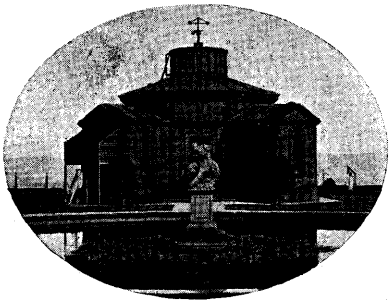
STONYHURST COLLEGE OBSERVATORY.

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.

1912.

With Report and Notes of the Director,

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

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1913.

CONTENTS.

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.

It has been decided at the Meteorological Office to reduce the number of its observing stations; and our connection with the Office ceases at the end of March. But the automatic recorders are to remain here, and will be kept in active service.

The year's mean barometric pressure appears as ·054 inch below the average of the last 65 years. In four of the months only, April, September, October, and November it was above the month's average.

The rainfall of the year was nearly $7\frac{1}{4}$ inches above the annual average, owing chiefly to excessive rains in March, June, August, and November. In March the amount was half an inch more than double the average for the month, and is the greatest fall on record for March.

April was the finest month: the only one with a sunshine duration greater than its average. This excess amounted to 48·3 hours, or 30 % of its average; and its rainfall was little more than half its average.

The total duration of sunshine in the year was only 927·6 hours, which is 409·6 hours short of the annual average, and is the smallest on our record of 32 years. The dullest months were March, June, August, and December: their sunshine durations are the lowest totals registered for these months: they are respectively, 46·6, 54·4, 50·7 and 70·2 per cent. short of their averages.

The year has been, on the whole, a mild year. The mean temperature of the winter months, including April, was 2°·4 above the winter average, and of the summer months, including October, 1°·0 below the summer average. Shade temperatures of 70° and over were registered on eleven days, two of these in the latter half of June, the rest in July. The hottest days were the 14th, 15th and 16th of July, when the thermometer showed 80°, 83°, and 81° respectively. But August and September were relatively very cold: their highest temperatures being 65° and 62°, which are 11°·6 and 10° below their average highest readings.

On five days only the velocity of the wind overreached the accepted velocity of a gale. The strongest of these occurrred on the 6th and 8th of April, at 45 and 46 miles per hour: the rest in November and December, at less than 40 miles.

On pages 35 and 36 an analysis of the velocity and direction of the wind during the past 45 years is set out in tabular form. These show the prevalence of a South-Westerly current, including the points South and West. The West-wind frequency is the highest in every month of the year. It is greater in the summer months than in winter, and greatest in July. But the velocity is greater in the winter months, and least in June.

A third table, on page 37, deals exclusively with storms, in which the velocity has reached at least 37 miles an hour, indicating a gale. And from this it appears that the highest velocity in a gale of wind is usually from the West or from the South.

Fine dry periods of the year are noted as follows:—January 22—February 5; April 10—30; May 23—29; July 3—9, 12—22; September 9—28; November 11—16; December 4—8.

Heavy rainfalls, of 1 inch and over in the day, were registered on 5 days: March 19th, June 17th, August 4th, October 26th, and November 4th.

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 has been obtained in each month by two double measures of the time of 400 vibrations.

The angles of deflection are at distances 1·0 and 1·3 foot between the magnets.

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 $1 + \frac{P}{r^2} + \frac{Q}{r^4} + \&c.$, 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. 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 value of the Unifilar Declination Magnet is 11′·28 arc per centimetre.

The scale value of the Bifilar torsion balance has been kept between ·00048, and ·00053 C.G.S. for one centimetre: the changes being due to re-adjustments of the magnet.

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 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.

The magnetic conditions during the year have been remarkably quiet. The mean daily range of the Declination magnet appears at 8′·1, and is the lowest on our worked out list of ranges of the last 18 years. The lowest monthly mean daily range, 6·1, belongs to January of this year; but in the following January, 1913, it is only 6′·6.

This long-continued magnetic calmness has been as unfavourable to our second series of quick-run magnetograms as it was to the first in 1911: only very small variations appear on the films. The series commenced on March 19, and ended on October 10, with two runs in each month. The films are still awaiting the return of Dr. Mawson, for comparison with simultaneous and similar runs at the Base-station of the Australasian Antarctic Expedition.

Solar and Astro-physical.—The Solar surface has been observed on 183 days, and 60 drawings have been made. Of these there are 43 showing spots and faculæ, and 17 showing faculæ only; or, omitting the faculæ, we have the record number of 140, or 76 % of the observing days, on which the surface was seen to be free from spots.

The mean disc area of the spots (in units of $\frac{1}{5000}$th of the visible surface) appears at 0·22; and the mean daily range of magnetic Declination (in minutes of arc) at 8·1.

These are included in the following table for comparison with the corresponding *means* of the past five years :—

Year.....	1907	1908	1909	1910	1911	1912
Spot area.....	5·8	4·6	3·8	1·8	0·3	0·2
Declination range	14·7	14·1	13·5	14·5	12·6	8·1

The table shows that probably the true epoch of least Solar disturbance will prove to be within the twelve months of 1912 : for, on December 17 a small group of spots was sketched in high latitude, 20° North : the usual fore-runner of increasing activity ; and again on February 19 a somewhat larger group was noted in latitude 31° N.

The Solar grating-spectrometer has again been idle during this prolonged Solar calm. Amongst the few spots that have been observed none were found large enough for the instrument.

The partial eclipse of the Sun on April 17 was observed for last contact with the six-inch lens telescope ; and over the chromosphere, with the Browning spectroscope on the Perry memorial equatorial. Photographs also were taken at noted times with the Abney four-inch lens.

On October 20, for comparison with the Solar corona during the total eclipse as seen in South America, a careful spectroscopic map of the prominences was made before and during the time of the eclipse.

The spectrum of Nova$_2$ Geminorum was photographed on seven occasions, and observed visually on several other nights. Gale's comet (1912a) and Borellis (1912c) were also photographed and observed, but not under favourable conditions of time or sky.

The Whitelow camera has been fitted recently with a six-inch objective prism of 19° angle: presented by the same donor. And the camera with its prism bears the name of the Whitelow prismatic camera. The prism is the work of Mr. Thorp, of Whitefield, Manchester. It does full justice to the Dallmeyer lens: the definition is excellent on every part of a quarter plate, from D to Hη. But the weather has been against any long enough exposure on small bright line stars.

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.

1912.

	Ja.	Fe.	Ma.	Ap.	My.	Ju.	Jl.	Au.	Se.	Oc.	No.	De.
(1)	3	0	1	0	2	4	3	4	2	2	3	3
(2)	6	4	1	4	11	15	9	10	4	3	5	6

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:—

0·15	0·03	0·04	0·02	1·10	0·22	0·16	0·75	0·32	0 06	0·18	0·18

The following papers have been published during the year:—

1. Report on the Total Solar Eclipse of 1911, April 28. Proceedings R.S. A 87. pp. 298-301.

2. Observations of the Solar Eclipse, 1912. April 16-17. Monthly Notices, R.A.S., 72.7. 1912, May.

3. Note on the Spectrum of Nova Germinorum 2, 1912. April 24. *Ibid.* 72.8. 1912, June.

4. The Sun-Spot Minimum: Sun-Spots and Prominences, 1912. October, 1912. *Ibid*, 73.1. 1912, November.

5. Sun-Spots and Terrestrial Magnetic Phenomena, 1898-1911. The Cause of the Annual Variation in Magnetic Disturbances. *Ibid*, 73.1. 1912, November.

6. Magnetic Disturbances, Sun-Spots and the Sun's Corona. The Observatory, No. 453. 1912, October.

7. Angelo Secchi, S.J. Catholic Truth Society.

8. The System of the Stars. The Month, No. 573, 1912, March.

WALTER SIDGREAVES, S.J.,
DIRECTOR.

February, 1913.

METEOROLOGICAL REPORT.

JANUARY, 1912.

Results of Observations taken during the Month.		Mean for the last 65 years.
Mean Reading of the Barometer .....inches	29·471	29·492
Highest ,, ,, on the 1st ... ,,	29·989	30·131
Lowest ,, ,, on the 6th ... ,,	28·374	28·584
Range of Barometer Readings ..... ,,	1·615	1·547
Highest Reading of a Max. Therm. on the 1st ...	50·0	51·2
Lowest Reading of a Min. Therm. on the 29th...	18·0	20·9
Range of Thermometer Readings.....	32·0	30·3
Mean of Highest Daily Readings	41·5	42·3
Mean of Lowest Daily Readings	33·9	32·8
Mean Daily Range	7·6	9·5
Deduced Mean Temp. (from mean of Max. and Min.)	37·5	37·3
Mean Temperature from Dry Bulb	38·2	37·4
Adopted Mean Temperature.....	37·9	37·4
Mean Temperature of Evaporation	36·3	36·2
Mean Temperature of Dew Point.....	34·2	34·0
Mean elastic force of Vapour .....inches	0·197	0·197
Mean weight of Vapour in a cub. ft. of air, grains	2·3	2·4
Mean additional weight required for saturation ,,	0·4	0·4
Mean degree of Humidity (saturation 100).....	87	87
Mean weight of a cubic foot of air.....grains	548·8	549·9
Mean amount of Cloud (0—10).....	7·7	7·8
Fall of Rain .....inches	3·835	4·158
Greatest Rainfall in one day (4th) ..... ,,	0·675	0·790
No. of days on which ·005 in. or more Rain fell...	22	19·1

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing Wind was	0	10	5	3	2	3	8	0
Mean Velocity in miles per hour	0	6·4	11·8	8·5	15·4	7·8	10·1	0
Total No. of miles for each Direction	0	1529	1412	611	738	563	1933	0

		Mean.*
Total No. of miles registered	6786	8178·1
Greatest hourly velocity (3rd and 5th, 6 a.m. and 11 p.m. Dir. W. by S. and W. respectively)	26	41·6

** For the last 45 years.*

JANUARY, 1912.

DIFFERENCES.

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

Mean barometric pressure	— 0·021 in.
Monthly range ,, ...	+ 0·068 ,,
Mean of highest temperatures	— 0·8°
Mean of lowest ,, ...	+ 1·1°
Mean daily range ,, ...	— 1·9°
Adopted mean temperature	+ 0·5°
Total rainfall	— 0·323 in.

Ground frost on 7th—9th, 17th—20th, 23rd—31st. Snow on 5th, 6th, 8th, 17th, 18th, 24th and 30th. Hail on 5th, 6th and 17th. Heavy rain on 3rd, 4th and 8th. Thunder on 5th. Lightning on 5th. Lunar halo on 29th and 30th.

A fairly average January. Severe frost set in towards the end of the month.

EXTREME READINGS FOR JANUARY, During 65 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, 1912.

Results of Observations taken during the Month.		Mean for the last 65 years.
Mean Reading of the Barometer .....inches	29·190	29·498
Highest ,, ,, on the 14th... ,,	29·698	30·100
Lowest ,, ,, on the 8th ... ,,	28·478	28·650
Range of Barometer Readings ..... ,,	1·220	1·450
Highest Reading of a Max. Therm. on 22nd, 28th, 29th	54·0	52·0
Lowest Reading of a Min. Therm. on the 3rd ...	16·0	22·0
Range of Thermometer Readings.....	38·0	30·0
Mean of Highest Daily Readings..	45·3	44·0
Mean of Lowest Daily Readings	36·4	33·4
Mean Daily Range	8·9	10·6
Deduced Mean Temp. (from mean of Max. and Min.)	40·5	38·1
Mean Temperature from Dry Bulb	41·2	38·3
Adopted Mean Temperature.....	40·9	38·2
Mean Temperature of Evaporation	39·2	36·7
Mean Temperature of Dew Point.....	37·1	34·5
Mean elastic force of Vapour.....inches	0·220	0·194
Mean weight of Vapour in a cub. ft. of air, grains	2·6	2·4
Mean additional weight required for saturation ,,	0·4	0·4
Mean degree of Humidity (saturation 100).....	86	87
Mean weight of a cubic foot of air .....grains	540·3	548·9
Mean amount of Cloud (0—10)	7·3	7·6
Fall of Rain ....inches	1·840	3·526
Greatest Rainfall in one day (17th)..... ,,	0·275	0·772
No. of days on which ·005 in. or more Rain fell...	20	16·8

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing Wind was	3	7	2	2	7	6	1	1
Mean Velocity in miles per hour	5·2	8·1	9·7	8·1	9·8	14·0	6·4	12·2
Total No. of miles for each Direction	373	1358	466	390	1641	2023	154	292

		Mean.*
Total No. of miles registered	6697	7627·2
Greatest hourly velocity (28th, 11 p.m. Dir. S.)...	33	42·4

** For the last 45 years.*

FEBRUARY, 1912.

DIFFERENCES.

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

Mean barometric pressure	— 0·308 in.
Monthly range ,, ...	— 0·230 ,,
Mean of highest temperatures	+ 1·3°
Mean of lowest ,, ...	+ 3·0°
Mean daily range ,, ...	— 1·7°
Adopted mean temperature	+ 2·7°
Total rainfall	— 1·686 in.

Ground frost on 1st—7th, 11th, 15th, 21st, 24th and 25th. Snow on 1st—4th. Hail on 26th. Fog on 16th, 17th and 24th. Solar Halo on 25th, 26th and 28th.

Severe frost continued till the 8th. The rest of the month was mild.

EXTREME READINGS FOR FEBRUARY, During 65 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, 1912.

Results of Observations taken during the Month.		Mean for the last 65 years.
Mean Reading of the Barometer .....inches	29·165	29·453
Highest ,, ,, on the 12th... ,,	29·824	30·049
Lowest ,, ,, on the 4th ... ,,	28·370	28·643
Range of Barometer Readings ..... ,,	1·454	1·406
Highest Reading of a Max. Therm. on the 26th...	55·0	56·9
Lowest Reading of a Min. Therm. on the 23rd...	31·0	23·1
Range of Thermometer Readings.....	24·0	33·8
Mean of Highest Daily Readings.....	48·1	47·1
Mean of Lowest Daily Readings	39·1	34·2
Mean Daily Range	9·0	12·9
Deduced Mean Temp. (from mean of Max. and Min.)	42·6	39·8
Mean Temperature from Dry Bulb	43·9	40·2
Adopted Mean Temperature.....	43·3	40·0
Mean Temperature of Evaporation	41·6	38·1
Mean Temperature of Dew Point.....	39·6	35·7
Mean elastic force of Vapour.....inches	0·244	0·208
Mean weight of Vapour in a cub. ft. of air, grains	2·8	2·4
Mean additional weight required for saturation ,,	0·4	0·5
Mean degree of Humidity (saturation 100).....	87	85
Mean weight of a cubic foot of air .....grains	537·0	546·2
Mean amount of Cloud (0—10)	8·6	7·5
Fall of Rain .....inches	7·205	3·354
Greatest Rainfall in one day (19th) ..... ,,	1·020	0·773
No. of days on which ·005 in. or more Rain fell...	24	16·5

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing Wind was	2	1	2	0	8	9	9	0
Mean Velocity in miles per hour	3·4	3·4	7·6	0	13·1	11·1	16·9	0
Total No. of miles for each Direction	163	82	366	0	2514	2389	3642	0

		Mean.*
Total No. of miles registered	9156	8552·1
Greatest hourly velocity (30th, 11 a.m. Dir. W. by S.).....	35	41·7

** For the last 45 years.*

MARCH, 1912.

DIFFERENCES.

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

Mean barometric pressure	—	0·288 in.
Monthly range ,, ...	+	0·048 ,,
Mean of highest temperatures	+	1·0°
Mean of lowest ,, ...	+	4·9°
Mean daily range ,, ...	—	3·9°
Adopted mean temperature	+	3·3°
Total rainfall	+	3·851 in.

Ground frost on 8th, 12th, 16th, 18th—23rd. Hoar frost on 16th. Snow on 20th and 21st. Hail on 19th, 20th and 30th. Heavy rain on 2nd, 4th, 12th, 14th, 19th, 27th and 30th. Thunder on 9th, 17th and 29th. Lightning on 7th, 9th and 29th. Lunar halo on 22nd. Solar halo on 11th.

A record March for greatest rainfall and least sunshine.

EXTREME READINGS FOR MARCH, During 65 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.....	1912	.....	7·205 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.*

APRIL, 1912.

Results of Observations taken during the Month.		Mean for the last 65 years.
Mean Reading of the Barometer .....inches	29·735	29·488
Highest ,, ,, on the 23rd ,,	30·116	29·948
Lowest ,, ,, on the 8th... ,,	28·965	28·811
Range of Barometer Readings .. .. ,,	1·151	1·137
Highest Reading of a Max. Therm. on 21st and 22nd	66·0	65·1
Lowest Reading of a Min. Therm. on 11th and 12th	30·0	28·0
Range of Thermometer Readings.....	36·0	37·1
Mean of Highest Daily Readings.....	54·2	55·0
Mean of Lowest Daily Readings	39·4	37·7
Mean Daily Range	14·8	17·3
Deduced Mean Temp. (from mean of Max. and Min.)	45·3	44·1
Mean Temperature from Dry Bulb	47·6	44·7
Adopted Mean Temperature.....	46·5	44·4
Mean Temperature of Evaporation	43·1	41·7
Mean Temperature of Dew Point.....	39·3	38·2
Mean elastic force of Vapour.....inches	0·241	0·235
Mean weight of Vapour in a cub. ft. of air, grains	2·8	2·7
Mean additional weight required for saturation ,,	0·9	0·7
Mean degree of Humidity (saturation 100).....	77	80
Mean weight of a cubic foot of air .....grains	544·2	542·1
Mean amount of Cloud (0—10)	5·0	6·8
Fall of Rain .....inches	1·361	2·498
Greatest Rainfall in one day (4th) ..... ,,	0·500	0·576
No. of days on which ·005 in. or more Rain fell...	6	14·7

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing Wind was	1	7	4	0	4	3	8	3
Mean Velocity in miles per hour	15·4	5·7	8·6	0	5·8	11·1	13·8	12·2
Total No. of miles for each Direction	370	965	823	0	552	800	2647	880

		Mean.*
Total No. of miles registered	7037	7584·3
Greatest hourly velocity (8th, 1 p.m. Dir. W.)...	46	37·0

** For the last 45 years.*

APRIL, 1912.

DIFFERENCES.

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

Mean barometric pressure	+ 0·247 in.
Monthly range ,, ...	+ 0·014 ,,
Mean of highest temperatures	— 0·8°
Mean of lowest ,, ...	+ 1·7°
Mean daily range ,, ...	— 2·5°
Adopted mean temperature	+ 2·1°
Total rainfall	— 1·137 in.

Ground frost on 1st — 3rd, 9th — 12th, 17th — 20th, 25th, 28th—30th. Snow on 9th. Hail on 8th, 10th and 11th. Heavy rain on 4th. Gales of wind on 6th and 8th. Solar halo on 12th.

A remarkably fine dry month. Sunshine 48 hours above the average.

EXTREME READINGS FOR APRIL, During 65 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.*

MAY, 1912.

Results of Observations taken during the Month.		Mean for the last 65 years.
Mean Reading of the Barometer .....inches	29·537	29·538
Highest ,, ,, on the 25th ... ,,	29·960	29·991
Lowest ,, ,, on the 15th ... ,,	29·022	28·946
Range of Barometer Readings ..... ,,	0·938	1·045
Highest Reading of a Max. Therm. on the 11th...	66·0	71·7
Lowest Reading of a Min. Therm. on 1st and 14th	37·0	31·7
Range of Thermometer Readings.....	29·0	40·0
Mean of Highest Daily Readings.....	58·2	59·5
Mean of Lowest Daily Readings	44·9	42·3
Mean Daily Range	13·3	17·2
Deduced Mean Temp. (from mean of Max. and Min.)	49·9	49·1
Mean Temperature from Dry Bulb	51·6	49·8
Adopted Mean Temperature.....	50·8	49·5
Mean Temperature of Evaporation	47·8	46·2
Mean Temperature of Dew Point...	44·7	42·7
Mean elastic force of Vapour.....inches	0·296	0·277
Mean weight of Vapour in a cub. ft. of air, grains	3·4	3·1
Mean additional weight required for saturation ,,	0·8	0·9
Mean degree of Humidity (saturation 100).....	80	76
Mean weight of a cubic foot of air .....grains	535·5	537·1
Mean amount of Cloud (0—10).....	8·0	7·1
Fall of Rain ....inches	2·945	2·666
Greatest Rainfall in one day (15th)..... ,,	0·550	0·626
No. of days on which ·005 in. or more Rain fell...	17	14·5

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing Wind was	0	6	2	0	1	7	14	1
Mean Velocity in miles per hour	0	7·1	7·7	0	5·6	6·4	8·9	6·0
Total No. of miles for each Direction	0	1021	370	0	135	1069	2990	145

		Mean.*
Total No. of miles registered	5730	7102·9
Greatest hourly velocity (16th, Noon. Dir. W.)...	29	33·9

* *For the last 45 years.*

MAY, 1912.

DIFFERENCES.

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

Mean barometric pressure	—	0·001 in.
Monthly range ,, ...	—	0·107 ,,
Mean of highest temperatures	—	1·3°
Mean of lowest ,, ...	+	2·6°
Mean daily range ,, ...	—	3·9°
Adopted mean temperature	+	1·3°
Total rainfall	+	0·279 in.

Ground frost on 1st, 14th and 24th. Hail on 16th. Heavy rain on 15th. Thunder on 16th, 17th, 30th and 31st. Lightning on 16th and 30th. Solar halo on 3rd, 17th, 18th, 19th, 28th and 30th.

The weather throughout was unsettled and unusually cloudy. Sunshine 62 hours below the average.

EXTREME READINGS FOR MAY, During 65 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.* † *And in other years.*

JUNE, 1912.

Results of Observations taken during the Month.		Mean for the last 65 years.
Mean Reading of the Barometer ..... inches	29·358	29·549
Highest ,, ,, on the 27th... ,,	29·635	29·930
Lowest ,, ,, on the 4th ... ,,	28·928	29·029
Range of Barometer Readings ..... ,,	0·707	0·901
Highest Reading of a Max. Therm. on the 22nd	73·0	77·1
Lowest Reading of a Min. Therm. on the 17th...	45·0	39·0
Range of Thermometer Readings.....	28·0	38·1
Mean of Highest Daily Readings.....	61·7	65·6
Mean of Lowest Daily Readings	50·4	48·0
Mean Daily Range	11·3	17·6
Deduced Mean Temp. (from mean of Max. and Min.)	54·3	55·0
Mean Temperature from Dry Bulb	55·3	55·3
Adopted Mean Temperature.....	54·8	55·2
Mean Temperature of Evaporation	52·0	52·0
Mean Temperature of Dew Point.....	49·3	48·5
Mean elastic force of Vapour.....inches	0·350	0·351
Mean weight of Vapour in a cub. ft. of air, grains	3·9	3·9
Mean additional weight required for saturation ,,	0·9	1·0
Mean degree of Humidity (saturation 100).....	81	78
Mean weight of a cubic foot of air .....grains	527·8	531·1
Mean amount of Cloud (0—10)	8·6	7·3
Fall of Rain .....inches	6·245	3·496
Greatest Rainfall in one day (17th) ..... ,,	1·680	0·830
No. of days on which ·005 in. or more Rain fell...	27	15·4

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing Wind was	2	6	1	0	5	6	9	1
Mean Velocity in miles per hour	4·3	4·6	5·0	0	9·1	9·1	9·6	9·3
Total No. of miles for each Direction	207	661	121	0	1093	1306	2074	222

		Mean.*
Total No. of miles registered	5684	6215·3
Greatest hourly velocity (25th, 9 a.m. Dir. S.S.E.)	27	30·2

* *For the last 45 years.*

JUNE, 1912.

DIFFERENCES.

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

Mean barometric pressure	—	0·191 in.
Monthly range ,, ...	—	0·194 ,,
Mean of highest temperatures	—	3·9°
Mean of lowest ,, ...	+	2·4°
Mean daily range ,, ...	—	6·3°
Adopted mean temperature	—	0·4°
Total rainfall	+	2·749 in.

Heavy rain on 17th. Thunder on 1st, 4th, 5th, 9th — 14th, 23rd, 25th, 28th and 29th. Lightning on 4th, 9th—12th, 23rd and 25th.

A remarkably wet and gloomy month. The total sunshine, 85·2 hours, is the lowest on record for June.

EXTREME READINGS FOR JUNE, During 65 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.* † *And 1912.*

JULY, 1912.

Results of Observations taken during the Month.		Mean for the last 65 years.
Mean Reading of the Barometer	inches 29·511	29·525
Highest ,, ,, on the 4th ...	,, 29·921	29·904
Lowest ,, ,, on the 28th...	,, 28·967	29·015
Range of Barometer Readings	,, 0·954	0·889
Highest Reading of a Max. Therm. on the 15th	83·2	78·8
Lowest Reading of a Min. Therm. on the 29th...	48·0	42·4
Range of Thermometer Readings.....	35·2	36·4
Mean of Highest Daily Readings.....	66·2	67·7
Mean of Lowest Daily Readings	53·8	50·9
Mean Daily Range	12·4	16·8
Deduced Mean Temp. (from mean of Max. and Min.)	58·1	57·7
Mean Temperature from Dry Bulb	59·1	57·9
Adopted Mean Temperature.....	58·6	57·9
Mean Temperature of Evaporation	55·7	54·8
Mean Temperature of Dew Point...	53·1	52·1
Mean elastic force of Vapour.....inches	0·405	0·389
Mean weight of Vapour in a cub. ft. of air, grains	4·5	4·4
Mean additional weight required for saturation ,,	1·0	1·1
Mean degree of Humidity (saturation 100)	82	81
Mean weight of a cubic foot of air .....grains	526·3	527·5
Mean amount of Cloud (0—10)	7·1	7·4
Fall of Rain ....inches	4·770	4·033
Greatest Rainfall in one day (29th) ..... ,,	0·975	0·870
No. of days on which ·005 in. or more Rain fell...	15	16·5

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing Wind was	2	12	3	1	6	1	5	1
Mean Velocity in miles per hour	10·0	7·2	4·4	8·1	10·0	14·6	8·2	8·3
Total No. of miles for each Direction	479	2068	317	194	1433	350	981	198

		Mean.*
Total No. of miles registered	6020	6522·4
Greatest hourly velocity (10th and 29th. Dir. S.).....	23	29·2

* *For the last 45 years.*

JULY, 1912.

DIFFERENCES.

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

Mean barometric pressure	—	0·014 in.
Monthly range ,, ...	+	0·065 ,,
Mean of highest temperatures	—	1·5°
Mean of lowest ,, ...	+	2·9°
Mean daily range ,, ...	—	4·4°
Adopted mean temperature	+	0·7°
Total rainfall	+	0·737 in.

Heavy rain on 27th, 28th, 29th and 31st. Thunder on 1st, 2nd, 11th, 12th, 24th, 25th, 27th and 29th. Lightning on 12th, 25th, 27th and 29th.

Sunshine 70 hours below the average.

EXTREME READINGS FOR JULY, During 65 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.* † *And in other years.*

AUGUST, 1912.

Results of Observations taken during the Month.		Mean for the last 65 years.
Mean Reading of the Barometer .....inches	29·275	29·491
Highest ,, ,, on the 22nd... ,,	29·651	29·887
Lowest ,, ,, on the 7th ... ,,	28·911	28·947
Range of Barometer Readings ..... ,,	0·740	0·940
Highest Reading of a Max. Therm. on the 4th ...	65·0	76·6
Lowest Reading of a Min. Therm. on the 28th...	42·0	41·7
Range of Thermometer Readings.....	23·0	34·9
Mean of Highest Daily Readings.....	59·0	66·7
Mean of Lowest Daily Readings	48·8	50·6
Mean Daily Range	10·2	16·1
Deduced Mean Temp. (from Mean of Max. and Min.)	52·2	57·0
Mean Temperature from Dry Bulb	54·2	57·6
Adopted Mean Temperature.....	53·2	57·3
Mean Temperature of Evaporation	51·0	54·4
Mean Temperature of Dew Point.....	48·8	51·7
Mean elastic force of Vapour.....inches	0·344	0·386
Mean weight of Vapour in a cub. ft. of air, grains	3·9	4·3
Mean additional weight required for saturation ,,	0·7	0·9
Mean degree of Humidity (saturation 100).....	85	82
Mean weight of a cubic foot of air.....grains	528·1	527·5
Mean amount of Cloud (0—10).....	8·7	7·3
Fall of Rain .....inches	7·360	5·077
Greatest Rainfall in one day (4th) ..... ,,	1·210	1·070
No. of days on which ·005 in. or more Rain fell...	26	18·5

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing Wind was	2	4	2	0	3	3	14	3
Mean Velocity in miles per hour	6·5	6·3	9·3	0	7·0	10·8	9·4	6·8
Total No. of miles for each Direction	312	601	444	0	507	779	3169	487

		Mean.*
Total No. of miles registered	6299	6530·1
Greatest hourly velocity (5th, Noon. Dir. S.W.)...	26	31·9

* *For the last 45 years.*

AUGUST, 1912.

DIFFERENCES.

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

Mean barometric pressure	— 0·216 in.
Monthly range ,, ...	— 0·200 ,,
Mean of highest temperatures	— 7·7°
Mean of lowest ,, ...	— 1·8°
Mean daily range ,, ...	— 5·9°
Adopted mean temperature	— 4·1°
Total rainfall	+ 2·283 in.

Hail on 6th. Heavy rain on 4th, 22nd and 23rd. Thunder on 1st, 4th, 6th, 7th and 19th. Lightning on 1st, 4th and 18th.

An exceptionally wet and cold month. The total amount of sunshine, 74·1 hours, is the lowest on record for August.

EXTREME READINGS FOR AUGUST, During 65 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, 1912.

Results of Observations taken during the Month.		Mean for the last 65 years.
Mean Reading of the Barometer ..... inches	29·748	29·544
Highest ,, ,, on the 19th... ,,	30·117	30·014
Lowest ,, ,, on the 30th... ,,	28·797	28·893
Range of Barometer Readings ..... ,,	1·320	1·121
Highest Reading of a Max. Therm. on the 18th...	62·0	72·1
Lowest Reading of a Min. Therm. on the 9th ...	35·0	36·3
Range of Thermometer Readings.....	27·0	35·8
Mean of Highest Daily Readings.....	56·7	62·1
Mean of Lowest Daily Readings	46·0	47·1
Mean Daily Range	10·7	15·0
Deduced Mean Temp. (from mean of Max. and Min.)	50·1	53·4
Mean Temperature from Dry Bulb	51·9	54·2
Adopted Mean Temperature	51·0	53·7
Mean Temperature of Evaporation	48·3	51·0
Mean Temperature of Dew Point.....	45·5	48·3
Mean elastic force of Vapour.....inches	0·306	0·339
Mean weight of Vapour in a cub. ft. of air, grains	3·5	3·9
Mean additional weight required for saturation ,,	0·7	0·8
Mean degree of Humidity (saturation 100).....	82	82
Mean weight of a cubic foot of air.....grains	539·2	532·7
Mean amount of Cloud (0—10)	6·2	6·7
Fall of Rain .....inches	2·755	4·298
Greatest Rainfall in one day (3rd) ..... ,,	0·760	0·957
No. of days on which ·005 in. or more Rain fell...	9	16·6

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing Wind was	3	2	9	2	1	1	8	4
Mean Velocity in miles per hour	6·8	3·5	8·0	10·8	5·1	6·7	11·5	12·6
Total No. of miles for each Direction	491	168	1735	518	122	161	2215	1211

		Mean.*
Total No. of miles registered	6621	6192·7
Greatest hourly velocity (6th, 9 p.m. Dir. N.W.)	29	33·1

* *For the last 45 years.*

SEPTEMBER, 1912.

DIFFERENCES.

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

Mean barometric pressure	+ 0·204 in.
Monthly range ,, ...	+ 0·199 ,,
Mean of highest temperatures	— 5·4°
Mean of lowest ,, ...	— 1·1°
Mean daily range ,, ...	— 4·3°
Adopted mean temperature	— 2·7°
Total rainfall	— 1·543 in.

Ground frost on 9th and 11th. Heavy rain on 1st, 3rd and 7th.

A very dry, but sunless September, and almost the coldest on record. The prevalence of Easterly and North-Easterly winds during half of the month accounted largely for the low temperatures recorded.

EXTREME READINGS FOR SEPTEMBER, During 65 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.* † *And in other years.*

OCTOBER, 1912.

Results of Observations taken during the Month.		Mean for the last 65 years.
Mean Reading of the Barometer .....inches	29·446	29·437
Highest ,, ,, on the 4th ... ,,	30·188	30·024
Lowest ,, ,, on the 29th ,,	28·684	28·668
Range of Barometer Readings ..... ,,	1·504	1·356
Highest Reading of a Max. Therm. on the 27th	60·0	64·1
Lowest Reading of a Min. Therm. on the 4th & 26th	31·0	29·3
Range of Thermometer Readings.....	29·0	34·8
Mean of Highest Daily Readings.....	53·1	54·6
Mean of Lowest Daily Readings	40·1	41·8
Mean Daily Range	13·0	12·8
Deduced Mean Temp. (from mean of Max. and Min.)	45·6	47·2
Mean Temperature from Dry Bulb	46·7	47·9
Adopted Mean Temperature	46·2	47·6
Mean Temperature of Evaporation	43·5	45·4
Mean Temperature of Dew Point.....	40·4	43·0
Mean elastic force of Vapour.....inches	0·252	0·278
Mean weight of vapour in a cub. ft. of air, grains	2·9	3·2
Mean additional weight required for saturation ,,	0·7	0·6
Mean degree of Humidity (saturation 100).....	81	84
Mean weight of a cubic foot of air.....grains	538·9	537·5
Mean amount of Cloud (0—10)	6·0	7·4
Fall of Rain .....inches	4·930	5·018
Greatest Rainfall in one day (26th) ..... ,,	1·700	0·995
No. of days on which ·005 in. or more Rain fell...	17	18·9

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing Wind was	4	6	1	0	6	9	5	0
Mean Velocity in miles per hour	5·8	5·3	8·7	0	8·1	9·1	8·0	0
Total No. of miles for each Direction	553	756	208	0	1164	1971	964	0

		Mean.*
Total No. of miles registered	5616	7025·3
Greatest hourly velocity (27th, 1 p.m. Dir. S.)...	30	38·4

* *For the last 45 years.*

OCTOBER, 1912.

DIFFERENCES.

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

Mean barometric pressure	+	0·009 in.
Monthly range ,, ...	+	0·148 ,,
Mean of highest temperatures	—	1·5°
Mean of lowest ,, ...	—	1·7°
Mean daily range ,, ...	+	0·2°
Adopted mean temperature	—	1·4°
Total rainfall	—	0·088 in.

Ground frost on 3rd—5th, 8th, 23rd—26th. Hoar frost on 4th and 26th. Snow on 21st. Hail on 20th and 21st. Heavy rain on 18th and 26th.

October is remarkable for being the calmest month of the year. The weather during the first half was fine and dry, but temperatures in general were below the average.

EXTREME READINGS FOR OCTOBER, During 65 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.*

NOVEMBER, 1912.

Results of Observations taken during the Month.		Mean for the last 65 years.
Mean Reading of the Barometer .....inches	29·509	29·464
Highest ,, ,, on the 1st ... ,,	29·948	30·059
Lowest ,, ,, on the 26th... ,,	28·547	28·570
Range of Barometer Readings ..... ,,	1·401	1·489
Highest Reading of a Max. Therm. on the 7th ...	59·0	55·8
Lowest Reading of a Min. Therm. on the 30th ...	20·0	25·4
Range of Thermometer Readings.....	39·0	30·4
Mean of Highest Daily Readings.....	46·9	47·3
Mean of Lowest Daily Readings	38·5	36·6
Mean Daily Range	8·4	10·7
Deduced Mean Temp. (from mean of Max. and Min.)	42·3	41·6
Mean Temperature from Dry Bulb	43·5	42·0
Adopted Mean Temperature	42·9	41·8
Mean Temperature of Evaporation	41·2	39·7
Mean Temperature of Dew Point.....	39·2	38·2
Mean elastic force of Vapour.....inches	0·240	0·231
Mean weight of Vapour in a cub. ft. of air, grains	2·8	2·7
Mean additional weight required for saturation ,,	0·4	0·4
Mean degree of Humidity (saturation 100).....	86	87
Mean weight of a cubic foot of air..... grains	543·8	544·7
Mean amount of Cloud (0—10)	8·1	7·4
Fall of Rain ..... inches	5·540	4·398
Greatest Rainfall in one day (4th) ..... ,,	1·020	0·975
No. of days on which ·005 in. or more Rain fell...	23	17·8

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing Wind was	2	1	0	0	2	7	12	6
Mean Velocity in miles per hour	17·3	7 8	0	0	13·5	9·1	10·2	7·1
Total No. of miles for each Direction	830	187	0	0	646	1537	2931	1016

		Mean.*
Total No. of miles registered	7147	7289·6
Greatest hourly velocity (10th, 6 p.m., and 26th, noon. Dir. W. by N. & S.S.W. respectively)	39	42·1

** For the last 45 years.*

NOVEMBER, 1912.

DIFFERENCES.

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

Mean barometric pressure	+	0·045 in.
Monthly range ,, ...	—	0·088 ,,
Mean of highest temperatures	—	0·4°
Mean of lowest ,, ...	+	1·9°
Mean daily range ,, ...	—	2·3°
Adopted mean temperature	+	1·1°
Total rainfall	+	1·142 in.

Ground frost on 1st—4th, 12th, 13th, 19th, 28th—30th. Hoar frost on 4th. Snow on 28th. Hail on 2nd, 10th, 13th, 19th, 25th, 26th and 28th. Heavy rain on 4th, 10th, 23rd and 25th. Gales of wind on 10th and 26th. Fog on 16th. Thunder on 26th.

A rather wet, gloomy month: the only dry period was between the 10th and 17th.

EXTREME READINGS FOR NOVEMBER, During 65 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, 1912.

Results of Observations taken during the Month.		Mean for the last 65 years.
Mean Reading of the Barometer .....inches	29·337	29·438
Highest ,, ,, on the 3rd ... ,,	29·899	30·070
Lowest ,, ,, on the 26th... ,,	28·591	28·524
Range of Barometer Readings ..... ,,	1·308	1·546
Highest Reading of a Max. Therm. on the 14th	55·0	53·0
Lowest Reading of a Min. Therm. on the 1st ...	22·0	20·8
Range of Thermometer Readings.....	33·0	32·2
Mean of Highest Daily Readings.....	47·7	43·3
Mean of Lowest Daily Readings	38·2	33·5
Mean Daily Range	9·5	9·8
Deduced Mean Temp. (from mean of Max. and Min.)	43·0	38·4
Mean Temperature from Dry Bulb	43·9	39·1
Adopted Mean Temperature	43·5	38·7
Mean Temperature of Evaporation	41·4	37·2
Mean Temperature of Dew Point..	38·9	35·3
Mean elastic force of Vapour.....inches	0·237	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).....	84	87
Mean weight of a cubic foot of air.....grains	540·1	547·3
Mean amount of Cloud (0—10)	8·2	7·6
Fall of Rain .....inches	5·345	4·574
Greatest Rainfall in one day (1st) ..... ,,	0·830	0·848
No. of days on which ·005 in. or more Rain fell...	25	19·8

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing Wind was	1	0	1	0	9	11	8	1
Mean Velocity in miles per hour	3·2	0	9·6	0	9·8	16·2	12·7	5·5
Total No. of miles for each Direction	76	0	230	0	2111	4266	2441	133

		Mean.*
Total No. of miles registered	9257	7870·8
Greatest hourly velocity (24th, 5 p.m. Dir. S.W.)	38	42·7

** For the last 45 years.*

DECEMBER, 1912.

DIFFERENCES.

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

Mean barometric pressure	—	0·101 in.
Monthly range ,, ...	—	0·238 ,,
Mean of highest temperatures	+	4·4°
Mean of lowest ,, ...	+	4·7°
Mean daily range ,, ...	—	0·3°
Adopted mean temperature	+	4·8°
Total rainfall	+	0·771 in.

Ground frost on 1st—4th, 6th, 7th, 10th, 11th, 14th, 17th, 19th, 23rd, 26th, 27th, 29th and 30th. Hoar frost on 10th. Snow on 1st, 18th and 24th. Hail on 12th, 16th, 17th, 18th and 24th. Heavy rain on 1st, 14th and 17th. Gale of wind on 24th. Thunder on 17th.

A remarkably warm but very cloudy and rather wet December. The amount of sunshine (7h. 24m.) is the lowest on record for this month, being 6h. 24m. less than the previous record in 1903.

EXTREME READINGS FOR DECEMBER.
During 65 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, 1912.

Results of Observations taken during the Year.		Mean for the last 65 years.
Readings of Barometer in inches.		
Mean of the Year	29·440	29·494
Highest Monthly Mean (September)	29·748	29·750
Lowest ,, ,, (March)	29·165	29·225
Highest Reading (October)	30·188	30·295
Lowest ,, (March)	28·370	28·208
Range	1·818	2·087
Thermometer, Fahrenheit.		
Highest Monthly Mean Temperature (July)	58·6	58·6
Lowest ,, ,, ,, (January).	37·9	35·4
Highest Reading of a Max. Therm. (July 15th)	83·2	81·8
Lowest ,, Min. ,, (Feb. 3rd)	16·0	15·7
Range of Thermometer Readings	67·2	66·1
Mean of Highest Daily ,,	53·2	54·6
Mean of Lowest Daily ,,	42·5	40·8
Mean Daily Range	10·8	13·8
Deduced Mean Temp. (from mean of Max. and Min.)	46·8	46·8
Mean Temperature from Dry Bulb	48·1	47·0
Adopted Mean Temperature of the Year	47·5	46·9
Mean Temperature of Evaporation	45·1	44·6
Mean Temperature of Dew Point	42·5	42·1
Mean elastic force of Vapour ....inches	0·278	0·274
Mean weight of Vapour in a cub. ft. of air...grns.	3·2	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.	537·5	539·2
Mean amount of Cloud (0—10)	7·5	7·3
Total fall of Rain .....inches	54·131	47·095
Greatest Monthly Rainfall (August) ,,	7·360	7·501
Least ,, ,, (April) ,,	1·361	1·216
Greatest Rainfall in one day (Oct. 26th). ,,	1·700	1·631
No. of days per Month on which ·005 inch or more Rain fell	19·3	17·1

SUMMARY OF WIND, 1912.

	N	NE	E	SE	S	SW	W	NW
No. of days in the year on which the prevailing Wind was	22	62	32	8	54	66	101	21
Mean Velocity in miles per hour	7·3	6·3	8·5	8·9	9·8	10·9	10·8	9·1
Total No. of miles for each Direction	3854	9396	6492	1713	12656	17214	26141	4584

		Mean for the last 45 years.
Total No. of miles registered	82050	86612·5
Greatest Monthly Total (December)	9257	10044·6
Least ,, ,, (October)	5616	5088·7
Greatest hourly velocity (April 8th)	46	52·0
Prevailing Direction of Wind	W	W

DIFFERENCES, 1912.

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

Mean barometric pressure	— 0·054 in.
Yearly range ,,	— 0·269 ,,
Mean of highest temperatures	— 1·4°
Mean of lowest ,,	+ 1·7°
Mean daily range	— 3·0°
Adopted mean temperature	+ 0·6°
Total rainfall	+ 7·036 in.

ABSOLUTE EXTREMES
FOR THE LAST 65 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 65 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	8552
Least ,, ,, ,,	September	6193
Greatest No. ,, ,, year	1868	102395
Least ,, ,, ,, ,,	1909	77165

* *Record dates from 1867 only.*

DATES OF OCCASIONAL PHENOMENA.

1912.	Frost.	Hoar Frost.	Snow.	Hail.	Heavy Rain.
January	7—9, 17—20, 23—31		5, 6, 8, 17, 18, 24, 30	5, 6, 17	3, 4, 8
February	1—7, 11, 15, 21, 24, 25		1—4	26	
March	8, 12, 16, 18—23	16	20, 21	19, 20, 30	2,4,12,14,19,27,30
April	1—3, 9—12, 17—20, 25, 28—30		9	8, 10, 11	4
May	1, 14, 24			16	15
June					17
July					27, 28, 29, 31
August				6	4 22, 23
September	9, 11				1, 3, 7
October	3—5, 8, 23—26	4, 26	21	20, 21	18, 26
November	1—4, 12, 13, 19, 28, 30	4	28	2,10,13,19,25,26,28	4, 10, 23, 25
December	1—4, 6, 7, 10 11, 14, 17, 19, 23, 26, 27, 29, 30	10	1, 18, 24	12, 16, 17, 18, 24	1, 14, 17

1912.	Gales of Wind.	Fog.	Thunder.	Lightning.	*Lunar Halo.	*Solar Halo.	Aurora Borealis.
January			5	5	29, 30		
February		16, 17, 24				25, 26, 28	
March			9, 17, 29	7, 9, 29	22	11	
April	6, 8					12	
May			16, 17, 30, 31	16, 30		3, 17, 18, 19, 28, 30	
June			1, 4, 5, 9–14, 23, 25, 28, 29	4, 9—12, 23, 25			
July			1, 2, 11, 12, 24, 25, 27, 29	12, 25, 27, 29			
August			1, 4, 6, 7, 19	1, 4, 18			
September							
October							
November	10, 26	16	26				
December	24		17				

* *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	...	...	...	...	0·7	1·9	5·1	5·6	5·2	3·4	2·3	0·6	...	...	...	...	...
February	...	...	...	...	2·2	4·5	5·9	7·5	6·5	5·9	6·4	4·8	0·8	...	...	...	...
March	...	...	...	1·5	4·0	3·1	5·1	7·8	9·2	6·5	7·5	6·4	4·7	1·0	...	...	...
April	...	2·5	9·6	14·7	16·1	15·7	16·4	16·1	17·1	19·1	18·4	17·1	18·1	13·1	4·6	0·1	...
May	0·4	3·5	7·5	8·0	9·6	9·7	9·9	9·6	12·4	9·2	10·0	9·8	8·6	8·7	7·4	2·7	...
June	0·1	1·8	4·9	7·2	9·2	8·7	8·7	6·1	5·8	5·4	5·9	6·6	6·6	4·5	3·6	0·1	...
July	...	1·6	5·0	7·4	7.2	8·6	9·8	8·4	11·3	10·4	12·2	11·3	9·3	5·7	0·8	...	...
August	...	...	...	2·5	5·5	6·2	8·4	10·2	8·9	8·1	7·9	8·2	6·4	1·8	...	...	...
September	...	...	0·1	3·3	9·5	10·0	11·0	11·7	10·8	10·9	9·2	9·0	5·4	0·8	...	...	...
October	...	...	...	0·9	3·9	7·9	11·7	10·7	8·3	11·2	9·3	5·3	1·5	...	...	...	...
November	...	...	...	...	0·7	4·0	5·3	7.3	7.7	7·7	4·5	0·5	...	...	...	...	...
December	...	...	...	...	...	...	2·3	2·4	1·0	1·1	0·6	...	...	...	...	...	...
Sums	0·5	9·4	27·1	45·5	68·6	80·3	99·6	103·4	104·2	98·9	94·2	79·6	61·4	35·6	16·4	2·9	...

TOTAL AMOUNT OF SUNSHINE RECORDED ON EACH DAY.

1912.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
January	...	...	..	...	0·2	...	4·6	...	1·1	...	0·3	...	0·4	...	...	...	...
February	5·0	3·7	6·0	5·5	1·7	...	...	...	0·5	2·3	...	...	0·5	0·2	...	...	...
March	1·7	0·2	1·7	0·4	3·7	4·5	3·0	0·6	2·2	0·2	1·4	...	...	...	1·0	3·8	0·3
April	9·6	3·2	5·6	0·2	...	3·2	...	1·8	5·8	9·5	7·8	8·6	3·0	4·7	6·0	10·0	7·4
May	0·2	...	10·3	...	...	2·1	...	1·1	4·6	...	1·0	6·6	8·6	9·1	1·4	7·2	7·3
June	5·0	...	...	0·7	3·5	3·7	5·7	0·1	5·6	1·8	3·9	0·1	4·5	7·5	3·5	1·0	5·0
July	0·4	0·1	3·1	3·1	2·0	8·2	11·2	8·0	8·1	0·7	1·5	1·4	5·0	12·4	10 5	11·2	4 8
August	1·1	6·4	4·2	0·6	5·3	1·6	0·1	5·3	2·9	1·1	3·5	5·9	7·3	0·1	...	0·9	...
September	1·7	5·8	...	2.9	4·7	1·3	1·8	...	7·2	1·3	...	...	5·7	0·5	7·5	...	7·2
October	1·1	5·6	2·3	7·0	7·6	3·0	0·2	4·9	4·8	5·9	1·6	3·1	0·4	1·0	1·0	0 3	4·7
November	4·7	0·1	0·6	...	0·9	...	0·3	...	0·2	...	5·5	...	2·4	5.3	0.4	...	3·0
December	...	...	...	0·5	0·2	..	...	...	...	...	...	1·0	...	...	...	2·3	1·7

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

1912.	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Monthly. Total.	Monthly. Percentage.
January ...	...	...	0·1	...	0·2	0·4	...	0·1	4·8	2·8	3·3	4·8	...	1·7	24·8	10·0
February ..	...	3·2	4·2	0·2	...	3·5	0·8	1·2	...	0·2	0·8	5·0			44·5	15·8
March ...	3·5	2·9	4·7	0·4	1·0	0·3	0·4	0·1	3·0	2·2	6·2	3·7	3·5	0 2	56·8	15·5
April... ...	5·4	7·4	5·9	4·4	11·5	13·8	13·6	12·9	6·6	8·5	4·5	7·7	10·1		198·7	47·4
May	10·5	3·6	0·2	1·2	...	1·7	7·8	8·9	7·6	4·1	11·4	6·1	4·4	...	127·0	25·8
June	...	4·1	1·1	0·1	7·6	5·3	4·5	1·5	1·5	0·2	2·4	2 3	3·0		85·2	16·8
July	5·3	0·8	1·5	0·9	0·3	0·1	0·3	0·7	3·1	0·8	0·8	1·0	1·7	...	109·0	21·4
August ...	2·0	...	0·5	5·1	4·5	...	...	...	...	1·5	2·8	6·8	2·0	2·6	74·1	16·2
September ...	5·7	1·1	...	8·1	9·1	6·0	1·1	0·5	0·5	8·1	1·0	0·4	2·5		91·7	24·2
October ...	...	2.5	0·3	1·0	4·3	0·2	0·2	0·5	0·7	...	0·7	2·1	2·3	1·4	70·7	21·7
November ...	1·9	0·9	...	...	...	...	1·6	...	0·3	...	...	5·4	4·2		37·7	14·7
December ...	1·0	0·4	...	...	...	...	...	...	...	...	0·1	0·2	...	...	7·4	3·2

SUMMARY OF SUNSHINE.

	Bright Sunshine Recorded.					
	1912.			Mean for the last 32 years.		
	Number of		Percentage of Possible Sunshine.	Number of		Percentage of Possible Sunshine.
	Days.	Hours.		Days.	Hours.	
January ...	14	24·8	10·0	14·0	34·1	13·7
February ...	18	44·5	15·8	17·7	59·4	21·7
March ...	28	56·8	15·5	24·3	106·3	29·0
April ...	28	198·7	47·4	26·3	150·4	35·9
May... ...	24	127·0	25·8	27·6	188·7	38·3
June ...	27	85·2	16·8	27·8	186·9	36·8
July ...	30	109·0	21·4	28·6	179·1	35·2
August ...	24	74·1	16·2	27·5	150·5	32·9
September ...	24	91·7	24·2	25·6	124·9	33·0
October ...	29	70·7	21·7	23·3	86·2	26·4
November ...	17	37·7	14·7	17·4	46·0	18·0
December ...	9	7·4	3·2	13·0	24·9	10·8
Year ...	272	927·6	20·7	273	1337·2	29·9

SUMMARY OF SUNSHINE—*Continued.*

EXTREMES FOR THE LAST 32 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	56·8	1912	46·1	1907	15·5	1912
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	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.	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	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.*

Prevailing Direction of the Wind for the Period 1868—1912.

Average No. of Days, for each Month, on which the prevailing wind was

	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
January ...	2	4	3	1	4	7	8	2
February ...	2	4	3	1	3	6	8	2
March ...	2	5	3	1	3	6	9	2
April ...	2	7	4	1	2	4	9	1
May ...	1·5	7	4	1	2	5	9	1·5
June ...	2	5	3	1	2	5	11	1
July ...	1	4	1	1	2	7	13·5	1·5
August ...	2	4	1	1	2	7	12	2
September ...	3	5	2	1	3	5	9	2
October ...	3	6	2	1	3	6	7	3
November ...	3	5	3	1	3	5	7	3
December ...	2·5	4	3	1	3·6	6·7	7·8	2·5
Totals ...	26	60	32	12	32·6	69·7	110·3	23·5

Monthly Mean Velocity, in miles per hour, of the Wind from Different Points of the Compass, for the Period 1868—1912.

	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
January ...	5·3	5·7	7·5	4·9	10·3	11·9	12·2	6·5
February ...	5·3	6·0	7·5	5·0	10·7	11·7	12·6	6·9
March ...	6·0	7·2	8·0	5·0	10·7	12·1	13·8	8·0
April ...	6·7	8·2	8·5	5·7	10·4	9·8	11·1	6·4
May ...	3·4	7·7	8·2	4·8	9·0	10·3	9·5	5·7
June ...	4·6	6·9	6·4	3·7	6·7	8·8	8·6	4·6
July ...	3·5	5·0	4·1	2·8	7·3	9·6	9·5	6·3
August ...	3·6	5·8	4·1	3·3	8·4	9·4	9·1	5·8
September ...	4·5	5·9	5·4	3·9	8·6	9·6	9·7	6·4
October ...	4·8	6·5	6·2	5·1	8·5	10·5	10·8	7·0
November ...	4·8	6·2	6·6	4·7	10·7	10·7	12·2	7·2
December ...	4·8	4·6	7·4	5·1	11·8	11·8	12·1	6·7
Means ...	4·8	6·3	6·7	4·5	9·4	10·5	10·9	6·5

Prevailing Direction of Gales during 45 Years, 1868—1912.

The Table gives the Number of Gales recorded from the different points of the Compass.

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
January ...	...	...	...	...	2	...	3	1	33	1	6	5	21	2	1	...
February	...	...	...	...	1	...	2	6	25	...	4	13	26	3	1	1
March ...	3	...	...	...	1	...	...	3	15	2	12	13	33	2	3	...
April ...	...	1	...	...	1	...	...	1	9	1	1	2	10	2	...	...
May ...	...	...	...	...	...	...	1	1	4	2	1	3	3	1	1	...
June ...	...	...	...	...	...	...	1	...	1	...	...	...	4	...	...	...
July ...	...	...	...	...	...	...	...	...	...	...	...	1	2	1	...	...
August ...	...	...	...	...	...	...	1	...	...	1	1	2	4	1	...	...
September	...	...	...	...	...	...	...	1	3	1	4	2	4	1	...	...
October ...	...	...	...	...	...	...	1	2	14	4	2	7	11	1	1	...
November	...	...	...	1	...	...	...	7	15	2	7	6	15	1	3	...
December	...	...	...	...	...	...	2	2	21	2	5	3	23	7	2	...
T ...	3	1	...	1	5	...	11	24	140	16	43	57	156	22	12	1
A ...	42	...	...	...	38	...	43	46	43	42	41	40	42	41	42	...
G ...	47	38	...	37	39	...	53	58	62	51	60	60	72	57	49	43

T = Total Number of Gales for the period. A = Average velocity in miles per hour.
G = Greatest velocity in miles per hour.

MAGNETIC DECLINATION, WEST.

1912.	G. M. T. Civil Day.	Observed.	Corrected.	1912.	G. M. T. Civil Day.	Observed.	Corrected.
	D. H. M.	° ′	° ′		D. H. M.	° ′	° ′
Jan.	5 16 0	17 10·1	17 7·8	July	4 16 0	17 8·0	17 3·0
,,	12 ,, ,,	,, 12·4	,, 7·5	,,	12 ,, ,,	,, 6·5	,, 5·7
,,	21 ,, ,,	,, 6·8	,, 7·6	,,	22 ,, ,,	,, 4·3	,, 4·0
,,	27 ,, ,,	,, 3·9	,, 4·7	,,	27 ,, ,,	,, 4·5	,, 5·1
Feb.	3 16 0	17 8·3	17 7·5	Aug.	3 16 0	17 4·4	17 3·2
,,	10 ,, ,,	,, 9·4	,, 6·1	,,	12 ,, ,,	16 58·7	16 59·1
,,	19 ,, ,,	,, 7·2	,, 7·0	,,	20 ,, ,,	17 3·2	17 2·0
,,	26 ,, ,,	,, 5·7	,, 6·6	,,	26 ,, ,,	,, 4·8	,, 3·3
Mar.	4 16 0	17 5·4	17 5·7	Sept.	3 16 0	17 0·7	17 0·8
,,	12 ,, ,,	,, 8·3	,, 4·9	,,	10 ,, ,,	,, 2·2	,, 3·6
,,	20 ,, ,,	,, 6·5	,, 4·8	,,	21 10 9	,, 2·6	,, 4·0
,,	27 ,, ,,	,, 7·8	,, 7·5	,,	27 16 0	,, 4·6	,, 4·0
April	4 16 0	17 6·8	17 6·8	Oct.	4 16 0	17 1·8	17 2·4
,,	13 ,, ,,	,, 7·6	,, 7·6	,,	11 / 12 ,, ,,	,, 5·6	,, 1·2
,,	20 17 12	,, 8·0	,, 6·7	,,	19 17 ,,	,, 1·3	,, 0·4
,,	27 16 0	,, 6·7	,, 6·6	,,	28 16 ,,	16 59·2	16 58·3
May	4 16 0	17 3·9	17 1·5	Nov.	4 16 0	16 59·2	16 58·2
,,	11 ,, ,,	,, 4·8	,, 3·0	,,	11 ,, ,,	17 4·8	17 2·3
,,	20 ,, ,,	,, 5·8	,, 4·6	,,	19 ,, ,,	,, 0·1	16 58·5
,,	27 ,, ,,	,, 5·3	,, 6·9	,,	27 ,, ,,	16 59·2	,, 57·6
June	4 16 0	17 2·8	17 2·4	Dec.	4 16 0	16 58·2	16 58·4
,,	12 ,, ,,	,, 4·0	,, 1·9	,,	11 ,, ,,	,, 58·0	,, 57·7
,,	19 ,, ,,	,, 6·2	,, 4·4	,,	19 ,, ,,	,, 58·3	,, 58·0
,,	26 ,, 5	,, 3·8	,, 4·2	,,	28 ,, ,,	17 3·5	17 3·2

HORIZONTAL MAGNETIC FORCE.

1912.	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.	19 11 20	6·0875	34	11 16·4 / 5 6·8	31·3 / 32·7	0·17439	0·17441
Feb.	15 10 55	6·0970	45	11 16·8 / 5 8·4	41·7 / 42·3	0·17413	0·17436
Mar.	14 9 15	6·0984	52	11 15·4 / 5 6·1	54·0 / 54·0	0·17395	0·17396
April	15 9 0	6·1056	49·5	11 20·8 / 5 7·1	58·0 / 58·0	0·17380	0·17415
May	15 8 0	6·1042	60	11 14·2 / 5 5·8	62·0 / 62·0	0·17396	0·17414
June	15 8 20	6·1121	61	11 16·4 / 5 5·5	61·1 / 63·3	0·17348	0·17366
July	15 8 40	6·1161	77	11 12·8 / 5 4·2	81·0 / 82·0	0·17375	0·17397
Aug.	16 9 20	6·1150	58	11 14·8 / 5 5·4	57·0 / 58·0	0·17363	0·17380
Sept.	17 11 20	6·1180	72	11 16·5 / 5 7·0	59·5 / 60·0	0·17350	0·17364
Oct.	15 8 15	6·1047	48	11 16·4 / 5 6·7	49·4 / 50·0	0·17376	0·17378
Nov.	15 9 30	6·1014	44	11 16·5 / 5 6·9	47·0 / 47 0	0·17378	0·17395
Dec.	16 9 25	6·1038	40	11 15·3 / 5 6·1	41·0 / 42·0	0·17391	0·17393

ABSOLUTE MEASURES—SUMMARY.

DIRECTION.				FORCE.		
1912.	Declination Corrected.		Inclination.	Horizontal.	Vertical.	Total.
	°	′	° ′	C. G. S. UNITS.		
January ...	17	6·9	68 40·9	0·17441	0·44691	0·47974
February ...	17	6·8	68 41·8	0·17436	0·44714	0·47994
March ...	17	5·7	68 40·8	0·17396	0·44573	0·47848
April ...	17	6·9	68 43·7	0·17415	0·44732	0·48002
May ...	17	4·0	68 38·5	0·17414	0·44531	0·47815
June ...	17	3·2	68 40·2	0·17366	0·44473	0·47744
July ...	17	4·2	68 42·3	0·17397	0·44633	0·47903
August ...	17	1·9	68 42·2	0·17380	0·44585	0·47853
September..	17	3·1	68 41·7	0·17364	0·44525	0·47791
October ...	17	0·6	68 41·8	0·17378	0·44565	0·47834
November..	16	59·2	68 41·8	0·17395	0·44608	0·47880
December..	16	59·3	68 41·3	0·17393	0·44584	0·47856
Means ...	17	3·5	68 41·4	0·17398	0·44601	0·47875

HORIZONTAL MAGNETIC DIRECTION.

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

1912.	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° +	16° +	
	′	′	′	′	′	′	′	′	′
January ...	68·3	63·9	66·3	65·9	66·1	6·1	13·2	57·4	15·8
February ...	67·8	64·0	64·8	64·0	65·1	7·8	12·1	54·6	17·5
March	67·2	60·6	64·5	62·2	63·6	9·6	12·1	47·8	24·3
April	71·0	65·4	68·8	66·7	68·0	**	**	**	**
May	70·2	64·2	67·5	65·5	66·9	7·3	14·3	58·5	15·8
June	67·9	61·8	66·0	63·8	64·9	6·8	12·1	58·3	13·8
July	66·5	59·3	64·2	61·0	62·8	6·4	12·1	56·9	15·2
August ...	64·2	60·3	62·0	61·2	61·9	6·8	8·8	53·6	15·2
September ...	68·9	60·4	64·6	62·4	64·1	12·2	16·7	23·7	53·0
October ...	64·5	56·1	61·0	59·4	60·3	10·5	13·7	18·7	55·0
November ...	62·2	56·5	59·6	58·4	59·2	8·9	16·7	45·7	31·0
December ...	62·2	58·4	60·7	60·3	60·4	6·7	7·7	44·7	23·0
Means... ...	66·7	60·9	64·2	62·6	63·6	8·1	12·7	47·3	25·4

Mean for the year... ... 17° 3′·6 W.

† *For the 10 quietest days.* * *Of the following day.* ‡ *Includes all days.* ** *Half-month lost.*

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.

1912.	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. *					
	17000 +				0 +		17000 +		0 +
January ...	448	434	440	440	440	22	407	342	65
February ...	421	399	406	404	408	23	432	371	61
March	424	404	415	417	415	32	456	375	81
April	423	393	416	414	411	**	**	**	**
May	420	395	412	409	409	38	461	362	99
June	415	384	406	403	402	37	433	367	66
July	407	379	400	399	396	33	427	362	65
August ...	397	370	389	389	386	39	424	300	124
September ...	389	364	384	385	380	37	445	327	118
October ...	375	355	369	371	368	29	406	291	115
November ...	372	358	367	367	366	21	384	294	90
December ...	388	379	383	384	384	22	410	326	84
Means... ...	407	384	399	398	397	30	426	338	88

Mean for the year ... ... 0·17397 C. G. S. Units.

† *For the 10 quietest days.* * *Of the following days.* ‡ *Includes all days.* ** *Half-month lost.*

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.

1912.	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	1912
D.													D.
1	s	s	c	c	c	s	c	s	c	s	c	s	1
2	s	s	c	c	s	s	c	s	c	s	c	m	2
3	c	c	s	c	s	s	m	s	s	s	c	s	3
4	s	c	c	c	s	s	m	c	s	c	c	c	4
5	s	c	s	s	s	c	s	m	s	c	s	c	5
6	c	c	s	s	s	c	s	s	c	c	c	m	6
7	s	s	s	s	s	s	s	s	s	s	c	s	7
8	s	s	m	c	s	s	s	c	s	s	s	c	8
9	s	s	s	c	c	s	c	s	s	c	s	s	9
10	s	s	s	c	c	s	c	s	s	s	m	s	10
11	s	s	c	c	s	s	c	s	s	m	s	s	11
12	s	s	c	c	m	s	c	s	s	s	c	c	12
13	s	s	c	c	m	s	c	s	s	s	s	s	13
14	s	s	s	s	s	s	s	s	c	g	m	s	14
15	c	c	s	s	c	s	s	c	c	m	s	c	15
16	s	s	c	s	c	s	s	s	c	s	s	c	16
17	s	s	c	s	s	s	s	s	m	s	c	c	17
18	s	c	c	c	s	s	s	s	c	c	*	c	18
19	c	c	c	s	s	c	s	s	s	c	*	c	19
20	c	c	c	c	s	c	s	s	s	s	s	c	20
21	s	c	s	c	s	s	s	s	s	s	s	c	21
22	s	s	s	s	c	s	s	m	s	s	s	m	22
23	c	s	c	s	c	s	c	s	m	c	s	m	23
24	s	s	c	s	s	s	c	s	m	c	c	s	24
25	c	s	s	s	s	c	s	c	c	s	s	s	25
26	c	s	s	c	s	s	s	s	s	s	s	c	26
27	s	c	s	c	s	s	s	s	c	s	s	c	27
28	s	c	s	c	s	s	s	s	c	s	c	c	28
29	s	s	s	c	s	s	s	s	c	s	c	s	29
30	c		c	s	s	s	s	s	*	s	c	c	30
31	s		c		s		s	s		s		c	31
Totals c	9	11	15	17	7	5	9	4	11	8	12	16	
Totals s	22	18	15	13	22	25	20	25	15	20	14	11	
Totals m	...	...	1	...	2	...	2	2	3	2	2	4	
Totals g	...	...	...	...	...	...	...	...	...	1	...	...	
Totals vg	...	...	...	...	...	...	...	...	...	...	...	...	

* *No record.*

DATES AND DISC AREAS OF SOLAR DRAWINGS.

The unit is $\frac{1}{10000}$th of the visible surface.

1912.	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	1912.
D.													D.
1		...		...		0·6			...		...		1
2		...		...				...	...	...			2
3		...		...	0·5			...		...			3
4		...				...	...		...	...			4
5		...	...			...	...	...	...	0·3			5
6			...	...			0·2	...					6
7	...					...	0·3						7
8			1·0	...	...		0·3	...		2·2			8
9	...		1·2	...	...	...	0·5	...	0·3	1·2	...		9
10		...		2·5			0 4	...		0·5			10
11			1·4	2·4	...	...	0·2	...		0·1	...		11
12				2·7	...			...		...			12
13				2·3	...	...		...	0·5		...		13
14				1·1	...		...			...	...		14
15			1·0	...	...	...	...		1·6	...			15
16			0·4	...	...	...	...	...		...			16
17				...	...	0·4	...		0·8	...	...	2·0	17
18			0·1	...	...		...	...	1·3		0·1	1·6	18
19		...		...	...	1·0				...			19
20			...	...		1·0						1·6	20
21	...	...		...				..	...	...			21
22			...	...		1·1		...	...	...			22
23	...	...	...	...	...	1·2			...				23
24		...		...	...	1·0			...		...		24
25		...		...	...		...			...			25
26	...	...	...	...	...		...						26
27	...		...	...	...			...	0·2				27
28	...	...	...	...	0·2	0·3		...		...			28
29	...	...	...	...			...	...		...	...		29
30			...	0·1			...		...	...	...		30
31	...									...			31
Daily Means	...	...	0·3	0·4	0·1	0·4	0.1	...	0·3	0·2	0·01	1·7	

PRESENTATIONS TO THE LIBRARY, 1912.

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

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