STONYHURST COLLEGE OBSERVATORY.

RESULTS

OF

METEOROLOGICAL & MAGNETICAL OBSERVATIONS

WITH REPORT AND NOTES OF THE DIRECTOR,

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

1898.

CLITHEROE
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REPORT AND NOTES.

ALL the meteorological self-recording instruments have been working well during the year. The photographic curves of atmospheric pressure and temperature have been uniformly clean and strong. The mechanical traces of wind, velocity and direction, are clear, but not very strong in calm weather.

The usual meteorological reports have been forwarded regularly to the Meteorological Office, and to the Registrar General, and, occasionally, detailed reports have been sent to applications.

The month of January, was the warmest January on record, and very wet, its mean temperature being 6°.6 above the average of 51 years; and the rainfall 2.321 inch above the average of 4.039 inches. July was the finest month of the year, with a rainfall nearly 3 inches below the average of 4.137. August was the warmest and wettest month of the year, with a mean temperature of 1°.7 above the average, and 2 inches of rain above the average of 5.147. But the warmest days occurred in the first week of September, the maximum shade temperatures being 80° and 81 on the 4th, 5th, and 7th. The mean temperatures of September, October, November, December, were respectively 3·5, 4·0, 2·3, and 5·5 above the averages, showing a general mean temperature of the 4 months of 3·8 above the average of this period.

A tabular summary of recorded sunshine during the last 18 years is given on page 38. The figures are formed upon the ratio of the recorded number of hours of sunshine to the aggregate

number of hours during which the sun was apparently above the horizon at sea level in each month.

The photo-magnetograms have been on the whole very satisfactory. Occasionally, the impressions have been weak through variation of gas pressure.

A day-table of magnetic disturbances is given on page 50. In this table an attempt is made at a general statement of the magnetic state of the day. It cannot claim great accuracy, for it is impossible to draw the line neatly between the several successive conditions of a calm, and a small, moderate, and greater disturbance. These appellations refer rather to the general character of the day than to any particular movement of the magnet; and supplement the tabulated measures on page 48.

Drawings of Solar Spots and Faculae have been made on 158 days during the year; and a tabular list of the times of the drawings is given on page 51.

A table of approximate spot areas on each drawing has been made out for comparison with the grating spectrographs of the Solar H K region, and with the table of magnetic disturbances. A preliminary statement of the results may be made as follows:—

1. The calcium radiation K being denoted by increasing intensities 1 to 4, and the apparent areas of spots expressed in units of one five-thousandeth of the solar disc or circular area, we have on 21 days of no spots, mean intensity of K 1.7; on the 12 days of spot area from 1 to 3 units inclusive, mean intensity of K 1.7; and on 11 days of spot area from 4 to 8 units, mean intensity of K 2.3.

2. There is at present no clear law connecting the magnetic disturbances with the sun-spot areas of the year. Taking from the observations or drawings the two extremes, viz., those which show either no spots or not more than a few dots, and those which show a total area above 8 units, their distribution

is as follows: the letters c s m and g signifying days of magnetic calm, small disturbance, and moderately great and greater disturbance.

		c	s	m	g
On days noted					
Spot areas	zero on	3 days,	20 days,	17 days	0 days.
,, ,,	above 8 on	2 ,,	9 ,,	3 ,,	1 ,,

The further questions of particular spots, and positions of spots, in connection with Terrestrial Magnetism, cannot be treated in a preliminary notice of one year's observations.

The results of our study of the spectrum of the variable star Mira (o Ceti) from the series of photographs obtained during the period of its maximum brightness at the end of last year, are given in the Monthly Notices of the Royal Astronomical Society for April, 1898. Enlarged photographs of the spectra of o Ceti and other stars, showing the sequence of changes towards the solar-type-spectrum, were exhibited at the Convesaziones of the Royal Society in May and June, and also at the photographic exhibition of the Royal Photographic Society at the Crystal Palace. A second series of the same star was obtained on the return of its maximum brightness, in September and October. The comparison of this series with the previous one, together with the results of our study of the spectrum of γ Cassopeiae are nearly ready for the Monthly Notices.

The Lunar Eclipse of the 27th December was well seen, and both the physical and astronomical observations connected with it were sent to the Royal Astronomical Society the following month. But the November Meteors were lost in the clouds.

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, 1898.

Result of Observations taken during the Month.		Mean for the last 51 years.
Mean Reading of the Barometer.....inches	29·812	29·454
Highest ,, on the 15th ,,	30·193	30·280
Lowest ,, on the 1st ,,	28·784	28·600
Range of Barometer Readings..... ,,	1·409	1·680
Highest Reading of a Max. Therm. on the 19th	54·5	51·4
Lowest Reading of a Min. Therm. on the 9th	30·2	20·6
Range of Thermometer Readings.....	24·3	30·8
Mean of all the Highest Readings.....	47·9	42·2
Mean of all the Lowest Readings.....	39·2	32·5
Mean Daily Range	8·7	9·7
Deduced Monthly Mean (from Mean of Max. and Min.)	43·4	37·1
Mean Temperature from Dry Bulb.....	44·0	37·1
Adopted Mean Temperature.....	43·7	37·1
Mean Temperature of Evaporation.....	42·2	35·9
Mean Temperature of Dew Point.....	40·4	33·7
Mean elastic force of Vapour..... inches	0·252	0·195
Mean weight of Vapour in a cub. ft. of air grains	2·9	2·4
Mean additional weight required for saturation,,	0·4	0·4
Mean degree of Humidity (saturation 1·00)...	0·88	0·86
Mean weight of a cubic foot of air.....grains	548·9	549·8
Fall of Rain.....inches	6·360	4·039
Number of days on which Rain fell.....	19	20·6

JANUARY, 1898.

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing wind was	1	1	0	0	4	14	11	0
Mean Velocity in miles per hour	6·3	2·2	0	0	5·2	9·2	11·1	0
Total No. of Miles for each Direction	150	52	0	0	500	3084	2940	0

The total number of miles registered during the month was 6726.
The max. Velocity of the wind was 42 miles per hour, W., on the 31st, at 2·0 a.m.

Mean amount of Cloud (an overcast sky being indicated by 10·0)			9·3
In the month of January the highest reading of the Barometer during 51 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	8·147in
Least ,, ,,		1881	0·472in
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 ...	+	0·358 inches
Monthly range ,, ...	—	0·271 ,,
Mean of highest temperatures	+	5·7 degrees
Mean of lowest ,,	+	6·7 ,,
Mean daily range ,,	—	1·0 ,,
Adopted mean temperature ...	+	6·6 ,,
Total rainfall	+	2·321 inches

The month of January this year has been the warmest recorded during the 51 years of observation, the adopted mean temperature 43°·7 being 6°·6 above the average. The highest barometer reading for the year occurred on the 15th at 10·30 p.m., being 30·193 inches.

Ground frost on the 1st, 3rd, 7th, 10th, 14th—17th, 22nd and 23rd. Fog on the 9th, 16th, 17th and 20th. Gale of wind on the 31st. Heavy rain on the 4th, 5th, 30th and 31st.

FEBRUARY, 1898.

Results of Observations taken during the Month.		Mean for the last 51 years.
Mean Reading of the Barometer..... inches	29·450	29·518
Highest ,, on the 11th ,,	29·892	30·070
Lowest ,, on the 21st ,,	28·716	28·705
Range of Barometer Readings ..... ,,	1·176	1·365
Highest Reading of a Max. Therm.on the 1st	55·0	52·1
Lowest Reading of a Min. Therm. on the 20th	24·5	22·3
Range of Thermometer Readings	30·5	29·8
Mean of all the Highest Readings.....	45·8	44·3
Mean of all the Lowest Readings	32·6	33·4
Mean Daily Range	13·2	10·9
Deduced Monthly Mean (from Mean of Max. and Min.).....	38·8	38·2
Mean Temperature from Dry Bulb	39·7	38·3
Adopted Mean Temperature	39·3	38·3
Mean Temperature of Evaporation.....	37·3	36·8
Mean Temperature of Dew Point	34·7	34·6
Mean elastic force of Vapour .....inches	0·202	0·193
Mean weight of Vapour in a cub. ft. of air grains	2·3	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	547·6	549·0
Fall of rain .....inches	4·673	3·526
Number of Days on which rain fell	22	18·0

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing wind was	3	1	0	0	2	6	14	2
Mean Velocity in miles per hour	5·2	5·7	0	0	8·1	12·6	19·7	8·1
Total No. of miles for each Direction	375	136	0	0	389	1815	6620	391

The total number of miles registered during the month was 9726.
The max. Velocity of the wind was 48 miles per hour, W. by S. on the 2nd at 1 and 2 p.m.

FEBRUARY, 1898.

Mean amount of Cloud (an overcast sky being indicated by 10·0)			7·7
In the month of February, the highest reading of the Barometer during 51 years, was on the	11th,	in 1849, and was	30·452
The lowest ,,	6th,	1867 ,,	28·208
The highest Temperature	8th,	1877 ,,	58·3
The lowest ,,	18th,	1895 ,,	8·0
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	8·882 in
Least ,, ,,	,,	1858	0·306 in
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	—	0·068	inches
Monthly range ,,	—	0·189	,,
Mean of highest temperatures	+	1·5	degrees
Mean of lowest ,,	—	0·8	,,
Mean daily range ,,	+	2·3	,,
Adopted mean temperature	+	1·0	,,
Total rainfall ,,	+	1·147	inches

Ground Frost on the 5th, 6th, 7th, 9th, 11th—13th, 17th—28th. Hail on the 2nd, 3rd, 6th—8th, 16th, 20th, 26th—28th Gales of wind on the 2nd, 15th, 16th and 25th. Fog on the 11th. Lunar Halo on the 4th. Snow fell on the 4th, 5th, 7th 20th and 26th.

MARCH, 1898.

Results of Observations taken during the Month.		Mean for the last 51 years
Mean Reading of the Barometer .....inches	29·498	29·460
Highest ,, on the 10th ,,	29·890	30·065
Lowest ,, on the 28th ,,	29·013	28·662
Range of Barometer Readings ..... ,,	0·877	1·403
Highest Reading of a Max. Therm. on the 18th	56·0	57·1
Lowest Reading of a Min. Therm. on the 8th	24·0	22·5
Range of Thermometer Readings.....	32·0	34·6
Mean of all the Highest Readings.....	47·0	47·3
Mean of all the Lowest Readings.....	31·1	34·1
Mean Daily Range.....	15·9	13·2
Deduced Monthly Mean (from Mean of Max. and Min.)	38·1	39·8
Mean Temperature from Dry Bulb.....	38·9	40·0
Adopted Mean Temperature	38 5	39·9
Mean Temperature of Evaporation	36·5	38·0
Mean Temperature of Dew Point	33·8	35·4
Mean elastic force of Vapour .....inches	0·194	0·206
Mean weight of Vapour in a cub. 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	0·85
Mean weight of a cubic foot of air..grains	549·9	546·4
Fall of Rain .....inches	3·179	3·302
Number of days on which Rain fell	13	18·2

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing wind was	10	3	0	2	0	5	10	1
Mean Velocity in miles per hour	10·4	9·0	0	4·2	0	11·0	9·7	12·8
Total No. of miles for each Direction	2505	651	0	202	0	1321	2321	308

The total number of miles registered during the month was 7308.
The max. Velocity of the wind was 47 miles per hour, N., on the 24th at 9-0 a.m.

MARCH, 1898.

Mean amount of Cloud (an overcast sky being indicated by 10·0)			6·8
In the month of March, the highest reading of the Barometer during 51 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	+	0·038 inches
Monthly range ,,	—	0·526 ,,
Mean of highest temperature	—	0·3 degrees
Mean of lowest ,,	—	3·0 ,,
Mean daily range ,,	+	2·7 ,,
Adopted mean temperature	—	1·4 ,,
Total rainfall	—	0·123 inches

Ground frost from the 1st—15th, 20th—26th, 28th—30th. Hoar frost on the 13th. Snow on the 1st, 4th, 6th, 7th, 24th, 25th—29th. Hail on the 1st, 23rd and 24th. Heavy rain on the 15th and 17th. Gales of wind on the 1st and 24th. Fog on the 10th, 11th, and 12th. Thunder and Lightning on the 1st. Aurora Borealis on the 15th from 9·0 to 10·0 p.m.

APRIL, 1898.

Results of Observations taken during the Month.		Mean for the last 51 years.
Mean Reading of the Barometer .....inches	29·451	29·487
Highest ,, on the 25th ,,	29·820	29·966
Lowest ,, on the 11th ,,	29·000	28·814
Range of Barometer Readings..... ,,	0·820	1·152
Highest Reading of a Max. Therm. on the 30th	63·8	66·0
Lowest Reading of a Min. Therm. on the 5th	25·5	28·0
Range of Thermometer Readings	38·3	38·0
Mean of all the Highest Readings	55·7	55·9
Mean of all the Lowest Readings.....	38·4	37·8
Mean Daily Range.....	17·3	18·1
Deduced Monthly Mean (from Mean of Max. and Min.)	45·6	44·5
Mean Temperature from Dry Bulb	46·3	44·6
Adopted Mean Temperature	46·0	44·6
Mean Temperature of Evaporation	42·8	41·7
Mean Temperature of Dew Point	39·2	38·2
Mean elastic force of Vapour..... inches	0·240	0·236
Mean weight of Vapour in a cub.ft.of air grains	2·8	2·7
Mean additional weight required for saturation,,	0·8	0·7
Mean degree of Humidity (saturation 1·00)..	0·78	0·80
Mean weight of a cubic foot of air.... grains	539·8	542·0
Fall of Rain..... inches	2·170	2·347
Number of Days on which rain fell.....	14	15·7

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	2	1	7	0	6	5	9	0
Mean Velocity in miles per hour	5·4	10·8	9·6	0	10·0	12 8	10·9	0
Total No. of miles for each Direction	261	259	1617	0	1441	1535	2348	0

The total No. of miles registered during the month was 7461.
The max. Velocity of the wind was 37 miles per hour, S. b E., on the 13th at 3-0 p.m.

APRIL, 1898.

Mean amount of Cloud (an overcast sky being indicated by 10·0)			7·5
In the month of April, the highest reading of the Barometer during 51 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	—	0·036 inches
Monthly range ,, ...	—	0·322 ,,
Mean of highest temperatures . ..	—	0·2 degrees
Mean of lowest ,, ..	+	0·6 ,,
Mean daily range ,, ...	—	0·8 ,,
Adopted mean temperature	+	1·4 ,,
Total rainfall	—	0·177 inches

Ground frost on the 1st, 2nd, 4th—6th. 8th, 13th, 16th—20th, 22nd. 23rd 25th, 26th, and 30th. Snow on the 4th and 15th. Hail on the 4th and 10th. Thunder on the 29th. Lunar Halo on the 5th. Aurora Borealis on the 12th at 9 p.m.

MAY, 1898.

Result of Observations taken during the Month.			Mean for the last 51 years
Mean Reading of the Barometer.....	inches	29·425	29·515
Highest ,, on the 7th ,,		29·947	29·955
Lowest ,, on the 11th ,,		28·583	28·947
Range of Barometer Readings.....	,,	1·364	1·008
Highest Reading of a Max. Therm. on the 24th		68·7	72·0
Lowest Reading of a Min. Therm. on the 15th		32·2	31·3
Range of Thermometer Readings		36·5	40·7
Mean of all the Highest Readings.....		58·6	59·8
Mean of all the Lowest Readings		40·9	42·0
Mean Daily Range		17·7	17·8
Deduced Monthly Mean (from Mean of Max and Min.)		48·1	49·1
Mean Temperature from Dry Bulb		49·0	49·6
Adopted Mean Temperature		48·6	49·4
Mean Temperature of Evaporation.....		45·1	46·1
Mean Temperature of Dew Point		41·3	42·5
Mean elastic force of Vapour .....inches		0·260	0·276
Mean weight of Vapour in a cub. ft. of air grains		3·0	3·1
Mean additional weight required for saturation,,		1·0	0·9
Mean degree of Humidity (saturation 1·00) ..		0·76	0·76
Mean weight of a cubic foot of air.... grains		536·5	537·1
Fall of Rain .....inches		3·595	2·631
Number of days on which Rain fell.....		19	15·4

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing wind was	0	7	3	0	2	1	16	2
Mean Velocity in miles per hour	0	10·9	6·6	0	16·0	6·6	10·9	4·1
Total No. of miles for each Direction.	0	1827	473	0	764	158	4178	196

The total No. of miles registered during the month was 7596.
The max. Velocity of the wind was 41 miles per hour, W.S.W. on the 11th at 11·0 a.m.

MAY, 1898.

Mean amount of Cloud (an overcast sky being indicated by 10·0			8·6
In the month of May, the highest reading of the Barometer during 51 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		1886	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	—	0·090	inches
Monthly range ,, ...	+	0·356	,,
Mean of highest temperatures ..	—	1·2	degrees
Mean of lowest ,, ...	—	1·1	,,
Mean daily range ,, ...	—	0·1	,,
Adopted Mean temperature	—	0·8	,,
Total rainfall	+	0·964	inches

Ground Frost on the 6th, 7th, 19th, 21st and 27th. Snow on the 11th. Hail on the 11th and 12th. Heavy rain on the 10th. Gale of wind on the 11th. Thunder on the 3rd, 22nd, 23rd and 31st. Lightning on the 3rd and 22nd. Solar Halo on the 28th. Lunar Halo on the 28th.

JUNE, 1898.

Results of Observations taken during the Month.		Mean for the last 51 years.
Mean Reading of the Barometer .... inches	29·562	29·545
Highest ,, on the 14th	29·959	29·896
Lowest ,, on the 25th	28·969	29·033
Range of Barometer Readings	0·990	0·863
Highest Reading of a Max. Therm. on the 9th	74·0	77·6
Lowest Reading of a Min. Ther. on the 1st & 14th	39·0	38·9
Range of Thermometer Readings	35·0	38·7
Mean of all the Highest Readings	65·7	65·9
Mean of all the Lowest Readings	47·3	47·9
Mean Daily Range	18·4	18·0
Deduced Monthly Mean (from Mean of Max. and Min.)	54·7	55·1
Mean Temperature from Dry Bulb.....	55·7	55·2
Adopted Mean Temperature	55·2	55·1
Mean Temperature of Evaporation	51·6	52·1
Mean Temperature of Dew Point	48·2	48·6
Mean elastic force of Vapour ..... inches	0·338	0·354
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)..	0·78	0·79
Mean weight of a cubic foot of air....grains	531·6	531·2
Fall of Rain ..... inches	2·795	3·578
Number of days on which Rain fell	16	16·6

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	4	5	1	1	0	5	14	0
Mean Velocity in miles per hour	5·8	6·5	7·1	10·4	0	9·0	10·0	0
Total No. of miles for each Direction	553	782	171	249	0	1077	3371	0

The total number of miles registered during the month was 6203.
The max. Velocity of the wind was 31 miles per hour, W., on the 1st, at noon.

JUNE, 1898.

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

In the month of June, the highest reading of the Barometer during 51 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 ,, 17th, 1892 ,, ... 34·1

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 0·525 in

Greatest number of days on which rain fell 1862 27

Least ,, ,, 1887 4

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

Mean barometric pressure	..	+	0·017 inches
Monthly range ,,	..	+	0·127 ,,
Mean of highest temperatures	..	—	0·2 degrees
Mean of lowest ,,	..	—	0·6 ,,
Mean daily range ,,	..	+	0·4 ,,
Adopted mean temperature	..	+	0·1 ,,
Total rainfall	..	—	0·783 inches

Ground frost on the 1st; Hail on the 1st; heavy rain on the 18th; Thunder on the 1st, 2nd, 19th, 24th and 26th. Lightning on the 24th.

JULY, 1898.

Results of Observations taken during the Month.		Mean for the last 51 years
Mean Reading of the Barometer.....inches	29·69	29·508
Highest ,, on the 10th ,,	30·012	29·884
Lowest ,, on the 23rd ,,	29·205	29·003
Range of Barometer Readings..... ,,	0·807	0·881
Highest Reading of a Max. Therm. on the 9th	74·0	78·7
Lowest Reading of a Min. Therm. on the 30th	42·5	42·1
Range of Thermometer Readings.....	31·5	36·6
Mean of all the Highest Readings.....	68·9	67·9
Mean of all the Lowest Readings.....	49·2	50·6
Mean daily Range	18·3	17·3
Deduced Monthly Mean (from Mean of Max. and Min.)	56·7	57·7
Mean Temperature from Dry Bulb.....	57·4	57·8
Adopted Mean Temperature.....	57·1	57·7
Mean Temperature of Evaporation.....	53·2	54·7
Mean Temperature of Dew Point.....	49·6	52·0
Mean elastic force of Vapour.....inches	0·355	0·388
Mean weight of Vapour in a cub.ft.of air grains	4·0	4·5
Mean additional weight required for saturation,,	1·3	1·0
Mean degree of Humidity (saturation 1·00).....	0·76	0·81
Mean weight of a cubic foot of air.....grains	531·9	527·5
Fall of Rain .....inches	1·178	4·137
Number of days on which Rain fell.....	12	18·1

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	1	3	1	1	0	1	23	1
Mean velocity in miles per hour	10 0	5·2	4·2	3·8	0	5·5	10·1	11·5
Total No. of miles for each Direction	240	376	100	90	0	133	5578	277

The total number of miles registered during the month was 6794.
The max. Velocity of the wind was 28 miles per hour, W. on the 12th, 13th, and 18th at noon, 7 a.m., and 2 p.m. respectively.

JULY, 1898.

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

In the month of July, the highest reading of the Barometer during 51 years, was on the 24th, in 1868, and was.....30·112

The lowest ,, 15th, 1877 ,, ...28·564

The highest Temperature 22nd, 1873 ,, ... 88·2

The lowest ,, 1st, 1857 ,, ... 36·0

The highest adopted mean temperature of the month, 1852... 63·0

The lowest ,, ,, 1888... 54·5

Greatest fall of rain during the month in ... 1888... 8·602in

Least ,, ,, ... 1868... 0·669in

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.

Monthly barometric pressure	+	0·189	inches
Monthly Range ,, ...	—	0·074	,,
Mean of highest temperatures	+	0·1	degrees
Mean of lowest ,, ...	—	1·4	,,
Mean daily range ,, ...	—	1·5	,,
Adopted mean temperature	—	0·6	,,
Total rainfall	—	2·959	inches

Thunder and Lightning on the 22nd.

AUGUST, 1898.

Results of Observations taken during the Month.		Mean for the last 51 years.
Mean Reading of the Barometer.....inches	29·559	29·488
Highest ,, on the 31st ,,	29·879	29·882
Lowest ,, on the 30th ,,	29·151	28·953
Range of Barometer Readings..... ,,	0·728	0·929
Highest Reading of a Max. Therm. on the 12th	79·5	77·1
Lowest Reading of a Min. Therm. on the 6th	43·2	41·3
Range of Thermometer Readings.....	36·3	35·8
Mean of all the Highest Readings.....	69·1	67·2
Mean of all the Lowest Readings.....	51·8	50·5
Mean Daily Range.....	17·3	16·7
Deduced Monthly Mean (from Mean of Max. and Min.)	58·8	57·2
Mean Temperature from Dry Bulb.....	59·4	57·5
Adopted Mean Temperature.....	59·1	57·4
Mean Temperature of Evaporation.....	55·5	54·5
Mean Temperature of Dew Point.....	52·3	51·8
Mean elastic force of Vapour.....inches	0·393	0·387
Mean weight of Vapour in a cub.ft.of air grains	4·4	4·3
Mean additional weight required for saturation,,	1·2	0·9
Mean degree of Humidity (saturation 1·00)....	0·79	0·82
Mean weight of a cubic foot of air.....grains	527·2	527·3
Fall of Rain.....inches	7·132	5·147
Number of days on which Rain fell.....	19	20·0

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing wind was	5	3	0	0	3	9	11	0
Mean Velocity in miles per hour	4·8	9·1	0	0	11·3	11·2	11·1	0
Total No. of Miles for each Direction	575	652	0	0	816	2410	2924	0

The total number of miles registered during the month was 7377.
The max. Velocity of the wind was 37 miles per hour, W. b S., on the 30th, at 10 p.m.

AUGUST, 1898.

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 51 years, was on the 21st, in 1874, and was.....		30·114
The lowest ,, 31st, 1876 ,, ...		28·555
The highest Temperature 2nd, 1868 ,, ...		88·0
The lowest ,, 13th, 1887 ,, ...		33·4
The highest adopted mean temperature of the month,	1857 &'84	61·0
The lowest ,, ,,	1848.....	52·5
Greatest fall of rain during the month in	1891	9·869in
Least ,, ,,	1871	2·085in
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	+ 0·071	inches
Monthly range ,, ...	— 0·201	,,
Mean of highest temperatures ...	+ 1·9	degrees
Mean of the lowest ,, ...	+ 1·3	,,
Mean daily range ,, ...	+ 0·6	,,
Adopted mean temperature	+ 1·7	,,
Total rainfall	+ 1·985	inches

Heavy rain fell on the 2nd, 3rd, 4th, 5th, 9th, 26th and 27th. Gale of wind on the 30th. Thunder on the 3rd, 8th, 15th, 19th and 22nd. Lightning on the 15th, 19th and 21st.

SEPTEMBER, 1898.

Results of Observations taken during the Month.		Mean for the last 51 years.
Mean Reading of the Barometer .....inches	29·656	29·520
Highest ,, on the 4th ,,	30·018	30·028
Lowest ,, on the 29th ,,	29·158	28·853
Range of Barometer Readings ,,	0·860	1·175
Highest Reading of a Max. Therm. on the 5th	80·8	72·6
Lowest Reading of a Min. Therm. on the 23rd	34·8	36·4
Range of Thermometer Readings	46·0	36·2
Mean of all the Highest Readings.....	66·7	62·4
Mean of all the Lowest Readings.....	49·6	47·0
Mean Daily Range.....	17·1	15·4
Deduced Monthly Mean (from Mean of Max. and Min.)	56·9	53·5
Mean Temperature from Dry Bulb	57·7	54·1
Adopted Mean Temperature.....	57·3	53·8
Mean Temperature of Evaporation	54·1	51·0
Mean Temperature of Dew Point	51·2	48·4
Mean elastic force of Vapour .....inches	0·377	0·340
Mean weight of Vapour in a cub. ft. of air grains	4·2	4·0
Mean additional weight required for saturation,,	1·1	0·8
Mean degree of Humidity (saturation 1·00) ...	0·80	0·82
Mean weight of a cubic foot of air... grains	530·9	532·2
Fall of Rain .....inches	1·747	4·576
Number of days on which Rain fell.....	16	18·8

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	5	1	0	5	3	7	8	1
Mean Velocity in miles per hour	4·4	4·3	0	7·4	6·8	11·2	9·4	2·5
Total No. of miles for each Direction	525	102	0	888	487	1869	1802	59

The total number of miles registered during the month was 5732.
The max. Velocity of the wind was 30 miles per hour on the 18th. Direction W. b N. at 3-0 p.m.

SEPTEMBER, 1898.

Mean amount of Cloud (an overcast sky being indicated by 10·0)			6·7
In the month of September, the highest reading of the Barometer during 51 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	+	0·136	inches
Monthly range ,, ...	—	0·315	,,
Mean of highest temperatures	+	4·3	degrees
Mean of lowest ,, ...	+	2·6	,,
Mean daily range ,, ...	+	1·7	,,
Adopted mean temperature	+	3 5	,,
Total rainfall	—	2·829	inches

This month the highest thermometer reading of the year occurred on the 5th, being 80°·8.

Ground Frost on the 23rd, 26th and 29th. Hail on the 28th. Fog on the 4th and 13th.

OCTOBER, 1898.

Results of Observations taken during the Month		Mean for the last 51 years.
Mean Reading of the Barometer.....inches	29·398	29·426
Highest ,, on the 4th ,,	30·014	30·022
Lowest ,, on the 17th ,,	28·493	28·642
Range of Barometer Readings ..... ,,	1·521	1·380
Highest Reading of Max. Therm. on the 3rd	70·7	64·4
Lowest Reading of a Min. Therm. on the 11th	32·5	28·8
Range of Thermometer Readings	38·2	35·6
Mean of all the Highest Readings	58·9	54·6
Mean of all the Lowest Readings	45·7	41·5
Mean Daily Range.....	13·2	13·1
Deduced Monthly Mean (from Mean of Max. and Min.)	51·3	47·1
Mean Temperature from dry bulb.....	51·4	47·6
Adopted Mean Temperature	51·4	47·4
Mean Temperature of Evaporation	49·0	45·2
Mean Temperature of Dew Point	46·5	42·7
Mean elastic force of Vapour .....inches	0·318	0·275
Mean weight of Vapour in a cub. ft. of air grains	3·6	3·1
Mean additional weight required for saturation,,	0·7	0·6
Mean degree of Humidity (saturation 1·00)..	0·84	0·84
Mean weight of a cubic foot of air ....grains	532·7	537·6
Fall of rain .....inches	4·140	4·997
Number of days on which rain fell.....	17	21·3

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	3	5	9	0	4	7	3	0
Mean Velocity in miles per hour	2·4	10·8	9·9	0	8·7	9·9	12·1	0
Total No. of miles for each Direction.	171	1292	2133	0	834	1667	871	0

The total number of miles registered during the month was 6968.
The max. Velocity of the wind was 32 miles per hour, S. by W., on the 22nd at noon.

OCTOBER, 1898.

Mean amount of Cloud (an overcast sky being indicated by 10·0)				8·5
In the month of October, the highest reading of the Barometer during 51 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	13·437in
Least	,,	,, ..	1856	1·328in
Greatest number of days on which rain fell ..			1873	31
Least	,,	,,	1881-'87-'97	12

TABLE OF DIFFERENCES.

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

Mean barometric pressure	—	0·028 inches
Monthly range ,, ...	+	0·141 ,,
Mean of highest temperatures ..	+	4·3 degrees
Mean of lowest ,, ...	+	4·2 ,,
Mean daily range ,, ...	+	0·1 ,,
Adopted mean temperature	+	4·0 ,,
Total rainfall	—	0·857 inches

Ground Frost on the 12th. 13th, and 31st. Hoar Frost on the 3rd; Hail on the 24th; heavy Rain on the 28th and 30th; Thunder on the 11th; Lightning on the 11th and 17th.

NOVEMBER, 1898.

Results of Observations taken during the Month.			Mean for the last 51 years.
Mean Reading of the Barometer	inches	29·397	29·340
Highest ,, on the 18th	,,	29·974	30·061
Lowest ,, on the 25th	,,	28·399	28·561
Range of Barometer Readings	,,	1·575	1·500
Highest Reading of a Max. Therm. on the 2nd		60·0	55·9
Lowest Reading of a Min. Therm. on the 28th		22·0	25·4
Range of Thermometer Readings		38·0	30·5
Mean of all the Highest Readings		49·8	47·3
Mean of all the Lowest Readings		38·3	36·4
Mean Daily Range		11·5	10·9
Deduced Monthly Mean (from Mean of Max and Min.)		43·7	41·5
Mean Temperature from Dry Bulb		44·0	41.7
Adopted Mean Temperature		43·9	41·6
Mean Temperature of Evaporation		42·7	39·4
Mean Temperature of Dew Point		41·3	38·0
Mean elastic force of Vapour	inches	0·261	0·230
Mean weight of Vapour in a cub. ft. of air	grains	3·0	2·6
Mean additional weight required for saturation,	,	0·5	0·4
Mean degree of Humidity (Saturation 1·00)		0·90	0·87
Mean weight of a cubic foot of air	grains	543·1	544·9
Fall of Rain	inches	5 095	4·365
Number of days on which Rain fell		17	20·0

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing wind was	7	4	3	2	0	6	8	0
Mean Velocity in miles per hour	7·3	6·4	12·4	8·4	0	8·9	10·3	0
Total No. of miles for each Direction	1234	610	896	402	0	1279	1983	0

The total number of miles registered during the month was 6404.
The max. Velocity of the wind was 45 miles per hour, S. by W. on the 2nd at 8 a.m.

NOVEMBER, 1898.

Mean amount of Cloud (an overcast sky being indicated by 10·0)			7·4
In the month of November, the highest reading of the Barometer during 51 years was on the	12th,	in 1857, and was	30·350
The lowest ,,	11th,	1891 ,,	27·938
The highest Temperature	2nd,	1894 ,,	62·0
The lowest ,,	17th,	1861 ,,	19·1
The highest adopted mean temperature of the month,		1881	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	+	0·057 inches
Monthly range ,, ...	+	0·075 ,,
Mean of highest temperatures ..	+	2·5 degrees
Mean of lowest ,, ...	+	1·9 ,,
Mean daily range ,, ...	+	0·6 ,,
Adopted mean temperature	+	2·3 ,,
Total rainfall	+	0·730 inches

The lowest barometer reading for the year occurred on the 25th, 6-30 a.m., being 28·399 inches.

The lowest thermometer reading for the year was 22°·0 on the 28th.

Ground Frost on the 1st, 6th, 8th, 14th, 18th, 24th, 27th—30th. Snow on the 23rd, 28th, 29th. Hail on the 3rd. Heavy Rain on the 2nd and 4th. Gale of Wind on the 2nd. Fog on the 15th and 16th.

DECEMBER, 1898.

Results of Observations taken during the Month		Mean for the last 51 years.
Mean Reading of the Barometer .... inches	29·518	29·455
Highest ,, on the 20th ,,	30·034	30·074
Lowest ,, on the 29th ,,	28·603	28·587
Range of Barometer Readings..... ,,	1·431	1·487
Highest Reading of a Max. Therm. on the 5th	58·0	53·2
Lowest Reading of a Min. Therm. on the 30th	24·0	20·3
Range of Thermometer Readings	34·0	32·9
Mean of all the Highest Readings	49·1	43·2
Mean of all the Lowest Readings	38·1	33·0
Mean Daily Range.....	11·0	10·2
Deduced Monthly Mean (from Mean of Max. and Min.)	43 6	38·1
Mean Temperature from Dry Bulb	44 2	38·8
Adopted Mean Temperature	43·9	38·4
Mean Temperature of Evaporation	42·0	36·9
Mean Temperature of Dew Point	39·7	35·0
Mean elastic force of Vapour .....inches	0·245	0·205
Mean weight of Vapour in a cubic ft. of air grains	2·8	2·4
Mean additional weight required for saturation,,	0·5	0·4
Mean degree of Humidity (saturation 1·00)..	0·85	0·87
Mean weight of a cubic foot of air ....grains	543·3	548·2
Fall of Rain .....inches	6·041	4·518
Number of days on which Rain fell.....	27	20·8

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	2	0	0	1	5	10	12	1
Mean Velocity in miles per hour	8·1	0	0	10·8	10·8	17·4	17·0	9·6
Total No. of miles for each Direction	388	0	0	259	1295	4185	4908	230

The total number of miles registered during the month was 11265.
The max. Velocity of the wind was 49 miles per hour, W. b S., on the 2nd at 4·0 p.m.

DECEMBER, 1898.

Mean amount of Cloud (an overcast sky being indicated by 10·0)				7·8
In the Month of December, the highest reading of the Barometer during 51 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	+	0·063	inches
Monthly range ,, ...	—	0·056	,,
Mean of highest temperatures ..	+	5·9	degrees
Mean of lowest ,, ...	+	5·1	,,
Mean daily range ,, ...	+	0·8	,,
Adopted mean temperatures	+	5·5	,,
Total rainfall	+	1·523	inches

Ground Frost on the 8th, 13th. 15th, 16th, 19th—25th, 27th—31st. Heavy rain on the 26th and 28th. Gales of wind on the 2nd, 14th, and 27th.

Summary of Observations, 1898.

Results of Observations taken during the Year.		Mean for the last 51 years
Mean Reading of the Barometer.....inches	29·535	29·492
Highest ,, on January 15th ,,	30·193	30·282
Lowest ,, on November 25th ,,	28·399	28·264
Range of Barometer Readings..... ,,	1·794	2·018
Highest Reading of a Max. Therm. on Sept. 5th	80·8	81·7
Lowest Reading of a Min. Ther. on Nov. 28th	22·0	15·5
Range of Thermometer Readings	58·8	66·2
Mean of all the Highest Readings	56·9	54 9
Mean of all the Lowest Readings	41·9	40·6
Mean Daily Range	15·0	14·3
Deduced yearly Mean (from Mean of Max. and Min.).....	48·3	46·8
Mean Temperature from Dry Bulb	49·0	46·8
Adopted Mean Temperature	48·7	46·8
Mean Temperature of Evaporation	46·0	44·5
Mean Temperature of Dew Point	43·2	42·1
Mean elastic force of Vapour ..... inches	0·286	0·273
Mean weight of Vapour in a cub. ft. of air grains	3·3	3·3
Mean additional weight required for saturation,,	0·8	0·7
Mean degree of Humidity (saturation 1·00)	0·82	0·84
Mean weight of a cubic foot of air .. grains	538·6	539·2
Total fall of rain in the year ..... inches	48·105	47·[illegible]
Number of days per month on which Rain fell	17·6	18·6

Summary of Wind.

	N	NE	E	SE	S	SW	W	NW
No of days in the year on which the prevailing wind was	43	34	24	12	29	76	139	8
Mean Velocity in miles per hour	6·8	8·3	9·4	7·3	9·4	11·3	11·9	7·6
Total No. of miles for each Direction	6977	6739	5390	2090	6526	20533	39844	1461

The total No. of miles registered during the year was 89560.

The max. Velocity of the wind was 49 miles per hour, W., by S. on December 2nd, at 4 p.m.

SUMMARY, 1898.

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 1866, 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 51 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 June 18th, 1893, and was		88·7
The lowest ,, ,, January 15th, 1881		4·6
The highest adopted mean temperature of a month, July 1868, and was		62·4
The lowest ,, ,, ,, February, 1855,		28·6
The highest adopted mean temperatures 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, 1892	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.

1898.	Frost.	Hoar Frost.	Snow.	Hail.	Heavy Rain.
January	1, 4, 7—10, 14—17, 22. 23				4, 5, 30, 31
February	5—7, 9. 11—13. 17—28		4, 5, 7, 20, 26	2,3,6,7,8,16,20,26,27,28	
March	1—15. 20—26, 28—31	13	1.4,6,7,24.25—29	1, 23, 24	15, 17
April	1,2,4—6,8,13,16—20.22.23,25,26,30		4. 15,	4. 10	
May	6, 7, 15, 16, 19, 21, 27		11	11, 12	10
June	1			1	18
July					
August					2,3,4,5,9,26.27
September	23—26. 29			28	
October	12, 13, 31	3		24	28, 30
November	1, 6, 8, 14, 18—24. 27—30		23, 28, 29	3	2. 4
December	8. 13, 15. 16, 19—25. 27—31				26. 28

1898	Gales of Wind.	Fog.	Thunder.	Lightning.	Lunar Halo.	Solar Halo.
January	31	9. 16. 17, 20				
February	2, 15, 16, 25	11			4	
March	1. 24	10, 11, 12	1	1		
April			29		5	
May	11		3. 22. 23. 31	3, 22	28	28
June			1, 2, 19. 24, 26	24		
July			22	22		
August	30		3. 8, 15, 19, 21	15, 19, 21		
September		4, 13				
October			11	11, 17		
November	2	15, 16				
December	2. 14. 27					

Aurora Borealis, March 15th, 9 to 10 p.m. April 12th, at 9 p.m.

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	0·3	1·5	1·4	2·5	4·8	4·0	2·1	0	0	0	0	0	0
February - -	0	0	0	1·8	6·0	9·4	11·3	13·8	14·2	11·8	10·9	6·4	2·8	0	0	0	0
March - - -	0	0	0·5	3·0	10·3	13·0	16·1	19·4	17·2	14·2	14·1	11·9	8·2	1·7	0	0	0
April - - -	0	0	3·5	6·3	8·6	12·4	12·1	13·4	14·6	15·7	13·5	12·5	8·6	6·5	1·3	0	0
May - - -	0·5	5·9	13·2	15·0	15·4	15·4	15·3	14·1	13·7	15·1	13·1	10·7	10·4	9·6	7·6	0·2	0
June - - -	0·8	3·9	6·6	7·7	10·6	14·5	14·6	16·0	15·6	16·8	15·2	13·1	11·0	10·8	7·1	1·6	0
July - - -	3·5	6·0	10·5	14·2	17·3	19·5	20·1	20·4	17·2	17·9	19·4	19·3	16·0	16·4	14·3	3·8	0
August - - -	0	2·4	7·4	8·5	12·2	16·0	16·8	14·5	12·8	13·5	11·7	11·0	9·3	7·3	1·6	0	0
September - -	0	0	0·4	6·2	10·3	10·9	12·3	13·3	12·6	12·1	13·1	12·9	9·6	2·0	0·2	0	0
October - -	0	0	0	1·1	4·6	8·5	10·0	11·1	9·4	9·4	9·0	6·0	3·2	0·3	0	0	0
November - -	0	0	0	0·3	0·9	4·6	7·6	8·8	9·5	7·7	6·1	2·7	0	0	0	0	0
December - -	0	0	0	0	0·3	2·7	3·6	5·3	6·6	7·0	3·3	0·5	0	0	0	0	0
Total - -	4·8	18·2	42·1	64·1	96·8	128·4	141·2	152·6	148·2	145·2	131·5	107·0	79·1	54·6	32·1	5·6	0

TOTAL AMOUNT OF SUNSHINE RECORDED ON EACH DAY.

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

TOTAL AMOUNT OF SUNSHINE RECORDED ON EACH DAY.

(Continued.)

MONTH.	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Monthly Total.	Per centage each month.
January - -	0	0	0	0	2·7	0	1·7	0	0	0	0	0	0	2·8	16·6	6·7
February - -	3·9	0	6·6	5·1	7·8	9·4	6·0	0·5	6·1	5·1	3·3	0	0	0	88·4	32·5
March - -	0	1·8	10·6	8·2	7·3	3·8	6·6	6·0	2·1	1·0	0·1	0·9	1·2	6·2	129·6	35·4
April - -	10·1	9·3	0	0·6	1·4	0·6	2·6	11·3	1·7	0	0	1·4	0	0	129·0	30·8
May - -	9·6	4·4	1·8	0	7·2	5·4	11·6	2·4	10·6	8·6	11·6	0	4·1	5·2	175·2	35·5
June - - -	0	7·8	0	0	9·6	5·7	3·3	1·8	3·4	0·8	14·0	3·3	2·8	0	165·9	32·7
July - - -	1·2	0	13·7	6·3	0	4·8	11·7	11·1	7·8	11·4	5·1	6·5	12·0	5·0	235·8	46·3
August - -	1·8	2·2	2·9	7·7	9·1	5·8	2·7	9·0	0	1·6	8·7	0	3·0	10·9	145·0	31·7
September -	0·9	0	5·8	0·7	7·7	9·0	8·0	4·3	7·7	0	8·2	0	0	0	115·9	30·6
October - -	0	0	0	1·8	0·6	6·5	1·3	0	6·2	1·3	0·7	0	1·4	2·8	72·6	22·3
November -	0	5·1	0	3·9	7·0	0	0	0	0·8	5·5	0·4	1·1	0	0	48·2	18·9
December - -	0	0·8	6·4	1·7	2·3	1·9	0	0	0	0	0	0	4·2	0	29·3	12·7

SUMMARY OF SUNSHINE.

1898.	Number of days on which Sunshine was recorded.	Amount or Total Number of Hours	Per centage of possible Sunshine.	Mean for the last 18 Years.		
				Days.	Amount hours	Per centage of possible Sunshine
January ...	8	16·6	6·7	13·8	35·3	14·2
February...	20	88·4	32·5	17·5	58·8	21·4
March ...	27	129·6	35·4	23·7	105·7	28·8
April ...	25	129·0	30·8	25·8	145·8	34·8
May ...	26	175·2	35·5	27·9	196·6	39·9
June ...	25	165·9	32·7	27·3	189·2	37·2
July ...	29	235·8	46·3	28·4	176·5	34·7
August ...	26	145·0	31·7	27·5	142·3	31·1
September	25	115·9	30·6	25·2	122·5	32·3
October ...	20	72·6	22·3	22·9	86·0	26·4
November	16	48·2	18·9	16·4	43·7	17·1
December	11	29·3	12·7	12·8	26·8	11·6
Year	258	1351·5	30·3	269·2	1329·2	29·8

SUMMARY OF SUNSHINE

(Continued)

EXTREMES FOR THE LAST 18 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	19	1881 1882	162·1	1893	67·0	1895	44·2	1893	18·3	1895
Apr.	28	1884 1887 1892 1893 1896	23	1883 1885 1888 1897	223·7	1893	95·7	1889	53·4	1893	22·8	1889
May	30	1881 1884 1888	22	1886	266·6	1881	127·0	1886	54·1	1881	25·8	1886
June	30	1896	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	194·8	1893	88·4	1891	42·6	1893	19·3	1891
Sept	29	1895	21	1897	170·0	1895	62·9	1896	44·9	1895	16·6	1896
Oct.	28	1891	17	1889	119·2	1881	50·0	1889	36·6	1881	15·3	1889
Nov	23	1883	9	1897	60·5	1884	18·5	1891	23·6	1884	7·2	1891
Dec.	18	1886	6	1882	60·1	1886	14·5	1882	26·0	1886	6·3	1882
Year	290	1887	252	1885	1613·7	1887	1132·1	1888	36·1	1887	25·3	1888

OBSERVATIONS OF UPPER CLOUDS (CIRRUS).

Date. 1898.	G.M.T.	Cloud.		Wind.		Direction of Lower Clouds.
		Direction.	V'locity (0—6.)	Direction	Force. (0—12.)	
January 7	3-40pm	NNW	2	SW b W	1	W
,, 14	3-15pm	NE	2	SW b W	1	SW
,, 31	10-0am	NW	3	WSW	2	SW
February 3	9-30am	NW	3	W b S	6	
,, 13	9-15am	W b N	3	W b S	1	SW b W
,, 16	5-20pm	WNW	3	W	6	W
,, 17	2-50pm	SW b S	2	W b S	3	NE
,, 21	9-0am	E b S	2	SSW	1	
,, 22	9-0am	N	2	N	1	NE b N
,, 24	9-0am	N	2	N	0	
March 3	9-0am	N b W	2	WNW	0	WNW
,, 4	9-0am	NW	2	N b W	2	N b W
,, 22	5-40pm	W	2	W	2	
April 8	4-0pm	S	3	S b W	4	SW
,, 12	9-0am	SW b S	3	NW b W	5	W b N
,, 15	10-0am	NW	2	W b S	3	W
,, 17	8-0am	SW b W	2	S b E	2	W
May 5	11-30am	W b N	3	W b S	2	W
,, 7	11-40am	SW b W	2	W	2	W
,, 11	4-30pm	SE	2	W b S	3	W
,, 12	2-0pm	W b S	2	W	4	NW
,, 15	1-30pm	S	2	WNW	2	SW
,, 30	9-0am	NW	2	W b N	3	W
June 1	2-0pm	E b N	2	W	5	W
,, 2	Noon	NE b N	2	WNW	3	W
,, 7	Noon	SW	2	W b S	3	W
,, 8	10-0am	S	2	SSW	2	SW
,, 11	10-0am	N b W	2	NE b N	1	NE
,, 16	3-0pm	W	3	SW b W	1	SW
,, 23	10-0am	N b W	3	W	3	W
,, 24	10-30	W b N	2	SW	3	SW b S
July 8	8-0am	W b N	2	SSE	0	
,, 9	8-15am	W	2	NE	1	
,, 10	11-15am	NW	3	NE	1	
,, 15	3-30pm	W b S	3	W b S	2	W
,, 16	Noon	WNW	2	W	3	W b S
,, 26	9-0am	W	3	NE b N	1	W
,, 30	8-0am	W	3	NNE	1	
,, 31	9-0am	SW	2	W b S	4	W b S

OBSERVATIONS OF UPPER CLOUDS (Continued).

Date. 1898	G. M. T.	Cloud.		Wind.		Direction of Lower Clouds
		Direction	Velocity (0–6).	Direction.	Force. (0—12)	
August 9	12-15pm	WNW	3	WSW	3	SW
,, 12	9-0am	S	2	SE b S	2	SE
,, 14	9-0am	SSW	2	NE b N	0	
,, 16	8-30am	S	2	NNE	1	
,, 20	9-15am	N b E	2	N	1	N
Sept. 6	9-0am	SE b E	3	NE	1	NE
,, 17	9-0am	S	3	N b E	1	
,, 19	4-0pm	E b N	3	WSW	4	W
,, 23	5-0pm	E	2	NE b E	1	
,, 24	10-0am	SE	2	E	1	NE
,, 26	3-0pm	SE b S	2	S b E	1	S
,, 28	11-50am	NE b N	3	W b S	4	W
October 1	Noon	ENE	2	E b S	1	W
,, 21	10-0am	SW	3	SSW	0	SW b W
,, 24	8-0am	SW b S	3	SW b S	2	SW
November 3	9-0am	SW b S	3	W b S	3	SW
,, 4	4-0pm	NE	2	WSW	4	SW b W
,, 6	Noon	W	2	SW b S	1	WSW
,, 9	3-30pm	SE	2	NE b N	1	NE
,, 11	10-0am	NNE	2	NE b N	1	NE
,, 21	8-0am	S b W	3	W b N	1	W b S
,, 22	Noon	N b W	2	N	1	
December 8	9-0am	W	2	NW	0	
,, 14	2-20pm	W b W	2	W	7	W
,, 20	10-am	N	3	NW b W	1	NW
,, 23	Noon	SE	2	S	3	S
,, 23	3-0pm	ESE	2	S b W	2	S
,, 27	3-30pm	SE	2	SW b S	5	SW

Observations of Earth-Magnetism.

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 13′·6 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 —0·00181.

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 Barrow's Circle, 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 six 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 1891-97.

OBSERVATIONS OF DECLINATION AND DIP.

1898 Month	G.M.T. Civil Day	West Declination Observations.	West Declination Monthly Mean.	Magnetic Dip. Needle	Magnetic Dip. Dip.	Magnetic Dip. G.M.T. Civil Day
	D. H. M.	° ′	° ′		° ′	D. H. M.
Jan.	3 16 0	18 25 0	18 23·5			
	11 16 0	18 21·7		1	68 46·4	14 14 45
	17 16 0	18 31·0		3	69 1·1	,, 15 20
	24 16 10	18 18·6				
	31 16 0	18 21·3				
Feb.	7 16 0	18 23·8	18 25·5			
	14 16 0	18 23·6		1	68 50·2	17 12 46
	21 16 0	18 27·6		3	68 58·6	,, 13 28
	28 16 0	18 27·1				
March	7 16 10	18 24·1	18 22·8			
	14 16 0	18 24·1		1	68 49·5	21 11 40
	21 16 5	18 20·1		3	68 55·9	,, 12 15
	28 16 5	18 23·0				
April	4 16 5	18 24·3	18 20·1			
	11 16 10	18 21·9		1	68 52·5	18 11 23
	18 16 15	18 14·6		3	68 56·4	,, 11 53
	25 16 0	18 19·7				
May	2 16 0	18 23·3	18 21·5			
	9 16 5	18 23·1		1	68 47·9	16 11 30
	16 16 0	18 20·2		3	68 56·7	,, 12 5
	23 16 0	18 19·5				
June	6 16 0	18 25·5	18 24 0			
	13 16 5	18 24·9		1	68 50·8	16 11 20
	20 16 0	18 22·7		3	68 54 4	,, 11 45
	27 16 0	18 22·7				
July	4 16 0	18 26·1	18 19·7			
	11 16 5	18 20·4		1	68 41·3	16 16 4
	18 16 5	18 14·2		3	68 56·1	,, 16 39
	25 16 0	18 18·0				

OBSERVATIONS OF DECLINATION AND DIP.

(Continued.)

1898 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	18 20·4	18 21·9	1	68 48·5	16 11 14
	15 16 0	18 23·5		3	68 59·4	,, 11 56
	22 16 0	18 21·8				
	29 15 49	18 21·8				
Sept.	5 16 0	18 20·3	18 21·3	1	68 48·3	15 13 33
	12 16 0	18 21·4		3	69 2·7	,, 14 3
	19 16 0	18 20·3				
	26 16 20	18 23·3				
Oct.	3 16 0	18 19·7	18 21·4	1	68 49·8	22 9 48
	10 16 0	18 18·2		3	69 4 3	,, 10 28
	24 16 0	18 26 9				
	31 16 5	18 20·7				
Nov.	7 16 15	18 23·6	18 21·3	1	68 51·4	14 11 33
	14 16 0	18 18·4		3	68 55·5	,, 12 5
	21 16 0	18 23·7				
	28 16 5	18 19·3				
Dec.	5 16 10	18 20·2	18 19·9	1	68 49·4	15 11 40
	12 16 15	18 19·5		3	68 58·5	,, 12 8
	19 16 0	18 21·2				
	26 16 0	18 18·8				
Yearly Mean			18 21·9		68 53·6	

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

1898 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.	14 9 58	41·3	5·9826	14 {11 3 {11 5	43·0 43·0	11 54·0 5 23·9	0·38718
Feb.	17 10 7	44·6	5·9876	17 {11 0 {11 0	45·0 45·0	11 53·7 5 23·0	0·38695
Mar.	21 9 47	45·0	5·9878	21 {10 23 {10 37	47·0 47·0	11 54·5 5 23·4	0·38718
Apr.	18 9 42	52·5	5 9882	18 {10 35 {10 34	54·0 54·0	11 51·8 5 22·7	0 38676
May	16 9 41	48·1	5·9868	16 {10 33 {10 35	49·0 49·5	11 53·4 5 23·3	0·38707
June	16 9 40	59·1	5 9951	16 {11 35 {11 36	61·5 61·5	11 51·3 5 22·2	0·38636
July	16 9 9	62·3	5 9368	16 {10 4 {10 5	64·8 65·0	11 51 8 5 22·6	0·38721
Aug.	16 9 32	65·6	5 9887	16 {10 28 {10 28	67·4 67·5	11 49·4 5 21·1	0·38674
Sept.	15 10 12	66·0	6 0053	15 {11 26 {11 38	67·7 67·9	11 49·8 5 21 4	0·38584
Oct.	21 9 19	56·3	5·9918	21 {11 1 {11 13	59·0 59·0	11 50·9 5 21·8	0·38638
Nov.	14 9 13	55·3	5·9886	14 {10 31 {10 28	50·5 51·0	11 50·6 5 22·1	0·38619
Dec.	15 10 17	52·8	5·9873	15 {10 52 {11 4	52·0 52·0	11 49·2 5 21·5	0·38591

MAGNETIC INTENSITY.

	BRITISH UNITS.			C. G. S. UNITS.		
1898	Horizontal Force.	Vertical Force.	Total Force.	Horizontal Force.	Vertical Force.	Total Force.
Jan. ...	3·7426	9·6969	10·3942	0·17256	0·44710	0·47925
Feb. ..	3·7426	9·7022	10·3990	0·17256	0·44735	0·47947
Mar. ...	3·7394	9·6797	10·3768	0·17242	0·44631	0·47845
April ..	3·7441	9·7067	10·4038	0·17263	0·44755	0·47969
May ...	3 7420	9·6833	10 3811	0·17253	0·44647	0·47865
June ...	3·7391	9·6786	10·3758	0·17240	0·44626	0·47840
July ..	3·7418	9·6532	10·3531	0·17253	0·44509	0·47736
Aug. ...	3·7498	9·7174	10·4158	0·17290	0·44805	0·48025
Sept. ...	3·7383	9·7005	10·3959	0·17236	0·44726	0·47933
Oct. ...	3·7432	9·7260	10·4203	0·17259	0·44844	0·48050
Nov. ...	3·7470	9·7058	10·4038	0·17277	0·44751	0·47969
Dec. ...	3·7506	9·7195	10·4179	0·17293	0·44814	0·48035
Means	3·7434	9·6975	10·3948	0·17260	0·44713	0·47928

HORIZONTAL MAGNETIC DIRECTION.

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

1898	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.
	18°+						18°+	17°+	
	′	′	′	′	′	′	′	′	′
January	27·4	15·2	21 3	22·7	1·4	12·2	31·6	55·3	36·3
February	29·5	16·2	22·9	23·1	·2	13·3	48·3	59·3	49·0
March	31·8	13·7	22·8	23 9	1 1	18 1	56·6	3·3	113·3
April	29 5	15·5	22·5	22·9	·4	14·0	36·3	65 8	30·5
May	28·3	14 2	21·3	21·9	6	14·1	33·3	63·3	30·0
June	26·5	12 9	19·7	20·5	·8	13·6	32·6	67·3	25·3
July	26 0	12·1	19 0	19·5	·5	13·9	30·3	65·3	25·0
August	26·9	11·4	19·2	18·8	—·4	15·5	31·3	59 3	32·0
September	27 4	6·0	16·7	18 4	1·7	21·4	64·3	33 3	91·0
October	24·7	8 4	16·6	18·3	1·7	16·3	29·8	46·3	43·5
November	22 5	10 4	16 5	17·8	1·3	12 1	34·6	62·7	31·9
December	21·5	9 1	15 3	17·8	2 5	12·4	28 5	66·7	21·8
Means ...	26·8	12·1	19·5	20·5	1·0	14·7	38·1	54·0	44·1
Correction for diurnal range				—·3					
Mean for the year				18° 20′ ·2					

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.

1898.	Mean of the highest daily readings. (a)	Mean of th 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 - -	291	247	269	269	0	44	331	201	130
February -	301	243	272	272	0	58	356	181	175
March - -	307	218	263	278	15	89	396	—331	727
April - -	311	248	280	284	4	63	349	199	150
May - -	317	238	279	288	9	79	390	171	219
June - -	314	236	275	283	8	78	349	196	153
July - -	307	231	269	278	9	76	349	201	148
August - -	298	221	260	268	8	77	336	176	160
September -	287	191	239	255	16	96	455	—269	724
October - -	291	225	258	264	6	66	364	171	193
November -	291	239	265	268	3	52	320	161	159
December -	300	251	276	278	2	49	321	216	105
Means - -	301	232	267	274	7	69	359	106	253

Correction for diurnal range —2

Mean Horizontal Force for the year 0·17272 C.G.S. units.

DATES OF MAGNETIC DISTURBANCES, 1898.

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	m	c	m	s	m	m	s	s	s	s	s	s
2	s	c	c	s	s	s	s	m	g	s	m	s
3	s	c	c	s	m	s	s	m	m	s	m	s
4	s	c	s	m	m	c	s	s	s	s	s	c
5	c	m	s	s	m	c	s	s	s	c	s	m
6	c	s	s	m	s	m	s	s	c	s	s	s
7	c	c	s	m	s	m	s	s	c	s	s	s
8	c	s	s	m	s	m	s	s	m	c	s	s
9	c	c	s	m	s	s	s	s	vg	c	s	s
10	s	m	s	m	s	m	s	s	g	s	c	s
11	s	g	m	s	m	m	s	s	c	c	s	s
12	s	g	s	g	m	s	s	s	s	c	s	s
13	s	m	s	m	s	s	m	s	s	s	s	m
14	c	g	g	m	s	s	c	s	s	s	s	m
15	m	m	vg	m	s	s	c	s	s	s	s	m
16	m	m	m	m	s	s	s	g	s	s	s	m
17	m	m	m	m	s	s	s	m	m	c	s	s
18	m	s	m	m	s	s	c	m	s	c	s	s
19	m	c	m	s	s	s	m	m	s	s	s	m
20	m	m	m	c	s	s	m	m	s	s	m	s
21	m	m	s	c	s	c	m	m	s	m	m	m
22	c	s	s	s	s	s	m	m	s	m	m	s
23	c	s	s	s	s	s	m	m	s	s	s	c
24	c	s	s	s	s	s	m	s	m	s	s	s
25	s	c	s	s	s	m	m	c	m	m	s	s
26	s	c	s	s	s	m	s	m	s	s	s	c
27	s	c	s	s	s	m	m	m	s	m	s	s
28	s	c	s	s	m	s	s	s	m	m	c	s
29	s		s	s	m	m	c	s	m	m	c	s
30	s		s	s	m	s	s	s	m	m	c	s
31	c		s		m		s	s		s		s
Totals c	10	11	2	2	0	3	4	1	3	7	4	3
Totals s	13	6	20	15	21	17	18	18	16	17	21	21
Totals m	8	8	7	12	10	10	9	11	8	7	5	7
Totals g	0	3	1	1	0	0	0	1	2	0	0	0
Totals vg	0	0	1	0	0	0	0	0	1	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.

1898.	January	February	March	April	May	June	July	August	September	October	November	December
1			·51	·46	·50					·47	·42	
2			·39			·54	·38					
3			·42							·43	·48	
4			·41	·69			·68	·43	·44	·41		
5		·41	·52	·41	·41				·40			
6		·43						·51	·38		·50	
7	·41	·48		·68	·39	·47		·70	·38		·44	
8			·43	·40		·37	·37	·41		·50		·52
9						·39	·38	·39		·40	·46	
10	·50					·39	·40			·37	·40	·50
11		·65	·42			·34	·43	·66		·42	·49	
12		·42	·45	·60	·40			·40	·40	·36		
13		·40	·64		·44		·45	·42		·36		
14		·51	·49		·40	·45		·41	·68			
15				·41	·52	·37	·46					·39
16			·44	·37	·69			·52	·34			
17				·37			·72		·38			
18		·48		·33	·39	·45						
19			·49	·40	·40	·46					·41	
20		·44	·40				·33	·44				·47
21		·41	·45					·35		·37	·42	·50
22	·62	·46			·44	·69		·39	·37		·38	·45
23		·43			·66		·75	·65	·38	·41		·45
24	·52	·39	·49	·45	·33		·44	·69	·67			
25			·70	·37			·39	·38				
26					·32		·40		·39	·47	·48	
27					·32		·41			·42	·43	
28					·48	·34		·45		·42		
29											·43	
30			·43							·50		·45
31	·39		·38					·38				

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APPENDIX

RESULTS

OF

METEOROLOGICAL OBSERVATIONS

TAKEN AT

ST. IGNATIUS' COLLEGE, MALTA

BY THE

REV. J. F. DOBSON, S.J.

1898.

ST. IGNATIUS' COLLEGE,

MALTA.

Lat. 35° 55′ N. Long. 14° 29′ E.

Barometer Readings reduced to 32° F. at sea level.

METEOROLOGICAL REPORT.

JANUARY, 1898.

Results of Observations taken during the Month.		Mean for the last 15 years.
Mean Reading of the Barometer.....inches	30·347	30·031
Highest ,, on the 29th ,,	30·638	30·413
Lowest ,, on the 1st ,,	29·925	29·560
Range of Barometer Readings..... ,,	0·713	0·853
Highest Reading of a Max. Therm. on the 10th	64·0	65·1
Lowest Reading of a Min. Therm. on the 29th	42·2	41·2
Range of Thermometer Readings	21·8	23·9
Greatest Range in 24 hours on the 29th	18·5	18·3
Mean of all the Highest Readings	60·8	59·0
Mean of all the Lowest Readings	51·5	48·4
Mean Daily Range.....	9·3	10·6
Mean Temperature (deduced from Max. & Min)	55·5	53·0
Mean Temperature (deduced from Dry Bulb)	55·5	52·7
Adopted Mean Temperature.....	55·5	52·9
Mean Temperature of Evaporation	51·1	48·5
Mean Temperature of Dew Point	48·1	45·3
Mean elastic force of Vapour..... inches	0·336	0·303
Mean weight of Vapour in a cub. ft. of air grains	3·8	3·5
Mean additional weight required for saturation,,	0·9	0·9
Mean degree of Humidity.....	80	80
Mean weight of a cubic foot of air .... grains	544·6	542·2
Fall of Rain..... inches	2·883	3·506
Number of days on which Rain fell	7	14
Mean amount of Cloud (an overcast sky=10)	6·0	5·4
Total number of miles of Wind indicated....	8403	8454
Mean Velocity of Wind per hour.....miles	11·3	11·4

FEBRUARY, 1898.

Results of Observations taken during the Month.		Mean for the last 15 years.
Mean Reading of the Barometer..... inches	29·949	30·044
Highest ,, on the 13th ,,	30·361	30·340
Lowest ,, on the 5th ,,	29·596	29·627
Range of Barometer Readings ..... ,,	0·765	0·713
Highest Reading of a Max.Therm.on the 24th	66·6	66·8
Lowest Reading of a Min. Therm. on the 10th	42 2	41·3
Range of Thermometer Readings	24·4	25·5
Greatest Range in 24 hours on the 14th	17·5	19·3
Mean of all the Highest Readings.....	59·1	60·2
Mean of all the Lowest Readings	48·5	49·4
Mean Daily Range	10·6	10·8
Mean Temperature (deduced from Max. & Min.)	52·8	53·8
Mean Temperature (deduced from Dry Bulb)	54·1	54·0
Adopted Mean Temperature	53·5	53·9
Mean Temperature of Evaporation.....	48·9	49·6
Mean Temperature of Dew Point	45·4	46·8
Mean elastic force of Vapour .....inches	0·304	0·322
Mean weight of Vapour in a cub. ft. of air grains	3·4	3·6
Mean additional weight required for saturation,,	1·0	0·8
Mean degree of Humidity.....	77	82
Mean weight of a cubic foot of air ....grains	539·1	541·0
Fall of rain .....inches	2·193	2·034
Number of Days on which rain fell	12	9
Mean amount of Cloud (an overcast sky=10)	5·7	5·1
Total number of miles of wind indicated	9673	7879
Mean Velocity of Wind per hour .....miles	14·4	11·7

MARCH, 1898.

Results of Observations taken during the Month.		Mean for the last 15 years.
Mean Reading of the Barometer .....inches	29·864	29·999
Highest ,, on the 15th ,,	30·194	30·347
Lowest ,, on the 7th ,,	29·229	29·537
Range of Barometer Readings ..... ,,	0·965	0·810
Highest Reading of a Max.Therm.on the 26th	74·4	73·4
Lowest Reading of a Min. Therm. on the 3rd	45·4	43·1
Range of Thermometer Readings.....	29·0	30·3
Greatest Range in 24 hours on the 3rd	20·7	22·6
Mean of all the Highest Readings.....	64·1	63·2
Mean of all the Lowest Readings.....	51·1	51·0
Mean Daily Range.....	13·0	12·2
Mean Temperature (deduced from Max.& Min.)	56·9	56·3
Mean Temperature (deduced from Dry Bulb)	55·9	55·3
Adopted Mean Temperature	56·4	55·8
Mean Temperature of Evaporation	52·9	51·7
Mean Temperature of Dew Point	50·3	48·5
Mean elastic force of Vapour .....inches	0·365	0·342
Mean weight of Vapour in a cub.ft.of air grains	4·1	3·9
Mean additional weight required for saturation,,	0·9	1·1
Mean degree of Humidity	82	79
Mean weight of a cubic foot of air..grains	534·3	537·4
Fall of Rain ..... inches	1·348	1·020
Number of days on which Rain fell	9	7
Mean amount of Cloud (an overcast sky=10)	4·9	4·6
Total number of miles of Wind indicated....	6904	8194
Mean Velocity of Wind per hour .....miles	9·3	11·0

APRIL, 1898.

Results of Observations taken during the Month.		Mean for the last 15 years.
Mean Reading of the Barometer .....inches	29·989	29·950
Highest ,, on the 15th ,,	30·347	30·257
Lowest ,, on the 2nd ,,	29·552	29·546
Range of Barometer Readings..... ,,	0·795	0·711
Highest Reading of a Max. Therm. on the 1st	77·6	76·5
Lowest Reading of a Min. Therm. on the 6th	48·3	47·8
Range of Thermometer Readings	29·3	28·7
Greatest Range in 24 hours on the 12th	20·7	21·6
Mean of all the Highest Readings	68·5	67·2
Mean of all the Lowest Readings.....	56·0	54·2
Mean Daily Range.....	12·5	13·0
Mean Temperature(deduced from Max.& Min.)	61·3	59·7
Mean Temperature (deduced from Dry Bulb)	58·6	59·4
Adopted Mean Temperature	60·0	59·6
Mean Temperature of Evaporation	56·2	55·5
Mean Temperature of Dew Point	54·0	52·1
Mean elastic force of Vapour..... inches	0·418	0·390
Mean weight of Vapour in a cub.ft.of air grains	4·6	4·4
Mean additional weight required for saturation,,	0·9	1·3
Mean degree of Humidity	85	78
Mean weight of a cubic foot of air.... grains	533·1	531·8
Fall of Rain..... inches	1·953	0·983
Number of Days on which rain fell.....	5	6
Mean amount of Cloud (an overcast sky=10)	5·3	4·6
Total number of miles of wind indicated	9112	8359
Mean Velocity of Wind per hour .....miles	12·7	11·6

MAY, 1898.

Result of Observations taken during the Month.		Mean for the last 15 years
Mean Reading of the Barometer..... inches	29·978	29·981
Highest ,, on the 15th ,,	30·215	30·175
Lowest ,, on the 19th ,,	29·654	29·625
Range of Barometer Readings..... ,,	0·561	0·550
Highest Reading of a Max. Therm. on the 26th	83·1	81·6
Lowest Reading of a Min. Therm. on the 3rd	52·8	53·2
Range of Thermometer Readings	30·3	28·4
Greatest Range in 24 hours on the 26th	23·8	23·4
Mean of all the Highest Readings.....	73·5	72·4
Mean of all the Lowest Readings	58·2	58·4
Mean Daily Range	15·3	14·0
Mean Temperature (deduced from Max.& Min)	64·9	64·3
Mean Temperature (deduced from Dry Bulb)	64·1	63 7
Adopted Mean Temperature	64·5	64·0
Mean Temperature of Evaporation.....	59·5	60·0
Mean Temperature of Dew Point	55·1	56·4
Mean elastic force of Vapour .....inches	0·434	0·456
Mean weight of Vapour in a cub.ft.of air grains	4·8	5·0
Mean additional weight required for saturation,,	1·9	1·7
Mean degree of Humidity	71	76
Mean weight of a cubic foot of air.... grains	526·7	526·9
Fall of Rain .....inches	0·045	0·714
Number of days on which Rain fell.....	1	4
Mean amount of Cloud (an overcast sky=10)	3·1	4·1
Total number of miles of wind indicated	8169	7467
Mean Velocity of Wind per hour .:....miles	11·0	10·6

JUNE, 1898.

Results of Observations taken during the Month.		Mean for the last 15 years.
Mean Reading of the Barometer .... inches	30·024	30·017
Highest ,, on the 20th	30·129	30·175
Lowest ,, on the 15th	29·746	29·804
Range of Barometer Readings	0·383	0·371
Highest Reading of a Max. Therm. on the 28th	96·3	90·5
Lowest Reading of a Min. Therm. on the 2nd	56·5	58·5
Range of Thermometer Readings	39·8	32·0
Greatest Range in 24 hours on the 25th.....	27·6	25·6
Mean of all the Highest Readings	83·4	80·6
Mean of all the Lowest Readings	65·6	64·7
Mean Daily Range	17·8	15·9
Mean Temperature (deduced from Max. & Min.)	73·8	71·9
Mean Temperature (deduced from Dry Bulb)	72·7	71·2
Adopted Mean Temperature	73·4	71·6
Mean Temperature of Evaporation	66·6	66·0
Mean Temperature of Dew Point	61·8	61·8
Mean elastic force of Vapour ..... inches	0·552	0·553
Mean weight of Vapour in a cub.ft. of air grains	6·0	5·9
Mean additional weight required for saturation,,	2·8	2·4
Mean degree of Humidity	68	72
Mean weight of a cubic foot of air....grains	518·5	519·7
Fall of Rain ..... inches	...	0·064
Number of days on which Rain fell	...	1
Mean amount of Cloud (an overcast sky = 10)..	1·3	2·3
Total number of miles of Wind indicated ..	6215	6248
Mean Velocity of Wind per hour..... miles	8·6	8·7

JULY, 1898.

Results of Observations taken during the Month.		Mean for the last 15 years
Mean Reading of the Barometer .....inches	29·992	30·004
Highest ,, on the 18th ,,	30·109	30·144
Lowest ,, on the 14th ,,	29·864	29·833
Range of Barometer Readings	0·245	0·311
Highest Reading of a Max. Therm. on the 22nd	95·7	97·9
Lowest Reading of a Min, Therm on the 17th	64·4	64·7
Range of Thermometer Readings	31·3	33·2
Greatest Range in 24 hours on the 22nd	23·2	27·2
Mean of all the Highest Readings.....	85·0	87·1
Mean of all the Lowest Readings	69·0	69·9
Mean Daily Range	16·0	17·2
Mean Temperature (deduced from Max. & Min.)	76·5	78·0
Mean Temperature (deduced from Dry Bulb)	74·6	77·1
Adopted Mean Temperature	75·1	77·6
Mean Temperature of Evaporation	68·6	70·5
Mean Temperature of Dew Point	63·9	65·8
Mean elastic force of Vapour .....inches	0·594	0·636
Mean weight of Vapour in a cub. ft. of air grains	6·4	6·8
Mean additional weight required for saturation ,,	3·5	3·4
Mean degree of Humidity.....	69	67
Mean weight of a cubic foot of air ....grains	515·3	513·3
Fall of Rain ....inches	...	0·036
Number of days on which Rain fell	...	1
Mean amount of Cloud (an overcast sky=10)	1·1	1·0
Total Number of Miles of Wind indicated ...	6874	5553
Mean Velocity of Wind per hour .....miles	9·2	7·5

AUGUST, 1898.

Results of Observations taken during the Month.		Mean for the last 15 years.
Mean Reading of the Barometer.....inches	30·020	30·012
Highest ,, on the 27th ,,	30·134	30·160
Lowest ,, on the 25th ,,	29·919	29·863
Range of Barometer Readings..... ,,	0·215	0·297
Highest Reading of a Max. Therm. on the 3rd	92·3	96·5
Lowest Reading of a Min. Therm. on the 1st	67·0	65·4
Range of Thermometer Readings	25·3	31·1
Greatest Range in 24 hours on the 3rd	23·6	25·8
Mean of all the Highest Readings	85·7	87·1
Mean of all the Lowest Readings	73·1	70·8
Mean Daily Range	12·6	16·3
Mean Temperature (deduced from Max.& Min.)	78·6	78·1
Mean Temperature (deduced from Dry Bulb)	76·4	78·0
Adopted Mean Temperature.....	77·5	78·1
Mean Temperature of Evaporation	71·6	71·3
Mean Temperature of Dew Point	68·1	66·8
Mean elastic force of Vapour .....inches	0·687	0·656
Mean weight of Vapour in a cub.ft.of air grains	7·4	7·0
Mean additional weight required for saturation,,	2·5	3·3
Mean degree of Humidity.....	75	68
Mean weight of cubic foot of air ....grains	513·8	512·5
Fall of Rain .....inches	.....	0·096
Number of days on which Rain fell	.....	1
Mean amount of Cloud (an overcast sky=10)	1·2	1·1
Total number of miles of Wind indicated	5430	5439
Mean Velocity of Wind per hour .....miles	7·3	7·3

SEPTEMBER, 1898.

Results of Observations taken during the Month.		Mean for the last 15 years.
Mean Reading of the Barometer .....inches	30·050	30 ·061
Highest ,, on the 19th ,,	30·136	30·256
Lowest ,, on the 25th ,,	29·779	29·833
Range of Barometer Readings ,,	0·357	0·423
Highest Reading of a Max. Therm. on the 9th	86·3	93·0
Lowest Reading of a Min. Therm. on the 30th	65·1	62·7
Range of Thermometer Readings	21·2	30·3
Greatest Range in 24 hours on the 9th	19·0	24·1
Mean of all the Highest Readings.....	81·9	83·5
Mean of all the Lowest Readings.....	68·9	70·0
Mean Daily Range.....	13·0	13·5
Mean Temperature (deduced from Max.& Min.)	74·4	75·3
Mean Temperature (deduced from Dry Bulb)	72·9	74·8
Adopted Mean Temperature.....	73·7	75·1
Mean Temperature of Evaporation	68·5	69·3
Mean Temperature of Dew Point	65·1	65·5
Mean elastic force of Vapour .....inches	0·620	0·624
Mean weight of Vapour in a cub. ft. of air grains	6·8	6·7
Mean additional weight required for saturation,,	2·0	2·7
Mean degree of Humidity	77	72
Mean weight of a cubic foot of air... grains	518·2	516·8
Fall of Rain .....inches	2·500	0·944
Number of days on which Rain fell.....	9	4
Mean amount of Cloud (an overcast sky=10)	2·1	2·4
Total number of miles of Wind indicated ..	4339	5681
Mean Velocity of Wind per hour .....miles	6·0	7·9

OCTOBER, 1898.

Results of Observations taken during the Month		Mean for the last 15 years.
Mean Reading of the Barometer.....inches	29·967	30·047
Highest ,, on the 28th ,,	30·195	30·268
Lowest ,, on the 19th ,,	29·616	29·745
Range of Barometer Readings ..... ,,	0·579	0·523
Highest Reading of Max. Therm. on the 17th	84·9	87·6
Lowest Reading of a Min. Therm. on the 21st	55·9	55·8
Range of Thermometer Readings	29·0	31·8
Greatest Range in 24 hours on the 13th	20·2	19·7
Mean of all the Highest Readings	76·3	76·7
Mean of all the Lowest Readings	65·4	64·5
Mean Daily Range	10·9	12·2
Mean Temperature (deduced from Max & Min)	70·0	69·7
Mean Temperature (deduced from Dry Bulb)	69·2	68·8
Adopted Mean Temperature	69·6	69·3
Mean Temperature of Evaporation	65·8	64·5
Mean Temperature of Dew Point	62·2	61·0
Mean elastic force of Vapour .....inches	0·560	0·540
Mean weight of Vapour in a cub. ft. of air grains	6·1	5·9
Mean additional weight required for saturation,,	2·0	1·7
Mean degree of Humidity.....	75	77
Mean weight of a cubic foot of air ....grains	519·3	523·3
Fall of rain .....inches	7·783	2·774
Number of days on which rain fell.....	8	7
Mean amount of Cloud (an overcast sky=10)	2·7	4·4
Total number of miles of Wind indicated ..	6809	6728
Mean Velocity of Wind per hour .... miles	9·2	9·0

NOVEMBER, 1898.

Results of Observations taken during the Month.		Mean for the last 15 years.
Mean Reading of the Barometer .....inches	30·039	30·079
Highest ,, on the 3rd ,,	30·219	30·324
Lowest ,, on the 24th ,,	29·712	29·713
Range of Barometer Readings ,,	0·507	0·611
Highest Reading of a Max. Therm. on the 2nd	76·2	76·9
Lowest Reading of a Min. Therm. on the 25th	54·5	50·0
Range of Thermometer Readings	21·7	26·9
Greatest Range in 24 hours on the 25th	19·3	18·3
Mean of all the Highest Readings.....	71·5	68·8
Mean of all the Lowest Readings	60·6	57·6
Mean Daily Range	10·9	11·2
Mean Temperature (deduced from Max. & Min.)	64·9	62·3
Mean Temperature (deduced from Dry Bulb)	64·8	61·6
Adopted Mean Temperature	64·9	62·0
Mean Temperature of Evaporation	61·1	57·5
Mean Temperature of Dew Point	58·5	53·4
Mean elastic force of Vapour .....inches	0·491	0·419
Mean weight of Vapour in a cub. ft. of air grains	5·5	4·8
Mean additional weight required for saturation,,	1·2	1·3
Mean degree of Humidity	82	79
Mean weight of a cubic foot of air.. ...grains	528·0	532·1
Fall of Rain ..... inches	2·329	3·301
Number of days on which Rain fell.....	11	11
Mean amount of Cloud (an overcast sky=10)	3·5	5·3
Total number of miles of Wind indicated ..	6070	6712
Mean Velocity of Wind per hour.....miles	8·4	9·3

DECEMBER, 1898.

Results of Observations taken during the Month.		Mean for the last 15 years.
Mean Reading of the Barometer .... inches	30·123	30·045
Highest ,, on the 27th ,,	30·550	30·395
Lowest ,, on the 16th ,,	29·730	29·576
Range of Barometer Readings..... ,,	0·820	0·819
Highest Reading of a Max. Therm. on the 7th	66·4	68·6
Lowest Reading of a Min. Therm. on the 23rd	41·4	43·8
Range of Thermometer Readings	25·0	24·8
Greatest Range in 24 hours on the 7th.....	16·9	17·6
Mean of all the Highest Readings	61·3	61·8
Mean of all the Lowest Readings	51·5	52·2
Mean Daily Range.....	9·8	9·6
Mean Temperature (deduced from Max.& Min.)	55·7	56·4
Mean Temperature (deduced from Dry Bulb)	56·0	56·1
Adopted Mean Temperature	55·9	56·3
Mean Temperature of Evaporation	52·1	51·9
Mean Temperature of Dew Point	49·1	48·6
Mean elastic force of Vapour .....inches	0·349	0·343
Mean weight of Vapour in a cubic ft. of air grains	3·9	3·9
Mean additional weight required for saturation,,	1·2	1·1
Mean degree of Humidity	79	79
Mean weight of a cubic foot of air ....grains	539·6	538·5
Fall of Rain .....inches	8·144	4·178
Number of days on which Rain fell.....	18	15
Mean amount of Cloud (an overcast sky=10)	5·2	5·9
Total number of miles of Wind indicated	8412	8278
Mean Velocity of Wind per hour .....miles	11·3	11·1

Summary of Observations, 1898.

Results of Observations taken during the Year.		Mean for the last 15 years
Mean Reading of the Barometer.....inches	30·029	30·025
Highest ,, on January 29th ,,	30·638	30·501
Lowest ,, on March 7th ,,	29·229	29·378
Range of Barometer Readings..... ,,	1·409	1·123
Highest Reading of a Max. Therm. on June 28th	96·3	99·6
Lowest Reading of a Min. Therm. on Dec. 23rd	41·4	40·2
Range of Thermometer Readings	54·9	59·4
Greatest Range in 24 hours on June 25th....	27·6	28·8
Mean of all the Highest Readings	72·6	72·5
Mean of all the Lowest Readings	59·9	59·3
Mean Daily Range	12·7	13·2
Mean Temperature (deduced from Max. & Min.)	65·4	65·0
Mean Temperature (deduced from Dry Bulb)	64·6	64·4
Adopted Mean Temperature	65·0	64·7
Mean Temperature of Evaporation	60·2	59·8
Mean Temperature of Dew Point	56·8	56·1
Mean elastic force of Vapour ..... inches	0·476	0·456
Mean weight of Vapour in a cub. ft. of air grains	5·2	5·1
Mean additional weight required for saturation,,	1·7	1·8
Mean degree of Humidity	77	76
Mean weight of a cubic foot of air.... grains	527·5	528·0
Fall of rain..... inches	29·178	19·650
Number of days on which Rain fell.....	80	77
Mean amount of Cloud (an overcast sky=10)	3·5	3·8
Total number of miles of Wind indicated....	86408	84992
Mean Velocity of Wind per hour..... miles	9·9	9·7

SINCE MAY, 1883.

The Maximum monthly mean height of the Barometer was in January, 1898, and was .....inches 30·347

The Minimum ,, ,, in January 1886, and was 29·844

The Maximum yearly mean height of the Barometer was in 1897, and was	inches	30·058
The Minimum ,, ,, in 1890, and was.....		29·996
The greatest monthly range of the Barometer was in January, 1886, and was	inches	1·201
The least ,, ,, in August, 1883, and was	,,	0·188
The highest reading of the Barometer was on January 29th, 1898, and was	inches	30·638
The lowest ,, ,, on January 17th, 1886, and was		29·155
Extreme range	inches	1·483
The highest temperature was on August 11th, 1896, and was		104·8
The lowest ,, ,, February 19th, 1895		34·2
The highest mean temperature of a month, was in August, 1885, and was		83·2
The lowest ,, ,, ,, February, 1891, ..		49·5
The greatest monthly mean weight of vapour in a cubic foot of air	August, 1885	7·9
The least ,, January and February, 1891, and was	grs	3·0
The highest observed Dew point was on August 30th, 1885, and was		78·7
The lowest ,, ,, February 19th, 1895, and was		27·9
The greatest fall of rain in a month, was in December, 1889, and was	inches	8·952
The greatest number of days on which rain fell in one month	January, 1889	24
The greatest fall of rain in a year was in 1898 and was	inches	29·178
The smallest ,, ,, ,, 1895 ,, ,,		11·384
The greatest number of rainy days in a year was in 1894 and was		90
The least ,, ,, ,, ,, 1888		59
The highest temperature registered in sunshine was on the 15th July, 1897, and was.....		159·7
The lowest temperature registered on ground was on the 19th February, 1895, and was		31·7
The highest observed sea temperature was on the 5th August, 1887, and was		85·0
The lowest ,, ,, 30th January, 1895, and was		55·5
The smallest mean amount of cloud observed in one month was in August, 1890, and was		0·0
The greatest ,, ,, in January, 1894, and was		7·2

NOTES FOR THE SEPARATE MONTHS.

JANUARY.

THE Dew point ranged between 56·8° on the 10th, and 39·9° on the 27th.

In Sunshine, the highest reading was 126·5° on the 25th.

On Ground, the lowest reading was 35·2° on the 29th.

The Sea has fallen to 59·3°, averaging 60·3°.

Thunderstorms passed on the 21st, and 22nd.

Hail fell on the 21st, and 22nd.

Total Rainfall since last June 11·549 inches ; the average of 15 years, 14·835 inches.

FEBRUARY.

The Dew-Point ranged between 32·9° on the 13th and 55.1° on the 24th.

In Sunshine, the highest reading was 129·9° on the 28th.

On Ground, the lowest reading was 32·7 on the 14th.

The Sea has fallen to 57·0° averaging 58·3°.

Thunderstorms passed on the 11th.

Lightning was seen on the 8th, 10th, 25th, and 26th.

Hail fell on the 4th, 10th, and 25th.

Total Rainfall since last June, 13·742 inches ; the average of 15 years, 16·869 inches.

MARCH.

The Dew-point ranged between 41·8° on the 27th, and 57·7° on the 31st.

In Sunshine, the highest reading was 145·4° on the 15th.

On Ground, the lowest reading was 38 9° on the 28th.

The Sea has averaged 61·0°.

Thunderstorms passed on the 6th, 11th, and 23rd.

Lightning was seen on the 13th, and 14th.

Hail fell on the 11th.

Total Rainfall since last June 15·090 inches ; the average of 15 years, 17·889 inches.

APRIL.

The Dew-point ranged between 43·0° on the 14th, and 58·8° on the 29th.

In Sunshine, the highest reading was 149·6° on the 24th.

On Ground, the lowest reading was 42·5° on the 6th.

The Sea has averaged 62·0°.

Thunderstorms passed on the 29th.

Lightning was seen on the 4th.

Total Rainfall since last June 17·043 inches ; the average of 15 years, 18·872 inches.

MAY.

The Dew-point ranged between 64·2 on the 13th and 46·9° on the 21st.

In Sunshine, the highest reading was 144·7° on the 11th.

On Ground, the lowest reading was 45·4° on the 3rd.

The Sea has averaged 67·0°.

Lightning was seen on the 9th.

Total Rainfall since last June 17·088 inches ; the average of 15 years, 19·586 inches.

JUNE.

The Dew-point ranged between 51·2° on the 1st and 69 6° on the 28th.

In Sunshine, the highest reading was 153·6° on the 15th.

On Ground, the lowest reading was 48·6° on the 2nd.

The Sea has averaged 70·0°.

Total Rainfall since last June 17·088 inches ; the average of 15 years, 19·650 inches.

A slight and almost momentary earthquake shock was felt through the island about 11 5 p.m. on the 2nd.

JULY.

The Dew-point ranged between 54·9° on the 22nd, and 72·2° on the 27th.

In Sunshine, the highest reading was 153·5° on the 22nd.

On Ground, the lowest reading was 57·1° on the 17th.

The Sea has averaged 78·5.

Lightning was seen on the 12th, 15th, 24th.

AUGUST.

The Dew-point ranged between 52·1° on the 11th, and 73·0° on the 31st.

In Sunshine the highest reading was 151·5° on the 26th.

On Ground the lowest reading was 61·0° on the 1st.

The Sea has averaged 78·8°.

Lightning was seen on the 18th, 27th, 28th, and 29th.

SEPTEMBER.

The Dew-point ranged between 56·7° on the 21st, and 72·2° on the 25th.

In Sunshine the highest reading was 147·8° on the 13th.

On Ground, the lowest reading was 61·5° on the 6th, and 17th.

The Sea has averaged 78·2°.

Thunderstorms passed on the 3rd, 16th, 19th, 21st, and 29th.

Lightning was seen on the 2nd, 4th, 11th, 12th, 15th, 17th, 18th, 22nd, 24th and 30th.

Total Rainfall since last June 2·500 inches; the average of 15 years 1·076 inches.

OCTOBER.

The Dew-Point ranged between 71·5° on the 6th and 52·7° on the 20th.

In Sunshine, the highest reading was 143·6° on the 3rd.

*On Ground, the lowest reading was 55·0° on the 12th and 31st.

The Sea has averaged 75·3.

Thunderstorms passed on the 1st, 9th, 10th, 13th, 19th, 21st, and 24th.

Lightning was seen on the 2nd, 7th, 12th, 14th, 20th, 23rd,

Hail fell on the 19th.

Total Rainfall since last June 10·283 inches; the average of 15 years, 3·850 inches.

* No Readings, on the ground from 20th to 30th inclusive. At 2-0 p.m. on the 19th, a severe thunderstorm precipitated hailstones as large as hen's eggs. Many picked up here measured 2¼ inches in longest diameter. In other places they crashed through wooden venetians and pierced corrugated iron roofs. A friend assures me that one mass of ice which fell weighed over two pounds, being composed of walnut-sized masses congealed together.

NOVEMBER.

The Dew-point ranged between 66·8° on the 25th, and 48·9° on the 30th.

In Sunshine, the highest reading was 137·7° on the 8th.

* On Ground, the lowest reading was 5[illegible]·0° on the 19th.

The Sea has averaged 71·1°.

Thunderstorms passed on the 21st, and the 22nd.

Lightning was seen on the 5th, 6th, 7th, 8th, 10th, 11th, 17th, 18th, 19th, and 20th.

Total Rainfall since last June 12·612 inches; the average of 15 years, 7·151 inches.

* No Readings on the ground from 21st to 30th inclusive.

DECEMBER.

The Dew-point ranged between 58.0°, on the 2nd and 37·1° on the 26th.

In Sunshine, the highest reading was 120·8° on the 7th.

On Ground, the lowest reading was 36·2° on the 23rd.

The Sea has averaged 65·0°.

Thunderstorms passed on the 2nd, 8th, 10th, 11th, 16th, 18th, and 25th.

Lightning was seen on the 3rd, 9th, and 17th.

Hail fell on the 23rd.

Total Rainfall since last June, 20·756 inches; the average of 15 years, 11·329 inches.

NOTES FOR THE YEAR.

The Dew-point ranged between 32·9° on the 13th February and 73·0° on the 31st August.

In Sunshine, the highest reading was 153·6° on the 15th June.

On Ground, the lowest reading was 32·7° on the 14th February.

The Sea has ranged from 58·3° in February to 78·8° in August.

Thunderstorms passed on 28 days.

Lightning was seen on 44 days.

Hail fell on 8 days

J. F. DOBSON, S.J.