



STONYHURST COLLEGE  
OBSERVATORY.

# RESULTS

OF

METEOROLOGICAL, MAGNETICAL,

AND

SOLAR OBSERVATIONS

BY THE

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1892.

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1893.

ROYA  
\*  
GREEN



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## INTRODUCTION.

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The meteorological work of the observatory has been carried on under the immediate direction of Mr. Ronchetti, assisted by Mr. Burns. All the instruments are in good condition; and the self recorders, both photographic and mechanical, continue to give full satisfaction. The only exception to perfection is the anemograph: The helix-pencil of this instrument is somewhat worn, and its tracing is not so good as it used to be; but the imperfection is hardly at all detrimental to the records. Duplicates have been made of all the curves, and one set has been sent regularly to the meteorological office together with the monthly report. A weekly report is also sent to the same office, and a monthly report to the Registrar General.

Of the magnetical instruments, those in use for the absolute measures are all in good condition; and the absolute measures of force have been made regularly every month, by the system of vibrations and deflections. The horizontal direction has been observed every week, nearly always on the Monday at 4 p.m. The

differential self-recorders have been continuously at work, with the few exceptions needed for adjustments and cleaning. At the end of January an attempt was made to adjust the suspension threads of the horizontal force magnet to give the value  $\cdot 0005$  C.G.S. unit of force to one centimetre of the curve-ordinate: as agreed to at the International Polar Congress.

This operation was found to be greatly facilitated by the telescopes and scales attached to the instruments for eye-observations. The value of one division of the scale in millimetres of the curve-ordinate having been previously determined, the equivalent number of scale divisions for  $0005$  C.G.S. unit of force per centimetre was computed from a single set of deflections, without the need of waiting for a photographic impression upon the sensitive paper. The separation of the threads was then adjusted to give the required scale-deflection, by successive small changes and repeated deflections. One double deflection, obtained by reversing the deflector in its stirrup, was enough for testing the effect, and could be completed within a minute of time; but several trials were needed, before a satisfactory result was obtained. At this date the adjustments were left for the value  $\cdot 00047$ , as it was thought that a nearer approximation was unnecessary. But the magnetic disturbances of February and March showed, by a comparison of the curves with those of the Kew Observatory, that the balance was too delicate; and a closer approximation had to be attempted. This was effected on March 17th; and the value then obtained was  $\cdot 00050$ .

ASTROPHYSICAL.—Some additions have been made to the working gear of the large grating spectrometer, in order to bring the spectra of solar spots and prominences within the reach of the camera and of the observer. A concave lens has been mounted

opposite the slit to enlarge the solar image given by a 4 inch lens. This arrangement has been found to work very well. The spot-images can be seen distinctly on the face of the slit, and an accurate focus can be obtained by a sliding movement of the concave enlarger, without shifting the objective. The working gear of the heliostat has also been improved. The driving wheel has been separated from the axle of the clock by a set of differential wheels, in order to employ a slow-motion-rod upon the wheel without affecting the clock. The two motions of the reflector are now under the control of the observer, who can easily retain the spot-image upon the slit, independently of the accurate running of the clock, and eye observations of the spectrum of a spot or prominence can be made without difficulty. But for the photographic plate, greater accuracy is needed in the working of the heliostat than for the eye; a shift of the image from one part of the slit to another is no inconvenience to the eye, but it is fatal to the photographic impression. To protect the plate from this mishap, a small telescope is placed to view the spot spectrum by one of the lower orders of spectra while the camera is taking the picture from a higher order. The spots-spectrum-band is adjusted to the cross-lines of the eye piece and is watched by the observer during the exposure. If the spot band disappears or wanders from the cross-lines, the light is shut off from the camera until the readjustment is made. In this way a few photographs of spot spectra have been obtained in the green yellow region. But the favourable opportunities have been few: the spots have not been wanting so much as the calm clear days; a little wind is enough to agitate the reflector of the home-made heliostat too much for the sensitive plate. It is hoped that, with the more favourable condition of the summer side of the year, success will be more easy.



The eight inch equatorial telescope has been employed as usual upon the solar spots and the chromosphere in the day time, and upon steller spectra at night. Complete drawings of the spots and faculae on the sun's surface have been made on 153 days ; and on 64 days the chromosphere has been measured, together with the prominences, all round the limb. The total number of photographs obtained of stellar spectra, since the completion of the instrumental adjustments in October 1891, is 160. These are of the brighter stars, including some of the 3rd and 4th magnitudes. But many of them are repetitions of the same star ; only 40 separate stars appear on the list. This small show of results is mainly owing to the dearth of fine nights, bright enough for the purpose, together with the long exposure needed to make up for the small optical power in use ; and not a little to the circumstances under which the observatory is necessarily worked, which make it impossible to take the full advantage of the morning side of a clear night.

These lists will nearly close the record of work with the eight inch equatorial objective. The new glass, of 15 inches, to the memory of the late Father Perry, is expected to be ready before the end of February. We hope to obtain some interesting comparisons between the spectra already photographed, and the same when given by the greater dispersion that may be employed upon the better light from the greater objective.

The most valuable plates of the collection are two of the spectrum of the new star in Auriga, for which we are so much indebted to Dr. Huggins, whose timely telegraphic message put us in readiness for the exceptionally clear night of the 3rd of February, when the star was at its brightest. An account of these photographs, of the

instrument employed, and of the experiments connected with it is given in the August No. of "Astronomy and Astrophysics." A preliminary discussion of the spectrum together with a map and catalogue of the lines was presented to the Royal Astronomical Society in May, and will appear in the next volume of the Society's memoirs. Further discussions relating to the offered explanations of the origin of the star have been sent to the "Observatory (October, 1892), to the journal of the British Astronomical Association (Vol. iii., No. 1) and to "Astronomy and Astrophysics" (December, 1892).

WALTER SIDGREAVES, S J.

# Stonyhurst Observatory.

Lat. 53° 50' 40" N. Long. 9m. 52s. 68 w. Height of the Barometer  
above the sea, 381ft.

## METEOROLOGICAL REPORT.

JANUARY, 1892.

Results of Observations taken during the Month.	Mean for the last 45 years.
Mean Reading of the Barometer . . . . .	29.384 29.438
Highest " on the 25th . . . . .	30.055 30.285
Lowest " on the 7th . . . . .	28.786 28.575
Range of Barometer Readings . . . . .	1.269 1.710
Highest Reading of a Max. Therm. on the 29th	49.0 51.5
Lowest Reading of a Min. Therm. on the 8th	17.2 20.8
Range of Thermometer Readings . . . . .	31.8 30.7
Mean of all the Highest Readings . . . . .	40.2 42.2
Mean of all the Lowest Readings . . . . .	30.1 32.5
Mean Daily Range . . . . .	10.1 9.7
Deduced Monthly Mean (from Mean of Max. and Min.) . . . . .	35.0 37.1
Mean Temperature from Dry Bulb . . . . .	35.3 37.1
Adopted Mean Temperature . . . . .	35.2 37.1
Mean Temperature of Evaporation . . . . .	33.9 36.0
Mean Temperature of Dew Point . . . . .	32.1 33.8
Mean elastic force of Vapour . . . . .	0.180in 0.220in
Mean weight of Vapour in a cub. ft. of air . . . .	2.1gr 2.4gr
Mean additional weight required for saturation	0.3gr 0.4gr
Mean degree of Humidity (saturation 1.00)	0.87 0.86
Mean weight of a cubic foot of air . . . . .	550.8gr 544.5gr
Fall of Rain . . . . .	4.230in 4.183in
Number of days on which Rain fell . . . . .	21 19.6

JANUARY, 1892.

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	2	5	3	0	3	3	12	3
Mean Velocity in miles per hour	2.5	5.8	9.6	0	2.6	17.0	12.6	13.3
Total No. of miles for each Direction	121	699	688	0	189	1223	3624	958

The total number of miles registered during the month was 7502.

The max. Velocity of the wind was 38 miles per hour. Direction W. by S. on the 29th at 11 a.m.

Mean amount of Cloud (an overcast sky being indicated by 10.0) 6.8

In the month of January, the highest reading of the Barometer during 45 years was on the 18th in 1882, and was 30.480

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, 1875 42.5

The lowest " " 1881.... 29.2

The barometer readings were generally low during the month, without any very low readings. There were ten rainless days, and these were equally divided between the days of higher and lower barometric pressure. Snow fell on the 6th, 7th, 8th, 10th, 14th, and 19th. Hail on the 3rd. Lightning on the 6th. Aurora Borealis on the 4th. Ground frost on 23 days.

## FEBRUARY, 1892.

Results of Observations taken during the month.	Mean for the last 45 years.	
Mean Reading of the Barometer .....	29·349	29·510
Highest „ on the 13th ....	30·169	30·066
Lowest „ on the 2nd ....	28·505	28·698
Range of Barometer Readings .....	1·664	1·368
Highest Reading of a Max. Therm. on the 11th	51·2	52·0
Lowest Reading of a Min. Therm. on the 18th	8·1	22·4
Range of Thermometer Readings.....	43·1	29·6
Mean of all the Highest Readings .....	43·6	44·3
Mean of all the Lowest Readings.....	31·2	33·6
Mean Daily Range .....	12·4	10·7
Deduced Monthly Mean (from Mean of Max. and Min.) .....	37·0	38·3
Mean Temperature from dry bulb .....	37·3	38·3
Adopted Mean Temperature .....	37·2	38·3
Mean Temperature of Evaporation .....	35·6	36·9
Mean Temperature of Dew Point.....	33·3	34·7
Mean elastic force of Vapour.....	0·191in	0·192in
Mean weight of Vapour in a cubic ft. of air ..	2·2gr	2·4gr
Mean additional weight required for saturation	0·4gr	0·4gr
Mean degree of Humidity (saturation 1·00) ..	0·86	0·87
Mean weight of a cubic foot of air .....	547·7gr	548·8gr
Fall of Rain .....	3·474in	3·435in
Number of days on which Rain fell.....	15	16·9

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
		2	9	4	0	0	4	9
Mean Velocity in miles per hour	4·2	6·3	11·1	0	0	15·7	14·1	10·2
Total No. of miles for each Direction	202	1359	1063	0	0	1015	3042	290

The total number of miles registered during the month was 6971.  
 The max. Velocity of the wind was 38 miles per hour. Direction E at 1 a.m. on the 21st.

## FEBRUARY, 1892. .

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 45 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, 1892.... 8·1
The highest adopted mean temperature of the month, 1869....	94·4
The lowest	1855.... 28·6

The mean barometric pressure was low. There were 14 rainless days, and of these nine were accompanied with low readings of the barometer. A heavy snow fall occurred on the 17th, giving  $6\frac{1}{2}$  inches in four hours. It was followed by excessive cold on the 18th, the thermometer falling to 8° Fahr.—the lowest recorded temperature in February during 45 years. Snow also on the 16th. Ground frost on 17 days,

## MARCH, 1892.

Result of Observations taken during the Month.	Mean for the last 45 years	
Mean Reading of the Barometer .....	29·613	29·470
Highest ,, on the 30th ..	30·229	30·084
Lowest ,, on the 10th ..	28·717	28·687
Range of Barometer Readings .....	1·512	1·397
Highest Reading of a Max. Therm. on the 22nd	60·3	56·9
Lowest Reading of a Min. Therm. on the 11th	12·6	22·3
Range of Thermometer Readings .....	47·7	34·6
Mean of all the Highest Readings .....	45·4	46·9
Mean of all the Lowest Readings .....	27·9	34·0
Mean Daily Range .....	17·5	12·9
Deducted Monthly Mean from Mean of Max. and Min. ....	35·6	39·6
Mean Temperature from Dry Bulb.....	35·7	39·8
Adopted Mean Temperature.....	35·6	39·7
Mean Temperature of Evaporation.....	33·7	37·8
Mean Temperature of Dew Point .....	30·9	35·2
Mean elastic force of Vapour .....	0·173in	0·204in
Mean weight of Vapour in a cub. ft. of air.....	2·0gr	2·4gr
Mean additional weight required for saturation..	0·4gr	0·5gr
Mean degree of Humidity (saturation 1·00)..	0·82	0·85
Mean weight of a cubic foot of air .....	554·7gr	546·7gr
Fall of Rain .....	1·044in	3·108in
Number of days on which Rain fell.....	8	17·5

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	4	5	5	1	2	2	7	5
Mean Velocity in miles per hour	5·6	10·8	8·6	12·5	11·7	5·8	4·7	7·8
Total No. of miles for each Direction	538	1299	1028	300	560	277	787	936

The total number of miles registered during the month was 5725.  
The max. Velocity of the wind was 39 miles per hour. Direction N, on the 10th, at 6 p.m.

## MARCH, 1892.

Mean amount of Cloud (an overcast sky being indicated by 10·0)	6·0
In the month of March, the highest reading of the Barometer during 45 years, was on the 6th, in 1852, and was..	
The lowest	30·401
The highest Temperature	31st, 1860.... 28·199
The lowest	25th, 1871.... 68·0
The highest adopted mean temperature of the month, 1871....	6th, 1886.... 11·5
The lowest	1855 and 1892 35·6

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The barometer readings, mean, highest, and lowest, are all well above the averages, and the month was generally fine, dry, and cold. There were 23 days without rain, and on all of these the barometric pressure was consistently high. The mean temperature is considerably below the average, and equals the lowest mean reading for March previously recorded, viz. in 1855. Snow fell on the 8th, 9th, 12th, 14th, 15th, 27th, 28th. Hail on the 28th. Hoar frost on the 26th. Lunar halo on the 9th. Ground frost on 27 days.



## APRIL, 1892.

Results of Observations taken during the Month.	Mean for the last 45 years.	
Mean Reading of the Barometer . . . . .	29.596	29.480
Highest „ on the 1st . . . . .	30.094	29.965
Lowest „ on the 27th. . . . .	29.032	28.789
Range of Barometer Readings . . . . .	1.062	1.176
Highest Reading of a Max. Therm. on the 3rd	70.1	66.0
Lowest Reading of a Min. Therm. on the 13th	20.8	28.1
Range of Thermometer Readings. . . . .	49.3	37.9
Mean of all the Highest Readings . . . . .	55.0	55.8
Mean of all the Lowest Readings. . . . .	33.7	37.7
Mean Daily Range . . . . .	21.3	18.1
Deduced Monthly Mean (from Mean of Max. and Min) . . . . .	42.8	44.3
Mean Temperature from Dry Bulb . . . . .	43.2	44.4
Adopted Mean Temperature. . . . .	43.0	44.4
Mean Temperature of Evaporation. . . . .	39.4	41.6
Mean Temperature of Dew Point. . . . .	35.1	38.0
Mean elastic force of Vapour. . . . .	0.204in	0.235in
Mean weight of Vapour in a cub. ft. of air. .	2.4gr	2.7gr
Mean additional weight required for saturation	0.8gr	0.7gr
Mean degree of Humidity (saturation 1.00) ..	0.74	0.80
Mean weight of a cubic foot of air . . . . .	546.0gr	542.1gr
Fall of Rain . . . . .	2.074in	2.298in
Number of days on which Rain fell. . . . .	11	14.6

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
		5	14	0	0	0	1	8
Mean Velocity in miles per hour	8.2	6.8	0	0	0	7.0	11.8	12.0
Total No. of miles for each Direction	986	2277	0	0	0	173	2265	571

The total number of miles registered during the month was 6272.  
 The max Velocity of the wind was 38 miles per hour. Direction N.N.E., on the 28th, at 3 a.m.

## APRIL, 1892.

Mean amount of Cloud (an overcast sky being indicated by 10·0)	4·2
In the month of April, the highest reading of the Barometer	
during 45 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

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Readings of the barometer above the mean still continued, with but seven exceptions, during this month, and the weather was generally fine. The 19 rainless days were accompanied with high readings of the barometer on 13, and with low readings on 6 days. The range of the thermometer readings was 11·4 above the mean, and 20·8, the lowest recorded reading for this month during 45 years was marked on the 13th. Snow fell on the 12th, 13th, 14th, and 18th. Auroræ were seen on the 25th, 26th, and 29th. Lunar Halo on the 4th. Lightning on the 17th. Hail on the 26th and 28th. Ground frost on 17 days.

## MAY, 1892

Results of Observations taken during the Month.	Mean for the last 45 years.	
Mean Reading of the Barometer .....	29.541	29.502
Highest ,, on the 12th..	30.046	29.939
Lowest ,, on the 16th	29.129	28.933
Range of Barometer Readings.....	0.917	1.006
Highest Reading of a Max. Therm. on the 31st	76.8	72.0
Lowest Reading of a Min. Therm. on the 6th	30.4	31.2
Range of Thermometer Readings .....	46.4	40.8
Mean of all the Highest Readings .....	61.1	59.6
Mean of all the Lowest Readings .....	42.9	42.1
Mean Daily Range .....	18.2	17.5
Deduced Monthly Mean (from Mean of Max. and Min. ....	50.3	49.0
Mean Temperature from Dry Bulb. ....	50.7	49.5
Adopted Mean Temperature.....	50.5	49.3
Mean Temperature of Evaporation.....	47.1	46.1
Mean Temperature of Dew Point .....	43.5	42.5
Mean elastic force of Vapour .....	0.283 in	0.276 in
Mean weight of Vapour in a cub. ft. of air .....	3.3 gr	2.2 gr
Mean additional weight required for saturation	0.9 gr	0.9 gr
Mean degree of Humidity (saturation 1.00....	0.78	0.76
Mean weight of a cubic foot of air.....	536.4 gr	537.0 gr
Fall of Rain .....	5.689 in	2.627 in
Number of days on which Rain fell .....	18	15.3

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	S W	W	NW
		7	4	0	0	3	14	3
Mean Velocity in miles per hour	7.6	12.0	0	0	14.0	11.4	7.8	0
Total No. of miles for each Direction.	1285	1163	0	0	1016	3844	561	0

The total number of miles registered during the month was 7869.  
The max. Velocity of the wind was 40 miles per hour. Direction  
S.W. on the 16th at noon.

## MAY, 1892.

Mean amount of Cloud (an overcast sky being indicated by 10·0	7·3
In the month of May, the highest reading of the Barometer	
during 45 years, was on the 22nd, in 1855, and was . . . .	30·124
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

The mean reading of the barometer was still above the average and the first third of the month was characterised by fine days and cloudless nights. A generally steady rise of the mercury was succeeded on the 12th by an equally steady fall, and wet weather prevailed, the rain-fall, which occurred on 18 days, exceeding the mean for this month by 3 inches. Readings of the barometer above the mean, with two exceptions, and generally high, corresponded to the 13 rainless days. The adopted mean temperature was 1·2 above the average, and the range was 5·6 in excess of the same. Thunderstorms occurred on the 25th and the 31st, the latter storm being accompanied at 3 p.m. with hail and heavy rain, three-tenths of an inch falling in 5 minutes. Rainbow on the 29th. Auroræ on the 5th and 6th. Ground frost on 7 days.

## JUNE, 1892.

Results of Observations taken during the Month.	Mean for the last 45 years.	
Mean Reading of the Barometer . . . . .	29.552	29.539
Highest                    "                    on the 8th. . . . .	29.997	29.889
Lowest                    "                    on the 2nd. . . . .	29.053	29.035
Range of Barometer Readings. . . . .	0.944	0.854
Highest Reading of a Max. Therm. on the 9th	81.0	77.0
Lowest Reading of a Min. Therm. on the 17th	34.1	38.8
Range of Thermometer Readings . . . . .	46.9	38.2
Mean of all the Highest Readings . . . . .	64.2	65.6
Mean of all the Lowest Readings . . . . .	45.6	47.9
Mean Daily Range . . . . .	18.6	17.7
Deduced Monthly Mean (from Mean of Max. and Min. . . . .	53.1	54.9
Mean Temperature from dry bulb . . . . .	53.9	55.0
Adopted Mean Temperature. . . . .	53.5	55.0
Mean Temperature of Evaporation . . . . .	49.4	51.9
Mean Temperature of Dew Point. . . . .	45.3	48.5
Mean elastic force of Vapour. . . . .	0.302 in	0.355 in
Mean weight of Vapour in a cub. ft. of air. . . . .	3.4 gr	3.9 gr
Mean additional weight required for saturation	1.2 gr	0.9 gr
Mean degree of Humidity (saturation 1.00. . . . .	0.74	0.79
Mean weight of a cubic foot of air. . . . .	533.4 gr	542.2 gr
Fall of Rain . . . . .	4.671 in	3.649 in
Number of Days on which rain fell . . . . .	19	16.3

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
		3	4	1	1	0	12	8
Mean Velocity in miles per hour	5.8	6.1	3.2	4.2	0	11.0	9.6	6.0
Total No. of miles for each Direction	419	604	77	100	0	3177	1840	141

The total number of miles registered during the month was 6358  
The max. Velocity of the wind was 40 miles per hour; direction S.E. on the 2nd at 8 a.m.

## JUNE, 1892.

Mean amount of Cloud (an overcast sky being indicated by 10·0)		6·6
In the month of June the highest reading of the Barometer		
during 45 years, was on the 15th, in 1874, and was . . . .		30·219
The lowest	„	„
		12th, 1862.. 28·632
The highest Temperature	„	
		27th, 1878.. 87·2
The lowest	„	
		17th, 1892.. 34·1
The highest adopted mean temperature of the month, 1858..		59·0
The lowest	„	
		1856 and 1860.. 52·2

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The mean, highest, and lowest, readings of the barometer were again above the averages, but with rain on 19 days. The month was generally cloudy. The 11 rainless days were accompanied with readings above or below the mean in the proportion of 8 to 3. The adopted mean temperature fell below the average, and the range was 1·3 above. The lowest thermometer reading for June as yet recorded, occurred on the 17th and was 34·1. The rainfall slightly exceeded the average. Thunderstorms with hail on the 17th and 19th. Lightning on the 10th and 17th. Solar Halos on the 15th and 22nd. Rainbow on the 20th, and ground frost on the 18th.

## JULY, 1892.

Results of Observations taken during the Month.	Mean for the last 45 years.	
Mean Reading of the Barometer . . . . .	29.608	29.504
Highest " on the 24th. . . . .	29.972	29.878
Lowest " on the 7th. . . . .	28.970	28.993
Range of Barometer Readings . . . . .	1.002	0.885
Highest Reading of a Max. Therm. on the 3rd	74.3	78.7
Lowest Reading of a Min. Therm. on the 17th	40.2	42.0
Range of Thermometer Readings. . . . .	34.1	36.7
Mean of all the Highest Readings . . . . .	65.0	67.7
Mean of all the Lowest Readings . . . . .	48.4	50.6
Mean Daily Range . . . . .	16.6	17.1
Deduced Monthly Mean (from Mean of Max. and Min.) . . . . .	56.7	57.7
Mean Temperature from dry bulb . . . . .	55.4	57.7
Adopted Mean Temperature. . . . .	56.0	57.7
Mean Temperature of Evaporation . . . . .	52.4	54.7
Mean Temperature of Dew Point . . . . .	49.0	52.1
Mean elastic force of Vapour . . . . .	0.350in	0.389in
Mean weight of Vapour in a cub. ft. of air. . . . .	3.9gr	4.5gr
Mean additional weight required for saturation	1.1gr	1.0gr
Mean degree of Humidity (saturation 1.00) ..	0.77	0.82
Mean weight of a cubic foot of air . . . . .	531.5gr	527.4gr
Fall of Rain . . . . .	1.856in	4.204in
Number of days on which Rain fell . . . . .	10	18.0

No. of days in the month of which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
		1	12	3	0	0	8	7
Mean Velocity in miles per hour	10.3	6.3	10.9	0	0	15.1	8.9	0
Total No. of miles for each Direction	247	1826	782	0	0	2891	1495	0

The total number of miles registered during the month was 7241.  
 The max. Velocity of the wind was 44 miles per hour. Direction  
 W.S.W. on the 8th at noon.

## JULY, 1892.

Mean amount of Cloud (an overcast sky being indicated by 10·0)	7·8
In the month of July, the highest reading of the Barometer	
during 45 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

Although the rainless days were 23 in number, yet the weather was generally gloomy and overcast until the 20th, when fine days were the rule. The mean height of the barometer still kept above the average, this being the fifth month in succession for which the same fact has to be noted. Of the rainless days, 9 in the first half of the month were accompanied with readings below the mean. The adopted mean temperature still remained below, with a range above the average. The rainfall fell short of the mean by  $2\frac{1}{2}$  inches. Thunderstorm on the 3rd. Solar halos on the 4th and 18th, the latter being followed by one rainy day with a fall in the barometer, to be succeeded by a steady rise, and a spell of fine weather.



## AUGUST, 1892.

Results of Observations taken during the Month.	Mean for the last 45 years.	
Mean Reading of the Barometer .....	29.446	29.486
Highest ,, on the 10th ,,	29.846	29.884
Lowest ,, on the 30th ,,	28.884	28.948
Range of Barometer Readings .....	0.962	0.936
Highest Reading of a Max. Therm. on the 23rd	78.0	77.0
Lowest Reading of a Min. Therm. on the 10th	36.0	41.3
Range of Thermometer Readings.....	42.0	35.7
Mean of all the Highest Readings .....	66.4	67.1
Mean of all the Lowest Readings.....	49.4	50.4
Mean Daily Range .....	17.0	16.7
Deduced Monthly Mean (from Mean of Max and Min.) .....	56.2	57.0
Mean Temperature (deduced from Dry Bulb)	56.8	57.4
Adopted Mean Temperature .....	56.5	57.2
Mean Temperature of Evaporation .....	53.8	54.5
Mean Temperature of Dew Point .....	49.4	51.7
Mean elastic force of Vapour .....	0.338 in	0.387 in
Mean weight of Vapour in a cub. ft. of air	3.8gr	4.3gr
Mean additional weight required for saturation	0.9gr	0.9gr
Mean degree of Humidity (saturation 1.00) ..	0.73	0.82
Mean weight of a cubic foot of air.....	528.0gr	525.2gr
Fall of Rain .....	7.222in	4.973gr
Number of days on which Rain fell.....	18	19.0

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	0	4	0	2	5	9	10	1
Mean Velocity in miles per hour	0	7.2	0	3.7	9.9	11.6	9.2	14.0
Total No. of miles for each direction	0	694	0	179	1191	2515	2200	336

The total number of miles registered during the month was 7115.  
 The max. Velocity of the wind was 34 miles per hour. Direction S.W., on the 15th, at 3 a.m.

## AUGUST, 1892.

Mean amount of Cloud (an overcast sky being indicated by 10·0)	6·8
In the month of August, the highest reading of the Barometer	
during 45 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

The more than average barometric pressures which had prevailed for five months, were now succeeded by pressures below the mean. The rainfall was correspondingly greater than the normal by nearly three inches. The mean temperature was for a third time in succession below the average. Of the 17 rainless days, five were accompanied with barometric readings below the mean. Lightning on the 13th and 29th. Thunderstorms on the 24th and 30th. Solar halos on the 7th, 10th, 23rd and 26th. Fog on the 8th. A fine display of aurora was witnessed on the 12th, between 9-20 and 10-p.m. G.M.T. Many fine bright streamers were seen extending from N. to S.W., one in the latter quarter of the heavens being remarkably brilliant. Ground frost on the 10th.

## SEPTEMBER, 1892.

Results of Observations taken during the Month.	Mean for the last 45 Years.	
Mean Reading of the Barometer.....	29.473	29.515
Highest                    ,,            on the 5th ....	29.872	30.025
Lowest                    ,,            on the 30th ....	28.940	28.847
Range of Barometer Readings .....	0.932	1.178
Highest Reading of a Max. Therm. on the 11th	73.2	72.5
Lowest Reading of a Min. Therm. on the 29th	38.4	36.6
Range of Thermometer Readings .....	34.8	35.9
Mean of all the Highest Readings .....	61.0	62.2
Mean of all the Lowest Readings .....	45.9	47.0
Mean Daily Range .....	15.1	15.2
Deduced Monthly Mean (from Mean of Max. and Min.) .....	52.2	53.4
Mean Temperature from Dry Bulb .....	52.4	54.0
Adopted Mean Temperature.....	52.3	53.7
Mean Temperature of Evaporation.....	49.0	51.0
Mean Temperature of Dew Point .....	45.6	48.3
Mean elastic force of Vapour .....	0.307in	0.339in
Mean weight of Vapour in a cub. ft. of air.....	3.5gr	4.0gr
Mean additional weight required for saturation	1.0gr	0.8gr
Mean degree of Humidity (saturation 1.00)	0.79	0.82
Mean weight of a cubic foot of air .....	533.7gr	532.4gr
Fall of rain .....	5.369in	4.625in
Number of Days on which rain fell.....	21	18.1

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	1	3	0	0	10	9	4	3
Mean Velocity in miles per hour	3.8	10.8	0	0	11.5	12.6	12.4	6.0
Total No. of miles for each Direction.	91	777	0	0	2766	2727	1193	432

The total number of miles registered during the month was 7986.  
The max. Velocity of the wind was 30 miles per hour. Direction S.W. by W., on the 2nd, at 4 a.m.

## SEPTEMBER, 1892.

Mean amount of Cloud (an overcast sky being indicated by 10·0)	8·0
In the month of September, the highest reading of the Barometer during 45 years, was on the 15th, in 1851, and was 30·274	
The lowest	2nd, 1883... 28·323
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

A wet month with only 9 days on which rain did not fall, although the amount of fall was not much above the average. Of these 9 days, 2 were accompanied with low barometric pressures. The mean pressure for the month was below the average, as also the adopted mean temperatures. Thunderstorm on the 2nd, and distant thunder was heard on the 12th and 30th. Hail on the 2nd and 30th. Rainbow on the 3rd. A double lunar rainbow with the colours fairly distinct, at 10-20 p.m. on the 7th, Aurora Borealis with coloured streamers, from 8-0 to 11-0 p.m. on the 21st. Ground frost on the 30th.

## OCTOBER, 1892.

Results of Observations taken during the Year. <i>month</i>		Mean for the last 45 years						
Mean Reading of the Barometer .....	29 272	29 422						
Highest ,, on the 18th ....	29 939	30 013						
Lowest ,, on the 29th ....	28 601	28 647						
Range of Barometer Readings .....	1 338	1 366						
Highest Reading of a Max. Therm. on the 11th	60 6	64 2						
Lowest Reading of a Min. Therm. on the 24th	22 8	29 2						
Range of Thermometer Readings .....	37 8	35 0						
Mean of all the Highest Readings .....	52 9	54 5						
Mean of all the Lowest Readings.....	35 9	41 6						
Mean Daily Range .....	17 0	12 9						
Deduced Monthly Mean (from Mean of Max. and Min.) .....	43 4	47 1						
Mean Temperature from Dry Bulb .....	44 1	47 7						
Adopted Mean Temperature .....	43 8	47 5						
Mean Temperature of Evaporation .....	41 4	45 2						
Mean Temperature of Dew Point .....	38 6	42 8						
Mean elastic force of Vapour .....	0 238in	0 275in						
Mean weight of Vapour in a cub. ft. of air .....	2 7gr	2 9gr						
Mean additional weight required for saturation...	0 6gr	0 6gr						
Mean degree of Humidity (saturation 1 00)	0 81	0 84						
Mean weight of a cubic foot of air .....	538 9gr	540 3gr						
Fall of Rain .....	5 444in	5 024in						
Number of days on which Rain fell .....	20	21 8						
No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	3	7	0	2	0	2	12	5
Mean Velocity in miles per hour	5 0	7 1	0	7 0	0	16 7	7 6	9 3
Total No. of miles for each Direction	360	1199	0	340	0	900	2181	1120
The total number of miles registered during the month was 6100. The max. Velocity of the wind was 50 miles per hour; direction S.S.W. on the 29th at noon.								

## OCTOBER, 1892.

Mean amount of Cloud (an overcast sky being indicated by 10·0)		6·4
In the month of October, the highest reading of the Barometer		
during 45 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	"    "	24th, 1892 . . . . 22·8
The highest adopted mean temperature of the month, 1861 & '76		51·6
The lowest	"    "	1880 . . . . 43·1

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Another month, the third in succession, in which the mean barometer pressure was lower than the average. The mean temperature too, now for the fifth time in succession, was below the normal. The lowest reading of the thermometer so far recorded for October occurred on the 24th, and was 22·8. Of the eleven rainless days, two were synchronous with days of pressure below the mean. Lightning on the 3rd. Rainbow on the 3rd. Aurorae on the 17th and 22nd. The latter appeared as a semi-circular arch in the N., with a long narrow streamer of extraordinary brightness, radiating from it in the N.W. by N. Lunar halo from 6·0 to 11·0 p.m. G.M.T. on the 30th. Ground frost on 17 days.

## NOVEMBER, 1892.

Results of Observations taken during the Month.		Mean for the last 45 years.						
Mean Reading of the Barometer .....	29.567	29.311						
Highest .. on the 22nd..	30.003	30.050						
Lowest .. on the 14th..	29.008	28.567						
Range of Barometer Readings .....	0.995	1.483						
Highest Reading of a Max. Therm. on 4th & 5th	56.7	55.6						
Lowest Reading of a Min. Therm. on the 17th	25.0	25.2						
Range of Thermometer Readings .....	31.7	30.4						
Mean of all the Highest Readings.....	48.4	46.9						
Mean of all the Lowest Readings .....	36.6	36.2						
Mean Daily Range .....	11.8	10.7						
Deduced Monthly Mean (from Mean of Max. and Min. ....	42.1	41.2						
Mean Temperature from dry bulb) .....	42.7	41.5						
Adopted Mean Temperature.....	42.4	41.4						
Mean Temperature of Evaporation .....	41.4	39.1						
Mean Temperature of Dew Point .....	40.2	37.8						
Mean elastic force of Vapour .....	0.259 in	0.228 in						
Mean weight of Vapour in a cub. ft. of air ....	2.9 gr	2.6 gr						
Mean additional weight required for saturation	0.3 gr	0.4 gr						
Mean degree of Humidity (saturation 1.00)..	0.86	0.87						
Mean weight of a cubic foot of air.....	545.8 gr	544.9 gr						
Fall of Rain .....	3.730 in	4.291 in						
Number of days on which Rain fell .....	20	19.6						
No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	3	2	7	1	7	1	8	1
Mean Velocity in miles per hour	2.7	1.9	5.6	4.9	10.7	11.5	12.1	2.3
Total No. of miles for each Direction	197	91	944	117	1806	277	2314	54
The total number of miles registered during the month was 5799.								
The max. Velocity of the wind was 47 miles per hour. Direction S.S.E. on the 14th, at 9 p.m.								

## NOVEMBER, 1892.

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 45 years, was on the 12th in 1857, and was.....	30·350
The lowest	11th, 1891 27·938
The highest Temperature	6th, 1872 61·9
The lowest	17th, 1861.... 19·1
The highest adopted mean temperature of the month, 1881....	47·0
The lowest	1851.... 36·7

In this month the mean barometer pressure recovered itself, and rose more than two-tenths above the average. There were, however, very few cloudless days, and the sky was generally dull and overcast. The rainfall was about half-an-inch less than the average, but the number of days on which rain fell about the average. Of the ten rainless days, nine were accompanied by a high barometer. Lunar halo on the 1st. Thick fog on the 7th. Hoar frost on the 18th. Hail showers on the 30th. Ground frost on 14 days.



## DECEMBER, 1892.

Results of Observations taken during the Month.	Mean for the last 45 years.	
Mean Reading of the Barometer .....	29.522	29.460
Highest " " on the 27th..	29.899	30.068
Lowest " " on the 12th..	28.816	28.604
Range of Barometer Readings.....	1.083	1.464
Highest Reading of a Max. Therm. on the 18th	49.8	52.9
Lowest Reading of a Min. Therm. on the 25th	14.3	20.0
Range of Thermometer Readings .....	35.5	32.9
Mean of all the Highest Readings .....	39.7	42.9
Mean of all the Lowest Readings .....	27.2	32.7
Mean Daily Range .....	12.5	10.2
Deduced Monthly Mean (from Mean of Max. and Min.) .....	33.5	37.8
Mean Temperature from Dry Bulb) .....	34.5	38.5
Adopted Mean Temperature .....	34.0	38.2
Mean Temperature of Evaporation.....	32.4	36.6
Mean Temperature of Dew Point .....	29.6	34.8
Mean elastic force of Vapour .....	0.164 in	0.204 in
Mean weight of Vapour in a cub. ft. of air ..	1.9gr	2.4gr
Mean additional weight required for saturation	0.4gr	0.4gr
Mean degree of Humidity (saturation 1 00)	0.83	0.87
Mean weight of a cubic foot of air .....	454.7gr	538.7gr
Fall of rain .....	3.894in	5.268in
Number of Days on which Rain fell .....	17	9.3

No of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	8	0	7	1	1	0	4	9
Mean Velocity in miles per hour	5.8	0	4.4	4.0	4.4	0	8.9	10.5
Total No. of miles for each Direction	1123	0	741	97	106	0	859	2273

The total No. of miles registered during the month was 5199.  
 The max. Velocity of the wind was 34 miles per hour; direction W.S.W., at 5 p.m., on the 17th. The Record for Friday, 23rd, was accidentally lost.

## DECEMBER, 1892.

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 45 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

The atmospheric pressure was remarkable for its oscillating condition; no fewer than 15 small depressions having passed over the station. The highest, lowest, and mean readings were all over the average. Of the 14 rainless days only one occurred with the barometer reading below the average, while two of the heaviest rain falls occurred on days of higher barometric pressure.

The mean temperature was very low, owing to the severe frost of the latter half of the month, which was fine, dry, and free from snow. Snow fell on the 4th, 5th, and 8th. Fog prevailed on the 8th, 15th, 16th, 21st and 22nd. Ground frost on 25 days. Lunar halos on the 28th and 30th.

## Summary of Observations FOR 1892.

	Mean for the last 45 years.
Mean Reading of the Barometer .....	29.494
Highest ,, on March 30th ..	30.229
Lowest ,, on February 2nd ..	28.505
Range of Barometer Readings .....	1.724
Highest Reading of a Max. Therm. on June 9th	81.0
Lowest Reading of a Min. Therm. on Feb. 18th	8.1
Range of Thermometer Readings .....	72.9
Mean of all the Highest Readings .....	53.6
Mean of all the Lowest Readings .....	37.9
Mean Daily Range .....	15.7
Deduced yearly Mean (from Mean of Max. and Min.) .....	44.8
Mean Temperature of dry bulb.....	45.2
Adopted Mean Temperature .....	45.0
Mean Temperature of Evaporation .....	42.5
Mean Temperature of Dew Point.....	39.4
Mean elastic force of Vapour.....	0.249 in
Mean weight of Vapour in a cubic foot of air	2.8 gr
Mean additional weight required for saturation	0.7 gr
Mean degree of Humidity (saturation 1.00)..	0.80
Mean weight of a cubic foot of air .....	533.5 gr
Total fall of rain in the Year.....	48.697 in
Number of Days per Month on which Rain fell	16.5

The Maximum monthly mean height of the Barometer was in February, 1891, and was	29.997
The Minimum ,, ,, in December, 1868, and was	28.984
The Maximum yearly mean height of the Barometer was in 1887, and was	29.582
The Minimum ,, ,, in 1866, and was	29.389

## SUMMARY, 1892.

The greatest monthly range of the Barometer was in  
 January, 1884, and was ..... 2·409

The least ,, ,, in July, 1852, and was ..... 0·505

The highest reading of the Barometer, during 45 years, was  
 on January 18th, 1882, and was ..... 30·480

The lowest ,, ,, on December 8th, 1886, and was 27·350

Extreme range ..... 3·130

The highest temperature was on July 15th, 1868, and was.. 88·2

The lowest ,, ,, January 15th, 1881.. 4·6

The highest adopted mean temperature of a month, July, 1868 62·4

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, } July, 1852.. 5·1gr  
 in a cubic foot of air ..... }

The least ,, ,, ,, February, 1855.. 1·4gr

The greatest fall of rain in a month, was in October, 1870, and  
 was ..... 13·437 in

The least ,, ,, ,, March, 1852.. 0·047 in

The greatest number of days on which } July, 1861, Dec. 1868 31  
 rain fell in one month ..... }

The least ,, ,, ,, March, 1852.. 3

No. of days in the year on which the prevailing wind was .....	N	NE	E	SE	S	SW	W	NW
.....	39	69	30	8	31	65	92	31
Mean Velocity in miles per hour .....	5·9	7·2	7·4	5·9	10·3	12·2	10·1	9·6
Total No. of miles for each Direction.....	5569	11988	5323	1133	7634	19019	22361	7111

The total No. of miles registered during the year was 80·138.

The Max. Velocity of the wind was 50 miles per hour; direction S.S.W., at Noon, on October 29th. The record of wind for Friday, December 23rd, was accidentally lost.

# DATES OF OCCASIONAL PHENOMENA.

1892.	Frost.	Hoar Frost.	Snow.	Hail
January	1-18, 19-23, 24-27		6, 7, 8, 10, 14, 17, 19	3
February	2-5, 9, 12-26, 28	26	16, 17,	28
March	1-17, 19-24, 26-31		8, 9, 12, 14, 15, 27, 28	28
April	1-4, 11-20, 26-30,		12, 13, 14, 18	26-28
May	1-3, 5-8, 9, 21, 28,			
June	18			
July				
August	10			
September	30			
October	2-7, 11-13, 17-20, 22-27, 30, 31			
November	1-4, 7-9, 11-13, 16-19, 22-24, 25, 30	18		30
December	1-15, 16, 22-31	2, 25-31	4, 5, 8	2, 4

# DATES OF OCCASIONAL PHENOMENA.

(Continued.)

1892.	Heavy Rain	Fog.	Thunder.	Lightning.	Lunar Halo.	Solar Halo.
January	27, 28			6	10, 11	
February	7				9	
March					4	
April				17		
May	13, 18, 19, 27, 31		25, 31	25, 31		15, 22
June	4, 10, 28		17, 19	10, 17, 19		4, 18
July	19		3			7, 10, 23, 26
August	7, 12, 23, 26, 29, 30		24, 30	13, 24, 29, 30		
September	1, 6, 27, 29		2, 12, 30	2		
October	8, 14, 27	8		3		
November	30				1	
December	8, 13, 18	8, 15, 16, 21, 22			28, 30	

Solar Rainbows were seen, May 29th.  
 " " " June 20th.  
 " " " Oct. 3rd.  
 Lunar Rainbow was seen, Sept. 7th.

Aurora Borealis, Jan 4th  
 " " April 25, 26, 29.  
 " " May 5, 6.  
 " " Aug. 12.  
 " " Sept. 21.  
 " " Oct. 17, 22.

## SUMMARY OF SOLAR OBSERVATIONS.

Number of days of Observation in Each Month.

1892	Recorded Sunshine.	Amount of Sunshine expressed in hours.	Number of Sun Drawings, 10½ inches to diameter.	Other Drawings and Notes.	Entire Chromosphere Measured.	Chromosphere partially measured.	Spot spectra observed.
January ..	14	44.4	10		6		
February	21	69.7	11		6		
March ..	25	145.9	20		7	2	
April .....	28	202.1	19		5		
May .....	28	171.9	14		8		
June .....	28	206.8	13		9	1	
July .....	27	155.0	14		7		
August ..	25	129.4	5		2		
September	23	114.0	10		2	1	
October ..	25	111.5	14		4		
November	14	34.4	11		2		
December	14	33.1	12		6	1	
Totals ..	272	1418.2	153		64	5	

DATES OF SOLAR DRAWINGS, OF NOTES, OF OBSERVATIONS OF CHROMOSPHERE, AND OF SPOT SPECTRA.

The figures express, in hundredths of a day, the Greenwich Civil time at which the drawing was made  
*c* denotes chromosphere, *s* spot spectra.

1892.	January	February	March	April	May	June	July	August	Sept.	October	Nov.	Dec.
1	.41, c		.47	.38, c	.43	.47	.48		.39	.45	.51	.38, c
2	.40	.46, c	.39	.43	.42, c	.64, c	.39, c	.38		.50	.39	.46
3	.41, c		.41, c	.36	.71, c		.73, c		c			.44
4	.44, c				.39, c	.71	.34					
5			.53	.68		.60, c	.65, c		.34, c	.34	.50	.51
6			.41	.46	.39, c	.50, c		.40	.53, c	.44		.43, c
7			.48, c	.48	.35, c	.42, c		.44, c				
8	.40 & .55, c		.39	.38, c	.43, c	.34, c	.35, c					
9	.39	.41	.41	.46, c	.46, c							
10	c	.50, c	.41	.41	.46, c	c						
11		.44, c	.41	.40	.48	.35	.72	.67	.42	.42	.39	.61, c
12			.35	.47	.60	.85				.36		.41, c
13	.41	.44	.48, c	.47	.72		.71		.44	.36	.41	
14		.68	.42, c	.42, c					.80	.35, c	.47	
15		.39, c	.60	.42, c								
16		.66	.41	.67, c	.38	.42, c	.48, c	c	.50	.35, c	.40	.43
17		.47	.41, c				.53, c		.40	.45		
18		.38, c	.37, c	.39		.72			.40	.50	.48	.44, c
19	.44	.42	.42	.35		.47, c	.46, c		.38	.42, c		.50, c
20	.59, c		.42	.65	.41		.34		.88	.46, c		.43, c
21								.52				.44
22			.34, c	.39	.41	.70	.30		.80		.38, c	
23			.37, c	.39	.41	.72, c	.50		.43	.45	.37, c	
24	.44		.34, c	.39	.41							
25	.59, c		.37, c	.39	.41							
26			.34, c	.39	.41							
27			.37, c	.39	.41							
28			.34, c	.39	.41							
29			.37, c	.39	.41							
30			.34, c	.39	.41							
31			.38	.39	.41				.43	.45		



## 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	5.8	0.4	3.1	5.6	0	3.6	1.1	0.6	3.1	3.0	5.3	0	0	0	0	3.0	0
February	2.0	3.0	7.0	0	4.4	0.1	0	3.0	0	0.6	4.5	5.2	6.5	0	0	6.0	0.4
March	3.0	1.4	0	7.2	4.3	0	0	3.9	6.0	1.3	8.2	8.1	6.9	4.7	0	2.5	0.2
April	9.5	3.9	9.5	8.3	0	0	4.6	11.1	11.3	12.0	11.5	0.5	6.6	4.3	6.9	7.1	9.9
May	13.0	3.1	0	12.8	5.0	12.2	4.7	3.4	10.6	13.3	13.9	10.9	0	7.4	4.7	0.8	6.3
June	11.3	3.8	11.7	5.7	8.3	10.9	8.1	13.0	14.6	7.8	0	11.9	5.3	13.3	5.8	0	13.2
July	8.0	0.3	4.0	10.5	4.5	4.0	8.4	12.4	1.4	2.0	9.5	4.2	3.1	0	0	0	1.2
August	4.7	0	6.5	12.8	2.5	7.6	3.1	0	8.1	7.2	0	3.7	0.5	4.6	8.7	0.8	2.2
September	0	6.3	8.0	6.0	3.2	0	3.3	10.9	0	7.0	0	0	4.6	4.5	0	5.0	9.0
October	3.0	6.3	0.3	6.0	0.2	0	3.8	5.8	2.0	6.3	6.2	3.8	4.9	0	0	5.2	6.2
November	5.6	1.4	4.9	0	5.3	0	1.1	0	0.2	0	0	0	0	0	0	0.8	2.9
December	0	1.6	0	3.4	2.0	2.3	3.4	0	0	0	0	1.8	5.3	0	0	0	0

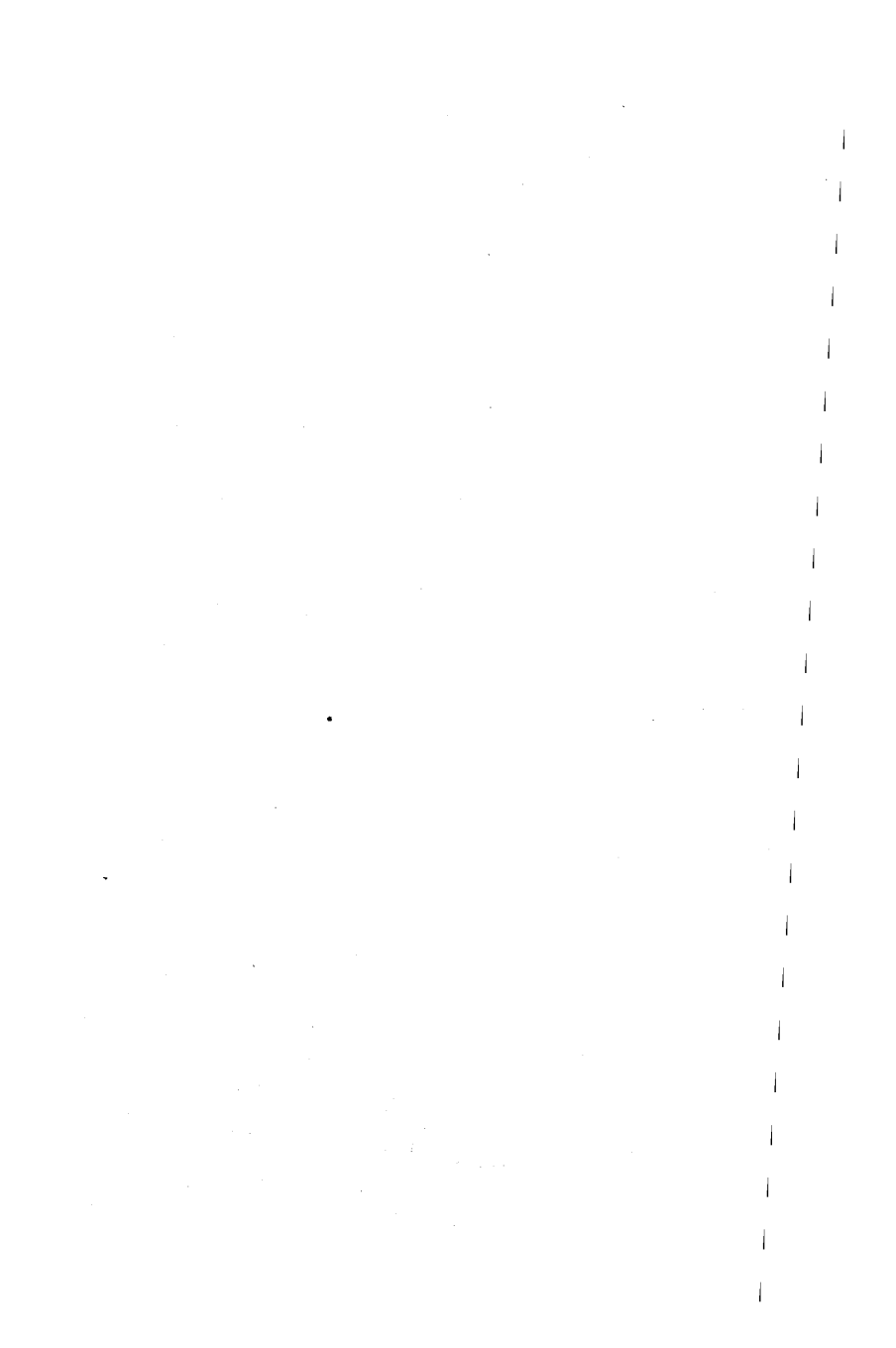
# TOTAL AMOUNT OF SUNSHINE RECORDED ON EACH DAY.

(Continued)

MONTH.	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Monthly Total.	Per centge each month.
January -	0	0	0	0	0	0	3.9	4.0	0	0	0	0	0	1.9	44.4	17.1
February -	8.9	0	2.2	0	1.9	6.4	0	2.4	2.6	0.5	1.6	0.5	0	0	69.7	24.2
March -	5.1	9.4	9.2	2.0	9.0	5.0	4.8	0	0.8	0	9.6	11.5	10.8	11.0	145.9	39.8
April -	5.1	9.5	0.3	0.3	8.8	5.1	10.3	11.4	8.3	2.1	5.0	6.0	12.9	0	202.1	48.7
May -	0.5	9.0	3.4	9.3	0	0.1	0.4	2.6	0.9	2.7	6.6	3.5	3.0	7.8	171.9	35.7
June -	4.3	5.4	3.2	9.2	6.5	6.2	7.8	0.4	0.3	2.1	1.1	3.8	11.8	0	206.8	41.9
July -	2.3	0.8	6.0	8.6	8.7	6.5	12.5	12.2	0	7.2	8.6	5.9	1.8	0.4	155.0	31.0
August -	0	7.7	11.5	2.3	2.7	5.4	4.3	3.4	5.6	1.3	0	6.8	5.4	0	129.4	28.9
September -	0.6	2.0	0	1.4	5.5	0.5	9.2	7.2	6.6	0.4	8.8	1.2	2.8	0	114.0	30.2
October -	5.6	3.4	1.4	0.7	6.8	8.4	4.6	6.7	2.8	0	0	0	6.1	5.0	111.5	33.8
November -	1.7	0	0	0	0.8	0	0	0.4	0.4	0	0	4.5	4.4	0	34.4	13.1
December -	0	0	0	0	0.8	0.3	1.0	3.2	0	3.3	0.7	0	0	0	33.1	13.7

## 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	7.0	9.2	9.0	8.0	6.0	5.0	0	0	0	0	0	0	0
February	0	0	0	0.8	2.5	5.2	9.0	11.0	11.6	12.2	8.9	6.5	2.0	0	0	0	0	0
March	0	0	1.3	7.4	11.4	16.4	16.8	17.8	17.3	16.4	14.4	13.1	10.0	3.6	0	0	0	0
April	0	1.9	9.6	15.6	19.9	19.9	20.4	18.6	16.0	17.6	19.0	16.1	13.4	10.6	3.5	0	0	0
May	0.7	4.7	11.7	12.8	11.1	11.0	12.0	15.9	13.7	15.8	14.7	15.5	13.1	9.9	7.1	2.2	0	0
June	2.3	9.5	10.7	11.3	11.9	13.2	15.0	16.5	16.3	16.7	15.0	15.8	16.0	16.8	13.4	6.4	0	0
July	0.2	2.4	6.7	9.1	9.8	9.8	10.3	12.9	11.7	13.0	14.0	14.9	15.2	13.0	9.5	2.5	0	0
August	0	2.3	6.1	7.8	10.7	13.0	13.5	12.8	12.9	11.8	10.4	10.4	7.5	5.6	4.3	0.5	0	0
September	0	0	2.6	6.1	9.0	10.4	12.1	12.2	12.8	13.1	11.6	10.7	8.9	4.3	0.2	0	0	0
October	0	0	0	1.7	8.4	13.7	16.6	15.8	16.2	14.6	12.5	9.8	2.2	0	0	0	0	0
November	0	0	0	0	0.3	2.7	6.1	6.3	6.7	6.8	4.2	1.3	0	0	0	0	0	0
December	0	0	0	0	0.2	3.0	7.6	8.7	7.6	3.5	2.5	0	0	0	0	0	0	0
Total	3.2	20.8	48.7	72.6	95.4	125.3	148.6	157.5	150.8	147.5	132.2	114.1	88.3	63.8	38.0	11.6	0	0



## OBSERVATIONS OF UPPER CLOUDS (CIRRUS).

Date. 1892.	G. M. T.	Cloud.		Wind.		Direction of Lower Clouds.
		Direction.	Velocity (0-6).	Direction.	Force. (0-12).	
January 4	4 p.m.	N.N.W.	1	N.W.	1	
" 8	8-30 a.m.	S.E.	1	W.N.W.	1	S.S.W.
" 9	1-20 p.m.	N.E.	1	N.E. by N.	2	N.W.
" 9	2-15 p.m.	N.	1	N.	1	N.W.
" 10	9-0 a.m.	S.	1	N.E. by N.	0	N.E.
" 18	9-0 a.m.	W. by S.	1	E. by N.	1	E.
" 24	2-30 p.m.	N.N.W.	1	W.	3	N.W.
Feb. 11	1-30 p.m.	.. .. .	...	W. by N.	3	W. by N.
" 15	4-30 p.m.	E.N.E.	1	E. by N.	4	E.
" 24	9-10 a.m.	S.E.	2	N.E. by N.	1	E.S.E.
March 11	9-30 a.m.	N. by E.	2	S.E.	0	N.
" 31	3-30 p.m.	N.N.E.	2	W. by S.	2	
April 1	8-0 a.m.	E.N.E.	1	N.W. by N.	0	
" 30	7-0 p.m.	S.	2	W.	1	
May 11	10-0 a.m.	W.S.W.	1	N.E.	1	
June 1	7-0 p.m.	N.E.	2	S.W.	1	
" 18	7-0 p.m.	N.W.	2	W.	2	W.
" 27	8-0 p.m.	W.	3	W.S.W.	2	S.W.
" 30	8-0 p.m.	W.	2	W.S.W.	0	W.
July 1	12-30 p.m.	N.W.	2	W. by S.	4	W.
" 1	3-30 p.m.	S.W.	1	W.	2	W. by S.
" 5	5-0 p.m.	S.W.	3	W.S.W.	4	W.S.W.
" 11	7-0 p.m.	S.E.	1	E. by N.	3	S.E.
" 18	5-30 p.m.	N.	1	W.	2	N.W.
" 25	7-15 a.m.	N.E.	1	N.E. by N.	1	
" 30	6-15 p.m.	E.	2	W. by N.	1	N.W.
August 10	5-45 p.m.	N.	2	W. by S.	1	N.W.
Sept. 10	3-0 p.m.	N.W.	2	W. by N.	2	N.W.
" 17	6-0 p.m.	N.W.	2	S.W.	1	N.W.
" 18	8-30 a.m.	S.W.	1	S.W. by W.	2	N.W.
" 25	3-0 p.m.	N.E.	2	S.W.	5	S.W.

OBSERVATIONS OF UPPER CLOUDS (*Continued*).

Date. 1892.	G. M. T.	Cloud.		Wind.		Direction of Lower Clouds.
		Direction.	Velocity (0-6)	Direction.	Force (0-12)	
October 7	2-20 p.m.	N. E.	1	W. by S.	2	S. W.
" 7	4-5 p.m.	N. E.	2	W. S. W.	1	S. W.
" 12	8-0 a.m.	N. E.	1	N. E. by N.	0	N. E.
" 17	9-0 a.m.	N.	1	N.	1	N. W.
" 19	2-0 p.m.	N. E.	2	W. by N.	3	S. W.
" 20	4-30 p.m.	.....	...	W.	1	W.
" 21	9-10 a.m.	S. W.	1	N. W. by N.	1	W.
" 22	10-7 a.m.	N. W.	1	N. W. by N.	4	W.
Nov. 1	10-0 a.m.	.....	...	N. E. by N.	1	
" 2	9-30 a.m.	E.	2	E.	1	S. E.
" 9	9-20 a.m.	N. W.	2	S. W.	1	S. E.
" 16	3-0 p.m.	W.	1	N. W. by W.	1	S.
" 18	9-45 a.m.	N. W.	2	N. N. E.	1	S. E.
Dec. 2	9-15 a.m.	N.	1	N. W. by N.	1	
" 6	10-45 a.m.	N. W.	2	N. W. by W.	1	
" 11	9-30 a.m.	N.	1	W.	2	W.
" 12	Noon.	N.	1	W. N. W.	3	N. W.
" 12	2-50 p.m.	N. W.	1	W. N. W.	3	N. W.
" 13	9-10 a.m.	N.	2	N. W.	1	
" 13	2-0 p.m.	N. W.	2	W. N. W.	1	
" 24	9-10 a.m.	S. W.	1	E. by S.	0	
" 24	11-0 a.m.	N. W.	2	E. by S.	1	
" 24	12-0 a.m.	N. W.	2	E. by S.	1	
" 25	10-0 a.m.	N. W.	1	E.	1	N. W.
" 28	9-0 a.m.	N.	1	E. N. E.	0	
" 30	9-5 a.m.	N. W.	1	S. S. E.	0	N. E.

MONTHLY MAGNETICAL OBSERVATIONS  
TAKEN AT THE  
COLLEGE OBSERVATORY, STONYHURST, 1892.

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THE Horizontal, Vertical, and Total Forces are calculated to English measure; one foot, one second of mean solar time, and one grain being assumed as the units of space, of time, and of mass.

The Vertical and Total Forces are obtained from the absolute measures of the Horizontal Force, and of the Dip.

In the observations of Deflection and Vibration, taken each month for absolute measure of Horizontal Force, the same magnet has always been employed.

The moment of inertia of the magnet with its stirrup, for different degrees of temperature, and the co-efficients in the corrections required for the effects of temperature and of terrestrial magnetic induction on the magnetic moment of the magnet, were determined at the Kew Observatory by the late Mr. Welsh.

The moment of inertia of the magnet with its stirrup, using the grain and foot as the units of mass and of linear measure is 5.27303. Its rate of increase for increase of temperature is 0.00073 for every 10° of Fahr.

The weight of the magnet with its stirrup is approximately 825 grains, and the length of the magnet is nearly 3.94 inches. The moment of inertia was determined, independently of the weight and dimensions, by the method of vibration, with and without a known increase of the moment of inertia.

The temperature corrections have always been obtained from the formula  $q(t^\circ - 35^\circ + q'(t^\circ - 35^\circ)^2)$ , where  $t^\circ$  is the observed temperature and  $35^\circ$  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  $\mu$  is 0.000244.

The correction for error of graduation of the Deflection bar at 10 foot is  $+ 0.00004$  ft, at 1.3  $+ 0.000064$  ft.

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

The time of one vibration has been obtained each month from the mean of twelve determinations of the time of 200 vibrations.

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

In deducing from these observations the ratio and product of the magnetic moment  $m$  of the magnet, and the earth's horizontal magnetic intensity  $X$ , the induction and temperature corrections have always been applied, and the observed time of vibration has been corrected for the effect of torsion of the suspending thread; but no correction has been required for the rate of the chronometer, or for the arc of vibration, the former having been always under 1.5s and the latter never over 50'.

The average deflection of the magnet caused by a twist of the torsion circle through  $90^\circ$ , has been about 9.3 of arc.

In the calculations of the ratio  $\frac{m}{X}$ , the third and subsequent

terms of the series  $1 + \frac{P}{r^2} + \frac{Q}{r^4} + \dots$  &c., have always been omitted.

The value of the constant  $P$  was found to be 0.00433.

The Declination observations have been taken once a week.





## OBSERVATIONS OF DECLINATION AND DIP.

(Continued.)

MONTH.	G.M.T.		WEST DECLINATION		G.M.T.		DIP.
	CIVIL DAY		Observation.	Monthly Mean	CIVIL DAY.		
	D. H. M.		° ' "	° ' "	D. H. M.		° ' "
July	4 16 13		18 54 44	18 55 48	15 16 8	69 19 9	
	12 16 13		18 55 24				
	18 16 16		18 56 14				
	25 16 15		18 56 49				
	1 16 8		18 58 34				
August	9 16 23		18 55 59	18 51 24	17 13 35	69 6 43	
	16 15 42		18 30 49				
	22 16 8		18 57 34				
	30 16 8		18 54 4				
	5 16 12		18 53 29				
Sept.	14 16 15		18 57 14	18 55 44	15 11 35	69 7 22	
	19 16 18		18 59 49				
	26 16 8		18 52 24				
	4 16 8		18 54 24				
Oct.	10 16 18		18 26 14	18 44 33	17 12 7	69 5 10	
	17 16 10		18 52 59				
	24 16 13		18 44 34				
Nov.	1 14 13		18 35 34	18 39 6	18 10 28	69 12 30	
	9 16 30		18 20 44				
	14 16 8		18 33 19				
	21 16 8		18 53 19				
Dec.	28 16 18		18 52 34	18 48 27	22 15 15	69 4 34	
	4 16 13		18 40 19				
	12 16 13		18 44 29				
	19 16 8		18 56 29				
	27 16 8		18 52 29				
Yearly Mean			18 48 18			69 6 14	

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

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.
	D. H. M.	°		D. H. M.	°	° ' "
Jan.	15 10 0	47·9	5·9570	15 {11 35 12 20	39·3 40·0	12 11 21 5 31 36
Feb.	15 9 14	37·4	5·9575	15 {10 25 11 15	40·1 40·1	12 14 12 5 33 19
Mar.	14 9 38	29·5	5·9614	14 {10 46 11 15	38·3 39·8	12 13 12 5 32 17
Apr.	15 11 49	39·9	5·9601	15 {14 46 15 10	50·2 47·5	12 13 13 5 33 53
May	21 11 8	53·3	5·9656	21 { 9 22 9 50	49·4 50·6	12 13 13 5 31 39
June	15 11 34	58·7	5·9720	15 {14 22 14 48	61·7 62·0	12 7 25 5 29 52
July	15 9 43	54·9	5·9803	15 {10 30 10 55	55·5 57·3	12 11 45 5 31 29
Aug.	17 11 12	64·9	5·9768	17 {12 7 12 30	64·5 65·0	12 9 8 5 31 5
Sept.	15 9 17	55·0	5·9670	15 {10 5 10 20	55·8 56·6	12 2 34 5 31 29
Oct.	17 9 17	46·2	5·9583	17 {10 5 10 35	44·0 45·4	12 14 50 5 33 17
Nov.	16 10 30	47·9	5·9451	16 {14 15 15 40	49·8 52·5	12 13 30 5 31 35
Dec.	22 11 15	42·4	5·9498	22 {12 8 12 35	42·5 43·0	12 14 11 5 31 50

## MAGNETIC INTENSITY.

BRITISH UNITS.			C. G. S. UNITS.			
	X or horizontal force.	Y or vertical force.	Total Force.	X or Horizontal Force.	Y or Vertical Force.	Total Force.
Jan. ..	3·7114	9·6770	10·3643	0·1711	0·4462	0·4779
Feb. ..	3·7001	9·6623	10·3465	0·1706	0·4455	0·4771
Mar. ..	3·7004	9·7080	10·3894	0·1706	0·4476	0·4790
April ..	3·6949	9·6403	10·3241	0·1704	0·4445	0·4760
May ..	3·7046	9·7152	10·3976	0·1708	0·4479	0·4794
June ..	3·7110	9·6519	10·3407	0·1711	0·4450	0·4768
July ..	3·6961	9·7913	10·4658	0·1704	0·4515	0·4826
Aug. ..	3·7032	9·7040	10·3866	0·1708	0·4474	0·4789
Sept. ..	3·7051	9·7143	10·3969	0·1708	0·4479	0·4794
Oct. ..	3·7028	9·6897	10·3732	0·1707	0·4468	0·4783
Nov. ..	3·7169	9·7891	10·4711	0·1714	0·4514	0·4828
Dec. ..	3·7123	9·7094	10·3949	0·1712	0·4477	0·4793
Means	3·7049	9·7044	10·3876	0·1708	0·4475	0·4790

## DATES OF MAGNETIC DISTURBANCES.

The disturbances are divided into three classes, *small*, *moderate*, and *greater*; these are indicated by the initial letters of the classes, and the letter c denotes *calm*. The days are reckoned astronomically, from noon to noon. The asterisk signifies that the record was partly or wholly lost, according as it stands, with or without an initial letter.

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

## PRESENTS RECEIVED.

On the relation between diameter of image, duration of exposure, and brightness of objects on photographs of stars taken at the Royal Observatory by W. H. M. Christie, M.A., F.R.S. . . .	Astronomer Royal.
Greenwich Observations, 1889 . . .	Royal Observatory.
On the simultaneity of magnetic variations, by William Ellis, F.R.A.S.	"
Quarterly Returns of the Registrar General . . . . .	Registrar General.
Philosophical transactions . . . . .	Royal Society.
R.S. proceedings . . . . .	"
Report of the Metereological Council, 1891 . . . . .	Metereological Office.
Quarterly Weather Reports, 1892 . . . . .	"
Monthly " " 1892 . . . . .	"
Weekly " " 1892 . . . . .	"
Daily " " 1892 . . . . .	"
Metereological Record, by William Marriott . . . . .	"
Ten years sunshine in British Isles, 1881—91 . . . . .	"
Harmonic Analysis of Hourly Observations of Air Temperature and pressure at British Observatories . . . . .	"
Hourly Means, 1888 . . . . .	"
Monthly Notices of the Royal Astronomical Society, 1892 . . . . .	Royal Astr. Soc.
Memoirs of Royal Astronomical Society Vol. L., 1890-1 . . . . .	"
Report of Kew Committee, 1891 . . . . .	Kew Observatory.
The new Star in Auriga by Prof. Copeland and Dr. L. Becker . . . . .	Royal Obs., Edinburgh.
The Solar Spectrum at Medium and Low Altitudes, by Ludwig Becker, Ph. D. . . . .	"
Edinburgh Circulars . . . . .	"
Measures of Positions and Areas of Sun spots and faculae . . . . .	Solar Physics Committee
Report of the British Association for 1889 . . . . .	British Association.
Meteorology of Ben Nevis . . . . .	Ben Nevis Observatory.
Journal of the Scottish Meteorological Society . . . . .	Scottish Met. Soc.

Astronomical observations made under the direction of Charles Pritchard, D.D., F.R.S., F.R.A.S., & Radcliffe Observations, 1887, under the direction of Edward James Stone, M.A., F.R.S., F.R.A.S., &c.	University Obs., Oxford.
Second Glasgow Star Catalogue, by the late Prof. Grant., LL.D., F.R.S., F.R.A.S.	Radcliffe Obs., Oxford.
Meteorological observations, Rousden Observatory, Devon, 1890—91, by C. E. Peek, M.A., F.R. Met. Soc., F.R.A.S.	Glasgow University.
Report of Wolsingham Observatory, 1891, by Rev. T. H. E. C. Espin, B.A., F.R.A.S.	Observatory.
Southport Meteorological Results, by Joseph Baxendell, F.R. Met. Soc.	"
Meteorology of Bradford, 1891, by John Landsborough, M. Inst. C.E., &c., and Alfred Eley Preston, M. Inst., C.E., &c. &c.	"
Thirty-ninth Annual Report of Committee of the Free Public Library, Liverpool.	"
Comparative Photographic Spectra of the Sun and Metals, F. McClean, M.A., F.R.A.S.	Committee.
Comparative Photographic Spectra of the High Sun and the Low Sun, by the same	Author.
Photographic Studies of the Normal Solar Spectrum, by G. Higgs, F.R.A.S.	"
Ephemerides of the Satellites of Saturn, 1891-92, by A. Marth, F.R.A.S.	"
On a Prominence of extraordinary height, May 5th, 1892, by Rev. J. Fenyi, S.J.	"
Phenomena, observed on the great sun spot group of Feb., 1892, by the same	"
Twenty years observations of Thunderstorms, by Rev. T. E. Espin, B.A., F.R.A.S.	"
The Law of Planetary Mean Velocities, by D. Dewar	"
Weather Forecasts, by the same	"
Kalendar and rite used by Catholics since the time of Elizabeth, by Rev. J. Morris, S.J., F.S.A.	"
Babylonian Astronomy, by Rev. A. L. Cortie, S.J., F.R.A.S.	"

Reduction of Spectroscopic Observations of motions in the line of sight, by Dr. W. W. Campbell	Author
The Spectrum of Nova Aurigae, in Feb. and March, 1892, by the same . . . . .	"
Recent Observations of Nova Aurigae, Sep. 8th to Oct. 13th, 1892, by the same . . . . .	"
A Plea for Astronomy in New South Wales, by John Tebutt, F.R.A.S., &c. . . . .	"
Results of Meteorological Observations, by the same . . . . .	"
The Silver Thaw at the Ben Nevis Observatory, by R. C. Mossman, F.R.A.S. . . . .	"
Laranaga's Photo-Phonograph by Julius Maier, Ph.D . . . . .	Author.
The connection between Solar and Terrestrial Magnetic Disturbances, by T. S. H. Shearman. . . . .	"
Sun Spots, by Prof. Schuster, Ph.D., F.R.S., etc., etc. . . . .	"
The New Star in Auriga, by William Huggins, D.C.L., LL.D., Ph.D., F.R.S., M.R.I., etc. . . . .	"
On Nova Aurigae, by Dr. William Huggins and Mrs. Huggins. . . . .	Authors.
Sun-spot diagrams, by Capt. William Elliot. . . . .	C. W. Baillie, Esq. Rev. J. G. Hagen, S.J.
The Astronomical Journal. . . . .	Burnley Health Committee
The Sanitary Inspectors' Report. . . . .	
The Medical Officer's Report for the County Palatine of Lancaster. . . . .	Medical Officer of Health.
The Observatory. . . . .	Editor.
The British Journal of Photography. . . . .	"
British Rainfall, 1891, by G. J. Symons, F.R.S. . . . .	"
Monthly Meteorological Magazine, by the same . . . . .	"
Magnetical and Meteorological observations, 1890 . . . . .	Government Obs. Bombay.
Results of the Meteorological observations made at the Government Observatory, Madras, during the years 1861—1890 . . . . .	Government Obs. Madras.
Madras Meridian circle observations, 1871—1876. . . . .	"
Report on the Meteorology of India, 1890, by John Eliot, M.A. . . . .	Met. office, India.
Monthly Weather Review . . . . .	"



Registers of Original Observations . . . . .	Met. Office, India
Meteorological Observations at Adelaide Observatory by Chas. Todd, C.M.G., M.A., F.R.S., F.R.A.S., F.R.M.S.	H.M. Govt. in Australia.
Monthly Record of Melbourne Observatory, 1891-92, by R. L. J. Ellerey, F.R.S., Government Astronomer . . . . .	Melbourne Observatory.
Report of the Board of Visitors to the Observatory, Victoria, 1891 . . . . .	Observatory.
New York Meteorological Observations Central Park . . . . .	"
Pilot Charts of the North Atlantic Ocean, 1892 . . . . .	U.S.A. Naval Obs.
Washington Observations for 1887, with Appendix 1, 2, and 3. (four vols.) . . . . .	"
Washington Astronomical and Meteorological Observations, 1888 . . . . .	"
Washington Magnetic Observations, 1892 . . . . .	"
Magnetic Disturbances, 1892 . . . . .	"
Smithsonian Report, 1887-88-89-90 . . . . .	Smithsonian Institute
Annals of the Astronomical Observatory . . . . .	Harvard College Obs.
The Draper Catalogue of Stellar Spectra . . . . .	"
Report of the Director, Edward C. Pickering . . . . .	"
Time Service . . . . .	"
Recent results in Solar Prominence Photography by Prof. George E. Hale, Director . . . . .	Kenwood Astro-Phys Obs
Ultra-Violet Spectrum of the Solar Prominences by the same . . . . .	"
Photographs of Solar Phenomena by the same . . . . .	"
A remarkable Solar Disturbance by the same . . . . .	"
Solar Photography at Kenwood Astro-Physical Observatory by the same . . . . .	"
Spectroscopic Observations of the Great Sun-spot Group of Feb. 1892, by the same . . . . .	"
Photograph of Spectroscope at Kenwood Astro-Physical Obs. . . . .	"
Some results and conclusions derived from a Photographic Study of the Sun by the same . . . . .	"
The Yerkes Observatory of the University of Chicago . . . . .	"

Report of Managers of Observatory Eighteenth Annual Report of the Meteorological Service of Canada Toronto General Meteorological Register, 1891 . . . . .	Yale University. Met. Office, Toronto. "
Monthly Weather Review . . . . .	"
Ninth Annual Report of the Ohio Meteorological Bureau . . . . .	Bureau.
Official Reports of the Ohio State Proceedings of Rochester Academy of Sciences . . . . .	Board of Agriculture. Academy.
The Photochronograph applied to determinations of Latitude, by the Rev. J. Hagen, S.J. . . . .	Georgetown Col. Obs.
The Rutherford Photographic Measures of the Pleiades, by Harold Jacoby . . . . .	Columbia Col. Obs.
The Rutherford Photographic Measures of stars about B. Cygni, by the same . . . . .	"
Memoirs of the National Academy of Sciences, vol. v. . . . .	"
Catalogue of Proper Motion Stars . . . . .	Cincinnati Obs.
Proceedings . . . . .	Haverford Col. Obs.
Observations made at the Meteorological and Magnetic Observatory at Batavia, 1891, by Dr. J. P. Van Der Stok . . . . .	Batavia Observatory.
Rainfall in the East India Archipelago, 1890, by the same . . . . .	"
Observations by W. Doberck . . . . .	Hong Kong Obs.
Annales de L'Observatoire de Nice . . . . .	L'Observatoire.
Annuaire de L'Observatoire Municipal de Montsouris, 1892-3 . . . . .	"
Bulletin Mensuel de l'Observatoire Météorologique de l'Université d'Upsal 1891 . . . . .	"
Bulletin Mensuel de l'Observatoire de Zi-ka-wei . . . . .	"
Observations faites à l'Observatoire Météorologique de l'Université de Kiev . . . . .	"
Annuaire de la Société Météorologique de France . . . . .	La Société
L'Astronomie Sidérale I, Les Etoiles par I. Thirion, S.J. . . . .	L'Auteur
Température et Thermomètres, par le même . . . . .	"
L'Origine des Mondes et Leurs Destinées par L'Abbè Eugène Spée . . . . .	"
Sur la Fréquence, des étoiles filantes pendant les nuits des 9 et 10 août, 1890, par M. F. Terby . . . . .	"

Sur de Nouvelles Observations des canaux de Mars et de Leur Gémination, par le même . . .	L'Auteur
Faits démontrant la permanence des taches sombres de Vénus et la lenteur de leur mouvement de rotation, par le même . . .	"
Sur la Structure des bandes équatoriales de Jupiter, par le même . . .	"
Quatrième note sur la même par le même . . .	"
Sur l'apparition de plusieurs nouvelles taches rouges dans l'Hémisphère Austral de Jupiter, et sur la structure de la bande Septentrionale 4 de cette planète, par le même . . .	"
La Fluctuation des Latitudes Terrestres par M. Antoine D'Abbadie . . .	"
Origine des forces de la Nature par Guillaume Poche . . .	"
Sur L'Anomalie magnétique du Bassin de Paris par M. H. Moureaux . . .	"
Rapport sur les mouvements aussi singuliers qu' extraordinaires d'une Protubérance, par J. Fenyi, S.J. . . .	"
Funérailles de M. Mouchez . . .	Madame E. Mouchez.
Astronomisches aus Babylon von J. N. Strassmaier, S.J., und J. Epping, S.J. . . .	Rev. A. L. Cortie, S.J.
Abhandlungen des Königlich Preussischen Meteorologischen Instituts Herausgegeben durch Wilhelm von Bezold. Direktor, Band 1, No. 4 und 5, Berlin, 1891 . . .	Das Institut.
Ergebnisse der Meteorologischen Beobachtungen, im Jahre, 1889, Heft iii. Von demselben . . .	"
Ergebnisse der Meteorologischen Beobachtungen, im Jahre, 1891, Heft ii. Von demselben . . .	"
Das Königlich Preussische Meteorologische Institute in Berlin, und Dessen Observatorium bei Potsdam . . .	"
Jahrbuch des Norwegischen Meteorologischen Instituts, Fur 1890 . . .	"
Astronomische Mittheilungen, Von Der Königlichen Sternwarte zu Göttingen . . .	Die Sternwarte.
Astronomische Mittheilungen, von Dr. R. Wolf . . .	Der Verfasser.

Die Triangulation von Java, von Dr. J. A. C. Oudemans . . . . .	Der Verfasser
Sammlung der Beobachtungen von Sternbedeckungen während der totalen Mondfinsterniss, Januar 28, herausgegeben von Otto Struve . . . . .	"
Annalen des Physikalischen Central-Observatoriums. Herausgegeben von H. Wild, Mitglied der Kaiserlichen Akademie der Wissenschaften und Direktor des Physikalischen Observatoriums Theil II. . . . .	Das Observatorium
Analele Institutului Meteorologie al României de S. C. Hepites . . . . .	"
Protuberanzen Beobachtet in Jahre 1887, am Haynald-Observatorium, von Julius Fenyi, S.J. . . . .	"
Buletinul Observatiunilor Meteorologice din România . . . . .	"
Observaciones Magnéticas y Meteorológicas del R. Coll., de Belen en la Habana . . . . .	Observatorio
Anales del Instituto y Observatorio de Marina de San Fernando, Sección 2a ano 1891 . . . . .	"
Almanaque Náutico para 1893-4 San Fernando . . . . .	"
Anuario del Observatorio de la Plata para el ano 1892 . . . . .	"
Anuario del Observatorio Astronómico Nacional de Tacubaya, año XIII. 1898 . . . . .	"
Boletín del Observatorio de Tacubaya Resúmen de las Observaciones Meteorológicas Col. Cat. del Sagrador Corazon de Jesus in Puebla . . . . .	"
Obs. Met. Colegio de San Juan Nepomuceno, Saltillo, Coahnila, Mexico . . . . .	"
Sintesis Elemental del Cálculo Infinitesimal por Pedro Spina S.J. . . . .	L'Autore
Memorias de la Sociedad Científica "Antonio Alzate" . . . . .	La Sociedad
Pubblicazioni della Specola Vaticana. Fasciolo II. . . . .	Specola Vaticana.
Bollettino Mensuale dell'oss. Centrale del R. Coll. Carlo Alberto in Moncalieri . . . . .	Osservatorio

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APPENDIX

RESULTS

OF

METEOROLOGICAL OBSERVATIONS

TAKEN AT

ST. IGNATIUS' COLLEGE, MALTA,

BY THE

REV. J. SCOLES, S.J.

1892.

# ST. IGNATIUS' COLLEGE, MALTA.

Lat.  $35^{\circ} 55'$  N. Long.  $14^{\circ} 29'$  E. Barometer Readings  
reduced to  $32^{\circ}$  F. at sea level.

## METEOROLOGICAL REPORT.

1892.

JANUARY.

Results of Observations taken during the Month.	Mean for the last 5 years.	
Mean Reading of the Barometer ....inches	29.978	30.051
Highest                    "            on the 31st    "	30.352	30.415
Lowest                    "            on the 14th    "	29.576	29.538
Range of Barometer Readings .....	0.776	0.877
Highest Reading of a Max. Therm. on the 12th	68.4	63.9
Lowest Reading of a Min. Therm. on the 30th	44.0	41.6
Range of Thermometer Readings .....	24.4	22.3
Greatest Range in 24 hours on the 8th .....	17.0	18.4
Mean of all the Highest Readings .....	62.1	58.4
Mean of all the Lowest Readings .....	50.5	47.8
Mean Daily Range .....	11.6	10.6
Mean Temperature (deduced from Max. & Min)	55.6	52.5
Mean Temperature (deduced from Dry Bulb)	55.0	52.1
Adopted Mean Temperature.....	55.3	52.3
Mean Temperature of Evaporation .....	51.2	48.1
Mean Temperature of Dew Point .....	48.7	44.9
Mean elastic force of Vapour .....inches	0.344	0.298
Mean weight of Vapour in a cub. ft. of air grains	3.9	3.4
Mean additional weight required for saturation ,,	0.8	0.9
Mean degree of Humidity .....	83	80
Mean weight of a cubic foot of air ..grains	538.4	542.9
Fall of Rain .....	inches 3.232	3.329
Number of days on which Rain fell.....	10	12
Mean amount of Cloud (an overcast sky=10)	4.3	4.6
Total number of miles of Wind indicated....	8340	8336
Mean Velocity of Wind per hour .....	miles 11.2	11.2

## FEBRUARY.

Results of Observations taken during the month.	Mean for the last 5 years.	
Mean Reading of the Barometer .....inches	29·933	30·064
Highest                    "                    on the 1st    ,,	30·210	30·334
Lowest                    "                    on the 4th    ,,	29·534	29·690
Range of Barometer Readings .....	0·676	0·644
Highest Reading of a Max. Therm. on the 19th	68·2	67·0
Lowest Reading of a Min. Therm. on the 5th	45·0	42·0
Range of Thermometer Readings.....	23·2	25·0
Greatest Range in 24 hours on the 19th .....	19·6	18·8
Mean of all the Highest Readings .....	61·6	60·7
Mean of all the Lowest Readings.....	51·8	49·0
Mean Daily Range .....	9·8	11·7
Mean Temperature (deduced from Max. & Min.)	55·7	53·9
Mean Temperature (deduced from Dry Bulb)	56·2	54·0
Adopted Mean Temperature .....	55·9	54·0
Mean Temperature of Evaporation .....	52·5	50·0
Mean Temperature of Dew Point.....	50·5	47·3
Mean elastic force of Vapour .....	inches 0·367	0·327
Mean weight of Vapour in a cubic ft. of air grains	4·2	3·7
Mean additional weight required for saturation ,,	0·6	0·8
Mean degree of Humidity .....	86	83
Mean weight of a cubic foot of air..... grains	536·7	541·1
Fall of Rain .....	inches 1·180	1·483
Number of days on which Rain fell.....	10	9
Mean amount of cloud (an overcast sky=10....	5·7	4·0
Total number of miles of Wind indicated....	8347	6893
Mean Velocity of Wind per hour .....	miles 12·0	10·1



## MARCH.

Result of Observations taken during the Month.	Mean for the last 5 years
Mean Reading of the Barometer .....inches	29·970 30·008
Highest ,, on the 23rd ,,	30·275 30·404
Lowest ,, on the 29th ,,	29·574 29·513
Range of Barometer Readings .....	0·701 0·891
Highest Reading of a Max. Therm. on the 14th	70·8 74·6
Lowest Reading of a Min. Therm. on the 20th	44·9 44·2
Range of Thermometer Readings .....	25·9 30·4
Greatest Range in 24 hours on the 24th....	19·6 23·4
Mean of all the Highest Readings .....	63·9 63·6
Mean of all the Lowest Readings .....	51·8 51·2
Mean Daily Range .....	12·1 12·4
Mean Temperature (deduced from Max & Min.	57·2 51·6
Mean Temperature (deduced from Dry Bulb)	55·8 56·0
Adopted Mean Temperature.....	56·5 56·3
Mean Temperature of Evaporation.....	52·5 52·5
Mean Temperature of Dew Point .....	49·6 49·4
Mean elastic force of Vapour .....inches	0·357 0·354
Mean weight of Vapour in a cub. ft. of air grains	4·0 4·0
Mean additional weight required for saturation ,,	1·0 1·0
Mean degree of Humidity .....	81 80
Mean weight of a cubic foot of air .... grains	536·5 536·7
Fall of Rain .....	0·810 0·692
Number of days on which Rain fell.....	5 6
Mean amount of Cloud (an overcast sky=10)	4·4 4·2
Total number of miles of wind indicated....	8101 7886
Mean velocity of wind per hour ..... miles	10·9 10·6

## APRIL.

Results of Observations taken during the Month.	Mean for the last 5 years.	
Mean Reading of the Barometer .....inches	29·907	29·930
Highest                    ,,        on the 24th    ,,   ..30·302		30·246
Lowest                    ,,        on the 29th    ,,   ..29·536		29·460
Range of Barometer Readings .....	0·766	0·786
Highest Reading of a Max. Therm. on the 25th	72·5	75·1
Lowest Reading of a Min. Therm. on the 21st	49·9	47·9
Range of Thermometer Readings.....	22·6	27·2
Greatest Range in 24 hours on the 25th .....	21·1	20·9
Mean of all the Highest Readings .....	65·8	67·5
Mean of all the Lowest Readings.....	55·5	54·2
Mean Daily Range .....	10·3	13·3
Mean Temperature (deduced from Max & Min)	59·6	59·8
Mean Temperature (deducted from Dry Bulb)	59·6	59·8
Adopted Mean Temperature.....	59·6	59·8
Mean Temperature of Evaporation.....	56·3	55·9
Mean Temperature of Dew Point.....	53·4	52·3
Mean elastic force of Vapour..... inches	0·409	0·393
Mean weight of Vapour in a cub. ft. of air grains	4·6	4·4
Mean additional weight required for saturation ,,	1·2	1·4
Mean degree of Humidity .....	81	77
Mean weight of a cubic foot of air .. grains	530·5	530·6
Fall of Rain .....	inches 2·321	0·606
Number of days on which Rain fell.....	9	5
Mean amount of Cloud (an overcast sky=10)	5·3	4·0
Total number of miles of Wind indicated ....	9312	7869
Mean Velocity of Wind per hour.....miles	12·9	10·9

## MAY.

Results of Observations taken during the Month.	Mean for the last 10 years.	
Mean Reading of the Barometer .....inches	30 002	29·991
Highest ,, on the 29th ,,	30 199	30·180
Lowest ,, on the 3rd ,,	29 520	29·614
Range of Barometer Readings ..... ,,	0·679	0·566
Highest Reading of a Max. Therm. on the 23rd	83·2	82·6
Lowest Reading of a Min. Therm. on the 4th	53·2	53·9
Range of Thermometer Readings .....	30 0	28·7
Greatest Range in 24 hours on the 23rd .....	25·2	24·1
Mean of all the Highest Readings .....	71·9	72·6
Mean of all the Lowest Readings .....	58·1	58·4
Mean Daily Range .....	13·8	14·2
Mean Temperature(deduced from Max and Min)	64 0	64·3
Mean Temperature (deduced from Dry Bulb.)	63·0	63·8
Adopted Mean Temperature.....	63·5	64·1
Mean Temperature of Evaporation.....	59·7	60·0
Mean Temperature of Dew Point .....	56·5	56·4
Mean elastic force of Vapour ..... inches	0·457	0·456
Mean weight of Vapour in a cub. ft. of air grains	5·0	5·0
Mean additional weight required for saturation,,	1·5	1·7
Mean degree of Humidity .....	78	75
Mean weight of a cubic foot of air....grains	528·0	527·1
Fall of Rain .....	inches 3·232	1·249
Number of days on which Rain fell .....	5	4
Mean amount of Cloud (an overcast sky =10)	4·2	3·1
Total number of miles of Winds indicated....	7515	7372
Mean Velocity of Wind per hour.....miles	10·1	9·9

## JUNE.

Results of Observations taken during the Month.	Mean for the last 10 years.	
Mean Reading of the Barometer ....inches	30·018	30·009
Highest            "            on the 22nd   "	30·129	30·175
Lowest            "            on the 10th   "	29·867	29·832
Range of Barometer Readings.....   "	0·262	0·243
Highest Reading of a Max. Therm. on the 25th	91·8	91·0
Lowest Reading of a Min. Therm. on the 4th	60·1	59·2
Range of Thermometer Readings .....	31·7	31·8
Greatest range in 24 hours on the 4th .....	26·1	25·7
Mean of all the Highest Readings .....	82·4	80·6
Mean of all the Lowest Readings .....	65·7	64·8
Mean Daily Range .....	16·7	15·8
Mean Temperature (deduced from Max. & Min)	72·1	71·9
Mean Temperature (deducted from dry bulb)	73·3	71·2
Adopted Mean Temperature.....	72·7	71·6
Mean Temperature of Evaporation.....	66·8	65·9
Mean Temperature of Dew Point.....	62·4	61·7
Mean elastic force of Vapour..... inches	0·564	0·550
Mean weight of Vapour in a cub. ft. of air grains	6·1	6·0
Mean additional weight required for saturation   "	2·6	2·4
Mean degree of Humidity .....	70	70
Mean weight of a cubic foot of air ..grains	518·7	519·6
Fall of Rain .....	0·010	0·081
Number of Days on which rain fell .....	1	1
Mean amount of Cloud (an overcast sky =10)	1·9	2·0
Total number of miles of Wind indicated ....	5872	6213
Mean Velocity of Wind per hour .....	8·2	8·7

## JULY.

Results of Observations taken during the Month.	Mean for the last 10 years.
Mean Reading of the Barometer .....inches 29·998	30·012
Highest „ on the 5th „ 30·195	30·155
Lowest „ on the 12th „ 29·801	29·844
Range of Barometer Readings..... „ 0·394	0·311
Highest Reading of Max. Therm. on the 12th 95·4	97·2
Lowest Reading of Min. Therm. on the 22nd 66·3	64·6
Range of Thermometer Readings..... 29·1	32·6
Greatest Range in 24 hours on the 31st ..... 24·8	26·8
Mean of all the Highest Readings ..... 86·4	86·8
Mean of all the Lowest Readings ..... 70·8	69·8
Mean Daily Range ..... 15·6	17·0
Mean Temperature (deduced from Max & Min.) 78·1	77·8
Mean Temperature (deduced from dry bulb) 76·7	76·8
Adopted Mean Temperature..... 77·4	77·3
Mean Temperature of Evaporation ..... 70·6	70·2
Mean Temperature of Dew Point ..... 66·0	65·3
Mean elastic force of Vapour .....inches 0·639	0·625
Mean weight of Vapour in a cub. ft. of air grains 6·9	6·7
Mean additional weight required for saturation,, 3·2	5·4
Mean degree of Humidity ..... 69	67
Mean weight of a cubic foot of air ....grains 513·2	513·8
Fall of Rain .....inches 0·407	0
Number of days on which Rain fell ..... 1	0
Mean amount of Cloud (an overcast sky=10) 0·9	0·6
Total number of miles of Wind indicated .... 6637	5600
Mean Velocity of Wind per hour.....miles 8·9	7·6

## AUGUST.

Results of Observations taken during the Month.	Mean for the last 10 years.	
Mean Reading of the Barometer .....inches	30·022	30·010
Highest           "           on the 16th   ,,	30·192	30·156
Lowest           "           on the 2nd   ,,	29·855	29·863
Range of Barometer Readings .....	0·237	0·293
Highest Reading of a Max. Therm. on the 1st	99·2	97·0
Lowest Reading of a Min. Therm. on the 10th	67·3	66·2
Range of Thermometer Readings.....	31·9	30·8
Greatest Range in 24 hours on the 1st .....	25·8	26·2
Mean of all the Highest Readings .....	87·4	87·3
Mean of all the Lowest Readings.....	71·2	71·1
Mean Daily Range .....	16·2	16·2
Mean Temperature (deduced from Max. & Min.)	78·5	78·4
Mean Temperature (deduced from Dry Bulb)	78·3	78·4
Adopted Mean Temperature .....	78·4	78·4
Mean Temperature of Evaporation .....	71·7	71·4
Mean Temperature of Dew Point .....	67·0	66·7
Mean elastic force of Vapour .....	inches 0·661	0·653
Mean weight of Vapour in a cub. ft. of air grains	7·1	7·0
Mean additional weight required for saturation ,,	3·4	3·5
Mean degree of Humidity .....	68	67
Mean weight of a cubic foot of air.....	grains 512·1	512·2
Fall of Rain .....	inches ...	..
Number of days on which Rain fell.....	...	..
Mean amount of Cloud (an overcast sky=10..	0·9	1·0
Total number of miles of Wind indicated....	4868	5442
Mean Velocity of Wind per hour .....	miles 6·5	7·3

## SEPTEMBER.

Results of Observations taken during the Month.	Mean for the last 10 Years.	
Mean Reading of the Barometer....inches	30·053	30·064
Highest ,, on the 22nd ,,	30·190	30·246
Lowest ,, on the 11th ,,	29·861	29·849
Range of Barometer Readings .....	0·329	0·397
Highest Reading of a Max. Therm. on the 4th	95·2	92·2
Lowest Reading of a Min. Therm. on the 11th	62·2	62·9
Range of Thermometer Readings .....	33·0	29·3
Greatest Range in 24 hours on the 4th .....	26·5	23·0
Mean of all the Highest Readings .....	81·0	82·6
Mean of all the Lowest Readings .....	67·7	68·5
Mean Daily Range .....	13·3	14·1
Mean Temperature (deduced from Max & Min.)	73·5	74·7
Mean Temperature (deduced from Dry Bulb)	72·7	74·5
Adopted Mean Temperature.....	73·1	74·6
Mean Temperature of Evaporation.....	67·8	68·9
Mean Temperature of Dew Point .....	64·1	64·8
Mean elastic force of Vapour ....inches	0·598	0·615
Mean weight of Vapour in a cub. ft. of air grains	6·5	6·7
Mean additional weight required for saturation ,,	2·4	2·6
Mean degree of Humidity .....	75	72
Mean weight of a cubic foot of air grains	518·3	517·3
Fall of rain .....	inches 3·280	1·375
Number of Days on which rain fell.....	7	5
Mean amount of Cloud (an overcast sky=10)..	2·5	2·4
Total number of miles of Wind indicated ....	5564	5630
Mean Velocity of Wind per hour.....miles	7·7	7·8

## OCTOBER.

Results of Observations taken during the Month.	Mean for the last 10 years	
Mean Reading of the Barometer .....inches	30·023	30·045
Highest                    "                    on the 28th    "	30·231	30·274
Lowest                    "                    on the 21st    "	29·728	29·727
Range of Barometer Readings.....    "	0·503	0·547
Highest Reading of a Max. Therm. on the 2nd	89·8	87·4
Lowest Reading of a Min. Therm. on the 23rd	58·1	55·7
Range of Thermometer Readings .....	31·7	31·7
Greatest Range in 24 hours on the 2nd .....	19·2	19·6
Mean of all the Highest Readings .....	78·3	76·1
Mean of all the Lowest Readings.....	66·2	64·3
Mean Daily Range .....	12·1	11·8
Mean Temperature (deduced from Max. & Min)	71·3	69·3
Mean Temperature (deduced from Dry Bulb)	69·7	68·4
Adopted Mean Temperature .....	70·5	68·9
Mean Temperature of Evaporation .....	66·3	64·2
Mean Temperature of Dew Point ∴.....	63·7	60·7
Mean elastic force of Vapour .....inches	0·590	0·536
Mean weight of Vapour in a cub. ft. of air grains	6·5	5·8
Mean additional weight required for saturation ,	1·4	1·7
Mean degree of Humidity .....	82	77
Mean weight of a cubic foot of air .. grains	521·4	523·4
Fall of Rain .....	1·658	3·013
Number of days on which Rain fell.....	8	8
Mean amount of Cloud (an overcast sky=10)	4·7	4·2
Total number of miles of Wind indicated.....	5711	6802
Mean Velocity of Wind per hour.....miles	7·7	9·2



## NOVEMBER.

Results of Observations taken during the Month.	Mean for the last 10 years.	
Mean Reading of the Barometer ....inches	30.124	30.076
Highest                    "            on the 30th    ,,	30.355	30.328
Lowest                    "            on the 18th    ,,	29.843	29.746
Range of Barometer Readings ..    ,,	0.512	0.582
Highest Reading of a Max. Therm. on the 2nd	81.6	76.1
Lowest Reading of a Min. Therm. on the 30th	47.6	49.0
Range of Thermometer Readings .....	34.0	27.1
Greatest Range in 24 hours on the 30th ....	17.1	18.5
Mean of all the Highest Readings.....	69.4	68.0
Mean of all the Lowest Readings .....	58.7	56.9
Mean Daily Range .....	10.7	11.1
Mean Temperature (deduced from Max. & Min.)	63.0	61.7
Mean Temperature (deduced from Dry Bulb)	62.0	61.2
Adopted Mean Temperature.....	62.5	61.5
Mean Temperature of Evaporation .....	57.9	56.9
Mean Temperature of Dew Point .....	55.0	53.8
Mean elastic force of Vapour .....inches	0.433	0.414
Mean weight of Vapour in a cub. ft. of air grains	4.8	4.7
Mean additional weight required for saturation ,,	1.2	1.3
Mean degree of Humidity .....	80	79
Mean weight of a cubic foot of air.... grains	532.5	532.6
Fall of Rain .....	inches 7.329	3.305
Number of days on which Rain fell .....	13	10
Mean amount of Cloud (an overcast sky=10)	5.2	4.8
Total number of miles of Wind indicated ....	6587	6809
Mean Velocity of Wind per hour.....miles	9.1	9.5

## DECEMBER.

Results of Observations taken during the Month.	Mean for the last 10 years.
Mean Reading of the Barometer .... inches	30·070
Highest " " on the 18th ,,	30·414
Lowest " " on the 31st ,,	29·582
Range of Barometer Readings.....,	0·832
Highest Reading of a Max. Therm. on the 9th	68·5
Lowest Reading of a Min. Therm. on the 8th	44·0
Range of Thermometer Readings .....	24·5
Greatest Range in 24 hours on the 8th .....	17·2
Mean of all the Highest Readings .....	64·9
Mean of all the Lowest Readings .....	52·2
Mean Daily Range .....	9·8
Mean Temperature (deduced from Max & Min).	56·5
Mean Temperature (deduced from Dry Bulb)	56·0
Adopted Mean Temperature .....	56·3
Mean Temperature of Evaporation.....	51·9
Mean Temperature of Dew Point .....	48·7
Mean elastic force of Vapour .....	0·344
Mean weight of Vapour in a cub. ft. of air grains	3·9
Mean additional weight required for saturation,,	1·1
Mean degree of Humidity.....	79
Mean weight of a cubic foot of air .... grains	538·8
Fall of rain .....	3·653
Number of Days on which Rain fell .....	14
Mean amount of Cloud (an overcast sky=10)	5·4
Total number of miles of Wind indicated ....	8291
Mean Velocity of Wind per hour.....miles	11·2

## Summary of Observations FOR 1892.

Results of Observations taken during the Year.	Mean for the last 10 years.	
Mean Reading of the Barometer .....inches	29·920	30·016
Highest ,, on December 18th ,,	30·447	30·505
Lowest ,, on December 31st ,,	29·336	29·354
Range of Barometer Readings .....	1·111	1·151
Highest Reading of a Max. Therm. on Aug. 1st	99·2	99·3
Lowest Reading of a Min. Therm. on Jan. 30th	44·0	40·9
Range of Thermometer Readings .....	55·2	58·4
Greatest Range in 24 hours on Sept. 4th ....	26·5	28·9
Mean of all the Highest Readings .....	72·9	72·4
Mean of all the Lowest Readings .....	60·2	59·2
Mean Daily Range .....	12·7	13·2
Mean Temperature (deduced from Max & Min.)	65·6	64·9
Mean Temperature (deduced from Dry Bulb)	65·0	64·4
Adopted Mean Temperature .....	65·3	64·7
Mean Temperature of Evaporation .....	60·6	59·7
Mean Temperature of Dew Point.....	57·3	56·0
Mean elastic force of Vapour..... inches	0·470	0·449
Mean weight of Vapour in a cubic foot of air grains	5·3	5·1
Mean additional weight required for saturation ,,	1·7	1·8
Mean degree of Humidity.....	78	76
Mean weight of a cubic foot of air .... grains	526·8	528·0
Total fall of rain in the Year..... inches	25·528	19·204
Number of Days on which Rain fell.....	81	76
Mean amount of Cloud (an overcast sky=10)..	3·9	3·5
Total number of miles of Wind indicated ....	84698	84749
Mean Velocity of Wind per hour..... miles	9·6	9·7

The Maximum monthly mean height of the Barometer was  
in November, 1889, and was .....inches 30·249  
The Minimum ,, ,, in January, 1886, and was ,, 29·844

The Maximum yearly mean height of the Barometer was in 1884, and was.....	inches	30·057
The Minimum ,, ,, in 1885, and was.....	,,	30·009
The greatest monthly range of the Barometer was in January, 1886, and was .....		1·201
The least ,, ,, in August, 1883, and was .....		0·188
The highest reading of the Barometer, during 5 years, was on January 26th, 1887, and was .....		30·627
The lowest ,, ,, on the 17th, January 1886, and was		29·155
Extreme range .....		1·472
The highest temperature was on July 20th, 1889, and was..		104·1
The lowest ,, ,, February 20th, 1891..		37·7
The highest mean temperature of a month was in August, 1885, and was .....		83·2
The lowest ,, ,, February, 1891, and was		49·5
The greatest monthly mean weight of vapour, in a cubic foot of air was in August, 1855, and was... ..	grains	7·9
The least ,, ,, January and February, 1891, and was ,,		3·0
The highest observed Dew-point was on the 30th August, 1885, and was .....		78·7
The lowest ,, ,, 19th January, 1891, and was		28·6
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 was in January, 1889 .....	days	24
The highest temperature registered in sunshine was on the 20th July, 1889, and was .....		158·8
The lowest temperature registered on ground was on the 25th January, 1891, and was .....		32·5
The highest observed sea temperature was on the 5th August, 1887, and was .....		85·0
The lowest ,, ,, 23rd January, 1891, and was		56·0
The smallest mean amount of cloud observed in one month was in August, 1890, and was .....		0·0
The greatest ,, ,, in December, 1888, and was		6·4

## NOTES FOR THE SEPARATE MONTHS.

### JANUARY.

THE Dew-point ranged between  $39.9^{\circ}$  on the 10th and  $55.2^{\circ}$  on the 20th.

In Sunshine, the highest reading was  $116.4^{\circ}$  on the 12th.

On ground, the lowest reading was  $38.2^{\circ}$  on the 11th.

The Sea has fallen from  $61.5^{\circ}$  to  $58.6^{\circ}$ .

Thunderstorms passed on the 25th and 26th.

Lightning was seen on the 14th.

Total Rainfall since last June 10.496 inches ;  
the average of 5 years, 15.362 inches.

### FEBRUARY.

The Dew-point ranged between  $36.1^{\circ}$  on the 15th &  $57.8^{\circ}$  on the 28th.

In Sunshine, the highest reading was  $123.4^{\circ}$  on the 29th.

On Ground, the lowest reading was  $39.0^{\circ}$  on the 12th.

The Sea has risen from  $58.6^{\circ}$  to  $61.0^{\circ}$ .

Lightning was seen on the 23rd.

Total Rainfall since last June, 11.676 inches  
the average of 5 years, 16.845 inches.

### MARCH.

The Dew-point ranged between  $57.0^{\circ}$  on the 10th and  $41.0^{\circ}$  on the 11th.

In Sunshine, the highest reading was  $129.4^{\circ}$  on the 14th.

On Ground, the lowest reading was  $38.0^{\circ}$  on the 23rd.

The Sea has fallen from  $61.0^{\circ}$  to  $59.8^{\circ}$ .

Lightning was seen on the 30th.

Total Rainfall since last June 12.486 inches ;  
the average of 5 years, 17.537 inches.

## APRIL.

The Dew-point ranged between  $59.4^{\circ}$  on the 14th and  $37.0^{\circ}$  on the 20th.

In Sunshine, the highest reading was  $131.6^{\circ}$  on the 27th.

On Ground, the lowest reading was  $43.5^{\circ}$  on the 24th.

The Sea has risen from  $59.8^{\circ}$  to  $62.5^{\circ}$ .

Thunderstorms passed on the 2nd, 4th, and 21st.

Hail fell on the 2nd, 20th, and 21st.

Total Rainfall since last June 14.807 inches ;  
the average of 5 years, 18.143 inches.

## MAY.

The Dew-point ranged between  $46.0^{\circ}$  on the 8th and  $64.7^{\circ}$  on the 28th.

In Sunshine, the highest reading was 138.8 on the 23rd.

On Ground, the lowest reading was  $46.7^{\circ}$  on the 4th.

The Sea has risen from  $62.5^{\circ}$  to  $72.0^{\circ}$ .

Total Rainfall since last June 18.039 inches ;  
the average of 5 years, 18.416 inches.

The rainfall is the same as that for the month of January, but it fell in half the number of days

## JUNE.

The Dew-point ranged between  $51.8^{\circ}$  on the 4th and  $70.3^{\circ}$  on the 30th.

In Sunshine, the highest reading was  $147.1^{\circ}$  on the 25th.

On Ground, the lowest reading was  $54.8^{\circ}$  on the 4th.

The Sea has risen from  $72.0^{\circ}$  to  $77.0^{\circ}$ .

Lightning was seen on the 15th.

## JULY.

The Dew-point ranged between  $57.6^{\circ}$  on the 11th and  $72.8^{\circ}$  on the 18th.

In Sunshine, the highest reading was  $146.5^{\circ}$  on the 31st.

On Ground, the lowest reading was  $61.7^{\circ}$  on the 26th.

The Sea has risen from  $77.0^{\circ}$  to  $80.0^{\circ}$ .

Thunderstorms passed on the 21st.

## AUGUST.

Dew point ranged between  $58.3^{\circ}$  on the 1st and  $71.8^{\circ}$  on the 17th.

In Sunshine, the highest reading was  $153.7^{\circ}$  on the 2nd.

On Ground, the lowest reading was  $61.4^{\circ}$  on the 5th.

The Sea rose to  $82.2^{\circ}$ .

Lightning was seen on the 22nd and 27th.

## SEPTEMBER.

Dew-point ranged between  $72.5^{\circ}$  on the 2nd and  $53.9^{\circ}$  on the 4th.

In Sunshine, the highest reading was  $144.5^{\circ}$  on the 4th.

On Ground, the lowest reading was  $58.4^{\circ}$  on the 29th.

The Sea has fallen from  $82.0^{\circ}$  to  $76.8^{\circ}$ .

Thunderstorms passed on the 9th, 10th, 21st, 22nd, 23rd, and 26th.

Lightning was seen on the 11th, 13th, 14th, 20th, and 24th.

Total Rainfall since last June 3.687 inches ;

the average of 10 years 1.525 inches.

## OCTOBER,

Dew-point ranged between  $73.2^{\circ}$  on the 2nd and  $51.6^{\circ}$  on the 23rd.

In Sunshine, the highest reading was  $142.5^{\circ}$  on the 3rd.

On Ground, the lowest reading was  $52.8^{\circ}$  on the 23rd.

The Sea has fallen from  $76.8^{\circ}$  to  $73.0^{\circ}$

Thunderstorms passed on the 15th and 24th.

Lightning was seen on the 9th, 14th, 18th, 20th and 23rd.

Total Rainfall since last June 5.345 inches, the average of 10 years 4.537 inches.

## NOVEMBER.

Dewpoint ranged between  $68.9^{\circ}$  on the 2nd and  $41.9^{\circ}$  on the 30th.

In Sunshine, the highest reading was  $131.3^{\circ}$  on the 2nd.

On Ground, the lowest reading was  $41.0^{\circ}$  on the 30th.

The Sea has fallen from  $73.0^{\circ}$  to  $66.4^{\circ}$ .

Thunderstorms passed on the 10th, 11th, and 15th.

Lightning was seen on the 18th.

Total Rainfall since last June 12·674 inches ;

the average of 5 years 7·842 inches.

The rainfall is double the average for the month.

#### DECEMBER.

Dew-point ranged between 38·8° on the 7th and 58·9° on the 28th.

In Sunshine, the highest reading was 117·0° on the 3rd.

On Ground, the lowest reading was 43·0° on the 8th.

The Sea has fallen from 66·4° to 64·0°.

Thunderstorms passed on the 14th and 28th.

Hail fell on the 14th and 28th.

Total Rainfall since last June 14·743 inches ;

the average of 10 years, 11·495.

#### NOTES FOR THE YEAR.

Dew-point ranged between 36·1° on the 15th February, and 73·2° on the 2nd October.

In Sunshine, the highest reading was 153·7° on the 2nd August.

On Ground, the lowest reading was 38·0° on the 23rd March.

The Sea has ranged from 58·6° in February to 82·0° in August.

Thunderstorms passed on 22 days.

Lightning was seen on 17 days.

Hail fell on 5 days.

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I have just finished an examination of the barometric waves during the last ten years, which I have carried on in the hopes that the result might throw some light on the three day period, popularly attributed to the gales of wind here, and very frequently verified in fact. I also expected to find a difference between the Summer and Winter behaviour of the barometer, and I think I have succeeded in both. I have reckoned the waves from Minimum to Minimum from a tabulation of the 8 a.m., and 8 p.m.



readings, but eliminating movements or dips of less than one-tenth inch deep. The results are as follows:—

	Length in Days.	Height in inches.	Rate of Motion in inches per diem.	
January ..	6.3	0.400	0.135	
February ..	5.2	0.326	0.127	
March ..	6.0	0.379	0.128	
April ..	4.7	0.308	0.133	
May ..	6.4	0.268	0.080	
SUMMER. {	June ..	6.4	0.192	0.059
	July ..	7.3	0.180	0.050
	August ..	7.9	0.171	0.043
	September ..	8.5	0.237	0.059
	October ..	6.7	0.290	0.092
	November ..	5.8	0.276	0.096
	December ..	6.4	0.371	0.124
Mean for Year	6.5	0.283	0.097	
Summer ..	7.2	0.223	0.064	
Winter ..	5.7	0.387	0.124	

From this it appears that the depressions average  $6\frac{1}{2}$  days in passing, and the winds of one side may be expected to come near averaging 3 days in duration or sufficiently so to attract notice to the period. Very frequently we have only the winds belonging to one side of a depression, and generally it is the rising side that is windy. Comparing Summer half with Winter half, there is considerable contrast to be seen. The Summer depressions average 1.7 day more in length and 0.16 inch less in depth than the Winter ones, so that the motion of the barometer is twice as lively in the Winter half. April is a remarkable month for short period. In Summer, especially in June and July, when the weather is very fine, there is a constant difference between 8 a.m. and 8 p.m. reading of from 3 to 5 hundredths of an inch in favour of the morning reading, the result of diurnal variation. This is seldom seen in Winter or indeed after August.

JAMES SCOLES, S.J.