





STONYHURST COLLEGE

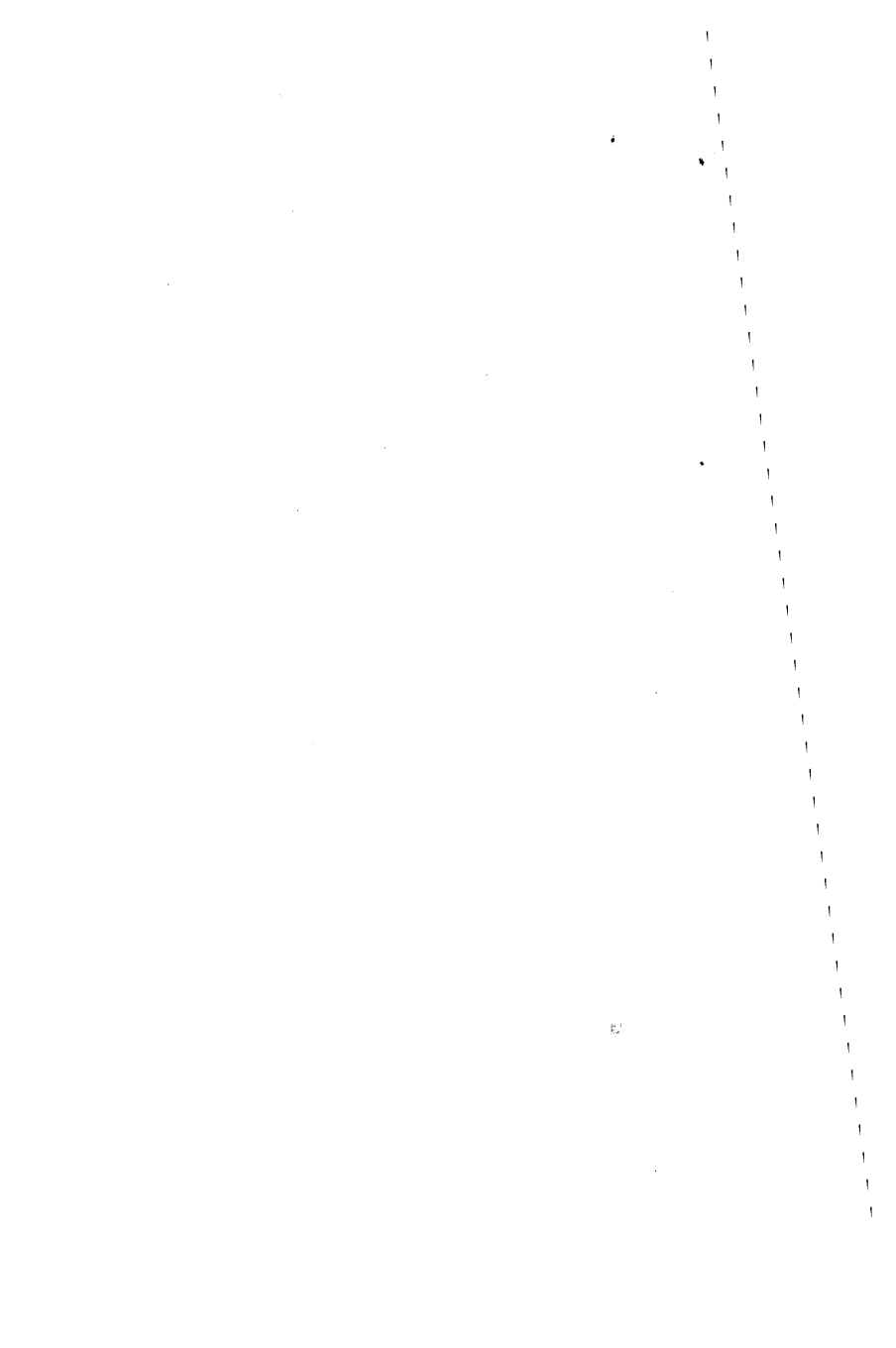
OBSERVATORY.

RESULTS
OF
METEOROLOGICAL AND MAGNETICAL
OBSERVATIONS.

1872.

PRESTON :
J. ROBINSON, PRINTER, 17, CANNON-STREET.





Stonhurst Observatory.

Lat. 53.^o 50' 40" N. Long. 9^m 52.68. W. Height of the Barometer.
above the sea, 381 ft.

METEOROLOGICAL REPORT

For January, 1872.

Results of Observations taken during the month.	Mean for the last 25 Years.	
Mean Reading of the Barometer.....	29·064	29·394
Highest " on the 12th	29·622	29·980
Lowest " on the 24th	28·008	28·532
Range of Barometer Readings.....	1·614	1·448
Highest Reading of a Max. Therm. on the 30th	56·2	51·3
Lowest Reading of a Min. Therm. on the 9th	29·2	20·9
Range of Thermometer Readings.....	27·0	30·4
Mean of all the Highest Readings	45·0	42·0
Mean of all the Lowest.....	36·7	32·7
Mean Daily Range	8·3	9·3
Deduced Monthly Mean (from Mean of Max. } and Min.).....	40·7	37·2
Mean Temperature from dry bulb.....	40·3	37·2
Adopted Mean Temperature	40·5	37·2
Mean Temperature of Evaporation	39·1	35·8
Mean Temperature of Dew Point.....	37·3	33·8
Mean elastic force of Vapour.....	0·223in	0·196in
Mean weight of Vapour in a cubic foot of air	2·6gr	2·3gr
Mean additional weight required for saturation ...	0·4gr	0·4gr
Mean degree of Humidity, (saturation 1·00).....	0·89	0·88
Mean weight of a cubic foot of air	538·3gr	548·2gr
Fall of Rain	5·561in	4·056in
Number of days on which Rain fell.....	31	20·5
Amount of Evaporation	1·256	0·794

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	0	2	2	1	12	9	2	3
Mean Velocity in miles per hour	0	4.5	11.8	14.5	17.6	13.0	11.4	4.1
Total No. of miles for each Direction	0	215	567	349	5059	2808	546	296

The total number of miles registered during the month was 9840.

The max. Velocity of the wind was 49 miles per hour ; direction S. by W. on the 17th, at 11 p.m.

Mean amount of Cloud, (an overcast sky being indicated by 10.0) 8.4

In the month of January, the highest reading of the Barometer during 25 years, was on the 8th, in 1859, and was 30.310

The lowest ,, ,, 15th, 1865 27.939

The highest Temperature ,, 30th, 1872 56.2

The lowest ,, ,, 13th, 1867 9.2

The highest adopted mean temperature of the month { 1869 41.3

The lowest ,, ,, 1871 39.0

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There was a distant Thunder storm on the 3rd. Snow fell on the 5th and 8th, and Hail on the 7th and 8th. The 12th and 21st were foggy. A Lunar Halo was seen on the 19th at 7 p.m.; it was 48° in diameter.

Several slight but very rapid falls of temperature have taken place during the month.

The barometer readings on the 18th and 24th are some of the lowest we have had for years.

The storm on the 17th and 18th was very violent. It commenced shortly before midnight on the 16th with a S. wind, which changed to SSW. at 2 p.m. on the 17th, and to SW. or WSW. at 3 a.m. on the 18th, where it remained until 4 p.m. During the 40 hours that the high winds lasted, 1300 miles were registered by the Anemometer. The maximum speed of the wind was very slightly under 50 miles an hour, and the max. was attained at 11 p.m. on the 17th.

The calm that shortly followed was also remarkable, as the Anemometer registered only 60 miles during the 40 hours from 3 p.m. on the 19th to 7 a.m. on the 21st. The month was free from magnetic disturbances of any great extent.

Stonyhurst Observatory.

Lat. 53.° 50' 40" N. Long. 9^m 52.68. w. Height of the Barometer.
above the sea, 381 ft.

METEOROLOGICAL REPORT For February, 1872.

Results of Observations taken during the month.	Mean for last 25 Years
Mean Reading of the Barometer.....	29.297 29.485
Highest „ „ on the 27th	29.750 30.092
Lowest „ „ on the 1st	28.967 28.677
Range of Barometer Readings	0.783 1.415
Highest Reading of a Max. Therm. on the 10th	55.1 51.3
Lowest Reading of a Min. Therm. on the 21st ...	34.7 23.2
Range of Thermometer Readings	20.4 28.1
Mean of all the Highest Readings	48.5 44.1
Mean of all the Lowest.....	39.8 34.0
Mean Daily Range ..	8.7 10.1
Deducted Monthly Mean (from Mean of Max. } and Min.)	43.8 38.7
Mean Temperature from dry bulb.....	43.0 38.7
Adopted Mean Temperature	43.4 38.7
Mean Temperature of Evaporation	41.9 36.7
Mean Temperature of Dew Point.....	40.1 34.9
Mean elastic force of Vapour.....	0.249in 0.201in
Mean weight of Vapour in a cubic foot of air	2.8gr 2.4gr
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	539.4gr 548.2gr
Fall of Rain	4.578in 3.913in
Number of days on which Rain fell.....	27 18.0
Amount of Evaporation	1.221 0.901

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	1	1	5	4	7	9	2	0
Mean Velocity in miles per hour	2·6	9·6	10·6	10·6	14·0	10·7	9·2	0
Total No. of miles for each Direction	62	231	1277	1018	2417	2319	440	0

The total number of miles registered during the month was 7764.

The max. Velocity of the wind was 38 miles per hour; direction S. on the 1st, from 6 to 8 a.m.

Mean amount of Cloud, (an overcast sky being indicated by 10·0) 8·2

In the month of February, the highest reading of the Barometer during 25 years, was on the 11th, in 1849, and was 30·452

The lowest " " 6th, 1867 28·208

The highest Temperature " 5th, 1869 57·5

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 readings of the Barometer are taken from Barrow's Standard, and have been corrected and reduced to the temperature of 32°, but not to Sea level. The max. and min. temperatures are obtained from the patent instruments of Negretti and Zambra, and the other temperatures from the hygrometer by the same Opticians. These instruments have all been compared by Mr. GLAISHER with those at Greenwich. Both the direction and velocity of the wind are given by a self-registering Anemometer, by Beck. The Hygometrical results have been calculated from Glaisher's tables, 2nd Edition.

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Hail fell on the 8th. A Lunar Halo was seen at 8 p.m. on the 23rd; diameter 46°.

Clouds prevented the Aurora of the 4th being observed during the latter part of the display. The first notice of its approach was given by the self-recording magnets, which were observed to be in a very disturbed state at 4-30 p.m. About the same time a band of cirro-cumulus cloud was seen extending across the heavens in the direction of the magnetic meridian.

At 6-25 the sky was very red in the S.W., and five minutes later a number of red and green streamers stretched from the S.E. horizon to the Zenith.

6-40 a narrow greenish streamer appeared a little above Leo Minor, and gradually increasing in length finally reached ι Aurigæ. Two minutes later a bright red streamer rose from the S., and joined the former near ι Aurigæ, when suddenly the whole space between the two streamers was filled with a number of rays of various tints, bright crimson, rose colour, orange, light green, and white predominating. This lasted only two minutes.

6-45 the N. was almost free from Auroral light.

6-48 the S.E. was covered with small cirro-cumulus clouds, and in colour bore a striking resemblance to the hue of the western sky at sun-set on a fine evening. Green auroral light in the S.

6-55 Streamers radiated in every direction from ι Aurigæ, reaching the horizon in the S.S.E. and S.W., but stretching scarcely half so far in the N.

7-7 the whole sky, with the exception of a small portion of Taurus was covered with streamers.

7-10 A pale greenish light covered the whole heavens.

7-14 A red band was formed extending from the S.W. horizon to the Zenith, and 3 minutes later a brilliant arch was completed by a N.E. streamer.

7-20 The arch was replaced by dull streamers from a radiating point in Taurus.

7-29 A large and very brilliant star was formed near the left foot of Aurigæ by a number of red, pink, and white rays, all curved and of unequal lengths; one of the short rays was nearly a semi-circle.

Previous to this, the spectrum given by a five prism direct vision Spectroscope consisted of the strong green line, with occasional faint glimpses of two more refrangible lines, and a red line not always clearly discernible. But when the instrument was turned towards the most brilliant of the curved rays forming the star in Aurigæ, the red line stood out stronger perhaps even than the green.

7-35 A few red streamers in the N., and an arch of red light from Ursa to S. of Cassiopea.

7-46 An orange coloured band from the N.N.E. horizon to between α and β Aurigæ.

7-50 A few green rays shot out from β Aurigæ towards the S.W. and N.E.

7-55 Streamers from β Aurigæ through Polaris. E. very red.

8-0 Bright red clouds about 45° above the S.W. horizon. Sky nearly overcast.

8-27 Drizzle. Red glare through the clouds.

11-0 Sky only half covered. No auroral light.

During this display of the Aurora the magnetic curves had to be supplemented by scale readings, since the movements of the magnets were too extended to be registered on the cylinders. The magnetic storm began shortly after 2 p.m., with an increase of both components of the intensity. From 4 to 11 the storm was at its height, and during the whole of this time the oscillations of all the magnets were very extended. The character of the disturbance then completely changed, and the long oscillations gave place on all the curves to a succession of short and rapid vibrations.

It is rare that the three magnetic curves present such a striking similarity in their simultaneous movements. The most rapid variation of the Declination needle was between $8^h 30^m$ and $8^h 53^m$, during which time the needle moved $1^\circ 23' 34''$ from N. towards W. At the same time the Vertical Force magnet was thrown off its balance; but the Horizontal Force magnet was comparatively quiet between 8-30 and 9 p.m., its greatest disturbance occurring 4 hours earlier, when the movement was so rapid as to leave on the sensitive paper only the thinnest possible trace of its long sweep of 4.050 inches. Between $4^h 38^m$ and $5^h 5^m$ the H.F. diminished by the great amount of 0.1260, its whole mean value for 1871 being only 3.6269. Its immediate increase was as rapid as its decrease.

The H.F. vibrations gradually diminished in amplitude from $10^h 30^m$ p.m. to 7 a.m., when the magnet returned to its normal condition; but the Declination magnet continued in an agitated state until after 10 a.m.

Besides this storm of the 4th there was a slight disturbance of the Declination from 8 to 12 p.m. on the 15th, and a somewhat greater perturbation from midnight to 1 p.m. on the 20th.

There was also a considerable similarity in the Declination curves of the 26th, 27th, and 28th, the chief disturbance beginning at 6 p.m. on the 26th, at about 7 p.m. on the 27th, and still later on the 28th.

Stonyhurst Observatory.

Lat. 53.^o 50' 40" N. Long. 9.^m 52.68. w. Height of the Barometer.
above the sea, 381 ft.

METEOROLOGICAL REPORT For March, 1872.

Results of Observations taken during the month.	Mean for the last 25 Years.	
Mean Reading of the Barometer.....	29·310	29·449
Highest " on the 10th	29·862	30·070
Lowest " on the 28th	28·667	28·692
Range of Barometer Readings	1·195	1·378
Highest Reading of a Max. Therm. on the 6th	60·0	56·5
Lowest Reading of a Min. Therm. on the 25th ...	22·4	23·5
Range of Thermometer Readings	37·6	33·0
Mean of all the Highest Readings	50·1	46·8
Mean of all the Lowest.....	38·6	34·5
Mean Daily Range	11·5	12·3
Deduced Monthly Mean (from Mean of Max. } and Min.)	43·4	39·7
Mean Temperature from dry bulb.....	43·5	39·9
Adopted Mean Temperature	43·5	39·8
Mean Temperature of Evaporation	41·6	37·9
Mean Temperature of Dew Point	39·4	35·5
Mean elastic force of Vapour.....	0·242in	0·209in
Mean weight of Vapour in a cubic foot of air	2·8gr	2·4gr
Mean additional weight required for saturation ...	0·5gr	0·5gr
Mean degree of Humidity, (saturation 1·00).....	0·85	0·85
Mean weight of a cubic foot of air	539·5gr	5·463gr
Fall of Rain	4·753in	2·998in
Number of days on which Rain fell.....	28	17·9
Amount of Evaporation	2·004	1·726

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
		1	6	1	2	9	5	6	1
Mean Velocity in miles per hour	12·5	9·2	9·0	12·2	11·3	9·5	11·4	5·5
Total No. of miles for each Direction	300	1331	216	584	2449	1142	1642	131

The total number of miles registered during the month was 7795.

The max. Velocity of the wind was 41 miles per hour. Direction W. by N. on the 18th, at 5 p.m.

Mean amount of Cloud, (an overcast sky being indicated by 10·0) 7·2

In the month of March, the highest reading of the Barometer during 25 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 " " 4th, 1866 14·5

The highest adopted mean temperature of the month } 1871 44·0

The lowest " " 1855 35·6

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The readings of the Barometer are taken from Barrow's Standard, and have been corrected and reduced to the temperature of 32°, but not to Sea level. The max. and min. temperatures are obtained from the patent instruments of Negretti and Zambra, and the other temperatures from the hygrometer by the same Opticians. These instruments have all been compared by MR. GLAISHER with those at Greenwich. Both the direction and velocity of the wind are given by a self-registering Anemometer, by Beck. The Hygrometrical results have been calculated from Glaisher's tables, 2nd Edition.

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This month has been remarkable for the constancy of the haze and rainfall, and for the low mean reading of the Barometer. Mist prevailed from the 1st to the 7th, and also on the 11th, 15th, 16th, and 27th.

The rainfall was 1·828 inch above the average for March; the mean for the last 24 years being less than three inches. The reading of the Barometer for the month was 0·248 less than that for last March, and 0·139 below the mean for 25 years. Snow fell every day from the 20th to the 25th, both included.

There was hail on the 25th and 26th; and thunder and lightning between six and nine p.m. on the 30th. A lunar halo was observed on the 19th at ten p.m., its diameter measured 45°. With the exception of a few irregular movements between seven p.m. on the 1st and the evening of the 2nd, and from the 7th to the morning of the 9th, the self-recording magnets were very quiet previous to the 19th, but during the remainder of the month there were a succession of disturbances, but none of any great violence.

Stonhurst Observatory.

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

METEOROLOGICAL REPORT

For April, 1872.

Results of Observations taken during the month.	Mean for the last 25 Years.	
Mean Reading of the Barometer.....	29·477	29·490
Highest ,, on the 6th	30·042	29·959
Lowest ,, on the 22nd	28·776	28·792
Range of Barometer Readings	1·266	1·167
Highest Reading of a Max. Therm. on the 12th	65·4	67·3
Lowest Reading of a Min. Therm. on the 19th ...	30·2	29·0
Range of Thermometer Readings.....	35·2	38·3
Mean of all the Highest Readings.....	54·5	54·0
Mean of all the Lowest.....	39·0	38·3
Mean Daily Range.....	15·5	15·7
Deduced Monthly Mean (from Mean of Max. } and Min.)	45·3	44·7
Mean Temperature from dry bulb.....	45·3	44·7
Adopted Mean Temperature	45·3	44·7
Mean Temperature of Evaporation	42·5	41·9
Mean Temperature of Dew Point.....	39·3	38·8
Mean elastic force of Vapour.....	0·241in	0·237in
Mean weight of Vapour in a cubic foot of air	2·8gr	2·8gr
Mean additional weight required for saturation ...	0·7gr	0·7gr
Mean degree of Humidity, (saturation 1·00).....	0·80	0·80
Mean weight of a cubic foot of air.....	540·7gr	541·8gr
Fall of Rain	3·675in	2·501in
Number of days on which Rain fell.....	20	15·0
Amount of Evaporation	2·223	2·820

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
		1	4	3	2	2	5	10	3
Mean Velocity in miles per hour	8.0	13.4	10.0	8.3	11.1	6.6	11.1	18.7
Total No. of miles for each Direction	192	1282	718	396	534	794	2672	1344

The total number of miles registered during the month was 7932.

The max. Velocity of the wind was 34 miles per hour. Direction W. on the 8th, at 7 a.m.

Mean amount of Cloud, (an overcast sky being indicated by 10.0) 6.4

In the month of April, the highest reading of the Barometer during 25 years, was on the 22nd, in 1853, and was 30.191

The lowest " " 20th, 1868 28.358

The highest Temperature " 17th, 1852 74.1

The lowest " " 12th, 1862 24.7

The highest adopted mean temperature of the month 18.5 48.5

The lowest " " " 11 40.8

0

The readings of the Barometer are taken from Barrow's Standard, and have been corrected and reduced to the temperature of 32°, but not to Sea level. The max. and min. temperatures are obtained from the patent instruments of Negretti and Zambra, and the other temperatures from the hygrometer by the same Opticians. These instruments have all been compared by MR. GLAISHER with those at Greenwich. Both the direction and velocity of the wind are given by a self-registering Anemometer, by Beck. The Hygrometrical results have been calculated from Glaisher's tables, 2nd Edition.

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The rainfall is far above the average for April. Snow fell on the 2nd, 4th, and 21st; and hail on the 4th, 18th, 19th, 23rd, 24th, and 26th. There were thunderstorms on the 23rd, 24th, 25th, and 26th. A lunar halo 44° in diameter was seen at 10.30 p.m. on the 15th. The Cuckoo was first heard on the 26th.

Auroras were observed on the 3rd, 10th, and 15th.

That on the 3rd was slight, and unaccompanied by any magnetic disturbance; it was visible at 8-30 p.m.

On the 10th the display lasted from 7-30 p.m. until after midnight. At 7-30 a band of light extended from the N.W. horizon to the zenith, but the sunlight being strong at the time, and the band near the setting sun, the nature of the light could not be accurately determined.

At 8-10 p.m. a strong auroral light due N., and a small white cloud near the zenith.

8.35 the green auroral line was strongest in the spectroscope when pointed a few degrees above the N. horizon, and could be traced upwards to the zenith, and near the horizon from E. to W.S.W., whilst the unassisted eye could only detect the light near the N. horizon.

8-45. An arch of pale-green light 6° or 7° in breadth extended from Lyra to Orion. The top of the arch was a little above Cassiopea.

8-50. Three magnificent streamers burst forth E. of Cassiopea, and reached as far as the head of Draco. These were at first of a pale green colour, but changed in a few seconds into a deep green, the upper extremities turning red. They were visible for about 30^s or 40^s , and were followed by waves and flashes of light, which succeeded each other with great rapidity, passing from the horizon to near the zenith.

9-5. The wavy motion ceased, and within two minutes the whole N. sky was covered with innumerable green and black streamers, the former extending to the zenith, the latter reaching a maximum height of 45° . Then the waves again returned, the E. and W. assumed a reddish hue, and a red band stretched from the N. horizon through Polaris to near β Ursa. N.E. three green bands.

9-19. The light of the arch became stronger. The streamers vanished. A few puffs of light passed across the sky. The light in the N. and a few pale streamers were all that could be seen of the Aurora for more than an hour, but at 11-10 there was a second display of green and black streamers reaching 60° above the horizon from Cygnus in the E. to Gemini in the W.

11-15. A broad pale green streamer from N. horizon to Ursa Major.

11-30. Another broad band from N. horizon to Zenith, and a small white cloud in Cepheus. A few waves from N.

11-45. A small streamer in the N.; auroral light gradually disappearing.

12-30. A fresh outburst of the Aurora.

The magnets were not greatly disturbed during this aurora, the principal movement being that of the V.F., and consisted of one long and more or less regular sweep from its maximum at 8 p.m. to its minimum at about 2-40 a.m. The magnets did not return to their normal state before 6-30 p.m. on the 11th.

The Aurora on the 15th was first observed at 8-2 p.m., when a yellow band was seen due N., and a red streamer from the N.E. horizon through Cygnus.

8-4. An arch of yellow light extended from a point 10° N. of Cygnus to the Pleiades, the top of the arch passing just beneath Cassiopea.

8-35. The space between Hercules and Taurus, from the horizon to the Zenith, was completely filled with yellow and red streamers.

8-45. A broad yellow band in the N. intersected the arch which had increased in brilliancy. Alternate yellow and black streaks N. and N.W., and several red streamers from N.E. horizon through Cygnus to a little S. of Ursa Major. This only lasted three or four minutes. The arch then faded away gradually.

9-30. Only a slight auroral light N.N.E.

The moon light was strong during this aurora, and there was a marked absence of more than a faint trace of the usual greenish light. The magnetic storm which accompanied this aurora commenced before three a.m. on the 15th, and lasted for more than two days. It was principally felt by the Declination and V.F. magnets, the movements being very similar on the 15th and 16th. The irregular movements on the 17th and 18th were also numerous, but the magnets then remained steady until the end of the month.

Stonhurst Observatory.

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

METEOROLOGICAL REPORT

For May, 1872.

Results of Observations taken during the month.	Mean for the last 25 Years.	
Mean Reading of the Barometer.....	29·495	29·518
Highest " on the 1st	29·931	29·937
Lowest " on the 7th	28·800	28·967
Range of Barometer Readings	1·131	0·970
Highest Reading of a Max. Therm. on the 1st	67·0	72·8
Lowest Reading of a Min. Therm. on the 18th ...	32·7	31·6
Range of Thermometer Readings.....	34·3	41·2
Mean of all the Highest Readings	56·7	59·8
Mean of all the Lowest.....	42·1	42·5
Mean Daily Range	14·6	17·3
Deducted Monthly Mean (from Mean of Max. } and Min.).....	47·7	49·5
Mean Temperature from dry bulb.....	47·8	49·9
Adopted Mean Temperature	47·8	49·7
Mean Temperature of Evaporation	45·0	46·4
Mean Temperature of Dew Point.....	41·9	42·9
Mean elastic force of Vapour.....	0·265in	0·278in
Mean weight of Vapour in a cubic foot of air	3·0gr	3·2gr
Mean additional weight required for saturation ...	0·7gr	0·9gr
Mean degree of Humidity, (saturation 1·00).....	0·81	0·75
Mean weight of a cubic foot of air	538·2gr	536·5gr
Fall of Rain	3·202in	2·430in
Number of days on which Rain fell.....	28	14·9
Amount of Evaporation	3·581	3·848

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
		2	7	0	0	0	4	18	0
Mean Velocity in miles per hour	7.5	9.0	0	0	0	13.6	9.0	0
Total No. of miles for each Direction	362	1513	0	0	0	1304	3898	0

The total number of miles registered during the month was 7077.

The max. Velocity of the wind was 30 miles per hour. Direction S.W. on the 4th, at 11 a.m.

Mean amount of Cloud, (an overcast sky being indicated by 10.0) 7.9

In the month of May, the highest reading of the Barometer during 25 years, was on the 22nd, in 1855, and was 30.124

The lowest ,, ,, 1st, 1858 28.564

The highest Temperature ,, 19th, 1854 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 readings of the Barometer are taken from Barrow's Standard, and have been corrected and reduced to the temperature of 32°, but not to Sea level. The max. and min. temperatures are obtained from the patent instruments of Negretti and Zambra, and the other temperatures from the hygrometer by the same Opticians. These instruments have all been compared by MR. GLAISHER with those at Greenwich. Both the direction and velocity of the wind are given by a self-registering Anemometer, by Beck. The Hygrometrical results have been calculated from Glaisher's tables, 2nd Edition.

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The fall of rain for the month was not very much in excess of the average for May, but the number of days on which rain fell was nearly double the mean for the last five and twenty years. The mean temperature was also low.

There was a thunderstorm at nine p.m. on the 9th, and thunder was heard on the 15th.

Hail fell on the 6th, 11th, 21st, and 31st.

Slight snow on the 18th and 19th.

A Lunar Rainbow was seen at 11 p.m. on the 22nd during the partial eclipse of the moon. Only a small portion of the arc was visible, attaining an altitude of about 20° above the E horizon. The red, orange, and blue of the arc were very distinct for a quarter of an hour, when heavy clouds completely covered the sky. The change of colour during the eclipse was very marked both on the sky and on the landscape.

Stonhurst Observatory.

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

METEOROLOGICAL REPORT

For June, 1872.

Results of Observations taken during the month.	Mean for the last 25 Years.	
Mean Reading of the Barometer.....	29·391	29·527
Highest „ on the 16th	29·835	29·900
Lowest „ on the 9th	28·757	29·004
Range of Barometer Readings	1·078	0·896
Highest Reading of a Max. Therm. on the 18th	81·5	76·9
Lowest Reading of a Min. Therm. on the 6th	34·7	39·2
Range of Thermometer Readings.....	46·8	37·7
Mean of all the Highest Readings.....	65·2	65·1
Mean of all the Lowest.....	49·5	48·2
Mean Daily Range	15·7	16·9
Deduced Monthly Mean (from Mean of Max. } and Min.)	55·6	54·9
Mean Temperature from dry bulb.....	54·7	54·6
Adopted Mean Temperature	55·2	54·8
Mean Temperature of Evaporation	52·5	52·2
Mean Temperature of Dew Point.....	49·9	49·0
Mean elastic force of Vapour.....	0·360in	0·360in
Mean weight of Vapour in a cubic foot of air	4·0gr	3·9gr
Mean additional weight required for saturation ...	0·9gr	0·9gr
Mean degree of Humidity, (saturation 1·00).....	0·83	0·79
Mean weight of a cubic foot of air	527·9gr	531·1gr
Fall of Rain	5·040in	3·755in
Number of days on which Rain fell.....	25	17·5
Amount of Evaporation	3·243	3·753

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
		0	2	1	0	2	10	15	0
Mean Velocity in miles per hour	0	5·6	9·7	0	11·0	10·9	9·0	0
Total No. of miles for each Direction	0	268	233	0	527	2618	3243	0

The total number of miles registered during the month was 6889.

The max. Velocity of the wind was 29 miles per hour. Direction WSW on the 22nd at 8 a.m., and on the 28th at 1 p.m.

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

In the month of June, the highest reading of the Barometer during 25 years, was on the 27th, in 1867, and was 30·206

The lowest ,, ,, 12th, 1862 28·632

The highest Temperature ,, 28th, 1857 84·6

The lowest ,, ,, 30th, 1856 34·2

The highest adopted mean temperature of the month } 1858 59·0

The lowest ,, ,, 1856 & 1860 52·2

— 0 —

The readings of the Barometer are taken from Barrow's Standard, and have been corrected and reduced to the temperature of 32°, but not to Sea level. The max. and min. temperatures are obtained from the patent instruments of Negretti and Zambra, and the other temperatures from the hygrometer by the same Opticians. These instruments have all been compared by MR. GLAISHER with those at Greenwich. Both the direction and velocity of the wind are given by a self-registering Anemometer, by Beck. The Hygrometrical results have been calculated from Glaisher's tables, 2nd Edition.

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The month was principally remarkable for the number of thunder storms; they occurred on the 7th, 8th, 9th, 18th, 24th, and 27th. Thunder was also heard on the 17th, 19th, and 21st.

The heaviest daily rainfall was 0.771 in. on the 19th. Between 5 and 6 p.m. on the 24th, there was a fall of 0.342 in., but the total fall on that day was only 0.738 in. On the 14th and 21st slight fog in the morning.

There were two rather considerable disturbances on the self-recording magnets towards the beginning of the month. That on the 3rd commenced at about 2 p.m.; the H.F. and V.F. curves presented a somewhat striking similarity of form.

On the morning of the 10th a sudden decrease of intensity threw the V.F. magnet off its balance shortly after midnight, and produced a similar, but much slighter, movement of the H.F. needle; the Declination magnet was moved at the same time rapidly towards the West. Slighter perturbations occurred on a few other days.

Stonhurst Observatory.

Lat. 53.° 50' 40" N. Long. 9^m 52.68. w. Height of the Barometer
above the sea, 381 ft.

METEOROLOGICAL REPORT

For July, 1872.

Results of Observations taken during the month.	Mean for the last 25 Years.	
Mean Reading of the Barometer.....	29.474	29.510
Highest ,, on the 4th	29.781	29.879
Lowest ,, on the 8th	29.254	29.010
Range of Barometer Readings	0.527	0.869
Highest Reading of a Max. Therm. on the 21st	83.8	78.3
Lowest Reading of a Min. Therm. on the 30th	42.0	42.1
Range of Thermometer Readings	41.8	36.2
Mean of all the Highest Readings	71.3	68.0
Mean of all the Lowest.....	53.3	51.0
Mean Daily Range	18.0	17.0
Deduced Monthly Mean (from Mean of Max. } and Min.)	60.4	57.6
Mean Temperature from dry bulb	60.5	57.9
Adopted Mean Temperature	60.5	57.8
Mean Temperature of Evaporation	57.5	55.0
Mean Temperature of Dew Point.....	54.9	52.4
Mean elastic force of Vapour.....	0.431in	0.394in
Mean weight of Vapour in a cubic foot of air	4.9gr	4.4gr
Mean additional weight required for saturation ...	1.1gr	1.0gr
Mean degree of Humidity, (saturation 1.00).....	0.83	0.82
Mean weight of a cubic foot of air	523.6gr	527.2gr
Fall of Rain	4.490in	3.886in
Number of days on which Rain fell.....	21	16.7
Amount of Evaporation	5.016	4.074

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	*W	NW
	0	7	2	1	1	5	14	1
Mean Velocity in miles per hour	0	6·9	7·3		5·9	8·9	5·7	6·9
Total No. of miles for each Direction	0	1164	350	Trace lost.	142	1064	1782	166

The total number of miles registered during the month was 4668.

The max. Velocity of the wind was 23 miles per hour. Direction W on the 1st, at 2 p.m.

Mean amount of Cloud, (an overcast sky being indicated by 10·0) 6·8

In the month of July, the highest reading of the Barometer during 25 years, was on the 24th, in 1868, and was 30·112

The lowest " " 14th, 1853 28·670

The highest Temperature " 15th, 1868 88·1

The lowest " " 1st, 1857 36·0

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

The lowest " " 1851 & 1853 55·5

————— 0 —————

The readings of the Barometer are taken from Barrow's Standard, and have been corrected and reduced to the temperature of 32°, but not to Sea level. The max. and min. temperatures are obtained from the patent instruments of Negretti and Zambra, and the other temperatures from the hygrometer by the same Opticians. These instruments have all been compared by Mr. GLAISHER with those at Greenwich. Both the direction and velocity of the wind are given by a self-registering Anemometer, by Beck. The Hygrometrical results have been calculated from Glaisher's tables, 2nd Edition.

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* The No. of miles registered on the 10th was lost.

The thunder storms this month have far exceeded in violence, those of June. They occurred on the 7th, 12th, 24th, 25th, 26th and 29th. Thunder was also heard on the 6th, 11th, 22nd and 27th; and lightning was seen on the 30th.

On the 24th thunder was heard throughout the greater part of the day from 3 a.m. to 7 p.m., and the storm passed twice almost vertically over the observatory. The fall of rain between 6h 45m and 7h a.m., was 0.6 of an inch, and at this time the wind backed through a complete revolution in about 20 minutes. The total rainfall for the day was 1.07 inch. At about 4h 15m p.m., a poplar tree was struck by lightning, many of the branches being cast to a distance of from 90 to 100 yards, & one or two driven with great force into the ground. The tree stands in a hedge two feet high, and the lightning seems to have struck the tree close by the hedge, and to have travelled upwards to within a few feet of the top.

During a considerable portion of the 25th, thunder was frequently heard, and the storm was violent at 11-40 a.m. and 7-30 p.m.

On the 26th two distinct storms approached together, one coming from the S.W., and the other from the E.

With the sole exception of the last mentioned storm all the thunder-storms of the month came from between W.N.W. and S. The only accidents in the neighbourhood from lightning were the death of a cow and some sheep, and the destruction of two trees.

The self-recording magnets were remarkably steady during the thunderstorms of the 24th, 25th and 26th.

The only magnetic disturbances worth notice were those on the evenings of the 7th and 8th, the continuous perturbations on the 21st, and the unusual similarity between the three curves of the Declination, H.F. & V.F. magnets during the disturbance which lasted from 9 p.m. on the 27th to 2 a.m. on the 28th.

On the 18th between 3 and 4 p.m. a cock of hay, about half a cwt. in weight, was raised by a whirlwind to the height of 300 or 400 feet, and then scattered in every direction, some of it falling at the distance of more than a quarter of a mile. The rest of the hay in the field was left undisturbed.

Stonypurast Observatory.

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

METEOROLOGICAL REPORT

For August, 1872.

Results of Observations taken during the month.	Mean for the last 25 Years.	
Mean Reading of the Barometer.....	29·505	29·500
Highest ,, on the 27th	29·846	29·889
Lowest ,, on the 10th	29·012	28·962
Range of Barometer Readings	0·834	0·927
Highest Reading of a Max. Therm. on the 18th	78·8	76·9
Lowest Reading of a Min. Therm. on the 31st	46·9	41·4
Range of Thermometer Readings	31·9	35·5
Mean of all the Highest Readings	67·9	67·2
Mean of all the Lowest.....	51·8	50·8
Mean Daily Range	16·1	16·4
Deduced Monthly Mean (from Mean of Max. } and Min.)	58·2	57·3
Mean Temperature from dry bulb.....	58·5	57·4
Adopted Mean Temperature	58·4	57·4
Mean Temperature of Evaporation	55·6	54·6
Mean Temperature of Dew Point.....	53·1	52·0
Mean elastic force of Vapour.....	0·405in	0·391in
Mean weight of Vapour in a cubic foot of air	4·5gr	4·2gr
Mean additional weight required for saturation ...	1·0gr	0·9gr
Mean degree of Humidity, (saturation 1·00).....	0·83	0·83
Mean weight of a cubic foot of air	526·5gr	527·5gr
Fall of Rain	5·566in	4·661in
Number of days on which Rain fell.....	21	19
Amount of Evaporation	4·140	3·505

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	3	6	5	1	3	2	8	3
Mean Velocity in miles per hour	3·1	5·5	9·6	5·2	10·7	10·1	10·2	6·8
Total No. of miles for each Direction	221	788	1156	125	767	485	1967	488

The total number of miles registered during the month was 5997.

The max. Velocity of the wind was 27 miles per hour. Direction W on the 11th, at 11 p.m.

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

In the month of August, the highest reading of the Barometer during 25 years, was on the 28th, in 1854, and was 30·111

The lowest " " 26th, 1853 28·637

The highest Temperature " 2nd, 1868 88·0

The lowest " " 21st, 1864 & 1869 36·0

The highest adopted mean temperature of } 1857 61·0
the month

The lowest " " 1848 52·5

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The readings of the Barometer are taken from Barrow's Standard, and have been corrected and reduced to the temperature of 32°, but not to Sea level. The max. and min. temperatures are obtained from the patent instruments of Negretti and Zambra, and the other temperatures from the hygrometer by the same Opticians. These instruments have all been compared by MR. GLAISHER with those at Greenwich. Both the direction and velocity of the wind are given by a self-registering Anemometer, by Beck. The Hygrometrical results have been calculated from Glaisher's tables, 2nd Edition.

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Thunder was heard on the 8th and 9th, and Lightning seen on the 25th, and there were storms on the 6th, 7th, 26th and 30th. Slight fog on the morning of the 14th. The heaviest rainfall was on the 11th, amounting to 1.243 inches in 24 hours.

The magnetic disturbances were numerous during the month.

The magnetic storm on the 3rd was at its height between 10 p.m. and midnight.

On the 9th at about 12-45 a.m. the V.F. rapidly decreased to a very low minimum and as quickly regained almost its previous value; the movement of the H.F. magnet was in the same direction but inconsiderable in amount.

The storm that commenced shortly before 6 p.m. on the 14th, was very violent between 8 and 10 p.m., as also at 4 a.m. on the 15th. The rapid decrease of both the H.F. and V.F. components of the intensity at 8-45 p.m. on the 14th, was accompanied by a great westerly sweep of the Declination magnet. This storm was accompanied by a display of Aurora; which was seen at 9-30 p.m., but the cloudy state of the sky prevented all accurate observations.

The last great disturbance began about 4 p.m. on the 26th, and lasted 12 hours; as before the disturbing force was felt mostly by the V.F. magnet.

Stonhurst Observatory.

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

METEOROLOGICAL REPORT

For September, 1872.

Results of Observations taken during the month.	Mean for the last 25 Years.
Mean Reading of the Barometer.....	29·299 29·506
Highest ,, on the 13th	29·757 30·055
Lowest ,, on the 28th	28·918 28·838
Range of Barometer Readings	0·839 1·217
Highest Reading of a Max. Therm. on the 4th	74·0 72·2
Lowest Reading of a Min. Therm. on the 21st ...	35·1 36·7
Range of Thermometer Readings	38·9 35·5
Mean of all the Highest Readings	61·4 62·2
Mean of all the Lowest.....	49·2 47·1
Mean Daily Range	12·2 15·1
Deducted Monthly Mean (from Mean of Max. } and Min.)	54·0 53·4
Mean Temperature from dry bulb.....	54·4 53·9
Adopted Mean Temperature	54·2 53·7
Mean Temperature of Evaporation	51·3 51·1
Mean Temperature of Dew Point.....	48·5 48·5
Mean elastic force of Vapour.....	0·340in 0·343in
Mean weight of Vapour in a cubic foot of air	3·9gr 3·9gr
Mean additional weight required for saturation ...	0·9gr 0·8gr
Mean degree of Humidity, (saturation 1·00).....	0·81 0·83
Mean weight of a cubic foot of air	527·4gr 531·7gr
Fall of Rain	8·853in 4·565in
Number of days on which Rain fell.....	29 18·2
Amount of Evaporation	3·024 2·264

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	0	2	0	0	3	6	13	6
Mean Velocity in miles per hour	0	6·9	0	0	9·8	13·5	12·9	12·6
Total No. of miles for each Direction	0	329	0	0	706	1942	4035	1820

The total number of miles registered during the month was 8832.

The max. Velocity of the wind was 37 miles per hour. Direction S. W. on the 28th, at 2 p.m.

Mean amount of Cloud, (an overcast sky being indicated by 10·0) 7·2

In the month of September, the highest reading of the Barometer during 25 years, was on the 15th, in 1851, and was 30·274

The lowest ,, ,, 22nd, 1863 28·371

The highest Temperature ,, 6th, 1868 85·0

The lowest ,, ,, 6th, 1855 30·7

The highest adopted mean temperature of } 1865 59·1
the month

The lowest ,, ,, 1863 50·9

—o—

The readings of the Barometer are taken from Barrow's Standard, and have been corrected and reduced to the temperature of 32°, but not to Sea level. The max. and min. temperatures are obtained from the patent instruments of Negretti, and Zambra, and the other temperatures from the hygrometer by the same Opticians. These instruments have all been compared by MR. GLAISHER with those at Greenwich. Both the direction and velocity of the wind are given by a self-registering Anemometer, by Beck. The Hygrometrical results have been calculated from Glaisher's tables, 2nd Edition.

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The rainfall during the month has been almost double the average, and has only twice been exceeded in September during the last quarter of a century. The heaviest September falls were 9.2 inches in 1866, and 9.5 in 1869. The amount of rain on the 2nd, 9th, and 27th, was 1.320, 1.053, and 1.497 respectively,

Thunder storms occurred on the 3rd, 4th, and 9th; and lightning was seen on the 21st and 24th.

Hail fell on the 9th, 21st, and 28th.

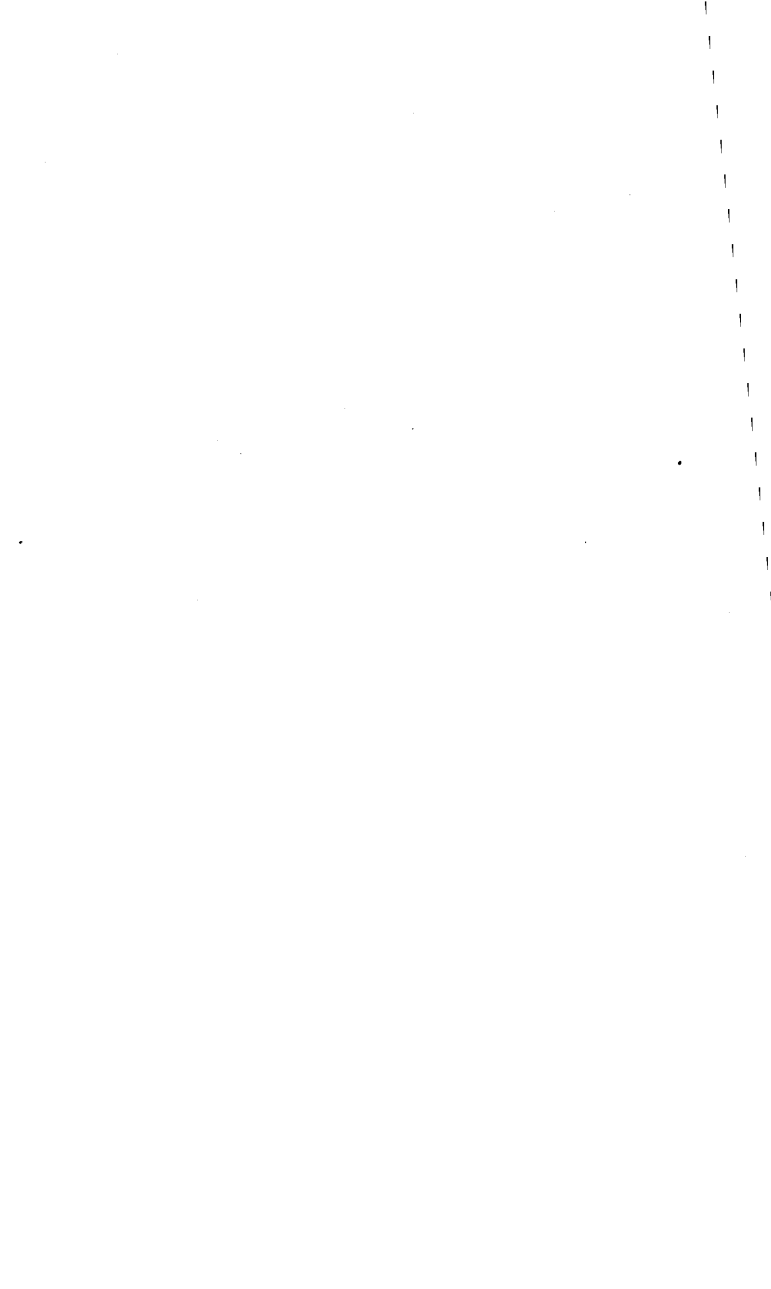
There was a slight fog on the evening of the 16th.

An Aurora was observed at 9-30 p.m. on the 9th.

The magnetic disturbances have been frequent, but only once of any considerable amount. The existence of the disturbing force was shown particularly on the declination curve. This was somewhat irregular from noon on the 2nd until the morning of the 4th, and again from 2 p.m. of the same day till mid-day of the 10th; the magnet was, however, generally more quiet during the hours from noon to 6 p.m. Similar perturbations were observable from 7 a.m. on the 11th, until midnight, and from 11 p.m. of the 16th to 10 the next morning.

The sudden and extensive sweep of the needle towards the West at about 20 minutes past 9 p.m. on the 17th, was followed by a magnetic storm which lasted rather more than 6 hours. The components of the intensity were both diminished during this interval, and every movement of the V.F. magnet is shown in miniature on the H.F. curve. The oscillations of the V.F. were very considerable.

The only other movements of the V.F. magnet worth recording were an increase attaining its max. just before 4 p.m. on the 3rd, and another max. at 5-20 p.m. on the 9th. On the evening of the 29th, there was also some disturbance.



Stonhurst Observatory.

Lat. $53^{\circ} 50' 40''$ N. Long. $9^{\text{m}} 52^{\text{s}}.68.$ W. Height of the Barometer
above the sea, 331 ft.

METEOROLOGICAL REPORT

For October, 1872.

Results of Observations taken during the month.	Mean for the last 25 Years.
Mean Reading of the Barometer.....	29·236 29·404
Highest ,, on the 6th	29·931 29·976
Lowest ,, on the 10th	28·626 28·653
Range of Barometer Readings	1·305 1·323
Highest Reading of a Max. Therm. on the 2nd	60·7 64·4
Lowest Reading of a Min. Therm. on the 14th ..	30·6 30·0
Range of Thermometer Readings	30·1 34·4
Mean of all the Highest Readings	53·0 54·7
Mean of all the Lowest.....	41·2 42·3
Mean Daily Range	11·8 12·4
Deducted Monthly Mean (from Mean of Max. } and Min.).....	46·1 47·5
Mean Temperature from dry bulb.....	46·1 48·1
Adopted Mean Temperature	46·1 47·8
Mean Temperature of Evaporation	44·2 45·7
Mean Temperature of Dew Point.....	42·0 43·3
Mean elastic force of Vapour.....	0·268in 0·283in
Mean weight of Vapour in a cubic foot of air	3·1gr 3·2gr
Mean additional weight required for saturation ...	0·5gr 0·6gr
Mean degree of Humidity, (saturation 1·00).....	0·87 0·85
Mean weight of a cubic foot of air	535·3gr 536·0gr
Fall of Rain	6·004in 5·330in
Number of days on which Rain fell.....	30 21·4
Amount of Evaporation	1·389 1·493

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	1	3	3	3	1	13	5	2
Mean Velocity in miles per hour	4·5	7·1	6·6	11·5	2·0	10·4	6·6	13·7
Total No. of miles for each Direction	109	513	472	831	48	3253	792	656

The total number of miles registered during the month was 6674.

The max. Velocity of the wind was 34 miles per hour. Direction S.S.E. on the 24th, at 7 a.m.

Mean amount of Cloud, (an overcast sky being indicated by 10·0) 7·5

In the month of October, the highest reading of the Barometer during 25 years, was on the 29th, in 1849, and was 30·238

The lowest " " 19th, 1862 28·139

The highest Temperature " 9th, 1869 72·8

The lowest " " 21st, 1859 25·2

The highest adopted mean temperature of } 1861 51·6
the month

The lowest " " 1850 44·8

— 0 —

The readings of the Barometer are taken partly from Barrow's Standard, and partly from an instrument by Adie. The correction — 0·02 has been applied to the readings of the latter on account of difference of height above sea level. Corrections for index error, capillarity, and temperature are never omitted, but the observed values are not reduced to sea-level. The maximum and minimum temperatures are obtained from the patent instruments of Negretti and Zambra, and the other temperatures from the hygrometer by the same opticians. These thermometers have all been compared by Mr. GLAISHER with those of Greenwich. Both the direction and the velocity of the wind are given by a self-registering Anemometer of BECK. The Hygrometrical results have been calculated from GLAISHER'S tables, 2nd edition.

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Lightning was seen on the 11th and 31st. Fog prevailed on the 20th. The Solar halo visible on the same day was very brilliant between 1-40 and 2-0 p.m., the colours were strong, and the whole ring sharply defined at the inner border. Between 6 p.m. on the 29th, and 5 a.m. of the 30th, there was a remarkable fall of rain, the amount being about 1.5 inches. During this time the wind was mostly from the SSW, and its rate about 25 miles per hour. This was followed by a hail storm on the 31st.

The month started with a slightly disturbed state of terrestrial magnetism, and continued thus until the morning of the 8th. The only perturbations of any considerable extent during this period were those of the Declination and V.F. magnets on the morning of the 7th, the H.F. magnet not being much affected. The magnets then remained undisturbed until about 10^h 20^m p.m. on the 14th, when the most violent storm that has ever been registered by the Stonyhurst photographic magnetographs suddenly burst forth. All the magnets were equally affected at the same moment, and the H.F. magnet was more violently disturbed at the beginning than at any succeeding stage of the perturbations. The storm continued, with the sole exception of a short lull on the afternoon of the 16th, until 10 p.m. of the 18th. The general character of the movements was the same throughout the whole storm, consisting mostly of extensive oscillations of the Declination needle on either side of its mean position; but it moved more towards the West on the morning of the 15th, and more towards the North on the afternoon of the 17th. The general tendency of the two components of the intensity was to diminish, except during the afternoons of the 17th and 18th. There was a very striking agreement between the Declination Curves of the 15th, 16th, 17th, and 18th during

the morning hours, the maximum West Deviation having been attained at about 6 a.m. on each successive day. During the afternoon of the 17th the greatest movement of the Declination needle towards the West was equal to that of the previous morning, whilst the oscillations towards the North were greater than on the other days of the storm. The Range was then $1^{\circ} 46' 50''$. The movement of the Declination magnet was so extensive at about 6 a.m. on the 15th that it failed for some minutes to be recorded, but this frequently happened to the V.F. magnet, which was also several times thrown off its balance by the violence of the disturbing force. From the morning of the 19th the magnets were exceedingly quiet until the afternoon of the 28th, when the calm was followed by some slight movements, which continued to the end of the month.

Stonbury Observatory.

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

METEOROLOGICAL REPORT

For November, 1872.

Results of Observations taken during the month.	Mean for the last 25 Years.	
Mean Reading of the Barometer.....	29·183	29·465
Highest " on the 12th	29·872	30·068
Lowest " on the 30th	28·343	28·617
Range of Barometer Readings	1·529	1·451
Highest Reading of a Max. Therm. on the 6th	61·9	55·1
Lowest Reading of a Min. Therm. on the 18th ..	26·9	25·2
Range of Thermometer Readings	35·0	29·9
Mean of all the Highest Readings	49·1	46·6
Mean of all the Lowest.....	39·2	36·0
Mean Daily Range	9·9	10·6
Deduced Monthly Mean (from Mean of Max. } } and Min.)	43·8	40·9
Mean Temperature from dry bulb	43·3	41·1
Adopted Mean Temperature	43·6	41·0
Mean Temperature of Evaporation	41·9	39·3
Mean Temperature of Dew Point	39·9	37·4
Mean elastic force of Vapour.....	0·247in	0·224in
Mean weight of Vapour in a cubic foot of air	2·8gr	2·6gr
Mean additional weight required for saturation ...	0·4gr	0·4gr
Mean degree of Humidity, (saturation 1·00).....	0·87	0·87
Mean weight of a cubic foot of air	537·0gr	544·9gr
Fall of Rain	4·697in	3·948in
Number of days on which Rain fell.....	29	18·6
Amount of Evaporation	1·236	1·154

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
		1	7	2	1	4	9	4	2
Mean Velocity in miles per hour	3·0	9·1	6·6	10·8	24·0	16·4	12·4	12·4
Total No. of miles for each Direction	71	1531	318	259	2305	3548	1195	594

The total number of miles registered during the month was 9821.

The max. Velocity of the wind was 60 miles per hour for 30 minutes. Direction S. on the 23rd, at 10 p.m.

Mean amount of Cloud, (an overcast sky being indicated by 10·0) 6·2

In the month of November, the highest reading of the Barometer during 25 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 } 1857 & 1863 43·8

The lowest ,, ,, 1851 36·7

— 0 —

The readings of the Barometer are taken from Adie's Standard.

The correction—0·02 has been applied, on account of the difference of height above sea level, between the Adie Barometer, and the instrument formerly in use. Corrections for index error, capillarity, and temperature are never omitted, but the observed values are not reduced to sea-level. The maximum and minimum temperatures are obtained from the patent instruments of Negretti and Zambra, and the other temperatures from the hygrometer by the same opticians. These thermometers have all been compared by Mr. GLAISHER with those of Greenwich. Both the direction and the velocity of the wind are given by a self-registering Anemometer of BECK. The Hygrometrical results have been calculated from GLAISHER'S tables, 2nd edition.

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The maximum temperature for November during the last 25 years, occurred on the 6th this year; the mercury stood $0^{\circ}.8$ higher than in 1868, when the maximum was $61^{\circ}.1$.

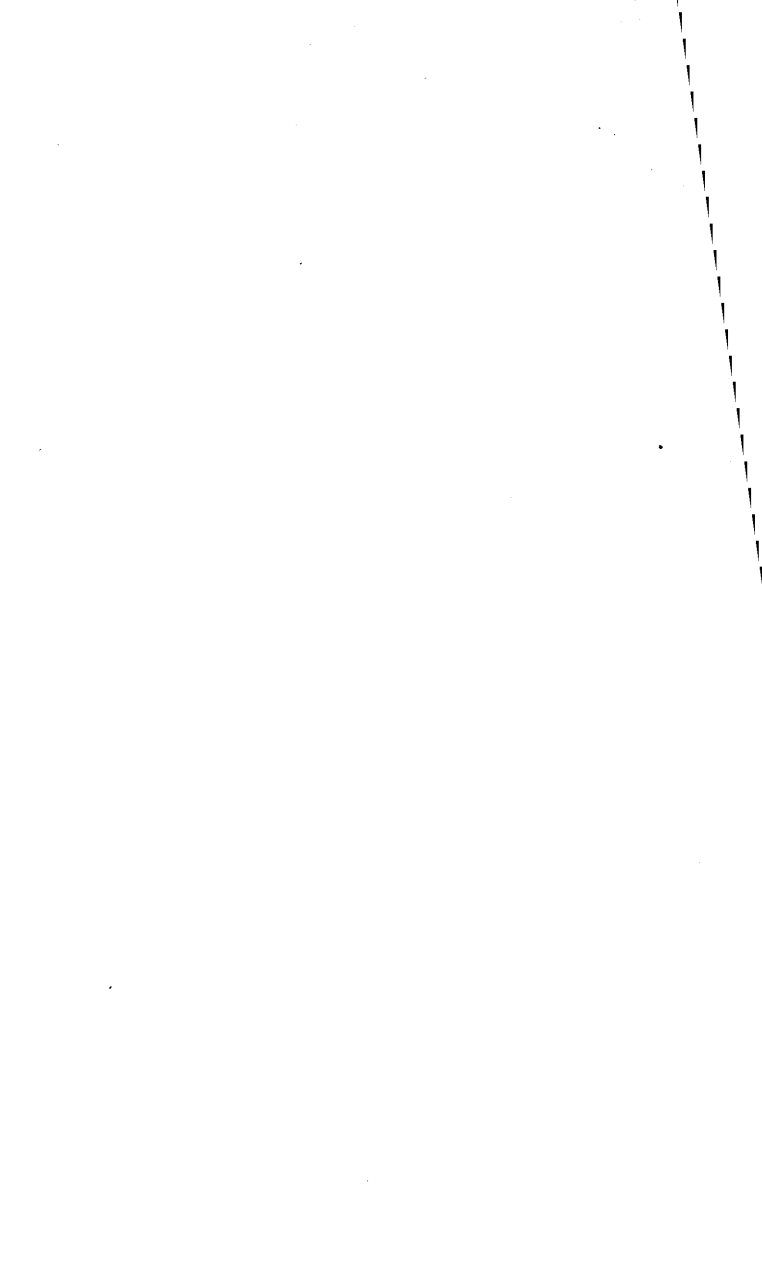
During the gale, on the night of the 23rd, the velocity of the wind was 60 miles an hour for 30 minutes, and much greater for short intervals. The total number of miles registered by the Anemometer on the 23rd was 912 miles, which gives a mean velocity of 31 miles per hour for the whole 24 hours. After midnight of the 23rd the wind veered slightly towards the SW., returning to S by 4 p.m. on the 24th, and then backing to SSE in the evening. There is an increase of 3343 in the number of miles recorded by the Anemometer during the month, as compared with last November. The number of rainy days is large, but there is not a proportional increase in the amount, this being only $0ia.75$ above the average.

There was a slight fall of snow on the 13th.

The 28th and 29th were foggy.

On the morning of the 11th the auroral light in the North was strong. At 2-25 a.m. a broad band of light arose from the NNE horizon, and extended to the Zenith. The lower portion of the band was of a beautiful sea-green colour, but near the Zenith it was red. It remained visible for about 10 minutes. At 2-54 another broad streamer shot up from the N horizon, enveloping Polaris. It was of a rosy tint, with a light green edge along the whole of its Eastern border. At 4-15 two streamers extended to the Zenith from the horizon, a red one in the N., and a green one NW. These remained in view for five minutes.

With the exception of some short irregular movements of the suspended magnets, repeated on several successive days, or at intervals of two days, there was no magnetic disturbance of any note previous to that which commenced at 11 p.m. G.M.T. on the 10th. The disturbing force was felt principally by the Vertical Force magnet, which indicated a diminution of this component of the earth's magnetic intensity. The minimum was reached at 6-25 a.m. on the 11th, and about 12 hours later there was another disturbance, which increased considerably the Vertical Force. There was also a slight disturbance on the morning of the 24th, followed by a few irregular movements of the Declination needle on the succeeding days, but the month altogether was remarkably free from magnetic perturbations.



Stonhurst Observatory.

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

METEOROLOGICAL REPORT

For December, 1872.

Results of Observations taken during the month.	Mean for the last 25 Years.	
Mean Reading of the Barometer.....	29·092	29·441
Highest „ „ on the 4th	29·568	30·055
Lowest „ „ on the 8th	28·143	28·606
Range of Barometer Readings	1·425	1·449
Highest Reading of a Max. Therm. on the 29th	51·2	53·3
Lowest Reading of a Min. Therm. on the 4th ..	24·5	20·4
Range of Thermometer Readings.....	26·7	32·0
Mean of all the Highest Readings	44·4	43·4
Mean of all the Lowest.....	36·9	33·8
Mean Daily Range	7·5	9·6
Deduced Monthly Mean (from Mean of Max. } and Min.)	40·7	38·6
Mean Temperature from dry bulb.....	41·0	39·3
Adopted Mean Temperature	40·9	39·0
Mean Temperature of Evaporation	39·2	37·9
Mean Temperature of Dew Point.....	37·1	36·1
Mean elastic force of Vapour.....	0·220in	0·214in
Mean weight of Vapour in a cubic foot of air	2·6gr	2·5gr
Mean additional weight required for saturation ...	0·4gr	0·3gr
Mean degree of Humidity, (saturation 1·00).....	0·86	0·88
Mean weight of a cubic foot of air	538·4gr	546·7gr
Fall of Rain	4·085in	4·556in
Number of days on which Rain fell.....	30	20·0
Amount of Evaporation	1·687	0·95

No. of days in the month on which the prevailing wind was	N	NE	E	SE	S	SW	W	NW
	0	10	3	0	9	5	2	2
Mean Velocity in miles per hour	0	8·0	10·6	0	19·7	12·7	18·6	4·8
Total No. of miles for each Direction	0	1910	763	0	4261	1523	891	228

The total number of miles registered during the month was 9576.

The max. Velocity of the wind was 39 miles per hour; direction W.N.W. on the 9th, at 6 a.m.

Mean amount of Cloud, (an overcast sky being indicated by 10·0) 8·4

In the month of December, the highest reading of the Barometer during 25 years, was on the 22nd, in 1849, and was 30·376

The lowest ,, ,, 8th, 1872 28·143

The highest Temperature ,, 6th, 1856 58·0

The lowest ,, ,, 24th, 1860 6·7

The highest adopted mean temperature of the month } 1857 44·6

The lowest ,, ,, 1869 33·3

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The readings of the Barometer are taken from Adie's Standard. The correction—0·02 has been applied, on account of the difference of height above sea level, between the Adie Barometer, and the instrument formerly in use. Corrections for index error, capillarity, and temperature are never omitted, but the observed values are not reduced to sea-level. The maximum and minimum temperatures are obtained from the patent instruments of Negretti and Zambra, and the other temperatures from the hygrometer by the same opticians. These thermometers have all been compared by Mr. GLAISHER with those of Greenwich. Both the direction and the velocity of the wind are given by a self-registering Anemometer by BECK. The Hygrometrical results have been calculated from GLAISHER'S tables, 2nd edition.

—o—

Light falls of snow on the 5th, 9th, 12th, 13th, and 17th. Hail on the 7th, 8th, and 9th. Slight fog on the 2nd and 30th. Lunar halo at 8h 20m p.m. on the 9th, diameter 39°. Another halo was visible on the 12th.

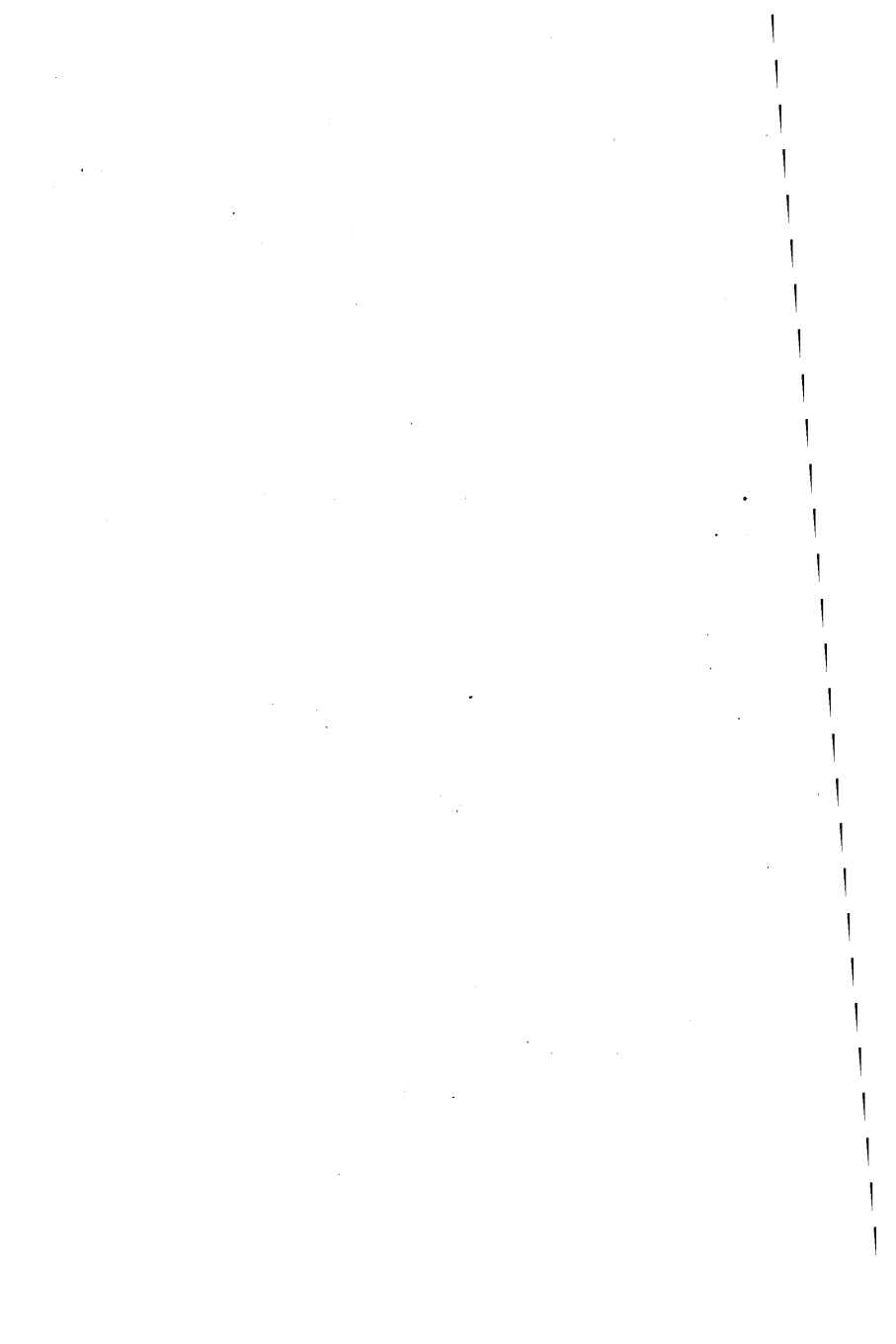
On December 9th, at 8h 40m p.m., auroral light was seen in the N. There was also a slight aurora on the 26th.

The first magnetic perturbation of the month occurred between 8 p.m. on the 9th and 1 a.m. on the 10th. The motion of the V.F. magnet was considerable.

On the 14th the magnets were suddenly disturbed at 4 p.m., the Declination needle moving Eastward, and both the components of the intensity being increased. A somewhat similar disturbance of the Declination happened at the same hour two days later, and on the 17th the curve was in general more irregular throughout than on the 14th, but the principal inflexions were the same. The chief irregular movement was again apparent on the 18th, but the time was somewhat earlier than on the preceding days.

On the 21st the needle oscillated rapidly between 6 and 8 p.m., and the V.F. was increased.

A slight disturbance that occurred on the 25th, at 2 p.m., was reproduced at 4 p.m. on the 26th, at 6 p.m. on the 27th, and shortly after 8 p.m. on the 28th, when it had increased considerably in extent. These similar perturbations on succeeding days, or within certain intervals, appear to be worthy of special attention, as they are likely to lead to a knowledge of the true cause of these disturbances. The period of rotation of the earth, and probably also of the rotation of the sun and of the revolution of the planets, enter as important data into these results.



Summary of the Observations

FOR 1872.

		Mean for the last 25 Years.
Mean Reading of the Barometer	29·319	29·478
Highest ,, on April 6th....	30·042	30·266in
Lowest ,, on January 24th....	28·008	28·275in
Range of Barometer Readings	2·034	1·99lin
Highest Reading of a Max. Therm. on July 21st	83·8	81·4
Lowest Reading of a Min. Therm. on March 25th	22·4	16·1
Range of Thermometer Readings.....	61·4	65·3
Mean of all the Highest Readings.....	55·6	54·7
Mean of all the Lowest	43·1	41·0
Mean Daily Range	12·5	13·7
Deducted Yearly Mean (from Mean of Max. and Min.)	48·3	46·8
Mean Temperature of dry bulb	48·2	46·9
Adopted Mean Temperature.....	48·3	46·9
Mean Temperature of Evaporation.....	46·0	44·6
Mean Temperature of Dew Point	43·6	42·1
Mean elastic force of Vapour	0·291in	0·276in
Mean weight of Vapour in a cubic foot of air.....	3·3gr	3·2gr
Mean additional weight required for saturation....	0·7gr	0·6gr
Mean degree of Humidity, (saturation 1·00)	0·84	0·84
Mean weight of a cubic foot of air.....	534·4gr	538·7gr
Total Fall of Rain in the Year	60·504in	46·817in
Number of days per Month on which Rain fell.....	27	18·1
Amount of Evaporation	30·020in	27·305in

The Maximum monthly mean height of the Barometer was in
March, 1854, and was 29·861

The Minimum ,, ,, in December, 1868, and was... 28·984

The Maximum yearly mean height of the Barometer was in
1858, and was..... 29·544

The Minimum ,, ,, ,, ,, in 1872, and was... 29·319

The greatest monthly range of the Barometer was in November, 1859, and was	2.290
The least ,, ,, in July, 1852, and was	0.505
In 1859, on Nov. 1st, at 1 p.m., the Barometer stood at 28.035, and on Nov. 2nd, at 1 p.m., it stood at 29.263, this was the greatest range of the Barometer, in 24 hours and was.....	1.228
The highest reading of the Barometer, during 25 years, was on February 11th, 1849, and on March 4th, 1854, and was	30.452
The lowest ,, ,, on Jan. 14th, 1865, and was	27.939
Extreme range	2.513
The highest temperature was on July 15th, 1868, and was	88.1
The lowest ,, ,, Dec. 24th, 1860,	6.7
The highest adopted mean temperature of a month	} July, 1868,
of a month .....		62.4
The lowest ,, ,, Feb., 1855,	28.6
The highest adopted mean temperature of a year 1868,	49.1
The lowest ,, ,, 1855,	44.6
The greatest monthly mean weight of vapour, in a cubic foot of air.....	} July, 1852,
of a month .....		5.1
The least ,, ,, Feb., 1855,	1.4
The greatest fall of rain in a month, was in Oct., 1870, and was..	13.357
The least ,, ,, May, 1853, and May, 1859,.....	0.3
The greatest number of days on which rain fell in one Month	} July, 1861, Dec. 1868, and Jan. 1872
of a month .....		31.
The least ,, ,, March, 1852,	3.

The Rainfall for 1872, although it is 13.687 inches above the yearly average, falls short of that of 1866 by 1.1; but the number of days on which rain fell, was greater during the past year than in any of the preceding 24 years, the number being 319, if we include the days on which less than 0.01 of an inch was registered.

1866 had also the lowest mean barometer previous to 1872, but the reading has now decreased by 0.070.

The adopted mean temperature is very high for the present year, that of 1857 however equalled it, and 1868 surpassed it by 0.8 Fah.

The anemometer registered 92865 miles during the twelve months, and the velocity of the gale on the 23rd of November, far exceeded any previous record, being at times considerably over 60 miles an hour.

Secular Variation of the Meteorological Elements.

The meteorological observations at this observatory having now been carried on uninterruptedly for a quarter of a century, it may be well to throw into a tabular form the yearly mean values of the principal meteorological data, in order to see whether any secular variation of these quantities may be apparent. The curves at the end of the report are constructed from these tabulated values, so that the eye may more readily detect any approach to a period in the annual changes.

The scales adopted as most convenient are as follows :—

For the yearly mean Barometer the ordinate has been multiplied by 4.

For the Rainfall the inch is represented by one twentieth of an inch.

For the number of days on which more than 0.01 inch of rain fell, 75 days go to the inch.

For temperature 2 inches represent 5°.0 Fah.

For humidity 5 inches are equivalent to complete saturation.

The mean Barometer curve, though coinciding generally in its movements with the Rain curves, but with opposite inflections, seems to point far less clearly than the latter to any great change of climate during the last five and twenty years. The increase of Rain within the past thirteen years is very apparent from the curve representing the number of rainy days. There is a very slight difference between the mean readings of the adopted temperature, and those of evaporation. The period between the two principal maxima of the adopted temperature is eleven years, from 1857 to 1868. It may not be superfluous to remark that the minima of solar activity were about 1856 and 1867.

The humidity, whose variations are comprised within very narrow limits, is remarkable from its being almost always above the mean from 1852 to 1862, and then invariably below the mean until 1872.

Table showing the Yearly Values of the
Meteorological Elements.

Year.	Mean. Barometer.	Rainfall.	Number of days on which the rain was not less than 0·01.	Adopted mean Temperature	Mean temperature of evaporation	Mean degree of humidity
1848	in 29·392	in 52·4	166	46°·5	44°·4	0·84
1849	·513	47·6	180	46·6	44·0	·83
1850	·509	47·6	185	46·2	44·1	·85
1851	·506	44·4	175	46·4	43·8	·82
1852	·425	56·5	187	47·5	45·2	·84
1853	·463	37·3	154	45·0	43·2	·86
1854	·540	44·2	174	46·7	44·7	·87
1855	·506	35·6	134	44·6	42·4	·83
1856	·510	42·1	159	46·5	44·3	·86
1857	·534	39·3	178	48·3	46·4	·86
1858	·544	42·0	176	46·9	44·6	·84
1859	·460	45·0	189	47·3	45·1	·86
1860	·390	48·5	222	45·0	42·8	·84
1861	·472	46·4	211	47·1	44·9	·85
1862	·441	52·0	223	46·8	44·7	·85
1863	·475	55·2	234	47·8	46·5	·82
1864	·495	39·8	184	46·1	43·7	·83
1865	·482	38·4	169	47·7	45·4	·84
1866	·389	61·6	221	47·3	45·0	·84
1867	·487	44·7	200	46·7	44·5	·84
1868	·565	44·5	196	49·1	46·4	·82
1869	·510	54·4	195	47·6	45·1	·83
1870	·527	45·0	161	46·7	44·3	·83
1871	·503	43·9	205	46·9	44·3	·82
1872	·319	60·5	251	48·3	46·0	·84
Means.	29·478	46·81a	189	46·9	44·6	0·84
Range.	0·246	26·0	117	4·5	4·1	0·05

Monthly Magnetical Observations taken at the College Observatory, Stonyhurst, 1872.

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

The Vertical and Total forces are obtained from the absolute measures of the Horizontal force and of the Dip.

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

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

The moment of inertia of the magnet with its stirrup, using the grain and foot as the units of mass and of linear measure, is 5·27303. Its rate of increase for increase of temperature is 0·00073 for every 10° of Fahr.

The weight of the magnet with its stirrup is approximately 825 grains, and the length of the magnet is nearly 3·94 inches. The moment of inertia was determined, independently of the weight and dimensions, by the method of vibration, with and without a known increase of the moment of inertia.

The temperature corrections have always been obtained from the formula $q(t^{\circ}-35^{\circ}) + q'(t^{\circ}-35^{\circ})^2$, where t° is the observed temperature and 35° Fahr the adopted standard temperature. The values of the co-efficients q and q' are respectively 0001128 and 0·000000436.

The induction co-efficient μ is 0·000244.

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

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

The time of one vibration has been obtained each month from the mean of twelve determinations of the time of 100 or of 200 vibrations.

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

In deducing from these observations the ratio and product of the magnetic moment m of the magnet, and the earth's horizontal magnetic intensity X , the induction and temperature corrections have always been applied, and the observed time of vibration has been corrected for the effect of torsion of the suspending thread; but no correction has been required for the rate of the chronometer, or for the arc of vibration, the former having been only once just over 4s, and the latter always under 74'.

The average deflection of the magnet caused by a twist of the torsion circle through 90° , has been about $8\cdot2$ 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 $-0\cdot0028497$.

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

Most of the observations since the beginning of May have been taken by Mr. W. Carlisle, the magnetic assistant of this observatory.

Observations of Deflection for Absolute measure of
Horizontal Force.

Month.	G. M. T.			Distances of centres of Magnets.	Tem- pera- ture.	Observed Deflection.	$\frac{m}{X}$
	D	H	M				
January ...	20th...	2	2 p.m.	FOOT. 1·0	41·0	14 33 12	9·10076
	,, ...	2	28 p.m.	1·3	43·7	6 34 15	.....
February ..	26th..	2	13 p.m.	1·0	46·6	14 32 34	9·10073
	,, ...	2	39 p.m.	1·3	46·9	6 33 56	.....
March.....	20th...	2	13 p.m.	1·0	50·9	14 31 8	9·10042
	,, ...	2	38 p.m.	1·3	53·5	6 33 54	.....
April	27th...	2	24 p.m.	1·0	57·8	14 30 4	9·10027
	,, ...	2	50 p.m.	1·3	58·3	6 33 1	.....
May.....	18th...10	21	a.m.	1·0	48·4	14 32 59	9·10104
	,, ...10	46	a.m.	1·3	49·2	6 34 42	.....
June.....	17th... 9	42	a.m.	1·0	66·8	14 30 20	9·10105
	,, ...10	23	a.m.	1·3	67·8	6 33 43	.....
July.....	19th... 4	5	p.m.	1·0	69·5	14 27 21	9·09978
	,, ... 4	47	p.m.	1·3	69 0	6 32 22	.....
August ...	23rd...11	37	a.m.	1·0	68·0	14 27 27	9·09972
	,, ...12	28	p.m.	1·3	73·0	6 31 25	.....
September.	10th...12	32	p.m.	1·0	64·4	14 29 29	9·10046
	,, ...12	54	p.m.	1·3	65·4	6 32 38	.....
October ...	11th... 2	39	p.m.	1·0	65·1	14 27 50	9·09970
	,, ... 3	34	p.m.	1·3	62·7	6 32 15	.....
November.	23rd...10	58	a.m.	1·0	51·7	14 27 16	9·09847
	" ...12	7	p.m.	1·3	53·5	6 32 3	.....
December .	26th...10	53	a.m.	1·0	56·8	14 25 51	9·09814
	,, ...11	30	a.m.	1·3	60·0	6 31 3	.....

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.	Tem- pera- ture.	Time of one vibra- tion.	Log m X	Value of m.
January ...	<small>D H M</small> 20th...11 35 a.m.	35·9	5·58587	0·22058	0·45780
February ..	26th...12 35 p.m.	43·4	5·58879	0·22120	0·45811
March	20th...12 30 p.m.	47·1	5·58736	0·22074	0·45770
April	27th...12 28 p.m.	57·1	5·59571	0·21948	0·45668
May..	18th...12 10 p.m.	52·3	5·58999	0·22062	0·45796
June	17th...12 6 p.m.	69·5	5·59660	0·22094	0·45814
July.....	19th...11 22 a.m.	65·0	5·60150	0·21981	0·45687
August ...	23rd... 9 1 a.m.	61·0	5·60360	0·21947	0·45667
September.	10th...11 19 a.m.	63·5	5·59860	0·22020	0·45744
October ...	11th...11 33 a.m.	69·2	5·60113	0·22050	0·45719
November.	23rd...10 57 a.m.	45·1	5·59655	0·21962	0·45609
December..	26th...12 34 p.m.	61·0	5·59898	0·22036	0·45632

Dip Observations.				Magnetic Intensity.		
Months.	G. M. T.	Needle.	Dip.	X, or Horizontal Force.	Y, or Vertical Force.	Total Force.
January ...	D H M 15th... 11 15 a.m.	1	69° 32' 14"	3·6300	9·7281	10·3833
	20th... 2 35 p.m.	3	69 32 12	.....	.....	.....
February ..	12th... 11 25 a.m.	1	69 35 56	3·6328	9·7401	10·3955
	16th... 11 50 a.m.	3	69 29 34	.....	.....	.....
March	8th... 11 50 a.m.	1	69 37 4	3·6321	9·7568	10·4111
	8th... 4 20 p.m.	3	69 32 42	.....	.....	.....
April ...	13th... 11 35 a.m.	1	69 34 58	3·6275	9·7303	10·3845
	15th... 12 5 p.m.	3	69 31 31	.....	.....	.....
May	15th... 11 37 a.m.	1	69 30 12	3·6290	9·7004	10·3570
	15th... 4 15 p.m.	3	69 28 25	.....	.....	.....
June	18th... 11 50 a.m.	1	69 33 10	3·6262	9·7107	10·3657
	24th... 11 58 a.m.	3	69 29 38	.....	.....	.....
July	23rd... 11 45 a.m.	1	69 31 12	3·6309	9·7108	10·3675
	23rd... 12 25 p.m.	3	69 28 39	.....	.....	.....
August ...	24th... 10 55 a.m.	1	69 31 8	3·6298	9·7041	10·3608
	24th... 12 2 p.m.	3	69 27 54	.....	.....	.....
September.	11th... 12 35 p.m.	1	69 31 56	3·6297	9·7265	10·3816
	26th... 12 50 p.m.	3	69 32 19	.....	.....	.....
October ...	14th... 9 28 a.m.	1	69 30 40	3·6341	9·7357	10·3919
	14th... 10 18 a.m.	3	69 32 59	.....	.....	.....
November.	23rd... 11 20 a.m.	3	69 31 31	3·6356	9·7357	10·3924
	29th... 9 25 a.m.	1	69 31 13	.....	.....	.....
December..	21st... 10 24 a.m.	1	69 32 34	3·6401	9·7570	10·4139
	21st... 11 30 a.m.	3	69 32 20	.....	.....	.....
Means			69 31 45	3·6315	9·7280	10·3838

Declination Observations.

			Uncorrected,		Corrected.	
Month.	G. M. T.		Observation	Monthly Mean.	Observation	Monthly Mean.
January ..	D.	H. M.	21° 32' 54" w.	° ' "	21° 34' 54"	° ' "
	5th... 9	7a.m.				
	13th... 9	5	21 39 56		21 40 48	
	21st... 9	16	21 25 38		21 30 42	
February ..	26th... 9	17	21 25 50	21 32 38	21 34 10	21 35 9
	2nd... 9	2	21 27 14		21 29 14	
	9th... 9	11	21 28 20		21 30 55	
	16th... 9	15	21 24 9		21 25 18	
March.	23rd... 9	19	21 24 57	21 26 10	21 28 58	21 28 36
	2nd... 9	11	21 30 58		21 26 23	
	8th... 9	16	21 30 46		21 30 12	
	15th... 9	13	21 25 11		21 27 46	
April	23rd... 9	17	21 27 3		21 29 38	
	30th.. 8	19	21 24 25	21 27 41	21 34 44	21 29 45
	5th... 9	8	21 21 27		21 24 36	
	12th... 9	15	21 22 57		21 29 32	
May	19th... 9	25	21 23 46		21 23 29	
	27th.. 9	3	21 19 29	21 21 55	21 27 13	21 26 13
	3rd... 9	6	21 23 11		21 28 3	
	10th... 9	2	21 31 6		21 38 33	
June	17th... 9	14	21 20 25		(21 20 25)	
	24th... 8	59	21 20 50	21 23 53	21 26 34	21 28 24
	1st... 9	1	21 19 13		21 19 30	
	7th... 9	8	21 19 29		21 26 22	
June	15th.. 9	10	21 26 14		21 29 40	
	23rd... 8	54	21 20 45		(21 20 45)	
	29th... 8	55	21 19 41	21 21 4	21 25 8	21 24 17

Declination Observations.—continued.

			Uncorrected.		Corrected.	
Month.	G. M. T.		Observation	Monthly Mean.	Observation.	Monthly Mean.
	D.	H. M.	° ' "	° ' "	° ' "	° ' "
July	6th...	9 5a.m.	21 20 15 w.	° ' "	21 30 34	° ' "
	14th...	8 54	21 22 25		21 28 26	
	21st...	9 9	21 26 32		21 25 58	
	26th...	9 6	21 22 34	21 22 57	21 23 43	21 27 10
August ...	2nd...	9 0	21 27 56		21 31 39	
	10th...	9 4	21 27 22		21 34 15	
	18th...	8 59	21 28 29		21 31 4	
	24th...	9 6	21 27 44		21 30 36	
	30th...	8 59	21 26 25	21 27 35	(21 26 25)	21 30 48
September.	7th ..	9 18	21 25 54		21 28 46	
	14th...	9 4	21 23 13		21 26 56	
	21st...	9 48	21 28 52		21 29 26	
	28th...	9 1	21 22 21	21 25 5	21 26 39	21 27 57
October ...	4th...	8 51	21 18 41		21 17 32	
	11th...	9 15	21 23 58		21 32 51	
	18th...	9 4	21 15 27		(21 15 27)	
	26th...	8 59	21 26 16	21 21 6	21 27 59	21 23 27
November.	2nd...	9 6	21 22 23		21 22 57	
	9th...	9 3	21 25 12		21 26 55	
	16th ..	9 16	21 25 36		21 26 45	
	23rd ..	9 18	21 26 17		21 29 26	
	29th...	9 1	21 30 39	21 26 1	21 34 5	21 28 2
December .	7th...	9 4	21 29 41		21 29 7	
	14th...	9 8	21 27 57		21 29 23	
	21st...	9 0	21 29 57		21 29 57	
	27th..	9 8	21 33 11	21 30 12	21 29 45	21 29 33
Yearly mean				21 25 31		21 28 17

1848 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72

Aean Barometer

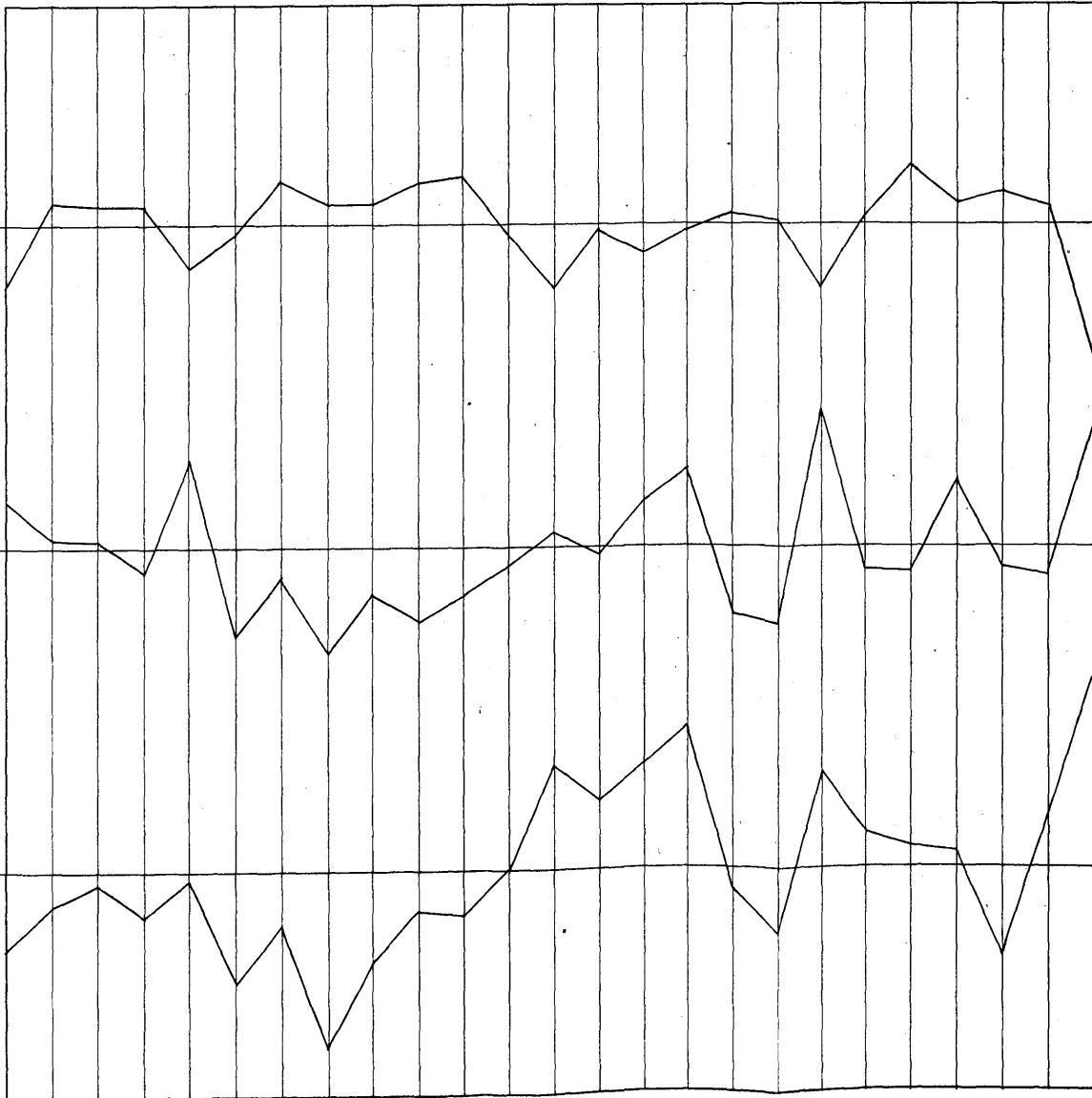
29.478

Annual yearly Rainfall

46.8

*Number of days per
year on which at least*

*1/4 of Rain fell
189.*



1848 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72

*Adopted
Temperature*

46.9

*Temperature
evaporation*

44.6

*in degree
humidity*

78.4

