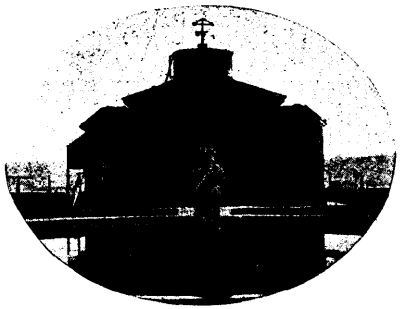
STONYHURST COLLEGE OBSERVATORY.

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 and Magnetical Observations.

1911.

With Report and Notes of the Director,

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

LIVERPOOL:
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1912.

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CORRIGENDA.

MAGNETIC FORCE, 1908 and 1910.

Corrected Values in C.G.S. Units.

	1908.*		1910.*		
	Vertical.	Total.	Vertical.	Total.	
January ...	0·44836	0·48105	0·44528	0·47801	January
February ...	0·44825	0·48094	0·44736	0·47997	February
March ...	0·44694	0·47976	0·44497	0·47779	March
April ...	0·44756	0·48024	0·44658	0·47927	April
May ...	0·44839	0·48112	0·44703	0·47978	May
June ...	0·44778	0.48043	0·44634	0·47914	June
July ..	0·44795	0·48073	0·44750	0·48024	July
August ...	0·44840	0·48118	0·44550	0·47823	August
September .	0·44888	0·48163	0·44582	0·47863	September
October ...	0·44802	0·48074	0·44643	0·47904	October
November. .	0·44853	0·48125	0·44758	0·48035	November
December...	0·44693	0·47963	0·44816	0·48085	December
Means ...	0·44800	0·48073	0·44655	0·47928	

* The corresponding figures in "Results," 1908, p. 40, and 1910, p. 39, were computed from the uncorrected values of Horizontal Force.

Also on page 44 of 1908, for last entry, 17412, read the corrected value, 17434.

REPORT AND NOTES.

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

The wind is recorded by a Robinson's Anemograph at about 45 feet above the ground. A velocity of 37 miles per hour and over is called a gale.

Bright sunshine is recorded by a Campbell-Stokes Recorder.

The Rain Gauge is a Beckley Self Recorder. 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 more during the day.

The Barometer is a standard barometer of the pattern approved by the Meteorological Office. It is now mounted, with the photo-barograph, in the underground Magnetic chamber. Its cup is 363 feet above the 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, and are annually compared with the Office-standards. 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 year's mean barometric pressure appears as only ·053 inch above the average of the last 64 years; although the monthly means, excepting only those of November and December, are all above their averages. December shows the lowest and January the highest mean of the year. The rainfall of January was nearly 2½ inches short of its average, and that of December was over 2½ inches in excess. December was the wettest month of the year, with rain on 27 days, but it was a very warm month relatively: its mean temperature being 4°·2 above its average. February also was a wet month. Its rainfall, although one inch less in amount than that of December, was the tenth of an inch greater in excess of its average. It was distributed over 17 days, the first 9 days being rainless, with a low but steady barometer: the rains came with the higher readings which brought up the mean pressure to ·157 above the month's barometric average. July may be compared with January in barometric pressure and rainfall. Its mean pressure reads one-tenth inch less than that of January, and one-tenth

inch less in excess of the average; while the rainfall was over eighth-tenths of an inch less than in January, and over six-tenths shorter of the average. July was the finest month of the twelve. Its rainfall, a little less than one inch distributed over 10 days, is the lowest monthly fall of the year. Its sunshine cards show the longest duration of clear sky on record for July with 82 hours of bright sunshine in excess of the average. August followed, nearly as fine as July, with a lower mean reading of the barometer by ·17 inch. Its rainfall was nearly two inches short of its average, against the three inches shortage of July; and its sunshine duration was 61 hours in excess. Its mean temperature, the highest on record for August, was higher than that of July by half a degree, and was 4°·7 above the average, against 3°·7 the excess in July. But the highest temperature of the year, 83°·6, occurred in July, against 82°·3 in August.

The year has been, in general, a warm year. Its mean temperature, 48°·6, is 1°·7 above the average. Of our five summer months, May—September, the mean temperature comes out at 56°·7, which is 2°·8 above the average of the same months; and the remaining seven colder months show a mean temperature of 42°·2, which is 1°·2 above their average. The lowest temperature of the year was 20°·5 in February. High temperatures in the summer months are recorded as follows: in May, between 70° and 75° on 6 days at the end of the month; in June, between 70° and 78° on 6 days at the beginning of the month; in July, between 71° and 80° on 13 days, and between 80° and 84° on 4 days; in August, between 70° and 80° on 10 days, and between 80° and 83° on 3 days; in September, between 70° and 77° on 4 days.

There have been 8 gales of wind, at highest velocities between 37 and 53 miles per hour: one in each of the months February, April, May and November, and 4 in December. Seven of these were from points of the compass between S and SSE, and one from SW by W. The highest velocity, 53 miles, was reached on April 19 from SSE, and is the highest recorded for April.

The total current crossing the Observatory in any direction was 86,346 miles; and dividing this between two general directions, West and East of the magnetic meridian, *i e.*, including South in the West side and North in the East side, the West side current has been the longer by 35,202 miles, or nearly $2\frac{3}{8}$ths times that of the East side current.

Fine dry periods of the year are noted as follows:—January 1—4, 11—14, 15—21, 25—31; February 1—13; March 13—31; April 1—18; May 4—12, 14—16, 18—22, 24—31; August 1—3, 7—19, 22—25, 28—31; September 1—3, 5—9, 13—18, 21—24; October 1—18; November 17—30; December none.

Heavy rainfalls, of 1 inch and over in the day, were registered on 4 days: February 21; June 24; September 12; and October 29.

Magnetical.— Absolute measures of Horizontal Magnetic Force have been made once each month, by the method of Vibration and Deflection.

In these observations the same Magnet has been employed from the beginning of the series in March, 1863. The weight of the Magnet with its stirrup is 825 grains, and its length 3·94 inches nearly. Its moment of inertia, measured by the method of vibrations, with and without

a known increase of the moment, is 5·27303 to the English foot-second-grain units, at the temperature 35° Fahr., and its rate of increase is 0·00073 for increase of 10°.

The temperature corrections have been obtained from the formula $q\ (t°—32°) + q'\ (t°—32°)^2$ where t° is the observed temperature and 32° Fahr. the adopted standard temperature. The values of the co-efficient q and q' are respectively 0·0001128 and 0·000000436.

The induction co-efficient μ is 0·000244.

The correction for error of graduation of the Deflection bar at 1·0 foot is + 0·00004 ft. at 1·3 + 0·000064 ft.

The observed times of vibration are entered in the Table without corrections.

The time of one vibration was obtained in August by two measures of the time of 400 vibrations; the rest by twelve measures of 100 vibrations.

The angles of deflection are each the mean of two sets of readings.

In deducing from these observations the ratio and product of the magnetic moment m of the magnet, and the earth's horizontal magnetic intensity X, the induction and temperature corrections have always been applied, and the observed time of vibration has been corrected for the effect of torsion of the suspending thread, and for rate of chronometer; but no correction has been required for the arc of vibration.

In the calculations of the ratio $\frac{m}{X}$, the third and subsequent terms of the series $1 + \frac{P}{r2} + \frac{Q}{r4} +$ &c., have always been omitted.

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

All the computations are in English foot-second-grain units; but in the final table the results are given only in C. G. S. units.

Absolute measures of horizontal force and inclination are made once each month, as soon after the 14th day as weather and other circumstances permit. The Inclination is measured with Dover's Circle, No. 159.

The horizontal direction, or Declination, is observed 4 times each month, at approximately equal intervals, and always, when possible, at 4 p.m. These measures 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 ten quietest days of the month. This change has been made in order to free the means from the chance-balancing of disturbed extremes.

The Differential Instruments, or 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. The time-scale is provided by 4 automatic interruptions at the hours 4, 10, 16, 22 Astronomical time, in addition to the times of the beginning and end of the run.

The scale value of the Unifilar Declination Magnet is 11′·28 arc per centimetre.

The scale value of the Bifilar torsion balance has been constant at 0·00053 C.G.S. for one centimetre.

Four daily readings are taken from the unifilar and bifilar curves, the highest and lowest, and at the hours 4 and 16; but the V.F. balance has not yet given results sufficiently reliable for any other quotation than greater or less disturbance. Its base-line value has been continuously changing throughout the year.

On the table of magnetic disturbances (page 40) 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 greater 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.

Photographic copies of the principal magnetic disturbances in declination, horizontal force, and vertical force during the year 1911 have been sent to the Imperial Magnetic Observatory at Potsdam, and to the Russian Observatory at Ekaterinburg.

At the invitation of the Royal Society a series of quick-run photomagnetograms, of two hours' duration, was commenced in the latter half of May, at the rate of 18 cms per hour, or 12 times the usual rate. The days and the hours were pre-arranged with Dr. Simpson, who is in charge of the magnetic observations on the Antarctic expedition of 1911-12: the object being an accurate comparison of simultaneous movements of the needles at positions near to and remote from the magnetic pole. The series consists of four runs in each of our summer months, and two in each of the following winter months: November, December and January. Unfortunately, being at the time of a prolonged minimum of magnetic disturbance, there are no marked movements for comparison; all the runs are quiet, excepting a few of rapid small oscillations. A preliminary report of these has been sent to the Royal Society.

Solar and Astro-physical.—The solar surface has been observed on 210 days, and 84 drawings of spots and faculæ have been added to our collection. On 126 days the surface was found quite free from spots.

The mean disc area of the spots (in units of $\frac{1}{5000}$th of the visible surface) appears at 0·33; and the mean daily range of magnetic Declination (in minutes of arc) at 12·6. These are included in the following table for comparison with the corresponding *means* of the past five years:—

Year	1906	1907	1908	1909	1910	1911
Spot area	4·8	5·8	4·6	3·8	1·8	0·3
Declination range	13·9	14·7	14·1	13·5	14·5	12·6

These figures point to the year 1911 as a year of minimum Solar activity and of earth magnetic disturbance. The precise epoch, however, remains uncertain. The monthly means assign the Solar minimum to December, with a near approach to it in July; but up to the date of writing (February 8) there has been no indication of recovery: no spots have been seen on the sun since November 30, the surface having been observed on 14 days in December evenly distributed throughout the month, on 9 days only in the following cloudy January, and on the first 5 days of February. The magnetic minimum, resting on daily measures, independent of weather, is distinctly claimed for a later month than December, 1911. The monthly mean daily ranges of the Declination and Horizontal force needles show a steady decline in the last five months (November, 1911, to January, 1912). The figures are as follows in arc-minutes for both needles:—

1911.	Sep.	Oct.	Nov.	Dec.	Jan. 1912.
D.....	12·4	11·3	9·4	8·8	6·1
H.....	12·1	10·8	7·5	7·0	4·8

Little or no progress has been made during the year in the spectrographic examination of Sun-spots: for no spots have been found large enough for serviceable work with our instruments. Hence nothing was lost by the absence of Father Cortie on the Government expedition to Vavau, in the South Pacific, for the Solar eclipse of April 28.

Of the eight comets discovered during the year, those of Brooks, Quénisset, and Borelli have been under constant observation, weather permitting; and sixteen photographs have been taken of the brighter one of Brooks, with the Whitelow 6-inch Dallmeyer portrait lens.

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.

In the following table the frequency of earthquakes in the several months is set out in two divisions: the first (1) containing those of double amplitudes, 2 A, greater than 1 mm; and the second (2) containing the same between 0·1 and 1·0 mm. The double amplitude is the complete swing of the boom from side to side of its position of rest; and 1 mm swing = 220″ arc, produced by, approximately, 0·45 vertical swing of the pillar.

Swings of 0·1 mm are seen distinctly on the photographic films, and are easily measured, with a half millemetre scale and small magnifier, by deducting the normal width of the straight line trace from the measured length between the outside limits of the curve.

1911.

	Ja.	Fe.	Ma.	Ap.	My.	Ju.	Jl.	Au.	Se.	Oc.	No.	De.
(1)	4	2	0	1	1	3	3	1	2	5	2	3
(2)	10	2	4	9	5	1	8	6	5	10	8	5

And in the following line the mean daily displacement of the boom is shown for each month: viz., the ratio of half the sum of the 2 A millimetres to the number of days in the month :—

1·46	0·70	0·03	0·16	0·30	1·23	0·73	0·58	0·20	0·03	0·26	0·64

The following paper only has been published during the year 1911 :—

"Report on Observations of Sun-spot Spectra. Transactions of the International Union for co-operation in Solar Research."

WALTER SIDGREAVES, S.J.,
DIRECTOR.

February, 1912.

METEOROLOGICAL REPORT.

JANUARY, 1911.

Results of Observations taken during the Month.		Mean for the last 64 years.
Mean Reading of the Barometer .....inches	29·861	29·479
Highest ,, ,, on the 18th ... ,,	30·302	30·282
Lowest ,, ,, on the 11th ... ,,	28·976	28·595
Range of Barometer Readings ..... ,,	1·326	1·687
Highest Reading of a Max. Therm. on the 25th...	49·2	51·2
Lowest Reading of a Min. Therm. on the 13th...	27·3	21·0
Range of Thermometer Readings.....	21·9	30·2
Mean of Highest Daily Readings	42·6	42·3
Mean of Lowest Daily Readings	35·3	32·8
Mean Daily Range	7·3	9·5
Deduced Mean Temp. (from mean of Max. and Min.)	38·8	37·3
Mean Temperature from Dry Bulb	39·6	37·4
Adopted Mean Temperature.....	39·2	37·4
Mean Temperature of Evaporation	37·4	36·2
Mean Temperature of Dew Point.....	35·1	34·0
Mean elastic force of Vapour .....inches	0·205	0·197
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	554·7	549·9
Mean amount of Cloud (0—10).....	7·8	7·8
Fall of Rain .....inches	1·752	4·163
Greatest Rainfall in one day (10th)..... ,,	0·430	0·791
No. of days on which ·005 in. or more Rain fell...	18	19·1

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing Wind was	2	3	3	0	3	9	9	2
Mean Velocity in miles per hour	12·2	5·7	4·4	0	8·8	11·3	7·2	14·6
Total No. of miles for each Direction	587	410	319	0	637	2435	1559	699

		Mean.*
Total No. of miles registered	6646	8209·8
Greatest hourly velocity (6th, 9 a.m. Dir. S.)...	32	42·0

* *For the last 44 years.* † *In "Results" 1903-10 this value by mistake was entered wrongly. The correct figure here should be 87 for each of those years.*

JANUARY, 1911.

DIFFERENCES.

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

Mean barometric pressure	+ 0·382 in.
Monthly range ,, ...	— 0·361 ,,
Mean of highest temperatures	+ 0·3°
Mean of lowest ,, ...	+ 2·5°
Mean daily range ,, ...	— 2·2°
Adopted mean temperature	+ 1.8°
Total rainfall	— 2·411 in.

Ground frost on 1st—7th, 12th—14th, 17th, 20th, 21st, 30th and 31st. Snow on 2nd, 3rd and 12th. Hail on 3rd, 9th and 12th. Fog on 16th and 20th. Lightning on 2nd. Lunar halo on 16th.

A mild dry month, especially during the second half; with high and steady barometric pressure and no gales.

EXTREME READINGS FOR JANUARY, During 64 Years.

Highest reading of Barometer	1896 (9th)	30·597 in.
Lowest ,, ,, ...	1884 (26th).....	27·803 ,,
Highest temperature	1877 (7th)	59·9°
Lowest ,, ...	1881 (15th).....	4·6°
Highest adopted mean temperature.....	1898	43·7°
Lowest ,, ,, ...	1881	29·2°
Greatest fall of rain.....	1910	8·403 in.
Least ,, ...	1881	0·472 ,,
Greatest fall of rain in one day.....	1910 (15th)	2·070 ,,
Greatest No. of days on which ·005 in. or more rain fell	1890	30
Least ,, ,, ,,	†1850	8
*Greatest hourly velocity of the wind ...	1899 (12th).....	63 mls.
*Greatest No. of miles registered	1890	11661
*Least ,, ,, ,, ...	1881	4352

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

FEBRUARY, 1911.

Results of Observations taken during the Month.		Mean for the last 64 years.
Mean Reading of the Barometer .....inches	29·663	29·506
Highest ,, ,, on the 1st ... ,,	30·396	30·085
Lowest ,, ,, on the 23rd... ,,	28·467	28·653
Range of Barometer Readings ..... ,,	1·929	1·432
Highest Reading of a Max. Therm. on the 21st	52·6	51·9
Lowest Reading of a Min. Therm. on the 1st ...	20·5	22·1
Range of Thermometer Readings.....	32·1	29·8
Mean of Highest Daily Readings..	44·1	44·0
Mean of Lowest Daily Readings	34·6	33·3
Mean Daily Range	9·5	10·7
Deduced Mean Temp. (from mean of Max. and Min.)	39·0	38·1
Mean Temperature from Dry Bulb	40·1	38·2
Adopted Mean Temperature.....	39·6	38·2
Mean Temperature of Evaporation	37·7	36·7
Mean Temperature of Dew Point.....	35·2	34·4
Mean elastic force of Vapour.....inches	0·206	0·194
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).....	85	87
Mean weight of a cubic foot of air .....grains	550·5	549·0
Mean amount of Cloud (0—10)	7·4	7·6
Fall of Rain .....inches	6·235	3·553
Greatest Rainfall in one day (21st) ..... ,,	1·190	0·779
No. of days on which ·005 in. or more Rain fell...	17	16·8

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing Wind was	1	3	0	1	5	9	8	1
Mean Velocity in miles per hour	3·5	2·7	0	3·1	8·9	15·1	18·0	1·8
Total No. of miles for each Direction	84	195	0	74	1063	3270	3447	43

		Mean.*
Total No. of miles registered	8176	7648·4
Greatest hourly velocity (23rd, 9 a.m. Dir. S.) ...	43	42·7

* *For the last 44 years.*

FEBRUARY, 1911.

DIFFERENCES.

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

Mean barometric pressure	+	0·157 in.
Monthly range ,, ...	+	0·497 ,,
Mean of highest temperatures	+	0·1°
Mean of lowest ,, ...	+	1·3°
Mean daily range ,, ...	—	1·2°
Adopted mean temperature	+	1·4°
Total rainfall	+	2·682 in.

Ground frost on 1st—4th, 6th, 7th, 9th, 11th, 12th, 20th and 27th. Hoar frost on 1st—3rd, and 20th. Hail on 10th, 19th, 24th—26th. Heavy rain on 14th, 16th, 18th, 21st and 25th. Gale of wind on 23rd. Fog on 12th.

A mild month on the whole. The first half was cold and dry; the second wet and unsettled.

EXTREME READINGS FOR FEBRUARY, During 64 Years.

Highest reading of Barometer	1902 (1st)	30·476 in.
Lowest ,, ,, ...	1900 (19th)	27·870 ,,
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 ,,
Greatest fall of rain in one day..... ...	1909 (3rd)	2·000 ,,
Greatest No. of days on which ·005 in. or more rain fell	1910	27
Least ,, ,, ,,	1855	4
*Greatest hourly velocity of the wind ...	1903 (27th)	60 mls.
*Greatest No. of miles registered	1868	12577
*Least ,, ,, ,, ...	1886	4251

* *Since 1867 only.*

MARCH, 1911.

Results of Observations taken during the Month.		Mean for the last 64 years.
Mean Reading of the Barometer .....inches	29·528	29·460
Highest ,, ,, on the 25th... ,,	29·936	30·053
Lowest ,, ,, on the 12th... ,,	29·099	28·647
Range of Barometer Readings ..... ,,	0·837	1·406
Highest Reading of a Max. Therm. on the 30th...	54·0	57·0
Lowest Reading of a Min. Therm. on the 5th ...	30·5	23·0
Range of Thermometer Readings.....	23·5	34·0
Mean of Highest Daily Readings.....	44·9	47·1
Mean of Lowest Daily Readings	36·3	34·2
Mean Daily Range	8·6	12·9
Deduced Mean Temp. (from mean of Max. and Min.)	39·6	39·7
Mean Temperature from Dry Bulb	41·0	40·1
Adopted Mean Temperature.....	40·3	39·9
Mean Temperature of Evaporation	38·2	38·1
Mean Temperature of Dew Point.....	35·5	35·6
Mean elastic force of Vapour.....inches	0·208	0·208
Mean weight of Vapour in a cub. ft. of air, grains	2·4	2·4
Mean additional weight required for saturation ,,	0·5	0·5
Mean degree of Humidity (saturation 100).....	84	85
Mean weight of a cubic foot of air .....grains	547·3	546·4
Mean amount of Cloud (0—10)	8·0	7·5
Fall of Rain .....inches	2·511	3·294
Greatest Rainfall in one day (1st) ..... ,,	0·590	0·770
No. of days on which ·005 in. or more Rain fell...	15	16·4

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing Wind was	3	13	3	0	1	4	6	1
Mean Velocity in miles per hour	10·6	11·1	13·5	0	16·7	11·7	11·7	14·5
Total No. of miles for each Direction	760	3417	974	0	401	1120	1691	349

		Mean.*
Total No. of miles registered	8712	8538·3
Greatest hourly velocity (2nd, 2 p.m. Dir. W.)...	35	41·8

* *For the last 44 years.*

MARCH, 1911.

DIFFERENCES.

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

Mean barometric pressure	+ 0·068 in.
Monthly range ,, ...	— 0·569 ,,
Mean of highest temperatures	— 2·2°
Mean of lowest ,, ...	+ 2·1°
Mean daily range ,, ...	— 4·3°
Adopted mean temperature	+ 0·4°
Total rainfall	— 0·783 in.

Ground frost on 5th, 6th, 8th, 10th, 13th — 17th, 21st, 24th—27th. Hoar frost on 5th. Snow on 14th, 15th, 17th, 24th, 25th and 27th. Hail on 9th, 14th, 23rd, and 27th. Heavy rain 1st and 3rd. Lunar halo on 5th.

A good average month, the latter half being exceptionally dry and fine.

EXTREME READINGS FOR MARCH, During 64 Years.

Highest reading of Barometer	†1854	(4th)	30·452 in.
Lowest ,, ,,	†1876	(10th)	28·100 ,,
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	1896		7·079 in.
Least ,,	1852		0·352 ,,
Greatest fall of rain in one day	1898	(17th)	1·540 ,,
Greatest No. of days on which ·005 in. or more rain fell	1861		28
Least ,, ,, ,,	1852		3
*Greatest hourly velocity of the wind	1905	(15th)	57 mls.
*Greatest No. of miles registered	1903		12773
*Least ,, ,, ,,	1892		5725

* *Since 1867 only.* † *Corrected record.*

APRIL, 1911.

Results of Observations taken during the Month.		Mean for the last 64 years.
Mean Reading of the Barometer .....inches	29·556	29·484
Highest ,, ,, on the 8th ... ,,	30·040	29·977
Lowest ,, ,, on the 29th ,,	28·764	28·812
Range of Barometer Readings ..... ,,	1·276	1·165
Highest Reading of a Max. Therm. on the 22nd...	57·0	65·1
Lowest Reading of a Min. Therm. on the 6th ...	26·7	28·0
Range of Thermometer Readings.....	30·3	37·1
Mean of Highest Daily Readings.....	50·0	55·0
Mean of Lowest Daily Readings	39·1	37·7
Mean Daily Range	10·9	17·3
Deduced Mean Temp. (from mean of Max. and Min.)	43·1	44·0
Mean Temperature from Dry Bulb	44·8	44·6
Adopted Mean Temperature.....	44·0	44·4
Mean Temperature of Evaporation	41·3	41·6
Mean Temperature of Dew Point.....	38·1	38·2
Mean elastic force of Vapour.....inches	0·230	0·235
Mean weight of Vapour in a cub. ft. of air, grains	2·7	2·7
Mean additional weight required for saturation ,,	0·6	0·7
Mean degree of Humidity (saturation 100).....	79	80
Mean weight of a cubic foot of air .....grains	543·6	542·1
Mean amount of Cloud (0—10)	7·6	6·8
Fall of Rain .....inches	3·032	2·516
Greatest Rainfall in one day (28th) ..... ,,	0·480	0·577
No. of days on which ·005 in. or more Rain fell...	18	14·9

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing Wind was	3	8	0	0	3	7	8	1
Mean Velocity in miles per hour	8·6	7·1	0	0	24·5	15·5	13·2	6·0
Total No. of miles for each Direction	622	1362	0	0	1767	2611	2529	143

		Mean.*
Total No. of miles registered	9034	7596·7
Greatest hourly velocity (19th, 1 p.m. Dir. S.S.E.)	53	36·8

* *For the last 44 years.*

APRIL, 1911.

DIFFERENCES.

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

Mean barometric pressure	+ 0·072 in.
Monthly range ,, ...	+ 0·111 ,,
Mean of highest temperatures	— 5·0°
Mean of lowest ,, ...	+ 1·4°
Mean daily range ,, ...	— 6·4°
Adopted mean temperature	— 0·4°
Total rainfall	+ 0·516 in.

Ground frost on 3rd—8th, 11th, 12th and 30th. Snow on 3rd, 4th and 5th. Gale of wind on 19th. Solar halo on 4th.

The first half of April was cold, dry and fine; nearly all the rain fell during the second half of the month. Sunshine 38 hours less than the average. The velocity of the wind, at 53 miles an hour on the 19th, is a record for April.

EXTREME READINGS FOR APRIL, During 64 Years.

Highest reading of Barometer	†1906 (8th)	30·317 in.
Lowest ,, ,, ...	1868 (20th)	28·358 ,,
Highest temperature	1852 (14th)	74·1°
Lowest ,, ...	1892 (13th)	20·8°
Highest adopted mean temperature.....	1865	48·5°
Lowest ,, ,, ...	1879	40·7°
Greatest fall of rain.....	1867	5·672 in.
Least ,, ...	1852	0·478 ,,
Greatest fall of rain in one day.....	1899 (9th).....	1·060 ,,
Greatest No. of days on which ·005 in. or more rain fell	1867	24
Least ,, ,, ,,	1852	4
*Greatest hourly velocity of the wind ...	1911 (19th)	53 mls.
*Greatest No. of miles registered	1904	11016
*Least ,, ,, ,, ...	1884	5047

* *Since 1867 only.* † *Corrected record.*

MAY, 1911.

Results of Observations taken during the Month.		Mean for the last 64 years.
Mean Reading of the Barometer .....inches	29·577	29·523
Highest ,, ,, on the 28th ... ,,	29·923	29·962
Lowest ,, ,, on the 3rd ... ,,	28·952	28·929
Range of Barometer Readings ..... ,,	0·971	1·033
Highest Reading of a Max. Therm. on the 29th...	74·8	71·8
Lowest Reading of a Min. Therm. on the 21st ...	34·5	31·7
Range of Thermometer Readings.....	40·3	40·1
Mean of Highest Daily Readings.....	62·3	59·5
Mean of Lowest Daily Readings	47·0	42·2
Mean Daily Range	15·3	17·3
Deduced Mean Temp. (from mean of Max. and Min.)	53·0	49·1
Mean Temperature from Dry Bulb	55·0	49·8
Adopted Mean Temperature.....	54·0	49·5
Mean Temperature of Evaporation	50·5	46·2
Mean Temperature of Dew Point...	47·1	42·7
Mean elastic force of Vapour.....inches	0·322	0·277
Mean weight of Vapour in a cub. ft. of air, grains	3·7	3·1
Mean additional weight required for saturation ,,	1·0	0·9
Mean degree of Humidity (saturation 100).....	77	76
Mean weight of a cubic foot of air .....grains	532·8	537·1
Mean amount of Cloud (0—10).....	5·8	7·1
Fall of Rain ....inches	2·242	2·662
Greatest Rainfall in one day (23rd) ..... ,,	0·690	0·627
No. of days on which ·005 in. or more Rain fell...	11	14·5

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing Wind was	1	13	1	0	3	9	4	0
Mean Velocity in miles per hour	4·2	7·2	9·4	0	16·0	7·1	7·6	0
Total No. of miles for each Direction	100	2257	226	0	1155	1535	731	0

		Mean.*
Total No. of miles registered	6004	7134·1
Greatest hourly velocity (3rd, 1 p.m. Dir. S.) ...	43	34·0

* *For the last 44 years.*

MAY, 1911.

DIFFERENCES.

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

Mean barometric pressure	+	0·054 in.
Monthly range ,, ...	—	0·062 ,,
Mean of highest temperatures	+	2·8°
Mean of lowest ,, ...	+	4·8°
Mean daily range ,, ...	—	2·0°
Adopted mean temperature	+	4·5°
Total rainfall	—	0·420 in.

Ground frost on 1st, 3rd, 6th and 21st. Hoar frost on 6th. Heavy rain on 3rd and 23rd. Gale of wind on 3rd. Thunder on 13th, 14th, 17th, 27th and 31st. Lightning on 13th and 31st.

Estimated by mean temperature, May this year was the hottest experienced since the record May of 1848. Higher temperatures, however, were often registered in relatively colder Mays.

EXTREME READINGS FOR MAY, During 64 Years.

Highest reading of Barometer	†1881	(10th)	30·332 in.
Lowest ,, ,, ...	1877	(28th)	28·559 ,,
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 ,,
Greatest fall of rain in one day.....	1881	(5th).....	1·647 ,,
Greatest No. of days on which ·005 in. or more rain fell	‡1860	.....	22
Least ,, ,, ,,	‡1848	.....	4
*Greatest hourly velocity of the wind ...	1888	(2nd).....	49 mls.
*Greatest No. of miles registered	1888	.....	9648
*Least ,, ,, ,, ...	1889	.....	5396

* *Since 1867 only.* † *Corrected record.* ‡ *And in other years.*

JUNE, 1911.

Results of Observations taken during the Month.		Mean for the last 64 years.
Mean Reading of the Barometer ..... inches	29·554	29·552
Highest ,, ,, on the 6th ... ,,	30·156	29·917
Lowest ,, ,, on the 24th... ,,	28·953	29·035
Range of Barometer Readings ..... ,,	1·203	0·882
Highest Reading of a Max. Therm. on the 1st...	77·6	77·2
Lowest Reading of a Min. Therm. on the 10th...	37·0	38·9
Range of Thermometer Readings.....	40·6	38·3
Mean of Highest Daily Readings.....	64·1	65·6
Mean of Lowest Daily Readings	48·9	48·0
Mean Daily Range	15·2	17·6
Deduced Mean Temp. (from mean of Max. and Min.)	54·6	55·0
Mean Temperature from Dry Bulb	56·7	55·3
Adopted Mean Temperature.....	55·7	55·2
Mean Temperature of Evaporation	51·4	52·0
Mean Temperature of Dew Point.....	47·3	48·3
Mean elastic force of Vapour.....inches	0·329	0·351
Mean weight of Vapour in a cub. ft. of air, grains	3·6	3·9
Mean additional weight required for saturation ,,	1·3	1·0
Mean degree of Humidity (saturation 100).....	74	78
Mean weight of a cubic foot of air .....grains	530·6	531·1
Mean amount of Cloud (0—10)	5·9	7·3
Fall of Rain .....inches	3·780	3·453
Greatest Rainfall in one day (24th)..... ,,	1·040	0·817
No. of days on which ·005 in. or more Rain fell...	15	15·2

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing Wind was	2	5	3	0	1	7	11	1
Mean Velocity in miles per hour	6·4	5·6	9·6	0	7·6	11·7	9·3	11·6
Total No. of miles for each Direction	306	674	694	0	183	1972	2459	278

		Mean.*
Total No. of miles registered	6566	6227·3
Greatest hourly velocity (22nd, 1 p.m. Dir. S.W.)	29	30·2

** For the last 44 years.*

JUNE, 1911.

DIFFERENCES.

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

Mean barometric pressure	+	0·002 in.
Monthly range ,, ...	+	0·321 ,,
Mean of highest temperatures	—	1·5°
Mean of lowest ,, ...	+	0·9°
Mean daily range ,, ...	—	2·4°
Adopted mean temperature	+	0·5°
Total rainfall	+	0·327 in.

Ground frost on 10th. Heavy rain on 17th, 24th and 28th. Thunder and lightning on 17th.

The first half of June was remarkably fine. There was absolutely no rain, and sunshine averaged 11 hours per day. Of the total amount for June, nearly nine-tenths of it was registered during the first half of the month.

EXTREME READINGS FOR JUNE, During 64 Years.

Highest reading of the Barometer	1874 (15th)	30·219 in.
Lowest ,, ,, ...†	1862 (12th)	28·632 ,,
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 the wind ...	1897 (16th)	45 mls.
*Greatest No. of miles registered	1877	8384
*Least ,, ,, ,, ...	1884	4507

* *Since 1867 only.* † *Corrected record.*

JULY, 1911.

Results of Observations taken during the Month.			Mean for the last 64 years.
Mean Reading of the Barometer	inches	29·737	29·523
Highest ,, ,, on the 10th...	,,	30·203	29·899
Lowest ,, ,, on the 1st ...	,,	29·201	29·015
Range of Barometer Readings	,,	1·002	0·884
Highest Reading of a Max. Therm. on the 12th		83·6	78·7
Lowest Reading of a Min. Therm. on the 3rd ...		42·9	42·3
Range of Thermometer Readings.....		40·7	36·4
Mean of Highest Daily Readings.....		70·8	67·7
Mean of Lowest Daily Readings		53·7	50·9
Mean Daily Range		17·1	16·8
Deduced Mean Temp. (from mean of Max. and Min.)		60·4	57·7
Mean Temperature from Dry Bulb		62·7	57·9
Adopted Mean Temperature.....		61·6	57·9
Mean Temperature of Evaporation		57·0	54·8
Mean Temperature of Dew Point...		53·0	52·0
Mean elastic force of Vapour.....	inches	0·403	0·389
Mean weight of Vapour in a cub. ft. of air, grains		4·5	4·4
Mean additional weight required for saturation	,,	1·6	1·1
Mean degree of Humidity (saturation 100)		74	81
Mean weight of a cubic foot of air	grains	527·3	527·6
Mean amount of Cloud (0—10)		5·8	7·4
Fall of Rain	inches	0·935	4·021
Greatest Rainfall in one day (1st)	,,	0·255	0·868
No. of days on which ·005 in. or more Rain fell...		10	16·6

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing Wind was	0	7	0	0	6	7	11	0
Mean Velocity in miles per hour	0	5·9	0	0	6·7	7·6	8·9	0
Total No. of miles for each Direction	0	984	0	0	960	1281	2339	0

		Mean.*
Total No. of miles registered	5564	6533·8
Greatest hourly velocity (16th and 27th, 9 a.m. Dir. W. and S. respectively).....	25	29·3

* *For the last 44 years.*

JULY, 1911.

DIFFERENCES.

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

Mean barometric pressure	+ 0·214 in.
Monthly range ,, ...	+ 0·118 ,,
Mean of highest temperatures	+ 3·1°
Mean of lowest ,, ...	+ 2·8°
Mean daily range ,, ...	+ 0·3°
Adopted mean temperature	+ 3·7°
Total rainfall	— 3·086 in.

Hail on 2nd. Thunder on 19th. Thunder and lightning on 20th, 25th and 29th.

A very remarkable July. The amount of sunshine was 82 hours above the average, and 16 hours in excess of all previous records for July. The highest reading of the barometer becomes a record. The mean barometric pressure was the second highest and rainfall the second lowest on record for 64 years. Thermometer readings, however, though much above the average, were below many past readings of this month.

EXTREME READINGS FOR JULY, During 64 Years.

Highest reading of Barometer	1911	(10th)	30·203 in.
Lowest ,, ,, ...	1877	(15th)	28·564 ,,
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 ,,
Greatest fall of rain in one day.....	1888	(2nd).....	2·482 ,,
Greatest No. of days on which ·005 in. or more rain fell ....‡	1861	.....	27
Least ,, ,, ,, ‡	1863	.....	8
*Greatest hourly velocity of the wind ...	1892	(8th).....	44 mls.
*Greatest No. of miles registered	1877	.....	8288
*Least ,, ,, ,, ...	1872	.....	4668

* *Since 1867 only.* † *Corrected record.* ‡ *And in other years.*

AUGUST, 1911.

Results of Observations taken during the Month.		Mean for the last 64 years.
Mean Reading of the Barometer .....inches	29·570	29·496
Highest ,, ,, on the 14th... ,,	29·876	29·891
Lowest ,, ,, on the 5th ... ,,	29·268	28·955
Range of Barometer Readings ..... ,,	0·608	0·936
Highest Reading of a Max. Therm. on the 13th...	82·3	76·8
Lowest Reading of a Min. Therm. on the 30th...	46·5	41·7
Range of Thermometer Readings.....	35·8	35·1
Mean of Highest Daily Readings.....	70·5	66·8
Mean of Lowest Daily Readings	55·1	50·6
Mean Daily Range	15·4	16·2
Deduced Mean Temp. (from Mean of Max. and Min.)	61·1	57·1
Mean Temperature from Dry Bulb	63·1	57·7
Adopted Mean Temperature.....	62·1	57·4
Mean Temperature of Evaporation	58·0	54·5
Mean Temperature of Dew Point.....	54·5	51·8
Mean elastic force of Vapour.....inches	0·426	0·387
Mean weight of Vapour in a cub. ft. of air, grains	4·7	4·3
Mean additional weight required for saturation ,,	1·5	0·9
Mean degree of Humidity (saturation 100).....	77	82
Mean weight of a cubic foot of air.....grains	523·7	527·5
Mean amount of Cloud (0—10).....	5·6	7·3
Fall of Rain .....inches	3·140	5·041
Greatest Rainfall in one day (5th) ..... ,,	0·900	1·068
No. of days on which ·005 in. or more Rain fell...	14	18·4

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing Wind was	5	4	2	1	5	10	4	0
Mean Velocity in miles per hour	5·1	7·1	5·9	7·0	9·1	8·6	6·7	0
Total No. of miles for each Direction	612	684	281	167	1095	2054	644	0

		Mean.*
Total No. of miles registered	5537	6535·4
Greatest hourly velocity (24th, 3 p.m. Dir. S, ...	27	32·0

* *For the last 44 years.*

AUGUST, 1911.

DIFFERENCES.

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

Mean barometric pressure	+	0·074 in.
Monthly range ,, ...	—	0·328 ,,
Mean of highest temperatures	+	3·7°
Mean of lowest ,, ...	+	4·5°
Mean daily range ,, ...	—	0·8°
Adopted mean temperature	+	4·7°
Total rainfall	—	1·901 in.

Heavy rain on 5th and 27th. Thunder on 1st, 11th and 20th. Lightning on 10th, 11th, 20th and 28th. Solar halo on 28th.

August, again, was the warmest month of the year, estimated by mean temperature, which, at 62·1°, becomes a record for this month. Sunshine was 61 hours above the average.

EXTREME READINGS FOR AUGUST, During 64 Years.

Highest reading of Barometer	1874 (21st)	30·114 in.
Lowest ,, ,, ...	1903 (15th)	28·492 ,,
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 ,,
Greatest fall of rain in one day.....	1857 (7th).....	2·333 ,,
Greatest No. of days on which ·005 in. or more rain fell	1891	27
Least ,, ,, ,,	1880	6
*Greatest hourly velocity of the wind ...	1903 (31st).....	45 mls.
*Greatest No. of miles registered	1903	8486
*Least ,, ,, ,, ...	1884	4060

* *Since 1867 only.*

SEPTEMBER, 1911.

Results of Observations taken during the Month.		Mean for the last 64 years.
Mean Reading of the Barometer	inches 29·622	29·541
Highest ,, ,, on the 16th...	,, 29·965	30·025
Lowest ,, ,, on the 20th...	,, 28·916	28·877
Range of Barometer Readings	,, 1·049	1·148
Highest Reading of a Max. Therm. on the 8th ...	76·8	72·3
Lowest Reading of a Min. Therm. on the 22nd...	36·3	36·3
Range of Thermometer Readings.....	40·5	36·0
Mean of Highest Daily Readings.....	61·6	62·2
Mean of Lowest Daily Readings	47·7	47·1
Mean Daily Range	13·9	15·1
Deduced Mean Temp. (from mean of Max. and Min.)	53·4	53·4
Mean Temperature from Dry Bulb	55·1	54·2
Adopted Mean Temperature.....	54·3	53·8
Mean Temperature of Evaporation	51·0	51·0
Mean Temperature of Dew Point.....	47·8	48·3
Mean elastic force of Vapour.....inches	0·331	0·339
Mean weight of Vapour in a cub. ft. of air, grains	3·8	3·9
Mean additional weight required for saturation ,,	1·0	0·8
Mean degree of Humidity (saturation 100).....	78	82
Mean weight of a cubic foot of air.....grains	533·2	532·6
Mean amount of Cloud (0—10)	5·4	6·7
Fall of Rain .....inches	5·106	4·322
Greatest Rainfall in one day (12th) ..... ,,	1·340	0·960
No. of days on which ·005 in. or more Rain fell...	15	16·7

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing Wind was	5	4	0	1	3	6	10	1
Mean Velocity in miles per hour	6·8	5·1	0	7·0	8·7	8·7	7·0	4·8
Total No. of miles for each Direction	816	492	0	167	624	1254	1689	114

		Mean.*
Total No. of miles registered	5156	6102·7
Greatest hourly velocity (23rd, 8 a.m. Dir. S.S.E.)	26	33·2

* *For the last 44 years.*

SEPTEMBER, 1911.

DIFFERENCES.

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

Mean barometric pressure	+ 0·081 in.
Monthly range ,, ...	— 0·099 ,,
Mean of highest temperatures	— 0·6°
Mean of lowest ,, ...	+ 0·6°
Mean daily range ,, ...	— 1·2°
Adopted mean temperatures	+ 0·5°
Total rainfall	+ 0·784 in.

Heavy rain on 12th, 19th, 25th, 27th and 29th. Thunder on 4th, 8th, 11th, 20th and 21st. Lightning on 11th and 20th. Solar halo on 5th and 13th.

Sunshine 29 hours above the average.

EXTREME READINGS FOR SEPTEMBER, During 64 Years.

Highest reading of Barometer	1851 (15th)	†30·247 in.
Lowest ,, ,, ...	1896 (25th)	28·314 ,,
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 ,,
Greatest fall of rain in one day.....	1889 (26th)	2·060 ,,
Greatest No. of days on which ·005 in. or more rain fell	1866	27 ,,
Least ,, ,, ,,	‡1851	6
*Greatest hourly velocity of the wind ...	1875 (26th)	53 mls.
*Greatest No. of miles registered	1869	9053
*Least ,, ,, ,, ...	1888	3261

* *Since 1867 only.* † *Corrected record.* ‡ *And in other years.*

OCTOBER, 1911.

Results of Observations taken during the Month.		Mean for the last 64 years.
Mean Reading of the Barometer ....inches	29·464	29·436
Highest ,, ,, on the 10th... ,,	30·187	30·022
Lowest ,, ,, on the 22nd ,,	28·556	28·667
Range of Barometer Readings ..... ,,	1·631	1·355
Highest Reading of a Max. Therm. on the 13th	59·5	64·2
Lowest Reading of a Min. Therm. on the 29th ...	28·5	29·3
Range of Thermometer Readings.....	31·0	34·9
Mean of Highest Daily Readings	53·1	54·6
Mean of Lowest Daily Readings	42·7	41·8
Mean Daily Range	10·4	12·8
Deduced Mean Temp. (from mean of Max. and Min.)	46·9	47·2
Mean Temperature from Dry Bulb	47·9	47·9
Adopted Mean Temperature	47·4	47·6
Mean Temperature of Evaporation	45·0	45·4
Mean Temperature of Dew Point.....	42·4	43·0
Mean elastic force of Vapour.....inches	0·270	0·279
Mean weight of vapour in a cub. ft. of air, grains	3·1	3·2
Mean additional weight required for saturation ,,	0·6	0·6
Mean degree of Humidity (saturation 100).....	84	84
Mean weight of a cubic foot of air.....grains	538·0	537·5
Mean amount of Cloud (0—10)	7·0	7·4
Fall of Rain ....inches	3·767	5·019
Greatest Rainfall in one day (29th) ..... ,,	1·195	0·984
No. of days on which ·005 in. or more Rain fell...	15	19·0

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing Wind was	8	11	2	2	1	2	3	2
Mean Velocity in miles per hour	6·5	6·7	8·0	12·7	14·0	15·2	14·9	5·9
Total No. of miles for each Direction	1253	1758	382	611	335	730	1004	281

		Mean.*
Total No. of miles registered	6354	7057·3
Greatest hourly velocity (30th, 11 a.m. Dir. S.)...	35	38·6

** For the last 44 years.*

OCTOBER, 1911.

DIFFERENCES.

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

Mean barometric pressure	+	0·028 in.
Monthly range ,, ...	+	0·276 ,,
Mean of highest temperatures	—	1·5°
Mean of lowest ,, ...	+	0·9°
Mean daily range ,, ...	—	2·4°
Adopted mean temperature	—	0·2°
Total rainfall	—	1·252 in.

Ground frost on 2nd, 11th, 28th and 29th. Hoar frost on 29th. Heavy rain on 22nd and 29th. Lightning on 24th. Solar halo on 2nd, 5th, 8th and 29th.

The weather in general was exceptionally fine, calm and dry. Almost all the rain fell during 8 days towards the close of the month.

EXTREME READINGS FOR OCTOBER, During 64 Years.

Highest reading of Barometer	1884 (5th)	30·306 in.
Lowest ,, ,, ...	1862 (19th).....	28·139 ,,
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 ,, ...	1856	1·328 ,,
Greatest fall of rain in one day.....	1870 (8th)	2·529 ,,
Greatest No. of days on which ·005 in. or more rain fell	1903	29
Least ,, ,, ,,	1864	10
*Greatest hourly velocity of the wind ...	1877 (15th).....	52 mls.
*Greatest No. of miles registered	1874	9818
*Least ,, ,, ,, ...	1908	4569

* *Since 1867 only.* † *Corrected record.*

NOVEMBER, 1911.

Results of Observations taken during the Month.		Mean for the last 64 years.
Mean Reading of the Barometer .....inches	29·238	29·468
Highest ,, ,, on the 29th... ,,	29·937	30·061
Lowest ,, ,, on the 18th... ,,	28·420	28·568
Range of Barometer Readings ..... ,,	1·517	1·493
Highest Reading of a Max. Therm. on the 5th ...	56·0	55·8
Lowest Reading of a Min. Therm. on the 11th ...	25·4	25·5
Range of Thermometer Readings.....	30·6	30·3
Mean of Highest Daily Readings.....	46·4	47·3
Mean of Lowest Daily Readings	38·2	36·6
Mean Daily Range	8·2	10·7
Deduced Mean Temp. (from mean of Max. and Min.)	41·9	41·6
Mean Temperature from Dry Bulb	42·5	41·9
Adopted Mean Temperature	42·2	41·8
Mean Temperature of Evaporation	40·1	39·7
Mean Temperature of Dew Point.....	37·5	38·2
Mean elastic force of Vapour.....inches	0·225	0·231
Mean weight of Vapour in a cub. ft. of air, grains	2·6	2·7
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	539·7	544·7
Mean amount of Cloud (0—10)	7·6	7·4
Fall of Rain .....inches	4·565	4·380
Greatest Rainfall in one day (3rd) ..... ,,	0·805	0·974
No. of days on which ·005 in. or more Rain fell...	20	17·8

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing Wind was	4	5	1	2	7	5	4	2
Mean Velocity in miles per hour	6·7	8·7	16·4	7·9	11·5	20·7	17·5	11·1
Total No. of miles for each Direction	640	1043	394	379	1940	2486	1679	533

		Mean.*
Total No. of miles registered	9094	7292·9
Greatest hourly velocity (5th, 11 a.m. Dir. S.W. by W.)	44	42·3

** For the last 44 years.*

NOVEMBER, 1911.

DIFFERENCES.

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

Mean barometric pressure	— 0·230 in.
Monthly range ,, ...	+ 0·024 ,,
Mean of highest temperatures	— 0·9°
Mean of lowest ,, ...	+ 1·6°
Mean daily range ,, ...	— 2·5°
Adopted mean temperature	+ 0·4°
Total rainfall	+ 0·185 in.

Ground frost on 7th, 9th, 10th—12th, 19th—23rd, 26th, 29th and 30th. Hoar frost on 11th. Hail on 2nd, 4th, 6th—8th, 16th and 17th. Heavy rain on 3rd and 4th. Gale of wind on 5th. Thunder on 2nd, 8th and 9th. Lightning on 2nd, 4th and 9th.

A good average November. The rain was largely confined to the first half of the month, the rest being fine and dry.

EXTREME READINGS FOR NOVEMBER, During 64 Years.

Highest reading of Barometer	1857 (12th).....	30·350 in.
Lowest ,, ,, ...	1891 (11th).....	27·938 ,,
Highest temperature	1900 (1st)	62·4°
Lowest ,, ...	1901 (15th).....	17·5°
Highest adopted mean temperature.....	†1881.....	47·0°
Lowest ,, ,, ...	1851.....	36·7°
Greatest fall of rain	1866.....	9·026 in.
Least ,, ...	1855.....	1·158 ,,
Greatest fall of rain in one day.....	1866 (16th).....	3·700 ,,
Greatest No. of days on which ·005 in. or more rain fell	1872	27
Least ,, ,, ,,	1848.....	6
*Greatest hourly velocity of the wind ...	1887 (1st)	62 mls.
*Greatest No. of miles registered	1888.....	12813
*Least ,, ,, ,, ...	1870.....	4951

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

DECEMBER, 1911.

Results of Observations taken during the Month.		Mean for the last 64 years.
Mean Reading of the Barometer .....inches	29·214	29·439
Highest ,, ,, on the 31st... ,,	29·944	30·076
Lowest ,, ,, on the 11th... ,,	28·263	28·531
Range of Barometer Readings ..... ,,	1·681	1·545
Highest Reading of a Max. Therm. on the 18th	53·0	53·0
Lowest Reading of a Min. Therm. on the 23rd...	33·3	20·7
Range of Thermometer Readings.....	19·7	32·3
Mean of Highest Daily Readings.....	46·5	43·3
Mean of Lowest Daily Readings	38·8	33·4
Mean Daily Range	7·7	9·9
Deduced Mean Temp. (from mean of Max. and Min.)	42·7	38·3
Mean Temperature from Dry Bulb	43·0	39·0
Adopted Mean Temperature	42·9	38·7
Mean Temperature of Evaporation	41·0	37·1
Mean Temperature of Dew Point..	38·7	35·2
Mean elastic force of Vapour.....inches	0·235	0·207
Mean weight of Vapour in a cub. ft. of air, grains	2·7	2·4
Mean additional weight required for saturation ,,	0·5	0·4
Mean degree of Humidity (saturation 100).....	85	87
Mean weight of a cubic foot of air.....grains	538·3	547·5
Mean amount of Cloud (0—10).....	7·7	7·6
Fall of Rain .....inches	7·155	4·562
Greatest Rainfall in one day (10th) ..... ,,	0·770	0·848
No. of days on which ·005 in. or more Rain fell...	27	19·7

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing Wind was	0	0	2	3	10	8	8	0
Mean Velocity in miles per hour	0	0	16·8	11·7	16·7	7·5	12·6	0
Total No. of miles for each Direction	0	0	806	840	4001	1436	2420	0

		Mean.*
Total No. of miles registered	9503	7839·3
Greatest hourly velocity (18th, 9 a.m. Dir. S. by E.).....	48	42·8

** For the last 44 years.*

DECEMBER, 1911.

DIFFERENCES.

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

Mean barometric pressure	— 0·225 in.
Monthly range ,, ...	+ 0·136 ,,
Mean of highest temperatures	+ 3·2°
Mean of lowest ,, ...	+ 5·4°
Mean daily range ,, ...	— 2·2°
Adopted mean temperature	+ 4·2°
Total rainfall	+ 2·593 in.

Ground frost on 4th—6th, 8th—10th, 23rd—27th, and 31st. Snow on the 8th Hail on 6th, 9th, 11th and 20th. Heavy rain on 8th, 10th, 13th and 28th. Gales of wind on 6th, 7th, 10th and 18th. Lightning on 13th. Lunar halo on 4th and 29th. Solar halo on the 27th.

The rainfall was evenly distributed over the whole month. The only dry days were the 1st, 12th, 22nd and 30th. Frost in the air was not once registered, and the range of temperature, 19·7°, is the smallest on record for December.

EXTREME READINGS FOR DECEMBER.
During 64 Years.

Highest reading of Barometer	1905 (12th).....	30·484 in.
Lowest ,, ,, ...	1886 (8th)	27·350 ,,
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 ,,
Greatest fall of rain in one day.....	1870 (19th).....	1·962 ,,
Greatest No. of days on which ·005 in. or more rain fell	1868.....	28
Least ,, ,, ,,	†1853.....	8
*Greatest hourly velocity of the wind ...	1894 (22nd).....	72 mls.
*Greatest No. of miles registered	1898.....	11265
*Least ,, ,, ,, ...	1878.....	4885

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

Summary of Observations, 1911.

Results of Observations taken during the Year.		Mean for the last 64 years.
Readings of Barometer in inches.		
Mean of the Year	29·549	29·496
Highest Monthly Mean (January)	29·861	29·750
Lowest ,, ,, (December)	29·214	29·226
Highest Reading (February 1st)	30·396	30·295
Lowest ,, (December 11th)	28·263	28·206
Range	2·133	2·089
Thermometer, Fahrenheit.		
Highest Monthly Mean Temperature (August)	62·1	58·6
Lowest ,, ,, ,, (January)	39·2	35·4
Highest Reading of a Max. Therm. (July 12th)	83·6	81·6
Lowest ,, Min. ,, (Feb. 1st)	20·5	15·8
Range of Thermometer Readings	63·1	65·8
Mean of Highest Daily ,,	54·7	54·6
Mean of Lowest Daily ,,	43·1	40·8
Mean Daily Range	11·6	13·8
Deduced Mean Temp. (from mean of Max. and Min.)	47·9	46·8
Mean Temperature from Dry Bulb	49·3	47·0
Adopted Mean Temperature of the Year	48·6	46·9
Mean Temperature of Evaporation	45·7	44·6
Mean Temperature of Dew Point	42·7	42·1
Mean elastic force of Vapour ....inches	0·282	0·274
Mean weight of Vapour in a cub. ft. of air...grns.	3·2	3·3
Mean additional weight required for saturation ,,	0·8	0·7
Mean degree of Humidity (saturation 100)	81	83
Mean weight of a cubic foot of air ....grns.	538·3	539·2
Mean amount of Cloud (0—10)	6·8	7·3
Total fall of Rain ....inches	44·220	46·985
Greatest Monthly Rainfall (December) ... ,,	7·155	7·503
Least ,, ,, (July) ,,	0·935	1·214
Greatest Rainfall in one day (Sept. 12th). ,,	1·340	1·630
No. of days per Month on which ·005 inch or more Rain fell	16·3	17·0

SUMMARY OF WIND, 1911.

	N	NE	E	SE	S	SW	W	NW
No. of days in the year on which the prevailing Wind was	34	76	17	10	48	83	86	11
Mean Velocity in miles per hour	7·1	7·3	10·0	9·3	12·3	11·1	10·8	9·2
Total No. of miles for each Direction	5780	13276	4076	2238	14161	22184	22191	2440

		Mean for the last 44 years.
Total No. of miles registered	86346	86716·2
Greatest Monthly Total (December)	9503	10062·5
Least ,, ,, (September)	5156	5076·7
Greatest hourly velocity (April 19th)	53	52·1
Prevailing Direction of Wind	W	W

DIFFERENCES, 1911.

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

Mean barometric pressure	+ 0·053 in.
Yearly range ,,	+ 0·044 ,,
Mean of highest temperatures	+ 0·1°
Mean of lowest ,,	+ 2·3°
Mean daily range	— 2·2°
Adopted mean temperature	+ 1·7°
Total rainfall	— 2·765 in.

ABSOLUTE EXTREMES
FOR THE LAST 64 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. 9)	30·597
Lowest ,,	1886 (Dec. 8)	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 20)	89·0
Lowest ,, ,,	1881 (Jan. 15)	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 64 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 ,, ,, ,,	1888 (Sep.)	3261
Greatest Mean No. ,, ,,	March	8538
Least ,, ,, ,,	September	6103
Greatest No. ,, ,, year	1868	102395
Least ,, ,, ,, ,,	1909	77165

* *Record dates from 1867 only.*

DATES OF OCCASIONAL PHENOMENA.

1911.	Frost.	Hoar Frost.	Snow.	Hail.	Heavy Rain.
January	1—7, 12—14, 17, 20, 21, 30, 31		2, 3, 12	3, 9, 12	
February	1—4, 6, 7, 9, 11, 12, 20, 27	1—3, 20		10, 19, 24—26	14, 16, 18, 21, 25
March	5, 6, 8, 10, 13—17, 21, 24—27	5	14, 15, 17, 24, 25, 27	9, 14, 23, 27	1, 3
April	3—8, 11, 12, 30		3, 4, 5		
May	1, 3, 6, 21	6			3, 23
June	10				17 24, 28
July				2	
August					5, 27
September					12, 19, 25, 27, 29
October	2, 11, 28, 29	29			22, 29
November	7, 9, 10—12, 19—23, 26, 29, 30	11		2, 4, 6—8, 16, 17	3, 4
December	4—6, 8—10, 23—27, 31		8	6, 9, 11, 20	8, 10, 13, 28

1911.	Gales of Wind.	Fog.	Thunder.	Lightning.	*Lunar Halo.	*Solar Halo.	Aurora Borealis.
January		16, 20		2	16		
February	23	12					
March					5		
April	19					4	
May	3		13, 14, 17, 27, 31	13, 31			
June		17		17			
July			19, 20, 25, 29	20, 25, 29			
August			1, 11, 20	10, 11, 20, 28		28	
September			4, 8, 11, 20, 21	11, 20		5, 13	
October				24		2, 5, 8, 29	
November	5		2, 8, 9	2, 4, 9			
December	6, 7, 10, 18			13	4, 29	27	

* *22° Radius.*

MONTHLY TOTALS FOR EACH HOUR OF RECORDED SUNSHINE.

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	...	...	...	...	0·4	3·7	4·1	4·4	3·7	3·8	3·0	0·1	...	...	...	...	...
February	...	...	...	0·1	2·6	4·9	5·8	5·8	8·1	9·4	8·4	4·2	...	...	...	...	...
March	...	...	0·7	6·5	9·4	10·9	12·2	13·7	12·3	10·7	10·0	7·6	6·2	1·0	...	...	...
April	...	0·2	4·6	7·6	7·5	9·3	12·0	12·1	12·2	11·0	9·6	7·8	8·6	7·0	1·1	...	...
May	0·6	6·5	8·3	10·7	14·5	15·6	17·4	18·9	17·2	18·2	17·9	17·8	16·5	14·2	11·4	1·7	...
June	2·3	11·3	14·5	15·6	14·7	13·4	11·2	9·7	11·3	10·8	12·2	14·7	15·1	14·0	10·0	5·4	...
July	2·1	11·3	15·3	15·3	17.4	20·1	20·4	21·4	21·1	21·0	20·0	22·3	19·7	16·9	13·6	5·5	...
August	...	3·6	11·9	16·1	16·8	16·4	18·0	19·7	19·7	19·6	18·8	16·9	16·4	13·3	6·9	...	...
September	...	...	0·8	8·5	12·5	14·1	15·3	16·1	14·9	14·3	16·0	17·0	15·6	8·2	1·4	...	...
October	...	...	0·4	3·0	5·8	10·9	12·5	11·9	10·3	9·2	8·7	7·2	1·6	0.1	...	...	...
November	...	...	...	1·5	5·9	9·3	10·6	8·9	6.9	5·2	1·3	...	...	...	...	...	...
December	...	...	...	...	...	0·5	2·7	5·2	4·7	2·9	1·3	0·3	...	...	...	...	...
Sums	5·0	32·9	56·5	84·9	107·5	129·1	142·2	147·8	142·4	136·1	127·2	115·9	99·7	74·7	44·4	12·6	...

TOTAL AMOUNT OF SUNSHINE RECORDED ON EACH DAY.

1911.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
January	...	4·8	2·6	...	...	0·5	0·1	0·5	...	0·5	...	3·8	2·9	...	...	0·2	...
February	5·8	0·2	1·6	...	...	0·2	...	...	...	0·8	6·2	1·9	...	...	6·3	...	5·8
March	7·5	3·2	0·2	1·4	5·0	0·9	1·0	...	8·0	0·4	7·4	...	6·0	4·8	1·5	6·5	0·6
April	2·2	...	7·9	2·4	7·7	10·2	1·9	1·0	0·4	3·9	10·9	3·4	3·5	10·0	3·5	8·4	0·1
May	3·5	2·4	...	10·2	6·1	11·0	0·2	3·5	10·2	11·1	9·8	2·6	3·7	2·3	7·3	6·2	2·4
June	13·3	14·9	10·6	13·3	13·7	7·2	12·6	14·8	6·0	10·4	4·1	12·2	7·1	11·1	13·0	1·1	0·5
July	5·5	8·8	8·4	0·1	8·5	10·7	11·0	12·1	11·7	15·2	14·2	14·9	14·1	15·0	10·6	6.8	0·3
August	4·3	7·1	4·3	7·8	0·4	0·4	7·2	13·1	11·4	12·6	12·2	11·3	13·1	12·5	12·1	9·7	9·5
September	11·5	8·8	11·1	...	8·1	8·9	9·4	9·7	4·2	10·6	2·0	...	5·0	4·1	5·1	8·6	0·7
October	8·4	4·6	5·6	0.1	1·9	5·6	0·7	3·7	1·7	8·1	6·1	0·4	4·0	2·0	0·8	...	7·2
November	4·4	1·3	...	0·3	3·3	0·5	3·4	1·5	0·5	3·8	2·2	...	1·4	...	...	0·2	1·6
December	0·6	1·1	1·0	0·7	0·5	1·4	3·9	...	1·9	...	1·8	1·0	...	0·1	...	...	...

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

1911.	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Monthly. Total.	Monthly. Percentage.
January ...	...	...	...	...	...	...	...	...	...	...	...	...	3·3	4·0	23·2	9·4
February ..	...	3·9	1·4	...	2·0	1·1	3·5	1·8	5·8	...	1·0				49·3	18·1
March ...	0·9	0·8	3·4	3·4	1·1	1·9	7·3	6·2	9·6	8·8	2·2	...	1·2	...	101·2	27·7
April... ...	...	8·1	9·9	...	0·1	2·0	1·6	...	5·5	...	4·2	0·1	1·7		110·6	26·4
May	4·2	1·7	10·2	9·4	10·8	0·1	5·6	11·9	1·0	6·7	14·4	14·6	13·7	10·6	207·4	42·1
June	2·1	2·3	1·3	2·3	0·8	2·4	...	0·2	1·2	3·6	2·1	0·5	1·5		186·2	36·7
July	1·6	4·1	1·3	4·5	10·5	8·4	11·3	8·4	5·0	1·1	13·3	11·9	6·8	7·3	263·4	51·7
August ...	6·6	1·5	8·2	0·1	2·0	4·9	3·2	9·9	1·9	0·9	5·4	9·3	10·7	0·5	214·1	46·8
September ...	2·9	1·5	3·2	7·3	3·5	...	7·3	1·0	6·0	...	3·3	2·4	8·5		154·7	40·8
October ...	2·8	...	...	0·6	0·3	0·2	...	2·6	...	4·8	6·0	...	0·7	2·7	81·6	25·0
November ...	0·1	...	1·4	6·4	1·1	5·3	...	5·6	3·8	...	1·5	...	...		49·6	19·4
December ...	1·3	...	...	...	...	0·2	1·9	...	0·1	0·1	...	...	...	...	17·6	7·6

SUMMARY OF SUNSHINE.

	Bright Sunshine Recorded.					
	1911.			Mean for the last 31 years.		
	Number of		Percentage of Possible Sunshine.	Number of		Percentage of Possible Sunshine.
	Days.	Hours.		Days.	Hours.	
January ...	11	23·2	9·4	14·0	34·4	13·9
February ...	17	49·3	18·1	17·7	59·9	21·9
March ...	27	101·2	27·7	24·2	107·9	29·5
April ...	25	110·6	26·4	26·2	148·9	35·5
May... ...	30	207·4	42·1	27·7	190·7	38·7
June ...	29	186·2	36·7	27·9	190·2	37·4
July ...	31	263·4	51·7	28·6	181·4	35·6
August ...	31	214·1	46·8	27·6	153·0	33·5
September ...	26	154·7	40·8	25·7	125·9	33·2
October ...	25	81·6	25·0	23·1	86·7	26·6
November ...	21	49·6	19·4	17·4	46·2	18·1
December ...	16	17·6	7·6	13·1	25·4	11·0
Year ...	289	1458·9	32·7	273·0	1350·4	30·2

SUMMARY OF SUNSHINE—*Continued.*

EXTREMES FOR THE LAST 31 YEARS.

MONTH.	Number of Days on which Sunshine was recorded.				Number of Hours				Percentage of Possible Sunshine.			
	Greatest		Least		Greatest		Least		Greatest		Least	
	No.	Year	No.	Year	No.	Year	No.	Year	%	Year	%	Year
Jan.	21	1881	8	1898	64·2	1881	14·9	1885	25·9	1881	6·0	1885
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	67·0	1895	46·1	1907	18·3	1895
Apr.	30	1909	22	1905	223·7	1893	95·7	1889	53·4	1893	22·8	1889
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	109·0	1907	53·6	1887	21·5	1907
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	88·4	1891	51·5	1899	19·3	1891
Sept.	29	*1895	21	1897	175·6	1906	62·9	1896	46·3	1906	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	73·5	1909	18·5	1891	28·7	1909	7·2	1891
Dec.	18	*1886	6	1882	60·1	1886	13·8	1903	26·0	1886	6·0	1903
Year	300	1905	251	1903	1613·7	1887	1132·1	1888	36·1	1887	25·3	1888

* *And in other years.*

MAGNETIC DECLINATION, WEST.

1911.	G. M. T. Civil Day.	Observed.	Corrected.	1911.	G. M. T. Civil Day.	Observed.	Corrected.
	D. H. M.	° ′	° ′		D. H. M.	° ′	° ′
Jan.	3 16 0	17 13·3	17 17·0	July	4 16 0	17 13·5	17 12·6
,,	10 ,, ,,	,, 14·1	,, 19·8	,,	12 ,, ,,	,, 18·0	,, 13·7
,,	19 ,, ,,	,, 16·1	,, 15·8	,,	19 ,, ,,	,, 17·2	,, 13·5
,,	27 ,, ,,	,, 17·5	,, 16·2	,,	27 ,, ,,	,, 15·7	,, 14·2
Feb.	3 16 0	17 18·2	17 17·7	Aug.	4 16 0	17 15·1	17 12·9
,,	10 ,, ,,	,, 17·5	,, 15·5	,,	12 18 48	,, 13·0	,, 12·7
,,	17 ,, 12	,, 17·9	,, 19·9	,,	21 16 0	,, 7·9	,, 6·8
,,	25 ,, 0	,, 22·7	,, 18·7	,,	28 ,, ,,	,, 9·4	,, 6·9
Mar.	4 16 5	17 18·1	17 16·5	Sept.	4 16 0	17 12·4	17 11·9
,,	11 ,, 0	,, 17·9	,, 17·3	,,	12 ,, ,,	,, 10·3	,, 11·0
,,	20 ,, ,,	,, 6·7	,, 20·2	,,	20 10 45	,, 20·0	,, 9·4
,,	27 ,, ,,	,, 16·9	,, 16·9	,,	28 16 0	,, 13·2	,, 12·0
April	3 16 0	17 17·4	17 16·8	Oct.	4 16 0	17 10·7	17 10·9
,,	11 ,, ,,	,, 17·8	,, 17·8	,,	12 ,, ,,	,, 10·7	,, 11·5
,,	19 ,, ,,	,, 16·6	,, 14·5	,,	20 ,, ,,	,, 8·7	,, 10·0
,,	26 ,, ,,	,, 16·2	,, 14·1	,,	27 ,, ,,	,, 10·5	,, 9·6
May	4 16 0	17 14·8	17 14·5	Nov.	5 16 0	17 10·1	17 9·2
,,	12 ,, ,,	,, 14·6	,, 14·8	,,	13 ,, ,,	,, 10·2	,, 9·0
,,	19 ,, ,,	,, 16·7	,, 13·4	,,	20 ,, 5	,, 11·3	,, 9·5
,,	27 ,, ,,	,, 12·5	,, 12·7	,,	27 ,, 0	,, 11·5	,, 11·5
June	5 16 0	17 18·8	17 14·9	Dec.	4 16 0	17 8·9	17 9·6
,,	12 ,, ,,	,, 14·7	,, 11·9	,,	11 ,, ,,	,, 21·5	,, 7·5
,,	19 17 10	,, 12·0	,, 15·9	,,	19 ,, ,,	,, 6·1	,, 5·6
,,	27 16 0	,, 15·3	,, 14·1	,,	27 ,, ,,	,, 7·2	,, 7·9

HORIZONTAL MAGNETIC FORCE.

1911.	G. M. T. Civil Day.	Observed Time of one Vibration.	Temp.	Observed Deflection at 1·0 ft. / at 1·3 ft.	Temp.	Deduced Horizontal Force.	Horizontal Force Corrected.
	D. H. M.	S.	°	° ′	°	C.G.S. UNITS.	
Jan.	18 9 50	6·0700	48	11 20·0 / 5 8·8	46·5 / 48·0	0·17426	0·17417
Feb.	15 10 20	6·0784	57	11 19·6 / 5 8·4	56·2 / 58·0	0·17376	0·17389
Mar.	15 10 0	6·0757	43	11 20·6	50	0·17404	0·17417
April	15 10 0	6·0800	51	11 20·6 / 5 8·4	58 / 60	0·17380	0·17405
May	15 9 30	6·0910	64	11 20·8 / 5 8·6	67 / 68	0·17367	0·17424
June	16 10 15	6·0862	66	11 18·1 / 5 7·1	66 / 60·5	0·17400	0·17416
July	15 10 0	6·0955	75	11 16·2 / 5 6·8	75 / 77	0·17363	0·17401
Aug.	21 9 50	6·0970	67	11 16·8 / 5 6·8	70 / 71·4	0·17367	0·17397
Sept.	15 10 0	6·0788	66	11 15·8 / 5 5·9	70 / 70·5	0·17431	0·17447
Oct.	17 10 20	6·0872	64	11 16·5 / 5 6·9	60 / 69·2	0·17373	0·17427
Nov.	15 12 15	6·0913	52	11 15·8 / 5 7·2	46·3 / 49	0·17385	0·17392
Dec.	16 10 40	6·0935	45	11 16·8 / 5 6·1	43 / 44	0·17404	0·17407

ABSOLUTE MEASURES—SUMMARY.

1911.	DIRECTION. Declination Corrected.		DIRECTION. Inclination.		FORCE. Horizontal.	FORCE. Vertical.	FORCE. Total.
	°	′	°	′	C. G. S. UNITS.		
January ...	17	17·2	68	40·4	0·17417	0·44611	0·47891
February ...	17	18·0	68	42·5	0·17389	0·44619	0·47888
March ...	17	17·7	68	42·0	0·17417	0·44672	0·47947
April ...	17	15·8	68	42·4	0·17405	0·44656	0·47929
May ...	17	13·9	68	44·2	0·17424	0·44775	0·48045
June ...	17	14·2	68	39·9	0·17416	0·44590	0·47870
July ...	17	13·5	68	39·6	0·17401	0·44539	0·47818
August ...	17	9·8	68	41·5	0·17397	0·44602	0·47874
September..	17	11·1	68	40·3	0·17447	0·44684	0·47969
October ...	17	10·5	68	41·4	0·17427	0·44675	0·47954
November..	17	9·8	68	41·1	0·17392	0·44574	0·47847
December..	17	7·7	68	41·9	0·17407	0·44643	0·47916
Means ...	17	13·3	68	41·4	0·17412	0·44637	0·47912

HORIZONTAL MAGNETIC DIRECTION.

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

1911.	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.*					
	17° +						17° +	16° +	
	′	′	′	′	′	′	′	′	′
January ...	20·7	14·1	17·8	16·4	17·2	14·3	30	41	49
February ...	21·7	12·7	19·3	17·9	17·9	16·4	34	44	50
March	21·2	14·2	19·2	16·3	17·7	14·9	30	45	45
April	20·9	10·6	17·0	13·5	15·5	15·8	46	55	51
May	18·9	7·8	14·3	14·1	13·8	13·2	28	59	29
June	18·6	9·2	17·2	11·8	14·2	11·5	24	62	22
July	19·1	8·0	15·8	11·3	13·5	12·9	29	59	30
August ...	14·5	5·9	10·8	8·0	9·8	11·8	31	61	30
September ...	16·2	7·2	11·9	9·3	11·2	12·4	21	50	31
October ...	14·8	7·1	11·0	9·3	10·5	11·3	30	30	60
November ...	13·1	7·2	10·0	9·0	9·8	9·4	19	49	30
December ...	9·7	6·4	7·5	7·2	7·7	8·8	12	48	24
Means... ...	17·4	9·2	14·3	12·0	13·2	12·7	27·8	50·2	37·6

Mean for the year... ... 17° 13′·2 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.

1911.	MEANS OF †				Mean for the month.	Mean daily range. ‡	Highest reading of the month.	Lowest reading of the month.	Monthl range.
	Highest readings.	Lowest readings.	4 p.m. readings	4 a.m. readings. *					
	17000 +				0 +		17000 +		0 +
January ...	428	394	412	416	412	60	470	320	150
February ...	426	389	405	414	408	63	505	324	181
March	426	380	405	412	406	73	479	315	164
April	423	372	403	405	401	79	493	293	200
May	473	424	452	456	451	73	531	361	170
June	449	410	437	432	432	59	499	369	130
July	444	399	424	425	423	68	548	350	198
August ...	430	383	410	410	408	56	483	338	145
September ...	418	380	408	408	404	56	465	314	151
October ...	419	382	401	406	402	50	461	307	154
November ...	409	386	398	398	398	35	440	330	110
December ..	404	390	393	396	396	32	440	294	146
Means... ...	429	391	412	415	412	59	484	326	158

Mean for the year ... ... 0·17412 C. G. S. Units.

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

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.

1911.	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	1911
D.													D.
1	s	s	s	s	s	s	g	s	s	s	s	c	1
2	m	m	s	s	s	s	s	s	s	s	s	c	2
3	m	s	s	s	s	c	s	s	c	s	s	c	3
4	s	s	s	s	c	m	s	s	s	s	s	c	4
5	s	s	m	c	s	s	s	s	*	c	s	c	5
6	s	m	s	s	m	s	s	s	s	s	c	m	6
7	s	s	s	s	g	s	s	s	s	s	c	c	7
8	m	s	s	g	s	c	s	s	s	s	s	c	8
9	m	s	s	m	s	m	s	s	s	s	m	c	9
10	s	s	c	s	s	m	s	s	s	g	s	m	10
11	s	s	c	s	m	s	s	s	s	s	s	g	11
12	s	s	c	s	c	s	s	s	s	s	s	c	12
13	s	g	s	s	s	s	s	s	s	s	m	c	13
14	s	s	s	c	g	s	s	c	s	s	s	c	14
15	s	s	s	m	m	s	s	s	s	c	s	s	15
16	s	s	s	g	m	s	s	s	s	s	s	m	16
17	s	s	c	m	m	c	s	s	s	m	s	m	17
18	s	s	c	m	s	c	m	s	s	m	c	s	18
19	s	c	g	s	s	s	s	s	m	s	s	s	19
20	s	s	g	m	s	s	s	s	m	s	c	c	20
21	c	g	g	m	m	m	s	s	m	s	s	c	21
22	s	g	m	s	c	s	s	m	s	s	c	c	22
23	s	m	m	s	s	s	c	m	s	s	c	c	23
24	g	m	m	s	s	c	c	m	c	s	c	c	24
25	m	s	m	s	m	c	s	s	c	s	s	s	25
26	m	s	m	s	s	c	s	s	s	c	c	m	26
27	s	m	m	s	s	s	s	s	c	c	s	s	27
28	s	m	m	s	s	s	g	s	c	c	c	c	28
29	s		s	s	c	c	s	s	c	c	c	c	29
30	m		s	s	s	s	s	s	c	c	s	s	30
31	m		s		s		s	s		c		s	31
Totals c	1	1	5	2	4	8	2	1	7	8	10	18	
Totals s	21	18	15	20	18	18	26	27	19	20	18	7	
Totals m	8	6	8	7	7	4	1	3	3	2	2	5	
Totals g	1	3	3	2	2	...	2	...	...	1	...	1	
Totals vg	...	...	...	...	...	...	...	...	...	...	...	...	

* *No record.*

DATES AND DISC AREAS OF SOLAR DRAWINGS.

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

1911.	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	1911.
D.													D.
1	...	...	2·5	1·5	1·7	1·0	...	...	0·4	...	0·4		1
2	...					1·0	0·1	...	0·8	0 4		...	2
3			2·0	2·4		0·8	...	...	1 0	1·2		...	3
4			1·6		0·5	0·8		...					4
5			1·3	2·4	0·1	0·3	...		1·2			...	5
6				2·0	1·4	...	...		1·2	0·6		...	6
7						...	...		0·8		...	...	7
8					0·7	...	...	0·8	0·6	0·3	...		8
9		...	0·4		0·3	...	...	1·0			...	...	9
10		0·5			...	...	...	0·9	0·1	...	0·1		10
11		0·7	0·5	1·2	...	...	...	0·3		...	0·1	...	11
12	0·4	0·7		0·8	...	...	...	0·3					12
13	0·3		...	0·6	...	...	...	0·2	...	...			13
14			...	0·4	...	...	0·2	0·4	...			...	14
15		0·7			...	...	0·2	0·3	...				15
16	...		...	...	...		0·2	0·1	...				16
17		1·5	...		...			0·1		...	...		17
18			...		...	...		...	...	...			18
19				...			...		...			...	19
20			...	...	0·2	...	...	...	...		...		20
21			...		0·2	...	...		...		0·3		21
22		...			0·2		...	...			0·6		22
23			...	1·2			...				0·9	...	23
24		...	0·3		...		...	...	...			...	24
25		...	0·1		0·2		...	...		...	1·1		25
26			...	2·8			...	...	...		1·2	...	26
27			...		1·3	...	...			...		...	27
28				2·8	1·4	..	...	...	...	...	1·0		28
29			0·2		1·2		..	...	...				29
30	...		1·0	1·6	1·3		...	...	...			...	30
31	...				1·1		...						31
Daily Means	0·1	0·4	0·5	1·3	0·5	0.2	0·03	0·2	0·3	0·2	0·4	...	

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An Asterisk (*) denotes that the work is an excerpt.

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