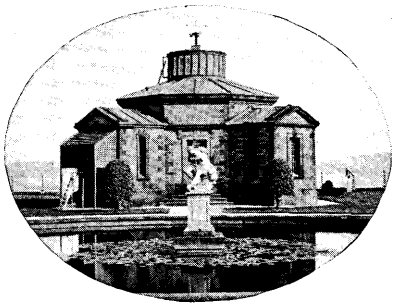
STONYHURST COLLEGE OBSERVATORY.

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,

1908.

With Report and Notes of the Director,

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

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1909.

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, aud 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 has been on the whole a mild and quiet year. The mean barometric pressure appears at 0·06 inch above the average: the month-means being below the annual average only in March and December; and the mean temperature was only 0°·4 above the average. July was the warmest month, and January the coldest. The warmest period was from June 26th to July 3rd, both included, when the shade temperature rose daily above 70°, and reached 83°·2 on July 2nd. On four days only the wind velocity indicated a gale—viz., on January 31st at 39 miles in the hour, on February 22nd at 50 miles, on March 30th at 47 miles, on November 22nd at 41 miles; and the total length of current crossing the Observatory in the 12 months was the least on record,—in each month less than its average, excepting only February. October was a remarkable month, having the highest mean reading of the barometer, the least rainfall, and the lowest average wind velocity. It was also *relatively* the warmest month, at a mean temperature 5°·0 above its average.

The distribution of rain through the months shows excesses of over ½ an inch above their respective average falls in January, February, May, July, September and November, and deficiencies in June, August, October and

December, with a total excess of 2·5 inches in the year. The greatest monthly falls, over 5 inches, occurred in July, January and September, and nearly 5 inches in November.

The prevailing wind has been as usual from the West,—on 123 days, or a little over $\frac{1}{3}$rd of the year. And restricting the statement to two general directions,—the two sides of the astronomical meridian—we have from the West 190 days, against 96 days from the East; the remaining 80 days belonging to the neutral directions, North and South.

Fine and dry periods of the year may be noted as follows, but not excluding occasional interruptions by light rains of short duration:—January 1—4, 9—13, 18—23, April 5—24, May 23—31, June 14—30, July 17—31, August 1—19, October 1—17, 21—28, November 1—9, December 1—4, 20—27.

Halos have been observed more frequently than usual:—15 solar and 3 lunar halos. Of the solar halos, six were followed by very heavy rain within 24 hours of the observed times; and two were followed by fine weather. All the rest occurred in wet or broken weather.

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 $q\,(t^{\circ}-32^{\circ}) + q'\,(t^{\circ}-32^{\circ})^2$ 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 0·0000004436.

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 each month from the mean of twelve determinations of the time 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.

The average deflection of the magnet caused by a twist of the torsion circle through 90° has been about 9′·6 of arc.

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 value of the constant P was found to be —0·00130.

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.

The Inclination, or angle between the direction of total force, and that of its horizontal component, is measured with Dover's Circle, No. 159, once each month by two needles, always when possible on the days of vibration and deflection observations.

The Declination is observed four times each month at nearly equal intervals, usually at 4 p.m., and is quoted as the angle between the horizontal direction of force and the Astronomical Meridian, measured from the North Point.

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 hand screens cutting off the light at noted times at the beginning and end of the curves.

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

The scale value of the Bifilar torsion balance was 0·0005 C.G.S. for one centimetre, in the first half of the year, and 0·00048 in the second half.

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.

Absolute measures of horizontal force and inclination are made once each month, as soon after the 14th day as weather and other circumstances permit.

But 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 4 daily readings.

Except for occasional losses through variability of the lights, the magnetograph curves have been quite satisfactory.

On the table of magnetic disturbances (page 53) 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 decided storm; and *very great* (v.g.) needs no comment.

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 any disturbance worth comparing with other phenomena; 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.

Tracings of the principal magnetic disturbances in declination and horizontal force during the years 1907-08 have been sent to the Imperial Magnetic Observatory at Potsdam.

Considerable time has been devoted to an examination of our 40 years' series of magnetographs in connection with solar influence. This has been carried back to the year 1889, with the preliminary results of many well-established recurrences of disturbances at 24-hour intervals, and of over 70 per cent. of all disturbances, great and small, occurring during the Greenwich night hours between 7 p.m. and 3 a.m., with a maximum frequency between 9 and 11 p.m.; raising the question whether this indicates a greater sensibility to solar influence of some region of the Earth in longitude 10 hours west of Greenwich. But the work was unavoidably suspended in September, and has not yet been resumed.

It has not been found possible, with our limited staff, to take, regularly, hourly readings from the curves; but a beginning was made in 1901 to carry out the measures of "Diurnal Inequality" from the monthly five quiet days selected by the Astronomer Royal, beginning with the year 1890. The work had to be suspended when nearly complete for the first seven years; and it has not been possible to resume it. The results, so far worked out, are now given for each of the years, followed by the mean values for the seven years at pages 45—52. But no correction for temperature has been thought necessary, the instruments being installed in an underground vaulted chamber, in which the temperature is very constant.

Two of these years afford a comparison between the annual mean values of declination and horizontal force, as

derived from our four daily readings, and the annual means of the hourly readings of quiet days. Hourly readings have also been taken from the curves of the past year on *all* available quiet days; and these afford a third year's comparison. The comparison is exhibited in the following table, in which the 2 daily readings are at the hours 4 and 16, and the 24 daily readings are the hourly readings of quiet days.

ANNUAL MEAN VALUES OF

	Declination by daily readings.			Horizontal Force by daily readings.		
	24	4	2	24	4	2
		17°+		17000+ (units 10^{-5} c.g.s.)		
	′	′	′			
1895.....	95·5	95·3	95·9	165	166	169
1896.....	88·6	88·5	89·0	225	224	227
1908.....	35·8	35·8	37·8	435	433	436

The differences are small, but are in favour of the four daily readings as affording a closer approximation to the mean of the hourly readings of quiet days than the two readings at the hours 4 and 16. The annual means of the four daily readings have therefore been adopted as the truer mean values of Declination and Horizontal Force for the past and future years.

The rule of reduction, followed in 1908, and partly exhibited in the tables of pages 38 and 39, is as follows:—The observed monthly absolute measures of Declination and Horizontal Force (D and H) are corrected by the differences between the curve-ordinates at the times of the observations, and the month's mean of the four daily measured ordinates. This correction gives, obviously, the monthly values as they would have appeared if they had been observed at the times when the respective magnetograph needles were at their monthly mean positions. And

thus all disturbing effects, including diurnal variation, are eliminated; and the time of observation is of little importance provided that a note of the time is not omitted. The corrected values are then used for the measure of the base-line values of the magnetograph curves, on which depend the evaluations quoted in the columns of the tables on pages 41 and 42. It follows that the annual mean values of D and H by the two processes must be in close agreement; and hence the values derived from the curves must be the truer mean values for the year.

The four daily readings were commenced in 1895; and the tabulated reductions have appeared regularly since then in our annual "Results, &c." These afford the following comparison of the uncorrected absolute measures of D and H denoted by a, with the corrected or curve values denoted by c.

	Declination, arc-minutes. $c-a$.			Horizontal Force, -5 10 c.g.s. units. $c-a$.			
	′		′				
1895	−2·2	1902	−0·9	1895	+15	1902	+15
1896	−2·5	1903	−1·4	1896	+23	1903	+13
1897	−1·8	1904	−1·8	1897	+22	1904	+19
1898	−1·7	1905	−2·0	1898	+12	1905	+16
1899	−2·4	1906	−1·4	1899	+15	1906	+22
1900	−1·2	1907	−2·0	1900	+18	1907	+ 6
1901	−1·1	1908	−1·3	1901	+14	1908	+21
	Mean	−1′·7			+17		

The differences are practically constant both for D and for H. The mean difference of the H measures agrees very closely with the mean diurnal variation between $9\frac{1}{2}$ a.m. and noon, the hours within which the experiments of vibration and deflection have always been made. The mean difference, therefore, + 17 units is the constant by which the H values, collected in the table at

page 44, have been corrected up to the year 1894 included; the subsequent entries being taken directly from the curve-measures, viz., the mean of the two evaluations in columns (*c*) and (*d*) of each year, as on page 42.

In our annual "Results, &c.," 1871-1890 inclusively, the Declination values are entered in adjoining columns as *observed* and *corrected*,—corrected, by the curves, for disturbances and diurnal variation. These values have been retained in the list of yearly means collected on page 43; and for the *other* years, from 1865 to 1892 included, the observed values have been increased by 2′·8,—the mean value of the diurnal inequality at 9 a.m., at which time all the weekly observations were made.

The hour of observation was changed at the beginning of 1893, from 9 a.m. to 4 p.m.; and the observed declinations of the two years 1893, 1894 have been corrected by the mean difference 1′·7 of the foregoing tables. But for the subsequent years the readings have been taken unchanged from the curves as already stated for the H readings.

In the same tables a column of 5 year means has been added, and again a column of their differences: from which the mean secular change has been derived for the epochs July 1 of the

YEARS ...	1869	1874	1879	1884	1889	1894	1899	1904	
(D—) ...	7·5	9·1	7·8	6·1	8·0	6·0	4·2	4·5	arc minutes.
(H+) ...	19	22	14	23	15	23	26	6	10^{-5} C.G.S. units.

These figures indicate an apparent decrease of secular change of Declination in the later years. The irregularities of change in both elements may be in part attributed to varying influence of solar activity; but this supposition is not well supported by the differences taken from adjacent

years, one before and one after a maximum or minimum epoch of solar activity. The figures run as follows for the years of minimum and maximum of sun-spot area:

Min.	Max.	D at Min.	at Max.	H at Min.	at Max.
		arc-minutes.		10^{-5} c.g.s. units.	
1867 ...	1870 ...	10·6	3·0	12	25
1878 ...	1883 ...	8·0	6·6	18	21
1889 ...	1893 ...	5·7	1·7	10	24
1901 ...	1905 ...	3·1	5·0	21	—10
	Mean ...	6·8	4·1	15	15
43 years' mean ...		6·7		18	

From these figures we might have concluded that the annual changes of D and H were below the general average, the former at a maximum and the latter at a minimum of solar activity, if the rule had not been reversed in the fourth comparison.

Solar and Astro-physical.—The solar surface has been observed on all available days, and 189 drawings of spots and faculæ have been added to our collection. On one day only 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 4·6; and the mean daily range of magnetic Declination (in minutes of arc) at 14·5. And the following table shows a secondary maximum of solar activity and magnetic disturbance in 1907.

Year.....	1903	1904	1905	1906	1907	1908
Spot area.....	1·9	2·5	6·8	4·8	5·8	4·6
Declination range	11·8	11·9	14·9	14·2	14·7	14·5

Amongst the few stellar spectrographs obtained on Messrs. Wrattan and Wainright's panchromatic plates, those of γ Cassiopeiæ show H_α the strongest of bright hydrogen lines. And on the only plate of o Ceti (October 24), H_β is stopped out by the neighbouring absorption-band, and H_α is most probably masked by the

excessive brilliancy of the red region of its spectrum; all the absorption-bands are well shown, but in other respects the photograph is very poor, and nothing can be made of the line spectrum for comparison with the spectra of β Pegasi and α Orionis, which are now complete up to $H\alpha$.

The Comet "Morehouse" 1908 has been photographed on every available night between September 29th and November 29th, furnishing a series of 28 plates on 20 nights. Some of these are weak, taken between passing clouds and through much haze, but only one exposure was a complete failure. Several in clearer sky show well-defined details. All were taken with the Whitelow camera (Dallmeyer 6″ portrait lens).

The solar grating-spectrograph has been in use whenever possible; but always, until quite recently, under difficulties with the clock gear working the heliostat; and several photographs of the spectra of the larger spots have been secured.

The following papers were published during the year:

"The absorption of D_3 in the neighbourhood of Sun-Spots." The "Observatory," No. 392. January, 1908.

"What Catholics have done for Astronomy." Benziger's Magazine. January, 1908.

"The variability in light of Mira Ceti, and the temperature of Sun-Spots." (Abstract.) British Association Report, 1907. *Leceister.*

"Note on Captain Daunt's observations of helium D_3 in the neighbourhood of Sun-Spots." Monthly Notices, R.A.S., 68, 8. June, 1908.

"The Sun's Corona." Transactions of the Rochdale Literary and Scientific Society, 1908.

"The Maintenance of the Sun's Heat." Liverpool Astronomical Society's Annual Report, 1908.

"On the possible existence of steam in the regions of Sun-Spots." (Abstract.) The "Observatory," No. 401, October, 1908.

"Note on Comet c 1908 (Morehouse) 1908, Sept. 29 to Oct. 2." Monthly Notices, R.A.S., 69, 1. Nov., 1908.

"Recent work on the spectra of Sun-Spots." The "Observatory," No. 403. December, 1908.

"On the possible existence of steam in the regions of Sun-Spots." Astrophysical Journal, 28, 5. Dec., 1908.

WALTER SIDGREAVES, S.J.,
DIRECTOR.

January, 1909.

METEOROLOGICAL REPORT.

JANUARY, 1908.

Results of Observations taken during the Month.		Mean for the last 61 years.
Mean Reading of the Barometer .....inches	29·678	29·473
Highest ,, ,, on the 20th ... ,,	30·150	30·285
Lowest ,, ,, on the 8th ... ,,	28·604	28·597
Range of Barometer Readings ..... ,,	1·546	1·688
Highest Reading of a Max. Therm. on the 17th...	50·9	51·3
Lowest Reading of a Min. Therm. on the 5th ...	19·4	21·0
Range of Thermometer Readings.....	31·5	30·3
Mean of Highest Daily Readings	40·8	42·3
Mean of Lowest Daily Readings	31·2	32·7
Mean Daily Range	9·6	9·6
Deduced Mean Temp. (from mean of Max. and Min.)	35·8	37·3
Mean Temperature from Dry Bulb	36·2	37·4
Adopted Mean Temperature.....	36·0	37·3
Mean Temperature of Evaporation	34·8	36 1
Mean Temperature of Dew Point.....	33·0	34·0
Mean elastic force of Vapour .....inches	0·189	0·197
Mean weight of Vapour in a cub. ft. of air, grains	2·2	2·4
Mean additional weight required for saturation ,,	0·3	0·4
Mean degree of Humidity (saturation 100).....	89	80
Mean weight of a cubic foot of air.....grains	554·9	549·8
Mean amount of Cloud (0—10)	6·5	7·8
Fall of Rain .....inches	5·518	4·157
Greatest Rainfall in one day (26th)..... ,,	1·260	0·780
No. of days on which ·005 in. or more Rain fell...	17	19·0

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing Wind was	2	3	3	0	5	6	11	1
Mean Velocity in miles per hour	10·8	3·7	8·6	0	7·4	9·0	12·3	11·4
Total No. of miles for each Direction	518	268	621	0	887	1298	3256	273

		Mean.*
Total No. of miles registered	7121	8274·3
Greatest hourly velocity (31st, 11 a.m. Dir. W.)	39	42·6

* *For the last 41 years.*

JANUARY, 1908.

DIFFERENCES.

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

Mean barometric pressure	+ 0·205 in.
Monthly range ,, ...	— 0·142 ,,
Mean of highest temperatures	— 1·5°
Mean of lowest ,, ...	— 1·5°
Mean daily range ,, ...	0·0°
Adopted mean temperature	— 1.3°
Total rainfall	+ 1·361 in.

Ground frost on 1st—6th, 9th—14th, 18th—25th, 28th—30th. Hoar frost on 4th, 5th, 19th—22nd. Snow on 8th, 9th, 28th—30th. Hail on 28th, 29th and 31st. Heavy rain on 5th, 6th, 7th, 15th and 26th. Gale of wind on 31st. Fog on 20th, 23rd and 24th. Solar halo on 25th.

EXTREME READINGS FOR JANUARY, During 61 Years.

Highest reading of Barometer	1896 (9th)	30·597 in.
Lowest ,, ,, ...	1884 (26th).....	27·803 ,,
Highest temperature	1887 (7th)	59·9°
Lowest ,, ...	1881 (15th).....	4·6°
Highest adopted mean temperature.....	1898	43·7°
Lowest ,, ,, ...	1881	29·2°
Greatest fall of rain.....	1852	8·147 in.
Least ,, ...	1881	0·472 ,,
Greatest fall of rain in one day.....	1886 (3rd).....	1·700 ,,
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, 1908.

Results of Observations taken during the Month.		Mean for the last 61 years.
Mean Reading of the Barometer .....inches	29·599	29·506
Highest ,, ,, on the 6th ... ,,	30·305	30·081
Lowest ,, ,, on the 28th... ,,	28·565	28·661
Range of Barometer Readings ..... ,,	1·740	1·420
Highest Reading of a Max. Therm. on the 22nd	48·9	52·0
Lowest Reading of a Min. Therm. on the 29th...	26·4	22·0
Range of Thermometer Readings.....	22·5	30·0
Mean of Highest Daily Readings..	44·2	44·0
Mean of Lowest Daily Readings	35·9	33·3
Mean Daily Range	8·3	10·7
Deduced Mean Temp. (from mean of Max. and Min.)	39·7	38·1
Mean Temperature from Dry Bulb	40·8	38·2
Adopted Mean Temperature.....	40·3	38·1
Mean Temperature of Evaporation	39·1	36·7
Mean Temperature of Dew Point.....	37·6	34·4
Mean elastic force of Vapour.....inches	0·225	0·193
Mean weight of Vapour in a cub. ft. of air, grains	2·6	2·4
Mean additional weight required for saturation ,,	0·3	0·4
Mean degree of Humidity (saturation 100).....	90	87
Mean weight of a cubic foot of air .....grains	548·5	549·0
Mean amount of Cloud (0—10)	7·7	7·6
Fall of Rain .....inches	4·125	3·464
Greatest Rainfall in one day (14th)..... ,,	0·675	0·746
No. of days on which ·005 in. or more Rain fell...	22	16·7

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing Wind was	2	1	0	0	0	1	23	2
Mean Velocity in miles per hour	11·6	3·8	0	0	0	3·8	14·9	16·7
Total No. of miles for each Direction	555	91	0	0	0	92	8251	800

		Mean.*
Total No. of miles registered	9789	7640·2
Greatest hourly velocity (22nd, 3 p.m. Dir. W. by S.)	50	42·4

* *For the last 41 years.*

FEBRUARY, 1908.

DIFFERENCES.

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

Mean barometric pressure	+ 0·093 in.
Monthly range ,, ...	+ 0·320 ,,
Mean of highest temperatures	+ 0·2°
Mean of lowest ,, ...	+ 2·6°
Mean daily range ,, ...	— 2·4°
Adopted mean temperature	+ 2·2°
Total rainfall	+ 0·661 in.

Ground frost on 1st, 2nd, 4th, 5th, 12th—16th, 24th, 26th—29th. Hoar frost on 13th. Snow on 23rd, 27th, 28th and 29th. Hail on 22nd, 23rd, 27th and 28th. Heavy rain on 14th and 16th. Gale of wind on 22nd. Fog on 2nd, 7th and 10th. Thunder on 28th. Lightning on 23rd, 28th and 29th.

EXTREME READINGS FOR FEBRUARY, During 61 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..	1869 (8th)	1·829 ,,
Greatest No. of days on which ·005 in. or more rain fell	1880	26
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, 1908.

Results of Observations taken during the Month.		Mean for the last 61 years.
Mean Reading of the Barometer ....inches	29·374	29·461
Highest ,, ,, on the 14th ... ,,	29·843	30·058
Lowest ,, ,, on the 9th ... ,,	28·596	28·634
Range of Barometer Readings ..... ,,	1·247	1·424
Highest Reading of a Max. Therm. on the 23rd	51·5	57·1
Lowest Reading of a Min. Therm. on the 20th ..	25·3	22·8
Range of Thermometer Readings.....	26·2	34·3
Mean of Highest Daily Readings	43·6	47·2
Mean of Lowest Daily Readings	33·3	34·1
Mean Daily Range	10·3	13·1
Deduced Mean Temp. (from mean of Max. and Min.)	37·5	39·7
Mean Temperature from Dry Bulb	39·2	40·1
Adopted Mean Temperature.....	38·4	39·9
Mean Temperature of Evaporation	37·1	38·0
Mean Temperature of Dew Point.....	35·3	35·5
Mean elastic force of Vapour.....inches	0·206	0·207
Mean weight of Vapour in a cub. ft. of air, grains	2·4	2·4
Mean additional weight required for saturation ,,	0·4	0·5
Mean degree of Humidity (saturation 100).....	89	85
Mean weight of a cubic foot of air .....grains	546·5	546·4
Mean amount of Cloud (0—10)	7·9	7·5
Fall of Rain ....inches	3·421	3·354
Greatest Rainfall in one day (24th) ..... ,,	0·780	0·781
No. of days on which ·005 in. or more Rain fell...	21	16·5

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing Wind was	3	6	3	1	6	3	7	2
Mean Velocity in miles per hour	7·4	5·3	3·3	17·0	8·5	13·7	16·7	12·4
Total No. of miles for each Direction	536	763	237	407	1231	987	2808	593

		Mean.*
Total No. of miles registered	7562	8637·8
Greatest hourly velocity (30th, 7 p.m. Dir. S.)	47	42·3

* *For the last 41 years.*

MARCH, 1908.

DIFFERENCES.

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

Mean barometric pressure	— 0·087 in.
Monthly range ,, ...	— 0·177 ,,
Mean of highest temperatures	— 3·6°
Mean of lowest ,, ...	— 0·8°
Mean daily range ,, ...	— 2·8°
Adopted mean temperature	— 1·5°
Total rainfall	+ 0·067 in.

Ground frost on 1st—7th, 11th—22nd, 24th, 27th and 30th. Hoar frost on 5th, 13th and 20th. Snow on 1st—4th, 6th, 14th—17th, 19th and 20th. Hail on 7th and 24th. Heavy rain on 7th and 24th. Gale of wind on 30th. Fog on the 12th. Thunder on 2nd. Lightning on 2nd and 8th. Solar halo on 2nd, 5th, 9th and 13th.

EXTREME READINGS FOR MARCH, During 61 Years.

Highest reading of Barometer	1852 (6th)	30·401 in.
Lowest ,, ,, ...	1897 (3rd).....	28·157 ,,
Highest temperature	1871 (25th)	68·0°
Lowest ,, ...	1886 (6th).....	11·5°
Highest adopted mean temperature.....	1871	44·0°
Lowest ,, ,, ...†	1855	35·6°
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.* † *And 1892.*

APRIL, 1908.

Results of Observations taken during the Month.		Mean for the last 61 years.
Mean Reading of the Barometer .....inches	29·545	29·484
Highest ,, ,, on the 6th ,,	30·067	29·970
Lowest ,, ,, on the 25th ,,	28·910	28·815
Range of Barometer Readings .. .. ,,	1·157	1·155
Highest Reading of a Max. Therm. on the 17th...	58·1	65·4
Lowest Reading of a Min. Therm. on the 24th...	24·8	28·0
Range of Thermometer Readings.....	33·3	37·4
Mean of Highest Daily Readings..	48·3	55·2
Mean of Lowest Daily Readings	36·0	37·7
Mean Daily Range	12·3	17·5
Deduced Mean Temp. (from mean of Max. and Min.)	40·7	44·1
Mean Temperature from Dry Bulb	42·1	44·6
Adopted Mean Temperature.....	41·4	44·4
Mean Temperature of Evaporation	39·1	41·6
Mean Temperature of Dew Point.....	36·2	38·1
Mean elastic force of Vapour.....inches	0·214	0·234
Mean weight of Vapour in a cub. ft. of air, grains	2·5	2·7
Mean additional weight required for saturation ,,	0·6	0·7
Mean degree of Humidity (saturation 100).....	82	80
Mean weight of a cubic foot of air .....grains	546·3	542·1
Mean amount of Cloud (0—10)	7·2	6·8
Fall of Rain .....inches	2·583	2·447
Greatest Rainfall in one day (29th) ..... ,,	0·655	0·574
No. of days on which ·005 in. or more Rain fell...	17	14·7

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing Wind was	5	8	7	0	1	0	6	3
Mean Velocity in miles per hour	12·6	8·8	7·3	0	10·7	0	11·5	10·7
Total No. of miles for each Direction	1514	1792	1222	0	256	0	1658	767

		Mean.*
Total No. of miles registered	7209	7565·8
Greatest hourly velocity (3rd, noon and 4 p.m. Dir. W.)	34	36·7

** For the last 41 years.*

APRIL, 1908.

DIFFERENCES.

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

Mean barometric pressure	+ 0·061 in.
Monthly range ,, ...	+ 0·002 ,,
Mean of highest temperatures	— 6·9°
Mean of lowest ,, ...	— 1·7°
Mean daily range ,, ...	— 5·2°
Adopted mean temperature	— 3·0°
Total rainfall	+ 0·136 in.

Ground frost on 6th—8th, 13th—15th, 20th, 23rd—27th. Hoar frost on 8th, 24th and 26th. Snow on 14th, 19th, 20th, 22nd—25th. Hail on 4th, 14th and 19th. Heavy rain on 29th and 30th. Thunder and lightning on the 4th. Solar halo on the 8th.

EXTREME READINGS FOR APRIL, During 61 Years.

Highest reading of Barometer	1887 (17th)	.....30·251 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 ...	1904 (10th)	50 mls.
*Greatest No. of miles registered	1904	11016
*Least ,, ,, ,, ...	1884	5047

* *Since 1867 only.*

MAY, 1908.

Results of Observations taken during the Month.		Mean for the last 61 years.
Mean Reading of the Barometer ....inches	29·541	29·521
Highest ,, ,, on the 27th ... ,,	30·149	29 962
Lowest ,, ,, on the 6th ... ,,	28·852	28·930
Range of Barometer Readings .... ,,	1·297	1·032
High'st Read'g of a Max. Therm. on the 28th & 31st	71·4	71·6
Lowest Reading of a Min. Therm. on the 23rd...	36·6	31·6
Range of Thermometer Readings.....	34·8	40·0
Mean of Highest Daily Readings.....	59·4	59·5
Mean of Lowest Daily Readings	45·8	42·2
Mean Daily Range	13·6	17·3
Deduced Mean Temp. (from mean of Max. and Min.)	50·9	49·0
Mean Temperature from Dry Bulb	52·9	49·7
Adopted Mean Temperature.....	51·9	49·4
Mean Temperature of Evaporation	49·4	46·1
Mean Temperature of Dew Point...	46·9	42·6
Mean elastic force of Vapour..... inches	0·322	0·276
Mean weight of Vapour in a cub. ft. of air, grains	3·6	3·1
Mean additional weight required for saturation ,,	0·8	0·9
Mean degree of Humidity (saturation 100).....	83	76
Mean weight of a cubic foot of air .....grains	534·4	537·2
Mean amount of Cloud (0—10).....	6·9	7·1
Fall of Rain ....inches	3·836	2·662
Greatest Rainfall in one day (2nd) ..... ,,	0·702	0·625
No. of days on which ·005 in. or more Rain fell...	21	14·5

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing Wind was	0	4	5	0	3	5	14	0
Mean Velocity in miles per hour	0	5·1	8·1	0	5·6	10·5	8·5	0
Total No. of miles for each Direction	0	489	966	0	504	1256	2863	0

		Mean.*
Total No. of miles registered	·6078	7196·1
Greatest hourly velocity (8th, 4 a.m. Dir. W.S.W.)	25	34·0

** For the last 41 years.*

MAY, 1908.

DIFFERENCES.

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

Mean barometric pressure	+	0·020 in.
Monthly range ,, ...	+	0·265 ,,
Mean of highest temperatures	—	0·1°
Mean of lowest ,, ...	+	3·6°
Mean daily range ,, ...	—	3·7°
Adopted mean temperature	+	2·5°
Total rainfall	+	1·174 in.

Ground frost on the 22nd—24th. Hoar frost on 23rd. Hail on 4th, 21st and 22nd. Heavy rain on the 2nd and 7th. Fog on 4th. Thunder on 3rd, 4th, 6th, 12th, 13th, 21st and 22nd. Lightning on 2nd, 3rd, 4th, 12th, 13th, 21st, 22nd and 30th. Solar halo on 6th, 7th and 11th.

EXTREME READINGS FOR MAY, During 61 Years.

Highest reading of Barometer	1895	(2nd)	30·217 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, 1908.

Results of Observations taken during the Month.		Mean for the last 61 years.
Mean Reading of the Barometer ..... inches	29·677	29·553
Highest ,, ,, on the 27th... ,,	30·068	29·911
Lowest ,, ,, on the 14th... ,,	29·054	29·039
Range of Barometer Readings .... ,,	1·014	0·872
Highest Reading of a Max. Therm. on the 3rd...	76·3	77·4
Lowest Reading of a Min. Therm. on the 21st...	40·3	38·9
Range of Thermometer Readings..... ...	36·0	38·5
Mean of Highest Daily Readings.....	63·9	65·8
Mean of Lowest Daily Readings	48·2	48·0
Mean Daily Range	15·7	17·8
Deduced Mean Temp. (from mean of Max. and Min.)	54·3	55·1
Mean Temperature from Dry Bulb	56·4	55·3
Adopted Mean Temperature.....	55·4	55·2
Mean Temperature of Evaporation	52·1	52·0
Mean Temperature of Dew Point.....	48·9	48·5
Mean elastic force of Vapour.....inches	0·348	0·352
Mean weight of Vapour in a cub. ft. of air, grains	3·9	3·9
Mean additional weight required for saturation ,,	1·1	1·0
Mean degree of Humidity (saturation 100).....	80	78
Mean weight of a cubic foot of air .....grains	533·0	531·1
Mean amount of Cloud (0—10)	6·1	7·3
Fall of Rain .....inches	2·688	3·449
Greatest Rainfall in one day (13th) ..... ,,	1·195	0·814
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	1	9	2	0	0	4	14	0
Mean Velocity in miles per hour	9·4	5·8	6·6	0	0	11·2	8·1	0
Total No. of miles for each Direction	226	1243	315	0	0	1076	2705	0

		Mean.*
Total No. of miles registered	5565	6276·9
Greatest hourly velocity (5th, 3 p.m. Dir. W.N.W.)	22	30·5

* *For the last 41 years.*

JUNE, 1908.

DIFFERENCES.

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

Mean barometric pressure	+ 0·124 in.
Monthly range ,, ...	+ 0·142 ,,
Mean of highest temperatures	— 1·9°
Mean of lowest ,, ...	+ 0·2°
Mean daily range ,, ...	— 2·1°
Adopted mean temperature	+ 0·2°
Total rainfall	— 0·761 in.

Heavy rain on the 13th. Thunder on the 1st, 2nd, 3rd, 11th and 18th. Lightning on the 2nd. Solar halo on the 16th.

EXTREME READINGS FOR JUNE,
During 61 Years.

Highest reading of the Barometer	1874 (15th)	30·219 in.
Lowest ,, ,, ...	1893 (23rd)	28·813 ,,
Highest temperature	1893 (18th)	88·7°
Lowest ,, ...	1902 (9th)	32·0°
Highest adopted mean temperature.....	1858	59·0°
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.*

JULY, 1908.

Results of Observations taken during the Month.		Mean for the last 61 years.
Mean Reading of the Barometer .....inches	29·583	29·522
Highest ,, ,, on the 29th... ,,	30·083	29·897
Lowest ,, ,, on the 17th... ,,	28·864	29·017
Range of Barometer Readings ..... ,,	1·219	0·880
Highest Reading of a Max. Therm. on the 2nd	83·2	78·8
Lowest Reading of a Min. Therm. on the 8th ...	43·1	42·3
Range of Thermometer Readings.....	40·1	36·5
Mean of Highest Daily Readings.....	65·6	67·8
Mean of Lowest Daily Readings	51·8	50·8
Mean Daily Range	13·8	17·0
Deduced Mean Temp. (from mean of Max. and Min.)	56·8	57·7
Mean Temperature from Dry Bulb	59·2	57·9
Adopted Mean Temperature.....	58·0	57·9
Mean Temperature of Evaporation	55·1	54·8
Mean Temperature of Dew Point...	52·5	52·1
Mean elastic force of Vapour.....inches	0·396	0·390
Mean weight of Vapour in a cub. ft. of air, grains	4·4	4·4
Mean additional weight required for saturation ,,	1·0	1·0
Mean degree of Humidity (saturation 100)	82	81
Mean weight of a cubic foot of air .....grains	528·4	527·6
Mean amount of Cloud (0—10)	6·9	7·5
Fall of Rain ....inches	5·624	4·008
Greatest Rainfall in one day (13th) ..... ,,	0·913	0·868
No. of days on which ·005 in. or more Rain fell...	17	16·6

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing Wind was	2	5	1	0	1	4	17	1
Mean Velocity in miles per hour	7·7	5·1	4·9	0	6·8	10·6	7·0	7·9
Total No. of miles for each Direction	370	606	118	0	162	1015	2875	189

		Mean.*
Total No. of miles registered	5335	6535·3
Greatest hourly velocity (9th, 11 a.m. Dir. W.)	24	29·5

* *For the last 41 years.*

JULY, 1908.

DIFFERENCES.

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

Mean barometric pressure	+	0·061 in.
Monthly range ,, ...	+	0·339 ,,
Mean of highest temperatures	—	2·2°
Mean of lowest ,, ...	+	1·0°
Mean daily range ,, ...	—	3·2°
Adopted mean temperature	+	0·1°
Total rainfall	+	1·616 in.

Heavy rain on 8th, 9th, 13th, 16th and 25th. Thunder on 3rd, 7th, 14th and 17th. Lightning on 3rd, 14th and 17th. Solar halo on 9th, 12th, 24th and 27th.

EXTREME READINGS FOR JULY, During 61 Years.

Highest reading of Barometer	1868 (24th)	30·112 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 ,, ,, ...	1888	54·5°
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, 1908.

Results of Observations taken during the Month.		Mean for the last 61 years.
Mean Reading of the Barometer .....inches	29·546	29·495
Highest ,, ,, on the 2nd ... ,,	29·997	29·892
Lowest ,, ,, on the 31st... ,,	28·776	28·948
Range of Barometer Readings ..... ,,	1·221	0·944
Highest Reading of a Max. Therm. on the 2nd...	72·2	76·8
Lowest Reading of a Min. Therm. on the 12th...	39·3	41·4
Range of Thermometer Readings.....	32·9	35·4
Mean of Highest Daily Readings.....	62·4	66·9
Mean of Lowest Daily Readings	50·4	50·5
Mean Daily Range	12·0	16·4
Deduced Mean Temp. (from Mean of Max. and Min.)	54·7	57·0
Mean Temperature from Dry Bulb	56·9	57·6
Adopted Mean Temperature.....	55·8	57·3
Mean Temperature of Evaporation	53·0	54·4
Mean Temperature of Dew Point.....	50·4	51·7
Mean elastic force of Vapour.....inches	0·367	0·386
Mean weight of Vapour in a cub. ft. of air, grains	4·1	4·3
Mean additional weight required for saturation ,,	0·9	0·9
Mean degree of Humidity (saturation 100).....	83	82
Mean weight of a cubic foot of air.....grains	530·0	527·5
Mean amount of Cloud (0—10).....	7·0	7·4
Fall of Rain .....inches	4·312	5·067
Greatest Rainfall in one day (20th) ..... ,,	0·850	1·065
No. of days on which ·005 in. or more Rain fell...	18	18·4

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing Wind was	3	5	3	0	1	4	15	0
Mean Velocity in miles per hour	7·0	4·8	6·1	0	12·8	10·0	10·4	0
Total No. of miles for each Direction	506	578	440	0	306	957	3761	0

		Mean.*
Total No. of miles registered	6548	6577·5
Greatest hourly velocity (26th, 11 p.m., and 31st, 8 p.m. Dir. S. by W. and S.S.E. respectively)	30	32·3

* *For the last 41 years.*

AUGUST, 1908.

DIFFERENCES.

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

Mean barometric pressure	+ 0·051 in.
Monthly range ,, ...	+ 0·277 ,,
Mean of highest temperatures	— 4·5°
Mean of lowest ,, ...	— 0·1°
Mean daily range ,, ...	— 4·4°
Adopted mean temperature	— 1·5°
Total rainfall	— 0·755 in.

Ground frost on the 12th. Hail on the 11th. Heavy rain on 20th and 26th. Thunder on 21st and 28th. Lightning on 28th. Solar halo on the 8th.

EXTREME READINGS FOR AUGUST, During 61 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.....	1899	61·7°
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, 1908.

Results of Observations taken during the Month.		Mean for the last 61 years.
Mean Reading of the Barometer .... inches	29·502	29·533
Highest ,, ,, on the 5th ... ,,	29·815	30·025
Lowest ,, ,, on the 1st ... ,,	28·656	28·864
Range of Barometer Readings .... ,,	1·159	1·161
Highest Reading of a Max. Therm. on the 30th...	73·8	72·5
Lowest Reading of a Min. Therm. on the 12th...	35·1	36·4
Range of Thermometer Readings.....	38·7	36·1
Mean of Highest Daily Readings	59·4	62·3
Mean of Lowest Daily Readings	48·6	47·1
Mean Daily Range	10·8	15·2
Deduced Mean Temp. (from mean of Max. and Min.)	52·7	53·5
Mean Temperature from Dry Bulb	55·1	54·2
Adopted Mean Temperature	53·9	53·9
Mean Temperature of Evaporation	51·9	51·1
Mean Temperature of Dew Point.....	50·0	48·4
Mean elastic force of Vapour.....inches	0·360	0·340
Mean weight of Vapour in a cub. ft. of air, grains	4·1	4·0
Mean additional weight required for saturation ,,	0·6	0·8
Mean degree of Humidity (saturation 100).....	87	82
Mean weight of a cubic foot of air.....grains	531·2	532·4
Mean amount of Cloud (0—10)	6·2	6·8
Fall of Rain .....inches	5·238	4·383
Greatest Rainfall in one day (8th)..... ,,	0·860	0·966
No. of days on which ·005 in. or more Rain fell...	20	16·9

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing Wind was	1	4	2	0	6	9	6	2
Mean Velocity in miles per hour	3·7	4·1	5·0	0	8·5	9·8	9·9	7·4
Total No. of miles for each Direction	89	394	242	0	1222	2118	1422	354

		Mean.*
Total No. of miles registered	5841	6219·4
Greatest hourly velocity (9th, 1 and 2 a.m. Dir. S. by W.).....	34	33·5

** For the last 41 years.*

SEPTEMBER, 1908.

DIFFERENCES.

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

Mean barometric pressure	—	0·031 in.
Monthly range ,, ...	—	0·002 ,,
Mean of highest temperatures	—	2·9°
Mean of lowest ,, ...	+	1·5°
Mean daily range ,, ...	—	4·4°
Adopted mean temperatures		0·0°
Total rainfall	+	0·855 in.

Ground frost on 3rd, 5th, and 11th—13th. Heavy rain on 8th, 14th, 16th, 18th and 20th. Thunder on 10th, 18th and 30th. Lightning on 30th.

The weather, in general, was unusually dull.

Sunshine was 43 hours below the September average.

EXTREME READINGS FOR SEPTEMBER, During 61 Years.

Highest reading of Barometer	1851 (15th)	30·274 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 ,, ...	1894	0·801 ,,
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, 1908.

Results of Observations taken during the Month.		Mean for the last 61 years.
Mean Reading of the Barometer ....inches	29·704	29·435
Highest ,, ,, on the 22nd... ,,	30·133	30·020
Lowest ,, ,, on the 10th... ,,	29·405	28·670
Range of Barometer Readings ..... ,,	0·728	1·350
Highest Reading of a Max. Therm. on the 1st ...	73·9	64·2
Lowest Reading of a Min. Therm. on the 25th ...	33·7	29·2
Range of Thermometer Readings.....	40·2	35·0
Mean of Highest Daily Readings	58·6	54·6
Mean of Lowest Daily Readings	47·6	41·7
Mean Daily Range	11·0	12·9
Deduced Mean Temp. (from mean of Max. and Min.)	52·1	47·2
Mean Temperature from Dry Bulb	52·9	47·8
Adopted Mean Temperature	52·5	47·5
Mean Temperature of Evaporation	50·8	45·3
Mean Temperature of Dew Point.....	49·1	43·0
Mean elastic force of Vapour.....inches	0·350	0·278
Mean weight of vapour in a cub. ft. of air, grains	3·9	3·2
Mean additional weight required for saturation ,,	0·5	0·6
Mean degree of Humidity (saturation 100).....	89	84
Mean weight of a cubic foot of air.....grains	536·5	537·5
Mean amount of Cloud (0—10)	5·3	7·4
Fall of Rain ....inches	2·339	5·048
Greatest Rainfall in one day (18th) ..... ,,	0·585	0·973
No. of days on which ·005 in. or more Rain fell...	12	19·1

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing Wind was	6	2	11	0	8	3	1	0
Mean Velocity in miles per hour	4·3	3·6	7·6	0	6·2	6·8	3·2	0
Total No. of miles for each Direction	616	171	2018	0	1194	493	77	0

		Mean.*
Total No. of miles registered	4569	7064·8
Greatest hourly velocity (26th, noon. Dir. E. by N.)	22	38·7

** For the last 41 years.*

OCTOBER, 1908.

DIFFERENCES.

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

Mean barometric pressure	+ 0·269 in.
Monthly range ,, ...	— 0·622 ,,
Mean of highest temperatures	+ 4·0°
Mean of lowest ,, ...	+ 5·9°
Mean daily range ,, ...	— 1·9°
Adopted mean temperature	+ 5·0°
Total rainfall	— 2·709 in.

The high temperatures and calm winds of this month exceeded all our October records, see table of "extremes." The wind mileage, 4569, was 737 miles below the previous minimum in 1882, while the greatest hourly velocity, 22 miles, was never before lower than 30. The Barometric pressure was remarkably high and steady throughout the month, and the rainfall was less than half the October average.

Ground frost on 22nd, 24th—26th, and 28th. Hoar frost on the 25th. Heavy rain on the 18th. Fog on the 2nd, 4th and 7th. Thunder and lightning on the 30th.

EXTREME READINGS FOR OCTOBER, During 61 Years.

Highest reading of Barometer	1884 (5th)	30·306 in.
Lowest ,, ,, ...	1862 (19th).....	28·139 ,,
Highest temperature	1908 (1st)	73·9°
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, 1908.

Results of Observations taken during the Month.		Mean for the last 61 years.
Mean Reading of the Barometer .....inches	29·541	29·475
Highest ,, ,, on the 30th... ,,	30·026	30·069
Lowest ,, ,, on the 22nd... ,,	29·129	28·576
Range of Barometer Readings ..... ,,	0·897	1·493
Highest Reading of a Max. Therm. on the 1st ...	55·0	55·9
Lowest Reading of a Min. Therm. on the 30th...	28·5	25·5
Range of Thermometer Readings.....	26·5	30·4
Mean of Highest Daily Readings.....	48·9	47·4
Mean of Lowest Daily Readings	39·4	36·7
Mean Daily Range	9·5	10·7
Deduced Mean Temp. (from mean of Max. and Min.)	43·8	41·7
Mean Temperature from Dry Bulb	44·7	42·0
Adopted Mean Temperature	44·3	41·8
Mean Temperature of Evaporation	43·0	39·8
Mean Temperature of Dew Point.....	41·5	38·3
Mean elastic force of Vapour.....inches	0·261	0·233
Mean weight of Vapour in a cub. ft. of air, grains	3·0	2·7
Mean additional weight required for saturation ,,	0·4	0·4
Mean degree of Humidity (saturation 100).....	90	88
Mean weight of a cubic foot of air..... grains	542·7	544·7
Mean amount of Cloud (0—10)	6·2	7·4
Fall of Rain .... inches	4·964	4·387
Greatest Rainfall in one day (21st) ..... ,,	1·580	0·982
No. of days on which ·005 in. or more Rain fell...	17	17·7

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing Wind was	7	1	3	0	5	6	6	2
Mean Velocity in miles per hour	4·9	3·7	5·9	0	10·6	7·6	17·3	11·8
Total No. of miles for each Direction	826	89	422	0	1277	1096	2498	564

		Mean.*
Total No. of miles registered	6772	7341·0
Greatest hourly velocity (22nd, 10 p.m. Dir. W. by N.)	41	42·5

* *For the last 41 years.*

NOVEMBER, 1908.

DIFFERENCES.

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

Mean barometric pressure	+ 0·066 in.
Monthly range ,, ...	— 0·596 ,,
Mean of highest temperatures	+ 1·5°
Mean of lowest ,, ...	+ 2·7°
Mean daily range ,, ...	— 1·2°
Adopted mean temperature	+ 2·5°
Total rainfall	+ 0·577 in.

Ground frost on 5th, 7th—10th, 15th, 16th, 19th, 20th, 23rd, 29th and 30th. Hoar frost on 3rd, 8th—10th, 20th and 30th. Hail on 25th. Heavy rain on 12th and 21st. Gale of wind on 22nd. Lightning on 20th and 22nd. Lunar halo on the 9th.

EXTREME READINGS FOR NOVEMBER, During 61 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, 1908.

Results of Observations taken during the Month.		Mean for the last 61 years.
Mean Reading of the Barometer .....inches	29·426	29·451
Highest ,, ,, on the 1st ... ,,	29·998	30·079
Lowest ,, ,, on the 11th... ,,	28·289	28·553
Range of Barometer Readings ..... ,,	1·709	1·526
Highest Reading of a Max. Therm. on the 22nd...	49·9	53·0
Lowest Reading of a Min. Therm. on the 30th ...	16·1	20·6
Range of Thermometer Readings.....	33·8	32·4
Mean of Highest Daily Readings.....	42·5	43·2
Mean of Lowest Daily Readings	34·3	33·2
Mean Daily Range	8·2	10·0
Deduced Mean Temp. (from mean of Max. and Min.)	38·4	38·2
Mean Temperature from Dry Bulb	38·9	38·8
Adopted Mean Temperature.....	38·7	38·5
Mean Temperature of Evaporation	37·4	37·0
Mean Temperature of Dew Point..	35·7	35·1
Mean elastic force of Vapour.....inches	0·210	0·206
Mean weight of Vapour in a cub. ft. of air, grains	2·5	2·4
Mean additional weight required for saturation ,,	0·3	0·4
Mean degree of Humidity (saturation 100).....	90	87
Mean weight of a cubic foot of air.....grains	547·2	547·8
Mean amount of Cloud (0—10)	7·1	7·6
Fall of Rain .....inches	3·671	4·472
Greatest Rainfall in one day (31st) ..... ,,	0·585	0·843
No. of days on which ·005 in. or more Rain fell...	22	19·4

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing Wind was	4	1	4	2	8	7	3	2
Mean Velocity in miles per hour	2·3	4·2	11·4	6·7	8·3	8·2	9·3	14·8
Total No. of miles for each Direction	225	100	1093	323	1584	1370	671	708

		Mean.*
Total No. of miles registered	6074	7771·9
Greatest hourly velocity (11th, 7 p.m. Dir. N.W. by W.)	27	42·6

* *For the last 41 years.*

DECEMBER, 1908.

DIFFERENCES.

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

Mean barometric pressure	—	0·025 in.
Monthly range ,, ...	+	0·183 ,,
Mean of highest temperatures	—	0·7°
Mean of lowest ,, ...	+	1·1°
Mean daily range ,, ...	—	1·8°
Adopted mean temperature	+	0·2°
Total rainfall	—	0·801 in.

Ground frost on 1st—4th, 10th—14th, 17th, 18th, 24th—31st. Hoar frost on 2nd, 3rd, 7th, 25th and 26th. Snow on 27th and 29th. Hail on 9th, 10th, 29th and 30th. Heavy rain on 31st. Fog on 1st, 2nd, 3rd and 31st. Lightning on the 9th. Lunar halo on the 6th and 7th.

EXTREME READINGS FOR DECEMBER.
During 61 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, 1908.

Results of Observations taken during the Year.		Mean for the last 61 years.
Readings of Barometer in inches.		
Mean of the Year	29·560	29·497
Highest Monthly Mean (October)	29·704	29·747
Lowest ,, ,, (March)	29·374	29·230
Highest Reading (February 6th)	30·305	30·295
Lowest ,, (December 11th)	28·289	28·251
Range	2·016	2·044
Thermometer, Fahrenheit.		
Highest Monthly Mean Temperature (July)	58·0	58·6
Lowest ,, ,, ,, (Jan.)	36·0	35·2
Highest Reading of a Max. Therm. (July 2nd)	83·2	81·7
Lowest ,, Min. ,, (Dec. 30th)	16·1	15·7
Range of Thermometer Readings	67·1	66·0
Mean of Highest Daily ,,	53·1	54·7
Mean of Lowest Daily ,,	41·9	40·7
Mean Daily Range	11·2	14·0
Deduced Mean Temp. (from mean of Max. and Min.)	46·5	46·8
Mean Temperature from Dry Bulb	47·9	46·9
Adopted Mean Temperature of the Year	47·2	46·8
Mean Temperature of Evaporation	45·2	44·5
Mean Temperature of Dew Point	43·1	42·1
Mean elastic force of Vapour ....inches	0·287	0·274
Mean weight of Vapour in a cub. ft. of air...grns.	3·3	3·3
Mean additional weight required for saturation ,,	0·6	0·7
Mean degree of Humidity (saturation 100)	86	84
Mean weight of a cubic foot of air ....grns.	540·0	539·2
Mean amount of Cloud (0—10)	6·8	7·3
Total fall of Rain ....inches	48·319	46·898
Greatest Monthly Rainfall (July) ,,	5·624	7·494
Least ,, ,, (October) ,,	2·339	1·208
Greatest Rainfall in one day (Nov. 21st)... ,,	1·580	1·621
No. of days per Month on which ·005 inch or more Rain fell	18·3	17·0

SUMMARY OF WIND, 1908.

	N	NE	E	SE	S	SW	W	NW
No. of days in the year on which the prevailing Wind was	36	49	44	3	44	52	123	15
Mean Velocity in miles per hour	6·9	5·6	7·3	10·1	8·2	9·4	11·1	11·8
Total No. of miles for each Direction	5981	6584	7694	730	8623	11758	32845	4248

		Mean for the last 41 years.
Total No. of miles registered	78463	87101·0
Greatest Monthly Total (February)	9789	10126·4
Least ,, ,, (October)	4569	5118·4
Greatest hourly velocity (February 22nd)	50	52·0
Prevailing Direction of Wind	W	W

DIFFERENCES, 1908.

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

Mean barometric pressure	+ 0·063 in
Yearly range ,,	— 0·028 ,,
Mean of highest temperatures	— 1·6°
Mean of lowest ,,	+ 1·2°
Mean daily range	— 2·8°
Adopted mean temperature	+ 0·4°
Total rainfall	+ 1·421 in.

ABSOLUTE EXTREMES
FOR THE LAST 61 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	1884 (Jan.)	2·409
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 61 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	8638
Least ,, ,, ,,	September	6219
Greatest No. ,, ,, year	1868	102395
Least ,, ,, ,, ,,	1908	78463

* *Record dates from 1867 only.*

DATES OF OCCASIONAL PHENOMENA.

1908.	Frost.	Hoar Frost.	Snow.	Hail.	Heavy Rain.
January	1—6, 9—14, 18—25, 28—30	4, 5, 19—22	8, 9, 28—30	28, 29, 31	5, 6, 7, 15, 26
February	1, 2, 4, 5, 12—16, 24, 26—29	13	23, 27, 28, 29	22, 23, 27, 28	14, 16
March	1—7, 11—22, 24, 27, 30	5, 13, 20	1—4,6,14—17,19,20	7, 24	7, 24
April	6—8, 13—15, 20, 23—27	8, 24, 26	14, 19, 20, 22—25	4, 14, 19	29, 30
May	22—24	23		4, 21, 22	2, 7
June					13
July					8, 9, 13, 16, 25
August	12			11	20, 26
September	3, 5, 11—13				8, 14, 16, 18, 20
October	22, 24—26, 28	25			18
November	5, 7—10, 15, 16, 19, 20, 23, 29, 30	3, 8—10, 20, 30		25	12, 21
December	1—4, 10—14, 17, 18, 24—31	2, 3, 7, 25, 26	27, 29	9, 10, 29, 30	31

1908.	Gales of Wind.	Fog.	Thunder.	Lightning.	*Lunar Halo.	*Solar Halo.	Aurora Borealis.
January	31	20, 23, 24				25	
February	22	2, 7, 10	28	23, 28, 29			
March	30	12	2	2, 8		2, 5, 9, 13	
April			4	4		8	
May		4	3, 4, 6, 12, 13, 21, 22	2, 3, 4, 12, 13, 21, 22, 30		6, 7, 11	
June			1, 2, 3, 11, 18	2		16	
July			3, 7, 14, 17	3, 14, 17		9, 12, 24, 27	
August			21, 28	28		8	
September			10, 18, 30	30			
October		2, 4, 7	30	30			
November	22			20, 22	9		
December		1, 2, 3, 31		9	6, 7		

* *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	0	0	0	0·2	2·5	5·7	8·1	9·4	9·7	2·9	0	0	0	0	0	0
February	0	0	0	0·5	2·3	4·6	5·4	4·9	6·7	6·9	8·1	7·8	1·0	0	0	0	0
March	0	0	0·8	3·8	7·9	13·3	11·9	11·3	12·5	9·8	9·5	8·1	4·8	1·3	0	0	0
April	0	0·4	7·5	12·4	12·7	11·7	13·6	14·0	15·1	10·8	12·4	10·6	7·9	4·4	1·0	0	0
May	1·2	5·9	10·3	11·0	13·0	13·1	14·4	15·7	15·5	16·3	15·8	15·4	14·3	12·7	10·6	3·0	0
June	2·2	6·0	9·4	11·8	12·8	13·2	14·2	16·0	16·7	15·2	16·6	15·8	15·9	15·5	13·1	6·4	0
July	1·7	7·3	9·6	10·8	13·1	12·4	13·2	15·1	15·4	14·5	15·4	14·5	15·1	12·6	8·7	2·2	0
August	0·1	1·3	3·6	8·4	11·9	12·6	14·1	15·1	15·6	16·0	17·0	16·1	16·5	14·3	7·6	0·4	0
September	0	0	0·6	4·3	7·6	8·0	8·9	9·9	9·5	10·4	10·4	5·4	6·2	2·4	0	0	0
October	0	0	0	0·7	5·1	11·1	12·8	16·4	14·8	15·7	13·9	9·5	2·0	0	0	0	0
November	0	0	0	0	1·5	4·0	6·7	9·5	9·2	7·2	5·6	2·7	0·7	0	0	0	0
December	0	0	0	0	0	1·5	3·1	6·1	6·9	4·1	1·1	0	0	0	0	0	0
Sums	5·2	20·9	41·8	63·7	88·1	108·0	124·0	142·1	147·3	136·6	128·7	105·9	84·4	63·2	41·0	12·9	0

TOTAL AMOUNT OF SUNSHINE RECORDED ON EACH DAY.

1908.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
January	1·2	0·2	4·4	4·3	0	0	0	0	3·2	2·7	0	5·2	0·2	0	0	0	0·5
February	6·3	0	2·3	5·8	0	0·1	0	0	0·6	0	0·3	0	0	2·8	3·0	4·0	0
March	3·4	4·5	2·0	4·5	0·4	0	1·1	0	4·7	2·5	7·9	5·6	5·2	0	0	0	4·2
April	3·8	0·4	3·2	5·4	5·3	8·7	11·8	8·5	0	1·8	0	0·2	4·6	6·5	5·5	12·6	11·1
May	8·5	7·8	0	0·9	0 9	1·9	12·3	0	10·0	13·1	5·5	8·1	3·4	3·7	1·8	2·6	4·4
June	1·3	0·9	8 2	7·7	12·7	10·4	1·5	1·9	0·3	3·4	1·3	9·3	0	7·5	5·5	12·0	0
July	14·3	13·8	11·2	4·2	0·1	0	6·9	0	6·1	3·8	3·0	5·6	8·6	2·1	5·5	0	5·2
August	10·2	8·5	10·1	1·5	0	8·5	8·7	10·3	1·3	4·2	10·2	4·9	3·6	4·4	8·3	10·5	10·6
September	5·1	5·9	0·4	1·6	0·8	0	0·2	1·9	3·9	0·8	4·5	11·0	0	0	2·4	0	5·7
October	7·7	4·9	8·3	4·0	5·8	2·1	4·7	1·0	0	4·8	1·1	8·4	5·3	2·0	2·7	0	0
November	0·4	0·2	4·1	1·9	0	0	0·1	8·0	3·6	1·6	0	5·7	2·6	1·2	0	0	1·6
December	0	1·0	0	0	0	0·5	0	0	3·1	0	5·3	3·4	0·1	0·2	0·4	0	1·2

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

1908.	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Monthly.	
															Total.	Percentage.
January ...	1·8	1·0	3·7	0	0	0	4·5	2·7	0	0	0·7	1·8	0	0·4	38·5	15·5
February ..	1·8	0·3	0	0·3	0·3	4·1	3·8	2·5	0	3·4	2·8	3·7	0	0	48·2	17·1
March ...	5·6	2·4	3·5	0	8·2	0	0	0	5·0	10·4	0	7·5	6·4	0	95·0	26·0
April... ...	5·6	7·8	5·4	0·8	3·7	5·1	4·6	0·3	1·0	9·4	0	1·4	0	0	134·5	32·1
May	0·7	0·1	12·3	4·8	1·9	12·8	5·9	1·4	2·2	15·1	14·7	12·0	10·8	8·6	188·2	38·2
June	5·1	2·0	8·0	15·0	14·5	1·4	3·0	12·7	8·6	9·3	11·7	10·7	14·9	0	200·8	39·5
July	2·6	13·1	7·1	11·4	9·8	5·2	2·6	0·8	2·4	3·9	10·8	13·7	0	7·8	181·6	35·7
August ...	0	0	0	3·5	4·8	5·2	1·7	2·7	1·6	9·7	6·4	8·8	9·2	1·2	170·6	37·3
September ...	0	6·4	0	0·1	3·9	0	0·5	0·7	2·3	7·1	0·2	9·4	8·8	0	83·6	22·1
October ...	0·5	0	0	4·9	4·4	0	5·7	8·1	0·2	0	5·2	0·8	4·7	4·7	102·0	31·3
November ...	0	4·2	0	0·9	0·9	5·8	0	0	0	0	0·1	3·0	1·2	0	47·1	18·4
December ...	0·5	0	0	0·9	0	0	0	2·4	3·8	0	0	0	0	0	22·8	9·9

SUMMARY OF SUNSHINE.

	Bright Sunshine Recorded.					
	1908.			Mean for the last 28 years.		
	Number of		Percentage of Possible Sunshine.	Number of		Percentage of Possible Sunshine.
	Days.	Hours.		Days.	Hours.	
January ...	17	38·5	15·5	14·1	34·3	13·8
February ...	19	48·2	17·1	17·6	59·5	21·7
March ...	20	95·0	26·0	24·0	109·0	29·8
April ...	26	134·5	32·1	26·2	149·9	35·8
May... ...	29	188·2	38·2	27·5	187·4	38·0
June ...	28	200·8	39·5	27·8	193·2	38·0
July ...	27	181·6	35·7	28·4	180·5	35·5
August ...	27	170·6	37·3	27·5	152·4	33·3
September ...	23	83·6	22·1	25·6	126·5	33·4
October ...	24	102·0	31·3	23·0	87·4	26·8
November ...	19	47·1	18·4	17·0	44·6	17·4
December ...	13	22·8	9·9	12·9	25·6	11·1
Year ...	272	1312·9	29·3	271·6	1350·2	30·2

SUMMARY OF SUNSHINE—*Continued.*

EXTREMES FOR THE LAST 28 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.	29	*1900	22	1905	223·7	1893	95·7	1889	53·4	1893	22·8	1889
May	30	*1881	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	247·2	1887	98·0	1888	48·6	1887	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	65·2	1903	18·5	1891	25·5	1903	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.*

OBSERVATIONS OF UPPER CLOUDS (CIRRUS.)

1908.	G. M. T.	Cloud.		Wind.		Direction of Lower Clouds.
		Direction.*	Velocity (0—6.)	Direction.*	Force (0—12.)	
Jan. 9	2-25 p.m.	NE	6	NE	1	—
,, 11	4-10 p.m.	NE	2	W by S	2	W
,, 13	9-10 a.m.	NNE	3	NE	1	NW
,, 17	9-0 a.m.	ENE	3	SW	2	SW
,, 17	12-50 p.m.	NE	2	SW	4	SW
,, 18	10-10 a.m.	SW	2	W by S	1	W
,, 18	11-45 a.m.	S	3	W by S	1	W
,, 18	12-15 p.m.	WSW	5	W by S	1	W by S
,, 23	2-15 p.m.	E by S	4	Calm	0	S by E
,, 23	4-15 p.m.	E	3	Calm	0	—
,, 24	9-30 a.m.	NE by E	4	NE	1	—
,, 24	10-0 a.m.	E by N	3	NE	1	—
,, 25	2-30 p.m.	W by S	4	SW	2	SW by W
,, 29	9-0 a.m.	W by N	3	W	2	WNW
Feb. 1	10-15 a.m.	NW	4	NW	5	—
,, 4	9-0 a.m.	W	3	N by W	2	N by E
,, 8	9-0 a.m.	E by S	3	W	2	W
,, 16	11-45 a.m.	N by W	2	W by N	5	W
,, 18	5-0 p.m.	NW by W	4	W by N	2	NW
,, 21	4-0 p.m.	SW by W	4	W by S	2	W
,, 24	11-0 a.m.	W	4	NW	4	NW
Mar. 10	9-0 a.m.	NW	4	W by N	4	W by N
,, 13	Noon	NNW	4	Calm	0	NE
,, 18	10-40 a.m.	N by W	2	E	1	N by E
,, 27	Noon	S by E	4	S by W	4	S by W
,, 28	5-0 p.m.	W by N	3	NW by W	1	WSW

* *Whence coming.*

OBSERVATIONS OF UPPER CLOUDS (CIRRUS)—*Continued.*

1908.	G. M. T.	Cloud.		Wind.		Direction of Lower Clouds.
		Direction.*	Velocity (0–6.)	Direction.*	Force (0—12.)	
Apr. 8	9-0 a.m.	N by E	3	Calm	0	—
,, 14	9-0 a.m.	N	3	NE	2	NE
,, 16	9-0 a.m.	E by S	3	NE	2	—
May 1	5-0 p.m.	NW by W	2	W	1	NW
,, 7	2-0 p.m.	NW by W	5	W by S	2	W
,, 9	1-0 p.m.	SW	3	W by S	2	W
,, 21	9-0 a.m.	S by E	4	W by S	1	SW
,, 24	9-0 a.m.	SSE	4	S by W	2	S by W
June 3	9-0 a.m.	S by E	4	NE	1	—
,, 4	4-0 p.m.	W by N	3	NW	4	—
,, 12	2-0 p.m.	S	4	W by N	2	W
,, 15	9-0 a.m.	S	3	S	4	SSW
,, 16	9-0 a.m.	S by E	3	W by S	2	SW
,, 26	9-0 a.m.	N	2	Calm	0	NE
July 1	9-0 a.m.	E by S	2	N by E	1	—
,, 2	Noon	SE	2	Calm	0	—
,, 3	3-0 p.m.	E by S	2	NE	1	—
,, 7	9-0 a.m.	S	3	W	2	W
,, 13	10-0 a.m.	SW	3	Calm	0	NE
,, 20	5-0 p.m.	N by W	3	NW	3	NW
,, 23	4-0 p.m.	W	2	W	3	S
,, 26	9-0 p.m.	W	3	Calm	0	SW by S
,, 27	9-0 p.m.	W	2	Calm	0	W
,, 28	9-0 p.m.	W	2	NW	1	W by N
,, 29	Noon	WSW	3	W	2	W
,, 29	4-0 p.m.	W by N	2	W	1	—

* *Whence coming.*

OBSERVATIONS OF UPPER CLOUDS (CIRRUS)—*Continued.*

1908.	G. M. T.	Cloud.		Wind.		Direction of Lower Clouds.
		Direction.*	Velocity (0—6.)	Direction.*	Force (0—12).	
Aug. 1	9-0 a.m.	NW by W	4	NW	2	NW
,, 3	Noon	SSE	3	W	2	W
,, 8	8-0 a.m.	W by S	3	W by S	1	—
,, 13	5-0 p.m.	N	4	W by N	1	W by N
,, 17	5-0 p.m.	NW by N	3	E by N	1	—
,, 25	9-0 p.m.	S by W	3	SW	4	W
,, 28	9-0 p.m.	S	4	W by S	3	W
Sept. 1	6-0 p.m.	NW by W	4	NW	4	NW
,, 15	9-0 a.m.	W by N	2	W by S	2	W by S
,, 26	11-0 a.m.	NNE	3	W by S	4	SW
Oct. 6	2-0 p.m.	S	4	SE	1	SE
,, 11	11-0 a.m.	SW	4	S	3	S
,, 31	9-0 p.m.	N	3	Calm	0	—
Nov. 2	10-0 a.m.	SW	3	Calm	0	ENE
,, 9	9-0 a.m.	N	2	N by E	1	—
,, 12	11-0 a.m.	S	4	W by S	2	SW
,, 13	9-0 a.m.	S	4	Calm	0	SW
,, 21	9-0 a.m.	NW	3	W	2	—
,, 23	9-0 a.m.	N	3	W by N	2	NW
,, 28	9-0 a.m.	W	4	S	2	S
Dec. 6	9-0 a.m.	W	3	W by S	1	S
,, 9	11-0 a.m.	S	4	SW	2	SW
,, 11	9-0 a.m.	N by W	4	NW	4	—

* *Whence coming.*

MAGNETIC DECLINATION, WEST.

1908.	G. M. T. Civil Day.	Observed.	Corrected.	1908.	G. M. T. Civil Day.	Observed.	Corrected.
	D. H. M.	° ′	° ′		D. H. M.	° ′	° ′
Jan.	2 16 0	17 40·4	17 37·6	July	4 18 0	17 35·6	17 36·0
,,	9 ,, ,,	,, 30·1	,, 39·3	,,	11 16 30	,, 38·6	,, 37·0
,,	17 ,, ,,	,, 39·5	,, 37·7	,,	18 16 0	,, 37·2	,, 34·5
,,	25 ,, ,,	,, 40·2	,, 39·4	,,	26 ,, ,,	,, 35·4	,, 34·8
Feb.	3 16 0	17 43·1	17 37·9	Aug.	3 18 30	17 37·7	17 34·4
,,	10 ,, ,,	,, 41·2	,, 39·0	,,	10 22 10	,, 31·6	,, 33·3
,,	17 ,, ,,	,, 40·4	,, 39·2	,,	17 16 0	,, 37·7	,, 34·4
,,	24 ,, ,,	,, 43·3	,, 40·1	,,	25 ,, ,,	,, 36·4	,, 35·1
Mar.	2 16 0	17 36·5	17 41·0	Sept.	2 16 0	17 36·4	17 34·4
,,	10 ,, 15	,, 38·5	,, 35·9	,,	10 ,, ,,	,, 35·9	,, 34·3
,,	18 ,, 0	,, 41·7	,, 38·1	,,	18 ,, ,,	,, 38·2	,, 35·6
,,	26 ,, ,,	,, 41·3	,, 36·7	,,	26 ,, ,,	,, 36·2	,, 33·6
April	3 17 30	17 35·4	17 37·0	Oct.	5 16 0	17 39·7	17 34·7
,,	11 16 0	,, 39·6	,, 38·2	,,	12 ,, ,,	,, 40·5	,, 33·5
,,	20 17 0	,, 36·7	,, 36·3	,,	19 ,, 10	,, 32·7	,, 31·7
,,	28 16 0	,, 36·3	,, 35·9	,,	26 ,, ,,	,, 33·0	,, 32·4
May	5 16 0	17 39·5	17 37·1	Nov.	3 16 0	17 33·6	17 32·9
,,	12 ,, ,,	,, 40·2	,, 36·8	,,	11 ,, ,,	,, 26·9	,, 32·6
,,	20 ,, ,,	,, 36·7	,, 35·3	,,	19 ,, ,,	,, 37·9	,, 33·6
,,	27 ,, ,,	,, 40·2	,, 35·8	,,	27 ,, 10	,, 31·2	,, 32·2
June	3 16 0	17 42·4	17 35·4	Dec.	5 16 15	17 34·4	17 32·9
,,	11 ,, ,,	,, 40·3	,, 36·3	,,	12 ,, 0	,, 33·8	,, 33·3
,,	19 ,, 10	,, 41·8	,, 38·8	,,	19 16 0	,, 33·9	,, 33·4
,,	27 ,, 0	,, 37·1	,, 36·1	,,	26 16 45	,, 29·4	,, 29·9

HORIZONTAL MAGNETIC FORCE.

1908.	G. M. T. Civil Day.	Observed Time of one Vibration.	Temp.	Observed Deflection $\frac{\text{at 1·0 ft.}}{\text{at 1·3 ft.}}$	Temp.	Deduced Horizontal Force.	Horizontal Force Corrected.
	D. H. M.	S.	°	° ′	°	C.G.S. UNITS.	
Jan.	17 9 50	6·0564	52	$\left\{\begin{matrix}11 & 24·3\\5 & 9·3\end{matrix}\right\}$	50	0·17432	0·17431
Feb.	18 10 50	6·0569	46	$\left\{\begin{matrix}11 & 23·8\\5 & 9·5\end{matrix}\right\}$	48	0·17425	0·17427
Mar.	18 10 45	6·0542	50	$\left\{\begin{matrix}11 & 24·6\\5 & 10·6\end{matrix}\right\}$	41	0·17418	0·17440
April	15 10 55	6·0564	48	5 10·9	42	0·17396	0·17412
May	16 10 5	6·0563	55	$\left\{\begin{matrix}11 & 25·0\\5 & 10·3\end{matrix}\right\}$	58	0·17408	0·17444
June	15 10 0	6·0607	58	$\left\{\begin{matrix}11 & 23·9\\5 & 9·7\end{matrix}\right\}$	58	0·17385	0·17410
July	15 10 0	6·0589	62	$\left\{\begin{matrix}11 & 23·3\\5 & 10·3\end{matrix}\right\}$	56	0·17430	0·17447
Aug.	17 9 50	6·0598	60	$\left\{\begin{matrix}11 & 23·7\\5 & 9·6\end{matrix}\right\}$	61	0·17417	0·17455
Sept.	15 9 45	6·0697	62	$\left\{\begin{matrix}11 & 24·6\\5 & 11·3\end{matrix}\right\}$	58	0·17393	0·17456
Oct.	15 10 30	6·0652	66	$\left\{\begin{matrix}11 & 24·1\\5 & 9·8\end{matrix}\right\}$	62	0·17400	0·17434
Nov.	16 10 20	6·0550	57	$\left\{\begin{matrix}11 & 23·7\\5 & 10·1\end{matrix}\right\}$	46	0·17439	0·17442
Dec.	15 11 0	6·0612	50	$\left\{\begin{matrix}11 & 23·3\\5 & 9·7\end{matrix}\right\}$	47	0·17408	0·17407

ABSOLUTE MEASURES—SUMMARY.

DIRECTION.				FORCE.		
1908.	Declination Corrected.		Inclination.	Horizontal.	Vertical.	Total.
	°	′	° ′	C. G. S. UNITS.		
January ...	17	38·5	68 45·3	0·17431	0·44850	0·48127
February ...	17	39·0	68 45·3	0·17427	0·44835	0·48110
March ...	17	38·0	68 41·0	0·17440	0·44665	0·47944
April ...	17	36·8	68 44·5	0·17412	0·44784	0·48055
May ...	17	36·2	68 44·5	0·17444	0·44779	0·48049
June ...	17	36·7	68 45·2	0·17410	0·44804	0·48072
July ...	17	35·6	68 43·2	0·17447	0·44844	0·48125
August ...	17	34·3	68 43·8	0·17455	0·44855	0·48134
September..	17	34·5	68 45·0	0·17456	0·44822	0·48092
October ...	17	33·1	68 44·2	0·17434	0·44789	0·48061
November..	17	32·8	68 45·0	0·17442	0·44817	0·48087
December..	17	31·2	68 43·2	0·17407	0·44765	0·48040
Means ...	17	35·6	68 44·2	0·17434	0·44801	0·48075

HORIZONTAL MAGNETIC DIRECTION.

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

1908.	MEAN OF				Differences.	Differences of *a* and *b* or Mean daily range.	Highest reading of the month.	Lowest reading of the month.	Monthly range.
	Highest daily readings. (*a*)	Lowest daily readings. (*b*)	*a* and *b*. (*c*)	Daily readings at 4 a.m. and 4 p.m. (*d*)	*d*—*c*				
	17° +						17° +		
	′	′	′	′	′	′	′	′	′
January ...	44·1	33·0	38·6	39·5	0·9	11·1	52	18	34
February ...	45·1	30·7	37·9	39·4	1·5	14·4	50	18	32
March	46·0	26·5	36·2	38·2	2·0	19·5	60	1	59
April	45·0	28·9	37·0	37·2	0·2	16·1	49	17	32
May	43 7	28·7	36·2	36·5	0·3	15·0	55	19	36
June	41·7	29·1	35·4	35·8	0·4	12·6	45	25	20
July	41·3	28·8	35·0	35·4	0·4	12·5	50	19	31
August ...	43·5	26·5	35·0	34·0	—1·0	17·0	57	14	43
September ...	42.5	25·8	34·2	34·3	0·1	16 7	90	*	—
October ...	40·3	26·0	33·2	34·2	1·0	14·3	48	3	45
November ...	39·1	26·5	32·8	34·2	1·4	12·6	59	6	53
December ...	36·5	29·5	33·0	33·6	0·6	7·0	48	8	40
Means... ...	42·4	28·3	35·4	36·0	0·7	14·1	52·1	13·5	38·6

Mean for the year... ... 17° 35·7 W.

* *Beyond the recording limit.*

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.

1908.	MEAN OF				Differences.	Differences of *a* and *b* or Mean daily range.	Highest reading of the month.	Lowest reading of the month.	Monthly range.
	Highest daily readings. (*a*)	Lowest daily readings. (*b*)	*a* and *b*. (*c*)	Daily readings at 4 a.m. and 4 p.m. (*d*)	*d*−*c*				
	17000 +				0 +		17000 +		0 +
January ...	455	417	436	438	2	38	509	381	128
February ...	452	405	429	433	4	47	489	369	120
March... ...	455	389	422	427	5	66	514	191	323
April	453	377	415	431	16	76	461	271	190
May	458	371	415	427	12	87	493	256	237
June	456	376	416	425	9	80	561	341	220
July	497	424	460	472	12	73	561	376	185
August ...	495	395	445	466	21	100	576	319	257
September ...	471	379	425	434	9	92	618	*	—
October ...	458	398	428	434	6	60	496	336	160
November ...	454	404	429	438	9	50	567	242	325
December ..	450	420	435	434	−1	30	488	392	96
Means... ...	463	396	430	438	9	67	520	316	204

Mean for the year ... ... 0·17434 C. G. S. Units.

* *Beyond the recording limit.*

DECLINATION YEARLY MEANS.

Year.	Corrected.	5 Year Means.	Differences.	Year.	Corrected.	5 Year Means.	Differences.
	° ′	° ′	′		° ′	° ′	′
1865	22 27·0			1890	19 16·2		
1866	22 15·8			1891	19 3·9		
1867	22 14·8	22 7·2		1892	18 46·5	18 54·9	
1868	21 54·5			1893	18 44·7		
1869	21 43·7			1894	18 43·0		
			37·7				29·9
1870	21 45·2			1895	18 35·3		
1871	21 37·7			1896	18 28·5		
1872	21 28·3	21 29·5		1897	18 25·7	18 25·0	
1873	21 23·3			1898	18 20.0		
1874	21 13·1			1899	18 15·4		
			45·3				21·1
1875	21 0·9			1900	18 9·9		
1876	20 52·7			1901	18 8·7		
1877	20 44·3	20 44·2		1902	18 3·7	18 3·9	
1878	20 34·9			1903	18 0·6		
1879	20 28·3			1904	17 56·6		
			38·8				22·5
1880	20 17·6			1905	17 51·3		
1881	20 11·1			1906	17 46·7		
1882	20 5·9	20 5·4		1907	17 41·6	17 41·4	
1883	19 59.8			1908	17 35·8		
1884	19 52·8						
			30·6				
1885	19 47·0						
1886	19 41·7						
1887	19 35·2	19 34·8					
1888	19 27·6						
1889	19 22·4						
			39·9				

All the observations from 1865 to 1891 inclusive were made at 9 a.m., and the rest at 4 p.m. The corrected readings are explained in the "Notes."

HORIZONTAL FORCE YEARLY MEANS.

C. G. S. 10^{-5}.

Year.	Corrected.	5 Year Means.	Differences.	Year.	Corrected.	5 Year Means.	Differences.
1865	16627			1890	17102		
1866	16638			1891	17095		
1867	16675	16658		1892	17100	17124	
1868	16662			1893	17177		
1869	16690			1894	17147		
			97				117
1870	16704			1895	17166		
1871	16740			1896	17224		
1872	16761	16755		1897	17253	17241	
1873	16760			1898	17271		
1874	16810			1899	17289		
			112				130
1875	16828			1900	17330		
1876	16840			1901	17361		
1877	16870	16867		1902	17371	17371	
1878	16892			1903	17382		
1879	16905			1904	17411		
			69				30
1880	16913			1905	17381		
1881	16912			1906	17391		
1882	16929	16936		1907	17400	17401	
1883	16955			1908	17412		
1884	16970						
			113				
1885	17017						
1886	17024						
1887	17042	17049					
1888	17083						
1889	17080						
			75				

Corrections applied as explained in the "Notes."

Diurnal Inequality of the Declination, Five Quiet Days of each Month,

The unit is

1890.

(Mean Declination

Hours	Mid't	1	2	3	4	5	6	7	8	9	10	11
Summer ...	-0·5	-0·6	-0·9	-1·3	-1·8	-2·6	-3·2	-3·6	-3·6	-2·5	-0·5	+2·1
Winter.....	-0·7	-0·6	-0·4	-0·3	-0·4	-0·5	-0·7	-0·9	-1·3	-1·4	-0·6	+1·2
Annual ...	-0 6	-0·6	-0·7	-0·8	-1·1	-1·6	-2·0	-2·3	-2·5	-2·0	-0·6	+1·7

1891.

(Mean Declination

Summer ...	-1·0	-0·8	-1·0	-1·8	-2·0	-2·8	-3·6	-4·3	-4·3	-3·2	-1·0	+2·2
Winter.....	-1·1	-0·8	-0·9	-0·7	-0·8	-0·9	-1·0	-1·3	-2·1	-2·0	-0·8	+1·1
Annual ...	-1·1	-0·8	-1·0	-1·3	-1·4	-1·9	-2·3	-2·8	-3·2	-2·6	-0·9	+1·7

1892.

(Mean Declination

Summer ...	-0·4	-0·6	-1·2	-1·5	-2·3	-3·6	-4·8	-5·4	-5·4	-3·4	-1·1	+2·5
Winter... ..	-1·4	-1·5	-1·4	-1·5	-1·5	-1·3	-1·2	-1·6	-2·0	-1·7	-0·5	+1·7
Annual ...	-0·9	-1·1	-1·3	-1·5	-1·9	-2·5	-3·0	-3·5	-3·7	-2·6	-0·8	+2·1

1893.

(Mean Declination

Summer ...	-0·7	-0·8	-0·8	-1·3	-2·0	-3·2	-4·7	-5·6	-5·8	-4·8	-2·2	+1·8
Winter... ..	-1·3	-1·0	-0·7	-0·9	-0·8	-1·4	-1·5	-2·0	-2·7	-2·8	-1·6	+1·0
Annual ...	-1·0	-0·9	-0·8	-1·1	-1·4	-2·3	-3·1	-3·8	-4·3	-3·8	-1·9	+1·4
Hours	Mid't	1	2	3	4	5	6	7	8	9	10	11

NOTE.—When the sign is + the magnet

" " − "

Deduced from the Hourly Means on the selected by the Astronomer Royal.

one minute of arc.

for the year = 19° 16′·2 W.) **1890.**

Noon	1	2	3	4	5	6	7	8	9	10	11	Midnight
+4·5	+5·3	+4·9	+3·0	+1·7	+0·8	+0·3	+0·1	+0·1	+0·1	−0·2	−0·3	−0·8
+2·8	+3·4	+2·9	+2·0	+0·8	+0·4	+0·2	0·0	−0·7	−1·1	−1·3	−1·1	−0·8
+3·7	+4·4	+3·9	+2·5	+1·3	+0·6	+0·3	+0·1	−0·3	−0·5	−0·8	−0·7	−0·8

for the year = 19° 3′·9 W.) **1891.**

+4·9	+6·1	+5·7	+4·4	+2·4	+1·0	+0·4	−0·2	−0·2	+0·1	−0·3	−0·3	−0·5
+2·9	+4·0	+3·5	+2·5	+1·3	+0·5	+0·2	−0·1	−0·2	−0·7	−1·3	−0·9	−1·3
+3·9	+5·1	+4·6	+3·5	+1·9	+0·8	+0·3	−0·2	−0·2	−0·3	−0·8	−0·6	−0·9

for the year = 18° 46′·5 W.) **1892.**

+6·1	+7·4	+6·8	+5·0	+2·8	+1·2	+0·2	+0·1	−0·3	−0·1	0·0	−0·4	−0·8
+4·2	+4·9	+4·5	+3·7	+2·4	+1·1	+0·6	−0·1	−0·5	−1·1	−1·6	−1·7	−1·5
+5·2	+6·2	+5·7	+4·4	+2·6	+1·2	+0·4	0·0	−0·4	−0·6	−0·8	−1·1	−1·2

for the year = 18° 44′·7 W.) **1893.**

+5·6	+7·5	+7·5	+5·9	+3·7	+1·8	+0·6	+0·2	0·0	0·0	0·0	−0·4	−0·7
+3·2	+4·6	+4·4	+3·4	+2·2	+1·2	+0·6	+0·4	−0·2	−0·8	−0·9	−1·2	−1·5
+4·4	+6·1	+6·0	+4·7	+3·0	+1·5	+0·6	+0·3	−0·1	−0·4	−0·5	−0·8	−1·1
Noon	1	2	3	4	5	6	7	8	9	10	11	Midnight

points to the West of its mean position.

,, ,, East ,, ,, ,,

Diurnal Inequality of the

The unit is

1894.

(Mean Declination

Hours	Mid't	1	2	3	4	5	6	7	8	9	10	11
Summer ...	-1·2	-1·5	-1·4	-1·6	-2·0	-2·9	-4·0	-5·1	-5·3	-4·1	-1·8	+1·6
Winter.....	-1·5	-1·1	-0·7	-0·8	-1·3	-1·6	-1·7	-1·9	-2·5	-2·6	-1·4	+0·8
Annual ...	-1·4	-1·3	-1·1	-1·2	-1·7	-2·3	-2·9	-3·5	-3·9	-3·4	-1·6	+1·2

1895.

(Mean Declination

Summer ...	-1·0	-1·1	-1·6	-1·8	-2·3	-3·3	-4·4	-5·2	-5·0	-3·6	-1·1	+2·0
Winter.....	-1·3	-1·0	-0·6	-0·7	-0·8	-0·9	-1·1	-1·3	-1·6	-1·7	-0·4	+1·4
Annual ...	-1·2	-1·1	-1·1	-1·3	-1·6	-2·1	-2·8	-3·3	-3·3	-2·7	-0·8	+1·7

1896.

(Mean Declination

Summer ...	-0·7	-0·8	-0·9	-1·3	-1·8	-2·7	-3·6	-4·4	-4·4	-3·4	-1·1	+1·4
Winter.....	-1·0	-1·1	-0·8	-0·8	-0·7	-0·7	-1·0	-1·2	-1·6	-1·7	-0·5	+1·3
Annual ...	-0·9	-1·0	-0·9	-1·1	-1·3	-1·7	-2·3	-2·8	-3·0	-2·6	-0·8	+1·4

MEAN VALUES FOR THE

Hours	Mid't	1	2	3	4	5	6	7	8	9	10	11
Summer ...	-0·8	-0·9	-1·1	-1·5	-2·0	-3·0	-4·0	-4·8	-4·8	-3·6	-1·3	+1·9
Winter.....	-1·2	-1·0	-0·8	-0·8	-0·9	-1·0	-1·2	-1·5	-2·0	-2·0	-0·8	+1·2
Annual ...	-1·0	-1·0	-1·0	-1·2	-1·5	-2·0	-2·6	-3·1	-3·4	-2·8	-1·1	+1·6

NOTE.—When the sign is + the magnet

" " − "

Declination—*Continued.*

one minute of arc.

for the year = 18° 43′·0 W.) **1894.**

Noon	1	2	3	4	5	6	7	8	9	10	11	Midnight
+5·0	+6·8	+6·6	+5·1	+3·4	+1·7	+0·8	+0·4	+0·3	+0·2	−0·1	−0·6	−1·3
+3·0	+4·3	+4·5	+3·4	+2·1	+1·3	+0·9	+0·7	+0·2	−0·3	−0·6	−1·2	−1·1
+4·0	+5·6	+5·6	+4·3	+2·8	+1·5	+0·9	+0·6	+0·3	−0·1	−0·4	−0·9	−1·2

for the year = 18° 35′·3 W.) **1895.**

+5·5	+6·8	+6·5	+4·8	+3·1	+1·4	+0·6	+0·3	0·0	−0·1	−0·1	−0·4	−0·9
+3·1	+3·9	+3·5	+2·5	+1·4	+0·6	+0·3	0·0	−0·5	−0·9	−1·1	−1·1	−1·0
+4·3	+5·4	+5·0	+3·7	+2·3	+1·0	+0·5	+0·2	−0·3	−0·5	−0·6	−0·8	−1·0

for the year = 18° 28′·5 W.) **1896.**

+4·3	+5·8	+5·7	+4·4	+2·9	+1·5	+0·8	+0·5	+0·2	−0·1	−0·3	−0·6	−0·6
+3·1	+3·9	+3·5	+2·5	+1·3	+0·5	+0·4	0·0	−0·5	−0·7	−1·0	−1·4	−1·6
+3·7	+4·9	+4·3	+3·5	+2·1	+1·0	+0·6	+0·3	−0·2	−0·4	−0·7	−1·0	−1·1

SEVEN YEARS, 1890—1896.

Noon	1	2	3	4	5	6	7	8	9	10	11	Midnight
+5·1	+6·5	+6·2	+4·7	+2·9	+1·3	+0·5	+0·2	0·0	0·0	−0·1	−0·4	−0·8
+3·2	+4·2	+3·8	+2·9	+1·6	+0·8	+0·5	+0·1	−0·3	−0·8	−1·1	−1·2	−1·3
+4·2	+5·4	+5·0	+3·8	+2·3	+1·1	+0·5	+0·2	−0·2	−0·4	−0·6	−0·8	−1·0

points to the West of its mean position.

,, ,, East ,, ,, ,,

Diurnal Inequality of the Horizontal Force, Five Quiet Days of each Month,

The unit is

1890.

(Mean Horizontal Force

Hours	Mid't	1	2	3	4	5	6	7	8	9	10	11
Summer ..	+1	+1	+1	+1	0	0	−1	−2	−4	−5	−5	−4
Winter.....	0	0	0	0	+1	+1	+1	+1	+1	−1	−2	−2
Annual ...	+1	+1	+1	+1	+1	+1	0	0	−1	−3	−3	−3

1891.

(Mean Horizontal Force

Summer ...	+2	+2	+2	+1	+1	0	−1	−2	−5	−7	−8	−7
Winter.....	+1	+1	0	+1	+1	+1	+2	+1	0	−2	−3	−3
Annual ...	+1	+1	+1	+1	+1	0	0	−1	−2	−4	−5	−5

1892.

(Mean Horizontal Force

Summer ...	+9	+7	+6	+5	+5	+4	−3	−8	−16	−27	−30	−31
Winter.....	+1	−2	0	+2	+1	+4	+4	+5	+1	−6	−17	−15
Annual ...	+5	+3	+3	+4	+3	+4	+1	−1	−7	−16	−23	−23

1893.

(Mean Horizontal Force

Summer ..	+8	+6	+6	+6	+6	+5	+2	−6	−15	−26	−34	−36
Winter.....	+4	+3	+3	+4	+5	+5	+7	+5	−1	−10	−17	−22
Annual ...	+6	+5	+5	+5	+6	+5	+5	0	−8	−18	−25	−29
Hours	Mid't	1	2	3	4	5	6	7	8	9	10	11

NOTE.—When the sign is + the

deduced from the Hourly Means on the selected by the Astronomer Royal.

10^{-5} *C.G.S.*

for the year = 0·17102.)

1890.

Noon	1	2	3	4	5	6	7	8	9	10	11	Midnight
−3	−1	+1	+1	+1	+2	+2	+3	+3	+3	+2	+2	+1
−2	−1	−1	+1	+1	+1	+1	+1	0	0	0	0	0
−2	−1	0	+1	+1	+1	+1	+2	+2	+2	+1	+1	+1

for the year = 0·17095.)

1891.

−6	−3	−1	+2	+3	+4	+5	+5	+4	+4	+3	+3	+3
−3	−2	0	+1	0	+1	+1	+2	+2	+2	+2	+1	+1
−5	−2	0	+1	+1	+2	+3	+3	+3	+3	+2	+2	+2

for the year = 0·17100.)

1892.

−22	−13	−4	+3	+6	+10	+15	+17	+17	+16	+15	+13	+12
−16	−12	−7	−1	+2	+2	+5	+7	+9	+7	+6	+8	+9
−19	−12	−5	+1	+4	+6	+10	+12	+13	+12	+11	+11	+11

for the year = 0·17177.)

1893.

−27	−19	−9	+3	+8	+14	+18	+19	+19	+18	+15	+13	+13
−21	−14	−9	−3	0	+4	+7	+8	+8	+9	+9	+8	+7
−24	−16	−9	0	+4	+9	+13	+14	+14	+14	+12	+11	+10
Noon	1	2	3	4	5	6	7	8	9	10	11	Midnight

reading is above the mean.

Diurnal Inequality of the

The unit is

1894.

(Mean Horizontal Force

Hours	Mid't	1	2	3	4	5	6	7	8	9	10	11
Summer ..	+9	+7	+6	+7	+5	+4	-1	-6	-16	-25	-31	-33
Winter.. ..	+1	0	+1	0	+3	+5	+6	+4	+1	-8	-15	-19
Annual ...	+5	+4	+4	+4	+4	+5	+3	-1	-7	-16	-23	-26

1895.

(Mean Horizontal Force

Summer ...	+7	+6	+4	+3	+2	0	-2	-8	-16	-26	-32	-31
Winter.....	+1	-1	+1	+1	+2	+4	+5	+5	+1	-7	-10	-16
Annual ...	+4	+3	+3	+2	+2	+2	+2	-1	-7	-16	-21	-23

1896.

(Mean Horizontal Force

Summer ...	+5	+3	+3	+2	+2	+1	-1	-6	-13	-22	-25	-25
Winter.....	+2	-1	-1	0	+2	+4	+5	+4	+2	-6	-11	-14
Annual ...	+4	+1	+1	+1	+2	+3	+2	-1	-5	-14	-18	-19

MEAN VALUES FOR THE

Hours	Mid't	1	2	3	4	5	6	7	8	9	10	11
Summer ...	+6	+5	+4	+4	+3	+2	-1	-5	-12	-20	-24	-24
Winter.....	+1	0	+1	+1	+2	+3	+4	+4	+1	-6	-11	-13
Annual ...	+4	+3	+3	+3	+3	+3	+2	-1	-5	-13	-17	-18

NOTE.—When the sign is + the

Horizontal Force—*Continued.*

10^{-5} *C.G.S.*

for the year = 0·17147.)

1894.

Noon	1	2	3	4	5	6	7	8	9	10	11	Midnight
−28	−18	−12	+1	+9	+15	+18	+20	+19	+17	+14	+12	+10
−19	−14	−8	−4	+1	+6	+8	+10	+9	+8	+8	+7	+6
−23	−16	−10	−1	+5	+11	+13	+15	+14	+13	+11	+10	+8

for the year = 0·17166.)

1895.

−23	−14	−3	+4	+8	+11	+18	+19	+18	+17	+15	+15	+12
−14	−10	−5	−2	−1	+3	+5	+6	+6	+7	+9	+6	+5
−18	−12	−4	+1	+4	+7	+12	+13	+12	+12	+12	+11	+9

for the year = 0·17224.)

1896.

−20	−12	−3	+5	+8	+11	+13	+16	+16	+14	+12	+11	+10
−13	−7	−4	−2	0	+1	+4	+7	+6	+6	+6	+5	+3
−16	−9	−3	+2	+4	+6	+9	+12	+11	+10	+9	+8	+7

SEVEN YEARS, 1890—1896.

Noon	1	2	3	4	5	6	7	8	9	10	11	Midnight
−18	−11	−4	+3	+6	+10	+13	+14	+14	+13	+11	+10	+9
−13	−9	−5	−1	0	+3	+4	+6	+6	+6	+6	+5	+4
−15	−10	−4	+1	+3	+6	+9	+10	+10	+9	+8	+8	+7

reading is above the mean.

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.

1908.	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	1908
D.													D.
1	s	s	g	s	m	s	s	s	c	s	s	s	1
2	s	c	g	s	m	s	c	s	s	s	s	s	2
3	s	m	m	s	m	g	c	m	s	m	s	s	3
4	s	m	g	s	m	s	s	s	g	m	c	g	4
5	m	g	s	m	m	s	s	s	g	m	c	m	5
6	s	g	m	m	s	s	m	m	s	m	s	s	6
7	m	m	s	m	s	s	s	m	m	s	g	s	7
8	g	s	g	s	s	s	s	g	m	s	g	s	8
9	g	s	m	s	c	s	s	s	g	c	m	c	9
10	s	s	s	c	g	s	s	s	s	c	m	c	10
11	m	m	m	s	m	s	s	m	vg	s	s	c	11
12	s	m	c	s	m	m	s	g	m	g	s	s	12
13	s	c	c	s	m	s	s	m	s	m	s	s	13
14	s	s	s	m	s	s	s	s	c	s	m	s	14
15	s	s	m	g	s	s	g	s	m	s	c	s	15
16	s	s	m	s	s	s	g	s	g	c	m	c	16
17	s	s	s	s	s	m	m	s	m	s	g	s	17
18	s	s	s	s	s	g	s	g	s	m	s	s	18
19	c	m	m	c	s	m	s	m	s	c	s	s	19
20	c	c	m	c	s	s	s	s	c	s	c	c	20
21	s	c	s	s	m	s	s	g	s	s	c	c	21
22	c	g	s	m	g	s	s	s	s	c	c	s	22
23	s	m	s	m	m	s	s	s	s	—	c	s	23
24	s	m	s	m	m	m	m	s	s	c	s	c	24
25	s	m	s	m	g	s	m	s	s	s	s	c	25
26	c	m	vg	m	m	m	s	s	s	s	s	m	26
27	m	s	g	m	g	m	s	s	m	s	s	s	27
28	m	s	g	m	g	s	s	s	vg	c	m	s	28
29	s	m	m	s	m	s	s	s	vg	s	s	s	29
30	s		m	s	m	s	s	s	m	m	c	c	30
31	s		m		m		s	s		m		s	31
TOTALS c	4	4	2	3	1	0	2	0	3	7	8	9	
TOTALS s	20	11	11	15	10	22	23	21	13	14	14	19	
TOTALS m	5	11	11	11	15	6	4	6	7	8	5	2	
TOTALS g	2	3	6	1	5	2	2	4	4	1	3	1	
TOTALS vg	0	0	1	0	0	0	0	0	3	0	0	0	

DATES AND DISC AREAS OF SOLAR DRAWINGS.

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

1908.	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	1908.
D.													D.
1	1·4	2·5	0·5	0·6	5·1		4·0	4·5	24·7	6·5			1
2	2·9		0·4		4·0		3·7	10·2	21·3	6·0	0·7	2·5	2
3	3·8	2·4				16·4	4·0	17·8		5·4	1·2		3
4	5·1	2·2	0·7	6·5	4·0	16·2	2·9				1·4		4
5	4·3		0·3	9·1	3·7	12·6				6·5			5
6				13·7		7·8		24·2		5·8			6
7				14·9	3·5		1·0	33·0		5·5			7
8				10·3		4·2		18·0	12·1		5·1		8
9	4·0				3·3		0·4				8·1	5·4	9
10	3·9				2·5	1·4	0·3	9·1		4·4	13·8		10
11			2·5		2·0		0·3		14·1	2·4		5·4	11
12	4·7		2·4		3·2	1·0	0·3	3·0	11·3	1·5	12·7	4·1	12
13	3·8	2·1	2·1	5·4	1·2		0·1	2·7		1·0	10·3		13
14		3·1		2·5	1·1	0·6		3·1			9·4	1·3	14
15		2·1		2·3			2·2	6·6		0·0			15
16		1·4		3·1				6·8					16
17				2·5		1·0		7·7	8·5			0·5	17
18	1·8		2·7			1·3							18
19	1·4		4·2	2·4					8·5		5·7		19
20	1·6			3·0	1·4	1·3							20
21	1·6		2·2		1·6	0·8	4·6	4·2		0·3		2·6	21
22				2·5		0·5		3·9	8·0	0·5			22
23		1·5	1·2	1·0	0·6						1·6		23
24	2·6	2·1		2·1	0·7	2·0				0·4			24
25	2·4					1·9			7·1	0·3		4·8	25
26						2·4		8·6				4·6	26
27		4·9	0·5	4·0	1·5	2·5	1·1	11·6	6·7				27
28		3·5	2·2		2·8	3·4	1·0			1·0			28
29	0·8	1·3		4·1	3·3	3·3	1·2	15·2	3·5	0·6	0·8		29
30			0·8		6·1	3·2			5·3	0·6	1·0		30
31			0·5		7·3		1·5	22·9		0·5			31
Daily Means	2·9	2·4	1·5	5·0	2·9	4·2	1·8	11·2	10·9	2·6	5·5	3·5	

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

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