STONYHURST COLLEGE OBSERVATORY.

RESULTS

OF

METEOROLOGICAL, MAGNETICAL,

AND

SOLAR OBSERVATIONS

BY THE

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

1893.

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TABLE OF CONTENTS.

INTRODUCTION.

The routine work of the meteorological and magnetical department of the observatory has been carried on under the same direction, and on the same lines as described in the introduction to the report of last year; and special meteorological reports have been occasionally sent to personal applications.

The scale co-efficient of the Bifilar magnetograph was tested in October, and found to have suffered no change since its adjustment to 0·00050 C.G.S. units in March, 1892.

The year in general has been meteorologically a memorable one as a warm and dry year. But the long drought which affected the farming interest over the greater part of Europe, and the southern and midland counties of England, was only partially felt at Stonyhurst; and it is remarkable that the total rainfall of the 12 months is in excess of the average by over three inches. Eight heavy storms in the four months following July contributed 10½ inches of rain to the unexpected total. The dry season commenced abruptly on the 18th of March, and lasted to the 22nd of June.

But it was broken with light showers in April, and on the first days of May and June; and the fall in May was brought up to the average by thundry rains in the third week, and on the 29th. The higher monthly mean temperature was maintained from March to August inclusively, at an average of nearly 3° above the general mean for the same period September and October were colder, and December was a mild month.

The mean annual temperatures for the last 46 years are given at the end of the meteorological report, page 40, plotted on a chart; and a smooth mean wave curve of the whole period is drawn through the series. The complete period of this wave appears to be about 32 or 33 years, and the epochs of its maximum and minimum are approximately coincident with those of the great November meteor swarm, the Leonids.

The ordinary work of the solar chromosphere has been practically suspended during the year on account of the anticipated dismounting of the telescope for the erection of the Fr. Perry Memorial. But the Sun-spot drawings have been continued, and were carried on with the six inch objective—Alvan Clark—which was mounted on the Equatorial during the absence of parts of the eight inch telescope.

The new objective, with its mountings, arrived at the beginning of November, and was erected on the 6th. It has a clear apertnre of $14\frac{7}{8}$ inches, and was worked by Sir Howard Grubb, of Dublin. It is valued at £650, and constitutes the substantial tribute to the memory of the late Fr. Perry, raised by the generosity of his many friends. The general appearance of the instrument has been an agreeable surprise. The greater telescope appears better suited to the massive pedestal of the equatorial than the smaller one it was

built to carry; and a remark made by the late Sir George Airey in 1866, while the instrument was still in the keeping of the Royal Astronomical Society—that it was worthy of a better object glass—has been more than confirmed by its manner of bearing the heavier load. We are not yet able to speak by experience of the excellence of the glass. The bright wintry nights have so far been attended with that optical quivering which reduces the greatest atmospheric transparency to a rank, in the order of observing excellence, inferior to a hazy sky. The severest tests of superior definition have therefore been impossible but occasional glimpses through momentarily steady air have given us an assurance that the objective will prove its constructor's verdict of excelling amongst the best.

The large grating spectograph has been employed upon the solar spots and faculae with the result of 175 photographs of spot-spectra in the green-yellow region, and 92 plates of faculae-reversals of the H and K lines.

The night-work with the Equatorial has been confined to stellar photographic spectra; the intention being to continue the series of at least one good plate per annum of each of the brighter stars. But the series was interrupted in May, when it was decided to make use of every opportunity upon the variable star β Lyrae; and as the exposures upon this were necessarily long, and there were many failures, the brightest stars were let alone. Out of the whole number of exposures, 45 plates proved to be available for careful measurements, and the results are published in the December number of the Monthly Notices of the Royal Astronomical Society.

WALTER SIDGREAVES, S.J., F.R.A.S.

Stonyhurst Observatory.

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

METEOROLOGICAL REPORT.

JANUARY, 1893.

Results of Observations taken during the Month.		Mean for the last 46 years.
Mean Reading of the Barometer	29·617	29·442
Highest ,, on the 4th ,,	30·129	30·282
Lowest ,, on the 29th ,,	28·864	28·581
Range of Barometer Readings	1·265	1·701
Highest Reading of a Max. Therm. on the 30th	52·1	51·5
Lowest Reading of a Min. Therm. on the 4th	15·0	20·7
Range of Thermometer Readings	37·1	30·8
Mean of all the Highest Readings	41·1	42·2
Mean of all the Lowest Readings	31·0	32·5
Mean Daily Range	10·1	9·7
Deduced Monthly Mean (from Mean of Max. and Min.)	35·9	37·1
Mean Temperature from Dry Bulb	36·1	37·1
Adopted Mean Temperature.....	36·0	37·1
Mean Temperature of Evaporation	34·7	36 0
Mean Temperature of Dew Point	32·8	33·8
Mean elastic force of Vapour	0·188in	0·196in
Mean weight of Vapour in a cub. ft. of air.....	2·1gr	2·4gr
Mean additional weight required for saturation	0·4gr	0·4gr
Mean degree of Humidity (saturation 1·00)..	0·88	0·86
Mean weight of a cubic foot of air	554·2gr	549·6gr
Fall of Rain	1·793in	4·131in
Number of days on which Rain fell.....	18	19·6

JANUARY, 1893.

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	1	5	4	1	0	5	9	6
Mean Velocity in miles per hour	3·6	4·6	11·2	15·7	0	12·6	12·8	7·5
Total No. of miles for each Direction	86	552	1075	376	0	1511	2764	1082

The total number of miles registered during the month was 7446.

The max. Velocity of the wind was 37 miles per hour. Direction S., on the 26th at 8 a.m (South for two hours only.)

Mean amount of Cloud (an overcast sky being indicated by 10·0) 8·3

In the month of January, the highest reading of the Barometer during 46 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 first week was very cold. The daily highest readings of the thermometer being below the mean temperature of the month until the 8th. The lowest readings on these days were approximately 18°, 18°, 16°, 15°, 22°, and 29° respectively.

FEBRUARY, 1893.

Results of Observations taken during the month.		Mean for the last 46 years.
Mean Reading of the Barometer	29·197	29·503
Highest ,, on the 5th	29·942	30·063
Lowest ,, on the 26th.....	28·236	28·688
Range of Barometer Readings.....	1·706	1·375
Highest Reading of a Max. Therm. on the 19th	57·0	52·1
Lowest Reading of a Min. Therm. on the 27th	20·3	22·4
Range of Thermometer Readings.....	36·7	29·7
Mean of all the Highest Readings	44·9	44·3
Mean of all the Lowest Readings.	33·4	33·6
Mean Daily Range	11·5	10·7
Deduced Monthly Mean (from Mean of Max. and Min.)	38 8	38·4
Mean Temperature from Dry Bulb.....	39·4	38·4
Adopted Mean Temperature	39·1	38·4
Mean Temperature of Evaporation	37·7	36·9
Mean Temperature of Dew Point.....	35·9	34·7
Mean elastic force of Vapour.....	0·211 in	0·193in
Mean weight of Vapour in a cubic ft. of air....	2·4gr	2·4gr
Mean additional weight required for saturation	0·4gr	0·4gr
Mean degree of Humidity (saturation 1·00) ..	0·89	0·87
Mean weight of a cubic foot of air	542·0gr	548·4gr
Fall of Rain	5·762 in	3·486in
Number of days on which Rain fell.....	22	17·0

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing wind was	2	1	3	2	5	4	10	1
Mean Velocity in miles per hour	7·5	11·0	9·3	8 0	8·7	16·3	16·5	2·2
Total No. of miles for each Direction	360	267	672	385	1038	1560	3963	53

The total number of miles registered during the month was 8298.
The max. Velocity of the wind was 46 miles per hour. Direction W. by N., noon, on the 10th.

FEBRUARY, 1893.

Mean amount of Cloud (an overcast sky being indicated by 10·0)			8·7
In the month of February, the highest reading of the Barometer during 46 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....			44·0
The lowest	,,	,, 1855....	28·6

A very wet and warm month with a remarkably low barometer. On 10 days the pressure was below 29 inches.

MARCH, 1893.

Results of Observations taken during the Month.		Mean for the last 46 years.
Mean Reading of the Barometer	29·657	29·474
Highest ,, on the 25th	30·026	30·083
Lowest ,, on the 1st	28·906	28·692
Range of Barometer Readings	1·120	1·391
Highest Reading of a Max. Therm. on the 24th	65·0	57·1
Lowest Reading of a Min. Therm. on the 18th	21·0	22·3
Range of Thermometer Readings	44·0	34·8
Mean of all the Highest Readings	53·5	47·1
Mean of all the Lowest Readings	35·2	34·0
Mean Daily Range	18·3	13·1
Deduced Monthly Mean from Mean of Max and Min	43·4	39·6
Mean Temperature from Dry Bulb	43·0	39·9
Adopted Mean Temperature	43·2	39·7
Mean Temperature of Evaporation	40·9	37·8
Mean Temperature of Dew Point	38·2	35·3
Mean elastic force of Vapour	0·230 in	0·205 in
Mean weight of Vapour in a cub. ft. of air	2·6gr	2·4 gr
Mean additional weight required for saturation	0·7gr	0·5 gr
Mean degree of Humidity (saturation 1·00)	0·77	0·85
Mean weight of a cubic foot of air	545·7gr	546·7 gr
Fall of Rain	1·699in	3·077 in
Number of days on which Rain fell	14	17·4

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing wind was	2	5	1	0	1	7	13	2
Mean Velocity in miles per hour	4·5	7·2	12·5	0	4·7	12·0	14·3	5·3
Total No. of miles for each Direction	215	867	300	0	113	2021	4463	254

The total number of miles registered during the month was 8233.
The max. Velocity of the wind was 37 miles per hour. Direction S.W. by W., on the 15th at noon.

MARCH, 1893.

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 46 years, was on the 6th, in 1852, and was..			30·401
The lowest	,,	,, 31st, 1860....	28·199
The highest Temperature	,,	25th, 1871....	68·0
The lowest	,,	,, 6th, 1886....	11·5
The highest adopted mean temperature of the month, 1871....			44·0
The lowest	,,	,, 1855 and 1892	35·6

The rainy weather of last month held on through the first week of March, with a high barometer. The dry weather set in on the 18th with a rapid rise of the barometer from its principal depression in the month. The general curve of the pressure during the month is represented by two long wave-crests, divided by a short hollow in the middle of the month.

APRIL, 1893.

Results of Observations taken during the Month.		Mean for the last 46 Years.
Mean Reading of the Barometer	29·762	29·486
Highest ,, on the 8th	30·146	29·969
Lowest ,, on the 29th	29·388	28·803
Range of Barometer Readings.....	0·758	1·166
Highest Reading of a Max. Therm. on the 24th	74·0	66·2
Lowest Reading of a Min. Therm. on the 11th	25·7	28·1
Range of Thermometer Readings	48·3	38·1
Mean of all the Highest Readings.....	61·6	55·9
Mean of all the Lowest Readings	37·8	37·7
Mean Daily Range	23·8	18·2
Deduced Monthly Mean (from Mean of Max. and Min.)	48·2	44·4
Mean Temperature from Dry Bulb	48·2	44·5
Adopted Mean Temperature	48·2	44·5
Mean Temperature of Evaporation	44·1	41·6
Mean Temperature of Dew Point	39·3	38·1
Mean elastic force of Vapour	0·245 in	0·235 in
Mean weight of Vapour in a cub. ft. of air ...	2·8gr	2·7gr
Mean additional weight required for saturation	1·0gr	0·7gr
Mean degree of Humidity (saturation 1·00)..	0·73	0·80
Mean weight of a cubic foot of air	543·1gr	542·1gr
Fall of rain	0·811 in	2·265 in
Number of Days on which rain fell	8	14·6

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	5	3	6	0	3	1	11	1
Mean Velocity in miles per hour	6·6	7·6	8·9	0	6 1	9·6	9·5	7·1
Total No. of miles for each Direction.	788	547	1288	0	441	230	2493	171

The total number of miles registered during the month was 5958. The max. Velocity of the wind was 30 miles per hour. Direction W. by S., on the 30th, at noon.

APRIL, 1893.

Mean amount of Cloud (an overcast sky being indicated by 10·0)			4·3
In the month of April, the highest reading of the Barometer during 46 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

A fine dry month with a generally high and steady barometer. There were three shallow depressions at the beginning, middle, and end of the month accompanied by a little rain.

MAY, 1893.

Result of Observations taken during the Month		Mean for the last 46 years
Mean Reading of the Barometer	29·643	27·505
Highest ,, on the 8th	30·051	29·942
Lowest ,, on the 20th	29·060	28·937
Range of Barometer Readings	0·991	1·005
Highest Reading of a Max. Therm. on the 14th	74·4	72·1
Lowest Reading of a Min. Therm. on the 10th	38·0	31·4
Range of Thermometer Readings	36·4	40·7
Mean of all the Highest Readings	65·4	59·7
Mean of all the Lowest Readings	44·4	42·1
Mean Daily Range	21·0	17·6
Deduced Monthly Mean (from Mean of Max. and Min.)	53·2	49·1
Mean Temperature from Dry Bulb	53·1	49·6
Adopted Mean Temperature	53·2	49·4
Mean Temperature of Evaporation	49·5	46·1
Mean Temperature of Dew Point	45·8	42·6
Mean elastic force of Vapour	0·309 in	0·277 in
Mean weight of Vapour in a cub. ft. of air	3·5gr	2·7 gr
Mean additional weight required for saturation	1·1gr	0·9gr
Mean degree of Humidity (saturation 1·00	0·76	0·76
Mean weight of a cubic foot of air	535·3gr	536·9 gr
Fall of Rain	2·448in	2·623 in
Number of days on which Rain fell	12	15·3

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	4	4	5	1	2	3	12	0
Mean Velocity in miles per hour	7·8	8·0	12·7	8·5	9·7	5·3	8·5	0
Total No. of miles for each Direction	752	771	1528	205	465	384	2441	0

The total number of miles registered during the month was 6546. The max. Velocity of the wind was 40 miles per hour. Direction W. by N., on the 25th, at 9 a.m.

MAY, 1893.

Mean amount of Cloud (an overcast sky being indicated by 10·0)			7·5
In the month of May, the highest reading of the Barometer during 46 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

Another fine month on the whole. But the average rainfall was kept up by occasional thunderstorms, and notably during the barometric depression of the middle of the month which reached its lowest on the 18th. The general distribution of pressure is represented by two long waves with their crests at the 7th and 27th.

JUNE, 1893.

Results of Observations taken during the Month		Mean for the last 46 years
Mean Reading of the Barometer	29·586	29·541
Highest ,, on the 10th	29·984	29·891
Lowest ,, on the 23rd	28·813	29·030
Range of Barometer Readings	1·171	0·861
Highest Reading of a Max. Therm. on the 18th	88·7	77·2
Lowest Reading of a Min. Therm. on the 1st	41·8	38·9
Range of Thermometer Readings	46·9	38 3
Mean of all the Highest Readings	70·7	65·7
Mean of all the Lowest Readings	49·0	47·9
Mean Daily Range	21·7	17·8
Deduced Monthly Mean (from Mean of Max. and Min.	58·1	55·0
Mean Temperature from dry bulb	57·9	55·1
Adopted Mean Temperature	58·0	55·1
Mean Temperature of Evaporation	53·8	52·0
Mean Temperature of Dew Point	50·8	48·6
Mean elastic force of Vapour	0·362 in	0·355 in
Mean weight of Vapour in a cub. ft. of air	4·0 gr	3·9 gr
Mean additional weight required for saturation	1·6 gr	0·9 gr
Mean degree of Humidity (saturation 1·00)	0·75	0·79
Mean weight of a cubic foot of air	528·9 gr	531·2 gr
Fall of Rain	2·382 in	3·622 in
Number of Days on which rain fell	11	16·2

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	2	6	3	1	0	5	13	0
Mean Velocity in miles per hour	4·9	6·7	8·3	6·2	0	9·3	8·4	0
Total No. of miles for each direction	234	968	598	150	0	1118	2628	0

The total number of miles registered during the month was 5696. The max. Velocity of the wind was 28 miles per hour. Direction S.S.W., on the 28th at 9 a.m.

JUNE, 1893.

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 46 years, was on the	15th,	in 1874, and was....	30·219
The lowest ,,	,,	23rd, 1893....	28·813
The highest Temperature	,,	18th, 1893....	88·7
The lowest ,,	,,	17th, 1892....	34·1
The highest adopted mean temperature of the month,		1858....	59·0
The lowest ,,	,,	1856 and 1860	52·2

A very warm month, marked by the highest shade temperature of 46 years. This was 88·7° on the 18th, and is half a degree higher than the previous maximum, which was read on the 15th of July, 1868; and on 16 days the maximum shade-thermometers stood above 70°. But the mean temperature of the month is as much as 1° lower than that of June, 1858. The barometer was generally high in the first half of the month, with two short and shallow depressions. A deep fall began on the 19th and reached the lowest point of the hollow on the 23rd, when the pressure fell below 29 inches for the first time since March 1st.

JULY, 1893.

Results of Observations taken during the Month		Mean for the last 46 years.
Mean Reading of the Barometer	29·465	29·503
Highest ,, on the 27th	29·847	29 877
Lowest ,, on the 19th	29·031	28·993
Range of Barometer Readings	0·816	0·884
Highest Reading of a Max. Therm. on the 7th	83·5	78·8
Lowest Reading of a Min. Therm. on the 31st	45·7	42·1
Range of Thermometer Readings	37·8	36·7
Mean of all the Highest Readings	70 3	67·8
Mean of all the Lowest Readings	52·3	50·7
Mean Daily Range	18·0	17·1
Deduced Monthly Mean (from Mean of Max. and Min.)	59·4	57·7
Mean Temperature from dry bulb	58·9	57·8
Adopted Mean Temperature	59·2	57·8
Mean Temperature of Evaporation	55·7	54·7
Mean Temperature of Dew Point	52·5	52·1
Mean elastic force of Vapour	0·397 in	0·389 in
Mean weight of Vapour in a cub. ft. of air	4·5 gr	4·5 gr
Mean additional weight required for saturation	1·2 gr	1·0 gr
Mean degree of Humidity (saturation 1·00)	0·79	0·82
Mean weight of a cubic foot of air	523·5 gr	527·3 gr
Fall of Rain	5·026 in	4·222 in
Number of days on which Rain fell	20	18·1

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	2	5	3	4	1	1	14	1
Mean Velocity in miles per hour	5·0	7·2	8·4	9·5	7·6	14·7	10·2	10·4
Total No. of miles for each Direction	239	866	604	910	183	353	3414	251

The total number of miles registered during the month was 6820. The max. Velocity of the wind was 30 miles per hour. Direction W., on the 17th at 6 p.m.

JULY, 1893.

Mean amount of Cloud (an overcast sky being indicated by 10·0)			7·7
In the month of July, the highest reading of the Barometer during 46 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

A very warm month, with an average rainfall. The temperature was more even during this month than in the last, the highest readings being above 70° only on 10 days, against the 16 days of June.

AUGUST, 1893.

Results of Observations taken during the Month.		Mean for the last 46 years.
Mean Reading of the Barometer	29·564	29·488
Highest ,, on the 28th	29·945	29·885
Lowest ,, on the 21st	28·939	28·948
Range of Barometer Readings	1·006	0·937
Highest Reading of a Max. Therm. on the 18th	84·0	77·2
Lowest Reading of a Min. Therm. on the 27th	40·3	41·1
Range of Thermometer Readings	43·7	36·1
Mean of all the Highest Readings	72·1	67·2
Mean of all the Lowest Readings	53·6	50·4
Mean Daily Range	18·5	16·8
Deduced Monthly Mean (from Mean of Max. and Min.)	61·2	57·1
Mean Temperature (deduced from Dry Bulb)	60·4	57·5
Adopted Mean Temperature	60·8	57·3
Mean Temperature of Evaporation	57·6	54·5
Mean Temperature of Dew Point	54·9	51·8
Mean elastic force of Vapour	0·431 in	0·388 in
Mean weight of Vapour in a cub. ft. of air	4·8 gr	4·3 gr
Mean additional weight required for saturation	1·5 gr	0·9 gr
Mean degree of Humidity (saturation 1·00)	0·82	0·82
Mean weight of a cubic foot of air	524·5gr	527·3 gr
Fall of Rain	6·090in	4·997 in
Number of days on which Rain fell	19	19·0

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing wind was	0	1	2	1	2	8	14	3
Mean Velocity in miles per hour	0	4·0	10·7	3·8	7·4	10·6	9·7	4·4
Total No. of miles for each Direction	0	97	515	92	355	2028	3259	314

The total number of miles registered during the month was 7115. The max. Velocity of the wind was 36 miles per hour. Direction S.W., by S., on the 21st at 1 p.m.

AUGUST, 1893.

Mean amount of Cloud (an overcast sky being indicated by 10·0)			6·6
In the month of July, the highest reading of the Barometer during 46 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 excess of rainfall is mainly owing to two storms, with shallow barometric depressions, on the 2nd and 10th. These together gave over three inches of rain. Over an inch of rain fell between 5-30 p.m. and 6-30 p.m. on the 10th, divided between two thunderstorms. The first of these storms was perhaps the most magnificent ever witnessed at Stonyhurst. The telephone wires suffered, but no other damage was done.

SEPTEMBER, 1893.

Results of Observations taken during the Month.		Mean for the last 46 years.
Mean Reading of the Barometer	29·394	29 512
Highest ,, on the 12th	29·957	30·023
Lowest ,, on the 29th	28·710	28·844
Range of Barometer Readings	1·247	1·179
Highest Reading of a Max. Therm. on the 4th	74·0	72·5
Lowest Reading of a Min. Therm. on the 20th	34·6	36·5
Range of Thermometer Readings	39·4	36·0
Mean of all the Highest Readings	62·2	62·2
Mean of all the Lowest Readings	45·4	47 0
Mean Daily Range	16·8	15·2
Deduced Monthly Mean (from Mean of Max. and Min.)	52·5	53·4
Mean Temperature from Dry Bulb	54·0	54 0
Adopted Mean Temperature	53·3	53·7
Mean Temperature of Evaporation	50·5	51·0
Mean Temperature of Dew Point	47·7	48·3
Mean elastic force of Vapour	0·331 in	0·339 in
Mean weight of Vapour in a cub. ft. of air	3·8 gr	4·0 gr
Mean additional weight required for saturation	1·2 gr	0·8 gr
Mean degree of Humidity (saturation 1·00)	0·80	0·82
Mean weight of a cubic foot of air	529·9 gr	532·4 gr
Fall of Rain	7·206 in	4·681 in
Number of days on which Rain fell	20	18·1

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	2	1	0	0	2	7	17	1
Mean Velocity in miles per hour	5·9	6 9	0	0	15·9	10·0	9·1	8·6
Total No. of miles for each Direction	284	166	0	0	765	1684	3724	206

The total number of miles registered during the month was 6829. The max. Velocity of the wind was 30 miles per hour. Direction S. by W., on the 28th, at 3 p.m.

SEPTEMBER, 1893.

Mean amount of Cloud (an overcast sky being indicated by 10·0)			7·3
In the month of September, the highest reading of the Barometer during 46 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

Three heavy rainfalls, averaging over an inch for each, occurred on the 18th, 26th, and 28th, and three deep barometric depressions passed over, with their lowest readings on the 8th, 20th, and 29th.

OCTOBER, 1893.

Results of Observations taken during the Month.		Mean for the last 46 years.
Mean Reading of the Barometer	29·406	29·422
Highest ,, on the 23rd	30·012	30·013
Lowest ,, on the 4th	28·572	28·645
Range of Barometer Readings	1·440	1·368
Highest Reading of a Max. Therm. on the 17th	65·9	64·2
Lowest Reading of a Min. Therm. on the 31st	25·1	29·1
Range of Thermometer Readings	40·8	35·1
Mean of all the Highest Readings	57·8	54·6
Mean of all the Lowest Readings	42·0	41·7
Mean Daily Range	15·8	12·9
Deduced Monthly Mean (from Mean of Max. and Min.)	48·9	47·2
Mean Temperature from Dry Bulb	48·0	47·7
Adopted Mean Temperature	48·5	47·5
Mean Temperature of Evaporation	46·3	45·2
Mean Temperature of Dew Point	43·9	42 8
Mean elastic force of Vapour	0·287 in	0·276 in
Mean weight of Vapour in a cub. ft. of air	3·3gr	3·2 gr
Mean additional weight required for saturation	0·8gr	0·6 gr
Mean degree of Humidity (saturation 1·00)	0·84	0·84
Mean weight of a cubic foot of air	536·1gr	537·4 gr
Fall of Rain	7·858in	5·085 in
Number of days on which Rain fell	23	21·8

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	0	3	0	1	1	10	15	1
Mean Velocity in miles per hour	0	4·0	0	6·4	4·0	9·5	11·5	6·1
Total No. of miles for each Direction.	0	286	0	154	97	2288	4125	146

The total number of miles registered during the month was 7096. The max. Velocity of the wind was 35 miles per hour. Direction W.N.W., on the 26th, at 9 a.m.

OCTOBER, 1893.

Mean amount of Cloud (an overcast sky being indicated by 10·0)			7·5
In the month of October, the highest reading of the Barometer during 46 years, was on the	5th, in	1884, and was	30·706
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

The barometer remained generally very low till the 17th, when it recovered for a week, and fell down again on the 25th to a moderate depression until the 30th. Both depressions were accompanied with rain, and heavy falls were registered on the 3rd and 14th, 1·416 and 1·182 inches.

NOVEMBER, 1893.

Results of Observations taken during the Month.		Mean for the last 46 years.
Mean Reading of the Barometer	29·568	29·317
Highest ,, on the 21st	30·112	30·051
Lowest ,, on the 17th	28·442	28·564
Range of Barometer Readings	1·670	1·487
Highest Reading of a Max. Therm. on the 16th	55·3	55·6
Lowest Reading of a Min. Therm. on the 22nd	27·2	25·3
Range of Thermometer Readings	28·1	30·3
Mean of all the Highest Readings	48·0	47·0
Mean of all the Lowest Readings	35 5	36·2
Mean Daily Range	12·5	10·8
Deduced Monthly Mean (from Mean of Max. and Min.)	41·1	41·4
Mean Temperature from Dry Bulb	40·7	41 5
Adopted Mean Temperature	41·1	41·4
Mean Temperature of Evaporation	39·4	39·1
Mean Temperature of Dew Point	37·3	37·8
Mean elastic force of Vapour	0·222 in	0·228 in
Mean weight of Vapour in a cub. ft. of air	2·6 gr	2·6 gr
Mean additional weight required for saturation	0·4 gr	0·4 gr
Mean degree of Humidity (saturation 1·00)	0·86	0·87
Mean weight of a cubic foot of air	547·6 gr	545·0 gr
Fall of Rain	4·575 in	4·297 in
Number of days on which Rain fell	20	19 6

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing wind was	2	1	13	1	1	2	8	2
Mean Velocity in miles per hour	13·5	2·5	10·3	11·0	2·8	15·3	14·1	10·2
Total No. of miles for each Direction	646	60	3211	265	68	735	2804	489

The total number of miles registered during the month was 8278.
The max. Velocity of the wind was 37 miles per hour. Direction E N.E., on the 18th at 11 p.m.

NOVEMBER, 1893.

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 46 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

The recovery of excess in barometric pressure in this month is mainly due to the steady anticyclone which held together from the 6th to the 13th, when the mercury stood uniformily at over 30 inches, from the middle of the 6th to the middle of the 12th day. But on four of these days there was a little rain not exceeding ·01 inch.

The destructive gale in the middle of the month, which will be remembered as the most severe one that has visited the Country in the years of careful records, was hardly felt as a gale at Stonyhurst, the velocity of the wind never exceeding 37 miles an hour for any time long enough to leave a trustworthy register on the cylinder. Its force was greatest on the 18th at 11-0 p.m., 24 hours after the barometer had fallen to its lowest reading 28·519 through a nearly continuous slope from its maximum height 30·054 on the night of the 11th. And the forewarning of its approach was a run-round the compass, through a wheel and threequarters between 10-0 a.m., and 4-0 p.m. Little rain attended the gale, and it was followed by a short high wave of atmospheric pressure, with its crest over 30 inches on the 21st, and the following trough below 29 inches on the 25th, and this steep fall brought with it nearly an inch-and-a-half of rain,

DECEMBER.

Results of Observations taken during the Month.		Mean for the last 46 years.
Mean Reading of the Barometer	29·455	29·460
Highest ,, ,, on the 29th.	30·302	30·073
Lowest ,, ,, on the 20th.	28·329	28·598
Range of Barometer Readings	1·973	1·475
Highest Reading of a Max. Therm. on the 16th	55·6	53·0
Lowest Reading of a Min. Therm. on the 1st	17·6	20·0
Range of Thermometer Readings	38·0	33·0
Mean of all the Highest Readings	46·1	42·9
Mean of all the Lowest Readings	34·7	32·8
Mean Daily Range	11·4	10·1
Deduced Monthly Mean (from Mean of Max. and Min.)	40·4	37·9
Mean Temperature from Dry Bulb	40·9	38·6
Adopted Mean Temperature	40·7	38·3
Mean Temperature of Evaporation	38·9	36·7
Mean Temperature of Dew Point	36·7	34·8
Mean elastic force of Vapour	0·217 in	0·204 in
Mean weight of Vapour in a cub. ft. of air	2·5gr	2·4gr
Mean additional weight required for saturation	0·5gr	0·4gr
Mean degree of Humidity (saturation 1·00)	0·86	0·87
Mean weight of a cubic foot of air	545·7gr	548 5gr
Fall of rain	4·903 in	5·268in
Number of Days on which Rain fell	25	18·9

	N	NE	E	SE	S	SW	W	NW
No of days in the month on which the prevailing wind was	1	0	1	0	6	13	10	0
Mean Velocity in miles per hour	2·3	0	8·3	0	7·0	7·0	9·3	0
Total No. of miles for each Direction	65	0	199	0	1005	2173	2166	0

The total number of miles registered during the month was 5608.
The max. Velocity of the wind was 36 miles per hour. Direction S. by W., at 7 a.m., on the 8th.

DECEMBER, 1893.

Mean amount of Cloud (an overcast sky being indicated by 10·0			7·8
In the month of December, the highest reading of the Barometer during 46 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

A mild month with a wide range of barometric pressure. On 9 days the mercury fell below 29 inches, and on 5 days it stood above 30. There were no heavy rainfalls, but only six days with rain.

Summary of Observations FOR 1893.

		Mean for the last 46 years
Mean Reading of the Barometer	29·526	29·489
Highest ,, on December 29th	30·302	30·279
Lowest ,, on February 26th	28·236	28·265
Range of Barometer Readings	2·066	2·014
Highest Reading of a Max. Therm. on June 18th	88·7	81·6
Lowest Reading of a Min. Therm. on Jan. 4th	15·0	15·4
Range of Thermometer Readings	73·7	66·2
Mean of all the Highest Readings	57·8	54·7
Mean of all the Lowest Readings	41·2	40·6
Mean Daily Range	16·6	14·1
Deduced yearly Mean (from Mean of Max. and Min.)	48·5	46·8
Mean Temperature of dry bulb	48·4	46·7
Adopted Mean Temperature	48·4	46·8
Mean Temperature of Evaporation	45·8	44·5
Mean Temperature of Dew Point	43·0	42·1
Mean elastic force of Vapour	0·286 in	0·273 in
Mean weight of Vapour in a cubic foot of air	3·2 gr	3·3 gr
Mean additonal weight required for saturation	0·9 gr	0·7 gr
Mean degree of Humidity (saturation 1·00)	0·81	0·84
Mean weight of a cubic foot of air	538·0 gr	539·4 gr
Total fall of rain in the Year	50·553 in	47·262 in
Number of Days per Month on which Rain fell	17·7	18·0

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, 1893.

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 46 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 June 18th, 1893, and was.. 88·7
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, in a cubic foot of air ..... } July, 1852.. 5·1gr
The least ,, ,, ,, February, 1855.. 1·4gr
The greatest fall of rain in a month, was in October, 1870, and was.....13·437in
The least ,, ,, ,, March, 1852.. 0·047in
The greatest number of days on which rain fell in one month ..... } July, 1861, Dec. 1868 31
The least ,, ,, ,, March, 1852.. 3

	N	NE	E	SE	S	SW	W	NW
No. of days in the year on which the prevailing wind was	23	35	41	12	24	66	146	18
Mean Velocity in miles per hour.....	5·1	5·8	8·4	5·8	6·2	11·0	11·2	5·2
Total No. of miles for each Direction.....	3669	5447	9990	2537	4530	16085	38244	2966

The total No. of miles registered during the year was 83468.

The max. Velocity of the wind was 46 miles per hour; direction W. by N., at Noon, on February 10th.

DATES OF OCCASIONAL PHENOMENA.

1893.	Frost.	Hoar Frost.	Snow.	Hail.
January	1—21, 26—28		1, 3, 6, 14, 17	
February	5, 6, 11—13, 15, 17, 20—28	28	12, 22, 24, 25, 26,	24, 26
March	1, 2, 10—14, 16—26, 28—31	14	16, 17	16, 17
April	1—5, 7—15, 29			29
May	1			
June				
July	13			
August				
September	10, 12, 21			22, 23, 30
October	6, 7, 30, 31			26
November	1, 4—8, 10, 15, 16, 18—24, 26, 27		19, 23	22
December	1—3, 9—15, 20, 26, 31		9, 20	7, 9, 20, 21

DATES OF OCCASIONAL PHENOMENA.

(Continued.)

1893.	Heavy Rain	Fog	Thunder.	Lightning.	Lunar Halo.	Solar Halo.
January		16, 26, 27			27	
February	9, 13	3	16		6, 28	
March	1	14			29	
April		27	20	19	26	26
May	17, 29	28	18, 19, 20, 22, 29	18, 19		10
June	26, 28		3, 4, 7, 9, 27	27		
July	10, 11, 18		3, 8, 9, 10, 11, 12	8, 9, 10, 11, 12		
August	2, 4, 6, 10	14, 16, 30	4, 10, 22	10, 22		
September	13, 22, 26, 28, 30	26	8, 23, 29	8, 30		
October	3, 4, 6, 13, 14, 15		3	1, 2, 3, 5		
November	25, 27	27				4
December	8, 12, 22	5, 11, 29, 30, 31	8, 9		17	

Aurora Borealis, August 12—13, 11 p.m. and 1 a.m.

Rainbows, August 23 and 25.

,, September 21, 22, 29, 30.

SUMMARY OF SOLAR OBSERVATIONS.

Number of days of Observation in Each Month.

1893	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.	Photographs of Spot spectra.
January ..	19	38·1	8				2
February	17	46·9	6				1
March ..	23	162·1	18				11
April	28	223·7	24				56
May	27	176·5	19				32
June	29	207·4	20				6
July	29	180·2	17				
August ..	31	194·8	18				8
September	26	144·8	9				40
October ..	25	110·5	17				19
November	14	55·4	1				
December	12	26·9	3				
Totals ..	280	1567·3	160				175

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

1893.	January	February	March	April	May	June	July	August	Sept.	October	Nov.	Dec.
1	·48						·36					·54
2				·48		·46	·35	·50	·44	·49		·53
3	·48			·38	·42	·40	·38		·61	·42		
4		·49	·50	·40	·37,c		·40	·44	·39			
5				.37,c	·48,c	·64	·40		·40	·40		
6				·41,c	·40,c			·39		·41	·42	
7		·38		·40,c	·41	·38,c			·67			
8				·43,c	·66	·42,c	·38	c		·48		
9				·40,c	·39,c	·46		·40	·39	·38		
10			·35	·39	·37,c	·43		·44	·41	·37		
11			·65		·52	·42		·41	·42	·40		
12			·44	·39,c	·74		·65	·41	·43	·42		
13	·39		·45	·74	·39	·42	·33					
14		·46		·40,c	·41	·40		·41				
15	·47					·41		·42				
16			·33			·39,c						
17		·45				·42				·34 & ·68		
18			·32	·70	38	·40						
19			·40	·53	·51	·44,c		·67				
20	·41		·44	·46	·43	·46	·49					
21			·38	·37,c			·65	·42				
22			·39	·48,c	·58		·38	·37		·33		
23			·47	·36,c				·39		·42		
24			·38	c		·57	·42	·38				
25			·39	·40,c	·75			·42				
26			·45	·39,c		·38	·42	·72		·47		
27	·40	·35	·52	·48	·48		·38,c	·50				
28	·38	·38	·38	·46				·47				
29				·65		·69	·41			·45		
30	·45		·41	·46		·32,c	·33			·38		
31					·36,c		·46			·38		·46

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

TOTAL AMOUNT OF SUNSHINE RECORDED ON EACH DAY.

(Continued)

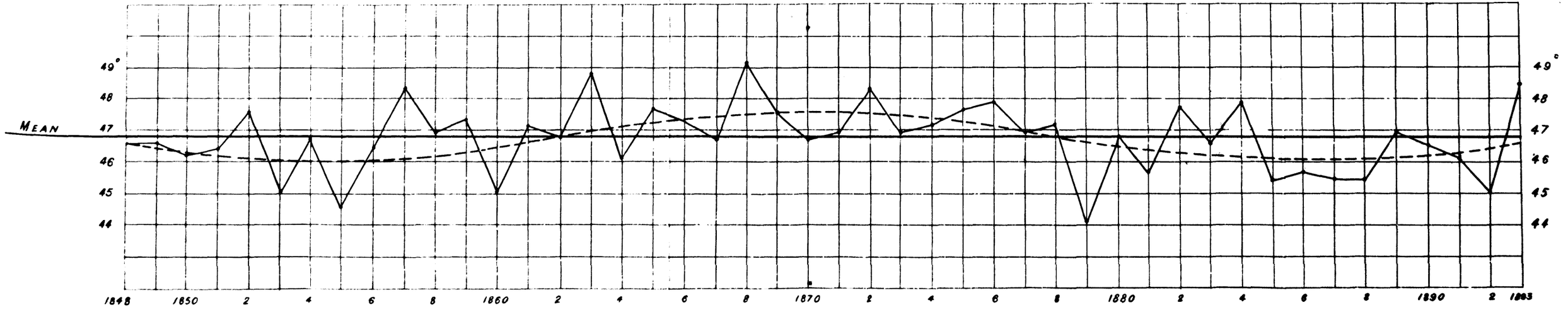
MONTH.	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Monthly Total.	Per centage each month.
January - -	0·7	0	3·1	0	0	0	0	0·3	0·8	0·8	0·8	0·5	3·2	5·4	38·1	14·7
February - -	0	4·4	0·6	0	0	2·8	0·3	0	0	7·2	6·9	..	..	..	46·9	16·9
March - -	10·7	7·8	9·2	9·4	8·5	8·4	7·8	9·2	4·7	6·0	10·6	6·8	10·4	4·3	162·1	44·2
April - -	1·5	3·5	4·8	10·8	12·0	12·3	6·8	8·4	9·8	3·4	6·8	5·6	10·3	..	223·7	53·9
May - -	4·2	2·7	3·6	7·1	7·7	3·6	5·3	3·7	0	6·3	4·6	0·3	4·8	7·8	176·5	36·6
June - - -	9·4	8·3	3·4	0·6	0·9	1·4	3·8	5·8	7·2	3·8	1·2	2·1	10·7	..	207·4	42·0
July - - -	2·5	0	10·2	10·6	12·3	0	6·8	4·2	5·2	6·7	1·3	2·2	8·2	7·2	180·2	36·5
August - -	10·0	8·0	3·8	8·3	5·9	8·0	9·3	8·8	2·3	1·2	11·9	6·6	6·7	1·2	194·8	43·5
September -	0	3·9	3·3	7·0	4·5	6·4	8·4	4·2	0	1·1	0	7·5	4·3	..	144·8	38·4
October - -	0·8	0·6	0	0·7	7·4	4·1	0	0·3	5·8	3·1	0	3·8	7·6	8·3	110·5	33·5
November -	0	3·2	2·2	0	4·4	5·4	0	0	4·8	0	0	0	0	..	55·4	21·0
December - -	1·9	0	0	0	0·6	0·8	0	1·4	0	0	0	0	0	2·9	26·9	11·1

MONTHLY TABLES FOR EACH HOUR OF RECORDED SUNSHINE.

Local apparent time.	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9
January - -	0	0	0	0	0·2	2·8	7·4	8·2	7·9	7·3	4·1	0·2	0	0	0	0	0
February - -	0	0	0	0	1·3	4·7	7·7	8·2	7·8	5·8	5·7	4·5	1·2	0	0	0	0
March - - -	0	0	0·7	6·4	13·6	16·2	19·0	18·6	20·6	19·6	17·4	15·5	11·8	2·7	0	0	0
April - - -	0	1·3	8·6	15·2	20·1	21·8	22·6	22·4	21·4	19·3	19·1	18·3	18·6	13·2	1·8	0	0
May - - -	0·2	6·1	9·6	11·3	13·3	13·7	13·3	15·1	16·4	14·2	14·6	13·1	14·5	12·7	7·0	1·4	0
June - - -	0·6	4·2	9·4	11·6	14·8	15·2	17·2	18·3	17·8	18·6	19·1	19·3	17·3	13·2	8·3	2·5	0
July - - -	0·6	3·6	6·7	12·7	15·1	16·1	15·9	17·2	13·5	14·2	15·4	14·0	12·8	11·5	8·0	2·8	0
August - -	0	1·8	5·6	9·4	15·6	18·4	16·6	19·5	19·3	18·2	19·2	18·4	15·4	12·8	4·6	0	0
September - -	0	0	3·3	10·1	14·2	12·8	14·1	13·6	14·2	14·0	15·3	16·3	12·9	4·0	0	0	0
October - -	0	0	0	3·4	10·1	13·6	14·9	15·5	14·0	14·1	11·6	9·8	3·2	0·3	0	0	0
November - -	0	0	0	0	3·0	4·5	7·6	9·3	10·4	8.7	8·0	3·9	0	0	0	0	0
December - -	0	0	0	0	0·4	2·5	4·2	7·0	6·2	4·4	2·0	0·2	0	0	0	0	0
Total - -	1·4	17·0	43·9	80·1	121·7	142·3	160·5	172·9	169·5	158·4	151·5	133·5	107·7	70·4	29·8	6·7	0

CURVE OF MEAN TEMPERATURE FOR EACH YEAR FROM 1848 TO 1893 INCLUSIVE

The Broken Line represents the wave of periodic change of Mean Temperature for the 46 years



OBSERVATIONS OF UPPER CLOUDS (CIRRUS).

Date 1893.	G. M. T.	Clouds.		Wind.		Direction of Lower Clouds.
		Direction.	V'locity (0—6).	Direction.	Force. (0—12).	
January 5	7-8 a m.	N.	1	N.N.E.	1	
,, 13	1-30 p.m.	N.W.	2	N.W.by W.	3	N.W.
,, 15	12-50 p.m.	N.W.	2	W.S.W.	1	N.W.
,, 16	4-0 p.m.	N.W.	1	N.E.	1	N.W.
,, 18	Noon.	N.	2	S.E. by S.	2	S.W.
,, 18	1-58 p.m.	N.W.	1	S.W.	5	S.W.by W
,, 20	9-58 a.m.	N.	1	W. by S.	4	S.W.
,, 25	12-50 p.m.	N.	2	W.S.W.	2	S.W.
,, 27	9-12 a m.	N.W.	1	S.W. by W.	0	
,, 27	2-30 p.m.	W.	2	S.W. by S	1	
,, 28	9-10 a.m.	N.W.	1	S.E.	2	S.E.
,, 30	Noon.	N.W.	1	S. by W.	3	S.
,, 30	1-58 p.m.	S.E.	..	S.S.W.	2	S.W.
Feb. 5	10-0 a.m.	N.W.	1	E.N.E.	1	S.E.
,, 6	8-55 a.m.	N.	1	N.E by E.	0	
,, 7	12-15 p.m.	N,W.	1	W.S.W.	5	S.W.
,, 8	11-10 a.m.	N.E.	2	W.	6	S.W.
,, 11	5-40 p.m.	N.	1	W. by S.	3	N.W.
,, 12	9-8 a.m.	N.	1	N.W. by W.	2	N.W.
,, 15	8-10 a.m.	N.	1	S,W. by S.	0	S.W.
,, 27	8-40 a.m.	S.E.	2	W.S.W.	3	
,, 27	3-0 p.m.	S.	2	W. by S.	2	W.
,, 28	5-30 p.m.	W.	2	S.W. by S.	1	
March 8	10-8 a.m.	N.E.	3	W.S.W.	2	W.
,, 10	2-0 p.m.	S W.	2	W.	6	N.W.
,, 11	8-0 a.m.	N.W.	2	S.W. by W.	1	
,, 11	9-0 a.m.	N.W.	2	S.W. by W.	1	
,, 13	10-20 a.m	N.E.	3	S.S.W.	1	S.W.
,, 13	Noon.	N.E.	2	W.S.W.	2	S.W.
,, 13	2-0 p.m.	N.E.	2	W. by S.	3	S.W.
,, 13	4 0 p.m.	N.E.	2	W.	3	S.W.
,, 15	8-7 a.m.	N.E.	2	S.W.	5	S.W.
,, 16	7-5 a.m.	N.E.	2	W. by N.	3	
,, 22	8-10 a.m.	N.	1	N.N.E.	1	
,, 23	2-40 p m.	N.W.	1	S.W. by S.	1	
,, 29	9-0 a.m.	N.E.	1	N.E. by N.	1	
,, 30	10-9 a.m.	N.W.	1	S.W. by W.	0	

OBSERVATIONS OF UPPER CLOUDS *(Continued).*

Date 1893.	G. M T.	Clouds.		Wind.		Direction of Lower Clouds.
		Direction.	V'locity (0–6)	Direction.	Force (0—12)	
March 30	1-30 p.m.	N.W.	1	W.	2	
,, 31	9-0 a.m.	N.	2	Lost.	..	S.W.
,, 31	Noon.	N. by W.	1	S.W. by S.	3	S.W.
April 2	8-0 a.m.	N.	2	N. by W.	0	
,, 7	9-0 a.m.	W. by S.	1	N.N.E.	1	
,, 8	10-10 a.m.	S.E.	1	E.	2	
,, 10	6-0 p.m.	E.	1	N.N.E.	2	
,, 11	8-5 a.m.	S.E.	1	E.N.E.	4	
,, 12	10-17 a.m.	E. by N.	1	S.S.W.	1	N.W.
,, 15	10-5 a.m.	E.	2	W.S.W.	4	S.W.
,, 18	5-40 p.m.	N.	1	W. by S.	1	
,, 20	8-45 a.m.	E.S.E.	1	N.W.byW.	1	
,, 24	10-9 a.m.	N. by W.	1	S.S.W.	1	
,, 25	9-50 a.m.	E.	1	N.N.E.	1	
,, 28	10-45 a.m.	N. by E.	1	W. by N.	1	
May 3	3-0 p.m.	N.W.	2	W.	3	
,, 4	10-0 a.m.	N.E.	1	S.S.W.	1	
,, 10	8-7 a.m.	N. by W.	1	N.E. by N.	1	
,, 10	2-15 p.m.	N. by W.	1	E.N.E.	1	
,, 10	4-0 p.m.	N. by W.	1	E. by N.	1	
,, 11	8-0 a.m.	N.E.	2	N.E.	0	
,, 13	9-30 a.m.	N.E.	1	S. by E.	1	
,, 24	5-30 p.m.	N.W.	1	N.W.byW	2	
,, 27	7-0 a.m.	N.W.	2	E.	0	
June 7	7-0 a.m.	N.N.W.	2	N.N.E.	1	
,, 12	5-15 p.m.	N.E.	1	E. by N.	2	
,, 14	9-0 a.m.	N.W.	2	N.E. by N.	2	
,, 15	7-0 a.m.	N.N.W.	1	N.N.E.	1	
,, 16	8-45 a.m.	N.W.	1	N.N.E.	0	
,, 16	3-15 p.m.	N.W.	1	W.	2	
,, 26	3-45 p.m.	N.N.E.	1	W.N.W.	0	S.W.
,, 27	8 40 a.m.	N.N.W.	1	S.W. byW.	3	S.W.
July 1	7-5 a.m.	N.W.	1	N.N.E	1	
,, 1	8-0 a.m.	N.W.	2	N.E. by N.	1	
,, 2	9-10 a.m.	N. by E.	1	W.	1	S.W.

OBSERVATIONS OF UPPER CLOUDS *(Continued)*,

Date. 1893.	G. M. T.	Clouds.		Wind.		Direction of Lower Clouds.
		Direction.	V'locity (0—6)	Direction.	Force. (0—12)	
July 4	9-10 a.m,	N.W.	1	N.E.	2	N.E.
,, 5	7-0 a.m.	S. by W.	1	N. by E.	2	N.E.
,, 5	4-0 p.m.	W.	1	N.E.	2	
,, 20	5-20 p.m.	S.W.	1	W.S.W.	3	W. by S.
,, 21	10-15 a.m.	S.	1	W. by N.	2	S W.
,, 21	5-40 p.m.	S.	1	W.	2	S.W.
,, 24	2-0 p.m.	N.	1	S.W. by W.	4	W.S.W.
August 2	Noon.	N.E.	1	W by S.	3	W.
,, 3	4-30 p.m.	N.E.	1	W.S.W.	3	S.W.
,, 12	11-25 a.m.	N.E.	1	W.S.W.	2	S.W.
,, 14	11-55 a.m.	N. by W.	1	S.W. by W.	1	
,, 14	2-15 p.m.	N. by W.	1	S.W. by W.	1	
,, 16	5-30 p.m.	N.W.	1	W.S.W.	1	
,, 17	2-0 p.m.	N.E.	1	S.	1	
,, 18	7-45 a.m.	S.	1	S.S.E.	1	
,, 18	10-0 a.m.	S.	1	S.S.E.	2	
,, 18	3-10 p.m.	S.	2	W.	2	
,, 19	8-40 a.m.	S. by E.	2	S.W. by W.	2	W.
,, 21	8-35 a.m.	W.N.W.	1	W.S.W.	5	S.W.
,, 22	7-0 a.m.	S.S.W.	1	S.W.	2	S.W.
,, 23	4-5 p.m.	S.S.W.	1	W.S.W.	3	S.W.
,, 25	8-40 a.m.	N. by W.	1	W. by S.	3	N.W.
,, 25	1-40 p.m.	S. by W.	1	W. by N.	3	S.W.
,, 28	Noon.	N.E.	1	N.W. by N.	1	N.W.
,, 28	1-35 p.m.	N.E.	1	N. by E.	1	N.N.W.
,, 28	3-45 p.m.	N.E.	1	W. by N.	2	S.W.
,, 29	9-10 a.m.	E.S.E.	1	S.W. by W.	0	
,, 30	2-10 p.m.	N.	2	W.S.W.	2	W.
Sept. 4	8-10 a.m.	S.E.	1	N. by W.	0	
,, 5	10-30 a.m	S.S.E.	1	S. by E.	2	
,, 5	Noon.	S.S.E.	1	S.W. by S.	2	
,, 5	3-40 p,m.	S.S.E.	1	W.N.W.	1	
,, 8	6-50 a.m.	E.N.E.	2	S.W.	1	S.W.
,, 8	8-14 a.m.	E.N.E.	2	S.W. by S.	3	S.W.
,, 10	9-25 a.m.	W.N.W.	1	N.E. by E.	1	E. by N.
,, 16	6-50 a.m.	N.E. by E.	1	W. by S.	1	N.W.
,, 16	8-0 a.m.	N.E. by E.	1	W. by N.	1	N.W.
,, 29	9-0 a.m.	S.	2	S.W. by S.	5	S.S.W.

OBSERVATIONS OF UPPER CLOUDS *(Continued).*

Date. 1893.	G. M. T.	Clouds.		Wind.		Direction of Lower Clouds.
		Direction.	Velocity (0—6)	Direction.	Force (0—12)	
October 2	3-18 p m.	S.E.	1	S. by W.	0	
,, 10	10-0 a.m.	E. by S.	1	S.W.	2	S.W.
,, 11	2-45 p.m.	N.	1	S.W.	3	S.W.
,, 12	4-15 p.m.	N.W.	1	W.S.W.	3	S.W.
,, 17	2 40 p.m.	E.N.E.	1	W. by S.	1	S.W.
,, 29	10-0 a.m.	E.N.E.	1	W. by N.	4	N.W.
Nov. 4	11-0 a.m.	N.E.	3	E.N.E.	1	
,, 4	1-0 p.m.	N.E.	3	N.E. by N.	1	N.W by W
,, 4	4-0 p.m.	S.W.	3	N.E.	0	W.
,, 23	Noon.	N.W.	2	N.W. by N.	5	
Dec. 2	8-0 a.m.	N.W.	2	N.W. by N.	0	
,, 8	12-30 p.m.	S.W.	3	S.W.	5	S.W. by W
,, 31	10-0 a.m.	W.	2	W.	1	W.N.W.

Monthly Magnetical Observations

taken at the

College Observatory, Stonyhurst, 1893.

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 $q(t°-35°+q'(t°-35°)^2$, where t° is the observed temperature and 35° Fahr. the adopted standard temperature. The values of the co-efficient q and q' are respectively 0·0001128 and 0·000000436

The induction co-efficient μ is 0·000244.

The correction for error of graduation of the Deflection bar at 1·0 foot is + 0·00004 ft, at 1·3 + 0·000064 ft.

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

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

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

In deducing from these observations the ratio and product of the magnetic moment m of the magnet, and the earth's horizontal magnetic intensity X, the induction and temperature corrections have always been applied, and the observed time of vibration has been corrected for the effect of torsion of the suspending thread; but no correction has been required for the rate of the chronometer, or for the arc of vibration, the former having been always under 1·5s and the latter never over 50′.

The average deflection of the magnet caused by a twist of the torsion circle through 90°, has been about 9·1 of arc.

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

The value of the constant P was found to be—0·00082.

The Declination observations have been taken once a week

OBSERVATIONS OF DECLINATION AND DIP.

Month	G.M.T. Civil Day	West Declination Observations	West Declination Monthly Mean.	G.M.T. Civil Day.	Dip.
	D. H. M.	° ′ ″	° ′ ″	D. H. M.	° ′ ″
Jan.	4 16 7	18 49 49	18 40 57	28 10 30	69 4 42
	10 16 22	18 27 49			
	16 16 12	18 33 34			
	23 16 12	18 52 34			
Feb.	7 16 22	19 20 4	19 1 58	24 11 13	69 5 46
	13 16 7	19 20 14			
	22 16 7	18 34 54			
	27 16 20	18 52 39			
March	6 16 22	18 42 14	18 43 23	18 12 35	69 7 53
	13 16 15	18 38 4			
	21 16 12	18 51 24			
	27 16 7	18 41 49			
April	3 16 52	18 33 54	18 48 58	19 11 30	69 4 53
	10 16 20	18 53 44			
	17 16 12	18 53 59			
	24 16 12	18 54 14			
May	1 16 7	18 51 9	18 51 37	22 12 20	69 3 32
	8 16 12	18 50 44			
	15 16 12	18 52 29			
	22 15 50	18 52 4			
June	5 16 7	18 52 54	18 49 53	15 14 42	69 5 8
	12 16 12	18 44 39			
	19 16 10	18 56 14			
	26 16 15	18 45 44			

OBSERVATIONS OF DECLINATION AND DIP.

(Continued.)

Month	G.M.T. Civil Day	West Declination Observations	West Declination Monthly Mean.	G.M.T. Civil Day.	Dip.
	D. H. M.	° ′ ″	° ′ ″	D. H. M.	° ′ ″
July	3 16 7	18 50 9	18 54 51	21 12 10	69 6 26
	17 16 13	18 58 9			
	31 16 52	18 56 14			
August	7 16 18	18 56 24	18 50 51	23 16 15	69 8 1
	16 16 15	18 51 54			
	28 16 20	18 44 14			
Sept.	12 16 10	18 48 44	18 27 7	27 16 0	68 34 20
	19 16 10	18 5 29			
Oct.	2 16 0	18 57 54	18 39 36	18 12 30	69 3 38
	9 16 12	17 53 44			
	16 16 7	18 46 19			
	24 16 3	18 53 54			
	31 16 8	18 46 9			
Nov.	13 16 12	18 44 39	18 41 37	25 10 13	69 1 31
	27	18 38 34			
Dec.	4 16 12	18 22 44	18 47 37	14 13 7	69 4 40
	11 16 7	18 35 29			
	18 16 7	18 48 29			
	27 16 12	19 23 44			
Yearly Mean.			18 46 32		69 2 33

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.	27 10 38	48·2	5·9536	27 {11 28 11 55	47·0 45·7	12 16 41 5 31 45
Feb.	23 10 53	37·4	5·9441	23 {11 42 12 10	36·0 36·2	12 13 47 5 27 5
Mar.	18 10 8	45·0	5·9588	18 {11 0 11 20	42·5 43·0	12 14 44 5 32 5
Apr.	19 9 9	57·6	5·9635	19 {10 4 10 33	60·1 61·8	12 3 8 5 32 15
May	22 8 32	50·1	5·9591	22 {10 55 11 15	56·1 56·5	12 12 50 5 30 48
June	15 11 25	71·1	5·9544	15 {12 34 12 52	72·5 73 3	12 9 52 5 29 42
July	21 9 45	62 0	5·9696	21 {10 38 11 0	63·0 62·3	12 9 42 5 31 1
Aug.	23 10 31	63·0	5·9692	23 {11 20 11 45	63·8 64·3	12 9 5 5 30 20
Sept.	23 11 43	48·8	5·96[illegible]	[illegible] {16 40 17 0	53·1 53·1	12 9 23 5 29 51
Oct.	18 9 38	50·7	5 9520	18 {11 0 11 20	52·2 51·5	12 10 59 5 31 45
Nov.	24 9 37	45·6	5·9629	24 {11 17 11 50	46·6 47·0	11 57 58 5 28 50
Dec.	14 10 22	45·9	5·9711	14 {11 20 11 35	44·2 47·0	12 7 20 5 28 37

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. ..	3·7132	9·7130	10·3985	0·1712	0·4478	0·4795
Feb. ..	3·7314	9·7695	10·4578	0·1721	0·4505	0·4822
Mar. ..	3·7103	9·7322	10·4155	0·1711	0·4487	0·4802
April ..	3·7201	9·7324	10·4191	0·1715	0·4487	0·4804
May ..	3·7140	9·7051	10·3915	0·1712	0·4475	0·4791
June ..	3·7252	9·7479	10·4354	0·1718	0·4495	0·4812
July ..	3·7163	9·7356	10·4208	0·1714	0·4489	0·4805
Aug. ..	3·7184	9·7549	10·4395	0·1715	0·4498	0·4813
Sept. ..	3·7211	9·4816	10·1857	0·1716	0·4372	0·4696
Oct. ..	3·7203	9·7224	10·4098	0·1715	0·4483	0·4800
Nov. ..	3·7337	9·7396	10·4309	0·1722	0·4491	0·4809
Dec. ..	3·7199	9·7302	10·4169	0·1715	0·4486	0·4803
Means	3·7203	9·7137	10·4018	0·1716	0·4479	0·4796

DATES OF MAGNETIC DISTURBANCES, 1893.

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

PRESENTS RECEIVED.

Greenwich Observations, 1890 . .	Royal Observatory.
Greenwich Spectroscopic and Photographic Results, 1890 .	,,
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CORRIGENDA.

	True corresponding values for 1893 (mean for the last 46 years) as in this volume.
Mean weight of a cubic foot of air (mean for the last 33 years) in summary 1880 was given 539·1 grs. should be 538·6 grs.	539·4 grs.
Mean weight of a cubic foot of air (mean for the last 34 years) in October, 1881, was given 543·6 grs. should be 536 6 grs.	537·4 grs.
Mean weight of a cubic foot of air (mean for the last 35 years) in June, 1882, was given 545·1 grs. should be 530·9 grs.	531·2 grs.
Mean elastic force of vapour (mean for October 1882 and 1888) was given 0·287 and 0·219 in. should be 0 284 and 0·249 in.	0·276 in.
Mean weight of vapour in a cubic foot of air (mean for the last 37 years) in Oct. 1884, was given 3·1 grs. should be 3·2 grs.	3·2 grs.
Mean weight of a cubic foot of air (mean for the last 41 years) in August, 1888, was given 525·0 grs. should be 527·4 grs.	527·3 grs.
Mean elastic force of vapour (mean for the last 43 years) in January, 1890, was given 0·222 ins. should be 0·197 ins.	0·196 in.
Mean weight of a cubic foot of air (mean for the last 43 years) in January, 1890, was given 544·1 grs. should be 549·3 grs.	549·6 grs.
Mean weight of a cubic foot of air (mean for the last 43 years) in December, 1890, was given 540·4 grs. should be 548·0 grs.	548·5 grs.
Number of days on which rain fell (mean for the last 43 years) in December, 1890, was given 8·9 dys. should be 18·8 dys.	18·9 days
Mean weight of a cubic foot of air (mean for Dec. 1892, and last 45 yrs.) was given 454·7 and 538·7 grs. should be 554·4 and 548·6 gr	548·5 grs.
Mean weight of a cubic foot of air (mean for the year 1892, ,, ,,) was given 533·8 and 539·3 grs. should be 541·8 and 539·6 gr	539·4 grs.

APPENDIX

RESULTS

OF

METEOROLOGICAL OBSERVATIONS

TAKEN AT

St. IGNATIUS' COLLEGE, MALTA,

BY THE

Rev. J. DOBSON, S.J.

1893.

ST. IGNATIUS' COLLEGE,

MALTA.

Lat. 35° 55′ N. Long. 14° 29 E. Barometer Readings reduced to 32 F at sea level.

METEOROLOGICAL REPORT.

1893.

JANUARY,

Results of Observations taken during the Month.		Mean for the last 10 years.
Mean Reading of the Barometer ....inches	29·851	30·056
Highest ,, on the 31st ,,	30·379	30·425
Lowest ,, on the 24th ,,	29·416	29·578
Range of Barometer Readings	0·963	0·847
Highest Reading of a Max. Therm. on the 10th	65·4	64·9.
Lowest Reading of a Min. Therm. on the 19th	39 0	41·8
Range of Thermometer Readings	26·4	23·1
Greatest Range in 24 hours on the 19th	18·1	18·4
Mean of all the Highest Readings	57·7	59·0
Mean of all the Lowest Readings	46·6	48·6
Mean Daily Range	11·1	10·4
Mean Temperature (deduced from Max. & Min.)	51·4	53·1
Mean Temperature (deduced from Dry Bulb)	50·8	52·9
Adopted Mean Temperature.....	51·1	53·0
Mean Temperature of Evaporation	46·8	48 7
Mean Temperature of Dew Point	43·8	45·6
Mean elastic force of Vapour .....inches	0·286	0·306
Mean weight of Vapour in a cub. ft. of air grains	3·3	3·5
Mean additional weight required for saturation ,,	0·8	0·9
Mean degree of Humidity	81	80
Mean weight of a cubic foot of air ....grains	540·9	542·5
Fall of Rain .....inches	6·643	3·594
Number of days on which Rain fell.....	20	13
Mean amount of Cloud (an overcast sky=10)..	5·7	5·0
Total nnmber of miles of Wind indicated....	8479	8500
Mean Velocity of Wind per hour .....miles	11·4	11·4

FEBRUARY.

Results of Observations taken during the month.		Mean for the last 10 years.
Mean Reading of the Barometer .....inches	30·096	30·020
Highest ,, on the 1st	30·366	30·320
Lowest ,, on the 22nd.....	29·713	29·623
Range of Barometer Readings.....	0·653	0·697
Highest Reading of a Max. Therm. on the 25th	68·9	67·1
Lowest Reading of a Min. Therm. on the 6th	41·7	41·7
Range of Thermometer Readings.....	27·2	25·4
Greatest Range in 24 hours on the 15th	18·0	19·6
Mean of all the Highest Readings	61·2	60·1
Mean of all the Lowest Readings.	49·1	48·9
Mean Daily Range	12·1	11·2
Mean Temperature (deduced from Max. & Min.)	54 1	53·5
Mean Temperature deduced (from Dry Bulb)	54·1	53·8
Adopted Mean Temperature	54·1	53·7
Mean Temperature of Evaporation	49·5	49·5
Mean Temperature of Dew Point.....	46·5	46·6
Mean elastic force of Vapour.....inches	0·317	0·319
Mean weight of Vapour in a cubic ft. of air grains	3·6	3·6
Mean additional weight required for saturation ,,	0·9	0·8
Mean degree of Humidity	81	82
Mean weight of a cubic foot of air .... grains	542·2	540·8
Fall of Rain ..... inches	1·768	2·087
Number of days on which Rain fell.....	7	10
Mean amount of Cloud (an overcast sky=10)..	4·1	4·7
Total number of miles of Wind indicated	7817	7675
Mean Velocity of Wind per hour .....miles	11 5	11·3

MARCH.

Results of Observations taken during the Month.		Mean for the last 10 years.
Mean Reading of the Barometer .....inches	30·073	29·989
Highest ,, on the 13th ,,	30·385	30·363
Lowest ,, on the 31st ,,	29·771	29·496
Range of Barometer Readings	0·614	0·867
Highest Reading of a Max. Therm. on the 18th	66·2	74·7
Lowest Reading of a Min. Therm. on the 22nd	44·2	42·9
Range of Thermometer Readings	22 0	31·8
Greatest Range in 24 hours on the 22nd.....	19·8	23·1
Mean of all the Highest Readings	61·9	63·3
Mean of all the Lowest Readings	49 4	50·8
Mean Daily Range	12·5	12·5
Mean Temperature (deduced from Max. & Min)	55·0	56·2
Mean Temperature (deduced from Dry Bulb)	53·8	55·6
Adopted Mean Temperature.....	54·4	55·9
Mean Temperature of Evaporation.....	50·5	51·9
Mean Temperature of Dew Point	47·5	48·7
Mean elastic force of Vapour .....inches	0·329	0·345
Mean weight of Vapour in a cub. ft. of air grains	3·7	3·9
Mean additional weight required for saturation ,,	0·9	1·1
Mean degree of Humidity	79	79
Mean weight of a cubic foot of air ....grains	540·4	537·0
Fall of Rain .....inches	2·268	0·896
Number of days on which Rain fell	7	7
Mean amount of Cloud (an overcast sky=10)	4·5	4·4
Total number of miles of Wind indicated....	7271	8175
Mean Velocity of Wind per hour.....miles	9·8	10·9

APRIL.

Results of Observations taken during the Month.		Mean for the last 10 Years.
Mean Reading of the Barometer ..inches	30·048	29·925
Highest ,, on the 16th	30·386	30·256
Lowest ,, on the 28th	29·705	29·499
Range of Barometer Readings.....	0·681	0·757
Highest Reading of a Max. Therm. on the 28th	77·7	77·1
Lowest Reading of a Min. Therm. on the 17th	47·2	48·0
Range of Thermometer Readings	30·5	29·1
Greatest Range in 24 hours on the 21st.....	22·1	22·1
Mean of all the Highest Readings.....	66·9	67·4
Mean of all the Lowest Readings	53·1	54·3
Mean Daily Range	13·8	13·1
Mean Temperature (deduced from Max & Min)	59·0	59·9
Mean Temperature (deduced from Dry Bulb)	58·6	59·6
Adopted Mean Temperature	58·8	59·8
Mean Temperature of Evaporation	55·5	55·6
Mean Temperature of Dew Point	52·7	52·1
Mean elastic force of Vapour....inches	0·399	0·389
Mean weight of Vapour in a cub. ft. of air grains	4·4	4·4
Mean additional weight required for saturation ,,	1·1	1·4
Mean degree of Humidity	81	77
Mean weight of a cubic foot of air ..grains	534·4	531·0
Fall of rain .....inches	0·247	0·768
Number of Days on which rain fell	3	6
Mean amount of Cloud (an overcast sky=10)..	4·3	4·3
Total number of miles of Wind indicated.....	6585	8473
Mean Velocity of Wind per hour.....miles	9·1	11·8

MAY.

Result of Observations taken during the Month		Mean for the last 10 years
Mean Reading of the Barometer .....inches	29·999	29·991
Highest ,, on the 3rd ,,	30·143	30·180
Lowest ,, on the 22nd ,,	29·632	29·614
Range of Barometer Readings.....	0·511	0·566
Highest Reading of a Max. Therm. on the 30th	81·9	82·6
Lowest Reading of a Min. Therm. on the 8th	52·5	53·9
Range of Thermometer Readings	29·4	28·7
Greatest Range in 24 hours on the 17th	22·1	24·1
Mean of all the Highest Readings	74·4	72·6
Mean of all the Lowest Readings.....	59·6	58·4
Mean Daily Range	14·8	14·2
Mean Temperature (deduced from Max. & Min.)	66·0	64·3
Mean Temperature (deduced from Dry Bulb)	64·8	63·8
Adopted Mean Temperature	65·4	64·1
Mean Temperature of Evaporation	61·3	60·0
Mean Temperature of Dew Point	57·8	56·4
Mean elastic force of Vapour..... inches	0·479	0·456
Mean weight of Vapour in a cub. ft. of air grains	5·3	5·0
Mean additional weight required for saturation ,,	1·6	1·7
Mean degree of Humidity	77	75
Mean weight of a cubic foot of air ..grains	525·7	527·1
Fall of Rain ....inches	0·147	0·761
Number of days on which Rain fell.....	2	4
Mean amount of Cloud (an overcast sky=10)	4·3	3·5
Total number of miles of Wind indicated	6460	7372
Mean Velocity of Wind per hour.....miles	8·7	9·9

JUNE.

Results of Observations taken during the Month		Mean for the last 10 years
Mean Reading of the Barometer....inches	29·997	30·009
Highest ,, on the 18th ,,	30·164	30·175
Lowest ,, on the 2nd ,,	29·649	29·832
Range of Barometer Readings ..... ,,	0·515	0·343
Highest Reading of a Max. Therm. on the 30th	87·2	91·0
Lowest Reading of a Min. Therm. on the 10th	59·5	59·2
Range of Thermometer Readings	27·7	31·8
Greatest Range in 24 hours on the 14th.....	22·2	25·7
Mean of all the Highest Readings	80·6	80·6
Mean of all the Lowest Readings	65·0	64·8
Mean Daily Range	15·6	15·8
Mean Temperature (deduced from Max. & Min)	72·1	71·9
Mean Temperature (deduced from dry bulb)	71·3	71·2
Adopted Mean Temperature.....	71·7	71·6
Mean Temperature of Evaporation.....	66·4	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	2·4	2·4
Mean degree of Humidity	73	71
Mean weight of a cubic foot of air....grains	519·2	519·6
Fall of Rain .....inches	0·150	0·081
Number of Days on which rain fell	2	1
Mean amount of Cloud (an overcast sky=10	2·6	2·0
Total number of miles of Wind indicated....	6358	6213
Mean Velocity of Wind per hour.....miles	8·8	8·7

JULY.

Results of Observations taken during the Month		Mean for the last 10 years.
Mean Reading of the Barometer.....inches	29·963	30·012
Highest ,, on the 10th ,,	30·083	30·155
Lowest ,, on the 14th ,,	29·785	29·844
Range of Barometer Readings	0·298	0·311
Highest Reading of a Max. Therm. on the 14th	96·1	97·2
Lowest Reading of a Min. Therm. on the 20th	65·7	64·6
Range of Thermometer Readings.....	30·4	32·6
Greatest Range in 24 hours on the 5th.....	23·2	26 8
Mean of all the Highest Readings	87·0	86·8
Mean of all the Lowest Readings	70·8	·69·8
Mean Daily Range	16·2	17·0
Mean Temperature (deduced from Max. & Min.)	78·4	77·8
Mean Temperature deduced (from dry bulb)...	76·8	76·8
Adopted Mean Temperature.....	77·6	77·3
Mean Temperature of Evaporation	71·0	70·2
Mean Temperature of Dew Point	66·8	65·3
Mean elastic force of Vapour .....inches	0·657	0·625
Mean weight of Vapour in a cub. ft. of air grains	7·1	6·7
Mean additional weight required for saturation ,,	3·0	3·4
Mean degree of Humidity	70	67
Mean weight of a cubic foot of air .....grains	512·6	513·8
Fall of Rain	...	...
Number of days on which Rain fell	...	...
Mean amount of Cloud (an overcast sky=10)	1·7	0·6
Total number of miles of Wind indicated	6077	5600
Mean Velocity of Wind per hour.....miles	8·2	7·6

AUGUST.

Results of Observations taken during the Month.		Mean for the last 10 years.
Mean Reading of the Barometer .....inches	30·023	30·010
Highest ,, on the 17th ,,	30·136	30·156
Lowest ,, on the 31st ,,	29·775	29·863
Range of Barometer Readings ..... ,,	0·361	0·293
Highest Reading of a Max. Therm. on the 28th	95·1	97·0
Lowest Reading of a Min. Therm. on the 11th	66·2	66·2
Range of Thermometer Readings.....	28·9	30·8
Greatest Range in 24 hours on the 28th	23·6	26·2
Mean of all the Highest Readings.....	86·9	87·3
Mean of all the Lowest Readings.....	70·1	71·1
Mean Daily Range	16·8	16·2
Mean Temperature (deduced from Max. & Min.)	77·7	78·4
Mean Temperature (deduced from Dry Bulb)	77·7	78·4
Adopted Mean Temperature	77·7	78·4
Mean Temperature of Evaporation	71·8	71·4
Mean Temperature of Dew Point.....	67·5	66·7
Mean elastic force of Vapour .....inches	0·673	0·653
Mean weight of Vapour in a cub. ft. of air grains	7·2	7·0
Mean additional weight required for saturation ,,	3·0	3·5
Mean degree of Humidity	71	67
Mean weight of a cubic foot of air.....grains	512·5	512·2
Fall of Rain .....inches	0·030	..
Number of days on which Rain fell.....	1	..
Mean amount of Cloud (an overcast sky=10	1·4	1·0
Total nnmber of miles of Wind indicated	4474	5442
Mean Velocity of Wind per hour.....miles	6·0	7·3

SEPTEMBER.

Results of Observations taken during the Month.		Mean for the last 10 years.
Mean Reading of the Barometer .... inches	30·044	30·064
Highest ,, on the 14th ,,	30·243	30·246
Lowest ,, on the 19th ,,	29·869	29·849
Range of Barometer Readings	0·374	0·397
Highest Reading of a Max. Therm. on the 25th	98·8	92·2
Lowest Reading of a Min. Therm. on the 6th..	66·5	62·9
Range of Thermometer Readings	32·3	29·3
Greatest Range in 24 hours on the 25th	22·2	23·0
Mean of all the Highest Readings	87·8	82 6
Mean of all the Lowest Readings	72·3	68·5
Mean Daily Range	15·5	14·1
Mean Temperature (deduced from Max & Min)	79·1	74·7
Mean Temperature (deduced from Dry Bulb)	77·6	74·5
Adopted Mean Temperature.....	78·4	77·3
Mean Temperature of Evaporation	71·7	68·9
Mean Temperature of Dew Point	67·5	64·8
Mean elastic force of Vapour..... inches	0·673	0·615
Mean weight of Vapour in a cub. ft. of air grains	7·1	6·7
Mean additional weight required for saturation ,,	3·3	2·6
Mean degree of Humidity.....	68	72
Mean weight of a cubic foot of air .. grains	510·2	517·3
Fall of Rain .....inches	..	1·373
Number of days on which Rain fell	..	5
Mean amount of Cloud (an overcast sky=10)	2·0	2·4
Total number of miles of Wind indicated	5817	5630
Mean Velocity of Wind per hour.....miles	8·1	7·8

OCTOBER.

Results of Observations taken during the Month.		Mean for the last 10 years.
Mean Reading of the Barometer .....inches	30·048	30·045
Highest ,, on the 25th ,,	30·227	30·274
Lowest ,, on the 29th ,,	29·909	29·727
Range of Barometer Readings	0·318	0·547
Highest Reading of a Max. Therm. on the 2nd	91·4	87·4
Lowest Reading of a Min. Therm. on the 27th	56·8	55·7
Range of Thermometer Readings.....	34·6	31·7
Greatest Range in 24 hours on the 5th.....	21·6	19·6
Mean of all the Highest Readings	78·8	76·1
Mean of all the Lowest Readings	65·5	64·3
Mean Daily Range	13·8	11·8
Mean Temperature (deduced from Max & Min.)	71·3	69·3
Mean Temperature (deduced from Dry Bulb)..	69·9	86·4
Adopted Mean Temperature	70·6	68·9
Mean Temperature of Evaporation.....	65·1	64·2
Mean Temperature of Dew Point.....	60·7	60·7
Mean elastic force of Vapour .....inches	0·531	0·536
Mean weight of Vapour in a cub. ft. of air grains	5·9	5·8
Mean additional weight required for saturation ,,	2·3	1·7
Mean degree of Humidity	71	77
Mean weight of a cubic foot of air.....grains	520·1	523·4
Fall of Rain .....inches	3·302	3·013
Number of days on which Rain fell	7	8
Mean amount of Cloud (an overcast sky=10..	2·9	4·2
Total number of miles of Wind indicated	5983	6802
Mean Velocity of Wind per hour..miles.....	8·0	9·2

NOVEMBER.

Results of Observations taken during the Month.		Mean for the last 10 years.
Mean Reading of the Barometer .....inches	30·000	30·076
Highest ,, on the 29th ,,	30·257	30·328
Lowest ,, on the 18th ,,	29·589	29·746
Range of Barometer Readings..... ,,	0·668	0·582
Highest Reading of a Max. Therm. on the 1st	80·0	76·1
Lowest Reading of a Min. Therm. on the 26th	53·0	49·0
Range of Thermometer Readings.....	27·0	27·1
Greatest Range in 24 hours on the 1st	16·8	18·5
Mean of all the Highest Readings	71·5	68·0
Mean of all the Lowest Readings.....	61·0	56·9
Mean Daily Range	10·5	11·1
Mean Temperature (deduced from Max. & Min)	65·2	61·7
Mean Temperature (deduced from Dry Bulb)	64·4	61·2
Adopted Mean Temperature	64·8	61·5
Mean Temperature of Evaporation.....	60·1	56·9
Mean Temperature of Dew Point.....	56·1	53·8
Mean elastic force of Vapour.....inches	0·451	0·414
Mean weight of Vapour in a cub. ft. of air grains	5·0	4·7
Mean additional weight required for saturation ,,	1·8	1·3
Mean degree of Humidity	74	79
Mean weight of a cubic foot of air .. grains	528·4	532·6
Fall of Rain .....inches	3·374	3·305
Number of days on which Rain fell.....	9	10
Mean amount of Cloud (an overcast sky=10)	6 5	4·8
Total number of miles of Wind indicated....	7317	6809
Mean Velocity of Wind per hour .....miles	10·2	9·5

DECEMBER.

Results of Observations taken during the Month.		Mean for the last 10 years.
Mean Reading of the Barometer ....inches	29·937	30·070
Highest ,, ,, on the 16th ,,	30·261	30·414
Lowest ,, ,, on the 22nd ,,	29·520	29·582
Range of Barometer Readings.....	0·741	0·832
Highest Reading of a Max. Therm. on the 1st	69·9	68·5
Lowest Reading of a Min. Therm. on the 30th	41·1	44·0
Range of Thermometer Readings	18·8	24·5
Greatest Range in 24 hours on the 21st	17·4	17·2
Mean of all the Highest Readings	61·0	62 0
Mean of all the Lowest Readings.....	52·8	52·2
Mean Daily Range	8·2	9·8
Mean Temperature (deduced from Max. & Min.)	56·2	56·5
Mean Temperature (deduced from Dry Bulb)	56·3	56·0
Adopted Mean Temperature	56·3	56·3
Mean Temperature of Evaporation	51·7	51·9
Mean Temperature of Dew Point.....	48·1	48·7
Mean elastic force of Vapour.....inches	0·336	0·334
Mean weight of Vapour in a cub. ft. of air grains	3·8	3·9
Mean additional weight required for saturation ,,	1·2	1·1
Mean degree of Humidity	76	79
Mean weight of a cubic foot of air ....grains	536·8	538 8
Fall of rain ....inches	7·374	3·653
Number of Days on which Rain fell	22	14
Mean amount of Cloud (an overcast sky=10..	7·1	5·4
Total number of miles of Wind indicated	6924	8291
Mean Velocity of Wind per hour.....miles	9·3	11·2

Summary of Observations

FOR 1893.

Results of Observations taken during the Year.		Mean for the last 10 years.
Mean Reading of the Barometer..... inches	30·007	30·016
Highest ,, on April 16th ,,	30·386	30·505
Lowest ,, on Jan. 17th ,,	29·416	29·354
Range of Barometer Readings	0·970	1·151
Highest Reading of a Max. Therm. on Sept. 25th	98·8	99·3
Lowest Reading of a Min. Therm. on Jan. 19th	39·0	40·9
Range of Thermometer Readings	59·8	58·4
Greatest Range in 24 hours on August 28th ..	23·6	28·9
Mean of all the Highest Readings	73·0	72·4
Mean of all the Lowest Readings	59·6	59·2
Mean Daily Range	13·4	13·2
Mean Temperature (deduced from Max & Min)	65·5	64·9
Mean Temperature (deduced from Dry Bulb)	64·7	64·4
Adopted Mean Temperature	65·1	64·7
Mean Temperature of Evaporation	60·0	59·7
Mean Temperature of Dew Point.....	56·5	56·0
Mean elastic force of Vapour .....inches	0·475	0·449
Mean weight of Vapour in a cub. ft. of air grains	5·2	5·1
Mean additonal weight required for saturation ,,	1·9	1·8
Mean degree of Humidity	75	76
Mean weight of a cubic foot of air ....grains	526·9	528·0
Fall of Rain .....inches	25·283	19·204
Number of Days on which Rain fell.....	80	76
Mean amount of Cloud (an overcast sky=10)..	3·9	3·5
Total number of miles of Wind indicated	79562	84749
Mean Velocity of Wind per hour.....miles	9·1	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 1893, and was ..... ,,		30·007
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 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, 1887, 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 .....grains	August, 1855	7·9
The least ,, ,, January and February, 1891, and was..gr		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 ....days	January, 1889....	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, 1893, and was		7·1

NOTES FOR THE SEPARATE MONTHS.

JANUARY.

THE Dew-point ranged between 54·0°on the 11th and 29·0°on the 23rd.
In Sunshine, the highest reading was 106·5° on the 19th.
On ground, the lowest reading was 36·5° on the 6th.
Thunderstorms passed on the 4th, 13th and 16th.
Hail fell on the 2nd, 3rd, 4th, 5th, 17th, 18th, 22nd and 24th.
Total Rainfall since last June 21·386 inches;
the average of 5 years, 14·795 inches.
Pressure has been unusually low, and rainfall nearly double the average.

FEBRUARY.

The Dew-point ranged between 32·7° on the 8th & 54·7° on the 28th.
In Sunshine, the highest reading was 122·1° on the 26th.
On Ground, the lowest reading was 36·3° on the 8th.
Lightning was seen on the 4th and 23rd.
Total Rainfall since last June, 23·154 inches
the average of 10 years, 16·882 inches

MARCH.

The Dew-point ranged between 26·6° on the 17th and 34 8° on the 20th.
In Sunshine, the highest reading was 129·2° on the 25th.
On Ground, the lowest reading was 38·0° on the 22nd.
Thunderstorms passed on the 2nd.
Lightning was seen on the 7th and 25th.
Total Rainfall since last June 25·422 inches;
the average of 10 years, 17·778 inches

APRIL.

The Dew-point ranged between 38·7° on the 12th and 60·3° on the 28rd.

In Sunshine, the highest reading was 134·1° on the 28th.

On Ground, the lowest reading was 41·9° on the 18th.

Lightning was seen on the 9th.

Total Rainfall since last June 25·669 inches;
the average of 10 years, 18·546 inches.

MAY.

The Dew-point ranged between 51·6° on the 14th and 62·9° on the 21st.

In Sunshine, the highest reading was 137·3 on the 31st.

On Ground, the lowest reading was 47·0° on the 8th.

Total Rainfall since last June 25·816 inches;
the average of 10 years, 19·307.

JUNE.

The Dew-point ranged between 56·3° on the 3rd and 68·7° on the 24th.

In Sunshine, the highest reading was 141·4° on the 26th.

On Ground, the lowest reading was 54·5° on the 10th.

Thunderstorms passed on the 2nd and 10th.

Hail fell on the 2nd.

JULY,

The Dew-point ranged between 57·6° on the 1st and 73·1° on the 28th.

In Sunshine the highest reading was 146·9° on the 14th.

On Ground, the lowest reading was 60·8° on the 20th.

On the 29th, at 10-30 a.m., a few heavy drops of rain fell, not enough to measure.

AUGUST.

The Dew-point ranged between 59·7° on the 1st, and 74·0° on the 29th.

In Sunshine, the highest was 148·8° on the 31st.

On Ground, the lowest reading was 60·8 on the 11th.

Lightning was seen on the 6th.

SEPTEMBER.

The Dew-point ranged between 51·6° on the 25th at 2-0 p.m., and 75·8° on the 20th at 8·0 a.m.

In Sunshine, the highest reading was 147·9° on the 20th.

On Ground, the lowest reading was 60·0° on the 6th.

Total Rainfall since last June ·030 inches on August 6th.

The hottest month of this year, and hotter than any previous September of last ten years. Total absence of rain never before recorded in last ten years. High dew-point has made weather very trying

OCTOBER.

The Dew-point ranged between 71·9° on the 1st and 53·2° on the 30th.

In Sunshine, the highest reading was 144·6° on the 2nd.

On Ground, the lowest reading was 51·0° on the 27th.

Thunderstorms passed on the 20th, 21st, 22nd, 23rd and 28th.

Lightning was seen on the 3rd, 24th, 29th and 30th.

Total Rainfall since last June 3·332 inches;

the average of 10 years, 4·537 inches.

NOVEMBER.

The Dew-point ranged between 67·2° on the 9th and 47·3° on the 20th.

In Sunshine, the highest reading was 127·2° on the 23rd.

On Ground, the lowest reading was 48·1° on the 26th.

Thunderstorms passed on the 13th, 14th, and 17th.

Lightning was seen on the 6th, 9th, 10th, 11th, 15th, 16th, 18th, 30th.

Total Rainfall since last June 6·706 inches ; the average of 10 years, 7·842 inches.

The month has been marked by an unusually variable barometer. The sky has been unusually overcast, whilst the rainfall for the month only slightly exceeds the average.

DECEMBER.

The Dew-point, ranged between 59·2° on the 1st and 35·4° on the 30th.

In Sunshine, the highest reading was 126·2° on the 3rd.

On Ground, the lowest reading was 37·5 on the 30th.

The Sea has fallen to 61·0°.

Thunderstorms passed on the 1st, 6th, 7th, 8th, 20th and 22nd

Lightning was seen on the 5th, 23rd, 25th, 26th, 28th and 29th.

Hail fell on the 7th, 8th and 22nd.

Total Rainfall since last June 14·080 inches ;
the average of 10 years, 11·495 inches.

The month has been unusually overcast and rainy, with much less than the average amount of wind.

NOTES FOR THE YEAR.

The Dew-point ranged between 29·0 on the 23rd January, and 75·8 on the 20th September.

In Sunshine, ths highest reading was 148·8 on the 31st Aug.

On Ground, the lowest reading was 36·3 on the 8th Feb.

Thunderstorms passed on 20 days.

Lightning was seen on 26 days.

Hail fell on 12 days.