RESULTS

OF THE

MAGNETICAL AND METEOROLOGICAL

OBSERVATIONS

MADE AT

THE ROYAL OBSERVATORY, GREENWICH,

1871.

(EXTRACTED FROM THE GREENWICH OBSERVATIONS, 1871.)

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GREENWICH MAGNETICAL AND METEOROLOGICAL OBSERVATIONS, 1871.

Introduction.

§ 1. *Buildings of the Magnetic Observatory.*

In consequence of a representation by the Astronomer Royal, dated 1836, January 12, and a memorial by the Board of Visitors of the Royal Observatory, dated 1836, February 26, addressed to the Lords Commissioners of the Admiralty, an additional space of ground on the south-east side of the former boundary of the Observatory grounds was inclosed from Greenwich Park for the site of a Magnetic Observatory, in the summer of 1837; and the Magnetic Observatory was erected in the spring of 1838. Its nearest angle in its present form is about 174 feet from the nearest point of the S.E. dome, and about 30 feet from the office of Clerk of Works. It is based on concrete and built of wood, united for the most part by pegs of bamboo; no iron was intentionally admitted in its construction, or in subsequent alterations. Its form, as originally built, was that of a cross with four equal arms, very nearly in the direction of the cardinal magnetic points as they were in 1838; the length within the walls, from the extremity of one arm of the cross to the extremity of the opposite arm, was 40 feet, the breadth of each arm 12 feet. In the spring of 1862, the northern arm was extended 8 feet. The height of the walls inside is 10 feet, and the ceiling of the room is about 2 feet higher. The northern arm of the cross is separated from the central square by a partition, so as to form an ante-room. The meridional magnet for observations of absolute declination formerly used also for observations of variations of declination, (placed in its position in 1838), is mounted in the southern arm; and the theodolite by which the magnet-collimator is viewed, and by which circumpolar stars for determination of the astronomical meridian are also observed (for which observation an opening is made in the roof, with proper shutters,) is in the southern arm, near the southern boundary of the central square. The bifilar magnet, for variations of horizontal magnetic force (erected at the end of 1840) was mounted near the northern wall of the eastern arm; and the balance-magnetometer, for variations of vertical magnetic force (erected in 1841) was mounted near the northern wall of the western arm. Important changes have subsequently been made in the positions of these instruments, as will be mentioned below. The sidereal time-clock is in the south arm, near the south-east re-entering angle. The fire-grate (constructed of copper, as far as possible,) is near the north end of the west side of the ante-room. Some of these fixtures may contain trifling quantities of iron, and, as the ante-room is used as a computing room it is impossible to avoid the introduction of iron in small quantities; great care, however, is taken to avoid it as far as possible.

In 1864, a room, called the Magnetic Basement, was excavated below the whole of the Magnetic Observatory except the ante-room; the descent to it is by a staircase close to the south wall of the western arm of the building.

For the theodolite, a brick pier was built from the ground below the floor of the Basement, rising through the ceiling into the south arm of the upper room, and supporting the theodolite in exactly the same position as before.

Instead of a single meridional magnet performing the double functions of "magnet for determining absolute magnetic declination," and "magnet carrying a mirror for photographic register," there are now two meridional magnets, one in the Upper Room and one in the Basement. The upper magnet is in a position about 10 inches north of the former position of the declination-magnet; it carries a collimator, for observation by the theodolite; but, in reversion of position of the collimator, the collimator is always either above or below the magnet, so that the magnet is always in the same vertical. The lower magnet, which is in the same vertical with the upper magnet, carries the mirror for the photographic register of the continual changes of declination. A massive brick pier is built in the south arm of the Basement, covered by a stone slab; upon it is fixed the gun-metal stand carrying the photographic lamp, and the narrow chink through which it shines; from the stone slab rise three smaller piers, upon which crossed slates are placed; and from these rises a small pier through the ceiling, to the height of 18 inches above the upper floor, carrying the suspension of the lower magnet; the skein of silk, which supports the lower magnet, passes through a hole in one of the slates. Upon the tops of the three piers rest the feet of the original wooden stand carrying the suspension of the upper magnet.

The bifilar-magnetometer is in the Basement, in a position vertically below its former position. A massive brick pier, surmounted by a thick slab of stone (upon which the metal stand carrying the photograph lamp and narrow chink is fixed) carries a pier consisting of a back and return-sides, which rises through the ceiling about 2 feet above the upper floor, and is crowned by a slate slab that carries the suspension of the bifilar-magnetometer.

The vertical-force magnetometer is in the Basement, in a position vertically below its former position; it rests upon a brick pier, capped by a thick stone; to which also is fixed the plate of metal with narrow chink through which passes the light of the photographic lamp.

To the theodolite-pier are fixed telescopes for eye-observation of the bifilar and vertical-force magnetometers. They are protected from accidental violence by guards fixed to the floor, first attached on 1871, May 2.

At the south-east re-entering angle of the Basement (which has been rebated for the purpose) is the horizontal photographic cylinder, which receives the traces of the movements of the declination-magnet and the bifilar-magnet. The angle is so far cut away that the straight line joining their suspensions passes at the distance of one foot from the wall, and thus the cylinder receives the light from the concave mirrors carried by both instruments, at right angles to its surface. The vertical cylinder which receives the traces of the movements of the vertical-force-magnet, and of the self-registering barometer near it, is east of the vertical force pier.

In the south-east corner of the eastern arm is placed the apparatus for self-registration of the spontaneous galvanic currents on the wires leading respectively, from Angerstein Wharf to Lady Well Station (on the Mid Kent Railway), and from North Kent Junction (on the Greenwich Railway) to Morden College end of the Blackheath Tunnel (on the North Kent Railway). The straight lines connecting these points intersect each other nearly at right angles, at a point not far distant from the Observatory (see § 13 below).

The mean-time-clock is on the west wall of the south arm of the Basement.

Adjoining the north wall is the table for photographic operations. Much water is used in these operations, and therefore a pump is provided in the grounds at a distance of about 30 feet from the nearest magnetometer, by which the water is withdrawn from the cistern at the east end of the photographic table and at once discharged into a covered drain.

Near the west end of the photographic table and fixed to the north wall is the Normal Sidereal Clock of the Astronomical Observatory, Dent 1906, communicating with the Chronograph Barrel and other clocks by galvanic wires. It was established in this position at the end of May 1871.

The Basement is warmed by a gas-stove, and ventilated by a large copper tube nearly two feet in diameter, receiving the flues from the stove and all the lamps, and passing through the upper room to a revolving cowl above the roof. Each of the arms of the basement has a window facing the south, but in general the window-wells are closely stopped.

The variations in the temperature of the instruments have been greatly reduced by their location within this Basement.

On the outside of the Magnetic Observatory, near the north-east corner of the ante-room, a pole 79 feet in height is fixed, for the support of the conducting wires to the electrometers; the electrometers, &c., are planted in the window-seat at the north-end of the ante-room.

The apparatus for naphthalizing the gas used in the photographic registration is mounted in a small detached zinc-built room, erected in 1863, near the west side of the ante-room. The use of the naphthalizing process, which had been discontinued in the years 1865 to 1870, has since 1871 been restored.

In 1863, a range of seven rooms, usually called the Magnetic Offices, was erected near the southern fence of the grounds. Since the summer of 1863, observations of

Dip and Deflexion have been made in the westernmost of these rooms, No. 7. On 1871, December 1, the Watchman's Clock was moved from the Quadrant Passage of the Astronomical Observatory to Magnetic Office No. 3.

At the distance of 28 feet south (magnetic) from the south-east angle of the southern arm is a square shed about $10^{ft}\ 6^{in}$ square, supported by four posts at the height 8 feet, with an adjustible opening at the center of the top. Under this shed are placed the large dry-bulb and wet-bulb thermometers, with a photographic cylinder, whose axis is vertical, between them; and external to these are the gas flames, whose light passing through the thermometer-tubes above the quicksilver makes photographic traces upon the paper which covers the cylinder.

For better understanding of these descriptions, the reader is referred to the Descriptions of Buildings and Grounds with accompanying Maps, attached to the Volumes of Astronomical Observations for the years 1845 and 1862.

§ 2. *Upper Declination-Magnet and Apparatus for observing it.*

The theodolite with which the meridional magnet is observed is by Simms: the radius of its horizontal circle is 8·3 inches: it is divided to 5′, and reads to 5″, by three verniers, carried by the revolving frame of the theodolite. The fixed frame stands upon three foot-screws, which rest in brass channels let into a stone pier, that stands upon the brick pier rising from the ground of the Magnetic Basement. The revolving frame carries the Y's (with vertical adjustment at one end) for a telescope with transit-axis: the length of the axis is $10\frac{1}{2}$ inches: the length of the telescope 21 inches: the aperture of the object glass 2 inches. The Y's are not carried immediately by the T head which crosses the vertical axis of the revolving frame, but by pieces supported by the ends of that T head, and projecting horizontally from it: the use of this construction is to allow the telescope to be pointed sufficiently high to see δ Ursæ Minoris above the pole. The eye-piece of the telescope carries only one fixed horizontal wire, and one vertical wire moved by a micrometer-screw. The opening in the roof of the building permits the observation of circumpolar stars, as high as δ Ursæ Minoris above the pole, and as low as β Cephei below the pole.

For supporting the magnet, a braced wooden tripod-stand is provided, whose feet, as above described, rest upon brick piers in the Magnetic Basement. Upon the cross-bars of the stand rests a double rectangular box (one box completely inclosed within another), both boxes being covered with gilt paper on their exterior and interior sides. On the southern side of the principal upright piece of the stand is a moveable upright bar, turning in the vertical E. and W. plane, upon a pin in its center (which is fixed in the principal upright), and carrying at its top the pulleys for suspension of the magnet; this construction is adopted as convenient for giving an E. and W. movement (now very rarely required) to the point of suspension, by giving a motion to the lower end of the bar. The top of the upright piece carries a brass frame with two pulleys, whose axes are E. and W.: one of these pulleys projects beyond the north side of the principal upright, and from it depends the suspension skein: the other pulley projects on the south side. Till 1871, October 7, the magnet was thus suspended: the suspension skein, being brought from the magnet up to the north pulley, was carried over it and over the south pulley, and thence downwards to a small windlass, fixed to the lower part of the moveable upright. The height of the two pulleys above the floor is about 11 ft. $3\frac{3}{4}$ in., and the height of the magnet is about 2 ft. 10 in.; the length of the metal carrier which bears the magnet is 1 ft. 3 in.; so that the length of the free suspending skein was about 7 ft. $2\frac{3}{4}$ in.

On 1871, October 7, the suspension-skein, which had been in use from 1865, January 20, gave way. Before re-suspending the magnet, new pulleys were prepared by Mr. Simms for the top of the upright piece, adapted to carry a flat leather strap. The silk skein which now carries the magnet is attached to this leather strap; the strap passes over the two pulleys, and is then connected with a cord, which is wound round the windlass above described. If, therefore, by the rotation of the windlass acting upon that cord, the strap is drawn over the pulleys, and the magnet is raised or lowered, yet the effective length of the skein is unaltered, the upper end is perfectly secured from rotation, and the state of the skein is absolutely unvaried. The length of the free suspending skein is now about 6 feet 4 inches. The new suspension-apparatus and skein were mounted on October 21; the adjustment experiments were made October 21–23; and the magnet was finally suspended for observations on October 23.

The magnet was made by Meyerstein, of Göttingen: it is a bar 2 feet long, $1\frac{1}{2}$ inch broad, and about $\frac{1}{4}$ inch thick: it is of hard steel throughout. The magnet-carrier was also made by Meyerstein, but it has since been altered by Simms. The magnet is inserted sideways and fixed by screws in a double square hook which constitutes the lower part of the magnet-carrier. This lower part turns stiffly by a vertical axis with index in a graduated horizontal circle (usually called the torsion-circle) attached to the upper part. The upper part of the magnet-carrier is simply hooked into the skein.

The suspending skein was originally of silk fibre, in the state in which it is first prepared by silk manufacturers for further operations; namely, when seven or more fibres from the cocoon are united by juxtaposition only (without twist) to form a single thread. The skein was strong enough to support perhaps three times the weight of the magnet, &c.

In the summer and autumn of 1864, an attempt was made to suspend the magnet by a steel wire, capable of supporting the weight 15 lbs.; but the torsion force was found to be so large as greatly to diminish the value of the observations; and the skein was finally restored on 1865, January 20. A similar attempt was made for suspension of the lower magnet; the skein, however, was restored on 1865, January 30.

Upon the magnet there slide two brass frames, firmly fixed in their places by means of pinching-screws. One of these contains, between two plane glasses, a cross of delicate codwebs; the other holds a lens of 13 inches focal length and nearly 2 inches aperture. This combination, therefore, serves as a reversed telescope without a tube:

the cross of cobwebs is seen very well with the theodolite-telescope, when the suspension-bar of the magnet is so adjusted as to place the object-glass of the reversed telescope in front of the object-glass of the theodolite, their axes coinciding. The wires are illuminated by a lamp and lens in the night, and by a reflector in the day.

In the original mounting of this magnet the small vibrations were annihilated by a copper oval or "damper," thus constructed: A copper bar, about one inch square, is bent into a long oval form, intended to contain within itself the magnet (the plane of the oval curve being vertical). A lateral bend is made in the upper half of the oval, to avoid interference with the suspension-piece of the magnet. The effect of this damper was, that after every complete or double vibration of the magnet, the amplitude of the oscillation is reduced in the proportion of 5 : 2 nearly.

On mounting the photographic magnetometer in the basement, the damper was removed from its place surrounding the upper magnet, and was adjusted to encircle the photographic magnet. The upper magnet remained unchecked in its vibrations till 1866, January 23, when the lower part of its magnet-carrier was connected with a brass bar which vibrates in water.

OBSERVATIONS RELATING TO THE PERMANENT ADJUSTMENTS OF THE UPPER DECLINATION-MAGNET AND ITS THEODOLITE.

1. Determination of the inequality of the pivots of the theodolite-telescope.

1871, January 17. The theodolite was clamped, so that the transit-axis was at right angles to the astronomical meridian. The illuminated end of the axis of the telescope was first placed to the East: the level was applied, and its scale was read; the level was then reversed, and its scale was again read; it was then again reversed, and again read, and so on successively six times. The illuminated end of the axis was then placed to the West, and the level was applied and read as before. This process was repeated four times, and the result was, that when the level indicates the axis to be horizontal, the pivot at the illuminated end is really too low by 0″·3 nearly.

2. Value of one revolution of the micrometer-screw of the theodolite-telescope.

On 1862, December 26, observations were made, giving for the value of one revolution of the micrometer 1′. 33″·85. On 1865, December 27, the magnet was made to rest on blocks of wood, and its collimator was used as a fixed mark at an infinite distance. The micrometer of the theodolite was placed in different positions, and the telescope of the theodolite was then turned till the micrometer wire bisected the cross. The result of ten comparisons of theodolite-readings with large values and with small values of the micrometer-reading was, that one revolution = 1′. 34″·8. A similar experiment on 1870, December 29, gave 1′. 34″·2. The value used, however, through the year 1871 is 1′. 34″·8.

3. Determination of the micrometer-reading for the line of collimation of the theodolite-telescope.

1870, December 29. The vertical axis of the theodolite had been adjusted to verticality, and the transit-axis was made horizontal. The declination-magnet was made to rest on blocks, and the cross-wires carried by it were used as a collimator for determining the line of collimation of the telescope of the theodolite. The telescope was reversed after each observation. The mean of 20 double observations was 100^{r}·069. This value is used to 1871, January 10.

On 1871, January 10, Mr. Dover took the theodolite in order to regrind the pivots; it was restored on January 17. The value found for the line of collimation on February 2 was 100^{r}·176. This value is used to the end of the year 1871.

4. Determination of the effect of the mean-time-clock on the declination-magnet.

The observations by which this has been determined are detailed in the volumes for 1840, 1841, 1844, and 1845. It appeared that it was necessary to add 9″·41 to every reading of the theodolite. The clock was removed to the basement in 1864, having now nearly the same relative position to the lower declination-magnet which formerly it had to the upper. No correction is now applied to the upper declination-magnet.

5. Determination of the compound effects of the vertical-force-magnet and the horizontal-force-magnet on the declination-magnet.

The details applying to the effect of the horizontal-force-magnet and first vertical-force-magnet will be found in the volumes for 1840, 1841, 1844, and 1845. It appeared that it was necessary to subtract 55″·22 from all readings of the theodolite. In 1848 a new vertical-force-magnet was introduced, and the subtractive quantity was then found to be 42″·2. A few experiments in 1865 seemed to show that the correction is now 36″·9. No numerical correction has been applied.

6. Determination of the error of collimation for the plane glass in front of the boxes of the declination-magnet.

1870, December 29. The magnet was made to rest entirely on blocks. The micrometer head of the telescope was to the East. The plane glass has the word "top" engraved on it, and, in ordinary use, this word is always kept east. The cross-wire carried by the collimator of the magnet was observed with the engraved word alternately east and west. The result of 20 double observations was, that in the ordinary position of the glass 18″·5 is to be added to all readings.

7. Determination of the error of collimation of the magnet-collimator, with reference to the magnetic axis of the magnet.

1870, December 29. Observations were made by placing the declination-magnet in its stirrup, with its collimator alternately above and below, and observing the collimator-wire by the theodolite-telescope; the windlass of the suspending skein being so moved that the collimator in each observation was in the line of the theodolite-telescope. Seven pairs of observations were taken. The mean half excess of reading with collimator above, (its usual position) over that with collimator below was 25′. 50″·0. The value used in the reductions for 1871 to October 7 is 25′. 29″·7 (the mean of the results for the six years 1866–1871).

On 1871, October 25, after mounting the magnet on its new skein and new strap, the value was found to be 26′. 37″·7; this number is used in the reductions from 1871, October 23, to the end of the year.

8. Effect of the damper.

In the volume for 1841 observations are exhibited shewing that the oval copper bar, or damper, which then surrounded what is now the upper declination-magnet, had but little or no effect. Repeated observations, of less formal character, in succeeding years, have confirmed this result. The same bar has encircled the lower declination-magnet since the year 1865. The following observations were made in the year 1865, for ascertaining the effect of the damper on the lower declination-magnet under various circumstances.

On 1865, February 8 and 10, and March 2, the time of vibration of the magnet was observed :—

Mean of times with damper in usual position	$23^s\cdot888$
Mean of times with damper reversed end for end	$24^s\cdot508$
Mean of times when damper was removed	$23^s\cdot153$

These seem to indicate a repulsion of the magnet by the damper, but the magnet came to rest so rapidly that the observations are very uncertain.

On several days from 1865, April 2 to May 12, observations were made for ascertaining the deflexion of the magnet produced by turning the damper through a small angle round a vertical axis, passing through its center.

DAMPER IN USUAL POSITION.

		′ ″
Damper turned through 2°	N. end towards E., increase of western declination	−1. 27
	N. end towards W., " " "	+1. 25
Damper turned through 4°	N. end towards E., " " "	−2. 16
	N. end towards W., " " "	+3. 11
Damper turned through 6°	N. end towards E., " " "	−3. 10
	N. end towards W., " " "	+2. 55
Damper turned through 8°	N. end towards E., " " "	−1. 22
	N. end towards W., " " "	+1. 45

DAMPER REVERSED END FOR END.

Damper turned through 2°	N. end towards E., increase of western declination	+0. 12
	N. end towards W., " " "	+0. 20
Damper turned through 4°	N. end towards E., " " "	0. 0
	N. end towards W., " " "	+0. 26
Damper turned through 6°	N. end towards E., " " "	+0. 5
	N. end towards W., " " "	+0. 5
Damper turned through 8°	N. end towards E., " " "	−0. 10
	N. end towards W., " " "	+0. 5

The first series shews clearly that the damper in its usual position drags the magnet; the second shews no certain effect. It seems that the damper possesses two kinds of magnetism, one permanent, the other transiently induced, of nearly equal magnitude; their sum being about $\frac{1}{100}$ part of the terrestrial effect for the same deflexion.

From 1865, July 25 to August 9, observations were made to ascertain whether the effect of an external deflecting cause is the same with the damper present and the damper removed. The observation was extremely difficult, as the magnet was perpetually in vibration when the damper was removed. A small magnet on the east side of the

N. end of the magnetometer, with its north end pointing towards the East (and therefore diminishing the western declination of the magnetometer), was moved to the distance (about five feet) at which it produced a deviation of 5′ nearly. The apparent western declination was observed, damper present, and damper removed. It appeared to be less with damper present than with damper removed, by 0′. 53″. The separate results are very discordant. If the conclusion has any validity, it tends to shew a repulsive power in the damper, opposite to that found in the preceding experiments. This experiment is regarded as inconclusive.

9. Calculation of the constant used in the reduction of the observations of the upper declination-magnet, in three portions of the year 1871, the micrometer-head of the theodolite-telescope being East.

——	1871, Jan. 1–10.	1871, Jan. 17 to Oct. 7.	1871, Oct. 23 to Dec. 28.
	r ° ′ ″	r ° ′ ″	r ° ′ ″
Mic. equivalent for reading for line of collimation - -	(100·069) — 2. 38. 6·6	(100·176) — 2. 38. 16·7	(100·176) — 2. 38. 16·7
Correction for the plane glass in front of the box, in its usual position - - -	+ 18·5	+ 18·5	+ 18·5
The collimator above the Magnet. Correction for error of collimation - -	— 25. 29·7	— 25. 29·7	— 26. 37·7
Constant to be used - -	— 3. 3. 17·8	— 3. 3. 27·9	— 3. 4. 35·9

10. Determination of the time of vibration of the upper declination-magnet under the action of terrestrial magnetism.

On 1868, January 22, it was found to be 30ˢ·60; on March 19, 30ˢ·56; on December 30, 30ˢ·50; on 1869, November 13, 30ˢ·50; on 1870, December 29, 30ˢ·51; and on 1871, October 25, 30ˢ·52.

11. Fraction expressing the proportion of the torsion-force to the earth's magnetic force.

By the same process which is described in the Magnetical Observations 1847, but with the silk skein lately in use, the proportion was found, on 1865, January 31, $\frac{1}{214}$; on February 17, $\frac{1}{227}$; on April 27, $\frac{1}{207}$; on December 27, $\frac{1}{230}$; and on 1869, December 29, $\frac{1}{262}$. With the new thread the proportion was found, on 1871, October 25, $\frac{1}{180}$; and on 1871, December 28, $\frac{1}{170}$.

DETERMINATION OF THE READINGS OF THE HORIZONTAL CIRCLE OF THE THEODOLITE CORRESPONDING TO THE ASTRONOMICAL MERIDIAN.

The error of the level is determined by application of the spirit-level at the time of observation: due regard being paid, in the reduction, to the inequality of pivots already found. One division of the level is considered = 1″·0526. The azimuth-reading is then corrected by this quantity;

Correction = Elevation of W. end of axis × tan star's altitude.

The readings of the azimuth circle increase as the instrument is turned from N. to E., S., and W.; from which it follows that the correction must have the same sign as the elevation of the W. end.

The correction for the azimuth of the star observed has been computed independently in every observation, by a peculiar method, of which the principle is fully explained in the volumes for 1840-1841, 1843, 1844, 1845. The formula and table used are the following:—

Let $A_{''}$ = seconds of arc in star's azimuth,

C_s = seconds of time in star's hour-angle,

$a_{''}$ = seconds of arc in star's N.P.D. for the day of observation,

Then $\log. A_{''} = \log. C_s + \log. E + \log. (a_{''} + F) + \log. \cos \phi$.

The values of log. E, F, and log. cos φ, are given in the following table:—

TABULATED VALUES of LOG. Cos ϕ, for DIFFERENT VALUES of C_s, and of the QUANTITIES LOG. E and F, for the STARS POLARIS and δ URSÆ MINORIS.

Hour Angle.	Log. Cos φ for Polaris.	δ Ursæ Minoris.	Polaris S.P.	δ Ursæ Min. S.P.
m				
1	9·99999	9·99999	9·99999	9·99999
2	999	999	999	999
3	999	999	999	999
4	998	998	998	998
5	996	996	997	997
6	994	994	996	996
7	992	992	994	995
8	990	989	992	993
9	988	986	990	991
10	985	983	988	989
11	981	979	985	987
12	978	975	982	984
13	974	971	979	981
14	970	966	975	978
15	966	961	972	975
16	961	955	968	971
17	956	950	964	968
18	951	944	959	964
19	945	937	955	960
20	939	930	950	956
21	932	923	945	951
22	926	915	939	946
23	919	908	933	941
24	912	900	928	936
25	904	891	922	930
26	896	882	915	925
27	888	873	909	919
28	880	863	902	912
29	871	853	894	906
30	9·99862	9·99843	9·99887	9·99900
Log. E	6·09721	6·13638	−6·03899	−6·00617
F	−186″ ·79	−944″ ·71	+181″ ·57	+886″ ·86

Observations for determining the theodolite readings corresponding to the astronomical meridian were made on the following days in 1871:—January 26; February 23; March 13, 23; April 27; May 6, 9, 26, 29; June 30; July 18, 28; August 5, 14, September 5; October 11, 13; November 10; December 6, 27. As a check on the continued steadiness of the theodolite, observations of a fixed mark (a small hole in a plate of metal above the Observatory Library, illuminated by a reflector of sky-light in the day and by a lamp at night,) have been taken about twenty times at nearly equal intervals through the year.

The following is a description of the method of making and reducing the eye observations of the declination-magnet:—

A fine horizontal wire (as stated above) is fixed in the field of view of the theodolite-telescope, and another fine vertical wire is fixed to a wire-plate, moved right and left by a micrometer screw. On looking into the telescope, the cross of the magnetometer is seen; and during the vibration of the magnet, this cross is seen to pass alternately right and left. The observation is made by turning the micrometer till its wire bisects the image of the magnet-cross at the pre-arranged times, and reading the micrometer. The verniers of the horizontal circle are read.

The mean-time clock is kept very nearly to Greenwich mean time (its error being ascertained each day), and the clock-time for each determination is arranged beforehand. Chronometer M'Cabe 649 has usually been employed for observation.

If the magnet is in a state of disturbance, the first observation is made by the observer applying his eye to the telescope about one minute before the pre-arranged time; he bisects the magnet-cross by the micrometer wire at 45^s, and again at 15^s before that time, also at 15^s and 45^s after that time. The intervals of these four observations are therefore the same as the time of vibration of the magnet, and the mean of all the times is the same as the Greenwich pre-arranged mean time.

The mean of each pair of adjacent readings of the micrometer is taken (giving three means), and the mean of these three is adopted as the result. In practice, this is done by adding the first and fourth readings to the double of the second and third, and dividing the sum by 6.

Till 1866, January 23, the magnet was usually in a state of vibration; but, since the introduction of the water-damper on that day, the number of instances of vibration has been very small. When it is found to be quite free from vibration, two bisections only of the cross are made, one about 15^s before the time recorded, the other about 15^s after that time, 30^s being nearly the time of a single vibration. (The lower magnet, furnished with the copper damper, never exhibits any troublesome vibrations.)

The adopted result is converted into arc, supposing $1^r = 1'.\ 34''\cdot 8$, and the quantity thus deduced is added to the mean of the vernier-readings, from which is subtracted the constant given in article 9 of the permanent adjustments; the difference between this number and the adopted reading for the Astronomical South Meridian is taken;

and thus is deduced the magnetic declination, which is used in determining the zero for the photographic register.

§ 3. *General principle of construction of Photographic self-registering Apparatus for continuous Record of Magnetic and other Indications.*

The general principle adopted for all the photographic instruments is the same. For the register of each indication, a cylinder is provided, whose material is ebonite, and which is very accurately turned in the lathe. The axis of the cylinder is placed parallel to the direction of the change of indication which is to be registered. If there are two indications whose movements are in the same direction, both may be registered on the same cylinder; thus, the Declination and the Horizontal Force, whose indications of changes of the respective elements are both made to travel horizontally, can both be registered upon one cylinder with axis horizontal: the same remark applies to the register of two different galvanic Earth-Currents; the Vertical Force and the reading of the Barometer can both be registered upon one cylinder with axis vertical; and similarly the Dry-Bulb Thermometer and the Wet-Bulb Thermometer.

To the ends of each ebonite cylinder there are fixed circular brass plates, that which is near the clock-work having a diameter somewhat greater than that of the cylinder. In the further fittings there is a little difference between those for vertical and those for horizontal cylinders. Each horizontal cylinder has a pivot fixed in the brass plate at each end; these revolve each upon two antifriction wheels of the fixed frame. The vertical cylinders have no pivots; there is a perforation through the center of the lower or larger brass plate which, when the cylinder is mounted, is fitted upon a vertical spindle projecting upwards from the center of a second horizontal brass plate; this second brass plate sustains the weight of the vertical cylinder and turns horizontally, being supported by three antifriction wheels (each in a vertical plane) carried by the fixed frame.

Uniform rotatory motion is given to the cylinders by the action of clock-work, or rather chronometer-work, regulated by either duplex-escapement or chronometer-escapement. For two of the cylinders, which revolve in 24 hours, and for the thermometer-cylinder which revolves in 50 hours, the axis is placed in the center of the chronometer, and a fork at the end of the hour hand takes hold of a winch fixed to the plate of the cylinder, or (in the vertical cylinders) to the plate that sustains the cylinder. In the cylinder for galvanic earth-currents only, the connexion is made by toothed wheels. For the horizontal cylinders, the plane of the chronometer work is vertical; for the vertical cylinders, it is horizontal.

Three of the cylinders are $11\frac{1}{2}$ inches high, $14\frac{1}{4}$ inches in circumference; that for the thermometers is 10 inches high, and 19 inches in circumference.

Each cylinder is covered, when in use, by a tube of glass, which is open at one end, and has at the other end a circular plate of ebonite or brass, perforated at its center. The tube is a little larger than the cylinder; its open end is kept in position by a narrow collar of ebonite, and the opposite end by a circular piece of brass fixed to the smaller brass plate at the end of the cylinder.

To prepare the cylinder for register of indications, it is covered with a sheet of photographic paper; the moisture on the paper usually agglutinates its overlapping ends with sufficient firmness; the glass tube is then slipped over it, and the cylinder thus loaded is placed (if horizontal,) with its pivots in bearing upon its two sets of antifriction wheels, or, (if vertical,) with its end-brass-plate upon the rotating brass plate, and its central perforation upon the spindle of that plate; care is taken to ensure connection with the clock-work, and the apparatus is ready for action.

The light, by which the trace of each instrument is made, originates in a lamp, formerly of camphine, but, since 1849, of coal gas, sometimes charged with the vapour of coal-naphtha. Before the flame of the lamp is placed a metallic plate, with a small aperture about $0^{in}\cdot3$ high and $0^{in}\cdot1$ broad, independent of the lamp, and supported (for the magnetometers) by a part of the stone capping of the brick pier which carries the magnet; or (for the earth-current apparatus and thermometers) by the upper platform of the braced frame which carries the rest of the apparatus. The following arrangements are for the purpose of throwing on the photographic paper of the revolving cylinder a spot of light which shall travel in the direction of the cylinder's axis with every motion of either magnetometer, or of either galvanometer, or with the rise or fall of the mercury of the barometer or of either thermometer.

For each of the three magnetometers, a large concave mirror of speculum metal is carried by a part of the magnet-carrier; although it has a small movement of adjustment relative to the magnet-carrier, yet in practice it is very firmly clamped to it, so that the mirror receives all the angular movements of the magnet. The lamp above mentioned is placed slightly out of the direction of the straight line drawn from the center of the concave mirror to the center of the cylinder which carries the photographic paper. By the concave mirror, the light diverging from the aperture is made to converge to a place nearly on the surface of the cylinder of photographic paper. The form of the aperture, however, and the astigmatism caused by the inclined reflexion from the mirror, produce this effect, that the image is somewhat elongated in the vertical direction, and is at the same time slightly curved. To diminish the length there is placed near the cylinder a plano-convex cylindrical lens of glass, with its axis parallel to the axis of the cylinder, and the image is thus reduced to a neat spot of light.

For the registers of galvanic earth-currents, the light, which falls upon a plane mirror carried by each galvanometer, is made to converge to a spot by a system of cylindrical lenses.

For the barometer, the light shines through a small aperture in a plate of blackened mica, which moves with the fluctuations of the quicksilver, and thus forms a spot of light.

For the thermometers, the light shines through the vacant part of the tube, and thus forms a sheet of light.

The spot of light (for the magnets, the earth-currents, and the barometer) or the boundary of the line of light (for the thermometers) moves, with the movements which are to be registered, in the direction of the axis of the cylinder, while the cylinder itself is turned round. Consequently, when the paper is unwrapped from its cylindrical form, there is traced upon it (though not visible till the proper chemical agents have been applied) a curve, of which the abscissa measured in the direction of a line surrounding the cylinder is proportional to the time, while the ordinate measured in the direction parallel to the axis of the cylinder is proportional to the movement which is the subject of measure.

In the instruments for registering the motions of the magnets, the earth-currents, and the barometer, a line of abscissæ is actually traced on the paper, by a lamp giving a spot of light in an invariable position, the effect of which on the revolving paper is to trace a line surrounding the cylinder. For the thermometers this is not necessary, as the thermometer-scales are made to carry and to transfer to the photographic paper sufficient indications of the actual reading of the thermometers.

Every part of the cylinder-apparatus for the declination and horizontal force, except those on which the spots of light fall, is covered with a double case of blackened zinc, having a slit for each moveable spot of light and a hole for the invariable spot; and every part of the path of the photographic light is protected by blackened zinc tubes from the admixture of extraneous light. The cylinder-apparatus for the thermometers is protected in the same manner, except that the whole space including the gas-light is enclosed in a zinc case, blackened internally. The earth-current apparatus is enclosed in a mahogany case, similarly blackened.

In all the instruments, the following method is used for attaching, to the sheet of photographic paper, indications of the time when certain parts of the photographic trace were actually made, and for giving the means of laying down a time-scale applicable to every part of the trace. By means of a small moveable plate, arranged expressly for this purpose, the light which makes the trace can at any moment be completely cut off. An assistant, therefore, occasionally cuts off the light (registering in the proper book the clock-time of doing so), and after a few minutes withdraws the plate (again registering the time). The effect of this is to make a visible interruption in the trace, corresponding to registered times. By drawing lines from these points of interruption parallel to the axis of the cylinder, to meet the photographic line of abscissæ, or an adopted line of abscissæ parallel to it, points are defined upon the line of abscissæ corresponding to registered times. The whole length of the photographic sheet (except where one end, in the cylindrical arrangement, laps over the other) corresponds to the known time of revolution of the cylinder. A scale being prepared beforehand, whose value for the time of revolution corresponds to the circumference of the cylinder, and the scale-reading for the registered time of interruption of light being applied to the foot of the ordinate corresponding to that interruption, the divisions of hours and minutes may be transferred at once from the scale to the line of abscissæ. In practice it is found that the length of the paper is not always the same, and it is necessary, therefore, to use for each instrument several pasteboard scales of different lengths, adapted to various lengths of the photographic sheets.

Since the year 1870 by means of an opening made in the chimney of each of the lamps which throws light on the concave mirror, the light in each instrument falls upon the cylindrical lens, and, if allowed to act for a short time, produces a dark line upon the photographic paper. An apparatus of clock-work, specially arranged by Messrs. E. Dent and Co. for this purpose, uncovers simultaneously the chimney-holes in all the lamps about 2½ minutes before each hour, and covers them all simultaneously about 2½ minutes after each hour. In this manner a good series of hour-lines in the direction of the ordinates is formed. The system of cutting off the trace by hand is still retained, as giving means of correcting any error in the clock, &c.; the correction thus found will be common to all the hour-lines. The accuracy of the time-registers has been much increased by this arrangement.

§ 4. *Lower Declination-Magnet; and Photographic self-registering Apparatus for Continuous Record of Magnetic Declination.*

The lower declination-magnet is made by Simms. It is 2 feet long, 1½ inch broad, ¼ inch thick, of hard steel throughout, much harder than the upper declination-magnet.

The magnet-frame consists of an upper piece, whose top is a hook, (to be hooked into the suspension-skein), and which carries a concave mirror used for the photographic record in the manner described above. The lower part of this upper piece turns in a graduated horizontal circle, similar to the torsion circle of the upper magnet, and attached to the lower piece or magnet-carrier proper. The lowest part of the carrier is a double square hook, in which the magnet is inserted and is kept in position by the pressure of three screws.

It has been mentioned in § 1 that a small pier, built upon one of the crossed slates which are laid upon three piers rising from below, carries the suspension-pulleys. The suspension-skein rises to one of these pulleys, passes horizontally over a second pulley about 5 inches south of it, and then descends obliquely to a windlass which is fixed to the stone slab about 2 ft. 3 in. south of the center of the magnet.

The height of the pulley above the floor of the Basement is 10 ft. 4¾ in. As the height of the magnet above the floor is 2 ft. 10½ in., and the length of the magnet frame is 1 ft. 3 in., there remains 6 ft. 3¼ in. of free suspending skein.

On 1870, July 5, the skein, which had been in use from 1865, January 30, gave way. On July 7 a new skein was mounted; from July 7 to July 9 experiments were made for freeing it from torsion; and on July 9 the photographic registers were restored in their usual form.

One of the revolving cylinders is used for the photographic record of the Declination-Magnet and the Horizontal Force Magnet. In the preparation of the basement in 1864, as has been stated, the south-eastern re-entering angle was cut away, so that the straight line from the suspending skein of the declination-magnet to the center of those of the bifilar magnet passes through a clear space, in which the registering apparatus is placed.

The concave mirror of the declination-magnet is 5 inches in diameter, and is above the top of the magnet-box. The distance of the light-aperture from the mirror is about 25·3 inches. The bright spot formed by the reflection of light from the mirror is received on the south side of the cylinder, near its west end.

For the declination-magnet, the values, in minutes and seconds of arc, of movements of the photographic spot in the direction of the ordinate, are thus deduced from a geometrical calculation founded on the measures of different parts of the apparatus. The distance of the cylinder from the concave mirror is about $11^{ft.}\ 0^{in.}\cdot 1$, and a movement of 1° of the mirror produces a movement of 2° in the reflected ray. From this it is found that 1° of movement of the mirror is represented by 4·611 inches upon the photographic paper. A small scale of pasteboard is prepared, (for which a glass scale is now substituted), whose graduations correspond in value to minutes and seconds so calculated. The zero of the ordinate-scale is found in the following manner. The time-scale having been laid down as is already described, and actual observations of the position of the upper declination-magnet having been made with the eye and the telescope, (as has been fully described above), at certain registered times, there is no difficulty (by means of these registered times) in defining the points of the photographic trace which correspond to the observed positions. The pasteboard scale being applied as an ordinate to one of these points, and being slid up and down till the scale reading which represents the reading actually taken by the eye-observation falls on that point, the reading of the scale where it crosses the line of abscissæ is immediately found. This process rests on the assumption that the movements of the upper and lower magnets are exactly similar. The various readings given by different observations, so long as there is no instrumental change, will scarcely differ, and may be combined in groups, and thus an adopted reading for the line of abscissæ may be obtained. From this, with the assistance of the same pasteboard scale, there will be laid down without difficulty a new line, parallel to that line of abscissæ whose ordinate would represent some whole number of degrees, or other convenient quantity.

§ 5. *Horizontal-Force-Magnet and Apparatus for observing it.*

The horizontal-force-magnet, furnished by Meyerstein of Göttingen, is, like the declination-magnet, 2 feet long, $1\frac{1}{2}$ inch broad, and about $\frac{1}{4}$ inch thick. For its support (as is mentioned above), a brick pier in the eastern arm of the Magnetic Observatory, built on the ground below the basement floor, rises through the floor of the upper room, and carries a slate slab, to the top of which a brass frame is attached, carrying two brass pulleys (with their axes in the same east and west line) in front of the pier, and two (in a similar position) at the back of the pier; these constitute the upper suspension-piece. A small windlass is attached to the back of the pier at a convenient height. The magnet-carrier consists of two parts. The upper part is a horizontal bar, 2½ inches long, whose ends are furnished with verniers for reading the graduations of the torsion-circle (a portion of the lower part, to be mentioned below). On the upper side of this horizontal bar are two small pulleys with axes horizontal and at right angles to the vertical plane passing through the length of the bar: by these pulleys the apparatus is suspended, as will be mentioned. From the lower side of the horizontal bar, a vertical axis projects downwards through the center of the torsion-circle, in which it turns by stiff friction. The lower part of the magnet-carrier consists, first of the torsion-circle, a graduated circle about 3 inches in diameter: next, immediately below the central part of the torsion-circle, is attached (but not firmly fixed) a circular piece of metal from which projects downwards a frame that, by means of three cramps and screws, carries the photographic concave mirror, with the plane of its front under the center of the vertical axis: this circular piece of metal has a radial arm upon which acts a screw carried by the torsion-circle, for giving to the concave mirror small changes of azimuthal position. Thirdly, there is fixed to the torsion-circle, at the back of the mirror-frame but not touching it, a bar projecting downwards, bent horizontally under the mirror-frame and then again bent downwards, carrying the cramps in which the magnet rests; and, still lower, a small plane mirror, to which a fixed telescope is directed for observing by reflexion the graduations of a fixed scale (to be mentioned shortly). Under the two small pulleys mentioned above passes a skein of silk; its two branches rise up and pass over the front pulleys of the suspension-piece, then over its back pulleys, and then descend and pass under a single large pulley, whose axis is attached to a wire that passes down to the windlass. Supported by the two branches of the skein, the magnet swings freely, but the direction that it takes will depend on the angular position of its stirrup with respect to the upper horizontal bar; it is intended that the index should be brought to such a position on the torsion-circle that the two suspending branches should not hang in one plane, but should be so twisted that their torsion-force will maintain the magnet in a direction very nearly E. and W. magnetic (its marked end being W.); in which state an increase of the earth's magnetic force draws the marked end towards the N., till the torsion-force is sufficiently increased to resist it; or a diminution allows the torsion-force to draw it towards the S. The magnet, with its plane mirror, hangs within a double rectangular box (one box completely inclosed within another) covered with gilt paper, similar to that used for the declination-magnet; in its S. side there is one long hole, covered with glass, through which the rays of light from the scale enter to fall on the plane mirror, and the rays reflected by the mirror pass to the fixed telescope. The vertical rod (below the torsion-circle), which carries the magnet-stirrup, passes through a hole in the top of the box. Above the magnet box is the concave mirror above mentioned. The height of the brass pulleys of the suspension-piece above the floor is $11^{ft.}\ 8^{in.}\cdot 5$; that of the pulleys of the magnet-carrier is $4^{ft.}\ 2^{in.}\cdot 5$; and that of the center of the plane mirror is about $3^{ft.}\ 1^{in.}$. The distance between the branches of the silk skein, where they pass over the upper pulleys, is $1^{in.}\cdot 14$; at the lower part the distance between them is $0^{in.}\cdot 80$.

An oval copper bar (exactly similar to that for the declination-magnet), embraces the magnet, for the purpose of diminishing its vibrations.

The scale, which is observed by means of the plane mirror, is in a horizontal position, and is fixed to the South wall of the East arm of the Magnetic Basement. The numbers of the scale increase from East to West, so that when the magnet is inserted in the magnet-cell with its marked end towards the West, increasing readings of the scale (as seen with a fixed telescope directed to the mirror which the magnet carries) denote an increasing horizontal force. A normal from the plane-mirror to the scale meets it at the division 51 nearly; the distance from the center of the plane-mirror to the scale is $7^{ft.}\ 6^{in.}\cdot 8$.

The telescope is fixed on the east side of the brick pier which supports the stone pier of the declination-theodolite in the upper observing room. The angle between the normal to the scale (which usually coincides nearly with the normal to the axis of the magnet) and the axis of the telescope, is about 38°, and the plane of the mirror is therefore inclined to the axis of the magnet about 19°.

OBSERVATIONS RELATING TO THE PERMANENT ADJUSTMENTS OF THE HORIZONTAL-FORCE-MAGNET.

1. Determination of the times of vibration and of the different readings of the scale for different readings of the torsion-circle, and of the reading of the torsion-circle and the time of vibration when the magnet is transverse to the magnetic meridian.

To render the process intelligible, it may be convenient to premise the following explanation.

Suppose that the magnet is suspended in its stirrup which is firmly connected with the small plane mirror, with its marked end in a magnetic westerly direction (not exactly W., but in any westerly direction between N. and S.), and suppose that, by means of the telescope directed towards that mirror, the scale is read, or (which is the same thing) the position of the plane mirror and of the stirrup, and therefore that of the axis of the magnet, are defined. Now let the magnet be taken out of the stirrup and replaced with its marked end easterly. The terrestrial magnetic power will now act as regards torsion, in the direction opposite to that in which it acted before, and therefore the magnet will not take the same position as before. But by turning the torsion-circle, which changes the amount and direction of the torsion-power produced by the oblique tension of the suspending cords, the magnet may be made to take the same position as at first (which will be proved by the reading of the scale, as viewed in the plane mirror, being the same). The reading of the torsion-circle will be different from what it was. The effect of this operation then is, to give us the difference of torsion-circle-readings for the same position of the magnet-axis with the marked end opposite ways, but it gives no information as to whether the magnet-axis is accurately transverse to the meridian, inasmuch as the same operation can be performed whether the magnet-axis is transverse or not.

But there is another observation which will inform us whether the magnet-axis is or is not accurately transverse. Let the time of vibration be taken in each position of the magnet. Resolve the terrestrial magnetic force acting on the poles of the magnet into two parts, one transverse to the magnet, the other longitudinal. In the two positions of the magnet (marked end westerly and marked end easterly, with axis in the same position), the magnitude of the transversal force is the same, and the changes which the torsion undergoes in a vibration of given extent are the same, and the time of vibration (if there were no other force) would be the same. But there is another force, namely, the longitudinal force; and when the marked end is northerly, this tends from the center of the magnet's length, and when it is southerly it tends towards the center of the magnet's length; and in a vibration of given extent this produces force, in one case increasing that from the torsion and in the other case diminishing it. The times of vibration therefore will be different. There is only one exception to this, which is when the magnet-axis is transverse to the magnetic meridian, in which case the longitudinal force vanishes.

The criterion then of the position truly transverse to the meridian (which position is necessary in order that the indications of our instrument may apply truly to changes of the magnitude of terrestrial magnetic force without regard to changes of direction) is this. Find the readings of the torsion-circle which, with magnet in reversed positions, will give the same readings of the scale as viewed by reflexion in the plane mirror, and will also give the same time of vibration for the magnet. With these readings of the torsion-circle the magnet is transverse to the meridian; and the difference of the readings of the torsion-circle is the difference between the position when terrestrial magnetism acting on the magnet twists it one way, and the position when the same force twists it the opposite way, and is therefore double the angle due to the torsion-force of the suspending lines when they neutralize the force of terrestrial magnetism.

The following table exhibits the elements of one of the determinations made for 1871:—

1870. Day.	The Marked end of the Magnet. West. Torsion-Circle Reading.	West. Scale Reading.	West. Difference of Scale Readings for 1° of Torsion.	West. Mean of the Times of Vibration.	East. Torsion-Circle Reading.	East. Scale Reading.	East. Difference of Scale Readings for 1° of Torsion.	East. Mean of the Times of Vibration.
	°	div.	div.	s	°	div.	div.	s
Dec. 31	140	13·37	8·54	21·56	222	12·87	6·88	20·22
	141	21·91	9·03	21·40	223	19·75	7·35	20·30
	142	30·94	8·58	21·10	224	27·10	7·76	20·44
	143	39·52	9·51	20·92	225	34·86	7·45	20·48
	144	49·03	7·71	20·74	226	42·31	8·23	20·52
	145	56·74	8·13	20·64	227	50·54	7·85	20·56
	146	64·87	7·30	20·56	228	58·39	8·29	20·66
	147	72·17	8·59	20·40	229	66·68	8·55	20·80
	148	80·76	7·13	20·30	230	75·23	8·11	20·96
	149	87·89		20·22	231	83·34		21·16

The times of vibration and scale readings were sensibly the same, when the torsion-circle read 145°. 0′, marked end West, and 227°. 48′, marked end East, differing 82°. 48′. Half this difference, or 41°. 24′, is the angle of torsion when the magnet is transverse to the meridian.

The mean of several similar determinations gave 41°. 17′·1; and this value was adopted in the reduction of observations through the year 1871.

The reading adopted for the torsion-circle, marked end of magnet west, was 145°. 30′ through the year.

2. Computation of the angle corresponding to one division of the scale, and of the variation of the horizontal force (in terms of the whole horizontal force) which moves the magnet through a space corresponding to one division of the scale.

It was found by accurate measurements, on 1864, November 3, that the distance from $51^{\text{div.}}$ on the scale to the center of the face of the plane mirror is $7^{\text{ft.}}\ 6^{\text{in.}}\cdot84$, and that the length of $30^{\text{div.}}\cdot85$ of the scale is exactly 12 inches; consequently the angle at the mirror subtended by one division of the scale is 14′. 43″·25, or, for one division of the scale, the magnet is turned through an arc of 7′. 21″·625.

The variation of horizontal force (in terms of the whole horizontal force) for a disturbance through one division of the scale, is computed by the formula, "Cotan. angle of torsion × value of one division in terms of radius." Using the numbers of the last article, the value is found to be 0·0024384 through the year 1871.

3. Determination of the compound effect of the vertical-force-magnet and the declination-magnet on the horizontal-force-magnet, when suspended with its marked end towards the West.

The details of the experiments, made while the old vertical-force-magnet was in use, will be found in the volumes for 1841, 1842, 1843, 1844, 1845. The effect was to increase the readings by $0^{div}\cdot 487$. On mounting a new vertical-force-magnet in 1848, similar experiments were made, and the resulting number was $0^{div}\cdot 45$. These quantities are totally unimportant in their influence on the registers of changes of horizontal force. No experiments have been made since the magnets were placed in the basement.

4. Effect of the damper.

In the year 1865, from May 17 to May 25, observations were made for ascertaining the deflection of the magnet produced by turning the damper through a small angle round a vertical axis passing through its center.

DAMPER IN USUAL POSITION.

			div.
Damper turned through 2°	W. end towards S.,	increase of scale-reading	−0·251
	W. end towards N.,	„ „	+0·050
Damper turned through 4°	W. end towards S.,	„ „	−0·34
	W. end towards N.,	„ „	+0·16

DAMPER REVERSED END FOR END.

Damper turned through 2°	W. end towards S.,	increase of scale-reading	−0·15
	W. end towards N.,	„ „	−0·02
Damper turned through 4°	W. end towards S.,	„ „	−0·12
	W. end towards N.,	„ „	+0·08

On 1865, July 25, observations were made to ascertain whether the effect of an external deflecting cause is the same with the damper present and the damper removed. A small magnet was placed with its marked end pointing N. at the distance 4 feet S. of the unmarked end of the horizontal-force-magnet, deflecting the magnet through $1^{div.}$ of the scale, and the scale-readings were observed with the damper in its usual place and the damper away. Three experiments were made, containing twenty-four observations of position. Not the smallest difference of position of the horizontal-force-magnet was produced by the presence or absence of the damper. The observations were very easy, and the result is certain.

No experiments on the damper have been made since 1865.

5. Determination of the correction for the effect of temperature on the horizontal-force-magnet.

In the Introduction to the volume of Magnetical and Meteorological Observations for 1847 will be found a detailed account of observations made in the years 1846 and 1847 for determination of this element. The principle adopted was that of observing the deflection which the magnet (to be tried) produces on another magnet; the magnet (to be tried) being carried by the same frame which carries the telescope that is directed to the plane mirror attached to the other magnet, and which also carries the scale that is viewed in these experiments by reflection in that plane mirror. The rotation of the frame was measured by a graduated circle about 23 inches in diameter. The magnet (to be tried) was always on the eastern side of the other magnet. It was enclosed in a copper trough, which was filled with water at different temperatures. One end of the magnet (to be tried) was directed towards the other magnet. The values found for correction of the results as to horizontal force determined with the magnet at temperature t° in order to reduce them to what they would have been if the temperature of the magnet had been 32°, expressed as multiples of the whole horizontal force, were,*

When the marked end of the magnet (to be tried) was West,

$$0{\cdot}00007137\ (t-32) + 0{\cdot}000000898\ (t-32)^2.$$

When the marked end of the magnet (to be tried) was East,

$$0{\cdot}00009050\ (t-32) + 0{\cdot}000000626\ (t-32)^2.$$

The mean, or

$$0{\cdot}00008093\ (t-32) + 0{\cdot}000000762\ (t-32)^2$$

has been embodied in tables which have been used in the computation of the "Reduction of Magnetic Observations 1848–1857," attached to the Volume of Observations 1859, and in the computation for "Days of Great Magnetic Disturbance 1841–1857," attached to the volume for 1862. The same formula has been employed in the Reduction of Magnetic Observations 1858–1863, published in the volume for 1867.

In the year 1864 observations were made for ascertaining the temperature-coefficient by heating the magnet by hot air. The magnet, whose variation of power in different temperatures was to be determined, was placed in a copper box planted upon the top of a copper gas-stove, whose heat could be regulated by manipulation of a tap, and from which rose a stream of heated air (not the air vitiated by combustion) through a large opening in the bottom of the box. The stove used for this purpose was the same which is now used for warming the Magnetic Basement. It was placed in the Magnetic Office, No. 7, in a position magnetic south of the deflexion-apparatus used in the operation for ascertaining the absolute measure of horizontal magnetic force. The hot air which rose through the opening in the center of the bottom was discharged by adjustible openings near the extreme ends of the top. Three windows were provided for reading three thermometers. The box, and the magnet which it inclosed, were placed in a magnetic E. and W. position. The needle whose deflection exhibited the power of the magnet was that which is employed in the ordinary use of the deflexion-apparatus. The proportion of the power of the magnet (under definite circumstances) to the earth's directive horizontal power was expressed by the tangent of the angle of deviation. Observations were made with temperatures both ascending and descending.

*By inadvertence in printing the Introduction 1847, the letter t has been used in two different senses.

The intervals of observation at different temperatures were sufficiently small to permit the assumption that the earth's force had not sensibly changed. The following is an abstract of the principal results:—

Omitting some days of less perfect series, satisfactory series of observations were made on 1864, February 21, 22, 23, and March 10. The tangents of angle of deflection were as follows:—

13 observations with marked end E } 13 " " W }	at mean temperature	36°·8	Fahrenheit	gave	0·403711
21 " marked end E } 25 " " W }	"	61·3	"		0·400836
17 " marked end E } 16 " " W }	"	90·3	"		0·400579

From these it was inferred that the tangent of angle of deflection could be represented by—

$$0{\cdot}404559 \times \left\{1 - 0{\cdot}0004610 \times (t - 32) + 0{\cdot}000005061 \times (t - 32)^2\right\}$$

On comparing the quantity within the bracket (which expresses the law of magnetic power as depending on temperature) with that found in 1847, which, as above stated, is—

$$\left\{1 - 0{\cdot}00008093 \times (t - 32) - 0{\cdot}000000762 \times (t - 32)^2\right\}$$

it will be seen that the difference is great. The second terms differ greatly in magnitude, and the third terms in sign.

Possibly some light may be thrown on the difference by the following remark. The two formulæ give the same values for $t = 32°$ and for $t = 97°{\cdot}3$. And they give equal degrees of change per degree when $t = 65°$. It would seem therefore that the real discordance is in the experimental values for the mean temperatures only, or principally; and that it is probable that there is some error in the hot-air process for the middle temperatures.

I insert here (although not applying to the observations of the present volume) the results of a similar examination of the Old Vertical Force Magnet, which was in use to the end of 1863. Omitting less perfect series, observations made on 1864, February 21 and 24, gave the following values for tangents of angles of deflection:—

7 observations with marked end E } 7 " " W }	at mean temperature	34°·2	Fahrenheit	gave	0·279985
9 " marked end E } 11 " " W }	"	57·0	"		0·275111
7 " marked end E } 7 " " W }	"	86·5	"		0·270778

From these it was inferred that the tangent of angle of deflection could be represented by—

$$0{\cdot}280526 \times \left\{1 - 0{\cdot}00088607 \times (t - 32) + 0{\cdot}0000045594 \times (t - 32)^2\right\}$$

The expression found in 1847 for the law of force was—

$$\left\{1 - 0{\cdot}00015816 \times (t - 32) - 0{\cdot}000001172 \times (t - 32)^2\right\}$$

giving a discordance of the same kind as that found for the horizontal force, but still larger. The formulæ agree only when $t = 32^\circ$ and when $t = 159^\circ{\cdot}0$. The discordance cannot be removed by a supposition similar to that made above.

Returning now to the temperature-correction of the Horizontal Force Magnet. The unsatisfactory character of the comparisons just given induced me at the beginning of 1868 to try the method of heating the air of the Magnetic Basement generally (by means of the gas-stove), leaving the magnets in all respects in their ordinary state, and comparing their indications as recorded in the ordinary way, but at different temperatures.* Experiments were at first made at intervals of a few hours in the course of one day, but it was soon found that the magnet did not acquire the proper temperature; moreover, the result was evidently affected by diurnal inequality. After this, an entire day was in each case devoted to the effects of each temperature (high or low, as the case might be). The principal series of observations were made with the horizontal force magnet in its ordinary position, or marked end to the west; but a few were made with the marked end to the east. In some instances, the numbers given are the result each of several observations; but in other instances, the result is that of a single observation, taken when all the apparatus had acquired unusual steadiness. The following are the results:—

RESULTS OF TEMPERATURE EXPERIMENTS UPON THE H.F. MAGNET MARKED END WEST.

1868. MONTH and DAY. (Civil.)	Temperature.	Scale Reading.	Change of Temperature.	Change of Scale Reading.	Change of Scale Reading reduced to Parts of the whole Horizontal Force.	Change of H.F. corresponding to a change of 1° of Temperature (in Parts of the whole Horizontal Force).
	°	div.	°	div.		
January 3	56·8	60·82	6·3	0·65	0·001579	0·000250
3	50·5	61·47				
4	49·5	61·47	6·0	0·12	·000292	·000049
4	55·5	61·35				
6	59·3	60·91	10·0	0·71	·001725	·000172
7	49·3	61·62	7·4	0·57	·001385	·000187
9	56·7	61·05				
10	58·9	60·91	7·6	0·80	·001943	·000256
11	51·3	61·71	8·0	0·53	·001288	·000161
12	59·3	61·18				

* This method was first used for magnets, so far as I am aware, at the Kew Observatory. It had been used for pendulums by Lieut.-General Sir Edward Sabine and by myself.

RESULTS OF TEMPERATURE EXPERIMENTS UPON THE H.F. MAGNET MARKED END WEST—*continued.*

1868. Month and Day. (Civil.)	Temperature.	Scale Reading.	Change of Temperature.	Change of Scale Reading.	Change of Scale Reading reduced to Parts of the whole Horizontal Force.	Change of H.F. corresponding to a change of 1° of Temperature (in Parts of the whole Horizontal Force).
	°	div.	°	div.		
January 13	59·5	61·26	5·6	0·16	0·000389	0·000070
14	53·9	61·42				
14	55·2	61·74	2·7	0·31	·000753	·000279
16	52·5	62·05	9·0	1·27	·003086	·000343
17	61·5	60·78	8·0	0·46	·001118	·000143
18	53·5	61·24	6·1	0·31	·000753	·000123
19	59·6	60·93				
January 31	60·7	58·63	10·1	0·31	·000753	·000075
February 4	50·6	58·94	9·7	0·88	·002138	·000220
5	60·3	58·06	9·2	0·80	·001943	·000211
7	51·1	58·86	8·5	0·82	·001992	·000234
10	59·6	58·04				
14	59·7	58·64	9·6	0·82	·001992	·000208
16	50·1	59·46	9·7	0·49	·001190	·000123
18	59·8	58·97	11·6	0·48	·001166	·000100
20	48·2	59·45	10·6	0·43	·001045	·000099
21	58·8	59·02				
Mean . . .	..	..	..	..	....	0·000174

RESULTS OF TEMPERATURE EXPERIMENTS UPON THE H.F. MAGNET MARKED END EAST.

1868. Month and Day. (Civil.)	Temperature.	Scale Reading.	Change of Temperature.	Change of Scale Reading.	Change of Scale Reading reduced to Parts of the whole Horizontal Force.	Change of H.F. corresponding to a change of 1° of Temperature (in Parts of the whole Horizontal Force).
	°	div.	°	div.		
January 21	60·2	60·73	9·7	1·42	0·003449	0·000355
22	50·5	59·31				
24	58·6	62·56	7·3	1·02	·002477	·000339
24	51·3	61·54	8·0	0·32	·000777	·000097
27	59·3	61·86	10·3	0·35	·000850	·000083
29	49·0	61·51	11·9	0·30	·000729	·000061
31	60·9	61·81				
Mean . . .	..	...	..	..	....	0·000187

These results do not differ greatly from those which are given by application of the formula found in 1847. It is important to observe that they include the entire effects of temperature upon all the various parts of the mounting of the magnet, as well as on the magnet itself; and for this reason I think them deserving of great confidence. Still I have thought it prudent, at present, to omit application of corrections for temperature.

The method of observing with the horizontal-force-magnet is the following:—

A fine vertical wire is fixed in the field of view of the telescope, which is directed to the plane mirror carried by the magnet. On looking into the telescope, the graduations of the fixed scale, mentioned in pages *xix* and *xx*, are seen; and during the oscillations of the magnet, the divisions of the scale are seen to pass alternately right and left across the wire. The clock-time, for which the position of the magnet is to be determined, is the same as that for the observation of declination. The first observation is made by the observer applying his eye to the telescope 40^s before that time, and, if the magnet is in a state of vibration, he observes the next four extreme points of vibration of the scale, and the mean of these is adopted in the same manner as for the declination-observations; but if it is at rest, then at 10^s before the pre-arranged time, he notes the division of the scale bisected by the wire; and 10^s after the pre-arranged time he notes whether the same division continues bisected, and if it does, that reading is adopted as the result.

The number of instances when the magnet was observed in a state of vibration during the year 1871 is very small.

Outside the double box is suspended a thermometer which is read on every day except Sundays, at 21^h, 22^h, 23^h, 0^h, 1^h, 2^h, 3^h, and 9^h. Occasional observations have been taken at other hours. Self-registering maximum and minimum thermometers placed outside the box were read twice every day, but in consequence of the very small diurnal range of temperature, their readings are not printed in the volume.

§ 6. *Photographic self-registering Apparatus for Continuous Record of Magnetic Horizontal Force.*

Referring to the general description of photographic apparatus, the following remarks apply more particularly to that which is attached to the horizontal-force-magnet. A concave mirror of speculum-metal, 4 inches in diameter, is carried by the magnet-carrier. The light of a gas-lamp shines through a small aperture $0^{in.}\cdot 3$ high, and $0^{in.}\cdot 01$ broad (which is supported by the solid base of the brick pier carrying the magnet-support), at the distance of about 21·25 inches from the concave mirror, and is made to converge to a point, on the north surface and near the east end of the same revolving cylinder which receives the light from the concave mirror of the declination-magnet. A cylindrical lens parallel to the axis of the cylinder receives the somewhat elongated image of the source of light, and converts it into a well-defined spot. The motions of this spot parallel to the axis represent the angular movements of the magnet which are produced by an increase of terrestrial magnetic force overcoming more completely the torsion-force of the bifilar suspension, or by a diminution of terrestrial force yielding to the torsion-force.

As the spot of light from the horizontal-force-mirror falls on the side of the cylinder opposite to that on which the light from the declination-mirror falls, the same time-scale will not apply to both; it is necessary to prepare a time-scale independently for each.

The following is the calculation by which the scale of horizontal force on the photographic sheet is determined. The distance between the surface of the concave mirror and the surface of the cylinder is 134·436 inches; consequently, one degree of angular motion of the magnet, producing two degrees of angular motion of the reflected ray, moves the spot of light through 4·6927 inches. For the year 1871 the adopted value of variation of horizontal force for one degree of angular motion of the magnet is sin $1^\circ \times$ cotan $41^\circ. 17'.1 = 0·019878$; and the movement of the spot of light for 0·01 part of the whole horizontal force is 2·361 inches. With this fundamental number, the graduations of the pasteboard scale for measure of horizontal force have been prepared.

§ 7. *Vertical-Force-Magnet, and Apparatus for observing it.*

The vertical-force-magnet in use to 1848 was made by Robinson; that in use from 1848 to 1864, January 20, was by Barrow. The magnet now in use is by Simms. Its length is $1^{ft.} 6^{in.}$; it is pointed at the ends. After some trials, it was re-magnetized by Mr. Simms on 1864, June 15. Between 1864, August 27, and September 27, a new knife-edge was attached to it, to remedy a defect which, as was afterwards found, arose from a cause that had no relation to the knife-edge. Its supporting frame rests upon a solid pier, built of brick and capped with a thick block of Portland stone, in the western arm of the magnetic basement. Its position is as nearly as possible symmetrical with that of the horizontal-force-magnet in the eastern arm. Upon the stone block is fixed the supporting frame, consisting of two pillars (connected at their bases) on whose tops are the agate planes upon which vibrate the extreme parts of the knife-edge (to be mentioned immediately). The carrier of the magnet is an iron frame, to which is attached, by clamps and pinching screws, a steel knife-edge, about 8 inches long. The steel knife-edge passes through an aperture in the magnet. The axis of the magnet is as nearly as possible transverse to the meridian, its marked end being E. The axis of vibration is as nearly as possible N. and S. To the southern end of the iron frame, and projecting further south than the end of the knife-edge, is fixed a small plane mirror, whose plane makes with the axis of the magnet an angle of $52\frac{3}{4}°$ nearly. The fixed telescope (to be mentioned) is directed to this mirror, and by reflexion at the surface of the mirror it views a vertical scale (to be mentioned shortly). The height of this mirror above the floor is about $2^{ft.}\ 10^{in.}\ 6$. Before the introduction of the photographic methods, the magnet was placed in a perforation of a brass frame midway between its knife-edges. But since the photographic method was introduced, the magnet has been placed excentrically; the distance of its southern face from the nearest end of the southern knife-edge being nearly 2 inches, and a space of $4\frac{1}{2}$ inches in the northern part of the iron frame being left disposable. In this disposable space there is attached to the iron frame by three clips a concave mirror of speculum-metal, with its face at right angles to the length of the magnet; it is used in the photographic system (shortly to be described). Near the north end of the iron frame are fixed in it two screw-stalks, upon which are adjustible screw-weights; one stalk is horizontal, and the movement of its weight affects the position of equilibrium of the magnet (which depends on the equilibrium between the moments of the vertical force of terrestrial magnetism on the one hand and of the magnet's center of gravity on the other hand); the other stalk is vertical, and the movement of its weight affects the delicacy of the balance, and varies the magnitude of its change of position produced by a change in the vertical force of terrestrial magnetism.

The whole is inclosed in a rectangular box. This box is based upon the stone block above mentioned; and in it, in a space separated from the rest by a thin partition, the magnet can vibrate freely in the vertical plane. In the south side of the box is a hole covered by glass, through which pass the rays of light from the scale to the plane mirror, and through which they are reflected from the plane mirror to the telescope. And at the east end is a large hole covered by glass, through which passes the light from the lamp to the concave mirror, and through which it is reflected to the photographic cylinder (to be described hereafter).

The telescope is fixed to the west side of the brick pier which supports the stone pier in the upper room carrying the declination-theodolite. Its position is symmetrical with that of the telescope by which the horizontal-force-magnet is observed; so that a person seated in a convenient position can, by an easy motion of the head left and right, observe the vertical-force and horizontal-force-magnets.

The scale is vertical: it is fixed to the pier which carries the telescope, and is at a very small distance from the object-glass of the telescope. The wire in the field of view of the telescope is horizontal. The telescope being directed towards the mirror, the observer sees in it the divisions of the scale passing upwards and downwards over the fixed wire as the magnet vibrates. The numbers of the scale increase from top to bottom; so that, when the magnet is placed with its marked end towards the East, increasing readings (as seen with the fixed telescope) denote an increasing vertical force.

OBSERVATIONS RELATING TO THE PERMANENT ADJUSTMENTS OF THE VERTICAL-FORCE-MAGNET.

1. Determination of the compound effect of the declination-magnet, the horizontal-force-magnet, and the iron affixed to the electrometer pole, on the vertical-force-magnet.

The experiments applying to the magnets are given in the volumes for 1840–1841 to 1845: and those applying to the electrometer pole in the volume for 1842. It appeared that no sensible disturbance was produced on the magnet formerly in use. No experiments have been made with the new magnet.

2. Determination of the time of vibration of the vertical-force-magnet in the vertical plane.

In the year 1871, vibrations of the vertical-force-magnet were observed on 177 different days, and with readings of various divisions of the scale. The mean time of vibration adopted for the year was $15^{s}\cdot96$.

3. Determination of the time of vibration of the vertical-force-magnet in the horizontal plane.

1868, December 31. The magnet with all its apparatus was suspended from a tripod in Magnetic Office, No. 5, its broad side being in a plane parallel to the horizon; therefore, its moment of inertia was the same as when it is in observation. A telescope, with a wire in its focus, was directed to the reflector carried by the magnet. A scale of numbers was placed on the floor of the room, at right angles to the long axis of the magnet, or parallel to the mirror. The magnet was observed only at times when it was swinging through a small arc. From 500 vibrations, the mean time of one vibration $=16^{s}\cdot3192$. This number is used through the year 1871.

4. Computation of the angle through which the magnet moves for a change of one division of the scale; and calculation of the disturbing force producing a movement through one division, in terms of the whole vertical force.

The distance from the scale to the mirror is 186·07 inches, and each division of the scale $=\frac{12}{30\cdot85}$ inches. Hence the angle which one division subtends, as seen from the mirror, is $7'.\ 11''\cdot19$; and therefore the angular movement of the normal to the mirror, corresponding to a change of one division of the scale, is half this quantity, or $3'.\ 35''\cdot60$.

But the angular movement of the normal to the mirror is not the same as the angular movement of the magnet; but is less in the proportion of unity to the cosine of the angle which the normal to the mirror makes with the magnet, or in the proportion of unity to the sine of the angle which the plane of the mirror makes with the magnet. This angle has been found to be $52\frac{3}{4}°$; therefore, dividing the result just obtained by sine $52\frac{3}{4}°$, we have, for the angular motion of the magnet corresponding to a change of one division of the scale, 4′. 30″·85.

From this, the value, in terms of the whole vertical force, of the disturbing force, producing a change of one division, is to be computed by the formula, "Value of Division in terms of radius × cotan dip × $\frac{T'^2}{T^2}$;" where T' is the time of vibration in the horizontal plane, and T the time of vibration in the vertical plane.

For the year 1871, T' was assumed = $16^s·319$, $T = 15^s·96$, dip = 67°. 50′. 15″. From these numbers, the change of the vertical force, in terms of the whole vertical force, corresponding to one division of the scale, is found = 0·0005592.

5. Investigation of the temperature-correction of the vertical-force-magnet.

The new vertical-force-magnet was subjected to experiments by inclosing it in a copper box, and warming it by an injection of hot air, and observing the amount of deviation which it produced on the suspended magnet used in the deflexion-apparatus for absolute measure of horizontal force, at the same time and in the same manner as were the horizontal-force-magnet and the old vertical-force-magnet, in the experiments described in pages *xxiv* to *xxvi*. Observations made on 1864, February 20, 25, March 3, 9, gave, for the tangents of the angles of deflection,—

16 observations with marked end E 18 ,, ,, W	at mean temperature	36·6	Fahrenheit, gave	0·172352
33 ,, marked end E 29 ,, ,, W	,,	62·2	,,	0·171657
26 ,, marked end E 27 ,, ,, W	,,	93·3	,,	0·171389

From these it appeared that the angle of deflection might be represented by—

$$0·172522 \times \left\{1 - 0·0002233 \times (t - 32) + 0·000001894 \times (t - 32)^2\right\}$$

The quantity within the brackets (which represents the variation of magnetic power in terms of the whole power of the magnet) shows the same peculiarities as those found for the other magnets; that the third term is large, and has a sign opposite to that of the second term.

The factor of variation for 1° of Fahrenheit, when $t = 62°$, is − 0·0001097.

After these observations, the new vertical-force-magnet was re-magnetized by Mr. Simms, on 1864, June 15.

In the beginning of 1868, observations were made in the method already described for the horizontal-force-magnet, by heating the magnetic basement to different temperatures, and observing the scale-reading in the ordinary way. The results are as follows :—

RESULTS OF TEMPERATURE EXPERIMENTS UPON THE VERTICAL-FORCE-MAGNET.

1868. Month and Day.		Temperature.	Scale Reading.	Change of Temperature.	Change of Scale Reading.	Change of Scale Reading reduced to Parts of the whole Vertical Force.	Change of V.F. corresponding to a change of 1° of Temperature (in Parts of the whole V.F.)
		°	div.	°	div.		
January	3	56·0	56·45				
	4	48·2	46·52	7·8	9·93	0·006482	·000831
	5	59·6	61·49	11·4	14·97	·009772	·000857
January	6	59·6	61·73				
	7	49·0	46·84	10·6	14·89	0·009720	·000917
	10	59·5	61·62	10·5	14·78	·009648	·000919
	11	49·7	48·70	9·8	12·92	·008434	·000861
	12	62·0	64·40	12·3	15·70	·010249	·000833
	13	53·4	53·33	8·6	11·07	·007226	·000840
	14	55·4	55·72	2·0	2·39	·001560	·000780
	16	52·3	50·79	3·1	4·93	·003218	·001038
	17	63·7	66·13	11·4	15·34	·010014	·000878
	18	52·4	53·26	11·3	12·87	·008402	·000743
	20	60·7	62·19	8·3	8·93	·005829	·000702
	22	50·6	47·82	10·1	14·37	·009381	·000929
	23	59·6	59·60	9·0	11·78	·007690	·000854
	25	49·6	46·67	10·0	12·93	·008441	·000844
	26	60·5	60·62	10·9	13·95	·009107	·000836
	29	49·3	44·78	11·2	15·84	·010340	·000923
	31	63·1	64·55	13·8	19·77	·012906	·000935
February	4	51·0	47·11	12·1	17·44	·011385	·000941
	5	62·3	64·02	11·3	16·91	·011039	·000977
	6	50·6	46·43	11·7	17·59	·011483	·000981
	7	53·3	49·10	2·7	2·67	·001743	·000646
	8	50·6	45·55	2·7	3·55	·002317	·000858
	10	62·1	62·76	11·5	17·21	·011235	·000977
February	14	60·6	57·70				
	16	49·0	36·75	11·6	20·95	·011298	·000974
	18	61·9	58·85	12·9	22·10	·011919	·000924
February	18	61·9	58·05				
	20	50·0	41·96	11·9	16·09	·011749	·000987
	21	62·6	56·82	12·6	14·86	·010851	·000861
Mean . .		..	..	..	..	...	0·000880

The coefficient of temperature-correction given by these experiments is enormously greater than any that has been found in any previous experiments. Yet I conceive that there can be no doubt of its accuracy. And it is easy to see that an instrument, subjected to the effects of gravity working differentially on its two ends, is liable to great changes depending on temperature which have no connexion with magnetism. For instance, if the point, at which the magnet is grasped by its carrier, is not absolutely coincident with its center of gravity, a great change of position may be produced by a small change of temperature. There appears to be no way of avoiding these evils but by maintaining almost uniform temperature; a condition which has been almost perfectly preserved in the year 1871.

The method of observing with the vertical-force-magnet is the following:—

A fine horizontal wire is fixed in the field of view of the telescope, which is directed to the small plane mirror carried by the magnet. On looking into the telescope, the graduations of the fixed vertical scale are seen; and during the oscillations of the magnet, the divisions of the scale are seen to pass alternately upwards and downwards across the wire. The clock-time, for which the position of the magnet is to be determined, is the same as that for the other two magnets. The observer applies his eye to the telescope about two vibrations before the arranged time, and if the magnet is in motion he observes its places at four extreme vibrations; and the mean of these is taken as for the horizontal-force-magnet. But if the magnet is at rest, then at one-half time of vibration before the arranged time, and at an equal interval after the arranged time, the division of the scale is noted; if there is a slight difference, the mean is taken.

The number of instances in 1871 in which the magnet was found in a state of vibration is very small.

Outside the box is placed a thermometer, which is read on every day except Sundays, at the hours 21^h, 22^h, 23^h, 0^h, 1^h, 2^h, 3^h, and 9^h. Occasional readings of the thermometer are also taken at other hours.

A maximum and a minimum thermometer have also been read twice daily; but the results are not printed.

§ 8. *Photographic self-registering Apparatus for Continuous Record of Magnetic Vertical Force.*

The concave mirror which is carried by the vertical-force-magnet is 4 inches in diameter; its mounting has been described in the last article. At the distance of about 22 inches from that mirror, and external to the box, is the horizontal aperture, about $0^{in}\cdot 3$ in length and $0^{in}\cdot 01$ in breadth, carried by the same stone block which carries the supports of the agate planes. The lamp which shines through this aperture is carried by a wooden stand. The light reflected from the mirror passes through a cylindrical lens with its axis vertical, very near to the cylinder carrying the photographic paper, and finally forms a well-defined spot of light on the cylinder of paper, at the distance of 100·18 inches from the mirror. As the movements of the magnet are vertical, the axis of the cylinder is vertical. The cylinder is about 14¼ inches in circumference, being of the same dimensions as those used for the declination and horizontal-force magnets, and for the earth-currents. The forms of the exterior and interior cylinders, and the method of mounting the paper, are in all respects the same as for the declination and horizontal-force magnets; but the cylinder is supported by being merely planted upon a circular horizontal plate (its position being defined by fitting a central hole in the metallic cap of the cylinder upon a central pin in the plate), which rests on anti-friction rollers and is turned by watchwork once in twenty-four hours. The trace of the vertical-force-magnet is on the west side of the cylinder.

On the east side, the cylinder receives the trace produced by the barometer (to be described hereafter). A pencil of light from the lamp which is used for the barometer shines through a fixed aperture with a small cylindrical lens, for tracing a photographic base-line upon the cylinder of paper, similar to that for the cylinder of the declination and horizontal-force magnets.

The scale for the ordinates of the photographic curve of the vertical force is thus computed. Remarking that the radius which determines the range of the motion of the spot of light is double the distance 100·18 inches, and is therefore = 200·36 inches, the formula used in the last section, when applied to $\frac{\text{disturbing force}}{\text{whole vertical force}} = 0{\cdot}01$, gives value of division $= 200{\cdot}36 \times \text{tan. dip.} \times \left(\frac{\text{T}}{\text{T}'}\right)^2 \times 0{\cdot}01$. The value of the ordinate of the photographic curve for $\frac{\text{disturbing force}}{\text{whole vertical force}} = 0{\cdot}01$, thus obtained, is, for the year 1871, = 4·705 inches. With this value, the pasteboard scales, used for measuring the photographic ordinates, have been prepared.

§ 9. *Dipping Needles, and Method of observing the Magnetic Dip.*

The instrument with which all the dips in the year 1871 have been observed, is that which, for distinction, is called Airy's instrument. The following description will probably suffice to convey an idea of its peculiarities :—

The form of the needles, the form of their axes, the form of the agate bearings, and the general arrangement of the relieving apparatus, are precisely the same as those in Robinson's and other needles. But the form of the observing apparatus is greatly modified, in order to secure the following objects :—

I. To obtain a microscopic view of the points of the needles, as in the instruments introduced by Dr. Lloyd and Lieut.-General Sir E. Sabine.

II. To possess at the same time the means of observing the needles while in a state of vibration.

III. To have the means of observing needles of different lengths.

IV. To give an illumination to the field of view of each microscope, directed from the side opposite to the observer's eye, so that the light may enter past the point of the needle into the object glass of the microscope, forming a black image of the needle-point in a bright field of view.

V. To give facility for observing by day or night.

With these views, the following form is given to the apparatus :—

The needle, and the bodies of the microscopes, are inclosed in a square box. The base of the box, two vertical sides, and the top, are made of gun-metal (carefully selected to insure its freedom from iron); but the sides parallel to the plane of vibration of the needle are of glass. Of the two glass sides, that which is next the observer is firmly fixed; it is hereafter called "the graduated glass-plate." The other glass side can be withdrawn, to open the box, for inserting the needle, &c.

An axis, whose length is perpendicular to the plane of vibration of the needles, and is as nearly as possible in the line of the axis of the needle, supported on two bearings (of which one is cemented in a hole in the graduated glass-plate, the other being upon a horizontal bar near to the agate support of the needle-axis), carries a transverse arm, about 11 inches long, or rather two arms, projecting about 5½ inches on each side of the axis. Each of these projecting arms carries three fixed microscopes on each side, adapted in position to the lengths of the needles to be mentioned shortly.

The microscope-tube thus carried is not the entire microscope, but so much as contains the object-glass and the field-glass. Upon the plane side of the field-glass (which is turned towards the object-glass), a series of parallel lines is engraved by etching with fluoric acid. The object-glass is so adjusted that the image of the needle-point is formed upon the plane side of the field-glass; and thus the parallel lines can be used for observing the needle in a state of vibration; and, one of them being adopted as standard, the lines can be used for reference to the graduated circle (to be mentioned). All this requires that there be an eye-glass also for the microscope.

The axis of which we have spoken is continued through the graduated glass-plate, and there it carries another transverse arm parallel to the former, and generally similar to it, in which are fixed three sockets and eye-glasses. Thus, reckoning from the observer's eye, there are the following parts:—

(1.) The eye-glass.

(2.) The graduated glass-plate (its graduations, however, not intervening in this part of the glass, the graduated circle being so large as to include, within its circumference, all the microscopes).

(3.) The field-glass, on the further surface of which the parallel lines are engraved.

(4.) The object-glass.

(5.) The needle.

(6.) The removeable glass side of the box.

(7.) The illuminating reflector, to be described hereafter.

The optical part of the apparatus being thus described, we may proceed to speak of the graduated circle.

The graduations of the circle (whose diameter is about 9¾ inches) are etched on the inner surface of the graduated glass-plate. These divisions (as well as the parallel lines on the field glasses of the microscopes) are beautifully neat and regular, and are, I think, superior to any that I have seen on metal. The same piece of metal, which carries the transverse arms supporting the microscope bodies, carries also two arms with verniers for reading their graduations. These verniers (being adapted to transmitted light) are thin plates of metal, with notches instead of lines. The reading of the verniers is very easy. The portion of the axis which is external to the graduated glass-plate (towards the observer), and which has there, as already stated, two arms for carrying the microscope eye-glasses, has also two arms for carrying the lenses by which the verniers and glass-plate graduations are viewed. These four arms are the radii of a circle, which can be fixed in position by a clamp, attached to the gun-metal casing of the graduated glass-plate, and furnished with the usual slow-motion screw.

The entire system of the two arms carrying the microscope-bodies, the two arms carrying the microscope eye-glasses, the two arms carrying the verniers, and the two arms carrying the reading-glasses for the verniers, is turned rapidly by means of a button on the external side of the graduated glass-plate, or is moved slowly by means of the slow-motion screw just mentioned.

It now remains only to describe the illuminating apparatus. On the outside of the removeable glass plate, there are supports for the axis of a metallic circle turning in a plane parallel to the plane of needle-vibration. This circle has four slotted radii, which support eight small frames carrying prismatic glass reflectors, each of which can turn on an axis that is in the plane of the circle but transverse to the radius. Two of these reflectors are for the purpose of sending light through the verniers, and therefore are fixed at the same radial distance as the verniers; the other six are intended for sending light past the ends of the needle through the six microscopes, and are therefore fixed at distances corresponding to the fixed microscopes. The circle was originally turned by a small winch near the observer's hand; at present, the winch is removed, as its axis was found to be slightly magnetic. At each observation, it is necessary to turn the circle which carries the reflectors; but this is the work of an instant.

The light which illuminates the whole is a gas-burner, in the line of the axis of rotation. Its rays fall upon the glass prisms, and each of these is adjusted, by turning on its axis, to throw the reflected light in the required direction.

The whole of the apparatus, as thus described, is planted upon a horizontal plate admitting of rotation in azimuth: the plate is graduated in azimuth, and verniers are fixed to the gun-metal tripod stand. The gas-pipe is led down the central vertical axis, and there communicates by a rotatory joint with the fixed gas-pipes.

The needles adapted for use with this instrument are—

B_1, a plain needle	each 9 inches long.
B_2, a plain needle	
B_3, a loaded needle with adjustible load	
B_4, a needle whose plane passes through the axis of the needle	
C_1, a plain needle	each 6 inches long.
C_2, a plain needle	
C_3, a loaded needle with adjustible load	
C_4, a needle whose plane passes through the axis of the needle	
D_1, a plain needle	each 3 inches long.
D_2, a plain needle	
D_3, a loaded needle with adjustible load	
D_4, a needle whose plane passes through the axis of the needle	

The needles constantly employed are B_1, C_1, D_1, B_2, C_2, D_2.

In discussing carefully the observations taken with this instrument (as well as with other dip-instruments), great trouble was sometimes experienced in determining the zenith-point (or reading of the vertical circle when the points of the needle are in the same vertical). To remedy this, a "zenith-point-needle" was constructed under my instructions by Mr. Simms; and it has since been used as need required. It is a flat bar of brass; with pivots similar to those of the dip-needles; and with three pairs of points corresponding to the three lengths of needles used; loaded at one end so as to take a position perfectly definite with respect to the direction of gravity; observed with the microscopes, and reversed for another observation, exactly as the dip-needles. For each of the different lengths of dip-needles, the zenith-point is determined by observation of that pair of points of the zenith-point-needle whose interval is the same as the length of the dip-needle.

The Dip Instrument and all the needles are examined, at the close of each year and at other times if thought desirable, by Mr. Simms.

§ 10. *Observations for the absolute Measure of the Horizontal Force of Terrestrial Magnetism.*

In the spring of 1861, a Unifilar Instrument, similar in all respects (as is understood) to those used in and issued by the Kew Observatory, was procured by the courteous application of Sir E. Sabine, from the makers, Messrs. J. T. Gibson and Son; and after having been subjected to the usual examinations, at the Kew Observatory, for determination of its constants (for which I am indebted to the kindness of Balfour Stewart, Esq.), was mounted at the Royal Observatory. Observations with this instrument commenced on 1861, June 11, and were continued through the year; and, after some slight modifications of its verniers, it is still maintained in use (1871).

The deflected magnet (whose use is merely to ascertain the proportion which the power of the deflecting magnet at a given distance bears to the power of terrestrial magnetism) is 3 inches long, carrying a small plane mirror. The deflecting magnet is 4 inches long; it is a hollow cylinder, carrying in its internal tube a collimator, by means of which its time of vibration is observed in another apparatus. The frame which supports the suspension-piece of the deflected magnet carries also the telescope directed to the magnet-mirror; it rotates round the vertical axis of a horizontal graduated circle whose external diameter is 10 inches. The deflecting magnet is always placed on the E. or W. side of the deflected magnet, with one end towards the deflected magnet. In the reduction of the observations, the precepts contained in the Skeleton Form prepared by the Kew Observatory have received the strictest attention.

The following is the explanation of the method of reduction.

The distance of the centers of the deflected and deflecting magnet being known, it is supposed (from observations made at Kew, of which the details have not reached me) that the magnetism of the deflecting magnet is so altered by induction that the following multipliers ought to be used in computing the Absolute Force:—

At distance 1·0 foot, factor is	1·00031
1·1	1·00023
1·2	1·00018
1·3	1·00014
1·4	1·00011
1·5	1·00009

The correction of the magnetic power for temperature t_0 of Fahrenheit, reducing all to 35° of Fahrenheit, is

$$0{\cdot}000131261\,(t_0-35)+0{\cdot}000000259\,(t_0-35)^2$$

A_1 is $\frac{1}{2}(\text{distance})^3 \times$ sine deflection, corrected by the two last-mentioned quantities, for distance 1 foot; A_2 is the similar expression for distance 1·3 foot; A'_2 is $\frac{A_2}{(1\cdot3)^2}$; P is $\frac{A_1-A_2}{A_1-A'_2}$. A mean value of P is adopted from various observations; then $\frac{m}{X}=A_1\times\left(1-\frac{P}{1}\right)$ for smaller distance, or $=A_2\times\left(1-\frac{P}{1\cdot69}\right)$ for larger distance. The mean of these is usually adopted for the true value of $\frac{m}{X}$.

For computing the value of mX from observed vibrations, it is necessary to know K, the moment of inertia of the magnet as mounted. The value of log. π^2K furnished by Mr. Stewart is 1·66073 at temperature 30° and 1·66109 at temperature 90°. Then putting T for the time of the magnet's vibration as corrected for induction, temperature, and torsion-force, the value of mX is $=\frac{\pi^2K}{T^2}$. From the combination of this value of mX with the former value of $\frac{m}{X}$, m and X are immediately found.

It appears, from a comparison of observations given in the Introduction to the *Magnetical and Meteorological Observations*, 1862, that the determinations with the Old Instrument (in use to 1861) ought to be diminished by $\frac{1}{117}$ part, to make them comparable with those of the Kew Unifilar.

The computation of the values of m and X has, to the year 1857, been made in reference to English measure only, using the foot and the grain as the units of length and weight; but, for comparison with foreign observations of the Absolute Intensity of Magnetism, it is desirable that X should be expressed also in reference to Metric measure, in terms of the millimètre and milligramme. If an English foot be supposed equal to α times the millimètre, and a grain be equal to β times the milligramme, then it is seen that, for the reduction of $\frac{m}{X}$ and mX to Metric measure, these must be multiplied by α^3 and $\alpha^2\beta$ respectively. Hence X^2 must be multiplied by $\frac{\beta}{\alpha}$, and X by $\sqrt{\frac{\beta}{\alpha}}$. Assuming that the mètre is equal to 39·37079 inches, and the gramme equal to 15·43249 grains, log. $\sqrt{\frac{\beta}{\alpha}}$ will be found to be $=9{\cdot}6637805$, and the factor for reducing the English values of X to Metric values will be 0·46108 or $\frac{1}{2\cdot1689}$. The values of X in Metric measure thus derived from those in English measure are given in the proper table.

§ 11. *Explanation of the Tables of Reductions of the Magnetic Observations (excluding the days of great Magnetic Disturbance).*

The Indications, on which the reductions of this section and the next are founded, are derived entirely from the measures of the ordinates of the Photographic Curves.

The first step taken was to divide the days of observation into two groups; in one of which the magnetism was generally so tranquil that it appeared proper to use those days for determination of the laws of diurnal inequality; while in the other group the movements of the magnetic instruments were so violent, and the photographic curves traced by them so irregular, that it appeared impossible to employ them, except by the exhibition of every motion of the magnet during the day. A similar division into groups had been made in two Memoirs printed in the Philosophical Transactions. For the year 1871, the following days, thirteen in number, were selected by Mr. Glaisher as exhibiting practically the same amount of irregularity which he had considered as defining the class of Days of Great Disturbance in the Memoirs to which I have alluded:—

February 11, 12, March 23, April 1, 9, 17, 18, June 17, August 6, 24, November 2, 9, 10.

These days being separated, the photographic sheets for the remaining days were thus treated. Through each photographic curve a pencil line was drawn, representing, as well as could be judged, the general form of the curve without its petty irregularities. These pencil curves only were then used; and their ordinates were measured, with the proper pasteboard scales, at every hour. The methods of forming from these the various tables of this section require no special explanation.

The temperature of the Magnetometers was maintained in so great uniformity through each day that no apprehension is entertained of the slightest appreciable error in the diurnal inequalities of horizontal force and vertical force, as a consequence of the omission of temperature-correction. But it was impossible to maintain perfect uniformity of temperature through all the seasons. I have, therefore, exhibited, in the Tables of Mean Force in each month, the mean temperature of the month. It will be borne in mind, therefore, that the numbers exhibited are *not* corrected for temperature, but require the correction corresponding to the printed mean temperatures.

§ 12. *Explanation of the Tables of Indications of Magnetometers on thirteen days of Great Magnetic Disturbance.*

Telescope-observations of the Magnetometers have usually been made four times every day, except on Sundays, on which days two or three observations only have been taken; but, though these observations are employed in forming the base lines on the photographic sheets, their immediate results are not necessarily given in the Tables.

For each photographic record, a new base-line, representing a convenient reading in round numbers of the element to which it applies, has been drawn on the sheet. Then the Assistant, who is charged with the translation of the curve-ordinates into numbers, remarks the salient points of the curve, or the points which if connected by straight lines would produce a polygon not sensibly differing from the photographic curve; to each of these he applies the scale of pasteboard or glass proper for the element under consideration; the base of the scale determines the time on the time-scale, and the reading of the scale for the point of the photographic curve gives the quantity which is to be added to the value for the new base-line. The ordinate-reading so formed is printed without alteration in the Tables. It is particularly to be remarked that the indications for horizontal force and vertical force are *not corrected for temperature.*

In preceding years, allusion has been made to the occasional dislocations of the curve of Vertical Force. No instance of such dislocation has presented itself in 1871. It is believed that these dislocations were produced by bringing a magnet into the proximity (though not very close) of the magnetometer; and this supposed cause of error has, in late years, been carefully avoided.

§ 13. *Wires and Photographic self-registering Apparatus for continuous Record of Spontaneous Terrestrial Galvanic Currents.*

In order to obtain an exhibition of the spontaneous galvanic currents which in some measure are almost always discoverable in the earth, and which occasionally are very powerful, it was necessary to extend two insulated wires from an earth connexion at the Royal Observatory, in two directions nearly at right angles to each other, to considerable distances, where they would again make connexion with the earth. By the kindness of the Directors of the South Eastern Railway Company, to whom the Royal Observatory has on several occasions been deeply indebted, two connexions were made; one to a station near Dartford, at the direct distance $9\frac{3}{4}$ miles nearly, in azimuth (measured from North, to East, South, West), 102° astronomical or 122° magnetical, the length of the connecting wire being about $15\frac{2}{3}$ miles; the other to a station near Croydon, at the direct distance 8 miles, in azimuth, 209° astronomical, or 229° magnetical, the length of the connecting wire being about $10\frac{1}{2}$ miles. At these two stations connexion was made with earth. The details of the course were as follows. The wires were soldered to a water pipe in the Magnetic Ground at the Royal Observatory. Thence they entered the Magnetic Basement, and passed through the photographic self-registering apparatus (to be shortly described). From it they were led up the electrometer mast to a height exceeding 50 feet, and thence they were swung across the grounds to a chimney above the Octagon Room. They descended thence, and were led to a terminal board in the Astronomical Computing Room, to which an intermediate galvanometer can be attached for eye-observation of the currents. From this point they were led to the "Battery Basement," and, with other wires, passed under the Park to the Greenwich Railway Station, and upon the telegraph poles. One wire branched off at the junction with the North Kent Railway to Dartford, the other at the junction with the Croydon Branch Railway to Croydon. At both places their connexion with earth was made by soldering to water-pipes, as at the Royal Observatory.

These wires remained in the places described till the end of 1867. It had been discovered in experience that a much smaller separation of the extreme points of earth-connexion would suffice, and it was conjectured that advantage might arise from making the two earth-connexions of each wire on opposite sides of the Observatory and nearly equidistant from it, instead of making one earth-connexion of each within the Observatory grounds. In 1868, therefore, the following wire-courses were substituted. One wire is connected with earth, by a copper plate, at the Lady Well station of the Mid-Kent Railway; it is thence led by a circuitous course to the North Kent Junction with the Greenwich Railway, to the Royal Observatory (for communication with the self-registering apparatus), back to the North Kent Junction, then by North Kent Railway and Angerstein Branch to the Angerstein Wharf, where it is connected with earth by a copper plate. The other wire is connected with earth by a copper plate at the North Kent Junction, then passes to the Royal Observatory and back to the Junction, and then along the North Kent Railway to the Morden College end of the Blackheath Tunnel, where it is connected with earth in the same manner. The straight lines connecting the extreme points of the wires cross each other near the middle of their lengths and near the Royal Observatory; the length of the first line is nearly 3 miles, and its azimuth 56° N. to E. (magnetic); that of the second line is nearly $2\frac{1}{2}$ miles, and its azimuth 136°. But, in the circuitous courses above described, the length of the first wire is about $10\frac{3}{8}$ miles, and that of the second $6\frac{1}{4}$ miles. These wires were established and brought into use on 1868, August 20. The names and connexions of the wires within the Observatory were again identified in 1871, June.

The apparatus for receiving the effects of the galvanic currents consists essentially of two magnetic needles (one for each wire), each suspended by a hair so as to vibrate horizontally within a galvanic coil, exactly as in the ordinary speaking telegraph (supposed to be laid horizontally); these coils being respectively in the courses of the two long wires. The number of folds of the wire in each coil was 100 through the year 1871; at the end of the year it was increased to 150. A current of one kind, in either wire, causes the corresponding needle to turn itself through an angle nearly proportioned to the strength of the current, in one direction; a current of the opposite kind causes it to turn in the opposite direction. These turnings are registered by the following apparatus.

To the carrier of each magnet is fixed a small plane mirror, which receives all the azimuthal motions of the magnet. The light of a gas-lamp passes through a minute aperture, and shines upon the mirror; the divergent pencil is converted into a convergent pencil by refraction through crossed cylindrical lenses (with axes vertical before the pencil reaches the mirror, and with axes horizontal where the pencil is received from the mirror), which, under the circumstances, were more convenient than spherical lenses. A spot of light is thus formed upon the photographic paper wrapped upon a cylinder of ebonite, which is covered by a glass cylinder, and made to rotate in twenty-four hours by clock-work, exactly as for the register of the magnetic elements. As in the case of declination and horizontal-force, the two earth currents make their registers upon opposite sides of the same barrel, and upon different parts of the sheet; the same gaslight serving for the illumination of both.

A portion of a base-line for either record is obtained at any time by simply breaking the galvanic communication.

The photograph records were regularly made, with the wires in the first position, from 1865, March 15, to the end of 1867. Fifty-three days, on which the magnetic disturbances were active, were selected for special examination; and for these the equivalent galvanic currents in the north and west directions were computed, and their effects in producing apparent magnetic disturbances in the west and north directions were inferred. They correspond almost exactly with those indicated by the magnetometers. Then the records for all the days of tranquil magnetism were reduced in the same manner, not for comparison with the magnetometer-results, but for ascertaining the diurnal laws of the galvanic currents. These laws were found to be very different from the laws of magnetic diurnal inequalities. These discussions have been communicated to the Royal Society in two papers, of which the first is printed in the Philosophical Transactions, 1868.

The records with the wires in the new positions have been regularly made since 1868, August 20, but have not yet been discussed.

§ 14. *Standard Barometer.*

The Barometer is a standard, by Newman, mounted in 1840. It is fixed on the South wall of the West arm of the Magnetic Observatory. The graduated scale which measures the height of the mercury is made of brass, and to it is affixed a brass rod, passing down the inside of one of the upright supports, and terminating in a conical point of ivory; this point in observation is made just to touch the surface of the mercury in the cistern, and the contact is easily seen by the reflected and the actual point appearing *just* to meet each other. The rod and scale are made to slide up and down by means of a slow-motion screw. The scale is divided to $0^{\text{in}}\cdot05$.

The vernier subdivides the scale divisions to $0^{\text{in}}\cdot002$; it is moved by a slow-motion screw, and in observation is adjusted so that the ray of light, passing under the back and front of the semi-cylindrical plate carried by the vernier, is a tangent to the highest part of the convex surface of the mercury in the tube.

The tube is $0^{\text{in}}\cdot565$ in diameter; the correction for the effect of capillary attraction is therefore only $+ 0^{\text{in}}\cdot002$. The cistern is of glass.

At the bottom of the instrument are three screws, turning in the fixed part of the support, and acting on the piece in which the lower pivot of the barometer-frame turns, for adjustment to verticality: this adjustment is examined weekly.

The readings of this barometer, until 1866, August 20^d, 0^h, are considered to be coincident with those of the Royal Society's flint-glass standard barometer. On that day a change was made in the barometer. It had been remarked that the slow-motion-screw at the bottom of the sliding rod (for adjusting the ivory point to the surface of the mercury in the cistern) was partly worn away: and on August 20 the sliding rod was removed from the barometer by Mr. Zambra to remedy this defect. It was restored on 1866, August 30^d, 3^h. Before the removal of the sliding rod, barometric comparisons had been made with a standard barometer the property of Messrs. Murray and Heath, and with two barometers, Negretti and Zambra, Nos. 646 and 647. While the sliding rod of the Greenwich standard was removed, Negretti and Zambra 647 was used for daily observations. After the new equipment of the standard barometer, another series of comparisons with the same barometers was made: from which it was found (the three auxiliaries giving accordant results) that the readings of the barometer, in its new state, required a correction of $-0^{in}\cdot006$. This is applied in the printed observations commencing with 1866, August 30.

The height of the cistern above the mean level of the sea is 159 feet. This element is founded upon the determination of Mr. Lloyd, in the *Phil. Trans.*, 1831; the elevation of the cistern above the brass piece inserted in a stone in the transit-room (to which Mr. Lloyd refers) being $5^{ft}.2^{in}$.

The barometer has been read at 21^h, 0^h, 3^h, 9^h (astronomical), on every day, excepting on Sundays, and on Good Friday and Christmas Day, on which days fewer observations have been taken. Every reading has been reduced to the reading which would have been obtained at the temperature 32° of the mercury and scale, by application of the correction given in Table II. (pages 82 to 87) of the Report of the Committee of Physics of the Royal Society. The mean of the reduced readings has then been taken for each civil day, and finally converted into mean daily reading, by application of the correction inferred from Mr. Glaisher's paper in the *Philosophical Transactions*, 1848, Part I, Table I, page 127.

In the printed record of the barometrical and all other meteorological observations, the day is to be understood, generally, as defined in civil reckoning.

§ 15. *Photographic self-registering Apparatus for continuous Record of the Readings of the Barometer.*

The Photographic self-registering Apparatus for continuous Record of Magnetic Vertical Force is furnished (as has been stated) with a vertical cylinder covered with photographic paper and revolving in 24 hours. North of the surface of this cylinder, at the distance of about 30 inches, is a large syphon barometer, the bore of the upper and lower extremities of its arms being about 1·1 inch. A glass float partly immersed in the quicksilver of the lower extremity is partially supported by a counterpoise acting on a light lever (which turns on delicate pivots), so that the wire supporting the float is constantly stretched, leaving a definite part of the weight of the float to be supported by the quicksilver. This lever is lengthened to carry a vertical plate of opaque mica with a small aperture, whose distance from the fulcrum is nearly eight times the distance of the point of attachment of the float wire, and whose movement, therefore, is nearly four times the movement of the column of a cistern-barometer. Through this hole the light of a lamp, collected by a cylindrical lens, shines upon the photographic paper.

The scale of time is established by means of occasional interruptions of the light, and the scale of measure is established by comparison with occasional eye-observations.

This barometer was brought into use in 1848, but its indications were not satisfactory till the mercury was boiled in the tube by Messrs. Negretti and Zambra on 1853, August 18, since which time they have appeared unexceptionable. Results of the indications are printed in the *Maxima and Minima of the Barometer*, near the end of the Meteorological Results.

§ 16. *Thermometers for ordinary Observation of the Temperature of the Air and Evaporation.*

The Dry-Bulb Thermometer, the Wet-Bulb Thermometer, the Maximum Self-Registering Thermometers, both dry and wet, and the Minimum Self-Registering Thermometers, dry and wet, all for determination of the temperature of the air and of evaporation, are mounted on a revolving frame whose fixed vertical axis is planted in the ground. From the year 1846 to 1863 the post forming the vertical axis was about 23 feet south (magnetic) of the S.S.E. angle of the south arm of the Magnetic Observatory; in 1863 it was moved to a position about 35 feet south (astronomical) of the south angle. A frame revolves on this post, consisting of a horizontal board as base, of a vertical board projecting upwards from it connected with one edge of the horizontal board, and of two parallel inclined boards (separated about three inches) connected at the top with the vertical board, and at the bottom with the other edge of the horizontal board. The outer inclined board is covered with zinc. The air passes freely between all these boards.

The dry and wet-bulb thermometers are attached to the outside, and near the center of the vertical board; the maximum and minimum thermometers for air towards one vertical edge, and those for evaporation towards the other vertical edge, with their bulbs at almost the same level, and near to those of the dry and wet-bulb thermometers; their bulbs are about 4 feet above the ground and projecting from 2 inches to 3 inches below the horizontal board. Above the thermometers is a small projecting roof to protect them from rain. The frame is always turned with the inclined side towards the sun. It is presumed that the thermometers are thus sufficiently protected.

The graduations of all the thermometers used in the Royal Observatory rest fundamentally upon those of a Standard Thermometer, the property of Mr. Glaisher, which derives its authority from comparison with original thermometers constructed by the late Rev. R. Sheepshanks about the years 1840–1843, in the course of his preparations for the construction of the National Standard of Length. The whole of the radical determinations of Freezing Point, Boiling Point, and Subdivision of Volume of Tube, were made by Mr. Sheepshanks with the utmost care: it is believed that these were the first original thermometers that had been constructed in England for many years. Mr. Glaisher's thermometer has been adopted as the standard of reference for all the thermometers used in the Royal Observatory since 1840.

The Dry-Bulb Thermometer is by Newman. The corrections required for its readings, as found by comparison with the standard above-mentioned, are as follows:—

Between 8° and 11°	subtract	0°.4
12 and 19		0.5
20 and 24		0.6
25 and 30		0.7
31 and 37		0.8
38 and 44		0.9
45 and 52		1.0
53 and 59		1.1
60 and 64		1.2
65 and 68		1.3
69 and 71		1.4
72 and 74		1.5
75 and 77		1.6
78 and 79		1.7
80 and 82		1.8
83 and 84		1.9
85 and 86		2.0
87 and 90		2.1
91 and 95		2.2
96 and 100		2.3
101 and 104		2.4

The wet-bulb thermometer is by Negretti and Zambra, and is in every respect similar to the dry-bulb thermometer. The corrections required to the readings of this thermometer are—

Between 32° and 49°		0°.0
50 and 81	add	0.2
82 and 91		0.0
92 and 105	subtract	0.2

Dry-bulb and wet-bulb thermometers, with pea-bulbs and porcelain scales, Negretti and Zambra 1179, are also mounted on the roof of the library, 4 feet above the leads and 22 feet above the ground. No corrections for index error are applied to the readings of these thermometers.

On 1869, September 30, dry-bulb and wet-bulb thermometers were mounted on the roof of the cabinet containing the registering mechanism of Robinson's Anemometer, but below the revolving cups, at the height 4 feet above the flat roof and 50 feet above the ground. No corrections for index errors are applied to their readings.

The eye-readings of the dry-bulb and wet-bulb thermometers have usually been taken at the hours (astronomical reckoning) 21^h, 0^h, 3^h, 9^h, and corrected by application of the numbers given above. They are not printed in the present volume.

The dew-point has been inferred exclusively from the simultaneous observations of the dry-bulb and wet-bulb thermometers, by multiplying the difference between the readings of these thermometers by a factor peculiar to the temperature of the air, and subtracting the product from the reading of the dry-bulb thermometer. These factors have been found by Mr. Glaisher from the comparison of a great number of dew-point determinations, obtained by use of Daniell's hygrometer, with simultaneous observations of dry-bulb and wet-bulb thermometers. The first part of this investigation was published in full, in the volume of *Magnetical and Meteorological Observations* for 1844, pages 67–72; it was based upon all the observations made up to that time. Subsequently, the comparison was extended to include all the simultaneous observations of these instruments made at the Royal Observatory, Greenwich, from 1841 to 1854, with some observations taken at high temperatures in India, and others at low and medium temperatures at Toronto. The results at the same temperature were found to be the same at these different localities, so far as the climatic circumstances permitted comparison. (See Glaisher's Hygrometrical Tables, 5th Edition). The following table exhibits the result of the entire comparison; it has been used in forming the dew-points in the present volume.

TABLE OF FACTORS by which the DIFFERENCE of READINGS of the DRY-BULB and WET-BULB THERMOMETERS is to be MULTIPLIED in order to PRODUCE the DIFFERENCE between the READINGS of the DRY-BULB and DEW-POINT THERMOMETERS.

Reading of Dry-bulb Thermometer.	Factor.	Reading of Dry-bulb Thermometer.	Factor.	Reading of Dry-bulb Thermometer.	Factor.	Reading of Dry-bulb Thermometer.	Factor.
° 10	8·78	° 33	3·01	° 56	1·94	° 79	1·69
11	8·78	34	2·77	57	1·92	80	1·68
12	8·78	35	2·60	58	1·90	81	1·68
13	8·77	36	2·50	59	1·89	82	1·67
14	8·76	37	2·42	60	1·88	83	1·67
15	8·75	38	2·36	61	1·87	84	1·66
16	8·70	39	2·32	62	1·86	85	1·65
17	8·62	40	2·29	63	1·85	86	1·65
18	8·50	41	2·26	64	1·83	87	1·64
19	8·34	42	2·23	65	1·82	88	1·64
20	8·14	43	2·20	66	1·81	89	1·63
21	7·88	44	2·18	67	1·80	90	1·63
22	7·60	45	2·16	68	1·79	91	1·62
23	7·28	46	2·14	69	1·78	92	1·62
24	6·92	47	2·12	70	1·77	93	1·61
25	6·53	48	2·10	71	1·76	94	1·60
26	6·08	49	2·08	72	1·75	95	1·60
27	5·61	50	2·06	73	1·74	96	1·59
28	5·12	51	2·04	74	1·73	97	1·59
29	4·63	52	2·02	75	1·72	98	1·58
30	4·15	53	2·00	76	1·71	99	1·58
31	3·70	54	1·98	77	1·70	100	1·57
32	3·32	55	1·96	78	1·69		

The maximum self-registering thermometer is a mercurial thermometer, of the construction invented by Messrs. Negretti and Zambra. There is a small detached piece of glass in the tube, just above a bent part of the tube (near the bulb), through which the piece of glass cannot pass down. The column of mercury in rising lifts the glass up and passes freely; but in descending it is unable to pass the glass, and the lower mass of mercury descends, leaving a vacant space below the glass, and leaving a portion of the mercury above it. The piece of glass operates as an efficient valve. The corrections to the readings of this thermometer are as follows:—

Between 32° and 54°	subtract	0°·3
54 and 72		0·2
72 and 80		0·1
80 and 93		0·0
93 and 96	add	0·1
96 and 99		0·2
99 and 102		0·4

There is a similar thermometer for the maximum wet-bulb reading (Negretti and Zambra No. 7537): no corrections have been applied to its readings.

The minimum self-registering thermometers are alcohol thermometers, of the construction known as Rutherford's. A sliding glass index allows the alcohol in rising to pass above it, but is drawn down by the peculiar action of the bounding surface of the fluid when it sinks. The readings of that which gives the minimum temperature of the air require no correction.

The minimum wet-bulb thermometer (Negretti and Zambra, No. 3627) is also free from sensible error.

The mean daily values of dry thermometer in the printed columns are found by combining two results derived from different sources. The first and simpler result is the mean of the maximum and minimum, corrected by a small quantity depending on the month, given in Table III. of Mr. Glaisher's paper in the *Philosophical Transactions*, 1848, page 130. The second result is formed by taking the means of the four eye-observations at 21^h, 0^h, 3^h, 9^h, and applying a correction thus investigated. The daily range being found by taking the difference between the maximum and minimum, this daily range is multiplied by the mean of the factors in Table IV. of Mr. Glaisher's paper before mentioned corresponding to the hours of observation; the application of this correction to the mean of the eye-observations gives the second result. (It is evident that this process is applicable to any number of eye-observations.) These two results are then combined to form a mean, weights being given proportional to the number of observations contributing to each result.

For the mean daily value of dew point, the usual process is,—by observing the difference between dry and wet thermometers, and by use of the table of factors printed in page *xlvii* above, to form the difference between air-temperature and dew point at each of the hours of reading; to take the mean of the deduced dew-points; and to apply a correction which is the mean of the corrections in Mr. Glaisher's Table VIII. for the several hours of observation. Sometimes, however, the following process is used. The correction for diurnal range applicable to the mean of the eye-observations of the dry thermometer having been found (as is described above), this correction is multiplied by a fraction, whose numerator is the mean of corrections to wet bulb thermometer in Table VII. for the hours of observations, and whose denominator is the mean of corrections to dry thermometer in Table II. for the same hours; and thus a correction is found which is applied to the mean of the eye-observations of wet bulb thermometer, to form the mean wet bulb for the day. Then by use of the mean dry bulb reading for the day and the mean wet bulb reading for the day and the table of factors above, the mean dew point for the day is formed.

§ 17. *Photographic self-registering Apparatus for continuous Record of the Readings of the Dry-Bulb and Wet-Bulb Thermometers.*

About 28 feet south (magnetic) of the south-east angle of the south arm of the Magnetic Observatory, and about 25 feet east of the thermometers for eye-observations, is a shed 10 ft. 6 in. square, standing upon posts 8 feet high, under which are placed the photographic thermometers, the dry-bulb thermometer towards the east, and the wet-bulb thermometer towards the west. The bulbs of the thermometers are 8 inches in length, and 0·4 inch internal bore, and their centers are about 4 feet above the ground. The bulb of one of the thermometers is covered with muslin throughout its whole length, which is kept moist by means of capillary passage of water along cotton wicks leading to a vessel filled with water.

There are small adjustments admitting the raising or dropping of the thermometers, so that the register of their changing readings may be on a convenient part of the paper. The thermometer frames are covered by plates having longitudinal apertures, so narrow, that any light which may pass through them is completely, or almost completely, intercepted by the broad flat column of mercury in the thermometer-tube. Across these plates a fine wire is placed at every degree; and at the decades of the degrees, and also at 32°, 52°, and 72°, a coarser wire is placed. A gas lamp is placed about 9 inches from each thermometer (east of the dry bulb and west of the wet bulb), and its light, condensed by a cylindrical lens, whose axis is vertical, shines through the thermometer-tube above the surface of the mercury, and forms a well-defined line of light upon the photographic paper, which is wrapped around the cylinder. The axis of this cylinder is vertical; its mounting is in all respects similar to that of the Vertical Force cylinder. As the cylinder, covered with photographic paper, revolves under the light, which passes through the thermometer-tube, it receives a broad sheet of photographic trace, whose breadth (in the direction of the axis of the cylinder) varies with the varying height of the mercury in the thermometer-tube. The light in its passage is intercepted by the wires placed across the tube at every degree, and there are, therefore, left upon the paper corresponding lines in which there is no photogenic action.

The cylinder was at first made to revolve in 48 hours; the daily photographic traces of the two thermometers were thus simultaneously registered on opposite sides of the cylinder, sometimes slightly intermixing. The length of the glass cylinder used till 1869, March, is 13½ inches, and its circumference is about 19 inches. On 1869, March 5, an ebonite cylinder was introduced, whose length is 10 inches, and circumference about 19' inches; and at a later time the cylinder was made to revolve in 50 hours instead of 48 hours, to insure the separation of the records of the two thermometers.

§ 18. *Thermometers for Solar Radiation and Radiation to the Sky.*

The thermometer for Solar Radiation, which to the end of the year 1864 was placed in an open box about 10 feet south of the south-west angle of the south arm of the Magnetic Observatory, is now laid on the grass, near the same place.

The thermometer is a self-registering maximum mercurial thermometer of Negretti and Zambra's construction; its bulb is blackened, and enclosed in a glass sphere from which the air has been exhausted. Its graduations are correct, and the numbers inserted in the tables are those read from the instrument without alteration. The thermometer is read at 9^h a.m., noon, 3^h p.m., and occasionally at 9^h p.m.; the highest of these readings is adopted as the maximum for the day.

The use of a thermometer with blackened bulb not inclosed in an exhausted sphere was discontinued at the end of 1865.

The thermometer for radiation to the sky is placed near to the Solar Radiation thermometer, with its bulb resting on short grass, and fully exposed to the sky. It is a self-registering minimum spirit thermometer of Rutherford's construction, made by Negretti and Zambra. Its graduation is correct, and the numbers inserted in the table are those read from the scale without alteration. It is read every day at 9^h a.m., and occasionally at 9^h p.m.

§ 19. *Thermometers sunk below the Surface of the Soil at different Depths.*

These thermometers were made by Messrs. Adie of Edinburgh, under the immediate superintendence of the late Professor J. D. Forbes. The graduation was made by Professor Forbes himself.

The thermometers are four in number. They are all placed in one hole in the ground, the diameter of which in its upper half is 1 foot, and in its lower half about 6 inches. Each thermometer is attached in its whole length to a slender piece of wood, which is planted in the hole with it. The place of the hole is 20 feet south of the extremity of the south arm of the Magnetic Observatory, and opposite the center of its south front.

The soil consisted of beds of sand; of flint-gravel with a large proportion of sand; and of flints with a small proportion of sand, cemented almost to the consistency of pudding-stone. Every part of the gravel and sand extracted from the hole was perfectly dry.

The bulbs of the thermometers are cylindrical, 10 or 12 inches long and 2 or 3 inches in diameter. The bore of the principal part of the tubes, from the bulb to the graduated scale, is very small. In that part to which the scale is attached, the tube is larger.

The thermometer No. 1 was dropped into the hole to such a depth that the center of its bulb was 24 French feet (25·6 English feet) below the surface: then dry sand was poured in till the hole was filled to nearly half its height. Then No. 2 was dropped in till the center of its bulb was 12 French feet below the surface; No. 3 and No. 4 till the centers of their bulbs were respectively 6 and 3 French feet below the surface; and the hole was then completely filled with dry sand. The upper parts of the tubes, carrying the scales, were left projecting above the surface: No. 1 by 27·5 inches, No. 2 by 28·0 inches, No. 3 by 30·0 inches, and No. 4 by 32·0 inches. Of these lengths, the parts 8·5, 10·0, 11·0, and 14·5 inches, respectively are tube with narrow bore.

The projecting parts of the tubes are protected by a wooden case or box fixed to the ground; the sides of the box are perforated with numerous holes, and it has a double roof. In the North face of this box is a large plate of glass through which the thermometers are read. Within the box are two smaller thermometers, one (No. 5) whose bulb is sunk one inch in the ground, and one (No. 6) whose bulb is in the free air nearly in the center of the box.

The fluid of the four long thermometers is alcohol tinged with a red colour.

The lengths of 1° on the scales of Nos. 1, 2, 3 and 4, are respectively $2^{in.}$, $1^{in.}1$, $0^{in.}9$, and $0^{in.}55$; and the ranges of the scales, as first mounted, were, 43°·0 to 52°·7, 42°·0 to 56°·8, 39°·0 to 57°·5, and 34°·2 to 64°·5.

These ranges for Nos. 2, 3, and 4, were found to be insufficient in some years, particularly those of Nos. 3 and 4, or the thermometers sunk to the depth of 6 feet and 3 feet.

In 1857, June 22, Messrs. Negretti and Zambra removed from Nos. 3 and 4 a quantity of fluid corresponding to the extent of 5° on their scales, and the scales of these two thermometers were then lowered by that linear extent, making the readings the same as before. Their ranges are now, respectively, 44° to 62°·5, and 39°·2 to 69°·5.

In subsequent years it was found that the amount of fluid removed was somewhat too great, for at the lower end of the scale the 6-foot thermometer sometimes fell below the limit of its scale or 44°; and the 3-foot thermometer below 39°·0; in which cases the alcohol sank into the capillary tube.

The readings at the early part of the series were at times defective at high temperatures, but always complete at low temperatures; afterwards, they were generally complete at high temperatures, and at times defective at low temperatures. The two combined, however, will enable us to complete all readings.

On 1869, July 21, Mr. Zambra removed fluid from No. 1 to the amount of 2°·7, and from No. 2 to the amount of 1°·5, and inserted in No. 4 fluid to the amount of 1°·5. The scales were re-engraved, to make the reading at every temperature the same as before.

These thermometers are read once a day, at noon, and the readings appear in the printed volumes as read from their scales without correction.

§ 20. *Thermometers immersed in the Water of the Thames.*

The self-registering maximum and minimum thermometers for determining the highest and lowest temperatures of the water of the Thames are by Messrs. Negretti and Zambra, and are observed every day at 9^h a.m.

The thermometers were originally attached to the side of the "Dreadnought" hospital ship. Commencing with 1871, January 12, they were attached to the Police Ship "Scorpion," moored in Blackwall Reach.

A strong wooden trunk is firmly fixed to the side of the "Scorpion" Police Ship, about 5 feet in length, and closed at the bottom; the bottom and the sides, to the height of 3 feet, are perforated with a great number of holes, so that the water can easily flow through; the thermometers are suspended within this trunk so as to be about 2 feet below the surface of the water, and 1 foot from the bottom of the trunk.

The observations have been made by the Resident Inspector on board, by permission of Lieut.-Col. Henderson, R.E., C.B., Commissioner of Metropolitan Police.

On 1871, February 21, the minimum thermometer was broken; it was replaced by a similar thermometer (Negretti and Zambra, 2093).

The index-error corrections to the thermometers were:—

For the maximum thermometer,	subtract 1°·4
For the minimum thermometer in use till February 21,	subtract 0·4
For the minimum thermometer in use from Feb. 22 to Dec. 31,	0·0

No observations of the maximum thermometer were made till January 12, and on August 27 and 28; and no trustworthy observations of the minimum thermometer till January 29, and from August 20 to 28.

§ 21. *Osler's Anemometer.*

This anemometer is self-registering: it was made by Newman, on a plan furnished by A. Follett Osler, Esq., F.R.S., but has received several changes since it was originally constructed. A large vane, which is turned by the wind, and from which a vertical spindle proceeds down nearly to the table in the north-western turret of the ancient part of the Observatory, gives motion by a pinion upon the spindle to a rack-work carrying a pencil. This pencil makes a mark upon a paper affixed to a board which is moved uniformly in a direction transverse to the direction of the rack-motion. The movement of the board is effected by means of a second rack connected with the pinion of a clock. The paper has lines printed upon it corresponding to the positions which the pencil must take when the direction of the vane is N., E., S., or W.; and also has transversal lines corresponding to the positions of the pencil at every hour. The first adjustment for azimuth was obtained by observing from a certain point the time of passage of a star behind the vane-shaft, and computing from that observation the azimuth; then on a calm day drawing the vane by a cord to that position, and adjusting the rack, &c., so that the pencil position on the sheet corresponded to that azimuth.

This construction originally arranged by Mr. Osler was in use till the middle of 1866, when the following modifications were made in it by Mr. Browning:—

The vane-shaft was made to bear upon anti-friction-rôllers running in a cup of oil. For elucidation of the following description of the apparatus which it carries, I refer to Figure 3 on the engraving at the end of the Introduction to the volume of 1866. To the vane-shaft is attached a rectangular frame C, which rotates with the vane. To this frame are firmly attached the ends of four strong springs D, which rise from the point of attachment in a vertical direction, are then bent so as to descend below the frame C, and are then bent upwards so as to rise a short distance, where they terminate, each of them thus forming a large hook. To the interior of each strong spring, near to its upper bend, is affixed a very weak spring, which descends free into the lower bend or hook of the strong spring, so that its lower end may be moved by a light pressure till it reaches and takes bearing against the bent-up part of the strong spring, after which it cannot be further moved without moving the strong spring, and will therefore require much greater pressure. The four ends of these four light springs carry the circular pressure-plate A by the following connexions. The two which are farthest from A, or which are below the wide part of the vane, are united by a light horizontal cross-bar G; and from the ends of these springs proceed four light bars E, which are attached to points of the pressure-plate A, near its circumference. The two ends of light springs which are nearest to A are also united by a light horizontal cross bar, which is attached to a projection from the center of the plate A. (The diagonal lines upon A, in the diagram, represent indistinctly two strengthening edge-bars upon the pressure-plate, and the projection above-mentioned is fixed to their intersection.) The weight of the pressure-plate thus rests entirely on the slender springs; it is held steadily in position, as regards the opposition to the wind, and it moves without sensible friction. A light wind drives it through a considerable space, until the ends of one pair of light springs touch their large hooks; then for every additional pound of pressure the movement is smaller, till the ends of the other pair of light springs touch their large hooks; after this the movement for every additional pound of pressure is still further diminished. This apparatus was arranged by Mr. Browning. The communication with the pencil below is similar to that in the first construction: the cord and pulley are omitted in the drawing to avoid confusion.

The pressure-pencil below is carried by a radial bar, whose length is parallel to the scale of hours; it is brought to zero by a small weight on a cord running over a pulley.

The surface of the pressure-plate is 2 square feet, or double that in the old construction. The scale of indications on the recording-sheet was determined experimentally as in the old instrument; yet it is remarked that the pressures of wind per square foot appear generally greater than formerly. It has been suspected that the inertia of the tension-weight acting against the pressure-spring, and that of the pencil-weight, may have produced an injurious effect: both these weights were replaced by springs, 1872, February 21.

The scale for small pressures is much larger, and their indications much more certain than formerly. A pressure of an ounce per square foot is clearly shown.

A rain gauge of peculiar construction is carried by this instrument, by which the fall of rain is registered with reference to the time of the fall. It is described in § 23.

A fresh sheet of paper is applied to this instrument every day at 22^h mean solar time.

§ 22. *Robinson's Anemometer.*

In the latter part of the year 1866, a new instrument, on the principles described by Dr. Robinson in the Transactions of the Royal Irish Academy, vol. xxii., adapted to give a continuous record of the velocity of the wind, was mounted by Mr. Browning, of which the principal parts are represented in Figures 1 and 2 of the engraving in the Introduction 1866. The motion is given (as in the former instrument) by the pressure of the air on four hemispherical cups, the distance of the center of each from the axis of rotation being 15·00 inches. The foot of the axis is a hollow flat cone bearing upon a sharp cone which rises up from the base of a cup of oil. The horizontal arms are connected with a vertical spindle, upon which is an endless screw, working in a toothed wheel connected with a train of wheels, furnished with indices capable of registering one mile and decimal multiples of a mile up to 1,000 miles. A pinion C upon the axis of one of the wheels (which, in the figure, occupies a place too high) acts in a rack J, drawing it upwards by the ordinary motion of the revolving cups. The rack is pressed to the pinion by a spring, and, when it has been drawn up, it can be pressed by hand in opposition to the spring so as to release it from the pinion, and can then be pushed down, again to be raised by the action of the wheel-work. The rack is connected at the bottom with a sliding rod D, which passes down into the chamber below, where it draws up the sliding pencil-carrier E. The pencil F, which it carries, traces its indications upon the sheet of paper wrapped round a barrel, whose axis is vertical, and which by spindle connexion with the clock H is made to revolve in 24 hours. The revolving cups and wheel-work are so adjusted that a motion of the pencil upwards of one inch represents a motion of the air through 100 miles. The curve traced upon the barrel exhibits, therefore, the aggregate of the air's movements, and also the air's velocity, at every instant of the day.

In the year 1860, on July 3, 4, and 13, experiments were made in Greenwich Park, with the instrument then in use, to ascertain the correctness of the theory of Robinson's anemometer; the point to be verified being that the scale of the instrument, founded on the supposition that the horizontal motion of the air is about three times the space described by the centers of the cups, is correct.

A post about 5 feet high with a vertical spindle in the top was erected, and on this spindle turned a horizontal arm, carrying at the extremity of its longer portion Robinson's anemometer, and on its shorter portion a counterpoise. The distance from the vertical spindle of the post to the vertical axis of the anemometer was $17^{ft.}\ 8^{in.}\cdot 7$. The reading of the dial was taken, and then the arm was made to revolve in the horizontal plane 50 or 100 times, an attendant counting the number of revolutions, and the reading of the dial was again taken. In this manner 1,000 revolutions were made in the direction N.E.S.W.N., and 1,000 revolutions in the direction N.W.S.E.N. In some of the experiments the air was sensibly quiet, and in others there was a little wind; the result was,

For a movement of the instrument through one mile,

Beam revolving N.E.S.W. (opposite to the direction of rotation of the Anemometer-cups)	1·15 was registered.
Beam revolving N.W.S.E. (in the same direction as the Anemometer-cups)	0·97 was registered.

The results from rapid revolutions and from slow revolutions were sensibly the same.

This may be considered as confirming in a very high degree the accuracy of the theory.

§ 23. *Rain Gauges.*

The rain-gauge connected with Osler's anemometer is 50 feet 8 inches above the ground, and 205 feet 6 inches above the mean level of the sea. It exposes to the rain an area of 200 square inches (its horizontal dimensions being 10 by 20 inches).

The collected water passes through a tube into a vessel suspended in a frame by spiral springs, which lengthen as the water increases, until 0·24 of an inch is collected in the receiver; it then discharges itself by means of the following modification of the syphon. A copper tube, open at both ends, is fixed in the receiver, in a vertical position, with its end projecting below the bottom. Over the top of this tube a larger tube, closed at the top, is placed loosely. The smaller tube thus forms the longer leg, and the larger tube the shorter leg, of a syphon. The water, having risen to the top of the smaller tube, gradually falls through it into the uppermost portion of a tumbling bucket, fixed in a globe under the receiver. When full, the bucket falls over, throwing the water into a small pipe at the lower part of the globe; the water completely fills the bore of the pipe; its descent causes an imperfect vacuum in the globe, sufficient to cause a draught in the longer leg of the syphon, and the whole contents run off. After leaving the globe, the water is carried away by a waste-pipe attached to the building. The springs then shorten and raise the receiver. The ascent and descent of the water-vessel move a radius-bar which carries a pencil; and this pencil makes a trace upon the paper carried by the sliding board of the self-registering anemometer. As the trace is rather long in proportion to the length of the radius-bar, the bar has now been furnished by Mr. Browning with a "parallel motion," which makes the trace sensibly straight.

The scale of the printed paper was adjusted by repeatedly filling the water-vessel until it emptied itself, then weighing the water, and thus ascertaining its bulk, and dividing this bulk by the area of the surface of the rain receiver.

A second gauge, with an area 77 square inches nearly, is placed close to the preceding, the receiving surface of both being on the same horizontal plane.

A third gauge is placed on the roof of the Octagon room, at 38 feet $4\frac{1}{2}$ inches above the ground, and 193 feet $2\frac{1}{2}$ inches above the mean level of the sea. It is a simple cylinder gauge, 8 inches in diameter and about $50\frac{1}{4}$ square inches in area. The height of the cylinder is $13\frac{1}{2}$ inches; at the depth of 1 inch from the top within the cylinder is fixed a funnel (an inverted cone) of 6 inches perpendicular height; with the point of this funnel is connected a tube, $\frac{1}{5}$ of an inch in diameter, and $1\frac{1}{2}$ inch in length; $\frac{3}{4}$ of an inch of this tube is slightly curved, and the remaining $\frac{3}{4}$ of an inch is bent upwards, terminating in an aperture of $\frac{1}{8}$ of an inch in diameter. By this arrangement, the last few drops of water remain in the bent part of the tube, and the water is some days evaporating. The upper part of the funnel or bore of the cone is connected with a brass ring, which has been turned in a lathe, and this is connected with a circular piece 6 inches in depth, which passes outside the cylinder, and rests in a water joint, attached to the inner cylinder, and extending all round.

A fourth gauge is placed on the top of the Library; it is a funnel, whose top has a diameter of 6 inches; its exposed area is $28\frac{1}{4}$ square inches nearly. The receiving surface of the gauge is 22 feet 4 inches above the ground, and 177 feet 2 inches above the mean level of the sea.

A fifth gauge is planted on the roof of the Photographic Thermometer shed, 10 feet above the ground, and 164 feet 10 inches above the mean level of the sea. Its construction is the same as that of the third gauge.

A sixth gauge is a self-registering rain-gauge on Crosley's construction, made by Watkins and Hill. The surface exposed to the rain is 100 square inches. The collected water falls into a vibrating bucket, whose receiving concavity is entirely above the center of motion, and which is divided into two equal parts by a partition whose plane passes through the axis of motion. The pipe from the rain-receiver terminates immediately above the axis. Thus that part of the concavity which is highest is always in the position for receiving water from the pipe. When a certain quantity of water has fallen into it, it preponderates, and, falling, discharges its water into a cistern below; then the other part of the concavity receives the rain, and after a time preponderates. Thus the bucket is kept in a state of vibration. To its axis is attached an anchor with pallets, which acts upon a toothed wheel by a process exactly the reverse of that of a clock-escapement. This wheel communicates motion to a train of wheels, each of which carries a hand upon a dial-plate; and thus inches, tenths, and hundredths are registered. Sometimes, when the escapement has obviously failed, the water which has descended to the lower cistern has again been passed through the gauge, in order to enable an assistant to observe the indication of the dial-plates without fear of an imperfection in the machinery escaping notice. The gauge is placed on the ground, 21 feet South of the Magnetic Observatory, and 156 feet 6 inches above the mean level of the sea.

The seventh and eighth gauges are placed near together, about 16 feet south of the Magnetic Observatory, 5 inches above the ground, and 155 feet 3 inches above the mean level of the sea. They are similar in construction and area to No. 3. These cylinders are sunk about 8 inches in the ground.

All these gauges, except No. 7, are read at 22^h daily; in addition, Crosley's gauge and No. 8 are read daily at 9^h p.m., and No. 7 at the end of each month only, to check the summation of the daily readings of No. 8. All are read at midnight of the last day of each month.

Gauges Nos. 1, 2, 3, 5, 8 were made by Messrs. Negretti and Zambra; No. 4 by Troughton; No. 6 by Watkins and Hill; and No. 7 is an old gauge.

§ 24. *Electrical Apparatus.*

The electrical apparatus consists of two parts, namely, the Moveable Apparatus, which is connected with a pole nearly 80 feet high planted 7 feet North and 2 feet East of the north-east angle of the north arm of the Magnetic Observatory (as extended in 1862); and the Fixed Apparatus, which is mounted in a projecting window in the ante-room of the Magnetic Observatory.

On the top of the pole is fixed a projecting cap, to which are fastened the ends of two iron rods, which terminate in a pit sunk in the ground, and are kept in tension by attached weights. These rods are to guide the moveable apparatus in its ascents and descents. Near the bottom of the pole is fixed a windlass; the rope upon which it acts passes over a pulley in the cap, and is used to raise the moveable apparatus, which when raised to the top is suspended on a hook.

The moveable apparatus consists of the following parts:—A plank in a nearly vertical position is attached to perforated iron bars, which slide upon the iron rods. On the upper part of this plank is a cubical box. The box incloses a stout pillar of glass, having a conical hollow in its lower part. In the bottom of the box there is a large hole through which a cone of copper passes into the conical hollow of the glass pillar. In the lower part of the box a gas-lamp is placed, by the flame of which the copper cone and the lower part of the glass pillar are kept in a state of warmth. The gas lamp is lighted when necessary by means of a sliding frame, carrying a torch similar to that of ordinary lamplighters, which can be easily raised to the box; and there are very few losses of electrical indications from the failure of the lamp. A copper wire is fastened round the glass pillar; its end is carried to a similar glass pillar, warmed in the same manner, near the north-western turret of the Octagon room; by this wire, whose length is about 400 feet, the atmospheric electricity is collected. To this wire, near the box, is attached another copper wire (now covered with gutta percha) 0·1 inch in diameter, and about 73 feet long, at the end of which is a hook; a loaded brass lever connected with the fixed apparatus presses upon this hook, and thus keeps the wire in a state of tension, and at the same time establishes the electrical communication between the long horizontal wire and the fixed apparatus.

On 1871, November 17, the box which carries the insulating glass pillar was burnt. It seems possible that this accident was caused by soot deposited during gusty weather, which afterwards caught fire from the lamp. A copper box was substituted for the wooden box on 1872, January 2.

The fixed apparatus consists of these parts:—A glass bar, nearly 3 feet long, and thickest at its middle, is supported in a horizontal position, its ends being fixed in pieces of wood projecting downwards from the roof of the projecting window. Near to each end is placed a small gas-lamp, whose chimney encircles the glass, and whose heat keeps the glass in a state of warmth proper for insulation. A brass collar surrounds the center of the glass bar; it carries one brass rod, projecting vertically upwards through a hole in the roof of the window-recess, to which rod are attached a small metallic umbrella and the loaded lever above-mentioned; and it carries another rod projecting vertically downwards, to which is attached a horizontal brass tube in an East and West direction. On the North and South sides of this tube there project four horizontal rods, through the ends of which there pass vertical rods, which can be fixed by screws at any elevation; these are placed in connexion with the electrometers, which rest on the window seat.

The electrometers during the year 1871 consisted of two Volta's Electrometers, denoted by Nos. 1 and 2; a Henley's Electrometer; a Ronalds' Spark Measurer; a Dry-pile Apparatus; and a Galvanometer.

Volta 1 and Volta 2 are of the same construction; each is furnished with a pair of straws 2 Paris inches in length; those of the latter being much heavier than those of the former: each instrument is furnished with a graduated ivory scale, whose radius is 2 Paris inches, and it is graduated into half Paris lines. In the original construction of these instruments it was intended that each division of No. 2 should correspond to five of No. 1: the actual relation between them has not yet been determined by observations at the Royal Observatory. The straws are suspended by hooks of fine copper wire to the suspension-piece, and they are separated by an interval of half a line.

Henley's Electrometer is supported on the West end of the large horizontal tube by means of a vertical rod fixed in it. On each side of the upper part of this rod is affixed a semicircular plate of ivory, whose circumference is graduated; at the centers of these ivory plates two pieces of brass are fixed, which are drilled to receive fine steel pivots, carrying a brass axis, into which the index or pendulum is inserted; the pendulum terminates with a pith ball. The relation between the graduations of this instrument and those of the other electrometers has not been determined. This instrument has seldom been affected till Volta 2 has risen to above 100 divisions of its scale.

The spark measurer consists of a vertical sliding rod terminated by a brass ball, which ball can be brought into contact with one of the vertical rods before referred to, also terminating in a ball; and it can be moved from it or towards it by means of a lever, with a wooden handle. During the operation of separating the balls, an index runs along a graduated scale, and exhibits the distance between the balls, and this distance measures the length of the spark.

The electrometers and the spark measurer were originally constructed under the superintendence of Francis Ronalds, Esq., but have since received small alterations.

The dry-pile apparatus was made by Watkins and Hill; it is placed in connexion with the brass bar by a system of wires and brass rods. The indicator, which vibrates between the two poles, is a small piece of gold leaf. This instrument is very delicate, and it indicates at once the quality of the electricity. When the inclination of the gold leaf is such that it is directed towards the top of either pile, it remains there as long as the quantity of electricity continues the same or becomes greater: the position is sometimes expressed in the notes by the words "as far as possible." The angle which the gold leaf makes with the vertical at this time is about 40°.

The galvanometer was made by Gourjon of Paris, and consists of an astatic needle, composed of two large sewing needles, suspended by a split silk fibre, one of the needles of the pair vibrating within a ring formed by 2,400 coils of fine copper wire. The connexions of the two portions of wire forming these 2,400 coils are so arranged that it is possible to use a single system of 1,200 coils of single wire, or a system of 1,200 coils of double wire, or a system of 2,400 coils of single wire: in practice the last has always been used. A small ball communicating by a wire with one end of the coils is placed in contact at pleasure with the electric conductor, and a wire leading from the other end of the coil communicates with the earth. An adjustible circular card, graduated to degrees, is placed immediately below the upper needle; the numeration of its divisions proceeds in both directions from a zero. One of these directions is distinguished by the letter A, and the other by the letter B; and the nature of the indication represented by the deflection of the needle towards A or towards B will be ascertained from the following experiment. A voltaic battery being formed by means

h 2

of a silver coin and a copper coin, having a piece of blotting paper moistened with saliva between them: when the copper touches the small ball, and the wire which usually communicates with the earth is made to touch the silver, the needle turns towards A; when the silver touches the small ball, and the wire is made to touch the copper, the needle turns towards B.

§ 25. *Explanation of the Tables of Meteorological Observations.*

The mean daily value of the difference between dew-point temperature and air-temperature is the difference between the two numbers in the sixth and seventh columns. The Greatest and Least are the greatest and least among the differences corresponding to the times of observation in the civil day, or they are found from the absolute maxima and minima, as determined by comparing the observations of the self-registering wet-bulb thermometers with those of the self-registering dry-bulb thermometers.

The difference between the mean temperature for the day and the mean for the same day of the year on an average of fifty years, is found by comparison with a table of results deduced by Mr. Glaisher from fifty years' observations, made at the Royal Observatory, ending 1863.

Little explanation of the results deduced from Osler's Anemometer appears to be necessary. It may be understood generally that the greatest pressure occurred in gusts of short duration.

To 1867, October 31, the indication of Robinson's Anemometer was read off every day at 22^h (10^h A.M.), and the difference between consecutive readings was entered opposite to the civil day on which the first reading was taken. From 1867, November 1, the daily values have been extracted from the sheets of the continuous record, applying to the interval from midnight to midnight, and are entered opposite to the civil day to which each value belongs.

The daily register of rain is given for each civil day ending at midnight. This applies to the Cylinder Rain-gauge partly sunk in the ground, described above as the "eighth."

For understanding the divisions of time under the heads of Electricity and Weather, the following remarks are necessary:—The day is divided by columns into two parts (from midnight to noon, and from noon to midnight), and each of these parts is roughly subdivided into two or three parts by colons (:). Thus, when there is a single colon in the first column, it denotes that the remarks before it apply (roughly) to the interval from midnight to 6 A.M., and those following it to the interval from 6 A.M. to noon. When there are two colons in the first column, it is to be understood that the twelve hours are divided into three nearly equal parts of four hours each. And similarly for the second column.

METEOROLOGICAL NOTATION.

The following is the explanation of the notation employed for record of electrical observations, it being premised that the quality of the Electricity is always to be supposed positive when no indication of quality is given:—

g cur.	denotes *galvanic currents*	s	denotes *strong*
m	... *moderate*	sp	... *sparks*
N	... *negative*	v	... *variable*
P	... *positive*	w	... *weak*

The duplication of the letter denotes an intensity of the modification described, thus, s s is very strong; v v, very variable.

The Clouds and Weather are described generally by Howard's Nomenclature; the figure denotes the proportion of sky covered by clouds, the whole sky being represented by 10. The notation is as follows:

a	denotes *aurora borealis*	sl-mt	denotes *slight mist*
ci	... *cirrus*	n	... *nimbus*
ci-cu	... *cirro-cumulus*	r	... *rain*
ci-s	... *cirro-stratus*	th-r	... *thin rain*
cu	... *cumulus*	oc-r	... *occasional rain*
cu-s	... *cumulo-stratus*	oc-th-r	... *occasional thin rain*
d	... *dew*	fr-r	... *frozen rain*
h-d	... *heavy dew*	h-r	... *heavy rain*
f	... *fog*	shs-r	... *showers of rain*
sl-f	... *slight fog*	c-r	... *continued rain*
th-f	... *thick fog*	c-h-r	... *continued heavy rain*
fr	... *frost*	m-r	... *misty rain*
g	... *gale*	fr-m-r	... *frequent misty rain*
h-g	... *heavy gale*	oc-m-r	... *occasional misty rain*
glm	... *gloom*	sl-r	... *slight rain*
gt-glm	.. *great gloom*	h-shs	... *heavy showers*
h-fr	... *hoar frost*	fr-shs	... *frequent showers*
h	... *haze*	fr-h-shs	... *frequent heavy showers*
hl	... *hail*	li-shs	... *light showers*
so-ha	... *solar halo*	oc-shs	... *occasional showers*
l	... *lightning*	oc-h-shs	... *occasional heavy showers*
li-cl	... *light clouds*	sq	... *squall*
lu-co	... *lunar corona*	sqs	... *squalls*
lu-ha	... *lunar halo*	fr-sqs	... *frequent squalls*
m	... *meteor*	h-sqs	... *heavy squalls*
ms	... *meteors*	fr-h-sqs	... *frequent heavy squalls*
mt	... *mist*	oc-sqs	... *occasional squalls*

sc	denotes *scud*	t	denotes *thunder*
li-sc	... *light scud*	t-s	... *thunder storm*
sl	... *sleet*	th-cl	... *thin clouds*
sn	... *snow*	v	... *variable*
oc-sn	... *occasional snow*	vv	... *very variable*
sl-sn	... *slight snow*	w	... *wind*
s	... *stratus*	st-w	... *strong wind*

The foot-notes show the means and extremes of readings, and their departure in each month from average values, as found from the preceding Thirty Years Observations; those relating to Humidity have been calculated from the Fifth Edition of Glaisher's Hygrometrical Tables.

§ 26. *Observations of Luminous Meteors.*

In arranging for the observations of meteors, the directions circulated by the Committee of the British Association have received the most careful attention. The observers have been educated in the knowledge of the principal stars by observations of the stars themselves, and by means of globes and maps. The general instruction to all observers has been, to look out for meteors on every clear night; but the observer specially appointed for the evening's duties has been more particularly charged with this observation.

On the nights specially mentioned in the directions of the British Association Committee, greater attention was given to the sky, and the observations of meteors were made more systematically. The principal nights are, January 2 and 10; February 6; March 1; April 19; May 18; June 6 and 20; July 17, 20, and 29; August 3, August 7–13; September 10; October 1 and 23; November 9–14, November 19, 28, and 30; December 8–14, especially December 11. A more extended list of days has been published by the British Association Committee.

Special arrangements were made in the August period for observing till the morning; and in the November period for observing through the night, one or two observers being on duty till midnight, and then all the observers till daybreak. The observers were so stationed as to command different views of the sky, to secure observation of all the meteors which might present themselves, and to guard against the observation of the same meteor by different observers.

The observers in the year 1871 were Mr. Nash, Mr. Wright, Mr. Schultz, Mr. Marriott, and Mr. W. Bishop. Their observations are distinguished by the initials N., W., S., M., and B., respectively.

§ 27. *Details of the Chemical Operations for the Photographic Records.*

Mr. Glaisher has drawn up the following account of the Chemical Processes employed in the Photographic Operations for the self-registration of the Magnetical and Meteorological Indications.

CHEMICAL PREPARATION AND TREATMENT OF THE PHOTOGRAPHIC PAPER FOR PRIMARIES.

The paper used in 1871 is principally furnished by Hollingsworth and Turner; it is strong and of even texture, and is prepared expressly for Photographic purposes.

First Operation.—Preliminary Preparation of the Paper.

The chemical solutions used in this process are the following:—

(1.) Sixteen grains of Iodide of Potassium are dissolved in one ounce of distilled water.

(2.) Twenty-four grains of Bromide of Potassium are dissolved in one ounce of distilled water.

(3.) When the crystals are dissolved, the two solutions are mixed together, forming the iodising solution. The mixture will keep through any length of time. Immediately before use, it is filtered through filtering paper.

A quantity of the paper, sufficient for the consumption of several weeks, is treated in the following manner, sheet after sheet.

> The sheet of paper is pinned by its four corners to a horizontal board. Upon the paper, a sufficient quantity (about 50 minims, or $\frac{5}{48}$ of an ounce troy) of the iodising solution is applied, by pouring it upon the paper in front of a glass rod, which is then moved to and fro till the whole surface is uniformly wetted by the solution. Or, the solution may be evenly distributed by means of a camel-hair brush.

The paper thus prepared is allowed to remain in a horizontal position for a few minutes, and is then hung up to dry in the air; when dry, it is placed in a drawer, and may be kept through any length of time.

Second Operation.—Rendering the Paper sensitive to the Action of Light.

A solution of Nitrate of Silver is prepared by dissolving 50 grains of crystallized Nitrate of Silver in one ounce of distilled water. Since the magnetic basement has been used for photography, 15 grains of Acetic Acid have always been added to the solution.

Then the following operation is performed in a room illuminated by yellow light.

> The paper is pinned as before upon a board somewhat smaller than itself, and (by means of a glass rod, as before,) its surface is wetted with 50 minims of the Nitrate of Silver solution. It is allowed to remain a short time in a horizontal position, and, if any part of the paper still shines from the presence of a part of the solution unabsorbed into its texture, the superfluous fluid is taken off by the application of blotting paper.

The paper, still damp, is immediately placed upon the cylinder, and is covered by the exterior glass tube, and the cylinder is mounted upon the revolving apparatus, to receive the spot of light formed by the mirror, which is carried by the magnet; or to receive the line of light passing through the thermometer tube.

Third Operation.—Development of the Photographic Trace.

When the paper is removed from the cylinder, it is placed as before upon a board, and a saturated solution of Gallic Acid, to which a few drops of Aceto-Nitrate of Silver are occasionally added, is spread over the paper by means of a glass rod, and this action is continued until the trace is fully developed. The solutions are kept in the magnetic basement, and are always used at the temperature of that room. When the trace is well developed, the paper is placed in a vessel with water, and repeatedly washed with several waters; a brush being passed lightly over both sides of the paper to remove any crystalline deposit.

Fourth Operation.—Fixing the Photographic Trace.

The Photograph is placed in a solution of Hyposulphite of Soda, made by dissolving four or five ounces of the Hyposulphite in a pint of water; it is plunged completely in the liquid, and allowed to remain from one to two hours, until the yellow tint of the Iodide of Silver is removed. After this the sheet is washed repeatedly with water, allowed to remain immersed in water for 24 hours, and afterwards placed within folds of cotton cloths till nearly dry. Finally it is placed between sheets of blotting-paper, and is pressed.

CHEMICAL PREPARATION AND TREATMENT OF THE PHOTOGRAPHIC PAPER FOR SECONDARIES.

Before taking a Secondary, the Primary is examined to ascertain whether the tint of the photographic curve is sufficiently dark. If it is not, the Primary is laid, face downwards, upon a desk of transparent plate-glass, below which is a large silvered plane mirror, so placed that the light from the sky is reflected upwards through the transparent glass and through the Primary; and the photographic curve is seen from the upper side or back with perfect distinctness. An assistant then darkens the back of the photographic curve by the application of sepia; the original photograph being untouched.

The paper used for the Secondaries is made by Rive; it is a strong wove paper, of tolerably even texture, thin, but able to bear a great deal of wear.

First Operation.—Preliminary Preparation of the Paper.

The chemical solution required for this purpose is as follows:—

Two grains of Chloride of Ammonium are dissolved in one ounce of distilled water. A sufficient quantity of this solution is placed in a flat-bottomed porcelain dish, and sheets of paper, one by one, are plunged within it; care being taken that no air bubbles remain between the paper and the solution; this may be prevented by slight pressure over the sheet by means of a bent glass rod. When a few sheets are thus immersed, they are turned over, and are taken out and hung to dry. Any number of sheets may thus be prepared.

An equally good result is obtained, by spreading over one side by means of a glass rod, as in the preparation of the Primaries, a solution of Chloride of Ammonium made by dissolving five grains of the chloride in one ounce of distilled water.

Second Operation.—Rendering the Paper sensitive to the Action of Light.

The solution required for this purpose is as follows:—

To a filtered solution of Nitrate of Silver (made by dissolving 50 grains of Crystallized Nitrate of Silver in one ounce of distilled water) some strong solution of Ammonia is added; the whole becomes at first of a dark brown colour, but when a sufficient quantity of Ammonia is added the solution becomes perfectly clear; a few crystals of Nitrate of Silver are then added till the solution is a little dull, forming "Ammoniacal Nitrate of Silver"; it is then ready for use.

The following operation is performed in a room illuminated by yellow light:—

By means of a glass rod this solution is spread over the paper, whilst pinned on a board; the paper is dried before a fire, and is then in a fit state to be used for producing a Secondary.

Third Operation.—Formation of the Photographic Copy.

A sheet of the paper so prepared is placed in a printing frame with its prepared side upwards, upon a bed of blotting paper resting upon a sheet of plate-glass; the Primary is then placed on the paper with its own face downwards; and as it is necessary, for obtaining a correct copy of the Primary, that it should be in close contact with the prepared surface, a second sheet of plate-glass is placed over it, and the two are pressed together by clamps and screws. The whole is then exposed to the light (the Primary to be copied being above the paper on which the copy is to be made). The time required to produce a copy depends, in a great measure, upon the thickness of the paper on which the Primary is made, and on the actinic quality of the light; a period of five minutes in a bright sunshine, or one hour in clear daylight, is generally sufficient.

Fourth Operation.—Fixing the Photographic Secondary.

When an impression has been thus obtained, it is necessary that the undecomposed Salts of Silver remaining in the paper be removed.

For this purpose the Secondary is at once plunged into water and well washed on both sides, passing a camel-hair brush over every part of it; it is then plunged into a solution of Hyposulphite of Soda (made by dissolving two or three ounces of the Hyposulphite in a pint of water), and is left through a period varying from half an hour to an hour. It is then removed, and washed in plain water several times; and running water is allowed to pass over it for twenty-four hours.

The sheets are then placed within the folds of drying cloths, till nearly dry, and finally between sheets of blotting paper.

The process of obtaining a Tertiary from a Secondary is in every respect the same as that of obtaining a Secondary from a Primary.

§ 28. *Personal Establishment.*

The personal establishment during the year 1871 has consisted of James Glaisher, Esq., F.R.S., Superintendent of the Magnetical and Meteorological Department, and Mr. William Carpenter Nash, Assistant.

Three or four computers have usually been attached to the Department.

Royal Observatory, Greenwich,
1872, October 25.

G. B. AIRY.

ROYAL OBSERVATORY, GREENWICH.

RESULTS

OF

MAGNETICAL OBSERVATIONS.

1871.

ROYAL OBSERVATORY, GREENWICH.

REDUCTION

OF THE

MAGNETIC OBSERVATIONS

(EXCLUDING THE DAYS OF GREAT MAGNETIC DISTURBANCE).

1871.

TABLE I.—MEAN WESTERLY DECLINATION of the MAGNET on each ASTRONOMICAL DAY, as deduced from the MEAN of TWENTY-FOUR HOURLY MEASURES of ORDINATES of the PHOTOGRAPHIC REGISTER on that DAY.

1871.

Days of the Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
	19°	19°	19°	19°	19°	19°	19°	19°	19°	19°	19°	19°
d	′	′	′	′	′	′	′	′	′	′	′	′
1	47·8	46·1	46·0	..	43·0	40·9	40·5	39·1	38·9	39·7	38·0	38·4
2	46·8	46·1	46·6	45·3	43·7	41·0	41·3	39·0	38·2	39·2	..	37·9
3	46·5	47·0	45·8	45·3	43·7	41·6	40·7	39·6	38·5	39·7	41·7	37·9
4	46·0	46·1	46·7	45·5	43·9	40·8	40·6	39·5	39·4	39·1	38·6	38·4
5	48·8	46·4	45·9	44·5	43·3	41·1	40·2	42·1	38·7	40·6	38·8	37·9
6	48·0	46·2	46·4	44·7	44·2	40·4	40·4	..	39·3	40·6	40·0	37·5
7	46·6	47·1	46·4	44·3	44·0	41·7	39·4	39·9	38·5	41·9	38·9	38·4
8	47·5	46·3	46·8	45·5	44·4	41·0	39·6	39·4	38·6	41·5	38·8	36·5
9	48·7	..	45·3	..	42·5	40·8	39·6	39·0	39·9	41·2	..	37·7
10	48·0	44·7	45·5	46·8	42·3	40·0	39·8	39·9	40·2	41·7	..	37·7
11	47·3	..	45·7	45·1	44·2	42·6	41·0	39·1	38·8	39·6	38·4	38·0
12	46·7	..	45·7	44·5	43·5	41·4	41·4	37·8	39·1	41·4	38·5	38·0
13	48·7	47·8	46·4	40·7	42·5	40·8	40·7	39·0	39·0	40·7	39·1	37·7
14	47·0	45·8	45·9	45·2	42·0	41·5	39·8	39·0	40·4	39·3	37·7	38·3
15	47·2	45·5	46·9	44·9	42·6	40·0	40·1	39·3	40·1	40·3	39·5	37·8
16	47·2	46·1	45·4	44·4	42·6	39·1	40·1	41·0	39·5	40·6	38·4	38·0
17	47·0	45·2	44·8	..	42·7	..	40·4	38·9	41·0	41·2	38·3	37·6
18	46·8	45·4	45·5	..	42·3	40·8	39·7	39·7	39·7	39·5	40·0	37·7
19	46·5	45·0	45·3	45·2	43·7	40·0	40·1	39·6	40·2	40·1	37·9	39·0
20	46·7	45·2	45·9	43·5	43·4	41·7	41·9	40·1	39·5	40·2	37·1	37·3
21	46·6	44·8	45·5	44·7	43·7	40·6	40·3	37·8	38·2	36·4	38·7	38·6
22	47·6	46·9	44·9	44·4	43·1	41·1	41·9	39·4	39·3	35·7	38·3	37·7
23	47·4	46·4	..	45·8	41·3	42·8	39·8	40·0	39·4	40·9	38·3	37·7
24	47·2	44·1	45·9	45·8	42·2	41·2	40·6	..	39·2	39·6	37·9	37·7
25	46·6	45·4	45·7	44·6	42·5	40·9	39·4	37·8	39·9	37·9	37·8	37·9
26	47·1	44·2	46·1	44·6	42·2	41·0	40·0	39·4	38·8	38·9	38·0	37·6
27	46·6	46·2	47·2	44·1	40·3	40·8	37·4	38·5	38·7	38·8	38·5	..
28	46·4	45·2	43·9	45·7	41·2	41·6	38·9	38·8	39·5	39·5	38·0	..
29	47·6		45·5	45·1	42·0	41·0	40·6	39·8	40·1	39·9	38·7	..
30	47·3		45·3	44·7	42·2	40·6	38·5	39·0	39·7	39·7	38·1	..
31	47·4		44·9		42·3		38·6	39·3		39·4		..

TABLE II.—MEAN MONTHLY DETERMINATION of the WESTERN DECLINATION of the MAGNET at every HOUR of the DAY; obtained by taking the MEAN of all the DETERMINATIONS at the same HOUR of the DAY through the MONTH.

1871.

Hour, Greenwich Mean Solar Time.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
	19°	19°	19°	19°	19°	19°	19°	19°	19°	19°	19°	19°
h	′	′	′	′	′	′	′	′	′	′	′	′
0	50·6	50·0	52·4	53·2	49·0	47·4	46·4	47·0	47·1	46·4	43·1	42·0
1	51·8	51·7	54·4	55·5	50·7	49·0	47·8	49·0	48·1	47·5	44·3	42·6
2	51·9	52·2	54·2	54·8	50·3	49·2	48·2	48·7	47·0	47·2	43·9	42·4
3	50·7	51·8	52·6	52·8	48·9	47·9	47·1	46·5	45·2	45·3	42·2	41·1
4	49·6	49·9	50·0	50·0	46·8	46·1	45·3	44·0	42·8	43·3	41·0	40·2
5	48·9	48·3	48·0	47·4	45·0	44·0	43·6	41·6	40·8	41·6	39·6	39·3
6	48·8	47·7	46·8	45·6	43·7	42·5	41·7	39·6	39·4	40·2	39·2	38·7
7	47·6	46·9	46·4	45·2	43·0	41·4	40·5	38·9	38·7	39·3	38·1	37·9
8	46·7	46·0	45·6	43·8	43·0	41·3	39·9	38·6	38·3	38·4	37·3	36·9
9	45·5	44·2	44·9	43·4	42·7	41·2	39·7	38·0	38·0	37·5	35·7	35·5
10	44·3	43·5	44·4	43·5	42·7	41·1	39·8	38·2	36·9	36·0	35·0	35·2
11	43·9	42·9	43·2	43·6	42·2	40·4	39·0	37·7	36·6	36·1	35·3	35·7
12	44·5	42·4	43·1	43·3	42·1	40·4	38·9	37·6	36·2	37·3	35·4	35·0
13	45·2	42·3	42·3	41·5	42·0	40·0	38·5	37·0	36·4	37·5	36·9	35·6
14	45·4	42·1	41·8	41·4	41·2	39·3	38·3	36·9	36·2	37·6	37·4	36·4
15	45·7	43·2	42·4	42·0	40·8	39·0	36·7	36·4	36·3	38·0	37·6	36·1
16	45·9	43·3	43·2	41·5	39·8	37·5	36·1	36·2	36·2	38·0	37·4	36·7
17	46·1	44·3	43·3	41·2	38·6	35·8	35·0	34·9	36·1	37·7	37·8	36·8
18	46·6	43·8	43·4	39·9	38·0	35·0	34·1	33·6	36·2	38·1	37·6	37·0
19	46·0	43·8	42·3	38·8	37·0	33·8	34·0	33·0	35·4	37·3	37·6	37·1
20	45·5	43·2	40·9	37·8	36·5	33·6	34·5	33·5	35·4	36·2	37·0	37·1
21	45·4	43·2	41·2	39·1	37·7	35·6	35·9	35·6	37·1	36·6	36·6	36·6
22	47·1	44·9	43·9	42·6	41·0	39·1	38·9	39·0	39·9	39·7	38·8	37·7
23	49·1	47·8	48·4	47·8	45·1	43·6	42·7	43·1	43·9	43·3	41·1	39·9

TABLE III.

1871.		
Month.	MEAN WESTERLY DECLINATION of the MAGNET IN EACH MONTH, as deduced from the Mean of the MEAN HOURLY DETERMINATIONS in each MONTH (Table II.).	MONTHLY MEANS of all the Actual DIURNAL RANGES of the WESTERN DECLINATION, as deduced from the Twenty-four Hourly Measures of each day.
	° ′	′
January	19. 47·2	10·4
February	19. 45·8	13·6
March	19. 45·8	16·9
April	19. 44·8	20·0
May	19. 42·8	16·0
June	19. 41·0	17·0
July	19. 40·1	16·0
August	19. 39·3	17·3
September	19. 39·3	15·2
October	19. 39·8	15·6
November	19. 38·6	11·9
December	19. 37·9	10·4
Mean	19. 41·9	15·0

TABLE IV.—MEAN HORIZONTAL MAGNETIC FORCE (diminished by a Constant 0·8600 nearly), uncorrected for TEMPERATURE, on each ASTRONOMICAL DAY, as deduced from the MEAN of TWENTY-FOUR HOURLY MEASURES of ORDINATES of the PHOTOGRAPHIC REGISTER on that DAY.

1871.												
Days of the Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d												
1	0·1494	0·1494	0·1480	. .	0·1494	0·1517	0·1515	0·1502	0·1499	0·1505	0·1504	0·1516
2	·1495	·1496	·1487	0·1471	·1501	·1514	·1514	·1498	·1499	·1509	. .	·1515
3	·1488	·1486	·1483	·1485	·1500	·1517	·1508	·1502	·1498	·1508	·1493	·1514
4	·1471	·1478	·1494	·1493	·1499	·1521	·1505	·1506	·1496	·1511	·1498	·1511
5	·1488	·1489	·1498	·1496	·1500	·1511	·1499	·1504	·1497	·1514	·1500	·1515
6	·1481	·1495	·1500	·1496	·1497	·1506	·1504	. .	·1502	·1511	·1503	·1512
7	·1482	·1494	·1496	·1495	·1507	·1500	·1509	·1492	·1483	·1513	·1509	·1513
8	·1490	·1493	·1491	·1492	·1497	·1504	·1511	·1496	·1490	·1514	·1510	·1505
9	·1490	·1492	·1490	. .	·1492	·1511	·1508	·1503	·1493	·1516	. .	·1507
10	·1477	·1492	·1485	·1469	·1494	·1512	·1513	·1501	·1496	·1516	. .	·1507
11	·1482	. .	·1493	·1484	·1493	·1500	·1511	·1494	·1491	·1514	·1489	·1508
12	·1484	. .	·1498	·1487	·1495	·1506	·1517	·1497	·1494	·1501	·1491	·1512
13	·1475	·1461	·1496	·1483	·1496	·1515	·1515	·1496	·1496	·1508	·1499	·1511
14	·1481	·1478	·1504	·1482	·1495	·1517	·1507	·1496	·1499	·1496	·1495	·1510
15	·1490	·1479	·1494	·1491	·1494	·1518	·1494	·1500	·1494	·1505	·1504	·1520
16	·1494	·1480	·1486	·1489	·1495	·1517	·1495	·1503	·1492	·1506	·1495	·1513
17	·1494	·1485	·1484	. .	·1498	. .	·1494	·1500	·1488	·1502	·1504	·1507
18	·1495	·1487	·1487	. .	·1506	·1485	·1493	·1494	·1494	·1504	·1503	·1514
19	·1492	·1489	·1486	·1484	·1510	·1491	·1496	·1497	·1498	·1504	·1477	·1512
20	·1490	·1494	·1490	·1490	·1500	·1500	·1504	·1505	·1500	·1505	·1495	·1511
21	·1489	·1491	·1485	·1493	·1497	·1517	·1494	·1492	·1501	·1501	·1502	·1512
22	·1494	·1492	·1478	·1507	·1495	·1516	·1493	·1497	·1509	·1508	·1498	·1512
23	·1494	·1494	. .	·1489	·1523	·1517	·1495	·1494	·1509	·1513	·1498	·1516
24	·1496	·1490	·1477	·1478	·1529	·1512	·1499	. .	·1509	·1499	·1506	·1512
25	·1495	·1482	·1487	·1489	. .	·1510	·1495	·1466	·1509	·1500	·1509	·1519
26	·1491	·1475	·1496	·1496	·1522	·1504	·1500	·1476	·1508	·1505	·1513	·1521
27	·1498	·1483	·1477	·1493	·1520	·1512	·1507	·1476	·1508	·1501	·1513	·1522
28	·1488	·1485	·1480	·1489	·1526	·1513	·1509	·1492	·1510	·1504	·1513	·1523
29	·1487		·1489	·1483	·1521	·1509	·1501	·1494	·1515	·1506	·1514	·1521
30	·1492		·1494	·1488	·1520	·1511	·1502	·1496	·1513	·1509	·1515	·1512
31	·1493		·1507		·1519		·1500	·1502		·1507		·1516

TABLE V.—MEAN MONTHLY DETERMINATION of the HORIZONTAL MAGNETIC FORCE (diminished by a Constant 0·8600 nearly), uncorrected for TEMPERATURE, at every HOUR of the DAY; obtained by taking the MEAN of all the DETERMINATIONS at the same HOUR of the DAY through each MONTH.

1871.

Hour, Greenwich Mean Solar Time.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
h												
0	0·1479	0·1476	0·1474	0·1462	0·1489	0·1494	0·1487	0·1480	0·1487	0·1496	0·1491	0·1507
1	·1484	·1479	·1478	·1472	·1493	·1500	·1494	·1489	·1492	·1500	·1494	·1510
2	·1488	·1482	·1484	·1484	·1499	·1505	·1502	·1493	·1497	·1504	·1496	·1511
3	·1488	·1486	·1492	·1489	·1505	·1512	·1508	·1495	·1500	·1506	·1499	·1512
4	·1489	·1489	·1494	·1495	·1511	·1516	·1510	·1499	·1501	·1508	·1503	·1513
5	·1490	·1490	·1494	·1498	·1515	·1519	·1513	·1504	·1502	·1511	·1503	·1514
6	·1491	·1491	·1494	·1504	·1520	·1523	·1518	·1505	·1504	·1512	·1503	·1515
7	·1491	·1492	·1496	·1505	·1521	·1524	·1519	·1505	·1506	·1512	·1504	·1515
8	·1490	·1489	·1497	·1501	·1520	·1523	·1517	·1506	·1506	·1511	·1504	·1515
9	·1490	·1488	·1497	·1500	·1518	·1521	·1514	·1506	·1505	·1513	·1504	·1515
10	·1491	·1487	·1496	·1497	·1516	·1519	·1512	·1503	·1507	·1511	·1504	·1515
11	·1491	·1488	·1496	·1496	·1513	·1517	·1511	·1502	·1506	·1511	·1505	·1515
12	·1489	·1488	·1496	·1496	·1512	·1516	·1508	·1503	·1505	·1510	·1505	·1514
13	·1488	·1488	·1496	·1495	·1511	·1515	·1508	·1501	·1505	·1511	·1506	·1514
14	·1488	·1486	·1493	·1493	·1509	·1515	·1508	·1502	·1506	·1511	·1506	·1514
15	·1490	·1487	·1493	·1495	·1507	·1514	·1507	·1502	·1506	·1512	·1506	·1514
16	·1491	·1491	·1495	·1494	·1507	·1515	·1506	·1502	·1505	·1512	·1507	·1517
17	·1494	·1493	·1496	·1494	·1506	·1511	·1505	·1500	·1505	·1513	·1508	·1518
18	·1494	·1492	·1495	·1492	·1503	·1508	·1501	·1496	·1502	·1512	·1509	·1519
19	·1493	·1492	·1492	·1486	·1499	·1502	·1496	·1491	·1499	·1509	·1507	·1518
20	·1490	·1489	·1486	·1479	·1493	·1497	·1488	·1484	·1492	·1503	·1504	·1515
21	·1486	·1484	·1478	·1470	·1487	·1490	·1484	·1477	·1485	·1496	·1496	·1511
22	·1481	·1480	·1471	·1460	·1483	·1488	·1482	·1473	·1482	·1491	·1490	·1507
23	·1479	·1476	·1470	·1460	·1486	·1491	·1484	·1476	·1483	·1492	·1490	·1505

The Thermometer on the box inclosing the Horizontal Force Magnetometer was read generally eight times every day. The means of the readings taken for the same nominal hour through each month show no sensible Mean Diurnal Inequality of Temperature.

TABLE VI.

1871.

Month.	MEAN HORIZONTAL MAGNETIC FORCE (diminished by a Constant 0·8600 nearly) IN EACH MONTH, as deduced from the Mean of the MEAN HOURLY DETERMINATIONS in each MONTH (Table V.), uncorrected for Temperature.	Mean Temperature.
		°
January	0·1489	63·2
February	·1487	63·4
March	·1490	62·5
April	·1488	62·3
May	·1505	63·0
June	·1510	64·4
July	·1503	66·8
August	·1496	68·2
September	·1500	64·8
October	·1507	65·1
November	·1502	63·0
December	·1513	62·3

TABLE VII.—MEAN VERTICAL MAGNETIC FORCE (diminished by a Constant 0·9600 nearly), uncorrected for TEMPERATURE, on each ASTRONOMICAL DAY, as deduced from the MEAN of TWENTY-FOUR HOURLY MEASURES of ORDINATES of the PHOTOGRAPHIC REGISTER on that DAY.

1871.

Days of the Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d												
1	0·0354	0·0333	0·0337	. .	0·0306	0·0301	0·0305	0·0290	0·0308	0·0262	0·0240	0·0219
2	·0357	·0335	·0338	0·0320	·0302	·0292	·0303	·0298	·0317	·0259	. .	·0219
3	·0357	·0335	·0344	·0314	·0304	·0288	·0314	·0307	·0299	·0254	·0248	·0220
4	·0353	·0335	·0344	·0312	·0297	·0288	·0310	·0289	·0286	·0255	·0240	·0213
5	·0352	·0330	·0338	·0313	·0307	·0294	·0311	·0301	·0280	·0256	·0228	·0210
6	·0367	·0336	·0336	·0304	·0313	·0300	·0314	. .	·0292	·0264	·0226	·0216
7	·0365	·0342	·0329	·0313	·0294	·0298	·0319	·0319	·0290	·0264	·0236	·0208
8	·0358	·0343	·0322	·0311	·0306	·0299	·0316	·0316	·0282	·0248	·0230	·0206
9	·0361	·0334	·0323	. .	·0302	·0301	·0308	·0316	·0268	·0244	. .	·0212
10	·0357	·0328	·0328	·0320	·0295	·0303	·0309	·0314	·0288	·0241	. .	·0223
11	·0355	. .	·0327	·0317	·0299	·0310	·0297	·0319	·0298	·0239	·0234	·0225
12	·0349	. .	·0328	·0324	·0305	·0303	·0300	·0324	·0291	·0244	·0229	·0230
13	·0355	·0357	·0320	·0313	·0300	·0313	·0324	·0323	·0270	·0238	·0226	·0226
14	·0346	·0351	·0314	·0318	·0304	·0323	·0326	·0319	·0263	·0243	·0230	·0229
15	·0340	·0354	·0313	·0311	·0302	·0329	·0328	·0309	·0274	·0251	·0239	·0227
16	·0340	·0352	·0316	·0313	·0302	·0329	·0331	·0302	·0270	·0262	·0233	·0229
17	·0343	·0349	·0322	. .	·0295	. .	·0332	·0308	·0260	·0259	·0224	·0221
18	·0344	·0355	·0331	. .	·0295	·0318	·0319	·0301	·0255	·0260	·0223	·0222
19	·0342	·0353	·0329	·0324	·0306	·0311	·0314	·0284	·0253	·0265	·0225	·0231
20	·0350	·0337	·0323	·0310	·0315	·0308	·0301	·0297	·0254	·0256	·0222	·0223
21	·0342	·0340	·0319	·0311	·0310	·0303	·0302	·0302	·0254	·0237	·0225	·0229
22	·0340	·0347	·0323	·0317	·0307	·0302	·0299	·0303	·0242	·0232	·0231	·0232
23	·0337	·0341	. .	·0315	·0312	·0303	·0302	·0296	·0257	·0237	·0230	·0226
24	·0335	·0336	·0331	·0313	·0322	·0291	·0296	. .	·0259	·0246	·0228	·0223
25	·0333	·0340	·0325	·0310	·0328	·0285	·0287	·0291	·0264	·0250	·0225	·0224
26	·0336	·0336	·0322	·0311	·0305	·0295	·0291	·0280	·0266	·0251	·0226	·0226
27	·0336	·0347	·0325	·0310	·0306	·0299	·0300	·0283	·0272	·0259	·0223	·0226
28	·0345	·0333	·0314	·0318	·0313	·0307	·0295	·0290	·0266	·0252	·0215	·0223
29	·0342		·0316	·0326	·0316	·0309	·0295	·0299	·0263	·0247	·0214	·0221
30	·0334		·0323	·0314	·0319	·0312	·0277	·0307	·0256	·0250	·0217	·0223
31	·0330		·0316		·0309		·0285	·0306		·0245		·0216

TABLE VIII.—MEAN MONTHLY DETERMINATION of the VERTICAL MAGNETIC FORCE (diminished by a Constant 0·9600 nearly), uncorrected for TEMPERATURE, at every HOUR of the DAY; obtained by taking the MEAN of all the DETERMINATIONS at the same HOUR of the DAY through each MONTH.

1871.

Hour, Greenwich Mean Solar Time.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
h												
0	0·0344	0·0336	0·0319	0·0306	0·0297	0·0296	0·0300	0·0296	0·0268	0·0246	0·0226	0·0220
1	·0345	·0337	·0321	·0309	·0300	·0299	·0304	·0300	·0272	·0248	·0228	·0221
2	·0345	·0338	·0323	·0312	·0304	·0302	·0308	·0305	·0275	·0250	·0229	·0222
3	·0345	·0340	·0326	·0315	·0306	·0305	·0312	·0309	·0277	·0252	·0230	·0222
4	·0345	·0341	·0329	·0318	·0309	·0308	·0316	·0312	·0279	·0253	·0231	·0223
5	·0346	·0342	·0330	·0320	·0312	·0310	·0318	·0315	·0280	·0254	·0231	·0223
6	·0348	·0344	·0330	·0321	·0314	·0311	·0319	·0316	·0280	·0255	·0231	·0223
7	·0349	·0346	·0330	·0321	·0314	·0311	·0319	·0316	·0281	·0255	·0232	·0223
8	·0350	·0347	·0330	·0320	·0314	·0310	·0318	·0317	·0281	·0255	·0232	·0223
9	·0350	·0348	·0330	·0319	·0313	·0309	·0316	·0316	·0279	·0254	·0231	·0222
10	·0350	·0347	·0330	·0318	·0312	·0308	·0313	·0313	·0278	·0253	·0230	·0222
11	·0350	·0347	·0330	·0318	·0312	·0308	·0311	·0310	·0276	·0253	·0230	·0222
12	·0349	·0346	·0330	·0317	·0311	·0307	·0308	·0306	·0275	·0252	·0229	·0222
13	·0350	·0344	·0328	·0317	·0310	·0306	·0306	·0303	·0273	·0252	·0229	·0222
14	·0349	·0343	·0327	·0316	·0308	·0304	·0304	·0301	·0272	·0251	·0229	·0222
15	·0348	·0342	·0326	·0315	·0307	·0303	·0301	·0298	·0271	·0251	·0228	·0222
16	·0347	·0341	·0326	·0314	·0306	·0302	·0301	·0295	·0270	·0250	·0227	·0222
17	·0346	·0339	·0324	·0314	·0305	·0302	·0300	·0294	·0269	·0250	·0227	·0222
18	·0346	·0339	·0324	·0314	·0304	·0302	·0299	·0293	·0269	·0249	·0226	·0222
19	·0346	·0339	·0324	·0314	·0302	·0301	·0298	·0292	·0268	·0249	·0226	·0222
20	·0346	·0339	·0323	·0313	·0300	·0300	·0298	·0292	·0268	·0248	·0226	·0222
21	·0345	·0338	·0322	·0311	·0298	·0298	·0298	·0293	·0267	·0247	·0226	·0222
22	·0344	·0336	·0320	·0308	·0297	·0297	·0298	·0293	·0266	·0245	·0224	·0221
23	·0343	·0334	·0318	·0305	·0296	·0295	·0298	·0294	·0265	·0244	·0224	·0220

The Thermometer on the box inclosing the Vertical Force Magnetometer was read generally eight times every day. The means of the readings taken for the same nominal hour through each month show no sensible Mean Diurnal Inequality of Temperature.

TABLE IX.

1871.

Month.	MEAN VERTICAL MAGNETIC FORCE (diminished by a Constant 0·9600 nearly) in EACH MONTH, as deduced from the Mean of the MEAN HOURLY DETERMINATIONS in each Month (Table VIII.), uncorrected for Temperature.	Mean Temperature.
		°
January	0·0347	61·7
February	·0341	62·8
March	·0326	62·5
April	·0315	62·0
May	·0306	62·7
June	·0304	64·2
July	·0307	66·5
August	·0303	68·4
September	·0273	66·2
October	·0251	64·3
November	·0228	62·2
December	·0222	61·7

TABLE X.—MEAN, through the Range of Months, of the MONTHLY MEAN DETERMINATIONS of the DIURNAL INEQUALITIES of DECLINATION, HORIZONTAL FORCE, and VERTICAL FORCE for the Year 1871.

January to December.

Hour, Greenwich Mean Solar Time.	Declination.	Horizontal Force.	Vertical Force.
h	′		
0	+ 6·02	− 0·00140	− 0·00058
1	+ 7·50	− 87	− 32
2	+ 7·30	− 38	− 8
3	+ 5·81	+ 2	+ 13
4	+ 3·88	+ 32	+ 34
5	+ 2·14	+ 53	+ 48
6	+ 0·96	+ 75	+ 58
7	+ 0·12	+ 83	+ 62
8	− 0·55	+ 74	+ 62
9	− 1·34	+ 67	+ 53
10	− 1·82	+ 57	+ 43
11	− 2·15	+ 51	+ 37
12	− 2·18	+ 43	+ 24
13	− 2·27	+ 40	+ 14
14	− 2·37	+ 34	+ 2
15	− 2·35	+ 36	− 9
16	− 2·55	+ 43	− 18
17	− 2·90	+ 44	− 26
18	− 3·26	+ 27	− 30
19	− 3·86	− 5	− 35
20	− 4·27	− 58	− 40
21	− 3·48	− 122	− 48
22	− 0·82	− 168	− 62
23	+ 2·80	− 165	− 73

ROYAL OBSERVATORY, GREENWICH.

INDICATIONS

OF

MAGNETOMETERS

ON THIRTEEN DAYS OF GREAT MAGNETIC DISTURBANCE.

1871.

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H.F. Magnet.	Readings of Thermometers. Of V.F. Magnet.
Feb. 11 h m	° ′ ″	Feb. 11 h m		Feb. 11 h m		Feb. 11 h m	°	°
0. 0	19. 54. 35	0. 0	·1481	0. 0	·03176	0. 0	62·5	61·5
0. 2	53. 55	0. 4	·1477	0. 8	·03196	1. 0	63·1	62·2
0. 8	55. 15	0. 14	·1482	0. 17	·03190	3. 0	63·0	62·1
0. 10	58. 30	0. 19	·1479		***	9. 0	64·0	63·7
0. 17	57. 0	0. 24	·1473	1. 0	·03250	21. 40	64·4	63·4
0. 20	55. 20	0. 27	·1475	2. 40	·03354			
0. 25	57. 10	0. 29	·1473	2. 47	·03345			
0. 43	55. 45	0. 32	·1475	3. 0	·03372			
0. 46	58. 30	0. 36	·1471	3. 40	·03397			
0. 51	56. 50	0. 40	·1475	3. 57	·03392			
0. 56	57. 15	0. 45	·1471	4. 20	·03400			
1. 0	55. 40	0. 48	·1479	4. 27	·03390			
1. 3	57. 35	0. 52	·1474	4. 35	·03409			
1. 7	57. 15	0. 58	·1480	4. 50	·03404			
1. 10	58. 40	1. 5	·1474	4. 58	·03392			
1. 14	56. 35	1. 8	·1480	5. 11	·03412			
1. 22	56. 15	1. 11	·1478	5. 17	·03408			
1. 30	57. 5	1. 15	·1485	5. 36	·03430			
1. 39	55. 55	1. 26	·1483	6. 9	·03502			
1. 42	19. 59. 55	1. 31	·1488	6. 15	·03504			
1. 46	20. 0. 40	1. 41	·1482	6. 25	·03510			
1. 55	19. 57. 0	1. 46	·1494	6. 35	·03530			
2. 3	59. 0	1. 49	·1489	6. 50	·03543			
2. 8	58. 0	1. 52	·1491	6. 58	·03542			
2. 21	57. 40	1. 57	·1488	7. 7	·03545			
2. 23	55. 55	1. 59	·1484	7. 19	·03570			
2. 29	54. 15	2. 1	·1490	7. 27	·03568			
2. 41	54. 50	2. 5	·1494	7. 31	·03552			
2. 46	45. 30	2. 9	·1492	7. 37	·03567			
2. 48	49. 30	2. 13	·1496	7. 41	·03552			
2. 51	47. 0	2. 20	·1489	7. 50	·03560			
2. 58	51. 45	2. 30	·1478	8. 38	·03510			
3. 7	51. 25	2. 39	·1479	9. 8	·03460			
3. 10	52. 30	2. 42	·1472	9. 17	·03400			
3. 17	51. 40	2. 46	·1481	9. 27	·03412			
3. 22	52. 40	2. 48	·1464	9. 41	·03432			
3. 30	51. 10	2. 52	·1483	9. 51	·03420			
3. 32	52. 0	2. 54	·1467	10. 1	·03420			
3. 37	51. 20	2. 59	·1477	10. 17	·03440			
3. 40	52. 50	3. 3	·1474	10. 40	·03424			
3. 47	53. 0	3. 8	·1471	11. 7	·03450			
4. 0	49. 35	3. 12	·1477	11. 14	·03420			
4. 21	53. 55	3. 17	·1476	11. 30	·03400			
4. 32	52. 5	3. 20	·1478	11. 48	·03420			
4. 37	53. 10	3. 26	·1481	12. 0	·03388			
4. 41	52. 15	3. 33	·1475	12. 4	·03391			
4. 50	51. 35	3. 41	·1478	12. 20	·03386			
4. 58	48. 35	3. 44	·1483	12. 31	·03435			
5. 5	48. 45	3. 47	·1479	12. 45	·03411			
5. 11	52. 0	3. 50	·1481	12. 50	·03340			
5. 25	52. 20	3. 58	·1474	12. 59	·03310			
5. 32	53. 45	4. 19	·1479	13. 5	·03328			
5. 45	49. 40	4. 29	·1480	13. 18	·03325			
5. 58	50. 0	4. 33	·1478	13. 27	·03305			
6. 3	51. 25	4. 39	·1481	13. 32	·03342			
6. 13	50. 20	4. 46	·1476	13. 53	·03378			
6. 27	44. 0	4. 50	·1471	14. 1	·03351			
6. 32	43. 30	4. 54	·1473	14. 19	·03390			

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H.F. Magnet.	Readings of Thermometers. Of V.F. Magnet.
Feb. 11 h m	° ′ ″	Feb. 11 h m		Feb. 11 h m		h m	°	°
6. 38	19. 44. 35	4. 58	·1466	14. 29	·03398			
6. 43	44. 40	5. 10	·1474	14. 45	·03365			
6. 50	46. 25	5. 14	·1479	14. 55	·03377			
7. 19	44. 0	5. 19	·1474	15. 0	·03385			
7. 25	42. 50	5. 29	·1481	15. 14	·03347			
7. 32	42. 20	5. 40	·1462	15. 26	·03350			
7. 42	38. 40	5. 46	·1459	15. 30	·03327			
7. 47	39. 45	5. 53	·1467	15. 37	·03307			
7. 51	38. 0	6. 0	·1462	15. 42	·03320			
7. 56	38. 50	6. 6	·1466	15. 52	·03230			
8. 10	38. 45	6. 10	·1462	16. 2	·03200			
8. 20	37. 20	6. 12	·1462	16. 14	·03251			
8. 29	38. 55	6. 20	·1450	16. 28	·03152			
8. 33	37. 50	6. 25	·1452	16. 33	·03107			
8. 40	38. 55	6. 27	·1450	16. 39	·03118			
8. 49	38. 30	6. 37	·1455	16. 41	·03105			
8. 51	37. 10	6. 41	·1455	16. 50	·03147			
8. 54	37. 30	6. 52	·1461	16. 51	·03140			
9. 3	35. 0	7. 0	·1457	17. 5	·03205			
9. 10	42. 45	7. 3	·1455	17. 10	·03240			
9. 19	44. 40	7. 8	·1455	17. 33	·03292			
9. 33	34. 0	7. 12	·1451	17. 48	·03230			
9. 43	32. 0	7. 19	·1452	18. 0	·03186			
9. 55	36. 35	7. 25	·1445	18. 8	·03207			
10. 0	37. 5	7. 31	·1449	18. 10	·03190			
10. 9	34. 55	7. 37	·1443	18. 15	·03200			
10. 28	26. 0	7. 39	·1447	18. 20	·03178			
10. 40	26. 10	7. 45	·1449	18. 30	·03212			
10. 52	28. 15	7. 49	·1447	18. 40	·03224			
11. 0	33. 0	7. 51	·1441	18. 48	·03213			
11. 8	33. 45	7. 56	·1447	19. 2	·03252			
11. 20	36. 30	8. 0	·1444	19. 5	·03240			
	(†)	8. 7	·1452	19. 20	·03336			
12. 2	35. 45	8. 11	·1451	19. 34	·03234			
12. 11	32. 30	8. 22	·1459	19. 46	·03250			
12. 18	30. 0	8. 28	·1461	20. 0	·03241			
12. 31	24. 15	8. 34	·1459	20. 19	·03305			
12. 43	34. 35	8. 46	·1467	20. 21	·03280			
12. 48	36. 15	8. 54	·1467	20. 30	·03316			
12. 57	41. 35	9. 1	·1473	20. 37	·03365			
12. 59	41. 10	9. 9	·1485	20. 40	·03344			
13. 6	44. 55	9. 11	·1481	20. 50	·03340			
13. 10	44. 20	9. 13	·1484	21. 38	·03392			
13. 17	45. 25	9. 19	·1477	21. 42	·03372			
13. 22	47. 30	9. 24	·1446	21. 50	·03395			
13. 28	48. 0	9. 33	·1443	21. 55	·03385			
13. 39	41. 55	9. 43	·1452	22. 0	·03390			
13. 42	41. 15	9. 50	·1457	22. 11	·03412			
13. 55	36. 10	9. 58	·1447	22. 20	·03373			
14. 5	37. 30	10. 1	·1442	22. 41	·03418			
14. 17	32. 35	10. 4	·1443	22. 45	·03437			
14. 27	32. 20	10. 13	·1435	22. 50	·03405			
14. 37	36. 40	10. 20	·1438	22. 51	·03447			
14. 43	37. 5	10. 26	·1443	22. 54	·03407			
14. 48	35. 50	10. 33	·1441	22. 55	·03450			
15. 1	30. 45	10. 37	·1438	22. 59	·03420			
15. 15	40. 25	10. 46	·1439	23. 5	·03450			
15. 21	39. 0	10. 52	·1436	23. 11	·03478			

The indications are taken from the sheets of the Photographic Record, except where an asterisk is attached to the number, in which instances they are inferred from observations made with the telescope in the ancient manner. The Symbol *** denotes that the magnet has been generally in a state of agitation. The Symbol (†) denotes that the register has failed between the preceding and following readings. The Symbol : attached to a time denotes that the reading will apply equally well to a considerable range of time near that which is recorded. A brace denotes that at this time the curve of the Vertical Force was dislocated, and the difference of the numbers included by the brace shows the amount of the displacement.

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
Feb. 11		Feb. 11		Feb. 11				
h m	° ′ ″	h m		h m		h m	°	°
15. 28	19. 40. 50	10. 56	·1436	23. 20	·03460			
15. 33	39. 20	11. 0	·1431	23. 25	·03478			
15. 42	19. 36. 0	11. 3	·1432	23. 30	·03460			
16. 5	20. 0. 35	11. 6	·1430	23. 50	·03483			
16. 8	19. 59. 0	11. 19	·1443	23. 59	·03508			
16. 10	20. 0. 35	11. 22	·1439					
16. 17	19. 57. 50	11. 26	·1440					
16. 22	20. 5. 30	11. 30	·1436					
16. 31	5. 15	11. 33	·1437					
16. 33	3. 50	11. 39	·1433					
16. 37	5. 55	11. 45	·1432					
16. 44	20. 0. 15	11. 50	·1437					
16. 53	19. 49. 5	11. 57	·1453					
16. 56	50. 0	12. 6	·1456					
17. 3	42. 40	12. 10	·1453					
17. 11	41. 15	12. 15	·1451					
17. 13	43. 10	12. 22	·1446					
17. 20	43. 25	12. 34	·1431					
17. 24	19. 44. 50	12. 42	·1439					
17. 43	20. 12. 0	12. 48	·1441					
17. 59	19. 56. 20	12. 52	·1439					
18. 3	57. 20	12. 58	·1447					
18. 8	19. 56. 0	13. 2	·1441					
18. 19	20. 2. 30	13. 10	·1429					
18. 27	19. 56. 0	13. 14	·1435					
18. 31	19. 59. 50	13. 17	·1437					
18. 38	20. 1. 55	13. 29	·1455					
18. 41	19. 58. 55	13. 38	·1449					
18. 46	59. 0	13. 43	·1455					
18. 50	57. 0	13. 47	·1455					
18. 54	57. 5	14. 3	·1468					
18. 57	57. 55	14. 11	·1464					
19. 2	56. 30	14. 13	·1460					
19. 7	57. 50	14. 21	·1461					
19. 9	19. 57. 30	14. 32	·1472					
19. 14	20. 1. 30	14. 40	·1476					
19. 28	24. 0	14. 47	·1475					
19. 37	13. 35	14. 55	·1467					
19. 40	8. 15	15. 9	·1481					
19. 43	7. 15	15. 20	·1481					
19. 47	8. 20	15. 26	·1473					
19. 53	20. 5. 45	15. 34	·1478					
20. 2	19. 55. 20	15. 40	·1473					
20. 6	55. 35	15. 47	·1457					
20. 8	54. 10	15. 54	·1455					
20. 12	55. 20	15. 57	·1444					
20. 20	57. 45	16. 0	·1419					
20. 26	52. 0	16. 4	·1415					
20. 30	49. 35	16. 10	·1412					
20. 32	19. 56. 50	16. 13	·1408					
20. 36	20. 1. 50	16. 16	·1421					
20. 41	19. 52. 40	16. 23	·1464					
20. 50	47. 45	16. 29	·1465					
20. 58	49. 0	16. 32	·1460					
21. 2	47. 45	16. 34	·1455					
21. 7	48. 10	16. 38	·1462					
21. 13	47. 0	16. 40	·1459					
21. 16	48. 0	16. 43	·1451					

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
Feb. 11		Feb. 11						
h m	° ′ ″	h m		h m		h m	°	°
21. 25	19. 47. 35	16. 47	·1454					
21. 31	48. 50	16. 50	·1451					
21. 40	53. 40	16. 55	·1459					
21. 47	52. 15	16. 58	·1467					
21. 52	19. 58. 0	17. 1	·1469					
21. 59	20. 3. 0	17. 8	·1488					
22. 2	3. 40	17. 13	·1493					
22. 7	6. 45	17. 15	·1500					
22. 16	7. 5	17. 17	·1507					
22. 18	3. 20	17. 22	·1500					
22. 20	4. 40	17. 27	·1501					
22. 23	2. 0	17. 33	·1494					
22. 25	14. 45	17. 43	·1452					
22. 26	8. 50	17. 49	·1449					
22. 28	5. 50	17. 51	·1453					
22. 31	7. 55	17. 53	·1449					
22. 38	4. 35	17. 56	·1454					
22. 39	3. 55	18. 0	·1451					
22. 42	7. 0	18. 6	·1447					
22. 43	1. 55	18. 11	·1463					
22. 47	20. 4. 20	18. 17	·1461					
22. 54	19. 55. 20	18. 21	·1473					
22. 58	58. 45	18. 23	·1471					
23. 1	19. 55. 55	18. 25	·1473					
23. 8	20. 1. 55	18. 30	·1487					
23. 13	2. 0	18. 41	·1464					
23. 14	0. 20	18. 44	·1461					
23. 18	20. 0. 50	18. 47	·1448					
23. 20	19. 59. 25	18. 50	·1440					
23. 22	20. 0. 50	18. 52	·1435					
23. 27	19. 58. 20	18. 55	·1430					
23. 32	54. 30	18. 58	·1429					
23. 35	55. 0	19. 2	·1416					
23. 39	53. 55	19. 6	·1420					
23. 42	54. 30	19. 10	·1414					
23. 47	52. 45	19. 13	·1418					
23. 52	55. 50	19. 17	·1416					
23. 58	53. 20	19. 23	·1435					
23. 59	54. 10	19. 27	·1448					
		19. 30	·1457					
		19. 33	·1452					
		19. 36	·1448					
		19. 41	·1432					
		19. 48	·1430					
		19. 53	·1416					
		19. 57	·1409					
		20. 3	·1417					
		20. 6	·1415					
		20. 9	·1410					
		20. 11	·1413					
		20. 15	·1410					
		20. 22	·1425					
		20. 25	·1416					
		20. 30	·1426					
		20. 33	·1425					
		20. 36	·1433					
		20. 38	·1440					
		20. 41	·1445					

For the Horizontal and Vertical Forces, increasing readings denote increasing forces.

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
h m	° ′ ″	Feb. 11 h m		h m		h m	°	°
		20.53	·1425					
		20.59	·1420					
		21. 3	·1410					
		21. 9	·1415					
		21.16	·1412					
		21.20	·1409					
		21.23	·1407					
		21.30	·1411					
		21.36	·1405					
		21.42	·1411					
			(†)					
Feb. 12		Feb. 12		Feb. 12		Feb. 12		
0. 0	19.55. 0		(†)	0. 0	·03508	0.40	63·8	62·8
0. 2	56.15	0.53	·1474	0. 2	·03490	5. 0	64·2	63·0
0. 8	54. 0	1.14	·1469	0. 9	·03513	8.20	64·3	63·2
0.11	55.35		***	0.11	·03492	21. 0	63·9	63·3
0.18	56.10	1.28	·1473	0.23	·03529	22. 0	63·8	63·1
0.23	54. 0		***	0.48	·03520	23. 0	63·5	63·1
0.38	55.15	1.44	·1470	1. 7	·03492			
0.46	57.50	1.50	·1474	1.40	·03480			
0.53	56.25	1.53	·1469	1.58	·03482			
1. 2	56.15	2. 0	·1480	2. 2	·03500			
1. 7	57. 0	2. 3	·1479	2.14	·03490			
1.20	57.10	2. 8	·1474	2.48	·03524			
1.25	57.45	2.11	·1469	2.50	·03520			
1.43	57.15	2.13	·1461	3.14	·03576			
1.48	57.45	2.17	·1464	3.18	·03570			
1.51	56.45	2.19	·1457	3.40	·03591			
1.57	59.20	2.22	·1463	3.47	·03607			
2.10	58.40	2.25	·1459	3.51	·03592			
2.12	57.10	2.28	·1464	4. 0	·03604			
2.18	57.10	2.31	·1465	4.10	·03630			
2.21	57.50	2.35	·1460	4.30	·03612			
2.27	57. 5	2.37	·1462	5. 0	·03588			
2.32	57.35	2.42	·1457	5.12	·03610			
2.35	56.50	2.48	·1457	5.25	·03607			
2.39	57.40	2.50	·1450	5.48	·03650			
2.47	57.20	2.56	·1452	6.30	·03704			
2.51	55.50	3. 3	·1458	7. 0	·03662			
3. 0	54.50	3. 5	·1452	7. 3	·03716			
3. 4	51.55	3. 9	·1457	7.11	·03644			
3.14	50.45	3.12	·1453	7.22	·03797			
3.22	45.55	3.14	·1462	7.29	·03770			
3.32	45.55	3.18	·1459	7.37	·03673			
3.40	46.45	3.20	·1462	7.48	·03440			
3.43	45.50	3.23	·1459	7.58	·03562			
3.50	47.20	3.25	·1465	8. 0	·03864			
3.53	46.15	3.29	·1463	8. 5	·03550			
3.59	46.35	3.32	·1469	8. 8	·03482			
4. 8	40.30	3.36	·1465	8.10	·03518			
4.23	45.40	3.40	·1470	8.17	·03433			
4.30	44.40	3.44	·1461	8.20	·03590			
4.33	45.30	3.47	·1468	8.27	·03476			
4.41	45. 0	3.50	·1461	8.30	·03440			
4.47	45.55	3.53	·1457	8.37	·03510			
4.53	52.15	3.55	·1459	8.44	·03445			
4.55	49.35	3.57	·1453	8.49	·03504			

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
Feb. 12 h m	° ′ ″	Feb. 12 h m		Feb. 12 h m		h m	°	°
4.58	19.50.10	3.59	·1453	8.50	·03473			
5. 2	47. 0	4. 3	·1447	8.51	·03506			
5.11	39.20	4.12	·1470	9. 0	·03382			
5.42	51.10	4.18	·1469	9. 7	·03545			
5.48	48.55	4.22	·1472	9.10	·03432			
6. 0	50. 5	4.28	·1469	9.17	·03387			
6. 6	51.50	4.32	·1472	9.22	·03542			
6.12	52.15	4.36	·1469	9.28	·03450			
6.20	51.50	4.43	·1475	9.30	·03407			
6.34	43.35	4.46	·1474	9.32	·03561			
6.40	43.55	4.50	·1480	9.36	·03090			
6.49	42.20	4.54	·1472	9.38	·03248			
6.57	43.10	4.56	·1455	9.39	·03190			
7. 9	46.50	5. 4	·1438	9.50	·03670			
7.10	47.55	5.14	·1461	9.55	·03714			
7.13	46.10	5.23	·1469	9.59	·03672			
7.19	51.45	5.31	·1467	10. 0	·03693			
7.28	36.45	5.38	·1468	10. 8	·03651			
7.33	42.20	5.46	·1461	10. 9	·03668			
7.37	43. 0	5.50	·1464	10.19	·03590			
7.43	49.20	5.57	·1461	10.30	·03642			
7.48	40.10	6. 0	·1462	10.35	·03724			
7.50	36.15	6. 2	·1460	10.40	·03682			
7.55	39. 0	6. 7	·1462	10.42	·03652			
7.59	19.34.10	6.16	·1449	10.50	·03682			
8. 9	20. 0.15	6.20	·1451	10.52	·03657			
8.11	20. 4. 0	6.23	·1447	10.58	·03638			
8.17	19.52.10	6.27	·1449	11. 5	·03548			
8.20	52.50	6.30	·1448	11.10	·03637			
8.28	18.55	6.35	·1455	11.14	·03569			
8.33	40.15	6.40	·1458	11.17	·03608			
8.38	41.40	6.45	·1454	11.20	·03570			
8.42	39.30	6.50	·1457	11.23	·03594			
8.47	35.20	6.53	·1455	11.25	·03530			
8.49	35.45	7. 3	·1459	11.30	·03612			
8.53	32.50	7. 8	·1465	11.32	·03598			
9. 2	52. 0	7.11	·1535	11.39	·03632			
9.10	38. 0	7.14	·1505	11.41	·03672			
9.17	54.45	7.16	·1503	11.42	·03627			
9.20	52.35	7.17	·1481	11.45	·03670			
9.21	53. 0	7.20	·1469	11.47	·03620			
9.24	42.55	7.23	·1480	11.48	·03639			
9.28	45.40	7.25	·1483	11.50	·03612			
9.30	41. 5	7.30	·1513	11.55	·03675			
9.32	43. 5	7.36	·1499	11.59	·03642			
9.35	38.35	7.40	·1502	12. 0	·03667			
9.38	39.45	7.45	·1465	12. 1	·03650			
9.40	37. 0	7.48	·1447	12. 8	·03706			
9.42	43.50	7.53	·1443	12.11	·03640			
9.59	10.20	7.55	·1432	12.13	·03672			
10. 1	12.45	7.58	·1438	12.18	·03630			
10. 3	9.15	8. 1	·1437	12.20	·03680			
10. 7	12.25	8. 7	·1507	12.25	·03631			
10. 9	14.50	8.10	·1467	12.29	·03660			
10.11	16. 0	8.12	·1457	12.32	·03633			
10.24	35.40	8.15	·1454	12.33	·03604			
10.28	35. 0	8.17	·1433		***			
10.32	37.35	8.19	·1436	12.41	·03612			

The indications are taken from the sheets of the Photographic Record, except where an asterisk is attached to the number, in which instances they are inferred from observations made with the telescope in the ancient manner. The Symbol *** denotes that the magnet has been generally in a state of agitation. The Symbol (†) denotes that the register has failed between the preceding and following readings. The Symbol : attached to a time denotes that the reading will apply equally well to a considerable range of time near that which is recorded. A brace denotes that at this time the curve of the Vertical Force was dislocated, and the difference of the numbers included by the brace shows the amount of the displacement.

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
Feb. 12		Feb. 12		Feb. 12				
h m	° ′ ″	h m		h m		h m	°	°
10. 37	19. 35. 10	8. 22	·1430	12. 43	·03635			
10. 40	35. 35	8. 26	·1440	12. 52	·03532			
10. 50	39. 45	8. 28	·1444	12. 57	·03547			
10. 52	38. 55	8. 33	·1481	13. 1	·03510			
10. 57	44. 20	8. 37	·1473	13. 8	·03555			
11. 2	44. 45	8. 39	·1478	13. 12	·03532			
11. 7	47. 20	8. 43	·1459	13. 18	·03482			
11. 13	42. 0	8. 46	·1463		***			
11. 19	42. 55	8. 49	·1456	13. 21	·03498			
11. 23	38. 25	8. 51	·1463	13. 30	·03390			
11. 28	40. 15	8. 54	·1461	13. 35	·03420			
11. 35	35. 50	8. 57	·1466	13. 39	·03446			
11. 46	36. 0	9. 0	·1472	13. 42	·03424			
11. 50	37. 30	9. 2	·1461	13. 49	·03487			
12. 5	47. 5	9. 5	·1432	13. 51	·03464			
12. 9	46. 0	9. 6	·1441	13. 54	·03480			
12. 14	46. 45	9. 10	·1451	13. 55	·03447			
12. 18	45. 0	9. 12	·1440	13. 56	·03490			
12. 25	44. 10	9. 17	·1429	13. 58	·03464			
12. 29	44. 50	9. 19	·1414	14. 2	·03415			
12. 37	43. 40	9. 23	·1424	14. 15	·03200			
12. 50	48. 15	9. 28	·1416	14. 23	·03178			
13. 9	45. 50		(†)	14. 36	·03214			
13. 15	46. 50	9. 56	·1413	14. 42	·03190			
13. 20	46. 35	9. 57	·1443	14. 58	·03260			
13. 24	48. 10	9. 59	·1446	15. 15	·03275			
13. 36	45. 10	10. 1	·1438	15. 27	·03329			
13. 41	46. 0	10. 3	·1472	15. 31	·03330			
13. 48	48. 40	10. 10	·1447	16. 2	·03410			
13. 50	49. 0	10. 15	·1453	16. 39	·03460			
13. 59	19. 58. 0	10. 17	·1447	17. 25	·03480			
14. 8	20. 6. 0	10. 19	·1441	18. 40	·03500			
14. 12	4. 0	10. 21	·1431	19. 15	·03510			
14. 17	20. 5. 40	10. 24	·1435	19. 55	·03527			
14. 32	19. 48. 30	10. 26	·1430	19. 58	·03515			
14. 40	51. 20	10. 31	·1440	20. 1	·03530			
14. 49	52. 5	10. 37	·1455	20. 6	·03520			
14. 52	53. 0	10. 42	·1448	20. 10	·03535			
14. 57	54. 30	10. 45	·1446	20. 12	·03520			
15. 3	53. 10	10. 48	·1449	20. 16	·03535			
15. 8	52. 0	10. 50	·1441	20. 19	·03527			
15. 12	52. 40	10. 52	·1442	20. 23	·03530			
15. 23	50. 40	10. 55	·1431	20. 32	·03522			
15. 26	51. 20	11. 0	·1432	20. 40	·03532			
15. 44	51. 35	11. 3	·1420	20. 43	·03520			
15. 53	50. 15	11. 5	·1423	20. 48	·03532			
16. 1	50. 45	11. 8	·1413	20. 50	·03525			
16. 10	50. 15	11. 13	·1423	20. 57	·03535			
16. 18	48. 55	11. 16	·1412	20. 59	·03528			
16. 22	49. 50	11. 20	·1425	21. 4	·03539			
16. 28	48. 45	11. 22	·1413	21. 12	·03525			
	***	11. 24	·1418	21. 20	·03530			
17. 0	48. 5	11. 27	·1415	21. 32	·03527			
17. 5	47. 0	11. 29	·1420	21. 38	·03534			
17. 8	48. 0	11. 32	·1412	21. 42	·03527			
17. 13	47. 20	11. 40	·1424	22. 30	·03525			
17. 19	47. 55	11. 44	·1437	22. 48	·03520			
17. 32	47. 15	11. 47	·1425	22. 51	·03532			

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
Feb. 12		Feb. 12		Feb. 12				
h m	° ′ ″	h m		h m		h m	°	°
17. 34	19. 46. 40	11. 49	·1438	22. 57	·03518			
17. 37	47. 30	11. 53	·1425	22. 59	·03528			
17. 40	46. 0	11. 55	·1433	23. 1	·03510			
17. 42	46. 35	11. 58	·1442	23. 25	·03510			
17. 50	45. 40	12. 0	·1433	23. 29	·03533			
17. 53	44. 45	12. 1	·1437	23. 32	·03515			
17. 55	45. 55	12. 4	·1427	23. 38	·03535			
17. 58	45. 5	12. 10	·1440	23. 42	·03515			
18. 5	45. 30	12. 13	·1426	23. 50	·03524			
18. 22	45. 55	12. 17	·1437	23. 59	·03528			
18. 33	45. 40	12. 20	·1424					
18. 49	44. 40	12. 26	·1434					
18. 56	44. 45	12. 31	·1423					
19. 11	44. 10	12. 35	·1429					
19. 16	43. 15	12. 36	·1424					
19. 18	44. 50	12. 41	·1430					
19. 21	44. 0	12. 47	·1438					
19. 26	44. 45	12. 51	·1428					
19. 43	43. 25	12. 54	·1412					
19. 48	44. 10		(†)					
19. 53	44. 0	15. 23	·1412					
19. 57	43. 10	15. 31	·1427					
20. 0	44. 20	15. 37	·1422					
20. 4	43. 30	15. 40	·1430					
20. 7	44. 40	15. 43	·1426					
20. 11	43. 50	15. 51	·1425					
20. 15	45. 15	15. 57	·1431					
20. 20	43. 55	15. 59	·1424					
20. 38	43. 45	16. 2	·1434					
20. 40	44. 30	16. 4	·1425					
20. 43	43. 10	16. 12	·1432					
20. 47	44. 0	16. 16	·1429					
20. 51	43. 0	16. 22	·1441					
20. 56	45. 5	16. 25	·1436					
20. 59	43. 55	16. 30	·1443					
21. 4	44. 45	16. 37	·1449					
21. 13	42. 15	16. 40	·1445					
21. 22	44. 45	16. 41	·1449					
21. 27	43. 40	16. 43	·1444					
21. 31	44. 55	16. 49	·1453					
21. 35	44. 30	16. 52	·1446					
21. 39	45. 50	16. 57	·1452					
21. 42	44. 15	17. 1	·1452					
21. 48	44. 50	17. 4	·1449					
21. 53	46. 35	17. 9	·1458					
21. 59	44. 15	17. 12	·1450					
22. 2	44. 55	17. 15	·1459					
22. 8	46. 20	17. 20	·1453					
22. 13	44. 45	17. 25	·1456					
22. 20	45. 50	17. 28	·1452					
22. 30	45. 20		***					
22. 32	46. 5	17. 42	·1455					
22. 48	46. 50	17. 48	·1450					
22. 53	50. 20	17. 52	·1453					
22. 57	47. 30	18. 2	·1459					
23. 0	51. 0		***					
23. 3	47. 0	18. 17	·1461					
23. 7	50. 50		***					

For the Horizontal and Vertical Forces, increasing readings denote increasing forces.

February 12. The spot of light for Horizontal Force was off the sheet in the direction of *decreasing* force from 9h. 28m. to 9h. 56m., and from 12h. 54m. to 15h. 23m.

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
Feb. 12		Feb. 12						
h m	° ′ ″	h m		h m		h m	°	°
23. 10	19. 48. 0	18. 44	·1458					
23. 12	47. 50	18. 54	·1456					
23. 15	50. 50	19. 3	·1453					
23. 20	47. 0	19. 7	·1450					
23. 24	48. 35	19. 10	·1456					
23. 29	47. 15	19. 13	·1450					
23. 31	51. 0	19. 17	·1455					
23. 36	49. 55	19. 19	·1451					
23. 38	51. 50	19. 23	·1455					
23. 42	50. 50	19. 25	·1448					
23. 46	48. 15	19. 30	·1451					
23. 55	50. 30	19. 32	·1450					
23. 59	51. 20	19. 35	·1448					
		19. 39	·1451					
		19. 41	·1448					
		19. 47	·1452					
		19. 52	·1446					
		19. 56	·1450					
		19. 58	·1443					
		20. 1	·1451					
		20. 6	·1444					
		20. 9	·1449					
		20. 13	·1442					
		20. 17	·1449					
		20. 20	·1439					
		20. 27	·1447					
		20. 34	·1440					
		20. 40	·1446					
		20. 44	·1439					
		20. 50	·1445					
		20. 53	·1440					
		20. 57	·1446					
		21. 0	·1436					
		21. 5	·1439					
		21. 9	·1434					
		21. 12	·1430					
		21. 22	·1437					
		21. 26	·1431					
		21. 33	·1436					
		21. 37	·1433					
		21. 42	·1437					
		21. 47	·1430					
		21. 51	·1432					
		21. 54	·1439					
		22. 1	·1431					
		22. 9	·1437					
		22. 13	·1430					
		22. 20	·1432					
		22. 22	·1436					
		22. 26	·1433					
		22. 33	·1439					
		22. 38	·1435					
		22. 42	·1446					
		22. 44	·1440					
		22. 50	·1445					
		22. 54	·1451					
		22. 58	·1441					
		23. 1	·1453					

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
		Feb. 12						
h m	° ′ ″	h m		h m		h m	°	°
		23. 4	·1443					
		23. 8	·1452					
		23. 13	·1445					
			(†)					
Mar. 23		Mar. 23		Mar. 23		Mar. 23		
0. 0	19. 57. 30	0. 0	·1495	0. 0	·03210	0. 0	62·9	63·5
0. 5	58. 30	0. 2	·1494	0. 8	·03235	1. 0	62·6	63·4
0. 14	57. 50	0. 3	·1481	0. 9	·03210	3. 0	63·2	64·3
0. 20	55. 0	0. 5	·1493	0. 11	·03247	9. 0	63·0	64·5
0. 26	19. 57. 0	0. 14	·1477	0. 15	·03210	21. 0	62·7	62·6
0. 35	20. 1. 30	0. 24	·1485	0. 20	·03246	22. 0	62·6	62·6
0. 40	3. 30	0. 31	·1473	0. 22	·03232	23. 0	62·7	62·6
0. 49	9. 30	0. 33	·1496	0. 37	·03230			
0. 59	1. 20	0. 36	·1490	0. 40	·03288			
1. 10	7. 50	0. 40	·1478	0. 41	·03262			
1. 18	5. 15	0. 46	·1497	0. 42	·03276			
1. 28	9. 25	0. 53	·1483	0. 48	·03310			
1. 35	9. 25	0. 58	·1451	0. 50	·03280			
1. 43	5. 55	1. 8	·1493	0. 52	·03312			
1. 53	9. 55	1. 12	·1502	1. 0	·03262			
2. 0	13. 35	1. 17	·1488	1. 8	·03320			
2. 5	34. 50	1. 21	·1492	1. 12	·03339			
2. 16	19. 55	1. 25	·1500	1. 18	·03302			
2. 19	23. 25	1. 31	·1493	1. 22	·03330			
2. 27	20. 0	1. 33	·1495	1. 36	·03367			
2. 32	9. 45	1. 39	·1485	1. 41	·03347			
2. 39	16. 50	1. 50	·1506	2. 1	·03392			
	(†)	1. 55	·1511	2. 2	·03492			
2. 49	20. 0	1. 58	·1504	2. 9	·03378			
3. 0	4. 0	2. 2	·1517	2. 10	·03440			
3. 12	15. 45	2. 7	·1581	2. 17	·03397			
3. 15	10. 0	2. 8	·1558	2. 28	·03448			
3. 18	2. 0	2. 12	·1566	2. 33	·03478			
3. 21	14. 50	2. 15	·1552	2. 38	·03680			
3. 22	10. 5	2. 21	·1563	3. 0	·03547			
3. 30	20. 11. 35	2. 26	·1554	3. 11	·03596			
3. 37	19. 57. 50	2. 28	·1539	3. 12	·03540			
3. 40	20. 2. 50	2. 33	·1504	3. 18	·03564			
3. 42	19. 59. 55	2. 39	·1616	3. 21	·03480			
3. 49	20. 3. 5	2. 46	·1566	3. 22	·03601			
3. 52	19. 59. 50	2. 57	·1591	3. 28	·03535			
4. 7	59. 0	2. 59	·1543	3. 30	·03507			
4. 17	55. 50	3. 1	·1507	3. 32	·03551			
4. 22	57. 25	3. 10	·1577	3. 39	·03430			
4. 28	19. 55. 0	3. 12	·1565	3. 41	·03507			
4. 32	20. 0. 55	3. 14	·1518	3. 43	·03446			
4. 39	19. 56. 55	3. 16	·1529	3. 49	·03481			
4. 50	20. 1. 0	3. 18	·1449	3. 57	·03450			
4. 53	19. 54. 15	3. 22	·1538		***			
4. 58	57. 10	3. 25	·1510	4. 16	·03424			
5. 16	56. 30	3. 28	·1492	4. 19	·03409			
5. 22	55. 0	3. 32	·1509	4. 20	·03431			
5. 26	57. 10	3. 33	·1441	4. 22	·03410			
5. 31	54. 55	3. 36	·1479	4. 28	·03433			
5. 42	57. 50	3. 39	·1452	4. 31	·03401			
5. 45	53. 30	3. 42	·1468	4. 33	·03450			
5. 49	58. 0	3. 48	·1487	4. 40	·03398			

The indications are taken from the sheets of the Photographic Record, except where an asterisk is attached to the number, in which instances they are inferred from observations made with the telescope in the ancient manner. The Symbol *** denotes that the magnet has been generally in a state of agitation. The Symbol (†) denotes that the register has failed between the preceding and following readings. The Symbol : attached to a time denotes that the reading will apply equally well to a considerable range of time near that which is recorded. A brace denotes that at this time the curve of the Vertical Force was dislocated, and the difference of the numbers included by the brace shows the amount of the displacement.

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.	Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
Mar. 23		Mar. 23		Mar. 23					Mar. 23		Mar. 23		Mar. 23				
h m	° ′ ″	h m		h m		h m	°	°	h m	° ′ ″	h m		h m		h m	°	°
5. 51	19. 52. 55	3. 52	·1471	4. 48	·03426				14. 3	19. 45. 15	7. 39	·1486	10. 22	·03396			
5. 55	57. 55	3. 57	·1478	4. 50	·03392				14. 9	44. 40	7. 45	·1475	10. 38	·03430			
6. 0	53. 50	4. 1	·1476	4. 51	·03422				14. 20	45. 15	7. 51	·1485	10. 48	·03407			
6. 2	56. 30	4. 7	·1482	4. 52	·03364				14. 32	44. 50	7. 54	·1475	11. 11	·03417			
6. 8	53. 0	4. 12	·1472	4. 58	·03415				14. 46	46. 15	7. 56	·1491	11. 21	·03412			
6. 12	54. 15	4. 18	·1485	5. 0	·03386				14. 56	45. 55	7. 57	·1499	11. 40	·03410			
6. 24	54. 0	4. 21	·1501	5. 2	·03410				15. 6	46. 10	8. 0	·1510		***			
6. 30	53. 0	4. 26	·1477	5. 7	·03370				15. 49	46. 50	8. 2	·1500	12. 12	·03400			
6. 32	54. 50	4. 28	·1492	5. 10	·03405				16. 2	48. 15	8. 4	·1488		***			
6. 37	51. 50	4. 29	·1501	5. 11	·03380				16. 10	48. 25	8. 10	·1500	13. 0	·03392			
6. 40	55. 55	4. 30	·1511	5. 12	·03398				16. 12	49. 45	8. 12	·1491	13. 10	·03410			
6. 42	53. 45	4. 35	·1519	5. 18	·03372				16. 18	49. 35	8. 15	·1478	13. 17	·03410			
6. 49	53. 15	4. 37	·1507	5. 20	·03392				16. 21	50. 25	8. 22	·1493	13. 45	·03388			
6. 51	52. 30	4. 40	·1496	5. 22	·03361				16. 36	49. 50	8. 31	·1475	13. 50	·03400			
6. 55	53. 20	4. 45	·1511	5. 30	·03390				16. 41	52. 45	8. 37	·1481	13. 59	·03388			
7. 1	52. 25	4. 48	·1517	5. 32	·03354				16. 48	49. 0	8. 42	·1472	14. 47	·03390			
7. 5	53. 0	4. 50	·1527	5. 36	·03390				16. 50	51. 50	8. 52	·1492	15. 48	·03371			
7. 8	50. 20	4. 52	·1481	5. 40	·03356				16. 52	47. 50	8. 57	·1471	16. 18	·03370			
7. 15	50. 45	4. 57	·1505	5. 43	·03390				16. 56	50. 15	9. 1	·1489	16. 42	·03350			
7. 20	51. 10	5. 0	·1498	5. 48	·03354				17. 0	50. 0	9. 7	·1470	16. 50	·03336			
7. 30	48. 50	5. 2	·1510	5. 49	·03384				17. 8	51. 50	9. 10	·1478	16. 56	·03353			
7. 32	53. 15	5. 6	·1492	5. 52	·03350				17. 15	49. 30	9. 14	·1471	17. 0	·03340			
7. 36	50. 0	5. 10	·1506	5. 58	·03382				17. 21	52. 45	9. 18	·1479	17. 38	·03312			
8. 6	51. 5	5. 11	·1497	6. 1	·03344				17. 25	51. 5	9. 22	·1469		***			
8. 50	49. 5	5. 14	·1500	6. 30	·03350				17. 30	52. 35	9. 27	·1483	18. 31	·03300			
	***	5. 16	·1492	6. 33	·03378				17. 34	50. 40	9. 32	·1476		***			
9. 17	48. 10	5. 18	·1498	6. 39	·03342				17. 50	50. 30	9. 41	·1480	19. 18	·03290			
9. 44	46. 35	5. 23	·1481	6. 41	·03374				17. 57	47. 50	9. 57	·1479	19. 20	·03280			
9. 50	46. 35	5. 27	·1491	6. 43	·03350				18. 10	48. 0	10. 0	·1476	19. 22	·03304			
9. 52	45. 5	5. 31	·1500	6. 51	·03345				18. 15	46. 20	10. 3	·1485	19. 27	·03272			
10. 0	46. 30	5. 34	·1479	7. 3	·03352				18. 37	46. 40	10. 6	·1487	19. 30	·03300			
10. 7	44. 0	5. 37	·1496	7. 9	·03348				19. 8	44. 10	10. 8	·1493	19. 31	·03272			
10. 11	44. 40	5. 40	·1481	7. 18	·03366				19. 18	44. 45	10. 10	·1482	19. 33	·03295			
10. 16	43. 30	5. 44	·1496	7. 22	·03350				19. 27	41. 50	10. 15	·1493	19. 36	·03286			
10. 23	43. 15	5. 46	·1475	7. 33	·03378				19. 32	44. 55	10. 17	·1483		***			
10. 28	45. 25	5. 50	·1493	7. 39	·03364				19. 48	43. 55	10. 19	·1476	20. 0	·03287			
10. 35	45. 45	5. 52	·1472	7. 49	·03368				19. 59	47. 0	10. 21	·1479	20. 2	·03270			
10. 40	47. 0	5. 54	·1479	7. 55	·03391				20. 0	41. 50	10. 25	·1470	20. 11	·03298			
10. 43	43. 40	5. 58	·1492	8. 2	·03350				20. 8	45. 0	10. 30	·1476	20. 13	·03277			
10. 52	43. 55	6. 1	·1471	8. 6	·03370				20. 12	42. 35	10. 40	·1477	20. 22	·03276			
11. 2	43. 15	6. 5	·1490	8. 11	·03345				20. 19	44. 0	10. 43	·1486	20. 26	·03298			
11. 11	43. 35	6. 9	·1479	8. 13	·03372				20. 23	47. 30	10. 48	·1478	20. 38	·03277			
11. 22	42. 30	6. 13	·1489	8. 23	·03362				20. 29	43. 10	10. 53	·1479	21. 37	·03255			
11. 30	43. 35	6. 15	·1481	8. 40	·03367				20. 41	44. 30	10. 56	·1473	22. 33	·03250			
11. 35	43. 30	6. 20	·1483	8. 48	·03391				20. 51	43. 30	11. 0	·1475	23. 25	·03233			
11. 42	46. 10	6. 33	·1481	8. 55	·03370				21. 3	44. 0	11. 7	·1467	23. 59	·03248			
11. 52	45. 20	6. 37	·1491	8. 58	·03391				21. 6	44. 45	11. 11	·1470					
11. 58	44. 0	6. 40	·1480	9. 0	·03370				21. 55	45. 50	11. 20	·1472					
12. 5	45. 15	6. 42	·1493		***				22. 10	46. 40	11. 25	·1467					
12. 40	42. 35	6. 46	·1484	9. 23	·03391				22. 53	49. 0	11. 45	·1481					
12. 54	43. 0	6. 54	·1473	9. 29	·03386				23. 2	49. 10	11. 52	·1474					
13. 10	45. 5	7. 1	·1484		***				23. 12	51. 5	12. 0	·1482					
13. 22	45. 50	7. 6	·1480	9. 58	·03390				23. 26	50. 35	12. 5	·1477					
13. 32	45. 0	7. 10	·1484	10. 4	·03412				23. 28	51. 45	12. 8	·1479					
13. 39	45. 0	7. 12	·1471	10. 10	·03390				23. 30	51. 50	12. 26	·1473					
13. 45	44. 15	7. 19	·1475	10. 11	·03412				23. 37	52. 20	12. 35	·1478					
13. 51	45. 50	7. 23	·1480	10. 15	·03389				23. 44	51. 55	12. 39	·1474					
13. 57	44. 45	7. 29	·1469	10. 19	·03410				23. 59	55. 15	12. 42	·1476					

For the Horizontal and Vertical Forces, increasing readings denote increasing forces.

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Of V. F. Magnet.
h m	° ′ ″	Mar. 23 h m		h m		h m	°	°
		12.47	·1474					
		12.57	·1477					
		13. 4	·1473					
		13.15	·1478					
		13.21	·1475					
		13.32	·1476					
		13.38	·1479					
		13.48	·1475					
		13.52	·1482					
		13.58	·1477					
		14. 5	·1479					
		14.10	·1473					
		14.15	·1475					
		14.25	·1469					
		14.37	·1475					
		15. 6	·1477					
		15.20	·1474					
		15.30	·1476					
		16. 0	·1475					
		16. 7	·1476					
		16.13	·1474					
		16.21	·1480					
		16.31	·1477					
		16.38	·1481 ***					
		16.53	·1478					
		16.57	·1485					
		17. 1	·1483					
		17. 4	·1490					
		17.10	·1483					
		17.13	·1487					
		17.17	·1482					
		17.21	·1489					
		17.27	·1483					
		17.31	·1492					
		17.35	·1482					
		17.38	·1483 ***					
		17.57	·1483					
		18. 5	·1487					
		18.13	·1485					
		18.17	·1483					
		18.23	·1488					
		18.29	·1480					
		18.35	·1484					
		18.37	·1481					
		18.45	·1482					
		18.48	·1476					
		18.51	·1481					
		18.53	·1478					
		18.58	·1482					
		19. 1	·1479					
		19.10	·1483					
		19.19	·1480 ***					
		19.31	·1477					
		19.35	·1480					
		20. 8	·1469					

Greenwich Mean Solar Time.	Western Declination.
h m	° ′ ″
Apr. 1	
0. 0	19.49.20
0. 5	51.20
0.13	51.25
0.19	50.10
0.37	52.40
0.40	52. 0
0.54	53.25
1. 2	51.55
1. 7	53.30
1.10	51.50
1.23	51.20
1.31	53.35
1.39	52.20
1.55	52. 0
2. 8	52.50
2.11	50.25
2.14	52.55
2.25	51.25
2.32	53.30
2.41	52.25
2.56	52. 0
3. 2	52.55
3. 8	51. 0
3.11	53.15
3.13	51.50
3.18	53.45
3.20	51. 0
3.23	51.45
3.29	49.35
3.32	51. 0

Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.
Mar. 23 h m	
20.15	·1472
20.29	·1464
20.43	·1471
21. 3	·1467
21. 7	·1462
21.11	·1466
21.15	·1462
21.23	·1466
21.37	·1464
21.40	·1460
21.58	·1461
22.15	·1459
22.23	·1456
22.35	·1461
22.42	·1456
22.48	·1456
22.52	·1453
22.56	·1457
23. 3	·1453
23.15	·1456
23.18	·1459
23.22	·1454
23.38	·1456
23.42	·1451
23.51	·1453
23.59	·1458
Apr. 1	
0. 0	·1495
0. 7	·1501
0.15	·1500
0.21	·1495
0.36	·1502
0.43	·1499
0.52	·1502
0.57	·1507
1. 3	·1497
1. 8	·1509
1.23	·1499
1.27	·1500
1.35	·1511
1.41	·1504
1.47	·1508
1.50	·1505
1.56	·1509
1.58	·1507
2. 9	·1515
2.13	·1502
2.20	·1515
2.27	·1510
2.36	·1521
2.42	·1517
3. 0	·1517
3. 3	·1523
3. 8	·1520
3.11	·1517
3.13	·1513
3.15	·1529

Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.
h m	
Apr. 1	
0. 0	·02990
0.12	·02990
0.18	·02987
0.38	·03000
0.57	·03015
1. 2	·03010
1. 5	·03030
1. 9	·03015
1.26	·03030
1.30	·03045
1.39	·03032
2. 7	·03047
2.12	·03027
2.18	·03052
2.57	·03050
3. 2	·03062
3. 8	·03050
3.10	·03072
3.15	·03050
3.20	·03078
3.33	·03062
4.25	·03090
4.32	·03113
4.35	·03073
4.39	·03108
4.41	·03084
4.49	·03103
5. 2	·03092
5.15	·03108
5.19	·03104

Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Of V. F. Magnet.
h m	°	°
Apr. 1		
0. 0	61·7	61·2
1. 0	61·7	61·5
2. 0	61·7	61·5
3. 0	61·9	61·7
9. 0	61·5	61·4
21.45	63·2	63·5

The indications are taken from the sheets of the Photographic Record, except where an asterisk is attached to the number, in which instances they are inferred from observations made with the telescope in the ancient manner. The Symbol *** denotes that the magnet has been generally in a state of agitation. The Symbol (†) denotes that the register has failed between the preceding and following readings. The Symbol : attached to a time denotes that the reading will apply equally well to a considerable range of time near that which is recorded. A brace denotes that at this time the curve of the Vertical Force was dislocated, and the difference of the numbers included by the brace shows the amount of the displacement.

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
Apr. 1		Apr. 1		Apr. 1				
h m	° ′ ″	h m		h m		h m	°	°
3. 37	19. 48. 30	3. 17	·1519	6. 7	·03130			
3. 40	49. 55	3. 21	·1533	6. 10	·03126			
3. 53	49. 55	3. 25	·1518	6. 30	·03147			
3. 59	49. 15	3. 28	·1524	7. 1	·03166			
4. 6	50. 0	3. 31	·1511	7. 8	·03180			
4. 17	49. 20	3. 35	·1520	7. 10	·03170			
4. 27	50. 55	3. 39	·1505	7. 21	·03195			
4. 31	53. 40	3. 44	·1513	7. 27	·03220			
4. 33	50. 0	3. 48	·1511	7. 29	·03200			
4. 38	51. 45	3. 57	·1512	7. 32	·03220			
4. 43	49. 55	4. 2	·1510	7. 47	·03243			
4. 48	51. 0	4. 9	·1514	7. 51	·03258			
4. 59	49. 45	4. 12	·1512	7. 53	·03247			
5. 7	48. 25	4. 21	·1516	8. 8	·03311			
5. 16	49. 45	4. 29	·1529	8. 12	·03327			
5. 20	48. 40	4. 35	·1546	8. 17	·03317			
5. 32	49. 10	4. 37	·1527	8. 30	·03340			
5. 39	48. 55	4. 41	·1539	8. 36	·03360			
5. 51	50. 35	4. 44	·1534	8. 41	·03350			
5. 57	50. 20	4. 47	·1532	8. 50	·03400			
6. 3	51. 0	4. 51	·1536	9. 2	·03380			
6. 18	49. 30	4. 55	·1538	9. 18	·03350			
6. 24	48. 25	5. 0	·1533	9. 33	·03266			
6. 32	48. 55	5. 8	·1526	9. 52	·03338			
6. 39	48. 15	5. 20	·1536	9. 57	·03246			
6. 42	49. 0	5. 23	·1533	9. 59	·03190			
6. 52	48. 50	5. 29	·1536	10. 7	·03290			
6. 57	48. 10	5. 48	·1542	10. 20	·03209			
7. 7	49. 40	5. 57	·1534	10. 31	·03240			
7. 13	48. 50	6. 6	·1536	10. 38	·03240			
7. 27	53. 10	6. 8	·1532	10. 57	·03190			
7. 31	52. 35	6. 10	·1533	11. 0	·03200			
7. 43	57. 0	6. 14	·1527	11. 5	·03150			
7. 50	55. 5	6. 17	·1529	11. 15	·03211			
8. 0	50. 10	6. 20	·1526	11. 21	·03186			
8. 2	50. 35	6. 28	·1529	11. 28	·03192			
8. 10	47. 40	6. 33	·1533	11. 40	·03160			
8. 13	45. 5	6. 39	·1526	11. 48	·03117			
8. 20	45. 40	6. 45	·1529	11. 50	·03135			
8. 26	47. 45	6. 48	·1527	12. 1	·03095			
8. 31	47. 0	6. 53	·1525	12. 9	·03112			
8. 36	48. 35	6. 56	·1527	12. 25	·03050			
8. 41	46. 50	6. 58	·1525	12. 38	·03060			
8. 43	42. 50	7. 7	·1522	12. 45	·03044			
8. 50	39. 55	7. 11	·1527	12. 58	·03112			
8. 57	39. 50	7. 14	·1522	13. 5	·03110			
9. 2	37. 55	7. 17	·1520	13. 11	·03100			
9. 3	38. 0	7. 20	·1522	13. 22	·03112			
9. 10	33. 45	7. 22	·1514	13. 30	·03090			
9. 15	31. 5	7. 25	·1516	13. 41	·03107			
9. 23	28. 5	7. 28	·1511	13. 48	·03051			
9. 32	33. 10	7. 30	·1524	13. 53	·03065			
9. 41	26. 10	7. 32	·1511	14. 2	·03030			
9. 48	27. 45	7. 35	·1518	14. 6	·03011			
9. 57	13. 20	7. 40	·1523	14. 10	·02990			
10. 4	37. 10	7. 46	·1511	14. 15	·03012			
10. 9	29. 30	7. 50	·1498	14. 25	·02930			
10. 17	30. 45	7. 54	·1505	14. 32	·02908			

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
Apr. 1		Apr. 1		Apr. 1				
h m	° ′ ″	h m		h m		h m	°	°
10. 21	19. 33. 50	7. 58	·1501	14. 43	·02985			
10. 25	31. 35	8. 2	·1504	14. 55	·02970			
10. 29	32. 45	8. 8	·1491	15. 7	·02932			
10. 32	31. 30	8. 16	·1511	15. 25	·03010			
10. 40	24. 55	8. 18	·1507	15. 42	·03040			
10. 50	29. 30	8. 21	·1507	15. 51	·03043			
10. 54	27. 0	8. 26	·1491	16. 16	·03060			
10. 57	27. 40	8. 32	·1487	16. 24	·03058			
11. 6	24. 15	8. 35	·1489	16. 33	·03047			
11. 13	26. 0	8. 39	·1478	16. 48	·03060			
11. 22	31. 0	8. 41	·1469	16. 59	·03060			
11. 30	26. 45	8. 48	·1474	17. 4	·03045			
11. 42	6. 15	8. 58	·1460	17. 13	·03061			
11. 45	7. 40	9. 25	·1469	17. 28	·03025			
11. 52	4. 5	9. 35	·1452	17. 43	·02990			
12. 0	6. 5	9. 41	·1464	18. 0	·03010			
12. 7	7. 10	9. 48	·1458	18. 4	·03035			
12. 16	6. 45	10. 0	·1500	18. 38	·03065			
12. 22	10. 0	10. 4	·1468	18. 42	·03063			
12. 28	9. 50	10. 9	·1470	19. 8	·03082			
12. 42	14. 30	10. 13	·1461	19. 28	·03106			
12. 49	13. 10	10. 19	·1463	20. 14	·03150			
12. 53	10. 45	10. 21	·1458	20. 22	·03160			
13. 0	6. 50	10. 26	·1466	20. 32	·03168			
13. 10	15. 40	10. 28	·1459	20. 46	·03190			
13. 17	18. 25	10. 31	·1461	20. 51	·03192			
13. 20	17. 35	10. 33	·1457	20. 58	·03188			
13. 33	20. 30	10. 37	·1455	21. 2	·03200			
13. 47	17. 45	10. 45	·1467	21. 28	·03210			
13. 51	18. 0	10. 53	·1451	21. 35	·03207			
14. 0	14. 55	10. 57	·1435	21. 47	·03232			
14. 24	53. 0	11. 0	·1430	22. 3	·03210			
14. 30	45. 10	11. 4	·1430	22. 15	·03220			
14. 41	33. 25	11. 10	·1422	22. 29	·03210			
14. 50	28. 55	11. 18	·1448	22. 38	·03220			
15. 4	35. 40	11. 20	·1451	22. 49	·03208			
15. 21	27. 0	11. 23	·1462	23. 20	·03210			
15. 32	26. 45	11. 26	·1459	23. 38	·03212			
15. 38	27. 20	11. 36	·1468	23. 59	·03220			
15. 42	26. 55	11. 43	·1480					
15. 48	28. 55	11. 48	·1477					
16. 0	33. 15	11. 53	·1461					
16. 18	33. 30	11. 59	·1459					
16. 32	36. 30	12. 7	·1449					
16. 40	34. 30	12. 15	·1455					
16. 52	32. 25	12. 20	·1451					
17. 2	34. 10	12. 26	·1455					
17. 18	46. 55	12. 29	·1452					
17. 21	45. 30	12. 35	·1450					
17. 25	46. 0	12. 40	·1443					
17. 32	43. 20	12. 44	·1445					
17. 37	44. 15	12. 55	·1431					
17. 41	42. 30	13. 0	·1442					
17. 44	43. 40	13. 4	·1446					
17. 50	41. 0	13. 10	·1441					
18. 0	41. 40	13. 13	·1441					
18. 9	46. 45	13. 23	·1435					
18. 14	48. 45	13. 35	·1440					

For the Horizontal and Vertical Forces, increasing readings denote increasing forces.

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
Apr. 1		Apr. 1						
h m	° ′ ″	h m		h m		h m	°	°
18. 19	19. 47. 35	13. 40	·1435					
18. 29	49. 55	13. 51	·1441					
18. 32	49. 50	13. 57	·1430					
18. 39	51. 15	14. 6	·1402					
18. 52	49. 10	14. 14	·1411					
19. 5	50. 30	14. 21	·1430					
19. 19	47. 35	14. 23	·1450					
19. 27	49. 15	14. 30	·1447					
19. 32	48. 0	14. 34	·1451					
19. 38	48. 0	14. 41	·1452					
19. 48	45. 50	14. 53	·1477					
19. 52	46. 0	15. 2	·1471					
19. 56	44. 25	15. 6	·1457					
20. 0	43. 45	15. 13	·1450					
20. 2	44. 0	15. 15	·1452					
20. 9	42. 55	15. 18	·1448					
20. 19	42. 15	15. 32	·1457					
20. 22	43. 30	15. 36	·1458					
20. 28	42. 30	15. 43	·1464					
20. 31	43. 40	15. 47	·1461					
20. 40	42. 30	15. 52	·1463					
20. 51	48. 50	16. 0	·1455					
20. 56	48. 0	16. 13	·1461					
21. 0	51. 0	16. 19	·1469					
21. 15	47. 30	16. 29	·1475					
21. 27	48. 5	16. 32	·1473					
21. 32	47. 15	16. 37	·1475					
21. 42	48. 40	16. 42	·1469					
21. 49	55. 40	16. 52	·1471					
21. 57	57. 50	16. 59	·1459					
22. 8	54. 55	17. 6	·1450					
22. 12	55. 50	17. 12	·1438					
22. 17	55. 10	17. 22	·1467					
22. 21	56. 35	17. 27	·1479					
22. 29	55. 10	17. 36	·1485					
22. 33	57. 50	17. 43	·1478					
22. 39	57. 0	17. 47	·1468					
22. 43	57. 35	17. 52	·1470					
22. 49	57. 0	17. 56	·1468					
22. 54	57. 50	17. 58	·1471					
23. 1	58. 20	18. 4	·1471					
23. 7	58. 5	18. 8	·1474					
23. 10	59. 25	18. 15	·1465					
23. 12	57. 30	18. 24	·1466					
23. 20	58. 0	18. 30	·1462					
23. 24	58. 45	18. 38	·1458					
23. 29	57. 50	18. 50	·1450					
23. 32	58. 25	18. 57	·1451					
23. 37	56. 50	19. 7	·1448					
23. 48	58. 5	19. 12	·1441					
23. 55	19. 58. 0	19. 15	·1444					
23. 59	20. 0. 10	19. 18	·1441					
		19. 23	·1443					
		19. 27	·1438					
		19. 40	·1435					
		19. 49	·1436					
		20. 4	·1429					
		20. 13	·1430					

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
		Apr. 1						
h m	° ′ ″	h m		h m		h m	°	°
		20. 17	·1425					
		20. 20	·1427					
		20. 30	·1421					
		20. 34	·1416					
		20. 39	·1420					
		20. 44	·1425					
		20. 52	·1417					
		20. 56	·1412					
		21. 1	·1416					
		21. 6	·1413					
		21. 11	·1417					
		21. 13	·1414					
		21. 22	·1416					
		21. 35	·1402					
			(†)					
		22. 31	·1402					
		22. 39	·1405					
		22. 47	·1410					
		22. 51	·1407					
		22. 58	·1414					
			(†)					
Apr. 9		Apr. 9		Apr. 9		Apr. 9		
0. 0	19. 51. 0	0. 0	·1472	0. 0	·03022	0. 0	62 ·0	61 ·7
0. 35	53. 40	0. 31	·1476	0. 58	·03037	8. 30	62 ·2	62 ·3
0. 55	54. 0	0. 37	·1478	1. 38	·03060	21. 0	61 ·9	61 ·6
1. 21	55. 30	0. 43	·1475	1. 45	·03054	22. 0	62 ·0	61 ·7
1. 30	54. 55	0. 52	·1480	2. 54	·03090	23. 0	62 ·1	61 ·8
1. 35	55. 45	0. 55	·1477	3. 42	·03128			
1. 57	54. 15	1. 20	·1484	3. 55	·03146			
2. 30	55. 40	1. 25	·1487	4. 10	·03138			
2. 44	55. 15	1. 29	·1485	4. 37	·03160			
3. 5	52. 50	1. 32	·1486	4. 38	·03198			
3. 13	52. 40	1. 40	·1492	4. 40	·03167			
3. 20	51. 30	1. 58	·1489	4. 42	·03192			
3. 48	51. 10	2. 13	·1495	4. 45	·03176			
3. 53	52. 45	2. 28	·1500	4. 51	·03210			
4. 4	51. 55	2. 32	·1504	5. 1	·03192			
4. 18	50. 0	2. 38	·1504	5. 20	·03237			
4. 21	50. 5	2. 45	·1509	5. 26	·03222			
4. 36	49. 35	2. 52	·1507	5. 33	·03235			
4. 38	52. 15	3. 16	·1506	5. 40	·03210			
4. 40	50. 50	3. 20	·1504	5. 51	·03232			
4. 42	51. 30		***		***			
4. 46	50. 5	3. 50	·1510	6. 20	·03202			
4. 48	50. 45	3. 58	·1523	6. 32	·03200			
4. 53	49. 30	4. 6	·1520	6. 40	·03190			
5. 0	42. 45	4. 13	·1513		***			
5. 9	41. 45	4. 20	·1511	7. 0	·03190			
5. 21	47. 15	4. 23	·1513	7. 10	·03192			
5. 24	47. 0	4. 29	·1511	7. 19	·03178			
5. 33	49. 40	4. 37	·1515	7. 36	·03178			
5. 40	48. 5	4. 41	·1551	7. 47	·03209			
5. 51	51. 30	4. 44	·1538	8. 1	·03198			
5. 54	50. 30	4. 47	·1547	8. 7	·03186			
5. 58	51. 30	4. 50	·1541	8. 27	·03201			
6. 1	49. 45	4. 52	·1552	8. 39	·03159			
6. 8	46. 55	4. 57	·1562	8. 42	·03110			

The indications are taken from the sheets of the Photographic Record, except where an asterisk is attached to the number, in which instances they are inferred from observations made with the telescope in the ancient manner. The Symbol *** denotes that the magnet has been generally in a state of agitation. The Symbol (†) denotes that the register has failed between the preceding and following readings. The Symbol : attached to a time denotes that the reading will apply equally well to a considerable range of time near that which is recorded. A brace denotes that at this time the curve of the Vertical Force was dislocated, and the difference of the numbers included by the brace shows the amount of the displacement.

April 1. The spot of light for Horizontal Force was off the sheet in the direction of *decreasing* force from $21^h. 35^m.$ to $22^h. 31^m.$

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
Apr. 9		Apr. 9		Apr. 9				
h m	° ′ ″	h m		h m		h m	°	°
6. 19	19. 45. 50	5. 1	·1554	8. 52	·03120			
6. 40	47. 30	5. 10	·1550	9. 8	·02998			
6. 43	48. 50	5. 15	·1553	9. 11	·03011			
6. 50	49. 10	5. 26	·1543	9. 17	·02960			
7. 8	49. 5	5. 30	·1532	9. 27	·03058			
7. 14	50. 40	5. 40	·1524	9. 33	·02987			
7. 27	47. 45	5. 44	·1507	9. 38	·02946			
7. 41	40. 50	5. 50	·1520	9. 40	·02952			
7. 53	43. 40	5. 55	·1523	9. 47	·02850			
7. 58	45. 15	5. 57	·1511	9. 55	·02870			
8. 8	41. 0	6. 0	·1513	10. 2	·02771			
8. 16	42. 40	6. 2½	·1503	10. 10	·02648			
8. 27	51. 0	6. 11	·1495	10. 11	·02658			
8. 31	52. 0	6. 17	·1498	10. 17	·02563			
8. 51	36. 55	6. 22	·1496	10. 22	·02633			
9. 4	40. 0	6. 36	·1506	10. 28	·02710			
9. 12	38. 0	6. 39	·1512	10. 32	·02612			
9. 18	38. 15	6. 44	·1510	10. 36	·02650			
9. 23	27. 10	6. 48	·1518	10. 44	·02290			
9. 28	32. 20	6. 52	·1515	10. 57	·01687			
9. 32	33. 55	6. 55	·1524	11. 0	·02170			
9. 37	33. 0	6. 58	·1522	11. 8	·02492			
9. 40	34. 0	7. 3	·1527	11. 11	·02620			
9. 42	32. 45	7. 6	·1533	11. 22	·02834			
9. 47	33. 0	7. 10	·1531	11. 27	·02818			
9. 50	29. 10	7. 15	·1536	11. 30	·02848			
10. 3	24. 0	7. 21	·1520	11. 35	·02944			
10. 8	21. 55	7. 30	·1517	11. 40	·02987			
10. 14	25. 0	7. 42	·1508	11. 43	·02944			
10. 18	27. 0	7. 50	·1522	11. 49	·02953			
10. 23	25. 40	7. 58	·1526	12. 0	·02827			
10. 30	28. 30	8. 3	·1511	12. 7	·02858			
10. 32	28. 0	8. 7	·1513	12. 12	·02791			
10. 39	33. 55	8. 13	·1503	12. 28	·03015			
10. 47	30. 5	8. 19	·1506	12. 30	·02989			
10. 50	46. 55	8. 34	·1498	12. 31	·03017			
10. 52	46. 0	8. 48	·1479	12. 41	·02952			
10. 53	51. 15	8. 52	·1493	12. 48	·02842			
10. 59	41. 50	8. 57	·1501	13. 0	·02898			
11. 0	45. 55	9. 0	·1496	13. 9	·02990			
11. 2	40. 5	9. 2	·1499	13. 18	·02955			
11. 4	53. 55	9. 9	·1473	13. 49	·02890			
11. 10	51. 40	9. 15	·1481	13. 58	·02938			
11. 17	55. 15	9. 22	·1439	14. 5	·02850			
11. 20	51. 55	9. 26	·1445	14. 12	·02730			
11. 25	47. 10	9. 29	·1440	14. 18	·02767			
11. 31	36. 40	9. 32	·1441	14. 27	·02732			
11. 36	40. 5	9. 38	·1423	14. 32	·02667			
11. 40	36. 5	9. 42	·1417	14. 35	·02440			
11. 50	42. 0		(†)	14. 41	·02250			
11. 53	41. 0	9. 48	·1400*	14. 47	·02208			
11. 57	42. 30	9. 52	·1393*	14. 53	·02470			
11. 59	41. 5	9. 55	·1397*	15. 1	·02704			
12. 2	41. 40	10. 0	·1391*	15. 5	·02672			
12. 10	43. 30	10. 1	·1393*	15. 11	·02745			
12. 12	42. 0	10. 4	·1389*	15. 21	·02783			
12. 18	46. 0	10. 6	·1392*	15. 29	·02814			
12. 28	36. 0	10. 8	·1389*	15. 33	·02864			

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
Apr. 9		Apr. 9		Apr. 9				
h m	° ′ ″	h m		h m		h m	°	°
12. 36	19. 32. 45	10. 9	·1391*	15. 43	·02892			
12. 44	20. 0	10. 14	·1380*	15. 50	·02940			
12. 56	23. 5	10. 15	·1383*	15. 51	·02925			
13. 8	15. 55	10. 23	·1358*	15. 52	·02948			
13. 11	17. 55	10. 34	·1392*	15. 59	·02898			
13. 18	17. 50	10. 35	·1390*	16. 25	·02997			
13. 28	19. 45	10. 45	·1426	16. 36	·03010			
13. 45	24. 20	10. 53	·1309*	16. 58	·03064			
13. 53	21. 20	10. 54	·1314*	17. 0	·03052			
13. 58	21. 30	10. 59	·1278*	17. 9	·03074			
14. 8	11. 25	11. 5	·1345*	17. 20	·03070			
14. 13	13. 0	11. 12	·1418	17. 25	·03060			
14. 19	10. 55	11. 15	·1433	17. 31	·03075			
14. 23	11. 10	11. 17	·1439	17. 33	·03063			
14. 30	7. 55	11. 22	·1422	17. 46	·03055			
14. 36	10. 40	11. 25	·1427	18. 8	·03100			
14. 41	21. 45	11. 30	·1436	18. 12	·03090			
14. 48	13. 35	11. 34	·1445	18. 20	·03109			
14. 53	29. 0	11. 38	·1429	18. 28	·03117			
14. 56	27. 30	11. 40	·1440	18. 31	·03110			
15. 3	39. 5	11. 47	·1448	18. 40	·03128			
15. 8	37. 55	11. 51	·1435	18. 45	·03110			
15. 19	46. 5	12. 0	·1439	19. 8	·03110			
15. 23	42. 0	12. 8	·1435	19. 12	·03127			
15. 28	42. 40	12. 11	·1424	19. 17	·03105			
15. 31	39. 0	12. 14	·1429	19. 22	·03124			
15. 49	32. 50	12. 16	·1422	19. 28	·03106			
15. 51	35. 55	12. 20	·1418	19. 32	·03117			
15. 53	31. 15		(†)	19. 37	·03104			
16. 0	34. 50	12. 47	·1418	19. 41	·03112			
16. 2	30. 0	12. 49	·1426	19. 42	·03104			
16. 4	28. 0	12. 53	·1415	19. 48	·03112			
16. 9	31. 55	12. 57	·1418	19. 50	·03092			
16. 13	29. 50		(†)	19. 55	·03112			
16. 19	31. 20	13. 8	·1418	20. 10	·03112			
16. 23	28. 0	13. 9	·1422	20. 11	·03138			
16. 30	31. 30	13. 13	·1426	20. 15	·03112			
16. 31	30. 35	13. 19	·1418	20. 17	·03135			
16. 33	32. 5		(†)	20. 20	·03115			
16. 35	29. 55	13. 56	·1418	20. 22	·03127			
16. 39	32. 0	14. 1	·1438	20. 27	·03112			
16. 42	29. 30	14. 5	·1431	20. 31	·03138			
16. 59	40. 25	14. 10	·1435	20. 32	·03120			
17. 8	35. 30	14. 14	·1427	20. 40	·03120			
17. 12	38. 30	14. 16	·1418	20. 47	·03140			
17. 19	36. 55	14. 19	·1422	20. 50	·03125			
17. 21	38. 0	14. 22	·1418	21. 10	·03130			
17. 30	36. 0		(†)	21. 25	·03141			
17. 33	37. 40	15. 17	·1418	21. 35	·03130			
17. 36	36. 10	15. 24	·1472	21. 43	·03147			
17. 40	37. 10	15. 29	·1469	21. 58	·03145			
17. 43	35. 50	15. 34	·1477	22. 19	·03170			
17. 49	37. 5	15. 37	·1466	22. 20	·03150			
17. 53	34. 30	15. 40	·1468	22. 24	·03162			
18. 0	38. 30	15. 43	·1459	22. 28	·03144			
18. 2	37. 30	15. 47	·1464	22. 32	·03170			
18. 8	38. 50	15. 51	·1449	22. 42	·03140			
18. 11	37. 50	15. 54	·1462	22. 52	·03140			

For the Horizontal and Vertical Forces, increasing readings denote increasing forces.

April 9. The spot of light for Horizontal Force was off the sheet in the direction of *decreasing* force from 9h. 42m. to 11h. 12m. (with the exception of one minute at 10h. 45m.); from 12h. 20m. to 12h. 47m.; from 12h. 57m. to 13h. 8m.; from 13h. 19m. to 13h. 56m.; and from 14h. 22m. to 15h. 17m.

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Of V. F. Magnet.
Apr. 9		Apr. 9		Apr. 9				
h m	° ′ ″	h m		h m		h m	°	°
18.17	19.39.45	15.59	·1455	22.58	·03160			
18.30	42.35	16. 6	·1471	23. 5	·03161			
18.34	41.10	16. 9	·1467	23.20	·03172			
18.40	44. 0	16.18	·1473	23.35	·03184			
18.47	40.30	16.20	·1468	23.59	·03220			
18.55	42.15	16.27	·1466					
19. 7	39.30	16.41	·1449					
19.16	43.25	16.45	·1457					
19.19	40.40	16.51	·1460					
19.26	44.35	16.53	·1449					
19.30	42.35	16.55	·1454					
19.33	44.35	16.59	·1441					
19.38	40.45	17. 5	·1443					
19.42	43.15	17. 8	·1451					
19.44	41. 0	17.13	·1448					
19.50	44.15	17.20	·1456					
19.53	40.15	17.22	·1451					
19.59	45.10	17.28	·1454					
20. 4	44.45	17.31	·1460					
20.11	43. 0	17.33	·1454					
20.12	46.10	17.37	·1455					
20.17	44.10	17.41	·1449					
20.20	46. 5	17.44	·1451					
20.22	42.50	17.48	·1444					
20.26	44.45	17.57	·1451					
20.30	42.45	18. 0	·1444					
20.31	48. 5	18. 2	·1447					
20.38	44.45	18. 8	·1443					
20.42	41.35	18.11	·1449					
20.48	46.20	18.19	·1440					
20.52	43.30	18.21	·1442					
20.55	45. 5	18.30	·1442					
20.58	43.20	18.34	·1437					
21.10	45.30	18.40	·1445					
21.13	48.20	18.44	·1437					
21.19	46. 5	18.48	·1443					
21.20	48.45	18.50	·1436					
21.30	48. 5	18.52	·1444					
21.32	49. 0	18.57	·1438					
21.38	47.20	19. 0	·1443					
21.40	50.40	19. 1	·1440					
21.43	50. 0	19.14	·1458					
21.48	50.40	19.16	·1446					
21.55	49. 0	19.22	·1464					
22.15	52. 0	19.28	·1456					
22.24	55.30	19.31	·1460					
22.27	54.10	19.37	·1451					
22.28	55. 0	19.41	·1460					
22.30	52.30	19.43	·1451					
22.40	55.25	19.48	·1460					
22.50	55.20	19.50	·1449					
22.58	53.40	19.57	·1459					
23. 3	57.30	19.59	·1453					
23.10	19.59.10	20. 1	·1455					
23.19	20. 0.15	20. 2	·1451					
23.28	0.15	20. 6	·1454					
23.42	1.35	20. 8	·1450					
23.50	0.55	20.11	·1460					

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Of V. F. Magnet.
Apr. 9		Apr. 9						
h m	° ′ ″	h m		h m		h m	°	°
23.59	20. 1.55	20.13	·1447					
		20.17	·1456					
		20.19	·1446					
		20.24	·1450					
		20.27	·1446					
		20.30	·1457					
		20.33	·1447					
		20.40	·1447					
		20.44	·1440					
		20.50	·1455					
		20.53	·1445					
		21. 0	·1441					
		21.16	·1447					
		21.19	·1440					
			(†)					
		22.13	·1431					
		22.22	·1439					
		22.30	·1429					
		22.32	·1435					
		22.35	·1429					
		22.40	·1441					
		22.50	·1440					
		22.52	·1432					
		22.55	·1435					
		23. 0	·1431					
		23. 3	·1444					
		23. 8	·1441					
		23.10	·1446					
		23.12	·1443					
		23.18	·1452					
		23.21	·1445					
			(†)					
		23.59	·1450					
Apr. 17		Apr. 17		Apr. 17		Apr. 17		
0. 0	19.56.25	0. 0	·1455	0. 0	·03090	0. 0	62·6	62·2
	***	0. 9	·1452	0.55	·03112	1. 0	62·3	62·0
0.26	58.50	0.14	·1457	1.33	·03142	2. 0	62·4	62·4
0.31	58.10	0.18	·1454	2.50	·03150	3. 0	62·6	62·7
0.39	58.40	0.36	·1454	3.38	·03155	9. 0	63·5	63·5
0.50	56.40	0.40	·1457	4.10	·03172	21. 0	63·1	62·5
1. 0	57.15	0.46	·1452	4.19	·03185	22. 0	62·1	61·8
1.10	56. 0	0.51	·1457	4.23	·03182	23. 0	62·1	61·7
1.18	55.55	0.54	·1453	4.32	·03192			
1.33	54.10	0.57	·1453	4.42	·03187			
1.57	53.55	1. 5	·1460	4.50	·03204			
2.18	52. 0	1.12	·1457	4.56	·03192			
2.52	51.55	1.22	·1457	5.24	·03210			
3. 0	52.45	1.34	·1453	5.40	·03225			
3.30	50. 0	2. 7	·1464	6.59	·03251			
4. 0	49. 5	2.20	·1463	7. 5	·03290			
4.10	49. 5	2.37	·1465	7.10	·03250			
4.18	48.30	2.45	·1469	7.15	·03250			
4.23	48.45	2.53	·1468	7.32	·03252			
4.30	48.10	2.59	·1473	7.39	·03247			
4.38	48.40	3. 4	·1470	7.42	·03255			
4.48	47.30	3.12	·1477	7.51	·03240			
4.53	48.10	3.15	·1475	8. 7	·03232			

The indications are taken from the sheets of the Photographic Record, except where an asterisk is attached to the number, in which instances they are inferred from observations made with the telescope in the ancient manner. The Symbol *** denotes that the magnet has been generally in a state of agitation. The Symbol (†) denotes that the register has failed between the preceding and following readings. The Symbol : attached to a time denotes that the reading will apply equally well to a considerable range of time near that which is recorded. A brace denotes that at this time the curve of the Vertical Force was dislocated, and the difference of the numbers included by the brace shows the amount of the displacement.

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
Apr. 17		Apr. 17		Apr. 17				
h m	° ′ ″	h m		h m		h m	°	°
5. 0	19. 47. 15	3. 22	·1478	8. 42	·03245			
5. 23	46. 15	3. 31	·1475	8. 51	·03230			
5. 39	45. 15	3. 41	·1479	8. 55	·03240			
5. 45	45. 15	4. 0	·1480	8. 59	·03230			
6. 9	42. 35	4. 15	·1487	9. 22	·03232			
6. 20	42. 5	4. 20	·1486	10. 1	·03220			
6. 30	40. 45	4. 27	·1491	10. 59	·03220			
6. 50	39. 45	4. 30	·1489	11. 9	·03238			
7. 0	39. 40	4. 38	·1495	11. 13	·03212			
7. 9	41. 10	4. 51	·1492	11. 21	·03212			
7. 11	38. 25	4. 57	·1498	11. 29	·03224			
7. 23	34. 50	5. 1	·1495	11. 42	·03190			
7. 40	38. 30	5. 5	·1498	11. 54	·03180			
7. 45	37. 40	5. 10	·1495	12. 11	·03132			
7. 49	38. 50	5. 17	·1497	12. 40	·03080			
7. 55	37. 0	5. 28	·1497	12. 53	·02984			
8. 0	38. 0	5. 31	·1495	13. 1	·03008			
8. 12	38. 0	5. 43	·1500	13. 5	·02972			
8. 28	38. 55	5. 54	·1496	13. 14	·03030			
8. 38	40. 40	5. 58	·1499	13. 33	·03048			
8. 48	42. 0	6. 1	·1495	13. 50	·03062			
8. 51	41. 45	6. 25	·1497	13. 59	·03030			
8. 59	44. 0	6. 31	·1500	14. 5	·03040			
9. 8	44. 10	6. 40	·1502	14. 8	·03030			
9. 17	43. 15	6. 53	·1509	14. 15	·03030			
9. 19	44. 0	7. 1	·1508	14. 25	·03104			
9. 27	45. 10	7. 6	·1553	14. 32	·03110			
9. 38	44. 30	7. 10	·1540	14. 41	·03132			
9. 48	45. 5	7. 15	·1542	14. 49	·03117			
9. 58	45. 0	7. 20	·1537	15. 11	·03162			
10. 8	45. 40	7. 35	·1531	15. 22	·03163			
10. 12	45. 0	7. 41	·1524	15. 40	·03190			
10. 18	45. 55	7. 48	·1526	15. 43	·03170			
10. 22	44. 45	7. 51	·1518	16. 0	·03184			
10. 33	46. 15	7. 59	·1519	16. 28	·03195			
10. 41	45. 0	8. 19	·1506	16. 34	·03182			
10. 59	45. 0	8. 28	·1506	16. 42	·03200			
11. 8	44. 5	8. 32	·1503	16. 50	·03192			
11. 18	48. 0	8. 42	·1506	17. 20	·03203			
11. 27	46. 40	8. 48	·1514		***			
11. 34	48. 0	8. 53	·1506	17. 48	·03210			
11. 52	45. 15	8. 58	·1509	17. 52	·03206			
12. 2	45. 5	9. 1	·1506	18. 0	·03211			
12. 23	37. 0	9. 10	·1508	18. 42	·03215			
12. 32	36. 0	9. 17	·1504	19. 0	·03210			
12. 42	38. 0	9. 33	·1511	19. 22	·03210			
12. 47	37. 15	9. 36	·1507	19. 37	·03190			
12. 52	34. 50	9. 40	·1510	19. 40	·03210			
12. 55	35. 45	9. 44	·1507	19. 43	·03184			
13. 1	35. 30	9. 57	·1510	19. 50	·03213			
13. 23	14. 50	10. 0	·1508	19. 58	·03192			
13. 32	19. 45	10. 9	·1512	20. 0	·03208			
13. 45	24. 30	10. 11	·1510	20. 5	·03192			
13. 52	23. 5	10. 19	·1514	20. 11	·03210			
14. 2	28. 10	10. 24	·1511	20. 17	·03176			
14. 18	22. 15	10. 30	·1515	20. 22	·03195			
14. 22	23. 50	10. 41	·1510	20. 49	·03178			
14. 30	19. 15	10. 48	·1512	21. 18	·03161			

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
Apr. 17		Apr. 17		Apr. 17				
h m	° ′ ″	h m		h m		h m	°	°
14. 39	19. 27. 10	10. 51	·1517	21. 35	·03150			
14. 43	27. 30	10. 57	·1509	22. 15	·03110			
14. 48	31. 20	11. 1	·1512	22. 41	·03095			
14. 51	29. 5	11. 4	·1510	22. 58	·03100			
15. 0	27. 40	11. 17	·1526	23. 42	·03092			
15. 5	31. 0	11. 29	·1502	23. 57	·03087			
15. 29	31. 30	11. 39	·1518	23. 59	·03090			
15. 30	38. 10	11. 56	·1522					
15. 33	35. 45	12. 2	·1527					
15. 40	38. 0	12. 12	·1514					
15. 42	39. 10	12. 19	·1506					
15. 47	41. 30	12. 25	·1511					
15. 50	44. 30	12. 36	·1494					
15. 55	38. 30	12. 41	·1498					
15. 59	39. 45	12. 49	·1490					
16. 5	40. 30	12. 58	·1467					
16. 9	37. 55	13. 10	·1415					
16. 10	39. 15	13. 23	·1447					
16. 12	36. 55	13. 28	·1444					
16. 15	39. 15	13. 39	·1450					
16. 23	37. 0	13. 45	·1447					
16. 31	37. 45	13. 59	·1453					
16. 35	40. 40	14. 6	·1438					
16. 40	39. 0	14. 11	·1446					
16. 42	40. 0	14. 14	·1441					
16. 45	38. 0	14. 17	·1445					
16. 50	39. 30	14. 20	·1435					
16. 52	37. 40	14. 22	·1443					
16. 54	38. 40	14. 25	·1432					
17. 0	37. 5	14. 31	·1448					
17. 2	38. 55	14. 35	·1452					
17. 7	38. 15	14. 39	·1449					
17. 17	40. 40	14. 47	·1460					
17. 18	39. 40	14. 55	·1468					
17. 22	41. 15	14. 58	·1465					
17. 28	40. 0	15. 3	·1471					
17. 32	37. 5	15. 14	·1476					
17. 38	39. 30	15. 20	·1486					
17. 40	37. 5	15. 24	·1487					
17. 42	38. 25	15. 27	·1483					
17. 48	34. 5	15. 29	·1480					
17. 50	38. 5	15. 31	·1475					
17. 51	36. 0	15. 34	·1481					
17. 57	37. 55	15. 45	·1490					
18. 0	34. 45	15. 49	·1498					
18. 7	36. 15	15. 53	·1480					
18. 11	35. 35	16. 5	·1487					
18. 15	37. 15	16. 8	·1482					
18. 20	34. 45	16. 13	·1481					
18. 31	38. 30	16. 16	·1489					
18. 35	36. 25	16. 21	·1480					
18. 37	38. 30	16. 35	·1489					
18. 49	36. 35	16. 38	·1478					
18. 51	39. 40	16. 41	·1487					
18. 53	37. 25	16. 46	·1479					
18. 55	38. 30	16. 50	·1475					
18. 58	36. 30	16. 51	·1480					
19. 0	39. 5	16. 56	·1484					

For the Horizontal and Vertical Forces, increasing readings denote increasing forces.

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Of V. F. Magnet.
Apr.17		Apr.17						
h m	° ′ ″	h m		h m		h m	°	°
19. 3	19. 35. 45	16. 58	·1476					
19. 11	38. 20	17. 0	·1481					
19. 13	37. 0	17. 7	·1478					
19. 20	38. 50	17. 10	·1475					
19. 30	39. 10	17. 15	·1481					
19. 45	36. 0	17. 19	·1476					
19. 46	40. 10	17. 26	·1478					
19. 50	34. 15	17. 37	·1470					
19. 55	41. 15	17. 40	·1476					
19. 58	39. 0	17. 43	·1471					
20. 0	40. 5	17. 47	·1477					
20. 2	37. 0	17. 49	·1460					
20. 8	38. 15	17. 51	·1474					
20. 12	36. 35	17. 53	·1465					
20. 20	39. 30	17. 58	·1474					
20. 28	32. 45	18. 1	·1468					
20. 31	38. 10	18. 11	·1466					
20. 45	38. 0	18. 20	·1470					
20. 53	36. 40	18. 23	·1463					
20. 58	39. 45	18. 27	·1469					
21. 1	38. 10	18. 33	·1468					
21. 4	39. 30	18. 37	·1463					
21. 10	38. 15	18. 40	·1469					
21. 15	39. 40	18. 44	·1465					
21. 20	39. 10	18. 48	·1468					
21. 25	40. 45	18. 50	·1464					
21. 33	40. 30	18. 52	·1469					
21. 48	43. 0	19. 0	·1471					
22. 20	46. 40	19. 7	·1461					
22. 25	45. 50	19. 11	·1469					
22. 32	47. 30	19. 17	·1461					
22. 37	46. 20	19. 21	·1464					
22. 52	47. 40	19. 26	·1460					
23. 0	50. 0	19. 30	·1465					
23. 7	49. 30	19. 41	·1465					
23. 26	53. 0	19 ·44	·1457					
23. 30	52. 0	19. 47	·1469					
23. 44	54. 0	19. 50	·1455					
23. 59	53. 0	19. 58	·1464					
		20. 2	·1455					
		20. 9	·1459					
		20. 13	·1455					
		20. 18	·1460					
		20. 25	·1449					
		20. 28	·1454					
		20. 31	·1461					
		20. 35	·1457					
		20. 42	·1459					
		20. 46	·1455					
		20. 52	·1459					
		20. 56	·1455					
		20. 59	·1460					
		21. 4	·1459					
		21. 7	·1452					
		21. 15	·1457					
		21. 25	·1457					
		21. 31	·1456					
		21. 35	·1452					

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Of V. F. Magnet.
		Apr.17						
h m	° ′ ″	h m		h m		h m	°	°
		21. 45	·1458 ***					
		22. 19	·1459					
		22. 25	·1448					
		22. 38	·1446					
		22. 44	·1451					
		22. 50	·1448					
		22. 58	·1453					
		23. 10	·1456					
		23. 18	·1460					
		23. 28	·1458					
		23. 38	·1466					
		23. 51	·1466					
		23. 58	·1457					
Apr.18		Apr.18		Apr.18		Apr.18		
0. 0	19. 53. 0	0. 0	·1460	0. 0	·03090	0. 0	62 ·7	62 ·2
0. 20	55. 45	0. 5	·1469	0. 10	·03097	1. 0	62 ·8	62 ·6
1. 0	56. 55	0. 15	·1468	0. 40	·03094	2. 0	62 ·6	62 ·5
1. 8	58. 0	0. 18	·1472	1. 12	·03120	3. 0	62 ·8	62 ·7
1. 18	56. 50	0. 36	·1466	2. 0	·03156	9. 0	63 ·5	63 ·3
1. 42	57. 45	0. 41	·1469	2. 5	·03150	21. 0	63 ·5	63 ·3
2. 0	57. 55	0. 50	·1466	2. 19	·03158	22. 0	63 ·5	63 ·3
2. 20	56. 0	0. 59	1473	3. 0	·03190	23. 0	63 ·5	63 ·4
2. 43	56. 15	1. 8	·1472	3. 25	·03200			
3. 11	54. 55	1. 12	·1476	3. 40	·03200			
3. 30	54. 30	1. 26	·1468	4. 10	·03220			
3. 43	53. 40	1. 47	·1476	4. 18	·03226			
3. 58	53. 40	1. 53	·1483	4. 31	·03240			
4. 21	51. 55	1. 58	·1482	4. 40	·03240			
4. 43	50. 30	2. 3	·1486	5. 2	·03270			
4. 55	49. 30	2. 13	·1480	5. 7	·03270			
5. 10	49. 30	2. 20	·1477	5. 19	·03286			
5. 20	48. 0	2. 26	·1471	5. 23	·03300			
5. 30	49. 0	2. 43	·1481	5. 50	·03320			
	(†)	2. 52	·1488	6. 4	·03345			
9. 25	40. 15	3. 16	·1490	6. 8	·03328			
9. 30	44. 35	3. 24	·1493	6. 20	·03350			
9. 40	29. 45	3. 29	·1491	6. 26	·03328			
9. 47	25. 0	3. 37	·1493	6. 37	·03350			
9. 53	26. 25	3. 50	·1488	6. 55	·03372			
10. 2	30. 0	4. 12	·1498	7. 0	·03361			
10. 10	29. 0	4. 16	·1496	7. 21	·03381			
10. 18	23. 15	4. 22	·1496	7. 35	·03357			
10. 32	33. 50	4. 36	·1505	7. 45	·03314			
10. 39	30. 15	4. 42	·1502	7. 52	·03304			
10. 42	26. 30	4. 51	·1509	8. 3	·03348			
10. 51	35. 45	4. 57	·1507	8. 7	·03330			
11. 2	39. 50	5. 0	·1518	8. 11	·03340			
11. 8	38. 5	5. 7	·1512	8. 19	·03275			
11. 12	41. 0	5. 10	·1517	8. 21	·03291			
11. 22	40. 55	5. 21	·1513	8. 30	·03135			
11. 31	39. 0	5. 26	·1520	8. 36	·03172			
11. 41	38. 0	5. 33	·1524	8. 41	·03124			
11. 45	38. 55		(†)	8. 51	·03170			
11. 51	37. 10	9. 15	·1465	9. 10	·03340			
12. 0	37. 20	9. 20	·1469	9. 26	·03250			
12. 2	36. 35	9. 24	·1485	9. 39	·03320			

The indications are taken from the sheets of the Photographic Record, except where an asterisk is attached to the number, in which instances they are inferred from observations made with the telescope in the ancient manner. The Symbol *** denotes that the magnet has been generally in a state of agitation. The Symbol (†) denotes that the register has failed between the preceding and following readings. The Symbol : attached to a time denotes that the reading will apply equally well to a considerable range of time near that which is recorded. A brace denotes that at this time the curve of the Vertical Force was dislocated, and the difference of the numbers included by the brace shows the amount of the displacement.

April 18. Between $5^h. 33^m.$ and $9^h. 15^m.$ the driving clock of the Declination and Horizontal Force Cylinder was not going; within these times the Declination varied between 19°. 41′. 30″. and 20°. 8′. 30″., and the Horizontal Force between ·1440 and ·1545.

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
Apr. 18		Apr. 18		Apr. 18				
h m	° ′ ″	h m		h m		h m	°	°
12. 6	19. 39. 0	9. 27	·1471	9. 58	·03290			
12. 18	38. 10	9. 29	·1462	10. 8	·03240			
12. 28	41. 30	9. 31	·1465	10. 23	·03187			
12. 40	49. 35	9. 34	·1453	10. 29	·03198			
12. 48	46. 55	9. 45	·1467	10. 32	·03184			
12. 51	46. 0	9. 49	·1474	10. 42	·03210			
12. 59	46. 45	9. 52	·1470	10. 46	·03198			
13. 10	50. 0	10. 2	·1480	11. 2	·03240			
13. 19	49. 30	10. 11	·1467	11. 13	·03245			
13. 28	45. 10	10. 18	·1448	11. 31	·03296			
13. 42	52. 45	10. 21	·1453	11. 40	·03292			
13. 50	51. 50	10. 25	·1452	11. 50	·03272			
13. 57	49. 30	10. 32	·1458	12. 8	·03302			
14. 3	48. 0	10. 35	·1458	12. 12	·03294			
14. 22	45. 0	10. 39	·1448	12. 21	·03310			
14. 50	43. 40	10. 41	·1449	12. 32	·03280			
15. 0	44. 0	10. 45	·1443	12. 59	·03240			
15. 15	42. 45	10. 50	·1456	13. 18	·03182			
15. 32	43. 0	10. 55	·1443	13. 30	·03191			
15. 51	41. 45	11. 1	·1441	13. 48	·03164			
16. 11	41. 40	11. 9	·1444	14. 2	·03182			
16. 23	41. 0	11. 16	·1449	14. 10	·03184			
17. 5	42. 45	11. 21	·1443	14. 51	·03240			
17. 21	42. 20	11. 29	·1445	15. 4	·03240			
17. 30	42. 30	11. 43	·1461	15. 22	·03250			
17. 40	42. 0	11. 52	·1454	16. 19	·03250			
17. 53	43. 0	11. 54	·1451	17. 3	·03258			
18. 0	42. 0	11. 58	·1454	17. 41	·03250			
18. 28	41. 10	12. 1	·1449	18. 37	·03253			
18. 32	41. 45	12. 5	·1454	19. 10	·03253			
18. 39	41. 10	12. 8	·1453	19. 25	·03248			
18. 49	40. 10	12. 13	·1456	19. 46	·03253			
18. 50	40. 45	12. 21	·1453	20. 36	·03240			
19. 0	40. 10	12. 28	·1458	21. 34	·03230			
19. 10	40. 45	12. 37	·1443	22. 18	·03210			
19. 30	39. 0	12. 46	·1444	23. 0	·03200			
19. 43	40. 10	12. 53	·1456	23. 59	·03200			
20. 0	40. 50	13. 5	·1472					
20. 8	40. 20	13. 15	·1475					
20. 28	41. 15	13. 21	·1468					
20. 35	40. 50	13. 30	·1477					
20. 59	42. 30	13. 38	·1482					
21. 25	42. 45	13. 47	·1478					
21. 53	45. 0	13. 50	·1474					
22. 8	45. 5	13. 57	·1477					
23. 10	51. 15	14. 1	·1475					
23. 22	52. 30	14. 7	·1477					
23. 48	54. 15	14. 17	·1475					
23. 59	54. 0	14. 25	·1478					
		14. 48	·1477					
		14. 57	·1480					
		15. 10	·1476					
		15. 17	·1478					
		15. 49	·1480					
		15. 55	·1481					
		16. 10	·1481					
		16. 16	·1478					
		16. 50	·1478					
		16. 59	·1480					

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
		Apr. 18						
h m	° ′ ″	h m		h m		h m	°	°
		17. 43	·1478					
		17. 50	·1476					
		17. 56	·1477					
		18. 1	·1475					
		18. 15	·1476					
		18. 29	·1473					
		18. 35	·1474					
		19. 1	·1468					
		19. 24	·1468					
		19. 33	·1463					
		19. 49	·1461					
		20. 1	·1464					
		20. 26	·1463					
		20. 36	·1459					
		20. 42	·1460					
		20. 49	·1457					
		20. 58	·1458					
		21. 4	·1455					
		21. 14	·1456					
		21. 21	·1453					
		21. 55	·1452					
		22. 8	·1447					
		22. 57	·1449					
		23. 4	·1448					
		23. 10	·1450					
		23. 13	·1449					
		23. 20	·1454					
		23. 27	·1453					
		23. 39	·1460					
		23. 50	·1456					
		23. 55	·1459					
		23. 59	·1457					
June 17		June 17		June 17		June 17		
0. 0	19. 45. 0	0. 0	·1500	0. 0	·03130	0. 0	67 ·0	66 ·7
1. 0	48. 10	0. 42	·1504	0. 10	·03140	1. 0	67 ·3	67 ·6
2. 20	49. 0	1. 33	·1515	1. 5	·03188	2. 0	67 ·4	67 ·6
3. 0	47. 30	1. 57	·1516	1. 48	·03213	3. 0	67 ·5	67 ·5
3. 18	46. 30	2. 14	·1524	2. 25	·03233	9. 0	66 ·3	65 ·9
3. 37	46. 10	2. 47	·1518	3. 9	·03252	22. 0	66 ·0	65 ·1
4. 2	46. 40	3. 7	·1520	4. 10	·03280			
4. 28	45. 50	3. 14	·1515	4. 42	·03273			
4. 58	43. 40	3. 48	·1521	5. 41	·03268			
5. 30	42. 0	4. 3	·1526	6. 30	·03250			
6. 10	41. 40		***	7. 52	·03218			
6. 27	40. 50	4. 43	·1529	9. 0	·03207			
6. 43	41. 0	4. 51	·1525	10. 2	·03208			
7. 17	40. 5	5. 24	·1526	10. 40	·03210			
8. 7	40. 20	5. 31	·1524	11. 0	·03210			
8. 37	39. 40	5. 40	·1529	11. 11	·03218			
9. 12	40. 0	5. 47	·1527	11. 18	·03210			
9. 52	40. 20	6. 7	·1528	11. 28	·03216			
10. 25	39. 45	6. 13	·1531	11. 32	·03312			
11. 10	38. 25	6. 23	·1527	11. 33	·03232			
11. 31	38. 30	6. 31	·1532	11. 38	·03206			
11. 48	43. 45	6. 56	·1529	11. 40	·03218			
11. 50	39. 5	7. 25	·1533	11. 41	·03160			
11. 52	42. 0	7. 40	·1535	11. 46	·03191			

For the Horizontal and Vertical Forces, increasing readings denote increasing forces.

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H.F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V.F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H.F. Magnet.	Readings of Thermometers. Of V.F. Magnet.
June 17 h m	° ′ ″	June 17 h m		June 17 h m		h m	°	°
12. 2	19. 39. 30	7. 56	·1531	11. 51	·03210			
12. 10	44. 5	8. 7	·1536	11. 58	·03188			
12. 18	50. 30	8. 12	·1534	12. 11	·03210			
12. 22	47. 45	8. 21	·1536	12. 18	·03170			
12. 29	52. 5	8. 31	·1537	12. 21	·03180			
12. 40	54. 10	8. 38	·1532	12. 32	·03128			
12. 53	41. 0	8. 59	·1534	12. 43	·02994			
12. 57	41. 30	9. 10	·1533	12. 50	·03020			
13. 0	37. 30	9. 28	·1534	13. 0	·02987			
13. 8	48. 10	9. 34	·1531	13. 1	·02992			
13. 10	39. 0	9. 42	·1533	13. 8	·02904			
13. 11	43. 0	9. 58	·1532	13. 11	·02944			
13. 13	39. 0	10. 6	·1534	13. 15	·02890			
13. 23	36. 0	10. 11	·1530	13. 21	·02927			
13. 28	43. 45	10. 19	·1532	13. 22	·02895			
13. 39	29. 50	10. 25	·1529	13. 25	·02940			
13. 41	33. 10	10. 34	·1531	13. 30	·02810			
13. 51	24. 10	10. 47	·1528	13. 36	·02660			
14. 0	19. 45	10. 55	·1532	13. 40	·02700			
14. 11	26. 55	11. 9	·1527	13. 41	·02660			
14. 17	25. 0	11. 18	·1533	13. 52	·02808			
14. 23	31. 0	11. 21	·1528	14. 4	·02927			
14. 32	28. 10	11. 27	·1526	14. 7	·02915			
14. 40	21. 45	11. 32	·1528	14. 12	·02957			
14. 53	48. 0	11. 34	·1522	14. 15	·02928			
15. 1	29. 50	11. 37	·1633	14. 18	·02940			
15. 8	33. 5	11. 39	·1604	14. 20	·02928			
15. 13	58. 10	11. 41	·1617	14. 24	·02942			
15. 18	19. 53. 0	11. 44	·1603	14. 27	·02927			
15. 20	20. 0. 15	11. 47	·1597	14. 29	·02936			
15. 33	19. 32. 20	11. 49	·1607	14. 33	·02906			
15. 43	21. 5	11. 50	·1558	14. 42	·02950			
16. 0	36. 30	11. 52	·1571	14. 50	·02758			
16. 7	31. 30	11. 54	·1562	15. 0	·02807			
16. 11	28. 0	11. 56	·1567	15. 4	·02740			
16. 13	29. 0	11. 58	·1576	15. 10	·02810			
16. 17	26. 55	12. 2	·1562	15. 11	·02724			
16. 19	30. 40	12. 8	·1564	15. 13	·02750			
16. 22	27. 55	12. 14	·1574	15. 19	·02584			
16. 26	25. 45	12. 17	·1571	15. 31	·02672			
16. 27	26. 50	12. 23	·1584	15. 40	·02720			
16. 30	24. 55	12. 28	·1563	15. 52	·02800			
16. 39	34. 10	12. 32	·1570	16. 0	·02770			
16. 41	33. 0	12. 36	·1561	16. 1	·02782			
16. 42	35. 0	12. 38	·1554	16. 3	·02760			
16. 48	32. 0	12. 43	·1544	16. 10	·02758			
16. 52	34. 30	12. 49	·1529	16. 15	·02790			
16. 58	33. 0	12. 54	·1487	16. 17	·02770			
17. 2	38. 0	12. 57	·1494	16. 21	·02783			
17. 18	44. 0	12. 59	·1487	16. 33	·02850			
17. 20	45. 45	13. 2	·1501	16. 48	·02897			
17. 23	42. 15	13. 6	·1495	16. 50	·02890			
17. 30	35. 10	13. 11	·1457	16. 58	·02918			
17. 37	38. 20	13. 17	·1468	17. 1	·02898			
17. 40	40. 25	13. 23	·1440	17. 16	·02930			
17. 43	32. 35	13. 25	·1459	17. 17	·02911			
17. 49	39. 55	13. 30	·1433	17. 21	·02940			
17. 51	39. 0	13. 32	·1455	17. 23	·02922			

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H.F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V.F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H.F. Magnet.	Readings of Thermometers. Of V.F. Magnet.
June 17 h m	° ′ ″	June 17 h m		June 17 h m		h m	°	°
17. 52	19. 41. 0	13. 34	·1447	17. 36	·02984			
17. 57	38. 35	13. 37	·1458	17. 40	·02954			
18. 0	41. 40	13. 39	·1474	17. 47	·02992			
18. 7	38. 0	13. 41	·1443		***			
18. 15	40. 30	13. 44	·1447	18. 0	·03010			
18. 22	33. 15	13. 48	·1443	18. 1	·02992			
18. 30	42. 15	13. 53	·1456	18. 14	·03027			
18. 37	32. 15	13. 56	·1470	18. 19	·03000			
18. 40	34. 55	14. 5	·1458	18. 23	·03040			
18. 47	30. 40	14. 8	·1472	18. 28	·03057			
18. 50	38. 5	14. 12	·1464	18. 31	·03028			
18. 51	34. 0	14. 17	·1480	18. 38	·03070			
18. 58	35. 15	14. 20	·1471	18. 48	·03090			
19. 0	31. 40	14. 23	·1477	18. 52	·03068			
19. 3	36. 10	14. 29	·1478	18. 59	·03128			
19. 11	23. 55	14. 32	·1472	19. 2	·03096			
19. 19	18. 30	14. 34	·1455	19. 5	·03112			
19. 28	26. 10	14. 46	·1479	19. 10	·03070			
19. 32	19. 20	14. 47	·1472	19. 20	·03110			
19. 37	26. 30	14. 49	·1466	19. 23	·03092			
19. 42	15. 35	14. 53	·1433	19. 32	·03084			
19. 50	30. 55	15. 1	·1458	19. 38	·03110			
19. 51	27. 45	15. 8	·1437	19. 43	·03048			
19. 52	29. 45	15. 13	·1450	19. 50	·03136			
20. 3	44. 0	15. 17	·1439	19. 57	·03107			
20. 6	18. 10	15. 22	·1470	20. 4	·03148			
20. 10	48. 0	15. 27	·1457	20. 10	·03010			
20. 15	34. 20	15. 37	·1487	20. 20	·03118			
20. 20	47. 5	15. 39	·1499	20. 23	·03093			
20. 21	42. 25	15. 40	·1467	20. 32	·03128			
20. 25	47. 50	15. 42	·1487	20. 37	·03087			
20. 26	45. 50	15. 43	·1467	20. 39	·03108			
20. 30	51. 15	15. 45	·1477	20. 42	·03092			
20. 31	41. 30	15. 47	·1452	20. 45	·03110			
20. 38	44. 30	15. 50	·1489	20. 51	·03070			
20. 40	39. 30	15. 52	·1444	20. 55	·03127			
20. 43	41. 45	15. 57	·1465	20. 58	·03087			
20. 44	38. 50	15. 59	·1467	21. 0	·03120			
20. 50	40. 10	16. 1	·1458	21. 5	·03087			
20. 52	35. 10	16. 5	·1469	21. 7	·03104			
20. 53	42. 45	16. 7	·1464	21. 8	·03090			
20. 55	38. 50	16. 14	·1478	21. 12	·03103			
21. 0	42. 30	16. 15	·1471	21. 18	·03087			
21. 1	40. 0	16. 18	·1496	21. 21	·03103			
21. 7	42. 5	16. 20	·1473	21. 24	·03090			
21. 10	41. 5	16. 24	·1490	21. 30	·03101			
21. 12	42. 10	16. 28	·1479	21. 32	·03080			
21. 17	39. 20	16. 30	·1490	21. 39	·03100			
21. 20	42. 30	16. 32	·1480	21. 41	·03060			
21. 28	41. 15	16. 35	·1489	21. 45	·03112			
21. 31	38. 0	16. 38	·1475	22. 0	·03086			
21. 37	40. 0	16. 40	·1487	22. 4	·03118			
21. 42	34. 0	16. 44	·1465	22. 9	·03118			
21. 51	44. 10	16. 49	·1484	22. 12	·03138			
22. 0	40. 30	16. 55	·1460	22. 15	·03126			
22. 3	43. 10	16. 59	·1474	22. 30	·03138			
22. 9	44. 50	17. 0	·1459	22. 51	·03170			
22. 11	47. 45	17. 2	·1466	23. 2	·03162			

The indications are taken from the sheets of the Photographic Record, except where an asterisk is attached to the number, in which instances they are inferred from observations made with the telescope in the ancient manner. The Symbol *** denotes that the magnet has been generally in a state of agitation. The Symbol (†) denotes that the register has failed between the preceding and following readings. The Symbol ; attached to a time denotes that the reading will apply equally well to a considerable range of time near that which is recorded. A brace denotes that at this time the curve of the Vertical Force was dislocated, and the difference of the numbers included by the brace shows the amount of the displacement.

Greenwich Mean Solar Time.	Western Declination.
June 17	
h m	° ′ ″
22. 13	19. 44. 40
22. 19	46. 0
22. 21	45. 5
22. 28	46. 45
22. 32	45. 5
22. 37	46. 45
22. 40	44. 30
22. 41	47. 45
22. 43	46. 45
22. 51	49. 30
23. 2	47. 30
23. 10	48. 55
23. 21	43. 10
23. 40	51. 10
23. 46	49. 0
23. 51	52. 15
23. 59	52. 30
Aug. 6	
	(†)
1. 30	19. 52. 30
1. 40	53. 30
1. 48	55. 40
1. 54	54. 0
2. 0	51. 45
2. 8	54. 10
2. 12	51. 0
2. 20	53. 15
2. 25	51. 40
2. 39	39. 30
2. 43	40. 15
2. 49	39. 35

Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.
June 17	
h m	
17. 4	·1452
17. 7	·1459
17. 9	·1453
17. 11	·1445
	***
17. 18	·1451
17. 19	·1429
	***
17. 22	·1423
17. 27	·1430
17. 34	·1456
17. 38	·1419
17. 44	·1434
17. 49	·1439
17. 51	·1433
17. 55	·1439
18. 1	·1437
18. 10	·1449
18. 13	·1435
18. 25	·1468
18. 29	·1437
18. 34	·1458
18. 40	·1455
18. 46	·1471
18. 50	·1451
19. 0	·1468
19. 10	·1415
19. 17	·1431
19. 21	·1414
19. 28	·1424
19. 30	·1414
	(†)
19. 40	·1414
19. 46	·1450
19. 50	·1439
19. 55	·1460
19. 58	·1439
20. 0	·1467
20. 1	·1457
20. 2	·1485
20. 3	·1416
20. 7	·1430
20. 9	·1477
20. 10	·1416
20. 18	·1450
20. 20	·1431
20. 23	·1451
20. 28	·1460
20. 31	·1479
20. 32	·1436
20. 36	·1452
	***
20. 45	·1454
20. 48	·1433
20. 51	·1471
20. 55	·1456
20. 58	·1478
21. 1	·1458
June 17	
h m	
21. 6	·1458
21. 10	·1466
21. 15	·1455
21. 20	·1468
21. 23	·1457
21. 29	·1470
21. 31	·1457
21. 36	·1473
21. 37	·1489
21. 40	·1445
21. 43	·1464
21. 47	·1501
21. 51	·1482
21. 54	·1501
21. 56	·1481
21. 59	·1465
22. 4	·1484
22. 8	·1474
22. 12	·1482
22. 17	·1469
22. 30	·1469
22. 37	·1476
22. 42	·1473
22. 45	·1483
22. 50	·1489
22. 53	·1482
22. 57	·1490
22. 59	·1483
23. 4	·1482
23. 11	·1491
23. 19	·1485
23. 24	·1465
23. 28	·1479
23. 31	·1474
23. 35	·1464
23. 36	·1484
23. 42	·1473
23. 45	·1484
23. 49	·1474
23. 51	·1482
23. 53	·1475
23. 57	·1493
23. 59	·1483
Aug. 6	
0. 0	·1476
0. 12	·1483
0. 18	·1471
0. 25	·1466
0. 40	·1476
0. 50	·1474
1. 7	·1460
1. 11	·1459
1. 19	·1464
1. 21	·1474
1. 26	·1477
1. 34	·1505
1. 39	·1518

Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.
June 17	
h m	
23. 9	·03170
23. 22	·03127
23. 25	·03148
23. 30	·03130
23. 32	·03150
23. 38	·03140
23. 42	·03156
23. 49	·03128
23. 51	·03150
23. 59	·03130
Aug. 6	
0. 0	·03130
0. 10	·03150
0. 49	·03180
1. 10	·03220
1. 35	·03277
2. 0	·03310
2. 10	·03370
2. 30	·03490
2. 39	·03518
2. 45	·03520
2. 50	·03512
3. 3	·03664
3. 10	·03650

Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
h m	°	°
Aug. 6		
0. 15	67 ·6	68 ·9
8. 45	69 ·0	70 ·2
21. 0	67 ·7	68 ·5
22. 0	67 ·9	68 ·6
23. 0	68 ·0	69 ·0

For the Horizontal and Vertical Forces, increasing readings denote increasing forces.

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
Aug. 6		Aug. 6		Aug. 6				
h m	° ′ ″	h m		h m		h m	°	°
2. 52	19. 42. 35	1. 48	·1524	3. 20	·03712			
3. 0	39. 0	1. 52	·1518	3. 27	·03690			
3. 5	47. 0	2. 1	·1509	3. 32	·03714			
3. 12	38. 10	2. 6	·1515	3. 41	·03670			
3. 20	50. 45	2. 17	·1564	3. 49	·03657			
3. 25	41. 25	2. 22	·1546	3. 57	·03640			
3. 29	42. 40	2. 24	·1550	4. 6	·03652			
3. 31	40. 15	2. 28	·1534	4. 11	·03680			
3. 37	42. 50	2. 31	·1541	4. 20	·03670			
3. 47	39. 10	2. 35	·1537	4. 30	·03620			
3. 51	41. 10	2. 43	·1548	4. 31	·03624			
3. 59	45. 30	2. 48	·1558	4. 41	·03600			
4. 2	42. 35	2. 50	·1547	5. 16	·03568			
4. 8	44. 35	2. 54	·1551	5. 30	·03570			
4. 18	39. 10	2. 58	·1546	5. 43	·03550			
4. 19	40. 0	3. 1	·1568	6. 0	·03555			
4. 28	37. 15	3. 4	·1574	6. 14	·03540			
4. 50	50. 5	3. 11	·1555	6. 39	·03500			
5. 20	45. 40	3. 19	·1601	6. 42	·03504			
5. 23	45. 40	3. 24	·1565	6. 51	·03492			
5. 32	43. 45	3. 27	·1571	7. 5	·03510			
5. 57	47. 30	3. 31	·1564	7. 18	·03498			
6. 20	41. 15	3. 36	·1572	7. 27	·03473			
6. 28	42. 15	3. 40	·1551	7. 40	·03453			
6. 50	40. 0	3. 47	·1557	8. 5	·03448			
7. 17	24. 0	3. 54	·1545	9. 0	·03400			
7. 40	35. 30	3. 57	·1550	9. 9	·03386			
7. 44	35. 0	4. 3	·1537	9. 25	·03360			
8. 4	37. 0	4. 7	·1547	9. 37	·03330			
8. 17	37. 30	4. 13	·1527	9. 43	·03310			
8. 36	38. 40	4. 18	·1530	9. 50	·03318			
8. 59	33. 30	4. 25	·1506	9. 56	·03310			
9. 2	35. 0	4. 30	·1514	10. 1	·03312			
9. 10	32. 0	4. 36	·1507	10. 30	·03280			
9. 14	34. 0	4. 44	·1504	10. 37	·03287			
9. 30	42. 30	4. 52	·1511	11. 28	·03260			
9. 35	40. 45	4. 57	·1505	12. 42	·03228			
9. 43	40. 10	5. 2	·1508	12. 53	·03220			
9. 51	41. 0	5. 8	·1505	14. 50	·03140			
10. 0	39. 45	5. 13	·1497	15. 43	·03108			
10. 10	41. 5	5. 23	·1501	16. 25	·03092			
10. 32	38. 20	5. 34	·1495	17. 30	·03080			
10. 39	38. 45	5. 44	·1497	17. 38	·03070			
10. 43	38. 10	5. 57	·1512	17. 50	·03080			
10. 51	39. 45	6. 1	·1516	18. 36	·03075			
11. 0	39. 5	6. 9	·1512	18. 48	·03070			
11. 9	40. 30	6. 11	·1515	19. 2	·03080			
11. 28	39. 15	6. 15	·1510	20. 10	·03110			
11. 32	40. 20	6. 30	·1497	21. 0	·03120			
11. 43	39. 15		(†)	21. 40	·03117			
12. 20	38. 30	9. 15	·1502	22. 30	·03127			
12. 38	38. 45	9. 23	·1524	23. 30	·03132			
13. 0	38. 0	9. 29	·1516	23. 59	·03144			
13. 21	38. 20	9. 37	·1500					
14. 10	37. 45	9. 41	·1497					
14. 30	38. 30	9. 50	·1500					
14. 50	37. 30	9. 59	·1498					
15. 18	37. 45	10. 8	·1513					

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H.F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
Aug. 6		Aug. 6						
h m	° ′ ″	h m		h m		h m	°	°
15. 22	19. 36. 40	10. 17	·1503					
15. 37	36. 30	10. 19	·1509					
15. 43	35. 30	10. 33	·1499					
15. 51	35. 45	10. 43	·1499					
16. 18	34. 45	10. 56	·1489					
16. 30	36. 15	11. 6	·1497					
16. 40	33. 45	11. 14	·1491					
16. 43	34. 45	11. 27	·1490					
16. 49	34. 0	11. 33	·1497					
17. 22	32. 15	11. 39	·1492					
17. 30	33. 0	11. 52	·1495					
17. 38	31. 10	12. 8	·1491					
17. 48	32. 45	12. 28	·1493					
17. 52	32. 0	12. 34	·1489					
18. 0	32. 30	12. 40	·1491					
18. 24	31. 55	12. 53	·1489					
18. 30	32. 30	12. 58	·1492					
18. 38	31. 50	13. 3	·1489					
18. 41	32. 30	13. 11	·1490					
18. 49	31. 15	13. 26	·1489					
19. 10	32. 45	13. 37	·1489					
19. 30	32. 10	13. 46	·1492					
	(†)	13. 58	·1490					
		14. 8	·1489					
		14. 14	·1492					
		14. 45	·1493					
		14. 49	·1491					
		14. 53	·1495					
		14. 58	·1491					
		15. 2	·1496					
		15. 7	·1492					
		15. 9	·1496					
		15. 12	·1493					
		15. 18	·1498					
		15. 23	·1493					
		15. 26	·1497					
		15. 30	·1494					
		15. 36	·1497					
		15. 41	·1494					
		15. 48	·1499					
		15. 51	·1495					
		15. 53	·1498					
		15. 59	·1495					
		16. 3	·1498					
		16. 7	·1495					
		16. 14	·1498					
		16. 21	·1494					
		16. 27	·1498					
		16. 42	·1494					
		16. 47	·1496					
		17. 7	·1493					
		17. 12	·1495					
		17. 18	·1490					
		17. 29	·1494					
		17. 39	·1489					
		17. 47	·1492					
		17. 50	·1489					
		18. 3	·1490					

The indications are taken from the sheets of the Photographic Record, except where an asterisk is attached to the number, in which instances they are inferred from observations made with the telescope in the ancient manner. The Symbol *** denotes that the magnet has been generally in a state of agitation. The Symbol (†) denotes that the register has failed between the preceding and following readings. The Symbol : attached to a time denotes that the reading will apply equally well to a considerable range of time near that which is recorded. A brace denotes that at this time the curve of the Vertical Force was dislocated, and the difference of the numbers included by the brace shows the amount of the displacement.

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
h m	° ′ ″	h m		h m		h m	°	°
		Aug. 6						
		18. 9	·1487					
		18. 31	·1483					
		18. 37	·1484					
		18. 45	·1480					
		19. 12	·1479					
		19. 36	·1478					
		19. 42	·1473					
		19. 47	·1476					
		19. 50	·1473					
		20. 13	·1472					
		20. 25	·1471					
		20. 32	·1467					
		20. 38	·1470					
		20. 41	·1467					
		20. 45	·1469					
		20. 53	·1468					
		20. 59	·1466					
		21. 4	·1468					
		21. 25	·1466					
		21. 37	·1464					
		21. 46	·1466					
		22. 2	·1464					
		22. 15	·1458					
		22. 39	·1459					
		22. 48	·1457					
		23. 5	·1456					
		23. 23	·1460					
		23. 30	·1462					
		23. 50	·1466					
		23. 59	·1467					
Aug. 24		Aug. 24		Aug. 24		Aug. 24		
0. 0	19. 47. 45	0. 12	·1449	0. 0	·02807	0. 0	66·6	66·2
0. 11	47. 30	0. 22	·1449	0. 30	·02830	1. 0	66·8	66·5
0. 19	48. 0	0. 50	·1467	1. 10	·02856	2. 0	66·6	66·2
0. 22	47. 10	0. 53	·1465		(†)	3. 0	66·6	66·3
0. 40	47. 0	1. 24	·1470	3. 10	·02890	9. 0	68·4	68·3
0. 43	46. 15		(†)	4. 22	·02924	21. 0	67·3	66·2
0. 51	47. 5	3. 10	·1499	4. 35	·02930	22. 0	67·3	66·6
1. 3	47. 5	3. 32	·1503	4. 53	·02926	23. 0	67·4	66·7
1. 20	45. 55	3. 51	·1498	4. 59	·02930			
	(†)	4. 8	·1499	5. 3	·02928			
3. 13	41. 15	4. 15	·1496	5. 33	·02938			
3. 50	39. 20	4. 30	·1499	5. 42	·02935			
4. 25	38. 5	4. 38	·1505	5. 59	·02944			
4. 50	38. 40	4. 44	·1507	6. 3	·02955			
4. 58	37. 30	4. 48	·1502	6. 7	·02948			
5. 1	38. 0	4. 52	·1505	6. 11	·02958			
5. 22	37. 15	4. 58	·1501	6. 17	·02952			
5. 59	38. 0	5. 2	·1504	6. 30	·02970			
6. 4	39. 30	5. 14	·1500	6. 32	·02967			
6. 9	38. 5	5. 23	·1503	6. 37	·02977			
6. 12	39. 25	5. 31	·1499	6. 41	·02966			
6. 18	38. 10	5. 38	·1502	6. 47	·02980			
6. 27	38. 0	5. 44	·1499	6. 52	·02976			
6. 30	39. 0	5. 59	·1505	7. 4	·02990			
6. 32	37. 45	6. 8	·1517	7. 10	·02991			
6. 39	38. 55	6. 12	·1513	7. 30	·03010			

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
Aug. 24		Aug. 24		Aug. 24				
h m	° ′ ″	h m		h m		h m	°	°
6. 43	19. 37. 50	6. 17	·1522	7. 41	·03030			
6. 52	37. 40	6. 20	·1516	7. 51	·03017			
7. 9	36. 15	6. 30	·1517	8. 6	·03040			
7. 38	33. 0	6. 34	·1520	8. 11	·03040			
7. 43	33. 30	6. 37	·1516	8. 23	·03070			
7. 53	27. 55	6. 42	·1525	8. 30	·03030			
8. 5	22. 45	6. 47	·1511	8. 32	·03036			
8. 18	27. 55	6. 50	·1515	8. 38	·02980			
8. 22	32. 15	7. 0	·1507	8. 40	·02960			
8. 31	49. 15	7. 3	·1512	8. 55	·02932			
8. 32	48. 15	7. 10	·1511	9. 2	·02902			
8. 40	56. 45	7. 14	·1507	9. 7	·02900			
8. 51	38. 20	7. 27	·1505	9. 15	·02860			
9. 0	41. 40	7. 33	·1497	9. 23	·02830			
9. 9	35. 20	7. 43	·1499	9. 37	·02808			
9. 18	38. 10	7. 50	·1494	9. 48	·02790			
9. 19	36. 15	7. 57	·1486	9. 57	·02794			
9. 20	37. 15	8. 9	·1499	10. 8	·02720			
9. 22	34. 10	8. 16	·1501	10. 12	·02750			
9. 30	38. 45	8. 25	·1535	10. 21	·02700			
9. 52	23. 30	8. 32	·1519	10. 31	·02736			
10. 3	34. 5	8. 37	·1540	10. 33	·02647			
10. 26	17. 45	8. 41	·1516	10. 40	·02690			
10. 31	19. 35	8. 46	·1501	10. 45	·02685			
10. 46	19. 0. 45	8. 57	·1513	10. 53	·02627			
10. 51	18. 53. 15	9. 6	·1489	11. 16	·02752			
11. 9	19. 4. 5	9. 12	·1515	11. 43	·02850			
11. 18	17. 15	9. 24	·1472	11. 49	·02870			
11. 34	21. 55	9. 27	·1476	11. 57	·02863			
11. 45	24. 55	9. 37	·1448	12. 0	·02867			
11. 52	27. 30	9. 40	·1438	12. 3	·02857			
12. 7	29. 0	9. 44	·1433	12. 8	·02860			
12. 19	57. 10	9. 52	·1441	12. 18	·02767			
12. 38	37. 45	9. 55	·1447	12. 29	·02543			
12. 47	42. 55	9. 58	·1457	12. 42	·02634			
12. 55	44. 5	10. 6	·1442	12. 46	·02640			
13. 13	34. 10	10. 9	·1429	13. 0	·02687			
13. 20	35. 15	10. 16	·1393	13. 6	·02664			
13. 21	33. 45	10. 19	·1425	13. 15	·02680			
13. 28	35. 10	10. 27	·1412	13. 22	·02692			
13. 38	29. 20	10. 33	·1441	13. 41	·02752			
13. 45	28. 30	10. 39	·1423	13. 53	·02710			
13. 55	25. 5	10. 49	·1437	14. 22	·02750			
14. 3	18. 0	10. 58	·1451	14. 29	·02743			
14. 20	16. 5	11. 1	·1450	14. 32	·02754			
14. 30	19. 55	11. 8	·1455	14. 40	·02748			
14. 37	17. 40	11. 17	·1462	14. 53	·02697			
14. 40	19. 5	11. 23	·1456	15. 1	·02730			
14. 47	19. 55	11. 28	·1451	15. 8	·02710			
14. 51	17. 35	11. 34	·1451	15. 20	·02625			
15. 2	29. 30	11. 41	·1457	15. 25	·02650			
15. 15	35. 0	11. 48	·1459	15. 32	·02624			
15. 22	36. 0	11. 56	·1467	15. 42	·02652			
15. 28	38. 20	12. 9	·1454	15. 49	·02650			
15. 40	31. 45	12. 14	·1456	16. 4	·02670			
15. 49	30. 20	12. 20	·1447	16. 12	·02630			
16. 0	27. 0	12. 34	·1382	16. 18	·02632			
16. 9	32. 25	12. 48	·1466	16. 22	·02658			

For the Horizontal and Vertical Forces, increasing readings denote increasing forces.

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Of V. F. Magnet.
Aug. 24		Aug. 24		Aug. 24				
h m	° ′ ″	h m		h m		h m	°	
16. 15	19. 32. 30	12. 55	·1473	16. 28	·02632			
16. 20	33. 20	12. 57	·1482	16. 32	·02632			
16. 25	31. 45	13. 4	·1489	16. 42	·02673			
16. 35	25. 45	13. 11	·1485	16. 57	·02656			
16. 40	27. 40	13. 19	·1490	17. 1	·02659			
16. 55	37. 40	13. 34	·1468	17. 9	·02652			
17. 2	33. 15	13. 42	·1481	17. 32	·02726			
17. 8	32. 10	13. 50	·1494	17. 38	·02728			
17. 16	34. 0	13. 58	·1487	17. 50	·02740			
17. 21	31. 0	14. 5	·1491	17. 58	·02714			
17. 29	30. 40	14. 13	·1482	18. 4	·02730			
17. 40	39. 55	14. 27	·1486	18. 6	·02710			
17. 43	38. 5	14. 35	·1480	18. 12	·02744			
17. 47	40. 40	14. 38	·1487	18. 22	·02735			
17. 49	39. 30	14. 46	·1489	18. 28	·02750			
17. 50	42. 30	14. 59	·1461	18. 39	·02750			
17. 55	41. 30	15. 9	·1471	18. 42	·02746			
17. 59	45. 0	15. 22	·1441	19. 2	·02767			
18. 6	39. 0	15. 32	·1463		***			
18. 10	43. 30	15. 39	·1459	19. 9	·02755			
18. 15	37. 55	15. 48	·1474	19. 15	·02770			
18. 20	43. 30	15. 57	·1470	19. 23	·02770			
18. 28	38. 0	16. 9	·1481	19. 29	·02767			
18. 31	35. 15	16. 18	·1462	19. 57	·02810			
18. 33	37. 10	16. 22	·1459	20. 0	·02810			
18. 39	35. 45	16. 28	·1473	20. 31	·02835			
18. 40	39. 45	16. 38	·1464	20. 38	·02830			
18. 47	38. 20	16. 47	·1473	20. 51	·02846			
18. 51	41. 40	16. 58	·1449		***			
18. 53	37. 45	17. 2	·1450	21. 19	·02850			
18. 57	41. 45	17. 10	·1432	21. 45	·02866			
19. 5	40. 0	17. 12	·1433	21. 53	·02860			
19. 9	43. 15	17. 23	·1420		***			
19. 10	38. 0	17. 33	·1432	22. 28	·02874			
19. 11	42. 30	17. 39	·1433	22. 37	·02886			
19. 15	36. 50	17. 52	·1454	22. 42	·02886			
19. 22	40. 0	18. 0	·1441	23. 5	·02884			
19. 25	37. 0	18. 7	·1452	23. 30	·02904			
19. 30	39. 5	18. 12	·1440	23. 35	·02900			
19. 31	36. 20	18. 17	·1455	23. 59	·02927			
19. 33	37. 15	18. 21	·1445					
19. 40	34. 50	18. 28	·1447					
19. 43	37. 0	18. 31	·1455					
19. 50	35. 0	18. 40	·1458					
20. 0	39. 0	18. 42	·1450					
20. 1	37. 10	18. 45	·1453					
20. 9	38. 20	18. 50	·1441					
20. 13	37. 10	18. 55	·1447					
20. 23	36. 10		***					
20. 31	40. 20	19. 11	·1432					
20. 40	39. 30	19. 20	·1438					
20. 51	43. 40	19. 27	·1435					
21. 8	41. 15	19. 32	·1428					
21. 23	40. 45	19. 44	·1425					
22. 0	44. 0	19. 58	·1431					
22. 9	44. 40	20. 11	·1419					
22. 13	46. 45	20. 20	·1429					
22. 21	46. 0	20. 23	·1427					

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Of V. F. Magnet.
Aug. 24		Aug. 24						
h m	° ′ ″	h m		h m		h m	°	°
22. 29	19. 47. 15	20. 28	·1434					
22. 41	46. 0	20. 32	·1436					
22. 51	48. 15	20. 40	·1429					
23. 0	48. 0	20. 57	·1424					
23. 10	48. 20	21. 8	·1427					
23. 16	49. 10	21. 27	·1419					
23. 30	49. 20	21. 39	·1422					
23. 37	50. 0	21. 48	·1414					
23. 59	49. 45	22. 15	·1412					
		22. 36	·1413					
		22. 40	·1422					
		22. 55	·1421					
		23. 0	·1418					
		23. 4	·1421					
		23. 12	·1421					
		23. 17	·1425					
		23. 25	·1425					
		23. 38	·1427					
		23. 41	·1424					
		23. 51	·1425					
		23. 55	·1431					
		23. 59	·1432					
Nov. 2		Nov. 2		Nov. 2		Nov. 2		
0. 0	19. 44. 0	0. 0	·1497	0. 0	·03510	0. 0	65 ·0	64 ·4
0. 3	43. 45	0. 12	·1498	0. 30	·03520	1. 0	64 ·6	64 ·3
0. 12	43. 45	0. 28	·1503	1. 6	·03547	2. 0	64 ·8	64 ·2
0. 19	43. 15	0. 35	·1496	1. 14	·03550	3. 0	64 ·7	64 ·1
0. 31	44. 50	0. 47	·1498	1. 52	·03592	9. 0	64 ·9	64 ·5
0. 37	43. 40	0. 51	·1496	1. 59	·03618	21. 0	64 ·7	64 ·0
0. 50	44. 0	0. 58	·1497	2. 3	·03590	22. 0	64 ·5	63 ·8
1. 1	47. 40	1. 2	·1499	2. 12	·03600	23. 0	64 ·4	63 ·8
1. 9	48. 45	1. 10	·1498	2. 40	·03706			
1. 17	48. 0		***	2. 43	·03690			
1. 22	48. 40	1. 21	·1496	2. 49	·03715			
1. 24	48. 10	1. 37	·1504	2. 59	·03730			
1. 37	49. 0	1. 40	·1501	3. 1	·03712			
1. 40	48. 0	1. 46	·1509	3. 19	·03718			
1. 46	49. 10	1. 55	·1510	3. 25	·03710			
1. 49	48. 30	1. 59	·1518	3. 49	·03750			
1. 56	48. 35	2. 1	·1506	4. 8	·03793			
2. 0	52. 20	2. 9	·1489	4. 21	·03808			
2. 2	46. 50	2. 24	·1513	4. 30	·03838			
2. 6	47. 40	2. 39	·1492	4. 40	·03880			
2. 10	46. 0	2. 46	·1510	4. 52	·03904			
2. 18	39. 10	2. 49	·1512	4. 59	·03946			
2. 31	43. 30	2. 55	·1522	5. 5	·03927			
2. 37	42. 20	3. 0	·1519	5. 19	·04092			
2. 41	37. 45	3. 18	·1527	5. 20	·03834			
2. 49	40. 45	3. 22	·1511	5. 28	·03776			
2. 59	44. 0	3. 28	·1511	5. 40	·03874			
3. 3	44. 20	3. 35	·1501	5. 47	·03844			
3. 25	53. 25	3. 42	·1516	5. 48	·03864			
3. 29	51. 25	3. 48	·1512	5. 54	·03832			
3. 31	52. 30	3. 52	·1496	6. 6	·03894			
3. 39	46. 45	3. 58	·1507	6. 11	·03878			
3. 49	55. 35	4. 1	·1503	6. 20	·03840			
3. 58	52. 25	4. 15	·1531	6. 30	·03910			

The indications are taken from the sheets of the Photographic Record, except where an asterisk is attached to the number, in which instances they are inferred from observations made with the telescope in the ancient manner. The Symbol *** denotes that the magnet has been generally in a state of agitation. The Symbol (†) denotes that the register has failed between the preceding and following readings. The Symbol : attached to a time denotes that the reading will apply equally well to a considerable range of time near that which is recorded. A brace denotes that at this time the curve of the Vertical Force was dislocated, and the difference of the numbers included by the brace shows the amount of the displacement.

October 4. VERTICAL FORCE. The adjustments were altered, so that the readings were increased by 20div·06 or by 0·011217 parts of the whole Vertical Force. It will be necessary therefore to diminish the indications on November 2, 9, and 10, by 0·011217 to connect them with the indications on the days preceding October 4.

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
Nov. 2		Nov. 2		Nov. 2				
h m	° ′ ″	h m		h m		h m	°	°
4. 0	19. 54. 25	4. 25	·1508	6. 38	·03877			
4. 7	53. 20	4. 30	·1512	6. 43	·03920			
4. 11	19. 50. 50	4. 35	·1507	6. 50	·03892			
4. 20	20. 0. 45	4. 39	·1509	6. 54	·04004			
4. 29	19. 57. 45	4. 58	·1484	7. 0	·03956			
4. 33	59. 25	5. 8	·1514	7. 4	·04024			
4. 40	58. 25	5. 11	·1510	7. 12	·03926			
4. 47	59. 45	5. 16	·1552	7. 20	·04060			
4. 50	57. 50	5. 18	·1540	7. 28	·04011			
4. 53	58. 0	5. 22	·1467	7. 33	·04058			
5. 5	39. 50	5. 25	·1471	7. 40	·04036			
5. 9	40. 45	5. 29	·1437	7. 49	·03943			
5. 11	19. 32. 20	5. 31	·1450	7. 51	·03982			
5. 18	20. 13. 40	5. 34	·1465	7. 54	·03970			
5. 20	4. 0	5. 36	·1467	8. 3	·03990			
5. 22	20. 8. 45	5. 40	·1499	8. 7	·03960			
5. 28	19. 59. 30	5. 45	·1478	8. 11	·03992			
5. 30	50. 35	5. 54	·1505	8. 24	·03940			
5. 38	38. 25	5. 57	·1497	8. 40	·03893			
5. 41	47. 0	6. 0	·1493	8. 49	·03895			
5. 49	38. 0	6. 4	·1465	8. 54	·03907			
6. 0	53. 45	6. 12	·1478	9. 4	·03853			
6. 10	42. 30	6. 21	·1467	9. 26	·03761			
6. 15	49. 0	6. 30	·1474	9. 33	·03720			
6. 21	51. 55	6. 40	·1499	9. 39	·03733			
6. 30	49. 0	6. 46	·1472	9. 41	·03715			
6. 31	19. 53. 0	6. 52	·1487	9. 45	·03734			
6. 40	20. 3. 0	6. 58	·1465	9. 53	·03703			
6. 45	0. 45	7. 2	·1496	10. 5	·03604			
6. 46	4. 30	7. 7	·1458	10. 10	·03612			
6. 50	1. 0	7. 10	·1460	10. 18	·03532			
6. 57	20. 4. 45	7. 13	·1449	10. 23	·03564			
7. 0	19. 55. 20	7. 19	·1464	10. 30	·03504			
7. 5	20. 4. 25	7. 22	·1453	10. 39	·03584			
7. 9	2. 30	7. 29	·1477	10. 50	·03530			
7. 14	6. 40	7. 33	·1487	10. 58	·03554			
7. 20	20. 2. 30	7. 40	·1473	11. 5	·03520			
7. 28	19. 57. 45	7. 44	·1449	11. 12	·03560			
7. 40	20. 8. 35	7. 47	·1451	11. 28	·03530			
7. 50	19. 57. 25	7. 50	·1447	11. 40	·03550			
8. 6	38. 0	7. 52	·1444	11. 54	·03573			
8. 22	26. 25	7. 56	·1447	12. 7	·03564			
8. 28	27. 10	8. 1	·1438	12. 28	·03560			
8. 34	31. 5	8. 5	·1453	12. 32	·03570			
8. 40	31. 55	8. 12	·1456	12. 38	·03558			
8. 42	31. 0	8. 17	·1449	12. 48	·03562			
8. 49	32. 0	8. 30	·1450	12. 56	·03578			
8. 52	31. 30	8. 33	·1443	13. 0	·03573			
8. 59	34. 15	8. 47	·1454	13. 10	·03578			
9. 3	33. 30	9. 1	·1449	13. 20	·03594			
9. 10	36. 0	9. 4	·1454	13. 29	·03590			
9. 22	38. 40	9. 18	·1457	13. 42	·03620			
9. 30	37. 0	9. 23	·1453	14. 0	·03610			
9. 36	29. 0	9. 29	·1461	14. 7	·03605			
9. 41	34. 45	9. 34	·1451	14. 19	·03620			
9. 51	9. 15	9. 40	·1477	14. 46	·03584			
10. 3	28. 0	9. 48	·1454	15. 7	·03607			
10. 7	26. 35	9. 56	·1514	15. 22	·03590			

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
Nov. 2		Nov. 2		Nov. 2				
h m	° ′ ″	h m		h m		h m	°	°
10. 12	19. 40. 0	10. 0	·1517	15. 43	·03607			
10. 26	26. 15	10. 3	·1486	16. 31	·03608			
10. 33	8. 45	10. 11	·1499	17. 42	·03594			
10. 47	23. 30	10. 20	·1444	18. 41	·03592			
10. 53	25. 0	10. 25	·1451	19. 40	·03589			
11. 0	28. 15	10. 32	·1433	20. 20	·03572			
11. 10	18. 0	10. 41	·1483	21. 10	·03570			
11. 16	19. 55	10. 47	·1464	21. 42	·03590			
11. 30	16. 30	10. 51	·1456	21. 57	·03571			
11. 43	19. 0	10. 58	·1460	22. 7	·03582			
11. 51	22. 10	11. 4	·1434	22. 43	·03560			
12. 0	25. 20	11. 13	·1454	23. 2	·03570			
12. 3	28. 30	11. 27	·1446	23. 15	·03558			
12. 10	29. 45	11. 38	·1455	23. 59	·03560			
12. 14	28. 20	11. 42	·1450					
12. 20	29. 0	12. 0	·1463					
12. 33	24. 40	12. 9	·1458					
12. 40	24. 55	12. 18	·1459					
12. 50	27. 20	12. 24	·1457					
12. 59	28. 20	12. 31	·1460					
13. 8	26. 20	12. 35	·1467					
13. 15	28. 20	12. 39	·1463					
13. 26	32. 30	12. 43	·1466					
13. 35	31. 10	12. 48	·1462					
13. 40	32. 45	12. 56	·1461					
13. 45	32. 35	13. 11	·1454					
13. 52	33. 30	13. 23	·1463					
13. 59	32. 25	13. 30	·1458					
14. 7	32. 30	13. 37	·1464					
14. 14	34. 30	13. 49	·1468					
14. 28	35. 50	13. 54	·1467					
14. 31	35. 10	14. 14	·1474					
14. 37	36. 0	14. 27	·1470					
14. 46	31. 35	14. 31	·1464					
14. 48	32. 0	14. 33	·1465					
14. 59	29. 5	14. 40	·1458					
15. 9	30. 25	14. 52	·1464					
15. 17	33. 30	14. 59	·1474					
15. 22	34. 10	15. 1	·1479					
15. 30	33. 30	15. 13	·1492					
15. 38	35. 20	15. 28	·1482					
15. 41	34. 45	15. 33	·1486					
15. 47	38. 10	15. 40	·1484					
15. 53	39. 45	15. 46	·1491					
16. 3	39. 15	15. 58	·1481					
16. 19	39. 45	16. 7	·1483					
16. 25	38. 30	16. 11	·1479					
16. 30	39. 40	16. 13	·1481					
16. 48	37. 25	16. 20	·1479					
16. 54	37. 20	16. 26	·1483					
16. 59	38. 0	16. 30	·1480					
17. 3	37. 15	16. 40	·1482					
17. 10	38. 20	16. 57	·1488					
17. 21	38. 40	17. 4	·1490					
17. 29	38. 0	17. 19	·1490					
17. 35	38. 40	17. 23	·1488					
17. 41	38. 0	17. 29	·1491					
17. 53	38. 55	17. 33	·1489					

For the Horizontal and Vertical Forces, increasing readings denote increasing forces.

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
Nov. 2		Nov. 2						
h m	° ′ ″	h m		h m		h m	°	°
18. 3	19. 38. 30	17. 48	·1491					
18. 10	39. 30	17. 56	·1486					
18. 17	39. 0	17. 59	·1487					
18. 28	39. 0	18. 1	·1485					
18. 32	40. 0	18. 6	·1488					
18. 42	42. 20	18. 10	·1484					
18. 48	41. 55	18. 24	·1482					
19. 0	43. 35	18. 40	·1485					
19. 6	43. 30	18. 46	·1479					
19. 15	44. 20	18. 58	·1479					
19. 20	43. 0	19. 9	·1481					
19. 31	42. 55	19. 21	·1479					
19. 40	42. 0	19. 31	·1481					
19. 46	43. 10	19. 43	·1488					
20. 0	41. 10	19. 57	·1486					
20. 9	41. 30	20. 0	·1484					
20. 11	42. 45	20. 3	·1487					
20. 14	40. 0	20. 7	·1486					
20. 19	44. 10	20. 12	·1490					
20. 25	42. 35	20. 14	·1483					
20. 32	39. 45	20. 17	·1502					
20. 38	40. 50	20. 19	·1475					
20. 41	39. 30	20. 21	·1487					
20. 48	40. 0	20. 30	·1475					
20. 51	41. 45	20. 32	·1477					
20. 52	40. 45	20. 39	·1468					
20. 58	41. 35	20. 43	·1466					
21. 0	40. 30	20. 47	·1469					
21. 8	41. 45	20. 50	·1462					
21. 12	41. 10	20. 52	·1466					
21. 19	45. 0	20. 57	·1458					
21. 25	42. 30	21. 0	·1460					
21. 32	42. 0	21. 8	·1455					
21. 48	46. 45	21. 14	·1466					
21. 58	41. 30	21. 20	·1459					
22. 10	43. 15	21. 27	·1463					
22. 16	40. 45	21. 32	·1460					
22. 20	40. 0	21. 40	·1468					
22. 30	39. 35	21. 44	·1460					
22. 43	39. 0	21. 51	·1464					
22. 51	40. 30	21. 58	·1458					
22. 57	40. 45	22. 1	·1459					
23. 0	42. 0	22. 8	·1468					
23. 7	43. 30	22. 15	·1462					
23. 10	42. 15	22. 30	·1472					
23. 18	42. 50	22. 40	·1468					
23. 27	41. 45	22. 50	·1475					
23. 35	41. 0	22. 55	·1473					
23. 59	42. 0	23. 4	·1478					
		23. 9	·1472					
		23. 16	·1478					
		23. 25	·1475					
		23. 35	·1475					
		23. 49	·1482					
		23. 54	·1478					
		23. 59	·1482					

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
Nov. 9		Nov. 9		Nov. 9		Nov. 9		
h m	° ′ ″	h m		h m		h m	°	°
0. 0	19. 44. 0	0. 0	·1513	0. 0	·03290	0. 0	62·9	61·1
0. 15	43. 50	0. 12	·1512	0. 50	·03290	1. 0	62·6	61·2
0. 51	44. 30	0. 19	·1516	1. 14	·03294	2. 0	62·9	61·4
1. 0	44. 55	0. 25	·1513	2. 16	·03300	3. 0	62·9	61·5
1. 16	44. 0	0. 40	·1518	3. 11	·03312	9. 0	63·2	62·5
1. 22	45. 0	0. 57	·1518	3. 53	·03330	21. 0	61·8	60·0
1. 30	44. 30	1. 14	·1514	4. 27	·03312	22. 0	61·8	60·0
1. 51	46. 10	1. 24	·1520	4. 37	·03316	23. 0	62·0	60·5
2. 3	44. 45	1. 30	·1519	4. 44	·03322			
2. 8	45. 20	1. 53	·1528	4. 51	·03326			
2. 22	43. 35	2. 2	·1525	5. 17	·03350			
2. 33	44. 30	2. 7	·1529	5. 25	·03344			
2. 39	43. 25	2. 9	·1525	6. 3	·03392			
2. 48	44. 45	2. 11	·1530	6. 25	·03430			
2. 58	43. 20	2. 15	·1525	6. 40	·03450			
3. 7	44. 30	2. 18	·1529	7. 1	·03530			
3. 14	43. 40	2. 23	·1524	7. 20	·03724			
3. 19	45. 50	2. 31	·1527	7. 28	·03692			
3. 27	44. 40	2. 36	·1523	7. 42	·03552			
3. 34	45. 40	2. 46	·1528	7. 51	·03528			
3. 50	44. 0	2. 56	·1527	8. 1	·03500			
4. 1	42. 30	3. 5	·1531	8. 17	·03467			
4. 21	46. 40	3. 10	·1528	8. 25	·03530			
4. 28	45. 30	3. 14	·1531	8. 29	·03510			
4. 33	45. 50	3. 20	·1545	8. 31	·03530			
4. 42	45. 25	3. 24	·1540	8. 35	·03512			
4. 51	46. 30	3. 47	·1556	8. 41	·03532			
4. 58	47. 15	3. 56	·1550	9. 5	·03502			
5. 1	47. 0	4. 6	·1534	9. 22	·03506			
5. 9	47. 30	4. 14	·1525	9. 47	·03497			
5. 19	48. 40	4. 19	·1526	10. 5	·03490			
5. 22	48. 40	4. 24	·1524	10. 17	·03480			
5. 35	49. 30	4. 31	·1530	10. 23	·03492			
5. 42	49. 15	4. 40	·1526	10. 31	·03401			
5. 58	49. 20	4. 45	·1536	10. 32	·03435			
6. 8	48. 30	4. 50	·1529	10. 39	·03340			
6. 15	48. 55	4. 57	·1537	10. 47	·03292			
6. 29	47. 45	5. 2	·1532	10. 50	·03250			
6. 37	47. 25	5. 6	·1536	10. 59	·03422			
6. 53	41. 25	5. 12	·1529	11. 5	·03472			
7. 0	43. 5	5. 16	·1532	11. 11	·03510			
7. 9	40. 30	5. 28	·1506	11. 19	·03470			
7. 19	32. 25	5. 35	·1509	11. 28	·03438			
7. 29	10. 0	5. 41	·1516	11. 42	·03342			
7. 38	14. 10	5. 50	·1512	11. 49	·03328			
7. 47	16. 0	5. 53	·1516	12. 0	·03352			
7. 57	13. 35	6. 3	·1508	12. 4	·03330			
8. 2	20. 0	6. 6	·1515	12. 8	·03344			
8. 14	42. 10	6. 10	·1508	12. 12	·03332			
8. 25	20. 0	6. 17	·1515	12. 15	·03364			
8. 29	21. 15	6. 25	·1515	12. 21	·03350			
8. 33	19. 55	6. 31	·1510	12. 28	·03344			
8. 42	33. 0	6. 41	·1503	12. 32	·03370			
9. 3	40. 55	6. 49	·1504	12. 41	·03333			
9. 15	38. 30	6. 55	·1511	12. 49	·03360			
9. 32	37. 40	7. 0	·1508	12. 50	·03344			
9. 43	38. 30	7. 12	·1521	12. 56	·03357			
9. 49	37. 20	7. 14	·1516	13. 7	·03326			

The indications are taken from the sheets of the Photographic Record, except where an asterisk is attached to the number, in which instances they are inferred from observations made with the telescope in the ancient manner. The Symbol *** denotes that the magnet has been generally in a state of agitation. The Symbol (†) denotes that the register has failed between the preceding and following readings. The Symbol : attached to a time denotes that the reading will apply equally well to a considerable range of time near that which is recorded. A brace denotes that at this time the curve of the Vertical Force was dislocated, and the difference of the numbers included by the brace shows the amount of the displacement.

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
Nov. 9		Nov. 9		Nov. 9				
h m	° ′ ″	h m		h m		h m	°	°
9. 58	19. 38. 10	7. 16	·1519	13. 11	·03360			
10. 10	37. 0	7. 23	·1493	13. 15	·03330			
10. 13	38. 45	7. 31	·1519	13. 21	·03360			
10. 18	37. 0	7. 38	·1502	13. 33	·03312			
10. 23	38. 55	7. 43	·1500	13. 36	·03292			
10. 28	41. 45	7. 47	·1495	13. 41	·03308			
10. 33	32. 30	7. 52	·1500	13. 43	·03262			
10. 39	37. 30	7. 57	·1498	13. 45	·03320			
10. 40	35. 45	8. 2	·1508	13. 53	·03273			
10. 44	36. 50	8. 9	·1496	14. 1	·03328			
10. 53	27. 45	8. 19	·1435	14. 2	·03317			
11. 4	39. 30	8. 22	·1453	14. 5	·03332			
11. 10	27. 40	8. 26	·1455	14. 12	·03290			
11. 18	23. 45	8. 33	·1471	14. 20	·03322			
11. 38	46. 10	8. 37	·1464	14. 21	·03310			
12. 3	32. 25	8. 47	·1477	14. 27	·03310			
12. 8	34. 55	8. 50	·1475	14. 31	·03350			
12. 11	31. 45	8. 58	·1477	14. 32	·03313			
12. 13	33. 30	9. 11	·1474	14. 33	·03367			
12. 20	30. 50	9. 33	·1487	14. 37	·03330			
12. 24	35. 20	9. 46	·1482	14. 39	·03350			
12. 28	37. 55	9. 55	·1486	14. 41	·03322			
12. 30	36. 15	10. 4	·1478		***			
12. 33	37. 0	10. 10	·1482	15. 0	·03280			
12. 43	32. 25	10. 13	·1474	15. 2	·03300			
12. 50	33. 40	10. 21	·1495	15. 3	·03290			
12. 54	32. 10	10. 24	·1531	15. 11	·03321			
13. 0	34. 25	10. 30	·1491		***			
13. 5	30. 25	10. 33	·1515	15. 25	·03230			
13. 10	37. 0	10. 40	·1473	15. 27	·03243			
13. 15	33. 35	10. 46	·1448	15. 30	·03177			
13. 23	40. 20	11. 0	·1533	15. 32	·03246			
13. 27	38. 45	11. 4	·1489		***			
13. 32	40. 45	11. 24	·1515	15. 41	·03252			
13. 33	37. 30	11. 36	·1461	15. 43	·03272			
13. 39	40. 45	11. 42	·1449	15. 51	·03250			
13. 41	35. 10	11. 47	·1460		***			
13. 47	44. 55	11. 55	·1474	16. 19	·03251			
13. 50	42. 15	11. 59	·1465		***			
	***	12. 2	·1476	16. 51	·03278			
13. 58	37. 15	12. 6	·1468		***			
14. 4	47. 0	12. 11	·1485	17. 35	·03295			
14. 9	48. 55	12. 18	·1480		***			
14. 10	45. 40	12. 20	·1467	18. 20	·03280			
14. 12	42. 15	12. 29	·1482		***			
14. 17	43. 0	12. 38	·1464	18. 50	·03272			
14. 18	40. 15	12. 43	·1475		***			
14. 21	41. 0	12. 48	·1467	19. 21	·03280			
14. 28	37. 15	12. 52	·1475		***			
14. 33	46. 45	12. 59	·1459	20. 19	·03278			
14. 37	41. 55	13. 3	·1489		***			
14. 40	45. 15	13. 7	·1469	20. 35	·03270			
14. 42	42. 30	13. 8	·1472		***			
14. 49	41. 10	13. 11	·1468	20. 45	·03283			
14. 54	36. 10	13. 19	·1495		***			
14. 58	41. 15	13. 26	·1486	21. 5	·03272			
15. 0	36. 0	13. 29	·1489		***			
	***	13. 31	·1478	21. 40	·03280			
					***			

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
Nov. 9		Nov. 9		Nov. 9				
h m	° ′ ″	h m		h m		h m	°	°
15. 9	19. 48. 20	13. 34	·1488	22. 20	·03284			
15. 12	46. 45	13. 36	·1459	23. 55	·03270			
15. 18	51. 10	13. 43	·1499	23. 59	·03264			
15. 20	46. 40	13. 45	·1482					
15. 23	55. 45	13. 48	·1474					
15. 26	41. 30	13. 52	·1480					
15. 30	52. 0	14. 2	·1513					
15. 34	47. 15	14. 10	·1473					
15. 36	54. 35	14. 16	·1498					
15. 37	50. 0	14. 17	·1483					
15. 40	55. 0	14. 19	·1486					
15. 45	47. 15	14. 22	·1469					
15. 48	52. 15	14. 25	·1495					
15. 51	45. 15	14. 28	·1477					
15. 54	51. 45	14. 30	·1505					
15. 59	43. 0	14. 32	·1488					
16. 5	46. 25	14. 35	·1502					
16. 8	40. 0	14. 41	·1491					
16. 11	45. 25	14. 44	·1502					
16. 12	39. 0	14. 48	·1496					
16. 15	44. 45	14. 51	·1504					
16. 18	40. 25	14. 53	·1515					
16. 20	38. 0	14. 55	·1499					
16. 24	40. 40	15. 2	·1509					
16. 29	36. 15	15. 5	·1506					
16. 37	39. 5	15. 6	·1520					
16. 39	33. 45	15. 8	·1504					
16. 41	38. 45	15. 10	·1512					
16. 43	35. 0	15. 12	·1503					
16. 45	37. 30	15. 14	·1486					
	***	15. 17	·1491					
16. 57	38. 15	15. 19	·1475					
17. 7	34. 0	15. 22	·1487					
	***	15. 24	·1438					
17. 25	37. 30	15. 28	·1480					
17. 29	39. 45	15. 33	·1468					
17. 30	35. 30	15. 39	·1481					
17. 37	39. 30	15. 41	·1466					
17. 43	37. 15	15. 44	·1484					
17. 51	39. 40	15. 48	·1460					
17. 53	36. 15	15. 54	·1489					
17. 58	40. 0	15. 55	·1461					
18. 0	37. 15	15. 59	·1479					
18. 6	34. 0	16. 3	·1490					
18. 11	38. 10	16. 5	·1475					
18. 15	35. 30	16. 7	·1491					
18. 18	38. 30	16. 10	·1481					
18. 31	39. 35	16. 11	·1504					
18. 46	39. 45	16. 12	·1483					
18. 49	40. 55	16. 16	·1496					
18. 52	35. 15	16. 17	·1485					
18. 58	45. 40	16. 22	·1495					
19. 0	33. 20	16. 24	·1488					
19. 1	43. 0	16. 27	·1506					
19. 5	35. 40	16. 28	·1483					
19. 6	45. 25	16. 32	·1479					
19. 10	36. 20	16. 34	·1497					
19. 14	41. 40		***					

For the Horizontal and Vertical Forces, increasing readings denote increasing forces.

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
Nov. 9		Nov. 9						
h m	° ′ ″	h m		h m		h m	°	°
19. 18	19. 35. 0	16. 42	·1493					
19. 25	39. 20	16. 43	·1498					
19. 28	35. 10	16. 50	·1493					
19. 30	42. 40	16. 54	·1497					
19. 32	37. 20	16. 57	·1492					
19. 37	41. 0	17. 0	·1498					
19. 42	38. 0	17. 2	·1478					
19. 45	40. 30	17. 6	·1515					
19. 49	37. 45	17. 7	·1491					
19. 52	40. 30	17. 9	·1502					
19. 54	32. 0	17. 11	·1484					
19. 58	45. 30	17. 13	·1512					
20. 0	37. 0	17. 17	·1495					
20. 3	47. 10	17. 22	·1511					
20. 15	35. 30	17. 23	·1489					
20. 17	42. 40	17. 27	·1505					
20. 20	38. 40	17. 29	·1496					
20. 22	42. 15	17. 33	·1504					
20. 27	39. 45	17. 39	·1492					
20. 31	44. 20	17. 42	·1498					
20. 33	39. 30	17. 50	·1489					
20. 38	40. 20	17. 51	·1512					
20. 40	38. 45	17. 56	·1496					
20. 45	40. 25	18. 1	·1515					
20. 50	36. 40		***					
20. 52	38. 50	18. 4	·1537					
20. 55	36. 15	18. 10	·1523					
20. 58	41. 15	18. 13	·1535					
21. 0	35. 15	18. 17	·1520					
21. 4	43. 45	18. 20	·1533					
21. 9	37. 20	18. 23	·1519					
21. 18	39. 35	18. 27	·1530					
21. 21	36. 35	18. 34	·1512					
21. 22	41. 30	18. 37	·1521					
21. 28	38. 50	18. 41	·1516					
21. 30	36. 45	18. 46	·1539					
21. 31	40. 30	18. 48	·1514					
21. 34	38. 0	18. 50	·1540					
21. 45	39. 35	18. 51	·1506					
21. 50	37. 15	18. 55	·1532					
21. 59	40. 20	18. 57	·1509					
22. 4	38. 0	18. 59	·1529					
22. 9	40. 45	19. 1	·1497					
22. 11	38. 45	19. 8	·1529					
22. 15	40. 45	19. 9	·1499					
22. 18	38. 0	19. 13	·1519					
22. 24	39. 30	19. 16	·1508					
22. 35	40. 35	19. 19	·1528					
22. 45	38. 30	19. 20	·1512					
22. 52	40. 5	19. 23	·1521					
23. 0	40. 0	19. 24	·1494					
	(†)	19. 27	·1521					
23. 52	40. 0	19. 31	·1506					
23. 59	40. 15	19. 36	·1513					
		19. 39	·1505					
		19. 43	·1511					
		19. 47	·1505					
			***					

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
		Nov. 9						
h m	° ′ ″	h m		h m		h m	°	°
		20. 8	·1504					
		20. 10	·1509					
		20. 12	·1485					
		20. 14	·1530					
		20. 19	·1507					
		20. 22	·1515					
		20. 27	·1506					
		20. 30	·1513					
		20. 33	·1504					
		20. 41	·1505					
		20. 43	·1509					
		20. 45	·1498					
		20. 48	·1509					
		20. 51	·1497					
		20. 58	·1529					
		21. 0	·1500					
		21. 2	·1520					
		21. 3	·1507					
		21. 9	·1497					
			***					
		21. 18	·1508					
		21. 27	·1502					
		21. 35	·1501					
		21. 37	·1496					
		21. 42	·1501					
		21. 46	·1492					
		21. 49	·1499					
		21. 51	·1494					
		21. 55	·1501					
		21. 57	·1494					
		21. 59	·1498					
		22. 1	·1492					
		22. 4	·1503					
		22. 6	·1491					
		22. 10	·1500					
		22. 13	·1490					
		22. 16	·1496					
		22. 22	·1491					
		22. 31	·1497					
		22. 33	·1491					
		22. 35	·1495					
		22. 41	·1489					
		22. 49	·1495					
		22. 54	·1492					
			(†)					
		23. 52	·1493					
		23. 59	·1488					
Nov. 10		Nov. 10		Nov. 10		Nov. 10		
0. 0	19. 40. 15	0. 0	·1488	0. 0	·03262	0. 0	62 ·3	61 ·0
0. 3	41. 20	0. 5	·1494	0. 5	·03260	1. 0	62 ·8	61 ·7
0. 13	40. 30	0. 16	·1489	0. 19	·03268	2. 0	62 ·8	61 ·7
0. 24	41. 20	0. 27	·1491	0. 31	·03268	3. 0	62 ·8	61 ·8
0. 41	40. 25	0. 35	·1488	0. 51	·03287	9. 0	63 ·1	62 ·2
0. 50	41. 10	0. 45	·1484	1. 7	·03310	21. 0	63 ·3	62 ·1
1. 0	40. 0	0. 53	·1487	1. 41	·03340	22. 0	63 ·1	62 ·2
1. 10	41. 25	1. 0	·1481	2. 1	·03360	23. 0	61 ·6	60 ·6
1. 33	39. 25	1. 10	·1490	2. 11	·03358			

The indications are taken from the sheets of the Photographic Record, except where an asterisk is attached to the number, in which instances they are inferred from observations made with the telescope in the ancient manner. The Symbol *** denotes that the magnet has been generally in a state of agitation. The Symbol (†) denotes that the register has failed between the preceding and following readings. The Symbol : attached to a time denotes that the reading will apply equally well to a considerable range of time near that which is recorded. A brace denotes that at this time the curve of the Vertical Force was dislocated, and the difference of the numbers included by the brace shows the amount of the displacement.

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
Nov. 10		Nov. 10		Nov. 10				
h m	° ′ ″	h m		h m		h m	°	°
1. 44	19. 40. 40	1. 25	·1484	2. 46	·03370			
1. 49	40. 25	1. 33	·1483	2. 51	·03380			
2. 3	43. 0	1. 41	·1488	2. 58	·03364			
2. 20	41. 0	1. 50	·1487	3. 17	·03375			
2. 31	41. 30	2. 2	·1497	3. 45	·03370			
3. 3	37. 50	2. 20	·1486	4. 2	·03384			
3. 10	38. 40	2. 32	·1494	4. 20	·03386			
3. 18	38. 15	2. 42	·1491	4. 31	·03382			
3. 31	39. 5	2. 48	·1494	4. 57	·03390			
4. 2	40. 40	2. 54	·1486	5. 17	·03400			
4. 12	40. 40	3. 9	·1492	5. 40	·03410			
4. 41	42. 15	3. 29	·1496	5. 49	·03434			
5. 2	41. 15	3. 44	·1498	5. 51	·03404			
5. 27	40. 45	4. 0	·1507	6. 11	·03510			
5. 33	41. 25	4. 20	·1504	6. 27	·03490			
5. 41	41. 45	4. 29	·1495	6. 32	·03507			
5. 59	28. 25	4. 54	·1494	6. 40	·03478			
6. 3	30. 50	5. 10	·1497	6. 57	·03562			
6. 12	23. 40	5. 21	·1493	7. 2	·03550			
6. 20	21. 30	5. 41	·1497	7. 19	·03630			
6. 37	35. 20	5. 50	·1515	7. 29	·03630			
6. 46	36. 0	6. 3	·1478	7. 36	·03658			
6. 53	24. 45	6. 17	·1495	7. 45	·03627			
7. 0	28. 5	6. 27	·1495	8. 5	·03572			
7. 6	29. 0	6. 35	·1485	8. 12	·03608			
7. 16	34. 40	6. 45	·1430	8. 17	·03592			
7. 21	30. 45	6. 55	·1453	8. 22	·03610			
7. 35	38. 40	7. 3	·1444	8. 29	·03590			
7. 40	32. 25	7. 9	·1448	8. 40	·03618			
7. 43	33. 0	7. 15	·1442	8. 57	·03550			
7. 48	31. 45	7. 25	·1454	9. 10	·03590			
7. 52	32. 10	7. 33	·1440	9. 29	·03295			
8. 0	28. 55	7. 41	·1447	9. 35	·03344			
8. 14	40. 0	7. 44	·1441	9. 40	·03290			
8. 21	30. 55	7. 56	·1441	9. 45	·03267			
8. 27	32. 10	8. 5	·1461	9. 50	·03101			
8. 29	31. 0	8. 16	·1435	10. 2	·03420			
8. 30	31. 45	8. 23	·1441	10. 8	·03350			
8. 38	29. 0	8. 40	·1433	10. 12	·03454			
8. 53	20. 10	8. 50	·1422	10. 17	·03420			
8. 59	22. 30	9. 11	·1434	10. 20	·03454			
9. 0	21. 40	9. 18	·1427	10. 22	·03415			
9. 8	24. 50	9. 21	·1413	10. 24	·03448			
9. 11	23. 40	9. 29	·1415	10. 30	·03428			
9. 21	32. 10		(†)	10. 31	·03307			
9. 23	33. 55	10. 25	·1414	10. 38	·03202			
9. 26	29. 10	10. 29	·1426	10. 50	·03447			
9. 31	34. 0	10. 31	·1413	10. 52	·03440			
9. 33	32. 0	10. 39	·1418	11. 0	·03240			
9. 43	8. 45	10. 49	·1413	11. 10	·03292			
9. 57	23. 45	10. 58	·1444	11. 17	·03350			
10. 3	21. 50	11. 17	·1400	11. 23	·03378			
10. 12	14. 25	11. 45	·1449	11. 28	·03344			
10. 20	22. 0	11. 53	·1442	11. 39	·03410			
10. 28	16. 0	12. 0	·1446	11. 47	·03452			
10. 36	19. 25. 30	12. 4	·1441	11. 49	·03430			
10. 53	18. 43. 25	12. 19	·1439	11. 52	·03452			
11. 7	19. 10. 45	12. 32	·1425	12. 0	·03452			

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
Nov. 10		Nov. 10		Nov. 10				
h m	° ′ ″	h m		h m		h m	°	°
11. 15	19. 9. 0	12. 42	·1434	12. 1	·03420			
11. 18	9. 55	13. 4	·1425	12. 10	·03460			
11. 21	7. 15	13. 11	·1452	12. 12	·03432			
11. 27	10. 0	13. 23	·1418	12. 17	·03456			
11. 40	9. 0	13. 33	·1427	12. 22	·03411			
11. 56	17. 55	13. 35	·1442	12. 29	·03390			
12. 2	16. 30	13. 42	·1445	12. 37	·03402			
12. 7	18. 0	13. 52	·1490	12. 41	·03410			
12. 12	19. 20	14. 4	·1473		***			
12. 14	18. 40	14. 14	·1482	13. 9	·03435			
12. 21	20. 15	14. 33	·1460	13. 20	·03282			
12. 31	19. 50	14. 49	·1435	13. 27	·03310			
12. 41	16. 50	14. 58	·1452	13. 29	·03306			
12. 57	20. 45	15. 1	·1446	13. 35	·03340			
12. 58	20. 0	15. 8	·1459	13. 40	·03322			
13. 0	20. 50	15. 12	·1460	13. 49	·03370			
13. 7	19. 30	15. 19	·1472	14. 0	·03290			
13. 22	43. 20	15. 27	·1467	14. 11	·03270			
13. 40	35. 10	15. 30	·1471	14. 22	·03244			
13. 41	35. 40	15. 36	·1469	14. 33	·03247			
13. 43	31. 15	15. 41	·1472	14. 40	·03243			
13. 50	29. 40	15. 49	·1468	14. 45	·03250			
14. 2	45. 40	16. 5	·1480	14. 58	·03310			
14. 7	42. 40	16. 26	·1466	15. 8	·03320			
14. 11	34. 40	16. 31	·1475	15. 20	·03374			
14. 18	33. 10	16. 45	·1464	15. 31	·03372			
14. 19	30. 20	16. 57	·1462	15. 37	·03362			
14. 21	31. 5	17. 10	·1464	15. 59	·03362			
14. 27	29. 30	17. 19	·1461	16. 11	·03398			
14. 29	30. 15	18. 7	·1473	16. 27	·03390			
14. 32	27. 50	18. 29	·1475	16. 32	·03412			
14. 38	30. 45	18. 32	·1473	16. 52	·03427			
14. 44	29. 5	18. 36	·1478	17. 12	·03450			
14. 52	24. 30	18. 41	·1474	17. 35	·03460			
14. 55	23. 0	18. 46	·1478	18. 11	·03464			
15. 0	27. 40	18. 50	·1475	18. 49	·03478			
15. 3	24. 30	19. 0	·1482	19. 15	·03470			
15. 9	21. 45	19. 18	·1475		***			
15. 12	24. 0	19. 31	·1477	20. 4	·03480			
15. 16	23. 10	19. 54	·1475	20. 45	·03480			
15. 27	29. 40	20. 10	·1472	21. 12	·03472			
15. 31	28. 10	20. 15	·1474	21. 20	·03472			
15. 33	29. 10	20. 22	·1472	22. 9	·03462			
15. 38	28. 0	20. 31	·1477	23. 11	·03447			
15. 48	30. 10	20. 39	·1470	23. 27	·03418			
15. 54	28. 10	20. 48	·1469	23. 32	·03430			
16. 2	29. 0	21. 0	·1476	23. 59	·03420			
16. 20	34. 50	21. 7	·1471					
16. 30	31. 10	21. 30	·1463					
16. 43	37. 15	21. 38	·1466					
16. 50	36. 55	21. 46	·1462					
16. 59	37. 45	22. 1	·1464					
17. 2	36. 45	22. 10	·1462					
17. 9	37. 5	22. 25	·1465					
17. 18	39. 10		(†)					
17. 22	38. 5	23. 8	·1468					
17. 31	39. 10	23. 15	·1464					
17. 41	39. 40	23. 21	·1466					

For the Horizontal and Vertical Forces, increasing readings denote increasing forces.

Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers.		Greenwich Mean Solar Time.	Western Declination.	Greenwich Mean Solar Time.	Horizontal Force in parts of the whole H. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Vertical Force in parts of the whole V. F. uncorrected for Temperature.	Greenwich Mean Solar Time.	Readings of Thermometers.	
							Of H. F. Magnet.	Of V. F. Magnet.								Of H. F. Magnet.	Of V. F. Magnet.
Nov. 10		Nov. 10							Nov. 10								
h m	° ′ ″	h m		h m		h m	°	°	h m	° ′ ″	h m		h m		h m	°	°
17. 49	19. 38. 30	23. 29	·1458						20. 19	19. 35. 20							
17. 53	38. 40	23. 35	·1468						20. 25	34. 40							
17. 58	38. 0	23. 39	·1467						20. 33	35. 55							
18. 2	38. 15	23. 59	·1469						20. 41	34. 45							
18. 16	37. 10								20. 46	33. 30							
18. 30	38. 10								20. 50	35. 20							
18. 36	36. 55								20. 58	33. 45							
18. 43	37. 0								21. 0	35. 50							
18. 49	37. 50								21. 10	34. 30							
18. 55	36. 30								21. 23	35. 30							
19. 7	38. 10								21. 36	34. 45							
19. 10	37. 15								21. 42	36. 15							
19. 12	38. 10								21. 48	36. 0							
19. 18	36. 10								21. 52	37. 0							
19. 19	37. 45								22. 3	37. 15							
19. 23	36. 10								22. 11	36. 15							
19. 25	38. 0								22. 18	37. 5							
19. 31	36. 0								22. 22	37. 15							
19. 36	37. 0									(†)							
19. 41	35. 35								23. 12	40. 15							
19. 42	37. 45								23. 23	40. 40							
19. 49	35. 55								23. 31	37. 45							
19. 52	35. 10								23. 39	42. 0							
19. 59	36. 15								23. 56	41. 10							
	***								23. 59	42. 0							

The indications are taken from the sheets of the Photographic Record, except where an asterisk is attached to the number, in which instances they are inferred from observations made with the telescope in the ancient manner. The Symbol *** denotes that the magnet has been generally in a state of agitation. The Symbol (†) denotes that the register has failed between the preceding and following readings. The Symbol : attached to a time denotes that the reading will apply equally well to a considerable range of time near that which is recorded. A brace denotes that at this time the curve of the Vertical Force was dislocated, and the difference of the numbers included by the brace shows the amount of the displacement.

ROYAL OBSERVATORY, GREENWICH.

RESULTS

OF

OBSERVATIONS

OF THE

MAGNETIC DIP.

1871.

RESULTS of OBSERVATIONS of MAGNETIC DIP, on each Day of Observation.

Day and Approximate Hour, 1871.		Needle.	Length of Needle.	Magnetic Dip.	Observer.
	d h			° ′ ″	
January	6. 2	B 2	9 inches	67. 48. 46	N
	11. 2	C 1	6 ,,	67. 51. 6	N
	18. 1	C 2	6 ,,	67. 49. 46	N
	18. 2	D 1	3 ,,	67. 50. 38	N
	25. 2	D 2	3 ,,	67. 52. 15	N
	25. 22	B 1	9 ,,	67. 47. 56	N
	26. 22	C 1	6 ,,	67. 51. 31	N
	27. 0	D 1	3 ,,	67. 53. 4	N
	27. 3	C 1	6 ,,	67. 50. 19	N
February	3. 23	C 2	6 ,,	67. 53. 29	N
	5. 22	B 1	9 ,,	67. 49. 17	N
	6. 1	D 2	3 ,,	67. 52. 11	N
	6. 3	B 1	9 ,,	67. 48. 43	N
	10. 2	D 1	3 ,,	67. 51. 47	N
	18. 1	C 1	6 ,,	67. 52. 35	N
	18. 2	D 2	3 ,,	67. 54. 45	N
	23. 1	B 2	9 ,,	67. 48. 36	N
	27. 22	D 1	3 ,,	67. 53. 8	N
	28. 0	C 1	6 ,,	67. 53. 13	N
	28. 3	D 1	3 ,,	67. 51. 43	N
March	1. 22	B 1	9 ,,	67. 51. 3	N
	1. 23	C 2	6 ,,	67. 54. 32	N
	2. 0	C 1	6 ,,	67. 52. 17	N
	2. 3	B 1	9 ,,	67. 50. 50	N
	3. 22	C 1	6 ,,	67. 51. 32	N
	10. 22	D 2	3 ,,	67. 54. 52	N
	11. 3	D 2	3 ,,	67. 53. 38	N
	18. 2	D 1	3 ,,	67. 55. 6	N
	19. 22	C 2	6 ,,	67. 53. 8	N
	20. 3	C 2	6 ,,	67. 49. 12	N
	24. 22	B 2	9 ,,	67. 52. 55	N
	24. 23	D 1	3 ,,	67. 54. 7	N
	25. 3	B 2	9 ,,	67. 50. 4	N
April	4. 2	C 1	6 ,,	67. 50. 30	N
	6. 2	D 1	3 ,,	67. 49. 55	N
	12. 2	B 1	9 ,,	67. 50. 21	N
	14. 1	C 2	6 ,,	67. 53. 37	N
	17. 22	D 1	3 ,,	67. 55. 31	N
	25. 2	B 2	9 ,,	67. 51. 32	N
	25. 22	D 2	3 ,,	67. 54. 13	N
	25. 23	C 1	6 ,,	67. 53. 20	N
	26. 0	C 2	6 ,,	67. 53. 2	N
	26. 3	D 2	3 ,,	67. 53. 58	N
May	5. 1	C 1	6 ,,	67. 50. 55	N
	5. 22	D 1	3 ,,	67. 50. 35	N
	6. 0	D 2	3 ,,	67. 54. 28	N
	12. 2	C 2	6 ,,	67. 50. 42	N
	17. 2	B 1	9 ,,	67. 48. 10	N
	22. 1	C 1	6 ,,	67. 50. 18	N
	22. 23	B 2	9 ,,	67. 50. 44	N
	24. 22	D 1	3 ,,	67. 53. 16	N
	27. 1	C 2	6 ,,	67. 50. 17	N
	30. 22	D 2	3 ,,	67. 49. 58	N

Day and Approximate Hour, 1871.		Needle.	Length of Needle.	Magnetic Dip.	Observer.
	d h			° ′ ″	
May	31. 1	B 2	9 inches	67. 46. 23	N
	31. 3	D 2	3 ,,	67. 49. 19	N
June	7. 23	C 2	6 ,,	67. 50. 39	N
	9. 22	B 1	9 ,,	67. 49. 28	N
	10. 0	D 1	3 ,,	67. 54. 25	N
	10. 3	B 1	9 ,,	67. 50. 9	N
	14. 2	C 1	6 ,,	67. 49. 21	N
	22. 2	D 1	3 ,,	67. 49. 40	N
	23. 22	D 2	3 ,,	67. 51. 12	N
	23. 23	B 2	9 ,,	67. 48. 8	N
	24. 3	D 2	3 ,,	67. 47. 50	N
	25. 23	C 1	6 ,,	67. 49. 31	N
	26. 21	C 2	6 ,,	67. 50. 14	N
	26. 23	B 2	9 ,,	67. 48. 50	N
	27. 3	C 2	6 ,,	67. 49. 22	N
	28. 22	C 1	6 ,,	67. 50. 40	N
	29. 3	C 1	6 ,,	67. 47. 52	N
July	6. 2	D 1	3 ,,	67. 48. 37	N
	6. 22	B 1	9 ,,	67. 50. 21	N
	7. 3	B 1	9 ,,	67. 47. 45	N
	14. 2	C 2	6 ,,	67. 44. 46	N
	14. 23	B 1	9 ,,	67. 49. 3	N
	20. 2	D 2	3 ,,	67. 51. 9	N
	20. 23	D 1	3 ,,	67. 47. 3	N
	21. 1	C 1	6 ,,	67. 50. 9	N
	23. 22	B 2	9 ,,	67. 50. 50	N
	24. 3	B 2	9 ,,	67. 48. 56	N
	28. 23	C 2	6 ,,	67. 51. 2	N
	29. 0	D 1	3 ,,	67. 49. 6	N
	30. 23	C 1	6 ,,	67. 48. 52	N
	31. 22	D 2	3 ,,	67. 50. 25	N
August	4. 0	C 1	6 ,,	67. 44. 43	N
	6. 23	D 1	3 ,,	67. 53. 18	N
	7. 22	D 2	3 ,,	67. 52. 27	N
	8. 3	D 2	3 ,,	67. 51. 7	N
	11. 2	B 1	9 ,,	67. 50. 14	N
	16. 23	C 1	6 ,,	67. 48. 44	N
	22. 2	C 2	6 ,,	67. 49. 34	N
	24. 23	B 2	9 ,,	67. 54. 8	N
	28. 2	C 1	6 ,,	67. 49. 49	N
	31. 1	D 1	3 ,,	67. 46. 24	N
	31. 21	B 2	9 ,,	67. 48. 13	N
September	4. 22	D 1	3 ,,	67. 51. 35	N
	6. 22	D 2	3 ,,	67. 50. 52	N
	7. 3	D 2	3 ,,	67. 48. 48	N
	12. 22	C 1	6 ,,	67. 50. 18	N
	12. 23	B 1	9 ,,	67. 49. 20	N
	13. 8	C 2	6 ,,	67. 48. 7	N
	22. 0	B 2	9 ,,	67. 48. 10	N
	30. 2	C 1	6 ,,	67. 47. 34	N
	30. 3	D 1	3 ,,	67. 52. 9	N
October	3. 2	D 1	3 ,,	67. 51. 18	N
	3. 21	C 2	6 ,,	67. 50. 23	N

The initial N is that of Mr. W. C. Nash.

RESULTS of OBSERVATIONS of MAGNETIC DIP, on each Day of Observation—*continued.*

Day and Approximate Hour, 1871.	Needle.	Length of Needle.	Magnetic Dip.	Observer.
d h			° ′ ″	
October 4. 0	B 2	9 inches	67. 48. 54	N
4. 3	C 2	6 „	67. 47. 48	N
10. 2	C 1	6 „	67. 46. 18	N
14. 2	D 1	3 „	67. 50. 37	N
18. 1	B 1	9 „	67. 48. 12	N
27. 0	D 2	3 „	67. 50. 40	N
28. 2	C 1	6 „	67. 48. 46	N
31. 0	B 2	9 „	67. 49. 12	N
31. 1	C 1	6 „	67. 49. 16	N
November 4. 2	D 2	3 „	67. 51. 23	N
8. 0	C 1	6 „	67. 47. 41	N
8. 1	D 1	3 „	67. 50. 31	N
8. 22	C 2	6 „	67. 49. 23	N
November 9. 3	C 2	6 inches	67. 48. 33	N
13. 2	B 1	9 „	67. 48. 58	N
20. 2	D 2	3 „	67. 48. 21	N
22. 2	B 2	9 „	67. 49. 1	N
24. 2	C 2	6 „	67. 49. 9	N
December 2. 2	D 1	3 „	67. 48. 14	N
4. 2	C 1	6 „	67. 46. 33	N
11. 2	D 2	3 „	67. 52. 22	N
12. 0	B 1	9 „	67. 47. 22	N
18. 3	C 2	6 „	67. 48. 19	N
23. 1	D 1	3 „	67. 49. 41	N
23. 2	D 2	3 „	67. 49. 13	N
27. 2	B 2	9 „	67. 45. 55	N

The initial N is that of Mr. W. C. Nash.

MONTHLY MEANS of MAGNETIC DIPS.

Month, 1871.	B 1, 9-inch Needle.	Number of Observations.	B 2, 9-inch Needle.	Number of Observations.	C 1, 6-inch Needle.	Number of Observations.
	° ′ ″		° ′ ″		° ′ ″	
January	67. 47. 56	1	67. 48. 46	1	67. 50. 59	3
February	67. 49. 0	2	67. 48. 36	1	67. 52. 54	2
March	67. 50. 57	2	67. 51. 29	2	67. 51. 55	2
April	67. 50. 21	1	67. 51. 32	1	67. 51. 55	2
May	67. 48. 10	1	67. 48. 34	2	67. 50. 36	2
June	67. 49. 49	2	67. 48. 29	2	67. 49. 21	4
July	67. 49. 3	3	67. 49. 53	2	67. 49. 30	2
August	67. 50. 14	1	67. 51. 10	2	67. 47. 45	3
September	67. 49. 20	1	67. 48. 10	1	67. 48. 56	2
October	67. 48. 12	1	67. 49. 3	2	67. 48. 7	3
November	67. 48. 58	1	67. 49. 1	1	67. 47. 41	1
December	67. 47. 22	1	67. 45. 55	1	67. 46. 33	1
Means	67. 49. 15	Sum 17	67. 49. 24	Sum 18	67. 49. 46	Sum 27

Month, 1871.	C 2, 6-inch Needle.	Number of Observations.	D 1, 3-inch Needle.	Number of Observations.	D 2, 3-inch Needle.	Number of Observations.
	° ′ ″		° ′ ″		° ′ ″	
January	67. 49. 46	1	67. 51. 51	2	67. 52. 15	1
February	67. 53. 29	1	67. 52. 13	3	67. 53. 28	2
March	67. 52. 17	3	67. 54. 37	2	67. 54. 15	2
April	67. 53. 20	2	67. 52. 43	2	67. 54. 5	2
May	67. 50. 30	2	67. 51. 55	2	67. 51. 15	3
June	67. 50. 5	3	67. 52. 2	2	67. 49. 31	2
July	67. 47. 54	2	67. 48. 15	3	67. 50. 47	2
August	67. 49. 34	1	67. 49. 51	2	67. 51. 47	2
September	67. 48. 7	1	67. 51. 52	2	67. 49. 50	2
October	67. 49. 6	2	67. 50. 57	2	67. 50. 40	1
November	67. 49. 2	3	67. 50. 31	1	67. 49. 52	2
December	67. 48. 19	1	67. 48. 58	2	67. 50. 47	2
Means	67. 50. 14	Sum 22	67. 51. 16	Sum 25	67. 51. 32	Sum 23

For this table the monthly means have been formed without reference to the hour at which the observation was made on each day.
In combining the monthly results, to form the annual means, weights have been given proportional to the number of observations.

YEARLY MEANS of MAGNETIC DIPS for each of the NEEDLES, and GENERAL MEAN for the Year 1871.

Lengths of the several Sets of Needles.	Needles.	Number of Observations with each Needle.	Mean Yearly Dip from Observations with each Needle.	Mean Yearly Dip from each Set of Needles.	Mean Yearly Dip from all the Sets of Needles.
			° ′ ″	° ′ ″	° ′ ″
9-inch Needles	B 1	17	67. 49. 15	67. 49. 20	67. 50. 15
	B 2	18	67. 49. 24		
6-inch Needles	C 1	27	67. 49. 46	67. 50. 0	
	C 2	22	67. 50. 14		
3-inch Needles	D 1	25	67. 51. 16	67. 51. 24	
	D 2	23	67. 51. 32		

RESULTS of OBSERVATIONS of MAGNETIC DIP at the Hours of Observation 9^h. a.m. and 3^h. p.m.

Month and Day. 1871.		Needle.	Length of Needle.	Magnetic Dip. At 9^h. a.m. ±	Magnetic Dip. At 3^h. p.m. ±	Excess of the Magnetic Dip at 9^h. a.m. over the Magnetic Dip at 3^h. p.m.
				° ′ ″	° ′ ″	′ ″
January	27	C 1	6 inches	67. 51. 31	67. 50. 19	+ 1. 12
February	6	B 1	9 "	67. 49. 17	67. 48. 43	+ 0. 34
	28	D 1	3 "	67. 53. 8	67. 51. 43	+ 1. 25
March	2	B 1	9 "	67. 51. 3	67. 50. 50	+ 0. 13
	11	D 2	3 "	67. 54. 52	67. 53. 38	+ 1. 14
	20	C 2	6 "	67. 53. 8	67. 49. 12	+ 3. 56
	25	B 2	9 "	67. 52. 55	67. 50. 4	+ 2. 51
April	26	D 2	3 "	67. 54. 13	67. 53. 58	+ 0. 15
May	31	D 2	3 "	67. 49. 58	67. 49. 19	+ 0. 39
June	10	B 1	9 "	67. 49. 28	67. 50. 9	− 0. 41
	24	D 2	3 "	67. 51. 12	67. 47. 50	+ 3. 22
	27	C 2	6 "	67. 50. 14	67. 49. 22	+ 0. 52
	29	C 1	6 "	67. 50. 40	67. 47. 52	+ 2. 48
July	7	B 1	9 "	67. 50. 21	67. 47. 45	+ 2. 36
	24	B 2	9 "	67. 50. 50	67. 48. 56	+ 1. 54
August	8	D 2	3 "	67. 52. 27	67. 51. 7	+ 1. 20
September	7	D 2	3 "	67. 50. 52	67. 48. 48	+ 2. 4
October	4	C 2	6 "	67. 50. 23	67. 47. 48	+ 2. 35
November	9	C 2	6 "	67. 49. 23	67. 48. 33	+ 0. 50
Means		....		67. 51. 22	67. 49. 47	+ 1. 35

ROYAL OBSERVATORY, GREENWICH.

OBSERVATIONS

OF

DEFLEXION OF A MAGNET

FOR

ABSOLUTE MEASURE

OF

HORIZONTAL FORCE.

1871.

ABSTRACT of the OBSERVATIONS of DEFLEXION of a MAGNET for ABSOLUTE MEASURE of HORIZONTAL FORCE.

Month and Day, 1871.		Distances of Centers of Magnets.	Temperature.	Observed Deflexion.	Mean of the Times of Vibration of Deflecting Magnet.	Number of Vibrations.	Temperature.	Observer.
		ft.	°	° ′ ″	s		°	
January	26	1·0 1·3	37·8	11. 50. 50 5. 22. 15	5·445 5·438	100 100	39·6 43·1	N
February	11	1·0 1·3	33·6	11. 51. 40 5. 22. 33	5·455 5·440	100 100	35·5 37·5	N
February	24	1·0 1·3	46·9	11. 49. 19 5. 21. 7	5·450 5·445	100 100	49·2 50·3	N
March	11	1·0 1·3	52·0	11. 50. 13 5. 21. 52	5·464 5·452	100 100	54·6 55·5	N
March	28	1·0 1·3	48·4	11. 52. 26 5. 22. 36	5·461 5·460	100 100	54·0 52·2	N
April	22	1·0 1·3	56·3	11. 47. 39 5. 20. 44	5·455 5·454	100 100	58·0 60·0	N
May	13	1·0 1·3	52·9	11. 48. 13 5. 20. 57	5·452 5·447	100 100	53·8 53·8	N
May	30	1·0 1·3	74·1	11. 44. 40 5. 19. 20	5·463 5·452	100 100	76·6 74·8	N
June	17	1·0 1·3	69·3	11. 45. 9 5. 19. 34	5·466 5·457	100 100	70·2 71·0	N
June	29	1·0 1·3	70·7	11. 45. 42 5. 19. 36	5·467 5·461	100 100	71·2 71·9	N
July	20	1·0 1·3	70·7	11. 45. 17 5. 19. 35	5·458 5·462	100 100	71·8 72·8	N
July	31	1·0 1·3	74·9	11. 43. 59 5. 18. 58	5·465 5·469	100 100	77·7 79·3	N
August	12	1·0 1·3	86·7	11. 41. 59 5. 18. 1	5·460 5·474	100 100	90·8 88·2	N
September	13	1·0 1·3	70·7	11. 43. 9 5. 18. 37	5·471 5·469	100 100	72·0 71·0	N
September	29	1·0 1·3	55·0	11. 42. 12 5. 17. 50	5·470 5·462	100 100	54·6 57·0	N
October	19	1·0 1·3	61·8	11. 44. 15 5. 19. 25	5·477 5·473	100 100	60·7 62·6	N
October	31	1·0 1·3	56·9	11. 42. 25 5. 18. 29	5·468 5·469	100 100	58·6 56·4	N
November	28	1·0 1·3	41·6	11. 43. 21 5. 18. 33	5·464 5·462	100 100	41·4 43·1	N
December	12	1·0 1·3	45·4	11. 42. 39 5. 18. 21	5·455 5·463	100 100	46·3 47·0	N

The position of the Deflecting Magnet with regard to the suspended Magnet is always that which was formerly termed "Lateral." The Deflecting Magnet is placed on the East side of the suspended Magnet, with its marked pole alternately E. and W., and it is placed on the West side with its pole alternately E. and W.; and the deflexion in the table above is the mean of the four deflexions observed in those positions of the magnets.

The lengths of 1 foot and 1·3 foot answer to 304·8 and 396·2 millimètres respectively.

The initial N is that of Mr. W. C. Nash.

In the following calculations every observation is reduced to the temperature 35°.

COMPUTATION of the VALUES of ABSOLUTE MEASURE of HORIZONTAL FORCE in the Year 1871.

Month and Day, 1871.		In English Measure.									Value of X in Metric Measure.
		Apparent Value of A^1.	Apparent Value of A^2.	Apparent Value of P.	Mean Value of P.	Log. A corrected by the Application of Mean Value of P. = Log. $\frac{m}{X}$	Adopted Time of Vibration of Deflecting Magnet.	Log. m X.	Value of X.	Value of m.	
							s				
January	26	+0·10268	0·10285	−0·00407		9·01267	5·4415	0·18833	3·871	0·3986	1·785
February	11	+0·10274	0·10288	−0·00334		9·01285	5·4475	0·18707	3·865	0·3981	1·782
February	24	+0·10263	0·10265	−0·00048		9·01212	5·4475	0·18795	3·872	0·3981	1·785
March	11	+0·10284	0·10297	−0·00310		9·01326	5·4580	0·18664	3·861	0·3981	1·780
March	28	+0·10310	0·10314	−0·00095		9·01416	5·4605	0·18610	3·855	0·3982	1·777
April	22	+0·10255	0·10268	−0·00311		9·01204	5·4545	0·18747	3·870	0·3979	1·784
May	13	+0·10257	0·10269	−0·00287		9·01211	5·4495	0·18789	3·872	0·3981	1·785
May	30	+0·10244	0·10256	−0·00287		9·01154	5·4575	0·18819	3·875	0·3980	1·787
June	17	+0·10243	0·10254	−0·00263		9·01148	5·4615	0·18719	3·871	0·3975	1·785
June	29	+0·10253	0·10258	−0·00120	−0·00237	9·01178	5·4640	0·18686	3·869	0·3975	1·784
July	20	+0·10247	0·10257	−0·00239		9·01164	5·4600	0·18755	3·872	0·3977	1·785
July	31	+0·10236	0·10245	−0·00216		9·01116	5·4670	0·18685	3·871	0·3972	1·785
August	12	+0·10230	0·10238	−0·00192		9·01086	5·4670	0·18768	3·876	0·3974	1·787
September	13	+0·10216	0·10227	−0·00264		9·01034	5·4700	0·18588	3·870	0·3964	1·785
September	29	+0·10175	0·10173	+0·00048		9·00832	5·4660	0·18540	3·877	0·3952	1·788
October	19	+0·10216	0·10236	−0·00481		9·01053	5·4750	0·18440	3·863	0·3958	1·781
October	31	+0·10181	0·10198	−0·00410		9·00898	5·4685	0·18511	3·873	0·3954	1·786
November	28	+0·10169	0·10173	−0·00096		9·00819	5·4630	0·18497	3·876	0·3950	1·787
December	12	+0·10165	0·10173	−0·00193		9·00810	5·4590	0·18590	3·881	0·3954	1·789
Means........		..	..	..	..	..	..	..	3·871	..	1·785

ROYAL OBSERVATORY, GREENWICH.

RESULTS

OF

METEOROLOGICAL OBSERVATIONS.

1871.

MONTH and DAY, 1871.	Phases of the Moon.	Mean Daily Reading of the Barometer (corrected and reduced to 32° Fahrenheit).	Readings of Thermometers. Dry. Highest.	Dry. Lowest.	Dry. Mean Daily Value.	Dew Point. Mean Daily Value.	Highest in the Sun, as shown by a Self-Registering Thermometer, with blackened bulb in vacuo, placed on the Grass.	Lowest on the Grass, as shown by a Self-Registering Minimum Thermometer.	In the Water of the Thames, at Greenwich, by Self-Registering Thermometers, read at 9h A.M. Highest.	In the Water of the Thames. Lowest.	Difference between the Dew Point Temperature and Air Temperature. Mean Daily Value.	Difference. Greatest.	Difference. Least.	Difference between the Mean Temperature of the Day and the Mean Temperature of the same Day on an Average of 50 Years.	Wind as deduced from Anemometers. Osler's. General Direction. A.M.	General Direction. P.M.	Pressure in lbs. on the square foot. Greatest.	Pressure. Least.	Pressure. Mean of 24 Obs.	Robinson's. Amount of Horizontal Movement of the Air on each Day.	Rain in Inches, collected in a Gauge whose receiving surface is 5 inches above the Ground.
		in.	°	°	°	°	°	°	°	°	°	°	°	°			lbs.	lbs.	lbs.	miles.	in.
Jan. 1	..	29·883	30·7	19·2	24·6	15·5	54·9	12·0	..	..	9·1	14·0	4·6	−12·7	S: SSE	SSE: SE	0·1	0·0	0·0	141	0·00
2	Apogee	29·743	27·2	24·0	24·8	16·7	27·8	24·0	..	..	8·1	10·1	5·5	−12·2	SSE	SE: SSE	0·2	0·0	0·0	132	0·00
3	..	29·884	33·5	24·3	30·1	29·2	36·0	24·0	..	..	0·9	4·1	0·0	− 6·6	S: S by W	SSW: SSE	0·1	0·0	0·0	147	0·00
4	..	29·985	32·5	26·4	29·3	23·8	62·5	18·8	..	..	5·5	6·9	4·4	− 7·1	SE	ESE: Calm	0·2	0·0	0·0	112	0·00
5	..	29·724	39·9	22·5	32·7	31·5	44·5	19·5	..	..	1·2	4·8	0·0	− 3·5	SW	SW: W: WNW	3·3	0·0	0·3	368	0·04
6	Greatest Dec. N.: Full.	29·929	44·1	29·2	37·3	34·8	62·9	22·0	..	..	2·5	6·7	0·0	+ 1·3	WNW: SW	SW: WSW	3·3	0·0	0·3	315	0·02
7	..	29·517	45·9	32·8	38·6	35·7	62·0	30·4	..	..	2·9	5·7	0·0	+ 2·8	WSW	WSW	4·9	0·0	0·3	440	0·01
8	..	29·396	39·0	32·8	35·4	30·7	56·0	27·2	..	..	4·7	5·8	2·3	− 0·3	WSW	WNW: W	1·8	0·0	0·1	290	0·00
9	..	29·307	36·0	30·3	33·0	30·8	44·8	26·2	..	..	2·2	3·1	1·4	− 2·8	SW: S	NNE: W	0·1	0·0	0·0	149	0·00
10	..	29·447	36·2	26·6	31·9	29·0	41·7	22·1	..	..	2·9	5·0	2·4	− 4·0	NNW: WSW	SW: S: SE	0·5	0·0	0·0	205	0·03
11	..	29·663	34·2	30·6	31·9	29·0	41·5	27·0	..	..	2·9	7·6	0·0	− 4·1	E: NNE	N: NW	1·4	0·0	0·1	179	0·07
12	..	29·995	32·3	23·0	28·8	25·8	60·8	17·6	35·6	..	3·0	3·2	2·6	− 7·3	NNE	N: NNW: WSW	0·2	0·0	0·0	164	0·00
13	In Equator	30·024	38·0	18·3	30·0	25·0	40·7	17·7	37·6	..	5·0	6·7	1·3	− 6·2	WSW	WSW: SW	0·3	0·0	0·0	215	0·01
14	Last Qr.	29·758	44·8	36·0	40·3	37·4	56·5	33·2	36·6	..	2·9	5·5	1·2	+ 4·0	SW	SW: SSW	3·2	0·0	0·3	345	0·00
15	..	29·290	41·6	34·7	37·5	33·3	73·9	33·0	39·0	..	4·2	8·3	1·8	+ 1·1	SSW	SSW	13·2	0·1	0·9	426	0·01
16	..	28·744	46·7	35·2	39·8	37·7	66·5	32·0	38·1	..	2·1	6·5	0·0	+ 3·3	SSW: SW	SSW	30·0	0·1	2·7	599	0·63
17	..	28·814	40·7	33·9	36·7	34·3	59·8	31·8	40·8	..	2·4	4·8	0·0	+ 0·1	SSW	SSW	3·6	0·0	0·6	433	0·45
18	Perigee	28·962	45·7	35·3	39·4	37·7	79·8	29·6	39·8	..	1·7	4·8	0·0	+ 2·7	SSW	SSW: S	0·9	0·0	0·1	211	0·06
19	Greatest Declination S.	29·261	38·7	30·7	34·6	33·9	40·7	26·1	40·0	..	0·7	2·4	0·0	− 2·3	Calm: N	NNW: SW: S	0·0	0·0	0·0	108	0·08
20	..	29·419	37·8	34·0	35·6	35·1	43·0	27·0	39·4	..	0·5	1·2	0·0	− 1·4	SSE: E	ENE	1·2	0·0	0·0	201	0·09
21	New	29·542	37·7	34·8	36·0	33·9	41·9	33·0	38·4	..	2·1	3·6	0·5	− 1·2	E	ESE: SE	0·4	0·0	0·0	164	0·00
22	..	29·409	46·0	31·7	37·9	35·5	76·5	28·3	38·1	..	2·4	8·4	0·0	+ 0·5	SSE: S	ESE: ENE	1·9	0·0	0·2	228	0·22
23	..	29·646	38·2	35·2	36·4	35·8	39·0	34·5	37·8	..	0·6	2·2	0·0	− 1·3	NE	NE	1·7	0·0	0·2	310	0·19
24	..	29·899	36·0	31·0	33·3	32·6	36·9	30·0	37·4	..	0·7	2·5	0·0	− 4·6	NE	NE	2·6	0·0	0·5	409	0·06
25	..	29·836	31·9	28·5	29·9	19·8	33·6	25·0	37·1	..	10·1	12·5	7·9	− 8·2	ENE	NE	3·2	0·0	0·6	479	0·06
26	In Equator	29·871	34·2	25·9	29·3	24·9	58·8	21·6	36·8	..	4·4	8·1	2·5	− 9·0	NNE	NNE	2·2	0·0	0·2	291	0·01
27	..	30·057	34·8	25·0	29·7	22·4	52·6	18·0	36·1	..	7·3	10·9	5·9	− 8·7	NNE	N by E	1·3	0·0	0·2	293	0·00
28	First Qr.	29·998	33·4	26·4	30·4	26·2	41·8	19·0	35·8	..	4·2	7·6	2·0	− 8·0	NNE	N: N by E	0·4	0·0	0·0	215	0·00
29	..	30·006	35·7	32·2	33·4	30·7	44·2	31·2	36·1	30·6	2·7	4·0	1·8	− 4·9	N: NNE	NNE	0·0	0·0	0·0	139	0·00
30	Apogee	29·966	32·7	29·8	30·7	28·2	33·9	29·0	38·0	31·6	2·5	3·7	1·0	− 7·4	NNE: E by N	NE: ESE	0·1	0·0	0·0	127	0·01
31	..	30·048	33·7	28·2	30·8	23·8	39·7	24·0	37·8	32·4	7·0	8·7	4·7	− 7·1	ESE	ESE	0·9	0·0	0·1	217	0·00
Means	..	29·646	37·4	29·3	33·2	29·7	50·2	25·6	(20 days) 37·8	..	3·5	6·1	1·7	− 3·7	...	...	..	..	..	Sum 8052	Sum 2·05

BAROMETER READINGS FROM EYE-OBSERVATIONS.

The first maximum in the month was 30in·035 on the 4th; the first minimum in the month was 29in·732 on the 2nd.
The second maximum ,, was 30in·019 on the 6th; the second minimum ,, was 29in·648 on the 5th.
The third maximum ,, was 29in·598 on the 10th; the third minimum ,, was 29in·213 on the 9th.
The fourth maximum ,, was 30in·063 on the 13th; the fourth minimum ,, was 29in·245 on the 10th.
The fifth maximum ,, was 29in·587 on the 21st; the absolute minimum ,, was 28in·734 on the 16th.
The sixth maximum ,, was 29in·928 on the 24th; the sixth minimum ,, was 29in·400 on the 22nd.
The absolute maximum ,, was 30in·093 on the 31st; the seventh minimum ,, was 29in·820 on the 25th.
The range in the month was 1in·359.
The mean for the month was 29in·646, being 0in·106 *lower* than the average of the preceding 30 years.

TEMPERATURE OF THE AIR.

The highest in the month was 46°·7 on the 16th; the lowest was 18°·3 on the 13th.
The range ,, was 28°·4.
The mean ,, of all the highest daily readings was 37°·4, being 5°·8 *lower* than the average of the preceding 30 years.
The mean ,, of all the lowest daily readings was 29°·3, being 4°·2 *lower* than the average of the preceding 30 years.
The mean daily range was 8°·1, being 1°·6 *less* than the average of the preceding 30 years.
The mean for the month was 33°·2, being 5°·0 *lower* than the average of the preceding 30 years.

MONTH and DAY, 1871.	ELECTRICITY.		CLOUDS AND WEATHER.	
	A.M.	P.M.	A.M.	P.M.
Jan. 1			0	0 : 10
2			10	10 : 10, sl.-r : 10
3			10	10, oc.-th.-r : 10
4			9	0 : v : 10
5			5, ci, ci.-s : 10, r	10, r : v,ci,ci.-cu,ci.-s,f: 0
6			0	v, ci, ci.-cu, cu.-s, sl.-mt: 10, r
7			3, ci : v	10, r, glm : v : 3, ci, ci.-s, a
8			3, ci, sn, h.-fr, sl.-f	v, h, sl.-f : 10
9			10, sl.-sn	10, ci.-s, cu.-s : 10, sn
10			10, ci, ci.-s	10, ci.-cu, ci.-s, so.-ha, sl.-mt: 10, th.-cl
11			10 : 10, oc.-sn, f	10, oc.-sn : v : 10, sn
12			10, sl.-f	v, ci, ci.-s : 0, h.-fr
13			7, ci, ci.-s, cu.-s, mt	10, cu.-s : 10, r : 10
14			10, ci.-s, cu.-s	1 : v : 10, th.-cl
15			2, ci, ci.-cu, ci.-s	6, ci, ci.-cu, cu.-s, th.-r, sl.-sn: 10
16			10, h.-g, r, hl	8, r, hl, sn, sqs : v, sqs : 10, r, fr.-sqs
17			10, r : vv, ci.-s, cu, cu.-s, r, sn	vv, r, sn : 10, oc.-r : 3, ci.-s, s
18			9, ci.-cu, ci.-s	v, cu.-s, fr.-shs : 10, r
19			10, r : 10, f, gt.-glm	10, gt.-glm : v : 0, h
20	0	0 : 0 : 0	10 : 10, h.-r : 10, th.-r, mt	10, f : 10, m.-r, mt
21	0	0 : w : 0	10, sl.-f	10 : 10, th.-r
22	0	0 : 0	7, ci, ci-s, cu, sl.-f	v, ci, ci.-cu, ci.-s : 10, h.-r
23	0	0 : 0 : 0	10, r	10, c.-r : 10, c.-r
24	0	0 : 0 : w	10, th.-r	10, oc.-th.-r : 10, sn
25	0	m : m : s	8, ci.-s, cu.-s	10, sl.-sn : 10, sl.-sn
26	s	w : s : s	9, ci.-cu, ci.-s, cu, h.-fr	6,ci.-cu,cu: v, sn : v : 0, m
27	s	m : m : s	9, cu-s, sl.-mt	v, cu.-s : v
28	wN	w : w : m	10, sl.-sn	10 : 10
29	m	s : m	10, li.-cl, sl.-f	10, h : 10, mt
30	w	m : wN : w	10, sn	10, oc.-sn : 10
31	w	w : w : m	10	v, ci, cu.-s : v, ci.-s, cu.-s

HUMIDITY OF THE AIR.

Temperature of the Dew Point.

The highest in the month was $42^{\circ}\cdot 2$ on the 6th ; and the lowest was $13^{\circ}\cdot 9$ on the 1st.

The mean ,, was $29^{\circ}\cdot 7$, being $5^{\circ}\cdot 2$ *lower* than the average of the preceding 30 years.

Elastic Force of Vapour.—The mean for the month was $0^{in}\cdot 165$, being $0^{in}\cdot 037$ *less* than the average of the preceding 30 years.

Weight of Vapour in a Cubic Foot of Air.—The mean for the month was $2^{grs}\cdot 0$, being $0^{gr}\cdot 4$ *less* than the average of the preceding 30 years.

Degree of Humidity.—The mean for the month was 87 (that of Saturation being represented by 100), being 1 *less* than the average of the preceding 30 years.

Weight of a Cubic Foot of Air.—The mean for the month was 558 grains, being 4 grains *greater* than the average of the preceding 30 years.

CLOUDS.

The mean amount for the month, a clear sky being represented by 0 and a cloudy sky by 10, was 8·0.

WIND.

The proportions were of N. 7, S. 9, W. 6, E. 8, and Calm 1. The greatest pressure in the month was $30^{lbs}\cdot 0$ on the square foot on the 16th.

RAIN.

Fell on 18 days in the month, amounting to $2^{in}\cdot 05$, as measured in the simple cylinder gauge partly sunk below the ground ; being $0^{in}\cdot 19$ *greater* than the average all of the preceding 56 years.

ELECTRICITY.—The electrical apparatus was out of action till January 20.

MONTH and DAY, 1871.	Phases of the Moon.	Mean Daily Reading of the Barometer (corrected and reduced to 32° Fahrenheit).	Readings of Thermometers. Dry. Highest.	Dry. Lowest.	Dry. Mean Daily Value.	Dew Point. Mean Daily Value.	Highest in the Sun, as shown by a Self-Registering Thermometer with blackened bulb in vacuo, placed on the Grass.	Lowest on the Grass, as shown by a Self-Registering Minimum Thermometer.	In the Water of the Thames, at Greenwich, by Self-Registering Thermometers, read at 9h A.M. Highest.	In the Water of the Thames. Lowest.	Difference between the Dew Point Temperature and Air Temperature. Mean Daily Value.	Difference. Greatest.	Difference. Least.	Difference between the Mean Temperature of the Day and the Mean Temperature of the same Day on an Average of 50 Years.	Wind as deduced from Anemometers. Osler's. General Direction. A.M.	Osler's. General Direction. P.M.	Osler's. Pressure in lbs. on the square foot. Greatest.	Pressure. Least.	Pressure. Mean of 24 Obs.	Robinson's. Amount of Horizontal Movement of the Air on each Day.	Rain in Inches, collected in a Gauge whose receiving surface is 5 inches above the Ground.
		in.	°	°	°	°	°	°	°	°	°	°	°	°			lbs.	lbs.	lbs.	miles.	in.
Feb. 1	..	29·845	36·6	29·0	32·7	31·1	40·3	26·6	35·0	33·1	1·6	3·6	0·2	− 5·1	E	Calm	0·6	0·0	0·0	144	0·02
2	Greatest Declination N.	29·820	36·9	33·7	34·6	33·7	45·5	33·0	35·4	33·2	0·9	1·7	0·0	− 3·1	Calm : WSW	WSW : E	0·2	0·0	0·0	113	0·00
3	..	29·568	43·7	33·7	38·5	38·0	43·8	33·7	36·4	34·2	0·5	1·5	0·0	+ 0·7	E : SE	SSE : SSW	1·2	0·0	0·1	202	0·13
4	..	29·542	47·9	40·4	43·8	41·5	65·9	37·0	36·6	33·9	2·3	4·6	0·0	+ 5·8	SSW : SSE	SSE	0·5	0·0	0·0	181	0·03
5	Full	29·523	52·0	44·7	47·4	44·4	71·2	40·0	38·6	34·4	3·0	6·6	1·1	+ 9·1	SSW : SW	SW : SSW	30·0	0·0	0·9	465	0·15
6	..	29·809	52·2	42·0	46·4	38·5	79·5	33·5	44·6	35·6	7·9	11·0	3·5	+ 7·8	W	WNW : WSW	30·0	0·0	1·5	488	0·00
7	..	29·955	49·5	39·0	43·8	43·0	53·0	31·1	42·6	37·0	0·8	4·0	0·0	+ 5·0	SW : SE	SSE: SSW: WSW	1·1	0·0	0·1	195	0·27
8	..	29·727	51·7	42·0	47·0	44·8	57·9	36·8	43·4	37·4	2·2	4·6	0·0	+ 8·1	WSW	WSW : W by S	1·6	0·0	..	323	0·01
9	In Equator.	29·816	47·3	38·4	42·2	34·3	61·7	30·3	45·4	38·6	7·9	12·4	4·8	+ 3·3	WNW	NW	6·2	0·0	..	420	0·00
10	..	29·218	44·6	31·5	37·7	35·4	74·7	31·2	42·6	39·4	2·3	5·5	1·4	− 1·1	SW : SSW	WNW : NE	30·0	1·0	..	365	0·29
11	..	29·956	31·5	25·0	26·5	14·9	47·5	23·0	42·6	39·3	11·6	13·6	3·5	−12·1	NE : ENE	ENE : ESE	15·0	0·0	..	291	0·00
12	Last Qr.	29·572	40·3	26·5	35·3	32·7	50·9	25·0	41·6	38·6	2·6	4·1	1·1	− 3·1	S	SSW	2·3	0·1	..	351	0·01
13	Perigee	29·819	49·7	34·8	41·5	36·9	77·5	28·7	40·6	39·1	4·6	9·7	0·0	+ 3·2	NNW	NNW : S by W	0·3	0·0	..	166	0·01
14	..	29·982	49·2	36·0	41·7	38·6	72·7	33·7	42·2	38·9	3·1	5·5	0·7	+ 3·5	SSW	SW : SSW	0·8	0·0	0·0	242	0·00
15	..	29·989	47·5	38·1	42·9	41·3	56·3	32·0	40·6	39·0	1·6	3·8	0·0	+ 4·8	SSW	SSW: S : SW	0·2	0·0	0·0	190	0·00
16	Greatest Declination S.	30·013	48·2	39·9	43·5	38·6	59·4	36·1	41·6	39·4	4·9	6·3	2·1	+ 5·4	SW	SW : SSW	0·1	0·0	0·0	120	0·00
17	..	30·020	51·5	41·2	45·9	40·9	91·8	35·7	41·8	39·8	5·0	8·6	3·1	+ 7·7	SSW : SW	SW	1·9	0·0	0·2	314	0·00
18	..	30·069	54·7	42·4	48·3	43·2	84·8	35·3	42·5	40·1	5·1	9·4	2·9	+10·0	SW	SW	7·2	0·0	0·5	429	0·00
19	New	29·833	54·8	43·5	48·0	44·5	75·5	37·1	43·6	40·5	3·5	8·0	0·9	+ 9·5	SW	SW : SSW	11·9	0·0	0·8	450	0·01
20	..	29·612	51·3	39·4	44·0	37·6	80·8	35·3	44·6	43·1	6·4	11·6	4·2	+ 5·3	SW	WSW	18·6	0·0	1·6	589	0·01
21	..	29·928	49·3	38·7	42·3	36·7	94·5	33·0	43·6	42·1	5·6	13·0	2·1	+ 3·5	SW : N	N by E	1·2	0·0	0·1	286	0·04
22	In Equator.	30·232	50·0	31·9	40·6	34·9	86·0	26·0	44·0	43·0	5·7	13·2	0·0	+ 1·6	N : WSW	W : W by S	1·2	0·0	0·1	251	0·00
23	..	30·203	54·1	40·8	46·1	39·8	97·7	35·0	44·0	41·8	6·3	12·2	2·0	+ 6·9	WSW	WSW : SW	1·7	0·0	0·2	336	0·00
24	..	30·201	47·5	37·0	43·0	38·8	66·5	31·8	43·4	41·0	4·2	7·1	1·7	+ 3·6	SW	WSW	2·1	0·0	0·2	338	0·00
25	..	30·149	46·9	39·7	42·5	36·1	63·0	34·1	44·3	41·4	6·4	8·2	5·1	+ 2·9	WSW	WSW : S by E	1·8	0·0	0·2	290	0·00
26	Apogee	29·835	52·7	37·2	44·9	40·1	91·9	35·0	44·4	41·8	4·8	9·8	1·2	+ 5·1	SE : ESE	S : SSW : SW	30·0	0·0	0·3	264	0·00
27	First Qr.	29·616	57·0	47·9	51·0	44·1	101·8	44·3	44·8	41·0	6·9	11·2	2·5	+11·1	SW	WSW : SW	30·0	0·2	2·0	619	0·03
28	..	29·857	53·1	36·8	45·1	41·6	76·5	33·7	46·9	43·8	3·5	8·6	0·8	+ 5·0	SW : W	W by N: NNE: E	30·0	0·0	1·6	504	0·08
Means	..	29·847	48·3	37·5	42·4	38·1	70·3	33·1	42·1	38·9	4·3	7·8	1·6	+ 3·7	...	...	..	..	..	Sum 8926	Sum 1·09

BAROMETER READINGS FROM EYE-OBSERVATIONS.

The first maximum in the month was 29in·590 on the 5th; the first minimum in the month was 29in·522 on the 4th.
The second maximum ,, was 30in·030 on the 7th; the second minimum ,, was 29in·428 on the 5th.
The third maximum ,, was 29in·873 on the 9th; the third minimum ,, was 29in·656 on the 8th.
The fourth maximum ,, was 29in·978 on the 11th; the absolute minimum ,, was 29in·064 on the 10th.
The fifth maximum ,, was 30in·090 on the 18th; the fifth minimum ,, was 29in·491 on the 12th.
The absolute maximum ,, was 30in·259 on the 22nd; the sixth minimum ,, was 29in·598 on the 20th.
the seventh minimum ,, was 29in·593 on the 27th.
The range in the month was 1in·195.
The mean for the month was 29in·847, being 0in·051 *higher* than the average of the preceding 30 years.

TEMPERATURE OF THE AIR.

The highest in the month was 57°·0 on the 27th; the lowest was 25°·0 on the 11th.
The range ,, was 32°·0.
The mean ,, of all the highest daily readings was 48°·3, being 2°·9 *higher* than the average of the preceding 30 years.
The mean ,, of all the lowest daily readings was 37°·5, being 3°·5 *higher* than the average of the preceding 30 years.
The mean daily range was 10°·8, being 0°·6 *less* than the average of the preceding 30 years.
The mean for the month was 42°·4, being 3°·2 *higher* than the average of the preceding 30 years.

MONTH and DAY, 1871.	ELECTRICITY. A.M.	ELECTRICITY. P.M.	CLOUDS AND WEATHER. A.M.	CLOUDS AND WEATHER. P.M.
Feb. 1	wN : m	w : s : m : s	10 : 10, sn	10 : 10, m.-r, mt : 10
2	w	s : ss : w : o	10 : 10, th.-f, gt.-glm	10, f : 10, f
3	ssP : ssN,P,sp,g.-cur	ssN, P, sp, g.-cur: s : s	10 : 10, r	10, r : 10
4	o	o : m	10, th.-cl	9, ci, ci.-s, cu.-s : 10, r
5	m	o : o	v : 10, th.-r	v : 10, r, w : v, w
6	w	o : o	st.-w : v, ci.-cu, ci.-s, w	vv, ci.-cu, cu.-s, mt : v, ci.-s, cu.-s
7	s	w : w : o	10 : 10, oc.-th.-r	10, h.-r : 10, th.-r
8	m	o : w : s	10, th.-r	10,ci,ci.-cu,cu,cu.-s: vv, oc.-r : o
9	w	w : w : w	10	ci.-cu, cu.-s : o
10	s	o: ssN,P,sp,g.-cur: o	10, r	v,ci,cu.-s,mt,r: 10, oc.-r : 10, w
11	w	w : m : s	10	9 : o, h
12	w	ss : o	10 : 10, so.-ha	10, th.-r : 10
13	o	o : w : m	10 : 10, f, th.-r, glm : v	li.-cl, h, mt : o, h : o, f, h.-fr
14	s	m : m :ss,sp	8, ci, ci.-cu, ci.-s	li.-cl : o, d
15	w	w : o : ss	10, th-r	10 : 10 : o, sl.-mt, h, d
16	m	ss : m :ss,sp	10, sl.-f	10 : 10
17	s	s : s : s	8, ci, cu.-s, mt	10, mt, th.-r : v, mt : o, h, mt
18	w	m : m : m	9, ci, ci.-cu, cu.-s, d	10 : v, so.-ha : o, h
19	w	m : w	10	10 : v, oc.-th.-r : 10, th.-r
20	w	sN: ssN,sp,g.-cur: w	st.-w : v, cu.-s, st.-w	vv, ci.-s, cu.-s, w : o
21	o	o : o : o	10, r, mt	v, ci, cu.-s : 10, th.-r
22	w	o : o : w	o, h.-fr, h.-d, sl.-f	v, sl.-f : 10 : 10
23	w	w : o : m	ci, ci.-s	v, ci : o : o, d, lu.-co
24	o	o : o : o	10, mt	10 : 10
25	o	w : o : o	10	10, mt : 8,ci.-cu,ci.-s,cu.-s: 10
26	o	w : m	10 : 10 : v, ci.-s, cu.-s	v, ci, ci.-cu : v, w
27	o	w : w : o	10, oc.-r, fr.-h.-sqs	v,ci,ci.-cu,ci.-s,cu.-s,cu: 10 : 10, h.-sqs, r
28			st.-w : v, w	10, r, glm : 10, fr.-shs : 10

HUMIDITY OF THE AIR.

Temperature of the Dew Point.

The highest in the month was 48°·7 on the 7th; and the lowest was 12°·2 on the 11th.

The mean ,, was 38°·1, being 3°·2 *higher* than the average of the preceding 30 years.

Elastic Force of Vapour.—The mean for the month was $0^{\text{in}}\cdot230$, being $0^{\text{in}}\cdot025$ *greater* than the average of the preceding 30 years.

Weight of Vapour in a Cubic Foot of Air.—The mean for the month was $2^{\text{grs}}\cdot7$, being $0^{\text{gr}}\cdot3$ *greater* than the average of the preceding 30 years.

Degree of Humidity.—The mean for the month was 86 (that of Saturation being represented by 100), being 1 *greater* than the average of the preceding 30 years.

Weight of a Cubic Foot of Air.—The mean for the month was 551 grains, being 2 grains *less* than the average of the preceding 30 years.

CLOUDS.

The mean amount for the month, a clear sky being represented by 0 and a cloudy sky by 10, was 7·8.

WIND.

The proportions were, of N. 2, S. 11, W. 11, E. 4, and Calm 0. The greatest pressure in the month was $30^{\text{lbs}}\cdot0$ on the square foot on the 5th, 6th, 10th, 26th, 27th, and 28th.

RAIN.

Fell on 14 days in the month, amounting to $1^{\text{in}}\cdot09$, as measured in the simple cylinder gauge partly sunk below the ground; being $0^{\text{in}}\cdot47$ *less* than the average fall of the preceding 56 years.

ELECTRICITY.—The insulating lamp was not burning on February 28.

MONTH and DAY, 1871.	Phases of the Moon.	Mean Daily Reading of the Barometer (corrected and reduced to 32° Fahrenheit).	Readings of Thermometers. Dry. Highest.	Dry. Lowest.	Dry. Mean Daily Value.	Dew Point. Mean Daily Value.	Highest in the Sun, as shown by a Self-Registering Thermometer with blackened bulb in vacuo, placed on the Grass.	Lowest on the Grass, as shown by a Self-Registering Minimum Thermometer.	In the Water of the Thames, at Greenwich, by Self-Registering Thermometers, read at 9h A.M. Highest.	In the Water of the Thames. Lowest.	Difference between the Dew Point Temperature and Air Temperature. Mean Daily Value.	Difference. Greatest.	Difference. Least.	Difference between the Mean Temperature of the Day and the Mean Temperature of the same Day on an Average of 50 Years.	Wind as deduced from Anemometers. Osler's. General Direction. A.M.	Osler's. General Direction. P.M.	Osler's. Pressure in lbs. on the square foot. Greatest.	Pressure. Least.	Pressure. Mean of 24 Obs.	Robinson's. Amount of Horizontal Movement of the Air on each Day.	Rain in Inches, collected in a Gauge whose receiving surface is 5 inches above the Ground.
		in.	°	°	°	°	°	°	°	°	°	°	°	°			lbs.	lbs.	lbs.	miles.	in.
Mar. 1	Greatest Declination N.	30·291	44·7	33·4	37·3	28·4	92·7	26·2	47·4	42·8	8·9	13·9	2·5	− 2·9	ESE	E by S : E	12·9	0·0	0·3	286	0·00
2	..	30·201	57·8	30·1	43·2	38·1	105·1	23·2	45·9	39·4	5·1	14·8	1·7	+ 3·0	Calm	S : SE	0·0	0·0	0·0	121	0·00
3	..	30·068	64·8	30·1	46·7	41·8	110·0	21·4	45·8	41·2	4·9	17·6	0·0	+ 6·5	Calm	SSE: SE	0·1	0·0	0·0	129	0·00
4	..	29·834	63·9	39·0	51·8	43·8	109·0	27·7	45·9	42·0	8·0	19·3	1·4	+11·7	SSE	SSW	2·2	0·0	0·1	260	0·00
5	..	29·816	56·8	43·4	49·5	42·0	82·7	36·9	46·3	43·8	7·5	12·9	3·1	+ 9·4	SW	SSW : SSE	4·6	0·0	0·4	381	0·00
6	..	29·454	55·9	48·1	50·9	43·2	92·7	41·7	46·6	43·8	7·7	11·2	3·2	+10·8	SSE : S	S : S by W	12·9	0·0	0·5	370	0·04
7	Full	29·646	51·7	40·6	45·2	38·8	65·8	34·0	46·8	45·0	6·4	12·0	3·7	+ 5·0	SSW	WSW : SSW	2·6	0·0	0·5	420	0·00
8	In Equator	29·839	52·7	37·5	43·8	34·3	102·7	34·1	46·8	43·7	9·5	19·8	1·6	+ 3·5	SW : SSW	WSW	30·0	0·0	1·5	583	0·22
9	..	29·940	49·4	33·7	41·8	37·7	87·5	28·5	46·8	44·3	4·1	8·0	3·1	+ 1·4	SW	SW : W	30·0	0·0	2·0	527	0·19
10	Perigee	29·963	52·0	38·0	44·2	38·7	96·0	30·9	46·4	42·5	5·5	10·0	2·4	+ 3·6	WSW	W : SW	2·3	0·0	0·1	318	0·00
11	..	29·849	57·2	41·4	48·9	44·5	86·7	33·1	46·4	43·8	4·4	10·8	2·9	+ 8·0	SW : WSW	SW	19·6	0·0	0·8	448	0·02
12	..	29·582	56·8	46·6	49·9	43·2	99·0	44·0	47·0	45·0	6·7	10·1	4·6	+ 8·7	SW	SSW : SW	12·4	0·1	0·8	491	0·00
13	Last Qr.	29·567	53·4	39·0	44·8	39·1	95·5	33·0	47·0	45·0	5·7	11·8	1·5	+ 3·4	SW	SW	30·0	0·0	0·8	449	0·04
14	..	29·682	51·7	37·6	43·1	37·9	98·0	34·0	47·5	45·0	5·2	9·0	2·4	+ 1·6	SW	SW : N	2·2	0·0	0·1	262	0·18
15	Greatest Declination S.	29·696	42·7	28·9	34·3	27·6	82·5	24·5	47·6	45·0	6·7	13·8	0·9	− 7·4	NNW : WSW	NNW : SSW	1·4	0·0	0·1	257	0·04
16	..	29·472	42·0	32·5	35·7	33·4	58·0	29·8	47·0	41·5	2·3	6·4	0·0	− 6·2	SSW : NW : NE	NNE : N by W	30·0	0·0	0·7	422	0·32
17	..	30·101	44·7	30·7	38·2	30·9	86·5	26·0	46·1	42·0	7·3	13·0	6·2	− 3·8	N	WSW : W	1·8	0·0	0·1	199	0·00
18	..	30·117	59·4	36·0	45·8	42·4	96·2	28·2	45·2	40·8	3·4	12·2	0·0	+ 3·7	NW : N	NNE: ESE	0·2	0·0	0·0	122	0·00
19	..	30·015	55·8	40·2	45·2	41·2	70·0	35·0	45·1	42·5	4·0	12·9	0·0	+ 3·0	E : SSW	S by W : SE	0·0	0·0	0·0	95	0·00
20	..	29·882	57·5	35·3	45·6	41·5	96·5	28·8	45·4	43·0	4·1	14·3	0·0	+ 3·4	SSW	SW : SE	0·1	0·0	0·0	107	0·00
21	New	29·898	56·1	32·4	42·1	38·6	103·8	27·1	45·4	43·2	3·5	13·5	0·0	− 0·2	SW	SW : SSW	0·3	0·0	0·0	199	0·00
22	In Equator	29·922	53·2	30·2	40·2	38·0	98·5	23·2	45·6	41·2	2·2	9·6	0·0	− 2·0	SSW : NE	ENE : E by S	0·2	0·0	0·0	141	0·00
23	..	29·808	66·1	34·9	49·5	46·5	108·7	30·4	45·9	41·0	3·0	15·3	0·0	+ 7·3	E: ENE	E	1·2	0·0	0·1	158	0·00
24	..	29·671	70·9	36·3	53·3	44·5	123·6	25·0	46·8	44·0	8·8	22·7	1·1	+11·1	E by N	SSE : Calm	0·1	0·0	0·0	123	0·00
25	..	29·712	67·0	40·0	53·9	41·9	124·2	29·7	47·6	43·8	12·0	20·9	2·3	+11·6	ESE : WSW	SW : SSW	0·8	0·0	0·0	124	0·02
26	Apogee	29·792	67·4	44·1	55·3	44·4	120·8	33·2	48·6	46·0	10·9	21·2	4·4	+12·8	ENE : SE	SE : E	1·6	0·0	0·1	173	0·00
27	..	29·964	55·0	38·4	44·6	40·4	111·7	31·0	49·8	47·5	4·2	9·6	0·0	+ 1·7	E : NNE	NNE : NE	5·8	0·0	0·6	352	0·00
28	..	30·237	45·9	31·2	37·9	28·8	107·8	24·2	49·6	46·8	9·1	16·2	6·5	− 5·3	NE	NNE	3·2	0·0	0·3	351	0·00
29	First Quarter Greatest Dec. N.	30·171	47·3	31·4	39·1	32·6	68·0	26·4	49·4	44·5	6·5	13·2	4·3	− 4·5	N	N by E	3·7	0·0	0·5	329	0·00
30	..	30·101	49·8	38·0	43·1	36·2	81·8	29·1	48·9	45·2	6·9	10·7	2·6	− 0·9	NNE	N by E	1·8	0·0	0·2	221	0·03
31	..	29·843	54·1	40·0	46·3	38·8	87·8	32·0	48·6	45·5	7·5	13·8	4·6	+ 1·9	W by S : WNW	WNW : NW	3·4	0·0	0·4	329	0·00
Means	..	29·875	55·0	36·7	44·9	38·7	95·2	30·1	46·9	43·6	6·2	13·6	2·2	+ 3·2	...	...	..	..	..	Sum 8747	Sum 1·10

BAROMETER READINGS FROM EYE-OBSERVATIONS.

The absolute maximum in the month was $30^{\text{in}}\cdot324$ on the 1st; the first minimum in the month was $29^{\text{in}}\cdot796$ on the 4th.
The second maximum ,, was $29^{\text{in}}\cdot887$ on the 5th; the second minimum ,, was $29^{\text{in}}\cdot420$ on the 6th.
The third maximum ,, was $30^{\text{in}}\cdot135$ on the 9th; the third minimum ,, was $29^{\text{in}}\cdot811$ on the 9th.
The fourth maximum ,, was $30^{\text{in}}\cdot005$ on the 10th; the fourth minimum ,, was $29^{\text{in}}\cdot481$ on the 12th.
The fifth maximum ,, was $29^{\text{in}}\cdot727$ on the 15th; the absolute minimum ,, was $29^{\text{in}}\cdot118$ on the 16th.
The sixth maximum ,, was $30^{\text{in}}\cdot144$ on the 18th; the sixth minimum ,, was $29^{\text{in}}\cdot861$ on the 20th.
The seventh maximum ,, was $29^{\text{in}}\cdot957$ on the 22nd; the seventh minimum ,, was $29^{\text{in}}\cdot648$ on the 24th.
The eighth maximum ,, was $30^{\text{in}}\cdot281$ on the 28th.
The range in the month was $1^{\text{in}}\cdot206$.
The mean for the month was $29^{\text{in}}\cdot875$, being $0^{\text{in}}\cdot129$ *higher* than the average of the preceding 30 years.

TEMPERATURE OF THE AIR.

The highest in the month was 70°·9 on the 24th; the lowest was 28°·9 on the 15th.
The range ,, was 42°·0.
The mean ,, of all the highest daily readings was 55°·0, being 5°·4 *higher* than the average of the preceding 30 years.
The mean ,, of all the lowest daily readings was 36°·7, being 1°·6 *higher* than the average of the preceding 30 years.
The mean daily range was 18°·3, being 3°·8 *greater* than the average of the preceding 30 years.
The mean for the month was 44°·9, being 3°·5 *higher* than the average of the preceding 30 years.

MONTH and DAY, 1871.	ELECTRICITY. A.M.	ELECTRICITY. P.M.	CLOUDS AND WEATHER. A.M.	CLOUDS AND WEATHER. P.M.
March 1			4, ci	3, ci : 6, ci : 4, ci, h.-fr, lu.-co
2	o	w : w : w	o, h.-fr, mt	o : o, d, ms
3	w	w : w : s	o, d : o, h.-fr, f	o : o : o, d
4	m	w : m : s	o, d, mt	o : li.-cl
5	s	s : m	8, ci.-cu, ci.-s, cu.-s, d	v : 10
6	w	w : w : ssN,sp : o	3, ci, ci.-cu, cu.-s	10, th.-r : 10, r
7	o	m : o : m	10	10, cu, cu.-s : v : 3, ci, d
8	o	ssN,P,sp,g.-cur	v, w : ci, w	v, ci.-cu, cu.-s, sqs : v, h.-r, hl : 9
9			o : o : v	10, h.-g, r : 10, sc, r, h.-g : v, st.-w : o
10	o	m : ssN,P,sp,g.-cur : m : o	v	v, ci.-cu, cu, sl.-r : v, li.-cl
11	o	o : o : o	10, r, : 10 : v	7, ci.-cu, ci.-s, cu.-s, st.-w : v, ci.-s, s
12			10, th.-r	v, st.-w : v : 10
13		ssN,P,sp,g.-cur	v, r, hl	vv, fr.-h.-sqs, oc.-r : o
14	s	ssN,P,sp,g-cur : w	vv, mt	v, r : 10, r
15	m	m : sN : m	10 : 10, sn : 10, glm	7, cu, h : 4, ci.-cu, cu, h, mt : th.-cl
16	o	o : o : sN : o	10, sn	v, ci.-cu, cu.-s, cu : v, r : o
17	s	s : s : m	o, f, h	10 : 10
18	m	s : m : s,sp	10, d, sl.-f	9, ci.-cu, cu, h : v : 10
19	m	m : m	10, mt, f, glm	li.-cl : o, d, h
20	s	s : w : s	o : 10, li.-cl, f, d	li.-cl, h : o : o
21	o	m : m : m	10, sl.-f	2, ci.-cu, ci.-s, h : o, d
22	s	s : s : s	o, f,	o : o
23	s, sp	s, sp : s : s	th.-cl, h.-d, f	o, h : o : o, a, h.-d, m
24	m	m : m : s	o, h : o, h.-d, f, h	o : o : o, d
25	m	o : w : o	7, ci.-cu, d	o : o : 10, h, r
26	m	w : m	10 : 4, ci, ci.-s	4, ci, cu : 6, ci.-cu, d, lu.-co
27	s	s : s : m	4, ci, ci.-cu, ci.-s	10 : vv 10
28	o	o : o : s	5, ci.-cu	8, ci.-cu, ci.-s, cu.-s : 9
29	m	o : o : sN,sp	10	7, ci.-cu, cu : 10 10, sl.-r
30	w	w : m : w	10, oc.-th.-r	10 10
31	s	o : m : w	10, f	10 : 10 10, lu.-co

HUMIDITY OF THE AIR.

Temperature of the Dew Point.

The highest in the month was 51°·0 on the 23rd; and the lowest was 25°·9 on the 1st.

The mean ,, was 38°·7, being 2°·5 *higher* than the average of the preceding 30 years.

Elastic Force of Vapour.—The mean for the month was $0^{in}\cdot235$, being $0^{in}\cdot021$ *greater* than the average of the preceding 30 years.

Weight of Vapour in a Cubic Foot of Air.—The mean for the month was $2^{grs}\cdot7$, being $0^{gr}\cdot2$ *greater* than the average of the preceding 30 years.

Degree of Humidity.—The mean for the month was 79 (that of Saturation being represented by 100), being 3 *less* than the average of the preceding 30 years.

Weight of a Cubic Foot of Air.—The mean for the month was 549 grains, being 1 grain *less* than the average of the preceding 30 years.

CLOUDS.

The mean amount for the month, a clear sky being represented by 0 and a cloudy sky by 10, was 5·7.

WIND.

The proportions were of N. 6, S. 11, W. 7, E. 6, and Calm 1. The greatest pressure in the month was $30^{lbs}\cdot0$ on the square foot on the 8th, 9th, 13th, and 16th.

RAIN.

Fell on 10 days in the month, amounting to $1^{in}\cdot10$, as measured in the simple cylinder gauge partly sunk below the ground; being $0^{in}\cdot50$ *less* than the average fall of the preceding 56 years.

ELECTRICITY.—The insulating lamp was not burning on March 1, 9, and 12.

MONTH and DAY, 1871.	Phases of the Moon.	Mean Daily Reading of the Barometer (corrected and reduced to 32° Fahrenheit).	Readings of Thermometers. Dry. Highest.	Dry. Lowest.	Dry. Mean Daily Value.	Dew Point. Mean Daily Value.	Highest in the Sun, as shown by a Self-Registering Thermometer with blackened bulb in vacuo, placed on the Grass.	Lowest on the Grass, as shown by a Self-Registering Minimum Thermometer.	In the Water of the Thames, at Greenwich, by Self-Registering Thermometers, read at 9h A.M. Highest.	In the Water of the Thames. Lowest.	Difference between the Dew Point Temperature and Air Temperature. Mean Daily Value.	Difference. Greatest.	Difference. Least.	Difference between the Mean Temperature of the Day and the Mean Temperature of the same Day on an Average of 50 Years.	Wind as deduced from Anemometers. Osler's. General Direction. A.M.	General Direction. P.M.	Pressure in lbs. on the square foot. Greatest.	Pressure. Least.	Pressure. Mean of 24 Obs.	Robinson's. Amount of Horizontal Movement of the Air on each Day.	Rain in Inches, collected in a Gauge whose receiving surface is 5 inches above the Ground.
		in.	°	°	°	°	°	°	°	°	°	°	°	°			lbs.	lbs.	lbs.	miles.	in.
April 1	..	29.786	50.0	35.2	40.4	32.8	90.0	25.0	48.1	46.8	7.6	15.3	3.1	− 4.2	N by E	N	1.3	0.0	0.1	173	0.00
2	..	29.708	52.9	38.0	44.6	38.4	71.8	25.0	48.0	45.3	6.2	13.2	0.0	− 0.2	NW : W	WSW	1.1	0.0	0.1	272	0.00
3	..	29.643	56.7	40.0	45.6	40.5	90.0	37.1	47.6	45.0	5.1	14.6	1.1	+ 0.6	WSW : W	NNW : NNE : E	2.0	0.0	0.1	236	0.01
4	..	29.928	52.9	37.6	43.9	34.1	105.7	32.7	47.4	45.3	9.8	18.2	0.0	− 1.3	NE : NNE	NW : W by S	1.3	0.0	0.1	208	0.00
5	In Equator: Full.	29.859	55.0	38.2	45.6	40.3	70.5	30.7	47.4	43.0	5.3	14.0	1.1	+ 0.2	WSW : W	WNW : N	1.0	0.0	0.1	270	0.00
6	..	30.020	49.8	32.0	39.2	34.0	108.0	20.0	47.4	44.0	5.2	13.4	2.0	− 6.2	E	E : NE	1.6	0.0	0.2	247	0.00
7	Perigee	30.013	50.9	29.1	40.2	30.3	119.8	15.8	47.4	42.5	9.9	15.8	1.4	− 5.2	Calm : ESE	E	2.0	0.0	0.3	229	0.00
8	..	29.890	54.8	30.0	42.5	34.8	114.0	19.3	47.3	42.2	7.7	20.2	0.0	− 2.9	ENE : E	E	1.3	0.0	0.2	230	0.00
9	..	29.796	53.1	32.3	43.0	35.9	105.4	24.2	47.4	43.0	7.1	16.6	2.6	− 2.3	ENE : E	ESE : E	0.9	0.0	0.1	183	0.00
10	..	29.833	53.4	32.9	41.1	36.0	112.7	25.0	47.6	42.5	5.1	17.0	0.0	− 4.1	ENE	E	1.6	0.0	0.2	224	0.00
11	Greatest Declination S.	29.844	54.8	30.0	44.1	34.2	98.9	21.2	48.1	43.5	9.9	18.8	0.0	− 1.0	E by N : SE	SE : S	2.1	0.0	0.2	248	0.23
12	Last Qr.	29.742	66.5	49.0	54.7	48.2	127.5	46.5	48.4	43.8	6.5	13.3	1.7	+ 9.7	SSW : SW	W : WSW	4.2	0.0	0.9	457	0.01
13	..	29.870	64.9	47.1	53.8	47.8	114.0	40.3	49.6	46.8	6.0	12.4	1.3	+ 8.9	WSW : W	W : SW	1.7	0.0	0.2	320	0.00
14	..	29.649	62.5	42.9	50.8	48.1	111.7	37.7	50.1	47.8	2.7	10.3	0.4	+ 5.8	SW : ESE	ENE : E	1.7	0.0	0.1	214	0.00
15	..	29.210	60.4	46.6	50.5	47.0	89.2	41.7	51.0	48.0	3.5	12.9	0.0	+ 5.2	SE : SW	WSW : W	30.0	0.0	1.4	466	0.12
16	..	29.273	57.0	47.0	50.7	47.2	90.5	40.7	51.4	48.6	3.5	7.6	0.8	+ 5.2	SW : WSW	WSW	16.8	0.0	1.6	476	0.55
17	..	29.355	62.8	46.3	51.4	47.2	98.7	43.0	51.6	48.4	4.2	15.3	1.0	+ 5.7	SW : NE : W	WSW : SW	2.3	0.0	0.4	290	0.48
18	In Equator	29.394	55.1	45.6	50.0	49.8	73.8	39.2	52.4	48.2	0.2	3.8	0.0	+ 4.0	SSW : SE	SE : SSW	1.6	0.0	0.2	217	0.44
19	New	29.045	59.3	44.5	50.3	48.2	81.3	40.2	53.4	50.0	2.1	7.0	0.0	+ 3.9	SSW	SW	12.5	0.1	0.9	397	0.04
20	..	29.215	54.8	41.3	45.8	43.9	89.6	37.3	53.6	50.4	1.9	9.6	0.0	− 0.9	SW	WSW : SW	15.5	0.0	0.9	420	0.10
21	..	29.490	56.9	46.5	49.7	42.5	88.2	41.9	53.1	48.0	7.2	12.3	1.7	+ 2.7	W : NW	W by N : WSW	1.2	0.0	0.2	284	0.02
22	..	29.558	62.2	48.7	51.8	49.1	79.0	41.0	53.1	48.5	2.7	9.3	0.0	+ 4.6	WSW : SW	WSW : W	11.6	0.0	0.5	353	0.12
23	Apogee	29.537	63.0	46.3	51.2	44.8	96.6	40.7	53.4	50.0	6.4	16.7	2.7	+ 3.8	WSW : W	WNW : NW	4.8	0.0	0.5	401	0.02
24	..	29.796	50.7	42.7	45.0	42.8	59.5	35.4	53.1	49.8	2.2	6.8	0.0	− 2.6	W : E	S : E	0.0	0.0	0.0	126	0.01
25	Greatest Declination N.	29.891	58.3	42.8	48.9	45.6	104.5	37.3	52.8	49.3	3.3	10.8	1.3	+ 1.2	E : SE	ESE : SE	1.1	0.0	0.1	151	0.00
26	..	29.780	64.0	42.7	52.6	47.9	114.1	37.5	53.1	50.6	4.7	11.9	0.4	+ 4.7	E : SE : WSW	WSW : SW	1.2	0.0	0.1	223	0.02
27	First Qr.	29.618	64.5	45.0	51.4	44.4	114.1	40.4	53.4	50.8	7.0	17.1	1.5	+ 3.3	WSW : W	W : W by S	3.3	0.0	0.3	323	0.11
28	..	29.651	63.2	45.0	52.0	47.4	109.9	39.4	53.6	51.0	4.6	15.3	0.0	+ 3.6	W by S	WSW : SW	6.3	0.0	0.2	358	0.14
29	..	29.367	64.9	48.6	53.9	50.4	124.1	42.5	54.1	51.3	3.5	10.1	0.0	+ 5.1	SW	SW : NNW	2.4	0.0	0.1	266	0.50
30	..	29.689	60.1	42.8	47.6	40.8	103.9	35.0	55.1	52.3	6.8	17.7	1.3	− 1.7	WNW	NW : W	2.8	0.0	0.1	289	0.11
Means	..	29.648	57.8	41.2	47.7	42.5	98.6	34.5	50.7	47.2	5.3	13.2	0.8	+ 1.5	...	...	..	..	..	Sum 8551	Sum 3.03

BAROMETER READINGS FROM EYE-OBSERVATIONS.

The first minimum in the month was 29in·585 on the 3rd.

The first maximum in the month was 29in·948 on the 4th ; the second minimum ,, was 29in·852 on the 5th.
The absolute maximum ,, was 30in·059 on the 7th ; the third minimum ,, was 29in·796 on the 9th.
The third maximum ,, was 29in·909 on the 11th ; the fourth minimum ,, was 29in·690 on the 12th.
The fourth maximum ,, was 29in·887 on the 13th ; the fifth minimum ,, was 29in·167 on the 15th.
The fifth maximum ,, was 29in·315 on the 15th ; the sixth minimum ,, was 29in·243 on the 16th.
The sixth maximum ,, was 29in·348 on the 16th ; the seventh minimum ,, was 29in·248 on the 17th.
The seventh maximum ,, was 29in·516 on the 18th ; the absolute minimum ,, was 29in·008 on the 19th.
The eighth maximum ,, was 29in·619 on the 21st ; the ninth minimum ,, was 29in·485 on the 23rd.
The ninth maximum ,, was 29in·909 on the 25th ; the tenth minimum ,, was 29in·602 on the 27th.
The tenth maximum ,, was 29in·708 on the 28th ; the eleventh minimum ,, was 29in·341 on the 29th.
The range in the month was 1in·051.
The mean for the month was 29in·648, being 0in·125 *lower* than the average of the preceding 30 years.

TEMPERATURE OF THE AIR.

The highest in the month was 66°·5 on the 12th ; the lowest was 29°·1 on the 7th.
The range ,, was 37°·4.
The mean ,, of all the highest daily readings was 57°·8, being *the same as* the average of the preceding 30 years.
The mean ,, of all the lowest daily readings was 41°·2, being 2°·0 *higher* than the average of the preceding 30 years.
The mean daily range was 16°·6, being 2°·0 *less* than the average of the preceding 30 years.
The mean for the month was 47°·7, being 0°·6 *higher* than the average of the preceding 30 years.

MONTH and DAY, 1871.	ELECTRICITY.		CLOUDS AND WEATHER.	
	A.M.	P.M.	A.M.	P.M.
April 1	0	0 : w : 0	10, oc.-th.-r	7, ci.-cu, cu : 4, cu : li.-cl,d,a,h.-fr,lu.-ha
2	m	m : s	8, ci.-cu, ci.-s, cu.-s, sl.-f	10 : 10
3	sN	mN : w : wN	10, th.-r	10 : 10
4	0	0 : wN : 0	6, ci.-cu, cu.-s, h	v, ci, ci.-cu, cu.-s, h : 0
5	s	0 : mN : 0	6, ci, ci.-s, cu.-s	10 : 10
6	0	0 : m : m, sp	10	3, cu : 0, d
7	m	0 : m	0, h.-fr : 0	0 : 0
8	m	m : m : m	0, h.-fr : 1, ci, ci.-cu	1 : li.-cl : 0, d
9	0	w : w	8, ci, ci.-s, ci.-cu, d	10, ci.-s, cu, th.-r : v, a, ms
10	w	w : m : s, sp	7, ci.-cu, cu	5, ci.-cu, cu : 0, h.-d, a
11	m	m : 0	li.-cl, h.-fr : 9, ci, ci.-s, so.-ha	10, ci.-s : 10, r : 10, c.-r
12	0	0 : mN : m	10, r : 10, th.-r : v	vv : vv,ci,ci.-s,cu.-s: 0
13	m	m : 0 : s	6, ci, ci.-cu, ci.-s, cu.-s	8, ci, ci.-s, cu : 0
14	s	m : w : m	10, th.-cl, sl.-f, h.-d	5,ci,cu,so.-ha,h: vv : 2, h.-d, h
15	0	0 : 0 : m	10, cu.-s, sc, r	10, g : v, fr.-h.-sqs : 0
16	0	0	10, r : 9, fr.-h.-shs, fr.-h.-sqs	vv, fr.-h.-shs, fr.-sqs : v, ci.-s, cu.-s, h
17	0	0	10, r : 10, r	6, ci.-cu, ci.-s, cu : v
18	0	0	10, sl.-r	10, h.-r : 10, c.-h.-r : 10, th.-r
19	0	0 : 0	10, th.-r	10, ci.-cu, ci.-s, cu.-s, w : v
20	0	sN : 0 : m	0 : 10, r	10, sl.-r, sqs : vv : 10, r
21	0	w : v : 0	v	10 : v, th.-r : 0, m
22	0	0 : 0 : m	10, r	8,ci.-cu,ci.-s,cu.-s,w: li.-cl : 3, s, d, a
23	0	0 : 0	10, ci-cu, ci.-s, cu.-s	v, oc.-sl.-r : 5, ci.-s, s, h
24	0	0 : 0 : 0	10 : 10, gt.-glm, sl.-r	10, glm : 10
25	0	m : m : s	10, f : 9, ci, ci.-cu, ci.-s, d	v : 10 : 10, li.-cl
26	m	w : 0 : m	9, ci, ci.-cu, ci.-s, cu.-s	7, li.-cl : 7, li.-cl : 8,ci.-cu,ci.-s,r
27	0	0 : w : m	10, r : 10, sl.-f	6, cu : v, t, r : 1
28	w	0 : 0 : w	v, ci, cu, cu.-s	v, th.-cl, sl.-r : 10, r : 10, c.-r
29	0	0 : v : 0 : 0	10, h.-r : 10, r	v : 10, fr.-h.-shs, t : 4, ci.-s, cu.-s
30			10, r, sl.-f, glm	v, ci.-cu, cu : 10, r : 0, d, lu.-co

HUMIDITY OF THE AIR.

Temperature of the Dew Point.

The highest in the month was 53°·6 on the 22nd and 29th; and the lowest was 30°·3 on the 6th.

The mean ,, was 42°·5, being 1°·9 *higher* than the average of the preceding 30 years.

Elastic Force of Vapour.—The mean for the month was 0in·272, being 0in·018 *greater* than the average of the preceding 30 years.

Weight of Vapour in a Cubic Foot of Air.—The mean for the month was 3grs·1, being 0gr·2 *greater* than the average of the preceding 30 years.

Degree of Humidity.—The mean for the month was 83 (that of Saturation being represented by 100), being 5 *greater* than the average of the preceding 30 years.

Weight of a Cubic Foot of Air.—The mean for the month was 541 grains, being 2 grains *less* than the average of the preceding 30 years.

CLOUDS.

The mean amount for the month, a clear sky being represented by 0 and a cloudy sky by 10, was 7·1.

WIND.

The proportions were of N. 4, S. 7, W. 12, E. 7, and Calm 0. The greatest pressure in the month was 30lbs·0 on the square foot on the 15th.

RAIN.

Fell on 18 days in the month, amounting to 3in·03, as measured in the simple cylinder gauge partly sunk below the ground; being 1in·33 *greater* than the average fall of the preceding 56 years.

ELECTRICITY.

On April 30, the electrical apparatus was injured.

MONTH and DAY, 1871.	Phases of the Moon.	Mean Daily Reading of the Barometer (corrected and reduced to 32° Fahrenheit).	Readings of Thermometers. Dry. Highest.	Dry. Lowest.	Dry. Mean Daily Value.	Dew Point. Mean Daily Value.	Highest in the Sun, as shown by a Self-Registering Thermometer with blackened bulb in vacuo, placed on the Grass.	Lowest on the Grass, as shown by a Self-Registering Minimum Thermometer.	In the Water of the Thames, at Greenwich, by Self-Registering Thermometers, read at 9h A.M. Highest.	In the Water of the Thames. Lowest.	Difference between the Dew Point Temperature and Air Temperature. Mean Daily Value.	Difference. Greatest.	Difference. Least.	Difference between the Mean Temperature of the Day and the Mean Temperature of the same Day on an Average of 50 Years.	Wind as deduced from Anemometers. Osler's. General Direction. A.M.	Osler's. General Direction. P.M.	Osler's. Pressure in lbs. on the square foot. Greatest.	Pressure. Least.	Pressure. Mean of 24 Obs.	Robinson's. Amount of Horizontal Movement of the Air on each Day.	Rain in Inches, collected in a Gauge whose receiving surface is 5 inches above the Ground.
		in.	°	°	°	°	°	°	°	°	°	°	°	°			lbs.	lbs.	lbs.	miles.	in.
May 1	..	29·927	58·9	39·7	47·4	37·7	108·2	31·0	55·1	50·0	9·7	17·1	5·8	− 2·4	WNW : NW	NW : WSW	1·8	0·0	0·2	265	0·00
2	In Equator	29·953	60·4	36·3	48·0	39·5	106·7	27·6	55·4	49·0	8·5	17·3	1·3	− 2·3	SSW	S : SSE	0·2	0·0	0·0	129	0·00
3	..	29·724	67·9	39·1	52·3	43·0	127·5	31·7	55·1	52·6	9·3	22·0	0·0	+ 1·5	SSE : S	SSW : NW	3·1	0·0	0·3	272	0·00
4	Full	29·795	55·8	39·0	46·1	36·3	101·2	29·9	55·2	51·0	9·8	14·4	5·8	− 5·1	W	W : WNW	7·6	0·0	0·8	451	0·09
5	Perigee	29·984	63·1	36·1	50·0	40·8	114·5	28·9	54·6	48·0	9·2	18·4	3·3	− 1·5	W by S : NW	NW : W	0·4	0·0	0·1	220	0·00
6	..	30·087	69·9	47·6	56·5	50·1	130·7	41·0	54·6	50·0	6·4	16·0	1·0	+ 4·8	WSW : NE	NE : N	1·1	0·0	0·0	171	0·00
7	..	30·192	59·3	41·0	49·7	41·6	131·5	34·0	55·2	52·6	8·1	17·1	0·0	− 2·0	ENE : E	ENE : ESE	2·1	0·0	0·2	235	0·00
8	Greatest Declination S.	30·010	72·9	36·8	54·7	45·1	117·0	29·2	55·4	51·0	9·6	19·4	1·2	+ 3·0	ENE : W	WNW : NNE	3·2	0·0	0·1	201	0·13
9	..	29·981	54·2	43·5	46·5	39·7	104·3	39·0	56·1	50·8	6·8	10·4	4·2	− 5·0	NNE	NNE	4·1	0·0	0·6	358	0·02
10	..	30·042	53·5	37·2	45·2	38·8	97·2	27·9	56·0	48·6	6·4	12·4	0·0	− 6·1	NE	NE : NNE	1·3	0·0	0·2	251	0·00
11	Last Qr.	29·921	54·8	39·3	45·2	37·6	116·9	32·2	55·8	50·8	7·6	13·4	2·4	− 6·0	NE	NE : S	0·5	0·0	0·0	123	0·00
12	..	29·857	61·6	34·0	46·3	41·6	124·0	26·0	55·6	51·4	4·7	17·3	0·0	− 4·9	SW : NE	NE : E by S	0·9	0·0	0·1	208	0·00
13	..	29·814	51·3	42·0	45·9	37·6	72·4	41·0	55·3	50·2	8·3	12·6	6·1	− 5·5	NE	NE	0·5	0·0	0·1	334	0·00
14	..	29·680	58·0	42·0	47·9	39·7	118·9	40·3	54·6	51·8	8·2	12·9	3·6	− 3·8	NE : NNE	NE	1·1	0·0	0·1	235	0·00
15	In Equator	29·713	59·5	38·3	47·3	37·5	131·3	29·3	54·1	50·5	9·8	21·3	2·6	− 4·7	NNE : NE	NNE : ESE	0·7	0·0	0·0	177	0·00
16	..	29·690	62·4	36·3	49·4	41·3	101·2	26·4	54·4	51·5	8·1	16·5	2·0	− 2·9	S : WSW	WSW : NNW : NE	1·1	0·0	0·0	190	0·00
17	..	29·815	56·6	40·4	45·5	33·2	126·9	29·9	54·0	50·0	12·3	19·8	5·3	− 7·1	NE	N : WSW	2·0	0·0	0·2	258	0·00
18	..	29·793	62·4	40·5	50·0	45·2	101·1	28·0	53·6	48·8	4·8	15·4	1·1	− 2·9	WSW : W	Variable	2·1	0·0	0·2	264	0·16
19	New	30·024	69·8	43·3	54·4	47·5	121·7	34·3	53·6	50·0	6·9	20·0	0·0	+ 1·2	WSW	W : NNW	0·6	0·0	0·0	178	0·00
20	Apogee	30·096	67·8	46·8	56·5	46·2	112·0	38·0	54·2	52·0	10·3	19·4	0·4	+ 3·0	W : NW	WNW : NNW	1·3	0·0	0·2	277	0·00
21	..	30·154	69·5	46·7	54·5	47·0	133·4	36·6	54·8	51·3	7·5	18·4	0·0	+ 0·7	NNE : NNW	E : ESE	0·5	0·0	0·0	138	0·00
22	..	30·030	62·8	38·8	51·2	45·5	139·5	31·6	54·8	51·4	5·7	14·4	2·3	− 2·9	E	E	3·0	0·0	0·3	251	0·00
23	Greatest Declination N.	29·835	68·4	46·5	57·7	46·8	143·5	39·0	56·1	51·5	10·9	21·2	1·1	+ 3·4	E	E	3·6	0·0	0·4	265	0·00
24	..	29·714	77·2	44·0	62·6	49·1	151·1	35·0	57·6	55·2	13·5	21·9	0·0	+ 8·0	ENE : E	E by S : SE	1·2	0·0	0·1	166	0·00
25	..	29·658	79·5	58·4	67·2	55·3	139·8	49·0	59·4	56·8	11·9	23·1	0·0	+ 12·3	SSE	SW	1·6	0·0	0·1	204	0·14
26	..	29·810	67·2	47·8	53·4	44·5	135·8	40·0	58·6	52·8	8·9	18·0	1·3	− 1·8	WSW	W : N	2·8	0·0	0·2	289	0·00
27	First Qr.	29·823	66·6	40·7	50·5	45·2	136·3	31·0	60·9	56·0	5·3	19·0	0·0	− 4·9	WSW	NNE	2·4	0·0	0·0	155	0·08
28	..	29·971	72·2	49·6	56·7	52·3	113·0	43·9	60·8	57·0	4·4	13·7	0·0	+ 1·1	NNE	NE : NNE	2·3	0·0	0·4	360	0·06
29	..	30·075	70·1	46·8	56·7	50·3	148·9	40·4	60·8	56·0	6·4	17·3	0·0	+ 0·7	NE	NE : ESE	1·6	0·0	0·2	284	0·00
30	In Equator	29·991	74·6	40·3	59·9	50·6	139·7	32·2	61·6	57·3	9·3	19·6	0·0	+ 3·6	NE : N	Variable	1·0	0·0	0·0	139	0·00
31	..	29·968	69·3	45·8	55·1	47·5	134·7	42·5	61·9	58·6	7·6	19·4	1·2	− 1·5	ENE : NE	NNE : ESE	2·2	0·0	0·2	205	0·00
Means	..	29·907	64·4	42·1	51·9	43·7	122·0	34·4	56·3	52·1	8·3	17·4	1·7	− 1·0	...	...	..	..	..	Sum 7253	Sum 0·68

BAROMETER READINGS FROM EYE-OBSERVATIONS.

The first maximum in the month was 29in·976 on the 2nd; the first minimum in the month was 29in·670 on the 3rd.
The absolute maximum ,, was 30in·214 on the 7th; the second minimum ,, was 29in·937 on the 8th.
The third maximum ,, was 30in·053 on the 10th; the third minimum ,, was 29in·665 on the 14th.
The fourth maximum ,, was 29in·844 on the 17th; the fourth minimum ,, was 29in·725 on the 18th.
The fifth maximum ,, was 30in·166 on the 21st; the absolute minimum ,, was 29in·636 on the 25th.
The sixth maximum ,, was 30in·090 on the 29th.
The range in the month was 0in·578.
The mean for the month was 29in·907, being 0in·131 *higher* than the average of the preceding 30 years.

TEMPERATURE OF THE AIR.

The highest in the month was 79°·5 on the 25th; the lowest was 34°·0 on the 12th.
The range ,, was 45°·5.
The mean ,, of all the highest daily readings was 64°·4, being 0°·2 *lower* than the average of the preceding 30 years.
The mean ,, of all the lowest daily readings was 42°·1, being 2°·1 *lower* than the average of the preceding 30 years.
The mean daily range was 22°·3, being 1°·8 *greater* than the average of the preceding 30 years.
The mean for the month was 51°·9, being 1°·1 *lower* than the average of the preceding 30 years.

MONTH and DAY, 1871.	ELECTRICITY.		CLOUDS AND WEATHER.	
	A.M.	P.M.	A.M.	P.M.
May 1			vv, ci, ci.-s, cu.-s	v, ci, cu, ci.-s, cu.-s : o,.h
2			ci	10, th.-cl : o, h.-d, lu.-ha
3			7, ci, ci.-cu, ci.-s, d, so.-ha	10, ci.-s : 10
4			v, cu.-s	v, ci.-cu, ci.-s, w : o, d, sl.-mt, h, lu.-co
5			4, ci, cu.-s, h	7, ci.-cu, h : v, h, mt, d
6			li.-cl, h, h.-d	v, cu.-s : o
7			ci, ci.-cu	o : o
8			o, d, h	o, h, sl.-mt : 10, t.-s, l : v
9			10 : v, cu, cu.-s	8,ci.-cu,cu,cu.-s,oc.-r: vv : o, d
10			10	10 : 10
11			10	o : o, h.-d
12			o : 10, d	v, ci.-cu, cu, cu.-s : 10
13			10	10 : 10
14			10	vv : 3
15			5, ci, ci.-s, cu, d, so.-ha	6, cu : 6, cu : 1
16			o, h	10 : 10
17			6, ci, ci.-cu, cu.-s	1, ci, cu.-s : o, sl.-mt, h.-d
18			10	10, glm, r : 10, r
19		m	9	ci.-s, cu.-s, cu : 10, h, mt
20	w	o : m : w	7, ci, ci.-cu, ci.-s, cu, h, d	8, ci, ci.-cu, cu.-s : 10
21	w	w : m	10, d	ci, ci.-cu : o : o, d
22	m	m : m : m	o	o : o
23	o	o : mN : m	o	o, w : o
24	m	w : w : w	o	o : o
25	m	w : m : sN, sp	o : 3, ci, cu	5, ci, ci.-cu, cu : 10, r : 10, r
26	m	w : wN : m	6, ci.-cu, cu, cu.-s	9, cu, cu.-s : v, sl.-r : 1, mt, d
27	mN	m : ssN,P,sp,g-cur: m	8, cu, sl.-f, h, d, gt.-glm	9, t.-s : 6, ci.-s, cu.-s, s
28	o	o : w	10, r : 10	v : o : o
29	o	o : o : w	2, ci, ci.-cu, cu, d	1, ci, ci.-cu : 1 : o, h.-d
30	m	w : o : m	o, h.-d : 1, cu, h.-d	5, ci.-cu, cu, cu.-s, glm : v, mt
31	m	w : o : s	10	6, ci.-s, cu.-s, cu : 1, ci, ci.-cu

HUMIDITY OF THE AIR.

Temperature of the Dew Point.

The highest in the month was $60^{\circ}\cdot4$ on the 25th; and the lowest was $31^{\circ}\cdot5$ on the 17th.

The mean „ was $43^{\circ}\cdot7$, being $1^{\circ}\cdot9$ *lower* than the average of the preceding 30 years.

Elastic Force of Vapour.—The mean for the month was $0^{in}\cdot285$, being $0^{in}\cdot019$ *less* than the average of the preceding 30 years.

Weight of Vapour in a Cubic Foot of Air.—The mean for the month was $3^{grs}\cdot3$, being $0^{gr}\cdot2$ *less* than the average of the preceding 30 years.

Degree of Humidity.—The mean for the month was 74 (that of Saturation being represented by 100), being 2 *less* than the average of the preceding 30 years.

Weight of a Cubic Foot of Air.—The mean for the month was 541 grains, being *the same as* the average of the preceding 30 years.

CLOUDS.

The mean amount for the month, a clear sky being represented by 0 and a cloudy sky by 10, was 5·6.

WIND.

The proportions were of N. 9, S. 4, W. 7, E. 11, and Calm 0. The greatest pressure in the month was $7^{lbs}\cdot6$ on the square foot on the 4th.

RAIN.

Fell on 7 days in the month, amounting to $0^{in}\cdot68$, as measured in the simple cylinder gauge partly sunk below the ground; being $1^{in}\cdot46$ *less* than the average fall of the preceding 56 years.

ELECTRICITY.—The electrical apparatus was under adjustment from May 1 to 18.

MONTH and DAY, 1871.	Phases of the Moon.	Mean Daily Reading of the Barometer (corrected and reduced to 32° Fahrenheit).	Readings of Thermometers. Dry. Highest.	Dry. Lowest.	Dry. Mean Daily Value.	Dew Point. Mean Daily Value.	Highest in the Sun, as shown by a Self-Registering Thermometer, with blackened bulb in vacuo, placed on the Grass.	Lowest on the Grass, as shown by a Self-Registering Minimum Thermometer.	In the Water of the Thames, at Greenwich, by Self-Registering Thermometers, read at 9h A.M. Highest.	In the Water … Lowest.	Difference between the Dew Point Temperature and Air Temperature. Mean Daily Value.	Difference … Greatest.	Difference … Least.	Difference between the Mean Temperature of the Day and the Mean Temperature of the same Day on an Average of 50 Years.	Wind as deduced from Anemometers. Osler's. General Direction. A.M.	General Direction. P.M.	Pressure in lbs. on the square foot. Greatest.	Pressure Least.	Pressure Mean of 24 Obs.	Robinson's. Amount of Horizontal Movement of the Air on each Day.	Rain in Inches, collected in a Gauge whose receiving surface is 5 inches above the Ground.
		in.	°	°	°	°	°	°	°	°	°	°	°	°			lbs.	lbs.	lbs.	miles.	in.
June 1	..	29·889	72·0	42·2	54·0	48·0	119·1	36·0	61·9	56·0	6·0	12·8	0·0	− 3·0	SE : SSW : WSW	NNE : NE	2·8	0·0	0·2	238	0·00
2	..	29·988	60·8	41·0	47·5	37·7	135·8	31·9	61·4	58·2	9·8	18·2	2·8	− 9·8	NNW	N : N by E	8·2	0·0	0·4	299	0·01
3	Perigee : Full	29·977	57·4	41·2	47·2	40·3	126·0	30·8	60·6	55·0	6·9	14·4	4·4	−10·2	N by W : N	N	3·4	0·0	0·3	351	0·03
4	..	29·859	57·2	39·3	44·9	39·3	109·7	30·2	59·6	56·5	5·6	13·3	2·8	−12·4	N	NE : NNE	2·2	0·0	0·1	255	0·06
5	Greatest Declination S.	29·976	64·6	38·7	51·2	38·1	135·8	28·8	59·0	55·8	13·1	22·7	1·0	− 6·0	N : NNE	N by E	10·9	0·0	0·7	369	0·00
6	..	29·870	62·0	40·3	49·9	44·6	89·5	31·1	58·6	55·5	5·3	14·3	1·1	− 7·1	N	N	3·1	0·0	0·2	282	0·00
7	..	29·754	57·6	45·1	49·0	38·6	97·3	40·9	58·4	55·2	10·4	16·3	6·8	− 8·0	N	N	5·2	0·1	0·9	463	0·00
8	..	29·734	56·0	46·3	49·3	39·7	81·8	44·8	57·4	53·8	9·6	11·8	6·9	− 8·0	N	N	6·1	0·0	0·5	380	0·00
9	..	29·776	59·2	46·0	50·4	46·8	74·2	40·5	56·4	52·8	3·6	6·7	2·8	− 7·3	N	N : NNE	0·6	0·0	0·1	260	0·01
10	Last Qr.	29·806	66·8	49·5	54·5	49·8	123·3	48·2	56·0	53·6	4·7	14·4	0·0	− 3·5	N : NNE	N : ENE	1·5	0·0	0·0	145	0·24
11	In Equator	29·818	65·2	48·3	53·7	48·7	140·0	48·3	56·4	53·3	5·0	11·9	0·0	− 4·6	E : ENE	E : ENE	0·7	0·0	0·0	193	0·00
12	..	29·873	68·3	47·0	52·8	49·0	131·5	47·0	57·2	55·0	3·8	14·6	0·0	− 5·8	ENE	ENE : ESE	0·3	0·0	0·0	168	0·00
13	..	29·787	67·8	47·2	56·0	53·7	106·1	44·7	57·6	55·0	2·3	11·3	0·0	− 2·8	ESE	SSE	0·2	0·0	0·0	164	0·05
14	..	29·777	75·2	57·8	63·1	56·8	140·0	56·6	58·0	55·2	6·3	14·5	1·5	+ 4·1	SSE : SSW	SSW : SE : E	0·4	0·0	0·0	175	0·37
15	..	29·659	77·2	60·0	65·4	61·1	103·8	53·0	59·0	56·5	4·3	14·5	0·0	+ 6·4	Calm	E : SE : SW	0·5	0·0	0·0	125	0·19
16	Apogee	29·639	76·2	57·6	65·4	56·6	138·9	56·6	59·9	56·8	8·8	16·7	2·3	+ 6·4	SW	S : SSW	0·0	0·0	0·0	133	0·09
17	..	29·391	71·0	55·0	59·9	57·6	113·9	54·4	61·4	58·8	2·3	12·6	0·0	+ 0·9	SE	SSW	0·7	0·0	0·0	152	0·35
18	New	29·435	68·5	54·2	59·5	52·7	138·0	54·0	61·6	57·0	6·8	14·0	2·4	+ 0·4	SW	SSW : S	3·2	0·0	0·3	302	0·12
19	Greatest Declination N.	29·422	72·9	51·4	58·9	52·7	143·9	50·8	62·6	59·0	6·2	16·5	0·0	− 0·3	SSW : SW	SW	3·6	0·0	0·2	253	0·52
20	..	29·479	69·2	54·0	56·1	52·3	119·2	50·2	63·0	60·0	3·8	13·1	1·8	− 3·4	WSW : WNW	W	3·6	0·0	0·0	213	0·12
21	..	29·695	67·4	52·2	57·7	53·0	110·0	46·5	63·1	60·0	4·7	13·3	0·0	− 2·2	W : N by W	Variable	0·7	0·0	0·0	165	0·17
22	..	29·749	60·4	51·3	53·5	50·8	96·2	51·1	63·3	59·7	2·7	6·5	0·0	− 6·8	ENE : NE	ESE : SE	0·7	0·0	0·0	164	0·45
23	..	29·716	65·8	49·0	55·0	52·6	120·8	49·0	63·0	60·0	2·4	9·2	0·0	− 5·7	SSE : NW	N : NNE	1·4	0·0	0·1	234	0·12
24	..	29·922	60·9	47·5	52·4	46·1	101·5	42·0	63·1	60·0	6·3	11·6	3·6	− 8·8	NNE	NNE	1·8	0·0	0·1	250	0·00
25	..	30·002	60·6	41·7	49·9	40·3	121·5	34·1	62·4	57·8	9·6	14·4	1·1	−11·7	N	N	3·0	0·0	0·5	327	0·00
26	In Equator	30·081	65·4	42·7	52·4	44·2	134·2	33·5	61·6	59·0	8·2	18·7	1·8	− 9·3	N	N : NNE	1·6	0·0	0·1	193	0·00
27	..	29·869	69·1	40·0	55·1	46·1	129·5	33·8	61·4	58·3	9·0	19·6	0·7	− 6·5	SW : WSW	WSW : SSW	1·6	0·0	0·1	224	0·00
28	..	29·572	69·8	49·9	59·0	52·5	126·1	43·6	61·4	58·3	6·5	15·3	1·7	− 2·5	S : WSW	W	30·0	0·0	0·9	415	0·03
29	..	29·674	71·3	52·0	60·4	50·6	137·1	43·6	61·6	60·0	9·8	18·5	1·6	− 1·0	WSW : SW	SSW : S by E	2·2	0·0	0·1	249	0·00
30	..	29·630	72·1	50·0	59·3	51·8	138·5	43·0	62·1	59·2	7·5	18·5	4·4	− 1·8	S by E : SSW	WSW : SSW	1·4	0·0	0·1	250	0·02
Means	..	29·761	66·3	47·9	54·8	48·4	119·4	43·3	60·3	57·0	6·4	14·3	1·7	− 4·3	...	...	..	..	..	Sum 7391	Sum 2·95

BAROMETER READINGS FROM EYE-OBSERVATIONS.

The first minimum in the month was 29in·851 on the 1st.

The first maximum in the month was 30in·023 on the 3rd; the second minimum ,, was 29in·829 on the 4th.
The second maximum ,, was 29in·998 on the 5th; the third minimum ,, was 29in·721 on the 8th.
The third maximum ,, was 29in·890 on the 12th; the absolute minimum ,, was 29in·337 on the 17th.
The fourth maximum ,, was 29in·770 on the 22nd; the fifth minimum ,, was 29in·664 on the 23rd.
The absolute maximum ,, was 30in·097 on the 26th; the sixth minimum ,, was 29in·514 on the 28th.
The sixth maximum ,, was 29in·708 on the 29th; the seventh minimum ,, was 29in·587 on the 30th.
The range in the month was 0in·760.
The mean for the month was 29in·761, being 0in·055 *lower* than the average of the preceding 30 years.

TEMPERATURE OF THE AIR.

The highest in the month was 77°·2 on the 15th; the lowest was 38°·7 on the 5th.
The range ,, was 38°·5.
The mean ,, of all the highest daily readings was 66°·3, being 4°·9 *lower* than the average of the preceding 30 years.
The mean ,, of all the lowest daily readings was 47°·9, being 2°·2 *lower* than the average of the preceding 30 years.
The mean daily range was 18°·4, being 2°·7 *less* than the average of the preceding 30 years.
The mean for the month was 54°·8, being 4°·3 *lower* than the average of the preceding 30 years.

MONTH and DAY, 1871.	ELECTRICITY. A.M.	ELECTRICITY. P.M.	CLOUDS AND WEATHER. A.M.	CLOUDS AND WEATHER. P.M.
June 1	o	m : wN : m	10, th.-cl	10, gt.-glm : v : 1, cu.-s, s
2	m	m : wN : s	8, cu, cu.-s, d	9,ci.-cu,cu,cu.-s,glm,sl.-r: v, d
3	w : ssN, sP, g-cur	s : wN : s	8, ci, ci.-cu, cu.-s	7, li.-shs : 6, ci, ci.-cu
4	m	wN : o	10 : 10, r	v, r : o
5	wN	mN : o : m	3, ci, ci.-s, cu, d	6, ci, ci.-s, cu, so.-ha, w : 7, ci.-s, cu.-s
6	mN	wN : w : s	10	10 : v : 1
7	wN	o : w : w	10, w	10, w : 10, w
8	o	o : mN : mN	10, w	10 : 10
9	o	o : o : m	10 : 10, glm	10 : 10, r
10	m	wN : ssN,sp,g-cur : w	10, shs.-r : 10	10, h.-r : 9, ci.-cu, cu.-s
11	o	o : o	10	v, ci.-cu, cu : 10
12	o	o : o	10, m.-r	4, ci, ci.-cu, ci.-s: o : 10, th.-f
13	o	o : mN : o	10	10, shs.-r : 10, c.-r
14	o	o : m : ssN,sp,g.-cur : m	10, r : 10, r	10,ci.-s,cu.-s,oc.-r: 10, oc.-r : 10, h.-r, l
15	o	o : o : sN	10, r : 10, r	7, ci, ci.-cu, cu, cu.-s : 10, r, l
16	o	o : o	10, r : 3, ci, ci.-cu, ci.-s, cu	8, cu, cu.-s : 10 : 10, oc.-th.-r
17	o	o : mN : m	10 10, sl.-r	10 : v : 10, h.-r
18	o	o : o	10, h.-r v, oc.-shs	vv, ci, ci.-cu, ci.-s : 10
19	o	ssN,sp,g.-cur: o : o	10, r v, ci, ci.-cu, cu, cu.-s	8, cu, cu.-s, n, r, t, l : v, fr.-h.-shs :5,ci,ci.-cu,ci.-s,cu.-s
20	sN, sp	ssN,P,sp,g.-cur: o	10	10, shs.-r, t, l : 10, oc.-r : 6, ci, cu.-s, s
21	o	o : o	10	7, so.-ha : 10, h.-r : 10, oc.-r
22	wN	o : mN : o	10, sl.-r	10 : 10, h.-r : 10, c.-h.-r
23	o	o : o	10, c.-r : 10, mt	v,ci.-cu,ci.-s,cu: 10 : 10, oc.-th.-r
24	o	o : o	10 : 10	10 : 10 : 1, ci, ci.-cu, cu
25	o	o	9, ci, ci-cu, cu, cu.-s	vv : o
26	o	o	7, ci, ci.-cu, cu, d	cu : o, d
27	o	wN : o : o	10, ci.-cu, ci.-s	4, ci.-cu, cu, cu-s, h : o
28	o	o : w : o	9, ci, cu, cu.-s, li.-shs	v,ci,ci.-cu,cu,cu.-s,fr.-sqs: 8, ci.-cu, cu.-s, s
29	o	w : o : m	3, ci, ci.-cu, cu, d	6, ci, ci.-cu, cu : 8, ci.-cu, cu.-s
30	o	o : o	10, r : 8, ci, ci.-cu, cu, cu.-s	3, ci, ci.-cu, ci.-s : 1, li.-cl

HUMIDITY OF THE AIR.

Temperature of the Dew Point.

The highest in the month was $64^{\circ}\cdot 3$ on the 15th; and the lowest was $37^{\circ}\cdot 5$ on the 2nd.

The mean ,, was $48^{\circ}\cdot 4$, being $2^{\circ}\cdot 3$ *lower* than the average of the preceding 30 years.

Elastic Force of Vapour.—The mean for the month was $0^{in}\cdot 340$, being $0^{in}\cdot 032$ *less* than the average of the preceding 30 years.

Weight of Vapour in a Cubic Foot of Air.—The mean for the month was $3^{grs}\cdot 9$, being $0^{gr}\cdot 3$ *less* than the average of the preceding 30 years.

Degree of Humidity.—The mean for the month was 78 (that of Saturation being represented by 100), being 4 *greater* than the average of the preceding 30 years.

Weight of a Cubic Foot of Air.—The mean for the month was 535 grains, being 3 grains *greater* than the average of the preceding 30 years.

CLOUDS.

The mean amount for the month, a clear sky being represented by 0 and a cloudy sky by 10, was 8·1.

WIND.

The proportions were of N. 13, S. 7, W. 5, E. 5, and Calm 0. The greatest pressure in the month was $30^{lbs}\cdot 0$ on the square foot on the 28th.

RAIN.

Fell on 18 days in the month, amounting to $2^{in}\cdot 95$, as measured in the simple cylinder gauge partly sunk below the ground; being $1^{in}\cdot 04$ *greater* than the average fall of the preceding 56 years.

MONTH and DAY, 1871.	Phases of the Moon.	Mean Daily Reading of the Barometer (corrected and reduced to 32° Fahrenheit).	Readings of Thermometers. Dry. Highest.	Dry. Lowest.	Dry. Mean Daily Value.	Dew Point. Mean Daily Value.	Highest in the Sun, as shown by a Self-Registering Thermometer with blackened bulb in vacuo, placed on the Grass.	Lowest on the Grass, as shown by a Self-Registering Minimum Thermometer.	In the Water of the Thames, at Greenwich, by Self-Registering Thermometers, read at 9h A.M. Highest.	In the Water of the Thames. Lowest.	Difference between the Dew Point Temperature and Air Temperature. Mean Daily Value.	Difference. Greatest.	Difference. Least.	Difference between the Mean Temperature of the Day and the Mean Temperature of the same Day on an Average of 50 Years.	Wind as deduced from Anemometers. Osler's. General Direction. A.M.	Osler's. General Direction. P.M.	Osler's. Pressure in lbs. on the square foot. Greatest.	Pressure. Least.	Pressure. Mean of 24 Obs.	Robinson's. Amount of Horizontal Movement of the Air on each Day.	Rain in Inches, collected in a Gauge whose receiving surface is 5 inches above the Ground.
		in.	°	°	°	°	°	°	°	°	°	°	°	°			lbs.	lbs.	lbs.	miles.	in.
July 1	Perigee	29·768	72·2	48·0	60·1	50·4	144·9	39·3	62·6	59·2	9·7	19·4	0·0	− 0·8	SSW : SW	SSW	2·3	0·0	0·2	257	0·00
2	Full: Greatest Dec. S.	29·533	64·0	48·8	57·1	51·5	81·9	40·8	63·1	59·3	5·6	12·2	0·8	− 4·0	S : NE : E	ENE : SSW	1·5	0·0	0·1	189	0·18
3	..	29·466	69·3	54·8	60·9	52·7	119·5	49·4	62·6	59·0	8·2	9·0	2·1	− 0·4	S : SW	SW : SSW	10·5	0·0	0·7	349	0·29
4	..	29·582	68·0	53·2	57·7	54·5	123·5	48·5	62·6	60·0	3·2	11·3	2·0	− 3·8	SSW : S	SSW : SW	14·9	0·0	0·7	358	0·26
5	..	29·826	70·9	50·3	58·9	52·0	135·7	46·0	62·6	60·5	6·9	14·9	1·7	− 2·8	SW	SW : WSW	3·7	0·0	0·3	360	0·14
6	..	30·045	71·2	50·6	60·3	52·4	120·7	43·1	62·6	59·0	7·9	17·6	2·6	− 1·5	WSW	SW	4·1	0·0	0·4	345	0·00
7	..	29·847	76·5	56·8	65·9	54·1	132·9	54·7	62·9	59·6	11·8	21·3	3·2	+ 4·0	SSW	SSW : S	2·7	0·0	0·2	255	0·00
8	..	29·743	72·0	56·2	62·7	51·1	143·8	49·0	63·9	61·2	11·6	19·4	4·4	+ 1·0	SSW : WSW	SW	9·0	0·0	0·7	397	0·00
9	In Equator: Last Quarter.	29·826	73·4	54·2	62·2	53·0	138·5	49·0	64·4	60·8	9·2	17·7	2·4	+ 0·5	SW	SW	3·2	0·0	0·3	319	0·00
10	..	29·734	75·0	49·0	61·0	50·4	143·9	40·5	64·8	61·8	10·6	22·1	0·6	− 0·8	WSW	SSW : ESE : NE	1·2	0·0	0·0	119	0·12
11	..	29·541	58·1	52·6	54·2	51·6	71·4	50·6	65·4	62·0	2·6	4·9	0·0	− 7·6	NE : N by E	NNW : WNW	5·2	0·0	0·4	339	1·28
12	..	29·747	70·1	49·8	58·6	52·0	110·7	44·0	65·4	61·5	6·6	16·0	1·5	− 3·4	WSW	WSW : SW	3·1	0·0	0·3	376	0·01
13	..	29·743	71·7	54·3	62·0	58·9	108·7	54·0	64·6	60·0	3·1	11·5	1·8	− 0·3	SSW : SW	SSW	3·0	0·0	0·3	320	0·02
14	Apogee	29·835	74·2	61·9	65·5	60·6	129·0	60·2	65·1	61·6	4·9	9·9	2·3	+ 3·0	SSW	SSW	2·3	0·0	0·2	299	0·00
15	..	29·885	80·6	61·0	68·5	55·9	145·5	60·7	65·4	61·5	12·6	19·6	0·5	+ 6·0	SSW : WSW	SW	2·4	0·0	0·2	280	0·08
16	Greatest Declination N.	29·992	81·2	60·6	69·1	62·8	138·7	57·2	65·2	61·4	6·3	17·9	4·5	+ 6·7	SW : WSW	WSW : SSW	1·0	0·0	0·1	207	0·00
17	New	29·920	82·6	58·7	67·9	64·1	136·8	54·1	67·0	62·2	3·8	14·8	0·0	+ 5·7	SSW : WSW	WSW : N	0·6	0·0	0·0	179	0·00
18	..	29·880	76·6	59·6	67·3	53·7	135·8	55·3	67·4	62·2	13·6	21·8	4·9	+ 5·4	N : NNE	NNE : SE	0·3	0·0	0·0	171	0·00
19	..	29·587	80·3	54·0	66·9	59·0	132·5	47·1	67·0	62·0	7·9	17·5	3·8	+ 5·3	SE : E : SSW	SW : W	3·6	0·0	0·2	231	0·00
20	..	29·807	72·5	58·4	63·5	49·8	128·9	54·0	68·6	65·0	13·7	20·7	5·1	+ 2·1	NNW	NNW	1·7	0·0	0·2	272	0·00
21	..	29·739	75·1	54·9	63·2	54·5	140·5	53·6	68·4	66·6	8·7	18·7	4·7	+ 1·7	Calm : SW	SW : SSW	1·7	0·0	0·1	227	0·00
22	..	29·500	72·9	54·9	60·9	56·0	110·0	48·7	68·4	66·6	4·9	13·2	2·2	− 0·6	SSW	WSW : SW	2·3	0·0	0·2	310	0·05
23	In Equator	29·515	70·1	51·9	59·5	54·4	138·1	45·0	67·9	66·0	5·1	12·2	0·0	− 2·1	SSW : WSW	SW	13·5	0·0	0·3	340	0·17
24	..	29·470	70·9	53·9	60·4	52·5	139·0	50·3	67·2	64·2	7·9	17·5	1·6	− 1·3	WSW	WSW : SW	3·4	0·0	0·3	332	0·07
25	First Qr.	29·255	67·5	54·1	58·8	50·5	134·0	52·7	67·0	64·0	8·3	15·7	1·8	− 3·0	WSW : W	W : WSW	14·7	0·0	0·4	414	0·22
26	..	29·263	70·5	52·7	59·7	50·3	136·0	46·8	66·6	63·6	9·4	16·9	3·6	− 2·2	WSW	WSW	9·2	0·0	0·8	422	0·02
27	..	29·621	76·6	52·0	62·1	50·2	133·2	46·8	66·8	63·8	11·9	23·1	2·8	+ 0·1	WSW : W by N	WSW : SSW	1·5	0·0	0·1	225	0·00
28	..	29·675	71·7	56·2	61·4	56·1	115·0	52·0	66·4	63·2	5·3	15·5	3·8	− 0·8	Variable	WSW : SW	3·3	0·0	0·3	278	0·12
29	Perigee	29·651	71·8	52·8	60·8	51·8	136·5	47·2	66·6	64·8	9·0	19·4	0·0	− 1·5	SSW	SSW	7·0	0·0	0·4	321	0·07
30	Greatest Declination S.	29·535	67·3	50·0	55·2	50·0	131·5	46·8	66·4	63·0	5·2	13·7	0·0	− 7·2	SSW : SW	SW	14·4	0·0	0·8	385	0·15
31	Full	29·861	74·9	46·8	60·7	52·9	128·9	41·0	64·6	59·4	7·8	20·7	0·0	− 1·7	SW : WSW	WSW : SW	0·3	0·0	0·0	192	0·00
Means	..	29·690	72·6	54·0	61·7	53·9	127·9	49·3	65·5	62·1	7·8	16·3	2·1	− 0·1	...	...	..	..	..	Sum 9068	Sum 3·25

BAROMETER READINGS FROM EYE-OBSERVATIONS.

The first maximum in the month was $29^{in}\cdot784$ on the 1st; the first minimum in the month was $29^{in}\cdot385$ on the 3rd.
The absolute maximum ,, was $30^{in}\cdot061$ on the 6th; the second minimum ,, was $29^{in}\cdot733$ on the 7th.
The third maximum ,, was $29^{in}\cdot844$ on the 9th; the third minimum ,, was $29^{in}\cdot435$ on the 11th.
The fourth maximum ,, was $30^{in}\cdot004$ on the 16th; the fourth minimum ,, was $29^{in}\cdot538$ on the 19th.
The fifth maximum ,, was $29^{in}\cdot870$ on the 20th; the absolute minimum ,, was $29^{in}\cdot236$ on the 25th.
The sixth maximum ,, was $29^{in}\cdot706$ on the 27th; the sixth minimum ,, was $29^{in}\cdot545$ on the 28th.
The seventh maximum ,, was $29^{in}\cdot821$ on the 28th; the seventh minimum ,, was $29^{in}\cdot483$ on the 30th.
The range in the month was $0^{in}\cdot825$.
The mean for the month was $29^{in}\cdot690$, being $0^{in}\cdot117$ *lower* than the average of the preceding 30 years.

TEMPERATURE OF THE AIR.

The highest in the month was 82°·6 on the 17th; the lowest was 46°·8 on the 31st.
The range ,, was 35°·8.
The mean ,, of all the highest daily readings was 72°·6, being 1°·6 *lower* than the average of the preceding 30 years.
The mean ,, of all the lowest daily readings was 54°·0, being 0°·9 *higher* than the average of the preceding 30 years.
The mean daily range was 18°·6, being 2°·5 *less* than the average of the preceding 30 years.
The mean for the month was 61°·7, being 0°·3 *lower* than the average of the preceding 30 years.

MONTH and DAY, 1871.	ELECTRICITY. A.M.	ELECTRICITY. P.M.	CLOUDS AND WEATHER. A.M.	CLOUDS AND WEATHER. P.M.
July 1	o	o : o : w	o : 7, ci, ci.-cu, cu, cu.-s	cu : o
2	o	w : o	10, d	10, r : 8, cu.-s, s, cu
3	o : ssN,P,sp,g-cur	ssN,P,sp,g-cur : o	10, w : 10, r	v, t.-s : v, shs.-r : 5, ci, ci.-s, cu, cu.-s
4	wN	w : ssP,sp,g.-cur : o	v : 10, r	v, sqs : vv, fr.-h.-shs : o
5	m	ssN,P,sp,g.-cur : w	v	v,fr.-h.-shs,t,l,h : v : 4, ci.-cu, cu.-s
6	m	w : o	10	5,ci,ci.-cu,ci.-s : v : 10
7	o	o	9, ci, ci.-cu, cu.-s	2, ci, ci.-cu : o
8	o	o : o : w	5, cu, d	5, cu : v : 3,ci.-cu, cu.-s, s, d
9	o	o : m	vv, ci, ci.-s, cu, ci.-cu	v : 1, ci, cu.-s
10	o	o : o : w	v, cu, h	10, cu.-s : 10, r
11	wN	o : o : mN	10, h.-r : 10, c.-h.-r	10, r : 10
12	w	o	9, ci.-cu, cu.-s	10, sl.-r : 10, th.-r
13	o	o : w : o	10	10, th.-r : 10, oc.-th.-r
14	w	w : w : m	10 : v, t, so.-ha	10, ci.-s, cu, cu.-s : v
15	wN	w : o : s	10, r : o	5, ci, ci.-cu, ci.-s : o, d
16	o	m : m	10, h, mt	vv, cu.-s, h, mt : 7, cu.-s, s
17	w	w : o : m	10	7, ci, ci.-cu, cu : 2, cu.-s, s, d
18	o	o : o : w	1, ci, d	7, ci, ci.-s : v, ci.-cu
19	o	o : o : m	9, ci-cu, cu-s	10, cu.-s : 10 : v
20	o	o	7, ci.-cu, cu, d	6, ci, ci-cu, cu : 10
21	m	o : o : w	8, ci, cu.-s	5, ci, ci.-cu, ci.-s, cu.-s : 1, s, cu.-s
22	o	o : o : w	10, oc.-sl.-r	v,ci,ci.-cu,cu,cu.-s,oc.-shs : vv, cu.-s, s
23	m	ssP,N,sp,g.-cur : o	v, ci, ci.-cu, cu	vv, oc.-shs, t : vv, ci.-cu, ci.-s, cu, oc.-shs, l
24	m	m : o : w	8, ci.-cu, ci.-s, cu, cu.-s	vv, oc.-shs : 10, r
25	m	ssN,P,sp,g.-cur : ss : w	10, r : 9, cu, cu.-s	v, oc.-shs, t, fr.-h.-sqs : 4, ci.-s, cu.-s
26	o	ssN, sp : o	v, ci, ci.-cu, cu, cu.-s, w	v, r, w : 10, ci.-s, cu : 9, cu.-s, s
27	o	w : o : m	2, ci.-cu, cu	6, ci, ci.-cu, cu, cu.-s : 9
28	o	o	10, r	v, ci, ci.-cu, cu : v, ci, ci.-cu, cu : 3,ci.-cu,cu.-s,s,d
29	o	o	3, cu, d	7,ci,ci.-cu,ci.-s,cu : 10, r : 3, cu, cu.-s, d
30	o	o	10, r, sqs	vv, r, sqs : 1, ci.-s
31	o	o	3, cu	4, cu, h : v, ci, ci.-cu, ci.-s, cu : 6, ci, ci.-cu, ci.-s

HUMIDITY OF THE AIR.

Temperature of the Dew Point.

The highest in the month was 66°·5 on the 17th; and the lowest was 47°·4 on the 1st.

The mean ,, was 53°·9, being 0°·1 *higher* than the average of the preceding 30 years.

Elastic Force of Vapour.—The mean for the month was 0in·416, being 0in·001 *greater* than the average of the preceding 30 years.

Weight of Vapour in a Cubic Foot of Air.—The mean for the month was 4grs·6, being *the same as* the average of the preceding 30 years.

Degree of Humidity.—The mean for the month was 76 (that of Saturation being represented by 100), being 1 *greater* than the average of the preceding 30 years.

Weight of a Cubic Foot of Air.—The mean for the month was 526 grains, being 2 grains *less* than the average of the preceding 30 years.

CLOUDS.

The mean amount for the month, a clear sky being represented by 0 and a cloudy sky by 10, was 6·8.

WIND.

The proportions were of N. 2, S. 14, W. 13, E. 2, and Calm 0. The greatest pressure in the month was 14lbs·9 on the square foot on the 4th.

RAIN.

Fell on 17 days in the month, amounting to 3in·25, as measured in the simple cylinder gauge partly sunk below the ground; being 0in·70 *greater* than the average fall of the preceding 56 years.

MONTH and DAY, 1871.	Phases of the Moon.	Mean Daily Reading of the Barometer (corrected and reduced to 32° Fahrenheit).	Readings of Thermometers. Dry. Highest.	Dry. Lowest.	Dry. Mean Daily Value.	Dew Point. Mean Daily Value.	Highest in the Sun, as shown by a Self-Registering Thermometer with blackened bulb in vacuo, placed on the Grass.	Lowest on the Grass, as shown by a Self-Registering Minimum Thermometer.	In the Water of the Thames, at Greenwich, by Self-Registering Thermometers, read at 9h A.M. Highest.	In the Water of the Thames. Lowest.	Difference between the Dew Point Temperature and Air Temperature. Mean Daily Value.	Difference. Greatest.	Difference. Least.	Difference between the Mean Temperature of the Day and the Mean Temperature of the same Day on an Average of 50 Years.	Wind as deduced from Anemometers. Osler's. General Direction. A.M.	Osler's. General Direction. P.M.	Osler's. Pressure in lbs. on the square foot. Greatest.	Pressure. Least.	Pressure. Mean of 24 Obs.	Robinson's. Amount of Horizontal Movement of the Air on each Day.	Rain in Inches, collected in a Gauge whose receiving surface is 5 inches above the Ground.
		in.	°	°	°	°	°	°	°	°	°	°	°	°			lbs.	lbs.	lbs.	miles.	in.
Aug. 1	..	29·904	74·9	49·9	60·9	50·1	138·6	44·0	65·6	57·6	10·8	19·9	2·1	− 1·5	WSW : SW	SW : SSW	0·7	0·0	0·1	201	0·00
2	..	29·779	79·1	47·5	62·9	49·4	140·5	40·9	64·9	61·3	13·5	22·3	0·0	+ 0·5	S : ENE	SSW : S	0·3	0·0	0·0	149	0·00
3	..	29·552	80·5	49·7	65·2	48·8	139·7	41·0	66·6	63·6	16·4	25·5	0·6	+ 2·8	SSE : ENE	S : SSW	0·7	0·0	0·0	157	0·00
4	..	29·625	71·0	50·7	57·6	48·8	128·5	47·8	67·2	64·3	8·8	19·4	2·1	− 4·7	SSW : WSW	WNW : WSW	2·8	0·0	0·1	290	0·08
5	In Equator	29·972	74·3	46·9	59·6	50·7	135·5	39·2	67·0	63·2	8·9	20·4	1·3	− 2·6	WSW : W	WSW : SW	1·4	0·0	0·1	260	0·00
6	..	30·076	81·0	59·2	67·0	59·1	120·7	52·1	65·6	62·8	7·9	20·7	1·9	+ 4·9	WSW : W	W by S	0·3	0·0	0·0	172	0·00
7	..	30·015	79·1	54·0	64·7	59·6	136·9	46·0	66·0	62·8	5·1	15·5	0·0	+ 2·7	Calm : NE	NE : E	1·3	0·0	0·1	168	0·00
8	Last Qr.	29·946	78·2	59·0	67·5	55·7	130·5	45·6	66·6	65·6	11·8	19·6	2·8	+ 5·5	E by N : NE	E : ENE	1·3	0·0	0·1	156	0·00
9	..	29·969	82·0	51·9	67·3	55·4	142·9	44·0	67·4	64·8	11·9	24·1	0·0	+ 5·2	NE	ENE : E by S	0·7	0·0	0·0	124	0·00
10	Apogee	29·986	85·0	53·7	69·4	55·4	142·3	46·0	68·2	66·4	14·0	27·2	0·0	+ 7·3	Calm : NE	NE : E : E by S	0·2	0·0	0·0	111	0·00
11	..	29·954	87·5	52·2	69·6	56·6	140·0	43·3	68·8	66·6	13·0	27·0	0·0	+ 7·5	Calm : E	S : E : SE	0·7	0·0	0·0	94	0·00
12	Greatest Declination N.	29·903	88·2	56·0	72·4	57·4	146·5	48·3	69·6	68·0	15·0	27·5	0·0	+10·4	NE : NNE	E : ESE	0·6	0·0	0·0	95	0·00
13	..	29·795	89·2	59·7	73·9	61·5	151·0	52·2	70·4	68·2	12·4	26·4	0·0	+12·0	Calm : NE	E : NE	0·8	0·0	0·1	168	0·00
14	..	29·769	84·0	60·5	70·9	59·3	142·5	54·4	70·9	68·5	11·6	23·5	1·3	+ 9·2	NNE : NE	ENE : ESE	3·2	0·0	0·3	276	0·00
15	..	29·777	79·9	57·5	66·9	55·1	139·5	50·0	71·4	67·8	11·8	22·8	1·3	+ 5·4	NE	E : ESE	0·8	0·0	0·2	209	0·00
16	New	29·782	79·8	54·0	66·7	54·2	141·8	44·8	70·9	67·9	12·5	24·5	0·4	+ 5·4	ENE	E : ESE	0·7	0·0	0·1	124	0·00
17	..	29·631	82·4	54·5	67·9	58·7	139·6	46·3	70·6	68·0	9·2	23·1	1·2	+ 6·8	Calm : S	SSE	1·5	0·0	0·1	158	0·11
18	..	29·289	72·1	57·7	62·6	58·0	132·0	52·0	70·8	68·3	4·6	13·3	0·2	+ 1·6	SSE : S : SSW	SSW : NE : WSW	3·9	0·0	0·3	243	0·58
19	In Equator	29·772	71·5	54·0	60·8	48·9	135·8	46·0	71·6	69·0	11·9	20·7	3·4	− 0·1	W	WNW : SW	2·7	0·0	0·4	329	0·00
20	..	29·875	71·1	50·6	63·1	55·0	121·2	43·3	71·8	..	8·1	12·8	1·0	+ 2·3	S	SSW	17·0	0·0	0·7	343	0·00
21	..	29·896	78·7	63·0	67·2	58·1	125·7	60·5	70·6	..	9·1	13·9	0·0	+ 6·5	SW : WSW	W : N : NNE	2·0	0·0	0·4	270	0·01
22	..	29·877	76·9	52·8	64·4	59·5	124·4	43·6	73·6	..	4·9	14·3	0·0	+ 3·7	NE : E	SE : SW	0·3	0·0	0·0	163	0·00
23	First Qr.	29·752	72·9	56·1	62·1	58·4	115·5	45·6	70·6	..	3·7	12·4	0·8	+ 1·5	SW	WSW	2·2	0·0	0·3	281	0·03
24	..	29·615	67·9	56·0	60·9	58·3	84·7	48·1	70·6	..	2·6	6·3	1·3	+ 0·4	SW	SW	30·0	0·0	2·2	416	0·05
25	..	29·762	75·9	54·8	62·8	50·7	135·0	45·4	69·6	..	12·1	21·6	2·2	+ 2·3	SW : WSW	WSW	2·2	0·0	0·6	375	0·00
26	Greatest Dec. S.; Perigee.	30·000	71·7	50·8	60·6	45·3	146·1	39·8	66·6	..	15·3	24·3	1·4	+ 0·3	WSW	W : WNW	6·2	0·0	0·6	391	0·00
27	..	30·288	71·0	47·6	58·2	48·0	115·0	36·4	..	..	10·2	23·4	1·5	− 1·9	W by S : NNW	NNW : N	0·5	0·0	0·0	145	0·00
28	..	30·247	76·1	46·1	61·0	49·4	137·0	37·5	..	..	11·6	23·0	0·2	+ 1·1	SW : NE	E	0·8	0·0	0·0	104	0·00
29	..	29·996	76·0	51·0	63·1	50·7	141·8	41·5	65·6	61·0	12·4	22·3	0·2	+ 3·4	E : SE	E	4·2	0·0	0·4	229	0·00
30	Full	29·827	82·0	52·7	66·7	54·1	140·9	42·6	65·6	60·0	12·6	23·6	0·8	+ 7·3	ESE	SE : SSW	1·3	0·0	0·1	177	0·00
31	..	29·869	79·7	57·3	65·4	55·5	138·0	49·4	65·6	62·0	9·9	22·9	1·9	+ 6·2	WSW	SSW : S	1·3	0·0	0·2	272	0·00
Means	..	29·855	78·1	53·8	64·8	54·4	133·9	45·7	(29 days) 68·6	(22 days) 64·9	10·4	20·8	1·0	+ 3·6	...	...	..	..	..	Sum 6650	Sum 0·86

BAROMETER READINGS FROM EYE-OBSERVATIONS.

The first maximum in the month was 29^{in}·944 on the 1st; the first minimum in the month was 29^{in}·516 on the 3rd.
The second maximum ,, was 30^{in}·085 on the 6th; the second minimum ,, was 29^{in}·930 on the 8th.
The third maximum ,, was 30^{in}·020 on the 10th; the third minimum ,, was 29^{in}·738 on the 14th.
The fourth maximum ,, was 29^{in}·808 on the 16th; the absolute minimum ,, was 29^{in}·258 on the 18th.
The fifth maximum ,, was 29^{in}·921 on the 20th; the fifth minimum ,, was 29^{in}·827 on the 20th.
The sixth maximum ,, was 29^{in}·974 on the 21st; the sixth minimum ,, was 29^{in}·555 on the 24th.
The absolute maximum ,, was 30^{in}·312 on the 28th; the seventh minimum ,, was 29^{in}·806 on the 30th.
The range in the month was 1^{in}·054.
The mean for the month was 29^{in}·855, being 0^{in}·063 *higher* than the average of the preceding 30 years.

TEMPERATURE OF THE AIR.

The highest in the month was 89°·2 on the 13th; the lowest was 46°·1 on the 28th.
The range ,, was 43°·1.
The mean ,, of all the highest daily readings was 78°·1, being 5°·4 *higher* than the average of the preceding 30 years.
The mean ,, of all the lowest daily readings was 53°·8, being 0°·7 *higher* than the average of the preceding 30 years.
The mean daily range was 24°·3, being 4°·7 *greater* than the average of the preceding 30 years.
The mean for the month was 64°·8, being 3°·5 *higher* than the average of the preceding 30 years.

MONTH and DAY, 1871.	ELECTRICITY. A.M.	ELECTRICITY. P.M.	CLOUDS AND WEATHER. A.M.	CLOUDS AND WEATHER. P.M.
Aug. 1	w	o : o : m	1, ci.-cu, d	5, ci.-cu, cu : 5, ci.-cu, cu : o
2	m	o : o : w	1, ci, ci.-cu, d	6, ci, ci.-cu, ci.-s, cu : o
3	o	o : w : m	o	1, ci.-cu, cu : 1, ci.-s, s, m
4	o	o : m : w	10, r : 10	9,ci.-cu,cu,cu.-s,r : v, oc.-r : o, m
5	o	o : o : m	o	v,ci,ci.-cu,cu,cu.-s: 10 : 2, s, d
6	o	o	o : 10, h, mt	v, li.-cl : 2, ci.-cu, cu, cu.-s, s, ms
7	w	o : o : s	o, d : 10, th.-f, d : 8, ci.-s, cu.-s, mt	2, cu : o : o, ms
8	o	o : o : m	o, d : 6, ci, cu, cu.-s	1, ci.-cu : o : o, h.-d, ms
9	o	o : o : m	o, h.-d : o	o : o : o, ms, d
10	o	o	o, h.-d, f : o, h, sl.-f, h.-d: o, h	o : o : o, d, ms
11	o	o	o, f : o, sl.-f	2, ci, ci.-s : o : o, ms
12	o	o	o, d : o, mt, d : o	1, ci.-cu, cu : o : o, l, ms
13	o	o	o, l, d : o	2, cu : 1, s, l, d, ms
14	o	o : o : m	o	1, ci, ci.-cu : o : li.-cl, l, ms
15	o	o	10 : o	o : o : o, h, l
16	o	o : w : o	o, h, sl.-f, d : o, h	o, h : v, li.-cl : o, sl.-h, l
17	o	o : o : w	li.-cl : 9, li.-cl	4, ci, ci.-cu, cu: 10 : 10, r
18	o	o	10, h.-r : vv, r	vv, r : 10, r : o, h, mt
19	o	o	li.-cl : 2, li.-cl	8,ci,ci.-s,cu.-s : v : o
20	o	o	8, ci, ci.-s, ci.-cu, cu.-s	vv, sqs, th.-r : vv, ci.-s, cu.-s
21	o	o	10, th.-r	10 : 10, a
22	o	o	10, f : 9, mt	10, ci.-s, ci.-cu : v : 5, ci.-s, cu.-s
23	o	o	10	10, r : 10, h
24	o	o	10 : 10, sl.-r	10, sc, g : 10,oc.-r,h.-g: 10, r, st.-w : v, a, m
25	o	o : o : m	8, cu, cu.-s	10, th.-r : li.-cl : 2, ci, ci.-s
26	o	o	li.-cl : o : o	ci.-cu, cu, w : o, sl.-mt, m
27	o	o	2, cu, h	li.-cl : o, sl.-mt
28	m	o : o : m	o, f : o, f, h	1, ci.-cu : o : o, d
29	o	o	o	o : o, h : o, d, a
30	m	o	o, d : 4, ci, so.-ha	9, li.-cl : 10
31	m	o : o : m	7, ci, ci.-cu, ci.-s	5,ci,ci.-cu,cu : 10, ci.-cu, cu.-s: 1, li.-cl

HUMIDITY OF THE AIR.

Temperature of the Dew Point.

The highest in the month was 65°·0 on the 13th; and the lowest was 44°·5 on the 26th.

The mean „ was 54°·4, being 0°·7 *higher* than the average of the preceding 30 years.

Elastic Force of Vapour.—The mean for the month was $0^{in}\cdot424$, being $0^{in}\cdot008$ *greater* than the average of the preceding 30 years.

Weight of Vapour in a Cubic Foot of Air.—The mean for the month was $4^{grs}\cdot7$, being $0^{gr}\cdot1$ *greater* than the average of the preceding 30 years.

Degree of Humidity.—The mean for the month was 69 (that of Saturation being represented by 100), being 8 *less* than the average of the preceding 30 years.

Weight of a Cubic Foot of Air.—The mean for the month was 526 grains, being 3 grains *less* than the average of the preceding 30 years.

CLOUDS.

The mean amount for the month, a clear sky being represented by 0 and a cloudy sky by 10, was 3·9.

WIND.

The proportions were of N. 4, S. 9, W. 8, E. 9, and Calm 1. The greatest pressure in the month was $30^{lbs}\cdot0$ on the square foot on the 24th.

RAIN.

Fell on 6 days in the month, amounting to $0^{in}\cdot86$, as measured in the simple cylinder gauge partly sunk below the ground; being $1^{in}\cdot54$ *less* than the average fall of the preceding 56 years.

MONTH and DAY, 1871.	Phases of the Moon.	Mean Daily Reading of the Barometer (corrected and reduced to 32° Fahrenheit).	Readings of Thermometers. Dry. Highest.	Dry. Lowest.	Dry. Mean Daily Value.	Dew Point. Mean Daily Value.	Highest in the Sun, as shown by a Self-Registering Thermometer with blackened bulb in vacuo, placed on the Grass.	Lowest on the Grass, as shown by a Self-Registering Minimum Thermometer.	In the Water of the Thames, at Greenwich, by Self-Registering Thermometers, read at 9h A.M. Highest.	In the Water of the Thames. Lowest.	Difference between the Dew Point Temperature and Air Temperature. Mean Daily Value.	Difference. Greatest.	Difference. Least.	Difference between the Mean Temperature of the Day and the Mean Temperature of the same Day on an Average of 50 Years.	Wind as deduced from Anemometers. Osler's. General Direction. A.M.	Osler's. General Direction. P.M.	Osler's. Pressure in lbs. on the square foot. Greatest.	Pressure. Least.	Pressure. Mean of 24 Obs.	Robinson's. Amount of Horizontal Movement of the Air on each Day.	Rain in Inches, collected in a Gauge whose receiving surface is 5 inches above the Ground.
		in.	°	°	°	°	°	°	°	°	°	°	°	°			lbs.	lbs.	lbs.	miles.	in.
Sept. 1	In Equator	29·913	82·0	54·1	66·6	58·0	132·0	41·0	65·6	62·0	8·6	22·4	0·2	+ 7·6	SE : NE	E : SE	0·3	0·0	0·0	101	0·00
2	..	29·838	76·9	57·8	67·1	63·0	106·0	50·0	66·6	64·0	4·1	11·2	0·0	+ 8·4	Calm : NNE	NNE : N	0·0	0·0	0·0	82	0·02
3	..	29·703	73·2	59·0	63·3	54·2	109·1	51·0	65·6	63·0	9·1	13·3	0·2	+ 4·9	SW	SW	2·2	0·0	0·2	258	0·01
4	..	29·663	72·0	54·8	60·5	54·1	137·3	46·8	66·6	63·0	6·4	15·5	0·0	+ 2·3	SSW	S : SW	2·6	0·0	0·2	282	0·10
5	..	29·948	75·6	50·9	61·0	51·4	134·3	40·2	66·0	62·3	9·6	21·9	0·0	+ 3·0	SW	WSW : S by W	0·3	0·0	0·0	164	0·00
6	Last Qr.	29·810	76·3	46·6	61·5	56·0	118·0	36·1	66·2	62·5	5·5	15·8	0·2	+ 3·6	Calm : ENE	E : SE : SSW	2·1	0·0	0·2	189	0·01
7	Apogee	29·839	75·0	55·3	62·5	53·5	134·8	48·0	66·0	62·6	9·0	20·7	1·3	+ 4·7	WSW	SW : SSW	1·6	0·0	0·2	261	0·01
8	..	29·670	68·0	51·1	58·4	55·1	95·0	42·0	66·4	64·0	3·3	13·5	0·0	+ 0·6	SE : ESE	ESE : NW	0·3	0·0	0·0	110	0·25
9	Greatest Declination N.	29·599	67·8	51·0	56·6	49·7	125·2	44·0	65·8	64·0	6·9	14·6	0·4	— 1·1	SSW : SSE	SSW : SE	4·8	0·0	0·2	240	0·28
10	..	29·717	73·8	52·5	64·3	51·0	132·6	43·0	65·6	62·0	13·3	22·4	1·1	+ 6·6	ESE : SE	ESE : E	3·2	0·0	0·4	262	0·00
11	..	29·796	78·6	57·6	65·9	60·3	131·5	52·7	65·1	61·3	5·6	14·6	0·0	+ 8·3	ENE : NNE	ENE : NE	1·5	0·0	0·1	195	0·00
12	..	29·975	78·3	56·5	64·8	54·8	130·4	47·0	65·6	62·4	10·0	21·3	1·0	+ 7·3	NNE	NE : ENE	2·1	0·0	0·2	270	0·00
13	..	30·069	69·4	56·0	61·3	50·7	100·5	47·0	65·8	63·0	10·6	17·8	0·2	+ 4·0	NE	NE	2·3	0·0	0·3	326	0·00
14	New	30·095	64·8	56·2	59·6	48·0	96·6	51·1	65·0	60·8	11·6	15·2	6·5	+ 2·4	NE	NE	5·5	0·0	0·5	362	0·00
15	..	30·043	71·1	54·0	61·8	52·7	128·7	45·0	64·4	61·2	9·1	16·0	2·7	+ 4·7	NNE : E	E : ENE : NE	3·0	0·0	0·3	276	0·00
16	In Equator	30·070	71·8	53·0	60·4	53·0	118·2	47·1	64·1	61·2	7·4	15·8	0·8	+ 3·5	NE	NNE : NE	5·6	0·0	0·3	293	0·00
17	..	30·029	65·2	51·4	56·4	48·3	86·0	43·3	64·1	59·6	8·1	14·2	3·2	— 0·3	NE	ENE : NE	2·0	0·0	0·2	293	0·00
18	..	29·954	65·9	51·4	56·3	43·0	138·9	40·9	63·4	59·8	13·3	20·5	6·8	— 0·2	NNE	N by E	1·4	0·0	0·1	264	0·00
19	..	29·910	64·4	49·4	54·1	41·1	96·3	45·5	62·8	57·5	13·0	21·1	7·2	— 2·1	NNE : NE	NE : ENE	0·2	0·0	0·0	164	0·00
20	Perigee	29·716	65·2	48·8	54·1	45·4	115·1	36·8	62·3	57·8	8·7	16·4	4·6	— 1·9	ENE : E	SE : ENE	0·1	0·0	0·0	128	0·00
21	First Qr.	29·387	67·6	43·4	55·0	46·0	126·4	34·8	61·9	57·9	9·0	19·4	0·4	— 0·8	NE : N by E	N : NNW : WNW	0·5	0·0	0·0	168	0·00
22	Greatest Declination S.	29·629	64·0	40·0	51·2	39·7	126·3	27·8	61·4	56·2	11·5	19·6	0·9	— 4·3	W by S	W : WSW	2·5	0·0	0·2	331	0·00
23	..	29·593	56·7	39·0	47·9	42·1	71·7	27·3	60·4	55·5	5·8	12·9	0·9	— 7·3	WSW : SW	S : ENE	0·5	0·0	0·0	155	0·10
24	..	29·310	53·7	45·3	47·4	42·9	65·3	35·2	59·4	55·7	4·5	7·0	0·8	— 7·6	E by N : NNW	WNW : WSW	4·7	0·0	0·1	388	1·14
25	..	29·498	55·3	41·9	48·9	44·5	83·7	34·3	59·0	54·4	4·4	10·2	0·0	— 5·9	W by S : NW	ENE	0·7	0·0	0·0	207	0·53
26	..	29·408	55·8	44·0	48·2	45·6	72·5	37·0	58·1	55·5	2·6	7·6	0·0	— 6·4	NE	ENE	0·8	0·0	0·1	242	0·20
27	..	28·983	65·6	45·0	55·5	52·8	108·0	36·0	57·6	52·3	2·7	11·8	0·0	+ 1·1	ESE : SSE	S	6·6	0·0	0·3	303	0·45
28	Full	29·270	58·1	49·4	52·3	50·3	66·9	44·4	57·6	55·0	2·0	4·2	1·0	— 1·9	S : W by S	W : WNW : N	2·3	0·0	0·1	265	0·17
29	In Equator	29·500	56·9	47·1	51·3	50·6	59·9	42·0	57·3	54·8	0·7	3·6	0·0	— 2·8	ENE	E : SW	3·7	0·0	0·2	240	0·51
30	..	29·627	56·8	45·2	47·6	39·5	72·0	35·6	56·6	53·7	8·1	12·6	4·4	— 6·4	SW : NNW	NW : SW : S	6·6	0·0	0·3	332	0·34
Means	..	29·719	67·5	50·3	57·4	49·9	107·3	41·8	63·1	59·5	7·5	15·1	1·5	+ 0·8	...	...	..	..	..	Sum 7151	Sum 4·12

BAROMETER READINGS FROM EYE-OBSERVATIONS.

The first maximum in the month was 29in·935 on the 1st; the first minimum in the month was 29in·662 on the 4th.
The second maximum ,, was 29in·987 on the 5th; the second minimum ,, was 29in·702 on the 6th.
The third maximum ,, was 29in·851 on the 7th; the third minimum ,, was 29in·501 on the 9th.
The fourth maximum ,, was 29in·758 on the 9th; the fourth minimum ,, was 29in·699 on the 10th.
The absolute maximum ,, was 30in·117 on the 14th; the fifth minimum ,, was 29in·361 on the 21st.
The sixth maximum ,, was 29in·705 on the 23rd; the sixth minimum ,, was 29in·173 on the 24th.
The seventh maximum ,, was 29in·589 on the 25th; the seventh minimum ,, was 29in·364 on the 26th.
The eighth maximum ,, was 29in·466 on the 26th; the absolute minimum ,, was 28in·853 on the 27th.
The ninth maximum ,, was 29in·627 on the 29th; the ninth minimum ,, was 29in·366 on the 29th.
The tenth maximum ,, was 29in·690 on the 30th.
The range in the month was 1in·264.
The mean for the month was 29in·719, being 0in·095 *lower* than the average of the preceding 30 years.

TEMPERATURE OF THE AIR.

The highest in the month was 82°·0 on the 1st; the lowest was 39°·0 on the 23rd.
The range ,, was 43°·0.
The mean ,, of all the highest daily readings was 67°·5, being 0°·2 *lower* than the average of the preceding 30 years.
The mean ,, of all the lowest daily readings was 50°·3, being 1°·1 *higher* than the average of the preceding 30 years.
The mean daily range was 17°·2, being 1°·3 *less* than the average of the preceding 30 years.
The mean for the month was 57°·4, being 0°·1 *higher* than the average of the preceding 30 years.

MONTH and DAY, 1871.	ELECTRICITY.		CLOUDS AND WEATHER.	
	A.M.	P.M.	A.M.	P.M.
Sept. 1	o	o : o : m	th.-cl, mt : 3, ci, ci.-cu, ci.-s, h, mt	5, ci, ci.-cu, ci.-s, h : 2, ci, ci.-s
2	o	ssN, P, sp, g.-cur: w	mt, d : 7, h, f, glm, r	9, h, r, t : o, h, l
3	w	o : w	6, ci.-cu, cu, cu.-s, d	10, r : v : v
4	o	o	o, d : 2, ci, ci.-cu, cu	10, r : 10, r
5	w	m : o : m	7, ci, ci.-s, ci.-cu, mt, h	li.-cl : o, d, ms
6	o	o : w : w	o, d : 10, f, d : 10, sl.-f	8, ci.-cu : 10, sl.-r
7	w	o : o : m	10, r : o, d : 1, ci.-cu	6, ci, ci.-cu, cu : o, l, a, ms
8	m	o	o : 10 : 10, sl.-r, mt	10, ci.-s : 10, ci.-s : 10, r
9	o	o	10 : 10, r	5, cu : o, h.-d, ms
10	o	o	1, ci, ci.-s	2, ci, ci.-s, ci.-cu : 1, ci.-s, h
11	o	o : w : m	10 : 10, mt : li.-cl	2, ci, ci.-cu : o : o, d
12	o	w : o : m	o, h, d : 10 : 5, ci.-cu, cu	3, ci.-cu, cu : v : o, d
13	o	o	9, ci.-s, cu.-s	6, ci, ci.-cu, ci.-s : 8, ci.-s
14	o	o	10	10 : v : 10
15	o	o : o : w	5, ci, ci.-cu	1, cu : o : v, th.-cl, d
16	o	o	7, cu.-s	li.-cl : 10
17	o	o : m	10	10 : v : o
18	o	o : o : m	8, ci.-cu, cu	7, ci.-cu, cu, cu.-s : 10
19	o	o	10	5, ci, ci.-s, ci.-cu : 10
20	o	o : w : w	ci.-s	10, glm : v : o, h, h.-d
21	o	o	1, ci.-cu, mt, h.-d	6, ci.-cu, cu, cu.-s: 10 : 2, sl.-f, h
22	o	o : o : m	o	3, ci, ci.-cu, cu : o
23	o	o : w : w	o : 10, th.-cl, f, so.-ha	10 : 10, r : 10, r
24	o	o	10, h.-r : 10, r, w	10 : li.-cl : 1, h.-d
25	o	o	10, th.-cl	10 : 10, h.-r : 10, c.-r
26	o	o : o : m	10, r : 10, oc.-th.-r	9, ci.-s, cu.-s, cu: v : 1, ci.-s, lu.-ha
27	o	ssN, P, sp, g.-cur: w : o	10, r : 10, c.-r	10, shs.-r, sqs : 10, fr.-shs
28	o	o	10, h.-r : 10, oc.-r	10, oc.-shs : 10 : 10, h, mt
29	o	o	10	10, r : 10, h.-r : v
30	o	o : w : w	10, r : 10, th.-r, sqs	7, ci.-cu, cu.-s : o, d : 10, r

HUMIDITY OF THE AIR.

Temperature of the Dew Point.

The highest in the month was $68^{\circ}\cdot4$ on the 2nd; and the lowest was $36^{\circ}\cdot8$ on the 22nd.

The mean ,, was $49^{\circ}\cdot9$, being $1^{\circ}\cdot3$ *lower* than the average of the preceding 30 years.

Elastic Force of Vapour.—The mean for the month was $0^{in}\cdot360$, being $0^{in}\cdot021$ *less* than the average of the preceding 30 years.

Weight of Vapour in a Cubic Foot of Air.—The mean for the month was $4^{grs}\cdot0$, being $0^{gr}\cdot2$ *less* than the average of the preceding 30 years.

Degree of Humidity.—The mean for the month was 76 (that of Saturation being represented by 100), being 5 *less* than the average of the preceding 30 years.

Weight of a Cubic Foot of Air.—The mean for the month was 532 grains, being 1 grain *less* than the average of the preceding 30 years.

CLOUDS.

The mean amount for the month, a clear sky being represented by 0 and a cloudy sky by 10, was 6·8.

WIND.

The proportions were of N. 8, S. 6, W. 5, E. 10, and Calm 1. The greatest pressure in the month was $6^{lbs}\cdot6$ on the square foot on the 27th and 30th.

RAIN.

Fell on 15 days in the month, amounting to $4^{in}\cdot12$, as measured in the simple cylinder gauge partly sunk below the ground; being $1^{in}\cdot70$ *greater* than the average fall of the preceding 56 years.

MONTH and DAY, 1871.	Phases of the Moon.	Mean Daily Reading of the Barometer (corrected and reduced to 32° Fahrenheit).	Readings of Thermometers. Dry. Highest.	Dry. Lowest.	Dry. Mean Daily Value.	Dew Point. Mean Daily Value.	Highest in the Sun, as shown by a Self-Registering Thermometer, with blackened bulb in vacuo, placed on the Grass.	Lowest on the Grass, as shown by a Self-Registering Minimum Thermometer.	In the Water of the Thames, at Greenwich, by Self-Registering Thermometers, read at 9h A.M. Highest.	In the Water of the Thames. Lowest.	Difference between the Dew Point Temperature and Air Temperature. Mean Daily Value.	Difference. Greatest.	Difference. Least.	Difference between the Mean Temperature of the Day and the Mean Temperature of the same Day on an Average of 50 Years.	Wind as deduced from Anemometers. Osler's. General Direction. A.M.	General Direction. P.M.	Pressure in lbs. on the square foot. Greatest.	Pressure. Least.	Pressure. Mean of 24 Obs.	Robinson's. Amount of Horizontal Movement of the Air on each Day.	Rain in Inches, collected in a Gauge whose receiving surface is 5 inches above the Ground.
		in.	°	°	°	°	°	°	°	°	°	°	°	°			lbs.	lbs.	lbs.	miles.	in.
Oct. 1	..	28·997	62·1	44·8	52·5	45·7	111·4	41·7	56·4	51·8	6·8	11·0	2·5	− 1·4	SSE : SW	SW	10·2	0·0	0·3	352	0·61
2	..	29·154	59·6	47·2	52·2	45·8	93·7	40·0	56·0	53·0	6·4	12·4	1·4	− 1·6	WSW : W	WSW : SW	2·2	0·0	0·2	374	0·01
3	..	29·236	58·8	41·6	49·5	41·3	98·0	32·1	55·4	52·0	8·2	15·0	0·9	− 4·2	SW	W : WSW	0·7	0·0	0·0	233	0·00
4	..	29·553	58·5	42·7	49·2	44·2	77·5	35·3	54·8	52·0	5·0	11·8	0·0	− 4·3	WSW	NW : S by E	0·0	0·0	0·0	133	0·00
5	Apogee	29·646	62·6	41·5	52·0	44·4	111·1	33·1	54·6	51·8	7·6	15·2	0·0	− 1·3	S by E : SSW	WSW : SSW	2·0	0·0	0·1	252	0·04
6	Greatest Dec. N: Last Quarter.	29·658	64·8	49·0	56·1	49·8	96·5	41·9	54·5	52·0	6·3	11·5	3·4	+ 3·2	S by W	SSW	3·8	0·0	0·2	345	0·00
7	..	29·494	62·8	47·3	52·1	50·4	86·4	45·0	54·6	51·8	1·7	4·2	1·5	− 0·4	S by W	N by W : NE	3·6	0·0	0·3	278	0·11
8	..	29·785	56·8	39·7	46·3	40·0	73·9	31·3	55·0	52·0	6·3	12·5	1·2	− 5·8	NNW : WSW	W : SW	0·5	0·0	0·0	166	0·00
9	..	30·079	55·0	35·5	44·9	38·1	96·0	26·5	55·2	52·4	6·8	13·6	0·0	− 6·9	SW : NNW	N : NNE	0·3	0·0	0·0	110	0·00
10	..	30·243	58·3	32·4	44·7	39·9	101·1	26·3	54·8	52·3	4·8	11·8	1·0	− 6·9	NNE : ENE	E : E by N	0·3	0·0	0·0	113	0·00
11	..	30·049	54·6	36·9	45·8	40·1	76·6	32·7	53·6	51·7	5·7	10·8	1·9	− 5·6	E : E by S	E : ENE	0·0	0·0	0·0	99	0·00
12	..	30·260	57·8	33·0	44·3	38·4	93·3	28·1	53·4	50·8	5·9	14·4	1·3	− 6·9	Calm : E	E : Calm	0·1	0·0	0·0	97	0·00
13	In Equator	30·267	59·2	31·2	45·0	41·0	90·0	24·4	53·1	50·0	4·0	11·8	1·3	− 5·9	Calm : S	S by E : SE	0·1	0·0	0·0	119	0·00
14	New	30·059	58·8	36·8	47·5	41·2	91·6	29·0	52·8	50·0	6·3	12·0	0·0	− 3·1	SE	SSE : SE	0·2	0·0	0·0	132	0·00
15	..	29·874	59·8	34·5	47·2	43·4	80·8	26·6	52·5	49·0	3·8	10·8	0·8	− 3·1	Calm : N	S	0·0	0·0	0·0	119	0·00
16	..	29·802	60·3	50·3	54·1	52·9	67·5	43·9	52·3	48·8	1·2	4·9	0·4	+ 4·1	SSW	S : S by E	0·1	0·0	0·0	122	0·01
17	Perigee	29·828	64·8	49·4	56·0	51·5	108·9	42·6	52·4	49·0	4·5	10·6	1·9	+ 6·2	SE : S by E	S : SSE	0·2	0·0	0·0	160	0·00
18	..	29·676	68·4	48·1	56·6	52·2	99·5	38·9	52·6	49·4	4·4	13·9	0·4	+ 7·0	ESE	S : S by E	0·7	0·0	0·0	167	0·03
19	Greatest Declination S.	29·529	63·4	55·7	58·5	56·5	75·5	49·0	52·9	51·0	2·0	6·1	0·0	+ 9·2	S : S by E	SSE : SE	0·8	0·0	0·1	215	0·09
20	First Qr.	29·686	60·0	49·5	53·6	53·6	67·8	45·0	53·4	51·7	0·0	2·1	0·0	+ 4·5	S	WNW : SW	0·1	0·0	0·0	147	0·20
21	..	29·816	56·0	40·7	48·7	45·8	65·2	33·8	53·6	51·8	2·9	7·2	0·0	− 0·2	SSW : S	S by W : SW	7·2	0·0	0·2	301	0·22
22	..	30·177	56·8	41·5	47·1	42·6	70·7	33·4	53·2	51·8	4·5	10·5	1·5	− 1·6	SW	WNW : WSW : S	0·9	0·0	0·1	204	0·00
23	..	30·153	58·4	35·8	46·3	41·9	86·5	29·1	53·0	51·2	4·4	11·6	0·0	− 2·2	S : SE	S by E : SSE	0·3	0·0	0·0	126	0·00
24	..	30·083	52·5	34·6	42·0	41·4	76·8	29·0	52·9	50·8	0·6	6·6	0·0	− 6·2	Variable	NE : SW	0·0	0·0	0·0	59	0·00
25	..	30·177	54·1	38·0	45·4	42·8	78·0	32·2	52·4	50·2	2·6	7·8	0·0	− 2·5	SW : NNW	NNW : SW	0·9	0·0	0·0	158	0·01
26	In Equator	30·102	53·7	33·0	45·1	43·1	61·5	29·0	52·3	50·2	2·0	6·8	0·0	− 2·5	SW : SSW	S by W : Calm	0·0	0·0	0·0	140	0·00
27	..	29·814	58·6	47·1	52·4	50·8	70·8	38·7	52·0	50·0	1·6	6·8	0·0	+ 5·1	S by E	S : S by W	0·2	0·0	0·0	186	0·00
28	Full	29·612	55·6	47·1	50·1	46·5	82·9	41·0	52·1	50·0	3·6	9·2	2·3	+ 3·1	S : S by E	SSE : SE	1·2	0·0	0·1	270	0·00
29	..	29·407	57·8	42·6	49·4	38·9	84·7	37·0	51·9	49·8	10·5	17·7	2·7	+ 2·6	SE	SE : ESE	2·9	0·0	0·2	284	0·00
30	..	29·501	52·3	46·4	48·9	47·3	57·6	41·2	51·4	48·0	1·6	2·7	1·1	+ 2·3	E : ENE	E : NE	1·2	0·0	0·0	176	0·01
31	..	29·612	55·0	45·8	49·3	45·8	78·9	43·5	52·4	49·3	3·5	7·2	1·7	+ 2·8	NE	ENE : NE	16·6	0·0	0·7	342	0·03
Means	..	29·785	58·6	41·9	49·4	45·1	84·2	35·5	53·5	50·8	4·4	10·0	0·9	− 0·7	...	...	..	..	..	Sum 5979	Sum 1·37

BAROMETER READINGS FROM EYE-OBSERVATIONS.

The absolute minimum in the month was $28^{\text{in}}\cdot931$ on the 1st.

The first maximum in the month was $29^{\text{in}}\cdot721$ on the 5th; the second minimum ,, was $29^{\text{in}}\cdot417$ on the 7th.
The second maximum ,, was $30^{\text{in}}\cdot270$ on the 10th; the third minimum ,, was $30^{\text{in}}\cdot028$ on the 11th.
The absolute maximum ,, was $30^{\text{in}}\cdot325$ on the 13th; the fourth minimum ,, was $29^{\text{in}}\cdot520$ on the 19th.
The fourth maximum ,, was $29^{\text{in}}\cdot871$ on the 21st; the fifth minimum ,, was $29^{\text{in}}\cdot782$ on the 21st.
The fifth maximum ,, was $30^{\text{in}}\cdot209$ on the 22nd; the sixth minimum ,, was $30^{\text{in}}\cdot064$ on the 24th.
The sixth maximum ,, was $30^{\text{in}}\cdot201$ on the 25th; the seventh minimum ,, was $29^{\text{in}}\cdot403$ on the 29th.
The range in the month was $1^{\text{in}}\cdot394$.
The mean for the month was $29^{\text{in}}\cdot785$, being $0^{\text{in}}\cdot083$ *higher* than the average of the preceding 30 years.

TEMPERATURE OF THE AIR.

The highest in the month was $68^{\circ}\cdot4$ on the 18th; the lowest was $31^{\circ}\cdot2$ on the 13th.
The range ,, was $37^{\circ}\cdot2$.
The mean ,, of all the highest daily readings was $58^{\circ}\cdot6$, being $0^{\circ}\cdot1$ *higher* than the average of the preceding 30 years.
The mean ,, of all the lowest daily readings was $41^{\circ}\cdot9$, being $1^{\circ}\cdot9$ *lower* than the average of the preceding 30 years.
The mean daily range was $16^{\circ}\cdot7$, being $2^{\circ}\cdot0$ *greater* than the average of the preceding 30 years.
The mean for the month was $49^{\circ}\cdot4$, being $0^{\circ}\cdot9$ *lower* than the average of the preceding 30 years.

MONTH and DAY, 1871.	ELECTRICITY.		CLOUDS AND WEATHER.	
	A.M.	P.M.	A.M.	P.M.
Oct. 1	0	ssN,P,sp,g.-cur: m	10, h.-r : 10, r : v, ci, ci.-cu, ci.-s	10, t.-s, l : v, r : li.-cl
2	0	0 : 0 : w	8, ci, ci.-cu, ci.-s	7, ci.-cu, cu, cu.-s: v : 8, sl.-r
3	0	0	1, ci.-s, h, f	7,ci,ci.-s,ci.-cu,cu,h: vv : 9, f
4	w	0 : 0 : m	0, h	5, ci.-s, cu, cu.-s, h : v, h, f : 0, h, f
5	m	0 : s : w	3, ci, ci.-cu, ci.-s, h.-d	7, ci.-cu, cu, cu.-s: v, r : 10
6	m	0 : w : 0	6, ci, ci.-cu, ci.-s, h.-d	v,ci,ci.-cu,ci.-s,cu,cu.-s: v : 10, h
7	0	w : 0 : 0	v, st.-w : 10, r	10, r : 10, m.-t
8	0	0	0, h, mt	0, h : 0, mt, h.-d
9	m	0 : 0 : w	0, h.-d, f	5, ci, ci.-cu : li.-cl : 2, ci, ci.-cu
10●	m	w : 0 : w	0, th.-f : 0, h.-d	v : 0, m
11	m	w : w : 0	f, h.-d : 10, ci.-cu, ci.-s, cu.-s	10 : 10 : 0, d, sl.-f, ms
12	0	0 : 0 : w	0, h.-d, f	0 : 0
13	m	w : 0 : m	0, th.-f : 0, f	0 : 0 : 0, h.-d
14	0	0 : 0 : m	0, h.-d, th.-f	2, ci : 0 : 0, h.-d, h.-fr
15	w	0 : m	0, th.-f	0, h : 0
16	0	0	10, sl.-f, th.-r	9,ci.-s,cu.-s,sl.-f: v : v, h
17	w	0	10, ci.-s	v, ci, ci.-cu : 0 : 0, mt
18	0	w : 0 : w	10, r	ci, ci.-cu, ci.-s : 10 : 0, d, ms
19	0	0 : 0 : v	10	10 : 10, r, l
20	0	0	10, r	10, r, glm, f : 10, th.-r, f
21	m	0 : w : 0	0 : 10	10, r : 10, r, sqs : v, r
22	m	w : 0	3, ci, h, mt	ci, h : 0, h.-d, mt, m
23	0	m : 0 : m	0, sl.-f, d	6, ci, ci.-cu, ci.-s : 0
24	0	0	10, th.-f	6,ci,ci.-cu,ci.-s,f: 8,ci,ci.-s,h,sl.-f: 10, th.-cl, f
25	0	0 : w : m	10, f, sl.-r	7, ci, ci.-cu, cu, cu.-s : 0, h, f, h.-d, lu.-ha, lu.-co
26	m	0 : m : m	7, ci.-cu, cu.-s, f, d	10 : 10 : v,ci.-cu,cu.-s,lu.-co
27	m	0 : m : m	9, ci-cu, cu.-s	10 : 10
28	0	0	li.-cl : 10	10 : 10
29	0	0 : w	li.-cl, ci, ci.-s	6, li.-cl : 7, li.-cl, lu.-ha, lu.-co
30	m	0 : m : m	10	10, ci.-s, cu.-s, r : 10
31	0	0 : 0 : m	10, r : 10	10, sqs : 10, sqs : v, ci.-cu, ci.-s, cu

HUMIDITY OF THE AIR.

Temperature of the Dew Point.

The highest in the month was $57^{\circ}\cdot7$ on the 19th; and the lowest was $36^{\circ}\cdot8$ on the 24th.

The mean „ was $45^{\circ}\cdot1$, being $1^{\circ}\cdot1$ *lower* than the average of the preceding 30 years.

Elastic Force of Vapour.—The mean for the month was $0^{in}\cdot301$, being $0^{in}\cdot013$ *less* than the average of the preceding 30 years.

Weight of Vapour in a Cubic Foot of Air.—The mean for the month was $3^{grs}\cdot5$, being $0^{gr}\cdot2$ *less* than the average of the preceding 30 years.

Degree of Humidity.—The mean for the month was 86 (that of Saturation being represented by 100), being 1 *less* than the average of the preceding 30 years.

Weight of a Cubic Foot of Air.—The mean for the month was 542 grains, being 3 grains *greater* than the average of the preceding 30 years.

CLOUDS.

The mean amount for the month, a clear sky being represented by 0 and a cloudy sky by 10, was 5·9.

WIND.

The proportions were of N. 3, S. 13, W. 6, E. 6, and Calm 3. The greatest pressure in the month was $16^{lbs}\cdot6$ on the square foot on the 31st.

RAIN.

Fell on 12 days in the month, amounting to $1^{in}\cdot37$, as measured in the simple cylinder gauge partly sunk below the ground; being $1^{in}\cdot41$ *less* than the average fall of the preceding 56 years.

MONTH and DAY, 1871.	Phases of the Moon.	Mean Daily Reading of the Barometer (corrected and reduced to 32° Fahrenheit).	Readings of Thermometers. Dry. Highest.	Dry. Lowest.	Dry. Mean Daily Value.	Dew Point. Mean Daily Value.	Highest in the Sun, as shown by a Self-Registering Thermometer with blackened bulb in vacuo, placed on the Grass.	Lowest on the Grass, as shown by a Self-Registering Minimum Thermometer.	In the Water of the Thames, at Greenwich, by Self-Registering Thermometers, read at 9h A.M. Highest.	In the Water of the Thames. Lowest.	Difference between the Dew Point Temperature and Air Temperature. Mean Daily Value.	Difference. Greatest.	Difference. Least.	Difference between the Mean Temperature of the Day and the Mean Temperature of the same Day on an Average of 50 Years.	Wind as deduced from Anemometers. Osler's. General Direction. A.M.	General Direction. P.M.	Pressure in lbs. on the square foot. Greatest.	Pressure. Least.	Pressure. Mean of 24 Obs.	Robinson's. Amount of Horizontal Movement of the Air on each Day.	Rain in Inches, collected in a Gauge whose receiving surface is 5 inches above the Ground.
		in.	°	°	°	°	°	°	°	°	°	°	°	°			lbs.	lbs.	lbs.	miles.	in.
Nov. 1	..	29·809	49·9	45·2	47·0	41·3	73·5	41·0	51·6	49·8	5·7	6·7	4·0	+ 0·6	ENE	E : ENE	10·1	0·1	1·0	406	0·00
2	Apogee; Greatest Dec. N.	29·932	48·5	44·4	45·7	39·3	59·2	42·7	50·9	45·0	6·4	8·0	4·8	− 0·6	E : ENE	ENE	2·5	0·0	0·2	262	0·00
3	..	29·901	51·0	42·5	45·8	38·7	85·3	41·0	50·4	47·7	7·1	12·0	1·3	− 0·3	E	E by S : ENE	2·2	0·0	0·1	170	0·00
4	..	29·908	50·5	41·8	44·7	39·7	71·5	36·7	50·3	47·6	5·0	7·4	2·6	− 1·2	ENE	ESE : E	3·6	0·0	0·1	182	0·00
5	Last Qr.	29·926	45·4	35·5	40·4	32·9	74·7	28·3	50·0	47·6	7·5	10·6	5·0	− 5·3	E by S	E by S : ESE	30·0	0·0	1·3	339	0·00
6	..	29·645	43·0	32·2	37·9	30·7	62·0	25·3	49·0	46·6	7·2	9·5	4·6	− 7·6	ESE	ESE	0·7	0·0	0·1	153	0·00
7	..	29·412	49·4	37·0	43·4	42·8	55·9	32·5	48·0	45·7	0·6	3·6	0·0	− 1·9	E : Calm	S : W : SW	0·1	0·0	0·0	32	0·00
8	..	29·332	50·0	36·4	43·1	39·9	61·1	29·2	47·6	45·0	3·2	9·2	0·5	− 1·9	SW	W	2·2	0·0	0·1	218	0·03
9	..	29·598	45·7	31·4	37·5	31·9	52·6	25·4	47·4	44·7	5·6	12·0	1·8	− 7·2	W by S : W	WNW : WSW	0·8	0·0	0·1	213	0·00
10	In Equator	29·493	47·0	31·0	38·0	32·3	71·5	23·0	47·0	44·3	5·7	11·3	2·7	− 6·4	W by S : W	W by N : W	2·3	0·0	0·2	298	0·00
11	..	29·560	42·7	26·4	34·4	33·3	65·5	18·3	46·0	42·5	1·1	5·5	0·0	− 9·7	W	NNE	1·3	0·0	0·1	112	0·00
12	New	29·889	41·7	25·8	32·2	28·7	48·1	16·6	45·2	41·7	3·5	9·9	0·0	−11·6	W by S	WNW : W by S	0·3	0·0	0·0	135	0·00
13	..	30·139	37·7	25·9	30·6	28·7	43·1	19·0	44·6	40·7	1·9	5·0	0·5	−12·9	W by S	SW : E	0·1	0·0	0·0	92	0·00
14	Perigee	29·963	47·0	26·0	39·2	33·0	66·8	18·7	44·1	39·8	6·2	10·5	2·4	− 4·0	S : S by W	SW	6·8	0·0	0·4	261	0·20
15	..	29·629	51·0	40·0	45·3	43·5	60·0	33·8	43·6	39·7	1·8	5·9	0·0	+ 2·4	SW : W	NW : WNW	14·6	0·0	0·7	297	0·05
16	Greatest Declination S.	29·847	43·0	32·1	37·1	31·5	63·7	23·5	43·9	40·0	5·6	7·6	3·5	− 5·5	NNE	N : NW : W	2·8	0·0	0·2	241	0·04
17	..	29·782	37·6	31·0	33·6	26·5	44·5	24·5	43·6	40·0	7·1	10·2	4·3	− 8·7	W : N	N by E : N	12·6	0·0	1·4	419	0·05
18	..	30·125	34·6	25·0	29·0	25·0	34·6	20·2	43·1	39·0	4·0	6·5	2·3	−13·0	W : WNW	WNW : N : WSW	0·4	0·0	0·0	57	0·00
19	First Qr.	30·261	36·9	20·3	30·1	23·1	54·2	18·0	41·9	38·0	7·0	10·1	3·4	−11·7	WSW	Calm : SSE	0·1	0·0	0·0	52	0·00
20	..	30·190	44·2	28·9	36·2	30·6	64·1	20·5	40·9	37·3	5·6	12·1	0·7	− 5·4	S by E	S : SSE	1·2	0·0	0·1	165	0·00
21	..	29·937	38·4	28·2	32·5	24·5	68·4	20·0	40·6	37·0	8·0	12·9	4·7	− 8·9	SSE	SE	1·3	0·0	0·1	174	0·00
22	In Equator	29·906	39·9	29·8	35·4	31·9	58·5	22·7	40·0	36·2	3·5	8·1	0·7	− 5·8	SE : S	SSW : WSW	0·2	0·0	0·0	99	0·04
23	..	29·983	38·7	31·8	34·2	33·9	50·0	30·0	39·8	36·0	0·3	1·4	0·0	− 6·9	WNW : W by S	WSW : S	0·1	0·0	0·0	36	0·00
24	..	29·804	41·9	31·2	36·5	35·0	49·6	24·8	39·8	36·0	1·5	3·8	0·0	− 4·5	ESE : SSE	SE	0·2	0·0	0·0	56	0·00
25	..	29·763	36·9	33·0	35·1	33·7	38·2	30·5	40·0	36·0	1·4	2·5	0·0	− 5·8	SE : NE	N : E : ENE	0·3	0·0	0·0	57	0·06
26	..	29·800	42·9	36·2	39·0	36·7	49·8	34·8	39·6	36·0	2·3	4·2	1·2	− 1·9	NNE : ENE	ENE : NE	1·0	0·0	0·1	126	0·01
27	Full	29·843	41·7	35·0	37·5	34·3	53·9	30·0	39·8	36·3	3·2	5·1	1·8	− 3·6	NE	E : ENE	1·5	0·0	0·1	179	0·01
28	..	29·763	39·8	34·3	36·6	33·2	57·5	29·0	39·6	36·5	3·4	5·3	2·0	− 4·7	ENE	NE	1·3	0·0	0·1	230	0·00
29	Apogee	29·683	40·0	30·0	35·1	32·6	57·9	21·8	39·6	36·8	2·5	4·6	0·4	− 6·5	NNE	NNE : N	1·5	0·0	0·2	235	0·00
30	Greatest Declination N.	29·653	38·2	33·9	35·7	33·1	44·2	30·3	39·3	36·8	2·6	4·1	1·0	− 6·2	NNE	NNE	7·7	0·1	1·1	378	0·08
Means	..	29·816	43·2	32·7	37·6	33·4	58·0	27·1	44·2	40·9	4·2	7·5	1·9	− 5·6	...	...	..	..	..	Sum 5674	Sum 0·57

BAROMETER READINGS FROM EYE-OBSERVATIONS.

The first maximum in the month was 29in·950 on the 2nd; the absolute minimum in the month was 29in·295 on the 8th.
The second maximum ,, was 29in·603 on the 9th; the second minimum ,, was 29in·478 on the 10th.
The third maximum ,, was 30in·190 on the 13th; the third minimum ,, was 29in·601 on the 15th.
The fourth maximum ,, was 29in·878 on the 16th; the fourth minimum ,, was 29in·674 on the 17th.
The absolute maximum ,, was 30in·280 on the 19th; the fifth minimum ,, was 29in·885 on the 21st.
The sixth maximum ,, was 30in·014 on the 23rd; the sixth minimum ,, was 29in·740 on the 25th.
The seventh maximum ,, was 29in·860 on the 27th; the seventh minimum ,, was 29in·650 on the 30th.
The range in the month was 0in·985.
The mean for the month was 29in·816, being 0in·055 *higher* than the average of the preceding 30 years.

TEMPERATURE OF THE AIR.

The highest in the month was 51°·0 on the 3rd and 15th; the lowest was 20°·3 on the 19th.
The range ,, was 30°·7.
The mean ,, of all the highest daily readings was 43°·2, being 5°·9 *lower* than the average of the preceding 30 years.
The mean ,, of all the lowest daily readings was 32°·7, being 4°·6 *lower* than the average of the preceding 30 years.
The mean daily range was 10°·5, being 1°·2 *less* than the average of the preceding 30 years.
The mean for the month was 37°·6, being 6°·2 *lower* than the average of the preceding 30 years.

MONTH and DAY, 1871.	ELECTRICITY. A.M.	ELECTRICITY. P.M.	CLOUDS AND WEATHER. A.M.	CLOUDS AND WEATHER. P.M.
Nov. 1	0	0	10	v,ci,ci.-s,ci.-cu,sqs : 10, st.-w : 10
2	0	0	10	10 : 10, m.-r, l
3	w	0 : 0 : w	8, ci.-cu, cu, cu.-s	v : 10 : 10, m.-r
4	0	0 : 0 : w	vv	v : v, m.-r
5	0	0	5, ci.-cu, d, sqs	0, g : v : 0, d, h.-fr
6	0	0 : m : m	3, ci, d, h.-fr	10,ci,ci.-cu,cu.-s : v : 10, th.-cl, m
7	0	m : 0 : 0	10, f	10, th.-f : 10, th.-f : 10, th.-cl, f
8	0 : sN	0 : 0 : m	0 : 10, shs.-r, sl.-f, glm	v, ci, ci.-s, cu, cu.-s, so.-ha : 0, h.-fr, d
9	m	0 : 0 : m	10 : 0, h, d, mt, h.-fr	v, ci, ci.-cu, cu, h : 0, h.-fr, d, a, ms
10	0	0 : 0 : w	0, d, a, m : 0, d	3,ci,ci.-s,ci.-cu,h : 6,ci,ci.-s,ci.-cu : 0, h.-fr, d, a, m
11	0	m : 0 : m	0, h.-fr, h, f	10 : 10, m.-r : 0, m
12	0	s : m	0, h, f, h.-fr	0, h, f : 0, h.-fr, sl.-mt, m
13	m	0	0, h.-fr, ms : 0, h.-fr, h, sl.-f	8, ci.-s, cu.-s, h, f : 0, h, f, h.-fr
14	0	m : 0 : 0	0, h.-fr, ms : 0, h, h.-fr, ms : li.-cl, h.-fr : 1, ci	10 : 10, r, sqs
15	0	0	10, r, sqs : 2, ci, sl.-f	v, shs.-r, h : 0, sl.-f : 0, h, sl.-mt
16	0	0 : 0 : m	10, r : 0, h, mt	3, ci.-s, h : 0, h
17	0	w	sn : 3, ci, h.-fr, st.-w	10, st.-w : 0, w : 0, h.-fr : 0, h.-fr
18			0, f, h.-fr, h	0, f, h : 0, f, h.-fr
19			0, f, h.-fr	0, f : 0, f, h.-fr, m
20			0, h.-fr : 3, ci, ci.-s, h.-fr	3, ci, ci.-cu : 0, h.-fr, lu.-co
21			3, ci, h.-fr	8, ci, ci.-s : 6, ci.-s, ci.-cu, lu.-ha
22			10, sl.-f	10, sl.-f : 10, r
23			10, f, mt	10, f : 10, f : 10, li.-cl, h.-fr
24			10	4, ci, ci.-cu, ci.-s, cu.-s : 10, li.-cl
25			10, sl.-f, r	10, r, f : 10
26			10, m.-r	10 : 10
27			7, ci.-cu, cu, cu.-s, th.-r	10, th.-r : 9, cu, cu.-s
28			10	9, ci.-cu, ci.-s, cu.-s : 8, lu.-co
29			10, f	vv : vv : 10
30			10, sl.-sn	10, r, w : 10, r, st.-w

HUMIDITY OF THE AIR.

Temperature of the Dew Point.

The highest in the month was $47^{\circ}\cdot5$ on the 15th; and the lowest was $22^{\circ}\cdot1$ on the 17th.
The mean ,, was $33^{\circ}\cdot4$, being $6^{\circ}\cdot3$ *lower* than the average of the preceding 30 years.

Elastic Force of Vapour.—The mean for the month was $0^{in}\cdot191$, being $0^{in}\cdot058$ *less* than the average of the preceding 30 years.

Weight of Vapour in a Cubic Foot of Air.—The mean for the month was $2^{grs}\cdot2$, being $0^{gr}\cdot6$ *less* than the average of the preceding 30 years.

Degree of Humidity.—The mean for the month was 85 (that of Saturation being represented by 100), being 3 *less* than the average of the preceding 30 years.

Weight of a Cubic Foot of Air.—The mean for the month was 556 grains, being 8 grains *greater* than the average of the preceding 30 years.

CLOUDS.

The mean amount for the month, a clear sky being represented by 0 and a cloudy sky by 10, was 5·9.

WIND.

The proportions were of N. 7, S. 5, W. 8, E. 9, and Calm 1. The greatest pressure in the month was $30^{lbs}\cdot0$ on the square foot on the 5th.

RAIN.

Fell on 10 days in the month, amounting to $0^{in}\cdot57$, as measured in the simple cylinder gauge partly sunk below the ground; being $1^{in}\cdot76$ *less* than the average fall of the preceding 56 years.

ELECTRICITY.

From November 18 the electrical apparatus was under repair until the end of the year.

MONTH and DAY, 1871.	Phases of the Moon.	Mean Daily Reading of the Barometer (corrected and reduced to 32° Fahrenheit).	Readings of Thermometers. Dry. Highest.	Dry. Lowest.	Dry. Mean Daily Value.	Dew Point. Mean Daily Value.	Highest in the Sun, as shown by a Self-Registering Thermometer, with blackened bulb in vacuo, placed on the Grass.	Lowest on the Grass, as shown by a Self-Registering Minimum Thermometer.	In the Water of the Thames, at Greenwich, by Self-Registering Thermometers, read at 9h A.M. Highest.	In the Water … Lowest.	Difference between the Dew Point Temperature and Air Temperature. Mean Daily Value.	Difference … Greatest.	Difference … Least.	Difference between the Mean Temperature of the Day and the Mean Temperature of the same Day on an Average of 50 Years.	Wind as deduced from Anemometers. Osler's. General Direction. A.M.	Osler's. General Direction. P.M.	Osler's. Pressure in lbs. on the square foot. Greatest.	Pressure. Least.	Pressure. Mean of 24 Obs.	Robinson's. Amount of Horizontal Movement of the Air on each Day.	Rain in Inches, collected in a Gauge whose receiving surface is 5 inches above the Ground.
		in.	°	°	°	°	°	°	°	°	°	°	°	°			lbs.	lbs.	lbs.	miles.	in.
Dec. 1	..	29.886	42.7	33.7	38.4	34.1	58.5	32.0	39.0	36.4	4.3	7.9	0.5	– 3.7	NNE	NNE	17.5	0.0	1.8	464	0.02
2	..	30.071	36.7	28.5	32.6	29.6	55.0	21.1	39.0	36.4	3.0	6.2	1.7	– 9.6	NNE: NW	NW : W by S	0.7	0.0	0.0	94	0.00
3	..	29.882	38.0	30.5	33.9	31.9	44.7	23.5	38.6	36.2	2.0	4.3	0.7	– 8.4	WSW : N	N	1.2	0.0	0.2	171	0.03
4	..	29.991	35.0	25.0	29.8	24.5	56.6	18.0	38.4	36.0	5.3	7.8	1.7	–12.4	N	N by E	2.8	0.0	0.5	252	0.00
5	Last Qr.	30.075	33.2	24.0	28.8	22.1	36.3	12.3	37.8	35.0	6.7	9.4	4.0	–13.4	N by E	W	0.8	0.0	0.1	193	0.00
6	..	29.944	39.7	30.1	34.2	30.5	48.3	22.3	37.1	34.7	3.7	6.1	1.6	– 7.9	WNW : N by E	N by E : NNW	3.2	0.0	0.2	208	0.01
7	In Equator	29.933	35.5	26.0	30.7	25.2	36.4	22.0	36.8	34.2	5.5	11.0	2.3	–11.3	N : W	NNE : NE	19.4	0.0	0.9	300	0.00
8	..	30.317	28.7	18.6	22.4	16.8	28.7	11.0	36.4	33.5	5.6	12.4	0.8	–19.3	ENE : Calm	WSW	0.7	0.0	0.0	86	0.00
9	..	30.186	33.5	21.3	29.0	23.5	33.9	14.0	35.8	32.7	5.5	7.3	4.6	–12.3	WSW	W by S	0.1	0.0	0.0	160	0.00
10	..	30.175	36.3	31.1	34.0	29.3	37.5	26.7	35.4	32.5	4.7	5.4	3.4	– 7.0	WSW	WSW	0.1	0.0	0.0	112	0.00
11	..	30.277	40.8	27.2	34.5	32.4	41.2	22.2	35.4	32.2	2.1	5.3	0.5	– 6.2	WSW	W : WSW	0.2	0.0	0.0	119	0.00
12	New: Perigee	30.307	44.7	36.6	39.5	35.8	72.2	29.0	35.4	32.4	3.7	7.7	1.4	– 1.1	WSW	W	0.3	0.0	0.1	167	0.00
13	Greatest Declination S.	30.297	44.4	36.9	41.8	39.8	48.5	30.2	35.5	32.2	2.0	3.1	1.9	+ 1.3	W	W	0.8	0.0	0.1	164	0.01
14	..	30.200	47.2	39.3	43.7	40.6	54.8	34.4	36.2	32.5	3.1	5.5	2.1	+ 3.3	W	W	0.8	0.0	0.1	214	0.01
15	..	30.168	46.9	38.3	42.3	39.8	49.3	29.5	36.6	33.4	2.5	6.3	0.7	+ 2.1	W by N : WSW	WSW : SSW	0.2	0.0	0.0	85	0.02
16	..	30.161	45.5	39.9	43.3	42.4	45.5	31.9	36.6	34.0	0.9	2.2	0.0	+ 3.3	SSW : SW	N : NNE	0.8	0.0	0.1	157	0.06
17	..	30.155	43.2	35.6	39.1	37.7	56.6	30.5	37.6	34.8	1.4	3.9	0.0	– 0.7	N by E : SW	SW	1.1	0.0	0.1	164	0.02
18	First Qr.	29.863	47.7	42.3	45.2	41.9	48.0	35.0	37.4	35.2	3.3	5.3	2.6	+ 5.6	SW	SW	16.8	0.1	1.1	443	0.00
19	..	29.742	48.8	40.4	44.9	44.3	52.7	38.5	38.6	35.7	0.6	2.3	0.0	+ 5.5	SW	WSW : SSW	13.0	0.0	0.5	258	0.32
20	In Equator	29.466	47.5	36.5	42.7	38.9	50.0	29.4	40.6	37.0	3.8	8.6	2.3	+ 3.6	WSW : SW	SW : NW	30.+	0.0	3.8	610	0.14
21	..	29.702	44.0	35.5	40.5	36.5	47.2	29.2	39.4	37.0	4.0	7.0	2.9	+ 1.7	W by S	WSW : SSW	6.5	0.0	0.6	342	0.00
22	..	29.730	42.8	35.3	38.7	38.0	44.8	29.0	39.6	37.0	0.7	1.2	0.0	+ 0.2	SE : ESE	E : NE	0.2	0.0	0.0	116	0.03
23	..	29.976	41.7	39.0	40.2	38.6	42.2	35.3	40.4	37.5	1.6	3.2	0.0	+ 2.1	NNE : Calm	SW	0.5	0.0	0.0	114	0.00
24	..	29.927	44.7	37.8	41.0	37.2	65.6	30.1	40.6	37.7	3.8	7.0	1.4	+ 3.2	SW	SW : SSW	2.0	0.1	0.3	337	0.00
25	..	29.754	43.7	37.6	40.9	38.5	51.7	31.0	40.4	37.7	2.4	3.5	0.9	+ 3.3	SW	SW	3.3	0.0	0.8	399	0.04
26	Full : Apogee	29.570	46.3	41.0	44.5	44.1	47.3	39.5	40.4	37.9	0.4	1.3	0.0	+ 7.1	S : SW	SSW	1.7	0.0	0.2	269	0.39
27	Greatest Declination N.	29.441	48.3	41.7	44.7	40.1	68.3	35.1	41.0	38.3	4.6	8.4	2.2	+ 7.4	SW	SW	6.2	0.0	0.7	407	0.04
28	..	29.273	48.4	44.3	45.9	41.2	59.1	37.3	41.6	39.0	4.7	5.0	2.6	+ 8.7	SSW	SSW	9.0	0.1	1.0	423	0.03
29	..	29.619	44.6	36.0	40.7	37.6	47.3	28.0	41.9	39.3	3.1	6.8	0.0	+ 3.4	SW : NW	NW : W : SW	0.7	0.0	0.1	245	0.02
30	..	29.641	46.5	37.2	43.2	41.0	47.7	30.2	42.2	39.5	2.2	5.1	1.5	+ 5.8	SW	SW : W by S	14.0	0.0	1.3	485	0.04
31	..	29.954	41.5	33.0	36.5	31.4	63.9	26.8	42.4	39.6	5.1	7.6	3.5	– 1.0	W	NW : WSW : SSW	1.7	0.0	0.3	317	0.00
Means	..	29.925	42.2	34.2	38.3	35.0	49.7	27.9	38.5	35.7	3.3	5.9	1.5	– 1.5	...	...	..	..	..	Sum 7875	Sum 1.23

BAROMETER READINGS FROM EYE-OBSERVATIONS.

The first maximum in the month was 30in·155 on the 2nd; the first minimum in the month was 29in·870 on the 3rd.
The second maximum ,, was 30in·126 on the 5th; the second minimum ,, was 29in·882 on the 7th.
The absolute maximum ,, was 30in·333 on the 8th; the third minimum ,, was 30in·155 on the 10th.
The fourth maximum ,, was 30in·327 on the 12th; the fourth minimum ,, was 29in·243 on the 20th.
The fifth maximum ,, was 29in·792 on the 21st; the fifth minimum ,, was 29in·587 on the 21st.
The sixth maximum ,, was 30in·024 on the 23rd; the absolute minimum ,, was 29in·237 on the 28th.
The seventh maximum ,, was 29in·791 on the 29th; the seventh minimum ,, was 29in·602 on the 30th.
The eighth maximum ,, was 30in·055 on the 31st.
The range in the month was 1in·096.
The mean for the month was 29in·925, being 0in·119 *higher* than the average of the preceding 30 years.

TEMPERATURE OF THE AIR.

The highest in the month was 48°·8 on the 19th; the lowest was 18°·6 on the 8th.
The range ,, was 30°·2.
The mean ,, of all the highest daily readings was 42°·2, being 2°·9 *lower* than the average of the preceding 30 years.
The mean ,, of all the lowest daily readings was 34°·2, being 1°·3 *lower* than the average of the preceding 30 years.
The mean daily range was 8°·0, being 1°·5 *less* than the average of the preceding 30 years.
The mean for the month was 38°·3, being 2°·0 *lower* than the average of the preceding 30 years.

MONTH and DAY, 1871.	ELECTRICITY. A.M.	ELECTRICITY. P.M.	CLOUDS AND WEATHER. A.M.	CLOUDS AND WEATHER. P.M.
Dec. 1			10, sl.-r, h.-sqs : 4, ci, ci.-s, cu.-s	v, ci, ci.-cu, ci.-s, cu.-s: 10, sl.-r : 10
2			2, th.-cl, h, f, h.-fr	4, ci.-cu, cu, h, f: 0, th.-f : 0
3			10, sn, f, h	0 : 0, h.-fr
4			vv, ci, ci.-cu, ci.-s, h.-fr, sl.-sn	vv, oc.-sn : 0
5			1, li.-cl, h.-fr	3, ci, ci.-cu, h, f: v, oc.-sn : 0
6			10, sn	10, mt : v : 8, ci.-s, h.-fr
7			10, f	v : vv, sl. sn, sqs : 10, sqs
8			sl.-sn : 0, f, h, h.-fr	v, th.-f, glm : 0, f, h : 0, h.-fr, h, mt
9			10, f, h.-fr	10 : 10, sl.-sn
10			10, sl.-f	10, f : 10, f
11			0, f, h.-fr	10, th.-r : 10, sl.-f
12			3, ci, ci.-s	3, ci, ci.-cu, ci.-s: v : v, m
13			10, sl.-f, th.-r	10 : 10, sl.-f
14			10	10, m.-r : 10, m.-r
15			10, r, sl.-f	3, ci, ci.-s : v : v, h
16			10, sl.-mt	10, r 10, r
17			10, r : 0, th.-f, d	10 v 10
18			10	10, sc, sqs 10, oc.-th.-r, fr.-h.-sqs
19			10, r, w	10 : v : 10, r
20			10, r : 10 : 10, r, g	v, r, g : v, h.-g : 2, ci.-cu, sqs
21			4, ci, ci.-s, s, h.-fr	10, th.-r : 10
22			10, r : li.-cl : 10, th.-f	10, h, mt : 10
23			10, f : 10, f, glm	9, ci.-cu, ci.-s, cu.-s : 10
24			3, ci, ci.-cu, ci.-s, cu	1, ci, ci.-cu : v li.-cl, lu.-co, lu.-ha
25			6, ci, ci.-s	9, ci, ci.-s, cu.-s : 10, r
26			10, h.-r : 10, r	10, th.-r : 10
27			vv, shs.-r	v 0 : 8, cu.-s
28			10, w	10, r, w : 10, r
29			10, th.-r, f, glm	0, h, f : 0, h.-d, h.-fr
30			10	10, st.-w, th.-r : 10, w, r : 4, cu.-s
31			0, h.-fr, sl.-f	0, sl.-f : 0 : 0, d, h.-fr : li.-cl, h.-fr

HUMIDITY OF THE AIR.

Temperature of the Dew Point.

The highest in the month was $46^{\circ}\cdot5$ on the 19th; and the lowest was $11^{\circ}\cdot7$ on the 8th.

The mean „ was $35^{\circ}\cdot0$, being $1^{\circ}\cdot9$ *lower* than the average of the preceding 30 years.

Elastic Force of Vapour.—The mean for the month was $0^{in}\cdot204$, being $0^{in}\cdot018$ *less* than the average of the preceding 30 years.

Weight of Vapour in a Cubic Foot of Air.—The mean for the month was $2^{grs}\cdot4$, being $0^{gr}\cdot2$ *less* than the average of the preceding 30 years.

Degree of Humidity.—The mean for the month was 88 (that of Saturation being represented by 100), being *the same as* the average of the preceding 30 years.

Weight of a Cubic Foot of Air.—The mean for the month was 557 grains, being 5 grains *greater* than the average of the preceding 30 years.

CLOUDS.

The mean amount for the month, a clear sky being represented by 0 and a cloudy sky by 10, was 6·8.

WIND.

The proportions were of N. 6, S. 8, W. 15, E. 1, and Calm 1. The greatest pressure in the month was more than $30^{lbs.}$ on the square foot on the 20th.

RAIN.

Fell on 17 days in the month, amounting to $1^{in}\cdot23$, as measured in the simple cylinder gauge partly sunk below the ground; being $0^{in}\cdot75$ *less* than the average fall of the preceding 56 years.

The following table contains the highest and lowest readings of the Barometer, reduced to 32° Fahrenheit, extracted from the photographic records. The readings are accurate; but the times are liable to great uncertainty, as the barometer frequently remains at its highest or lowest point through several hours. The time given is the middle of the stationary period. Where the symbol : follows the time, it denotes that the quicksilver has been sensibly stationary through a period of more than one hour.

MAXIMA.			MINIMA.			MAXIMA.			MINIMA.		
Approximate Mean Solar Time, 1871.		Reading.	Approximate Mean Solar Time, 1871.		Reading.	Approximate Mean Solar Time, 1871.		Reading.	Approximate Mean Solar Time, 1871.		Reading.
	d h m	in.		d h m	in.		d h m	in.		d h m	in.
January	4. 10. 30:	30·035	January	2. 2. 55	29·732	April	15. 9. 10	29·315	April	14. 23. 15	29·162
	5. 21. 20	30·040		5. 2. 35	29·630		16. 10. 10	29·360		15. 15. 45	29·200
	9. 19. 15	29·610		8. 23. 20	29·205		17. 17. 30	29·531		16. 17. 45	29·156
	12. 15. 0	30·079		10. 9. 25:	29·245		21. 12. 15	29·650		19. 3. 20	29·004
	20. 21. 15	29·600		15. 19. 20	28·709		24. 21. 15	29·925		22. 17. 5	29·460
	24. 11. 0:	29·932		22. 2. 40	29·382		27. 21. 20	29·720		27. 2. 30	29·602
	26. 23. 0	30·086		25. 2. 40	29·810	May	1. 19. 15	29·980		29. 0. 35	29·325
	30. 21. 20	30·100		30. 2. 20	29·943		6. 22. 20	30·223	May	3. 6. 0	29·660
February	4. 23. 20	29·600	February	4. 4. 15:	29·522		9. 23. 20	30·065		8. 3. 40	29·925
	6. 21. 55:	30·032		5. 7. 25	29·406		16. 22. 50	29·875		14. 5. 0	29·645
	9. 9. 30	29·886		8. 11. 16	29·633		20. 20. 55	30·191		17. 16. 30:	29·710
	11. 6. 45	29·978		10. 2. 45	29·060		29. 10. 15:	30·110		25. 0. 0	29·636
	17. 23. 40	30·110		12. 8. 30	29·490	June	2. 20. 10:	30·023	June	1. 0. 55	29·834
	21. 23. 55	30·260		19. 15. 0	29·566		5. 10. 40:	30·003		3. 23. 0	29·816
	27. 7. 20	29·675		26. 21. 55	29·593		11. 23. 0	29·915		8. 5. 30:	29·721
March	0. 21. 0	30·324		27. 16. 15	29·520		21. 22. 30	29·788		17. 9. 30	29·337
	4. 21. 20	29·902	March	4. 3. 35	29·792		25. 21. 15	30·100		22. 16. 30	29·640
	7. 6. 15	29·735		6. 4. 35	29·417		28. 17. 35	29·740		27. 21. 10	29·514
	8. 19. 10	30·175		7. 15. 40	29·505		30. 19. 30	29·800		29. 22. 10	29·582
	10. 10. 10	30·022		9. 5. 30	29·680	July	5. 23. 40	30·071	July	2. 18. 45	29·290
	14. 23. 35	29·737		12. 16. 30	29·472		9. 10. 10	29·855		7. 16. 0:	29·672
	17. 22. 20	30·155		15. 19. 10:	29·110		16. 1. 30	30·010		10. 19. 30	29·415
	21. 21. 45:	29·964		20. 4. 40:	29·858		20. 9. 15	29·880		19. 6. 25	29·490
	28. 9. 10	30·282		24. 4. 0:	29·648		27. 8. 30	29·735		24. 16. 0:	29·190
April	3. 22. 30	29·966	April	2. 16. 40:	29·552		28. 11. 45:	29·840		27. 21. 10	29·534
	6. 10. 45	30·065		5. 3. 45:	29·834		31. 22. 0	29·944		29. 21. 50	29·465
	10. 19. 30	29·928		9. 6. 25	29·775	August	6. 10. 0	30·100	August	3. 15. 40	29·500
	12. 21. 30	29·905		11. 19. 20:	29·675		9. 20. 30	30·020		8. 3. 10	29·925

MAXIMA.			MINIMA.			MAXIMA.			MINIMA.		
Approximate Mean Solar Time, 1871.		Reading.	Approximate Mean Solar Time, 1871.		Reading.	Approximate Mean Solar Time, 1871.		Reading.	Approximate Mean Solar Time, 1871.		Reading.
	d h m	in.		d h m	in.		d h m	in.		d h m	in.
August	15. 22. 40	29·808	August	14. 4. 5	29·730	October	22. 9. 55:	30·218	October	21. 5. 10	29·720
	19. 19. 15	29·945		18. 5. 0	29·240		25. 8. 55	30·210		24. 3. 30	30·050
	21. 11. 50	30·000		20. 15. 30	29·781	November	2. 8. 45	29·950		29. 14. 50	29·368
	27. 9. 50:	30·322		24. 4. 45	29·522		9. 6. 15	29·610	November	7. 21. 30	29·292
	31. 22. 50	29·940		30. 3. 40	29·795		13. 10. 0	30·205		10. 12. 45	29·468
September	5. 9. 50:	29·995	September	3. 22. 25	29·645		15. 22. 20	29·883		14. 17. 10	29·585
	7. 8. 30	29·865		6. 12. 40	29·679		18. 23. 0	30·286		16. 16. 57	29·604
	9. 15. 10:	29·780		8. 17. 40	29·475		22. 19. 50	30·022		21. 15. 30	29·870
	13. 22. 5:	30·124		10. 5. 10	29·660		26. 21. 35	29·865		25. 2. 30	29·735
	22. 13. 40:	29·730		21. 2. 45	29·356	December	1. 21. 50:	30·176		30. 1. 30	29·628
	24. 21. 10	29·605		23. 19. 10	29·130		4. 21. 30	30·143	December	3. 2. 15	29·858
	26. 9. 10	29·480		25. 15. 0	29·290		7. 22. 30	30·365		7. 0. 45	29·856
	28. 21. 30	29·627		27. 15. 15	28·775		11. 22. 0	30·330		9. 16. 45	30·130
	30. 6. 30	29·730		29. 16. 45	29·212		20. 22. 0	29·800		20. 5. 45	29·122
October	5. 10. 30:	29·736	October	1. 7. 10	28·931		23. 11. 5	30·038		21. 13. 20	29·562
	9. 20. 50	30·275		6. 21. 30	29·415		29. 11. 5	29·830		28. 10. 0	29·230
	12. 20. 55	30·325		11. 4. 0	29·998		31. 7. 40	30·087		30. 6. 35	29·573
	20. 21. 45	29·884		19. 5. 5	29·508						

ABSOLUTE MAXIMA AND MINIMA READINGS OF THE BAROMETER for each Month in the YEAR 1871.
[Extracted from the preceding Table.]

1871, MONTH.	Readings of the Barometer.		Range of Reading in each Month.
	Maxima.	Minima.	
	in.	in.	in.
January	30·100	28·709	1·391
February	30·260	29·060	1·200
March	30·324	29·110	1·214
April	30·065	29·004	1·061
May	30·223	29·636	0·587
June	30·100	29·337	0·763
July	30·071	29·190	0·881
August	30·322	29·240	1·082
September	30·124	28·775	1·349
October	30·325	28·931	1·394
November	30·286	29·292	0·994
December	30·365	29·122	1·243

The highest reading in the year was $30^{in}·365$ on December 8. The lowest reading in the year was $28^{in}·709$ on January 16.
The range of reading in the year was $1^{in}·656$.

MONTHLY MEANS of RESULTS for METEOROLOGICAL ELEMENTS.

1871, MONTH.	Mean Reading of the Barometer.	TEMPERATURE OF THE AIR. Highest.	Lowest.	Range in the Month.	Mean of all the Highest.	Mean of all the Lowest.	Mean Daily Range.	Mean Temperature.	Mean Temperature of Dew Point.	Mean Elastic Force of Vapour.	Mean Weight of Vapour in a Cubic Foot of Air.	Mean additional Weight required to saturate a Cubic Foot of Air.
	in.	°	°	°	°	°	°	°	°	in.	grs.	grs.
January ..	29·646	46·7	18·3	28·4	37·4	29·3	8·1	33·2	29·7	0·165	2·0	0·2
February ..	29·847	57·0	25·0	32·0	48·3	37·5	10·8	42·4	38·1	0·230	2·7	0·5
March	29·875	70·9	28·9	42·0	55·0	36·7	18·3	44·9	38·7	0·235	2·7	0·7
April	29·648	66·5	29·1	37·4	57·8	41·2	16·6	47·7	42·5	0·272	3·1	0·7
May	29·907	79·5	34·0	45·5	64·4	42·1	22·3	51·9	43·7	0·285	3·3	1·1
June	29·761	77·2	38·7	38·5	66·3	47·9	18·4	54·8	48·4	0·340	3·9	1·0
July	29·690	82·6	46·8	35·8	72·6	54·0	18·6	61·7	53·9	0·416	4·6	1·5
August ...	29·855	89·2	46·1	43·1	78·1	53·8	24·3	64·8	54·4	0·424	4·7	2·1
September.	29·719	82·0	39·0	43·0	67·5	50·3	17·2	57·4	49·9	0·360	4·0	1·3
October ...	29·785	68·4	31·2	37·2	58·6	41·9	16·7	49·4	45·1	0·301	3·5	0·6
November .	29·816	51·0	20·3	30·7	43·2	32·7	10·5	37·6	33·4	0·191	2·2	0·5
December .	29·925	48·8	18·6	30·2	42·2	34·2	8·0	38·3	35·0	0·204	2·4	0·4
Means	29·790	68·3	31·3	37·0	57·6	41·8	15·8	48·7	42·7	0·285	3·3	0·9

1871, MONTH.	Mean Degree of Humidity. (Sat. = 100.)	Mean Weight of a Cubic Foot of Air.	Mean Amount of Cloud. (0—10.)	RAIN. Number of Rainy Days.	Amount collected on the Ground. Gauge read Daily.	Gauge read Monthly.	WIND. From Osler's Anemometer. Number of Hours of Prevalence of each Wind, referred to different Points of Azimuth. N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Number of Calm or nearly Calm Hours.	Mean Daily Pressure in lbs. on the Square Foot.	From Robinson's Anemometer. Mean Daily Horizontal Movement of Air in Miles.
		grs.			in.	in.											
January	87	558	8·0	18	2·05	2·10	103	132	66	87	102	148	68	19	19	0·25	260
February	86	551	7·8	14	1·09	1·10	28	23	58	54	84	284	102	36	3	0·47	319
March	79	549	5·7	10	1·10	1·07	84	72	74	73	84	243	58	32	24	0·36	282
April	83	541	7·1	18	3·03	2·96	38	51	121	59	27	228	137	59	0	0·35	285
May	74	541	5·6	7	0·68	0·70	79	225	114	50	36	72	105	63	0	0·17	234
June	78	535	8·1	18	2·95	2·95	246	90	51	62	57	132	48	25	9	0·20	246
July	76	526	6·8	17	3·25	3·15	32	21	16	13	97	452	89	24	0	0·30	292
August	69	526	3·9	6	0·86	0·80	22	106	133	62	69	207	82	30	33	0·24	215
September	76	532	6·8	15	4·12	3·96	42	247	98	63	58	113	52	28	19	0·16	238
October	86	542	5·9	12	1·37	1·50	31	66	51	126	170	167	36	21	76	0·08	193
November	85	556	5·9	10	0·57	0·62	74	127	125	86	41	68	132	46	21	0·26	189
December	88	557	6·8	17	1·23	1·30	94	45	9	9	41	290	205	37	14	0·48	254
Means	81	543	6·5	Sum 162	Sum 22·30	Sum 22·21	Sum 873	Sum 1205	Sum 916	Sum 744	Sum 866	Sum 2404	Sum 1114	Sum 420	Sum 218	0·28	251

(I.)—Reading of a Thermometer whose bulb is sunk to the depth of 25·6 feet (24 French feet) below the surface of the soil, at Noon on every Day, except Sundays, Good Friday, and Christmas Day.

Days of the Month, 1871.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
1	S	51·63	50·70	49·87	49·44	49·33	49·61	50·20	51·11	S	52·78	52·97
2	52·42	51·62	50·68	S	49·44	49·33	S	50·25	51·17	52·10	52·78	52·97
3	52·42	51·57	50·66	49·83	49·43	49·33	49·63	50·27	S	52·12	52·86	S
4	52·39	51·56	50·64	49·82	49·41	S	49·63	50·28	51·20	52·15	52·85	52·96
5	52·40	S	S	49·82	49·41	49·35	49·65	50·32	51·25	52·18	S	52·91
6	52·38	51·52	50·57	49·77	49·40	49·34	49·67	S	51·27	52·23	52·87	52·95
7	52·37	51·47	50·53	Good Friday.	S	•49·33	49·70	50·38	51·35	52·25	52·90	52·93
8	S	51·44	50·48	49·74	49·38	49·33	49·71	50·40	51·34	S	52·92	52·88
9	52·28	51·39	50·46	S	49·37	49·35	S	50·43	51·40	52·28	52·91	52·91
10	52·27	51·36	50·45	49·70	49·36	49·37	49·76	50·47	S	52·33	52·91	S
11	52·24	51·29	50·42	49·70	49·33	S	49·75	50·50	51·45	52·34	52·92	52·89
12	52·22	S	S	49·69	49·33	49·37	49·78	50·53	51·48	52·38	S	52·92
13	52·20	51·42	50·34	49·67	49·33	49·40	49·80	S	51·52	52·42	52·93	52·91
14	52·19	51·22	50·32	49·65	S	49·40	49·82	50·58	51·53	52·44	52·94	52·91
15	S	51·19	50·26	49·63	49·33	49·42	49·86	50·52	51·56	S	52·98	52·90
16	52·14	51·15	50·24	S	49·33	49·43	S	50·64	51·62	52·51	52·97	52·85
17	52·08	51·13	50·23	49·60	49·32	49·42	49·88	50·67	S	52·53	52·93	S
18	52·07	51·08	50·21	49·58	49·33	S	49·90	50·67	51·67	52·57	52·95	52·85
19	52·04	S	S	49·57	49·32	49·45	49·97	50·73	51·68	52·58	S	52·85
20	52·02	51·03	50·15	49·55	49·32	49·47	49·93	S	51·72	52·60	52·98	52·82
21	51·98	51·03	50·12	49·55	S	49·47	49·97	50·78	51·74	52·62	52·97	52·79
22	S	50·95	50·10	49·54	49·33	49·48	49·98	50·80	51·77	S	52·97	52·76
23	51·92	50·93	50·09	S	49·33	49·49	S	50·83	51·82	52·67	52·95	52·77
24	51·89	50·88	50·06	49·51	49·33	49·50	50·03	50·87	S	52·65	52·99	S
25	51·87	50·85	50·04	49·51	49·33	S	50·03	50·88	51·87	52·70	52·96	Christmas Day
26	51·82	S	S	49·50	49·33	49·52	50·07	50·93	51·88	52·72	S	52·67
27	51·78	50·78	50·00	49·48	49·32	49·53	50·10	S	51·95	52·74	53·00	52·69
28	51·72	50·82	50·00	49·47	S	49·55	50·12	50·98	51·97	52·77	52·97	52·67
29	S		49·92	49·46	49·32	49·56	50·15	51·02	52·00	S	52·98	52·65
30	51·68		49·93	S	49·33	49·58	S	51·07	52·01	52·83	52·98	52·63
31	51·67		49·88		49·33		50·18	51·08		52·82		S
Means.	52·09	51·22	50·28	49·63	49·35	49·43	49·87	50·63	51·59	52·48	52·93	52·84

(II.)—Reading of a Thermometer whose bulb is sunk to the depth of 12·8 feet (12 French feet) below the surface of the soil, at the same times.

Days of the Month, 1871.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
1	S	47·18	46·25	46·75	47·64	49·33	51·55	54·03	56·46	S	55·60	53·00
2	50·00	47·17	46·28	S	47·70	49·38	S	54·17	56·53	57·25	55·56	52·86
3	49·90	47·14	46·36	46·84	47·79	49·42	51·62	54·23	S	57·22	55·52	S
4	49·83	47·06	46·32	46·85	47·83	S	51·71	54·27	56·56	57·13	55·42	52·62
5	49·73	S	S	46·83	47·84	49·62	51·79	54·37	56·62	57·17	S	52·47
6	49·64	46·97	46·38	46·91	47·93	49·68	51·87	S	56·66	57·17	55·33	52·42
7	49·57	46·90	46·38	Good Friday.	S	49·72	51·97	54·56	56·70	57·07	55·27	52·35
8	S	46·88	46·35	46·97	48·03	49·85	52·02	54·60	56·75	S	55·18	52·12
9	49·32	46·73	46·40	S	48·03	49·93	S	54·71	56·76	56·97	55·10	52·05
10	49·22	46·72	46·42	47·01	48·10	50·03	52·17	54·78	S	56·94	55·04	S
11	49·18	46·63	46·45	47·03	48·13	S	52·15	54·82	56·93	56·87	54·97	51·85
12	49·01	S	S	47·04	48·22	50·18	52·27	54·96	56·97	56·83	S	51·77

(II.)—Reading of a Thermometer whose bulb is sunk to the depth of 12·8 feet (12 French feet) below the surface of the soil, at the same times—*concluded.*

Days of the Month, 1871.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
13	48·88	46·54	46·50	47·10	48·27	50·27	52·35	*S*	56·98	56·82	54·80	51·65
14	48·82	46·50	46·50	47·11	*S*	50·36	52·47	55·16	57·01	56·76	54·80	51·56
15	*S*	46·48	46·52	47·12	48·38	50·42	52·57	55·23	57·05	*S*	54·75	51·42
16	48·60	46·48	46·50	*S*	48·42	50·48	*S*	55·19	57·08	56·63	54·63	51·33
17	48·47	46·47	46·53	47·12	48·47	50·54	52·73	55·33	*S*	56·62	54·51	*S*
18	48·27	46·37	46·60	47·17	48·55	*S*	52·80	55·31	57·12	56·58	54·38	51·06
19	48·22	*S*	*S*	47·16	48·57	50·63	52·88	55·38	57·10	56·48	*S*	50·97
20	48·10	46·35	46·63	47·23	48·64	50·68	52·92	*S*	57·15	56·40	54·27	50·85
21	48·02	46·38	46·62	47·27	*S*	50·72	53·03	55·62	57·17	56·37	54·21	50·72
22	*S*	46·39	46·66	47·30	48·74	50·80	53·12	55·67	57·15	*S*	54·10	50·58
23	47·77	46·34	46·69	*S*	48·81	50·88	*S*	55·77	57·18	56·18	53·94	50·52
24	47·68	46·34	46·68	47·34	48·87	50·93	53·25	55·83	*S*	56·06	53·86	*S*
25	47·63	46·37	46·67	47·40	48·94	*S*	53·35	55·93	57·21	56·05	53·69	Christmas Day
26	47·56	*S*	*S*	47·44	48·94	51·11	53·46	56·02	57·19	55·98	*S*	50·23
27	47·49	46·34	46·68	47·51	48·97	51·22	53·57	*S*	57·27	55·95	53·50	50·21
28	47·40	46·33	46·67	47·54	*S*	51·27	53·68	56·17	57·23	55·88	53·35	50·13
29	*S*		46·66	47·57	49·11	51·37	53·77	56·27	57·23	*S*	53·26	50·06
30	47·37		46·73	*S*	49·20	51·43	*S*	56·37	57·16	55·77	53·12	50·00
31	47·28		46·74		49·25		53·95	56·42		55·71		*S*
Means .	48·58	46·63	46·52	47·15	48·42	50·39	52·65	55·23	56·97	56·57	54·54	51·39

(III.)—Reading of a Thermometer whose bulb is sunk to the depth of 6·4 feet (6 French feet) below the surface of the soil, at the same times.

Days of the Month, 1871.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
1	*S*	43·50	44·96	47·00	49·34	52·88	55·66	59·45	61·60	*S*	55·20	49·28
2	45·83	...	45·17	*S*	49·50	53·03	*S*	59·50	61·62	59·25	55·12	49·13
3	45·62	...	45·30	47·03	49·62	53·20	55·83	59·52	*S*	59·07	55·03	*S*
4	45·47	...	45·33	47·03	49·64	*S*	55·98	59·47	61·60	58·88	54·90	48·87
5	45·29	...	*S*	47·02	49·72	53·49	56·12	59·54	61·66	58·76	*S*	48·70
6	45·12	...	45·45	47·11	49·64	53·48	56·22	*S*	61·68	58·62	54·66	48·57
7	44·92	...	45·50	Good Friday.	*S*	53·46	56·33	59·74	61·68	58·40	54·56	48·40
8	*S*	...	45·62	47·19	49·90	53·47	56·38	59·80	61·60	*S*	54·41	48·18
9	44·62	...	45·77	*S*	49·97	53·46	*S*	59·92	61·55	58·10	54·18	47·99
10	44·52	...	45·88	47·22	50·10	53·52	56·63	60·14	*S*	58·00	54·00	*S*
11	44·42	43·50	45·91	47·25	50·22	*S*	56·70	60·19	61·60	57·82	53·80	47·61
12	44·33	*S*	*S*	47·29	50·32	53·51	57·11	60·38	61·53	57·65	*S*	47·40
13	44·26	43·80	46·03	47·33	50·37	53·54	57·23	*S*	61·46	57·51	53·32	47·22
14	44·15	43·84	46·07	47·40	*S*	53·64	57·34	60·72	61·42	57·30	53·13	47·04
15	*S*	43·80	46·13	47·48	50·51	53·74	57·48	60·86	61·47	*S*	52·85	46·91
16	44·02	43·80	46·20	*S*	50·56	53·90	*S*	61·06	61·43	56·90	52·52	46·82
17	43·96	43·85	46·22	47·73	50·57	54·03	57·66	61·22	*S*	56·72	52·20	*S*
18	43·91	43·85	46·24	47·93	50·70	*S*	57·80	61·38	61·38	56·60	52·10	46·78
19	43·87	*S*	*S*	48·06	50·72	54·43	58·03	61·55	61·30	56·43	*S*	46·60
20	43·83	44·12	46·11	48·26	50·80	54·63	58·20	*S*	61·30	56·32	51·62	46·83
21	43·79	44·22	46·08	48·40	*S*	54·80	58·49	61·80	61·22	56·28	51·32	46·85
22	*S*	44·40	46·09	48·54	50·93	55·00	58·70	61·81	61·10	*S*	51·03	46·89
23	43·75	44·50	46·13	*S*	51·08	55·14	*S*	61·82	60·99	56·26	50·73	46·95
24	43·74	44·60	46·12	48·69	51·24	55·26	59·02	61·74	*S*	56·17	50·47	*S*
25	43·72	44·63	46·20	48·78	51·46	*S*	59·14	61·85	60·70	56·12	50·20	Christmas Day
26	43·70	*S*	*S*	48·87	51·53	55·42	59·28	61·82	60·47	55·97	*S*	46·96

At temperatures below 43°·5 the fluid of this thermometer descends below the scale; the readings from February 2 to 10 were less than 43°·5.

(III.)—Reading of a Thermometer whose bulb is sunk to the depth of 6·4 feet (6 French feet) below the surface of the soil, at the same times—*concluded.*

Days of the Month. 1871.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
27	43·66	44·89	46·41	48·97	51·84	55·48	59·32	*S*	60·33	55·88	49·82	46·94
28	43·60	44·94	46·52	49·01	*S*	55·48	59·31	61·78	60·05	55·70	49·65	46·94
29	*S*		46·72	49·10	52·33	55·53	59·35	61·71	59·82	*S*	49·53	46·94
30	43·50		46·89	*S*	52·56	55·57	*S*	61·71	59·54	55·42	49·40	46·98
31	43·45		46·92		52·68		59·43	61·63	*S*	55·34		*S*
Means.	44·27	(44·14)	46·00	47·86	50·66	54·20	57·64	60·82	61·16	57·13	52·53	47·51

(IV.)—Reading of a Thermometer whose bulb is sunk to the depth of 3·2 feet (3 French feet) below the surface of the soil, at the same times.

Days of the Month, 1871.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
1	*S*	38·20	44·02	45·78	50·27	56·41	58·62	62·10	64·49	*S*	52·86	43·90
2	39·33	38·22	44·03	*S*	50·20	56·40	*S*	62·33	64·70	57·33	52·79	43·80
3	39·10	38·30	43·83	45·82	50·14	56·00	59·03	62·56	*S*	57·21	52·60	*S*
4	39·00	38·40	43·82	45·84	50·08	*S*	59·00	62·68	64·69	56·93	52·35	43·28
5	38·85	*S*	*S*	45·88	50·13	55·17	58·95	62·93	64·43	56·82	*S*	42·94
6	38·77	39·81	44·45	46·02	50·12	54·82	58·85	*S*	64·02	56·60	51·65	42·60
7	38·72	40·41	44·80	Good Friday.	*S*	54·88	59·02	63·03	63·88	56·50	51·10	42·22
8	*S*	40·90	44·92	46·03	50·98	54·76	59·47	63·42	63·81	*S*	50·75	41·92
9	38·95	41·45	44·91	*S*	51·23	54·59	*S*	63·93	63·68	56·39	50·52	41·63
10	38·94	41·63	44·68	46·10	51·22	54·52	60·55	64·35	*S*	55·92	50·05	*S*
11	38·89	41·44	44·48	46·11	51·01	*S*	60·72	64·72	63·36	55·44	49·48	41·03
12	38·88	*S*	*S*	46·15	50·98	54·82	60·67	65·21	63·51	55·06	*S*	40·86
13	38·80	40·55	44·92	46·70	50·94	55·37	60·22	*S*	63·72	54·77	48·20	40·90
14	38·70	40·52	45·14	47·32	*S*	55·87	60·30	66·14	63·72	54·40	47·60	41·17
15	*S*	40·75	45·03	47·81	51·08	56·31	60·72	66·45	63·63	*S*	47·17	41·58
16	39·05	41·03	44·66	*S*	51·24	56·95	*S*	66·66	63·45	53·90	47·10	42·03
17	39·26	41·32	44·15	48·30	51·20	57·52	61·88	66·75	*S*	54·07	47·10	*S*
18	39·10	41·60	43·77	48·50	51·37	*S*	62·60	66·72	63·20	54·33	46·69	42·60
19	39·33	*S*	*S*	48·70	51·33	58·24	63·32	66·44	62·80	54·60	*S*	42·83
20	39·42	42·43	44·08	48·91	51·43	58·42	63·50	*S*	62·57	54·93	45·50	43·28
21	39·41	42·78	44·17	48·86	*S*	58·32	63·80	65·75	62·24	55·23	44·93	43·43
22	*S*	42·90	44·51	48·83	52·41	58·21	63·81	65·60	61·75	*S*	44·52	43·30
23	39·42	42·75	44·67	*S*	53·00	58·20	*S*	65·50	61·28	54·72	44·20	43·33
24	39·62	42·93	44·87	49·07	53·56	58·00	63·40	65·30	*S*	54·15	44·22	*S*
25	39·65	43·12	45·41	49·04	54·22	*S*	63·05	65·04	59·92	53·73	44·10	Christmas Day
26	39·40	*S*	*S*	49·02	54·95	57·53	62·85	64·65	59·15	53·43	*S*	43·28
27	39·13	43·40	46·50	49·34	55·36	57·50	62·63	*S*	58·92	53·17	44·20	43·45
28	38·92	43·76	46·70	49·61	*S*	57·60	62·50	64·13	58·44	53·13	44·20	43·76
29	*S*		46·43	49·86	55·30	57·90	62·64	63·98	58·41	*S*	44·22	43·95
30	38·55		46·10	*S*	55·52	58·22	*S*	64·10	57·87	53·10	44·08	44·07
31	38·43		45·82		55·84		62·32	64·22		53·02		*S*
Means.	39·06	41·19	44·85	47·65	52·04	56·64	61·32	64·62	62·37	54·96	47·78	42·69

(V.)—Reading of a Thermometer whose bulb is sunk to the depth of 1 inch below the surface of the soil, within the case which covers the tops of the deep-sunk Thermometers, at the same times.

Days of the Month, 1871.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
1	S	35·0	42·0	45·0	49·4	60·2	62·0	63·3	67·0	S	50·0	37·6
2	31·8	36·2	42·0	S	51·2	55·6	S	64·1	68·1	54·2	49·0	36·1
3	33·3	38·0	44·7	47·0	52·6	53·3	60·6	65·0	S	52·3	48·7	S
4	33·8	41·7	47·2	45·1	50·0	S	60·0	64·8	65·0	52·2	48·2	35·3
5	35·1	S	S	47·0	50·0	54·2	60·0	62·0	62·2	53·0	S	33·0
6	35·5	44·2	49·0	45·0	55·0	55·0	61·0	S	63·0	55·0	42·8	36·0
7	40·0	42·0	47·3	Good Friday.	S	53·2	64·1	67·2	64·1	57·0	45·2	35·0
8	S	45·7	46·0	45·0	54·2	53·2	64·6	67·7	62·3	S	47·2	30·1
9	36·0	42·0	43·8	S	51·2	53·1	S	68·0	62·0	50·0	42·3	32·2
10	35·0	40·2	44·0	45·2	51·0	55·5	63·8	69·2	S	50·0	42·5	S
11	35·6	34·0	47·0	46·0	49·5	S	58·5	69·5	66·0	50·0	39·1	34·7
12	35·7	S	S	51·8	50·5	55·5	61·0	71·2	67·0	49·0	S	38·0
13	33·2	40·3	47·0	52·0	50·0	59·1	62·2	S	64·0	48·8	37·0	38·5
14	39·0	40·3	45·2	52·0	S	61·4	65·0	72·0	63·0	50·0	39·5	40·5
15	S	41·8	40·0	51·6	51·2	62·2	65·0	70·0	63·9	S	45·0	41·3
16	41·2	41·8	39·3	S	52·0	64·0	S	69·2	64·0	53·0	42·2	41·9
17	38·7	43·0	39·5	50·0	50·3	63·3	68·0	70·0	S	55·0	38·4	S
18	39·8	45·0	42·7	51·3	53·0	S	68·0	67·3	61·0	55·1	36·0	42·8
19	38·6	S	S	52·3	53·2	62·2	64·0	65·2	59·3	57·0	S	45·0
20	37·2	45·5	44·9	53·7	55·0	60·3	66·2	S	60·0	57·0	38·0	42·0
21	38·2	42·8	47·2	49·7	S	59·4	67·0	68·1	58·6	53·5	36·2	40·2
22	S	41·1	43·0	51·1	56·2	58·0	65·0	67·0	57·0	S	36·0	40·6
23	39·3	44·0	46·4	S	58·2	59·0	S	66·4	55·0	50·0	38·5	41·2
24	38·0	44·0	48·0	48·8	60·2	61·0	63·7	64·0	S	47·2	37·5	S
25	34·5	43·5	50·2	50·2	64·0	S	62·3	64·0	54·0	50·0	38·0	Christmas Day
26	34·3	S	S	52·0	59·2	57·0	62·5	62·7	53·5	47·5	S	42·5
27	34·0	48·0	50·0	52·1	56·7	58·0	63·1	S	56·0	52·0	39·5	44·2
28	34·2	48·2	44·0	52·5	S	60·5	64·0	63·0	56·2	51·0	39·2	45·0
29	S		42·7	54·0	58·8	61·7	63·8	64·0	54·0	S	38·2	43·5
30	34·8		45·0	S	59·2	62·2	S	66·2	52·2	51·0	38·2	43·0
31	34·0		45·7		61·0		61·0	66·5		51·0		S
Means.	36·2	42·0	45·0	49·6	54·2	58·4	63·7	66·6	60·7	52·0	41·2	39·2

(VI.)—Reading of a Thermometer within the case covering the deep-sunk Thermometers, whose bulb is placed on a level with their scales, at the same times.

Days of the Month, 1871.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
1	S	33·7	43·2	46·3	53·3	68·3	68·0	70·1	73·8	S	49·5	40·7
2	26·8	35·5	51·2	S	57·1	57·1	S	73·5	73·0	57·0	48·0	33·0
3	32·5	38·9	56·7	51·8	62·7	53·3	62·0	74·2	S	55·5	48·5	S
4	32·9	45·1	60·0	49·6	52·3	S	62·5	67·4	67·8	53·8	48·2	33·5
5	37·2	S	S	53·2	57·8	61·2	65·6	68·5	68·3	59·5	S	28·9
6	39·2	48·8	53·3	45·3	65·5	58·3	67·3	S	68·2	61·8	41·5	36·0
7	43·5	45·6	49·0	Good Friday.	S	53·5	73·0	75·5	69·5	58·5	47·3	34·3
8	S	50·3	49·2	53·7	66·5	53·0	70·6	75·9	65·4	S	48·0	22·2
9	35·0	44·0	46·1	S	51·3	53·8	S	76·5	64·0	52·5	41·5	31·0
10	34·5	41·5	48·7	50·0	54·0	60·0	70·3	79·5	S	55·2	46·2	S
11	32·8	28·5	52·7	52·8	51·5	S	57·4	80·3	73·9	54·2	39·5	37·0
12	33·3	S	S	61·2	56·0	57·6	68·8	83·5	73·3	53·7	S	43·8
13	33·0	46·5	50·1	58·5	51·2	64·0	68·4	S	67·0	56·5	34·5	42·8
14	42·5	45·2	48·7	59·2	S	69·5	72·5	81·3	65·3	57·7	46·5	45·2
15	S	46·5	37·0	53·1	55·8	68·6	73·5	75·5	70·1	S	49·0	43·5

(VI.)—Reading of a Thermometer within the case covering the deep-sunk Thermometers, whose bulb is placed on a level with their scales, at the same times—*concluded.*

Days of the Month, 1871.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
16	42·4	45·0	37·2	*S*	57·0	72·2	*S*	76·0	67·7	57·0	42·5	44·8
17	36·2	48·5	42·5	53·9	52·0	67·8	74·4	77·5	*S*	61·9	35·3	*S*
18	42·7	51·5	49·9	55·0	59·8	*S*	74·3	68·0	65·5	63·7	31·5	45·4
19	37·2	*S*	*S*	55·2	61·5	66·5	76·2	68·3	61·0	60·2	*S*	48·5
20	36·9	48·5	51·3	49·7	62·0	63·0	67·8	*S*	63·5	59·3	43·5	45·5
21	36·7	44·5	..	53·5	*S*	62·5	72·1	73·0	64·0	52·5	38·5	40·5
22	*S*	45·7	49·7	54·3	63·8	57·7	67·5	73·2	61·2	*S*	38·5	40·2
23	38·1	50·8	57·4	*S*	67·5	61·7	*S*	69·5	56·3	56·0	37·2	50·5
24	35·5	47·0	60·0	48·0	73·0	58·0	68·2	64·2	*S*	47·0	40·5	*S*
25	30·5	45·0	63·2	57·5	76·0	*S*	64·7	69·8	55·5	51·8	36·0	Christmas Day
26	31·5	*S*	*S*	60·9	62·0	61·4	69·0	68·4	53·2	51·0	*S*	45·5
27	32·5	54·0	51·2	58·6	60·5	65·2	69·5	*S*	62·5	57·0	40·0	46·3
28	32·3	52·5	43·0	59·2	*S*	64·3	66·0	70·5	55·2	53·5	39·5	47·5
29	*S*		42·2	60·2	66·4	68·8	68·2	71·0	52·5	*S*	38·5	43·5
30	31·5		48·0	*S*	69·4	67·5	*S*	75·5	49·8	51·6	37·5	45·2
31	32·0		51·3		65·2		68·5	73·6		53·5		*S*
Means .	35·4	45·1	49·7	54·2	60·4	62·1	68·7	73·3	64·1	55·8	41·8	40·6

WEEKLY MEANS of READINGS of THERMOMETERS.

1871. Period.		Thermometers sunk in the ground. Bulb 24 French Feet deep.	Bulb 12 French Feet deep.	Bulb 6 French Feet deep.	Bulb 3 French Feet deep.	Bulb 1 Inch deep.	Thermometer inclosed in the box which covers the scales of the deep-sunk Thermometers, and placed on a level with their scales.
	d d	°	°	°	°	°	°
January	1 to January 7	52·40	49·78	45·37	38·96	34·9	35·3
	8 to 14	52·23	49·07	44·38	38·86	35·7	35·2
	15 to 21	52·05	48·28	43·90	39·26	38·9	38·7
	22 to 28	51·83	47·59	43·69	39·36	35·7	33·4
	29 to February 4	51·62	47·20	..	38·35	36·6	36·1
February	5 to 11	51·41	46·80	..	40·94	41·3	43·1
	12 to 18	51·20	46·47	43·82	40·96	42·0	47·2
	19 to 25	50·94	46·36	44·41	42·82	43·5	46·9
	26 to March 4	50·71	46·31	45·10	43·81	45·3	52·9
March	5 to 11	50·48	46·40	45·69	44·71	45·8	49·8
	12 to 18	50·27	46·52	46·15	44·61	42·3	44·2
	19 to 25	50·09	46·66	46·12	44·62	46·6	56·3
	26 to April 1	49·93	46·71	46·74	46·22	45·4	47·0
April	2 to 8	49·80	46·88	47·08	45·92	45·8	50·7
	9 to 15	49·67	47·07	47·33	46·70	49·8	55·8
	16 to 22	49·56	47·21	48·15	48·68	51·3	53·6
	23 to 29	49·49	47·47	48·90	49·32	51·6	57·4
	30 to May 6	49·42	47·79	49·58	50·32	51·4	58·1
May	7 to 13	49·35	48·13	50·15	51·06	51·1	55·1
	14 to 20	49·32	48·50	50·64	51·27	52·4	58·0
	21 to 27	49·33	48·88	51·35	53·92	59·1	67·1
	28 to June 3	49·33	49·28	52·78	55·91	58·0	63·3
June	4 to 10	49·35	49·81	53·48	54·79	54·0	56·6
	11 to 17	49·41	50·37	53·73	56·14	60·9	66·6
	18 to 24	49·48	50·77	54·88	58·23	60·0	61·6
	25 to July 1	49·56	51·32	55·52	57·89	60·2	65·9
July	2 to 8	49·67	51·83	56·14	59·05	61·7	66·8
	9 to 15	49·79	52·33	57·08	60·53	62·6	68·5
	16 to 22	49·94	52·91	58·15	63·15	66·4	71·7
	23 to 29	50·08	53·51	59·24	62·84	63·2	67·6
	30 to August 5	50·25	54·17	59·48	62·49	63·4	70·4
August	6 to 12	50·45	54·74	60·03	64·11	68·8	78·5
	13 to 19	50·63	55·27	61·47	66·53	68·9	74·4
	20 to 26	50·85	55·81	61·81	65·31	65·4	69·7
	27 to September 2	51·07	56·37	61·67	64·27	65·8	72·9
September	3 to 9	51·30	56·67	61·63	64·09	63·1	67·2
	10 to 16	51·53	57·00	61·48	63·56	64·6	69·5
	17 to 23	51·73	57·14	61·21	62·31	58·5	61·9
	24 to 30	51·95	57·22	60·15	58·78	54·3	54·8
October	1 to October 7	52·17	57·17	58·83	56·90	53·9	57·7
	8 to 14	52·36	56·86	57·73	55·33	49·6	55·0
	15 to 21	52·57	56·51	56·54	54·51	55·1	59·1
	22 to 28	52·71	56·02	56·02	53·72	49·6	52·7
	29 to November 4	52·82	55·60	55·17	52·79	49·6	49·9
November	5 to 11	52·90	55·15	54·27	50·59	43·2	44·0
	12 to 18	52·95	54·64	52·69	47·31	39·7	39·9
	19 to 25	52·97	54·01	50·89	44·58	37·4	39·0
	26 to December 2	52·98	53·18	49·47	44·07	38·1	38·2
December	3 to 9	52·92	52·34	48·45	42·43	33·6	31·0
	10 to 16	52·90	51·60	47·17	41·26	39·1	42·8
	17 to 23	52·81	50·78	46·82	43·13	42·0	45·1
	24 to 31	52·66	50·13	46·95	43·70	43·6	45·6

ABSTRACT OF THE CHANGES OF THE DIRECTION OF THE WIND, AS DERIVED FROM OSLER'S ANEMOMETER.

By *direct* motion, in the following statements, is meant that the change of the direction of the wind was in the order N., E., S., W., N., &c.; by *retrograde* is meant in the order N., W., S., E., N., &c.

1870. Dec. 31^{d}. 12^{h}. The direction of the wind was E.N.E.
1871. Jan. 31. 12. ,, ,, E., which implies a direct motion of $22\frac{1}{2}$°.
On Jan. 2. 22, 22^{d}. 1^{h}, the trace was shifted to the next set of lines downwards; on Jan. 9^{d}. 0^{h}, 10^{d}. 22^{h}, 18^{d}. 20^{h}. 30^{m}, 19^{d}. 22^{h}, 22^{d}. 21^{h}. 15^{m}, the trace was shifted to the next set of lines upwards, implying direct motion of 720°, and retrograde motion of 1800°.
Therefore the whole excess of retrogade motion in the month of January was $1057\frac{1}{2}$°.

1871. Jan. 31^{d}. 12^{h}. The direction of the wind was E.
Feb. 28. 12. ,, ,, E., which implies no change.
On Feb. 5. 22, 12^{d}. 21^{h}, the trace was shifted to the next set of lines downwards, implying direct motion of 720°.
Therefore the whole excess of direct motion in the month of February was 720°.

1871. Feb. 28^{d}. 12^{h}. The direction of the wind was E.
March 31. 12. ,, ,, N., which implies a retrograde motion of 90°.
On March 7. 21, 18^{d}. 22^{h}, 24^{d}. 2^{h}. 45^{m}, the trace was shifted to the next set of lines downwards; on March 21^{d}. 22^{h}, the trace was shifted to the next set of lines upwards; and on March 25^{d}. 21^{h}. 15^{m}, to the second set of lines upwards, implying direct motion of 1080°, and retrograde motion of 1080°.
Therefore the whole excess of retrograde motion in the month of March was 90°.

1871. March 31^{d}. 12^{h}. The direction of the wind was N.
April 30. 12. ,, ,, W., which implies a retrograde motion of 90°.
On April 1. 22, 7^{d}. 9^{h}. 45^{m}, 11^{d}. 8^{h}. 40^{m}, 14^{d}. 22^{h}, 25^{d}. 22^{h}, the trace was shifted to the next set of lines downwards; on April 13^{d}. 22^{h}, 16^{d}. 21^{h}, 17^{d}. 22^{h}, the trace was shifted to the next set of lines upwards, implying direct motion of 1800°, and retrograde motion of 1080°.
Therefore the whole excess of direct motion in the month of April was 630°.

1871. April 30^{d}. 12^{h}. The direction of the wind was W.
May 31. 12. „ „ S.E., which implies a direct motion of 225°.
On May 2. 0, 2^{d}. 23^{h}. 45^{m}, 11^{d}. 23^{h}. 50^{m}, 20^{d}. 23^{h}. 45^{m}, 26^{d}. 22^{h}, 29^{d}. 2^{h}. 45^{m}, 29^{d}. 23^{h}. 45^{m}, 30^{d}. 21^{h}, the trace was shifted to the next set of lines upwards; and on May 21^{d}. 6^{h}. 15^{m}, to the second set of lines upwards; on May 7^{d}. 22^{h}, 11^{d}. 2^{h}. 45^{m}, 11^{d}. 20^{h}. 45^{m}, 15^{d}. 22^{h}, 18^{d}. 21^{h}. 15^{m}, 20^{d}. 22^{h}, 21^{d}. 0^{h}. 30^{m}, 25^{d}. 2^{h}. 45^{m}, 27^{d}. 8^{h}. 30^{m}, 30^{d}. 2^{h}. 40^{m}, 30^{d}. 8^{h}. 30^{m}, the trace was shifted to the next set of lines downwards, implying retrograde motion of 3600°, and direct motion of 3960°.
Therefore the whole excess of direct motion in the month of May was 585°.

1871. May 31^{d}. 12^{h}. The direction of the wind was S.E.
June 30. 12. „ „ S.W., which implies a retrograde motion of 270°.
On June 0. 22, 10^{d}. 3^{h}. 50^{m}, 13^{d}. 8^{h}. 45^{m}, 15^{d}. 8^{h}. 45^{m}, 17^{d}. 8^{h}. 50^{m}, 18^{d}. 10^{h}, 21^{d}. 21^{h}, 22^{d}. 20^{h}. 40^{m}, 26^{d}. 22^{h}, the trace was shifted to the next set of lines downwards; on June 0^{d}. 23^{h}. 45^{m}, 1^{d}. 1^{h}. 30^{m}, 1^{d}. 8^{h}. 45^{m}, 5^{d}. 21^{h}, 10^{d}. 8^{h}. 30^{m}, 11^{d}. 21^{h}, 14^{d}. 21^{h}, 16^{d}. 0^{h}, 21^{d}. 9^{h}. 20^{m}, the trace was shifted to the next set of lines upwards; on June 12^{d}. 21^{h}. 15^{m}, to the second set of lines upwards; and on June 11^{d}. 6^{h}, to the third set of lines upwards, implying direct motion of 3240°, and retrograde motion of 5040°.
Therefore the whole excess of retrograde motion in the month of June was 2070°.

1871. June 30^{d}. 12^{h}. The direction of the wind was S.W.
July 31. 12. „ „ S.W., which implies no change.
On July 2. 22, 18^{d}. 22^{h}, the trace was shifted to the next set of lines downwards; and on July 10^{d}. 8^{h}. 45^{m}, 20^{d}. 20^{h}. 50^{m}, to the second set of lines downwards; on July 1^{d}. 22^{h}, the trace was shifted to the next set of lines upwards, implying direct motion of 2160°, and retrograde motion of 360°.
Therefore the whole excess of direct motion in the month of July was 1800°.

1871. July $31^{d}. 12^{h}$. The direction of the wind was S.W.
Aug. 31. 12. ,, ,, S., which implies a retrograde motion of 45°.
On Aug. 2. 0, $7^{d}. 2^{h}. 45^{m}$, $15^{d}. 21^{h}. 25^{m}$, $22^{d}. 0^{h}$, $22^{d}. 22^{h}$, $28^{d}. 2^{h}. 40^{m}$, $29^{d}. 0^{h}$, the trace was shifted to the next set of lines downwards; on Aug. $3^{d}. 2^{h}. 45^{m}$, $6^{d}. 8^{h}. 15^{m}$, $11^{d}. 22^{h}$, $12^{d}. 0^{h}. 5^{m}$, $13^{d}. 8^{h}. 45^{m}$, $17^{d}. 8^{h}. 50^{m}$, $18^{d}. 8^{h}. 40^{m}$, $29^{d}. 22^{h}$, the trace was shifted to the next set of lines upwards; and on Aug. $2^{d}. 22^{h}$, $8^{d}. 0^{h}$, $8^{d}. 2^{h}. 45^{m}$, to the second set of lines upwards, implying direct motion of 2520°, and retrograde motion of 5040°.
Therefore the whole excess of retrograde motion in the month of August was 2565°.

1871. Aug. $31^{d}. 12^{h}$. The direction of the wind was S.
Sept. 30. 12. ,, ,, S., which implies no change.
On Sept. 0. 22, $5^{d}. 22^{h}$, $10^{d}. 21^{h}. 15^{m}$, $12^{d}. 8^{h}. 40^{m}$, $13^{d}. 22^{h}$, $16^{d}. 2^{h}. 45^{m}$, $17^{d}. 20^{h}. 45^{m}$, $23^{d}. 8^{h}. 40^{m}$, the trace was shifted to the next set of lines upwards; and on Sept. $8^{d}. 0^{h}. 15^{m}$, to the second set of lines upwards; on Sept. $6^{d}. 22^{h}$, $27^{d}. 3^{h}. 20^{m}$, $29^{d}. 8^{h}. 40^{m}$, the trace was shifted to the next set of lines downwards, implying retrograde motion of 3600°, and direct motion of 1080°.
Therefore the whole excess of retrograde motion in the month of September was 2520°.

1871. Sept. $30^{d}. 12^{h}$. The direction of the wind was S.
Oct. 31. 12. ,, ,, N.E., which implies a direct motion of 225°.
On Oct. 4. 22, $10^{d}. 2^{h}. 45^{m}$, $12^{d}. 22^{h}$, $14^{d}. 22^{h}$, $15^{d}. 22^{h}$, $22^{d}. 22^{h}$, $23^{d}. 20^{h}. 45^{m}$, $24^{d}. 9^{h}. 15^{m}$, $29^{d}. 20^{h}. 30^{m}$, the trace was shifted to the next set of lines downwards; on Oct. $13^{d}. 9^{h}. 10^{m}$, the trace was shifted to the next set of lines upwards, implying direct motion of 3240°, and retrograde motion of 360°.
Therefore the whole excess of direct motion in the month of October was 3105°.

1871. Oct. $31^{d}. 12^{h}$. The direction of the wind was N.E.
Nov. 30. 12. ,, ,, N.N.E., which implies a retrograde motion of 22½°.
On Nov. 7. 0, $13^{d}. 9^{h}. 15^{m}$, $18^{d}. 22^{h}$, $19^{d}. 10^{h}. 30^{m}$, the trace was shifted to the next set of lines downwards; on Nov. $24^{d}. 21^{h}. 15^{m}$, $26^{d}. 22^{h}$, the trace was shifted to the next set of lines upwards, implying direct motion of 1440°, and retrograde motion of 720°.
Therefore the whole excess of direct motion in the month of November was 697½°.

1871. Nov. $30^{d}. 12^{h}$. The direction of the wind was N.N.E.
Dec. 31. 12. ,, ,, S.S.W., which implies a retrograde motion of 180°
On Dec. 7. 22, the trace was shifted to the next set of lines downwards; on Dec. $22^{d}. 9^{h}$, the trace was shifted to the next set of lines upwards, implying direct motion of 360°, and retrograde motion of 360°.
Therefore the whole excess of retrograde motion in the month of December was 180°.

The whole excess of retrograde motion to the end of the year was 945°.

The revolution-counter which is attached to the vertical spindle of the vane, whose readings increase with change of direction of the wind in the order N., E., S., W., &c., or in *direct* motion, and decrease with change of direction in the order N., W., S., E., &c., or in *retrograde* motion, gave the following readings :—

	revs.
On 1870, December $31^{d}. 12^{h}$	98·90
On 1871, December $31^{d}. 12^{h}$	96·55

Implying an excess of retrograde motion, during the year, of 2·35 revolutions, or 846°.

AMOUNT OF RAIN COLLECTED IN EACH MONTH OF THE YEAR 1871.

1871, MONTH.	Monthly Amount of Rain collected in each Gauge.							
	Self-registering Gauge of Osler's Anemometer.	Second Gauge at Osler's Anemometer.	On the Roof of the Octagon Room.	On the Roof of the Library.	On the Roof of the Photographic Thermometer Shed.	Crosley's.	Cylinder partly sunk in the Ground read daily.	Cylinder partly sunk in the Ground read Monthly.
	in.	in.	in.	in.	in.	in.	in.	in.
January	1·08	1·18	1·45	1·50	2·02	1·86	2·05	2·10
February	0·60	0·75	0·85	0·82	1·04	1·04	1·09	1·10
March	0·41	0·51	0·77	0·64	1·09	1·12	1·10	1·07
April	1·95	2·01	2·51	2·36	2·84	2·74	3·03	2·96
May	0·45	0·47	0·55	0·63	0·65	0·70	0·68	0·70
June	2·11	2·33	2·56	2·61	2·87	2·82	2·95	2·95
July	1·86	1·96	2·55	2·73	3·20	3·23	3·25	3·15
August	0·69	0·69	0·76	0·70	0·85	0·84	0·86	0·80
September	3·37	3·68	3·74	4·31	4·17	3·79	4·12	3·96
October	0·95	1·07	1·16	1·23	1·35	1·30	1·37	1·50
November	0·18	0·25	0·38	0·47	0·55	0·53	0·57	0·62
December	0·61	0·72	0·92	0·89	1·12	1·11	1·23	1·30
Sums	14·26	15·62	18·20	18·89	21·75	21·08	22·30	22·21

The heights of the receiving surfaces are as follows:

	Above the Mean Level of the Sea. Ft.	In.	Above the Ground. Ft.	In.
The Two Gauges at Osler's Anemometer	205	6	50	8
Gauge on the Roof of the Octagon Room	193	2½	38	4½
Gauge on the Roof of the Library	177	2	22	4
Gauge on the Roof of the Photographic Thermometer Shed	164	10	10	0
Crosley's Gauge	156	6	1	8
The Two Cylinder Gauges partly sunk in the Ground	155	3	0	5

ROYAL OBSERVATORY, GREENWICH.

OBSERVATIONS

OF

LUMINOUS METEORS.

1871

Month and Day, 1871.		Greenwich Mean Solar Time.	Observer.	Apparent Size of Meteor in Star-Magnitudes.	Colour of Meteor.	Duration of Meteor in Seconds of Time.	Appearance and Duration of Train.	Length of Meteor's Path in Degrees.	No. for Reference.
		h m s						°	
January	26	10. 44. 50	M.	1	Yellowish	0·7	Train	10	1
March	2	7. 28. 45	M.	1	Bluish-white	0·7	Train	10	2
	,,	9. 21. 30	W.,S.,M.	1	Bluish-white	1	Train	25	3
	,,	11. 18. 55	M.	2	Bluish-white	0·7	Train	15	4
March	23	9. 51. 0	S.	> 1	. . .	2	None	..	5
April	9	9. 18. 50	M.	1	Bluish-white	0·7	Train	10	6
	,,	10. 12. 0	M.	2	Brownish	1·5	Train	15	7
April	19 } 20 }	. . .	M.	. . .	. . .	. . .	. . .	..	8
April	21	8. 44. 5	M.	Mars	Brownish	4	Splendid; 3 seconds duration.	35	9
May	9	10 27. 50	M.	2	Greenish-white	0·7	Train	7	10
May	21	10. 2. 0	M.	2	Bluish-white	2·7	Train	25	11
August	3	10. 52. 10	M.	1	Bluish-white	1	Train	15	12
August	4	9. 44. 0	M.	1·5	Bluish-white	0·7	Train	7	13
August	6	9. 54. 15	M.	1	Bluish-white	2·5	Train	25	14
	,,	9. 54. 40	M.	1·5	Bluish-white	0·7	Slight	7	15
	,,	10. 8. 50	M.	1	Bluish-white	1	Fine	10	16
	,,	10. 13. 5	M.	1	Bluish-white	1·3	Very fine	15	17
	,,	10. 16. 40	M.	2·5	Bluish-white	1	None	10	18
	,,	10. 25. 35	M.	1·5	Bluish-white	1·3	Train	15	19
	,,	10. 51. 55	M.	1·5	Bluish-white	0·7	Train	10	20
	,,	10. 55. 10	M.	1	Bluish-white	1·5	Fine	15	21
	,,	10. 57. 40	M.	1	Bluish-white	1	Train	15	22
	,,	11. 9. 45	M.	2	Bluish-white	1	Train	10	23
August	7	9. 9. 38	W.	1	Bluish-white	1	Train	30	24
	,,	9. 18. 0	M.	2	Bluish-white	1	Train	15	25
	,,	9. 22. 10	M.	1	Bluish-white	1	Train	10	26
	,,	9. 39. 15	M.	1	Bluish-white	2	Train	20	27
	,,	9. 39. 20	M.	1	Bluish-white	0·7	Train	10	28
	,,	9. 52. 5	M.	2	Bluish-white	1	Train	10	29
	,,	10. 2. 35	M.	2	Bluish-white	1	Train	10	30
	,,	10. 13. 2	N.	1	Bluish-white	1	Fine	20	31
	,,	10. 20. 10	M.	1	Bluish-white	0·7	Train	15	32
	,,	10. 29. 18	W.	3	Bluish-white	0·5	None	7	33
	,,	10. 30. 12	N.	2	Bluish-white	0·7	None	10	34
	,,	10. 30. 17	N.	4	Bluish-white	0·5	None	3	35
	,,	10. 31. 28	W.	3	Bluish-white	0·5	None	7	36
	,,	10. 32. 35	M.	1·5	Bluish-white	1	Train	15	37
	,,	10. 44. 13	W.	1	Bluish-white	1	Train	15	38
	,,	10. 47. 20	W., M.	1	Bluish-white	1	Slight	Short.	39
	,,	10. 49. 20	M.	3	Bluish-white	0·7	Train	15	40
	,,	10. 53. 50	W., M.	1	Yellowish	1·5	Brilliant	30	41
	,,	10. 55. 50	M.	1·5	Bluish-white	0·5	Train	10	42
	,,	11. 8. 30	M.	1	Bluish-white	1	Train	10	43
	,,	11. 9. 35	W., M.	2	Bluish-white	0·7	Train	10	44
	,,	11. 20. 8	W.	1	Yellowish	1·5	Fine	25	45
August	8	9. 28. 32	M.	2	Bluish-white	0·7	Train	10	46
	,,	9. 31. 33	M.	1	Bluish-white	1	None	15	47
	,,	9. 35. 33	B.	1	Bluish-white	. . .	Train	13	48

No. for Reference.	Path of Meteor through the Stars.
1	From direction of δ Ursæ Majoris shot across δ Leonis.
2	From ι Ursæ Majoris fell in direction of ε Cassiopeiæ.
3	From direction of δ Ursæ Majoris fell in direction of α Persei.
4	From near α Ursæ Majoris fell a few degrees to the left of Polaris.
5	From a point a few degrees above Polaris shot past and disappeared near α Cassiopeiæ.
6	From a point between γ Ursæ Minoris and η Draconis fell in a curved direction from right to left.
7	From direction of γ Leonis passed midway between δ and θ Leonis.
8	The sky constantly cloudy.
9	From direction of γ Draconis passed a little below Ursa Major and disappeared about 2° below θ Leonis.
10	Passed across ε and ρ Boötis.
11	From ε Cassiopeiæ passed over β Cephei.
12	From direction of γ Cassiopeiæ passed between α and β Lyræ.
13	From direction of β Aquilæ to λ Aquilæ.
14	From α Aquilæ to θ Lyræ.
15	Fell from ζ Aquilæ to the right at an inclination of about 30° from the vertical.
16	From ζ Cassiopeiæ to κ Andromedæ.
17	From φ Persei to a point between α Andromedæ and α Pegasi.
18	From α Cygni to β Cephei.
19	From direction of ε Cassiopeiæ shot across β Cephei.
20	From Polaris to β Ursæ Minoris.
21	From a point near φ Persei to β Andromedæ.
22	From δ Cygni to δ Draconis.
23	Shot from east to west across δ Cassiopeiæ.
24	From direction of α Aquilæ towards Antares.
25	From η Pegasi to α Cephei.
26	From a point near ε Cassiopeiæ to φ Persei.
27	Shot past β Pegasi to ε Delphini.
28	From ο Andromedæ to a point a little to the right of α Andromedæ.
29	From γ Cephei to 50 Cassiopeiæ.
30	From γ Cephei to φ Draconis.
31	Passed between Delphinus and ε Pegasi and across θ Aquilæ.
32	Fell from ε Delphini from left to right at an inclination of 40° from the vertical.
33	From λ Piscium towards δ Aquarii.
34	From direction of α Equulei passed just below θ Aquilæ.
35	From a point near δ Aquilæ fell between δ and ι Aquilæ.
36	From direction of ε Aquarii fell at angle of 45° to right.
37	From π Pegasi to 7 Andromedæ.
38	Passed downwards from Bradley 2329 in prolongation of line joining that star and 1 Aquilæ.
39	Appeared about the center of square of Pegasus, moving in line parallel to α and γ Pegasi (downwards).
40	From β Aquarii to θ Aquilæ.
41	From direction of γ Piscium towards λ Aquarii.
42	From α Cassiopeiæ to ο Andromedæ.
43	From λ Draconis to π Ursæ Majoris.
44	From direction of a point a few degrees to the left of Polaris to π Ursæ Majoris.
45	From direction of η towards ε Pegasi.
46	From a point between π and η Pegasi fell in direction of α Andromedæ.
47	From direction of ε Cassiopeiæ to ζ Draconis.
48	Passed between λ and κ Andromedæ to ν Andromedæ.

Month and Day, 1871.		Greenwich Mean Solar Time.	Observer.	Apparent Size of Meteor in Star-Magnitudes.	Colour of Meteor.	Duration of Meteor in Seconds of Time.	Appearance and Duration of Train.	Length of Meteor's Path in Degrees.	No. for Reference.
		h m s						°	
August	8	9. 42. 8	M.	1	Yellowish	1·5	Splendid	30	1
	"	9. 44. 28	B.	2	Bluish-white	. . .	Train	. .	2
	"	9. 51. 6	B.	2	Bluish-white	. . .	Train	. .	3
	"	9. 54. 58	M.	1	Yellowish	1·5	Brilliant	20	4
	"	10. 2. 53	M., B.	1	Yellowish	1·5	Fine	25	5
	"	10. 5. 2	B.	2	Bluish	. . .	Slight	. .	6
	"	10. 9. 32	M.	2	Bluish-white	1·3	Train	10	7
	"	10. 12. 52	B.	3	Reddish	. . .	Slight	. .	8
	"	10. 15. 48	M.	2	Bluish-white	0·7	Train	10	9
	"	10. 22. 7	M., B.	1	Yellowish	1·5	Train	15	10
	"	10. 31. 2	M.	1	Bluish-white	1	Train	15	11
	"	10. 31. 48	B.	3	Bluish-white	. . .	Train	. .	12
	"	10. 40. 58	M., B.	2	Bluish-white	1·3	Train	10	13
	"	10. 44. 58	M.	2	Bluish-white	0·7	Train	7	14
	"	10. 50. 20	M.	1·5	Bluish-white	0·5	Train	5	15
	"	10. 54. 53	M.	1	Bluish-white	1·5	Train	15	16
	"	11. 13. 45	N.	3	Bluish-white	0·5	None	9	17
	"	11. 18. 33	N.	2	White	0·5	Train	6	18
	"	11. 25. 11	N.	2	Bluish-white	0·5	None	7	19
	"	11. 30. 32	N.	2	Bluish-white	0·7	None	10	20
	"	11. 32. 15	M.	2	Bluish-white	0·7	Train	15	21
	"	11. 34. 24	N.	> 1	Bluish-white	1	Train	12	22
	"	11. 35. 55	M.	1	Bluish-white	1·3	Train	15	23
	"	11. 36. 15	M.	1	Bluish-white	1	Train	15	24
	"	11. 40. 42	M.	1	Bluish-white	1	Train	10	25
	"	11. 40. 49	N.	2	Bluish-white	0·5	None	4	26
	"	11. 45. 55	M.	1	Bluish-white	1·5	Fine	15	27
	"	11. 49. 25	M.	1·5	Bluish-white	1	Train	10	28
	"	11. 53. 42	N.	> 1	Bluish-white	1·2	Train	12	29
	"	11. 54. 22	M.	1	Bluish-white	1·3	Train	10	30
	"	11. 58. 59	N.	3	Bluish-white	0·7	None	6	31
	"	12. 1. 32	N.	2	Bluish-white	0·6	None	7	32
	"	12. 6. 14	N.	3	Bluish-white	0·4	None	5	33
	"	12. 16. 3	N.	4	White	0·4	None	5	34
	"	12. 19. 2	N.	3	White	0·6	None	6	35
	"	12. 20. 27	N.	3	White	0·5	None	6	36
	"	12. 22. 55	N.	2	Bluish-white	0·6	Train	7	37
	"	12. 27. 17	N.	2	Bluish-white	0·9	Train	10	38
	"	12. 31. 12	N.	1	Bluish-white	1	Train	10	39
	"	12. 34. 45	N.	3	White	0·5	None	12	40
August	9	9. 19. 20	M.	1	Bluish-white	0·7	Train	7	41
	"	9. 28. 40	M.	1	Bluish-white	1·5	Fine	25	42
	"	9. 37. 45	W.	4	Bluish-white	0·4	. . .	Short	43
	"	9. 37. 47	M.	2	Bluish-white	1	Train	10	44
	"	9. 42. 50	W.	3	Bluish-white	0·5	None	14	45
	"	9. 42. 58	M.	2	Bluish-white	1	Train	10	46
	"	9. 47. 28	W.	3	Bluish-white	0·5	None	7	47
	"	9. 50. 0	N.	3	Bluish-white	0·5	None	5	48
	"	9. 51. 30	W.	3	Bluish-white	0·5	None	6	49
	"	9. 54. 30	M.	1	Bluish-white	1·5	Fine	15	50
	"	9. 57. 35	M.	1	Bluish-white	1·3	Fine	15	51
	"	9. 58. 27	W.	> 1	Yellowish	1·5	Brilliant	. .	52
	"	10. 1. 10	M.	1	Bluish-white	1·5	Fine	15	53
	"	10. 2. 7	N.	2	Bluish-white	0·6	None	5	54
	"	10. 4. 37	M.	1	Bluish-white	1	Train	15	55
	"	10. 7. 36	M.	1·5	Bluish-white	0·7	Train	10	56
	"	10. 8. 1	W.	3	Bluish-white	0·5	None	6	57
	"	10. 9. 3	N.	1	Bluish-white	0·8	Fine	7	58
	"	10. 11. 25	N.	4	White	0·3	None	4	59
	"	10. 11. 35	W., M.	2	Bluish-white	1	Slight	10	60

No. for Reference.	Path of Meteor through the Stars.
1	From ε Cassiopeiæ shot through Cygnus in direction of α Lyræ.
2	From a little beyond ι Draconis passed midway between that star and δ Draconis, and disappeared near ζ Draconis.
3	From a point close to ι Ophiuchi disappeared a little to the left of α Herculis.
4	From τ Cygni to α Aquilæ.
5	From ζ Cassiopeiæ to a point midway between η and β Pegasi.
6	From 5 Vulpeculæ passed midway between ε and ζ Aquilæ.
7	From a point between ε Pegasi and α Aquarii passed a little to the left of ν Delphini.
8	From a little below δ Cassiopeiæ; path of meteor, if produced backwards, would pass midway between α and β Cassiopeiæ.
9	From λ Pegasi to υ Pegasi.
10	From μ Pegasi to θ Pegasi.
11	From ι Pegasi to α Equulei.
12	From υ Persei to β Andromedæ.
13	From υ Pegasi to α Andromedæ.
14	From e Pegasi to α Equulei.
15	From η Pegasi to 67 Pegasi.
16	From ζ Cygni to ε Pegasi.
17	From κ Pegasi disappeared near δ Equulei.
18	Directed from δ Aquilæ, disappeared near α Ophiuchi.
19	From direction of κ Andromedæ disappeared at β Pegasi.
20	From direction of α Cassiopeiæ disappeared near γ Draconis.
21	From α Cygni to β Ophiuchi.
22	From direction of β Cygni disappeared near μ Aquilæ.
23	From β Cephei to κ Andromedæ.
24	From α Andromedæ to α Pegasi.
25	From direction of κ Andromedæ to a point between η and β Pegasi.
26	Started a few degrees below β Pegasi and moved parallel to joining-line of β and μ Pegasi.
27	From a point between λ and β Andromedæ to center of square of Pegasus.
28	From κ Cassiopeiæ fell towards Lynx.
29	Fell at inclination of 45°, directed from ε Aquarii, passed about 5° below β Capricorni.
30	Shot across β and μ Pegasi in direction of ε Pegasi.
31	From β Sagittæ fell towards θ Serpentis.
32	From near Quadrans moved towards ζ Ursæ Majoris.
33	From a point between ζ Cygni and κ Pegasi, disappeared near δ Equulei.
34	From κ to ι Pegasi.
35	Directed from a point 5° below β Aquilæ, passed between δ and ι Aquilæ.
36	Fell at angle of 45° from direction of ε Aquarii, passing below β Capricorni.
37	Directed from γ Sagittæ, moved towards θ Aquilæ; centre of path opposite α Aquilæ.
38	Directed from α Aquarii to δ Aquarii.
39	Started at δ Aquilæ, passed across ι Aquilæ to a point about 5° beyond.
40	Passed between α and γ Aquarii, disappeared a few degrees above δ Aquarii.
41	From 7 Andromedæ shot in direction of β Andromedæ.
42	From ζ Cygni in direction of β Aquarii.
43	From *f* towards ρ Cygni.
44	From direction of a point midway between α and β Cassiopeiæ passed in direction of α Pegasi.
45	From direction of ε Cassiopeiæ towards δ Cephei.
46	From ζ Cassiopeiæ passed across 7 Andromedæ.
47	From direction of φ towards σ Cephei.
48	In N.E. at angle of 45°. Path parallel to joining-line of Capella and β Aurigæ, directed from γ Persei.
49	Fell from direction of ο Pegasi about 1° to the left of ω Pegasi.
50	From β Cassiopeiæ in direction of ζ Cygni.
51	From ε Cygni fell in direction of a point a little above γ Aquilæ.
52	From β Cephei across κ Cygni to a point just above α Lyræ.
53	From direction of δ Persei shot across Polaris.
54	In N.N.E. directed from γ Persei, appeared near δ Aurigæ and fell at inclination of 45°.
55	From α Persei passed near γ Camelopardali.
56	From κ Andromedæ fell near π Andromedæ.
57	Passed in line parallel to α and β Delphini from direction of ι Cygni.
58	From a point 2° to left of Capella passed about 6° above β Aurigæ.
59	Appeared about 7° above β Aurigæ and fell at angle of 45°. Path produced backwards would cut γ Pegasi.
60	Fell from ο Andromedæ in direction of π Andromedæ.

Month and Day, 1871.		Greenwich Mean Solar Time.	Observer.	Apparent Size of Meteor in Star-Magnitudes.	Colour of Meteor.	Duration of Meteor in Seconds of Time.	Appearance and Duration of Train.	Length of Meteor's Path in Degrees.	No. for Reference.
		h m s						°	
August	9	10. 11. 40	M.	2	Bluish-white	1	Train	10	1
	„	10. 15. 40	N., W., M.	2	Bluish-white	0·7	Train	12	2
	„	10. 19. 18	W., M.	> 1	Yellowish	2	Brilliant	25	3
	„	10. 21. 20	N.	2	Bluish-white	0·5	Train	5	4
	„	10. 26. 8	W., M.	2	Bluish-white	0·5	None	7	5
	„	10. 29. 10	M.	2	Bluish-white	0·7	Train	7	6
	„	10. 29. 35	W., M.	> 1	Yellowish	2	Brilliant	30	7
	„	10. 33. 37	N.	2	Bluish-white	0·4	Train	4	8
	„	10. 36. 5	N.	2	Bluish-white	0·5	Train	6	9
	„	10. 39. 0	M.	1	Yellowish	1·5	Fine	20	10
	„	10. 41. 52	N.	2	Bluish-white	1	Train	8	11
	„	10. 42. 28	N., W.	2	Bluish-white	1	None	20	12
	„	10. 42. 30	W.	1	Yellowish	1	Slight	15	13
	„	10. 42. 32	N., M.	2	Bluish-white	1	Train	5	14
	„	10. 45. 10	M.	3	Bluish-white	0·7	Train	10	15
	„	10. 46. 40	N.	2	Bluish-white	1	Train	12	16
	„	10. 52. 57	N., W., M.	> 1	Bluish-white	1·5	Fine	17	17
	„	10. 53. 44	N.	2	Bluish-white	0·8	Train	10	18
	„	10. 57. 10	N., W.	1	Bluish-white	> 1	Train	12	19
	„	10. 59. 20	M.	1	Bluish-white	1·2	Train	10	20
	„	11. 1. 20	M.	3	Bluish-white	0·7	Train	10	21
	„	11. 3. 5	N., M.	1	Bluish-white	. . .	Train	10	22
	„	11. 5. 30	M.	3	Bluish-white	0·7	Train	10	23
	„	11. 10. 22	N.	1	Bluish-white	0·8	Train	5	24
	„	11. 12. 0	M.	2	Bluish-white	0·7	Train	10	25
	„	11. 12. 50	M.	1	Bluish-white	1	Train	15	26
	„	11. 13. 25	N.	2	Bluish-white	0·7	Train	10	27
	„	11. 18. 2	N., M.	3	Bluish-white	0·4	None	4	28
	„	11. 18. 54	M.	1	Bluish-white	1·5	Train	25	29
	„	11. 21. 57	N., M.	1	Bluish-white	> 1	Train	20	30
	„	11. 22. 15	M.	1·5	Bluish-white	1	Train	10	31
	„	11. 24. 15	M.	1	Bluish-white	1·3	Train	15	32
	„	11. 29. 32	N.	1	Bluish-white	0·9	Train	12	33
	„	11. 29. 40	M.	1	Bluish-white	1	Train	15	34
	„	11. 31. 0	N.	2	Bluish-white	0·6	Train	12	35
	„	11. 34. 50	M.	1	Bluish-white	1·2	Fine	15	36
	„	11. 35. 53	N.	2	Bluish-white	0·6	None	12	37
	„	11. 38. 20	M.	1	Bluish-white	0·7	None	10	38
	„	11. 54. 18	N.	1	Bluish-white	0·9	Train	8	39
	„	11. 54. 50	M.	1	Bluish-white	1	Train	15	40
	„	12. 2. 30	N., M.	> 1	Bluish-white	> 1	Fine	30	41
	„	12. 12. 20	M.	1	Bluish-white	1	Train	15	42
	„	12. 28. 55	M.	1	Bluish-white	1	Train	20	43
	„	12. 29. 10	M.	2·5	Bluish-white	0·7	Train	10	44
	„	12. 33. 40	M.	2	Bluish-white	0·7	Train	10	45
	„	12. 36. 10	M.	2	Bluish-white	1	Train	15	46
August	10	8. 50. 24	N.	1	Bluish-white	1	Train	18	47
	„	8. 53. 55	M.	1	Bluish-white	1	Train	15	48
	„	9. 0. 2	N.	2	Bluish-white	0·7	Train	10	49
	„	9. 7. 37	N.	4	Bluish-white	0·5	None	5	50
	„	9. 18. 15	W.	3	Bluish-white	0·5	None	6	51
	„	9. 26. 5	W.	1	Bluish-white	0·5	None	7	52
	„	9. 26. 36	B.	3	Bluish	0·5	Slight	10	53
	„	9. 29. 58	W., M.	> 1	Yellowish	2	Brilliant	25	54
	„	9. 31. 27	N.	2	Bluish-white	0·8	Train	10	55
	„	9. 31. 32	N.	1	Bluish-white	1	Train	12	56
	„	9. 31. 58	W., B.	1	Bluish-white	3	Train	40	57
	„	9. 35. 10	M.	3	Bluish-white	0·7	Train	10	58
	„	9. 36. 0	B.	2	Bluish-white	1	Train	15	59
	„	9. 36. 38	W., M.	3	Bluish-white	0·5	None	7	60

No. for Reference.	Path of Meteor through the Stars.
1	From direction of γ Delphini passed between ζ and μ Cygni.
2	Fell from ι Andromedæ towards δ Andromedæ.
3	From direction of κ Cassiopeiæ shot across ζ Cygni.
4	From a point midway between Capella and ε Aurigæ moved towards β Aurigæ.
5	From direction of ρ Cassiopeiæ towards θ Andromedæ.
6	From *d* Pegasi passed over ζ Pegasi.
7	From direction of φ Andromedæ passed 1° below α Andromedæ.
8	Directed from α Persei; started 2° to the right of δ Persei and moved towards ν Persei.
9	Passed midway between β Persei and γ Andromedæ from direction of γ Persei.
10	From a point between ε and θ Pegasi to κ Aquilæ.
11	From direction of β Andromedæ passed across γ Pegasi.
12	From direction of τ Pegasi shot towards α Aquarii.
13	From direction of η Pegasi towards α Andromedæ.
14	From direction of γ Persei disappeared just before γ Andromedæ.
15	From β Cassiopeiæ to *g* Lacertæ.
16	Passed about 5° below Polaris, moving towards β Ursæ Minoris.
17	From direction of γ Cassiopeiæ towards *g* Lacertæ.
18	From near β Ursæ Minoris passed across ι Draconis.
19	Passed across ζ Draconis and between β and γ Draconis.
20	From γ Persei in direction of Capella.
21	From μ Andromedæ to π Andromedæ.
22	From 1° to the left of ο Andromedæ to a point midway between α and δ Andromedæ.
23	From a point between ε Cassiopeiæ and *x* Persei to φ Andromedæ.
24	From near *d* Camelopardali moved towards *b* Lyncis.
25	From a point between α Cassiopeiæ and κ Andromedæ fell between α and β Trianguli.
26	From near α Cassiopeiæ in direction of ζ Cygni.
27	From λ Pegasi almost to ζ Cygni.
28	Directed from γ Persei, disappeared near *c* Camelopardali.
29	From between α and δ Andromedæ passed a little above θ Piscium.
30	Passed across square of Pegasus; from α Andromedæ to a point a few degrees to left of α Pegasi.
31	From α Trianguli to η Piscium.
32	From κ Andromedæ passed 3° below β Pegasi.
33	From direction of γ Persei moved towards ε Ursæ Majoris; center of path opposite Polaris.
34	From a few degrees below β Andromedæ to a point between γ Pegasi and δ Piscium.
35	From the direction of ξ Herculis passed midway between β and γ Herculis.
36	From κ Andromedæ passed about 1° below β Pegasi.
37	From near δ Piscium at angle of about 45°. Path parallel to joining-line of α Andromedæ and α Pegasi.
38	From direction of α Persei to left at inclination of 45°.
39	Passed across δ Ursæ Majoris from direction of λ Draconis.
40	From ι Draconis to α Coronæ.
41	From between β and η Pegasi passed between α and γ Aquarii.
42	From direction of γ Persei to Polaris.
43	From a point between α Andromedæ and γ Pegasi to δ Piscium.
44	Passed from east to west across α Ceti.
45	From ζ Cassiopeiæ to κ Andromedæ.
46	From direction of ζ Cassiopeiæ to a point midway between η and β Pegasi.
47	Passed across γ Aquilæ from direction of γ Cygni.
48	From α Cassiopeiæ to β Andromedæ.
49	From a point about 10° to left and below Arcturus moved in line of continuation of joining-line of Arcturus and γ Boötis.
50	Directed from α Delphini about 10° above ε Pegasi.
51	From direction of ζ Cassiopeiæ shot towards *d* Lacertæ.
52	From direction of ε Cassiopeiæ towards ι Cephei.
53	From ν Andromedæ passed midway between θ and σ Andromedæ.
54	From ο Andromedæ shot past η Pegasi in direction of ε Pegasi.
55	From α Cephei moved towards α Lyræ.
56	Passed midway between α and β Ursæ Majoris and also between β and γ Ursæ Majoris.
57	From direction of ε Cephei to γ Delphini.
58	From κ Andromedæ passed between η and β Pegasi.
59	From α Aquarii to ι Piscium.
60	From ζ Cephei towards α Cygni.

Month and Day, 1871.		Greenwich Mean Solar Time.	Observer.	Apparent Size of Meteor in Star-Magnitudes.	Colour of Meteor.	Duration of Meteor in Seconds of Time.	Appearance and Duration of Train.	Length of Meteor's Path in Degrees.	No. for Reference.
		h m s						°	
August	10	9.37.21	M., B.	1	Bluish-white	0·7	Train	10	1
	"	9.40. 1	N.	1	Bluish-white	1	Train	15	2
	"	9.40.10	M.	3	Bluish-white	0·7	Train	5	3
	"	9.40.48	W., M.	> 1	Yellowish	3	Brilliant	40	4
	"	9.42.10	M.	1	Yellowish	1·5	Splendid	25	5
	"	9.42.56	N.	1	Bluish-white	> 1	Fine	20	6
	"	9.43.31	B.	2	Bluish-white	0·7	Train	10	7
	"	9.46.40	M.	2	Bluish-white	1	Train	10	8
	"	9.46.56	W.	1	Bluish-white	1	None	8	9
	"	9.50.27	B.	1	Bluish-white	1	Train	15	10
	"	9.50.38	W., M.	1	Bluish-white	1·5	Train	15	11
	"	9.52.20	M., B.	1	Bluish-white	1·5	Train	15	12
	"	9.52.24	N.	1	Bluish-white	> 1	Fine	20	13
	"	9.58.15	M.	4	Bluish-white	0·5	Train	7	14
	"	10. 0.37	N.	> 1	Bluish-white	1·4	Very fine	18	15
	"	10. 1.48	W., M.	1	Yellowish	1	Fine	15	16
	"	10. 3.56	N.	1	Bluish-white	0·5	Train	8	17
	"	10. 4.25	M., B.	1	Bluish-white	1	. . .	10	18
	"	10. 4.58	W., M.	1	Bluish-white	1	None	10	19
	"	10. 6.32	B.	2	Bluish-white	0·5	Train	10	20
	"	10. 9.11	W., M.	1	Bluish-white	3	Slight	> 40	21
	"	10. 9.14	N.	2	Bluish-white	> 1	Very fine	9	22
	"	10. 9.32	M.	1·5	Bluish-white	1	Train	10	23
	"	10.10.37	B.	2	Bluish-white	0·5	Slight	10	24
	"	10.11.41	N.	> 1	Bluish-white	1·5	Fine	15	25
	"	10.11.55	M., B.	1	Bluish-white	1·5	Train	15	26
	"	10.11.58	B.	2	Bluish-white	0·5	Slight	5	27
	"	10.12. 7	N.	> 1	Bluish-white	> 1	Very fine	12	28
	"	10.13.33	W., M.	3	Bluish-white	1	None	7	29
	"	10.20.40	M.	1	Bluish-white	0·7	Train	10	30
	"	10.20.46	N.	2	Bluish-white	0·8	Train	10	31
	"	10.21.53	W.	3	Bluish-white	0·5	None	4	32
	"	10.22.36	N.	> 1	Bluish-white	1·5	Very fine and enduring	..	33
	"	10.23. 8	W.	1	Yellowish	1	Fine	20	34
	"	10.23.28	W.	> 1	Yellowish	3	Brilliant	30	35
	"	10.23.31	W., B.	1	Yellowish	1	Train	10	36
	"	10.24.22	N.	3	Bluish-white	0·7	Train	7	37
	"	10.25. 2	N.	4	Bluish-white	0·4	None	5	38
	"	10.25.15	M.	3	Bluish-white	0·5	Train	7	39
	"	10.29.40	M.	3	Bluish-white	0·7	Train	7	40
	"	10.29.54	N.	3	Bluish-white	0·6	Train	7	41
	"	10.30.53	W., M.	2	Bluish-white	. . .	. . .	..	42
	"	10.34. 0	M.	2	Bluish-white	0·7	Train	7	43
	"	10.34.36	B.	3	Yellowish	1	Train	7	44
	"	10.35. 0	M.	1	Bluish-white	1	Train	10	45
	"	10.38.38	W., M.	1	Bluish-white	1	Train	15	46
	"	10.41. 8	W., M.	1	Bluish-white	1	Train	10	47
	"	10.41.40	M.	2	Bluish-white	0·7	Train	10	48
	"	10.42.25	M., B.	1	Bluish-white	1·5	Train	10	49
	"	10.45.14	N.	2	Bluish-white	0·8	Train	10	50
	"	10.47.48	W.	3	Bluish-white	0·5	None	4	51
	"	10.48.58 10.49. 4 10.49. 9	W.	2	Bluish-white	. . .	None	..	52
	"	10.50.32	N.	3	Bluish-white	0·5	Train	6	53
	"	10.50.56	M., B.	2	Bluish-white	0·5	Train	5	54
	"	10.51.15	N.	> Jupiter	Pale green	0·7	Fine	5	55
	"	10.51.30	M.	2	Bluish-white	1	Train	10	56
	"	10.52.17	N.	1	Bluish-white	0·6	Fine	15	57
	"	10.55.13	W., M.	> 1	Yellowish	2	Fine	15	58
	"	10.58.20	M.	3	Bluish-white	0·7	Train	7	59

No. for Reference.	Path of Meteor through the Stars.
1	From direction of β Aquarii to ι Aquarii.
2	Directed from ζ Aquilæ, passed between α and β Ophiuchi.
3	From κ to ο Andromedæ.
4	From direction of ζ Cygni shot across α Aquilæ.
5	From *g* Lacertæ in direction of Delphinus.
6	From β Herculis passed across α Serpentis.
7	From β Andromedæ passed midway between η and ζ Andromedæ.
8	From κ Andromedæ passed across η Pegasi.
9	From direction of λ shot towards θ Pegasi.
10	From θ Pegasi passed across β Aquarii.
11	From θ Persei towards δ Persei.
12	From *g* Lacertæ to ζ Cygni.
13	Passed across δ Cygni from direction of δ Draconis.
14	From ζ Cygni in direction of θ Pegasi.
15	Passed midway between ζ Cygni and ι Pegasi to ν Delphini.
16	From direction of *g* Lacertæ shot between κ and μ Pegasi.
17	Passed across α Cygni and between γ and δ Cygni.
18	From direction of γ Andromedæ passed across γ Pegasi.
19	From σ Cephei towards δ Cygni.
20	From α Andromedæ to γ Pegasi.
21	From β Pegasi passed across β Cassiopeiæ.
22	Directed from α Cassiopeiæ, disappeared at η Pegasi.
23	From direction of β Cassiopeiæ passed a little to left of α Cephei.
24	From a little to north of η Aquilæ passed between η Aquilæ and ζ Pegasi.
25	Fell at angle of 45° at a point 10° below α Capricorni, moving from direction of μ Aquarii.
26	From ε Pegasi moved in direction of η Capricorni.
27	From κ Aquarii to μ Aquarii.
28	From direction of α Herculis disappeared close to ε Herculis.
29	From direction of π Andromedæ towards φ Pegasi.
30	From between ε and θ Pegasi to α Aquarii.
31	Passed midway between γ and δ Cygni and about 3° below γ Lyræ.
32	From λ Andromedæ towards η Pegasi.
33	From between γ and β Lyræ to near 70 Ophiuchi.
34	From α Cassiopeiæ passed across λ Andromedæ.
35	From ι Herculis passed across η Lyræ.
36	From ο Andromedæ passed across η Pegasi.
37	Passed between μ Serpentis and δ Ophiuchi, moving from direction of γ Herculis.
38	Directed from γ Herculis, passed between μ Serpentis and δ Ophiuchi.
39	From β Cygni to ζ Aquilæ.
40	From direction of *g* Lacertæ to π Pegasi.
41	Passed between λ and ε Ophiuchi from direction of γ Herculis.
42	Low down in east: seen through trees: probably in Aries.
43	From κ and ζ Pegasi.
44	From *b* Vulpeculæ passed close to β Sagittæ.
45	From ζ Pegasi fell perpendicularly.
46	From direction of η Cassiopeiæ towards *g* Lacertæ.
47	From direction of φ Andromedæ passed across δ Andromedæ.
48	From μ Andromedæ in direction of α Persei.
49	From θ Piscium in direction of ι Aquarii.
50	From ε Pegasi to α Aquarii.
51	From τ towards α Pegasi.
52	All passed in a nearly identical path in continuation of line joining γ Andromedæ and α Trianguli.
53	From a point midway between 12 and 7 Aquilæ, fell parallel to line joining 7 and 1 Aquilæ.
54	From μ Andromedæ to δ Andromedæ.
55	Pear-shaped: from 12° below and to right of Antares, fell perpendicularly.
56	From κ Andromedæ passed about 1° below β Pegasi.
57	Directed from α Herculis, passed close to β Libræ.
58	From B Camelopardali passed 1° below 50 Cassiopeiæ.
59	From direction of ε Cassiopeiæ passed across γ Andromedæ.

Month and Day, 1871.	Greenwich Mean Solar Time.	Observer.	Apparent Size of Meteor in Star-Magnitudes.	Colour of Meteor.	Duration of Meteor in Seconds of Time.	Appearance and Duration of Train.	Length of Meteor's Path in Degrees.	No. for Reference.
	h m s						°	
August 10	10. 58. 27	N.	4	Bluish-white	0·5	None	6	1
"	10. 59. 49	N.	2	Bluish-white	0·6	Train	8	2
"	11. 0. 28	W., M., B.	> 1	Bluish-white	1	Train	12	3
"	11. 1. 0	M., B.	3	Bluish-white	0·5	Train	7	4
"	11. 1. 15	M., B.	1	Bluish-white	1·5	Fine	15	5
"	11. 1. 50	M.	2	Bluish-white	0·5	Train	7	6
"	11. 2. 8	N.	4	Bluish-white	0·5	Train	..	7
"	11. 3. 38	W.	1	Yellowish	1	Train	4	8
" "	11. 4. 19 } 11. 4. 23 }	W., B.	> 1	Bluish	. . .	Train	10	9
"	11. 6. 48	W.	3	Bluish-white	1	None	10	10
"	11. 7. 15	M.	1	Bluish-white	1·5	Train	10	11
"	11. 8. 29	B.	2	Bluish-white	..	Slight	Short	12
"	11. 8. 49	N.	3	Bluish-white	0·5	Train	8	13
"	11. 9. 13	W.	3	Bluish-white	1	None	10	14
"	11. 10. 28	W.	3	Bluish-white	1	None	10	15
"	11. 14. 18	W., M.	2	Bluish-white	1	None	..	16
"	11. 15. 10	M., B.	3	Bluish-white	0·7	Train	10	17
"	11. 15. 27	N.	2	Bluish-white	0·7	Train	10	18
"	11. 15. 55	M.	3	Bluish-white	0·7	Train	7	19
"	11. 16. 16	W., M., B.	3	Bluish-white	..	Train	15	20
"	11. 16. 27	N.	2	Bluish-white	0·6	Train	8	21
"	11. 17. 1	B.	2	Bluish-white	..	Slight	7	22
"	11. 19. 4	N.	1	Bluish-white	0·6	Train	12	23
"	11. 20. 13	W., M.	1	Bluish-white	1	Train	10	24
"	11. 20. 25	M.	1	Bluish-white	1	Train	10	25
"	11. 20. 55	M.	1·5	Bluish-white	0·7	Train	10	26
"	11. 23. 14	N.	1	Bluish-white	0·8	Train	10	27
"	11. 23. 34	N.	1	Bluish-white	0·7	Train	9	28
"	11. 24. 25	M.	2	Bluish-white	0·7	Train	10	29
"	11. 25. 0	B.	2	Yellowish	1	Train	10	30
"	11. 26. 48	W., B.	1	Bluish-white	1·5	Train	20	31
"	11. 27. 30	M.	1	Bluish-white	1·3	Train	15	32
"	11. 27. 40	W., M.	1	Bluish-white	1	Train	10	33
"	11. 27. 53	W.	1	Yellowish	1	Fine	7	34
"	11. 29. 31	W., B.	2	Bluish-white	1·5	. . .	15	35
"	11. 30. 3	M.	3	Bluish-white	0·5	Train	7	36
"	11. 31. 29	N.	1	Bluish-white	1	Fine	12	37
"	11. 31. 33	N.	2	Bluish-white	0·5	Train	5	38
"	11. 31. 40	M.	1	Bluish-white	1	Train	15	39
"	11. 31. 47	M.	3	Bluish-white	0·5	Train	7	40
"	11. 34. 40	M.	1	Bluish-white	1	Train	10	41
"	11. 39. 59	N.	3	. . .	0·6	Train	10	42
"	11. 41. 14	N.	2	Bluish-white	1·5	Train	12	43
"	11. 45. 45	W., M., B.	1	Bluish-white	0·8	Train	10	44
"	11. 46. 48	W.	3	Bluish-white	0·5	None	7	45
"	11. 47. 44	N.	3	Bluish-white	0·8	Train	6	46
"	11. 47. 48	W.	3	Bluish-white	..	None	Short	47
"	11. 52. 24	N.	1	Bluish-white	1	Train	15	48
"	11. 54. 7	N.	2	Bluish-white	0·5	Train	10	49
"	11. 56. 47	N.	2	Bluish-white	0·6	Train	10	50
"	11. 58. 0	M.	3	Bluish-white	0·7	Train	10	51
"	12. 3. 10	M., B.	2	Bluish-white	0·7	Train	..	52
"	12. 8. 40	M., B.	1	Bluish-white	1·3	Train	20	53
"	12. 10. 4	B.	1	Bluish-white	1	Train	10	54
"	12. 14. 40	M., B.	1	Greenish	0·7	Fine	7	55
"	12. 15. 31	M., B.	1	Bluish-white	0·7	Train	12	56
"	12. 17. 0	M.	> 1	Bluish-white	1	Train	10	57
"	12. 19. 31	B.	2	Bluish-white	0·5	Train	7	58
"	12. 20. 0	M.	3	Bluish-white	0·7	Train	10	59
"	12. 25. 28	B.	3	Bluish-white	0·5	Train	7	60

Number for Reference.	Path of Meteor through the Stars.
1	Fell nearly parallel to joining-line of 7 and 1 Aquilæ from direction of δ Aquilæ.
2	From direction of μ Ophiuchi passed midway between Antares and θ Ophiuchi.
3	From ι Cassiopeiæ towards *b* Camelopardali.
4	From θ Cassiopeiæ in direction of λ Andromedæ.
5	Passed across ζ Pegasi in direction of α Equulei.
6	From direction of β Cassiopeiæ in direction of α Cygni.
7	From a point near λ Aquilæ fell nearly perpendicularly, passing about 4° to the left of 3 Aquilæ.
8	From direction of γ Persei shot towards *c* Persei.
9	Two meteors in constellation of Capricornus, passing down towards horizon at angle of 45° to right.
10	From direction of ι Andromedæ towards μ Pegasi.
11	From 50 Cassiopeiæ passed near γ Cephei.
12	Passed across φ Piscium towards ζ Andromedæ.
13	Passed across β and μ Pegasi.
14	From direction of ι Andromedæ towards μ Pegasi.
15	From β towards ζ Andromedæ.
16	Passed 1° below φ and υ Persei parallel to line joining those stars.
17	From *m* Camelopardali shot a little to the left of 50 Cassiopeiæ.
18	Directed from α Lyræ, passed between δ and α Herculis.
19	From δ Ursæ Minoris passed across β Ursæ Minoris.
20	From H Camelopardali towards Capella.
21	Fell perpendicularly between α Coronæ and β Herculis across γ Serpentis.
22	From α Cephei towards α Cygni.
23	Passed midway between γ and ζ Aquilæ and across δ Aquilæ.
24	Prom β Pegasi to 3° to the right of α Andromedæ.
25	From α Persei to ε Persei.
26	From κ Andromedæ passed across β Pegasi.
27	Across β and γ Ursæ Minoris towards ι Draconis.
28	From δ Ursæ Majoris moved towards 12 Canum Venaticorum.
29	From ο Andromedæ passed near μ Pegasi.
30	From a little beyond φ Persei passed across that star, and disappeared close to δ Cassiopeiæ.
31	From ι Andromedæ passed across β Pegasi.
32	From direction of α Pegasi to α Capricorni.
33	From γ Andromedæ in direction of Aries.
34	From μ Persei towards Capella.
35	Passed midway between *c*, *q*, and *g* Lacertæ, path parallel to line joining two latter stars.
36	From ν Andromedæ to α Andromedæ.
37	From direction of θ Draconis to α Coronæ.
38	From ι Draconis towards μ Boötis.
39	From direction of ζ Cygni to θ Aquilæ.
40	From direction of η Pegasi passed between ξ and ζ Pegasi.
41	From direction of η Pegasi passed near α Equulei.
42	10° below γ Pegasi and across ο Pegasi and ρ Pegasi.
43	From direction of η Pegasi passed between α and ξ Pegasi.
44	From α Herculis in direction of η Serpentis.
45	From direction of μ Persei towards Pleiades.
46	Disappeared at α Pegasi from direction of ι Pegasi.
47	From β Persei in direction of Pleiades.
48	From η Cygni passed a few degrees above α Lyræ to γ Draconis.
49	Across ε Cygni to Sagitta.
50	Across υ to β Andromedæ.
51	From θ Piscium in direction of θ Aquarii.
52	From between η and β Pegasi fell in direction of ζ Pegasi.
53	From direction of α Andromedæ fell in direction of ι Aquarii.
54	From δ Andromedæ passed close to φ Piscium.
55	From direction of η Persei to a point midway between γ Trianguli and Musca.
56	From direction of α Cassiopeiæ passed between λ and 7 Andromedæ.
57	From ζ Cassiopeiæ passed across κ Andromedæ.
58	From δ Persei passed a little to left of ϵ Persei.
59	From ο Andromedæ passed near ι Pegasi.
60	Passed close to δ Draconis, moving towards φ Draconis.

Month and Day, 1871.	Greenwich Mean Solar Time.	Observer.	Apparent Size of Meteor in Star-Magnitudes.	Colour of Meteor.	Duration of Meteor in Seconds of Time.	Appearance and Duration of Train.	Length of Meteor's Path in Degrees.	No. for Reference.
	h m s						°	
August 10	12. 25. 43	M.	1·5	Bluish-white	0·7	Train	10	1
„	12. 29. 10	M.	1	Bluish-white	0·5	Train	7	2
„	12. 29. 10	M.	1	Bluish-white	0·5	Train	10	3
„	12. 33. 45	M.	1	Bluish-white	0·7	Train	10	4
„	12. 36. 20	M.	3	Bluish-white	0·5	Train	7	5
„	12. 36. 40	M.	1	Bluish-white	0·7	Train	10	6
„	12. 41. 5	M.	2	Bluish-white	0·7	Train	7	7
„	12. 41. 7	M.	2	Bluish-white	0·5	Train	10	8
„	12. 44. 50	M.	2	Bluish-white	0·7	Train	10	9
„	12. 47. 30	M., B.	2	Bluish-white	0·4	Train	5	10
„	12. 54. 10	M.	3	Bluish-white	0·5	Train	7	11
„	12. 58. 24	N.	1	Bluish-white	1	Fine	20	12
„	12. 59. 16	M., B.	1	Bluish	1	Train	10	13
„	13. 0. 30	M., B.	1	Bluish-white	1	Train	10	14
„	13. 4. 30	M.	2	Bluish-white	0·5	Train	7	15
„	13. 6. 8	M.	2	Bluish-white	0·7	Train	10	16
„	13. 7. 52	M.	2	Bluish-white	0·5	Train	7	17
„	13. 11. 35	M.	1	Bluish-white	0·7	Train	10	18
„	13. 15. 13	M.	1	Bluish-white	0·7	Train	10	19
„	13. 21. 15	M.	1	Bluish-white	1	Train	15	20
„	13. 26. 10	M.	1	Bluish-white	0·7	Train	15	21
„	13. 26. 10	M.	2	Bluish-white	0·5	Train	7	22
„	13. 26. 45	M.	> 1	Bluish-white	1·2	Train	15	23
„	13. 46. 30	M.	2	Bluish	0·5	. . .	7	24
„	13. 47. 40	M., B.	1	Bluish-white	1	. . .	15	25
„	13. 49. 10	M., B.	> 1	Bluish-white	1	Train	15	26
„	13. 49. 45	M., B.	> 1	Bluish-white	1	Train	15	27
„	14. 13. 40	M.	2	Bluish-white	0·5	Train	7	28
„	14. 13. 40	M.	2	Bluish-white	0·5	Train	7	29
„	14. 19. 10	M.	1	Bluish-white	0·7	Train	10	30
„	14. 21. 30	M.	2	Bluish-white	0·7	Train	10	31
„	14. 24. 30	M.	1	Bluish-white	1	Train	15	32
„	14. 28. 37	M.	1	Bluish-white	0·7	Train	10	33
„	14. 32. 0	M.	1	Bluish-white	0·7	Train	10	34
„	14. 34. 40	M.	1	Bluish-white	1	Train	15	35
„	14. 37. 51	M.	> 1	Bluish-white	0·7	Train	10	36
„	14. 43. 20	M.	1	Bluish-white	1	Train	12	37
„	14. 45. 20	M.	1	Bluish-white	1	Train	15	38
„	14. 49. 40	M.	2	Bluish-white	0·7	Train	10	39
„	14. 58. 5	M.	> 1	Bluish-white	0·7	Train	10	40
August 11	8. 59. 32	W.	1	Bluish-white	1	Train	10	41
„	9. 5. 33	M.	2	Bluish-white	1	Train	10	42
„	9. 13. 30	M.	1	Bluish-white	1·2	Fine	15	43
„	9. 14. 58	M.	2	Bluish-white	0·8	Train	10	44
„	9. 15. 0	N.	2	Bluish-white	0·8	Train	10	45
„	9. 15. 19	N.	1	Bluish-white	1	Train	..	46
„	9. 18. 43	M.	3	Bluish-white	0·5	Train	7	47
„	9. 22. 28	M.	2·5	Bluish-white	2·3	Train	17	48
„	9. 29. 43	M.	1	Bluish-white	1·2	Fine	15	49
„	9. 29. 46	M.	> Venus	Bluish-white	..	. . .	..	50
„	9. 30. 13	M.	1	Bluish-white	0·7	Train	10	51
„	9. 34. 18	M.	2	Bluish-white	0·7	Train	10	52
„	9. 39. 13	M.	1	Bluish-white	0·7	Train	10	53
„	9. 39. 28	M.	2	Bluish-white	0·7	Train	10	54
„	9. 44. 33	M.	2	Bluish-white	0·7	Train	10	55
„	9. 46. 7	W.	2	Bluish-white	0·5	None	7	56
„	9. 47. 43	M.	1	Bluish-white	0·7	Train	10	57
„	9. 48. 32	W., M.	1	Bluish-white	1·5	Train	10	58
„	9. 49. 22	W., M.	> 1	Yellowish	1·5	Brilliant	15	59
„	9. 50. 33	M.	1	Bluish-white	0·7	Train	10	60

Number for Reference.	Path of Meteor through the Stars.
1	From θ Piscium moved in direction of q Piscium.
2	From β Andromedæ in direction of α Arietis.
3	From direction of γ Persei passed across α Arietis.
4	From α Arietis fell to right at angle of 45°.
5	From κ Pegasi towards ζ Pegasi.
6	From near θ Pegasi moved in direction of ι Aquarii.
7	Directed from υ Pegasi, passed 2° below α Pegasi.
8	From near ε Pegasi to α Aquarii.
9	Directed from η Persei, passed across γ Andromedæ.
10	From γ Andromedæ to β Trianguli.
11	From a point about 2° below γ Pegasi fell in direction of ι Ceti.
12	From direction of α Lyræ fell across α Herculis.
13	Directed from β Camelopardali, passed between Capella and β Aurigæ.
14	From direction of α Persei moved towards α Ursæ Majoris.
15	Directed from β Aurigæ, moved towards α Cephei.
16	From a point between α Andromedæ and γ Pegasi to β Trianguli.
17	Passed across μ Pegasi in direction of ε Pegasi.
18	From direction of α Persei passed across β Cephei
19	From direction of α Cephei passed between α and ζ Aquilæ.
20	Started about 2° below α Pegasi, passed across η Equulei in direction of θ Aquarii.
21	From direction of α Cassiopeiæ passed across α Arietis.
22	From direction of α Cassiopeiæ fell towards Lynx.
23	From a point 2° below γ Pegasi fell in direction of η Eridani.
24	From η to ε Pegasi.
25	From direction of β Cassiopeiæ passed between ζ and ε Cygni.
26	From β Cygni to δ Aquilæ.
27	From direction of ζ Cygni fell vertically to horizon.
28	From γ Cygni in direction of β Lyræ.
29	From a point between β and η Cygni fell parallel to preceding meteor.
30	From α Herculis fell perpendicularly towards horizon.
31	From κ Andromedæ passed across β Pegasi.
32	From direction of γ Cassiopeiæ passed across γ Cygni.
33	From Polaris moved in direction of ι Draconis.
34	From ε Cygni passed across α Aquilæ.
35	From a point midway between α Andromedæ and γ Pegasi to γ Piscium.
36	From δ Cygni passed across β Cygni.
37	Passed across α Pegasi to θ Piscium.
38	From direction of β Cassiopeiæ passed about 2° to the right of η Pegasi.
39	From direction of β Cassiopeiæ to γ Cygni.
40	From direction of α Cassiopeiæ passed about 2° to the left of γ Pegasi.
41	Fell from direction of ε Cassiopeiæ towards c Persei.
42	From direction of α Cassiopeiæ passed across κ Andromedæ.
43	From ι Cephei passed near α Cygni.
44	From direction of β Cassiopeiæ passed in direction of η Pegasi.
45	Passed between α and β Cephei from direction of Perseus.
46	From Cassiopeia passed below α Cephei.
47	From ι Cephei in direction of κ Cygni.
48	From direction of Lacerta passed across η Cephei.
49	From direction of β Cassiopeiæ passed into Delphinus.
50	Very low down, immediately beneath γ Andromedæ.
51	From ο Andromedæ in direction of β Andromedæ.
52	From α Cassiopeiæ passed about 1° above ο Andromedæ.
53	From Delphinus passed between β and θ Aquilæ.
54	From direction of ι Pegasi passed across ε Pegasi.
55	From direction of ο Andromedæ passed about 2° below α Pegasi.
56	From π^2 towards γ Cygni.
57	From a point midway between ε and θ Pegasi passed across β Aquarii.
58	From direction of φ Andromedæ passed about 2° below α Andromedæ.
59	From direction of ζ Cassiopeiæ passed between κ and ι Pegasi.
60	From α Aquarii in direction of ι Aquarii.

Month and Day, 1871.	Greenwich Mean Solar Time.	Observer.	Apparent Size of Meteor in Star-Magnitudes.	Colour of Meteor.	Duration of Meteor in Seconds of Time.	Appearance and Duration of Train.	Length of Meteor's Path in Degrees.	No. for Reference.
	h m s						°	
August 11	9. 51. 37	N.	> 1	Bluish-white	1·2	Fine	..	1
„	9. 53. 12	W., M.	> 1	Yellowish	2	Brilliant	30	2
„	9. 54. 37	W., M.	3	Bluish-white	1	None	10	3
„	9. 58. 52	W., M.	1 × 2	Yellowish	2	Fine	12	4
„	10. 0. 19	W., M.	> 1	Bluish-white	1·5	Fine	10	5
„	10. 1. 52	W.	1	Bluish-white	1·5	None	15	6
„	10. 2. 23	M.	2	Bluish-white	0·7	Train	10	7
„	10. 2. 26	M.	3	Bluish-white	0·5	Train	7	8
„	10. 3. 33	M.	1	Bluish-white	0·7	Train	10	9
„	10. 4. 33	W., M.	2	Bluish-white	1	None	5	10
„	10. 6. 53	M.	1	Bluish-white	0·7	Train	10	11
„	10. 7. 49	W., M.	1	Bluish-white	2	Fine	15	12
„	10. 9. 33	M.	2	Bluish-white	0·7	Train	10	13
„	10. 12. 7	W.	2	Bluish-white	1	None	20	14
„	10. 12. 33	M.	1	Bluish-white	0·5	Train	7	15
„	10. 14. 1	W., M.	> 1	Bluish-white	1·5	Train	14	16
„	10. 15. 9	N., W.	> Jupiter	Bluish-white	1·3	Fine, 3 secs. duratn.	15	17
„	10. 16. 23	M.	3	Bluish-white	0·7	Train	10	18
„	10. 21. 24	W., M.	3	Bluish-white	0·5	None	5	19
„	10. 21. 28	M.	2	Bluish-white	0·7	Train	10	20
„	10. 21. 53	M.	3	Bluish-white	0·7	Train	7	21
„	10. 23. 7	W.	3	Bluish-white	0·5	None	7	22
„	10. 26. 10	M.	2	Bluish-white	0·7	Train	7	23
„	10. 28. 13	M.	1	Greenish	1	Fine	10	24
„	10. 29. 9	W., M.	1	Bluish-white	1·5	None	6	25
„	10. 32. 42	W., M.	3	Bluish-white	1	None	7	26
„	10. 35. 23	M.	2	Bluish-white	2·5	Train	15	27
„	10. 36. 7	W., M.	1	Bluish-white	1·5	Slight	15	28
„	10. 38. 7	W.	1	Bluish-white	1·5	Slight	17	29
„	10. 42. 33	M.	3	Bluish-white	0·7	Train	7	30
„	10. 42. 47	W., M.	> 1	Yellowish	2	Fine	14	31
„	10. 45. 12	W., M.	2	Bluish-white	1	None	16	32
„	10. 45. 53	M.	2	Bluish-white	0·7	Train	10	33
„	10. 51. 32	W., M.	1	Bluish-white	1	Train	10	34
„	10. 52. 28	M.	1	Bluish-white	0·7	Train	10	35
„	11. 0. 48	M.	1	Bluish-white	0·7	Train	10	36
„	11. 6. 18	M.	2	Bluish-white	0·7	Train	7	37
„	11. 14. 59	N.	> 1	Bluish-white	> 1	Fine	20	38
„	11. 24. 15	N., M.	1	Bluish-white	1	Train	15	39
„	11. 26. 23	M.	1	Yellowish	1	Fine	10	40
„	11. 35. 45	M.	> 1	Bluish-white	1·5	Magnificent	10	41
„	11. 46. 56	M.	> 1	Greenish	1·3	Splendid	10	42
„	11. 48. 45	N.	1	Bluish-white	1	Fine	15	43
„	11. 48. 50	N.	3	Bluish-white	0·5	Train	10	44
„	11. 49. 31	M.	2	Bluish-white	0·7	Train	10	45
„	11. 51. 10	M.	1	Bluish-white	1	Train	10	46
„	11. 53. 13	M.	1	Bluish-white	1	Train	10	47
„	11. 54. 35	N.	2	Bluish-white	0·7	Train	10	48
„	11. 57. 15	N.	4	Bluish-white	0·4	None	5	49
„	11. 57. 26	M.	1	Bluish-white	0·5	Train	7	50
„	11. 59. 36	M.	1	Bluish-white	1	Train	12	51
„	12. 4. 4	N.	2	Bluish-white	0·8	Train	10	52
„	12. 4. 23	M.	3	Bluish-white	1	Train	15	53
„	12. 7. 40	N.	1	Bluish-white	0·7	Train	12	54
„	12. 7. 57	N.	2	Bluish-white	0·5	Train	..	55
„	12. 8. 35	N.	1	Bluish-white	0·8	Train	16	56
„	12. 15. 18	N.	3	Bluish-white	0·5	Train	10	57
„	12. 18. 40	N.	1	Bluish-white	1	Fine	20	58
„	12. 21. 33	N.	1	Bluish-white	0·6	Train	15	59
„	12. 24. 45	N.	2	Bluish-white	0·5	Train	8	60
„	12. 26. 15	N.	1	Bluish-white	0·8	Fine	14	61

Number for Reference.	Path of Meteor through the Stars.
1	Across α to γ Ursæ Majoris.
2	From direction of α Cephei towards β Cygni.
3	From θ Cygni passed midway between β and γ Lyræ.
4	From direction of θ Cassiopeiæ passed towards τ Pegasi.
5	From B Camelopardali passed across ε Cassiopeiæ.
6	From ζ Pegasi towards α Aquarii.
7	From a point between α and γ Cassiopeiæ passed to κ Andromedæ.
8	From α to γ Cephei.
9	From δ Cassiopeiæ passed midway between β and γ Andromedæ.
10	Passed downwards to right at angle of 45° from γ Andromedæ.
11	From direction of ε Cassiopeiæ passed in direction of ο Cygni.
12	From ε Cephei towards γ Cygni.
13	From midway between α and β Cephei passed near α Cygni.
14	From direction of γ Cygni shot across δ Sagittæ.
15	From 50 Cassiopeiæ fell in direction of δ Aurigæ.
16	From about 3° above δ Cygni towards ζ Aquilæ.
17	Passed about 3° above *b* Lyncis from direction of *c* Camelopardali.
18	From direction of Lacerta passed across ζ Pegasi in direction of ε Pegasi.
19	From direction of *g* Lacertæ passed across κ Andromedæ.
20	From between α and γ Cygni passed across β Cephei.
21	From γ Cephei to ζ Draconis.
22	Passed about 3° above α Andromedæ towards δ Andromedæ.
23	From φ Persei passed near β Andromedæ.
24	From direction of β Camelopardali passed across γ Cephei.
25	From φ Draconis passed in direction of 50 Cassiopeiæ.
26	From direction of μ Andromedæ passed across φ Persei in direction of η Persei.
27	From center of square of Pegasus passed across δ Andromedæ.
28	From κ Andromedæ passed close to β Andromedæ.
29	From a point about midway between β and η Pegasi towards ε Pegasi.
30	From direction of η Pegasi passed between δ and ε Cassiopeiæ.
31	From direction of φ Persei passed across μ Andromedæ.
32	Directed from δ Cephei, passed across κ in direction of ε Pegasi.
33	From near α Pegasi passed in direction of λ Aquarii.
34	From β Andromedæ directed towards δ Piscium.
35	From θ Piscium in direction of ι Aquarii.
36	From direction of ε Cassiopeiæ passed across δ Persei.
37	From γ Cephei fell vertically towards horizon.
38	Across δ Ursæ Majoris to 12 Canum Venaticorum.
39	From direction of θ Draconis to δ Coronæ.
40	From ε Ursæ Majoris fell to left at inclination of 45°.
41	From direction of κ Andromedæ passed about 1° to the right of β Andromedæ.
42	From direction of φ Persei passed between μ and β Andromedæ to δ Andromedæ.
43	Across ζ to β Herculis.
44	From direction of θ Draconis to δ Coronæ.
45	From between η and β Pegasi to ε Pegasi.
46	From α Pegasi in direction of γ Pegasi.
47	From κ Pegasi to θ Aquilæ.
48	From α Draconis passed across θ Boötis.
49	From 50 Cassiopeiæ towards γ Cephei.
50	From direction of α Persei passed about 7° below Polaris.
51	From a point 2° below α Andromedæ to θ Piscium.
52	Passed between β and γ Herculis from direction of ζ Herculis.
53	From β Persei passed about 2° below α Arietis.
54	Passed between γ and ε Cygni to a point near 13 Vulpeculæ.
55	Passed between α and 72 Ophiuchi to β Ophiuchi.
56	From β Cygni to ζ Aquilæ.
57	Across *m* Herculis towards θ Serpentis.
58	Across η and ζ Pegasi.
59	From direction of β Cassiopeiæ to α Cygni.
60	Across γ Cephei to Polaris.
61	Passed between γ and ε Cygni to α Sagittæ.

Month and Day, 1871.		Greenwich Mean Solar Time.	Observer.	Apparent Size of Meteor in Star-Magnitudes.	Colour of Meteor.	Duration of Meteor in Seconds of Time.	Appearance and Duration of Train.	Length of Meteor's Path in Degrees.	No. for Reference.
		h m s						°	
August	11	12. 29. 25	N.	1	Bluish-white	1·2	Very fine	..	1
	„	12. 31. 55	N.	3	Bluish-white	0·5	Train	8	2
	„	12. 35. 50	N.	> 1	Bluish-white	1	Train	15	3
	„	12. 43. 13	N.	2	Bluish-white	0·7	Train	..	4
	„	12. 43. 53	N.	1	Bluish-white	0·7	Train	10	5
	„	12. 50. 15	N.	1	Bluish-white	0·8	Train	12	6
	„	12. 52. 50	N.	2	Bluish-white	0·6	Train	..	7
	„	12. 59. 18	N.	2	Bluish-white	0·7	Train	..	8
	„	13. 9. 40	N.	1	Bluish-white	0·9	Fine	15	9
	„	13. 16. 15	N.	3	Bluish-white	0·6	Train	10	10
	„	13. 28. 58	N.	1	Bluish-white	1	Train	15	11
August	12	9. 12. 8	M.	3	Bluish-white	0·7	Train	7	12
	„	9. 19. 35	B.	3	Bluish-white	0·5	Train	3	13
	„	9. 29. 25	M., B.	2	Bluish-white	1·3	Fine	10	14
	„	9. 31. 9	B.	2	Bluish-white	0·7	Slight	5	15
	„	9. 43. 50	M., B.	2	Bluish-white	1	Fine	15	16
	„	9. 44. 10	B.	4	Bluish-white	0·5	Train	Short	17
	„	9. 47. 15	M.	> 1	Bluish-white	0·7	Train	10	18
	„	9. 57. 0	M., B.	> 1	Bluish-white	1	Fine	7	19
	„	9. 58. 49	B.	2	Bluish-white	1	Train	10	20
	„	10. 0. 50	M.	1	Bluish-white	2·5	Magnificent	15	21
	„	10. 1. 25	M.	1	Bluish-white	0·7	Train	7	22
	„	10. 1. 47	M.	2	Bluish-white	0·7	Train	10	23
	„	10. 7. 25	M.	2	Bluish-white	0·7	Train	10	24
	„	10. 9. 20	M., B.	> 1	Bluish-white	0·7	Train	10	25
	„	10. 12. 30	M.	1	Bluish-white	2	Fine	10	26
	„	10. 12. 45	M.	3	Bluish-white	0·7	Train	10	27
	„	10. 15. 10	N.	3	Bluish-white	0·4	None	..	28
	„	10. 15. 18	B.	3	Bluish-white	0·5	Train	7	29
	„	10. 20. 58	M., B.	4	Bluish-white	0·7	Train	7	30
	„	10. 23. 30	M., B.	> Jupiter	Bluish-white	1·7	Very fine	10	31
	„	10. 27. 18	M.	3	Bluish-white	0·7	Train	7	32
	„	10. 34. 25	N.	3	Bluish-white	. . .	None	4	33
	„	10. 35. 25	N., M., B.	1	Bluish-white	0·7	Train	10	34
	„	10. 35. 58	N.	2	Bluish-white	0·6	Train	9	35
	„	10. 39. 55	N.	4	Bluish-white	0·4	None	5	36
	„	10. 42. 30	M.	1	Bluish-white	0·5	Fine	10	37
	„	10. 45. 16	N., M., B.	1	Bluish-white	2	Train	..	38
	„	10. 46. 10	N., M., B.	1	Pale green	2	Very fine and enduring. 14 secs.	..	39
	„	10. 48. 45	M.	3	Bluish-white	0·7	Train	7	40
	„	10. 54. 48	N., M.	2	Bluish-white	0·5	Train	8	41
	„	10. 56. 53	N.	4	Bluish-white	0·5	None	10	42
	„	11. 7. 15	M.	> 1	Greenish	2	Very fine	15	43
	„	11. 18. 50	M.	2	Bluish-white	0·7	Train	7	44
	„	11. 19. 10	N.	2	Bluish-white	0·6	Train	..	45
	„	11. 19. 25	N.	2	Bluish-white	0·6	Train	..	46
	„	11. 23. 5	M.	1	Bluish-white	1	Train	10	47
	„	11. 37. 20	N.	1	Bluish-white	0·7	Fine	..	48
	„	11. 38. 20	N.	2	Bluish-white	0·8	Fine	10	49
	„	11. 50. 45	N.	2	Bluish-white	0·6	Train	7	50
	„	11. 53. 58	N.	2	Bluish-white	0·5	Train	6	51
	„	12. 5. 37	N.	3	Bluish-white	0·5	Train	8	52
	„	12. 8. 25	N.	3	Bluish-white	0·4	Train	5	53
	„	12. 11. 55	N.	2	Bluish-white	0·6	Train	10	54
August	13	9. 2. 56	N., M.	2	Bluish-white	0·8	Train	12	55
	„	9. 18. 15	B.	3	Bluish-white	0·5	Slight	..	56
	„	9. 20. 25	M.	3	Bluish-white	0·7	Train	10	57
	„	9. 24. 26	B.	1	Bluish-white	1	Train	7	58
	„	9. 26. 33	N.	3	Bluish-white	0·5	Train	..	59

Number for Reference.	Path of Meteor through the Stars.
1	From ε Cygni to γ Aquilæ.
2	From ι Draconis across σ Herculis.
3	From σ Herculis passed across ε Coronæ.
4	Passed between κ Pegasi and ζ Cygni to a point between Delphinus and ε Pegasi.
5	Disappeared at η Pegasi, moving from direction of ι Andromedæ.
6	From direction of γ Pegasi passed across λ Aquarii.
7	From direction of η Pegasi passed between ε Pegasi and μ Delphini.
8	From direction of ε Cygni to γ Sagittæ.
9	From direction of θ Herculis passed to a point close to α Ophiuchi.
10	From direction of ι Draconis passed close to β Boötis.
11	From direction of F Herculis passed across β Ophiuchi.
12	From ζ Cassiopeiæ in direction of β Andromedæ.
13	Passed across γ to θ Persei.
14	From ο Cygni passed across α Cephei.
15	Passed close to *h* in direction of *m* Lacertæ.
16	From direction of ε Cassiopeiæ passed across ν Cygni.
17	Passed midway between μ Cygni and κ Pegasi.
18	From δ Andromedæ in direction of θ Piscium.
19	Passed midway between α and ξ Pegasi in direction of θ Piscium.
20	From a little beyond η Pegasi passed close by that star towards ε Pegasi.
21	From β Pegasi passed across θ Pegasi.
22	From ε Pegasi fell between α and β Aquarii.
23	From direction of δ Cephei passed across κ Pegasi.
24	From 7 Andromedæ passed across γ Cassiopeiæ.
25	From direction of δ Ursæ Minoris passed across δ Draconis.
26	From τ Cygni in direction of 7 Andromedæ.
27	From δ Draconis passed in direction of ρ Cygni.
28	Across β and ρ Persei.
29	From direction of γ passed close to β Cephei.
30	From 7 Andromedæ in direction of ξ Cassiopeiæ.
31	From direction of θ Piscium passed between η and β Pegasi.
32	From β Andromedæ fell in direction of γ Arietis.
33	From ν to ε Persei.
34	From direction of γ Andromedæ passed across α Trianguli.
35	From near λ Andromedæ towards a point 3° to right of α Andromedæ.
36	From a point about 5° above Capella moved parallel to line joining Capella and β Aurigæ.
37	From direction of α Andromedæ passed across θ Piscium.
38	From λ Pegasi to a point 1° above α Andromedæ.
39	From ι Cassiopeiæ passed across β Cephei almost to α Lyræ.
40	From direction of γ Cassiopeiæ passed across κ Andromedæ.
41	From θ Piscium in direction of ι Aquarii.
42	From direction of β Andromedæ passed across η Andromedæ.
43	From direction of ε Cygni passed across β Aquilæ.
44	From direction of η Persei passed across β Persei.
45	From below 12 Canum Venaticorum in continuation of line joining that star and δ Ursæ Majoris.
46	From direction of β Ursæ Minoris to β Boötis.
47	From β Aquilæ in direction of β Aquarii.
48	From direction of γ Draconis to B Herculis.
49	From between γ and β Draconis to ε Herculis.
50	Passed close to γ Ursæ Minoris; line of flight parallel to line joining η and ζ Draconis, moving from direction of α Cassiopeiæ.
51	Passed 3° above ζ Ursæ Majoris and 1° above η Ursæ Majoris.
52	Across Delphinus to γ Aquilæ and beyond.
53	From between δ and θ Serpentis fell towards 7 Aquilæ.
54	From direction of ε Cygni passed between α and γ Aquilæ.
55	From direction of φ Persei passed across α Andromedæ.
56	From a little below ζ Cassiopeiæ passed parallel to joining-line of ζ and ρ Cassiopeiæ.
57	From direction of *g* Lacertæ passed between ι and κ Pegasi.
58	From direction of Polaris fell almost perpendicularly.
59	Directed from δ Herculis, passed across α Ophiuchi.

Month and Day, 1871.		Greenwich Mean Solar Time.	Observer.	Apparent Size of Meteor in Star-Magnitudes.	Colour of Meteor.	Duration of Meteor in Seconds of Time.	Appearance and Duration of Train.	Length of Meteor's Path in Degrees.	No. for Reference.
		h m s						°	
August	13	9. 29. 27	B.	1	Greenish	1	Train	10	1
	,,	9. 36. 17	M.	3	Bluish-white	0·7	Train	7	2
	,,	9. 38. 5	M.	1	Bluish-white	1	Train	10	3
	,,	9. 54. 55	M.	3	Bluish-white	0·7	Train	10	4
	,,	9. 56. 55	M.	4	Bluish-white	0·7	Train	10	5
	,,	10. 18. 28	M.	1	Bluish-white	1	Train	10	6
	,,	10. 29. 35	M.	2	Bluish-white	0·5	Slight	7	7
	,,	10. 35. 15	M.	Jupiter	Greenish	3	Magnificent. 6 secs.	15	8
	,,	10. 39. 44	N.	2	Bluish-white	0·6	Train	10	9
	,,	10. 40. 7	M.	2	Bluish-white	0·5	Slight	7	10
	,,	10. 47. 0	M.	1	Bluish-white	1	Slight	10	11
	,,	10. 53. 56	N.	2	Bluish-white	1	Train	15	12
	,,	10. 56. 0	M.	3	Bluish-white	0·7	Slight	7	13
	,,	11. 6. 28	N.	2	Bluish-white	0·5	Train	5	14
	,,	11. 11. 18	N.	2	Bluish-white	0·5	Train	7	15
	,,	11. 19. 51	N.	2	Bluish-white	0·7	Train	10	16
August	14	9. 15. 55	M.	2	Bluish-white	0·7	Train	7	17
	,,	9. 16. 28	N.	2	Bluish-white	0·5	Train	10	18
	,,	9. 34. 16	N.	2	Bluish-white	0·5	Train	5	19
August	24	10. 57. 20	W., M.	Jupiter × 3	Yellowish, changed to brilliant blue	7	Brilliant: 3 secs. duration after meteor	30	20
August	26	8. 37. 20	M.	2	Bluish-white	0·7	Train	5	21
September	5	10. 17. 35	M.	1	Bluish-white	0·7	Train	7	22
	,,	10. 28. 40	M.	1	Bluish-white	1	Train	15	23
	,,	10. 38. 0	M.	1	Bluish-white	0·7	Train	10	24
September	7	8. 55. 22	N.	1	Bluish-white	0·5	Train	10	25
	,,	9. 43. 22	M.	1	Bluish-white	1·5	Train	10	26
	,,	9. 48. 13	N.	2	Bluish-white	0·5	Train	7	27
September	9	8. 35. 10	M.	3	Bluish-white	0·3	Slight	5	28
	,,	9. 22. 30	M.	1	Bluish-white	1	Fine	10	29
October	10	10. 28. 30	M.	2	Bluish-white	0·7	Train	10	30
October	11	9. 4. 40	M.	1	Bluish-white	0·5	Train	5	31
	,,	9. 5. 50	W., M.	> Jupiter	Bluish	6	Splendid; very enduring	35	32
October	18	7. 46. 56	N.	2	White	1·5	Train	5	33
	,,	7. 48. 41	N.	3	Bluish-white	0·7	Slight	10	34
	,,	7. 55. 24	N.	2	White	0·5	Train	4	35
	,,	8. 33. 10	M.	1	Bluish-white	1·5	Train	10	36
	,,	9. 34. 10	M.	2	Bluish-white	0·7	Train	15	37
	,,	10. 2. 6	N., M.	2	White	0·7	Train	8	38
	,,	10. 53. 41	N., M.	1	Bluish-white	1	Fine	12	39
October	22	9. 22. 22	M.	1	Bluish-white	3	Magnificent	25	40
November	6	7. 55. 0	M.	2	Bluish-white	1	Slight	20	41
November	9	11. 23. 35	M.	2	Bluish-white	0·7	Train	15	42
	,,	11. 37. 43	M.	1	Bluish-white	1	Fine	7	43
	,,	11. 56. 10	M.	> Jupiter	Bluish	6	Magnificent	25	44
	,,	12. 9. 10	M.	3	Bluish-white	0·5	None	7	45
	,,	12. 12. 20	M.	1	Bluish-white	2·5	Very fine	25	46

No. for Reference.	Path of Meteor through the Stars.
1	From direction of α Cephei passed across γ Cephei.
2	From a point midway between Polaris and γ Cephei in direction of c Camelopardali.
3	From direction of β Cephei passed across γ Ursæ Minoris.
4	From direction of ε Pegasi passed near θ Aquilæ.
5	From direction of α Lyræ passed across α Ophiuchi.
6	From direction of ε Cygni passed midway between α and β Aquarii.
7	Passed across π Pegasi and ζ Cygni.
8	From direction of η Persei passed about 1° below Polaris and β Ursæ Minoris.
9	Passed across β and λ Pegasi.
10	From direction of β Pegasi passed across θ Pegasi.
11	From direction of δ Cephei passed about 2° above ζ Cygni.
12	Directed from γ Cephei, passed across L Camelopardali.
13	From direction of γ Andromedæ passed a little above η Piscium.
14	From a point between κ and σ Persei passed midway between β and ν Persei.
15	Directed from ι Persei, passed about 3° to the right of ν Persei.
16	Passed across β Aquarii from direction of α Pegasi.
17	From δ Cephei passed across γ Cephei.
18	From direction of ι Draconis passed midway between ζ and η Ursæ Majoris.
19	Fell perpendicularly from a point midway between β and γ Persei, moving from direction of α Persei.
20	Fell towards horizon, passing across α Draconis and ε Ursæ Majoris. Appeared to die out and then re-appear with renewed brilliancy. Burst at about altitude 20°.
21	Passed between α and η Boötis from direction of γ Boötis.
22	From direction of ο Andromedæ to center of square of Pegasus.
23	From direction of ζ Draconis passed about 1° to left of η Ursæ Majoris.
24	From direction of θ Piscium in direction of a point about 5° above α Tauri.
25	Passed across ε Boötis from direction of β Boötis.
26	From between δ and ε Persei in direction of ζ Persei.
27	Fell towards ζ Ursæ Majoris from the direction of α Draconis.
28	From direction of δ Cephei passed a little to the left of θ Cassiopeiæ.
29	From direction of γ Andromedæ passed within less than a degree below α Persei.
30	From direction of a point between ε and 50 Cassiopeiæ fell between ζ Aurigæ and β Tauri.
31	Passed across τ and φ Herculis. Pear shaped.
32	Started from Polaris, moved in an almost straight line, and passed between ε and ζ Ursæ Majoris. The meteor increased in brightness as it passed along, and burst into six or seven fragments, the two last of which were of a beautiful crimson colour.
33	From direction of d Aquarii, started at a point nearly midway between α Equulei and β Aquarii, and moved towards θ Aquilæ.
34	Moved from direction of κ Cygni towards β Cygni; point of disappearance a few degrees before β Cygni.
35	Directed from η Aquarii, moved towards θ Aquarii; point of appearance about 3° below γ Aquarii.
36	From direction of a point near α Trianguli passed between η and ε Piscium.
37	From η Andromedæ passed across ε Piscium.
38	Directed from θ Cassiopeiæ moved towards β Andromedæ. (Cloudy immediately afterwards).
39	Passed across α Persei and a few degrees beyond, moving from direction of c Camelopardali. (Cloudy).
40	From a point about 3° to the right of α Lyræ passed between α and δ Herculis.
41	From direction of β Cephei passed between α Lyræ and α Cygni.
42	Passed across β Ursæ Minoris and ζ Draconis.
43	From a point between α and ι Draconis fell perpendicularly towards the horizon.
44	From direction of μ Ursæ Majoris passed between γ and ε Leonis. The meteor increased in brilliancy as it passed along, and finally burst into several fragments, some of which were of a crimson colour.
45	From ε Ursæ Majoris fell towards the horizon at a very slight inclination to the left.
46	From α Orionis moved to the left at an inclination of about 40°.

Month and Day, 1871.		Greenwich Mean Solar Time.	Observer.	Apparent Size of Meteor in Star-Magnitudes.	Colour of Meteor.	Duration of Meteor in Seconds of Time.	Appearance and Duration of Train.	Length of Meteor's Path in Degrees.	No. for Reference.
		h m s						°	
November	10	11. 15. 0	N.	1	Bluish-white	0·8	Train	12	1
November	11	8. 17. 30	B.	Jupiter × 2	Bluish-white	1	Slight	20	2
November	12	11. 47. 45	M.	1	Bluish-white	1	Fine	25	3
,,		12. 22. 17	M.	3	Bluish-white	0·7	Slight	10	4
,,		12. 34. 35	M.	1	White	1·5	Fine	15	5
,,		12. 47. 32	B.	3	Bluish-white	0·5	None	10	6
,,		13. 7. 6	M.	1	Bluish-white	0·5	Train	7	7
,,		13. 12. 31	M.	2	Bluish-white	0·7	Train	10	8
,,		13. 16. 31	M.	1	Orange	2	Train	30	9
,,		13. 35. 22	M.	3	Bluish-white	0·7	Train	15	10
,,		13. 40. 57	M.	1	Bluish-white	1·5	Train	25	11
,,		13. 52. 38	B.	1	Bluish-white	0·5	Train	5	12
,,		13. 59. 31	B.	2	Yellowish	0·7	Slight	10	13
,,		14. 4. 53	M.	1	Bluish-white	1	Train	20	14
,,		14. 12. 53	M.	2	Bluish-white	0·7	Slight	10	15
,,		14. 21. 6	M.	1	Yellowish	2	Very fine	25	16
,,		14. 44. 59	M.	2	Bluish-white	0·5	Train	10	17
,,		14. 47. 16	M.	1	Bluish-white	0·7	Train	7	18
,,		15. 10. 15	M.	1	Bluish-white	1	Train	15	19
,,		15. 12. 0	M.	1	Bluish-white	1·3	Very fine	10	20
November	13	12. 3. 12	N.	1	Bluish-white	0·9	Train	15	21
,,		12. 33. 17	N.	> 1	Bluish-white	0·3	Train	3	22
,,		12. 43. 30	N.	2	Bluish-white	0·7	Train	8	23
,,		14. 19. 58	N., B.	> 1	Bluish-white	0·5	Train	5	24
,,		14. 20. 0	B.	2	Bluish-white	0·5	Slight	Short	25
,,		14. 34. 43	M.	1	Bluish-white	1	Greenish	25	26
,,		14. 58. 21	M.	2	Bluish-white	0·7	Train	7	27
,,		16. 56. 36	M.	2	Bluish-white	0·7	Fine	10	28
,,		17. 31. 43	M.	1	Bluish-white	0·7	Train	10	29
,,		17. 32. 28	W.	3	Bluish-white	0·5	None	10	30
,,		17. 42. 51	W., M.	> 1	Bluish-white	2	Fine	15	31
November	14	..	..	..	..	..	..	..	32
November	19	10. 44. 0	N.	> Jupiter	White	3	Very fine	..	33
December	12	7. 11. 0	N.	2	Bluish-white	0·6	None	10	34

No. for Reference.	Path of Meteor through the Stars.
1	From direction of ι Ursæ Majoris moved towards γ Persei.
2	From near the Pleiades passed close to γ Tauri about midway between α and λ Tauri.
3	From direction of ο Ursæ Majoris passed towards ε Cassiopeiæ.
4	From direction of γ Tauri passed in direction of ε Eridani.
5	From direction of λ Orionis passed across β Canis Minoris.
6	Passed midway between α and β Ursæ Majoris; path of meteor if produced backwards would cut υ Ursæ Majoris.
7	Passed across α Ceti from direction of the Pleiades.
8	From direction of μ Orionis passed across α Leporis.
9	From α Orionis passed about midway between Sirius and Procyon.
10	From direction of θ Ursæ Majoris passed across Polaris.
11	From μ Geminorum passed to a point a few degrees before Sirius.
12	From direction of β passed close to γ Ursæ Majoris.
13	Passed midway between μ and λ Ursæ Majoris towards ψ Ursæ Majoris.
14	From direction of ο Ursæ Majoris passed across μ Geminorum.
15	From β Cancri in direction of ο Leonis.
16	From Capella passed about 3° to the left of α Orionis.
17	From direction of δ Cancri passed across Procyon.
18	From γ Ursæ Majoris fell towards the horizon at a slight inclination to the left.
19	From direction of γ Geminorum passed across β Tauri.
20	From direction of ξ Geminorum passed across ι Orionis.
21	From a point close to β Tauri to near γ Geminorum.
22	Passed across θ Aurigæ moving from direction of α Geminorum.
23	From direction of γ Geminorum to a point midway between Jupiter and Procyon.
24	Passed midway between β Canis Minoris and α Leporis from direction of α Monocerotis.
25	From a little to the right of ζ Orionis passed about midway between that star and c Orionis.
26	From direction of θ Ursæ Majoris passed between Polaris and γ Cephei.
27	From direction of μ Ursæ Majoris passed across ζ Leonis.
28	From direction of γ Leonis passed across ζ Ursæ Majoris.
29	From direction of β Aurigæ passed across μ Ursæ Majoris.
30	Directed from β Cassiopeiæ across κ Cassiopeiæ.
31	From direction of ζ Draconis passed about 1° above Polaris.
32	The sky was covered with cloud: rain falling.
33	From direction of α Ceti moved on a path parallel to line of stars in Orion's belt. Point of disappearance not seen.
34	From near Aldebaran moved to right, at right angles to joining line of Aldebaran and Pleiades.

The names of stars adopted in this record of Luminous Meteors are the same as those which are used in the Astronomical sections of the Volume. In some published accounts of observations of meteors a system has been used, derived from Bode, in which various stars are assigned to constellations not recognized here. The following are the corresponding names of all which appear in the Table above:—

50 Cassiopeiæ	is the same as Bode's	*f* Custodis.
γ Camelopardali	,,	*m* Custodis.
72 Ophiuchi	,,	*s* Tauri Poniatowski.
Bradley 2329	,,	*q* Scuti.
1 Aquilæ	,,	*m* Scuti.
3 Aquilæ	,,	*o* Scuti.
7 Aquilæ	,,	*l* Scuti.
12 Aquilæ	,,	*k* Scuti.
ο Andromedæ	,,	ο Honorum.
7 Andromedæ	,,	*u* Honorum.
λ Andromedæ	,,	λ Honorum.
ι Andromedæ	,,	ι Honorum.
κ Andromedæ	,,	κ Honorum.