# STONYHURST COLLEGE OBSERVATORY.

# RESULTS

OF

# METEOROLOGICAL, MAGNETICAL AND SOLAR OBSERVATIONS.

BY THE

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1890.

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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, 1890.

| Results of Observations taken during the Month. | | Mean for the last 43 years. |
|---|---|---|
| Mean Reading of the Barometer | 29·357 | 29·434 |
| Highest ,, on the 29th | 29·989 | 30·296 |
| Lowest ,, on the 23rd | 29·230 | 28·562 |
| Range of Barometer Readings | 1·759 | 1·674 |
| Highest Reading of a Max. Therm. on the 24th | 55·2 | 51·6 |
| Lowest Reading of a Min. Therm. on the 2nd | 19·8 | 21·1 |
| Range of Thermometer Readings | 35·4 | 30·5 |
| Mean of all the Highest Readings | 47·4 | 42·3 |
| Mean of all the Lowest Readings | 34·8 | 32·7 |
| Mean Daily Range | 12·6 | 9·6 |
| Deduced Monthly Mean (from Mean of Max. and Min.) | 40·9 | 37·2 |
| Mean Temperature from dry bulb | 41·3 | 37·2 |
| Adopted Mean Temperature | 41·1 | 37·2 |
| Mean Temperature of Evaporation | 39·5 | 36·1 |
| Mean Temperature of Dew Point | 35·3 | 33·9 |
| Mean elastic force of Vapour | 0·224 in | 0·222 in |
| Mean weight of Vapour in a cubic foot of air | 2·6gr | 2·4 gr |
| Mean additional weight required for saturation | 0·4gr | 0·4 gr |
| Mean degree of Humidity (saturation 1·00) | 0·87 | 0·86 |
| Mean weight of a cubic foot of air | 543·5gr | 544·1 gr |
| Fall of Rain | 5·983 in | 4·206in |
| Number of days on which Rain fell | 30 | 19·7 |

| No. of days in the month on which the prevailing wind was | N | NE | E | SE | S | SW | W | NW |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 0 | 0 | 8 | 14 | 5 | 1 |
| Mean Velocity in miles per hour | 11.0 | 4·4 | 0 | 0 | 18·0 | 16·7 | 16·1 | 8·1 |
| Total No. of miles for each Direction | 263 | 211 | 0 | 0 | 3457 | 5600 | 1935 | 195 |

The total number of miles registered during the month was 11661.

The max. Velocity of the wind was 45 miles per hour; direction S. on the 5th, at 4 a.m.

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

In the month of January, the highest reading of the Barometer during 43 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

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The Barometer readings were rather high. The mean temperature was high; but the range of temperature was great. The Rainfall and number of wet days were great. Prevailing wind S.W.

There was Frost on the 2nd, 3rd, 4th, and 29th; Snow on the 22nd, 23rd, and 28th; Hail on the 19th, 20th, and 22nd; a Thunderstorm on the 20th, and a Lunar Halo was seen on the 27th.

# February, 1890.

| Results of Observations taken during the Month. | | Mean for the last 43 years. |
|---|---|---|
| Mean Reading of the Barometer | 29·807 | 29·502 |
| Highest ,, on the 23rd | 30·308 | 30·058 |
| Lowest ,, on the 16th | 29·062 | 28·684 |
| Range of Barometer Readings | 1·246 | 1·374 |
| Highest Reading of a Max. Therm. on the 25th | 52·0 | 51·9 |
| Lowest Reading of a Min. Therm. on the 27th | 23·3 | 22·7 |
| Range of Thermometer Readings | 28·7 | 28·7 |
| Mean of all the Highest Readings | 42·6 | 44·2 |
| Mean of all the Lowest Readings | 30·9 | 33·7 |
| Mean Daily Range | 11·7 | 10·5 |
| Deduced Monthly Mean (from Mean of Max. and Min.) | 36·4 | 38·3 |
| Mean Temperature from dry bulb | 36·9 | 38·3 |
| Adopted Mean Temperature | 36·7 | 38·3 |
| Mean Temperature of Evaporation | 34·9 | 36·9 |
| Mean Temperature of Dew Point | 32·4 | 34·7 |
| Mean elastic force of Vapour | 0·184 in | 0·192 in |
| Mean weight of Vapour in a cubic foot of air | 2·1 gr | 2·4 gr |
| Mean additional weight required for saturation | 0·4 gr | 0·4 gr |
| Mean degree of Humidity (saturation 1·00) | 0·85 | 0·87 |
| Mean weight of a cubic foot of air | 543·6 gr | 548·6 gr |
| Fall of Rain | 0·878 in | 3·500 in |
| Number of days on which Rain fell | 11 | 17·2 |

| | N | NE | E | SE | S | SW | W | NW |
|---|---|---|---|---|---|---|---|---|
| No. of days in the month on which the prevailing wind was | 2 | 11 | 7 | 0 | 1 | 2 | 4 | 1 |
| Mean Velocity in miles per hour | 8·4 | 7·2 | 12·3 | 0 | 4·1 | 10·0 | 6·2 | 9·0 |
| Total No. of miles for each Direction | 405 | 1882 | 2063 | 0 | 99 | 480 | 597 | 215 |

The total number of miles registered during the month was 5741.
The Max. Velocity of the wind was 28 miles per hour; direction E. by N. at 8 a.m., on the 19th.

| | | | |
|---|---|---|---|
| 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 43 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 |

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The Barometer readings were rather high with almost normal range. Temperature was low. The Rainfall was slight and the number of rainy days few. Prevailing wind N.E., but the S.W. winds were the strongest.

There was Frost on the 8th, 9th, 11th, 13th, 14th, 22nd, 23rd, 24th, 27th, and 28th; Snow on the 20th, and Fog on the 22nd and 23rd.

# March, 1890.

| Results of Observations taken during the Month. | | Mean for the last 43 years. |
|---|---|---|
| Mean Reading of the Barometer | 29·342 | 29·469 |
| Highest ,, on the 3rd | 30·150 | 30·085 |
| Lowest ,, on the 16th | 28·664 | 28·685 |
| Range of Barometer Readings | 1·486 | 1·400 |
| Highest Reading of a Max. Therm. on the 17th | 58·0 | 56·9 |
| Lowest Reading of a Min. Therm. on the 2nd | 19·8 | 22·6 |
| Range of Thermometer Readings | 38·2 | 34·3 |
| Mean of all the Highest Readings | 49·3 | 47·0 |
| Mean of all the Lowest Readings | 35·9 | 34·2 |
| Mean Daily Range | 30·4 | 12·8 |
| Deduced Monthly Mean (from Mean of Max. and Min.) | 41·6 | 39·7 |
| Mean Temperature from dry bulb | 42·5 | 39·9 |
| Adopted Mean Temperature | 42·1 | 39·8 |
| Mean Temperature of Evaporation | 40·3 | 37·9 |
| Mean Temperature of Dew Point | 38·1 | 35·4 |
| Mean elastic force of Vapour | 0·230 in | 0·206 in |
| Mean weight of Vapour in a cubic foot of air | 2·7 gr | 2·4 gr |
| Mean additional weight required for saturation | 0·5 gr | 0·5 gr |
| Mean degree of Humidity (saturation 1·00) | 0·86 | 0·85 |
| Mean weight of a cubic foot of air | 542·1 gr | 546·7 gr |
| Fall of Rain | 4·355 in | 3·183 in |
| Number of days on which rain fell | 21 | 17·8 |

| | N | NE | E | SE | S | SW | W | NW |
|---|---|---|---|---|---|---|---|---|
| No. of days in the month on which the prevailing wind was | 0 | 4 | 1 | 1 | 2 | 8 | 14 | 1 |
| Mean Velocity in miles per hour | 0 | 8·8 | 7·0 | 8·9 | 21·3 | 12·4 | 13·8 | 13·3 |
| Total No. of miles for each Direction | 0 | 841 | 161 | 214 | 1020 | 2375 | 4647 | 319 |

The total number of miles registered during the month was 9577.
The max. Velocity of the wind was 42 miles per hour, direction W. by S. on the 7th, at 8 a.m.

| | | | |
|---|---|---|---|
| Mean amount of Cloud (an overcast sky being indicated by 10·0)... | | | 8·1 |
| In the month of March, the highest reading of the Barometer during 43 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 |

Barometer readings were pretty close to the average. The Temperature and Rainfall were rather above the mean. Prevailing wind W.S.W.

There was Frost on the 1st, 2nd, 3rd, 4th, 9th and 30th; Snow on the 1st, 4th, and 9th; Hail on the 8th; Heavy Rain on the 9th and 26th.

# April, 1890.

| Results of Observations taken during the Month. | | Mean for the last 43 years. |
|---|---|---|
| Mean Reading of the Barometer | 29·412 | 29·475 |
| Highest ,, on the 1st | 29·930 | 29·962 |
| Lowest ,, on the 7th | 28·911 | 28·777 |
| Range of Barometer Readings | 1·019 | 1·185 |
| Highest Reading of a Max. Therm. on the 30th | 64·2 | 66·1 |
| Lowest Reading of a Min. Therm. on the 11th | 27·7 | 28·3 |
| Range of Thermometer Readings | 36·5 | 37·8 |
| Mean of all the Highest Readings | 52·6 | 55·9 |
| Mean of all the Lowest Readings | 35·6 | 37·9 |
| Mean Daily Range | 17·0 | 18·0 |
| Deduced Monthly Mean (from Mean of Max. and Min.) | 42·6 | 44·4 |
| Mean Temperature from dry bulb | 43·4 | 44·5 |
| Adopted Mean Temperature | 43·0 | 44·5 |
| Mean Temperature of Evaporation | 39·6 | 41·7 |
| Mean Temperature of Dew Point | 35·5 | 38·2 |
| Mean elastic force of Vapour | 0·208 in | 0·236 in |
| Mean weight of Vapour in a cubic foot of air | 2·4 gr | 2·7 gr |
| Mean additional weight required for saturation | 0·8 gr | 0·7 gr |
| Mean degree of Humidity (saturation 1·00) | 0·75 | 0·80 |
| Mean weight of a cubic foot of air | 542·6 gr | 541·9 gr |
| Fall of rain | 1·539 in | 2·307 in |
| Number of days on which Rain fell | 16 | 14·8 |

| No. of days in the month on which the prevailing wind was | N | NE | E | SE | S | SW | W | NW |
|---|---|---|---|---|---|---|---|---|
| | 4 | 9 | 2 | 0 | 1 | 4 | 6 | 4 |
| Mean Velocity in miles per hour | 6·3 | 9·8 | 10·1 | 0 | 9·1 | 7·5 | 0 | 10·5 |
| Total No. of miles for each Direction | 608 | 2117 | 484 | 0 | 218 | 724 | 950 | 1007 |

The total number of miles registered during the month was 6108.
The max. Velocity of the wind was 36 miles per hour, direction W. by S. on the 23rd, at 11 a.m.

| | | | |
|---|---|---|---|
| Mean amount of Cloud (an overcast sky being indicated by 10·0)... | | | 7·0 |
| In the month of April, the highest reading of the Barometer during 43 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 |

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The Barometer readings were very close to the average. The Temperature was rather low. The Rainfall was small. Prevailing wind N.E., the strongest winds came from N.W.

There was Frost on the 1st, 2nd, 4th, 11th and 12th; Snow on the 12th and 13th; Fog on the 4th and 25th; a Lunar Halo on the 28th.

# May, 1890.

| Results of Observations taken during the Month. | | Mean for the last 43 years. |
|---|---|---|
| Mean Reading of the Barometer | 29·421 | 29·504 |
| Highest „ on the 22nd | 29·885 | 29·939 |
| Lowest „ on the 10th | 28·977 | 28·930 |
| Range of Barometer Readings | 0·908 | 1·029 |
| Highest Reading of a Max. Therm. on the 24th | 73·0 | 71·8 |
| Lowest Reading of a Min. Therm. on the 26th | 32·2 | 31·4 |
| Range of Thermometer Readings | 40·8 | 40·4 |
| Mean of all the Highest Readings | 62·7 | 59·6 |
| Mean of all the Lowest Readings | 44·9 | 42·1 |
| Mean Daily Range | 17·8 | 17·5 |
| Deduced Monthly Mean (from Mean of Max. and Min.) | 52·1 | 49·0 |
| Mean Temperature from dry bulb | 52·0 | 49·5 |
| Adopted Mean Temperature | 52·1 | 49·3 |
| Mean Temperature of Evaporation | 46·5 | 46·1 |
| Mean Temperature of Dew Point | 40·8 | 42·6 |
| Mean elastic force of Vapour | 0·255in | 0·277 in |
| Mean weight of Vapour in a cubic foot of air | 2·9 gr | 2·2 gr |
| Mean additional weight required for saturation | 1·5 gr | 0·9 gr |
| Mean degree of Humidity (saturation 1·00) | 0·64 | 0·76 |
| Mean weight of a cubic foot of air | 532·8gr | 537·0gr |
| Fall of Rain | 2·557 in | 2·545 in |
| Number of days on which Rain fell | 13 | 15·2 |

| | N | NE | E | SE | S | SW | W | NW |
|---|---|---|---|---|---|---|---|---|
| No. of days in the month on which the prevailing wind was | 0 | 8 | 8 | 3 | 2 | 3 | 6 | 1 |
| Mean Velocity in miles per hour | 0 | 7·6 | 9·9 | 12·9 | 12·6 | 12·9 | 9.4 | 18·8 |
| Total No. of miles for each Direction | 0 | 1457 | 1893 | 926 | 607 | 931 | 1352 | 452 |

The total number of miles registered during the month was 7618.
The max. Velocity of the wind was 32 miles per hour, direction S.E. by S., on the 20th at 6 p.m.

| | | | |
|---|---|---|---|
| Mean amount of Cloud (an overcast sky being indicated by 10·0)... | | | 5·9 |
| In the month of May, the highest reading of the Barometer during 43 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 |

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The Barometer readings and Rainfall were close to the average. Temperature a little in excess. Prevailing wind N.N.E.

Heavy rain fell on the 29th. Thunder was heard on the 12th, and there was a Thunderstorm on the 6th.

## June, 1890.

| Results of Observations taken during the Month. | | Mean for the last 43 years |
|---|---|---|
| Mean Reading of the Barometer | 29·528 | 29·537 |
| Highest ,, on the 14th | 29·970 | 29·884 |
| Lowest ,, on the 30th | 28·711 | 29·031 |
| Range of Barometer Readings | 1·259 | 0·883 |
| Highest Reading of a Max. Therm. on the 15th | 71·0 | 76·9 |
| Lowest Reading of a Min. Therm. on the 7th | 36·4 | 39·0 |
| Range of Thermometer Readings | 34·6 | 37·9 |
| Mean of all the Highest Readings | 64·1 | 65·6 |
| Mean of all the Lowest Readings | 48·1 | 47·9 |
| Mean Daily Range | 16·0 | 17·7 |
| Deduced Monthly Mean (from Mean of Max. and Min.) | 54·3 | 54·9 |
| Mean Temperature from dry bulb | 54·1 | 55·0 |
| Adopted Mean Temperature | 54·2 | 55·0 |
| Mean Temperature of Evaporation | 51·6 | 52·0 |
| Mean Temperature of Dew Point | 49·1 | 48·6 |
| Mean elastic force of Vapour | 0·348 in | 0·356 in |
| Mean weight of Vapour in a cubic foot of air | 4·0gr | 3·9 gr |
| Mean additional weight required for saturation | 0·8gr | 0·9 gr |
| Mean degree of Humidity (saturation 1·00) | 0·82 | 0·79 |
| Mean weight of a cubic foot of air | 531·8gr | 542·7gr |
| Fall of Rain | 4·474 in | 3·676 in |
| Number of days on which Rain fell | 22 | 16·3 |

| No. of days in the month on which the prevailing wind was | N | NE | E | SE | S | SW | W | NW |
|---|---|---|---|---|---|---|---|---|
| | 2 | 2 | 0 | 2 | 0 | 5 | 17 | 2 |
| Mean Velocity in miles per hour | 4·7 | 5·5 | 0 | 7·3 | 0 | 10·7 | 10·1 | 7·9 |
| Total No. of Miles for each Direction | 225 | 263 | 0 | 349 | 0 | 1278 | 4048 | 380 |

The total number of miles registered during the month was 6543.
The max. Velocity of the wind was 30 miles per hour, direction S.W. by S. on the 3rd, at 10 p.m.

| | | | |
|---|---|---|---|
| Mean amount of Cloud (an overcast sky being indicated by 10·0)... | | | 7·7 |
| In the month of June, the highest reading of the Barometer during 43 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 |

Although the Barometer readings and Temperature did not differ much from the mean, the fall of rain was large, and the number of wet days excessive. The Prevailing wind was S.S.W.

There was heavy Rain on the 2nd and 18th; a Thunderstorm on the 10th; and Thunder was heard on the 29th.

## July, 1890.

| Results of Observations taken during the Month. | | Mean for the last 43 years. |
|---|---|---|
| Mean Reading of the Barometer | 29·452 | 29·502 |
| Highest ,, on the 20th | 29·850 | 29·875 |
| Lowest ,, on the 1st | 28·751 | 28·993 |
| Range of Barometer Readings | 1.099 | 0·882 |
| Highest Reading of a Max. Therm. on the 31st | 72·1 | 78·8 |
| Lowest Reading of a Min. Therm. on the 11th | 40·7 | 42·0 |
| Range of Thermometer Readings | 31·4 | 36·8 |
| Mean of all the Highest Readings | 65·3 | 67·8 |
| Mean of all the Lowest Readings | 49·4 | 50·7 |
| Mean Daily Range | 15·9 | 17·1 |
| Deduced Monthly Mean (from Mean of Max. and Min.) | 55·5 | 57·7 |
| Mean Temperature from dry bulb | 55·6 | 57·8 |
| Adopted Mean Temperature | 55.6 | 57·8 |
| Mean Temperature of Evaporation | 51·4 | 54·8 |
| Mean Temperature of Dew Point | 47·4 | 52·2 |
| Mean elastic force of Vapour | 0·330 in | 0·390 in |
| Mean weight of Vapour in a cubic foot of air | 3.7gr | 4·5 gr |
| Mean additional weight required for saturation | 1·2 gr | 1·0 gr |
| Mean degree of Humidity (saturation 1·00) | 0.74 | 0·82 |
| Mean weight of a cubic foot of air | 528.6 in | 527·3 in |
| Fall of Rain | 4·217 in | 4·283 in |
| Number of days on which Rain fell | 22 | 18·2 |

| No. of days in the month on which the prevailing wind was | N | NE | E | SE | S | SW | W | NW |
|---|---|---|---|---|---|---|---|---|
| | 1 | 3 | 0 | 0 | 0 | 7 | 17 | 3 |
| Mean Velocity in miles per hour | 9·7 | 8·2 | 0 | 0 | 0 | 12·1 | 10·8 | 8·8 |
| Total No. of miles for each Direction | 233 | 590 | 0 | 0 | 0 | 2027 | 4395 | 631 |

The total number of miles registered during the month was 7876.
The max. Velocity of the wind was 33 miles per hour; direction W., on the 23rd at 2 p.m.

| | | | |
|---|---|---|---|
| Mean amount of Cloud (an overcast sky being indicated by 10·0)... | | | 8·7 |
| In the month of July, the highest reading of the Barometer during 43 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 |

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Barometer and Temperature slightly below the mean. Rainfall very close to average, but number of wet days large. Prevailing wind W.

There was Hail on the 3rd, and heavy Rain on the 25th.

# August, 1890.

| Results of Observations taken during the Month. | | Mean for the last 43 years. |
|---|---|---|
| Mean Reading of the Barometer | 29·438 | 29·491 |
| Highest ,, on the 31st | 29·882 | 29·890 |
| Lowest ,, on the 26th | 28·870 | 28·958 |
| Range of Barometer Readings | 1·012 | 0·932 |
| Highest Reading of a Max. Therm. on the 4th | 74·0 | 77·2 |
| Lowest Reading of a Min. Therm. on the 31st | 36·6 | 41·4 |
| Range of Thermometer Readings | 37·4 | 35·8 |
| Mean of all the Highest Readings | 64·8 | 67·2 |
| Mean of all the Lowest Readings | 48·3 | 50·4 |
| Mean Daily Range | 16·5 | 16·8 |
| Deduced Monthly Mean (from Mean of Max. and Min.) | 54·9 | 57·1 |
| Mean Temperature from dry bulb | 55·4 | 57·5 |
| Adopted Mean Temperature | 55·2 | 57·3 |
| Mean Temperature of Evaporation | 52·4 | 54·5 |
| Mean Temperature of Dew Point | 49·4 | 51·8 |
| Mean elastic force of Vapour | 0·357 in | 0·388 in |
| Mean weight of Vapour in a cubic foot of air | 4·0gr | 4·3gr |
| Mean additional weight required for saturation | 0·9gr | 0·9gr |
| Mean degree of Humidity (saturation 1·00) | 0·82 | 0.82 |
| Mean weight of a cubic foot of air | 529·2gr | 525·1gr |
| Fall of Rain | 6·982 in | 4·807 in |
| Number of days on which Rain fell | 22 | 18·8 |

| No. of days in the month on which the prevailing wind was | N | NE | E | SE | S | SW | W | NW |
|---|---|---|---|---|---|---|---|---|
| | 2 | 2 | 2 | 0 | 0 | 5 | 16 | 4 |
| Mean Velocity in miles per hour | 4·7 | 7·3 | 9·9 | 0 | 0 | 12·6 | 8·6 | 6·1 |
| Total No. of miles for each Direction | 226 | 351 | 475 | 0 | 0 | 1517 | 3301 | 590 |

The total number of miles registered during the month was 6460.
The max. Velocity of the wind was 35 miles per hour; direction W.S.W. on the 15th, at 11 a.m. and noon.

| | | | |
|---|---|---|---|
| Mean amount of Cloud (an overcast sky being indicated by 10·0)... | | | 7·6 |
| In the month of August, the highest reading of the Barometer during 43 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 |

Barometer readings a little below average. Temperature was low. The Rainfall was heavy. Prevailing wind W.

There was heavy Rain on the 10th, 22nd. and 24th ; Hail on the 16th, 24th, and 26th ; and Lightning on the 13th, 15th, 24th, and 30th.

## September, 1890.

| Results of Observations taken during the Month. | | Mean for the last 43 years. |
|---|---|---|
| Mean Reading of the Barometer | 29·759 | 29·516 |
| Highest ,, on the 7th | 30·051 | 30·033 |
| Lowest ,, on the 20th | 29·118 | 28·847 |
| Range of Barometer Readings | 0·933 | 1·186 |
| Highest Reading of a Max. Therm. on the 8th | 76·0 | 72·3 |
| Lowest Reading of a Min. Therm. on the 11th | 40·8 | 36·4 |
| Range of Thermometer Readings | 35·2 | 35·9 |
| Mean of all the Highest Readings | 65·1 | 62·2 |
| Mean of all the Lowest Readings | 50·8 | 47·0 |
| Mean Daily Range | 14·3 | 15·2 |
| Deduced Monthly Mean (from Mean of Max. and Min.) | 56·7 | 53·4 |
| Mean Temperature from dry bulb | 57·1 | 54·0 |
| Adopted Mean Temperature | 56·9 | 53·7 |
| Mean Temperature of Evaporation | 54·4 | 51·0 |
| Mean Temperature of Dew Point | 52·1 | 48·4 |
| Mean elastic force of Vapour | 0·389 in | 0·340 in |
| Mean weight of Vapour in a cubic foot of air | 4·3 gr | 4·0 gr |
| Mean additional weight required for saturation | 0·8 gr | 0·8 gr |
| Mean degree of Humidity (saturation 1·00) | 0·84 | 0·82 |
| Mean weight of a cubic foot of air | 533·0 gr | 532·5 gr |
| Fall of Rain | 5·437 in | 4·599 in |
| Number of days on which Rain fell | 19 | 18·0 |

| | N | NE | E | SE | S | SW | W | NW |
|---|---|---|---|---|---|---|---|---|
| No. of days in the month on which the prevailing wind was | 0 | 3 | 1 | 2 | 2 | 8 | 13 | 1 |
| Mean Velocity in miles per hour | 0 | 6·3 | 3·0 | 6·9 | 18·7 | 11·4 | 7·2 | 14·3 |
| Total No. of miles for each Direction | 0 | 450 | 73 | 333 | 896 | 2185 | 2252 | 344 |

The total number of miles registered during the month was 6533.
The max. Velocity of the wind was 33 miles per hour; direction S. by E. on the 21st at 5 a.m.

| | | |
|---|---|---|
| Mean amount of Cloud (an overcast sky being indicated by 10·0)... | | 6·4 |
| In the month of September, the highest reading of the Barometer during 43 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 |

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Both Barometer and Thermometer readings were higher than usual. The Rainfall was also above the average. Prevailing wind W.

There was heavy Rain on the 28th and 30th. Thunderstorms on the 17th, 18th, and 20th.

# October, 1890.

| Results of Observations taken during the Month. | | Mean for the last 43 years. |
|---|---|---|
| Mean Reading of the Barometer | 29·625 | 29·429 |
| Highest ,, on the 2nd | 30·087 | 30·008 |
| Lowest ,, on the 6th | 28·931 | 28·658 |
| Range of Barometer Readings | 1·156 | 1·350 |
| Highest Reading of a Max. Therm. on the 12th | 74·0 | 64·3 |
| Lowest Reading of a Min. Therm. on the 27th | 20·9 | 29·3 |
| Range of Thermometer Readings | 53·1 | 35·0 |
| Mean of all the Highest Readings | 55.6 | 54·5 |
| Mean of all the Lowest Readings | 41·5 | 41·8 |
| Mean Daily Range | 14·1 | 12·7 |
| Deduced Monthly Mean (from Mean of Max. and Min.) | 47·6 | 47·2 |
| Mean Temperature from dry bulb | 48·7 | 47·8 |
| Adopted Mean Temperature | 48·2 | 47·6 |
| Mean Temperature of Evaporation | 46·1 | 45·3 |
| Mean Temperature of Dew Point | 43·8 | 42·9 |
| Mean elastic force of Vapour | 0·286 in | 0·276 in |
| Mean weight of Vapour in a cubic foot of air | 3·3 gr | 2·9 gr |
| Mean additional weight required for saturation | 0·5 gr | 0·6 gr |
| Mean degree of Humidity (saturation 1·00) | 0·85 | 0·84 |
| Mean weight of a cubic foot of air | 550·3 gr | 540·5 gr |
| Fall of Rain | 5·215 in | 5·040 in |
| Number of days on which Rain fell | 16 | 21·9 |

| No. of days in the month on which the prevailing wind was | N | NE | E | SE | S | SW | W | NW |
|---|---|---|---|---|---|---|---|---|
| | 2 | 1 | 1 | 0 | 0 | 8 | 13 | 6 |
| Mean Velocity in miles per hour | 7·0 | 2·5 | 4·3 | 0 | 0 | 10·4 | 10·9 | 13·8 |
| Total No. of miles for each Direction | 334 | 60 | 103 | 0 | 0 | 2001 | 3410 | 1712 |

The total number of miles registered during the month was 7620.
The max. Velocity of the wind was 36 miles per hour; direction W.N.W., on the 16th, at 5 p.m.

| | | | |
|---|---|---|---|
| Mean amount of Cloud (an overcast sky being indicated by 10·0) | | | 7·4 |
| In the month of October, the highest Reading of the Barometer during 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 | ,, | ,, 27t, 1889 | 20·9 |
| The highest adopted mean temperature of the month, 1861 and 1876 | | | 51·6 |
| The lowest | ,, | ,, 1880 | 43·1 |

The Barometer readings were rather high. The mean Temperature did not differ much from the average for the month, but the range was very great, and the lowest reading ever recorded in October was on the 27th.

There was frost on the 27th and 28th; Snow on the 26th; Hail on the 15th and 16th; heavy Rain on the 6th, 24th and 28th; Fog on the 20th, and a Thunderstorm on the 16th.

# November, 1890.

| Results of Observations taken during the Month. | | Mean for the last 43 years. |
|---|---|---|
| Mean Reading of the Barometer | 29·385 | 29·304 |
| Highest ,, on the 20th | 30·002 | 30·046 |
| Lowest ,, on the 7th | 28·308 | 28·571 |
| Range of Barometer Readings | 1·694 | 1·475 |
| Highest Reading of a Max. Therm. on the 19th | 56·9 | 55·6 |
| Lowest Reading of a Min. Therm. on the 26th | 22·1 | 25·3 |
| Range of Thermometer Readings | 34·8 | 29·3 |
| Mean of all the Highest Readings | 47·8 | 46·9 |
| Mean of all the Lowest Readings | 35·1 | 36·2 |
| Mean Daily Range | 12·7 | 10·7 |
| Deduced Monthly Mean (from Mean of Max. and Min.) | 41·1 | 41·2 |
| Mean Temperature from dry bulb | 41·5 | 41·5 |
| Adopted Mean Temperature | 41·3 | 41·4 |
| Mean Temperature of Evaporation | 40·3 | 39·0 |
| Mean Temperature of Dew Point | 39·0 | 37·7 |
| Mean elastic force of Vapour | 0·239in | 0·227in |
| Mean weight of Vapour in a cubic foot of air | 2·8gr | 2·6gr |
| Mean additional weight required for saturation | 0·3gr | 0·4gr |
| Mean degree of Humidity (saturation 1·00) | 0·92 | 0·87 |
| Mean weight of a cubic foot of air | 543·6gr | 544·9gr |
| Fall of Rain | 8·230in | 4·299in |
| Number of days on which Rain fell | 23 | 19·6 |

| | N | NE | E | SE | S | SW | W | NW |
|---|---|---|---|---|---|---|---|---|
| No. of days in the month on which the prevailing wind was | 0 | 4 | 1 | 2 | 2 | 7 | 8 | 6 |
| Mean Velocity in miles per hour | 0 | 7·4 | 2·3 | 11·3 | 15·9 | 7·3 | 14·0 | 12·4 |
| Total No. of miles for each Direction | 0 | 708 | 54 | 542 | 764 | 1221 | 2687 | 1791 |

The total number of miles registered during the month was 7767.
The max. Velocity of the wind was 50 miles per hour; direction S. S. E. on the 6th at 8 p.m.

| | | | |
|---|---|---|---|
| Mean amount of Cloud (an overcast sky being indicated by 10·0) | | | 8·7 |
| In the month of November, the highest reading of the Barometer during 43 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 |

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The Barometer and Thermometer readings were close to the average for the 43 years, but the Rainfall was very great as were also the number of wet days. The Prevailing wind was W.S.W.

There was Frost from the 25th to the 30th; Snow on the 25th, 26th, and 27th; Hail on the 25th; heavy Rain on the 8th, 22nd and 23rd; and Lightning on the 9th.

## December, 1890.

| Results of Observations taken during the month. | | Mean for the last 43 years. |
|---|---|---|
| Mean Reading of the Barometer | 29·639 | 29·459 |
| Highest ,, on the 30th | 29·995 | 30·068 |
| Lowest ,, on the 19th | 28·882 | 28·604 |
| Range of Barometer Readings | 1·113 | 1·464 |
| Highest Reading of a Max. Therm. on the 1st | 44·8 | 52·9 |
| Lowest Reading of a Min. Therm. on the 19th | 15·1 | 20·3 |
| Range of Thermometer Readings | 29·7 | 32·6 |
| Mean of all the Highest Readings | 35·7 | 42·9 |
| Mean of all the Lowest Readings | 28·5 | 32·9 |
| Mean Daily Range | 9·2 | 10·0 |
| Deduced Monthly Mean (from Mean of Max. and Min.) | 31·1 | 37·9 |
| Mean Temperature from dry bulb | 32·0 | 38·6 |
| Adopted Mean Temperature | 31·6 | 38·3 |
| Mean Temperature of Evaporation | 30·2 | 36·7 |
| Mean Temperature of Dew Point | 26·8 | 34·9 |
| Mean elastic force of Vapour | 0·146 in | 0·204 in |
| Mean weight of Vapour in a cubic foot of air | 1·7 gr | 2·4 gr |
| Mean additional weight required for saturation | 0·4 gr | 0·4 gr |
| Mean degree of Humidity (saturation 1·00) | 0·81 | 0·87 |
| Mean weight of a cubic foot of air | 567·7 gr | 540·4 gr |
| Fall of Rain | 0·550 in | 5·220 in |
| Number of days on which Rain fell | 8 | 8·9 |

| | N | NE | E | SE | S | SW | W | NW |
|---|---|---|---|---|---|---|---|---|
| No. of days in the month on which the prevailing wind was | 2 | 11 | 10 | 5 | 2 | 1 | 0 | 0 |
| Mean Velocity in miles per hour | 1.9 | 5·2 | 9·9 | 7·3 | 4·9 | 5·3 | 0 | 0 |
| Total No. of miles for each Direction | 90 | 1368 | 2367 | 873 | 235 | 126 | 0 | 0 |

The total number of miles registered during the month was 5059.
The max. Velocity of the wind was 29 miles per hour; direction E. by N. on the 31st. at 1 a.m.

| | | | |
|---|---|---|---|
| Mean amount of Cloud (an overcast sky being indicated by 10·0)... | | | 8·1 |
| In the Month of December, the highest reading of the Barometer during 43 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 |

Barometer readings were a little above the average. The Temperature was very low, and the Rainfall very small. Prevailing wind N.N.E.

There was Frost from the 9th until the 16th, and from the 18th until the 31st; Snow on the 19th, 23rd and 25th; Hail on the 23rd; and Fog on the 15th.

# Summary of Observations
## FOR 1890.

| | | Mean for the last 43 years. |
|---|---|---|
| Mean Reading of the Barometer | 29·514 | 29·487 |
| Highest ,, on February 23rd | 30·308 | 30·279 |
| Lowest ,, on January 23rd | 28·230 | 28·268 |
| Range of Barometer Readings | 2·078 | 2·011 |
| Highest Reading of a Max. Therm. on September 8th | 76·0 | 81·5 |
| Lowest Reading of a Min. Therm. on December 19th | 15·1 | 15·7 |
| Range of Thermometer Readings | 60·9 | 65·8 |
| Mean of all the Highest Readings | 54·4 | 54·7 |
| Mean of all the Lowest Readings | 40·3 | 40·7 |
| Mean Daily Range | 14·1 | 14·0 |
| Deduced Yearly Mean (from Mean of Max. and Min.) | 46·2 | 46·8 |
| Mean Temperature of dry bulb | 46·7 | 46·7 |
| Adopted Mean Temperature | 46·5 | 46·8 |
| Mean Temperature of Evaporation | 43·9 | 44·5 |
| Mean Temperature of Dew Point | 40·8 | 42·2 |
| Mean elastic force of Vapour | 0·266 in | 0·273 in |
| Mean weight of Vapour in a cubic foot of air | 3·0 gr | 3·3 gr |
| Mean additional weight required for saturation | 0·7 gr | 0·7 gr |
| Mean degree of Humidity (saturation 1·00) | 0·81 | 0·84 |
| Mean weight of a cubic foot of air | 540·7 gr | 539·4 gr |
| Total Fall of Rain in the Year | 50·417 in | 47·123 in |
| Number of days per Month on which Rain fell | 18·6 | 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 43 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 | 16 | 60 | 33 | 15 | 20 | 72 | 119 | 30 |
| Mean Velocity in miles per hour | 6·2 | 7·2 | 9·7 | 9·0 | 15.2 | 11·8 | 10·4 | 10·6 |
| Total No. of miles for each Direction | 2384 | 10298 | 7673 | 3237 | 7296 | 20465 | 29574 | 7636 |

The total No. of miles registered during the year was 88,563.

The max. Velocity of the wind was 50 miles per hour; direction S.S.E., at 8 p.m., on November 6th.

# SUMMARY OF SOLAR OBSERVATIONS.

*(The figures, excepting the second column, give the number of days per month for each Observation.)*

| 1890. | Recorded Sunshine. | Amount of Sunshine expressed in hours. | Number of Sun Drawings, $10\frac{1}{2}$ inches to diameter. | Other Drawings and notes. | Entire Chromosphere measured. | Chromosphere partially measured. | Spot Spectra observed. |
|---|---|---|---|---|---|---|---|
| January ... | | | 17 | | 4 | | |
| February... | | | 16 | 1 | 6 | 1 | |
| March ... | | | 14 | 4 | 5 | | |
| April ..... | | | 21 | 2 | 7 | 1 | |
| May..... | | | 25 | 1 | 10 | 1 | |
| June..... | | | 14 | 2 | 5 | | |
| July ..... | | | 22 | | 2 | | |
| August ... | | | 11 | 3 | 3 | | |
| September | | | 19 | | 4 | | |
| October ... | | | 11 | | 5 | | |
| November | | | 10 | 3 | 0 | | |
| December | | | 7 | 3 | 0 | | |
| Totals | | | 187 | 19 | 51 | 3 | |

| 1890 | January. | February. | March. | April. | May. | June. | July. | August. | Sept. | October. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | n | ·65 | ·41,c | ·37,c | ·44 | ·79 | | ·43 | | n | |
| 2 | ·45,c | ·43 | ·42 | ·43,c | ·43 | | ·70 | | | ·41,c | ·52 | |
| 3 | | | ·48 | ·45,c | n | | | | | ·48 | | |
| 4 | | ·46 | | ·43,c | ·38,c | ·68 | ·39,c | ·69 | | | ·39 | |
| 5 | ·41 | ·46,c | ·42 | ·35 | | | ·43 | ·47 | ·70,c | | ·38 | |
| 6 | | c | ·46 | ·42 | ·37 | ·68 | | ·56 | | | | |
| 7 | | | | ·38 | ·38 | ·40,c | ·51 | | ·43 | | | n |
| 8 | ·45 | ·40,c | n | ·41,c | ·39 | | ·47 | ·40,c | ·48,c | ·42,c | | |
| 9 | ·45 | | ·40,c | ·67 | ·66 | ·70 | ·48,c | | | ·41,c | n | ·48 |
| 10 | | ·45 | | n | | ·39 | ·43 | | 68 | | n | |
| 11 | | ·42 | | ·38 | | ·43,c | | n | ·55 | | | |
| 12 | ·41,c | ·52 | | ·38 | ·37,c | | | | ·68 | ·65,c | ·41 | ·52 |
| 13 | ·51 | | | | ·48,c | ·34 | ·52 | | ·42,c | | | n |
| 14 | | ·45,c | | ·46 | ·47 | ·39,c | ·72 | | ·43 | | | ·55 |
| 15 | ·42 | | | n | | ·46 | ·39 | | ·44,c | | ·39 | |
| 16 | ·45 | ·34 | n | | | n | ·40 | ·64 | ·43,c | | | |
| 17 | | | c,n | | ·69 | n | ·73 | | ·43 | ·41 | | |
| 18 | ·48 | ·52 | n | | ·42 | | ·45 | | ·62 | ·53 | | |
| 19 | ·42 | | ·40 | ·42 | ·46 | | ·45 * | ·44 | ·53 | ·65 | | |
| 20 | ·44 | | | | ·40 | c | | | ·67 | | | ·41 |
| 21 | | | ·67 | ·70 | ·44 | | | | ·43 | | | ·63 |
| 22 | ·48 | ·38,c | ·43 | ·44 | ·40 | | ·40 | | ·44 | | | ·61 |
| 23 | | ·52 | | ·51 | ·38,c | | | n | | | | |
| 24 | ·46 | | | | ·35,c | | ·39 | n | | | ·62 | |
| 25 | ·53 | ·38,c | ·70 | ·46 | ·40,c | | ·59 | | ·44 | | ·38 | |
| 26 | | ·67 | ·35,c | ·47,c | ·42,c | ·60,c | | | | ·47 | | n |
| 27 | ·39,c | ·41 | | | ·41 | ·73 | ·75 | ·44 | | ·39,c | ·49 | ·51 |
| 28 | | ·39,c | | ·38 | ·48,c | ·68 | ·47 | ·43 | | | ·60 | |
| 29 | ·45,c | | ·46 | ·36,c | ·44 | ·41 | ·50 | ·49 | ·49 | | ·48 | |
| 30 | | | ·37,c | ·40,c | ·38,c | | | ·40,c | | | | |
| 31 | ·53 | | ·39,c | | ·37,c | | | ·47,c | | ·41 | | |

# 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 | 3·1 | 0 | 0 | 3·2 | 0 | 0 | 0·9 | 0 | 0 | 0 | 5·4 | 4·2 | 0 | 0 | 2·1 | 0 |
| February ..... | 0 | 6·7 | 0 | 1·0 | 6·5 | 0 | 0·5 | 5·3 | 0·5 | 1·5 | 3·9 | 4·0 | 0·1 | 2·5 | 0 | 3·3 | 0 |
| March ..... | 2·6 | 6·2 | 5·5 | 0 | 4·9 | 5·5 | 1·2 | 0 | 5·6 | 0 | 0 | 0 | 0·5 | 0 | 0·2 | 6·0 | 7·2 |
| April..... | 9·5 | 9·0 | 7·5 | 7·6 | 4·2 | 6·2 | 5·4 | 9·2 | 2·7 | 0·9 | 5·6 | 0·8 | 0·7 | 3·9 | 0·8 | 0 | 0·1 |
| May ..... | 11·4 | 4·8 | 5·8 | 13·0 | 1·8 | 2·6 | 4·9 | 1·7 | 2·6 | 0·3 | 0 | 8·9 | 8·8 | 9·8 | 1·9 | 0 | 4·8 |
| June ..... | 4·8 | 0·3 | 0 | 2·7 | 2·0 | 5·1 | 12·4 | 1·5 | 3·4 | 1·4 | 6·3 | 0·8 | 7·8 | 5·6 | 4·7 | 1·1 | 5·0 |
| July ..... | 1·5 | 6·8 | 5·1 | 8·2 | 6·5 | 0·3 | 3·5 | 7·4 | 9·2 | 7·0 | 0·5 | 0·1 | 0·7 | 2·1 | 12·6 | 2·5 | 1·5 |
| August ..... | 0 | 3·2 | 7·8 | 5·9 | 7·2 | 8·0 | 0 | 11·0 | 2·5 | 0 | 0·5 | 5·4 | 0 | 0·9 | 8·2 | 7·0 | 8.1 |
| September..... | 2 | 0 | 0 | 0 | 4·7 | 7·1 | 8·3 | 10.4 | 0·5 | 6·2 | 5·3 | 3·6 | 8·3 | 7·9 | 9·9 | 9·1 | 3·0 |
| October..... | 4·2 | 8·1 | 6·7 | 0 | 1·5 | 0 | 0 | 8·1 | 5·2 | 0·5 | 1·0 | 6·3 | 0 | 0 | 5.5 | 2·0 | 4·3 |
| November..... | 4·7 | 3·5 | 0 | 1·2 | 6·9 | 0 | 0 | 0·5 | 0·3 | 1·4 | 0 | 2·9 | 0 | 0·5 | 7·1 | 0·4 | 0 |
| December ..... | 0 | 0 | 0 | 9·8 | 0 | 0 | 2·4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0·9 | 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 ..... | 2·9 | 1·8 | 1·6 | 0 | 1·8 | 0 | 1·0 | 3·9 | 0 | 6·0 | 0 | 2·9 | 0 | 0 | 40·5 | 15·6 |
| February ..... | 0 | 0 | 0 | 0 | 4·8 | 4·1 | 0 | 9·0 | 1·0 | 2·1 | 7·3 | 0 | 0 | 0 | 64·1 | 22·9 |
| March..... | 1·3 | 2·2 | 0 | 2·0 | 1·4 | 0 | 0 | 0·7 | 7·4 | 0 | 0 | 5·6 | 10·7 | 9·5 | 86.2 | 23·4 |
| April ..... | 0 | 1·7 | 1·0 | 0·4 | 5·3 | 6·4 | 0 | 7·2 | 7·2 | 2·4 | 8·1 | 3·3 | 7·9 | 0 | 125·0 | 30·1 |
| May ..... | 3·9 | 5·5 | 3·4 | 2·8 | 7·8 | 13·8 | 15·1 | 12·9 | 11·7 | 7·8 | 9·6 | 2·4 | 12·7 | 13·7 | 206·2 | 42·7 |
| June ..... | 0·9 | 1·7 | 8·1 | 3·6 | 0·9 | 0·8 | 6·2 | 0 | 7·0 | 8·2 | 3·3 | 9·4 | 0 | 0 | 115·0 | 23·2 |
| July..... | 2·3 | 7·2 | 7·0 | 1·6 | 9·5 | 1·7 | 12·0 | 9·2 | 0 | 4·5 | 7·4 | 3·7 | 0·8 | 6·3 | 148·7 | 30·0 |
| August ..... | 4·5 | 4·6 | 1·0 | 0 | 5·2 | 5·8 | 5·6 | 1·0 | 5·4 | 5·6 | 6·0 | 7·1 | 7·6 | 11·5 | 146·6 | 33·4 |
| September ..... | 3·3 | 3·5 | 5·1 | 5·3 | 3·6 | 0·7 | 0·1 | 7·0 | 0 | 0·1 | 0 | 3·0 | 0 | 0 | 118·0 | 31·3 |
| October ..... | 7·1 | 5·8 | 0 | 0 | 0 | 0 | 0·4 | 0·5 | 4·3 | 8·5 | 1·6 | 0 | 7·2 | 0 | 88·8 | 27·1 |
| November ..... | 1·6 | 0 | 0 | 0 | 0·3 | 0 | 3·5 | 1·8 | 4·0 | 3·5 | 4·4 | 4·0 | 0 | 0 | 52·5 | 20·0 |
| December ..... | 0 | 0 | 1·5 | 4·3 | 0·3 | 0 | 0·3 | 0 | 1·2 | 2·3 | 0 | 0 | 0·2 | 0·4 | 14·6 | 6·4 |

## 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 | 0·6 | 4·1 | 7·2 | 7·8 | 8·5 | 7·4 | 3·9 | 1·0 | 0 | 0 | 0 | 0 | 0 |
| February | 0 | 0 | 0 | 1·0 | 3·4 | 5·9 | 8·4 | 8·5 | 10·8 | 9·8 | 8·9 | 5·9 | 1·5 | 0 | 0 | 0 | 0 |
| March | 0 | 0 | 0·5 | 3·9 | 7·0 | 6·4 | 8·9 | 9·7 | 9·3 | 10·4 | 9·4 | 10·6 | 6·6 | 2·5 | 1·0 | 0 | 0 |
| April | 0 | 0·5 | 1·5 | 6·1 | 11·1 | 13·8 | 14·1 | 12·8 | 12·3 | 13·0 | 11·8 | 10·9 | 10·2 | 5·4 | 1·5 | 0 | 0 |
| May | 1·8 | 8·1 | 12·3 | 14·6 | 15·9 | 17·3 | 16·6 | 16·7 | 16·2 | 16·4 | 14·6 | 14·4 | 14·5 | 13·2 | 10·2 | 3·4 | 0 |
| June | 0 | 3·6 | 5·0 | 5·5 | 6·4 | 7·5 | 7·4 | 7·0 | 7·9 | 8·1 | 11·7 | 11·0 | 11·9 | 9·2 | 9·0 | 3·8 | 0 |
| July | 0·8 | 3·1 | 6·0 | 7·2 | 8·7 | 9·3 | 13·7 | 15·3 | 15·4 | 14·7 | 12·1 | 11·2 | 10·5 | 9·8 | 8·3 | 2·6 | 0 |
| August | 0 | 0·6 | 5·7 | 6·8 | 11·8 | 13·6 | 12·4 | 12·9 | 14·2 | 14·9 | 13·4 | 13·8 | 12·8 | 8·8 | 4·6 | 0·3 | 0 |
| September | 0 | 0 | 0·3 | 3·8 | 8·3 | 11·9 | 11·3 | 12·2 | 14·4 | 14·6 | 13·6 | 12·9 | 10·2 | 4·1 | 0·4 | 0 | 0 |
| October | 0 | 0 | 0 | 2·6 | 6·1 | 8·4 | 10·9 | 11·9 | 10·9 | 11·4 | 10·9 | 11·5 | 4·2 | 0 | 0 | 0 | 0 |
| November | 0 | 0 | 0 | 0 | 1·9 | 4·9 | 8·2 | 9·2 | 8·8 | 9·7 | 7·6 | 2·0 | 0·2 | 0 | 0 | 0 | 0 |
| December | 0 | 0 | 0 | 0 | 0 | 0·9 | 1·9 | 5·0 | 3·6 | 2·6 | 0·6 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 2·6 | 15·9 | 31·3 | 51·5 | 81·2 | 104·0 | 121·0 | 129·0 | 132·3 | 133·0 | 118·5 | 105·2 | 82·6 | 53·0 | 35·0 | 10·1 | 0 |

# AGRICULTURAL NOTES.

JANUARY.—Mild, cloudy, and wet. A number of garden flowers remained in blossom, throughout the month, and towards the end of the month a few early spring-flowers were out.

FEBRUARY was cold and dull, and the frost killed most of the few flowers that were in blossom.

MARCH was warmer, but wet and dull. A little ploughing was done, but very little corn was got in the ground.

APRIL was rather cold, but upon the whole not a bad month for agricultural operations. Oat sowing was finished, and crops were pretty generally in before the close of the month.

MAY was bright and sunny, and fruit trees were very well in blossom; and towards the middle of the month both gardeners and farmers were hopeful that although the beginning of the year was not promising they would after all have a pretty good summer.

JUNE.—Unfortunately the promising weather of May was not continued in June, which was both wet and dull. Although it was not very much colder than usual, the lack of sunshine was very much felt, and considerable damage was done by the rain.

JULY.—The wet unfavourable weather still continued; very little hay was got in and corn which looked very poor, was in many places beaten down by rain.

AUGUST.—Still cold, and the wet preventing harvesting operations and spoiling fruit. Even at the end of the month a considerable quantity of hay remained out and a great deal was spoiled.

SEPTEMBER commenced wet but was better towards the middle. Oats only yielded a light crop, and were very short in straw.

OCTOBER.—Potatoes were housed in most places before the close of the month. They were very small and did not come up to average quantity. Most of the crops were got in during the month.

NOVEMBER was wet at the beginning and cold at the close. Very little wheat was sown.

DECEMBER.—Owing to the severe frost, scarcely any work was done on the land.

# OBSERVATIONS OF CROPS.

| GRAIN, ETC. | | | GREEN CROPS. | | | |
|---|---|---|---|---|---|---|
| Name. | When Sown. | When Cut. | Name. | When Sown. | Above Ground. | Stored. |
| Wheat | Nov. | Oct. | Potatoes | April—May | May 20th | Oct. |
| Oats | Mar.—Apl. | Sept. | Turnips | April—May | May 27th | Oct. |
| Beans | March | Sept. | Beet | April—May | May 12th | Oct.—Nov. |
| | | | Mangel | April—May | May 25th | 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 24th | Apple | May 21st | Aug. 25th | Laburnum | May 16th |
| Sycamore | Ap. 20th | May 26th | Pear | Ap. 23rd | Aug. 24th | Red Flowering Currant | Ap. 18th |
| Lime | Ap. 20th | May 25th | Red Currant | Ap. 20th | July 19th | Dog-Rose | July 17th |
| Ash | May 16th | May 19th | Black Currant | Ap. 21st | July 21st | Guelder-Rose | June 19th |
| Beech | May 10th | May 17th | Strawberry | May 20th | July 20th | Woodbine | June 25th |
| Horse Chestnut | Ap. 23rd | May 15th | Gooseberry | Ap. 5th | Aug. 25th | Elder | June 10th |
| | | | | | | Hawthorn | May 26th |

## DATES OF THE FLOWERING OF PLANTS AT STONYHURST IN 1890.

| | | |
|---|---|---|
| RANUNCULACEÆ. | | |
| Anemone nemorosa | Wood anemone | Mar. 27 |
| Ranunculus Ficaria | Lesser celandine | Mar. 12 |
| R. acris | Meadow crowfoot | May 22 |
| R. repens | Creeping buttercup | May 2 |
| R. bulbosus | Bulbous buttercup | May 11 |
| R. auricomus | Wood crowfoot | May 11 |
| R. lingua | Great spearwort | May 15 |
| R. hederaceus | Ivy-leaved crowfoot | May 26 |
| Caltha palustris | Marsh marigold | May 3 |
| NYMPHÆACEÆ. | | |
| Nymphæa alba | White water lily | June 26 |
| CRUCIFERÆ. | | |
| Nasturtium officinale | Common watercress | May 12 |
| Cardamine amara | Large bitter cress | May 2 |
| C. pratensis | May flower | May 4 |
| Alliaria officinalis | Garlic mustard | May 16 |
| Brassica campestris | Common wild navew | May 16 |
| Cochlearia Armoracia | Horse radish | June 17 |
| C. officinalis | Scurvy grass | May 10 |
| VIOLACEÆ. | | |
| Viola canina | Dog violet | April 3 |
| V. odorata | Sweet violet | Mar. 20 |
| V. palustris | Marsh violet | May 14 |
| POLYGALACEÆ. | | |
| Polygala vulgaris | Milkwort | May 25 |
| CARYOPHYLLACEÆ. | | |
| L. diurna | Red robin | May 15 |
| L. Flos cuculi | Ragged robin | May 29 |
| Stellaria aquatica | Water starwort | May 22 |
| S. holostea | Great starwort | May 17 |
| HYPERICACEÆ. | | |
| Hypericum perforatum | Common St. John's wort | July 13 |
| H. quadrangulum | Square-stalked St. John's wort | July 2 |
| H. humifusum | Trailing St. John's wort | July 17 |
| H. pulchrum | Slender St. John's wort | July 15 |
| H. hirsutum | Hairy St. John's wort | July 24 |

DATES OF THE FLOWERING OF PLANTS AT STONYHURST IN 1890 *(continued)*.

| | | |
|---|---|---|
| GERANIACEÆ. | | |
| G. Phæum | Dusky crane's-bill | May 29 |
| G. sylvaticum | Wood crane's-bill | May 23 |
| G. pratense | Meadow crane's-bill | June 10 |
| G. Robertianum | Herb Robert | May 14 |
| G. lucidum | Shining crane's-bill | May 29 |
| Oxalis acetosella | Wood sorrel | May 2 |
| PAPILIONACEÆ. | | |
| Ononis arvensis | Rest harrow | June 28 |
| Medicago lupulina | Black medic | June 13 |
| Trifolium pratense | Purple clover | May 5 |
| T. repens | White clover | June 10 |
| Lotus corniculatus | Bird's-foot trefoil | May 11 |
| Vicia sativa | Common vetch | May 21 |
| Lathyrus pratensis | Meadow pea | May 30 |
| ROSACEÆ. | | |
| Spiræa ulmaria | Meadow sweet | July 2 |
| Geum urbanum | Wood avens | June 10 |
| G. rivale | Water avens | May 1 |
| G. intermedium | Intermediate avens | June 14 |
| Fragaria vesca | Wood Strawberry | May 23 |
| Potentilla fragariastrum | Barren Strawberry | Feb. 28 |
| P. reptans | Creeping cinque-foil | June 15 |
| P. anserina | Silver weed | June 1 |
| Alchemilla vulgaris | Lady's mantle | May 10 |
| ONAGRACEÆ. | | |
| Epilobium montanum | Common willow-herb | June 17 |
| Circæa lutetiana | Enchanter's nightshade | June 21 |
| SAXIFRAGACEÆ. | | |
| Saxifraga umbrosa | London pride | May 12 |
| Chrysosplenium oppositifolium | Opposite leaved golden saxifrage | Mar. 21 |
| C. alternifolium | Alternate leaved do. | Mar. 21 |
| UMBELLIFERÆ. | | |
| Sanicula europæa | Wood sanicle | June 15 |
| CAPRIFOLIACEÆ. | | |
| Adoxa moschatellina | Tuberous moscatel | April 29 |

DATES OF THE FLOWERING OF PLANTS AT STONYHURST IN 1890 (*continued*).

| | | |
|---|---|---|
| ARALIACEÆ. | | |
| Hedera helix | Common ivy | Oct. 25 |
| STELLATÆ. | | |
| Galium cruciatum | Crosswort | May 16 |
| G. verum | Yellow bedstraw | May 25 |
| G. palustre | Marsh bedstraw | May 29 |
| G. saxatile | Heath bedstraw | June 1 |
| G. aparine | Cleavers | June 21 |
| Asperula odorata | Sweet woodruff | May 19 |
| VALERIANEÆ. | | |
| Valeriana dioica | Marsh valerian | May 9 |
| V. officinalis | Common valerian | July 20 |
| DIPSACEÆ. | | |
| Scabiosa arvensis | Field scabious | June 16 |
| COMPOSITÆ. | | |
| Tussilago farfara | Common colt's-foot | Mar. 7 |
| Tussilago petasites | Butterbur | April 10 |
| Achillea millefolium | Common yarrow | July 8 |
| S. jacobæa | Ragwort | July 10 |
| Arctium lappa | Common burdock | July 19 |
| Carduus lanceolatus | Spear thistle | July 21 |
| C. palustris | Marsh thistle | June 26 |
| Centaurea nigra | Black knapweed | July 10 |
| Leontodon hispidus | Common hawkbit | June 19 |
| Hypochæris radicata | Cat's-ear | June 4 |
| Sonchus oleraceus | Common sow thistle | June 26 |
| Taraxacum dens-leonis | Common dandelion | April 4 |
| Lapsana communis | Nipplewort | June 10 |
| CAMPANULACEÆ. | | |
| Campanula latifolia | Giant bell-flower | July 21 |
| C. rotundifolia | Harebell | July 20 |
| ERICACEÆ. | | |
| Erica tetralix | Cross-leaved heath | June 28 |

DATES OF THE FLOWERING OF PLANTS AT STONYHURST IN 1890 (*continued*).

| | | |
|---|---|---|
| PRIMULACEÆ. | | |
| Primula vulgaris | Common primrose | Jan. 27 |
| P. veris | Cowslip | May 11 |
| Lysimachia vulgaris | Great yellow loosestrife | May 29 |
| L. nemorum | Yellow pimpernel | May 29 |
| APOCYNACEÆ. | | |
| Vinca minor | Lesser periwinkle | May 29 |
| POLEMONIACEÆ. | | |
| Polemonium cœruleum | Jacob's ladder | June 23 |
| CONVOLVULACEÆ. | | |
| Convolvulus sepium | Large convolvulus | July 15 |
| BORAGINACEÆ. | | |
| Myosotis sylvatica | Forget-me-not | May 9 |
| M. arvensis | Field myosote | May 9 |
| Symphytum officinale | Common comfrey | June 6 |
| SCROPHULARINEÆ. | | |
| Scrophularia nodosa | Common figwort | June 2 |
| S. aquatica | Water figwort | June 7 |
| Mimulus luteus | Yellow mimulus | June 7 |
| Linaria cymbalaria | Ivy-leaved toad-flax | April 19 |
| Digitalis purpurea | Foxglove | June 29 |
| Veronica serpyllifolia | Thyme-leaved speedwell | May 21 |
| V. officinilas | Common speedwell | May 21 |
| V. anagallis | Water speedwell | June 23 |
| V. beccabunga | Brooklime speedwel | June 15 |
| V. chamædrys | Germander speedwe | May 15 |
| Bartsia odontites | Red bartsia | July 10 |
| Euphrasia officinalis | Eyebright | July 3 |
| Rhinanthus crista galli | Yellow rattle | June 16 |
| Pedicularis sylvatica | Lousewort | May 29 |
| LABIATÆ | | |
| Nepeta glechoma | Ground ivy | April 24 |
| Prunella vulgaris | Self-heal | May 21 |
| Stachys sylvatica | Hedge woundwort | June 30 |
| Lamium purpureum | Purple dead-nettle | May 22 |
| Ajuga reptans | Bugle | May 25 |
| PLANTAGINACEÆ. | | |
| Plantago major | Greater plantain | June 6 |
| P. lanceolata | Ribwort plantain | May 19 |

DATES OF THE FLOWERING OF PLANTS AT STONYHURST IN 1890 (*continued*).

| | | |
|---|---|---|
| CHENOPODIACIÆ. | | |
| Chenopodium bonus Henricus | Good King Henry | June 9 |
| Atriplex patula | Common orache | July 24 |
| POLYGONACEÆ. | | |
| Rumex obtusifolius | Broad dock | June 10 |
| R. crispus | Curled dock | June 10 |
| R. acetosa | Sorrel | May 15 |
| Polygonum aviculare | Knotgrass | July 23 |
| P. bistorta | Snakeweed | July 10 |
| P. persicaria | Common persicaria | July 10 |
| P. convolvulus | Black bindweed | July 13 |
| EUPHORBIACEÆ. | | |
| Mercurialis perennis | Dog's mercury | Mar. 29 |
| URTICACÆ. | | |
| Urtica dioica | Common nettle | June 2 |
| AROIDEÆ. | | |
| Arum maculatum | Common arum | May 30 |
| ORCHIDACEÆ. | | |
| Epipactis latifolia | Helleborine | July 2 |
| Listera ovata | Twayblade | June 20 |
| Orchis mascula | Early orchis | May 10 |
| O. maculata | Spotted orchis | May 20 |
| IRIDACEÆ. | | |
| Iris pseudacorus | Yellow iris | June 21 |
| Crocus vernus | Spring Crocus | Mar. 3 |
| AMARYLLIDEÆ. | | |
| Narcissus pseudonarcissus | Daffodil | April 20 |
| Galanthus nivalis | Snowdrop | Jan. 25 |
| LILIACEÆ. | | |
| Paris quadrifolia | Herb Paris | May 26 |
| Scilla nutans | Bluebell | May 10 |
| Allium ursinum | Broad-leaved garlic | May 25 |

## OBSERVATIONS OF VIBRATION AND DEFLECTION FOR ABSOLUTE MEASURE OF MAGNETIC FORCE.

| Month. | G. M. T. (Civil Day.) | Temperature. | Time of one vibration. | G. M. T. | Temperature. | Observed Deflection. at 1·0 ft. / at 1·3 ft. |
|---|---|---|---|---|---|---|
| | D. H. M. | ° | | H. M. | ° | ° ′ ″ |
| January... | 21st 9 32 | 50·4 | 5·7555 | 10 5 | 50·5 | 13 2 23 |
| | | | | 10 35 | 51·7 | 5 52 32 |
| February. | 22nd 11 44 | 46·5 | 5·7658 | 11 57 | 62·4 | 13 3 23 |
| | | | | 12 22 | 59·8 | 5 54 27 |
| March .. | 19th 9 47 | 52·3 | 5·7692 | 11 29 | 57·4 | 13 3 40 |
| | | | | 11 40 | 57·8 | 5 54 16 |
| April ..... | 17th 9 10 | 48·0 | 5·7694 | 11 20 | 49·8 | 13 1 0 |
| | | | | 11 40 | 52·1 | 5 56 28 |
| May ..... | 16th 11 16 | 50·6 | 5·7682 | 12 21 | 52.6 | 13 1 0 |
| | | | | 12 35 | 53·6 | 5 54 2 |
| June ..... | 18th 10 18 | 53·6 | 5·7847 | 11 41 | 53·0 | 12 59 13 |
| | | | | 12 5 | 53·7 | 5 56 8 |
| July ..... | 16th 10 9 | 56·4 | 5·7689 | 11 22 | 55·2 | 13 3 11 |
| | | | | 12 18 | 56·4 | 5 54 48 |
| August ... | 22nd 11 42 | 58·8 | 5·7542 | 12 20 | 59·5 | 13 2 27 |
| September | 23rd 15 37 | 57·3 | 5·8420 | 10 45 | 61·9 | 13 1 3 |
| October... | 16th 14 2 | 49·2 | 5·7791 | 15 20 | 49·3 | 13 0 37 |
| November | 15th 10 23 | *77·0 | 5.8533 | 15 15 | *77·0 | 12 38 34 |
| December | 20th 11 53 | 40·4 | 5·8240 | 15 30 | 36·0 | 12 39 41 |

* Sun shining on instrument.

| DIP OBSERVATIONS. | | | | MAGNETIC INTENSITY. | | |
|---|---|---|---|---|---|---|
| Month. | G. M. T. (civil day) | Needle. | Dip. | X- or Horizontal Force. | Y, or Vertical Force. | Total Force. |
| | D. H. M. | | ° ′ ″ | | | |
| January . | 20th 11 34 | | 69 8 52 | 3·7140 | 9·7500 | 10·4335 |
| February | 23rd 16 3 | | 69 6 7 | 3·7032 | 9·6990 | 10·3819 |
| March ... | 20th 11 58 | | 69 4 50 | 3·7028 | 9·6868 | 10·3705 |
| April ... | 17th 12 6 | | 69 6 16 | 3·7079 | 9·7120 | 10·3958 |
| May ..... | 17th 11 35 | | 69 8 21 | 3·7089 | 9·7322 | 10·4150 |
| June ..... | 19th 11 8 | | 69 4 43 | 3·7043 | 9·6890 | 10·3731 |
| July .. ... | 17th 11 28 | | 69 7 53 | 3·7042 | 9·7156 | 10·3977 |
| August... | 23rd 15 30 | | 69 5 29 | 3·7162 | 9·7285 | 10·4133 |
| Sept. ... | 22nd 11 35 | | 69 14 34 | 3·6626 | 9·6630 | 10·3338 |
| October.. | 18th 11 10 | | 69 11 20 | 3·7051 | 9·7478 | 10·4274 |
| Nov..... | 22nd 11 5 | | 69 9 37 | 3·7101 | 9·7470 | 10·4284 |
| Dec..... | 24th 9 52 | | 69 12 | 3·7250 | 9·8186 | 10·5022 |
| Means ... | ..... | ... | 69 8 25 | 3·7054 | 9·7241 | 10·4061 |

# DECLINATION OBSERVATIONS.

| Month. | G. M. T, | Uncorrected. Observation | Uncorrected. Monthly Mean. | Corrected. Observation. | Corrected. Monthly Mean. |
|---|---|---|---|---|---|
| | D. H. M. | ° ′ ″ | ° ′ ″ | ° ′ ″ | ° ′ ″ |
| January ... | 6th ..9 1 a.m. | 19 18 9 | | 19 19 8 | |
| | 13th...9 4 a.m. | 11 46 | | 12 27 | |
| | 21st...9 3 a.m. | 12 45 | 19 14 13 | 14 44 | 19 15 26 |
| February . | 4th...9 5 a.m. | 20 21 | | 19 35 | |
| | 10th...9 10 a.m. | 13 38 | | 14 27 | |
| | 17th...9 4 a.m. | 17 4 | | 18 0 | |
| | 25th...9 2 a.m. | 18 4 | 19 17 27 | 18 45 | 19 17 42 |
| March ... | 3rd...9 16 a.m. | 17 48 | | 17 50 | |
| | 10th...9 6 a.m. | 9 46 | | 11 15 | |
| | 17th...9 5 a.m. | 8 32 | | 9 30 | |
| | 24th...8 59 a.m. | 13 52 | | 13 59 | |
| | 31st ...8 53 a.m. | 11 35 | 19 12 9 | 13 12 | 19 13 9 |
| April ..... | 7th...9 5 a.m. | 15 59 | | 15 10 | |
| | 14th...9 5 a.m. | 15 20 | | 16 15 | |
| | 22nd...9 11 a.m. | 10 17 | | 11 24 | |
| | 28th...9 13 a.m. | 23 17 | 19 16 13 | 20 15 | 19 15 46 |
| May ..... | 7th...9 6 a.m. | 16 27 | | 16 27 | |
| | 12th...9 18 a.m. | 13 29 | | 14 39 | |
| | 19th...9 8 a.m. | 14 28 | | 15 30 | |
| | 26th...9 5 a.m. | 18 31 | 19 15 44 | 17 24 | 19 16 0 |
| June ..... | 2nd...8 59 a.m. | 10 59 | | 11 5 | |
| | 9th...9 11 a.m. | 9 36 | | 11 45 | |
| | 17th...9 4 a.m. | 15 19 | | 16 4 | |
| | 23rd...9 5 a.m. | 18 36 | 19 15 45 | 16 31 | 19 13 46 |

## DECLINATION OBSERVATIONS (*Continued*).

| Month. | G. M. T. | Uncorrected. Observation. | Uncorrected. Monthly Mean. | Corrected. Observation. | Corrected. Monthly Mean |
|---|---|---|---|---|---|
| | D. H. M. | ° ′ ″ | ° ′ ″ | ° ′ ″ | ° ′ ″ |
| July .... | 1st ...9 8 a.m. | 19 8 19 | | 19 10 19 | |
| | 7th...9 3 a.m. | 12 30 | | 18 17 | |
| | 21st ...9 8 a.m. | 9 31 | | 10 30 | |
| | 29th...8 54 a.m. | 12 26 | 19 10 42 | 21 21 | 19 15 7 |
| August ... | 4th...9 12 a.m. | 12 55 | | 21 39 | |
| | 11th...9 4 a.m. | 16 11 | | 17 20 | |
| | 21st...0 25 p.m. | 21 59 | | 21 50 | |
| | 30th 10 30 a.m. | 15 49 | 19 16 44 | 15 41 | 19 19 8 |
| September | 8th 10 55 a.m. | 21 19 | | 21 30 | |
| | 23rd...4 15 p.m. | 13 41 | | 16 10 | |
| | 30th...9 15 a.m. | 17 33 | 19 17 31 | 17 15 | 19 18 18 |
| October ... | 8th...9 15 a.m. | 15 9 | | 16 25 | |
| | 13th...9 15 a.m. | 9 27 | | 11 9 | |
| | 27th...9 15 a.m. | 20 3 | 19 14 53 | 20 45 | 19 16 6 |
| November | 3rd...9 15 a.m. | 21 42 | | 20 14 | |
| | 11th...9 15 a.m. | 81 13 | | 19 25 | |
| | 16th...9 17 a.m. | 14 54 | | 16 43 | |
| | 24th...9 20 a.m. | 6 57 | 19 15 27 | 7 10 | 19 15 53 |
| December | 1st...9 15 a.m. | 18 44 | | 18 40 | |
| | 9th...9 30 a.m. | 16 26 | | 17 15 | |
| | 22d...9 35 a.m. | 13 26 | | 15 30 | |
| | 30th...9 20 a.m. | 16 4 | 19 16 10 | 18 3 | 19 17 25 |
| Yearly mean | | | 19 15 15 | | 19 16 9 |

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

## PRESENTS RECEIVED.

| | | |
|---|---|---|
| Greenwich Observations, 1887, 1888 | *from* | The Royal Observatory. |
| Reduction of Meteorological Observations 1871–1876 | ,, | ,, |
| Greenwich ten year Catalogue of 4.059 Stars 1880 | ,, | ,, |
| Recomputation of Position of Ecliptic, 1877-86 | ,, | ,, |
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# APPENDIX.

# RESULTS

OF

# Meteorological Observations

TAKEN AT

ST. IGNATIUS' COLLEGE,

MALTA,

BY THE

REV. J. SCOLES, S.J.

1890.

# ST. IGNATIUS' COLLEGE.

## MALTA.

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

## METEOROLOGICAL REPORT.

1890.

### January.

| Results of Observations taken during the Month. | | Mean for the last 5 years. |
|---|---|---|
| Mean Reading of Barometer.....inches | 30·163 | 30·051 |
| Highest ,, ,, on the 7th ,, | 30·507 | 30·415 |
| Lowest ,, ,, ,, 31st ,, | 29·773 | 29·538 |
| Range of Barometer Readings ..... ,, | 0·734 | 0·877 |
| Highest Reading of Max. Therm. on the 26th..... | 67·5 | 63·9 |
| Lowest ,, Min. Therm. ,, 16th ... | 46·2 | 41·6 |
| Range of Thermometer Readings ..... | 21·3 | 22·3 |
| Greatest Range in 24 hours on the 26th ..... | 18·3 | 18·4 |
| Mean of all the Highest Readings..... | 61·4 | 58·4 |
| Mean of all the Lowest Readings ..... | 52·2 | 47·8 |
| Mean Daily Range ..... | 9·2 | 10·6 |
| Mean Temperature (deduced from Max. and Min.) | 56·1 | 52·5 |
| Mean Temperature (deduced from Dry Bulb.)..... | 55·8 | 52·1 |
| Adopted Mean Temperature ..... | 56·0 | 52·3 |
| Mean Temperature of Evaporation ..... | 51·5 | 48·1 |
| Mean Temperature of Dew-point ..... | 48·6 | 44·9 |
| Mean elastic force of Vapour .....inches | 0·343 | 0·298 |
| Mean weight of Vapour in a cubic foot of air...grains | 3.9 | 3·4 |
| Mean additional weight required for saturation ,, | 0·9 | 0·9 |
| Mean degree of Humidity ..... | 80 | 80 |
| Mean weight of a cubic foot of air .....grains | 540·0 | 542·9 |
| Fall of Rain..... .....inches | 1·324 | 3·329 |
| Number of days on which Rain fell ..... | 8 | 12 |
| Mean amount of Cloud (an overcast sky=10) ..... | 4·9 | 4·6 |
| Total number of miles of Wind indicated..... | 8415 | 8336 |
| Mean Velocity of Wind per hour .....miles | 11·3 | 11·2 |

## February.

| Results of Observations taken during the Month. | | Mean for the last 5 years. |
|---|---|---|
| Mean Reading of Barometer.....inches | 29·955 | 30·064 |
| Highest ,, ,, on the 18th ,, | 30·269 | 30·334 |
| Lowest ,, ,, ,, 28th ,, | 29·431 | 29·690 |
| Range of Barometer Readings ..... ..... | 0·838 | 0·644 |
| Highest Reading of Max. Therm. on the 20th ... | 67·1 | 67·0 |
| Lowest Reading of Min. Therm. ,, 13th..... | 42·7 | 42·0 |
| Range of Thermometer Readings ..... ..... | 24·4 | 25·0 |
| Greatest Range in 24 hours on the 13th ..... | 17·7 | 18·8 |
| Mean of all the Highest Readings ..... | 59·6 | 60·7 |
| Mean of all the Lowest Readings ..... | 49·9 | 49·0 |
| Mean Daily Range ..... ..... | 9·7 | 11·7 |
| Mean Temperature (deduced from Max. and Min.) | 53·7 | 53·9 |
| Mean Temperature (deduced from Dry Bulb.)..... | 54·4 | 54·0 |
| Adopted Mean Temperature ..... | 54·1 | 54·0 |
| Mean Temperature of Evaporation ..... | 49·6 | 50·0 |
| Mean Temperature of Dew-point ..... | 46·5 | 47·3 |
| Mean elastic force of Vapour .....inches | 0·317 | 0·327 |
| Mean weight of Vapour in a cubic foot of air...grains | 3·6 | 3·7 |
| Mean additional weight required for saturation ,, | 0·9 | 0·8 |
| Mean degree of Humidity ..... | 80 | 83 |
| Mean weight of a cubic foot of air .....grains | 539·4 | 541·1 |
| Fall of Rain.....inches | 5·144 | 1·483 |
| Number of days on which Rain fell ..... | 10 | 9 |
| Mean amount of Cloud (an overcast sky=10)..... | 5·5 | 4·0 |
| Total number of miles of Wind indicated ..... | 8516 | 6893 |
| Mean Velocity of Wind per hour .....miles | 12.7 | 10·1 |

# March.

| Results of Observations taken during the Month. | | Mean for the last 5 years. |
|---|---|---|
| Mean Reading of Barometer.....inches | 29·917 | 30·008 |
| Highest ,, ,, on the 14th ,, | 30·231 | 30·404 |
| Lowest ,, ,, ,, 1st ,, | 29·199 | 29·513 |
| Range of Barometer Readings .....,, | 1·032 | 0·891 |
| Highest Reading of Max. Therm. on the 31st..... | 72·2 | 74·6 |
| Lowest Reading of Min. Therm. ,, 3rd .... | 40·2 | 44·2 |
| Range of Thermometer Readings ..... ..... | 32·0 | 30·4 |
| Greatest Range in 24 hours on the 31st ..... | 22·0 | 23·4 |
| Mean of all the Highest Readings ..... | 62·8 | 63·6 |
| Mean of all the Lowest Readings ..... | 50·4 | 51·2 |
| Mean Daily Range ..... ..... | 12·4 | 12·4 |
| Mean Temperature (deduced from Max. and Min.) | 55·1 | 56·6 |
| Mean Temperature (deduced from Dry Bulb) ..... | 55·9 | 56·0 |
| Adopted Mean Temperature ..... | 55·5 | 56·3 |
| Mean Temperature of Evaporation..... | 51·3 | 52·5 |
| Mean Temperature of Dew-point ..... | 48·0 | 49·4 |
| Mean elastic force of Vapour .....inches | 0·335 | 0·354 |
| Mean weight of Vapour in a cubic foot of air...grains | 3·8 | 4·0 |
| Mean additional weight required for saturation ,, | 1·0 | 1·0 |
| Mean degree of Humidity ..... | 77 | 79 |
| Mean weight of a cubic foot of air .....grains | 536·2 | 536·7 |
| Fall of Rain..... .....inches | 1·015 | 0·692 |
| Number of days on which Rain fell ..... | 8 | 6 |
| Mean amount of Cloud (an overcast sky = 10) ..... | 4·5 | 4·2 |
| Total number of miles of Wind indicated ..... | 9465 | 7886 |
| Mean Velocity of Wind per hour .....miles | 12·7 | 10·6 |

## April.

| Results of Observations taken during the Month. | | Mean for the last 5 years. |
|---|---|---|
| Mean Reading of Barometer.....inches | 29·852 | 29·930 |
| Highest ,, ,, on the 29th ,, | 30·239 | 30·246 |
| Lowest ,, ,, ,, 16th ,, | 29·629 | 29·460 |
| Range of Barometer Readings..... | 0·610 | 0·786 |
| Highest Reading of Max. Therm on the 18th..... | 75·9 | 75·1 |
| Lowest ,, Min. Therm. ,, 30th ..... | 45·3 | 47·9 |
| Range of Thermometer Readings ..... | 30·6 | 27·2 |
| Greatest Range in 24 hours on the 18th ..... | 22·7 | 20·9 |
| Mean of all the Highest Readings..... ..... | 67·0 | 67·5 |
| Mean of all the Lowest Readings ..... | 54·7 | 54·2 |
| Mean Daily Range ..... | 12·3 | 13·3 |
| Mean Temperature (deduced from Max. and Min.) | 59·9 | 59·8 |
| Mean Temperature (deduced from Dry Bulb) ..... | 58·7 | 59·8 |
| Adopted Mean Temperature ..... | 59·3 | 59·8 |
| Mean Temperature of Evaporation ..... | 55·1 | 55·9 |
| Mean Temperature of Dew-point ..... | 51·9 | 52·3 |
| Mean elastic force of Vapour .....inches | 0·386 | 0·393 |
| Mean weight of Vapour in a cubic foot of air... grains | 4·3 | 4·4 |
| Mean additional weight required for saturation ,, | 1·3 | 1·4 |
| Mean degree of Humidity ..... | 78 | 77 |
| Mean weight of a cubic foot of air .....grains | 530·9 | 530·6 |
| Fall of Rain.....inches | 0·638 | 0·606 |
| Number of days on which Rain fell ..... | 5 | 5 |
| Mean amount of Cloud (an overcast sky=10) ..... | 4·7 | 4·0 |
| Total number of miles of Wind indicated ..... | 8495 | 7869 |
| Mean Velocity of Wind per hour ... .....miles | 11·8 | 10·9 |

# May.

| Results of Observations taken during the Month. | | Mean for the last 5 years. |
|---|---|---|
| Mean Reading of Barometer.....inches | 29.930 | 30·033 |
| Highest ,, ,, on the 15th ,, | 30·152 | 30·197 |
| Lowest ,, ,, ,, 7th ,, | 29·596 | 29·651 |
| Range of Barometer Readings..... ,, | 0·556 | 0·546 |
| Highest Reading of Max. Therm. on the 6th ..... | 80.4 | 84·0 |
| Lowest ,, Min. Therm. ,, 4th..... | 53·0 | 51·1 |
| Range of Thermometer Readings ..... | 27·4 | 32·9 |
| Greatest Range in 24 hours on the 10th..... | 22·8 | 25·2 |
| Mean of all the Highest Readings ..... | 73·3 | 73·3 |
| Mean of all the Lowest Readings ..... | 58·8 | 58·3 |
| Mean Daily Range ..... | 14·5 | 15·0 |
| Mean Temperature (deduced from Max. and Min.)... | 65·1 | 64·4 |
| Mean Temperature (deduced from Dry Bulb) ..... | 63·9 | 64·5 |
| Adopted Mean Temperature ..... | 64·5 | 64·5 |
| Mean Temperature of Evaporation ..... | 60·3 | 60·3 |
| Mean Temperature of Dew-point ..... | 56·8 | 56·3 |
| Mean elastic force of Vapour ..... inches | 0·462 | 0·456 |
| Mean weight of Vapour in a cubic foot of air...grains | 5·1 | 4·9 |
| Mean additional weight required for saturation ,, | 1·6 | 1·9 |
| Mean degree of Humidity ..... | 76 | 73 |
| Mean weight of a cubit foot of air ..... grains | 525·9 | 527·2 |
| Fall of Rain..... .....inches | 0·611 | 0·273 |
| Number of days on which Rain fell ..... | 4 | 3 |
| Mean amount of Cloud (an overcast sky = 10) ..... | 3·5 | 2·8 |
| Total number of miles of Wind indicated..... | 7750 | 6996 |
| Mean Velocity of Wind per hour ..... miles | 10·4 | 9·4 |

# June.

| Results of Observations taken during the Month. | | Mean for the last 5 years. |
|---|---|---|
| Mean Reading of Barometer.....inches | 30·058 | 29·998 |
| Highest ,, ,, on the 18th ,, | 30·203 | 30·179 |
| Lowest ,, ,, ,, 1st ,, | 29·891 | 29·799 |
| Range of Barometer Readings..... ,, | 0·312 | 0·380 |
| Highest Reading of Max. Therm. on the 25th..... | 86·2 | 88·2 |
| Lowest Reading of Min. Therm. ,, 3rd ..... | 58·1 | 59·3 |
| Range of Thermometer Readings ..... | 28·1 | 28·9 |
| Greatest Range in 24 hours on the 11th ..... | 23·1 | 23·2 |
| Mean of all the Highest Readings ..... | 79·1 | 79·2 |
| Mean of all the Lowest Readings ..... | 63·4 | 64·4 |
| Mean Daily Range ..... | 15·7 | 14·8 |
| Mean Temperature (deduced from Max. and Min.) | 70·5 | 71·1 |
| Mean Temperature (deduced from Dry Bulb) ..... | 69·5 | 70·6 |
| Adopted Mean Temperature ..... | 70·0 | 70·9 |
| Mean Temperature of Evaporation ..... | 65·1 | 65·6 |
| Mean Temperature of Dew-point ..... | 61·4 | 61·6 |
| Mean elastic force of Vapour ..... inches | 0.545 | 0·548 |
| Mean weight of Vapour in a cubic foot of air...grains | 6·0 | 5·9 |
| Mean additional weight required for saturation ,, | 2·0 | 2·3 |
| Mean degree of Humidity ..... | 74 | 72 |
| Mean weight of a cubic foot of air ..... grains | 522·1 | 520·0 |
| Fall of Rain ..... inches | 0·080 | 0·140 |
| Number of days on which Rain fell ..... | 1 | 2 |
| Mean amount of Cloud (an overcast sky = 10) ..... | 1·3 | 2.2 |
| Total number of miles of Wind indicated ..... | 6470 | 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 | 29·977 | 30·025 |
| Highest ,, ,, on the 8th ,, | 30·109 | 30·177 |
| Lowest ,, ,, on the 12th ,, | 28·807 | 29·876 |
| Range of Barometer Readings ..... ..... | 0·302 | 0·301 |
| Highest Reading of Max. Therm. on the 18th ... | 92·2 | 96·1 |
| Lowest ,, ,, Min. Therm. on the 25th ... | 62·7 | 64·9 |
| Range of Barometer Readings ..... | 29·5 | 31·2 |
| Greatest Range in 24 hours on the 17th ..... | 27·8 | 25·8 |
| Mean of all the Highest Readings ..... | 85·3 | 86·5 |
| Mean of all the Lowest Readings ..... | 68·8 | 69.6 |
| Mean Daily Range ..... | 16·5 | 16·9 |
| Mean Temperature (deduced from Max. and Min.) | 76·6 | 77·5 |
| Mean Temperature (deduced from Dry Bulb) ..... | 75·0 | 77·0 |
| Adopted Mean Temperature ..... | 75·8 | 77·3 |
| Mean Temperature of Evaporation ..... | 68·8 | 70·3 |
| Mean Temperature of Dew-point ..... | 64·0 | 65·4 |
| Mean Elastic force of Vapour .....inches | 0·596 | 0·627 |
| Mean Weight of Vapour in a cubic foot of air, grains | 6·5 | 6·7 |
| Mean additional weight required for saturation ,, | 3·1 | 3·4 |
| Mean degree of Humidity ..... | 67 | 67 |
| Mean Weight of a cubic foot of air .....grains | 515·2 | 514·1 |
| Fall of Rain..... .....inches | —— | —— |
| Number of days on which Rain fell ..... | —— | —— |
| Mean amount of Cloud (an overcast sky = 10) ... | 0·6 | 0·5 |
| Total number of miles of Wind indicated..... | 6290 | 5212 |
| Mean Velocity of Wind per hour..... miles | 8·5 | 7·0 |

## August.

| Results of observations taken during the Month. | | Mean for the last 5 years. |
|---|---|---|
| Mean Reading of Barometer.....inches | 29·990 | 29·994 |
| Highest ,, ,, on the 15th ,, | 30·090 | 30·142 |
| Lowest ,, ,, on the 25th ,, | 29·850 | 29·862 |
| Range of Barometer Readings ..... ,, | 0·240 | 0·280 |
| Highest Reading of Max. Therm. on the 25th..... | 97·5 | 95·5 |
| Lowest ,, ,, Min. Therm. on the 29th..... | 64·8 | 66·7 |
| Range of Thermometer Readings ..... | 32·7 | 28·8 |
| Greatest Range in 24 hours on the 25th ..... | 26·8 | 25·1 |
| Mean of all the Highest Readings ..... ..... | 89·1 | 87·1 |
| Mean of all the Lowest Readings ..... | 70·5 | 71·7 |
| Mean Daily Range ..... ..... | 18·6 | 15·4 |
| Mean Temperature (deduced from Max. and Min.) | 78·9 | 78·5 |
| Mean Temperature (deduced from Dry Bulb) ..... | 78·9 | 78·8 |
| Adopted Mean Temperature ..... | 78·9 | 78·7 |
| Mean Temperature of Evaporation ..... | 72·5 | 71·8 |
| Mean Temperature of Dew-point ..... | 69·0 | 67·0 |
| Mean Elastic force of Vapour .....inches | 0·684 | 0·662 |
| Mean Weight of Vapour in a cubic foot of air, grains | 7·4 | 7·1 |
| Mean additional weight required for saturation ,, | 3·3 | 3·5 |
| Mean degree of Humidity ..... | 69 | 68 |
| Mean Weight of a cubic foot of air.....grains | 511·0 | 511·7 |
| Fall of Rain.....inches | —— | 0·192 |
| Number of days on which Rain fell ..... | —— | 1 |
| Mean amount of Cloud (an overcast sky = 10) ..... | 0·0 | 1·3 |
| Total number of miles of Wind indicated ..... | 4565 | 5631 |
| Mean Velocity of Wind per hour .....miles | 6·1 | 7·6 |

## September.

| Results of observations taken during the Month. | | Mean for the last 5 years. |
|---|---|---|
| Mean Reading of Barometer.....inches | 30·138 | 30·052 |
| Highest ,, ,, on the 27th ,, | 30·348 | 30·248 |
| Lowest ,, ,, on the 15th ,, | 29·921 | 29·825 |
| Range of Barometer Readings..... ,, | 0·427 | 0·423 |
| Highest Reading of Max. Therm. on the 14th ... | 84·2 | 92·3 |
| Lowest ,, ,, Min. Therm. on the 25th..... | 58·7 | 63·7 |
| Range of Thermometer Readings ..... | 25·5 | 28·6 |
| Greatest Range in 24 hours on the 25th ..... | 20·1 | 22·7 |
| Mean of all the Highest Readings ..... | 78·4 | 82·9 |
| Mean of all the Lowest Readings ..... | 65·1 | 68·8 |
| Mean Daily Range ..... ..... | 13·3 | 14·1 |
| Mean Temperature (deduced from Max. and Min.) | 70·9 | 75·1 |
| Mean Temperature (deduced from Dry Bulb) ..... | 70·2 | 75·3 |
| Adopted Mean Temperature ..... | 70·5 | 75·2 |
| Mean Temperature of Evaporation..... | 64·9 | 69·2 |
| Mean Temperature of Dew-point ..... | 60·7 | 64·8 |
| Mean Elastic force of Vapour .....inches | 0·531 | 0·615 |
| Mean Weight of Vapour in a cubic foot of air grains | 5·8 | 6·7 |
| Mean additional weight required for saturation ,, | 2·3 | 2·8 |
| Mean degree of Humidity ..... | 71 | 70 |
| Mean Weight of a cubic foot of air..... grains | 524·5 | 516·3 |
| Fall of Rain.....inches | 1·308 | 1·134 |
| Number of days on which Rain fell ..... | 6 | 5 |
| Mean amount of Cloud (an overcast sky = 10) ..... | 2·2 | 2·3 |
| Total number of miles of Wind indicated ..... | 6410 | 6001 |
| Mean Velocity of Wind per hour ..... miles | 8·9 | 8·3 |

## October.

| Result of Observations taken during the Month. | | Mean for the last 5 years. |
|---|---|---|
| Mean Reading of Barometer .....inches | 30·111 | 30·048 |
| Highest ,, ,, on the 13th ,, | 30 317 | 30·292 |
| Lowest ,, ,, on the 19th ,, | 29·812 | 29·700 |
| Range of Barometer Readings ..... ,, | 0·505 | 0·592 |
| Highest Reading of Max. Therm. on the 8th ... | 83·2 | 87·8 |
| Lowest ,, ,, Min. Therm. on the 31st ..... | 52·6 | 55·8 |
| Range of Thermometer Readings ..... | 30·6 | 32·0 |
| Greatest Range in 24 hours on the 7th ..... | 19·0 | 19·5 |
| Mean of all the Highest Readings ..... | 74·8 | 75·5 |
| Mean of all the Lowest Readings..... | 61·8 | 64·1 |
| Mean Daily Range ..... | 13·0 | 11·4 |
| Mean Temperature (deduced from Max. and Min.) | 67·4 | 68·9 |
| Mean Temperature (deduced from Dry Bulb) ..... | 65·6 | 68·4 |
| Adopted Mean Temperature ..... .. ... ..... | 66·5 | 68·7 |
| Mean Temperature of Evaporation ..... | 61·9 | 63·8 |
| Mean Temperature of Dew-point ..... | 58·8 | 60·1 |
| Mean Elastic force of Vapour ... .....inches | 0·496 | 0·521 |
| Mean Weight of Vapour in a cubic foot of air ..grains | 5·5 | 5·7 |
| Mean additional weight required for saturation ,, | 1·5 | 1·9 |
| Mean degree of Humidity ..... | 80 | 76 |
| Mean Weight of a cubic foot of air.....grains | 527·7 | 523·5 |
| Fall of Rain .....inches | 5·310 | 3·323 |
| Number of days on which Rain fell ..... ... | 11 | 8 |
| Mean amount of Cloud (an overcast sky = 10)..... | 3·8 | 4·4 |
| Total number of miles of Wind indicated..... | 6507 | 6843 |
| Mean Velocity of Wind per hour .....miles | 8·7 | 9·2 |

## November.

| Results of observations taken during the Month. | | Mean for the last 5 years. |
|---|---|---|
| Mean Reading of Barometer .....inches | 29·964 | 30·052 |
| Highest ,, ,, on the 20th..... ,, | 30·320 | 30·276 |
| Lowest ,, ,, on the 26th..... ,, | 29·703 | 29·675 |
| Range of Barometer Readings ..... ,, | 0·617 | 0·601 |
| Highest Reading of Max. Therm. on the 6th ..... | 73·4 | 74·6 |
| Lowest ,, ,, Min. Therm. on the 22nd ... | 45·9 | 49·8 |
| Range of Thermometer Readings ..... | 27·5 | 24·8 |
| Greatest Range in 24 hours on the 22nd ..... | 19·8 | 17·9 |
| Mean of all the Highest Readings ..... | 66·0 | 67·8 |
| Mean of all the Lowest Readings..... | 55·1 | 57·0 |
| Mean Daily Range ..... | 10·9 | 10·8 |
| Mean Temperature (deduced from Max. and Min.) | 59.4 | 61·5 |
| Mean Temperature (deduced from Dry Bulb) ..... | 58·8 | 61·0 |
| Adopted Mean Temperature ..... | 59·1 | 61·3 |
| Mean Temperature of Evaporation .... ..... | 54·3 | 57·0 |
| Mean Temperature of Dew-point ..... | 50·9 | 53·9 |
| Mean Elastic force of Vapour ..... inches | 0·373 | 0·416 |
| Mean Weight of Vapour in a cubic foot of air, grains | 4·2 | 4·7 |
| Mean additional weight required for saturation ,, | 1·2 | 1·3 |
| Mean degree of Humidity..... | 77 | 79 |
| Mean Weight of a cubic foot of air.....grains | 533·5 | 532·1 |
| Fall of Rain .....inches | 1·871 | 4·130 |
| Number of days on which Rain fell..... | 12 | 11 |
| Mean amount of Cloud (an overcast sky = 10) ..... | 4.6 | 4·9 |
| Total number of miles of Wind indicated ..... | 7768 | 6786 |
| Mean Velocity of Wind per hour.....miles | 10·8 | 9·4 |

## December.

| Results of observations taken during the Month. | | Mean for the last 5 years. |
|---|---|---|
| Mean Reading of Barometer .....inches | 29·892 | 30·054 |
| Highest ,, ,, on the 31st ... ,, | 30·318 | 30·383 |
| Lowest ,, ,, on the 23rd... ,, | 29·354 | 29·572 |
| Range of Barometer Readings ..... ., | 0·964 | 0·811 |
| Highest Reading of Max. Therm. on the 1st ..... | 67·2 | 67·9 |
| Lowest ,, ,, Min. Therm. on the 15th ..... | 45·8 | 43·7 |
| Range of Thermometer Readings..... | 21·4 | 24·2 |
| Greatest Range in 24 hours on the 12th ..... ..... | 15·9 | 17·0 |
| Mean of all the Highest Readings ..... | 61·2 | 61·6 |
| Mean of all the Lowest Readings..... | 50·5 | 51·8 |
| Mean Daily Range ..... | 10·7 | 9·8 |
| Mean Temperature (deduced from Max. and Min.) | 55·2 | 56·1 |
| Mean Temperature (deduced from Dry Bulb) ..... | 54·5 | 55·4 |
| Adopted Mean Temperature..... | 54·9 | 55·7 |
| Mean Temperature of Evaporation ..... | 50·2 | 51·6 |
| Mean Temperature of Dew-point..... | 46·8 | 48·4 |
| Mean Elastic force of Vapour.....inches | 0·321 | 0·341 |
| Mean Weight of Vapour in a cubic foot of air, grains | 3·6 | 3·8 |
| Mean additional weight required for saturation ,, | 1·0 | 1·0 |
| Mean degree of Humidity ..... ..... | 77 | 79 |
| Mean Weight of a cubic foot of air.....grains | 537·2 | 539·1 |
| Fall of Rain ..... .....inches | 4·112 | 3·264 |
| Number of days on which Rain fell ..... | 19 | 13 |
| Mean amount of Cloud (an overcast sky = 10) ..... | 5·7 | 5·0 |
| Total number of miles of Wind indicated ..... | 7930 | 8608 |
| Mean Velocity of Wind per hour..... miles | 10·7 | 11·6 |

# Summary of Observations

## FOR 1890.

| Results of observations taken during the Year. | | Mean for the last 5 years. |
|---|---|---|
| Mean Reading of Barometer .....inches | 29·996 | 30·031 |
| Highest ,, ,, on the 7th Jan. ,, | 30·507 | 30·520 |
| Lowest ,, ,, on the 1st Mar. ,, | 29·199 | 29·363 |
| Range of Barometer Readings ..... ,, | 1·308 | 1·157 |
| Highest Reading of Max. Therm. on the 25th Aug. | 97·5 | 98·0 |
| Lowest ,, ,, Min. Therm. on the 3rd Mar. | 40·2 | 41·1 |
| Range of Thermometer Readings..... | 57·3 | 56·9 |
| Greatest Range in 24 hours on the 17th July..... | 27·8 | 27·6 |
| Mean of all the Highest Readings ..... | 71·5 | 72·4 |
| Mean of all the Lowest Readings..... | 58·4 | 59·2 |
| Mean Daily Range ..... .. | 13·1 | 13·2 |
| Mean Temperature (deduced from Max. and Min.) | 64·1 | 64·9 |
| Mean Temperature (deduced from Dry Bulb.) ..... | 63·4 | 64·6 |
| Adopted Mean Temperature ..... | 63·8 | 64·8 |
| Mean Temperature of Evaporation ..... | 58·8 | 59·8 |
| Mean Temperature of Dew-point..... | 55·3 | 56·1 |
| Mean Elastic force of Vapour.....inches | 0·437 | 0·451 |
| Mean Weight of Vapour in a cubic foot of air, grains | 5·0 | 5·1 |
| Mean additional weight required for saturation ,, | 1·7 | 1·8 |
| Mean degree of Humidity..... | 76 | 75 |
| Mean Weight of a cubic foot of air .....grains | 528·6 | 527·8 |
| Fall of Rain ..... .....inches | 21·413 | 17·620 |
| Number of days on which Rain fell..... | 84 | 72 |
| Mean amount of Cloud (an overcast sky=10) ..... | 3·4 | 3·4 |
| Total number of miles of Wind indicated ..... | 88581 | 83144 |
| Mean Velocity of Wind per hour .....miles | 10.1 | 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 |
| The smallest mean amount of cloud observed in one month was in August, 1890, and was ..... | 0·0 |
| The greatest ,, ,, ,, in December, 1888, and was | 6·4 |

# NOTES FOR THE SEPARATE MONTHS.

## JANUARY.

THE Dew-point ranged between 40·3° on the 14th and 57·3° on the 4th.

In Sunshine, the highest reading was 117·1° on the 22nd.

On Ground, the lowest reading was 39·3° on the 16th.

The Sea has fallen from 61·0 to 60·0.

Thunderstorms passed on the 13th.

Hail fell on the 13th.

Total Rainfall since last June 14·230 inches;

the average of 5 years, 15·362 inches.

Pressure has been unusually steady and temperatures have been much above the average.

## FEBRUARY.

The Dew-point ranged between 39·1° on the 12th and 55·7° on the 19th.

In Sunshine, the highest reading was 121·2° on the 19th.

On Ground, the lowest reading was 38·9° on the 16th.

The Sea fell to 58·9°.

Thunderstorms passed on the 7th, 10th, 12th, 14th, and 27th.

Lightning was seen on the 8th.

Hail fell on the 3rd, 7th, and 12th.

Total Rainfall since last June 19·374 inches;

the average of 5 years, 16·845 inches.

Pressure has been low. The rainfall is greatly in excess of the average.

## MARCH.

The Dew-point ranged between 55·4° on the 16th and 37·9° on the 6th.

In Sunshine, the highest reading was 129·7 on the 21st.

On Ground, the lowest reading was 34·0° on the 3rd.

The Sea has risen from 59·8° to 62·3°.

Total Rainfall since last June 20·389 inches;

the average of 5 years, 17·537 inches.

Variations of pressure and amount of wind are both above the average.

APRIL.

The Dew-point ranged between 40·6° on the 10th and 58·9° on the 20th.

In Sunshine, the highest reading was 132·3° on the 27th.

On Ground, the lowest reading was 37·3° on the 30th.

The Sea has risen from 60·6° to 62·9°

Total Rainfall since last June 21·027 inches;
the average of 5 years, 18·143 inches.

MAY.

The Dew-point ranged between 49·6° on the 9th and 65·4° on the 27th.

In Sunshine, the highest reading was 139·4° on the 26th.

On Ground, the lowest reading was 47·8 on the 18th.

The Sea has risen from 62·9° to 72·0.°

Thunderstorms passed on the 1st, 27th, and 31st.

Total Rainfall since last June 21·638 inches;
the average of 5 years, 18·416 inches.

JUNE.

The Dew-point ranged between 54·6° on the 1st and 68·4° on the 24th.

In Sunshine, the highest reading was 140·2° on the 10th.

On Ground, the lowest reading was 49·8° on the 3rd.

The Sea has risen from 72·0° to 77·0.°

Thunderstorms passed on the 5th.

During the eclipse of the sun, on the 17th, temperature in screen fell from 70·0° to 66·5°; that in sunshine from 120° to 84°.

JULY.

The Dew-point ranged between 53·6° on the 13th and 69·8° on the 31st.

In Sunshine, the highest reading was 145·9° on the 16th.

On Ground, the lowest reading was 57·0° on the 17th.

The Sea has risen from 76·5° to 80·0.°

Lightning was seen on the 12th.

AUGUST.

The Dew-point ranged between 58·1° on the 24th, and 73·8° on the 16th.

In Sunshine, the highest reading was 149·4° on the 30th.

On Ground, the lowest reading was 59·0° on the 28th.

The Sea has risen from 78·5° to 82·6°.

Lightning was seen on the 22nd and 31st.

SEPTEMBER.

Dew-point ranged between 52·4° on the 16th and 66·6° on the 1st.
In Sunshine, the highest reading was 138·6 on the 9th.
On Ground, the lowest reading was 50·0° on the 25th.
The Sea has fallen from 82·6° to 75·0°.
Thunderstorms passed on the 4th and 14th.
Lightning was seen on the 5th, 6th, 7th and 10th.
Pressure above the average, temperatures much below it, but fevers very prevalent.

OCTOBER.

Dew-point ranged between 44·0° on the 25th and 66·9° on the 28th.
In Sunshine, the highest reading was 141·2° on the 2nd.
On Ground, the lowest reading was 46·°0 on the 26th.
The Sea has fallen from 75·0° to 70·5°.
Thunderstorms passed on the 1st, 2nd, 3rd, 9th, 19th and 23rd.
Lightning was seen on the 10th and 24th.
Hail fell on the 24th.
Total Rainfall since last June 6·618 inches;
the average of 5 years, 4·659 inches.

NOVEMBER.

Dew-point ranged between 39·1° on the 21st and 61·4° on the 30th.
In Sunshine, the highest reading was 128·2° on the 6th.
On Ground, the lowest reading was 37·6° on the 22nd.
The Sea has fallen from 70·5° to 65·0°
Thunderstorms passed on the 3rd, 6th and 7th.
Lightning was seen on the 5th, 10th, 13th, 15th, 17th, 18th and 19th.
Total Rainfall since last June 8·489 inches;
the average of 5 years, 8·769 inches.

DECEMBER.

Dew-Point, ranged between 58·3° on the 1st, and 38·9° on the 14th.
In Sunshine, the highest reading was 116·9° on the 8th.
On Ground the lowest reading was 39·0° on the 26th.
The Sea has fallen from 65·0° to 60·5°.
Thunderstorms passed on the 2nd, 12th, 18th, 22nd and 27th.
Lightning was seen on the 6th, 11th and 13th.
Hail fell on the 29th.
Total Rainfall since last June 12·601 inches;
the average of 5 years, 12·033 inches.

## NOTES FOR THE YEAR.

Dew-Point, ranged between 37·9° on the 6th March, and 73·8° on the 16th August.

In Sunshine the highest reading was 149·4° on the 30th August.

On Ground the lowest reading was 34·0° on the 3rd March.

The Sea has ranged between 59·8° in February and 82·6° in August.

Thunderstorms passed on 24 days.

Hail fell on 6 days.

The range of pressure and of temperature is above the average.

Rainfall and wind are also above the average.

The 5 year averages are the averages for the years 1883–8.

J. SCOLES, S.J.