STONYHURST COLLEGE OBSERVATORY.

RESULTS

OF

METEOROLOGICAL & MAGNETICAL OBSERVATIONS

WITH REPORT AND NOTES OF THE DIRECTOR,

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

1904.

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REPORT AND NOTES.

THE meteorological and magnetical continuous records have been carried on as usual, and the instruments have been in good working condition all through the year.

An arrangement has been made for an interchange of magnetograph curves of greater disturbances, with the Meteorological and Magnetical Observatory of Potsdam: and the quarterly report of magnetic calm days has been sent regularly to the Chief of the Magnetic Service, De Bilt, Holland.

The year, on the whole, has been an average year for barometric pressure and temperature. But the mean daily range of temperature is nearly 4° below the annual average; and generally the highest readings have been lower, and the lowest readings higher than usual throughout the year. The highest reading of the whole year was 78°·4 in August, and the lowest 21°·5 in December.

The rain fall was 7·3 inches below the annual average, showing a deficit of nearly 16 per cent. June and September were the driest months, and August and October the wettest. On

three days the rainfall exceeded one inch: the amounts were on Oct. 16th, 1·48 in., on November 7th and 8th, 1·37 and 1·70 in. July was also a relatively dry month with only a little above the half of its average rain.

There have been no very violent wind storms during the year. On three days the velocity just reached 50 miles an hour: on January 29th at 11 p.m., on April 10th at noon, and on December 30th at 9 a.m.

The prismatic camera, employed for the spectra of the stars, has been removed from the Perry memorial telescope, and mounted on the polar axis of the "Cross" 7-inch reflector, of which mention was made in last year's report. The driving clock, which was built for the greater telescope of the Redscar Observatory, has been successfully geared to the smaller one, and runs it very smoothly. The little Observatory, as noticed last year, is a strongly built wooden revolving shed Its chief excellence consists in its double shutter, which is also both door-way and window, and when fully open leaves the telescope objective in the free open air, with a range of motion through nearly 180°, and at the same time sheltered from the wind The shutters are "lean to" at the angle of the latitude. They are carried on small grooved wheels running on steel rails. The shed is 9 feet high, octagonal at the base, and cut down from the roof to the "lean" of the shutters. The whole rests on 5 broad flanged wheels 6½ inches diameter, and running on a circular rail of 10 feet in diameter laid on a concrete bed.

With the instrument in its new gearing, the first photographs were taken on June 26th; and during the rest of the year 100 exposures were made. Many of these were experiments required by the new condition of things. But two series of spectrographs, on β Aurigae, and γ Cassiopeiae have been commenced; and these promise well, but progress has been slow in the almost continuous night-cloudiness.

The Perry memorial telescope is now more free in the early evenings for educational purposes; and on favourable nights both instruments are employed on the same star for the simultaneous spectrographs mentioned in last year's Report.

The solar surface has been observed on 214 days: recorded by 211 drawings of spots and faculae and three blank sheets.

The mean disc area of spots, in units of 1/5000 of the visible surface, appears as 2·54, to compare with the mean range of the magnetic declination 11·9. And the following table shows the relation in previous years, covering the epoch of minimum solar disturbance.

Year ...	1898	'99	1900	'01	'02	'03	'04
Spot area	2·5	0·74	0·55	0·29	0·33	1·93	2·54
Declination range	14·7	12·9	9·7	9·1	9·0	11·8	11·9

Spectrographs of the larger spots have been taken with the Rowland-grating in the green and violet regions; and experiments have been carried on during the year for the photography of spot spectra in the red region.

PUBLICATIONS

"Spectroscopic Study of the Variations of β Lyrae," Monthly Notices, R.A.S. January, 1904.

"Spectroscopic Studies of Astrophysical Problems," Proceedings Royal Institution, 1904.

"Variation in Latitude of Greater Sun-Spot disturbances 1881-1903." Monthly Notices, June, 1904.

"The Spectra of Sun-Spots in the Red and Yellow regions of the Spectrum." Astrophysical Journal, November, 1904.

"Tenth Report of the Section for the Observations of the Sun." Memoris B.A.A., vol. xii., part ii.

WALTER SIDGREAVES, S.J.

Stonyhurst Observatory.

Lat. 53° 50′ 40″N. Long. 9m. 52s. 68, W. Height of the Barometer above the sea 381 ft.

METEOROLOGICAL REPORT.

JANUARY, 1904.

Results of Observations taken during the Month		Mean for the last 57 years
Mean Reading of the Barometer ....inches	29·453	29·458
Highest ,, on the 22nd ,,	30·338	30·280
Lowest ,, on the 14th ,,	28·352	28·597
Range of Barometer Readings..... ,,	1·986	1·683
Highest Reading of a Max. Therm. on the 27th	50·5	51·4
Lowest Reading of a Min. Therm. on the 22nd	27·7	20·9
Range of Thermometer Readings.....	22·8	30.5
Mean of all the Highest Readings.....	42·2	42·3
Mean of all the Lowest Readings	35·7	32·6
Mean Daily Range.....	6·5	9·7
Deduced Monthly Mean (from Mean of Max. and Min.)	39·0	37·2
Mean Temperature from Dry Bulb	38·5	37·3
Adopted Mean Temperature	38·8	37·3
Mean Temperature of Evaporation	37·4	36·1
Mean Temperature of Dew Point	35·6	33·9
Mean elastic force of Vapour .....inches	0·208	0·197
Mean weight of Vapour in a cub.ft. of air grains	2·4	2·4
Mean additional weight required for saturation,,	0·5	0 4
Mean degree of Humidity (saturation 1·00)..	0·89	0·79
Mean weight of a cubic foot of air ....grains	547·5	549·7
Fall of Rain.....inches	3·948	4.144
Number of days on which rain fell	22	20·7

JANUARY, 1904.

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing wind was	3	1	3	3	6	6	8	1
Mean Velocity in miles per hour	5·7	6·7	8·6	17·4	14·4	12·2	10·6	13 6
Total No. of miles for each Direction	411	161	622	1250	2077	1757	2036	326

The total number of miles registered during the month was 8680.

The max. Velocity of the wind was 50 miles per hour, on the 29th, at 11 p.m. Dir. S.S.W.

Mean amount Cloud (an overcast sky being indicated by 10·0) 8 1

In the Month of January the highest reading of the Barometer during 57 years, was on the 9th. in 1896, and was ...		30·597
The Lowest ,,	26th, 1884 ,,	27·803
The highest Temperature	7th, 1887 ,,	59·9
The lowest ,,	15th, 1881 ,,	4·6
The highest adopted mean temperature of the month,	1898	43·7
The lowest ,, ,,	1881	29·2
Greatest fall of rain for the month in	1852	8·147
Least ,, ,,	1881	0·472
Greatest number of days on which rain fell	1872	31
Least ,, ,,	1879	8

TABLE OF DIFFERENCES.

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

Mean barometric pressure	—	0·005 inches
Monthly range ,, ...	+	·303 ,,
Mean of highest temperatures	—	0·1 degrees
Mean of lowest ,, ...	+	3·1 ,,
Mean daily range ,, ...	—	3·2 ,,
Adopted mean temperature	—	1·5 ,,
Total rainfall	—	0·196 inches

Ground frost on 1st—4th, 6th, 8th, 9th, 11th, 15—17th, 21st. 22nd, 24th, 25th. 29th—31st. Snow on 15th. Hail on 10th. and, 15th. Heavy rain on 12th. Gales of wind on 7th, 10th, 14th, 15th 29th and 30th. Fog on 9th, 18th, 19th, 20th and 24th.

FEBRUARY, 1904.

Results of Observations taken during the Month.		Mean for the last 57 years.
Mean Reading of the Barometer.....inches	29·127	29·505
Highest ,, on the 28th ,,	29·943	30·077
Lowest ,, on the 9th ,	28·314	28·680
Range of Barometer Readings.....	1·629	1·397
Highest Reading of a Max Therm. on the 21st	49·9	52·2
Lowest Reading of a Min. Therm. on the 29th	21·7	21·8
Range of Thermometer Readings	28·2	30 4
Mean of all the Highest Readings	40·2	44·1
Mean of all the Lowest Readings	33·3	33·3
Mean Daily Range	6·9	10·8
Deduced Monthly Mean (from Mean of Max. and Min.)	36·8	38·1
Mean Temperature from Dry Bulb	36·2	38·2
Adopted Mean Temperature	36·5	38·1
Mean Temperature of Evaporation	34·7	36·7
Mean Temperature of Dew Point	32·1	34·4
Mean elastic force of Vapour.....inches	0·183	0·192
Mean weight of Vapour in a cub.ft.of air grains	2·1	2·4
Mean additional weight required for saturation,,	0·5	0·4
Mean degree of Humidity (saturation 1·00)..	0·84	0·87
Mean weight of a cubic foot of air .. grains	543·9	549·0
Fall of Rain ..... inches	3·978	3·466
Number of Days on which rain fell	18	18·0

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	1	4	5	3	4	5	6	1
Mean Velocity in miles per hour	7·4	4·1	9·4	7·1	10·5	12·2	13·2	7·3
Total No. of miles for each Direction	178	398	1129	512	1005	1466	1903	175

The total No. of miles registered during the month was 6766.
The max. Velocity of the wind was 47 miles per hour, on the 12th at 4 p.m. Dir. S.

FEBRUARY, 1904.

Mean amount of Cloud (an overcast sky being indicated by 10·0)			7·8
In the month of February, the highest reading of the Barometer during 57 years, was on the 1st, in 1902, and was			....30·476
The lowest	,,	19th, 1900	,, ...27·870
The highest Temperature		8th, 1877	,, ... 58·3
The lowest	,,	11th, 1902	,, ... 5·0
The highest adopted mean temperature of the month,		1869	.. 44·0
The lowest	,,	,,	1855 .... 28·6
Greatest fall of rain for the month in		1848	8·882in
Least ,,	,,	,,	1858 0·306in
Greatest number of days on which rain fell		1868	28
Least ,,	,,	,,	1858 and '95 6

TABLE OF DIFFERENCES.

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

Mean barometric pressure	.. ..	—	0·378 inches
Monthly range ,,	.. ..	+	0·232 ,,
Mean of highest temperatures	.. ..	—	3·9 degrees
Mean of lowest ,,	.. ..		0·0 ,,
Mean daily range ,,	.. ..	—	3·9 ,,
Adopted mean temperature	.. ..	—	1·6 ,,
Total rainfall ,,	.. ..	+	0·512 inches

Ground frost on 1st, 2nd, 4th—7th, 9th—12th, 14th—19th, 22nd, 25th—29th. Snow on 8th, 14th, 15th, 16th, 17th, 25th, 26th, 27th and 29th. Hail on 8th, 15th and 16th. Heavy rain on 3rd and 19th. Gales of wind on 12th, 13th, 20th and 22nd. Fog on 5th and 10th. Lunar Halo on 26th, 27th and 29th.

MARCH, 1904.

Results of Observations taken during the Month.		Mean for the last 57 years
Mean Reading of the Barometer .... inches	29·583	29·462
Highest ,, on the 23rd ,,	30·040	30 065
Lowest ,, on the 29th ,,	28·762	28·646
Range of Barometer Readings ..... ,,	1·278	1·419
Highest Reading of a Max. Therm. on the 20th	53·7	57·1
Lowest Reading of a Min. Therm. on the 1st	25·7	22·6
Range of Thermometer Readings	28·0	34·5
Mean of all the Highest Readings	43·3	47.3
Mean of all the Lowest Readings	33·7	34·0
Mean Daily Range	9·6	13·3
Deduced Monthly Mean (from Mean of Max. and Min.)	38·5	39·8
Mean Temperature from Dry Bulb	37·7	40·0
Adopted Mean Temperature	38·1	39·9
Mean Temperature of Evaporation	36·2	37·9
Mean Temperature of Dew Point	33·6	35·4
Mean Elastic force of Vapour .....inches	0·193	0·206
Mean weight of Vapour in a cubic ft. of air grains	2·2	2·4
Mean additional weight required for saturation,,	0·5	0·5
Mean degree of Humidity (saturation 1·00)..	0·84	0·84
Mean weight of a cubic foot of air .... grains	550·9	546·4
Fall of Rain .....inches	2·740	3·296
Number of days on which Rain fell.....	18	18·1

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing wind was	2	9	4	0	4	7	4	1
Mean Velocity in miles per hour	7·6	9·1	8·0	0	10·6	8·0	11·6	3·6
Total No. of Miles for each Direction	367	1967	765	0	1014	1337	1114	86

The total number of miles registered during the month was 6650.
The max. Velocity of the wind was 38 miles per hour, on the 28th at 10 p.m. Dir. S.S.E.

MARCH, 1904.

Mean amount of Cloud (an overcast sky being indicated by 10·0) 7·6

In the month of March, the highest reading of the Barometer during 57 years, was on the 6th in 1852, and was ....30·401

The lowest ,, 3rd, 1897 ,, ..28·157

The highest Temperature ,, 25th, 1871 ,, .. 68·0

The lowest ,, ,, 6th, 1886 ,, .. 11·5

The highest adopted mean temperature of the month, 1871.. 44·0

The lowest ,, ,, 1855 and 1892.. 35·6

Greatest fall of rain during the month in .. 1896...7·079 in

Least ,, ,, .. 1852...0·352 in

Greatest number of days on which rain fell, 1859, 61, 68 & 72 28

Least ,, ,, .. 1852.. 3

TABLE OF DIFFERENCES.

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

Mean barometric pressure ..	+	0·121 inches
Monthly range ,, ...	—	0·141 ,,
Mean of highest temperatures ..	—	4·0 degrees
Mean of lowest ,, ...	—	0·3 ,,
Mean daily range ,, ...	—	3·7 ,,
Adopted mean temperature	—	1·8 ,,
Total rainfall	—	0·556 inches

Ground frost on 1st, 2nd, 4th—7th, 9th—18th, 21st—31st. Hoar Frost on 11th. Snow on 1st, 4th, 5th, 6th, 14th, 16th, 17th, 25th, 29th and 30th. Hail on 6th, 17th, 25th and 29th. Heavy rain on 20th. Gale of wind on 28th. Fog on 11th and 31st. Lightning on 29th.

APRIL, 1904.

Result of Observations taken during the Month.		Mean for the last 57 years.
Mean Reading of the Barometer	inches 29·477	29·484
Highest ,, on the 19th .,	29·916	29·966
Lowest ,, on the 13th ,,	28·869	28·817
Range of Barometer Readings ..... ,,	1·047	1·149
Highest Reading of a Max. Therm. on 18th & 19th	59·2	65·7
Lowest Reading of a Min. Therm on 12th & 26th	36·5	28·1
Range of Thermometer Readings	22·7	37·6
Mean of all the Highest Readings	51·3	55·6
Mean of all the Lowest Readings	41·0	37·7
Mean Daily Range	10·3	17·9
Deduced Monthly Mean (from Mean of Max. and Min)	46·2	44·5
Mean Temperature from Dry Bulb.....	45·6	44·7
Adopted Mean Temperature	45·9	44·6
Mean Temperature of Evaporation	43·3	41·7
Mean Temperature of Dew Point	40·3	38·2
Mean elastic force of Vapour ..... inches	0·252	0·235
Mean weight of Vapour in a cub. ft. of air grains	3·0	2·7
Mean additional weight required for saturation,,	0·5	0·7
Mean degree of Humidity (saturation 1·00) ...	0·82	0·79
Mean weight of a cubic foot of air ... grains..	540·0	542·0
Fall of Rain..... ..... inches	3·873	2·444
Number of days on which Rain fell	22	15·9

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	3	0	1	2	3	5	16	0
Mean Velocity in miles per hour	7·7	0	8·4	11·7	10·0	18·2	17·7	0
Total No. of miles for each Direction	554	0	201	563	721	2180	6797	0

The total number of miles registered during the month was 11016
The max. Velocity of the wind was 50 miles per hour, on the 10th at Noon. Dir. W. by S.

APRIL, 1904.

Mean amount of Cloud (an overcast sky being indicated by 10·0)			8·4
In the month of April, the highest reading of the Barometer during 57 years, was on the	17th,	in 1887, and was	30·251
The lowest ,,	20th, 1868	,,	28·358
The highest Temperature	14th, 1852	,,	74·1
The lowest ,,	13th, 1892	,,	20·8
The highest adopted mean temperature of the month,		1865 ...	48·5
The lowest ,,	,,	1879 ...	40·7
Greatest fall of rain during the month in		1867	5·672 in
Least ,,	,,	1852	0·478 in
Greatest number of days on which rain fell		1867	26
Least ,,	,,	1852	3

TABLE OF DIFFERENCES.

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

Mean barometric pressure	—	0·007	inches
Monthly range ,, ...	—	0·102	,,
Mean of highest temperature ...	—	4·3	degrees
Mean of lowest ,, ...	+	3·3	,,
Mean daily range ,, ...	—	7·6	,,
Adopted mean temperature	+	1·3	,,
Total rainfall	+	1·429	inches

Ground frost on 11th, 12th, 14th, 16th, 18th and 20th. Snow on 3rd and 9th. Hail on 1st, 3rd, 7th, 9th and 26th. Heavy rain on 28th. Gales of wind on 1st, 3rd, 6th, 7th and 10th. Lightning on 7th. Lunar Halo on 21st and 23rd.

MAY, 1904.

Results of Observations taken during the Month.		Mean for the last 57 years.
Mean Reading of the Barometer.....inches	29·521	29·521
Highest ,, on the 29th ,.	29·797	29·962
Lowest ,, on the 2nd ,,	29·033	28·938
Range of Barometer Readings..... ,,	0·764	1·024
Highest Reading of Max. Therm. on the 26th	67·9	71·8
Lowest Reading of a Min. Therm. on the 8th	35·5	31·5
Range of Thermometer Readings	32·4	40·3
Mean of all the Highest Readings	56·0	59·7
Mean of all the Lowest Readings	43·9	42·0
Mean Daily Range.....	12·1	17·7
Deduced Monthly Mean (from Mean of Max. and Min.).....	50·0	49·1
Mean Temperature from Dry Bulb.....	49·4	49·6
Adopted Mean Temperature	49·7	49·4
Mean Temperature of Evaporation	47·0	46·1
Mean Temperature of Dew Point	44·1	42·4
Mean elastic force of Vapour .....inches	0·290	0·275
Mean weight of Vapour in a cub. ft. of air grains	3·3	3·1
Mean additional weight required for saturation,,	0·7	0·9
Mean degree of Humidity (saturation 1·00) ..	0·82	0·76
Mean weight of a cubic foot of air....grains	536·5	537·2
Fall of rain .....inches	2·995	2·624
Number of days on which rain fell.....	18	15·5

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing wind was	4	4	2	1	5	3	12	0
Mean Velocity in miles per hour	7·7	7·8	6·4	7·5	11·6	5·3	12·8	0
Total No. of miles for each Direction	740	752	308	180	1392	382	3695	0

The total No. of miles registered during the month was 7449.
The max. Velocity of the wind was 38 miles per hour, on the 2nd at 5 p.m. Dir. West.

MAY, 1904.

Mean amount of Cloud (an overcast sky being indicated by 10·0)		8·1
In the month of May, the highest reading of the Barometer during 57 years, was on the 2nd in 1895, and was		30·217
The lowest ,, 28th, 1877 ,,		28·559
The highest Temperature 19th, 1864 ,,		82·5
The lowest ,, 4th, 1855 ,,		23·5
The highest adopted mean temperature of the month,	1848	55·1
The lowest ,, ,,	1855	45·0
Greatest fall of rain during the month in	1986	6·224 in
Least ,, ,,	1859	0·249 in
Greatest number of days on which rain fell	1872	28
Least ,, ,,	1853 and 1896	5

TABLE OF DIFFERENCES.

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

Mean barometric pressure		0·000 inches
Monthly range ,, ...	—	0·260 ,,
Mean of highest temperatures ..	—	3·7 degrees
Mean of lowest ,, ...	+	1·9 ,,
Mean daily range ,, ...	—	5·6 ,,
Adopted Mean temperature	+	0·3 ,,
Total rainfall	+	0·371 inches

Ground frost on 20th. Snow on 8th. Hail on 18th. Heavy rain on 31st. Gales of Wind on 2nd and 18th. Thunder on 16th.

JUNE, 1904.

Results of Observations taken during the Month.		Mean for the last 57 years.
Mean Reading of the Barometer.....inches	29·645	29·551
Highest ,, on the 5th ,,	29·953	29·907
Lowest ,, on the 25th ,,	29 057	29·037
Range of Barometer Readings ..... ,,	0·896	0·870
Highest Reading of a Max. Therm. on the 5th	72·4	77·5
Lowest Reading of a Min. Therm. on the 3rd	40·9	38·8
Range of Thermometer Readings	31·5	38·7
Mean of all the Highest Readings.....	62·1	65·9
Mean of all the Lowest Readings	48·4	47·9
Mean Daily Range.....	13·7	18·0
Deduced Monthly Mean (from Mean of Max. and Min.)	55·3	55·2
Mean Temperature from Dry Bulb.....	54·5	55·3
Adopted Mean Temperature	54·9	55·2
Mean Temperature of Evaporation	51·4	52·1
Mean Temperature of Dew Point	48·1	48·6
Mean elastic force of Vapour ..... inches	0·345	0·352
Mean weight of Vapour in a cub.ft. of air grains	3·8	3·9
Mean additional weight required for saturation,,	1·1	1·0
Mean degree of Humidity (saturation 1·00..)	0·77	0·78
Mean weight of a cubic foot of air .... grains	533·0	531·0
Fall of rain..... inches	1·398	3·406
Number of days on which Rain fell	11	16·2

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	2	5	5	0	4	3	11	0
Mean Velocity in miles per hour	7·6	9·3	8·8	0	11·1	16·8	10·4	0
Total No. of miles for each Direction	365	1114	1053	0	1065	1206	2746	0

The total number of miles registered during the month was 7549
The max. Velocity of the wind was 32 miles per hour, on the 1st, at 7 a.m. Dir. N.W.

JUNE, 1904.

Mean amount of Cloud (an overcast sky being indicated by 10·0)		6.9
In the month of June, the highest reading of the Barometer during 57 years, was on the 15th, in 1874, and was		30·219
The lowest ,, 23rd, 1893 ,, ...		28·813
The highest Temperature 18th, 1893 ,, ...		88·7
The lowest ,, 9th, 1902 ,, ...		32·0
The highest adopted mean temperature of the month,	1858..	59·0
The lowest ,, ,,	1856 and 1860..	52·2
Greatest fall of rain during the month in	1848	7·125 in
Least ,, ,,	1887	0·525in
Greatest number of days on which rain fell	1862	27
Least ,, ,,	1887	4

TABLE OF DIFFERENCES.

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

Mean barometric pressure ..	+	0·094	inches
Monthly range ,, ..	+	0·026	,,
Mean of highest temperatures ..	—	3·8	degrees
Mean of lowest ,, ..	+	0·5	,,
Mean daily range ,, ..	—	4·3	,,
Adopted mean temperature ..	—	0·3	,,
Total rainfall ..	—	2·008	inches

Thunder on 24th. Lightning on 24th.

JULY, 1904.

Results of Observations taken during the Month.		Mean for the last 57 years.
Mean Reading of the Barometer ....inches	29·615	29·517
Highest ,, on the 18th ,,	29·947	29·890
Lowest ,, on the 1st ,,	29·324	29·010
Range of Barometer Readings ..... ,,	0·623	0·880
Highest Reading of a Max.Therm. on the 11th	77·9	78·9
Lowest Reading of a Min. Therm. on the 8th	44·8	42·2
Range of Thermometer Readings	33·1	36·7
Mean of all the Highest Readings	67·4	68·0
Mean of all the Lowest Readings	53·9	50·8
Mean Daily Range	13·5	17·2
Deduced Monthly Mean (from Mean of Max. and Min.)	60·7	57·9
Mean Temperature from Dry Bulb.....	60·3	58·0
Adopted Mean Temperature	60·5	57·9
Mean Temperature of Evaporation	56·4	54·8
Mean Temperature of Dew Point	52·9	52·1
Mean elastic force of Vapour..... inches	0·400	0·389
Mean weight of Vapour in a cub.ft.of air grains	4·5	4·5
Mean additional weight required for saturation,,	1·4	1·1
Mean degree of Humidity (saturation 1·00)..	0 76	0·81
Mean weight of a cubic foot of air ....grains	526·4	527·4
Fall of Rain..... inches	2·143	4·024
Number of days on which Rain fell	14	17·7

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	3	3	5	0	4	3	13	0
Mean Velocity in miles per hour	4 7	7·8	9·3	0	9·0	8 1	8 5	0
Total No. of miles for each Direction	3 41	560	1112	0	865	586	2666	0

The total number of miles registered during the month was 6130.
The max Velocity of the wind was 25 miles per hour, on the 25th at Midnight. Dir. E N.E.

JULY, 1904.

Mean amount of Cloud an overcast sky being indicated by 10·0			7·7
In the month of July, the highest reading of the Barometer during 57 years, was on the 24th, in 1868, and was.....			30·112
The lowest	,,	15th, 1877 ,, ...	28·564
The highest Temperature		20th, 1901 ,, ...	89·0
The lowest	,,	1st, 1857 ,, ...	36·0
The highest adopted mean temperature of the month,			1901 63·2
The lowest	,,	,,	1888 54·5
Greatest fall of rain during the month in ...			1888 8·602 in
Least	,,	,, ...	1868 0·669 in
Greatest number of days on which rain fell ...			1861 30
Least	,,	,, ...	1868 9

TABLE OF DIFFERENCES.

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

Mean barometric pressure ...	+	0·098	inches
Monthly Range ,, ...	—	0·257	,,
Mean of highest temperatures ...	—	0·6	degrees
Mean of lowest ,, ...	+	3·1	,,
Mean daily range ,, ...	—	3·7	,,
Adopted mean temperature ...	+	2·6	,,
Total rainfall	—	1·881	inches

Heavy rain on 4th. Thunder on 2nd, 6th, 11th, 12th, 13th, 23rd and 24th. Lightning on 12th, 13th and 24th.

AUGUST, 1904.

Results of Observations taken during the Month.		Mean for the last 57 years.
Mean Reading of the Barometer.....inches	29·578	29.494
Highest ,, on the 8th ,,	29·825	29.887
Lowest ,, on the 15th ,,	29.060	28·947
Range of Barometer Readings ..... ,,	0·765	0·940
Highest Reading of a Max. Therm. on the 3rd	78·4	77·1
Lowest Reading of a Min. Therm. on the 21st	42·1	41·4
Range of Thermometer Readings	36·3	35·7
Mean of all the Highest Readings	63·3	67·1
Mean of all the Lowest Readings	51·4	50·4
Mean Daily Range	11·9	16·7
Deduced Monthly Mean (from Mean of Max. and Min)	57·4	57·2
Mean Temperature from Dry Bulb	57·5	57·6
Adopted Mean Temperature	57·5	57·4
Mean Temperature of Evaporation	53·9	54·5
Mean Temperature of Dew Point	50·6	51·7
Mean elastic force of Vapour .....inches	0·369	0·386
Mean weight of Vapour in a cub.ft.of air grains	4·1	4·3
Mean additional weight required for saturation,,	1·2	0·9
Mean degree of Humidity (saturation 1 00) ...	78	0·82
Mean weight of a cubic foot of air .. grains	529·2	527·5
Fall of Rain ..... inches	5·253	5·084
Number of days on which Rain fell	22	19·9

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing wind was	3	2	0	0	5	2	19	0
Mean Velocity in miles per hour	4·2	6·1	0	0	8·0	5·7	9·7	0
Total No. of Miles for each Direction	303	291	0	0	963	275	4427	0

The total number of miles registered during the month was 6259.
The max. Velocity of the wind was 38 miles per hour, on the 6th, at 6 a.m. Dir. W.S.W.

AUGUST, 1904.

Mean amount of Cloud (an overcast sky being indicated by 10·0)			7·7
In the month of August. the highest reading of the Barometer during 57 years, was on the 21st, in 1874, and was		.....	30·114
The lowest ,,	15th, 1903	,, ...	28·492
The highest Temperature	2nd, 1868	,, ...	88·0
The lowest ,,	13th, 1887	,, ...	33·4
The highest adopted mean temperature of the month,		1899	61·7
The lowest ,,	,,	1848	52·5
Greatest fall of rain during the month in		1891	9·869 in
Least ,,	,,	1871	2·085 in
Greatest number of days on which rain fell		1860	28
Least ,,	,,	1880	6

TABLE OF DIFFERENCES.

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

Mean barometric pressure	+	0·084	inches
Monthly range ,, ...	—	0·175	,,
Mean of highest temperatures ..	—	3·8	degrees
Mean of lowest ,, ...	+	1·0	,,
Mean daily range ,, ...	—	4·8	,,
Adopted mean temperature	+	0·1	,,
Total rainfall	+	0·169	inches

Heavy rain on 13th, 14th, 17th, and 23rd. Gales of Wind on 6th and 15th. Thunder on 4th, 5th, 17th, 23rd and 30th. Lightning on 3rd, 4th, 14th, 17th, and 30th. Lunar Halo on 23rd.

SEPTEMBER, 1904.

Results of Observations taken during the Month.		Mean for the last 57 years.
Mean Reading of the Barometer.....inches	29·663	29·526
Highest ,, on the 18th ,,	29·925	30·025
Lowest ,, on the 6th ,,	29·262	28·860
Range of Barometer Readings ..... ,,	0·663	1·165
Highest Reading of a Max. Therm on the 18th	67·5	72·5
Lowest Reading of a Min. Therm.on the 11th	40·9	36·4
Range of Thermometer Readings	26·6	36·1
Mean of all the Highest Readings	60·6	62·5
Mean of all the Lowest Readings	48·3	47·0
Mean Daily Range	12·3	15·5
Deduced Monthly Mean (from Mean of Max. and Min)	54·5	53·6
Mean Temperature from Dry Bulb.....	54·2	54·2
Adopted Mean Temperature	54·4	53·9
Mean Temperature of Evaporation	50·6	51·1
Mean Temperature of Dew Point	46·9	48·3
Mean elastic force of Vapour .....inches	0·321	0·339
Mean weight of Vapour in a cub.ft.of air grains	3·6	4·0
Mean additional weight required for saturation,,	0·9	0·8
Mean degree of Humidity (saturation 1·00..)	0·76	0·81
Mean weight of cubic foot of air ....grains	534·1	532·3
Fall of Rain .....inches	1·280	4·480
Number of days on which Rain fell	12	18·6

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	4	2	5	4	6	0	9	0
Mean Velocity in miles per hour	5·7	8·0	9·6	7·3	10·8	0	8·9	0
Total No. of miles for each Direction.	543	384	1154	697	1556	0	1932	0

The total number of miles registered during the month was 6266.
The max. Velocity of the wind was 28 miles per hour on the 9th· Dir. W. by S.

SEPTEMBER, 1904.

Mean amount of Cloud (an overcast sky being indicated by 10·0)			7·0
In the month of September, the highest reading of the Barometer during 57 years, was on the 15th, in 1851, and was			30·274
The lowest	,,	25th, 1896	,, ..28·314
The highest Temperature		6th, 1868	,, ... 85·0
The lowest	,,	25th, 1885, and 30th, 1888	... 29·8
The highest adopted mean temperature of the month,			1865 ... 59·1
The lowest	,,	,, ..	1863 ... 50·9
Greatest fall of rain during the month in		..	1869 9·539in
Least	,,	,, ..	1894 0·801in
Greatest number of days on which rain fell		..	1866 30
Least	,,	,,	1851 and 1894 6

TABLE OF DIFFERENCES.

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

Mean barometric pressure	.. ..	+	0·137 inches
Monthly range	.. ..	—	0·502 ,,
Mean of highest temperatures	.. ..	—	1·9 degrees
Mean of lowest ,,	.. ..	+	1·3 ,,
Mean daily range ,,	.. ..	—	3·2 ,,
Adopted mean temperature	.. ..	+	0·5 ,,
Total rainfall ,,	.. ..	—	3·200 inches

Fog on 29th. Thunder on 6th.

OCTOBER, 1904.

Results of Observations taken during the Month.		Mean for the last 57 years
Mean Reading of the Barometer ....inches	29·698	29 433
Highest ,, on the 13th ,,	30·122	30·022
Lowest ,, on the 6th ,,	28·852	28·655
Range of Barometer Readings ..... ,,	1·270	1·367
Highest Reading of a Max. Ther. on the 19th	58·6	64·2
Lowest Reading of a Min. Therm. on the 13th	33·5	29 1
Range of Thermometer Readings	25·1	35·1
Mean of all the Highest Readings	53·4	54·6
Mean of all the Lowest Readings	43·8	41·6
Mean Daily Range.....	9·6	13·0
Deduced Monthly Mean (from Mean of Max and Min.)	48·6	47·2
Mean Temperature from Dry Bulb	48·2	47·7
Adopted Mean Temperature	48·4	47·5
Mean Temperature of Evaporation	46·7	45·3
Mean Temperature of Dew Point	44·9	42·8
Mean elastic force of Vapour .....inches	0·298	0·277
Mean weight of Vapour in a cub.ft.of air grains	3·4	3·2
Mean additional weight required for saturation ,,	0·5	0·6
Mean degree of Humidity (saturation 1·00) ..	0·88	0·84
Mean weight of a cubic foot of air ....grains	541·1	537·6
Fall of Rain .....inches	3·725	5·087
Number of days on which Rain fell	13	21·1

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	1	2	2	2	5	4	13	2
Mean Velocity in miles per hour	5·6	9·7	6 8	5·7	5 3	6·1	10·0	10·6
Total No. of miles for each Direction	135	466	328	275	637	582	3135	510

The total number of miles registered during the month was 6068.
The max. Velocity of the wind was 48 miles per hour, on the 6th, at 3 a.m. Dir. W.

OCTOBER, 1904.

Mean amount of Cloud an overcast sky being indicated by 10·0			7·4
In the month of October the highest reading of the Barometer during 57 years, was on the	5th, in 1884, and was ..		30·306
The lowest ,,	19th, 1862	,, ...	28·139
The highest Temperature	9th, 1869	,, ...	72·8
The lowest ,,	28th, 1895	,, ...	17·8
The highest adopted mean temperature of the month,		1861 &'76	51·6
The lowest ,,	,,	1895 ..	42·8
Greatest fall of rain during the month in	..	1870	13·437 in
Least ,,	,, ..	1856	1·328 in
Greatest number of days on which rain fell	..	1873	31
Least ,,	,,	1881-'87-'97-'99	12

TABLE OF DIFFERENCES.

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

Mean barometric pressure	+	0·265 inches
Monthly range ,, ...	+	0·097 ,,
Mean of highest temperatures ...	—	1·2 degrees
Mean of lowest ,, ...	+	2·2 ,,
Mean daily range ,, ...	—	3·4 ,,
Adopted mean temperature	+	0·9 ,,
Total rainfall	—	1·362 inches

Ground Frost on 3rd, 9th, 13th—15th. Heavy rain on 16th Gales of Wind on 5th and 6th.

NOVEMBER, 1904.

Results of Observations taken during the Month.			Mean for the last 57 years.
Mean Reading of the Barometer	....inches	29·613	29·478
Highest ,,	on the 14th ,,	30·141	30·073
Lowest ,,	on the 9th ,,	28·945	28·571
Range of Barometer Readings.....	,,	1·196	1·502
Highest Reading of a Max.Therm. on the 9th		54·6	56·0
Lowest Reading of a Min. Therm. on the 24th		22·3	25·4
Range of Thermometer Readings		32·3	30·6
Mean of all the Highest Readings.....		45·8	47·4
Mean of all the Lowest Readings		37·6	36·6
Mean Daily Range.....		8·2	10·8
Deduced Monthly Mean (from Mean of Max. and Min.).....		41·7	41·6
Mean Temperature from Dry Bulb		41·2	41·9
Adopted Mean Temperature		41·5	41·8
Mean Temperature of Evaporation		39·9	39.6
Mean Temperature of Dew Point		37·9	38·2
Mean elastic force of Vapour .....inches		0·229	0·232
Mean weight of Vapour in a cub.ft.of air grains		2·6	2·7
Mean additional weight required for saturation,,		0·4	0·4
Mean degree of Humidity (saturation 1·00..)		0·88	0·87
Mean weight of a cubic foot of air ....grains		547·2	544·9
Fall of rain .....inches		5·128	4·390
Number of Days on which rain fell		18	19·7

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing wind was	4	1	2	0	2	1	17	3
Mean Velocity in miles per hour	4·4	5·1	4·7	0	3·4	12·0	11·7	13·5
Total No. of miles for each Direction	421	123	226	0	163	289	4775	975

The total number of miles registered during the month was 6972. The max. Velocity of the wind was 37 miles per hour, on the 9th, at 6 a.m. and 8 p.m. Dir. W.S.W., and W. respectively.

NOVEMBER, 1904.

Mean amount of Cloud (an overcast sky being indicated by 10·0)			7·1
In the month of November, the highest reading of the Barometer during 57 years was on the	12th,	in 1857, and was	30·350
The lowest ,,	11th,	1891 ,,	27·938
The highest Temperature	1st,	1900 ,,	62·4
The lowest ,,	15th,	1901 ,,	17·5
The highest adopted mean temperature of the month, 1881 and 1899			47·0
The lowest ,, ,,		1851	36·7
Greatest fall of rain during the month in ..		1866	9·026in
Least ,, ,, ..		1855	1·158in
Greatest number of days on which rain fell ..		1872	29
Least ,, ,, ..		1855	8

TABLE OF DIFFERENCES.

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

Mean barometric pressure	+	0·135 inches
Monthly range ,, ...	—	0·306 ,,
Mean of highest temperatures ..	—	1·6 degrees
Mean of lowest ,, ...	+	1·0 ,,
Mean daily range ,, ...	—	2·6 ,,
Adopted mean temperature	—	0·3 ,,
Total rainfall	+	0·778 inches

Ground frost on 3rd, 7th—14th, 18th—28th and 31st. Hail on 8th and 21st. Snow on 21st, 22nd, and 23rd. Heavy rain on 7th, and 8th. Gale of wind on 9th. Fog on 27th, 28th, and 29th. Lightning on 21st. Lunar Halo on 19th.

DECEMBER, 1904.

Results of Observations taken during the Month.		Mean for the last 57 years.
Mean Reading of the Barometer .... inches	29·466	29·448
Highest ,, on the 19th ,,	30·202	30·072
Lowest ,, on the 12th ,,	28·473	28·555
Range of Barometer Readings ..... ,,	1·729	1·517
Highest Reading of a Max.Therm. on the 16th	54·2	53·2
Lowest Reading of a Min.Therm.on 21st & 23rd	21·5	20·3
Range of Thermometer Readings	32·7	32·9
Mean of all the Highest Readings.....	41·7	43·2
Mean of all the Lowest Readings	33·1	33·1
Mean Daily Range.....	8·6	10·1
Deduced Monthly Mean (from Mean of Max. and Min).....	37·4	38·1
Mean Temperature from Dry Bulb.....	36·9	38.8
Adopted Mean Temperature	37·2	38·5
Mean Temperature of Evaporation	35·9	36·9
Mean Temperature of Dew Point	34·1	35·0
Mean elastic force of Vapour ..... inches	0·196	0·205
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 1·00)..	0·89	0·87
Mean weight of a cubic foot of air.... grains	549·7	547·9
Fall of Rain .....inches	3·173	4·491
Number of days on which Rain fell	16	20·6

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing wind was	7	4	1	0	3	5	8	3
Mean velocity in miles per hour	4·2	4·5	9·8	0	10·9	13·4	12·3	7·9
Total No. of miles for each Direction	718	429	235	0	783	1612	2352	572

The total number of miles registered during the month was 6701.
The max. Velocity of wind was 50 miles per hour, on the 30th at 9 a.m. Dir.W.

DECEMBER, 1904.

Mean amount of Cloud (an overcast sky being indicated by 10·0)			6·5
In the Month of December, the highest reading of the Barometer during 57 years, was on the 22nd, in 1849, and was			30·378
The lowest ,,	8th, 1886	,,	27·350
The highest Temperature	9th, 1876	,,	58·1
The lowest ,,	24th, 1860	,,	6·7
The highest adopted mean temperature of the month		1857	44·6
The lowest ,, ,,	..	1878	30·3
Greatest fall of rain during the month	..	1880	9·211 in
Least ,,	..	1890	0·550 in
Greatest number of days on which rain fell	..	1868	31
Least ,,	..	1890	8

TABLE OF DIFFERENCES.

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

Mean barometric pressure	+	0·018	inches
Monthly range ,, ...	+	0·212	,,
Mean of highest temperatures ...	—	1·5	degrees
Mean of lowest ,, ...	—	0·0	,,
Mean daily range ,, ...	—	1·5	,,
Adopted mean temperature	—	1·3	,,
Total rainfall	—	1·318	inches

Ground frost on 3rd, 7th—14th, 18th—28th, and 31st. Hoar frost on 19th and 21st. Hail on 6th. Snow on 9th and 11th. Fog on 20th, 21st, 22nd, 23rd, 24th, 25th, and 28th. Lightning on 5th and 6th. Lunar halo on 13th, and 15th. Gales of wind on 4th, and 30th.

Summary of Observations, 1904.

Results of Observations taken during the Year.			Mean for the last 57 years.
Mean Reading of the Barometer	inches	29·537	29·494
Highest , on Jan. 22nd	,,	30·338	30·286
Lowest , on Feb. 9th	,,	28·314	28·252
Range of Barometer Readings	,,	2·024	2·034
Highest Reading of a Max. Therm. on Aug. 3rd		78·4	81·8
Lowest Reading of a Min. Therm. on Dec 21 & 23		21·5	15·4
Range of Thermometer Readings		56·9	66·4
Mean of all the Highest Readings.....		52·3	54·8
Mean of all the Lowest Readings.....		42·0	40·7
Mean Daily Range.....		10·3	14·1
Deduced Yearly Mean (from Mean of Max. and Min).....		47·2	46·9
Mean Temperature from Dry Bulb.....		46·7	46·8
Adopted Mean Temperature		47·0	46·9
Mean Temperature of Evaporation		44·5	44·5
Mean Temperature of Dew Point		41·8	42·1
Mean elastic force of Vapour ...inches.....		0·274	0·273
Mean weight of Vapour in a cub. ft. of air grains		3·1	3·3
Mean additional weight required for saturation,,		0·7	0·7
Mean degree of Humidity (saturation 1·00) ..		0·83	0·83
Mean weight of a cubic foot of air.....grains		540·0	539·2
Total fall of rain in the year ..... inches		39·636	46·938
Number of days per month on which Rain fell		17·0	18·4

SUMMARY OF WIND.

	N	NE	E	SE	S	SW	W	NW
No of days in the year on which the prevailing wind was	37	37	35	15	51	44	136	11
Mean Velocity in miles per hour	5·7	7·5	8·5	9·7	10·0	11·1	11·5	10·0
Total No. of miles for each Direction	5076	6645	7173	3477	12241	11672	37578	2644

The total No. of miles registered during the year was 86506.

The max. Velocity of the wind was 50 miles per hour, on Jan. 29th, at 11 p.m., Apr. 10th, at noon, and Dec. 30th, at 9 a.m. Dir. S.S.W., W. b S., and W., respectively.

Mean amount of Cloud (an overcast sky being indicated by 10·0) 7·5

Table of Differences, 1904.

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

Mean barometric pressure	+	0·043	inches
Yearly range ,, ...	—	0·010	,,
Mean of highest temperatures	—	2·5	degrees
Mean of lowest ,, ...	+	1·3	,,
Mean daily range	—	3·8	,,
Adopted mean temperature	+	0·1	,,
Total rainfall	—	7·302	inches

Extreme Readings in the Last 57 Years.

The Maximum monthly mean height of the Barometer was in February, 1891, and was	inches	29·997
The Minimum ,, ,, in December, 1868, and was		28·984
The Maximum yearly mean height of the Barometer was in 1896, and was.....	inches	29·584
The Minimum ,, ,, in 1886, and was.....		29·389
The greatest monthly range of the Barometer was in January, 1884, and was	inches	2·409
The least ,, ,, in July, 1852, and was ,,		0·505
The highest reading of the Barometer during 57 years was on January 9th, 1896, and was	inches	30·597
The lowest ,, ,, on December 8th, 1886, and was		27·350
Extreme range	inches	3·247
The highest temperature was on July 20th, 1901, and was		89·0
The lowest ,, ,, January 15th, 1881.....		4·6
The highest adopted mean temperature of a month, July, 1901, and was		63·2
The lowest ,, ,, ,, February, 1855 ..		28·6
The highest adopted mean temperature of a year, 1868 ..		49·1
The lowest ,, ,, ,, ,, 1879 ..		44·1
The greatest monthly mean weight of vapour in a cubic foot of air ..... grains	July, 1852	5·1
The least ,, ,, February, 1855 and 1895, grains		1·4
The greatest fall of rain in a month was in October, 1870, and was	inches	13·437
The least ,, ,, ,, May, 1859 ,,		0·249
The greatest number of days on which rain fell in one month, January, 1872, October, 1873, December, 1868		31
The least ,, ,, ,, ,, March, 1852		3
The greatest fall of rain in one year in 1866	inches	62·183
The least ,, ,, ,, 1887 ..... ,,		31·250
The greatest number of days in one year on which rain fell .. 1872		319
The least ,, ,, ,, 1855		148

DATES OF OCCASIONAL PHENOMENA.

1904.	Frost.	Hoar Frost.	Snow.	Hail.	Heavy Rain.
January	1—4,6,8,9,11,15—17,21,22,24,25,29,31		15	10, 15	12
February	1, 2, 4—7, 9—12, 14—19, 22, 25—29		8, 14, 15, 16, 17, 25, 26	8, 15, 16	3, 19
March	1, 2, 4—7, 9—18, 21—31	11	1,4,5,6,14,16,17,25,29,30	6, 17, 25, 29	20
April	11, 12, 14, 16, 18, 20		3, 9	1, 3, 7, 9, 26	28
May	20		8	18	31
June					
July					4
August					13, 14, 17, 23
September					
October	3, 9, 13—15				16
November	15—17, 21—28		21, 22, 23	8, 21	7, 8
December	3, 7—14, 18—28. 31.	19, 21	9, 11	6	

1904	Gales of Wind.	Fog.	Thunder.	Lightning.	Lunar Halo.	Solar Halo.
January	7, 10, 14, 15, 29, 30	9, 18—20, 24				
February	12, 13. 20, 22	5. 10			26, 27, 29	
March	28	11, 31		29		
April	1, 3, 6, 7, 10			7	21. 23	
May	2, 18		16			
June			24	24		
July			2,6,11, 12, 13, 23, 24	12, 13, 24		
August	6, 15		4, 5, 17, 23, 30	3, 4, 14, 17, 30	23	
September		29	6			
October	5, 6					
November	9	27,28,29[25 28		21	19	
December		20.21.22.23.24		5, 6	13, 15	

MONTHLY TABLES 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	2·9	4·6	6·8	5·1	2·7	2·6	0·1	0	0	0	0	0
February - - -	0	0	0	0	1·5	2·5	5·8	5·1	5·6	6·1	5·5	2·5	0	0	0	0	0
March - - -	0	0	0·5	3·2	5·1	7·5	10·6	9·3	8·6	7·7	8·1	8·2	5·8	0·5	0	0	0
April - - -	0	0·5	4·3	9·6	11·3	13·0	13·9	15·6	16·8	14·9	16·7	14·8	13·3	8·6	1·9	0	0
May - - - -	0	5·1	7·4	9·8	8·5	10·5	13·5	10·8	11·7	12·6	12·9	11·8	10·3	8·5	5·0	1·4	0
June - - -	1·4	8·5	12·8	15·0	13·9	16·2	16·8	19·3	17·1	18 0	17·7	18·3	16·4	15·1	13·4	6·1	0
July - - - -	0·7	6·2	11·1	13·8	14·3	14·7	16·8	17·3	17·7	16·9	17·2	16·1	14·9	15·3	10·2	4·0	0
August - - -	0	2·7	8·7	13·0	13·7	17·0	16·0	16·2	14·4	14·5	14·9	16·1	16·7	13·4	7·0	0·5	0
September - -	0	0	2·8	7·2	12·4	16·0	16·6	17·5	16·6	16·7	15·6	15·3	12·1	4·9	0·2	0	0
October - - -	0	0	0	3·6	8·8	12·0	13·4	12·4	14·2	14·1	13·8	9·9	3·7	0·4	0	0	0
November - -	0	0	0	0	2·0	6·0	9·6	9·7	9·6	8·5	6·3	0	0	0	0	0	0
December - -	0	0	0	0	0·4	2·5	5·6	6·5	5·4	3·9	2·1	0	0	0	0	0	0
Total - - -	2·1	23·0	47·6	75·2	92·1	120·8	143·2	146·5	142·8	136·6	133·4	113·1	93·2	66·7	37·7	12·0	0

TOTAL AMOUNT OF SUNSHINE RECORDED ON EACH DAY.

1904.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
January - - -	1·5	0	0	0	0	0	0	0	1·1	0·2	0	0	1·5	0·7	1·4	4·2	0·9
February - - -	0·9	0	0·5	0	0	0	3·8	0	0	3·3	2·2	0	0·9	0·2	0·6	3·1	1·2
March - - -	4·7	0	0	0·2	0	0	3·3	0	0·2	9·5	7·0	0	0·2	0	6·2	0	0
April - - -	4·5	1·3	6·8	4·8	2·3	7·2	8·6	0·5	6·9	8·3	8·4	7·4	4·0	0	0	8·4	6·5
May - - -	5·1	8·0	8·8	11·0	0	6·5	0·3	0	2·7	2·8	5·6	0	2·7	7·8	8·6	9·3	8·1
June - - -	2·2	0·3	13·2	15·3	14·0	9·8	1·3	7·2	12·0	9·1	12·4	10·1	0	2·6	1·0	8·4	10·3
July - - -	7·4	10·5	11·3	0·7	0·7	0·7	13·2	12·0	13·1	13·2	15·0	11·4	9·5	8·7	0	10·7	8·5
August - - -	8·9	6·5	12·9	0·7	11·0	4·0	11·2	13·2	5·7	9·4	2·4	8·4	2·8	6·8	7·2	7·7	0
September - - -	0·4	3·0	9·7	7·3	4·4	4·9	6·9	0	9·4	8·9	10·9	0·2	7·9	1·2	2·9	1·7	8·4
October - - -	6·5	2·7	10·0	2·5	0	1·6	2·9	8·3	0·1	5·0	0·4	9·4	8·2	4·4	7·2	0	1·6
November - - -	0	0	0	0	1·2	4·5	0	1·5	0	0	0	5·0	5·0	4:1	4·7	3·4	0
December - - -	0	0	0	0	2 3	1·9	0·8	6·0	0	0	0·5	0·3	1·7	0	0	0·3	0

TOTAL AMOUNT OF SUNSHINE RECORDED ON EACH DAY.

(Continued)

1904.	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Monthly Total.	Per centage each month
January - -	0	0	0	5·2	0	0	0·6	0	0·8	1·1	1·7	4·1	0	0	25·0	10·1
February - -	6·7	0	1·0	0	5·2	0	0	0	0	0	4·3	0·7	0	0	34·6	12·3
March - -	1·0	0	0	7·5	0	10·7	6·3	0·7	0	4·5	0	5·5	6·9	0·7	75·1	20·5
April - -	9·8	10·5	0·8	10·7	0·8	5·1	5·8	11·1	4·3	1·4	0·8	0·3	7·9	0	155·2	37·0
May - -	9·0	13·1	10·7	0	0	1·0	0·8	0·9	3·5	0	4·5	4·4	2·4	2·2	139·8	28·4
June - - -	7·1	1·5	5·6	5·0	2·6	11·1	0·4	5·7	10·6	12·3	13·4	12·0	9·5	0	226·0	44·5
July - - -	13·8	12·8	0·2	4·8	3·6	1·5	4·4	0·2	0·2	2·9	3·4	3·4	1·6	7·8	207·2	40·7
August - -	4·2	2·4	11·5	1·1	0	2·0	3·3	0·9	1·8	8·3	9·4	11·2	5·7	4·2	184·8	40·4
September -	11·0	9·7	10·1	5·7	0·5	5·4	2·5	3·2	6·3	5·5	0·9	5·0	0	0	153·9	40·6
October - -	0	0	0	0	7·5	7·8	0	5·0	0·7	4·2	0	5·3	5·0	0	106·3	32·6
November -	0	0	4·3	1·2	2·8	1 2	3·7	0·5	5·7	0	2·9	0	0	0	51·7	20·2
December - -	3·2	0	0	0	2·7	0	0	0	1·9	0	0	0	3·1	1·7	26·4	11·4

SUMMARY OF SUNSHINE.

1904.	Number of days on which Sunshine was recorded.	Amount or Total Number of Hours	Per centage of possible Sunshine.	Mean for the last 24 Years.		
				Days.	Amount hours	Per centage of possible Sunshine
January ...	14	25·0	10·1	13·8	34·7	14·0
February ...	15	34·6	12·3	17·2	57·9	21·1
March ...	17	75·1	20·5	23·8	104·6	28·6
April ...	28	155·2	37·0	26·2	150·6	35·9
May ...	25	139·8	28·4	27·5	194·0	39·4
June ...	30	226·0	44·5	27·7	194·5	38·3
July ...	30	207·2	40·7	28·3	179·3	35·2
August ...	29	184·8	40·4	27·5	152·4	33·4
September	28	153·9	40·6	25·4	127·4	33·6
October ...	22	106·3	32·6	22·8	87·6	26·9
November	16	51·7	20·2	16·7	44·8	17·5
December	13	26·4	11·4	12·7	25·2	10·9
Year	267	1386·0	31·0	269·4	1352·9	30·0

SUMMARY OF SUNSHINE

(Continued).

EXTREMES FOR THE LAST 24 YEARS.

MONTH	Number of Days on which Sunshine was recorded.				Amount or Total number of Hours.				Percentage of possible Sunshine.			
	GREATEST		LEAST		GREATEST		LEAST		GREATEST		LEAST	
	Days	Year	Days	Year	Hours	Year	Hours	Year	o/o	Year	o/o	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	162·1	1893	67·0	1895	44·2	1893	18·3	1895
Apr.	29	1900	23	1883, 1885, 1888, 1897	223·7	1893	95·7	1889	53·4	1893	22·8	1889
May	30	1881, 1882, 1884, 1888	22	1886	266·6	1881	127·0	1886	54·1	1881	25·8	1886
June	30	1896, 1904	24	1888, 1897	272·5	1887	115·0	1890	53·6	1887	22·6	1890
July	31	1882	25	1888	247·2	1887	98·0	1888	48·6	1887	19·3	1888
Aug	31	1886, 1893	23	1894	235·2	1899	88·4	1891	51·5	1899	19 3	1891
Sept	29	1895, 1899	21	1897	170·0	1895	62·9	1896	44·9	1895	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	290	1887	251	1903	1613·7	1887	1132·1	1888	36·1	1887	25·3	1888

OBSERVATIONS OF UPPER CLOUDS (CIRRUS).

Date. 1904.	G. M. T.	Cloud.		Wind.		Direction of Lower Clouds.
		Direction.	Velocity (0—6.)	Direction.	Force (0—12)	
January 22	8 a.m.	NW	2	Calm	0	NW
February 17	8 a.m.	N	3	NE	1	NE
,, 22	8 a.m.	NW	2	W	4	W
March 21	2 p.m.	S	3	WSW	4	SW
,, 30	8 a.m.	N	3	W	1	W
June 1	8 a.m.	N W	3	WSW	1	W
,, 4	9 a.m.	W	2	Calm	0	W
,, 7	8 a.m.	W	2	ENE	3	NE
,, 8	9 a.m.	W	2	ENE	1	E
,, 9	4 p.m.	SW	2	NE	3	NE
,, 10	10 a.m.	NW	2	ENE	2	ENE
,, 11	8 p.m.	SW	2	NE	1	SW b S
,, 12	9 p.m.	W	2	NE	1	W
,, 16	8 a.m.	S b W	3	SW	5	SW
,, 17	8 a.m.	SE	3	SW	2	SW
,, 17	3·30 p.m.	ESE	2	WSW	2	SW
,, 22	5·30 p.m.	SW	2	W	2	W
,, 23	9 a.m.	S	2	WSW	2	W
,, 23	9 p.m.	SW	2	W	Calm.	W
,, 26	9 a.m.	W	2	W	1	NW
,, 28	9 p.m.	W	2	WNW	1	W
,, 29	8 p.m.	W	2	S	1	SW
,, 30	10 a.m.	W	2	SSE	3	SW
July 2	9 a.m.	SW	2	WSW	2	W
,, 5	9 a.m.	NW	2	WSW	3	SW
,, 7	9 a.m.	WSW	3	W	1	SW
,, 12	8 a.m.	SE	2	E b N	2	ENE
,, 13	9 p.m.	S	2	Calm	0	—
,, 14	8 a.m.	S b W	2	SSW	3	S
,, 16	9 a.m.	S	2	WSW	1	S
,, 17	8 p.m.	S	2	NNW	1	—
,, 18	8 a.m.	NW	2	N	1	—
,, 19	9 a.m.	E b S	2	E b S	1	SE
,, 21	9 a.m.	SE	2	Calm	0	S
,, 22	9 a.m.	S	2	W b N	1	S b W
August 16	9 a.m.	S	1	Calm	0	N
,, 19	10 a.m.	WNW	2	W b N	1	W
September 2	9 a.m.	W	1	S W	1	S
,, 5	6 p.m.	SE	1	S b E	2	S
,, 13	9 a.m.	SE	1	WSW	1	SW
,, 14	9 a.m.	N	1	NE b E	1	NE
,, 17	11 a.m.	S	1	SE	3	SE
,, 19	9 a.m.	S	1	E	1	—

OBSERVATIONS OF UPPER CLOUDS (Continued).

Date 1904.	G. M. T.	Cloud.		Cloud.		Direction of Lower Clouds.
		Direction.	V'locity (0—6).	Direction.	Force (0—12.)	
September 20	10 a.m.	E	1	E	1	E
,, 21	10 a.m.	E	1	E	1	E
,, 22	3 p.m.	E	1	NE	1	NE
,, 24	10 a.m.	N	1	NE	1	NE
,, 27	4 p.m.	NW	1	Calm	0	W
October 1	7·30 a.m.	W	1	Calm	0	SW
,, 2	8 a.m.	W	2	Calm	0	—
,, 3	8 p.m.	SW	1	Calm	0	SW
,, 4	7·30 a.m.	NW	1	W	1	W
,, 8	Noon.	NW	2	NNW	1	WNW
,, 10	9 a.m.	SW	1	WSW	1	SSW
,, 14	9 a.m.	N	1	NE	1	NE
,, 17	2·30 p.m.	W	3	W	4	SW
,, 23	9 a.m.	S	2	SW	1	—
,, 25	Noon.	W b N	1	W	3	W
,, 26	11·30 a.m.	W b S	2	W b S	2	WNW
November 15	4 p.m.	S	2	WSW	1	—
,, 16	9 a.m.	NNW	3	Calm	0	—
,, 24	Noon.	NW	2	N	1	N
,, 25	8 a.m.	NW	2	NNW	1	—
December 7	9 a.m.	W	3	Calm	0	WSW
,, 15	9 a.m.	NNW	3	W b S	3	W
,, 17	9 a.m.	W	2	SW b S	3	W
,, 19	Noon.	NW	3	N b W	1	W
,, 21	9 a.m.	N	2	NNE	1	N b E
,, 30	Noon.	NW	3	W	5	W

Observations of Earth-Magnetism, 1904.

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 + 0·00004ft. 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 or 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; but no correction has been required for the rate of the chronometer, or for the arc of vibration, the former having been always under $1·5^s$ and the latter never over 50′.

The average deflection of the magnet caused by a twist of the torsion circle through 90° has been about 11′·3 of arc.

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

The 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; and in the final table the results are given also in C. G. S units, in parallel columns.

The Dip, or angle between the direction of total force, and that of its horizontal component, has been 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 has been observed at the beginning of each week, usually on Mondays 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 shorter, and the clock is not provided with an automatic light-cut-off, for the time scale The "cut-offs" are made by hand at the hours 0, 2, 20, and 22 of the astronomical day, to furnish two time marks at each end of the day's curves, the changes being made between 10-30 and 11 a.m., civil time.

The scale value of the Bifilar horizontal force torsion balance, has remained very constant at 0·00051 C. G. S. for one centimetre, during the last twelve years.

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

The corrections for diurnal range, employed in the tables, are taken from the Kew Reports 1891-1902.

OBSERVATIONS OF DECLINATION AND DIP.

1904 Month	G.M.T. Civil Day	West Declination		Magnetic Dip.			
		Observations.	Monthly Mean.	Needle	Dip.		G.M.T. Civil Day
	D. H. M.	° ′	° ′		° ′		D. H. M.
Jan.	5 16 0	17 56·7	17 59·8	1	68	49·3	16 11 58
	11 16 5	17 57·8		2	68	51·3	,, 12 28
	18 16 0	18 0·7					
	25 16 0	18 3·9					
Feb.	1 16 0	18 2·6	18 3·6	1	68	47·9	18 11 3
	8 16 0	18 0·2		2	68	48·3	,, 11 39
	15 16 0	18 7·0					
	22 16 0	18 4·7					
March	1 16 0	18 0·4	18 0·1	1	68	48·2	23 11 23
	7 16 0	17 59·7		2	68	49·9	,, 12 23
	14 15 45	18 5·1					
	23 16 10	17 58·5					
	28 16 0	17 56·6					
Apri	4 16 0	18 6·7	18 3·2	1	68	48·5	18 10 15
	11 16 0	18 3·7		2	68	49·1	,, 11 15
	18 15 45	17 59·8					
	25 16 0	18 2·7					
May	2 16 0	17 59·2	18 0·3	1	68	47·4	26 14 39
	9 16 0	18 0·3		2	68	47·3	,, 15 8
	16 16 0	18 2·9					
	23 16 0	18 0·7					
	30 16 0	17 58·5					
June	6 16 5	18 1·2	17 55 8	1	68	50·6	16 12 9
	13 16 0	17 57·3		2	68	52 9	,, 12 43
	20 16 0	17 53·6					
	27 16 0	17 51·1					
July	4 16 0	17 55·7	17 57·4	1	68	47·5	14 12 16
	11 16 0	17 55·7		2	68	47·4	,, 12 49
	18 16 0	17 59·0					
	25 16 0	17 59·3					

OBSERVATIONS OF DECLINATION AND DIP.

(Continued.)

1904 Month	G.M.T. Civil Day	West Declination		Magnetic Dip.		
		Observations.	Monthly Mean.	Needle	Dip.	G.M.T. Civil Day
	D. H. M.	° ′	° ′		° ′	D. H. M.
Aug.	1 16 0	17 57·6	17 54·8	1	68 45·4	16 11 56
	9 16 0	17 59·1		2	68 47·0	,, 12 28
	16 16 5	17 54·2				
	26 16 30	17 48·4				
Sept.	19 16 10	17 55·3	17 54·5	1	68 46·9	16 10 46
	26 16 0	17 53·7		2	68 49·4	,, 11 31
Oct.	3 16 0	17 55·3	17 55·6	1	68 47 2	14 11 38
	10 16 0	17 55·7		2	68 48·0	,, 12 5
	17 16 5	17 54·5				
	24 16 0	17 55·7				
	31 16 0	17 56·9				
Nov.	7 16 0	17 55·9	17 55·3	1	68 46·6	14 14 40
	14 16 0	17 50·7		2	68 43·0	,, 15 12
	22 16 0	17 58·2				
	28 16 30	17 56·2				
Dec.	5 16 0	17 56·0	17 57·5	1	68 46·6	13 11 48
	12 16 0	17 55·7		2	68 49·9	,, 12 17
	19 16 0	17 57·8				
	26 16 0	18 0·4				
Yearly Mean			17 58·2		68 48·2	

OBSERVATIONS OF VIBRATIONS AND DEFLECTIONS FOR ABSOLUTE MEASURE OF MAGNETIC FORCE.

1904. Month.	G. M. T. (Civil Day)	Temp.	Time of one vibration	G. M. T.	Temp.	Observed Deflection at 1·0 ft. / at 1·3 ft.	Value of m.
	D. H. M.	°	S.	D. H. M.	°	° ′	
Jan.	16 9 53	46·3	6·0300	16 {11 3 10 59	43·6 43·5	11 33·3 5 13·7	0·37858
Feb.	18 8 22	35·3	6·0244	18 { 9 53 9 54	44·8 42·4	11 31·6 5 13·4	0·37827
Mar.	23 9 29	46·3	6·0274	23 {10 27 10 28	49·1 49·6	11 32·5 5 13·8	0·37873
Apr.	18 8 16	46·6	6·0322	18 { 9 23 9 25	51·4 51·2	11 32·7 5 12·1	0·37842
May	16 9 55	57·5	6·0403	16 {11 14 11 14	62·1 62·1	11 29·4 5 12·8	0·37763
June	16 10 9	58·4	6·0492	16 {11 1 11 0	59·0 59·0	11 32·1 5 14·1	0·37776
July	14 10 4	67·8	6·0411	14 {10 55 10 53	69·5 69·6	11 28·0 5 12·2	0·37775
Aug.	16 9 52	57·8	6·0373	16 {10 49 10 48	59·4 59·7	11 29·7 5 12·7	0·37783
Sept.	16 8 10	56·7	6·0364	16 { 9 48 9 46	59·5 59·6	11 30·4 5 12·8	0·37817
Oct.	14 9 37	53·2	6·0346	14 {10 38 10 38	57·0 57·0	11 28·9 5 12·6	0·37757
Nov.	14 11 11	55·6	6·0348	14 {12 24 12 25	55·0 55·0	11 29·1 5 12·4	0·37780
Dec.	13 9 32	40·5	6·0338	13 {10 26 10 25	41·5 41·5	11 29·1 5 12·3	0·37708

MAGNETIC INTENSITY.

	BRITISH UNITS.			C. G. S. UNITS.		
1904	Horizontal Force.	Vertical Force.	Total Force.	Horizontal Force.	Vertical Force.	Total Force.
Jan.	3·7711	9·97416	10·4460	0·17388	0·44916	0·48164
Feb.	3·7752	9·97340	10·4405	0·17407	0·44881	0·48139
Mar.	3·7722	9·97340	10·4393	0·17393	0·44881	0·48133
April	3·7721	9·97318	10·4372	0·17392	0·44871	0·48123
May	3·7691	9·97116	10·4175	0·17379	0·44778	0·48032
June	3·7576	9·97195	10·4206	0·17326	0·44814	0·48047
July	3·7729	9·97228	10·4292	0·17396	0·44830	0·48087
Aug.	3·7719	9·97092	10·4160	0·17392	0·44766	0·48026
Sept.	3·7719	9·97257	10·4316	0·17391	0·44843	0·48098
Oct.	3·7744	9·97280	10·4345	0·17403	0·44853	0·48111
Nov.	3·7777	9·97130	10·4218	0·17419	0·44784	0·48052
Dec.	3·7787	9·97441	10·4511	0·17422	0·44928	0·48187
Means	3·7721	9·97263	10·4321	0·17392	0·44845	0·48100

HORIZONTAL MAGNETIC DIRECTION.

Horizontal Magnetic Direction, west of north, (from daily measures of the continuous curves.)

1904	Mean of the highest daily readings. (*a*)	Mean of the lowest daily readings (*b*)	Means of *a* and *b*. (*c*)	Means of daily readings at 4a.m. & 4p.m. (*d*)	Differences *d*—*c*.	Difference of *a* and *b*, or Mean daily range.	Highest reading of the month.	Lowest reading of the month.	Monthly range.
	17°+	17°+	17°+				18°+	17°+	
	′	′	′	′	′	′	′	′	′
January	63·0	52·4	57·7	58·8	1·1	10·6	11·9	38·4	33·5
February	62·8	53.0	57·9	58·7	0·8	9·8	7·9	40·9	27·0
March	64 4	52·8	58·6	58·3	—0·3	11·6	9·9	42·9	27·0
April	65 2	50·8	57·9	57·9	0·0	14·4	11·9	39·9	32·0
May	64·3	51·1	57·7	57·6	—0·1	13·2	12·9	45·4	27·5
June	63·7	49 7	56·7	56·9	0·2	14·0	17·9	39·9	38·0
July	62·2	49 2	55·9	56·0	0·1	13·0	4 9	35·9	29·0
August	63·3	49·7	56·5	55·8	—0·7	13·6	9·9	40·9	29·0
September	61·7	50·1	55 9	54·9	—1·0	11·6	8·9	39 9	29·0
October	61·2	48·2	54·7	55·3	0·6	13 0	9·9	28·9	41·0
November	59·5	50 3	54 9	55·1	0·2	9·2	5 9	37·9	28·0
December	58 9	50·4	54·7	55·7	1·0	8·5	3·5	29·9	33·6
Means ..	62·5	50·6	56·6	56·7	0·1	11·9	9·6	38·4	31·2
Correction for diurnal range				—0·3					
Mean for the year				17°.56′ ·4					

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.

1904.	Mean of the highest daily readings. (a)	Mean of the lowest daily readings. (b)	Means of a and b. (c)	Means of daily readings 4a.m. & 4p.m. (d)	Differences $d-c$	Differences of a and b or Mean daily Range.	Highest reading of the Month.	Lowest reading of the Month.	Monthly Range.
	17000 +				0+		17000+		0+
January - -	426	385	406	407	1	41	453	325	128
February -	433	395	414	416	2	38	465	365	100
March - -	435	393	414	422	8	42	480	313	167
April - -	431	370	401	414	13	61	460	324	136
May - -	437	378	408	418	10	59	457	333	124
June - -	435	374	405	418	13	61	490	305	185
July - -	437	374	406	413	7	63	485	358	127
August - -	429	376	403	413	10	53	465	343	122
September -	422	374	398	407	9	48	440	335	105
October - -	426	375	401	407	6	51	473	330	143
November -	426	391	408	412	4	35	465	260	105
December -	436	406	421	423	2	30	482	385	097
Means - -	431	383	407	414	7	48	468	340	128

Correction for diurnal range — 00003

Mean Horizontal Force for the year 0·17411 C.G.S. units.

DATES OF MAGNETIC DISTURBANCES, 1904.

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

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

DATES OF SOLAR DRAWINGS.

The figures express, in decimals of a day, the Greenwich Civil time at which the drawing was made.

1904.	January	February	March	April	May	June	July	August	September	October	November	December
1	·40	·65	·42	·61	·32	·33				·42		
2					·42		·34	·39	·37			
3		·54		·34	·48	·30	·36	·34	·36	·38		
4	·48				·30	·38	·49	·59	·36	·37		
5				·48		·41		·34	·38		·48	·37
6	·55			·65	·42	·38	·49	·36	·35		·36	·41
7		·41	·53	·40		·44	·30	·49	·48	·65		·46
8						·35	·40			·36		·43
9	·50		·54	·46	·65	·33	·38	·61	·38			
10		·45	·40	·48	·41	·50	·39	·40	·40	·40		
11		·57	·43	·69	·40	·30	·38		·39			·51
12			·39	·36		·35	·36			·33	·39	·45
13	·46	·43	·45	·52	·44		·34	·52	·42	·41	·43	
14	·46						·39	·49	·40	·35	·54	
15		·39	·37	·74	·54				·41	36	40	·47
16	·43	·41		·42	·38	·37	·43	·38	·48		·41	
17	·46	·41		·35	·44	·32	·46		·41			
18		·37	·50	·29	·44	·33	·33	·42	·35			·43
19		·38		·29	·41		·29		·35			·44
20		·43			·30	·39		·37	·32		·40	
21	·39		·39	·44			·42		·35		·39	·41
22	·39	·49					·38			·38	·44	·41
23			·36	·47	·40	·34		·50	·70	·35	·41	
24	·40		·35	·45			·39	·35	·39			
25				·32	·67	·71		38·	·32	·38		
26					·43	·43			·38		·39	·42
27	·47		35	·40		·37		·64	42	·41		
28		·40		·39	·65	·30	·52	·36			·45	
29	·40		·46	·48		·30		·35	·43	·40		
30			·42	·43		·30		·35		·45		·46
31			·44					·60				·41

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