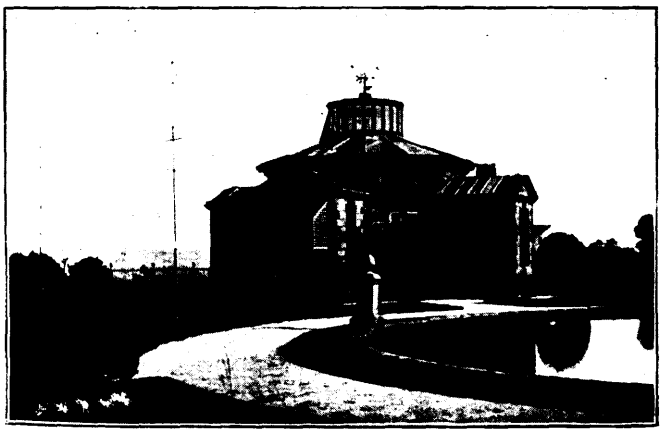
STONYHURST COLLEGE OBSERVATORY.

Lat. 53° 50′ 40″ N. Long. 9$^{m.}$ 52$^{s.}$ .68 W.
Height of the Barometer above the Sea, 381 feet.



(FOUNDED 1838)

Results of Meteorological, Magnetical, AND Seismological Observations, 1917.

With Report and Notes of the Director,

REV. W. SIDGREAVES, S.J., F.R.A.S.

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1918.

CONTENTS.

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.

In general the weather during the year has differed little from that of the preceding year. There have been no great extremes of temperature. The highest reading of a shade thermometer was 77·2°, against 77·0° of the previous twelve months; but the lowest, 13·6°, was 10° lower than in last year. There were 27 days on which the shade temperature rose to 70° and over, against 23° of last year. There have been no heavy gales of wind; the strongest at 42 miles per hour was less by 2 miles than that of 1916. The rainfall was quite 5 inches less than last year, notwithstanding the two wet months of August and October, which balance the excessive fall in October, 1916. And the duration of sunshine, though below the annual average, was 166½ hours longer than last year.

But when the year is divided into relatively warmer and colder months, we have the first 4 months, together

with October and December, very cold, at 3·5° below their mean averages, and the other six warmer months at only 1·8° above the mean of their averages.

February was a remarkably calm month, at mean velocity of the wind 5·2 miles per hour; the calmest month on our 50 years' record, and also the coldest month of the year. April, too, was very cold; quite as cold relatively as February, and the coldest April on our register; its lowest temperature, 13·6°, is 14·4° below the mean of this month's lowest readings.

July was the warmest month, at mean temperature 58·9°. But May and November were relatively warmer at 52·7° and 45·4°, these being 3·2° and 3·5° above their respective means, while the July temperature was only 1·0° above its mean.

The prevailing direction of the wind has been from the west side of the magnetic meridian, but in the first six months the easterly direction was a little more frequent than the westerly.

Of the five solar halos observed in the month of July that of the 1st was specially remarkable. It was multiple in character and exceptionally brilliant. The 22° halo, lasting from 9 a.m. to 1-30 p.m., G.M.T., was accompanied, for half an hour about noon, by the 46° halo and the parhelic circle of approximately 35° radius but no parhelia. All the five halos occurred during a spell of fine weather, lasting from June 28th to July 14th.

Fine dry periods of the year, not excluding occa-

sional interruptions by slight rains of short duration, may be noted as follows:—January 19th—February 2nd; February 4th—14th; March 1st—9th; 11th—16th; April 19th—May 8th; May 13th—17th; 24th—31st; June 7th—18th; 28th—July 14th; 19th—23rd; August 1st—7th; September 2nd—12th; 27th—30th; December 17th—22nd; 25th—31st. Total, 15 periods, average duration 10 days.

Heavy rains of 1 inch, or more, fell on only 4 days, viz., January 2nd, September 13th, October 8th, and November 26th.

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 all the even numbered hours by automatic interruptions of the pencils of light. The interruptions are worked by a relay, which is controlled by a separate clock. This arrangement has the advantage of freeing the time-indications from the errors of any irregular running of the motor-clock.

The scale values of the instruments are as follows:

For the Unifilar ... 11·28′ per Cm. of Ordinate.
„ Bifilar ... ·00050 C.G.S. „ „

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 dif-

ference 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 ten 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.

On the table of magnetic disturbances (page 38) the following remarks may be of service. There is often some embarrassment in assigning the proper note of magnetic condition to the date. Overlapping of indications cannot be wholly avoided; and some allowance must be made for the subjective impressions of the Recorder. But the general intention of the table 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 general returns from the Bureau show considerable

discordance between the interpretations of different authorities; and it may be well to state the rule followed at this Observatory. The two important notes are held to be 0 and 2: the former meaning a true calm, and the latter a disturbance not less than our note (m); and the intervening note comprises all the rest.

On this list the notes are quoted for the civil day, and may therefore be found occasionally at variance with our own quotations, which are given for the Astronomical day (from noon to noon). It has not been thought well to make any change here; because the convenience for tabulation is very great, when the curve, started at noon, stands for one day; and the risk of clerical errors is notably less.

But this advantage has to be sacrificed, beginning with the new year 1918, in order to follow the welcome suggestion of Dr. Chree in "Terrestrial Magnetism, June, 1917: Magnetic Activity and Hourly Readings"; viz., that disturbance is more correctly measured by extreme range than by general appearance—"Disturbance does not mean superposing irregular movements on a curve characteristic of quiet days."

We cannot undertake hourly readings, but it will be necessary to divide the civil day into its two halves a.m. and p.m. for the tabulations of maximum and minimum ranges, since these readings occur as often as not on different sheets. The astronomical day will then be suppressed, and the civil day will be used for both the international figures, 0, 1, 2, and our own characteristic letters.

Judging by the ranges of the Declination and Horizontal Force Magnets (D and H), the year has been relatively a quiet year, and out of accord with the solar activity as represented by Spot-area. This may be seen in the comparisons shown in the next section. The mean annual range of D and H are less than in the preceding year and nearly the same as in 1915. But at the actual maximum of sun-spot area in August, this month's mean range of H is greater than that of any other month since and including the last maximum in 1905. Also the mean range of D for the same month is greater than the greatest of any other month in the last 7 years, but less than those of the earlier years of the cycle, including the year 1905.

Solar and Astro-Physical.—The Perry memorial 15″ O.G. equatorial, with the Whitelow 6″ O.G. camera attached, the Thorp prism equatorial, and the large grating spectrometer, remain under the direction of Fr. Cortie.

Observations of the solar surface made on 210 days, include 211 drawings on 208 days, and notes without drawings on 2 days. Of the drawings 171 are complete, showing all spots and faculæ, and the remaining 40 are complete, showing all the spots, but without a record of the faculæ. The visible disc was never found spotless throughout the year.

The mean disc-area of the spots (in units of $\frac{1}{1000}$th of the visible surface) was 12·1. This value is about three times greater than that of the previous year, 1916, and twice as great as at the previous maximum

1905—6. The increased activity commenced early in February, and reached its greatest intensity in August, in which month the mean area was 25 units, or about double that for any other month of the year. The most active period was about Aug. 6th--16th, during which the mean area was 40 units. The greatest area of any one day was 50 units, on August 11th. The February and August groups were of exceptional size, and were second to none that have appeared on the sun for the last 38 years.

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.....	1912	1913	1914	1915	1916	1917
Spot Area	0·22	0·04	0·82	4·51	4·52	12·1
Declination range	8·1	9·7	10·2	11·7	12·1	11·8
Horizontal Force Range	30	39	47	58	63	59

With reference to the comparison of drawings of faculæ and spectroheliograms alluded to in our last report, we have received from the Mount Wilson and Yerkes observatories, through the courtesy of Professor Hale and Professor Frost, some spectroheliograms in Calcium K_2 and $H\alpha$ radiations. A preliminary comparison of the drawings of the faculæ and the photographs of the flocculi, show an almost perfect agreement between the faculæ and the calcium flocculi, but no similarity with the hydrogen flocculi.

The spectra of a few spots were observed to keep up our record.

A few spectra of stars were also obtained with the Thorp prismatic camera.

Various calls have been made for popular lectures on astronomy to the troops in home camps, which have been gladly met.

Astronomical.—In our Report of 1915 we had the satisfaction of acknowledging the kind permission of the late Postmaster-General to re-erect our Radiotelegraphic apparatus. Now we have to express our regret that the Military Authorities have requested the suppression of the installation. We have pressed our claim to an exception, in our favour, from the general policy against private wireless installations, but without avail. We have, therefore, to rely upon fine evenings for our time service by the transit instrument. Happily the chronometer has shown a very constant rate during long intervals of cloudy skies, and the rectification of our longitude by the Paris Wireless time signals has been deferred to better days, when the serious defects of the transit instrument can be remedied.

Seismological.—A short account of the Seismograph is given on page xiii. of our Annual, 1909. It is of the Milne photographic pattern, and is mounted with horizontal pendulum, or boom, in the astronomical meridian. A copy of its register is sent monthly to the Secretary of the Seismological Committee of the British Association for the Advancement of Science. This contains many small disturbances of uncertain origin, which do not appear in our occasional bulletins distributed

amongst the Seismic stations at home and abroad; they have to await confirmation by other Observatories. The instrument has been in constant service throughout the year. But it is now considered out of date and to be only of second rate value. The natural period of the boom in oscillation is too closely the same as that of the earth transmitting a shock; and the result is a series of interferences, which throws doubt upon the true time of the greatest displacement. We hope to find a remedy with a mechanical device for damping the oscillations of the boom. But for this we have to await the return of better times, when the Observatory staff may have recovered its normal efficiency.

The following papers have been published during the year:—

1.—"The nature of "Sun Spots." Science Progress, October, 1917.

2.—"The Planetary Relations." Journal Manchester Astronomical Society, No. 4, 1916—17.

Owing to the greatly increased cost of paper and printing we cease, for the present, to publish our appendix "Presentations to the Library."

METEOROLOGICAL REPORT.

JANUARY, 1917.

Results of Observations taken during the Month.		Mean for the last 70 years.
Mean Reading of the Barometer ..... inches	29 511	29·488
Highest ,, ,, on the 22nd... ,,	30·040	30·127
Lowest ,, ,, on the 8th ... ,,	28·474	28·582
Range of Barometer Readings..... ,,	1·566	1·545
Highest Reading of a Max. Therm. on the 3rd ...	51·0	51·3
Lowest Reading of a Min. Therm. on the 30th	25·1	21·3
Range of Thermometer Readings	25·9	30·0
Mean of Highest Daily Readings	37·7	42·3
Mean of Lowest Daily Readings	32·4	33·0
Mean Daily Range	5·3	9·3
Deduced Mean Temp. (from mean of Max. and Min.)	34·9	37·4
Mean Temperature from Dry Bulb	35·6	37·6
Adopted Mean Temperature	35·3	37·5
Mean Temperature of Evaporation	33·5	36·3
Mean Temperature of Dew Point	30·7	34·1
Mean elastic force of Vapour.....inches	0·172	0·198
Mean weight of Vapour in a cub. ft. of air, grains	2·0	2·4
Mean additional weight required for saturation ,,	0·4	0·4
Mean degree of Humidity (saturation 100)	83	87
Mean weight of a cubic foot of air ..... grains	552·8	549·7
Mean amount of Cloud (0—10)	8·6	7·8
Fall of Rain ..... inches	3·235	4·216
Greatest Rainfall in one day (2nd)..... ,,	1·450	0·827
No. of days on which ·005 in. or more Rain fell...	17	19·2

Wind :—Direction.....	N	NE	E	SE	S	SW	W	NW
No. of days.....	7	4	10	0	0	3	5	2
Mean Velocity in miles per hr.	9·5	6·9	11·6	0	0	13·5	14·3	11·3
Total No. of miles	1598	660	2775	0	0	973	1715	540

		Mean*
Total No. of miles registered	8261	8212·0
Greatest hourly velocity (2nd. 11 p.m. Dir.W.S.W.)	33	41·2

* *For the last 50 years.*

JANUARY, 1917.

DIFFERENCES.

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

Mean barometric pressure	+	0·023 in.
Monthly range ,, ...	+	0·021 in.
Mean of highest daily temperatures	—	4·6°
Mean of lowest ,, ,, ...	—	0·6°
Mean daily range	—	4·0°
Adopted mean temperature	—	2·2°
Total rainfall	—	0.981 in.

Ground Frost on 5th, 7th—11th, 13th—31st. Snow on 8th, 10th, 13th—17th, 19th—22nd, 26th, 28th—31st. Hail on 4th, 8th, and 12th. Heavy rain on 2nd and 7th. Fog on 11th.

A very cold and cloudy January, with a prevalence of strong, bitter easterly winds.

EXTREME READINGS FOR JANUARY,
During 70 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.*

FEBRUARY, 1917.

Results of Observations taken during the Month.		Mean for the last 70 years.
Mean Reading of the Barometer ..... inches	29·642	29·490
Highest ,, ,, on the 8th ... ,,	30·086	30·093
Lowest ,, ,, on the 20th... ,,	29·213	28·646
Range of Barometer Readings..... ,,	0 873	1·447
Highest Reading of a Max. Therm. on the 26th ..	45·2	51·9
Lowest Reading of a Min. Therm. on the 6th ...	13·6	22·2
Range of Thermometer Readings	31·6	29·7
Mean of Highest Daily Readings	38·0	43·9
Mean of Lowest Daily Readings	28·7	33·4
Mean Daily Range	9·3	10·5
Deduced Mean Temp. (from mean of Max. & Min.)	33·0	38·1
Mean Temperature from Dry Bulb	33·8	38·4
Adopted Mean Temperature	33·4	38·3
Mean Temperature of Evaporation	32·1	36·7
Mean Temperature of Dew Point	29·7	34·4
Mean elastic force of Vapour ..... inches	0·165	0·194
Mean weight of Vapour in a cub. ft. of air, grains	2·0	2·4
Mean additional weight required for saturation ,,	0·3	0·4
Mean degree of Humidity (saturation 100).....	86	86
Mean weight of a cubic foot of air ..... grains	557·4	548·7
Mean amount of Cloud (0—10)	6·6	7·5
Fall of Rain ..... inches	1·860	3·511
Greatest Rainfall in one day (20th) ..... ,,	0·420	0·754
No. of days on which ·005 in. or more Rain fell...	11	16·8

Wind :—Direction.....	N	NE	E	SE	S	SW	W	NW
No. of days.....	15	5	2	0	1	1	3	1
Mean Velocity in miles per hr.	3·1	4·8	7.6	0	4·8	7·7	7·7	10·7
Total No. of miles.....	1104	581	365	0	115	185	554	256

		Mean*
Total No. of Miles registered	3160	7608·1
Greatest hourly velocity (25th, 4 p.m., N.W.) ...	19	42·0

* *For the last 50 years.*

FEBRUARY, 1917.

DIFFERENCES.

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

Mean barometric pressure	+	0·152 in
Monthly range „	—	0·574 in
Mean of highest daily temperatures	—	5 9°
Mean of lowest „ „	—	4·7°
Mean daily range	—	1·2°
Adopted mean temperature	—	4·9°
Total rainfall	—	1·651 in.

Ground Frost on 1st—17th, 19th, and 27th. Hoar Frost on 1st and 7th. Snow on 3rd and 12th. Fog on 8th, 18th, 20th, and 21st.

The weather in general was excessively cold and severe, with long lying snows. For nearly half of the month the rivers Ribble and Hodder were frozen to skating condition. The winds, coming chiefly from the north, were so calm as to constitute an easy record. The greatest hourly velocity of 19 miles on the 25th, and the total run for the month, 3,160 miles, are each the lowest on record for February.

EXTREME READINGS FOR FEBRUARY, During 70 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, 1917.

Results of Observations taken during the Month.		Mean for the last 70 years.
Mean Reading of the Barometer ..... inches	29·403	29·444
Highest ,, ,, on the 15th ... ,,	30·163	30·042
Lowest ,, ,, on the 5th ... ,,	28·918	28·643
Range of Barometer Readings ..... ,,	1·245	1·399
Highest Reading of a Max. Therm. on the 17th...	51·5	56·8
Lowest Reading of a Min. Therm. on the 9th...	15·7	23·1
Range of Thermometer Readings	35·8	33·7
Mean of Highest Daily Readings	42·3	47·0
Mean of Lowest Daily Readings	31·7	34·3
Mean Daily Range	10·6	12·7
Deduced Mean Temp. (from mean of Max. & Min.)	36·0	39·7
Mean Temperature from Dry Bulb	38·0	40·2
Adopted Mean Temperature	37·0	40·0
Mean Temperature of Evaporation	35·4	38·1
Mean Temperature of Dew Point	33·2	35·6
Mean elastic force of Vapour ..... inches	0·189	0·208
Mean weight of Vapour in a cub. ft. of air, grains	2·2	2·4
Mean additional weight required for saturation ,,	0·4	0·5
Mean degree of Humidity (saturation 100).....	86	85
Mean weight of a cubic foot of air ..... grains	548·8	546·1
Mean amount of Cloud (0—10)	7·5	7·5
Fall of Rain ..... inches	3·110	3·394
Greatest Rainfall in one day (17th) ..... ,,	0·560	0·770
No. of days on which ·005 or more Rain fell...	16	16·8

Wind :—Direction	N	NE	E	SE	S	SW	W	NW
No. of Days.....	5	6	7	0	1	7	4	1
Mean Velocity in miles per hr.	9·1	7·9	11·0	0	25·1	15.5	9·9	8·5
Total No. of miles.....	1098	1139	1843	0	603	2617	949	203

		Mean*
Total No. of Miles registered	8452	8551·0
Greatest hourly velocity (7th. 7 a.m., Dir. E.N.E.)	37	41·1

* *For the last* **50** *years.*

MARCH, 1917.

DIFFERENCES.

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

Mean barometric pressure	...	...	...	—	0·041 in.
Monthly range ,,	...	...	...	—	0·154 in.
Mean of highest daily temperatures	...	...		—	4·7°
Mean of lowest ,, ,,			...	—	2·6°
Mean daily range	...	...	...	—	2·1°
Adopted mean temperature	...	...	...	—	3·0°
Total rainfall	...	...	...	—	0·284 in.

Ground Frost on 1st, 3rd—16th, 21st—24th, 26th—28th, 30th, and 31st. Hoar Frost on 1st, and 28th. Snow on 5th, 7th, 9th, 10th, 20th—22nd, 26th, 29th, and 30th. Hail on 19th, 29th, and 30th. Heavy rain on 10th, 17th, 28th, and 30th. Gale of Wind on 7th. Fog on 28th.

Unusually cold, with a prevalence of north-easterly winds, which greatly checked the growth of vegetation.

EXTREME READINGS FOR MARCH, During 70 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	1871	.....	44·0°
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, 1917.

Results of Observations taken during the Month.		Mean for the last 70 years.
Mean Reading of the Barometer ..... inches	29·455	29·489
Highest ,, ,, on the 25th ... ,,	30·197	29·955
Lowest ,, ,, on the 14th ... ,,	28·757	28·802
Range of Barometer Readings ..... ,,	1·440	1·153
Highest Reading of a Max. Therm. on the 22nd .	58·8	65·0
Lowest Reading of a Min. Therm. on the 2nd ...	13·6	28·0
Range of Thermometer Readings	45·2	37·0
Mean of Highest Daily Readings	46·7	54·7
Mean of Lowest Daily Readings	34·1	37·8
Mean Daily Range	12·6	16·9
Deduced Mean Temp. (from mean of Max. & Min.)	38·9	44·0
Mean Temperature from Dry Bulb	40·6	44·7
Adopted Mean Temperature	39·8	44·4
Mean Temperature of Evaporation	37·8	41·7
Mean Temperature of Dew Point	35·2	38·2
Mean elastic force of Vapour ..... inches	0·206	0·235
Mean weight of Vapour in a cub. ft. of air, grains	2·4	2·7
Mean additional weight required for Saturation ,,	0·5	0·7
Mean degree of Humidity (saturation 100).....	84	80
Mean weight of a cubic foot of air ..... grains	546·3	542·2
Mean amount of Cloud (0—10)	7·1	6·7
Fall of Rain ..... inches	1·540	2·554
Greatest Rainfall in one day (17th) ..... ,,	0·310	0·591
No. of days on which ·005 in. or more Rain fell...	12	14·7

Wind :—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	5	2	1	0	0	5	14	3
Mean Velocity in miles per hr.	2·9	6·0	1·8	0	0	11·0	12·7	7·3
Total No. of Miles.....	350	290	42	0	0	1320	4255	528

		Mean*
Total No. of Miles registered	6785	7581·5
Greatest hourly velocity (27th. 9 a.m. Dir. W.) ...	28	36·9

* *For the last 50 years.*

APRIL, 1917.

DIFFERENCES.

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

Mean barometric pressure	—	0·034 in.
Monthly range ,, ...	+	0·287 in.
Mean of highest daily temperatures	—	8·0°
Mean of lowest ,, ,, ...	—	3·7°
Mean daily range	—	4·3°
Adopted mean temperature	—	4·6°
Total rainfall	—	1·014 in.

Ground Frost on 1st—18th, and 26th. Hoar Frost on 3rd and 15th. Snow on 1st—6th, 8th—12th. Hail on 3rd—5th, 9th—11th, 13th and 14th. Solar Halo on 3rd and 17th.

This was the coldest April on our records. The mean temperature was 1° below our previous minimum in 1879, and the shade temperature, 13·6° on the 2nd, was 7° below any previous record.

EXTREME READINGS FOR APRIL, During 70 Years.

Highest reading of Barometer ...	1906	(8th)	30·317 in.
Lowest ,, ,, ...	1868	(20th)	28·358 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	1867	.....	24
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, 1917.

Results of Observations taken during the Month.		Mean for the last 70 years.
Mean Reading of the Barometer ..... inches	29·585	29·540
Highest ,, ,, on the 2nd & 3rd ,,	29·948	29·991
Lowest ,, ,, on the 18th ... ,,	29·264	28·955
Range of Barometer Readings ..... ,,	0·684	1·036
Highest Reading of a Max. Therm. on the 26th...	74·8	71·8
Lowest Reading of a Min. Therm. on the 7th ...	31·6	31·8
Range of Thermometer Readings	43·2	40·0
Mean of Highest Daily Readings	61·7	59·4
Mean of Lowest Daily Readings	45·1	42·4
Mean Daily Range	16·6	17·0
Deduced Mean Temp. (from mean of Max. & Min.)	51·7	49·1
Mean Temperature from Dry Bulb	53 6	49·9
Adopted Mean Temperature	52·7	49·5
Mean Temperature of Evaporation	49·5	46·3
Mean Temperature of Dew Point	46·3	42·8
Mean elastic force of Vapour ..... inches	0·315	0·278
Mean weight of Vapour in a cub. ft. of air, grains	3·6	3·1
Mean additional weigh required for saturation ,,	1·0	0·9
Mean degree of Humidity (saturation 100).....	80	77
Mean weight of a cubic foot of air ..... grains	534·4	537·1
Mean amount of Cloud (0—10).....	6·7	7·0
Fall of Rain ..... inches	1·530	2·668
Greatest Rainfall in one day (12th) ..... ,,	0·530	0·634
No. of days on which ·005 in. or more Rain fell...	11	14·5

Wind :—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	2	11	5	1	4	4	4	0
Mean Velocity in miles per hr.	7·5	8·3	7·4	8·2	8·3	7·5	6·9	0
Total No. of miles.....	360	2185	888	196	792	719	661	0

		Mean*
Total No. of Miles registered	5801	6998·0
Greatest hourly velocity (17th, 9 p.m. Dir. N. by E.)	19	32·9

* *For the last* **50** *years.*

MAY, 1917.

DIFFERENCES.

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

Mean barometric pressure	+	0·045 in.
Monthly range ,, ...	—	0·352 in.
Mean of highest daily temperatures	+	2·3°
Mean of lowest ,, ,, ...	+	2·7°
Mean daily range	—	0·4°
Adopted mean temperature	+	3·2°
Total rainfall	—	1·138 in.

Ground Frost on 2nd, 3rd, 6th, and 7th. Heavy Rain on 12th, Fog on 27th. Thunder on 13th, 21st, and 29th. Lightning on 13th and 21st. Solar Halo on 3rd and 30th.

A fine warm month, which largely restored the stunted vegetation to a condition of normal growth.

EXTREME READINGS FOR MAY,

During 70 Years.

Highest reading of Barometer ...	1881 (10th)	30·332 in.
Lowest ,, ,, ...	1877 (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	1886	6·178 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 ,, ,, ,, ...	1916	5353

* *Since* 1867 *only.* † *And in other years.*

JUNE, 1917.

Results of Observations taken during the Month.		Mean for the last 70 years.
Mean Reading of the Barometer ..... inches	29·603	29·553
Highest „ „ on the 30th ... „	29·967	29·931
Lowest „ „ on the 19th ... „	29·226	29·033
Range of Barometer Readings ..... „	0·741	0·898
Highest Reading of a Max. Therm. on the 12th...	75·6	76·9
Lowest Reading of a Min. Therm. on the 26th...	41·2	39·1
Range of Thermometer Readings	34·4	37·8
Mean of Highest Daily Readings	64·8	65·4
Mean of Lowest Daily Readings	49·1	48·1
Mean Daily Range	15·7	17·3
Deduced Mean Temp. (from mean of Max. & Min.)	55·2	54·9
Mean Temperature from Dry Bulb	56·5	55·3
Adopted Mean Temperature	55·9	55·1
Mean Temperature of Evaporation	51·9	51·9
Mean Temperature of Dew Point	48·1	48·4
Mean elastic force of Vapour ..... inches	0·339	0·349
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	531·2	531·2
Mean Amount of Cloud (0—10).....	4·9	7·2
Fall of Rain ..... inches	3·710	3·413
Greatest Rainfall in one day (23rd) ..... „	0·805	0·818
No. of days on which ·005 in. or more Rain fell...	13	15·3

Wind :—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	2	5	2	1	1	8	11	0
Mean Velocity in miles per hr.	3·0	7·1	8·5	3·9	6·1	10·0	5·7	0
Total No. of miles.....	142	848	407	94	147	1927	1513	0

		Mean*
Total No. of Miles registered	5078	6146·2
Greatest hourly velocity (22nd, 4 a.m.. Dir. W.)..	19	29·3

* *For the last 50 years.*

JUNE, 1917.

DIFFERENCES.

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

Mean barometric pressure	+	0·050 in.
Monthly range „	—	0·157 in.
Mean of highest daily temperatures	—	0.6°
Mean of lowest „ „	+	1·0°
Mean daily range	—	1·6°
Adopted mean temperature	+	0·8°
Total rainfall	+	0·297 in.

Hail on 2nd. Heavy Rain on 2nd and 23rd. Thunder on 1st, 2nd, 7th, 12th, 17th, 18th, 20th, 25th, and 26th. Lightning on 7th, 17th, and 20th. Solar Halo on 15th, 16th, and 20th.

A fairly normal June, with no great extremes of temperature.

EXTREME READINGS FOR JUNE,

During 70 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, 1917.

Results of Observations taken during the Month.		Mean for the last 70 years.
Mean Reading of the Barometer ..... inches	29·642	29·527
Highest ,, ,, on the 5th ... ,,	29·937	29·903
Lowest ,, ,, on the 18th ... ,,	29·057	29·018
Range of Barometer Readings ..... ,,	0·880	0·885
Highest Reading of a Max. Therm. on the 23rd..	77·2	78·6
Lowest Reading of a Min. Therm. on the 11th..	41·3	42·4
Range of Thermometer Readings	35·9	36·2
Mean of Highest Daily Readings	68·6	67·5
Mean of Lowest Daily Readings	51·7	51·1
Mean Daily Range	16·9	16·4
Deduced Mean Temp. (from mean of Max. & Min.)	58·3	57·7
Mean Temperature from Dry Bulb	59·5	58·0
Adopted Mean Temperature	58·9	57·9
Mean Temperature of Evaporation	54·9	54·8
Mean Temperature of Dew Point	51·3	52·0
Mean elastic force of Vapour ..... inches	0·379	0·388
Mean weight of Vapour in a cub. ft. of air, grains	4·3	4·4
Mean additional weight required for saturation ,,	1·3	1·1
Mean degree of Humidity (saturation 100)	76	81
Mean weight of a cubic foot of air ..... grains	528·5	527·6
Mean amount of Cloud (0—10)	6·1	7·4
Fall of Rain ..... inches	2·110	3·971
Greatest Rainfall in one day (18th)..... ,,	0·890	0·865
No. of days on which ·005 in. or more Rain fell...	8	16·5

Wind :—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	2	7	3	1	2	7	8	1
Mean Velocity in miles per hr.	9·4	6·1	8·2	2·3	7·3	8·1	6·6	4·6
Total No. of miles.....	451	1020	592	54	352	1354	1261	111

		Mean*
Total No. of Miles registered	5195	6405·9
Greatest hourly velocity (13th, Noon, Dir. S.) ...	21	28·5

* *For the last 50 years.*

JULY, 1917.

DIFFERENCES.

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

Mean barometric pressure	+	0·115 in.
Monthly range „	—	0·005 in.
Mean of highest daily temperatures	+	1·1°
Mean of lowest „ „	+	0·6°
Mean daily range	+	0·5°
Adopted Mean temperature	+	1·0°
Total rainfall	—	1·861 in.

Heavy Rain on 18th, and 27th. Thunder and Lightning on 15th, and 23rd. Solar Halo on 1st, 2nd, 5th, 8th, and 12th.

An ideal month for haymakers. Sunshine 46 hours above the average.

EXTREME READINGS FOR JULY,

During 70 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	†1861	.....	27
Least „ „ „	†1863	.....	8
*Greatest hourly velocity of wind	1892	(8th)	44 mls.
*Greatest No. of miles registered ...	1877	.....	8288
*Least „ „ „	1913	.....	4577

* *Since* 1867 *only.* † *And in othe. years.*

AUGUST, 1917.

Results of Observations taken during the Month.		Mean for the last 70 years.
Mean Reading of the Barometer ..... inches	29·245	29·491
Highest „ „ on the 5th ... „	29·603	29·886
Lowest „ „ on the 28th ... „	28·156	28·944
Range of Barometer Readings ..... „	1·447	0·942
Highest Reading of a Max. Therm. on the 5th...	74·4	76·4
Lowest Reading of a Min. Therm. on the 31st...	45·8	41·8
Range of Thermometer Readings	28·6	34·6
Mean of Highest Daily Readings	64·6	66·6
Mean of Lowest Daily Readings	53·5	50·7
Mean Daily Range	11·1	15·9
Deduced Mean. Temp. (from Mean of Max. & Min.)	57·4	57·0
Mean Temperature from Dry Bulb	58·3	57·7
Adopted Mean Temperature	57·9	57·4
Mean Temperature of Evaporation	55·2	54·5
Mean Temperature of Dew Point	52·8	51·8
Mean elastic force of Vapour ..... inches	0·400	0·387
Mean weight of Vapour in a cub. ft. of air, grains	4·5	4·3
Mean additional weight required for saturation „	0·9	0·9
Mean degree of Humidity (saturation 100)	83	82
Mean weight of a cubic foot of air ..... grains	522·3	527·4
Mean amount of Cloud (0—10).....	8·9	7·3
Fall of Rain ..... inches	6·215	5·015
Greatest Rainfall in one day (17th) ..... „	0·870	1·061
No. of days on which ·005 in. or more Rain fell...	26	18·4

Wind :—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	4	2	0	2	7	9	6	1
Mean Velocity in miles per hr.	5·5	5·3	0	7·1	9·6	10·3	10·1	9·3
Total No. of miles.....	527	254	0	340	1614	2223	1461	223

		Mean*
Total No. of Miles registered	6642	6364·4
Greatest hourly velocity (23rd, 1 p.m. Dir. S. by E.)	31	31·2

* *For the last 50 years.*

AUGUST, 1917.

DIFFERENCES.

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

Mean barometric pressure	—	0·246 in.
Monthly range „	+	0·505 in.
Mean of highest daily temperatures	—	2·0°
Mean of lowest „ „	+	2·8°
Mean daily range	—	4·8°
Adopted mean temperature	+	0·5°
Total rainfall	+	1·200 in.

Heavy Rain on 17th, 26th and 31st. Thunder on 11th—15th, and 23rd. Lightning on 11th, 13th, and 14th.

The weather in general was wet and unpleasant, with mean barometic pressure exceedingly low, and a minimum reading on the 28th, which forms a record for August.

EXTREME READINGS FOR AUGUST,
During 70 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, 1917.

Results of Observations taken during the Month.		Mean for the last 70 years.
Mean Reading of the Barometer ..... inches	29·575	29·547
Highest ,, ,, on the 29th ... ,,	29·942	30·012
Lowest ,, ,, on the 1st ... ,,	29·056	28·897
Range of Barometer Readings	0·886	1·115
Highest Reading of a Max. Therm. on the 5th...	69·0	72·1
Lowest Reading of a Min. Therm. on the 10th...	46·9	36·6
Range of Thermometer Readings	22·1	35·5
Mean of Highest Daily Readings	61·8	62·1
Mean of Lowest Daily Readings	50·5	47·2
Mean Daily Range	11·3	14·9
Deduced Mean Temp. (from mean of Max. & Min.)	54·9	53·4
Mean Temperature from Dry Bulb	55·8	54·3
Adopted Mean Temperature	55·4	53·9
Mean Temperature of Evaporation	53·0	51·1
Mean Temperature of Dew Point	50·7	48·3
Mean elastic force of Vapour ..... inches	0·371	0·339
Mean weight of Vapour in a cub. ft. of air, grains	4·2	3·9
Mean additional weight required for saturation ,,	0·8	0·9
Mean degree of Humidity (saturation 100).....	85	81
Mean weight of a cubic foot of air.....grains	531·0	532·6
Mean amount of Cloud (0—10)	6·5	6·7
Fall of Rain ..... inches	3·285	4·204
Greatest Rainfall in one day (13th)..... ,,	1·045	0·956
No. of days on which ·005 in. or more Rain fell...	14	16·2

Wind :—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	1	1	1	1	3	16	7	0
Mean Velocity in miles per hr.	4·3	3·6	6·2	4·2	8·3	9·7	8·9	0
Total No. of miles.....	102	86	149	101	595	3715	1492	0

		Mean*
Total No. of Miles registered	6240	6054·9
Greatest hourly velocity (13th, 4 p.m., Dir. S.W.	30	32·4

* *For the last* **50** *years.*

SEPTEMBER, 1917.

DIFFERENCES.

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

Mean barometric pressure	+	0·028 in.
Monthly range „	—	0·229 in.
Mean of highest daily temperatures	—	0·3°
Mean of lowest „ „	+	3·3°
Mean daily range	—	3·6°
Adopted mean temperature	+	1·5°
Total rainfall	—	0·919 in.

Heavy Rain on 13th, 15th and 18th. Thunder on 1st. Solar Halo on 11th.

A fairly fine normal September, with no extremes of temperature.

EXTREME READINGS FOR SEPTEMBER,

During 70 Years.

Highest reading of Barometer ...	1851	(15th)	30·247 in.
Lowest „ „ ...	1896	(25th)	28·314 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	1869	.....	9·539 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 ...	1866	.....	27
Least „ „ „	†1851	.....	6
*Greatest hourly velocity of wind	1875	(26th)	53 mls.
*Greatest No. of miles registered ...	1869	.....	9053
*Least „ „ „ ...	1888	.....	3261

* *Since* 1867 *only.* † *And in other years.*

OCTOBER, 1917.

Results of Observations taken during the Month.		Mean for the last 70 years.
Mean Reading of the Barometer ..... inches	29·228	29·437
Highest ,, ,, on the 20th ,,	29·798	30·017
Lowest ,, ,, on the 12th ,,	28·466	28·669
Range of Barometer Readings..... ,,	1·332	1·348
Highest Reading of a Max. Therm. on the 1st ...	64·9	64·0
Lowest Reading of a Min. Therm. on the 15th ...	29·5	29·6
Range of Thermometer Readings	35·4	34·4
Mean of Highest Daily Readings	49·9	54·5
Mean of Lowest Daily Readings	38·2	41·9
Mean Daily Range	11·7	12·6
Deduced Mean Temp. (from Mean. of Max. and Min.)	43·1	47·2
Mean Temperature from Dry Bulb	44·4	47·9
Adopted Mean Temperature	43·8	47·6
Mean Temperature of Evaporation	41·4	45·4
Mean Temperature of Dew Point	38·6	43·0
Mean elastic force of Vapour.....inches	0·234	0·278
Mean weight of vapour in a cub. ft. of air, grains	2·7	3·2
Mean additional weight required for saturation ,,	0·6	0·6
Mean degree of Humidity (saturation 100).....	82	84
Mean weight of a cubic foot of air .....grains	537·8	537·4
Mean amount of Cloud (0—10)	7·5	7·3
Fall of Rain ..... inches	8·805	5·017
Greatest Rainfall in one day (8th) ..... ,,	1·000	0·989
No. of days on which ·005 in. or more Rain fell...	25	18·9

Wind :—Direction.....	N	NE	E	SE	S	SW	W	NW
No. of days.....	0	0	0	1	4	18	5	3
Mean Velocity in miles per hr.	0	0	0	16·0	9·7	10·9	11·5	6·1
Total No. of miles.....	0	0	0	385	934	4691	1380	442

		Mean*
Total No. of miles registered	7832	6963·4
Greatest hourly velocity (25th, 3 a.m., Dir. W.) ...	42	37·7

* *For the last 50 years.*

OCTOBER, 1917.

DIFFERENCES.

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

Mean barometic pressure	—	0·209 in.
Monthly range ,, ...	—	0·016 in.
Mean of highest daily temperatures	—	4·6°
Mean of lowest ,, ,, ...	—	3·7°
Mean daily range ,, ...	—	0·9°
Adopted Mean temperature	—	3·8°
Total rainfall	+	3·788 in.

Ground Frost on 7th, 10th, 11th, 14th, 15th, 18th, 24th—28th. Hoar Frost on 15th, and 29th. Snow on 25th—28th. Hail on 5th, 7th—9th, 18th, 23rd—28th. Heavy Rain on 3rd, 6th—8th, 12th, 22nd, 24th, 26th. Gales of Wind on 25th, and 29th. Thunder on 8th, 9th, 26th and 27th. Lightning on 7th, 8th, 9th, 26th and 27th. Solar Halo on the 11th.

A cold and very wet month. The recorded Sunshine, however, was three hours above the normal.

EXTREME READINGS FOR OCTOBER, During 70 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 ,, ,, ,,	1864	10
*Greatest hourly velocity of wind	1877 (15th)	52 mls.
*Greatest No. of miles registered...	1874	9818
*Least ,, ,, ,, ...	1915	3965

* *Since* 1867 *only.*

NOVEMBER, 1917.

Results of Observations taken during the Month.		Mean for the last 70 years.
Mean Reading of the Barometer ..... inches	29·594	29·461
Highest ,, ,, on the 18th ... ,,	30·116	30·064
Lowest ,, ,, on the 9th ... ,,	28·594	28·561
Range of Barometer Readings..... ,,	1·522	1·503
Highest Reading of a Max. Therm. on the 5th...	54·4	55·8
Lowest Reading of a Min. Therm. on the 25th ...	29·8	25·5
Range of Thermometer Readings	24·6	30·3
Mean of Highest Daily Readings	49·2	47·3
Mean of Lowest Daily Readings	41·5	36·8
Mean Daily Range	7·7	10·5
Deduced Mean. Temp. (from Mean of Max. and Min.)	45·0	41·7
Mean Temperature from Dry Bulb.....	45·8	42·1
Adopted Mean Temperature	45·4	41·9
Mean Temperature of Evaporation	43·9	39·8
Mean Temperature of Dew Point	42·2	38·2
Mean elastic force of Vapour.....inches	0·269	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 ..... grains	542·6	544·5
Mean amount of Cloud (0—10)	9·2	7·4
Fall of Rain ..... inches	5·971	4·446
Greatest Rainfall in one day (26th)..... ,,	1·820	0·978
No. of days on which ·005 in. or more Rain fell...	27	18·1

Wind :—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	1	2	0	0	2	9	14	2
Mean Velocity in miles per hr.	4·7	6·0	0	0	9·9	14·7	13·3	8·1
Total No. of miles.....	112	288	0	0	475	3169	4452	389

		Mean*
Total No. of miles registered	8885	7328·5
Greatest hourly velocity (24th & 25th, Mid and 3 a.m., Dir. W.	40	41·3

* *For the last* 50 *years.*

NOVEMBER, 1917.

DIFFERENCES.

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

Mean barometic pressure	+	0·133 in.
Monthly range ,, ...	+	0·019 in.
Mean of highest daily temperatures	+	1·9°
Mean of lowest ,, ,, ...	+	4·7°
Mean daily range ,, ...	—	2·8°
Adopted mean temperature	+	3·5°
Total rainfall	+	1·525 in.

Ground Frost on 10th, 14th, 25th, and 26th. Snow on 26th. Hail on 25th and 26th. Heavy Rain on 20th and 26th. Gales of Wind on 6th, 24th, and 25th. Fog on 2nd, 12th, 13th, 15th, and 16th. Thunder on 25th. Lightning on 9th and 25th.

Weather mild, cloudy, and wet.

EXTREME READINGS FOR NOVEMBER, During 70 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, 1917.

Results of Observations taken during the Month.		Mean for the last 70 years.
Mean Reading of the Barometer ..... inches	29·777	29·432
Highest ,, ,, on the 11th ,,	30·056	30·064
Lowest ,, ,, on the 1st ,,	29·090	28·527
Range of Barometer Readings..... ,,	0·966	1·537
Highest Reading of a Max. Therm. on the 6th...	49·3	52·9
Lowest Reading of a Min. Therm. on the 10 & 22	23·0	21·0
Range of Thermometer Readings.....	26·3	31·9
Mean of Highest Daily Readings	40·8	43·3
Mean of Lowest Daily Readings	31·6	33·5
Mean Daily Range	9·2	9·8
Deduced Mean Temp. (from Mean. of Max. and Min.)	36·2	38·4
Mean Temperature from Dry Bulb	36·4	39·0
Adopted Mean Temperature	36·3	38·7
Mean Temperature of Evaporation	34·5	37·1
Mean Temperature of Dew Point	31·9	35·2
Mean elastic force of Vapour ..... inches	0·181	0·207
Mean weight of Vapour in a cub. ft. of air, grains	2·1	2·4
Mean additional weight required for saturation ,,	0·5	0·4
Mean degree of Humidity (saturation 100)	84	87
Mean weight of a cubic foot of air ..... grains	556·5	547·2
Mean amount of Cloud (0—10)	7·2	7·6
Fall of Rain ..... inches	2·813	4·601
Greatest Rainfall in one day (13th)..... ,,	0·525	0·848
No. of days on which ·005 in. or more Rain fell...	15	19·7

Wind :—Direction	N	NE	E	SE	S	SW	W	NW
No. of days.....	4	6	0	0	3	5	10	3
Mean Velocity in miles per hr.	7·2	11·0	0	0	5·5	11·1	11·1	7·7
Total No. of miles.....	687	1589	0	0	393	1326	2653	554

		*Mean
Total No. of miles registered	7202	7805·3
Greatest hourly velocity (2nd, 1 a.m. Dir., W.N.W.	35	42·4

* *For the last 50 years.*

DECEMBER, 1917.

DIFFERENCES.

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

Mean barometric pressure	+	0·345 in.
Monthly range „	—	0·571 in.
Mean of highest daily temperatures	—	2·5°
Mean of lowest „ „	—	1·9°
Mean daily range „	—	0·6°
Adopted mean temperature	—	2·4°
Total rainfall	—	1·788 in.

Ground Frost on 1st—4th, 8th—11th, 15th—22nd, 24th—28th. Hoar Frost on 9th. Snow on 4th, 5th, 9th, 14th—17th. Hail on 1st—3rd, 5th and 14th. Heavy Rain on 13th. Fog on 9th. Thunder and Lightning on 14th. Lunar Halo on 25th.

A dry, cold, and exceptionally sunny December.

EXTREME READINGS FOR DECEMBER, During 70 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	1880	9·211 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 ...	1868	28
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, 1917.

Results of Observations taken during the Year.		Mean for the last 70 Years.
Readings of Barometer in inches.		
Mean of the Year	29·522	29·492
Highest Monthly Mean (December)	29·777	29·745
Lowest ,, ,, (October)	29·228	29·220
Highest Reading (April)	30·197	30·291
Lowest ,, (August)	28·156	28·201
Range	2·041	2·090
Thermometer, Fahrenheit.		
Highest Monthly Mean Temperature (July)	58·9	58·6
Lowest ,, ,, ,, (February)	33·4	35·5
Highest Reading of a Max. Therm. (July 23rd)	77·2	81·5
Lowest ,, Min. ,, (Feb. 6, Apl. 2)	13·6	15·9
Range of Thermometer Readings	63·6	65·6
Mean of Highest Daily ,,	52·2	54·5
Mean of Lowest Daily ,,	40·7	40·9
Mean Daily Range	11·5	13·6
Deduced Mean Temp. (from mean of Max. and Min.)	45·4	46·8
Mean Temperature from Dry Bulb	46·5	47·1
Adopted Mean Temperature of the Year	46·0	47·0
Mean Temperature of Evaporation	43·6	44·6
Mean Temperature of Dew Point	40·9	42·1
Mean elastic force of Vapour ..... inches	0·268	0·274
Mean weight of Vapour in a cub. ft. of air...grns.	3·1	3·2
Mean additional weight required for saturation ,,	0·7	0·7
Mean degree of Humidity (saturation 100)	83	83
Mean weight of a cubic foot of air.....grns.	540·8	539·1
Mean amount of Cloud (0—10)	7·2	7·3
Total fall of Rain ..... inches	44·184	47·010
Greatest Monthly Rainfall (October)	8·805	7·547
Least ,, ,, (May)	1·530	1·232
Greatest Rainfall in one day (November 26th) ,,	1·820	1·628
No. of days per Month on which ·005 inch or more Rain fell	16·3	17·1

SUMMARY OF WIND, 1917.

Prevailing Direction	N	NE	E	SE	S	SW	W	NW
No. of days for each	48	51	31	7	28	92	91	17
Mean Velocity in miles per hour...	5·7	7·3	9·5	7·0	9·0	11·0	10·2	8·0
Total No. of miles for each Direction	6531	8940	7061	1170	6020	24219	22346	3246

		Mean for the last 50 years.
Total No. of miles registered	79533	86019·2
Greatest Monthly Total (November).....	8885	10015·7
Least ,, ,, (February)	3160	4991·0
Greatest hourly velocity (October 25th) ...	42	51·3
Prevailing Direction of Wind	S.W.	W

DIFFERENCES, 1917.

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

Mean barometric pressure...	+	0·030 in.
Yearly range ,, ...	—	0·049 in.
Mean of highest daily temperatures	—	2·3°
Mean of lowest ,, ,, ...	—	0·2°
Mean daily range	—	2·1°
Adopted mean temperature	—	1·0°
Total rainfall	—	2·826 in.

ABSOLUTE EXTREMES

FOR THE LAST 70 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 70 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.)	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	8551
Least „ „ „ ...	September	6055
Greatest No. „ „ year .	1868	102395
Least „ „ „ „ ...	1915	70623

* *Record dates from 1867 only.*

DATES OF OCCASIONAL PHENOMENA.

1917	Frost	Hoar Frost	Snow	Hail	Heavy Rain
January	5, 7-11, 13-31		8, 10, 13-17, 19-22,	4, 8, 12	2, 7
February	1-17, 19, 27	1, 7	3, 12 [26, 28-31		
March	1, 3-16, 21-24, 26-28, 30, 31	1, 28	5, 7, 9, 10. 20-22,	19, 29, 30	10, 17, 28, 30
April	1-18, 26	3, 15	1-6, 8-12 [26 29, 30	3-5, 9-11, 13-14	
May	2, 3, 6, 7				12
June				2	2, 23
July					18, 27
August					17, 26, 31
September					13, 15, 18
October	7, 10, 11, 14, 15, 18, 24-28	15, 29	25 28	5, 7-9, 18, 23-28	3 6-8 12 22 24-26
November	10, 14, 25, 26		26	25, 26	20, 26
December	1-4, 8-11, 15-22, 24-28	9	4, 5, 9, 14-17	1. 3. 5. 14	13

1917	Gales of Wind	Fog	Thunder	Lightning	*Lunar Halo	*Solar Halo	Aurora Borealis
January		11					
February		8, 18, 20, 21					
March	7	28					
April							
May		27	13, 21, 29	13, 21		3, 17	
June			1, 2, 7, 12, 17, 18. 20,	7, 17, 20		3, 30	
July			15, 23 [25, 26	15, 23		15, 16, 20	
August			11-15, 23	11, 13, 14		1, 2, 5, 8, 12	
September			1				
October	25, 29		8, 9, 26, 27	7, 8, 9, 26, 27		11	
November	6, 24, 25	2, 12, 13, 15,	25	9, 25		11	
December		9 [16	14	14	25		

*22° *Radius.*

MONTHLY TOTALS FOR EACH HOUR OF RECORDED SUNSHINE.

1917. 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 ...	...	...	...	...	0·1	2·0	3·7	3·0	4·9	3·6	1·4	0·1	0·1	...	...	...	...
February ...	...	...	...	...	2·1	6·2	8·5	7·5	9·1	8·5	7·8	5·8	1·1	...	...	...	...
March ...	...	...	0·2	5·3	9·6	11·5	14·3	13·0	12·4	12·3	10·7	10·2	5·4	0·9	...	...	...
April ...	...	0·4	3·0	5·9	10·9	10·8	9·8	10·3	11·3	11·6	12·3	11·2	8·3	6·1	0·8	...	...
May ...	0·3	3.4	12·4	14·2	14·5	14·4	17·6	15·8	15·0	17·0	14·8	13·6	13·2	11·6	7·6	1.7	...
June ...	2·2	9·0	14·5	16.1	16·1	16·1	12·9	13·1	12·8	11·3	11·6	14·4	16·6	17·8	15·6	11·3	...
July ...	2.7	9·9	13·8	16·7	13·8	14·4	14·8	15·6	16·0	15·6	17·1	16·6	15·9	15.6	13·7	8·9	...
August ...	...	0·4	1·7	3·8	6·9	9·3	9·9	10·2	13·6	12·7	12·8	11·3	10·4	6·2	3·1	0·3	...
September ..	...	...	0·7	6·0	8·4	10·4	11·1	9·3	9·7	10·1	10·5	11·1	9·3	2·7	0·9	...	...
October ...	...	...	...	1·4	6·4	9·7	11·9	11·6	13.4	11·4	10·3	8·0	2·4	...	...	...	...
November...	...	...	...	...	1·2	3·8	4.4	3·2	5·2	5·2	2·4	2·1	...	...	...	...	...
December ...	...	...	...	...	0.1	4·0	9·6	9·4	8·5	5·8	4·9	0·2	...	...	...	...	...
Sums ...	5·2	23·1	46·3	69·4	90·1	112·6	128·5	122·0	131·9	125·1	116·6	104·6	82·7	60·9	41·7	22·2	...

TOTAL AMOUNT OF SUNSHINE RECORDED ON EACH DAY.

1917	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
January ...	...	...	...	3.1	...	0·5	...	...	4·9	1·2	...	0·6	1.7	0·4	0·1	0·4	1.5
February ...	6·7	...	...	3·4	6·4	4·9	...	0·3	4·8	6·3	...	4.7	2·5	4·0	5·5	1·6	...
March ...	1.1	...	2·6	0·1	0·6	...	0·5	8·2	...	...	1·5	8·6	5·2	8·2	5.8	...	3·5
April ...	4·9	1·9	0·3	4·8	0.6	6·7	0·3	0·3	8·4	8·8	11·7	4·2	0·8	1·7	7·9	2.7	10·4
May ...	11·4	13·1	7·5	11·0	7.4	13·2	10·7	11·2	8·0	...	2·1	2.8	5·3	7·9	1·4	7·7	1·0
June ...	0·4	5·0	2·1	12·5	12·4	4·3	5·0	6·3	11·2	9·0	13·8	11·8	6·0	13.0	8·0	5·5	10·3
July ...	15·3	15·4	14·8	7·4	12·0	...	9·2	0·6	8.8	5·6	7·8	4·3	3·2	11·9	5·1	7·0	7.2
August ...	0·2	1·4	7·1	4·5	6·5	4·3	6·1	...	....	3·0	5·1	3·7	2·5	3·0	4.4	8.6	...
September ..	2·8	5·4	1.0	9·2	5·0	1·1	6·1	4·9	3·0	1·3	1·5	6·5	...	8·0	6·7	1·5	3·5
October ...	8·4	6.4	0·2	....	5.5	10·0	0·7	...	7.0	0.3	4·5	0·4	3·6	6·5	4·4	0·7	0.6
November...	...	...	...	3·6	...	3·6	2·5	...	1.3	3·9	0·3	2·8	...	4·3	...	...	0·3
December ...	0.6	4·9	3.4	...	...	...	2.8	1.7	...	5.5	3.3	...	0.8	0·9	0.8	...	3.5

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

1917	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MONTHLY Total	MONTHLY Percen.
January ...	...	...	0·1	...	...	0·3	1·7	0·7	...	1·3	0·1	...	0·3	...	18·9	7·6
February ...	1·2	...	...	...	...	...	...	...	3·5	...	0·8				56·6	20·8
March ...	7·0	1·6	6·3	2·2	7·0	8·4	3·5	0·7	4·3	8·5	1·9	7·3	0·4	0·8	105·8	28·9
April ...	0·5	0·1	9·5	1·8	0·5	0·1	10·6	0·7	2·9	3·2	0·1	0·1	6·2		112·7	26·9
May ...	0·1	...	0·8	0·8	3·8	6·4	2·5	2·1	10·3	1·2	14·5	13·3	8·8	0.8	187·1	38·0
June ...	12·9	0·1	0·8	9·8	5·2	0·1	6·7	8·0	4·0	1·6	0·3	14·3	11·0		211·4	41·6
July ...	0·6	10·8	14·0	11·0	14·2	2·7	2·1	8·1	0·7	1·9	7·5	0·1	5.8	6·0	221·1	43·4
August ...	6·3	8·6	3·2	6·9	3·3	7·0	...	4·6	0·1	6·1	1·4	0·6	0·4	3.7	112·6	24·6
September ..	0·9	1·0	3·0	7·5	...	...	2·7	7·3	...	...	2·8	4·8	2·7		100·2	26·4
October ...	1·6	7·1	0·2	...	0·1	5·4	0·3	3·2	3·0	2·3	1·6	1·4	0·2	0·9	86·5	26·5
November...	...	...	...	...	...	...	0·2	4·7	...	...	...	...	...		27·5	10·7
December ..	...	1·2	...	0·5	4·3	...	...	4·7	0·6	1·4	0·5	...	0·6	0·5	42·5	18·4

SUMMARY OF SUNSHINE.

	Bright Sunshine Recorded					
	1917			Mean for the last 37 years		
	Number of		Percentage of Possible Sunshine	Number of		Percentage of Possible Sunshine
	Days	Hours		Days	Hours	
January ...	17	18·9	7·6	14·1	32·4	13·1
February ...	15	56·6	20·8	17·8	58·9	21·5
March ...	26	105·8	28·9	24·2	103·5	28·3
April ...	30	112·7	26·9	26·4	149·0	35·6
May ...	29	187·1	38·0	27·6	186·0	37·7
June ...	30	211·4	41·6	27·9	184·7	36·4
July ...	30	221·1	43·4	28·4	175·5	34·5
August ...	27	112·6	24·6	27·6	150·2	32·9
September ..	25	100·2	26·4	25·8	125·0	33·0
October ...	28	86·5	26·5	23·4	83·5	25·6
November ..	11	27·5	10·7	17·3	46·2	18·1
December ...	20	42·5	18·4	13·4	25·7	11·1
Year ...	288	1282·9	28·7	273·6	1320·6	29·6

SUMMARY OF SUNSHINE—*Continued.*

EXTREMES FOR THE LAST 37 YEARS.

MONTH	Number of Days on which Sunshine was recorded				Number of Hours				Percentage of Possible Sunshine			
	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	1905	223·7	1893	94·0	1913	53·4	1893	22·3	1913
May	30	*1880	22	1886	266·6	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	25	*1888	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).

1917	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 p.m. readings	4 a.m. readings*					
	16° +						17° +	17° +	
	′	′	′	′	′	′	′	′	′
January ...	23·3	16·3	20·4	18·7	19·7	11·6	31·7	— 25·3	57·0
February ...	24·5	17·0	22·6	19·5	20·9	10·2	41·7	5·7	36·0
March	24·9	15·6	22·1	18·0	20·2	11·3	30·7	7·7	23·0
April	23·2	14·3	20·9	17·2	18·9	11·8	26·7	8·7	18·0
May	22·1	11·3	19·9	15·2	17·1	11·2	26·7	6·7	20·0
June	19·7	9·0	17·8	12·9	14·8	13·5	26·7	— 2·3	29·0
July	21·5	10·5	18·7	14·2	16·2	13·5	33·3	0·3	33·0
August ...	21·9	9·5	17·1	12·9	15·4	17·3	41·3	— 15·7	57·0
September ...	19·1	9·6	15·5	11·9	14·0	12·7	26·3	— 6·7	33·0
October ...	18·1	10·0	14·8	13·8	14·2	12·8	24·3	— 5·7	30·0
November ...	13·8	9·1	12·2	10·6	11·4	7·5	19·3	— 0·7	20·0
December ...	15·8	11·6	14·5	13·2	13·8	7·8	20·3	3·3	17·0
Means	20·7	12·0	18·0	14·8	16·4	11·8	29·1	— 2·0	31·1

Mean for the year ... ... 16° 16·4 W.

† *For the 10 quietest days.* * *Of the following day.* ‡ *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.

1917	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 p.m. readings	4 a.m. readings*					
	1700 +				0 +		17000 +		0 +
January ...	364	336	350	354	351	47	424	185	239
February ...	366	335	359	357	354	40	442	300	142
March ...	364	331	353	355	351	41	429	332	97
April	367	323	354	354	350	55	429	309	120
May	370	318	352	346	346	65	414	254	160
June	353	306	342	333	333	67	430	241	189
July	366	316	351	347	345	71	464	284	180
August ...	348	298	336	333	329	111	570	55	515
September ...	346	300	332	333	328	64	372	138	234
October ...	345	303	331	337	329	61	380	231	149
November ...	344	315	336	338	333	39	376	266	110
December ...	347	318	337	338	335	40	372	262	110
Means	357	317	344	344	340	58	425	238	187

Mean for the year ... ... 0·17340 C. G. S. Units.

† *For the* 10 *quietest days.* **Of the following days.* ‡ *Includes all days.*

ABSOLUTE MEASURES—SUMMARY.

DIRECTION				FORCE.		
1917	Declination Corrected		Inclination		Horizontal	Vertical	Total
	°	′	°	′	C. G. S. UNITS.		
January ...	16	21·4	68	44·1	0·17344	0·44566	0·47823
February ...	16	21·1	68	41·1	0·17348	0·44462	0·47726
March ...	16	22·3	68	40·9	0·17347	0·44450	0·47715
April	16	18·0	68	40·5	0·17350	0·44444	0·47722
May	16	14·1	68	39·7	0·17347	0·44405	0·47673
June	16	16·1	68	41·3	0·17350	0·44474	0·47738
July	16	16·3	68	40·0	0·17347	0·44417	0·47684
August ...	16	15·8	68	44·7	0·17344	0·44589	0·47844
September ...	16	13·5	68	44·6	0·17329	0·44546	0·47797
October ...	16	14·5	68	42·6	0·17343	0·44506	0·47766
November ...	16	13·4	68	42·0	0·17327	0·44441	0·47700
December ...	16	11·3	68	42·0	0·17311	0·44400	0·47656
Means ...	16	16·5	68	42·0	0·17341	0·44475	0·47737

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 reckoned astronomically from noon to noon.

1917	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1917
D.													D.
1	s	c	s	s	m	c	s	c	s	s	s	c	1
2	s	s	c	s	m	c	m	c	s	s	s	*	2
3	s	s	c	s	*	m	s	s	s	m	c	s	3
4	v.g.	s	m	s	c	s	s	s	m	s	c	s	4
5	s	s	m	m	c	s	c	c	m	s	c	*	5
6	s	s	*	s	*	*	s	c	s	c	s	*	6
7	s	s	*	s	c	*	s	s	s	s	s	s	7
8	s	s	s	s	c	s	c	g	s	s	c	s	8
9	s	s	s	s	s	s	s	g	s	s	c	c	9
10	s	s	s	s	s	s	s	s	c	s	s	c	10
11	s	s	s	c	s	s	s	c	c	s	s	c	11
12	m	c	s	s	s	s	m	s	s	c	m	c	12
13	s	c	s	c	c	m	m	v.g.	s	m	s	c	13
14	s	s	s	s	*	s	s	v.g.	s	s	c	s	14
15	c	g	s	s	*	s	s	s	s	c	c	*	15
16	s	s	s	s	s	s	c	s	s	c	c	m	16
17	s	s	s	s	s	s	c	s	s	c	c	*	17
18	c	s	s	s	*	c	c	s	s	c	s	s	18
19	s	m	s	*	c	c	c	c	s	c	s	s	19
20	s	s	s	*	s	c	c	s	s	c	s	s	20
21	m	s	s	*	s	s	m	v.g.	s	c	c	s	21
22	m	s	s	*	m	m	s	s	s	c	c	s	22
23	s	s	s	*	s	m	s	g	c	s	c	s	23
24	m	s	s	s	s	g	s	c	c	s	s	c	24
25	s	s	s	s	s	s	s	g	s	s	m	m	25
26	s	s	s	m	s	s	c	s	s	c	m	m	26
27	s	s	s	s	m	s	s	s	s	c	s	s	27
28	s	s	c	s	m	s	m	s	s	m	s	c	28
29	s		c	s	s	s	s	c	s	m	c	s	29
30	s		c	m	s	c	s	s	s	s	c	c	30
31	s		s		c		g	c		s		c	31
TOTAL c	2	3	5	2	7	6	8	9	4	12	14	10	
TOTAL s	24	23	22	20	14	17	17	15	24	15	13	13	
TOTAL m	4	1	2	3	5	4	5	...	2	4	3	3	
TOTAL g	...	1	...	...	...	1	1	4	...	...	...	...	
TOTAL vg	1	...	...	...	...	...	...	3	...	...	...	...	

* *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.

1917	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1917
D.													D.
1		2·0	2·1	4·5	11·5		8·0			5·0			1
2				1·2	9·0	13·0	8·0	7·0		4·7		18·3	2
3			8·2	1·0	9·8	9·8	10·4	7·8				13·2	3
4	12.6	3·7		0 6	8·8	8·6	9·6	7·6	8·5		6·0		4
5		8·0			10·0	5·6	13·4	17·2	8·0	5·0			5
6	11·0	12·0		1·4	9·2	5 8		30·0		5·3	9·4		6
7		18·0			8·0		10·4	40·0	4·0			4·2	7
8			14·0		7·6	9·8			4·2			5·1	8
9	7·0	28·2		0·7	8·4	9·2	16·6		4·0	3·0	9·7		9
10	5·3	37·2		0·3		11·0	17·0	45·0			9 6	6·4	10
11			4·5	1·7	9·6	11·5	22·6	50·0		1·7	7·0	9·4	11
12	3·5	29·4	8 8	8·0	11·0	14·2	20·6	49·0	7·6		6·2		12
13		30·0	8·0	11·7	11·4	15·2		46·0		2·2	2·7		13
14		18·0	7·5		12·5	15·2	26·2	32·0	12·4	4·2		21·4	14
15		10·4	4·4	20·8		13·0	22.0	31·0	12·3	5·2		21·0	15
16	3·3	4 2		13·5	12·6	12·0	16·6	28·6					16
17	2·6		5·5	17·4		13.0	14.0		11·4			11·0	17
18		n	7·0			18·6		25·0					18
19			5 8				6·8	24·6		12·3			19
20			7·3	7·2		14·4	5·4	20·0				11·0	20
21			7·3			14·0	4·8	20·0	37·8	11·4			21
22			9·2	n	9·0	13·1	7·2					14·5	22
23			9·6		9·6		8·0	15·0		15·0			23
24	3·6			10·2		13·8			34·6				24
25	3 1				11·6	15·0	11·6	10·0	32·0	13·0	8·0	26·5	25
26		1·0	9·2	10·8	15·4	11·2	13·6			12.0			26
27	3·8		5·2	10·0	17·0	13·4	11·5	10·5					27
28		2·0	6·2		21·8		12·2		10·0	6 4		26 0	28
29			6·7		21·4	12·6			5·0	5·0			29
30				8 0	18·6	9·0	15·0						30
31			5·3		15·0		12·4	9·0		4·6			31
Daily Means	5 6	14·6	7 1	7·2	12·1	12·1	13·0	25·0	13.7	6·8	7·3	14·5	