spots, but not for the faculæ.

The mean daily disc-area of the spots (in units of $\frac{1}{3000}$ th of the visible surface), stands at 4.05. A comparison of the mean disc-area of the spots with the mean daily range of magnetic Declination in minutes of arc, and of horizontal force in units 10^{-5} C.G.S., is set forth as follows:—

Year.....	1915	1916	1917	1918	1919	1920
Spot Area	4.51	4.52	12.1	7.9	8.4	4.05
Declination range	11.7	12.1	11.8	12.4	12.7	11.2
Horizontal Force						
Range	58	63	59	69	66	57

The sun-spot activity which had revived in 1919, shows a very considerable decline. But the revival of 1919 was maintained in the earlier months of 1920, and especially in a disturbed area, mean latitude -6° , and extending in longitude from 114° to 150° , which was active from December 27th, 1919, to May 16th, 1920. The very great spots of January 28th (18·3 units), and of March 23rd (25·8 units) were phases of this disturbance. The same region was again disturbed, when a large group, latitude $-11\cdot6^{\circ}$, and longitude $130\cdot1^{\circ}$ crossed the sun's disc from September 21st to October 4th, attaining an area of 9·4 units on September 26th. The following sequence of magnetic disturbances, at 27 day intervals, accompanied presumably the successive appearances of the disturbed spot region, January 1st moderate, January 28th moderate, February 24th very great, March 22nd exceptionally great, April 18th moderate, May 15th moderate. There was also a very great disturbance on September 22nd, when the region was again active. Two other noteworthy groups appeared, the one at the beginning of September, latitude $-14\cdot8^{\circ}$, longitude $108\cdot9^{\circ}$, its disc-area on September 6th being 10 units, and the other, which appeared on October 31st, and passed off the disc on November 11th, in latitude $-10\cdot9^{\circ}$, longitude $346\cdot4^{\circ}$, reached a maximum area of 11·2 on November 5th. The greatest activity therefore persisted in the sun's S. hemisphere.

There were four spotless days in 1920, September 17th—20th, the first recorded since August 26th, 1916. The occurrence, too, of faint polar faculæ heralds the approach of a sun-spot minimum.

Through the kindness of the Astronomer Royal, in

furnishing disc-areas of spots from the Greenwich records, distributed over the years 1919, 1920, we have been able to test the consistency of our measures with the change of observer. The observations and reductions are now under the charge of the Rev. H. Macklin.

The results of the comparison of the drawings of faculæ and of spectroheliograms of flocculi on the same days, were communicated to the British Association at its meeting at Cardiff. (*The Observatory*, November, 1920). The agreement of the two phenomena in extent and even in details is very close. We must conclude that the faculæ are the bases of the calcium flocculi.

A satisfactory series of spectrograms of Nova Cygni III, chiefly with the Whitelov prismatic camera was obtained. Preliminary results from measurements of the plates have been presented to the R.A.S. The Hilger direct vision spectroscope has been readjusted, and a series of spectrograms of some of the brighter stars has been secured in the red end of the spectrum, to supplement our collection of spectrograms of their more refrangible regions.

Seismological.—The Milne horizontal pendulum photographic seismograph has worked satisfactorily throughout the year. A copy of its register is sent monthly to the Secretary of the Seismological Committee of the British Association. Bulletins have been despatched at regular intervals to the seismic stations at home and abroad.

The following papers have been published during the year :—

1. Sun-Spot Areas and Terrestrial Magnetic Horizontal Ranges and Disturbances. The Observatory, 43, 550.
2. Magnetic Storm and Associated Phenomena. Nature, April 1st, 1920.
3. The Great Sun-Spot Group, and the Magnetic Storm, 1920, March 22nd—23rd. Monthly Notices, R.A.S., 80, 574.
4. The Spectrum of Nova Cygni III. Ibid., 81, 57.
5. Comparison of Drawings of Solar Faculæ and Spectroheliograms of Calcium Flocculi. The Observatory, 43, 558.

Our grateful thanks are tendered to those Governments, Institutions, and individuals, who, by presentations, have kindly contributed to the Library during the year.

BROTHER WILLIAM McKEON, S.J.

The death of Brother William McKeon took place on May 18th, after a short illness of a week, by an attack of pneumonia, brought on by exposing himself in the Observatory, in chilly and unseasonable weather, in his anxiety not to miss a drawing of the sun. He was born on June 8th, 1851, so that at the time of his death, he had nearly completed his 69th year. He joined the noviciate of the Society of Jesus on September 7th, 1870.

He was attached to the Observatory Staff in 1878, when Father Perry was Director of the Observatory, so that his assistantship stretched over 42 years. Although he was of delicate health, yet he was an assiduous worker, keenly interested in and greatly devoted to his duties at the Observatory. Possessed of an artistic temperament, he was a most painstaking, conscientious, and accurate draughtsman. He was also an expert photographer.

In 1881, Father Perry inaugurated a series of solar drawings, as part of the routine work of the Observatory, which has been maintained ever since. Except for several periods, during which Brother McKeon's health prevented him from undertaking the observations, the greater part of the entire series of drawings is his work. All competent judges have

borne witness to the excellence of these drawings, and especially of their exact fidelity to nature. They have been frequently exhibited at the soirées of the Royal Society, at the Royal Astronomical Society, and, in photographic reproductions, at the Royal Photographic Society.

He was no merely mechanical draughtsman, for he frequently suggested subjects for research in solar physics, which were subsequently embodied in scientific papers written by members of the Observatory staff.

He measured, too, on the micrometer, hundreds of plates of the spectra of stars, with meticulous care. The beautiful photographic enlargements of many of the stellar spectra, taken by Father Sidgreaves, which have appeared in astronomical publications, were due to his expert skill. His, too, was the responsibility for the reductions of the meteorological observations, and for the preparation of that portion of the annual report of the Observatory. He was likewise trained to take the magnetic observations, when necessary, and did a good deal of the computations connected with them. His duties at the Observatory also included the care of the library.

As an observer he was careful, cautious, and extremely accurate. The writer can bear testimony from a long experience that he never produced a slipshod piece of work. One could trust his measures absolutely.

In 1911 Brother McKeon accompanied Father Cortie on the Government Eclipse Expedition to observe

the total solar eclipse in the Tonga Islands of the South Pacific. The Admiralty had placed the light cruiser *Encounter* at the services of the astronomers. His charming simplicity made Brother McKeon a great favourite with the officers of the ship. What the sailors thought of him can be gathered from a description in "The Log of H.M.S. *Encounter*, 1910—12," written by the first-class petty officer Herbert Wilson: "Brother McKeon is known as Professor Radium, on account, I suppose, of his studious and scholastic mannerisms"; and again, "Brother McKeon is 65 years of age (it should have been 60), but works like one 40 years younger." Owing to clouds on the eventful day, the success of the expedition was partial and limited, but all the adjustments of Brother McKeon's instrument were in perfect order.

In his religious life Brother McKeon was a model of piety, of goodness, and of exactitude to rule—R.I.P.



METEOROLOGICAL REPORT.

JANUARY, 1920.

Results of Observations taken during the Month.		Mean for the last 73 years.						
Mean Reading of the Barometer	inches 29·352	29·484						
Highest " " on the 5th...	" 30·224	30·129						
Lowest " " on the 11th...	" 28·286	28·577						
Range of Barometer Readings.....	" 1·938	1·552						
Highest Reading of a Max. Therm. on the 17th...	53·6	51·3						
Lowest Reading of a Min. Therm. on the 6th	26·0	21·5						
Range of Thermometer Readings	27·6	29·8						
Mean of Highest Daily Readings	44·5	42·4						
Mean of Lowest Daily Readings	35·3	33·1						
Mean Daily Range	9·2	9·3						
Deduced Mean Temp. (from mean of Max. and Min.)	39·7	37·5						
Mean Temperature from Dry Bulb	40·9	37·7						
Adopted Mean Temperature	40·3	37·6						
Mean Temperature of Evaporation	39·0	36·3						
Mean Temperature of Dew Point	37·3	34·2						
Mean elastic force of Vapour.....inches	0·223	0·199						
Mean weight of Vapour in a cub. ft. of air, grains	2·6	2·4						
Mean additional weight required for saturation ,,	0·4	0·4						
Mean degree of Humidity (saturation 100)	90	87						
Mean weight of a cubic foot of air	543·9	549·5						
Mean amount of Cloud (0—10)	7·7	7·8						
Fall of Rain	inches 4·885	4·230						
Greatest Rainfall in one day (10th)	" 0·950	0·827						
No. of days on which ·005 in. or more Rain fell...	22	19·3						
Wind:—Direction.....	N	NE	E	SE	S	SW	W	NW
No. of days.....	1	2	1	1	7	3	15	1
Mean Velocity in miles per hr.	5·8	4·3	5·9	12·9	17·5	9·5	15·5	17·5
Total No. of miles	139	207	142	310	2944	687	5571	420
Total No. of miles registered	10420						Mean*	
Greatest hourly velocity (27th, 1-30 p.m., Dir. S. by E....	50						41·4	

* For the last 53 years.

JANUARY, 1920.

DIFFERENCES.

The signs + and — mean respectively above and below the
MONTHLY average.

Mean barometric pressure	...	...	...	—	0.132 in.
Monthly range	..	..	..	+	0.386 in.
Mean of highest daily temperatures	...	...	...	+	2.1°
Mean of lowest	..	..	..	+	2.2°
Mean daily range	...	...	...	—	0.1°
Adopted mean temperature	...	...	...	+	2.7°
Total rainfall	...	...	...	+	0.655 in.

Ground Frost on 1st—7th, 9th, 10th, 14th, 15th, 22nd, 25th—30th. Heavy Rain on 9th, and 10th. Hail on 2nd, 9th, 10th, 13th, 18th, 19th, 29th. Snow on 9th, 13th, 14th, and 29th. Lightning on 11th. Hoar Frost on 6th and 7th. Fog on 11th. Gales of wind on 8th, 11th, 24th, 27th, 29th and 30th.

EXTREME READINGS FOR JANUARY,

During 73 Years.

Highest reading of Barometer	...	1896 (9th)	.....	30.597 in.
Lowest	..	..	...	1884 (26th) .....27.803 in.
Highest temperature	...	...	1877 (7th)	..... 59.9°
Lowest	..	..	...	1881 (15th) 4.6°
Highest adopted mean temperature	...	...	1916	..... 44.7°
Lowest	..	..	...	1881 29.2°
Greatest fall of rain	...	...	1910	..... 8.403 in.
Least	..	..	...	1881 0.472 in.
Greatest fall of rain in one day	...	1914 (8th)	.....	2.074 in.
Greatest No. of days on which .005 in. or more rain fell	...	1890	.....	30
Least	..	..	...	†1850 8
*Greatest hourly velocity of wind	...	1899 (12th)	.....	63 mls.
*Greatest No. of miles registered	...	1890	.....	11661
*Least	..	..	...	1881 4352

* Since 1867 only.

† And in other years.

B

FEBRUARY, 1920.

Results of Observations taken during the Month.	Mean for the last 73 years.							
Mean Reading of the Barometer inches	29·676	29·493						
Highest " " on the 5th... "	30·240	30·101						
Lowest " " on the 10th... "	29·024	28·656						
Range of Barometer Readings..... "	1·216	1·445						
Highest Reading of a Max. Therm. on the 17th	55·6	51·9						
Lowest Reading of a Min. Therm. on the 6th ..	27·7	22·4						
Range of Thermometer Readings	27·9	29·5						
Mean of Highest Daily Readings	47·0	44·0						
Mean of Lowest Daily Readings	37·0	33·5						
Mean Daily Range	10·0	10·5						
Deduced Mean Temp. (from mean of Max. & Min.)	41·6	38·2						
Mean Temperature from Dry Bulb	42·8	38·4						
Adopted Mean Temperature	42·2	38·3						
Mean Temperature of Evaporation	40·9	36·8						
Mean Temperature of Dew Point	39·4	34·5						
Mean elastic force of Vapour inches	0·241	0·195						
Mean weight of Vapour in a cub. ft. of air, grains	2·8	2·4						
Mean additional weight required for saturation ,,	0·4	0·4						
Mean degree of Humidity (saturation 100)	90	86						
Mean weight of a cubic foot of air grains	547·6	548·6						
Mean amount of Cloud (0—10)	6·8	7·5						
Fall of Rain inches	3·875	3·520						
Greatest Rainfall in one day (9th) ,,	1·545	0·767						
No. of days on which ·005 in. or more Rain fell...	13	16·8						
Wind :—Direction.....	N	NE	E	SE	S	SW	W	NW
No. of days.....	3	3	0	2	4	6	10	1
Mean Velocity in miles per hr.	4·0	5·1	0	5·1	10·0	13·6	17·1	3·3
Total No. of miles.....	281	417	0	245	963	1965	4112	78
								Mean*
Total No. of Miles registered	8061							7549·9
Greatest hourly velocity (11th. at 2 a.m., Dir. W.)...	37							41·4

* For the last 53 years.

FEBRUARY, 1920.

DIFFERENCES.

The signs + and — mean respectively above and below the MONTHLY average.

Mean barometric pressure	...	...	...	+	0·183 in.
Monthly range	..	..	..	—	0·229 in.
Mean of highest daily temperatures	...	...	...	+	3·0°
Mean of lowest	..	..	..	+	3·5°
Mean daily range	...	...	...	—	0·5°
Adopted mean temperature	...	...	...	+	3·9°
Total rainfall	...	...	...	+	0·355 in.

Ground Frost on 5th—8th, 16th, 20th—22nd, 24th and 28th.
 Hoar Frost on 5th, 22nd, and 24th. Heavy Rain on 9th and 19th.
 Snow on 19th and 20th. Gale of wind and rain on 11th.

EXTREME READINGS FOR FEBRUARY,

During 73 Years.

Highest reading of Barometer	...	1902 (1st)	.....	30·476 in.
Lowest	..	1900 (19th)	.....	27·870 in.
Highest temperature	.....	1877 (8th)	.....	58·3°
Lowest	..	1902 (11th)	.....	5·0°
Highest adopted mean temperature	.....	1869	.....	44·0°
Lowest	..	1855	.....	28·6°
Greatest fall of rain	.....	1848	.....	8·882 in.
Least	..	1858	.....	0·306 in.
Greatest fall of rain in one day	...	1909 (3rd)	.....	2·000 in.
Greatest No. of days on which				
·005 or more rain fell	.....	1910	.....	27
Least	..	1855	.....	4
*Greatest hourly velocity of wind	...	1903 (27th)	.....	60 mls..
*Greatest No. of miles registered	...	1868	.....	12577
*Least	..	1917	.....	3160

* Since 1867 only.

MARCH, 1920.

Results of Observations taken during the Month.	Mean for the last 73 years.							
Mean Reading of the Barometer inches	29·429	29·446						
Highest " " on the 3rd ... "	30·164	30·045						
Lowest " " on the 15th ... "	28·354	28·641						
Range of Barometer Readings	1·810	1·404						
Highest Reading of a Max. Therm. on the 30th	60·7	56·8						
Lowest Reading of a Min. Therm. on the 8th...	22·4	23·2						
Range of Thermometer Readings	38·3	33·6						
Mean of Highest Daily Readings	49·7	46·9						
Mean of Lowest Daily Readings	38·4	34·3						
Mean Daily Range	11·3	12·6						
Deduced Mean Temp. (from mean of Max. & Min.)	43·1	39·7						
Mean Temperature from Dry Bulb	45·2	40·3						
Adopted Mean Temperature	44·2	40·0						
Mean Temperature of Evaporation	42·7	38·1						
Mean Temperature of Dew Point	40·9	35·7						
Mean elastic force of Vapour inches	0·257	0·209						
Mean weight of Vapour in a cub. ft. of air, grains	2·9	2·4						
Mean additional weight required for saturation ..	0·4	0·5						
Mean degree of Humidity (saturation 100).....	88	85						
Mean weight of a cubic foot of air grains	540·9	546·1						
Mean amount of Cloud (0—10)	7·9	7·5						
Fall of Rain	4·214	3·412						
Greatest Rainfall in one day (24th)	0·785	0·777						
No. of days on which ·005 or more Rain fell...	23	16·9						
Wind :—Direction	N	NE	E	SE	S	SW	W	NW
No. of Days.....	1	3	0	1	9	3	9	5
Mean Velocity in miles per hr.	10·3	4·9	0	1·6	14·7	9·8	13·1	12·5
Total No. of miles.....	247	352	0	39	3184	703	2924	1503
Total No. of Miles registered	8952						Mean*	
Greatest hourly velocity (26th at 2 p.m., Dir. S. b W.)	45						8481·5	
							40·8	

* For the last 53 years.

MARCH, 1920.

DIFFERENCES.

The signs + and — mean respectively above and below the MONTHLY average.

Mean barometric pressure	...	...	...	—	0·017 in.
Monthly range	"	...	...	+	0·406 in.
Mean of highest daily temperatures	...	...	...	+	2·8°
Mean of lowest	"	"	...	+	4·1°
Mean daily range	...	...	...	—	1·3°
Adopted mean temperature	...	...	...	+	4·2°
Total rainfall	...	...	...	+	0·802 in.

Ground Frost on 3rd, 7th—9th, 12th—15th, 22nd, 26th, and 27th. Hail on 7th, 8th, 12th—14th, 24th, 26th. Snow on 8th and 15th. Heavy Rain on 24th and 26th. Gales of wind on 26th and 28th. Aurora 22nd.

EXTREME READINGS FOR MARCH, During 73 Years.

Highest reading of Barometer	...	1854 (4th)	.....	30·452 in.
Lowest	"	1876 (10th)	.....	28·100 in.
Highest temperature	.....	1871 (25th)	.....	68·0°
Lowest	"	1874 (10th)	.....	11·1°
Highest adopted mean temperature	.....	1920	.....	44·2°
Lowest	"	1883	.....	34·4°
Greatest fall of rain	.....	1912	.....	7·205 in.
Least	"	1852	.....	0·352 in.
Greatest fall of rain in one day	...	1898 (17th)	.....	1·540 in.
Greatest No. of days on which				
·005 in. or more rain fell	...	†1861	.....	28
Least	"	1852	.....	3
*Greatest hourly velocity of wind	...	1905 (15th)	.....	57 mls.
*Greatest No. of miles registered	...	1903	.....	12773
*Least	"	1892	.....	5725

* Since 1867 only. † And 1914.

APRIL, 1920.

Results of Observations taken during the Month.		Mean for the last 73 years.						
Mean Reading of the Barometer	inches 29.236	29.486						
Highest " " on the 23rd ... "	29.793	29.957						
Lowest " " on the 15th ... "	28.580	28.792						
Range of Barometer Readings	" 1.213	1.165						
Highest Reading of a Max. Therm. on 19th & 23rd	56.5	64.8						
Lowest Reading of a Min. Therm. on the 17th...	34.6	28.1						
Range of Thermometer Readings	21.9	36.7						
Mean of Highest Daily Readings	50.1	54.6						
Mean of Lowest Daily Readings	40.8	37.8						
Mean Daily Range	9.3	16.8						
Deduced Mean Temp. (from mean of Max. & Min.)	44.0	44.0						
Mean Temperature from Dry Bulb	45.7	44.7						
Adopted Mean Temperature	44.9	44.4						
Mean Temperature of Evaporation	42.9	41.7						
Mean Temperature of Dew Point	40.6	38.3						
Mean elastic force of Vapour	inches 0.253	0.235						
Mean weight of Vapour in a cub. ft. of air, grains	2.9	2.7						
Mean additional weight required for Saturation ..	0.5	0.7						
Mean degree of Humidity (saturation 100).....	86	80						
Mean weight of a cubic foot of air	grains 536.6	542.1						
Mean amount of Cloud (0—10)	8.5	6.8						
Fall of Rain	inches 5.360	2.584						
Greatest Rainfall in one day (28th)	" 0.746	0.589						
No. of days on which .005 in. or more Rain fell...	27	14.9						
Wind :—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	3	6	2	2	3	3	8	3
Mean Velocity in miles per hr.	6.4	6.9	9.5	14.4	10.4	18.3	12.4	14.0
Total No. of Miles.....	460	991	455	691	747	1315	2374	1010
Total No. of Miles registered	8043	Mean*						
Greatest hourly velocity (25th. at Noon, Dir. W.)	31	7561.5	36.4					

* For the last 53 years.

APRIL, 1920.

DIFFERENCES.

The signs + and — mean respectively above and below the MONTHLY average.

Mean barometric pressure	...	...	...	—	0.250 in.
Monthly range	"	...	...	+	0.048 in.
Mean of highest daily temperatures	...	...	...	—	4.5°
Mean of lowest	"	"	...	+	3.0°
Mean daily range	...	...	...	—	7.5°
Adopted mean temperature	...	...	...	+	0.5°
Total rainfall	...	...	...	+	2.776 in.

Ground Frost on 17th, 18th, 22nd, 28th—30th. Heavy Rain on 9th, 26th and 27th. Hail on 28th. Thunder on 17th and 28th. Lightning on 28th.

EXTREME READINGS FOR APRIL,

During 73 Years.

Highest reading of Barometer	...	1906 (8th)	.....	30.317 in.
Lowest	"	1919 (14th)	.....	28.250 in.
Highest temperature	.....	1852 (14th)	.....	74.1°
Lowest	"	1917 (2nd)	.....	13.6°
Highest adopted mean temperature	.....	1865	.....	48.5°
Lowest	"	1917	.....	39.8°
Greatest fall of rain	.....	1867	.....	5.672 in.
Least	"	1852	.....	0.478 in.
Greatest fall of rain in one day	...	1913 (26th)	.....	1.180 in.
Greatest No. of days on which .005 in. or more rain fell	.....	1920	.....	27
Least	"	1852	.....	4
*Greatest hourly velocity of wind	...	1911 (19th)	.....	53 mls.
*Greatest No. of miles registered	.....	1904	.....	11016
*Least	"	1884	.....	5047

* Since 1867 only.

MAY, 1920.

Results of Observations taken during the Month.		Mean for the last 73 years.						
Mean Reading of the Barometer	inches 29.553	29.543						
Highest " " on the 4th ...	" 30.126	29.993						
Lowest " " on the 2nd ...	" 28.860	28.954						
Range of Barometer Readings	" 1.266	1.039						
Highest Reading of a Max. Therm. on the 25th ...	75.0	72.0						
Lowest Reading of a Min. Therm. on the 1st	35.7	32.0						
Range of Thermometer Readings	39.3	40.0						
Mean of Highest Daily Readings	58.3	59.5						
Mean of Lowest Daily Readings	45.4	42.5						
Mean Daily Range	12.9	17.0						
Deduced Mean Temp. (from mean of Max. & Min.)	50.2	49.2						
Mean Temperature from Dry Bulb	51.9	50.1						
Adopted Mean Temperature	51.1	49.7						
Mean Temperature of Evaporation	48.6	46.5						
Mean Temperature of Dew Point	46.0	43.0						
Mean elastic force of Vapour	inches 0.312	0.280						
Mean weight of Vapour in a cub. ft. of air, grains	3.5	3.1						
Mean additional weight required for saturation ..	0.7	0.9						
Mean degree of Humidity (saturation 100).....	83	77						
Mean weight of a cubic foot of air	grains 535.3	537.0						
Mean amount of Cloud (0—10).....	7.6	7.0						
Fall of Rain	inches 6.511	2.700						
Greatest Rainfall in one day (29th)	" 1.440	0.645						
No. of days on which .005 in. or more Rain fell...	20	14.5						
Wind:—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	0	2	5	1	0	9	14	0
Mean Velocity in miles per hr.	0	5.7	8.6	7.8	0	11.8	12.7	0
Total No. of miles.....	0	273	1032	188	0	2545	4270	0
Total No. of Miles registered	8308	Mean*						
Greatest hourly velocity (3rd, Midnight, Dir. W.S.W.....)	37	6956.1	32.7					

* For the last 53 years.

MAY, 1920.

DIFFERENCES.

The signs + and — mean respectively above and below the MONTHLY average.

Mean barometric pressure	...	...	...	+	0·010 in.
Monthly range	..	...	...	+	0·227 in.
Mean of highest daily temperatures	...	...	...	—	1·2°
Mean of lowest	..	..	...	+	2·9°
Mean daily range	...	...	...	—	4·1°
Adopted mean temperature	...	...	...	+	1·4°
Total rainfall	...	...	...	+	3·811 in.

Ground Frost on 1st, 5th, 8th and 10th. Heavy Rain on 5th, 18th, and 29th. Fog on 27th. Hail on 3rd, 4th, 18th, and 28th. Thunder on 2nd, 25th, and 29th. Lightning on 29th. Gale of wind on 3rd.

EXTREME READINGS FOR MAY,

During 73 Years.

Highest reading of Barometer	...	1881 (10th)	.....	30·332 in.
Lowest	..	1887 (28th)	.....	28·559 in.
Highest temperature	.....	1864 (19th)	.....	82·5°
Lowest	..	1855 (4th)	.....	23·5°
Highest adopted mean temperature	.....	1848	.....	55·1°
Lowest	..	1855	.....	45·0°
Greatest fall of rain	.....	1920	.....	6·511 in.
Least	..	1859	.....	0·249 in.
Greatest fall of rain in one day	...	1881 (5th)	.....	1·647 in.
Greatest No. of days on which				
.005 in. or more rain fell	...†	1860	.....	22
Least	..	1848	.....	4
*Greatest hourly velocity of wind	.....	1888 (2nd)	.....	49 mls.
*Greatest No. of miles registered	...	1888	.....	9648
*Least	..	1918	.....	5113

* Since 1867 only.

† And in other years.

JUNE, 1920.

Results of Observations taken during the Month.		Mean for the last 73 years.							
Mean Reading of the Barometer	inches 29·605	29·557							
Highest " " on the 23rd ... "	" 29·977	29·936							
Lowest " " on the 29th ... "	" 29·210	29·039							
Range of Barometer Readings	" 0·767	0·897							
Highest Reading of a Max. Therm. on the 17th...	75·6	76·8							
Lowest Reading of a Min. Therm. on the 5th...	39·1	39·1							
Range of Thermometer Readings	36·5	37·7							
Mean of Highest Daily Readings	64·0	65·3							
Mean of Lowest Daily Readings	49·8	48·1							
Mean Daily Range	14·2	17·2							
Deduced Mean Temp. (from mean of Max. & Min.)	55·1	54·9							
Mean Temperature from Dry Bulb	56·2	55·3							
Adopted Mean Temperature	55·7	55·1							
Mean Temperature of Evaporation	51·8	51·9							
Mean Temperature of Dew Point	48·1	48·4							
Mean elastic force of Vapour	inches 0·339	0·348							
Mean weight of Vapour in a cub. ft. of air, grains	3·8	3·9							
Mean additional weight required for saturation ..	1·2	1·0							
Mean degree of Humidity (saturation 100)	76	78							
Mean weight of a cubic foot of air	grains 531·6	531·2							
Mean Amount of Cloud (0—10).....	7·0	7·2							
Fall of Rain	inches 2·563	3·365							
Greatest Rainfall in one day (27th)	" 0·546	0·805							
No. of days on which '005 in. or more Rain fell...	15	15·3							
Wind :—Direction	N	NE	E	SE	S	SW	W	NW	
No. of days.....	0	2	11	1	4	2	9	1	
Mean Velocity in miles per hr.	0	5·0	7·6	7·9	9·2	10·4	9·7	11·6	
Total No. of miles.....	0	239	2008	189	881	500	2093	279	
Total No. of Miles registered		6189		Mean*		6169·5			
Greatest hourly velocity (2nd, 3 p.m., Dir. N.W.)		25					29·3		

* For the last 53 years

JUNE, 1920.

DIFFERENCES.

The signs + and — mean respectively above and below the
MONTHLY average.

Mean barometric pressure	...	...	...	...	+	0·060 in.
Monthly range	"	...	...	...	—	0·130 in.
Mean of highest daily temperatures	...	...	...	...	—	1·3°
Mean of lowest	"	"	...	...	+	1·7°
Mean daily range	...	...	...	...	—	3·2°
Adopted mean temperature	...	...	...	...	+	0·6°
Total rainfall	...	...	...	...	—	0·802 in.

Heavy Rain on 27th. Thunder heard on 13th, 14th, 16th, 17th, 18th, and 19th. Lightning on 13th, 16th, 18th. Solar Halo on 5th.

EXTREME READINGS FOR JUNE,

During 73 Years.

Highest reading of the Barometer	1874 (15th)	.....	30·219 in.
Lowest	"	"	1862 (12th) .....28·632 in.
Highest temperature	.....	1893 (18th)	..... 88·7°
Lowest	"	.....	1902 (9th) 32·0°
Highest adopted mean temperature	1896	.....	59·3°
Lowest	"	"	1907 51·5°
Greatest fall of rain	.....	1907	..... 8·705 in.
Least	"	.....	1887 0·525 "
Greatest fall of rain in one day	...	1857 (8th)	..... 2·093 "
Greatest No. of days on which			
·005 in. or more rain fell	.....	†1907	..... 27
Least	"	"	1887 4
*Greatest hourly velocity of wind	1897 (16th)	.....	45 mls.
*Greatest No. of miles registered...	1877	.....	8384
*Least	"	"	1915 3967

* Since 1867 only.

† And 1912.

JULY, 1920.

Results of Observations taken during the Month.		Mean for the last 73 years.						
Mean Reading of the Barometer	inches 29.438	29.526						
Highest " " on the 19th ... "	29.842	29.903						
Lowest " " on the 23rd ... "	28.993	29.020						
Range of Barometer Readings	" 0.849	0.883						
Highest Reading of a Max. Therm. on the 2nd ...	66.4	78.2						
Lowest Reading of a Min. Therm. on the 7th ..	45.7	42.5						
Range of Thermometer Readings	20.7	35.7						
Mean of Highest Daily Readings	61.3	67.4						
Mean of Lowest Daily Readings	51.3	51.1						
Mean Daily Range	10.0	16.3						
Deduced Mean Temp. (from mean of Max. & Min.)	54.4	57.6						
Mean Temperature from Dry Bulb	55.2	57.9						
Adopted Mean Temperature	54.8	57.8						
Mean Temperature of Evaporation	52.4	54.7						
Mean Temperature of Dew Point	50.1	51.9						
Mean elastic force of Vapour	inches 0.362	0.387						
Mean weight of Vapour in a cub. ft. of air, grains	4.1	4.4						
Mean additional weight required for saturation ..	0.8	1.1						
Mean degree of Humidity (saturation 100)	84	81						
Mean weight of a cubic foot of air	grains 529.2	527.6						
Mean amount of Cloud (0—10)	9.0	7.4						
Fall of Rain	inches 6.364	3.987						
Greatest Rainfall in one day (25th)	" 0.660	0.865						
No. of days on which .005 in. or more Rain fell...	28	16.6						
Wind:—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	2	0	1	1	3	6	15	3
Mean Velocity in miles per hr.	9.3	0	7.0	7.8	8.4	9.7	9.3	8.2
Total No. of miles.....	447	0	169	188	608	1394	3333	587
Total No. of Miles registered	6726							Mean*
Greatest hourly velocity (10th, Dir. S.)	23							6379.5
								28.3

* For the last 53 years.

JULY, 1920.

DIFFERENCES.

The signs + and — mean respectively above and below the
MONTHLY average.

Mean barometric pressure	...	...	...	—	0·088 in.
Monthly range	"	"	"	—	0·034 in.
Mean of highest daily temperatures	...	...	...	—	6·1°
Mean of lowest	"	"	"	+	0·2°
Mean daily range	...	...	...	—	6·3°
Adopted Mean temperature	...	...	...	—	3·0°
Total rainfall	...	...	...	+	2·377 in.

Heavy Rain on 16th, 22nd, 25th, and 29th. Thunder on 1st, 2nd, 8th, 9th, 10th, and 26th. Lightning on 2nd and 26th.

EXTREME READINGS FOR JULY,

During 78 Years.

Highest reading of Barometer	...	1911 (10th)	.....	30·203 in.
Lowest	"	1877 (15th)	.....	28·564 in.
Highest temperature	.....	1901 (20th)	.....	89·0°
Lowest	"	1857 (1st)	.....	36·0°
Highest adopted mean temperature	.....	1901	.....	63·2°
Lowest	"	1862	.....	54·3°
Greatest fall of rain	.....	1888	.....	8·475 in.
Least	"	1868	.....	0·669 in.
Greatest fall of rain in one day	...	1888 (2nd)	.....	2·482 in.
Greatest No. of days on which ·005 in. or more rain fell.....	†	1920	.....	28
Least	"	1863	.....	8
*Greatest hourly velocity of wind	.....	1892 (8th)	.....	44 mls.
*Greatest No. of miles registered	...	1879	.....	8288
*Least	"	1913	.....	4577

* Since 1867 only.

† And in other years.

AUGUST, 1920.

Results of Observations taken during the Month.		Mean for the last 73 years.						
Mean Reading of the Barometer	inches 29·653	29·495						
Highest " " on the 29th ... "	30·090	29·888						
Lowest " " on the 5th ... "	28 980	28·944						
Range of Barometer Readings	" 1·110	0·944						
Highest Reading of a Max. Therm. on the 28th...	69·4	76·4						
Lowest Reading of a Min. Therm. on the 31st...	38·8	41·8						
Range of Thermometer Readings	30·6	34·6						
Mean of Highest Daily Readings	61·5	66·5						
Mean of Lowest Daily Readings	50·3	50·7						
Mean Daily Range	11·2	15·8						
Deduced Mean. Temp. (from Mean of Max. & Min.)	54·2	56·9						
Mean Temperature from Dry Bulb	55·6	57·7						
Adopted Mean Temperature	54·9	57·3						
Mean Temperature of Evaporation	52·2	54·5						
Mean Temperature of Dew Point	49·6	51·7						
Mean elastic force of Vapour	inches 0·355	0·386						
Mean weight of Vapour in a cub. ft. of air, grains	4·1	4·3						
Mean additional weight required for saturation ..	0·9	0·9						
Mean degree of Humidity (saturation 100)	82	82						
Mean weight of a cubic foot of air	grains 533·1	527·5						
Mean amount of Cloud (0—10).....	7·6	7·3						
Fall of Rain	inches 2·177	4·966						
Greatest Rainfall in one day (4th)	" 0·715	1·052						
No. of days on which ·005 in. or more Rain fell...	12	18·3						
Wind :—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	5	2	0	0	1	1	20	2
Mean Velocity in miles per hr.	5·6	4·3	0	0	10·4	8·9	8·1	5·9
Total No. of miles.....	666	206	0	0	345	213	3868	281
Total No. of Miles registered	5579							Mean*
Greatest hourly velocity (9th, 4 p.m., Dir. N.W. b W.)	22							30·7

* For the last 53 years.

AUGUST, 1920.

DIFFERENCES.

The signs + and — mean respectively above and below the
MONTHLY average.

Mean barometric pressure	...	...	...	...	+	0·158 in.
Monthly range	"	...	...	...	+	0·166 in.
Mean of highest daily temperatures	...	...	...	...	—	5·0°
Mean of lowest	"	"	...	...	—	0·4°
Mean daily range	...	...	...	...	—	4·6°
Adopted mean temperature	...	...	...	...	—	2·4°
Total rainfall	...	...	...	...	—	2·789 in.

Heavy Rain on 4th. Hail on 3rd. Thunder on 1st.

EXTREME READINGS FOR AUGUST,

During 73 Years.

Highest reading of Barometer	...	1874 (21st)	.....	30·114 in.
Lowest	"	1917 (28th)	.....	28·156 in.
Highest temperature	.....	1868 (2nd)	.....	88·0°
Lowest	"	1887 (13th)	.....	33·4°
Highest adopted mean temperature	.....	1911	.....	62·1°
Lowest	"	1848	.....	52·5°
Greatest fall of rain	.....	1891	.....	9·869 in.
Least	"	1871	.....	2·085 in.
Greatest fall of rain in one day	...	1857 (7th)	.....	2·333 in.
Greatest No. of days on which ·005 in. or more rain fell	...	1891	.....	27
Least	"	1880	.....	6
*Greatest hourly velocity of wind	.....	1903 (31st)	.....	45 mls.
*Greatest No. of miles registered...	.....	1903	.....	8486
*Least	"	1915	.....	3918

* Since 1867 only.

SEPTEMBER, 1920.

Results of Observations taken during the Month.		Mean for the last 73 years.							
Mean Reading of the Barometer	inches 29·581	29·543							
Highest " " on the 22nd ... "	29·935	30·008							
Lowest " " on the 18th ... "	28·942	28·888							
Range of Barometer Readings	0·993	1·120							
Highest Reading of a Max. Therm. on the 12th..	67·5	72·0							
Lowest Reading of a Min. Therm. on the 20th...	38·1	36·5							
Range of Thermometer Readings	29·4	35·5							
Mean of Highest Daily Readings	60·2	62·0							
Mean of Lowest Daily Readings	47·4	47·2							
Mean Daily Range	12·8	14·8							
Deduced Mean Temp. (from mean of Max. & Min.)	52·5	53·4							
Mean Temperature from Dry Bulb	54·3	54·2							
Adopted Mean Temperature	53·4	53·8							
Mean Temperature of Evaporation	51·7	51·0							
Mean Temperature of Dew Point	50·0	48·3							
Mean elastic force of Vapour	inches 0·361	0·339							
Mean weight of Vapour in a cub. ft. of air, grains	4·1	3·9							
Mean additional weight required for saturation ,,	0·5	0·8							
Mean degree of Humidity (saturation 100).....	89	82							
Mean weight of a cubic foot of air.....	grains 533·2	532·6							
Mean amount of Cloud (0—10)	6·8	6·7							
Fall of Rain	inches 2·903	4·290							
Greatest Rainfall in one day (3rd)	" 0·605	0·957							
No. of days on which ·005 in. or more Rain fell...	15	16·4							
Wind:—Direction	N	NE	E	SE	S	SW	W	NW	
No. of days.....	2	3	2	0	1	7	11	4	
Mean Velocity in miles per hr.	3·8	6·4	10·3	0	4·5	5·4	7·5	5·7	
Total No. of miles.....	180	463	493	0	108	900	1977	550	
Total No. of Miles registered		4671		Mean*		6072·2			
Greatest hourly velocity (4th, 3 p.m., Dir. W.N.W.)		26					32·1		

* For the last 53 years.

SEPTEMBER, 1920.

DIFFERENCES.

The signs + and — mean respectively above and below the
MONTHLY average.

Mean barometric pressure	...	...	...	...	+	0·038 in.
Monthly range	..	..	..	..	—	0·127 in.
Mean of highest daily temperatures	...	...	...	...	—	1·8°
Mean of lowest	..	..	..	..	+	0·2°
Mean daily range	...	...	...	...	—	2·0°
Adopted mean temperature	...	...	...	...	—	0·4°
Total rainfall	...	...	...	...	—	1·387 in.

Ground Frost on 20th. Heavy Rain on 3rd. Fog on 14th,
23rd, 24th and 25th. Thunder on 16th, 17th, 18th. Lightning
on 18th.

EXTREME READINGS FOR SEPTEMBER,

During 73 Years.

Highest reading of Barometer	...	1851 (15th)	.....	30·247 in.	
Lowest	1918 (23rd)	28·210 in.
Highest temperature	.....	1868 (6th)	.....	85·0°
Lowest	†1885 (25th)	29·8°	
Highest adopted mean temperature	.....	1865	.....	59·1°
Lowest	1863	50·9°
Greatest fall of rain	.....	1918	.....	12·620 in.
Least	1910	0·652 in.
Greatest fall of rain in one day	...	1889 (26th)	.....	2·060 in.	
Greatest No. of days on which ·005 in. or more rain fell	...	1918	.....	29	
Least	†1851	6
*Greatest hourly velocity of win!	...	1875 (26th)	.....	53 mls.	
*Greatest No. of miles registered	...	1869	.....	9053	
*Least	1888	3261

* Since 1867 only.

† And in other years.

C

OCTOBER, 1920.

Results of Observations taken during the Month.		Mean for the last 73 years.						
Mean Reading of the Barometer	inches 29·550	29·444						
Highest on the 25th ..	30·000	30·017						
Lowest on the 31st ..	28·795	28·680						
Range of Barometer Readings.....	1·205	1·337						
Highest Reading of a Max. Therm. on the 8th ...	66·0	64·0						
Lowest Reading of a Min. Therm. on the 31st ...	37·3	29·7						
Range of Thermometer Readings	28·7	34·3						
Mean of Highest Daily Readings	56·0	54·5						
Mean of Lowest Daily Readings	46·1	41·9						
Mean Daily Range	9·9	12·6						
Deduced Mean Temp. (from Mean. of Max. and Min.)	50·0	47·2						
Mean Temperature from Dry Bulb	50·8	47·9						
Adopted Mean Temperature	50·4	47·6						
Mean Temperature of Evaporation	48·1	45·4						
Mean Temperature of Dew Point	45·7	43·0						
Mean elastic force of Vapour.....inches	0·307	0·278						
Mean weight of vapour in a cub. ft. of air, grains	3·5	3·2						
Mean additional weight required for saturation ..	0·7	0·6						
Mean degree of Humidity (saturation 100).....	84	84						
Mean weight of a cubic foot of air	536·2	537·6						
Mean amount of Cloud (0—10)	5·6	7·3						
Fall of Rain	inches 1·263	4·933						
Greatest Rainfall in one day (14th)	0·300	0·976						
No. of days on which ·005 in. or more Rain fell...	8	18·6						
Wind :—Direction.....	N	NE	E	SE	S	SW	W	NW
No. of days.....	3	5	13	6	2	2	0	0
Mean Velocity in miles per hr.	4·0	6·1	8·6	7·9	8·5	3·8	0	0
Total No. of miles.....	290	728	2683	1139	406	180	0	0
Total No. of miles registered	5426	Mean*						
Greatest hourly velocity (3rd, 1 p.m., Dir. S.E.) ...	30	6886·0						
		37·3						

* For the last 53 years.

OCTOBER, 1920.

DIFFERENCES.

The signs + and — mean respectively above and below the
MONTHLY average.

Mean barometric pressure	...	...	...	+	0.106 in.
Monthly range	"	...	...	—	0.132 in.
Mean of highest daily temperatures	...	...	...	+	1.5°
Mean of lowest	"	"	...	+	4.2°
Mean daily range	"	...	...	—	2.7°
Adopted Mean temperature	...	...	...	+	2.8°
Total rainfall	...	...	...	—	3.670 in.

Ground Frost on 18th, 19th, 28th, 30th, and 31st. Thunder on 2nd. Lightning on 2nd. Fog on 19th, 26th, and 27th.

EXTREME READINGS FOR OCTOBER,

During 73 Years.

Highest reading of Barometer	...	1884 (5th)	.....	30.306 in.
Lowest	"	"	.....	1862 (19th) .....28.139 in.
Highest temperature	.....	1890 (12th)	.....	74.0°
Lowest	"	.....	.....	1895 (28th) 17.8°
Highest adopted mean temperature	.....	1908	.....	52.5°
Lowest	"	"	.....	1895 42.8°
Greatest fall of rain	.....	1870	.....	13.437 in.
Least	"	.....	.....	1915 1.180 in.
Greatest fall of rain in one day	...	1870 (8th)	.....	2.529 in.
Greatest No. of days on which				
.005 in. or more rain fell	...	1903	.....	29
Least	"	"	.....	1920 8
*Greatest hourly velocity of wind	.....	1877 (15th)	.....	52 mls.
*Greatest No. of miles registered...	.....	1874	.....	9818
*Least	"	"	.....	1915 3985

* Since 1867 only.

NOVEMBER, 1920.

Results of Observations taken during the Month.		Mean for the last 73 years.						
Mean Reading of the Barometer	inches 29·591	29·463						
Highest " " on the 22nd ... "	30·042	30·064						
Lowest " " on the 15th ... "	28·910	28·570						
Range of Barometer Readings.....	" 1·132	1·494						
Highest Reading of a Max. Therm. on the 14th ...	57·4	55·8						
Lowest Reading of a Min. Therm. on the 23rd ...	28·6	25·4						
Range of Thermometer Readings	28·8	30·4						
Mean of Highest Daily Readings	48·7	47·2						
Mean of Lowest Daily Readings	40·5	36·8						
Mean Daily Range	8·2	10·4						
Deduced Mean. Temp. (from Mean of Max. and Min.)	44·2	41·6						
Mean Temperature from Dry Bulb.....	45·1	42·0						
Adopted Mean Temperature	44·7	41·8						
Mean Temperature of Evaporation	43·3	39·8						
Mean Temperature of Dew Point	41·7	38·2						
Mean elastic force of Vapour.....inches	0·264	0·231						
Mean weight of Vapour in a cub. ft. of air, grains	3·0	2·7						
Mean additional weight required for saturation ..	0·4	0·4						
Mean degree of Humidity (saturation 100)	89	87						
Mean weight of a cubic foot of air	543·3	544·6						
Mean amount of Cloud (0—10)	7·2	7·4						
Fall of Rain	inches 2·672	4·399						
Greatest Rainfall in one day (14th).....	" 0·740	0·969						
No. of days on which ·005 in. or more Rain fell...	15	18·1						
Wind.—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	1	3	7	1	5	4	8	1
Mean Velocity in miles per hr.	3·4	4·3	7·2	12·4	9·4	12	13·2	2·5
Total No. of miles.....	91	499	1203	298	1123	1156	2525	62
Total No. of miles registered	6957	Mean*		7259·1				
Greatest hourly velocity (14th, at 7 p.m., Dir. S...	37			41·2				

* For the last 53 years. † And in other years.

NOVEMBER, 1920.

DIFFERENCES.

The signs + and — mean respectively above and below the
MONTHLY average.

Mean barometric pressure	...	...	...	+	0.128 in.
Monthly range	"	"	"	—	0.362 in.
Mean of highest daily temperatures	...	...	...	+	1.5°
Mean of lowest	"	"	...	+	3.7°
Mean daily range	"	"	...	—	2.2°
Adopted mean temperature	...	...	...	+	2.9°
Total rainfall	...	...	...	—	1.727 in.

Ground Frost on 4th—6th, 11th, 21st—23rd. Heavy Rain on 14th. Lightning on 1st and 2nd. Hoar Frost on 6th, 21st, 22nd, and 23rd. Hail on 16th and 17th. Lunar Halo on 25th. Fog on 6th and 22nd. Gale of wind on 14th.

EXTREME READINGS FOR NOVEMBER,

During 73 Years.

Highest reading of Barometer	...	1857 (12th)	.....	30.350 in.	
Lowest	"	"	...	1891 (11th)	27.938 in.
Highest temperature	.....	1900 (1st)	.....	62.4°
Lowest	"	1901 (15th)	17.5°	
Highest adopted mean temperature	†	1881	.....	47.0°	
Lowest	"	"	1915	36.3°
Greatest fall of rain	.....	1866	.....	9.026 in.
Least	"	1855	1.158 in.	
Greatest fall of rain in one day	...	1866 (16th)	.....	3.700 in.	
Greatest No. of days on which						
.005 in. or more rain fell	...	1913	.....	28	
Least	"	"	1848	6
*Greatest hourly velocity of wind	..	1887 (1st)	.....	62 mls.	
*Greatest No. of miles registered	...	1888	.....	12813	
*Least	"	"	1915	4893

* Since 1867 only.

† And in other years.

DECEMBER, 1920.

Results of Observations taken during the Month,		Mean for the last 73 years.						
Mean Reading of the Barometer	inches 29·537	29·429						
Highest " " on the 5th ..	30·117	30·058						
Lowest " " on the 21st ..	28·580	28·534						
Range of Barometer Readings.....	" 1·537	1·524						
Highest Reading of a Max. Therm. on 2nd & 31st	54·0	52·9						
Lowest Reading of a Min. Therm. on the 13th ...	20·3	21·2						
Range of Thermometer Readings.....	33·7	31·7						
Mean of Highest Daily Readings	43·3	43·4						
Mean of Lowest Daily Readings	35·6	33·7						
Mean Daily Range	7·7	9·7						
Deduced Mean Temp. (from Mean. of Max. and Min.)	39·5	38·5						
Mean Temperature from Dry Bulb	39·9	39·1						
Adopted Mean Temperature	39·7	38·8						
Mean Temperature of Evaporation	37·9	37·2						
Mean Temperature of Dew Point	35·6	35·3						
Mean elastic force of Vapour	inches 0·209	0·207						
Mean weight of Vapour in a cub. ft. of air, grains	2·4	2·4						
Mean additional weight required for saturation ..	0·5	0·4						
Mean degree of Humidity (saturation 100)	86	87						
Mean weight of a cubic foot of air	grains 547·7	547·1						
Mean amount of Cloud (0—10)	8·7	7·6						
Fall of Rain	inches 3·050	4·690						
Greatest Rainfall in one day (24th).....	" 0·468	0·851						
No. of days on which ·005 in. or more Rain fell...	21	20·0						
Wind :—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	4	7	5	0	4	6	4	1
Mean Velocity in miles per hr.	4·4	4·6	4·5	0	9·5	11·7	17·4	20·9
Total No. of miles.....	426	770	505	0	911	1684	1670	501
Total No. of miles registered	6467	Mean*						
Greatest hourly velocity (3rd, at 4 p.m., Dir. W.)	50	7808·9	42·3					

* For the last 53 years.

DECEMBER, 1920.

DIFFERENCES.

The signs + and — mean respectively above and below the
MONTHLY average.

Mean barometric pressure	...	...	...	+	0.108 in.
Monthly range	"	...	...	+	0.013 in.
Mean of highest daily temperatures	...	...	...	—	0.1°
Mean of lowest	"	"	...	+	1.9°
Mean daily range	"	...	...	—	2.0°
Adopted mean temperature	...	...	...	+	0.9°
Total rainfall	...	...	...	—	1.640 in.

Ground Frost on 1st, 5th, 8th—18th, 20th, 23rd, 24th. Snow on 11th, 12th, and 13th. Fog on 10th and 11th. Lunar Halo on 22nd. Gales of wind on 3rd and 21st.

EXTREME READINGS FOR DECEMBER,

During 73 Years.

Highest reading of Barometer	...	1905 (12th)	.....	30.484 in.	
Lowest	"	"	...	1886 (8th)	27.350 in.
Highest temperature	.....	1876 (9th)	.....	58.1°
Lowest	"	1860 (24th)	6.7°	
Highest adopted mean temperature	.....	1857	.....	44.6°
Lowest	"	"	1878	30.3°
Greatest fall of rain	.....	1918	.....	10.595 in.
Least	"	1890	0.550 in.	
Greatest fall of rain in one day	...	1870 (19th)	.....	1.962 in.	
Greatest No. of days on which						
.005 in. or more rain fell	...	1918	.....	30	
Least	"	"	...	†1853	8
*Greatest hourly velocity of wind...	...	1894 (22nd)	.....	72 mls.	
*Greatest No. of miles registered	...	1898	.....	11265	
*Least	"	"	...	1916	4517

* Since 1867 only.

† And in other years.

Summary of Observations, 1920.

Results of Observations taken during the Year.	Mean for the last 73 Years.	
<i>Readings of Barometer in inches.</i>		
Mean of the Year	29·517	29·493
Highest Monthly Mean (February)	29·676	29·743
Lowest " " (January)	29·352	29·223
Highest Reading (February).....	30·240	30·290
Lowest " (January)	28·286	28·203
Range	1·954	2·087
<i>Thermometer, Fahrenheit.</i>		
Highest Monthly Mean Temperature (June)	55·7	58·6
Lowest " " " (December)..	39·7	35·6
Highest Reading of a Max. Therm. (June 17th)...	75·6	81·3
Lowest " Min. " (December 13th)	20·3	16·0
Range of Thermometer Readings	55·3	65·3
Mean of Highest Daily "	53·7	54·5
Mean of Lowest Daily "	43·1	40·9
Mean Daily Range	10·6	13·6
Deduced Mean Temp. (from mean of Max. and Min.)	47·4	46·8
Mean Temperature from Dry Bulb	48·6	47·1
Adopted Mean Temperature of the Year	48·0	47·0
Mean Temperature of Evaporation	46·0	44·6
Mean Temperature of Dew Point	43·8	42·1
Mean elastic force of Vapour inches	0·290	0·274
Mean weight of Vapour in a cub. ft. of air...grns.	3·3	3·2
Mean additional weight required for saturation "	0·6	0·7
Mean degree of Humidity (saturation 100).....	86	83
Mean weight of a cubic foot of air.....grns.	538·4	539·1
Mean amount of Cloud (0—10)	7·5	7·3
Total fall of Rain	45·837	47·050
Greatest Monthly Rainfall (May)	6·511	7·590
Least " " (October)	1·263	1·254
Greatest Rainfall in one day (February 9th) ..	1·545	1·624
No. of days per Month on which ·005 inch or more Rain fell	18·3	17·1

SUMMARY OF WIND, 1920.

Prevailing Direction	N	NE	E	SE	S	SW	W	NW
No. of days for each	25	38	47	16	43	52	123	22
Mean Velocity in miles per hour...	5.4	5.6	7.7	8.6	11.8	10.6	11.8	10.0
Total No. of miles for each Direction	3227	5145	8690	3287	12220	13242	34717	5271

		Mean for the last 53 years.
Total No. of miles registered	85799	85667.1
Greatest Monthly Total (January)	10420	9990.1
Least " " (September)	4671	4950.1
Greatest hourly velocity (Jan. 27th & Dec. 3rd) ...	50	50.9
Prevailing Direction of Wind	W.	

DIFFERENCES, 1920.

The signs + and — mean respectively above and below the YEARLY average.

Mean barometric pressure... ..	+	0.024 in.
Yearly range " ..	—	0.133 in.
Mean of highest daily temperatures ..	—	0.8°
Mean of lowest " ..	+	2.3°
Mean daily range	—	3.0°
Adopted mean temperature ..	+	1.0°
Total rainfall	—	1.213 in.

**ABSOLUTE EXTREMES
FOR THE LAST 73 YEARS.**

Readings of Barometer, in inches.

Highest monthly mean	1891 (Feb.)	29·997
Lowest " "	1868 (Dec.)	28·984
Highest yearly "	1896	29·584
Lowest " "	1872	29·319
Greatest monthly range	1886 (Dec.)	2·795
Least " "	1852 (July)	0·505
Highest reading	1896 (Jan. 9th)	30·597
Lowest "	1886 (Dec. 8th)	27·350
Extreme range		3·247

Thermometer, Fahrenheit.

Highest monthly mean temperature ...	1901 (July)	63·2
Lowest " " "	1855 (Feb.)	28·6
Highest yearly " "	1868	49·1
Lowest " " "	1879	44·1
Highest reading "	1901 (July 20th)	89·0
Lowest " "	1881 (Jan. 15th.)	4·6

Weight of Vapour in a cubic foot of air (grains).

Greatest monthly mean	1852 (July)	5·1
Least " "	†1855 (Feb.)	1·4

† *And on other dates.*

ABSOLUTE EXTREMES
FOR THE LAST 73 YEARS—Continued.

Rainfall, in inches.

Greatest Rainfall in one day	1866 (Nov. 16) ..	3·700
Greatest " " month	1870 (Oct.)	13·437
Least " " "	1859 (May)	0·249
Greatest " " year	1866	62·093
Least " " "	1887	31·250
Days on which ·005 in. or more Rain fell :		
Greatest No. in one month	1890 (Jan.) ... } and 1918 (Dec.) ... }	30
Least " "	1852 (Mar.)	3
Greatest " year	1872	281
Least " "	1855	135

* *Wind.*

Greatest hourly velocity, in miles	1894 (Dec. 22)...	72
Greatest No. of miles registered in a month	1888 (Nov.)	12813
Least " " ...	1917 (Feb.) ...	3160
Greatest Mean No. " " ...	March	8473
Least " " " ...	September	6099
Greatest No. " " year .	1868	102395
Least " " " " ...	1915	70623

* Record dates from 1867 only.

MONTHLY TOTALS FOR EACH HOUR OF RECORDED SUNSHINE.

1920. Local apparent time	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9
January ...	...	...	...	...	0.6	4.6	5.9	6.6	6.6	5.6	3.0	0.4	...	...	...	...	...
February ...	...	...	...	0.5	2.2	5.2	8.6	9.3	10.6	10.7	7.5	4.0	1.2	...	...	...	...
March ...	...	...	0.2	5.0	9.7	10.0	9.6	9.3	9.0	9.5	8.4	7.7	6.7	0.7	...	...	...
April ...	...	1.1	3.8	5.1	7.4	7.6	8.1	6.4	6.6	7.6	6.9	7.3	5.8	5.5	1.5	...	...
May ...	0.3	4.1	6.8	8.4	12.1	12.3	12.5	12.8	13.4	14.3	14.5	13.8	12.6	11.9	6.5	2.1	...
June ...	1.2	6.2	8.8	12.1	11.7	12.8	12.5	13.6	15.7	13.8	13.4	13.0	13.8	10.9	10.6	3.3	...
July ...	0.3	1.9	2.5	3.5	5.4	5.7	6.6	9.0	7.4	9.3	7.2	10.5	10.4	9.8	8.0	2.4	...
August ...	...	0.3	2.0	5.2	7.7	7.0	8.9	8.9	11.1	14.6	12.3	11.1	11.5	6.6	3.3	...	...
September ...	...	...	0.8	4.7	10.5	11.8	10.9	9.9	9.3	11.8	12.2	10.3	7.8	2.9	0.1	...	...
October ...	...	...	...	1.1	9.1	13.1	15.5	15.5	17.6	16.9	14.0	8.4	1.9	...	...	...	...
November...	...	...	...	...	0.7	4.9	8.1	11.0	8.4	8.7	5.1	1.5	...	...	...	...	...
December ...	...	...	...	...	...	1.5	3.6	5.6	7.2	6.9	3.9	0.6	...	...	...	...	...
Sums ...	1.8	13.6	24.9	45.6	77.1	96.5	110.8	117.9	122.9	129.7	108.4	88.6	71.7	48.3	30.0	7.8	...

TOTAL AMOUNT OF SUNSHINE RECORDED ON EACH DAY.

1920	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
January ...	4.1	1.8	...	...	2.1	...	...	...	1.1	...	...	...	...	5.1	0.1	...	...
February ...	...	...	1.5	6.2	...	...	1.4	2.6	...	...	3.6	0.3	0.3	3.9	0.7	7.2	5.0
March ...	0.4	4.2	1.6	...	1.9	0.5	2.7	10.0	0.4	...	7.3	...	1.3	4.8	...	2.4	1.2
April ...	1.3	...	2.0	0.2	0.6	0.1	0.1	0.1	...	...	...	...	0.3	0.1	1.1	2.8	6.1
May ...	...	5.0	5.0	10.4	...	0.6	4.2	4.7	13.0	7.3	3.0	0.5	10.0	8.7	8.0	2.7	...
June ...	3.1	3.9	4.5	11.9	9.0	2.9	3.5	13.7	15.2	12.7	0.5	5.2	0.3	...	7.8	2.2	10.7
July ...	...	1.5	...	...	...	7.8	0.7	5.4	2.2	2.6	4.9	0.9	...	1.2	8.9	0.2	4.1
August ...	6.1	3.4	4.9	0.1	0.4	3.0	2.0	1.1	3.4	1.5	3.5	1.0	8.4	3.0	...	0.9	0.1
September ...	2.2	...	0.6	3.0	...	2.5	0.1	0.2	...	10.8	1.1	6.6	5.5	0.6	3.3	0.7	4.3
October ...	2.5	...	5.7	...	1.7	1.8	7.8	6.4	1.0	6.5	4.0	4.9	4.8	1.7	...	1.9	...
November ...	...	3.5	...	0.3	5.9	...	0.1	...	...	0.5	5.0	0.4	3.5	...	2.5	1.0	2.5
December ...	3.3	...	...	5.0	4.2	2.5	...	0.9	...	...	0.3	0.3	...	...	...	2.6	0.2

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

1920	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MONTHLY	
															Total	Percent.
January ...	...	2.4	0.4	3.8	0.2	0.1	1.0	2.4	...	...	2.7	2.0	3.8	0.2	33.3	13.4
February ...	5.7	...	1.1	9.0	0.6	0.2	1.6	0.1	3.3	5.5	...	...	...	...	59.8	21.2
March ...	8.9	3.7	2.4	1.6	6.8	6.2	...	7.4	0.2	5.9	0.4	...	1.6	2.0	85.8	23.4
April ...	4.3	1.2	3.3	8.8	...	3.7	...	7.3	5.1	6.1	5.3	11.8	9.0	...	80.7	19.3
May ...	2.8	...	13.4	9.5	3.2	12.5	14.8	11.9	0.7	0.6	0.3	...	4.6	1.0	158.4	32.1
June ...	11.0	6.8	3.7	6.8	0.7	10.0	3.4	...	4.3	5.3	3.1	3.6	7.6	...	173.4	34.1
July ...	9.0	11.9	...	...	0.6	3.8	10.5	1.9	3.4	8.2	0.1	1.8	5.4	2.9	99.9	19.6
August ...	...	6.2	9.0	5.5	8.8	...	2.7	...	8.0	...	4.1	6.8	7.0	9.6	110.5	24.2
September ..	5.3	6.5	1.8	6.1	10.2	5.6	3.3	2.3	2.2	4.4	8.2	...	5.6	...	103.0	27.2
October ...	5.9	1.8	...	...	2.4	5.8	7.0	7.9	7.8	6.2	6.3	1.9	6.0	3.4	113.1	34.7
November...	0.8	0.9	...	4.1	4.4	4.8	3.3	3.4	1.3	...	...	...	0.2	...	48.4	18.9
December ..	...	...	...	0.8	1.3	3.0	...	...	3.0	0.5	...	...	1.4	...	29.3	12.7

SUMMARY OF SUNSHINE.

	BRIGHT SUNSHINE RECORDED					
	1920			Mean for the last 40 years		
	Number of		Percentage of Possible Sunshine	Number of		Percentage of Possible Sunshine
	Days	Hours		Days	Hours	
January ...	17	33·3	13·4	14·2	32·6	13·2
February ...	20	59·8	21·2	17·7	58·1	21·2
March ...	25	85·8	23·4	24·1	102·9	28·1
April ...	22	80·7	19·3	26·3	147·1	35·1
May ...	26	158·4	32·1	27·6	185·7	37·7
June ...	28	173·4	34·1	28·0	185·0	36·4
July ...	24	99·9	19·6	28·3	172·6	33·9
August ...	26	110·5	24·2	27·6	149·1	32·6
September ..	26	103·0	27·2	25·7	124·0	32·7
October ...	25	113·1	34·7	23·5	84·8	26·0
November ..	20	48·4	18·9	17·5	45·9	17·9
December ...	15	29·3	12·7	13·5	25·7	11·1
Year ...	274	1095·6	24·5	273·8	1313·6	29·4

SUMMARY OF SUNSHINE—Continued.
EXTREMES FOR THE LAST 40 YEARS.

MONTH	Number of Days				Number of Hours				Percentage of Possible Sunshine			
	on which Sunshine was recorded											
	Greatest		Least		Greatest		Least		Greatest		Least	
Jan.	21	1881	8	1898	64.2	1881	12.3	1913	25.9	1881	5.0	1913
Feb.	24	1895	11	1882	89.3	1887	29.6	1882	32.8	1887	10.9	1882
Mar.	28	*1894	17	1904	168.6	1907	56.8	1912	46.1	1907	15.5	1912
Aprl.	30	*1909	22	1920	223.7	1893	80.7	1920	53.4	1893	19.3	1920
May	30	*1880	22	1886	286.6	1881	79.7	*1906	54.1	1881	16.2	1906
June	30	*1896	24	*1888	272.5	1887	85.2	1912	53.6	1887	16.8	1912
July	31	*1882	24	1920	263.4	1911	98.0	1888	51.7	1911	19.3	1888
Aug.	31	*1886	23	1894	235.2	1899	74.1	1912	51.5	1899	16.2	1912
Sept.	30	1914	21	1897	176.5	1914	62.9	1896	46.6	1914	16.6	1896
Oct.	28	*1891	17	1889	134.9	1899	50.0	1889	41.4	1899	15.3	1889
Nov.	23	*1883	9	1897	86.6	1915	18.5	1891	33.8	1915	7.2	1891
Dec.	20	1917	6	1882	60.1	1886	7.4	1912	26.0	1886	3.2	1912
Year	300	1905	251	1903	1613.7	1887	927.6	1912	36.1	1887	20.7	1912

*And in other years.

HORIZONTAL MAGNETIC DIRECTION.

Horizontal Magnetic Direction, West of North (from daily measures of the continuous curves).

192:	MEANS OF *					Mean for the month	Mean daily range †	Highest reading of the month	Lowest reading of the month	Monthly range
	Highest readings	Lowest readings	4 a. m. readings	4 p. m. readings*	15° +					
	15° +									
January ...	61.7	56.9	58.5	60.5	59.4	8.3	67.0	50.0	17.0	
February ...	60.7	55.7	56.1	58.5	57.8	10.7	75.0	39.0	36.0	
March ...	62.3	55.9	57.1	59.3	58.7	21.0	127.0	19.0	146.0	
April ...	61.7	54.9	56.5	59.1	58.1	12.5	73.0	41.0	32.0	
May ...	59.3	52.3	54.7	57.3	55.9	9.9	64.0	45.0	19.0	
June ...	56.1	48.1	50.1	52.9	51.8	10.2	60.0	41.0	19.0	
July ...	55.3	46.7	49.7	53.5	51.3	10.4	61.0	40.0	21.0	
August ...	54.9	46.5	49.9	51.7	50.8	11.4	63.0	32.0	31.0	
September ...	52.9	45.9	47.7	50.5	49.3	14.9	60.0	10.0	50.0	
October ...	51.3	44.7	46.1	48.1	47.6	11.8	57.0	28.0	29.0	
November ...	48.9	46.7	47.3	47.7	47.7	7.1	60.0	37.0	23.0	
December ...	47.3	44.9	45.7	46.3	46.1	5.8	53.0	31.0	22.0	
Means ...	56.0	49.9	51.6	53.8	52.9	11.2	68.0	31.0	37.0	

Mean for the year 15° 52.9' W.

* For the 5 quietest days.

† Includes all days.

HORIZONTAL MAGNETIC FORCE.

Horizontal Magnetic Force in C. G. S. Units (from daily measures of the continuous curves).

The figures in the columns are entered to the unit 10^{-5} C. G. S.

1920	MEANS OF *					Mean for the month	Mean daily range †	Highest reading of the month	Lowest reading of the month	Monthly range
	Highest readings	Lowest readings	4 a. m. readings	4 p. m. readings	Mean for the month					
	17000 +									
January ...	329	308	320	321	320	38	363	269	94	
February ...	328	315	321	322	322	40	363	241	122	
March ...	327	299	315	317	314	99	588	—126	714	
April ...	322	284	309	308	306	60	363	234	129	
May ...	328	290	311	315	311	65	419	231	188	
June ...	325	285	307	315	308	64	386	231	155	
July ...	315	278	299	306	299	57	391	241	150	
August ...	308	276	290	306	293	58	372	231	141	
September ...	303	268	284	285	285	75	396	86	310	
October ...	297	271	290	287	286	45	325	232	93	
November ...	299	287	293	291	293	39	358	222	136	
December ...	305	289	298	294	297	40	325	212	113	
Means ...	316	288	303	305	303	57	387	192	195	
Mean for the year 17303 C. G. S. Units.										

* For the 5 quietest days.

† Includes all days.

ABSOLUTE MEASURES—SUMMARY.

DIRECTION			FORCE.		
1920	Declination Corrected	Inclination	Horizontal	Vertical	Total
	° ' ''	° ' ''	C. G. S. UNITS.		
	15 +	68 +	0·17000+	0·44000+	0·47000+
January ...	55·5	42·4	297	380	632
February ...	56·7	43·3	302	428	678
March ...	57·3	44·0	297	442	689
April	56·7	47·8	287	561	796
May	55·5	43·5	312	459	711
June	54·3	44·6	323	529	779
July	54·3	43·0	298	406	656
August ...	51·3	41·3	317	392	651
September ...	48·7	43·4	290	399	646
October ...	47·8	43·8	296	432	680
November ...	48·2	42·7	323	456	712
December ...	47·9	42·8	263	308	552
Means ...	15 52·9	68 43·5	0·17300	0·44433	0·47682

DATES OF MAGNETIC DISTURBANCES.

The disturbances are divided generally into three classes, *small*, *moderate*, and *greater*; these are indicated by the initial letters of the classes, and the letter *c* denotes *calm*. Very great disturbances are marked *vg.* The days are civil days.

1920	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1920
D.													D.
1	m	c	c	c	m	s	s	c	m	g	s	c	1
2	s	c	c	s	s	s	c	c	s	s	m	m	2
3	c	c	c	s	m	s	s	s	v.g.	c	m	s	3
4	c	c	v.g.	s	s	m	s	m	m	s	m	g	4
5	c	c	v.g.	s	c	s	c	s	*	s	s	m	5
6	c	s	m	m	c	s	s	c	c	s	g	m	6
7	s	m	c	s	c	s	m	s	s	m	s	s	7
8	c	s	s	s	c	s	c	m	g	s	s	m	8
9	m	s	c	c	m	s	s	m	m	s	s	s	9
10	m	s	m	s	c	g	c	s	s	g	c	c	10
11	m	s	s	c	c	s	s	c	m	c	s	c	11
12	s	s	s	c	c	s	s	v.g.	c	s	m	c	12
13	c	s	c	c	g	c	s	s	s	c	s	s	13
14	s	m	g	c	m	c	c	m	s	c	c	s	14
15	s	s	s	v.g.	m	s	g	s	s	s	s	s	15
16	c	v.g.	m	s	s	c	s	c	m	s	c	c	16
17	s	g	c	g	s	c	s	s	m	s	m	c	17
18	s	m	c	m	c	s	s	m	s	s	s	c	18
19	c	c	s	s	s	s	s	m	s	s	s	c	19
20	s	s	s	m	s	s	c	s	c	s	s	s	20
21	s	s	s	m	s	s	c	m	c	c	g	c	21
22	s	c	v.g.	c	c	s	s	m	v.g.	m	s	c	22
23	s	s	v.g.	s	s	s	m	*	s	m	c	s	23
24	s	v.g.	v.g.	m	c	s	m	c	c	m	c	s	24
25	c	m	m	c	s	c	c	c	c	s	c	s	25
26	s	s	s	c	c	c	c	c	c	s	g	g	26
27	c	m	s	c	c	s	c	c	s	m	m	m	27
28	m	s	c	c	m	s	c	c	v.g.	s	c	s	28
29	c	s	c	s	s	s	c	c	v.g.	s	c	c	29
30	s		c		s	s	s	s	m	c	c	c	30
31	c		s	m	c	s	c	s		s		s	31
TOTAL	c s m g vg	12 14 5 ... 2	7 14 5 1 5	11 10 4 1 5	10 12 6 1 1 ...	12 12 6 1 1 ...	6 22 14 4 1 ...	11 11 7 11 ... 1	7 10 7 1 4	6 18 5 2 ...	9 11 6 4 ...	12 12 5 2 ...	

* No record.

DATES OF SOLAR OBSERVATIONS, AND DISC AREAS OF SPOTS AS MEASURED FROM THE DRAWINGS.

The unit is $\frac{1}{5000}$ th of the visible surface.

n=note without a complete drawing.

1920	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1920
D.													D.
1	4.9					4.0		1.3		5.8		3.3	1
2	8.4		2.5	1.6		5.2	6.5	1.4			8.7		2
3		1.8		1.3	1.2	4.1				3.2			3
4		1.4			1.7	4.6			n		11.2	2.0	4
5	6.1		2.3			4.3				3.2	11.6	1.7	5
6						3.6	4.9	0.2	10.1	3.9		1.1	6
7		2.0	3.0		1.9	2.7	3.5	0.1		5.4			7
8			4.2		2.2	3.3	1.6			6.4		0.6	8
9	1.6		4.4		2.2	4.1	0.8	0.1		5.4			9
10			9.2		2.0	3.1	0.5		1.3	6.5	1.7		10
11			n		1.2		0.5	0.6	1.2	7.6	1.0		11
12						3.5			2.1	6.9		0.3	12
13		5.9	5.8					2.2	4.5	5.5	0.6		13
14	6.3	8.3	2.5					2.6	4.5	3.2			14
15	n	6.9				2.4	0.1		4.2		1.4		15
16		7.9	3.8	6.1		1.6						0.3	16
17		6.7		6.5		1.6			0.0		1.2		17
18		5.6	17.5	5.6	0.1	1.7	1.2		0.0				18
19	2.6		16.6			1.7	1.4	2.8	0.0	1.5	0.9		19
20		3.2	20.1	3.8	0.2			1.7	0.0		1.0		20
21	2.1	4.2	23.0		0.1	1.8		1.1	0.3		0.7	4.3	21
22			25.4		0.9			0.7	1.0	2.2	0.9	4.1	22
23	10.3		25.9	0.2	1.2	2.6	1.5		3.5	2.4	1.3	3.2	23
24		3.0			1.7	3.1	1.3	0.5	5.4	4.6	1.9		24
25	23.3		18.6	0.2	1.7		2.3		7.2	3.5	2.8		25
26		4.4		0.3	n	3.2		0.4	9.8	3.6	3.0	5.5	26
27		4.2	6.6	0.7			2.5		9.6	3.0		8.2	27
28	21.3			1.0				0.1	9.3	2.2			28
29	16.0			1.5			2.4	0.4		1.2			29
30	11.9		2.1	1.2	3.1	6.0	1.7	1.4	7.0	0.9	3.6	3.2	30
31							1.5	2.6		1.5			31
Daily Means	9.6	4.7	10.7	2.3	1.4	3.2	2.0	1.1	4.1	3.9	3.1	2.9	

