STONYHURST COLLEGE OBSERVATORY.

RESULTS

OF

METEOROLOGICAL, MAGNETICAL AND SOLAR OBSERVATIONS.

BY THE

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1889.

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Stonyhurst Observatory.

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

METEOROLOGICAL REPORT.

January, 1889.

Results of Observations taken during the Month.		Mean for the last 42 years.
Mean Reading of the Barometer	29·723	29·435
Highest ,, on the 3rd	30·310	30·297
Lowest ,, on the 9th	28·700	28·569
Range of Barometer Readings	1·610	1·728
Highest Reading of a Max. Therm. on the 18th	52·0	51·6
Lowest Reading of a Min. Therm. on the 26th	23·9	21·2
Range of Thermometer Readings	28·1	30·4
Mean of all the Highest Readings	43·4	42·1
Mean of all the Lowest Readings	34·0	32·6
Mean Daily Range	9·8	9·5
Deduced Monthly Mean (from Mean of Max. and Min.)	38·7	37·1
Mean Temperature from dry bulb	38·8	37·1
Adopted Mean Temperature	38·8	37·1
Mean Temperature of Evaporation	37·5	35·9
Mean Temperature of Dew Point	35·8	33·8
Mean elastic force of Vapour	0·211 in	0·196 in
Mean weight of Vapour in a cubic foot of air	2·5 gr	2·3 gr
Mean additional weight required for saturation	0·3 gr	0·4 gr
Mean degree of Humidity (saturation 1·00)	0·90	0·86
Mean weight of a cubic foot of air	553·0 gr	549·4 gr
Fall of Rain	2·588 in	4·188 in
Number of days on which Rain fell	13	19·4

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	2	7	1	5	0	9	5	2
Mean Velocity in miles per hour	6·1	4·8	8·7	10·4	0	11·5	11·1	3·6
Total No. of miles for each Direction	293	802	208	1245	0	2494	1332	172

The total number of miles registered during the month was 6546.

The max. Velocity of the wind was 38 miles per hour on the 31st at 6 p.m., from the West.

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

In the month of January, the highest reading of the Barometer during 42 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 above, and their range below the mean. The Temperature was above the mean, and the rain was little more than half the average fall for January. Prevailing wind, S.W.

There was Frost on 23 days; Hoar Frost on the 6th, 19th, and 26th; Fog on the 1st, 2nd, 3rd, 6th, 7th, 17th, 20th, and 21st.

February, 1889.

Results of Observations taken during the Month.		Mean for the last 42 years.
Mean Reading of the Barometer	29·481	29·495
Highest ,, on the 23rd	30·005	30·059
Lowest ,, on the 3rd	28·712	28·676
Range of Barometer Readings	1·293	1·382
Highest Reading of a Max. Therm. on the 18th	51·0	51·9
Lowest Reading of a Min. Therm. on the 10th	17·8	22·7
Range of Thermometer Readings	33·2	29·2
Mean of all the Highest Readings	42·8	44·2
Mean of all the Lowest Readings	29·7	33·8
Mean Daily Range	13·1	10·3
Deduced Monthly Mean (from Mean of Max. and Min.)	35·9	38·6
Mean Temperature from dry bulb	36·6	38·6
Adopted Mean Temperature	36·3	38·6
Mean Temperature of Evaporation	34·1	36·9
Mean Temperature of Dew Point	30·9	34·8
Mean elastic force of Vapour	0·174 in	0·192 in
Mean weight of Vapour in a cubic foot of air	2·0gr	2·4 gr
Mean additional weight required for saturation	0·6gr	0·4 gr
Mean degree of Humidity (saturation 1·00)	0·81	0·87
Mean weight of a cubic foot of air	551·5gr	548·7 gr
Fall of Rain	3·286in	3·552in
Number of days on which Rain fell	22	17·3

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	4	8	0	0	0	5	7	4
Mean Velocity in miles per hour	8·6	6·7	0	0	0	16·0	21·2	16·9
Total No. of miles for each Direction	822	1294	0	0	0	1916	3558	1624

The total number of miles registered during the month was 9214.
The Max. Velocity of the wind was 44 miles per hour; direction W.N.W. at 8 p.m., on the 8th.

Mean amount of Cloud (an overcast sky being indicated by 10·0)	7·3
In the month of February, the highest reading of the Barometer during 42 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 ,, ,, 1st, 1855.....	10·1
The highest adopted mean temperature of the month, 1869.....,	44·0
The lowest ,, ,, 1855.....	28·6

The Barometer readings and the Rainfall were both below the average. The Temperature was decidedly below the average for February. The Prevailing wind was N.E., but the strongest winds blew from the West.

There was Frost recorded on 21 days; Snow on 13; Lightning on the 1st; Hail on the 2nd, 8th, and 15th; Fog on the 13th. A Lunar Halo was seen on the 7th.

March, 1889.

Results of Observations taken during the Month.		Mean for the last 42 years.
Mean Reading of the Barometer	29·535	29·472
Highest ,, on the 15th	30·153	30·083
Lowest ,, on the 20th	28·323	28·686
Range of Barometer Readings	1·830	1·397
Highest Reading of a Max. Therm. on the 29th	57·0	56·8
Lowest Reading of a Min. Therm. on the 3rd	19·2	22·7
Range of Thermometer Readings	37·8	34·1
Mean of all the Highest Readings	46·4	46·9
Mean of all the Lowest Readings	32·8	34·2
Mean Daily Range	13·6	13·7
Deduced Monthly Mean (from Mean of Max. and Min.)	38·6	39·6
Mean Temperature from dry bulb	39·6	39·8
Adopted Mean Temperature	39·1	39·7
Mean Temperature of Evaporation	37·1	37·9
Mean Temperature of Dew Point	34·5	35·3
Mean elastic force of Vapour	0·200 in	0·205 in
Mean weight of Vapour in a cubic foot of air	2·3 gr	2·4 gr
Mean additional weight required for saturation	0·5 gr	0·5 gr
Mean degree of Humidity (saturation 1·00)	0·84	0·85
Mean weight of a cubic foot of air	549·1 gr	546·8 gr
Fall of Rain	4·066 in	3·162 in
Number of days on which rain fell	19	17·7

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing wind was	2	7	0	3	2	3	10	4
Mean Velocity in miles per hour	16·6	7·7	0	7·1	12·1	12·1	11·5	10·5
Total No. of miles for each Direction	796	972	0	510	582	868	2758	1009

The total number of miles registered during the month was 7495.
The max. Velocity of the wind was 37 miles per hour, direction N.W. by W. on the 13th, at 10 a.m.

Mean amount of Cloud (an overcast sky being indicated by 10·0)...	8·3
In the month of March, the highest reading of the Barometer during 42 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	35·6

The Barometer readings and range were high. The Temperature was close to the average. The Rainfall was somewhat in excess of the mean for March. The Prevailing wind was W.

There was Frost on 20 days; Hoar frost on the 4th, 11th, and 22nd; Snow on the 1st, 5th, 8th, and 21st; Hail on the 6th and 31st; Fog on the 8th.

April, 1889.

Results of Observations taken during the Month.		Mean for the last 42 years.
Mean Reading of the Barometer	29·313	29.476
Highest ,, on the 19th	29·730	29·962
Lowest ,, on the 4th	28·718	28·773
Range of Barometer Readings	1·012	1·189
Highest Reading of a Max. Therm. on the 27th	60·6	66·1
Lowest Reading of a Min. Therm. on the 14th	31·4	28·3
Range of Thermometer Readings	29·2	37·8
Mean of all the Highest Readings	51·7	53·9
Mean of all the Lowest Readings	36·9	37·9
Mean Daily Range	14·8	16·0
Deduced Monthly Mean (from Mean of Max. and Min.)	42·8	44·4
Mean Temperature from dry bulb	43·1	44·5
Adopted Mean Temperature	43·0	44·5
Mean Temperature of Evaporation	40·3	41·7
Mean Temperature of Dew Point	37·1	38·3
Mean elastic force of Vapour	0·221 in	0·237 in
Mean weight of Vapour in a cubic foot of air	2·6 gr	2·7 gr
Mean additional weight required for saturation	0·6 gr	0·7 gr
Mean degree of Humidity (saturation 1·00)	0·80	0·80
Mean weight of a cubic foot of air	540·8 gr	541·9 gr
Fall of rain	2·075 in	2·349 in
Number of days on which Rain fell	20	14·8

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	0	13	2	1	3	4	5	2
Mean Velocity in miles per hour	0	9·7	13·4	5·0	10·9	14·3	13·1	11·0
Total No. of miles for each Direction	0	3115	642	120	785	1374	1575	528

The total number of miles registered during the month was 8139.
The max. Velocity of the wind was 35 miles per hour, direction W. on the 1st, at 3 p.m.

Mean amount of Cloud (an overcast sky being indicated by 10·0)...			8·8
In the month of April, the highest reading of the Barometer during 42 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 ,, ,,	4th,	1885.....	21·1
The highest adopted mean temperature of the month,		1865.....	48·5
The lowest ,, ,,		1879.....	40·7

The Barometer readings were low and the range small. The Temperature was below the mean. The Rainfall was below, and the number of rainy days above the average for April. Prevailing wind N.E.

There was Frost on 8 days; Hoar frost on the 26th; Hail on the 21st; Thunder and Lightning on the 4th.

May, 1889.

Results of Observations taken during the Month.		Mean for the last 42 years.
Mean Reading of the Barometer	29·404	29·506
Highest " on the 21st	29·715	29·960
Lowest " on the 28th	29·111	28·929
Range of Barometer Readings	0·604	1·031
Highest Reading of a Max. Therm. on the 20th	76·0	71·8
Lowest Reading of a Min. Therm. on the 25th	36·8	31·4
Range of Thermometer Readings	39·2	48·4
Mean of all the Highest Readings	64·5	59·6
Mean of all the Lowest Readings	45·7	42·0
Mean Daily Range	18·8	17·6
Deduced Monthly Mean (from Mean of Max. and Min.)	53·4	48·9
Mean Temperature from dry bulb	53·4	49·4
Adopted Mean Temperature	53·4	49·1
Mean Temperature of Evaporation	50·2	46·1
Mean Temperature of Dew Point	47·0	42·6
Mean elastic force of Vapour	0·322in	0·278 in
Mean weight of Vapour in a cubic foot of air	3·7 gr	2·2 gr
Mean additional weight required for saturation	0·9 gr	0·9 gr
Mean degree of Humidity (saturation 1·00)	0·79	0·76
Mean weight of a cubic foot of air	530·6 gr	537·1gr
Fall of Rain	2·895 in	2·545 in
Number of days on which Rain fell	16	15·3

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing wind was	0	8	4	3	7	6	3	0
Mean Velocity in miles per hour	0	6·4	8·5	9·0	8·3	6·3	4.4	0
Total No. of miles for each Direction	0	1220	812	647	1402	997	318	0

The total number of miles registered during the month was 5396.
The max. Velocity of the wind was 33 miles per hour, direction S. by W., on the 31st at 9 a.m.

Mean amount of Cloud (an overcast sky being indicated by 10·0)...			7·6
In the month of May, the highest reading of the Barometer during 42 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 Barometer readings were slightly below the mean for 42 years, with an exceptionally small range. The Temperature was high, and the Rainfall close to the average for May. Prevailing wind, N.E.

Thunderstorms occurred on the 1st, 4th, 5th, 7th, 18th, 29th, and 31st. There was hail on the 29th and 31st; Heavy rain on the 14th, 29th, and 31st; Lunar halo on the 11th; Fog on the 19th.

June, 1889.

Results of Observations taken during the Month.		Mean for the last 42 years
Mean Reading of the Barometer	29·654	29·537
Highest ,, on the 15th	30·045	29·881
Lowest ,, on the 2nd	29·187	29·029
Range of Barometer Readings	0·858	0·852
Highest Reading of a Max. Therm. on the 22nd	80·0	77·0
Lowest Reading of a Min. Therm. on the 15th	41·5	39·1
Range of Thermometer Readings	38·5	37·9
Mean of all the Highest Readings	70·6	65·6
Mean of all the Lowest Readings	48·6	47·9
Mean Daily Range	22·0	17·7
Deduced Monthly Mean (from Mean of Max. and Min.)	57·8	54·9
Mean Temperature from dry bulb	57·9	55·0
Adopted Mean Temperature	57·9	55·0
Mean Temperature of Evaporation	53·4	52·0
Mean Temperature of Dew Point	49·4	48·6
Mean elastic force of Vapour	0·353 in	0·356 in
Mean weight of Vapour in a cubic foot of air	3·9 gr	3·9 gr
Mean additional weight required for saturation	1·5 gr	0·9 gr
Mean degree of Humidity (saturation 1·00)	0·73	0·79
Mean weight of a cubic foot of air	530·5 gr	542·7 gr
Fall of Rain	2·081 in	3·635 in
Number of days on which Rain fell	5	16·2

	N	NE	E	SE	S	SW	W	NW
No. of days in the month on which the prevailing wind was	0	7	8	0	2	5	5	3
Mean Velocity in miles per hour	·0	7·2	7·6	0	9·7	5·7	7·0	4·6
Total No. of Miles for each Direction	0	1204	1467	0	465	684	843	332

The total number of miles registered during the month was 4995.
The max. Velocity of the wind was 26 miles per hour, direction S. by E. on the 1st, at noon and 1 p.m.

Mean amount of Cloud (an overcast sky being indicated by 10·0)...		5.7
In the month of June, the highest reading of the Barometer during 42 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	,, ,, 30th, 1856.....	34·2
The highest adopted mean temperature of the month, 1858.....		59·0
The lowest	,, ,, 1856 and 1860...	52·2

The Barometer readings were slightly in excess, but the range was very close to the mean range for the month. The Temperature was high ; the Rainfall small, and the number of Rainy days scarcely one-third of the average for June. Prevailing wind, E.

Two exceptionally violent Thunderstorms occurred on the 2nd, one about 8 a.m., the other about 4 p.m. They were accompanied by heavy rain, hail, and pieces of ice measuring half an inch by a quarter of an inch each. There was Fog on the 7th, 13th, and 18th.

July, 1889.

Results of Observations taken during the Month.		Mean for the last 42 years.
Mean Reading of the Barometer	29·494	29·504
Highest ,, on the 1st	30·029	29·875
Lowest ,, on the 25th	29·031	28·999
Range of Barometer Readings	0.998	0·876
Highest Reading of a Max. Therm. on the 30th	78·8	79·0
Lowest Reading of a Min. Therm. on the 7th	40·0	42·0
Range of Thermometer Readings	38·8	37·0
Mean of all the Highest Readings	67·5	67·9
Mean of all the Lowest Readings	48·6	50·7
Mean Daily Range	18·9	17·3
Deduced Monthly Mean (from Mean of Max. and Min.)	56·2	57·8
Mean Temperature from dry bulb	57·2	57·9
Adopted Mean Temperature	56.7	57·9
Mean Temperature of Evaporation	52·9	54·9
Mean Temperature of Dew Point	49·4	52·2
Mean elastic force of Vapour	0·354 in	0·391 in
Mean weight of Vapour in a cubic foot of air	4.0gr	4·5 gr
Mean additional weight required for saturation	1·1 gr	1·0 gr
Mean degree of Humidity (saturation 1·00)	0.76	0·82
Mean weight of a cubic foot of air	528.9 in	527·3 in
Fall of Rain	3·032 in	4·284 in
Number of days on which Rain fell	16	18·1

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	0	7	0	4	1	7	10	2
Mean Velocity in miles per hour	0	5·9	0	7·4	8·5	8·1	10·0	7·5
Total No. of miles for each Direction	0	995	0	714	203	1357	2405	361

The total number of miles registered during the month was 6035.
The max. Velocity of the wind was 23 miles per hour; direction W.N.W., on the 21st at midnight.

Mean amount of Cloud (an overcast sky being indicated by 10·0)...			8·1
In the month of July, the highest reading of the Barometer during 42 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

The Barometer readings, the range, and the Temperature, were all close to the mean. The rain was a little below the average fall for July. The Prevailing wind and the strongest winds were both from the W.

A Thunderstorm occurred on the 26th. Distant Thunder was heard on the 16th and 23rd; Hail fell on the 15th; and heavy rain during the early hours of the 25th.

August, 1889.

Results of Observations taken during the Month.		Mean for the last 42 years.
Mean Reading of the Barometer	29·396	29·492
Highest ,, on the 31st	29·813	29·890
Lowest ,, on the 20th	28·702	28·960
Range of Barometer Readings	1·111	0·930
Highest Reading of a Max. Therm. on the 1st	73·3	77·3
Lowest Reading of a Min. Therm. on the 24th	41·8	41·5
Range of Thermometer Readings	31·5	35·8
Mean of all the Highest Readings	68·1	67·3
Mean of all the Lowest Readings	49·8	50·4
Mean Daily Range	18·3	16·9
Deduced Monthly Mean (from Mean of Max. and Min.)	57·3	57·2
Mean Temperature from dry bulb	56·2	57·5
Adopted Mean Temperature	56·8	57·4
Mean Temperature of Evaporation	54·0	54·6
Mean Temperature of Dew Point	51·4	51·9
Mean elastic force of Vapour	0·380 in	0·389 in
Mean weight of Vapour in a cubic foot of air	4·2 gr	4·3 gr
Mean additional weight required for saturation	0·9 gr	0·9 gr
Mean degree of Humidity (saturation 1·00)	0·82	0·82
Mean weight of a cubic foot of air	526·6 gr	525·0 gr
Fall of Rain	6·837 in	4·755 in
Number of days on which Rain fell	23	18·7

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	0	2	0	0	0	13	15	1
Mean Velocity in miles per hour	0	5·1	0	0	0	9·5	11·0	11·5
Total No. of miles for each Direction	0	247	0	0	0	2952	3960	275

The total number of miles registered during the month was 7434.
The max. Velocity of the wind was 37 miles per hour; direction W. by N. on the 20th, at 11 a.m.

Mean amount of Cloud (an overcast sky being indicated by 10·0)...		8·4
In the month of August, the highest reading of the Barometer during 42 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 & 1884	61·0
The lowest ,, ,,	1848.....	52·5

The Barometer was slightly higher than the mean for previous years. The mean Temperature was close to average. The fall of rain was heavy, and the number of rainy days large. The Prevailing Wind W.

Lightning was seen on the 11th, and Fog prevailed on the 31st.

September, 1889.

Results of Observations taken during the Month.		Mean for the last 42 years.
Mean Reading of the Barometer	29·615	29·512
Highest ,, on the 15th	30·062	30·032
Lowest ,, on the 20th	29·102	28·842
Range of Barometer Readings	0·960	1·190
Highest Reading of a Max. Therm. on the 12th	74.8	72·2
Lowest Reading of a Min. Therm. on the 21st	30·6	36·3
Range of Thermometer Readings	44·2	35·9
Mean of all the Highest Readings	61·3	62·2
Mean of all the Lowest Readings	46·0	46·9
Mean Daily Range	15·3	15·3
Deduced Monthly Mean (from Mean of Max. and Min.)	52·4	53·3
Mean Temperature from dry bulb	53·3	53·9
Adopted Mean Temperature	52·9	53·6
Mean Temperature of Evaporation	49·7	51·0
Mean Temperature of Dew Point	46·6	48·3
Mean elastic force of Vapour	0·318 in	0·339 in
Mean weight of Vapour in a cubic foot of air	3·6 gr	4·0 gr
Mean additional weight required for saturation	1·0 gr	0·8 gr
Mean degree of Humidity (saturation 1·00)	0·79	0·82
Mean weight of a cubic foot of air	535·1 gr	532·5 gr
Fall of Rain	5·118 in	4·579 in
Number of days on which Rain fell	14	18·0

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	1	9	2	0	2	4	8	4
Mean Velocity in miles per hour	11·8	6·0	5·0	0	4·5	5·6	12·2	8·3
Total No. of miles for each Direction	283	1300	241	0	218	538	2339	795

The total number of miles registered during the month was 5714.
The max. Velocity of the wind was 28 miles per hour; direction W. by S., on the 27th at 4 p.m., and W.N.W. on the 28th at 10 and 11 a.m.

Mean amount of Cloud (an overcast sky being indicated by 10·0)...				6·8
In the month of September, the highest reading of the Barometer during 42 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

The Barometer readings were high and the range small. The Temperature was close to the average. The Rainfall was above, and the number of rainy days below the mean for September. The Prevailing wind was N.E., and the strongest winds were from the W.

There was Frost on five days; Hoar frost on the 18th, 22nd, and 23rd; Hail on the 20th; Lightning on the 20th; Fog on the 12th.

October, 1889.

Results of Observations taken during the Month.		Mean for the last 42 years.
Mean Reading of the Barometer	29·247	29·424
Highest ,, on the 25th	29·907	30·006
Lowest ,, on the 7th	28·375	28·651
Range of Barometer Readings	1·532	1·355
Highest Reading of a Max. Therm. on the 2nd	59·3	64·1
Lowest Reading of a Min. Therm. on the 13th	32·0	29·5
Range of Thermometer Readings	27·3	34·6
Mean of all the Highest Readings	53·5	54·5
Mean of all the Lowest Readings	40·5	41·8
Mean Daily Range	13·0	12·7
Deduced Monthly Mean (from Mean of Max. and Min.)	46·0	47·2
Mean Temperature from dry bulb	46·6	47·8
Adopted Mean Temperature	46·3	47·6
Mean Temperature of Evaporation	44·2	45·2
Mean Temperature of Dew Point	42·1	42·9
Mean elastic force of Vapour	0·269 in	0·276 in
Mean weight of Vapour in a cubic foot of air	3·1 gr	2·9 gr
Mean additional weight required for saturation	0·5 gr	0·6 gr
Mean degree of Humidity (saturation 1·00)	0·87	0·84
Mean weight of a cubic foot of air	535·7 gr	540·5 gr
Fall of Rain	3·389 in	5·036 in
Number of days on which Rain fell	21	22·0

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	2	13	2	1	2	4	5	2
Mean Velocity in miles per hour	6·4	7·0	14·3	9·4	14·3	11·8	12·0	2·8
Total No. of miles for each Direction	309	2176	688	226	685	1135	1439	132

The total number of miles registered during the month was 6790.
The max. Velocity of the wind was 49 miles per hour; direction W., on the 7th, at 11 a.m.

Mean amount of Cloud (an overcast sky being indicated by 10·0)		8·4
In the month of October, the highest Reading of the Barometer during 42 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 ,, ,,	21st, 1880 and 1st 1888.....	23·1
The highest adopted mean temperature of the month, 1861 and 1876		51·6
The lowest ,, ,,	1880.....	43·1

The readings of the Barometer were below and the range above the mean. The Temperature was close to the average. The Rainfall was small with about the usual number of rainy days. Prevailing wind N.E.

There was Frost on four days; Hoar frost on the 26th; Hail on the 7th and 8th; Fog on the 11th, 16th and 17th; Lightning on the 21st and 27th.

November, 1889.

Results of Observations taken during the Month.		Mean for the last 42 years.
Mean Reading of the Barometer	29·744	29·303
Highest ,,	on the 17th.....30·239	30·047
Lowest ,,	on the 25th .....28·764	28·577
Range of Barometer Readings	1·475	1·470
Highest Reading of a Max. Therm. on the 15th	56·3	55·6
Lowest Reading of a Min. Therm. on the 7th	24·6	25·6
Range of Thermometer Readings	31·7	30·0
Mean of all the Highest Readings	48·4	46·9
Mean of all the Lowest Readings	38·5	36·2
Mean Daily Range	9·9	10·7
Deduced Monthly Mean (from Mean of Max. and Min.)	43·2	41·2
Mean Temperature from dry bulb	43·8	41·5
Adopted Mean Temperature	43·5	41·4
Mean Temperature of Evaporation	42·0	38·9
Mean Temperature of Dew Point	40·2	37·7
Mean elastic force of Vapour	0·250in	0·226in
Mean weight of Vapour in a cubic foot of air	2·9gr	2·6gr
Mean additional weight required for saturation	0·4gr	0·4gr
Mean degree of Humidity (saturation 1·00)	0·88	0·87
Mean weight of a cubic foot of air	547·8gr	544·9gr
Fall of Rain	2·563in	4·111in
Number of days on which Rain fell	17	19·5

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	0	4	0	1	5	5	12	3
Mean Velocity in miles per hour	0	4·4	0	4·4	5·4	9·8	9·0	10·5
Total No. of miles for each Direction	0	424	0	105	646	1175	2604	759

The total number of miles registered during the month was 5713
The Max. Velocity of the wind was 43 miles per hour; direction S.S.E. on the 1st at 6 a.m., and S. by E. on the 1st at 7 a.m.

Mean amount of Cloud (an overcast sky being indicated by 10·0)			8·9
In the month of November, the highest reading of the Barometer during 42 years, was on the	12th,	in 1857, and was	30·350
The lowest ,,	,,	1st, 1859.....	28·007
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

Barometer readings high with average range. Temperature high. Rainfall much below the mean for November. Prevailing Wind, W.

There was Frost on 10 days; Snow on the 26th; Hail on the 1st, 4th, 25th, and 26th; Fog on the 7th, 8th, 13th, 23rd and 24th; and a Thunderstorm on the 1st.

December, 1889.

Results of Observations taken during the month.		Mean for the last 42 years.
Mean Reading of the Barometer	29·687	29·454
Highest ,, on the 5th	30·308	30·065
Lowest ,, on the 10th	28·749	28·597
Range of Barometer Readings	1·559	1·468
Highest Reading of a Max. Therm. on the 18th	52·6	53·1
Lowest Reading of a Min. Therm. on the 28th	22·1	20·3
Range of Thermometer Readings	30·5	32·8
Mean of all the Highest Readings	42·7	43·1
Mean of all the Lowest Readings	32·2	33·0
Mean Daily Range	10·5	10·1
Deduced Monthly Mean (from Mean of Max. and Min.)	37·5	38·1
Mean Temperature from dry bulb	37·5.	38·7
Adopted Mean Temperature	37·5	38·4
Mean Temperature of Evaporation	35·9	37·1
Mean Temperature of Dew Point	33·7	35·1
Mean elastic force of Vapour	0·203 in	0·206 in
Mean weight of Vapour in a cubic foot of air	2·2 gr	2·4 gr
Mean additional weight required for saturation	0·2 gr	0·4 gr
Mean degree of Humidity (saturation 1·00)	0·87	0·87
Mean weight of a cubic foot of air	553·6 gr	548·0 gr
Fall of Rain	4·548 in	5·331 in
Number of days on which Rain fell	19	19·2

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	1	4	2	1	3	8	9	3
Mean Velocity in miles per hour	2.3	3·1	3·9	7·8	6·9	9·2	11·2	6·2
Total No. of miles for each Direction	54	296	251	188	495	1773	2419	377

The total number of miles registered during the month was 5853.
The max. Velocity of the wind was 36 miles per hour; direction S. by E. at 2 a.m., on the 13th.

Mean amount of Cloud (an overcast sky being indicated by 10·0)...			8·5
In the Month of December, the highest reading of the Barometer during 42 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 Barometer readings were high with a little more than average range. The Temperature and Rainfall were slightly below the mean for December. The Prevailing wind was W.

There was Frost on 23 days; Hoar frost on the 4th, 8th, 11th, 14th, 25th, 30th and 31st; Snow on the 6th, 12th, and 21st: Hail on the 10th and 20th; Fog on the 14th, 15th, and 16th; and a Lunar halo on the 3rd.

Summary of Observations
FOR 1889.

		Mean for the last 42 years.
Mean Reading of the Barometer	29·524	29·486
Highest ,, on January 3rd	30·310	30·280
Lowest ,, on March 20th	28·323	28·255
Range of Barometer Readings	1·987	2·025
Highest Reading of a Max. Therm. on June 22nd	80·0	81·6
Lowest Reading of a Min. Therm. on Feb. 10th	17·8	15·7
Range of Thermometer Readings	62·2	65·9
Mean of all the Highest Readings	55·1	54·7
Mean of all the Lowest Readings	40·6	40·7
Mean Daily Range	14·5	14·1
Deduced Yearly Mean (from Mean of Max. and Min.)	46·7	46·8
Mean Temperature of dry bulb	47·0	46·7
Adopted Mean Temperature	46·9	46·8
Mean Temperature of Evaporation	44·3	44·5
Mean Temperature of Dew Point	41·5	42·2
Mean elastic force of Vapour	0·271 in	0·274 in
Mean weight of Vapour in a cubic foot of air	3·1 gr	3·3 gr
Mean additional weight required for saturation	0·7 gr	0·7 gr
Mean degree of Humidity (saturation 1·00)	0·82	0·84
Mean weight of a cubic foot of air	540·2 gr	539·4 gr
Total Fall of Rain in the Year	42·478 in	47·045 in
Number of days per Month on which Rain fell	17·1	18·1

The Maximum monthly mean height of the Barometer was in January, 1880, and was ..... 29·928
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

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 41 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, in a cubic foot of air, July, 1852	5·1
The least ,, ,, ,, February, 1855	1·4
The greatest fall of rain in a month, was in October, 1870, and was	13·437in
The least ,, ,, ,, March, 1852	0·047
The greatest number of days on which rain fell in one month, July, 1861, December, 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	12	89	21	19	27	73	94	30
Mean Velocity in miles per hour	8·9	6·6	8·5	8·2	8·5	9·3	11·3	8·8
Total No. of miles for each Direction	2557	14045	4309	3755	5481	1726	25550	6364

The total No. of miles registered during the year was 79,324.

The max. Velocity of the wind was 49 miles per hour; direction W. on October 7th, at 11 a.m.

SUMMARY OF SOLAR OBSERVATIONS.

Number of days of Observation in each Month.

1889.	Recorded Sunshine.	Amount of Sunshine expressed in hours.	Number of Sun Drawings, 10¼ inches to diameter.	Other Drawings and notes.	Entire Chromosphere measured.	Chromosphere partially measured.	Spot Spectra observed.
January ...	9	25·5	8		3		
February...	21	77·3	17	1	7		
March ...	24	95·3	21		8	1	1
April	27	95·7	18		4		
May.....	27	145·5	22		10		3
June.....	29	253·8	26	2	15		5
July	29	184·8	24	2	7		
August ...	27	109·7	20	1	4		
September	25	118·3	19		11	1	2
October ...	17	50·0	15		4		
November	16	38·6	15		1		
December	12	18·1	11		3		
Totals	263	1212·6	216	6	77	2	11

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 each drawing was made; *n* are notes, *c* chromosphere, *s* spot spectra.

1889	January.	February.	March.	April	May.	June.	July.	August.	Sept.	October.	Nov.	Dec.
1			·38	·52	·48,c	·30	·35,c	·46			·43	
2		·45	·39,c	·37	·42,c	·50	·73	·40	·42	·39	·42	·46,c
3	·49	·39	·37,c			·42,c	·46,c					
4		·42,c		·35	·42	·46,c	·53	·43		·44	·50	
5			·43	·42	·48,c,s	·40,c	·48,c	·44	·41,c	·52		
6		·44,c		·47	·39,c,s	·43,c	·43,c		·46,c		·49	
7		·44,c			·41.c,s		·45,c	·46	·38			·60
8		·52			·48	·35,c	·48	·46		·40	·44	
9		·41,c	·38,c			·52			·39			
10	·42		·41			·76	·72	·53	·40,c	·35	-49	·49
11	·39	·41	·38,c			·45	·45			·42,c		·43,c
12		·47,c	·52			·44,c	·40		·61,c			
13			·37		·53	·38,c				·46,c	·44	·52
14		·35	·36,c s	·40	·52		·51			·45,c		·45,c
15		·40,c	·37	·44	·51		·49	·39			·47	
16			·38	·37	·41	·40,c	·46	·37	·49,c		·49	
17				·45	·46	·40,c	·40,c	·49	·38,c			
18			·41	·51,c	·46	·42,c	·78	·47	·38,c			·44
19		·42	·52		·65		·74		65			
20	·41,c	n		·48	·38,c	.50,c.s			·38,c			·60
21	·52	·43	·42,c		·38,c	·45,c		·35	·51	·37		
22	·50,c		·40	·52	·42,c	·36,c,s	·67	·32	·38,c	·39	·48	
23		·52,c		·76	·46,c	·49	·36	·42	·49	·49	·42	
24		·46		·44		·37,c,s		·42,c				
25		·37	·40	·41	·60,c	·50	n	n	·36,c,s	·38,c	·43,c	·45
26		·54	·40,c	·41,c		·37,s	·68	·38,c			·47	
27	·43,c		·50,c	·35,c		·40,c,s	·36				·51	
28						·46		·72	·36,c,s	·50	·47	
29	·53		·46,c	·35,c	·52	·40	·49,c	·63,c	·51,c			
30					·41	·64	·39	·41,c	·51	·51		·49

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	0	0	0	0	0·2	0	0	0	0	4·6	1·7	0	0	0	0	0	0
February	0	1·4	3·9	6·2	0	2·4	5·8	1·9	8·3	0	5·9	7·0	0	4·1	8·5	0·1	0
March	5·7	2·8	2·7	0	0·1	0	0·1	0	7·9	6·0	8·8	1·0	7·5	2·5	1·2	1·8	0·7
April	2·8	3·0	0	4·3	2·3	5·6	0	0·1	0·2	0	0·8	0·1	1·2	1·9	1·2	1·8	3·6
May	4·7	7·7	0	2·1	7·0	13·0	3·3	3·3	0·4	0	0	0	1·6	0·9	5·3	4·2	7·4
June	7·8	2·2	9·3	14·7	12·7	13·0	4·5	11·0	1·9	6·0	4·1	13·2	14·4	0	0·3	13·8	10·4
July	14·6	4·8	10·0	3·5	5·3	8·2	10·7	13·8	2·3	0·9	11·8	5·2	0	5·1	8·6	6·6	6·4
August	3·6	8·0	0·9	10·7	6·8	1·6	9·3	7·8	0·2	3·7	0·4	0·8	1·3	0	1·2	3·1	7.6
September	2·7	5·1	0·8	0	8·5	9·1	5·7	1·0	6·2	5·8	0·5	4·2	1·0	0	0.5	6·1	8·4
October	1·2	3·2	0	1·7	0	0	0·5	5·5	0	2·6	4·8	0	7·9	.4·6	0	0	0
November	2·2	5·0	0	0·8	0	3·2	0	0·1	0	2·4	0	0	0·6	0	0·8	3·3	0
December	0	1·7	0	0	0	0	0·8	0	0	2·0	5·7	0	3·3	2·7	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 centage each Month.
January	0	0	5·6	1·2	3·1	0	0·4	0	0	6·8	0	1·9	0	0	25·5	9·9
February	0·2	0·1	2·7	3·7	0	3·0	2·9	5·2	3·2	0	0·8				77·3	27·8
March.....	0·7	0·3	0·9	5·5	6·9	0	0	7·7	3·5	9.2	0	7·0	0	4·8	95·3	25·9
April	11·6	0·1	4·4	1·8	7·2	4·8	5·7	6·3	7·5	7·9	1·0	8·1	0·4		95·7	23·0
May	2·2	3·7	12·3	11·6	12·7	12·0	2·6	8·0	7·9	1·0	0·2	1·3	4·8	4·3	145·5	31·3
June	11·7	0·3	14·7	10·8	9·0	9·1	12·5	3·9	10·0	13·3	8·1	8·5	2·6		253·8	51·3
July.....	3·3	5·1	0	0·7	4·7	3·7	0·6	5·0	3·9	10·6	0·6	10·5	9·8	8·5	184·8	37·2
August	2·5	0	0	2·2	2·2	4·3	8·2	1·2	5·5	0	1·3	5·0	8·5	1·8	109·7	24·4
September	8·0	0·8	5·6	0·6	10·0	0·2	1·4	10·6	0	0	7·1	6·6	2·6		118·3	31·4
October	0	0	0	3·6	1·6	3·5	0·1	3·6	1·3	0	0	0	0·1	4·2	50·0	15·2
November	0	0	0	0	0·2	3·5	0·8	4·3	1·4	5·1	4·9	0	0		38·6	14·6
December	0·7	0	0·6	1·2	0	0	0·7	0·6	0	0·1	0	0	0	0	18·1	7·7

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	0·7	2·8	2·7	3·2	5·2	4·5	4·5	1·6	0·3	0	0	0	0
February	0	0	0	1·3	5·4	9·3	10·6	10·4	11·6	10·7	8·6	8·2	1·2	0	0	0	0
March	0	0	0.6	4·2	9·7	13·6	13·2	11·0	10·0	9·7	9·0	7·2	5·6	1·5	0	0	0
April	0	0·6	3·8	6·3	6·4	8·5	9·6	10·0	11·1	9·9	10·5	7·3	5·3	4·1	2·3	0	0
May	0·5	2·9	7·3	9·7	9·5	11·8	14·1	14·2	13·9	11·6	10·8	11·7	10·2	9·1	7·1	1·1	0
June	1·2	7·6	12·7	15·4	18·4	19·0	19·8	19·9	20·2	21·6	20·7	18·4	18·6	19·7	15·2	5·4	0
July	0·7	5·4	8·7	12·1	12·6	12·3	13·8	16·3	16·9	15·9	18·7	15·4	12·9	12·0	8·8	2·3	0
August	0	0·3	2·9	6·7	7·9	9·0	11·9	12·5	12·2	10·8	11·0	10·6	8·5	3·6	1·8	0	0
September	0	0	1·2	4·8	10·1	12·9	13·3	13·3	14·5	12·4	13·4	12·2	9·2	1·0	0	0	0
October	0	0	0	1·1	5·5	8·5	8·0	8·3	5·1	5·5	3·7	3·1	1·2	0	0	0	0
November	0	0	0	0	1·1	2·5	5·2	6·7	8·0	5·7	6·5	2·9	0	0	0	0	0
December	0	0	0	0	0	0·9	2·0	4·6	4·9	2·2	3·5	0	0	0	0	0	0
Total	2·4	16·8	37·2	61·6	87·3	111·1	124·2	130·4	133·6	120·5	120·9	98·6	73·0	51·0	35·2	8·8	0

OBSERVATIONS OF UPPER CLOUDS (CIRRUS).

Date.	G. M. T.	Cloud.		Wind.		Direction of Lower Clouds.
		Direction.	Velocity. (0—6).	Direction.	Force. (0—12).	
January 19	8.30 a.m.	N.W.	2	W.S.W.	1	W.
,, 19	3 p.m.	W.	2	W. by N.	4	W.
,, 22	2 p.m.	N.	1	N. by W.	1	N.
,, 22	4 p.m.	N.	1	N.N.W.	1	N.
,, 29	4 p.m.	W.	1	W.N.W.	3	W.
Feb. 14	Noon.	W.	1	W.	4	W.
,, 14	2 p.m.	W.	1	W.	4	W.
,, 21	10.30 a.m.	N.	2	N.	1	N.N.W.
,, 25	2 p.m.	N.	1	N.W.by N.	1	N.
March 9	8.45 a.m.	W.	1	W.	3	
,, 10	9.30 a.mr	W.	2	W.S.W.	2	S.W.
,, 10	11 a.m.	W.	1	W. by. S.	3	W.
,, 13	4 p.m.	N.W.	2	N.W.	5	N.W.
,, 16	7 a.m.	N.W.	1	W.	2	
,, 17	9 a.m.	W.	2	W.N.W.	3	W.
,, 22	1.30 p.m.	N.W.	1	W.N.W.	4	W.
,, 27	0.30 p.m.	N.W.	1	N.	1	N.W.
,, 27	4 p.m.	N.W.	2	W. by N.	2	
,, 29	Noon.	N.	1	W. by N.	3	W.
April 1	8.30 a.m.	N.	2	W. by N.	3	N.
May 5	3.45 p.m.	S.	2	E.	2	S.E.
,, 8	11 a.m.	S.W.	2	S.	0	S.W.
,, 17	11.15 a.m.	E.N.E.	1	E.	2	N.E.
,, 17	5 p.m.	S.W.	1	N.E. by N.	1	N.E.
,, 17	6 p.m.	S.W.	2	N.E.	1	
,, 17	7 p.m.	S.	2	N.E.	1	
,, 17	8 p.m.	S.	2	N.E. by N.	1	
,, 19	1.20 p.m.	W.	1	S.W. by S.	1	E.
,, 19	2 p.m.	W.	1	S.W.	1	E.
,, 23	11.30 a.m.	S.W.	1	W.S.W.	1	S.
,, 23	Noon.			W. by S.	1	S.
,, 23	1.30 p.m.	W.	2	W.	1	
,, 23	2 p.m.	W.S.W.	2	W.	1	
,, 24	7 a.m.	S.	1	N. by W.	0	
,, 24	2 p.m.	S.	2	S.S.W.	1	S.
,, 30	8 a.m.			S.W. by S.	2	S.W.
,, 30	11 a.m.	S.E.	1	S.	3	S.
,, 31	9.30 a.m.			S. by W.	6	W.
,, 31	10.30 a.m.	S.W.	2	S.W. by S.	4	S.W.
,, 31	Noon.	S.	2	S.W.	2	S. by W.

OBSERVATIONS OF UPPER CLOUDS *(Continued)*.

Date.	G. M. T.	Cloud.		Wind.		Direction of Lower Clouds.
		Direction.	Velocity (0—6).	Direction.	Force (0—12).	
June 1	2 p.m.	S.	1	S.S.E.	4	S.S.E.
,, 1	4 p.m.	S.	1	S. by E.	4	S.S.E.
,, 1	5 p.m.	S.S.W.	1	S.	4	S.S.W.
,, 1	6 p.m.	S.	1	S. by E.	3	S.
,, 8	4 p.m.	S.S.W.	1	W. by N.	2	
,, 8	5.30 p.m.	W.	1	W. by N.	2	W.
,, 8	8 p.m.	W.S.W.	1	W.S.W.	1	W.
,, 12	7 a.m.	W.	2	N.E. by N.	1	W.
,, 12	8 a.m.	W.	1	N.E. by E.	1	W.
,, 12	9 a.m.	W.	1	N.E.	1	W. by S.
,, 12	2 p.m.			N.E.	1	W.
,, 12	4 p.m.	W.	1	E. by N.	1	W.
,, 22	6 p.m.	E.	1	E.	0	
,, 25	10 a.m.	E.	1	N.E.	1	N.E.
,, 29	8.30 a.m.			S.	1	W.N.W.
,, 29	9 a.m.	W.	1	W. by N.	1	W.
,, 29	8 p.m.	N.W.	2	W. by N.	1	
July 8	8.30 a.m.	W.	2	W.	2	W.
,, 8	9 a.m.	W.	1	W.	2	W.
,, 8	2 p.m.	W.	2	W.	2	W.
,, 8	3 p.m.	W.	2	W.	2	W.
,, 8	4 p.m.	W.	2	W.N.W.	2	
,, 11	1.30 p.m.	S.W.	1	W. by S.	2	S.W.
,, 11	2 p.m.	S.W.	1	W. by S.	2	S.W.
,, 11	5.30 p.m.	S.W.	2	W.	1	
,, 14	Noon.	W.	1	W. by N.	3	W.
,, 14	2 p.m.	W.	1	W. by N.	3	W.
,, 17	9 a.m.	N.E.	2	E.S.E.	1	N.W.
,, 19	1 p.m.	W.	1	W. by S.	3	W.
,, 19	7 p.m.	W.	2	W.	0	W.
,, 21	7.30 p.m.	S.S.E.	1	W.	1	
,, 27	7 p.m.	N.W.	2	W. by S.	1	N.W.
,, 27	8 p.m.	W.S.W.	2	S.W.	1	N.N.W.
August 1	3 p.m.	W.	1	W.	2	W.
,, 4	6 p.m.			W.N.W.	0	
,, 7	7 a.m.	W.	1	W.S.W.	1	W.
,, 7	9 a.m.			W.	2	W.
,, 8	Noon.	W.	1	W.S.W.	2	W.
,, 8	1.30 p.m.	W.	2	S.W. by W.	2	W.
,, 8	2 p.m.	W.	2	W. by S.	2	W.
,, 22	5.30 p.m.	W.	1	W. by N.	3	W.
,, 24	Noon.	N.W.	1	W. by N.	3	N.W.

OBSERVATIONS OF UPPER CLOUDS *(Continued)*.

Date.		G. M. T.	Cloud		Wind.		Direction of Lower Clouds.
			Direction.	Velocity (0—6).	Direction.	Force (0—12).	
Sept.	9	1.30 p.m.	W.	2	W. by S.	2	W.S.W.
,,	9	3.45 p.m.	W.	2	W. by S.	1	W. by S.
Oct.	10	2 p.m.			N.W.byW.	1	W.S.W.
,,	10	4.30 p.m.			W. by S.	1	W.
,,	21	10 a.m.	E.	1	E. by N.	1	E.
Nov.	23	8.45 a.m.	S.W.	3	W.	1	S.W.
,,	28	9 a.m.	N.N.W.	2	N.W.	1	N.N.W.
Dec.	3	3.30 p.m.			E. by S.	1	E.
,,	18	3.30 p.m.	S.W.	3	W.N.W.	5	W.
,,	21	2.30 p.m.	W.	2	W.N.W.	2	S.W.
,,	30	9 a.m.	N.	2	N.N.W.	0	N.

AGRICULTURAL NOTES.

JANUARY and FEBRUARY.—With the exception of a little ploughing towards the close of the latter month, no work was done on the land, owing to the cold.

MARCH.—The first week was cold, and the remainder of the month was, in general, wet and dull, and agricultural operations were retarded in consequence. In most places ploughing was finished, and a few oats sown by the end of the month.

APRIL was cloudy and cold; but the ground was in a favourable condition, oats were sown by the middle, and a good part of the green crops were in the ground towards the close. Vegetation looked backward, and few flowers were out in blossom owing to the want of sun.

MAY was warmer, the beginning and end of the month was dull. Potatoes were finished in the first week, as well as the green crops. Grass looked well and fruit trees were pretty well in blossom.

JUNE was warm, bright, and favourable. Garden vegetables were doing very well. Fruit trees looked exceedingly promising. Strawberries, which were ripe in most places towards the end of the third week, yielded a heavy crop. Currants were very plentiful.

JULY was rather wet, and wheat was beaten down by rain in a few places, but not very badly. Oats were short in straw but improving later in the month. A fair quantity of hay was got in by the middle. All the currants were gathered by about the 10th.

AUGUST was wet. An average quantity of apples and pears were got. Gooseberries, which were ripe about the 5th, yielded a very good crop.

SEPTEMBER was mostly a good month. Wheat and Oats were got in pretty generally by the end.

OCTOBER.—All the potatoes, which were a good average crop and, generally, free from disease were stored by the end of the third week. Green crops were not quite finished at the end. A little wheat was sown before the close.

NOVEMBER was not so cold as usual and a considerable number of flowers remained in blossom. All crops were gathered and all the wheat sown.

DECEMBER.—Owing to the cold and sharp frost no out-door work was done.

OBSERVATIONS OF CROPS.

GRAIN, ETC.					GREEN CROPS.			
Name.	When Sown.	In Flower.	In Ear.	When Cut.	Name.	When Sown.	Above Ground.	Stored.
Wheat	Oct.—Nov.	June	July 11th	Sept.	Potatoes	Mar.—May	May 3rd	Oct.
Oats	Mar.—Apl.	June	July 2nd	Sept.	Turnips	April—May	May 7th	Oct.
Beans	March	June		Sept.	Beet	April—May	May 7th	Oct.—Nov.
					Mangel	April—May	May 12th	Oct.—Nov.

OBSERVATIONS OF TREES AND SHRUBS.

FOREST TREES, ETC.			FRUIT TREES, ETC.			SHRUBS.	
Name.	In Bud.	In Leaf.	Name.	In Blossom.	Ripe.	Name.	In Blossom.
Field Elm	May 10th	May 20th	Apple	May 10th	Aug. 16th	Lilac	May 26th
Oak	May 18th	May 20th	Pear	Ap. 10th	Aug. 18th	Laburnum	May 21st
Sycamore	Ap. 29th	May 12th	Red Currant	Ap. 20th	July 12th	Red Flowering Currant	Ap. 11th
Lime	Ap. 26th	May 11th	Black Currant	Ap. 20th	July 21st	Dog-Rose	June 10th
Ash	May 18th	May 21st	Strawberry	May 16th	June 27th	Guelder-Rose	May 26th
Beech	May 5th	May 10th	Gooseberry	Ap. 5th	Aug. 6th	Woodbine	June 29th
Horse Chestnut	Ap. 15th	May 7th				Elder	May 29th
						Yellow Azalea	May 15th
						Hawthorn	May 26th

DATES OF THE FLOWERING OF PLANTS AT STONYHURST IN 1889.

RANUNCULACEÆ.		
Anemone nemorosa	Wood anemone	Mar. 28
Ranunculus Ficaria	Lesser celandine	Jan. 24
R. acris	Meadow crowfoot	May 9
R. repens	Creeping buttercup	May 9
R. bulbosus	Bulbous buttercup	May 9
R. auricomus	Wood crowfoot	May 14
R. lingua	Great spearwort	May 19
R. hederaceus	Ivy-leaved crowfoot	May 23
Caltha palustris	Marsh marigold	April 2
Trollius Europæus	Globe flower	May 19
Aquilegia vulgaris	Columbine	May 23
NYMPHÆACEÆ.		
Nymphæa alba	White water lily	June 28
Nuphar lutea	Yellow water lily	June 25
PAPAVERACEÆ.		
Chelidonium majus	Common celandine	June 2
CRUCIFERÆ.		
Nasturtium officinale	Common watercress	May 20
Arabis hirsuta	Hairy rock cress	April 24
Cardamine amara	Large bitter cress	May 10
C. pratensis	May flower	April 27
C. hirsuta	Hairy bitter cress	April 18
Sisymbrium officinale	Hedge mustard	May 5
Alliaria officinalis	Garlic mustard	May 6
Brassica campestris	Common wild navew	May 9
Cochlearia Armoracia	Horse radish	June 15
C. officinalis	Scurvy grass	May 5
RESEDACEÆ.		
Reseda luteola	Dyer's rocket	May 26
VIOLACEÆ.		
Viola canina	Dog violet	April 7
V. odorata	Sweet violet (white)	Mar. 7
V. palustris	Marsh violet	May 9
V. hirsuta	Hairy violet	May 9
POLYGALACEÆ.		
Polygala vulgaris	Milkwort	May 19

DATES OF THE FLOWERING OF PLANTS AT STONYHURST IN 1889 *(continued)*.

CARYOPHYLLACEÆ.		
Lychnis vespertina	Evening campion	May 30
L. diurna	Red robin	April 25
L. Flos cuculi	Ragged robin	June 2
Arenaria serpyllifolia	Thyme-leaved sandwort	June 10
A. trinervis	Three-nerved sandwort	May 2
Cerastium vulgatum	Mouse-ear chickweed	May 2
Stellaria aquatica	Water starwort	May 2
S. nemorum	Wood starwort	May 20
S. graminea	Lesser starwort	May 17
S. holostea	Great starwort	May 18
S. media	Chickweed	Mar. 2
HYPERICACEÆ.		
Hypericum perforatum	Common St. John's wort	July 1
H. quadrangulum	Square-stalked St. John's wort	July 3
H. humifusum	Trailing St. John's wort	July 10
H. pulchrum	Slender St. John's wort	July 7
H. hirsutum	Hairy St. John's wort	July 3
LINACEÆ.		
Linum catharticum	Cathartic flax	June 3
MALVACEÆ.		
Malva sylvestris	Common mallow	June 4
GERANIACEÆ.		
G. Phæum	Dusky crane's-bill	May 20
G. sylvaticum	Wood crane's-bill	May 18
G. pratense	Meadow crane's-bill	June 14
G. Robertianum	Herb Robert	May 8
G. lucidum	Shining crane's-bill	May 5
Oxalis acetosella	Wood sorrel	April 19
PAPILIONACEÆ.		
Ononis arvensis	Rest harrow	July 15
Medicago lupulina	Black medic	May 23
Trifolium pratense	Purple clover	May 20
T. repens	White clover	May 21
T. procumbens	Lesser clover	June 12
Lotus corniculatus	Bird's-foot trefoil	May 26
Vicia cracca	Tufted vetch	June 27

DATES OF THE FLOWERING OF PLANTS AT STONYHURST IN 1889 *(continued)*.

Lathyrus pratensis	Meadow pea	June 4
ROSACEÆ.		
Spiræa ulmaria	Meadow sweet	June 25
Geum urbanum	Wood avens	May 23
G. rivale	Water avens	April 18
G. intermedium	Intermediate avens	May 28
Fragaria vesca	Wood Strawberry	May 1
Potentilla fragariastrum	Barren Strawberry	Feb. 3
P. reptans	Creeping cinque-foil	June 17
P. tormentilla	Tormentil cinque-foil	May 17
P. anserina	Silver weed	May 26
Alchemilla vulgaris	Lady's mantle	May 2
Sanguisorba officinalis	Great burnet	July 3
Agrimonia eupatoria	Common agrimony	July 10
ONAGRACEÆ.		
Epilobium montanum	Common willow-herb	June 21
E. palustre	Marsh willow-herb	June 15
E. parviflorum	Hoary willow-herb	June 23
E. tetragonum	Square willow-herb	June 23
Circæa lutetiana	Enchanter's nightshade	June 20
SAXIFRAGACEÆ.		
Saxifraga umbrosa	London pride	May 1
Chrysosplenium oppositofolium	Opposite leaved golden saxifrage	Mar. 19
C. alternifolium	Alternate leaved do.	Mar. 19
UMBELLIFERÆ.		
Sanicula europæa	Wood sanicle	May 12
Caucalis anthriscus	Hedge parsley	June 13
CAPRIFOLIACEÆ.		
Adoxa moschatellina	Tuberous moscatel	April 2
Lonicera periclymenum	Honeysuckle	July 5
ARALIACEÆ.		
Hedera helix	Common ivy	Oct. 15

DATES OF THE FLOWERING OF PLANTS AT STONYHURST IN 1889 (*continued*).

STELLATÆ.		
Galium cruciatum	Crosswort	April 18
G. verum	Yellow bedstraw	May 16
G. palustre	Marsh bedstraw	May 16
G. saxatile	Heath bedstraw	May 26
G. aparine	Cleavers	June 1
Asperula adorata	Sweet woodruff	May 14
VALERIANEÆ.		
Valeriana dioica	Marsh valerian	May 5
V. officinalis	Common valerian	July 12
DIPSACEÆ.		
Scabiosa arvensis	Field scabious	June 27
COMPOSITÆ.		
Tussilago farfara	Common colt's-foot	Feb. 17
Tussilago petasites	Butterbur	April 11
Chrysanthemum leucanthemum	Ox-eye daisy	May 26
Achillea millefolium	Common yarrow	July 11
Senecio vulgaris	Groundsel	Feb. 28
S. jacobæa	Ragwort	July 3
Arctium lappa	Common burdock	July 17
Carduus lanceolatus	Spear thistle	July 20
C. palustris	Marsh thistle	June 5
Centaurea nigra	Black knapweed	June 30
Leontodon hispidus	Common hawkbit	June 4
Hypochæris radicata	Cat's-ear	June 6
Sonchus oleraceus	Common sow thistle	June 18
Taraxacum dens-leonis	Common dandelion	April 11
Hieracium pilosella	Mouse-ear hawkweed	May 30
H. umbellatum	Smooth-leaved hawkweed	July 4
Crepis virens	Smooth crepis	June 3
C. paludosa	Marsh crepis	June 11
Lapsana communis	Nipplewort	June 9
CAMPANULACEÆ.		
Campanula latifolia	Giant bell-flower	July 3
C. rapunculoides	Creeping bell-flower	July 13
C. rotundifolia	Harebell	June 26

DATES OF THE FLOWERING OF PLANTS AT STONYHURST IN 1889 (*continued*).

ERICACEÆ.		
Erica tetralix	Cross-leaved heath	June 28
PRIMULACEÆ.		
Primula vulgaris	Common primrose	June 24
P. veris	Cowslip	May 9
Lysimachia vulgaris	Great yellow loosestrife	May 14
L. nemorum	Yellow pimpernel	May 20
APOCYNACEÆ.		
Vinca minor	Lesser periwinkle	April 2
GENTIANACEÆ.		
Menyanthes trifoliata	Common buckbean	May 26
POLEMONIACEÆ.		
Polemonium cœruleum	Jacob's ladder	June 4
CONVOLVULACEÆ.		
Convolvulus sepium	Large convolvulus	July 14
BORAGINACEÆ.		
Myosotis sylvatica	Forget-me-not	April 14
M. arvensis	Field myosote	May 6
Symphytum officinale	Common comfrey	May 21
SOLANACEÆ.		
Solanum dulcamara	Bittersweet	June 10
OROBANCHACEÆ.		
Lathræa squamaria	Toothwort	April 11
SCROPHULARINEÆ.		
Scrophularia nodosa	Common figwort	June 1
S. aquatica	Water figwort	June 10
Mimulus luteus	Yellow mimulus	May 29
Linaria cymbalaria	Ivy-leaved toad-flax	May 19

DATES OF THE FLOWERING OF PLANTS AT STONYHURST IN 1889 (*continued*).

Digitalis purpurea	Foxglove	June 4
Veronica serpyllifolia	Thyme-leaved speedwell	May 17
V. officinilas	Common speedwell	May 17
V. beccabunga	Brooklime speedwell	May 26
V. montana	Mountain speedwell	May 21
V. chamædrys	Germander speedwell	May 9
Bartsia odontites	Red bartsia	July 1
Euphrasia officinalis	Eyebright	June 2
Rhinanthus crista galli	Yellow rattle	May 26
Pedicularis sylvatica	Lousewort	May 9
Melampyrum pratense	Cow-wheat	June 7
LABIATÆ		
Nepeta glechoma	Ground ivy	April 11
Prunella vulgaris	Self-heal	May 23
Stachys sylvatica	Hedge woundwort	May 25
Lamium purpureum	Purple dead-nettle	May 10
Ajuga reptans	Bugle	May 14
PLANTAGINACEÆ.		
Plantago major	Greater plantain	May 28
P. lanceolata	Ribwort plantain	May 9
CHENOPODIACIÆ.		
Chenopodium bonus Henricus	Good King Henry	May 19
Atriplex patula	Common orache	July 16
POLYGONACEÆ.		
Rumex obtusifolius	Broad dock	May 20
R. crispus	Curled dock	June 11
R. acetosa	Sorrel	May 9
Polygonum aviculare	Knotgrass	July 5
P. bistorta	Snakeweed	May 21
P. persicaria	Common persicaria	June 20
P. convolvulus	Black bindweed	July 28
EUPHORBIACEÆ.		
Mercurialis perennis	Dog's mercury	Mar. 19
URTICACÆ.		
Urtica dioica	Common nettle	June 1
AROIDEÆ.		
Arum maculatum	Common arum	May 5

DATES OF THE FLOWERING OF PLANTS AT STONYHURST IN 1889 (*continued*).

NAIADACEÆ.		
Potamogeton natans	Broad pondweed	July 5
ALISMACEÆ.		
Alisma plantago	Water plantain	June 13
ORCHIDACEÆ.		
Epipactis latifolia	Helleborine	July 3
Listera ovata	Twayblade	May 23
Orchis mascula	Early orchis	May 21
O. maculata	Spotted orchis	June 6
IRIDACEÆ.		
Iris pseudacorus	Yellow iris	June 21
Crocus vernus	Spring Crocus	Mar. 2
AMARYLLIDEÆ.		
Narcissus pseudonarcissus	Daffodil	April 1
Galanthus nivalis	Snowdrop	Feb. 2
LILIACEÆ.		
Paris quadrifolia	Herb Paris	May 1
Scilla nutans	Bluebell	April 11
Allium ursinum	Broad-leaved garlic	May 24

Monthly Magnetical Observations taken at the College Observatory, Stonyhurst, 1889.

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-efficients q and q' are respectively 0·0001128 and 0·0000004436.

The induction co-efficient μ is 0·000244.

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

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

The time of one vibration has been obtained each month from the mean of twelve determinations of the time of 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 7.5 of arc.

In the calculations of the ratio $\frac{m}{X}$, the third and subsequent terms of the series $1 + \frac{P}{r^2} + \frac{Q}{r^4} +$ &c., have always been omitted.

The value of the constant P was found to be 0·002981.

The Declination observations have been taken once a week. Each reading has been corrected by the photographic curves for all irregular disturbances, as well as for daily and monthly range.

OBSERVATIONS OF DEFLECTION FOR ABSOLUTE MEASURE OF HORIZONTAL FORCE.

Month.	G. M. T.		Distances of centres of Magnets.	Temperature.	Observed Deflection.	$\text{Log}\frac{m}{X}$
	D.	H. M.	FOOT.	°	° ′ ″	
January ...	15th	10 10 a.m.	1·0	46·1	13 11 24	9·05838
	,,	10 50 a.m.	1·3	49·8	5 57 18	9·05811
February .	20th	11 45 a.m.	1·0	54·3	13 11 8	9·05871
	,,	0 20 p.m.	1·3	54·0	5 57 20	9·05838
March ...	17th	10 26 a.m.	1·0	52·1	13 11 20	9·05868
	,,	11 59 a.m.	1·3	52·5	5 57 8	9·05809
April	22nd	10 5 a.m.	1·0	49·0	13 12 10	9·05960
	,,	11 50 a.m.	1·3	51·2	5 57 17	9·05769
May	20th	11 30 a.m.	1·0	53.9	13 11 5	9·05867
	,,	0 10 p.m.	1·3	54·2	5 57 0	9·05794
June	17th	11 5 a.m.	1·0	60·3	13 11 24	9·05934
	,,	11 44 a.m.	1·3	61·1	5 57 15	9·05734
July	19th	11 0 a.m.	1·0	63·5	13 11 45	9·06011
	,,	11 40 a.m.	1·3	64·2	5 58 58	9·06102
August ...	23rd	11 5 a.m.	1·0	61·1	13 11 26	9·05991
	,,	11 43 a.m.	1·3	62·9	5 56 47	9·05857
September	22nd	11 1 a.m.	1·0	59.0	13 10 58	9·05954
	,,	11 53 a.m.	1·3	60·9	5 56 4	9·05737
October ...	25th	11 40 a.m.	1·0	51.0	13 10 36	9·05898
	,,	0 5 p.m.	1·3	51·2	5 57 5	9·05779
November	22nd	11 10 a.m.	1·0	47·9	13 9 38	9·05807
	,,	11 45 a.m.	1·3	48.5	5 58 2	9·05887
December	25th	11 40 a.m.	1·0	49·0	13 9 45	9·05830
	,,	0 15 p.m.	1·3	49·9	5 56 24	9·05699

m represents the Magnetic Moment of the Deflecting Magnet.
X represents the Earth's Horizontal Magnetic Intensity.

VIBRATION OBSERVATIONS FOR ABSOLUTE MEASURE OF HORIZONTAL FORCE.

Month.	G. M. T.		Temperature.	Time of one vibration.	Log m X	Value of m.
	D.	H. M.	°			
January...	15th	11 30 a.m.	45·9	5·74365	0·19735	0·42401
February.	20th	10 15 a.m.	52·3	5·74991	0·19638	0·42372
March ..	17th	11 45 a.m.	47·4	5·74526	0·19723	0·42403
April	22nd	10 13 a.m.	44·3	5·76138	0·19460	0·42295
May	20th	10 28 a.m.	53·2	5·75292	0·19551	0·42312
June	17th	10 11 a.m.	60·1	5·75981	0·19531	0·42310
July	19th	10 20 a.m.	60·4	5·75731	0·19580	0·42392
August ...	23rd	10 15 a.m.	60·0	5·75822	0·19510	0·42301
September	22nd	10 32 a.m.	48·9	5·75927	0·19519	0·42069
October...	25th	10 48 a.m.	54·8	5·75621	0·19487	0·42291
November	22nd	10 20 a.m.	40·6	5·75793	0·19456	0·42283
December	25th	10 42 a.m.	48·1	5·75937	0·19460	0·42260

DIP OBSERVATIONS.				MAGNETIC INTENSITY.		
Month.	G. M. T.	Needle.	Dip.	X- or Horizontal Force.	Y, or Vertical Force.	Total Force.
	D. H. M.		° ′ ″			
January .	22nd 10 25 a.m.	1	69 6 15	3·7116	9·7238	10·4059
	,, 10 50 a.m.	3	69 6 45			
February	18th 10 10 a.m.	1	69 5 29	3·7063	9·6972	10·3815
	,, 10 41 a.m.	3	69 4 30			
March ...	19th 11 5 a.m.	1	69 5 55	3·7104	9·7101	10·3953
	,, 11 35 a.m.	3	69 4 40			
April ...	23rd 10 59 a.m.	1	69 7 25	3·6982	9·6944	10·3831
	,, 11 36 a.m.	3	69 6 50			
May	25th 11 30 a.m.	1	69 3 45	3·7034	9·6923	10·3757
	,, 11 58 a.m.	3	69 6 57			
June	20th 10 50 a.m.	1	69 7 40	3·7025	9·7002	10·3832
	,, 11 25 a.m.	3	69 5 25			
July	22nd 11 1 a.m.	1	69 7 30	3·6929	9·6737	10·3549
	,, 11 45 a.m.	3	69 6 5			
August...	23rd 11 15 a.m.	1	69 4 10	3·6978	9·6888	10·3501
	,, 11 53 a.m.	3	69 3 50			
Sept. ...	20th 10 9 a.m.	1	69 5 20	3·6854	9·6581	10·3381
	,, 10 41 a.m.	3	69 8 15			
October..	25th 11 25 a.m.	1	69 4 9	3·7009	9·6882	10·3813
	,, 11 52 a.m.	3	69 7 2			
Nov.....	28th 10 58 a.m.	1	69 5 8	3·6966	9·6731	10·3557
	,, 11 21 a.m.	3	69 6 10			
Dec.....	19th 11 5 a.m.	1	69 4 20	3·7022	9·6880	10·3713
	,, 11 16 a.m.	3	69 5 59			
Means...	.....	...	69 5 5	3·7082		

DECLINATION OBSERVATIONS.

Month.	G. M. T,	Uncorrected. Observation	Uncorrected. Monthly Mean.	Corrected. Observation.	Corrected. Monthly Mean.
	D. H. M.	° ′ ″	° ′ ″	° ′ ″	° ′ ″
January ...	7th ..9 3 a.m.	19 25 10		19 27 17	
	14th...9 1 a.m.	22 25		25 18	
	21st...9 13 a.m.	23 11		25 10	
	28th...9 5 a.m.	21 19	19 22 31	24 9	19 25 28
February .	4th...9 10 a.m.	20 39		20 29	
	11th...9 8 a.m.	21 21		23 40	
	18th...9 7 a.m.	17 33		19 35	
	25th...9 6 a.m.	21 14	19 20 12	20 15	19 20 55
March ...	4th...9 21 a.m.	26 59		28 43	
	11th...9 16 a.m.	21 15		26 27	
	18th...9 1 a.m.	17 18		20 11	
	25th...9 6 a.m.	24 10	19 22 26	26 40	19 25 30
April	1st ...9 6 a.m.	26 28		27 15	
	8th...9 1 a.m.	20 37		22 11	
	15th...8 55 a.m.	18 59		21 9	
	22nd...9 10 a.m.	22 11		20 16	
	29th...8 51 a.m.	19 36	19 21 55	23 45	19 23 34
May	6th...9 15 a.m.	16 16		18 31	
	14th...9 2 a.m.	22 15		24 16	
	20th...9 3 a.m.	21 29		23 15	
	27th...9 5 a.m.	22 21	19 20 35	24 26	19 22 37
June	3rd...9 6 a.m.	21 26		22 48	
	10th...9 3 a.m.	23 38		24 29	
	18th...9 5 a.m.	18 56		20 19	
	24th...9 4 a.m.	20 59	19 21 45	23 16	19 22 43

DECLINATION OBSERVATIONS (*Continued*).

Month.	G. M. T.	Uncorrected. Observation.	Uncorrected. Monthly Mean.	Corrected. Observation.	Corrected. Monthly Mean.
	D. H. M.	° ′ ″	° ′ ″	° ′ ″	° ′ ″
July	1st ...9 0 a.m.	19 21 36		19 21 10	
	8th...9 5 a.m.	23 23		24 6	
	15th...9 9 a.m.	21 16		23 40	
	29th...9 7 a.m.	16 0	19 20 34	20 10	19 22 14
August ...	5th...9 3 a.m.	19 11		21 6	
	12th...8 59 a.m.	20 53		21 5	
	19th...9 2 a.m.	16 8		18 14	
	25th...9 6 a.m.	15 14	19 17 52	17 8	19 19 24
September	2nd...9 18 a.m.	19 10		21 4	
	9th...9 9 a.m.	21 38		20 15	
	16th...9 11 a.m.	19 50		21 13	
	25th...8 55 a.m.	18 45	19 19 51	20 18	19 20 38
October ...	1st ...8 53 a.m.	22 17		26 10	
	7th...9 6 a-m.	19 35		22 50	
	14th...9 5 a.m.	15 20		18 21	
	21st ...9 1 a.m.	21 58		21 59	
	28th...9 2 a.m.	19 20	19 19 42	20 15	19 21 55
November	4th...9 16 a.m.	21 35		24 28	
	11th...9 21 a.m.	19 21		19 36	
	18th...8 52 a.m.	26 30		25 5	
	25th...9 9 a.m.	18 25	19 22 28	19 20	19 22 7
December	2nd...9 1 a.m.	20 43		22 3	
	9th...9 5 a.m.	19 38		20 10	
	16th...9 0 a.m.	16 29		19 5	
	23rd...9 2 a.m.	23 40		23 40	
	30th...9 7 a.m.	25 23	19 21 2	24 10	19 21 55
Yearly mean			19 20 49		19 22 25

DATES OF MAGNETIC DISTURBANCES.

The disturbances are divided into three classes, *small*, *moderate*, and *greater*; and are indicated in the table by the initial letters of the classes. The days are reckoned, astronomically, from noon to noon.

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

PRESENTS RECEIVED.

Greenwich Observations, 1887 . .	*from*	The Royal Observatory.
Spectroscopic Results for the Motions of Stars, in the line of Sight, No. 12 . .	,,	,,
Spectroscopic Observations of Stars and Comets, made at the Royal Observatory in 1887 and 1888	,,	,,
Report of the Astronomer Royal to the Board of Visitors 1889	,,	,,
Mean Areas and Heliographic Latitudes of Sun-Spots, 1884–1888	,,	,,
Daily Weather Report, 1889 . . .	Meteorological Office.	
Weekly Weather Report, 1889 . . .	,,	,,
Monthly Weather Report, 1889 . .	,,	,,
Report of the Meteorological Council of the Royal Society, 1888	,,	,,
Hourly Readings, 1885	,,	,,
Report of the Fourth Meeting of the International Meteorological Committee, Zurich, 1888	,,	,,
Quarterly Weather Report, Part. 4, 1879 .	,,	,,
Summary of the Observations made at the Stations included in the Daily and Weekly Weather Reports	,,	,,
Code of Regulations for First Class Observatories, 1889	,,	,,
Meteorological Observations at Stations of the Second order, 1885	,,	,,
Hourly Readings, 1886	,,	,,
Proceedings of the Royal Society . .	Royal Society.	
Monthly Notices of the Royal Astronomical Society	Royal Astr. Soc.	
Journal of the Liverpool Astr. Society .	Liverpool Astr. Soc.	
Meteorological Record	Royal Met. Society.	
Quarterly Returns of the Registrar General	Registrar General.	
Report of the British Association . .	British Association.	
Report of the Kew Committee of the Royal Society	The Observatory.	
Appendix to the Bakerian Lecture, by J. Norman Lockyer	Solar Physics' Committee.	

On the Spectra of Meteor Swarms, by J. Norman Lockyer	Solar Physics' Committee.
Note on the Spectrum of the Rings of Saturn, by J. N. Lockyer	,, ,,
Radcliffe Observations, 1885	Radcliffe Trustees.
Astronomical Observations made at the University Observatory, Oxford, No. 3	The Observatory.
British Journal of Photography	The Editor.
Journal of the Scottish Meteorological Society	Scottish Met. Society.
Journal of the Society of Arts	Society of Arts.
Observations of Jupiter with the 3 ft. Reflector by O. Boeddicker	Lord Rosse.
Ephemeris for Physical Observations of the Moon, by A. Marth	The Author.
Ephemides of the Satellites of Jupiter, by A. Marth	,,
On the Close Conjunction of Mars and Saturn by A. Marth	,,
On the Eclipse of Japetus by Saturn and its Ring System by A. Marth	,,
Report of the Instruments of the Royal Astronomical Society, by T. F. Tennant	,,
A Table of the Positions of Observatories, with constants useful in correcting extra-meridian observations, by T. F. Tennant	,,
Address of Sir G. G. Stokes, Pres. R.S., 1888	,,
Solar Spectrum Photographs, by G. Higgs.	,,
Blackburn Corporation Water Works: Rainfall Tables	S. B. McCullum.
Meteorology of Bradford for 1888, by T. McLandsborough and A. E. Preston	The Authors.
Rousdon Observatory Report. C.E. Peek	The Author.
Ephemiris for Physical Observations of Jupiter, by A Marth	,,
Report of the Wind Force Committee, by G. M. Whipple and W. Dines	The Authors.
The Orbit of the Planet Sappho (80) by R. Bryant	The Author.
Return of Rainfall in the Glasgow Waterworks District. Bateman	,,
The Eclipses of Jupiter's Satellites, by A. Downing	,,
Earthquakes, by W. Roper	,,
Crowborough Observatory; Summary of the Meteorological Journal of C. L. Prince	,,
Diurnal Variation of Terrestrial Magnetism, by A. Schuster and H. Lamb	The Authors.
Address of Mr. Stanley on England and the Congo, and Manchester Trade	Royal Geographical Soc.
Map Drawing and the Teaching of Geography, by T. Cardwell	,, ,,

The Exhibition of Geographical Educational Appliances, 1886	Royal Geographical Soc.
The Relations between Commercial History and Geography, by T. Yeats . . .	,, ,,
Catalogue of Exhibition of Appliances used in Geographical Education	,, ,,
On the Belts and Markings of Jupiter, by N. E. Green	The Author.
On the Wave Length of the Principal Line in the Spectrum of the Aurora, by Dr. Huggins	,,
On the Spectrum, Visible and Photographic, of the Great Nebulæ of Orion, by Dr. and Mrs. Huggins	The Authors.
On the Wave Length of the Chief Fluting in the Spectrum of Manganese, by J. Norman Lockyer	The Author.
G. V. Juggarow Observatory, Results of Meteorological Observations, 1888, by V. Nursing Row	,,
Catalogue of the Collection of Meteorites, by J. R. Gregory	,,
N. E. Sanitary Inspection Association Report, 1888–9	The Association.
Monthly Weather Review, U.S.A. . .	U. S. War Department
Summary and Review of International Meteorological Observations . . .	,, ,,
Report of the Chief Signal Officer, War Department, U.S.	,, ,,
Pilot Charts of the North Atlantic Ocean, Hydrographic Office	U. S. Naval Department.
Report of the Superintendent of the U.S. Naval Observatory	,, ,,
Report of Proceeding of the U.S. Expedition to Lady Franklin Bay, Grinnell Land, by Greely	,, ,,
Report of the Superintendent of the U.S. Nautical Almanac	U.S. Naut. Alm. Office.
Annual Report of the Director of the Astronomical Observatory of Harvard College, by E. C. Pickering . . .	The Observatory.
Astronomical Economy of Radiation, by A. Searle	,,
New York Meteorological Observatory, Central Park, Abstract of Registers .	,,
Commemoration of the 50th Anniversary of of the Hopkins Observatory, 1888. .	,,
The Williams Cole Catalogue of North Polar Stars, by T. R. Safford, 1885-0 .	,,
A Photographic Determination of the Brightness of the Stars, Annals of Harvard College Observatory	,,

Henry Draper Memorial, Third Annual Report	The Observatory.
Annals of the Astronomical Observations of Harvard College Observatory, vol. xx. p. 1: Blue Hill Observatory, 1887–8	,,
Annals of the Astronomical Observations of Harvard College Observatory, vol. xviii. p. 8: Index to Observations of Variable Stars	,,
Haverford College Observatory, Micrometrical Measurements of Double Stars, &c.	,,
Observatory of Yale University, Report for the year 1888–9	,,
Meteorological Observations at Harvard College Observatory, 1840–1888	,,
Report of the Observations of the Total Eclipse of the Sun, January 1, 1889, taken at the Lick Observatory	,,
Report of the Ohio Meteorological Bureau, 1888–9	The Bureau.
United States Geological Survey, Massachusetts Sheet	Dept. of the Interior.
International Polar Expedition, Lady Franklin Bay, Greely	Meteorological Office.
The Tail of the Earth, by W. Danmar	The Author.
Smithsonian Report, 1886, p. 1	Smithsonian Institution.
General Astronomy, by C. A. Young	The Author.
Monthly Weather Review, Toronto Observatory, Canada	The Observatory.
Monthly Record, Melbourne Observatory, Victoria, 1888, 1889, 1, 2	,,
Indian Meteorological Memoirs, by H. F. Blandford, vol. iii., p. 3, 4; vol. iv., p. 5, 6	Met. Office, India.
Report on the administration of the Meteorological Department of the Government of India in 1887-8	,, ,,
Weather Charts of the Arabian Sea, &c.	,, ,,
Eskimo of Hudson's Strait, by F. F. Payne, Toronto Observatory	The Observatory.
Note on Modern Concretions from the St. Lawrence, by Kavanagh, S.J.	The Author.
Brief Sketch of the Meteorology of the Bombay Presidency in 1887–88	Met. Office Bombay.
Observations made at the Meteorological and Magnetic Observatory at Batavia, 1883, 4, 5, and 7	The Observatory.
Twenty-third Report of the Board of Visitors to the Observatory, Melbourne	,,
Report of the Meteorology of India in 1887, by J. Eliot	Met. Office, India.

Observations made at the Hong Kong Observatory, 1888,	The Observatory.
Meteorological Observations recorded at seven stations in India, 1888	Met. Office, India.
Magnetical and Meteorological observations made at the Government Observatory, Bombay	The Observatory.
Toronto Government Meteorological Register, 1888	,,
Ephemeris of Stars in the Vertical of Polaris, by T. L. Blake, 1889	The Author.
Magnetic Disturbances, G. T. Carruthers	,,
Report of Mr. Tebbutt's Observatory, Windsor, New South Wales	The Observatory.
Bulletin Mensuel de l'Observatoire de Zi-ka-wei, China	L'Observatoire.
Sur l'origine des étoiles filantes, par Th. Bredichin	L'Auteur.
Physique Solaire, par E. Spée, 1887	,,
Nouvelles recherches sur l'origine optique dis raiss Spectrales, par Ch. Fievez	,,
Sur la grande comète de 1887, I. par Th. Bredichin	,,
Bulletin de la Soc. Astr. de France, 1887	La Société.
Etoiles filantes et Météorites, par J. Carbonnelle	L'Auteur.
Physique, par J. Delsaulx	,,
Annuaire de la Société Météorologique de France, 1889	La Société.
Etudes sur l'aspect physique de la Planète Jupiter, II. partie, par F. Terby	L'Auteur.
Description de Service Horaire de la Ville de Lyon, par Ch. André	L'Observatoire.
Notice sur les trauvaux de M. Hevoi Mangon, par M. Th. Schloesing	L'Auteur.
Sur l'origine des Comites periodiques, par Th. Bredichin	,,
Bulletin du Comité international permanent pour l'exécution photographique de la carte du ciel, 1889, III., IV.	L'Comité.
Annales de la Société Scientifique de Bruxelles, 1888	La Société.
Rapport Annuel sur l'etat de l'Observatoire de Paris, 1888	L'Observatoire.
Bulletin Mensuel de l'Observatoire Météorologique de l'Université d'Upsal, 1888	,,
Annuaire de l'Observatoire de Montsouris, 1889	,,
Reconnaissances Magnétiques, par A. d'Abbadie	L'Auteur.
Obs. de l'eclipse de la lune à Méran la January 28, 1888, par C. V. Zenger	,,

La durée de rotation du Soleil comparée á celle des Planètes	L'Auteur.
Les orages des 17 et 19 Mai 1889 in Bohême	,,
L'ouragan du 7 au 9 Février, 1889, á Prague	,,
Exploration du Ciel Théocentrique, par P. F. P. Delastre	,,
Physique, par J. Delsaulx	,,
Annales de l'Obs. Astr. de Tōkyō, tome 1, fase. 1	L'Observatoire.
Société Astr. de France, 1889	Société Astronomique.
Notes bibliographiques sur les habitations ouvrieres, par F. Nizst.	L'Auteur.
Astronomie, par Thirion	,,
Météorologie Lyonnaise, par C. André .	,,
Description du Service Horaire de la ville de Lyon, par C. André . . .	,,
Influence de l'Altitude sur la Température, par C. André	,,
Travaux de l'Obs. de Lyon, par C. André	,,
Elements Magnétiques á Lyon, C. André	,,
Sur le Ligament lumineux des passages et occultations des satellites de Jupiter, par C. André	,,
Ensemble des Obs. physiques de la Planète Jupiter, par F. Terby	,,
Le Galilée	L'Éditeur.
Instrucktion für dé Krobachter au den Meteorologischen stationen, 2, 3, und 4 ordrung. K. Preuss. Met. Institut. .	Das. Institut.
A Nap Protuberanciái, 1886, ban: Hayrald Obs., J. Féngi	Das Observatorium.
Monographie der Sternhaufen G.C. 4460 und G.C. 1440, Bruno Peter . . .	Leipzig Sternw.
Monats und Jahresrésumés der Beobachtungen der Met. Stationen in Russland, 1887	Central-Observatorium.
Astronomische Mittheilungen, von Dr. R. Wolf	Das Observatorium.
Annalen des Physikalischen Central Observatoriums, 1887, theil II., von H. Wild	,, ,,
Normaler Gang und Störungen der erdmagnetischen Declination, von H. Wild .	,, ,,
Die Venus-Durchgäuge von 1874 und 1882, band II	Die Commission.
Die Sonnenrotation und die Planetenbewegungen, von K. W. Zenger	Der Verfasser.
Die periodischen Wetterstürze des Erdenjahres, von K. W. Zenger . . .	,,
Ergebnisse der Met. Beob., 1887, von des Königlich Preuss. Met. Institut durch W. von Bezold	Das Observatorium.
Ergebnisse der Met. Beob. 1889, von des Königlich Preuss. Met. Institut durch W. von Bezold	,, ,,

Publicationen des Astr. Obs. zu Potsdam, 4 band, 2 thiel	Das Observatorium.
Jahrbücher der K. K. Central-Austalt für Met. und Erdmagn.	,, ,,
Regenwaarnemingen in Nederlandsh- Indië 1887, door Van der Stok.	,, ,,
Bollettino Mensuale dell'osservatorio Centrale del R. Coll. Carlo Alberto in Moncalieri, vol. 9, m. 6	Osservatorio.
Pontificia Università Gregoriana. Bullettino Met. dell' oss. del. Coll. Rom. . .	,,
Accademia Pontificia de' Nuovi Lincei anno 42 sessione 1a.	Accademia Pontificia.
Atti dell' Accademia Pontificia de' Nuovi Lincei, anno 39	,, ,,
Atti dell' Accademia Pontificia de' Nuovi Lincei.	,, ,,
La Photographia Celeste, dal G. S. Ferrari	Autore. .
Relazione intorno all' Exclissi totale del Sole, pel G. S. Ferrari	,,
Anales del Instituto y Observatorio de Marina de San Fernando, por Don C. Pujazon, 1886, Sec. 2, Obs. Meteorológicas	Observatorio.
Boletin Mensual, Obs. Astr. Nacional de Tacubaya	,,
Observaciones Mag. y Met. del R. Col. de Belen, Habana, 1886, 1887 I. . .	,,
Memorias de la Sociedad Cientifica "Antonio Alzate," Mexico, 1888-89	La Sociedad.
Obs. Meteorologicas del Colegio de San Juan Nepomuceno, Santillo, Coahnila, Mexico, 1888	Observatorio.
Obs. Met. del Colegio del Estado de Puebla, 1889	,,
Resúmen de 11 años de Observaciones Meteorologicas su el Colegio del Estado de Puebla, por B. G. Gongalz . . .	,,
Obs. Met. de Mainda, Curvas Meteorográficas, 1884, 1885, 1886	,,
Annuario del Obs. de la Plata, para 1889 .	,,
Almanaque Náutico, para 1891, San Fernando	,,
Boletin Mensual, Obs. Met. Magn. Central de Mexico, 1888	,,
Obs. internationales polaires. Expedition Danoise à Godthaal, tome 2 . . .	Met. Office.

APPENDIX.

RESULTS

OF

Meteorological Observations

TAKEN AT

ST. IGNATIUS' COLLEGE,

MALTA,

BY THE

REV. J. SCOLES, S.J.

1889.

ST. IGNATIUS' COLLEGE.

MALTA.

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

METEOROLOGICAL REPORT.

1889.

January.

Results of Observations taken during the Month.		Mean for the last 5 years.
Mean Reading of Barometer.....inches	29·981	30·051
Highest ,, ,, on the 29th ,,	30·453	30·415
Lowest ,, ,, ,, 21st ,,	29·470	29·538
Range of Barometer Readings..... ,,	0·983	0·877
Highest Reading of Max. Therm. on the 21st.....	66·0	63·9
Lowest ,, Min. Therm. ,, 30th ...	41·1	41·6
Range of Thermometer Readings	24·9	22·3
Greatest Range in 24 hours on the 6th	17·9	18·4
Mean of all the Highest Readings.....	60·0	58·4
Mean of all the Lowest Readings	49·2	47·8
Mean Daily Range	10·8	10·6
Mean Temperature (deduced from Max. and Min.)	53·9	52·5
Mean Temperature (deduced from Dry Bulb.).....	53·7	52·1
Adopted Mean Temperature	53·8	52·3
Mean Temperature of Evaporation	49·7	48·1
Mean Temperature of Dew-point	47·0	44·9
Mean elastic force of Vapour .....inches	0·323	0·298
Mean weight of Vapour in a cubic foot of air...grains	3.7	3·4
Mean additional weight required for saturation ,,	0·8	0·9
Mean degree of Humidity	82	80
Mean weight of a cubic foot of air .....grains	540·2	542·9
Fall of Rain..... .....inches	7·823	3·329
Number of days on which Rain fell	24	12
Mean amount of Cloud (an overcast sky=10)	6·0	4·6
Total number of miles of Wind indicated	7971	8336
Mean Velocity of Wind per hour .....miles	10·7	11·2

February.

Results of Observations taken during the Month.		Mean for the last 5 years.
Mean Reading of Barometer.....inches	29·895	30·064
Highest ,, ,, on the 19th ,,	30·356	30·334
Lowest ,, ,, ,, 27th ,,	29·545	29·690
Range of Barometer Readings	0·811	0·644
Highest Reading of Max. Therm. on the 27th ...	72·5	67·0
Lowest Reading of Min. Therm. ,, 14th.....	41·0	42·0
Range of Thermometer Readings	31·5	25·0
Greatest Range in 24 hours on the 26th	25·1	18·8
Mean of all the Highest Readings	60·2	60·7
Mean of all the Lowest Readings	50·0	49·0
Mean Daily Range	10·2	11·7
Mean Temperature (deduced from Max. and Min.)	54·0	53·9
Mean Temperature (deduced from Dry Bulb.).....	54·8	54·0
Adopted Mean Temperature	54·4	54·0
Mean Temperature of Evaporation	49·3	50·0
Mean Temperature of Dew-point	45·5	47·3
Mean elastic force of Vapour .....inches	0·305	0·327
Mean weight of Vapour in a cubic foot of air...grains	3·5	3·7
Mean additional weight required for saturation ,,	1·1	0·8
Mean degree of Humidity	75	83
Mean weight of a cubic foot of air .....grains	537·8	541·1
Fall of Rain.....inches	1·603	1·483
Number of days on which Rain fell	12	9
Mean amount of Cloud (an overcast sky = 10).....	5·7	4·0
Total number of miles of Wind indicated	10394	6893
Mean Velocity of Wind per hour .....miles	15.5	10·1

March.

Results of Observations taken during the Month.		Mean for the last 5 years.
Mean Reading of Barometer.....inches	29·948	30·008
Highest ,, ,, on the 18th ,,	30·273	30·404
Lowest ,, ,, ,, 14th ,,	29·504	29·513
Range of Barometer Readings.....,,	0·769	0·891
Highest Reading of Max. Therm. on the 21st.....	78·2	74·6
Lowest Reading of Min. Therm. ,, 17th ...	40·8	44·2
Range of Thermometer Readings	37·4	30·4
Greatest Range in 24 hours on the 21st	20·7	23·4
Mean of all the Highest Readings	61·7	63·6
Mean of all the Lowest Readings	50·1	51·2
Mean Daily Range	11·6	12·4
Mean Temperature (deduced from Max. and Min.)	55·2	56·6
Mean Temperature (deduced from Dry Bulb)	54·4	56·0
Adopted Mean Temperature	54·8	56·3
Mean Temperature of Evaporation.....	50·5	52·5
Mean Temperature of Dew-point	47·0	49·4
Mean elastic force of Vapour .....inches	0·322	0·354
Mean weight of Vapour in a cubic foot of air...grains	3·6	4·0
Mean additional weight required for saturation ,,	1·1	1·0
Mean degree of Humidity	77	79
Mean weight of a cubic foot of air .....grains	537·6	536·7
Fall of Rain..... .....inches	2·712	0·692
Number of days on which Rain fell	12	6
Mean amount of Cloud (an overcast sky=10)	5·4	4·2
Total number of miles of Wind indicated	10405	7886
Mean Velocity of Wind per hour .....miles	14·3	10·6

April.

Results of Observations taken during the Month.		Mean for the last 5 years.
Mean Reading of Barometer.....inches	29·948	29·930
Highest ,, ,, on the 20th ,,	30·397	30·246
Lowest ,, ,, ,, 12th ,,	29·567	29·460
Range of Barometer Readings.....	0·830	0·786
Highest Reading of Max. Therm on the 24th.....	79·4	75·1
Lowest ,, Min. Therm. ,, 1st	45·7	47·9
Range of Thermometer Readings	33·7	27·2
Greatest Range in 24 hours on the 5th	21·6	20·9
Mean of all the Highest Readings.....	66·3	67·5
Mean of all the Lowest Readings	52·8	54·2
Mean Daily Range	13·5	13·3
Mean Temperature (deduced from Max. and Min.)	58·6	59·8
Mean Temperature (deduced from Dry Bulb)	58·2	59·8
Adopted Mean Temperature	58·4	59·8
Mean Temperature of Evaporation	54·3	55·9
Mean Temperature of Dew-point	50·8	52·3
Mean elastic force of Vapour .....inches	0·371	0·393
Mean weight of Vapour in a cubic foot of air...grains	4·2	4·4
Mean additional weight required for saturation ,,	1·3	1·4
Mean degree of Humidity	77	77
Mean weight of a cubic foot of air .....grains	533·2	530·6
Fall of Rain.....inches	0·420	0·606
Number of days on which Rain fell	2	5
Mean amount of Cloud (an overcast sky = 10)	3·8	4·0
Total number of miles of Wind indicated	9495	7869
Mean Velocity of Wind per hour .....miles	13·2	10·9

May.

Results of Observations taken during the Month.		Mean for the last 5 years.
Mean Reading of Barometer.....inches	29·879	30·033
Highest ,, ,, on the 1st ,,	30·085	30·197
Lowest ,, ,, ,, 26th ,,	29·550	29·651
Range of Barometer Readings..... ,,	0·435	0·546
Highest Reading of Max. Therm. on the 26th.....	85.4	84·0
Lowest ,, Min. Therm. ,, 5th & 13th	54·2	51·1
Range of Thermometer Readings	31·2	32·9
Greatest Range in 24 hours on the 26th.....	21·1	25·2
Mean of all the Highest Readings	71·7	73·3
Mean of all the Lowest Readings	59·0	58·3
Mean Daily Range	12·7	15·0
Mean Temperature (deduced from Max. and Min.)...	64·3	64·4
Mean Temperature (deduced from Dry Bulb)	62·9	64·5
Adopted Mean Temperature	63·6	64·5
Mean Temperature of Evaporation	59·8	60·3
Mean Temperature of Dew-point	56·7	56·3
Mean elastic force of Vapour ..... inches	0·461	0·456
Mean weight of Vapour in a cubit foot of air...grains	5·1	4·9
Mean additional weight required for saturation ,,	1·4	1·9
Mean degree of Humidity	79	73
Mean weight of a cubit foot of air ..... grains	525·9	527·2
Fall of Rain..... .....inches	0·580	0·273
Number of days on which Rain fell	4	3
Mean amount of Cloud (an overcast sky = 10)	4·2	2·8
Total number of miles of Wind indicated.....	8280	6996
Mean Velocity of Wind per hour ..... miles	11·1	9·4

June.

Results of Observations taken during the Month.		Mean for the last 5 years.
Mean Reading of Barometer.....inches	29·986	29·998
Highest ,, ,, on the 15th ,,	30·150	30·179
Lowest ,, ,, ,, 5th ,,	29·814	29·799
Range of Barometer Readings..... ,,	0·336	0·380
Highest Reading of Max. Therm. on the 26th.....	99·0	88·2
Lowest Reading of Min. Therm. ,, 1st	58·2	59·3
Range of Thermometer Readings	40·8	28·9
Greatest Range in 24 hours on the 26th	25·7	23·2
Mean of all the Highest Readings	81·4	79·2
Mean of all the Lowest Readings	65·4	64·4
Mean Daily Range	16·0	14·8
Mean Temperature (deduced from Max. and Min.)	72·7	71·1
Mean Temperature (deduced from Dry Bulb)	70·9	70·6
Adopted Mean Temperature	71·8	70·9
Mean Temperature of Evaporation	66·1	65·6
Mean Temperature of Dew-point	62·2	61·6
Mean elastic force of Vapour ..... inches	0.560	0·548
Mean weight of Vapour in a cubic foot of air...grains	6·1	5·9
Mean additional weight required for saturation ,,	2·3	2·3
Mean degree of Humidity	72	72
Mean weight of a cubic foot of air ..... grains	519·3	520·0
Fall of Rain ..... inches	——	0·140
Number of days on which Rain fell	——	2
Mean amount of Cloud (an overcast sky=10)	1·5	2.2
Total number of miles of Wind indicated	6495	6549
Mean Velocity of Wind per hour .....miles	9·0	9·1

July.

Results of Observations taken during the Month.		Mean for the last 5 years.
Mean Reading of Barometer ..... inches	30·010	30·025
Highest ,, ,, on the 31st ,,	30·175	30·177
Lowest ,, ,, on the 27th ,,	29·760	29·876
Range of Barometer Readings	0·415	0·301
Highest Reading of Max. Therm. on the 20th ...	104·1	96·1
Lowest ,, ,, Min. Therm. on the 4th ...	63·3	64·9
Range of Barometer Readings	40·8	31·2
Greatest Range in 24 hours on the 20th	28·9	25·8
Mean of all the Highest Readings	86·7	86·5
Mean of all the Lowest Readings	69·6	69.6
Mean Daily Range	17·1	16·9
Mean Temperature (deduced from Max. and Min.)	77·6	77·5
Mean Temperature (deduced from Dry Bulb)	76·2	77·0
Adopted Mean Temperature	76·9	77·3
Mean Temperature of Evaporation	69·8	70·3
Mean Temperature of Dew-point	64·9	65·4
Mean Elastic force of Vapour .....inches	0·615	0·627
Mean Weight of Vapour in a cubic foot of air, grains	6·7	6·7
Mean additional weight required for saturation ,,	3·3	3·4
Mean degree of Humidity	67	67
Mean Weight of a cubic foot of air .....grains	513·9	514·1
Fall of Rain..... .....inches	——	——
Number of days on which Rain fell	——	——
Mean amount of Cloud (an overcast sky = 10) ...	0·9	0·5
Total number of miles of Wind indicated.....	5705	5212
Mean Velocity of Wind per hour..... miles	7·7	7·0

August.

Results of observations taken during the Month.		Mean for the last 5 years.
Mean Reading of Barometer.....inches	30·050	29·994
Highest ,, ,, on the 1st ,,	30·166	30·142
Lowest ,, ,, on the 11th ,,	29·879	29·862
Range of Barometer Readings ..... ,,	0·287	0·280
Highest Reading of Max. Therm. on the 10th.....	100·0	95·5
Lowest ,, ,, Min. Therm. on the 30th.....	64·2	66·7
Range of Thermometer Readings	35·8	28·8
Greatest Range in 24 hours on the 9th	28·9	25·1
Mean of all the Highest Readings	88·0	87·1
Mean of all the Lowest Readings	69·9	71·7
Mean Daily Range	18·1	15·4
Mean Temperature (deduced from Max. and Min.)	78·2	78·5
Mean Temperature (deduced from Dry Bulb)	77·5	78·8
Adopted Mean Temperature	77·9	78·7
Mean Temperature of Evaporation	70·2	71·8
Mean Temperature of Dew-point	64·9	67·0
Mean Elastic force of Vapour .....inches	0·615	0·662
Mean Weight of Vapour in a cubic foot of air, grains	6·6	7·1
Mean additional weight required for saturation ,,	3·6	3·5
Mean degree of Humidity	65	68
Mean Weight of a cubic foot of air.....grains	513·7	511·7
Fall of Rain.....inches	——	0·192
Number of days on which Rain fell	——	1
Mean amount of Cloud (an overcast sky = 10)	0·3	1·3
Total number of miles of Wind indicated	5169	5631
Mean Velocity of Wind per hour .....miles	6·9	7·6

September.

Results of observations taken during the Month.		Mean for the last 5 years.
Mean Reading of Barometer.....inches	29·993	30·052
Highest ,, ,, on the 1st ,,	30·158	30·248
Lowest ,, ,, on the 29th ,,	29·669	29·825
Range of Barometer Readings..... ,,	0·489	0·423
Highest Reading of Max. Therm. on the 3rd.....	93·3	92·3
Lowest ,, ,, Min. Therm. on the 21st.....	61·7	63·7
Range of Thermometer Readings	31·6	28·6
Greatest Range in 24 hours on the 3rd	25·1	22·7
Mean of all the Highest Readings	83·5	82·9
Mean of all the Lowest Readings	67·6	68·8
Mean Daily Range	16·9	14·1
Mean Temperature (deduced from Max. and Min.)	74·6	75·1
Mean Temperature (deduced from Dry Bulb)	73·9	75·3
Adopted Mean Temperature	74·3	75·2
Mean Temperature of Evaporation.....	69·3	69·2
Mean Temperature of Dew-point	65·8	64·8
Mean Elastic force of Vapour .....inches	0·635	0·615
Mean Weight of Vapour in a cubic foot of air grains	6·9	6·7
Mean additional weight required for saturation ,,	2·2	2·8
Mean degree of Humidity	76	70
Mean Weight of a cubic foot of air..... grains	516·2	516·3
Fall of Rain.....inches	2·211	1·134
Number of days on which Rain fell	6	5
Mean amount of Cloud (an overcast sky=10)	2·7	2·3
Total number of miles of Wind indicated	4229	6001
Mean Velocity of Wind per hour ..... miles	5·9	8·3

October.

Result of Observations taken during the Month.		Mean for the last 5 years.
Mean Reading of Barometer .....inches	30·041	30·048
Highest ,, ,, on the 30th ,,	30·275	30·292
Lowest ,, ,, on the 6th ,,	29·781	29·700
Range of Barometer Readings ..... ,,	0·494	0·592
Highest Reading of Max. Therm. on the 26th ...	84·8	87·8
Lowest ,, ,, Min. Therm. on the 17th	58·0	55·8
Range of Thermometer Readings	26·8	32·0
Greatest Range in 24 hours on the 3rd.....	20·7	19·5
Mean of all the Highest Readings	78·6	75·5
Mean of all the Lowest Readings.....	66·3	64·1
Mean Daily Range	12·3	11·4
Mean Temperature (deduced from Max. and Min.)	71·5	68·9
Mean Temperature (deduced from Dry Bulb)	70·5	68·4
Adopted Mean Temperature	71·0	68·7
Mean Temperature of Evaporation	66·4	63·8
Mean Temperature of Dew-point	63·3	60·1
Mean Elastic force of Vapour ... .inches	0·582	0·521
Mean Weight of Vapour in a cubic foot of air ..grains	6·4	5·7
Mean additional weight required for saturation ,,	1·7	1·9
Mean degree of Humidity	78	76
Mean Weight of a cubic foot of air.....grains	520·9	523·5
Fall of Rain .....inches	0·646	3·323
Number of days on which Rain fell	3	8
Mean amount of Cloud (an overcast sky = 10).....	3·8	4·4
Total number of miles of Wind indicated.....	6826	6843
Mean Velocity of Wind per hour .....miles	9·2	9·2

November.

Results of observations taken during the Month.		Mean for the last 5 years.
Mean Reading of Barometer .....inches	30·249	30·052
Highest ,, ,, on the 17th..... ,,	30·596	30·276
Lowest ,, ,, on the 28th..... ,,	29·922	29·675
Range of Barometer Readings ..... ,,	0·674	0·601
Highest Reading of Max. Therm. on the 1st	79·9	74·6
Lowest ,, ,, Min. Therm. on the 25th ...	49·3	49·8
Range of Thermometer Readings	30·6	24·8
Greatest Range in 24 hours on the 16th	19·1	17·9
Mean of all the Highest Readings	66·6	67·8
Mean of all the Lowest Readings.....	54·5	57·0
Mean Daily Range	12·1	10·8
Mean Temperature (deduced from Max. and Min.)	62.4	61·5
Mean Temperature (deduced from Dry Bulb)	61·0	61·0
Adopted Mean Temperature	61·7	61·3
Mean Temperature of Evaporation	55·7	57·0
Mean Temperature of Dew-point	51·8	53·9
Mean Elastic force of Vapour ..... inches	0·385	0·416
Mean Weight of Vapour in a cubic foot of air, grains	4·3	4·7
Mean additional weight required for saturation ,,	1·6	1·3
Mean degree of Humidity.....	74	79
Mean Weight of a cubic foot of air.....grains	536·2	532·1
Fall of Rain .....inches	1·097	4·130
Number of days on which Rain fell.....	8	11
Mean amount of Cloud (an overcast sky = 10)	4·1	4·9
Total number of miles of Wind indicated	6610	6786
Mean Velocity of Wind per hour.....miles	9·2	9·4

December.

Results of observations taken during the Month.		Mean for the last 5 years.
Mean Reading of Barometer .....inches	30·174	30·054
Highest ,, ,, on the 29th... ,,	30·424	30·383
Lowest ,, ,, on the 12th... ,,	29·570	29·572
Range of Barometer Readings ..... ,,	0·854	0·811
Highest Reading of Max. Therm. on the 5th	67·5	67·9
Lowest ,, ,, Min. Therm. on the 4th	42·9	43·7
Range of Thermometer Readings.....	24·6	24·2
Greatest Range in 24 hours on the 4th	19·6	17·0
Mean of all the Highest Readings	60·8	61·6
Mean of all the Lowest Readings.....	50·0	51·8
Mean Daily Range	10·8	9·8
Mean Temperature (deduced from Max. and Min.)	54·7	56·1
Mean Temperature (deduced from Dry Bulb)	54·7	55·4
Adopted Mean Temperature.....	54·7	55·7
Mean Temperature of Evaporation	50·6	51·6
Mean Temperature of Dew-point.....	47·4	48·4
Mean Elastic force of Vapour.....inches	0·328	0·341
Mean Weight of Vapour in a cubic foot of air, grains	3·7	3·8
Mean additional weight required for saturation ,,	1·0	1·0
Mean degree of Humidity	78	79
Mean Weight of a cubic foot of air.....grains	542·8	539·1
Fall of Rain ....inches	8·952	3·264
Number of days on which Rain fell	18	13
Mean amount of Cloud (an overcast sky = 10)	5·4	5·0
Total number of miles of Wind indicated	7600	8608
Mean Velocity of Wind per hour..... miles	10·2	11·6

Summary of Observations

FOR 1889.

Results of observations taken during the Month.		Mean for the last 5 years.
Mean Reading of Barometer ..... inches	30·013	30·031
Highest ,, ,, on the 17th Nov. ,,	30·596	30·520
Lowest ,, ,, on the 21st Jan. ,,	29·470	29·363
Range of Barometer Readings ..... ,,	1·126	1·157
Highest Reading of Max. Therm. on the 20th July	104·1	98·0
Lowest ,, ,, Min. Therm. on the 17th Mar.	40·8	41·1
Range of Thermometer Readings.....	63·3	56·9
Greatest Range in 24 hours on the 20th July	28·9	27·6
Mean of all the Highest Readings	72·1	72·4
Mean of all the Lowest Readings.....	58·7	59·2
Mean Daily Range	13·4	13·2
Mean Temperature (deduced from Max. and Min.)	64·8	64·9
Mean Temperature (deduced from Dry Bulb.)	64·0	64·6
Adopted Mean Temperature	64·4	64·8
Mean Temperature of Evaporation	59·3	59·8
Mean Temperature of Dew-point.....	55·6	56·1
Mean Elastic force of Vapour.....inches	0·443	0·451
Mean Weight of Vapour in a cubic foot of air, grains	5·1	5·1
Mean additional weight required for saturation ,,	1·8	1·8
Mean degree of Humidity.....	75	75
Mean Weight of a cubic foot of air .....grains	528·1	527·8
Fall of Rain ....inches	26·044	17·620
Number of days on which Rain fell.....	89	72
Mean amount of Cloud (an overcast sky=10)	3·7	3·4
Total number of miles of Wind indicated	89179	83144
Mean Velocity of Wind per hour .....miles	10.2	9·5

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 Jannary, 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 the 26th January, 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 the 20th July, 1889, and was		104·1
The lowest ,, ,, 12th March, 1886,	,,	40·2
The highest mean temperature of a month was in August, 1885, and was		83.2
The lowest ,, ,, January, 1887, and was		51·6
The greatest monthly mean weight of vapour in a cubic foot of air was in August, 1885, and was	grains	7·9
The least ,, ,, January, 1884, and was	,,	3·3
The highest observed Dew-point was on the 30th August, 1885, and was		78·7
The lowest ,, ,, 14th December, 1883, and was		29·8
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 15th January, 1885, and was		33·8
The highest observed sea temperature was on the 5th August, 1887, and was		85·0
The lowest ,, ,, ,, on 17th Feb., 1889, and was		57·0

NOTES FOR THE SEPARATE MONTHS.

JANUARY.

THE Dew-point ranged between 56·0° on the 21st and 36·4° on the 29th.

In Sunshine, the highest reading was 113·5° on the 14th.

On Ground, the lowest reading was 34·9° on the 5th.

The Sea has fallen from 62·5 to 60·0.

Thunderstorms passed on the 5th, 7th, 10th, 15th, and 21st.

Lightning was seen on the 1st.

Hail fell on the 5th, 11th, 21st, and 28th.

Total Rainfall since last June 14·998 inches;
the average of 5 years, 15·362 inches.

Temperatures have been in general above the average and the mean pressure below it. The number of days with rain is double the average number, the rainfall is more than double the average amount.

FEBRUARY.

The Dew-point ranged between 34·5° on the 17th and 54·8° on the 20th.

In Sunshine, the highest reading was 117·7° on the 11th.

On Ground, the lowest reading was 39·0° on the 4th.

The Sea fell from 60·0° to 57·9°

Hail fell on the 14th, 16th, and 23rd.

Total Rainfall since last June 16·601 inches;
the average of 5 years, 16·845 inches.

Pressure has been much below average and wind very much above the average.

MARCH.

The Dew-point ranged between 37·6° on the 17th and 56·7° on the 13th.

In Sunshine, the highest reading was 129·3 on the 21st.

On Ground, the lowest reading was 37·2° on the 8th.

The Sea has ranged from 58·5° to 60·6°.

A Thunderstorm passed on the 23rd.

Hail fell on the 6th and 17th.

The rainfall is nearly four times its average value. Temperatures and pressure are both below, and wind much above the average.

APRIL.

The Dew-point ranged between 42·5° on the 3rd and 56·7° on the 30th.
In Sunshine, the highest reading was 131·3° on the 24th.
On Ground, the lowest reading was 40·5° on the 1st.
The Sea has risen from 59·8° to 62·2.°
A Thunderstorm passed on the 6th.
The amount of wind is again considerably above the average.

MAY.

The Dew-point ranged between 43·4° on the 12th and 62·0° on the 28th.
In Sunshine, the highest reading was 136·3° on the 26th.
On Ground, the lowest reading was 48·4 on the 13th.
The Sea has risen from 60·6° to 70·2.°
A Thunderstorm passed on the 25th.
Pressure has been low and wind is still above the average.

JUNE.

The Dew-point ranged between 53·7° on the 17th and 71·2° on the 27th.
In Sunshine, the highest reading was 150·1° on the 26th.
On Ground, the lowest reading was 52·0° on the 1st.
The Sea has risen from 70·1° to 74·8.°

JULY.

The Dew-point ranged between 54·7° on the 9th and 74·4° on the 19th.
In Sunshine, the highest reading was 158·8° on the 20th.
On Ground, the lowest reading was 56·6° on the 4th.
The Sea has risen from 74·8° to 81·5.°

AUGUST.

The Dew-point ranged between 56·2° on the 3rd, and 72·9° on the 14th.
In Sunshine, the highest reading was 147·6° on the 10th.
On Ground, the lowest reading was 58·2° on the 30th.
The Sea has fallen from 79·5° to 77·0.°

SEPTEMBER.

The Dew-point ranged between 50·7° on the 18th and 72·3° on the 24th.

In Sunshine, the highest reading was 141·7 on the 3rd.

On Ground, the lowest reading was 55·6° on the 21st.

The Sea has fallen from 77·0° to 75·5°.

Thunderstorms passed on the 12th, 13th, and 29th.

Lightning was seen on the 11th, 16th, and 19th.

Total Rainfall since last June 2·211 inches;

the average of 5 years, 1·336 inches.

OCTOBER.

The Dew-point ranged between 51·0° on the 15th and 70·7° on the 1st.

In Sunshine, the highest reading was 135·5° on the 13th.

On Ground, the lowest reading was 51·7° on the 10th.

The Sea has fallen from 77·5° to 72·0°.

Thunderstorms passed on the 17th.

Lightning was seen on the 20th and 31st.

Total Rainfall since last June 2·857 inches;

the average of 5 years, 4·659 inches.

NOVEMBER.

The Dew-point ranged between 67·8° on the 1st and 41·8° on the 30th.

In Sunshine, the highest reading was 127·2° on the 1st.

On Ground, the lowest reading was 42·0° on the 15th.

The Sea has fallen from 72·0° to 67·0°

Lightning was seen on the 1st, 3rd, 8th, 26th and 27th.

Total Rainfall since last June 3·954 inches;

the average of 5 years, 8·769 inches.

A fine lunar rainbow was seen on the 10th at 8 p.m. Water-spouts were seen on the 11th. Rainfall is far short of the average.

DECEMBER.

Dew-Point, ranged between 36·7° on the 11th, and 61·0° on the 5th.

In Sunshine, the highest reading was 117·1° on the 5th.

On ground the lowest reading was 35·0° on the 4th.

The Sea has fallen from 67·0° to 61·0°.

Thunderstorms passed on the 5th and 28th.

Total Rainfall since last June 12·906 inches;

the average of 5 years, 12·033 inches.

The Rainfall is far in excess of the average for the month.

NOTES FOR THE YEAR.

Dew-Point, ranged between 35·4° on the 17th February and 74·4° on the 19th July.

In Sunshine the highest reading was 158·8° on the 20th July.

On Ground the lowest reading was 34·9° on the 5th January.

The Sea has ranged from 57·0° to 81·5°.

Thunderstorms passed on 14 days.

Hail fell on 9 days.

The mean Temperature of the Sea was 68·2.°

The amount of Rainfall as also the number of days with rain is much above the average.

The extreme range of Temperature is also above the average.

J. SCOLES, S.J.