RESULTS

OF THE

MAGNETICAL AND METEOROLOGICAL

OBSERVATIONS

MADE AT

THE ROYAL OBSERVATORY, GREENWICH,

1872.

INDEX.

INDEX.

INDEX.

INDEX.

INDEX.

INDEX.

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GREENWICH MAGNETICAL AND METEOROLOGICAL OBSERVATIONS, 1872.

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, and on 1872, November 14, it was again moved from Office No. 3 to No. 1.

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 10½ 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., adapted to carry a flat leather strap: one of these pulleys projects beyond the north side of the principal upright, and from it depends that end of the strap to which the suspension skein is attached: the other pulley projects on the south side. The strap, being brought from the magnet up to the north pulley, is 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.; and the length of strap below the north pulley is about $10\frac{3}{4}$ inches; so that the length of the free suspending skein is about 6 feet 4 inches.

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 cobwebs; 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 1872 is 1′. 34″·8.

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

1871, December 28. 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 $100^{r}\cdot161$. This value is used throughout the year 1872.

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 $9''\cdot41$ 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 $55''\cdot22$ from all readings of the theodolite. In 1848 a new vertical-force-magnet was introduced, and the subtractive quantity was then found to be $42''\cdot2$. A few experiments in 1865 seemed to show that the correction is now $36''\cdot9$. 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.

1871, December 28. 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 $18''\cdot5$ 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.

1871, December 28. 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 $26'.\ 36''\cdot0$. This value is used in the reductions for 1872.

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	$23^s \cdot 888$
Mean of times with damper reversed end for end......................	$24^s \cdot 508$
Mean of times when damper was removed............................	$23^s \cdot 153$

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, the micrometer-head of the theodolite-telescope being East.

		° ′ ″
Micrometer equivalent for reading for line of collimation, 100r·161..	−	2. 38. 15·3
Correction for the plane glass in front of the box, in its usual position..	+	18·5
The collimator above the magnet. Correction for error of collimation	−	26. 36·0
Constant to be used in the reduction of the observations	−	3. 4. 32·8

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, $\frac{1}{180}$; on 1871, December 28, $\frac{1}{170}$; and on 1873, January 1, $\frac{1}{200}$.

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

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

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

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

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 1872:—January 3; February 2, 8, 20; March 5, 8, 19; April 17; May 7; June 16, 29; July 9, 12, 25; August 7, 8, 13, 15, 17, 23; September 5, 30; November 6, 30; December 4, 9, 21. 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 $0^{\text{in}}\cdot 3$ high and $0^{\text{in}}\cdot 1$ 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.

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, 1½ inch broad, and about ¼ 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, $2\frac{1}{2}$ 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 1872:—

1872. 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
Jan. 2	140	14·57		21·60	222	10·90		19·88
	141	23·96	9·39	21·46	223	19·40	8·50	20·00
	142	32·57	8·61	21·26	224	26·41	7·01	20·24
	143	41·19	8·62	21·06	225	33·64	7·23	20·34
	144	49·73	8·54	20·84	226	41·60	7·96	20·44
	145	57·16	7·43	20·62	227	49·64	8·04	20·60
	146	65·82	8·66	20·52	228	57·89	8·25	20·78
	147	73·97	8·15	20·44	229	65·95	8·06	21·00
	148	81·72	7·75	20·32	230	74·14	8·19	21·10
	149	89·80	8·08	20·14	231	82·22	8·08	21·18

The times of vibration and scale readings were sensibly the same, when the torsion-circle read 144°. 32′, marked end West, and 227°. 30′, marked end East, differing 82°. 58′. Half this difference, or 41°. 29′, is the angle of torsion when the magnet is transverse to the meridian.

The mean of several similar determinations gave 41°. 25′·7. The value adopted in the reduction of observations through the year 1872 was the same as that used in 1871, namely 41°. 17′·1.

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 $51^{div.}$ on the scale to the center of the face of the plane mirror is $7^{ft.}\ 6^{in.}{\cdot}84$, and that the length of $30^{div.}{\cdot}85$ 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 1872.

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 $0^{div.}487$. On mounting a new vertical-force-magnet in 1848, similar experiments were made, and the resulting number was $0^{div.}45$. 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 $t = 32°$ and when $t = 159°{\cdot}0$. 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				
14	53·9	61·42	5·6	0·16	0·000389	0·000070
14	55·2	61·74				
16	52·5	62·05	2·7	0·31	·000753	·000279
17	61·5	60·78	9·0	1·27	·003086	·000343
18	53·5	61·24	8·0	0·46	·001118	·000143
19	59·6	60·93	6·1	0·31	·000753	·000123
January 31	60·7	58·63				
February 4	50·6	58·94	10·1	0·31	·000753	·000075
5	60·3	58·06	9·7	0·88	·002138	·000220
7	51·1	58·86	9·2	0·80	·001943	·000211
10	59·6	58·04	8·5	0·82	·001992	·000234
14	59·7	58·64				
16	50·1	59·46	9·6	0·82	·001992	·000208
18	59·8	58·97	9·7	0·49	·001190	·000123
20	48·2	59·45	11·6	0·48	·001166	·000100
21	58·8	59·02	10·6	0·43	·001045	·000099
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				
22	50·5	59·31	9·7	1·42	0·003449	0·000355
24	58·6	62·56				
24	51·3	61·54	7·3	1·02	·002477	·000339
27	59·3	61·86	8·0	0·32	·000777	·000097
29	49·0	61·51	10·3	0·35	·000850	·000083
31	60·9	61·81	11·9	0·30	·000729	·000061
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 1872 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 $0^{in.}\cdot3$ high, and $0^{in.}\cdot01$ 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 1872 the adopted value of variation of horizontal force for one degree of angular motion of the magnet is sin 1° × cotan 41°. 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 $52\frac{3}{4}^{\circ}$ 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 1872, vibrations of the vertical-force-magnet were observed on 171 different days, and with readings of various divisions of the scale. The mean time of vibration adopted for the year was $15^{s}\cdot67$.

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

1873, January 17–18. 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 1,300 vibrations, the mean time of one vibration $=16^{s}\cdot158$. This number is used through the year 1872.

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 1872, T' was assumed $= 16^s\cdot158$, $T = 15^s\cdot67$, dip $= 67°. 47'. 51''$. 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 = 0·0005698.

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

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

$$0\cdot172522 \times \left\{1 - 0\cdot0002233 \times (t - 32) + 0\cdot000001894 \times (t - 32)^2\right\}$$

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 1872.

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 1872 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 $0^{in}\cdot3$ in length and $0^{in}\cdot01$ 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 = $200{\cdot}36 \times \text{tan. dip.} \times \left(\frac{T}{T'}\right)^2 \times 0{\cdot}01$. 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 1872, = 4·617 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 1872 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 $5\frac{1}{2}$ 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 $9\frac{3}{4}$ 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 (1872).

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

$$0·000131261\,(t_0-35)+0·000000259\,(t_0-35)^2$$

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 $\frac{A_2}{(1·3)^2}$; 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 $=A_2\times\left(1-\frac{P}{1·69}\right)$ 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 $=9·6637805$, and the factor for reducing the English values of X to Metric values will be 0·46108 or $\frac{1}{2·1689}$. 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 1872, the following days, fifteen 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 4; April 10; July 7, 8; August 3, 4, 8, 14, 25; September 17; October 14, 15, 16, 17; November 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 fifteen days of Great Magnetic Disturbance.*

Telescope-ooservations 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.*

It has been the custom, in preceding volumes of the Greenwich Magnetical and Meteorological Results, to exhibit the varying Declination in the sexagesimal divisions of the circle, and the variable parts of the Horizontal Force and the Vertical Force in terms of the whole Horizontal Force and whole Vertical Force respectively. This custom is still retained; but in the present year an addition has been made, carrying out the principle suggested by C. Chambers, Esq., Superintendent of the Bombay Observatory, that all the variable inequalities should be expressed in terms of Gauss's Magnetic Unit. In applying this principle, I have adopted the reference to metrical units of measure and weight instead of British units; a change from the first proposal, which, I believe, has received the assent of Mr. Chambers. The formulæ for converting the original numbers into the new numbers are the following:—

$$\frac{\text{Variations of H. F. in metrical measure}}{\text{H. F. in metrical measure}} = \frac{\text{Variation in former measure}}{\text{Whole value in former measure}}$$

from which,

$$\text{Variation of H. F. metrical} = \frac{\text{H. F. metrical}}{\text{Former H. F.}} \times \text{former variation.}$$

The mean value, for the year, of $\frac{\text{H. F. metrical}}{\text{Former H. F.}} = 1{\cdot}787$; and this therefore is the factor to be employed for transformation.

Similarly,

$$\text{Variation of V. F. metrical} = \frac{\text{V. F. metrical}}{\text{Former V. F.}} \times \text{former variation.}$$

The Former V. F. (in the same manner as Former H. F.) = 1; but the V. F. metrical = H. F. metrical × tan. dip. The factor is therefore 1·787 × tan. 67° 48′ = 4·378.

The values given at the bottom of the page, for the adopted zeros of the variable forces, are formed by multiplying these factors by 0·86 and 0·96 respectively.

For Variation of Declination, expressed in minutes, the metrical factor is 1·787 × sin 1′ = 0·0005198.

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 1872. 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 $15\frac{3}{8}$ 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 150 through the year 1872. 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.

f 2

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 $0^{in}{\cdot}05$.

The vernier subdivides the scale divisions to $0^{in}{\cdot}002$; 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 $0^{in}{\cdot}565$ in diameter; the correction for the effect of capillary attraction is therefore only $+ 0^{in}{\cdot}002$. 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 *xlviii* 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.

The index-error corrections to the thermometers were:—

For the maximum thermometer,	subtract $\overset{\circ}{1}\cdot 4$
For the minimum thermometer,	0·0

On 1872, April 17, the minimum thermometer was found broken. A new thermometer was immediately mounted. Its index error appeared to be insensible.

§ 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-rollers 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 $17^{ft.}\ 8^{in.}\cdot7$. 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 4½ inches above the ground, and 193 feet 2½ inches above the mean level of the sea. It is a simple cylinder gauge, 8 inches in diameter and about 50¼ square inches in area. The height of the cylinder is 13½ 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 1½ inch in length; ¾ of an inch of this tube is slightly curved, and the remaining ¾ of an inch is bent upwards, terminating in an aperture of ⅛ 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 28¼ 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 1872 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 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 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.

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-one 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 1872 were Mr. Nash, Mr. Wright, Mr. Marriott, Mr. W. Bishop, Mr. Cross, and Mr. W. Schultz. Their observations are distinguished by the initials N., W., M., B., C., and S., 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 1872 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 1872 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,
1874, April 10.

G. B. AIRY.

ROYAL OBSERVATORY, GREENWICH.

RESULTS

OF

MAGNETICAL OBSERVATIONS.

1872.

ROYAL OBSERVATORY, GREENWICH.

REDUCTION

OF THE

MAGNETIC OBSERVATIONS

(EXCLUDING THE DAYS OF GREAT MAGNETIC DISTURBANCE).

1872.

TABLE I.—MEAN WESTERN 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.

1872.

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	42·3	40·2	39·8	38·1	36·5	34·5	35·5	36·4	33·7	37·1	35·4	36·5
2	41·6	40·5	39·7	37·4	36·4	35·1	35·6	36·8	36·0	35·9	38·5	36·7
3	41·2	40·6	39·3	37·9	36·6	37·2	34·9	..	34·2	36·7	36·3	36·0
4	41·7	..	39·4	38·2	36·3	36·1	35·0	..	33·7	35·4	36·0	35·1
5	41·8	40·0	39·6	37·6	37·4	35·1	34·3	37·1	34·3	35·6	35·3	34·3
6	41·6	38·8	38·1	37·5	35·3	35·3	35·0	37·6	35·2	35·1	35·3	35·1
7	42·5	39·3	39·1	37·0	36·8	35·6	..	36·3	34·8	35·7	36·6	36·6
8	42·1	39·8	39·1	37·4	35·7	36·5	..	..	34·8	35·3	36·0	37·9
9	41·4	40·2	38·9	37·6	36·3	34·3	34·6	36·2	34·7	36·2	35·4	37·3
10	41·9	39·8	39·5	..	34·8	37·0	34·7	36·7	34·9	36·0	..	36·3
11	42·4	40·1	38·9	36·9	36·4	35·8	35·5	37·0	35·6	35·1	35·1	36·5
12	42·0	40·0	38·5	37·5	35·3	36·2	34·5	37·6	34·0	33·6	37·0	37·1
13	42·0	39·2	39·1	37·0	35·2	35·7	35·3	37·6	34·1	36·3	36·4	36·7
14	41·7	39·8	38·6	36·9	36·2	35·4	35·4	..	34·3	..	36·2	35·4
15	41·3	40·1	38·2	37·9	35·8	35·7	34·7	38·1	34·3	..	36·0	35·8
16	41·5	40·7	38·8	36·8	35·1	36·7	35·8	36·5	32·8	..	35·4	36·7
17	41·2	39·2	39·0	35·7	34·0	35·4	35·2	36·2	..	..	35·2	34·7
18	40·8	38·5	38·1	37·6	34·8	36·0	37·3	34·8	34·4	..	36·1	35·8
19	41·6	38·8	39·0	37·9	34·8	36·5	35·8	35·0	34·8	35·4	35·4	36·5
20	40·3	40·8	37·9	37·8	35·3	36·5	36·3	35·6	35·1	35·1	35·4	35·8
21	40·8	40·5	39·0	36·0	35·4	37·6	35·7	35·5	33·9	34·9	35·4	37·3
22	40·8	39·8	37·9	36·6	37·3	33·4	35·0	35·3	33·3	36·0	35·5	36·4
23	41·4	40·3	38·3	36·4	36·8	36·1	35·1	34·6	33·9	35·5	35·8	36·2
24	40·9	38·8	37·8	35·0	38·4	37·9	..	33·8	33·5	35·5	..	35·7
25	41·9	40·5	38·1	36·9	40·0	36·8	35·1	..	33·9	35·7	..	35·8
26	41·8	39·3	38·3	35·9	36·1	35·6	34·6	35·1	34·1	35·9	34·8	36·4
27	41·3	38·6	38·9	36·0	36·7	36·1	32·5	33·7	33·9	36·1	35·8	36·1
28	40·2	39·6	39·2	36·9	36·0	36·4	37·5	34·6	34·1	36·0	34·8	36·2
29	41·9	39·9	38·4	37·0	35·5	34·7	33·7	34·4	35·0	35·3	34·8	36·3
30	39·4		39·0	37·6	35·9	36·3	36·4	33·8	33·7	36·4	35·2	35·8
31	43·2		38·4		35·9		34·8	34·6		35·5		34·9

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.

1872.

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	44·7	44·0	46·1	44·3	42·1	42·0	41·2	43·2	41·5	41·7	40·6	39·5
1	46·3	45·7	47·5	46·5	43·3	43·7	42·9	44·3	43·0	42·5	41·0	39·9
2	47·1	46·1	46·9	46·2	43·4	43·9	43·0	43·8	42·3	42·2	41·0	39·7
3	46·2	44·6	45·0	44·2	42·6	42·7	41·5	41·6	39·8	40·3	39·5	39·1
4	44·5	42·6	42·7	42·2	40·9	41·3	40·0	39·2	37·6	38·1	38·3	38·0
5	43·8	41·6	40·4	39·7	38·6	39·2	38·1	37·2	36·2	36·9	36·9	37·7
6	43·5	40·9	39·2	37·4	37·0	37·2	36·3	36·0	34·8	36·1	36·2	36·9
7	42·3	40·3	38·6	36·2	36·1	36·0	35·6	35·7	33·5	35·3	34·1	36·5
8	40·6	39·5	37·4	35·4	35·8	35·1	35·3	35·8	33·2	34·3	32·9	35·6
9	39·6	38·6	36·5	34·9	36·0	35·3	34·9	35·7	32·4	32·9	32·2	33·8
10	38·7	37·4	36·4	34·9	35·6	35·1	34·4	35·2	32·2	32·6	32·6	32·6
11	38·2	36·7	35·5	35·2	34·9	34·8	34·3	34·4	32·1	32·5	32·7	32·1
12	38·9	36·7	36·4	35·0	34·9	34·0	33·1	34·2	31·9	32·9	33·2	33·0
13	39·2	36·8	35·9	34·8	34·8	34·2	32·7	34·3	32·1	33·1	33·6	34·1
14	39·4	37·5	35·9	34·7	34·4	34·0	33·2	34·1	31·9	32·6	33·7	33·8
15	39·4	37·6	35·1	34·6	33·5	33·5	32·8	33·0	31·5	33·2	34·4	34·1
16	39·8	37·8	36·1	34·2	33·1	33·3	31·6	32·9	31·6	34·2	35·0	35·1
17	40·1	38·0	36·2	33·8	31·6	31·8	31·1	31·7	31·6	35·0	35·3	35·3
18	40·2	38·5	35·5	33·4	30·9	30·4	30·0	30·3	31·4	34·9	35·2	35·7
19	40·6	38·2	34·9	32·5	30·2	29·4	29·8	29·6	30·4	33·8	35·0	35·9
20	40·3	37·7	34·6	31·5	30·4	29·6	29·9	30·0	29·6	32·4	34·7	36·1
21	39·7	37·8	35·8	32·1	32·1	31·6	31·4	32·1	30·8	32·6	34·5	36·5
22	40·5	38·8	39·0	35·8	35·3	34·9	34·0	35·5	33·9	35·0	36·1	37·6
23	42·5	41·5	42·9	40·1	39·0	38·9	37·6	39·1	38·2	38·8	38·7	38·5

TABLE III.

1872.			
Month.	MEAN WESTERN DECLINATION of the MAGNET IN EACH MONTH, as deduced from the Mean of the MEAN HOURLY DETERMINATIONS in each MONTH (Table II.).	EXCESS OF WESTERN DECLINATION above 18°, converted into WESTERLY FORCE, and expressed in terms of GAUSS'S UNIT measured on the METRICAL SYSTEM.	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. 41·5	0·0528	11·8
February	19. 39·8	·0519	12·9
March	19. 38·8	·0514	16·9
April	19. 37·1	·0504	17·4
May	19. 36·1	·0499	14·9
June	19. 35·9	·0498	15·8
July	19. 35·2	·0495	15·8
August	19. 35·8	·0498	15·4
September	19. 34·3	·0491	15·4
October	19. 35·6	·0497	14·1
November	19. 35·7	·0497	12·5
December	19. 36·1	·0499	10·8
Mean	19. 36·8	0·0503	14·5

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.

Days of the Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
						1872.						
d												
1	..	0·1493	0·1492	0·1503	0·1487	0·1512	0·1506	0·1506	0·1519	0·1509	0·1513	0·1529
2	..	·1497	·1480	·1502	·1495	·1513	·1500	·1513	·1517	·1506	·1510	·1528
3	0·1505	·1494	·1490	·1497	·1499	·1501	·1502	..	·1494	·1508	·1510	·1525
4	·1508	..	·1495	·1496	·1503	·1495	·1499	..	·1498	·1507	·1518	·1530
5	·1509	·1476	·1506	·1499	·1503	·1504	·1498	·1507	·1504	·1500	·1512	·1530
6	·1510	·1490	·1500	·1500	·1508	·1506	·1505	·1507	·1506	·1501	·1511	·1531
7	·1496	·1495	·1499	·1501	·1508	·1501	..	·1512	·1507	·1501	·1511	·1530
8	·1503	·1499	·1492	·1498	·1511	·1506	..	..	·1509	·1510	·1522	·1535
9	·1500	·1503	·1491	·1502	·1500	·1496	·1486	·1488	·1501	·1509	·1520	·1508
10	·1507	·1506	·1491	..	·1497	·1492	·1495	·1501	·1509	·1513	..	·1522
11	·1516	·1505	·1495	·1479	·1496	·1498	·1495	·1507	·1503	·1515	·1502	·1527
12	·1495	·1502	·1492	·1489	·1498	·1504	·1496	·1513	·1505	·1516	·1517	·1529
13	·1491	·1504	·1495	·1491	·1508	·1504	·1502	·1518	·1510	·1507	·1516	·1528
14	·1493	·1505	·1490	·1496	·1504	·1501	·1502	..	·1512	..	·1523	·1523
15	·1487	·1497	·1494	·1477	·1500	·1508	·1507	·1489	·1515	..	·1511	·1526
16	·1494	·1498	·1495	·1478	·1500	·1505	·1507	·1501	·1513	..	·1518	·1532
17	·1503	·1499	·1496	·1484	·1499	·1502	·1505	·1507	..	..	·1523	·1520
18	·1496	·1500	·1499	·1485	·1500	·1502	·1508	·1505	·1497	·1486	·1525	·1527
19	·1500	·1494	·1493	·1487	·1506	·1505	·1493	·1507	·1507	·1502	·1527	·1534
20	·1498	·1483	·1482	·1491	·1510	·1509	·1499	·1505	·1511	·1511	·1530	·1534
21	·1504	·1499	·1501	·1498	·1511	·1516	·1484	·1512	·1512	·1513	·1534	·1523
22	·1499	·1503	·1487	·1501	·1507	..	·1490	·1513	·1514	·1514	·1533	·1525
23	·1502	·1495	·1482	·1499	·1495	·1495	·1493	·1513	·1519	·1518	·1529	·1529
24	·1500	·1495	·1484	·1499	·1514	·1505	·1500	·1523	·1517	·1515	..	·1532
25	·1491	·1492	·1488	·1502	·1510	·1502	·1498	..	·1520	·1518	..	·1536
26	·1496	·1490	·1488	·1504	·1502	·1509	·1505	·1503	·1522	·1520	·1512	·1533
27	·1494	·1486	·1494	·1499	·1512	·1511	·1506	·1512	·1520	·1522	·1520	·1533
28	·1492	·1495	·1489	·1500	·1507	·1509	·1497	·1517	·1514	·1513	·1522	·1537
29	·1496	·1498	·1494	·1496	·1509	·1510	·1493	·1515	·1501	·1511	·1522	·1538
30	·1497		·1496	·1500	·1505	·1511	·1502	·1515	·1508	·1509	·1526	·1534
31	·1493		·1496		·1510		·1502	·1515		·1512		·1529

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.

1872.

Hour, Greenwich Mean Solar Time.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
h 0	0·1490	0·1485	0·1483	0·1479	0·1490	0·1492	0·1486	0·1492	0·1496	0·1495	0·1509	0·1527
1	·1494	·1488	·1487	·1484	·1493	·1495	·1490	·1499	·1502	·1497	·1514	·1529
2	·1498	·1492	·1492	·1490	·1499	·1502	·1495	·1504	·1506	·1505	·1517	·1529
3	·1500	·1495	·1494	·1496	·1507	·1506	·1501	·1509	·1509	·1508	·1517	·1528
4	·1499	·1498	·1496	·1503	·1512	·1512	·1505	·1512	·1512	·1510	·1519	·1527
5	·1499	·1498	·1498	·1507	·1517	·1516	·1510	·1513	·1515	·1513	·1520	·1527
6	·1500	·1500	·1498	·1507	·1520	·1520	·1513	·1517	·1516	·1515	·1522	·1527
7	·1500	·1500	·1498	·1505	·1516	·1522	·1513	·1519	·1516	·1517	·1521	·1528
8	·1500	·1499	·1498	·1505	·1514	·1519	·1511	·1519	·1516	·1517	·1522	·1528
9	·1502	·1499	·1497	·1502	·1512	·1515	·1506	·1518	·1515	·1516	·1520	·1528
10	·1501	·1500	·1497	·1500	·1511	·1511	·1504	·1518	·1516	·1517	·1520	·1527
11	·1501	·1499	·1498	·1500	·1510	·1508	·1505	·1517	·1515	·1518	·1521	·1528
12	·1499	·1498	·1498	·1500	·1509	·1506	·1501	·1516	·1514	·1516	·1521	·1528
13	·1500	·1498	·1497	·1500	·1507	·1504	·1502	·1516	·1515	·1516	·1522	·1529
14	·1501	·1499	·1496	·1499	·1508	·1505	·1503	·1515	·1515	·1515	·1522	·1530
15	·1501	·1499	·1495	·1498	·1505	·1507	·1503	·1514	·1515	·1515	·1523	·1530
16	·1503	·1500	·1495	·1497	·1505	·1507	·1503	·1514	·1514	·1516	·1525	·1531
17	·1501	·1500	·1494	·1496	·1503	·1504	·1502	·1513	·1516	·1516	·1527	·1532
18	·1504	·1501	·1494	·1496	·1501	·1502	·1499	·1509	·1514	·1516	·1527	·1534
19	·1503	·1501	·1492	·1494	·1497	·1498	·1494	·1504	·1511	·1512	·1523	·1534
20	·1501	·1497	·1486	·1490	·1492	·1493	·1487	·1498	·1505	·1505	·1518	·1532
21	·1497	·1491	·1480	·1481	·1489	·1488	·1484	·1493	·1497	·1497	·1514	·1529
22	·1492	·1488	·1477	·1475	·1486	·1487	·1482	·1490	·1491	·1492	·1509	·1528
23	·1489	·1485	·1478	·1475	·1487	·1487	·1484	·1492	·1493	·1492	·1508	·1527

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.

1872.

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.	EXCESS OF HORIZONTAL FORCE above 0·8600, expressed in terms of GAUSS'S UNIT measured on the METRICAL SYSTEM.	Mean Temperature.
January	0·1499	0·2678	61°·9
February	·1496	·2673	62·4
March	·1492	·2666	62·9
April	·1495	·2671	62·9
May	·1504	·2687	63·0
June	·1504	·2687	64·9
July	·1499	·2678	67·9
August	·1509	·2696	66·3
September	·1510	·2698	66·2
October	·1510	·2698	63·7
November	·1519	·2714	62·4
December	·1529	·2731	61·6

The value 0·8600 of Horizontal Force corresponds to 1·5368 of Gauss's Unit on the Metrical System.

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.

1872.

Days of the Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d												
1	0·0352	0·0352	0·0354	0·0350	0·0342	0·0318	0·0325	0·0310	0·0286	0·0272	0·0254	0·0239
2	·0360	·0351	·0362	·0339	·0349	·0323	·0324	·0298	·0309	·0286	·0248	·0235
3	·0356	·0351	·0352	·0332	·0337	·0332	·0327	..	·0331	·0275	·0246	·0233
4	·0354	..	·0337	·0339	·0327	·0320	·0340	..	·0326	·0264	·0250	·0227
5	·0354	·0355	·0339	·0352	·0323	·0329	·0342	·0306	·0314	·0259	·0260	·0235
6	·0346	·0359	·0339	·0341	·0323	·0317	·0347	·0313	·0306	·0262	·0257	·0235
7	·0354	·0358	·0346	·0345	·0322	·0316	..	·0310	·0301	·0266	·0250	·0226
8	·0352	·0358	·0348	·0350	·0321	·0316	..	..	·0295	·0270	·0252	·0218
9	·0349	·0356	·0343	·0343	·0321	·0315	·0326	·0311	·0297	·0263	·0245	·0231
10	·0352	·0347	·0337	..	·0322	·0321	·0330	·0310	·0296	·0255	..	·0233
11	·0358	·0348	·0343	·0354	·0318	·0326	·0347	·0302	·0315	·0249	·0244	·0230
12	·0361	·0347	·0351	·0351	·0318	·0327	·0338	·0294	·0310	·0241	·0246	·0233
13	·0362	·0349	·0353	·0339	·0317	·0331	·0321	·0294	·0314	·0246	·0243	·0242
14	·0355	·0350	·0352	·0340	·0321	·0330	·0323	..	·0314	..	·0244	·0242
15	·0352	·0350	·0351	·0347	·0329	·0340	·0309	·0312	·0306	..	·0246	·0240
16	·0359	·0352	·0354	·0340	·0333	·0353	·0322	·0311	·0288	..	·0238	·0238
17	·0359	·0357	·0348	·0335	·0325	·0354	·0318	·0317	..	..	·0238	·0241
18	·0356	·0355	·0340	·0333	·0316	·0351	·0313	·0317	·0279	·0266	·0241	·0236
19	·0354	·0345	·0345	·0332	·0317	·0346	·0327	·0317	·0269	·0262	·0245	·0235
20	·0354	·0350	·0349	·0336	·0322	·0335	·0336	·0325	·0269	·0260	·0247	·0240
21	·0354	·0352	·0347	·0339	·0328	·0322	·0357	·0326	·0267	·0259	·0245	·0247
22	·0354	·0354	·0354	·0329	·0326	·0311	·0352	·0319	·0267	·0254	·0240	·0250
23	·0354	·0355	·0352	·0326	·0330	·0324	·0350	·0307	·0268	·0247	·0236	·0238
24	·0356	·0357	·0352	·0322	·0331	·0338	·0356	·0303	·0272	·0249	·0237	·0231
25	·0360	·0358	·0345	·0328	·0337	·0330	·0363	..	·0266	·0251	·0239	·0232
26	·0358	·0347	·0343	·0334	·0344	·0311	·0352	·0307	·0272	·0254	·0240	·0231
27	·0361	·0348	·0351	·0344	·0344	·0318	·0335	·0284	·0283	·0257	·0242	·0227
28	·0363	·0348	·0357	·0335	·0338	·0317	·0333	·0292	·0276	·0258	·0244	·0231
29	·0359	·0357	·0359	·0339	·0339	·0309	·0333	·0297	·0273	·0259	·0242	·0236
30	·0356		·0356	·0336	·0330	·0323	·0321	·0291	·0274	·0265	·0237	·0229
31	·0349		·0352		·0319		·0305	·0282		·0261		·0227

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.

1872.

Hour, Greenwich Mean Solar Time.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
h												
0	0·0353	0·0349	0·0342	0·0330	0·0320	0·0321	0·0328	0·0302	0·0286	0·0257	0·0242	0·0232
1	·0354	·0350	·0344	·0333	·0323	·0324	·0333	·0306	·0289	·0259	·0244	·0233
2	·0356	·0351	·0345	·0336	·0326	·0327	·0336	·0309	·0292	·0261	·0245	·0234
3	·0357	·0352	·0347	·0338	·0329	·0330	·0339	·0312	·0295	·0262	·0246	·0235
4	·0358	·0354	·0349	·0341	·0331	·0334	·0342	·0314	·0297	·0263	·0247	·0236
5	·0358	·0354	·0351	·0344	·0333	·0336	·0344	·0315	·0298	·0263	·0247	·0237
6	·0358	·0354	·0352	·0345	·0334	·0337	·0345	·0315	·0298	·0263	·0248	·0237
7	·0357	·0355	·0353	·0345	·0333	·0338	·0345	·0315	·0298	·0263	·0249	·0237
8	·0357	·0355	·0353	·0345	·0332	·0336	·0344	·0315	·0298	·0263	·0248	·0237
9	·0356	·0355	·0353	·0344	·0332	·0335	·0344	·0315	·0296	·0263	·0247	·0236
10	·0355	·0355	·0353	·0343	·0331	·0334	·0343	·0313	·0295	·0262	·0247	·0236
11	·0355	·0354	·0352	·0343	·0332	·0331	·0340	·0311	·0294	·0261	·0246	·0235
12	·0355	·0354	·0352	·0342	·0332	·0329	·0336	·0308	·0292	·0261	·0245	·0235
13	·0355	·0353	·0351	·0342	·0332	·0326	·0333	·0305	·0291	·0260	·0245	·0235
14	·0355	·0353	·0350	·0341	·0330	·0325	·0331	·0303	·0290	·0259	·0244	·0234
15	·0355	·0352	·0350	·0340	·0329	·0322	·0328	·0302	·0289	·0258	·0244	·0234
16	·0355	·0352	·0349	·0339	·0328	·0321	·0326	·0300	·0288	·0258	·0243	·0234
17	·0354	·0352	·0348	·0338	·0327	·0320	·0324	·0299	·0287	·0257	·0243	·0233
18	·0355	·0351	·0348	·0337	·0326	·0319	·0322	·0297	·0286	·0257	·0242	·0233
19	·0355	·0351	·0349	·0337	·0326	·0319	·0322	·0297	·0286	·0257	·0242	·0233
20	·0355	·0351	·0348	·0336	·0325	·0319	·0323	·0297	·0286	·0257	·0242	·0233
21	·0355	·0351	·0346	·0333	·0323	·0319	·0325	·0297	·0286	·0256	·0242	·0232
22	·0354	·0349	·0344	·0331	·0321	·0319	·0325	·0297	·0285	·0255	·0241	·0232
23	·0353	·0349	·0342	·0329	·0318	·0319	·0326	·0298	·0284	·0254	·0241	·0232

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.

1872.

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.	EXCESS OF VERTICAL FORCE above 0·9600, expressed in terms of GAUSS'S UNIT measured on the METRICAL SYSTEM.	Mean Temperature.
January	0·0355	0·1554	62°·0
February	·0352	·1541	62·4
March	·0349	·1528	62·6
April	·0339	·1484	63·0
May	·0328	·1436	63·0
June	·0327	·1432	65·1
July	·0334	·1463	68·2
August	·0306	·1339	66·5
September	·0291	·1274	66·1
October	·0260	·1138	63·1
November	·0245	·1073	62·2
December	·0234	·1025	61·7

The value 0·9600 of Vertical Force corresponds to 4·2033 of Gauss's Unit on the Metrical System.

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 1872.

January to December.

Hour, Greenwich Mean Solar Time.	Inequality of Declination.	Equivalent in terms of Gauss's Unit measured on the Metrical System.	Inequality of Horizontal Force.	Equivalent in terms of Gauss's Unit measured on the Metrical System.	Inequality of Vertical Force.	Equivalent in terms of Gauss's Unit measured on the Metrical System.
h	′					
0	+ 5·75	+ 0·00299	− 0·00118	− 0·00211	− 0·00048	− 0·00210
1	+ 7·06	+ 367	− 78	− 139	− 23	− 101
2	+ 6·97	+ 362	− 31	− 55	− 2	− 9
3	+ 5·43	+ 282	+ 3	+ 5	+ 18	+ 79
4	+ 3·63	+ 189	+ 32	+ 57	+ 38	+ 166
5	+ 2·03	+ 106	+ 56	+ 100	+ 50	+ 219
6	+ 0·80	+ 42	+ 74	+ 132	+ 55	+ 241
7	− 0·14	− 7	+ 74	+ 132	+ 57	+ 250
8	− 0·92	− 48	+ 68	+ 121	+ 53	+ 232
9	− 1·59	− 83	+ 53	+ 95	+ 47	+ 206
10	− 2·02	− 105	+ 47	+ 84	+ 39	+ 171
11	− 2·38	− 124	+ 45	+ 80	+ 28	+ 123
12	− 2·31	− 120	+ 33	+ 59	+ 17	+ 74
13	− 2·19	− 114	+ 33	+ 59	+ 7	+ 31
14	− 2·23	− 116	+ 35	+ 63	− 4	− 18
15	− 2·43	− 126	+ 33	+ 59	− 14	− 61
16	− 2·27	− 118	+ 37	+ 66	− 23	− 101
17	− 2·53	− 132	+ 32	+ 57	− 32	− 140
18	− 2·96	− 154	+ 26	+ 46	− 39	− 171
19	− 3·47	− 180	− 3	− 5	− 38	− 166
20	− 3·76	− 196	− 52	− 93	− 40	− 175
21	− 2·91	− 151	− 105	− 188	− 46	− 201
22	− 0·46	− 24	− 141	− 252	− 56	− 245
23	+ 2·83	+ 147	− 141	− 252	− 63	− 276

ROYAL OBSERVATORY, GREENWICH.

INDICATIONS

OF

MAGNETOMETERS

ON FIFTEEN DAYS OF GREAT MAGNETIC DISTURBANCE.

1872.

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force. Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force. Expressed in terms of Gauss's Unit measured on the Metrical System.
Feb. 4			Feb. 4			Feb. 4		
h m	° ′ ″		h m			h m		
0. 0	19. 43. 20	·0538	0. 0	·1479	·2643	0. 0	·0353	·1545
0. 11	43. 20	·0538	0. 22	·1480	·2644	0. 30	·0355	·1554
0. 17	44. 15	·0542	0. 29	·1485	·2653	0. 36	·0354	·1550
0. 19	43. 20	·0538	0. 33	·1480	·2644	0. 44	·0355	·1554
0. 26	45. 50	·0550	0. 36	·1478	·2641	1. 6	·0355	·1554
0. 33	44. 5	·0541	0. 51	·1484	·2651	1. 52	·0356	·1558
0. 44	46. 0	·0551	1. 0	·1481	·2646	2. 24	·0357	·1563
0. 56	45. 5	·0546	1. 4	·1483	·2649	2. 29	·0361	·1580
1. 2	45. 40	·0549	1. 10	·1479	·2643	2. 37	·0357	·1563
1. 10	45. 5	·0546	1. 42	·1489	·2660	2. 38	·0358	·1567
1. 23	47. 10	·0557		***		2. 42	·0357	·1563
1. 31	46. 55	·0556	2. 12	·1490	·2662	2. 43	·0358	·1567
1. 38	48. 10	·0563	2. 24	·1494	·2669	2. 47	·0357	·1563
1. 40	47. 5	·0556		***		2. 55	·0362	·1585
1. 44	47. 50	·0560	2. 48	·1535	·2742	3. 2	·0366	·1602
1. 48	46. 55	·0556	3. 2	·1600	·2859	3. 6	·0366	·1602
1. 52	47. 35	·0559	3. 3	·1576	·2816	3. 8	·0368	·1611
2. 8	48. 0	·0562	3. 4	·1598	·2855	3. 10	·0367	·1607
2. 10	47. 25	·0558	3. 5	·1573	·2810	3. 15	·0376	·1646
2. 20	49. 40	·0570	3. 6	·1590	·2841	3. 20	·0366	·1602
2. 24	45. 5	·0546	3. 21	·1601	·2861	3. 23	·0374	·1638
2. 28	51. 40	·0580	3. 29	·1581	·2825	3. 27	·0372	·1629
2. 31	44. 20	·0543	3. 32	·1612	·2881	3. 32	·0372	·1629
2. 36	46. 0	·0551	3. 34	·1596	·2852	3. 37	·0377	·1651
2. 37	43. 0	·0536	3. 40	·1627	·2907	3. 40	·0374	·1638
2. 39	43. 50	·0540	3. 55	·1469	·2625	3. 42	·0380	·1664
2. 49	23. 35	·0435	3. 56	·1571	·2807	3. 45	·0389	·1703
2. 52	25. 0	·0442	4. 1	·1597	·2853	3. 49	·0380	·1664
2. 59	19. 40	·0414	4. 2	·1609	·2875	3. 50	·0396	·1734
3. 0	26. 50	·0451	4. 3	·1576	·2816	3. 59	·0378	·1655
3. 6	24. 30	·0440	4. 5	·1588	·2837	4. 1	·0384	·1682
3. 12	39. 30	·0518	4. 12	·1490	·2662	4. 2	·0386	·1690
3. 16	24. 0	·0437	4. 14	·1498	·2676	4. 3	·0391	·1712
3. 26	38. 20	·0512	4. 15	·1476	·2638	4. 5	·0397	·1739
3. 40	19. 53. 30	·0591	4. 27	·1565	·2796	4. 9	·0390	·1708
3. 41	20. 8. 0	·0666	4. 33	·1602	·2863	4. 18	·0404	·1769
3. 48	19. 47. 0	·0556		(†)		4. 24	·0390	·1708
3. 54	29. 5	·0463	4. 53	·1628	·2909	4. 52	·0449	·1966
4. 1	19. 38. 15	·0511	5. 1	·1422	·2541	4. 57	·0349	·1528
4. 10	20. 21. 50	·0737	5. 13	·1439	·2571	5. 2	·0383	·1677
4. 18	11. 50	·0685		(†)		5. 3	·0337	·1476
4. 20	9. 0	·0671	5. 30	·1413	·2524	5. 10	·0344	·1507
4. 30	18. 50	·0722	5. 31	·1631	·2915	5. 12	·0297	·1301
4. 33	19. 35	·0726	5. 34	·1457	·2603	5. 23	·0418	·1830
4. 40	15. 30	·0705	5. 39	·1471	·2629	5. 27	·0290	·1270
4. 43	4. 15	·0646	5. 40	·1437	·2567		(†)	
4. 46	18. 45	·0722	5. 42	·1444	·2580	5. 56	·0289	·1265
4. 49	16. 40	·0710	5. 43	·1424	·2544	5. 59	·0264	·1156
4. 50	20. 18. 40	·0721	5. 48	·1623	·2900	6. 0	·0294	·1288
	(†)		5. 50	·1537	·2745	6. 3	·0261	·1142
6. 0	19. 54. 5	·0593	5. 56	·1577	·2817	6. 4	·0292	·1279
6. 5	19. 46. 5	·0551	5. 59	·1489	·2660	6. 7	·0264	·1156

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Feb. 4			Feb. 4			Feb. 4		
h m	° ′ ″		h m			h m		
6. 20	21. 24. 35	·1064	6. 4	·1587	·2835	6. 10	·0308	·1348
6. 51	20. 11. 15	·0682	6. 11	·1421	·2539	6. 19	·0239	·1046
6. 58	19. 55	·0728	6. 18	·1579	·2821	6. 24	·0315	·1379
7. 0	15. 40	·0705	6. 19	·1462	·2613	6. 29	·0257	·1125
	(†)		6. 22	·1529	·2731	6. 37	·0273	·1195
7. 16	5. 20	·0652	6. 29	·1478	·2641	6. 38	·0263	·1151
7. 27	34. 0	·0801	6. 30	·1489	·2660	6. 42	·0270	·1182
7. 30	20. 12. 35	·0689	6. 31	·1429	·2553	6. 43	·0266	·1164
7. 45	19. 38. 40	·0513	6. 49	·1299	·2321	6. 44	·0274	·1200
7. 48	19. 57. 30	·0611	6. 50	·1300	·2323	6. 45	·0270	·1182
7. 55	20. 8. 50	·0670	6. 57	·1276	·2280	6. 48	·0276	·1208
	(†)		6. 58	·1323	·2364	7. 0	·0222	·0972
8. 20	19. 54. 50	·0597	6. 59	·1317	·2353		(†)	
8. 22	59. 45	·0623	7. 10	·1421	·2539	7. 6	·0223	·0976
8. 26	50. 45	·0576	7. 13	·1417	·2531	7. 12	·0267	·1169
8. 28	53. 0	·0588	7. 16	·1454	·2598	7. 13	·0258	·1129
8. 41	19. 27. 0	·0452	7. 18	·1416	·2530	7. 20	·0307	·1344
9. 0	20. 18. 10	·0719	7. 22	·1456	·2602	7. 24	·0340	·1489
9. 1	12. 30	·0689	7. 29	·1371	·2450	7. 30	·0330	·1445
9. 4	20. 15. 40	·0705	7. 33	·1632	·2917	7. 40	·0379	·1659
9. 10	19. 56. 15	·0604	7. 48	·1522	·2719	7. 45	·0356	·1558
9. 12	20. 16. 0	·0707	7. 58	·1651	·2950	7. 46	·0345	·1509
9. 16	19. 43. 10	·0537	8. 0	·1514	·2705	7. 50	·0357	·1563
9. 23	57. 5	·0608	8. 6	·1621	·2897	7. 56	·0350	·1532
9. 29	53. 0	·0588	8. 8	·1597	·2853	7. 58	·0372	·1629
9. 31	19. 58. 30	·0617	8. 16	·1724	·3081	8. 0	·0363	·1589
9. 32	20. 2. 55	·0639	8. 18	·1631	·2915	8. 1	·0373	·1633
9. 33	6. 0	·0655	8. 19	·1650	·2948	8. 3	·0366	·1602
	(†)		8. 20	·1604	·2866	8. 5	·0384	·1682
9. 44	20. 18. 55	·0723	8. 21	·1631	·2915	8. 10	·0367	·1607
10. 0	19. 26. 55	·0452	8. 22	·1601	·2861	8. 12	·0360	·1576
10. 3	29. 40	·0466	8. 28	·1652	·2952	8. 20	·0384	·1682
10. 7	19. 10	·0412	8. 30	·1585	·2832	8. 24	·0372	·1629
10. 12	24. 5	·0437	8. 37	·1642	·2934	8. 25	·0374	·1638
10. 14	34. 5	·0489	8. 40	·1557	·2781	8. 29	·0362	·1585
10. 20	31. 5	·0473	8. 47	·1641	·2932	8. 31	·0372	·1629
10. 22	39. 55	·0520	8. 51	·1570	·2805	8. 33	·0364	·1594
10. 29	38. 30	·0513	8. 59	·1604	·2866	8. 37	·0371	·1624
10. 30	50. 45	·0576	9. 1	·1581	·2825	8. 38	·0364	·1594
10. 32	44. 15	·0542	9. 8	·1617	·2889	8. 40	·0371	·1624
10. 37	48. 15	·0563	9. 9	·1564	·2794	8. 42	·0373	·1633
10. 39	40. 35	·0523	9. 11	·1634	·2920	8. 49	·0406	·1777
10. 43	36. 5	·0499	9. 12	·1608	·2873	8. 52	·0320	·1401
10. 52	44. 55	·0546	9. 15	·1614	·2884	8. 59	·0366	·1602
10. 59	38. 20	·0512	9. 20	·1578	·2819	9. 0	·0363	·1589
11. 2	40. 50	·0524	9. 30	·1515	·2701	9. 2	·0369	·1615
11. 3	38. 30	·0513	9. 47	·1649	·2946	9. 6	·0363	·1588
11. 8	36. 20	·0501	9. 48	·1593	·2846	9. 8	·0371	·1624
11. 9	38. 30	·0513	9. 57	·1709	·3054	9. 12	·0335	·1467
11. 12	36. 20	·0501	10. 0	·1577	·2817	9. 14	·0361	·1580
11. 16	40. 50	·0524	10. 9	·1473	·2632	9. 16	·0334	·1463
11. 19	39. 55	·0520	10. 14	·1562	·2791	9. 22	·0340	·1489

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.

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

The value 0·8600 of Horizontal Force corresponds to 1·5368 of Gauss's Unit on the Metrical System.

The value 0·9600 of Vertical Force corresponds to 4·2033 of Gauss's Unit on the Metrical System.

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Feb. 4 h m	° ′ ″		Feb. 4 h m			Feb. 4 h m		
11.21	19.41. 0	·0525	10.17	·1524	·2722	9.27	·0308	·1348
11.27	41.20	·0527	10.20	·1555	·2778	9.32	·0319	·1396
11.31	44.35	·0544	10.25	·1513	·2703	9.33	·0308	·1348
11.34	44.20	·0543	10.31	·1409	·2517	9.37	·0324	·1419
11.36	46.30	·0554	10.35	·1419	·2535	9.40	·0278	·1217
11.46	42.20	·0532	10.36	·1407	·2513	9.43	·0281	·1230
11.50	48.50	·0566	10.40	·1415	·2528	9.44	·0256	·1120
11.55	46.30	·0554	10.41	·1399	·2499	9.57	·0395	·1730
11.59	46. 0	·0551	10.44	·1419	·2535	10. 0	·0383	·1677
12. 0	50.15	·0573	10.46	·1431	·2557	10. 2	·0390	·1708
12. 5	47.30	·0559	10.49	·1415	·2528	10. 7	·0381	·1668
12. 9	50.50	·0576	10.55	·1449	·2589	10. 8	·0384	·1682
12.12	47.55	·0561	11. 3	·1397	·2495	10. 9	·0379	·1659
12.20	56.15	·0604	11.14	·1445	·2582	10.11	·0384	·1682
12.25	46.10	·0552	11.17	·1425	·2546	10.14	·0380	·1664
12.29	51.10	·0578	11.21	·1433	·2560	10.20	·0396	·1734
12.32	44.35	·0544	11.22	·1418	·2533	10.24	·0389	·1703
12.38	48.55	·0567	11.29	·1434	·2562	10.25	·0394	·1726
12.48	39.30	·0518	11.30	·1430	·2555	10.33	·0378	·1655
12.52	46.20	·0553	11.38	·1448	·2587	10.40	·0388	·1699
13. 0	42.35	·0533	11.41	·1419	·2535	10.42	·0384	·1682
13. 7	47.55	·0561	11.48	·1449	·2589	10.44	·0390	·1708
13.18	40.20	·0522	11.52	·1412	·2523	10.47	·0394	·1726
13.21	42. 0	·0530	11.59	·1476	·2638	10.50	·0391	·1712
13.30	38.40	·0513	12. 0	·1453	·2596	10.57	·0400	·1751
13.33	40.20	·0522	12. 1	·1467	·2621	11. 3	·0390	·1708
13.34	38. 0	·0510	12. 3	·1449	·2589	11.14	·0397	·1739
13.38	38.35	·0513	12.10	·1427	·2549	11.20	·0391	·1712
13.40	34.30	·0492	12.16	·1465	·2618	11.22	·0392	·1717
13.42	36. 0	·0499	12.19	·1431	·2557	11.27	·0389	·1703
13.47	35.30	·0497	12.20	·1439	·2571	11.31	·0392	·1717
13.49	37.50	·0508	12.21	·1416	·2530	11.33	·0391	·1712
13.51	37.15	·0505	12.22	·1451	·2593	11.38	·0393	·1721
13.52	38.20	·0512	12.25	·1407	·2513	11.43	·0386	·1690
13.59	36.10	·0500	12.27	·1441	·2575	11.48	·0390	·1708
14. 1	37.35	·0507	12.30	·1408	·2515	11.50	·0388	·1699
14. 5	35. 0	·0494	12.32	·1430	·2555	11.53	·0391	·1712
14. 7	38.30	·0513	12.35	·1416	·2530	11.55	·0388	·1699
14.12	38.15	·0511	12.37	·1420	·2537	12. 0	·0394	·1726
14.13	40.30	·0523	12.38	·1413	·2524	12. 5	·0389	·1703
14.19	39. 0	·0515	12.44	·1423	·2542	12.13	·0384	·1682
14.21	44. 0	·0541	12.49	·1399	·2499	12.18	·0388	·1699
14.28	41. 0	·0525	12.51	·1466	·2620	12.21	·0380	·1664
14.30	42.35	·0533	12.58	·1407	·2513	12.22	·0385	·1686
14.32	40.10	·0521	12.59	·1429	·2553	12.29	·0379	·1659
14.33	43.15	·0537	13. 0	·1413	·2524	12.30	·0388	·1699
14.34	41. 0	·0525	13. 7	·1425	·2546	12.32	·0383	·1677
14.38	37.30	·0507	13.10	·1397	·2495	12.36	·0387	·1695
14.41	41. 0	·0525	13.12	·1404	·2508	12.40	·0383	·1677
14.48	40. 0	·0520	13.17	·1396	·2494	12.45	·0383	·1677
14.50	41.10	·0526	13.25	·1412	·2523	12.48	·0380	·1664
14.51	45. 0	·0546	13.28	·1396	·2494	12.52	·0386	·1690

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Feb. 4 h m	° ′ ″		Feb. 4 h m			Feb. 4 h m		
14.53	19.40. 5	·0520	13.32	·1407	·2513	12.57	·0379	·1659
14.58	49.50	·0571	13.36	·1397	·2495	13. 0	·0384	·1682
15. 0	42. 5	·0530	13.40	·1405	·2510	13. 8	·0382	·1673
15. 1	50.10	·0573	13.41	·1397	·2495	13.11	·0378	·1655
15. 4	44.55	·0546	13.42	·1403	·2506	13.20	·0377	·1651
15. 9	44. 0	·0541	13.46	·1396	·2494	13.23	·0376	·1646
15.10	50.20	·0574	13.50	·1401	·2503	13.30	·0372	·1629
15.13	44. 0	·0541		(†)		13.32	·0374	·1638
15.14	50.15	·0573	14.10	·1411	·2521	13.37	·0371	·1624
15.18	39. 0	·0515	14.11	·1397	·2495	13.39	·0374	·1638
15.20	47.55	·0561		(†)		13.41	·0370	·1620
15.22	43.55	·0541	14.28	·1397	·2495	13.43	·0374	·1638
15.29	51.45	·0581	14.31	·1411	·2521	13.48	·0371	·1624
15.31	44. 0	·0541	14.37	·1397	·2495	13.51	·0374	·1638
15.36	50.35	·0575	14.41	·1410	·2519	13.54	·0371	·1624
15.37	36.55	·0504	14.44	·1418	·2533	13.57	·0373	·1633
15.39	44.35	·0544	14.50	·1406	·2512	14. 1	·0369	·1615
15.42	40.50	·0524	14.53	·1421	·2539	14. 8	·0373	·1633
15.44	45.15	·0547	14.58	·1399	·2499	14.11	·0369	·1615
15.48	39.25	·0517	15. 0	·1406	·2512	14.16	·0368	·1611
15.49	46.25	·0553	15. 2	·1397	·2495	14.18	·0372	·1629
15.50	38.55	·0515	15. 4	·1409	·2517	14.22	·0368	·1611
15.55	42.50	·0534	15. 8	·1425	·2546	14.25	·0372	·1629
15.58	34.45	·0493	15.10	·1397	·2495	14.28	·0366	·1602
16. 2	42.40	·0533	15.11	·1425	·2546	14.29	·0370	·1620
16. 8	36.50	·0503	15.12	·1405	·2510	14.32	·0366	·1602
16.12	43.40	·0539	15.13	·1426	·2548	14.41	·0371	·1624
16.17	36. 0	·0499	15.15	·1397	·2495	14.45	·0370	·1620
16.20	40.10	·0520	15.18	·1433	·2560	14.49	·0372	·1629
16.21	35.40	·0497	15.20	·1410	·2519	14.52	·0368	·1611
16.22	37.45	·0508	15.22	·1430	·2555	14.55	·0378	·1655
16.23	33. 5	·0484	15.23	·1406	·2512	14.57	·0366	·1602
16.27	38.30	·0513	15.27	·1448	·2587	15. 2	·0369	·1615
16.32	36.25	·0501	15.29	·1415	·2528	15. 4	·0372	·1629
16.33	39.20	·0517	15.33	·1427	·2549	15. 7	·0366	·1602
16.35	36.25	·0501	15.37	·1410	·2519	15. 8	·0372	·1629
16.37	40.20	·0522	15.39	·1439	·2571	15.10	·0366	·1602
16.46	35. 0	·0494	15.41	·1429	·2553	15.12	·0371	·1624
16.49	40.50	·0524		***		15.15	·0363	·1589
16.54	34.25	·0491	15.49	·1455	·2600	15.17	·0372	·1629
16.59	41.10	·0526	15.50	·1417	·2531	15.19	·0368	·1611
17. 3	33.55	·0489	15.55	·1436	·2566	15.21	·0371	·1624
17. 8	39.10	·0516	15.57	·1425	·2546	15.23	·0367	·1607
17.12	34.50	·0493	15.59	·1434	·2562	15.25	·0374	·1638
17.17	40.55	·0525	16. 0	·1406	·2512	15.28	·0366	·1602
17.18	32.50	·0482	16. 5	·1455	·2600	15.32	·0371	·1624
17.25	40.55	·0525	16. 7	·1430	·2555	15.35	·0365	·1598
17.27	32.25	·0480	16.10	·1449	·2589	15.38	·0369	·1615
17.30	38.55	·0515	16.12	·1435	·2564	15.40	·0364	·1594
17.38	31.15	·0474	16.13	·1441	·2575	15.43	·0367	·1607
17.42	40. 0	·0520	16.18	·1431	·2557	15.45	·0365	·1598
17.47	32.55	·0483	16.19	·1448	·2587	15.48	·0369	·1615

Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
Feb. 4 h m	°	°
0. 0	62·7	63·0
9. 0	61·7	61·8
11. 0	62·1	62·0

Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
Feb. 4 h m	°	°
21. 0	62·2	61·9
22. 0	62·4	62·0
23. 0	62·2	62·0

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.
Feb. 4 h m	° ′ ″	
17. 51	19. 39. 30	·0518
17. 54	35. 20	·0496
18. 2	39. 30	·0518
18. 10	34. 0	·0489
18. 15	40. 20	·0522
18. 18	33. 35	·0487
18. 23	41. 0	·0525
18. 27	35. 50	·0498
18. 29	38. 55	·0515
18. 31	35. 55	·0499
18. 32	40. 20	·0522
18. 40	34. 20	·0491
18. 45	39. 5	·0515
18. 50	35. 15	·0495
18. 53	37. 10	·0505
19. 0	35. 10	·0495
19. 2	39. 5	·0515
19. 11	36. 0	·0499
19. 16	38. 55	·0515
19. 20	36. 55	·0504
19. 23	39. 20	·0517
19. 27	38. 5	·0510
19. 29	40. 0	·0520
19. 32	37. 0	·0504
19. 33	40. 10	·0521
19. 39	37. 0	·0504
19. 40	39. 0	·0515
19. 42	36. 35	·0502
19. 48	39. 15	·0516
19. 50	37. 10	·0505
19. 57	40. 0	·0520
19. 59	37. 5	·0504
20. 5	39. 20	·0517
20. 10	36. 0	·0499
20. 12	38. 55	·0515
20. 17	36. 20	·0501
20. 20	39. 0	·0515
20. 25	36. 40	·0502
20. 28	38. 0	·0510
20. 30	36. 30	·0502
20. 33	39. 0	·0515
20. 38	36. 5	·0499
20. 44	39. 30	·0518
20. 49	37. 10	·0505
20. 52	39. 0	·0515
20. 57	34. 50	·0493
20. 58	39. 0	·0515
21. 1	36. 30	·0502
21. 3	39. 0	·0515
21. 8	36. 30	·0502
21. 10	39. 35	·0518
21. 14	37. 10	·0505
21. 18	19. 38. 10	·0511
21. 19	35. 50	·0498
21. 23	37. 40	·0507
21. 24	35. 0	·0494
21. 26	37. 40	·0507
21. 29	36. 10	·0500
21. 39	40. 0	·0520
21. 42	36. 50	·0503
21. 48	39. 20	·0517
21. 50	38. 0	·0510
21. 55	39. 50	·0519
22. 2	36. 20	·0501
22. 11	39. 50	·0519
22. 15	38. 10	·0511
22. 23	41. 10	·0526
22. 28	38. 20	·0512
22. 30	40. 10	·0521
22. 32	38. 5	·0510
22. 38	38. 40	·0513
22. 40	37. 30	·0507
22. 41	40. 0	·0520
22. 48	38. 0	·0510
22. 55	41. 30	·0528
22. 58	38. 50	·0514
23. 8	42. 0	·0530
23. 19	40. 0	·0520
23. 20	42. 5	·0530
23. 23	40. 30	·0523
23. 29	41. 30	·0528
23. 35	40. 35	·0523
23. 42	42. 10	·0531
23. 48	41. 15	·0526
23. 52	42. 15	·0531
23. 56	41. 20	·0527
23. 59	43. 0	·0536

Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature.	
	Expressed in parts of the whole Horizontal Force.	Expressed in terms of Gauss's Unit measured on the Metrical System.
Feb. 4 h m		
16. 21	·1433	·2560
16. 23	·1459	·2607
16. 24	·1415	·2528
16. 28	·1449	·2589
16. 30	·1426	·2548
16. 31	·1451	·2593
16. 32	·1433	·2560
16. 34	·1452	·2595
16. 38	·1437	·2567
16. 40	·1445	·2582
16. 42	·1435	·2564
16. 45	·1455	·2600
16. 48	·1431	·2557
16. 50	·1457	·2603
16. 51	·1433	·2560
16. 54	·1450	·2591
16. 55	·1440	·2573
16. 59	·1450	·2591
17. 2	·1439	·2571
17. 6	·1459	·2607
17. 8	·1449	·2589
17. 18	·1461	·2611
17. 19	·1432	·2559
17. 21	·1455	·2600
17. 25	·1431	·2557
17. 26	·1477	·2639
17. 28	·1427	·2549
17. 31	·1469	·2625
17. 32	·1445	·2582
17. 33	·1461	·2611
17. 34	·1443	·2578
17. 39	·1460	·2609
17. 40	·1435	·2564
17. 42	·1477	·2639
17. 44	·1439	·2571
17. 48	·1471	·2629
17. 50	·1437	·2567
17. 54	·1453	·2596
	***	
18. 5	·1444	·2580
	***	
18. 20	·1453	·2596
18. 25	·1444	·2580
18. 29	·1461	·2611
18. 31	·1449	·2589
18. 32	·1458	·2605
18. 36	·1444	·2580
18. 41	·1460	·2609
18. 46	·1445	·2582
18. 49	·1461	·2611
18. 51	·1451	·2593
18. 59	·1457	·2603
19. 2	·1466	·2620
19. 4	·1456	·2602
19. 10	·1465	·2618
19. 12	·1457	·2603
19. 19	·1465	·2618
19. 22	·1456	·2602
19. 28	·1466	·2620
19. 30	·1454	·2598
19. 32	·1466	·2620
19. 34	·1456	·2602
19. 40	·1458	·2605
19. 57	·1461	·2611
20. 0	·1452	·2595
20. 4	·1462	·2613
20. 10	·1453	·2596
20. 15	·1459	·2607
20. 22	·1452	·2595
20. 28	·1462	·2613
20. 31	·1455	·2600
20. 38	·1465	·2618
20. 41	·1455	·2600
20. 50	·1463	·2614
20. 59	·1454	·2598
21. 1	·1459	·2607
21. 5	·1453	·2596
21. 10	·1458	·2605
21. 20	·1451	·2593
21. 36	·1465	·2618
21. 42	·1453	·2596
21. 57	·1460	·2609
22. 0	·1443	·2578
22. 10	·1461	·2611
22. 12	·1455	·2600
22. 20	·1469	·2625
22. 28	·1446	·2584
22. 30	·1461	·2611
22. 31	·1447	·2585
22. 37	·1461	·2611
22. 42	·1449	·2589
22. 50	·1463	·2614
22. 59	·1446	·2584
23. 2	·1462	·2613
23. 5	·1456	·2602
23. 14	·1446	·2584
23. 17	·1456	·2602
23. 20	·1457	·2603
23. 22	·1450	·2591
23. 30	·1457	·2603
23. 34	·1446	·2584
23. 41	·1458	·2605
23. 51	·1451	·2593
23. 59	·1459	·2607

Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature.	
	Expressed in parts of the whole Vertical Force.	Expressed in terms of Gauss's Unit measured on the Metrical System.
Feb. 4 h m		
15. 50	·0363	·1589
15. 51	·0368	·1611
15. 55	·0363	·1589
15. 57	·0368	·1611
16. 0	·0362	·1585
16. 1	·0371	·1624
16. 2	·0365	·1598
16. 5	·0368	·1611
16. 7	·0365	·1598
16. 12	·0368	·1611
16. 15	·0364	·1594
16. 17	·0367	·1607
16. 20	·0365	·1598
16. 22	·0369	·1615
16. 24	·0363	·1589
16. 26	·0368	·1611
16. 30	·0364	·1594
16. 31	·0368	·1611
16. 35	·0364	·1594
16. 37	·0368	·1611
16. 40	·0366	·1602
16. 55	·0366	·1602
17. 2	·0364	·1594
17. 5	·0367	·1607
17. 12	·0364	·1594
17. 15	·0367	·1607
17. 18	·0360	·1576
17. 20	·0366	·1602
17. 22	·0362	·1585
17. 23	·0368	·1611
17. 25	·0359	·1571
17. 26	·0368	·1611
17. 30	·0358	·1567
17. 31	·0367	·1607
17. 37	·0360	·1576
17. 38	·0367	·1607
17. 45	·0359	·1571
17. 47	·0365	·1598
17. 57	·0363	·1589
18. 20	·0362	·1585
18. 40	·0362	·1585
18. 50	·0361	·1580
18. 55	·0360	·1576
19. 2	·0361	·1580
19. 10	·0360	·1576
20. 0	·0360	·1576
20. 25	·0359	·1571
20. 45	·0358	·1567
21. 8	·0358	·1567
21. 20	·0357	·1563
21. 30	·0357	·1563
21. 56	·0358	·1567
21. 59	·0356	·1558
22. 10	·0357	·1563
22. 15	·0358	·1567
22. 22	·0356	·1558
23. 0	·0358	·1567
23. 18	·0358	·1567
23. 22	·0357	·1563
23. 28	·0358	·1567
23. 33	·0356	·1560
23. 40	·0358	·1587
23. 46	·0356	·1558
23. 55	·0358	·1567
23. 57	·0357	·1563
23. 59	·0358	·1567

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.

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

The value 0·8600 of Horizontal Force corresponds to 1·5368 of Gauss's Unit on the Metrical System.

The value 0·9600 of Vertical Force corresponds to 4·2033 of Gauss's Unit on the Metrical System.

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 19° converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force. Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force. Expressed in terms of Gauss's Unit measured on the Metrical System.
Apr. 10 h m	° ′ ″		Apr. 10 h m			Apr. 10 h m		
0. 0	19. 45. 35	·0549	0. 0	·1498	·2676	0. 0	·0331	·1449
0. 5	46. 55	·0556	0. 35	·1509	·2696	1. 0	·0335	·1467
0. 13	46. 55	·0556	0. 40	·1501	·2682	1. 54	·0339	·1484
0. 16	47. 40	·0559	0. 47	·1507	·2692	2. 0	·0343	·1502
0. 25	47. 30	·0559	0. 51	·1504	·2687	2. 5	·0340	·1489
0. 33	49. 30	·0570	1. 20	·1511	·2700	2. 10	·0342	·1498
0. 35	48. 0	·0562	1. 30	·1508	·2694	2. 18	·0341	·1493
0. 40	48. 25	·0564	1. 50	·1518	·2712	2. 23	·0345	·1511
0. 53	48. 5	·0562	1. 57	·1513	·2703	2. 40	·0343	·1502
1. 0	48. 30	·0565	2. 2	·1517	·2710	2. 42	·0346	·1515
1. 5	47. 55	·0561	2. 5	·1550	·2769	2. 48	·0346	·1515
1. 7	48. 30	·0565	2. 11	·1525	·2724	2. 52	·0347	·1520
1. 19	48. 40	·0565	2. 17	·1551	·2771	2. 57	·0346	·1515
1. 31	48. 0	·0562	2. 21	·1542	·2755	3. 3	·0349	·1528
1. 48	48. 50	·0566	2. 39	·1561	·2789	3. 8	·0348	·1524
1. 52	47. 45	·0560	2. 40	·1543	·2756	3. 12	·0350	·1532
1. 58	48. 30	·0565	2. 57	·1567	·2799	3. 20	·0348	·1524
2. 0	46. 55	·0556	3. 0	·1544	·2758	3. 23	·0349	·1528
2. 2	53. 5	·0588	3. 6	·1561	·2789	3. 25	·0348	·1524
2. 9	50. 0	·0572	3. 11	·1548	·2765	3. 30	·0350	·1532
2. 10	52. 15	·0583	3. 15	·1554	·2776	3. 33	·0348	·1524
2. 18	52. 15	·0583	3. 24	·1535	·2742	3. 37	·0351	·1536
2. 20	51. 15	·0578	3. 30	·1522	·2719	3. 40	·0349	·1528
2. 28	54. 25	·0595	3. 32	·1535	·2742	3. 49	·0350	·1532
2. 38	54. 25	·0595	3. 37	·1506	·2691	3. 59	·0349	·1528
2. 40	51. 20	·0579	3. 40	·1542	·2755	4. 2	·0350	·1532
2. 43	52. 50	·0586	3. 42	·1525	·2724	4. 8	·0348	·1524
2. 47	51. 55	·0582	3. 49	·1537	·2745	4. 15	·0350	·1532
2. 50	54. 0	·0593	3. 50	·1527	·2727	4. 20	·0350	·1532
2. 56	49. 45	·0571	3. 56	·1533	·2738	4. 23	·0351	·1536
3. 2	51. 30	·0580	4. 0	·1519	·2714	4. 27	·0351	·1536
3. 7	50. 40	·0575	4. 2	·1532	·2737	4. 30	·0354	·1550
3. 9	51. 15	·0578	4. 10	·1502	·2684	4. 33	·0352	·1541
3. 11	50. 0	·0572	4. 13	·1508	·2694	4. 35	·0354	·1550
3. 13	51. 45	·0581	4. 21	·1502	·2684	4. 39	·0352	·1541
3. 20	49. 45	·0571	4. 27	·1515	·2707	4. 41	·0355	·1554
3. 29	49. 40	·0570	4. 29	·1509	·2696	4. 48	·0352	·1541
3. 30	52. 30	·0585	4. 31	·1535	·2742	4. 51	·0355	·1554
3. 33	51. 40	·0580	4. 32	·1525	·2724	4. 56	·0354	·1550
3. 36	55. 35	·0601	4. 34	·1544	·2758	5. 13	·0355	·1554
3. 41	53. 50	·0592	4. 39	·1530	·2733	5. 21	·0354	·1550
3. 48	55. 50	·0602	4. 41	·1554	·2776	5. 24	·0357	·1563
3. 54	54. 20	·0595	4. 47	·1534	·2740	5. 29	·0352	·1541
4. 0	52. 30	·0585	4. 54	·1551	·2771	5. 44	·0363	·1589
4. 3	54. 30	·0596	4. 58	·1542	·2755	5. 58	·0358	·1567
4. 9	48. 25	·0564	5. 0	·1546	·2762	6. 12	·0364	·1594
4. 15	50. 20	·0574	5. 4	·1543	·2756	6. 22	·0366	·1602
4. 20	48. 20	·0564	5. 10	·1549	·2767	6. 33	·0370	·1620
4. 22	49. 40	·0570	5. 14	·1541	·2753	6. 40	·0369	·1615
4. 26	48. 20	·0564	5. 20	·1562	·2791	6. 53	·0373	·1633
4. 28	50. 20	·0574	5. 22	·1549	·2767	6. 57	·0373	·1633
4. 30	49. 25	·0569	5. 28	·1563	·2792	7. 10	·0378	·1655

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 19° converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force. Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force. Expressed in terms of Gauss's Unit measured on the Metrical System.
Apr. 10 h m	° ′ ″		Apr. 10 h m			Apr. 10 h m		
4. 34	19. 52. 0	·0582	5. 31	·1512	·2702	7. 19	·0376	·1646
4. 38	49. 0	·0567	5. 34	·1526	·2726	7. 29	·0377	·1651
4. 41	50. 50	·0576	5. 47	·1584	·2830	7. 37	·0383	·1677
4. 45	46. 15	·0552	5. 50	·1571	·2807	7. 45	·0380	·1664
4. 49	49. 30	·0570	6. 0	·1501	·2682	8. 2	·0384	·1682
4. 53	48. 20	·0564	6. 9	·1521	·2717	8. 17	·0382	·1673
4. 59	50. 0	·0572	6. 14	·1515	·2707	8. 30	·0379	·1659
5. 0	48. 55	·0567	6. 20	·1520	·2715	8. 40	·0378	·1655
5. 10	50. 35	·0575	6. 27	·1515	·2707	8. 52	·0370	·1620
5. 13	49. 20	·0569	6. 35	·1525	·2724	9. 0	·0367	·1607
5. 17	52. 0	·0582	6. 41	·1515	·2707	9. 10	·0366	·1602
5. 19	50. 20	·0574	6. 49	·1521	·2717	9. 22	·0361	·1580
5. 23	51. 45	·0581	7. 1	·1498	·2676	9. 32	·0360	·1576
5. 28	42. 55	·0535	7. 10	·1508	·2694	9. 42	·0352	·1541
5. 30	44. 5	·0541	7. 25	·1480	·2644	9. 46	·0353	·1545
5. 32	43. 50	·0540	7. 40	·1509	·2696	9. 55	·0351	·1536
5. 39	49. 10	·0568	7. 57	·1467	·2621	10. 0	·0352	·1541
5. 40	48. 55	·0567	8. 7	·1476	·2638	10. 18	·0348	·1524
5. 41	51. 45	·0581	8. 19	·1466	·2620	10. 32	·0350	·1532
5. 47	46. 45	·0555	8. 39	·1485	·2653	10. 47	·0347	·1520
5. 48	47. 10	·0557	8. 58	·1454	·2598	10. 57	·0348	·1524
5. 49	43. 45	·0540	9. 4	·1442	·2577	11. 2	·0346	·1515
5. 53	45. 40	·0549	9. 9	·1447	·2585	11. 6	·0346	·1515
5. 57	44. 25	·0543	9. 21	·1427	·2549	11. 16	·0338	·1480
6. 0	46. 0	·0551	9. 30	·1451	·2593	11. 20	·0336	·1471
6. 9	44. 55	·0546	9. 33	·1447	·2585	11. 30	·0320	·1401
6. 12	45. 55	·0551	9. 39	·1461	·2611	11. 34	·0324	·1419
6. 17	44. 35	·0544	9. 43	·1447	·2585	11. 39	·0326	·1427
6. 20	44. 45	·0545	9. 49	·1453	·2596	11. 50	·0327	·1432
6. 24	44. 50	·0545	9. 56	·1443	·2578	11. 52	·0326	·1427
6. 29	46. 30	·0554	10. 2	·1459	·2607	11. 59	·0328	·1436
6. 35	45. 20	·0548	10. 10	·1469	·2625	12. 9	·0330	·1445
6. 37	45. 55	·0551	10. 27	·1439	·2571	12. 20	·0334	·1463
6. 40	44. 40	·0544	10. 30	·1445	·2582	12. 23	·0332	·1454
6. 50	46. 5	·0551	10. 36	·1437	·2567	12. 29	·0332	·1454
7. 0	43. 35	·0539	10. 41	·1441	·2575	12. 35	·0335	·1467
7. 8	42. 25	·0532	10. 48	·1432	·2559	12. 40	·0335	·1467
7. 17	48. 45	·0566	11. 0	·1442	·2577	12. 48	·0336	·1471
7. 27	44. 10	·0542	11. 2	·1437	·2567	12. 59	·0336	·1471
7. 32	46. 25	·0553	11. 11	·1439	·2571	13. 5	·0330	·1445
7. 35	46. 0	·0551	11. 17	·1426	·2548	13. 22	·0336	·1471
7. 40	52. 30	·0585	11. 25	·1449	·2589	13. 30	·0337	·1476
7. 42	53. 20	·0590	11. 31	·1429	·2553	13. 39	·0335	·1467
7. 54	43. 25	·0538	11. 41	·1487	·2656	13. 43	·0335	·1467
8. 1	39. 40	·0518	11. 49	·1495	·2671	13. 52	·0334	·1463
8. 10	39. 40	·0518	12. 5	·1448	·2587	14. 0	·0333	·1458
8. 15	37. 0	·0504	12. 20	·1482	·2648	14. 12	·0324	·1419
8. 22	34. 0	·0489	12. 25	·1470	·2627	14. 22	·0322	·1410
8. 28	32. 40	·0481	12. 30	·1459	·2607	14. 32	·0320	·1401
8. 39	37. 0	·0504	12. 37	·1470	·2627	15. 2	·0331	·1449
8. 44	31. 25	·0475	12. 41	·1460	·2609	15. 17	·0329	·1440
8. 52	32. 25	·0480	12. 47	·1465	·2618	15. 43	·0338	·1480

Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
April 10 h m	°	°	April 10 h m	°	°	April 10 h m	°	°
0. 0	63·0	63·0	3. 0	63·8	64·4	22. 0	63·2	63·6
1. 0	63·4	63·6	9. 0	63·7	64·3	23. 0	64·6	63·8
2. 0	63·6	64·0	21. 0	63·5	63·4			

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force … Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force … Expressed in terms of Gauss's Unit measured on the Metrical System.
Apr. 10			Apr. 10			Apr. 10		
h m	° ′ ″		h m			h m		
9. 7	19. 21. 40	·0424	12. 52	·1459	·2607	15. 51	·0338	·1480
9. 17	27. 0	·0452	12. 59	·1465	·2618	16. 0	·0340	·1489
9. 34	10. 0	·0364	13. 2	·1455	·2600	16. 9	·0338	·1480
9. 41	18. 10	·0407	13. 11	·1434	·2562	16. 23	·0337	·1476
9. 46	17. 55	·0405	13. 32	·1447	·2585	16. 58	·0345	·1511
9. 51	20. 40	·0419	13. 40	·1440	·2573	17. 14	·0347	·1520
9. 55	16. 55	·0400	13. 48	·1456	·2602	17. 34	·0345	·1511
9. 58	16. 30	·0398	13. 51	·1451	·2593	18. 7	·0348	·1524
10. 2	18. 35	·0409	14. 2	·1459	·2607	18. 14	·0346	·1515
10. 18	27. 55	·0457	14. 11	·1432	·2559	18. 29	·0348	·1524
10. 20	27. 40	·0455	14. 17	·1436	·2566	18. 32	·0347	·1520
10. 25	23. 55	·0437	14. 30	·1418	·2533	18. 39	·0348	·1524
10. 30	23. 20	·0434	14. 56	·1462	·2613	18. 43	·0347	·1520
10. 33	24. 5	·0437	15. 0	·1457	·2603	18. 48	·0348	·1524
10. 37	22. 30	·0429	15. 16	·1471	·2629	18. 59	·0347	·1520
10. 40	23. 0	·0432	15. 22	·1466	·2620	19. 2	·0348	·1524
10. 43	21. 30	·0424	15. 27	·1471	·2629	19. 12	·0346	·1515
10. 50	19. 35	·0414	15. 32	·1451	·2593	19. 17	·0347	·1520
10. 53	19. 25	·0413	15. 48	·1483	·2649	19. 22	·0346	·1515
10. 58	20. 40	·0419	15. 52	·1469	·2625	19. 27	·0346	·1515
11. 1	20. 5	·0416	16. 2	·1489	·2660	19. 32	·0345	·1511
11. 10	22. 5	·0426	16. 9	·1474	·2634	19. 33	·0346	·1515
11. 13	21. 45	·0425	16. 18	·1471	·2629	19. 40	·0345	·1511
11. 19	19. 0	·0411	16. 23	·1462	·2613	19. 41	·0346	·1515
11. 23	25. 0	·0442	16. 28	·1466	·2620	19. 52	·0346	·1515
11. 25	31. 10	·0474	16. 43	·1450	·2591	19. 55	·0347	·1520
11. 40	16. 15	·0396	17. 2	·1456	·2602	20. 0	·0345	·1511
11. 51	31. 15	·0474	17. 27	·1475	·2636	20. 5	·0347	·1520
11. 52	33. 55	·0489	17. 33	·1467	·2621	20. 15	·0346	·1515
11. 58	36. 35	·0502	17. 40	·1472	·2631	20. 22	·0345	·1511
12. 10	23. 25	·0434	17. 47	·1466	·2620	20. 31	·0347	·1520
12. 18	19. 40	·0414	17. 52	·1471	·2629	20. 35	·0346	·1515
12. 21	24. 0	·0437	17. 56	·1466	·2620	20. 38	·0347	·1520
12. 28	24. 25	·0439	18. 3	·1470	·2627	20. 42	·0346	·1515
12. 30	22. 35	·0429	18. 10	·1465	·2618	20. 46	·0347	·1520
12. 33	23. 20	·0434	18. 29	·1472	·2631	21. 0	·0346	·1515
12. 36	21. 35	·0424	18. 32	·1464	·2616	21. 2	·0348	·1524
12. 46	17. 25	·0402	18. 41	·1472	·2631	21. 8	·0346	·1515
12. 51	16. 0	·0395	18. 42	·1464	·2616	21. 10	·0347	·1520
12. 52	12. 35	·0377	18. 49	·1473	·2632	21. 12	·0345	·1511
13. 0	13. 0	·0380	19. 5	·1477	·2639	21. 21	·0346	·1515
13. 8	16. 55	·0400	19. 10	·1470	·2627	21. 24	·0345	·1511
13. 10	17. 10	·0401	19. 18	·1477	·2639	21. 36	·0345	·1511
13. 15	15. 5	·0390	19. 22	·1471	·2629	21. 47	·0344	·1507
13. 22	18. 40	·0409	19. 28	·1475	·2636	22. 25	·0345	·1511
13. 30	18. 0	·0406	19. 31	·1468	·2623	22. 33	·0345	·1511
13. 36	20. 5	·0416	19. 38	·1473	·2632	22. 39	·0346	·1515
13. 41	17. 20	·0402	19. 40	·1469	·2625	22. 42	·0345	·1511
13. 49	18. 40	·0409	19. 48	·1472	·2631	22. 47	·0346	·1515
13. 52	17. 20	·0402	20. 1	·1463	·2614	22. 52	·0346	·1515
14. 0	17. 25	·0402	20. 9	·1473	·2632	22. 57	·0348	·1524
14. 9	23. 55	·0437	20. 13	·1465	·2618	23. 2	·0346	·1515

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination, above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force … Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force … Expressed in terms of Gauss's Unit measured on the Metrical System.
Apr. 10			Apr. 10			Apr. 10		
h m	° ′ ″		h m			h m		
14. 14	19. 20. 50	·0420	20. 18	·1469	·2625	23. 17	·0347	·1520
14. 28	31. 30	·0476	20. 25	·1463	·2614	23. 38	·0352	·1541
14. 30	31. 20	·0475	20. 34	·1471	·2629	23. 40	·0355	·1554
14. 36	30. 50	·0472	20. 37	·1466	·2620	23. 47	·0352	·1541
14. 40	32. 55	·0483	20. 41	·1475	·2636	23. 51	·0355	·1554
14. 43	32. 10	·0479	20. 45	·1465	·2618	23. 59	·0354	·1550
14. 50	34. 20	·0491	20. 51	·1469	·2625			
14. 58	33. 45	·0488	21. 0	·1461	·2611			
15. 2	35. 5	·0494	21. 4	·1469	·2625			
15. 11	30. 45	·0472	21. 7	·1459	·2607			
15. 13	31. 25	·0475	21. 10	·1467	·2621			
15. 20	29. 0	·0463	21. 12	·1459	·2607			
15. 26	31. 0	·0473	21. 23	·1465	·2618			
15. 36	26. 0	·0447	21. 32	·1458	·2605			
15. 41	28. 55	·0463	21. 41	·1455	·2600			
15. 43	28. 20	·0460	21. 52	·1446	·2584			
15. 48	33. 0	·0484	22. 23	·1441	·2575			
15. 58	27. 10	·0453	22. 31	·1438	·2569			
16. 3	34. 0	·0489	22. 38	·1445	·2582			
16. 12	28. 10	·0459	22. 42	·1437	·2567			
16. 19	28. 55	·0463	22. 48	·1446	·2584			
16. 22	26. 5	·0447	22. 57	·1430	·2555			
16. 29	27. 25	·0454	23. 0	·1435	·2564			
16. 31	26. 35	·0450	23. 7	·1409	·2517			
16. 32	28. 25	·0460	23. 11	·1417	·2531			
16. 39	27. 30	·0455	23. 12	·1415	·2528			
16. 42	29. 30	·0466	23. 28	·1437	·2567			
16. 46	28. 30	·0461	23. 38	·1447	·2585			
17. 6	37. 20	·0506	23. 42	·1443	·2578			
17. 8	36. 50	·0503	23. 50	·1449	·2589			
17. 14	39. 55	·0520	23. 59	·1444	·2580			
17. 20	38. 25	·0512						
17. 23	39. 0	·0515						
17. 24	37. 50	·0508						
17. 28	37. 50	·0508						
17. 29	37. 5	·0504						
17. 32	37. 40	·0507						
17. 34	35. 10	·0495						
17. 39	36. 10	·0500						
17. 42	34. 50	·0493						
17. 43	35. 25	·0496						
17. 47	33. 50	·0488						
17. 53	34. 35	·0492						
17. 57	33. 30	·0487						
18. 4	35. 0	·0494						
18. 10	32. 35	·0481						
18. 16	32. 30	·0481						
18. 27	34. 0	·0489						
18. 30	32. 20	·0480						
18. 37	34. 30	·0492						
18. 42	32. 0	·0478						
18. 48	34. 30	·0492						

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.

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

The value 0·8600 of Horizontal Force corresponds to 1·5368 of Gauss's Unit on the Metrical System.

The value 0·9600 of Vertical Force corresponds to 4·2033 of Gauss's Unit on the Metrical System.

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force. Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force. Expressed in terms of Gauss's Unit measured on the Metrical System.
Apr. 10								
h m	° ′ ″		h m			h m		
18. 52	19. 33. 40	·0487						
18. 59	33. 35	·0487						
19. 0	35. 20	·0496						
19. 2	34. 0	·0489						
19. 6	35. 0	·0494						
19. 9	33. 35	·0487						
19. 17	35. 15	·0495						
19. 21	34. 5	·0489						
19. 27	35. 25	·0496						
19. 30	33. 35	·0487						
19. 34	34. 55	·0494						
19. 37	33. 5	·0484						
19. 40	34. 10	·0490						
19. 43	33. 0	·0484						
19. 47	33. 45	·0488						
19. 52	32. 25	·0480						
19. 57	34. 55	·0494						
20. 0	30. 50	·0472						
20. 2	34. 0	·0489						
20. 4	33. 25	·0486						
20. 9	34. 55	·0494						
20. 11	31. 40	·0476						
20. 17	33. 35	·0487						
20. 23	31. 20	·0475						
20. 31	34. 50	·0493						
20. 37	33. 20	·0486						
20. 39	36. 15	·0500						
20. 42	33. 15	·0485						
20. 49	35. 45	·0498						
20. 55	33. 10	·0485						
20. 59	32. 0	·0478						
21. 1	34. 20	·0491						
21. 6	32. 35	·0481						
21. 8	33. 25	·0486						
21. 9	31. 45	·0477						
21. 12	34. 0	·0489						
21. 17	33. 20	·0486						
21. 22	34. 35	·0492						
21. 29	35. 0	·0494						
21. 33	37. 10	·0505						
21. 39	36. 25	·0501						
21. 40	37. 35	·0507						
21. 47	36. 15	·0500						
22. 7	39. 0	·0515						
22. 18	38. 20	·0512						
22. 35	42. 35	·0533						
22. 40	41. 40	·0528						
22. 48	43. 40	·0539						
22. 52	42. 20	·0532						
23. 2	42. 40	·0533						
23. 9	41. 15	·0526						
23. 13	41. 55	·0530						

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force. Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force. Expressed in terms of Gauss's Unit measured on the Metrical System.
Apr. 10								
h m	° ′ ″		h m			h m		
23. 20	19. 40. 55	·0525						
23. 33	45. 55	·0551						
23. 39	42. 40	·0533						
23. 43	44. 10	·0542						
23. 52	45. 20	·0548						
23. 59	44. 10	·0542						
July 7			July 7			July 7		
0. 0	19. 39. 20	·0517	0. 0	·1489	·2660	0. 0	·0349	·1528
0. 31	41. 55	·0530	0. 32	·1493	·2667	2. 24	·0356	·1558
1. 27	45. 25	·0548	1. 12	·1499	·2678	2. 32	·0357	·1563
1. 50	45. 55	·0551	1. 40	·1501	·2682	2. 39	·0356	·1558
2. 2	46. 40	·0554	1. 49	·1505	·2689	2. 57	·0356	·1558
2. 8	46. 10	·0552	2. 0	·1507	·2692	3. 3	·0357	·1563
2. 26	46. 35	·0554	2. 7	·1504	·2687	3. 13	·0356	·1558
2. 32	47. 0	·0556	2. 30	·1509	·2696	3. 15	·0357	·1563
2. 59	45. 20	·0548	2. 39	·1519	·2714	3. 20	·0356	·1558
3. 3	46. 0	·0551	2. 44	·1514	·2705	3. 22	·0358	·1567
3. 11	45. 0	·0546	2. 55	·1515	·2707	3. 29	·0356	·1558
3. 15	45. 25	·0548	3. 0	·1511	·2700	3. 32	·0358	·1567
3. 20	44. 25	·0543	3. 10	·1519	·2714	3. 34	·0357	·1563
3. 24	44. 55	·0546	3. 12	·1516	·2709	3. 42	·0359	·1571
3. 28	44. 0	·0541	3. 19	·1521	·2717	4. 0	·0357	·1563
3. 31	45. 0	·0546	3. 23	·1514	·2705	4. 14	·0359	·1571
3. 37	44. 0	·0541	3. 29	·1521	·2717	4. 22	·0361	·1580
3. 45	45. 20	·0548	3. 31	·1516	·2709	4. 27	·0360	·1576
4. 1	42. 0	·0530	3. 37	·1523	·2720	4. 35	·0362	·1585
4. 9	41. 50	·0529	3. 50	·1537	·2745	4. 42	·0361	·1580
4. 15	43. 35	·0539	4. 9	·1517	·2710	4. 49	·0363	·1589
4. 19	42. 55	·0535	4. 17	·1530	·2733	4. 52	·0362	·1585
4. 24	44. 20	·0543	4. 20	·1527	·2727	4. 59	·0364	·1594
4. 29	42. 45	·0534	4. 28	·1544	·2758	5. 1	·0363	·1589
4. 39	42. 45	·0534	4. 30	·1536	·2744	5. 3	·0376	·1646
4. 44	40. 5	·0520	4. 40	·1549	·2767	5. 7	·0367	·1607
4. 49	40. 55	·0525	4. 47	·1535	·2742	5. 8	·0372	·1629
4. 56	39. 35	·0518	4. 52	·1544	·2758	5. 10	·0368	·1611
4. 59	40. 50	·0524	4. 56	·1536	·2744	5. 12	·0372	·1629
5. 1	37. 5	·0504	5. 0	·1547	·2763	5. 13	·0370	·1620
5. 3	49. 55	·0572	5. 18	·1638	·2927	5. 17	·0372	·1629
5. 8	41. 0	·0525	5. 28	·1679	·3000	5. 20	·0373	·1633
	***		5. 29	·1692	·3024	5. 25	·0366	·1602
5. 20	50. 5	·0572	5. 31	·1621	·2897	5. 29	·0371	·1624
5. 28	47. 15	·0557	5. 33	·1675	·2993	5. 33	·0364	·1594
5. 29	41. 10	·0526	5. 36	·1646	·2941	5. 36	·0365	·1598
5. 30	45. 0	·0546	5. 39	·1601	·2861	5. 38	·0363	·1589
5. 33	41. 55	·0530	5. 41	·1574	·2812	5. 41	·0366	·1602
5. 37	44. 25	·0542	5. 42	·1560	·2787	5. 43	·0364	·1594
5. 39	41. 0	·0525	5. 47	·1579	·2821	5. 55	·0366	·1602
5. 43	44. 20	·0543	5. 50	·1544	·2758	6. 7	·0369	·1615
5. 45	42. 0	·0530	5. 55	·1538	·2747	6. 10	·0368	·1611
5. 49	43. 10	·0537	5. 56	·1562	·2791	6. 25	·0375	·1642
6. 0	36. 30	·0502		***		6. 30	·0374	·1638

Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
July 7		
h m	°	°
0. 0	69·2	70·4
9. 0	70·4	71·0
21. 0	68·9	68·8

Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
July 7		
h m	°	°
22. 0	68·1	67·8
23. 0	68·0	67·8

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force: Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force: Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force: Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force: Expressed in terms of Gauss's Unit measured on the Metrical System.
July 7			July 7			July 7			July 7			July 7			July 7		
h m	° ′ ″		h m			h m			h m	° ′ ″		h m			h m		
6. 6	19. 39. 35	·0518	6. 0	·1536	·2744	6. 34	·0379	·1659	11. 49	19. 17. 40	·0403	10. 39	·1456	·2602	16. 12	·0342	·1498
6. 10	35. 25	·0496	6. 8	·1549	·2767	6. 40	·0381	·1668	11. 54	23. 0	·0432	10. 45	·1498	·2676	16. 23	·0339	·1484
6. 21	37. 15	·0505	6. 11	·1563	·2792	6. 46	·0384	·1682	11. 58	22. 5	·0426	10. 46	·1475	·2636	16. 36	·0340	·1489
6. 25	38. 20	·0512	6. 17	·1549	·2767	6. 58	·0378	·1655	12. 2	25. 50	·0446	10. 50	·1483	·2649	16. 42	·0339	·1484
6. 30	35. 40	·0497	6. 21	·1568	·2801	7. 12	·0385	·1686	12. 8	23. 0	·0432	10. 51	·1461	·2611	16. 52	·0338	·1480
6. 32	39. 30	·0518		***		7. 22	·0382	·1673	12. 12	27. 10	·0453	10. 58	·1440	·2573	17. 2	·0336	·1471
6. 36	38. 40	·0513	6. 30	·1581	·2825	7. 37	·0378	·1655	12. 16	25. 55	·0447	11. 2	·1399	·2499	17. 9	·0339	·1484
6. 38	40. 30	·0523	6. 32	·1555	·2778	7. 50	·0369	·1615	12. 19	28. 25	·0460	11. 10	·1393	·2488	17. 21	·0337	·1476
6. 41	38. 40	·0513	6. 43	·1606	·2870	7. 59	·0370	·1620	12. 22	25. 30	·0445	11. 20	·1419	·2535	17. 41	·0339	·1484
6. 46	40. 50	·0524	6. 54	·1647	·2942	8. 7	·0377	·1651	12. 24	26. 10	·0448	11. 22	·1458	·2605	17. 46	·0337	·1476
6. 49	37. 20	·0506	7. 2	·1585	·2832	8. 16	·0381	·1668	12. 27	24. 20	·0439	11. 29	·1467	·2621	17. 52	·0340	·1489
6. 52	39. 25	·0517	7. 10	·1601	·2861	8. 26	·0383	·1677	12. 30	24. 50	·0441	11. 35	·1448	·2587	18. 0	·0341	·1493
7. 4:	35. 55	·0499	7. 15	·1621	·2897	8. 42	·0375	·1642	12. 31	23. 50	·0436	11. 40	·1455	·2600	18. 5	·0337	·1476
7. 14	37. 30	·0507	7. 24	·1686	·3013	8. 50	·0372	·1629	12. 39	29. 0	·0463	11. 42	·1450	·2591	18. 26	·0338	·1480
7. 22	37. 15	·0505	7. 29	·1669	·2982	8. 53	·0373	·1633	12. 40	27. 15	·0453	11. 58	·1485	·2653	18. 56	·0337	·1476
7. 24	40. 55	·0525	7. 37	·1679	·3000	9. 8	·0370	·1620	12. 42	30. 55	·0473	12. 1	·1488	·2658	19. 0	·0339	·1484
7. 28	39. 35	·0518	7. 45	·1631	·2915	9. 22	·0372	·1629	12. 49	25. 15	·0443	12. 9	·1473	·2632	19. 3	·0333	·1458
7. 31	42. 5	·0530	7. 50	·1646	·2941	9. 30	·0371	·1624	12. 55	27. 30	·0455	12. 14	·1489	·2660	19. 12	·0343	·1502
7. 34	41. 0	·0525	7. 51	·1624	·2902	9. 45	·0364	·1594	12. 58	26. 25	·0449	12. 17	·1481	·2646	19. 13	·0340	·1489
7. 37	44. 55	·0546	7. 59	·1559	·2785	9. 55	·0365	·1598	13. 3	30. 15	·0469	12. 20	·1487	·2656	19. 23	·0340	·1489
7. 42	42. 55	·0535	8. 4	·1531	·2735	10. 10	·0361	·1580	13. 10	25. 30	·0445	12. 22	·1475	·2636	19. 28	·0334	·1463
7. 43	47. 5	·0556	8. 10	·1549	·2767	10. 18	·0362	·1585	13. 17	26. 35	·0450	12. 28	·1481	·2646	19. 32	·0337	·1476
7. 47	46. 25	·0553	8. 14	·1534	·2740	10. 24	·0358	·1567	13. 21	30. 40	·0471	12. 31	·1473	·2632	19. 38	·0331	·1449
7. 50	50. 45	·0576	8. 18	·1549	·2767	10. 30	·0358	·1567	13. 29	28. 0	·0458	12. 39	·1489	·2660	19. 42	·0333	·1458
7. 57	47. 45	·0560	8. 20	·1527	·2727	10. 35	·0355	·1554	13. 38	27. 0	·0452	12. 42	·1483	·2649	19. 48	·0328	·1436
8. 7	37. 20	·0506	8. 26	·1513	·2703	10. 40	·0356	·1558	13. 41	27. 35	·0455	12. 46	·1491	·2664	19. 58	·0331	·1449
8. 8	38. 50	·0514	8. 29	·1517	·2710	10. 50	·0323	·1414	13. 43	26. 55	·0452	12. 50	·1479	·2643	20. 10	·0326	·1427
8. 34	12. 50	·0378	8. 30	·1511	·2700	11. 0	·0304	·1331	13. 46	28. 15	·0459	12. 56	·1488	·2658	20. 16	·0324	·1419
8. 41	24. 0	·0437	8. 39	·1523	·2720	11. 2	·0307	·1344	13. 51	25. 45	·0446	13. 0	·1481	·2646	20. 23	·0328	·1436
8. 46	23. 5	·0432	8. 42	·1535	·2742	11. 3	·0306	·1339	14. 0	28. 20	·0460	13. 2	·1487	·2656	20. 27	·0326	·1427
8. 50	26. 0	·0447	8. 47	·1524	·2722	11. 19	·0340	·1489	14. 3	27. 35	·0455	13. 7	·1475	·2636	20. 31	·0329	·1440
8. 51	24. 40	·0440	8. 51	·1537	·2745	11. 26	·0338	·1480	14. 6	28. 50	·0462	13. 21	·1492	·2666	20. 32	·0328	·1436
9. 0	31. 30	·0476	8. 52	·1511	·2700	11. 48	·0354	·1550	14. 8	28. 20	·0460	13. 29	·1481	·2646	20. 38	·0333	·1458
9. 13	29. 35	·0466	8. 57	·1521	·2717	12. 0	·0352	·1541	14. 20	34. 55	·0494	13. 31	·1487	·2656	20. 40	·0332	·1454
9. 14	32. 0	·0478	9. 2	·1501	·2682	12. 35	·0354	·1550	14. 25	34. 15	·0490	13. 35	·1477	·2639	20. 42	·0335	·1467
9. 23	30. 20	·0470	9. 8	·1493	·2667	12. 48	·0354	·1550	14. 28	35. 10	·0495	13. 39	·1484	·2651	20. 52	·0331	·1449
9. 32	37. 0	·0504	9. 10	·1498	·2676	12. 56	·0353	·1545	14. 30	33. 35	·0487	13. 42	·1475	·2636	20. 58	·0330	·1445
9. 41	34. 55	·0494	9. 12	·1485	·2653	13. 14	·0354	·1550	14. 36	34. 40	·0492	13. 44	·1479	·2643	21. 8	·0334	·1463
9. 46	36. 5	·0499	9. 16	·1497	·2674	13. 40	·0350	·1532	14. 48	32. 10	·0479	13. 50	·1467	·2621	21. 16	·0330	·1445
9. 50	33. 10	·0485	9. 20	·1486	·2655	13. 56	·0352	·1541	14. 58	37. 20	·0506	14. 1	·1485	·2653	21. 35	·0336	·1471
10. 0	31. 15	·0474	9. 35	·1519	·2714	14. 6	·0351	·1536	15. 2	34. 0	·0489	14. 6	·1479	·2643	21. 42	·0334	·1463
10. 12	34. 40	·0492	9. 42	·1492	·2666	14. 32	·0347	·1520	15. 8	32. 40	·0481	14. 11	·1487	·2656	21. 49	·0335	·1467
10. 18	32. 0	·0478	9. 46	·1497	·2674	14. 43	·0346	·1515	15. 18	30. 20	·0470	14. 17	·1480	·2644	21. 56	·0332	·1454
10. 20	32. 40	·0481	9. 48	·1486	·2655	14. 50	·0346	·1515	15. 20	32. 0	·0478	14. 30	·1466	·2620	22. 8	·0331	·1449
10. 26	30. 15	·0469	9. 50	·1489	·2660	14. 58	·0344	·1507	15. 25	29. 55	·0468	14. 42	·1472	·2631	22. 12	·0335	·1467
10. 32	31. 0	·0473	9. 53	·1471	·2629	15. 16	·0345	·1511	15. 36	31. 20	·0475	14. 51	·1477	·2639	22. 23	·0333	·1458
10. 40	23. 45	·0436	10. 5	·1489	·2660	15. 22	·0344	·1507	15. 37	33. 15	·0485	15. 0	·1494	·2669	22. 32	·0335	·1467
11. 4	50. 50	·0576	10. 11	·1479	·2643	15. 33	·0345	·1511	15. 40	31. 55	·0478	15. 2	·1468	·2623	22. 36	·0331	·1449
11. 20	31. 0	·0473	10. 13	·1483	·2649	15. 46	·0342	·1498	15. 48	34. 55	·0494	15. 16	·1455	·2600	22. 41	·0334	·1463
11. 30	36. 35	·0502	10. 18	·1471	·2629	15. 55	·0344	·1507	15. 53	31. 10	·0474	15. 23	·1467	·2621	22. 45	·0332	·1454
11. 35	31. 30	·0476	10. 24	·1481	·2646	15. 56	·0341	·1493	15. 57	36. 30	·0502	15. 24	·1456	·2602	22. 55	·0336	·1471
11. 42	18. 35	·0409	10. 30	·1469	·2625	16. 10	·0341	·1493	15. 59	32. 35	·0481	15. 29	·1466	·2620	23. 3	·0333	·1458

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.

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

The value 0·8600 of Horizontal Force corresponds to 1·5368 of Gauss's Unit on the Metrical System.

The value 0·9600 of Vertical Force corresponds to 4·2033 of Gauss's Unit on the Metrical System.

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.
July 7		
h m	° ′ ″	
16. 2	19. 30. 45	·0472
16. 7	32. 40	·0481
16. 10	30. 20	·0470
16. 12	32. 50	·0482
16. 17	28. 0	·0458
16. 19	35. 0	·0494
16. 21	30. 5	·0468
16. 23	32. 20	·0480
16. 29	30. 10	·0469
16. 31	30. 40	·0471
16. 36	29. 5	·0463
16. 43	34. 0	·0489
16. 48	31. 0	·0473
16. 50	33. 45	·0488
16. 58	28. 0	·0458
17. 0	29. 5	·0463
17. 3	26. 20	·0449
17. 4	26. 55	·0452
17. 9	24. 0	·0437
17. 14	30. 20	·0470
17. 17	27. 20	·0454
17. 19	26. 0	·0447
17. 20	33. 45	·0488
17. 23	26. 25	·0449
17. 30	20. 20	·0418
17. 54	22. 45	·0430
17. 59	22. 0	·0426
18. 1	31. 0	·0473
18. 7	25. 15	·0443
18. 9	26. 25	·0449
18. 14	23. 5	·0432
18. 19	23. 25	·0434
18. 22	24. 55	·0442
18. 26	23. 30	·0435
18. 29	24. 20	·0439
18. 33	21. 20	·0423
18. 39	22. 35	·0429
18. 41	22. 0	·0426
18. 48	24. 30	·0440
	***	
19. 0	20. 45	·0420
	***	
19. 26	52. 35	·0585
	***	
19. 32	40. 20	·0522
	***	
19. 35	48. 50	·0566
	***	
19. 40	40. 50	·0524
19. 48	48. 0	·0562
19. 53	40. 30	·0523
20. 0	50. 30	·0575

Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Expressed in terms of Gauss's Unit measured on the Metrical System.
July 7		
h m		
15. 30	·1457	·2603
15. 40	·1464	·2616
16. 0	·1471	·2629
16. 6	·1469	·2625
16. 10	·1473	·2632
	***	
16. 23	·1471	·2629
16. 32	·1466	·2620
16. 47	·1482	·2648
16. 57	·1469	·2625
17. 5	·1452	·2595
	***	
17. 10	·1471	·2629
	***	
17. 20	·1452	·2595
17. 22	·1469	·2625
17. 29	·1459	·2607
17. 41	·1453	·2596
17. 49	·1459	·2607
17. 55	·1445	·2582
17. 59	·1464	·2616
18. 1	·1455	·2600
18. 4	·1477	·2639
18. 12	·1461	·2611
18. 21	·1457	·2603
18. 31	·1448	·2587
18. 40	·1452	·2595
18. 45	·1448	·2587
	***	
19. 2	·1432	·2559
19. 8	·1397	·2495
19. 13	·1443	·2578
19. 18	·1419	·2535
19. 21	·1433	·2560
19. 27	·1446	·2584
19. 28	·1463	·2614
19. 31	·1446	·2584
19. 37	·1476	·2638
19. 41	·1430	·2555
19. 44	·1440	·2573
19. 45	·1422	·2541
19. 50	·1441	·2575
19. 51	·1417	·2531
20. 0	·1412	·2523
20. 7	·1439	·2571
	***	
20. 20	·1403	·2506
20. 24	·1395	·2492
20. 30	·1409	·2517
20. 32	·1395	·2492
20. 43	·1437	·2567
20. 45	·1419	·2535

Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Expressed in terms of Gauss's Unit measured on the Metrical System.
July 7		
h m		
23. 18	·0336	·1471
23. 21	·0340	·1489
23. 26	·0338	·1480
23. 27	·0340	·1489
23. 30	·0339	·1484
23. 31	·0341	·1493
23. 37	·0340	·1489
23. 39	·0341	·1493
	(†)	

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.
July 7		
h m	° ′ ″	
20. 13	19. 38. 50	·0514
20. 18	40. 40	·0523
20. 20	35. 0	·0494
20. 28	45. 5	·0546
20. 32	39. 30	·0518
	***	
20. 48	54. 5	·0593
	***	
21. 10	38. 10	·0511
21, 12	44. 40	·0544
	***	
21. 23	32. 50	·0482
21. 32	34. 5	·0489
21. 42	41. 0	·0525
21. 50	37. 0	·0504
21. 52	38. 55	·0515
21. 59	34. 0	·0489
22. 4	30. 50	·0472
22. 10	31. 55	·0478
22. 12	28. 20	·0460
22. 13	36. 35	·0502
22. 21	31. 50	·0477
22. 36	36. 50	·0503
22. 42	27. 45	·0456
22. 46	33. 25	·0486
22. 50	28. 45	·0462
22. 53	32. 30	·0481
22. 55	31. 0	·0473
23. 1	35. 55	·0499
23. 8	30. 50	·0472
23. 12	31. 50	·0477
23. 15	36. 55	·0504
23. 18	35. 0	·0494
23. 21	40. 35	·0523
23. 25	39. 55	·0520
23. 32	45. 25	·0548
23. 47	45. 50	·0550
23. 51	47. 0	·0556
23. 53	45. 45	·0550
23. 56	46. 10	·0552
23. 59	44. 20	·0543
July 8		
0. 0	19. 45. 0	·0546
0. 4	43. 50	·0540
0. 10	45. 40	·0549
0. 12	44. 55	·0546
0. 15	46. 0	·0551
0. 19	45. 10	·0547
0. 21	46. 35	·0554
0. 26	45. 35	·0549
0. 30	47. 25	·0558

Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Expressed in terms of Gauss's Unit measured on the Metrical System.
July 7		
h m		
20. 50	·1449	·2589
20. 57	·1434	·2562
21. 0	·1443	·2578
21. 3	·1423	·2542
21. 13	·1461	·2611
21. 18	·1434	·2562
21. 20	·1451	·2593
21. 23	·1419	·2535
21. 33	·1456	·2602
21. 37	·1441	·2575
21. 42	·1459	·2607
21. 49	·1441	·2575
21. 57	·1450	·2591
22. 0	·1422	·2541
	***	
22. 11	·1410	·2519
22. 20	·1438	·2569
22. 25	·1419	·2535
22. 31	·1435	·2564
22. 36	·1413	·2524
22. 41	·1426	·2548
22. 43	·1407	·2513
22. 50	·1410	·2519
22. 58	·1426	·2548
23. 3	·1437	·2567
23. 10	·1425	·2546
	(†)	
23. 40	·1426	·2548
23. 59	·1458	·2605
July 8		
0. 0	·1458	·2605
0. 10	·1452	·2595
0. 18	·1463	·2614
0. 30	·1439	·2571
0. 42	·1452	·2595
0. 49	·1446	·2584
1. 9	·1464	·2616
1. 12	·1454	·2598
1. 27	·1475	·2636

Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Expressed in terms of Gauss's Unit measured on the Metrical System.
h m		
July 8		
0. 0	·0347	·1520
0. 10	·0346	·1515
0. 18	·0347	·1520
0. 28	·0350	·1532
0. 38	·0351	·1536
0. 59	·0357	·1563
1. 5	·0357	·1563
1. 13	·0360	·1576
1. 21	·0359	·1571

Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Of V. F. Magnet.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Of V. F. Magnet.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Of V. F. Magnet.
July 8			July 8			July 8		
h m	°	°	h m	°	°	h m	°	°
0. 0	68·7	68·7	3. 0	68·5	67·8	22. 0	67·2	66·4
1. 0	68·7	68·6	9. 0	67·2	67·4	23. 0	67·3	66·4
2. 0	68·3	68·2	21. 0	67·2	66·6			

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 19°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force. Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force. Expressed in terms of Gauss's Unit measured on the Metrical System.
July 8			July 8			July 8		
h m	° ′ ″		h m			h m		
0. 41	19. 44. 0	·0541	1. 29	·1468	·2623	1. 33	·0359	·1571
0. 43	44. 30	·0544	1. 30	·1475	·2636	1. 40	·0358	·1567
0. 53	41. 30	·0528	1. 39	·1466	·2620	1. 55	·0359	·1571
0. 57	42. 35	·0533	1. 50	·1449	·2589	2. 0	·0361	·1580
1. 0	41. 10	·0526	1. 52	·1453	·2596	2. 3	·0360	·1576
1. 2	43. 5	·0536	1. 57	·1445	·2582	2. 8	·0365	·1598
1. 9	41. 45	·0529	2. 8	·1476	·2638	2. 27	·0370	·1620
1. 14	44. 50	·0545	2. 11	·1465	·2618	2. 31	·0370	·1620
1. 17	43. 50	·0540	2. 20	·1485	·2653	2. 37	·0374	·1638
1. 19	45. 15	·0547	2. 30	·1455	·2600	2. 40	·0373	·1633
1. 22	44. 30	·0544	2. 31	·1469	·2625	2. 42	·0373	·1633
1. 36	47. 45	·0560	2. 36	·1465	·2618	2. 50	·0377	·1651
1. 40	47. 20	·0558	2. 40	·1491	·2664	2. 58	·0378	·1655
1. 50	49. 45	·0571	2. 51	·1453	·2596	3. 9	·0379	·1659
1. 52	49. 0	·0567	3. 2	·1474	·2634	3. 20	·0381	·1668
1. 54	50. 5	·0572	3. 7	·1462	·2613	3. 32	·0386	·1690
1. 59	48. 20	·0564	3. 17	·1469	·2625	3. 56	·0388	·1699
2. 3	50. 35	·0575	3. 22	·1476	·2638	4. 10	·0379	·1659
2. 10	46. 35	·0554	3. 31	·1472	·2631	4. 28	·0386	·1690
2. 13	47. 0	·0556	3. 40	·1506	·2691	4. 33	·0387	·1695
2. 18	44. 40	·0544	3. 43	·1499	·2678	4. 42	·0389	·1703
2. 20	45. 50	·0550	3. 51	·1509	·2696	4. 58	·0385	·1686
2. 23	44. 55	·0546	3. 57	·1503	·2685	5. 11	·0392	·1717
2. 30	47. 5	·0556	4. 2	·1509	·2696	5. 22	·0386	·1690
2. 35	46. 5	·0551	4. 19	·1487	·2656	5. 26	·0387	·1695
2. 40	50. 35	·0575	4. 32	·1547	·2763	5. 35	·0379	·1659
2. 43	47. 55	·0561	4. 39	·1538	·2747	5. 38	·0379	·1659
2. 46	48. 30	·0565	4. 50	·1581	·2825	5. 49	·0371	·1624
2. 53	42. 0	·0530	4. 57	·1575	·2814	6. 2	·0366	·1602
3. 0	43. 15	·0537	5. 2	·1586	·2834	6. 8	·0366	·1602
3. 14	42. 0	·0530	5. 22	·1654	·2955	6. 10	·0364	·1594
3. 18	43. 5	·0536	5. 29	·1640	·2930	6. 20	·0365	·1598
3. 26	42. 55	·0535	5. 33	·1651	·2950	6. 25	·0364	·1594
3. 27	41. 50	·0529	5. 40	·1631	·2915	6. 38	·0365	·1598
3. 31	42. 0	·0530	5. 42	·1623	·2900	6. 47	·0365	·1598
3. 32	40. 50	·0524	5. 48	·1626	·2906	7. 0	·0362	·1585
3. 39	43. 0	·0536	5. 57	·1595	·2850	7. 6	·0362	·1585
3. 40	40. 0	·0520	6. 7	·1570	·2805	7. 20	·0366	·1602
3. 43	40. 50	·0524	6. 12	·1563	·2792	7. 29	·0362	·1585
3. 49	33. 55	·0489	6. 20	·1567	·2799	7. 34	·0360	·1576
3. 51	35. 25	·0496	6. 28	·1557	·2781	7. 40	·0362	·1585
3. 57	31. 45	·0477	6. 32	·1541	·2753	7. 43	·0359	·1571
4. 11	37. 55	·0509	6. 44	·1539	·2749	7. 48	·0360	·1576
4. 12	38. 45	·0514	7. 15	·1493	·2667	7. 50	·0356	·1558
4. 21	38. 55	·0515	7. 20	·1501	·2682	7. 53	·0356	·1558
4. 23	40. 55	·0525	7. 29	·1534	·2740	7. 55	·0353	·1545
4. 29	38. 45	·0514	7. 33	·1529	·2731	8. 0	·0354	·1550
4. 33	41. 55	·0530	7. 39	·1534	·2740	8. 3	·0345	·1511
4. 43	27. 25	·0454	7. 40	·1515	·2707	8. 10	·0348	·1524
4. 53	35. 45	·0498	7. 52	·1586	·2834	8. 18	·0344	·1507
5. 1	38. 55	·0515	7. 58	·1577	·2817	8. 22	·0346	·1515
5. 10	35. 40	·0497	8. 0	·1588	·2837	8. 28	·0345	·1511

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 19°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force. Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force. Expressed in terms of Gauss's Unit measured on the Metrical System.
July 8			July 8			July 8		
h m	° ′ ″		h m			h m		
5. 17	19. 38. 5	·0510	8. 8	·1570	·2805	8. 30	·0343	·1502
5. 21	43. 25	·0538	8. 11	·1492	·2666	8. 40	·0345	·1511
5. 28	40. 55	·0525	8. 22	·1462	·2613	8. 55	·0342	·1498
5. 33	41. 35	·0528	8. 30	·1473	·2632	9. 7	·0343	·1502
5. 38	38. 45	·0514	8. 37	·1450	·2591	9. 54	·0339	·1484
5. 49	41. 50	·0529	8. 48	·1463	·2614	10. 20	·0340	·1489
6. 7	42. 0	·0530	8. 54	·1450	·2591	11. 8	·0341	·1493
6. 15	39. 10	·0516	9. 0	·1447	·2585	12. 12	·0337	·1476
6. 28	40. 55	·0525	9. 5	·1450	·2591	12. 16	·0343	·1502
6. 37	37. 0	·0504	9. 12	·1459	·2607	12. 28	·0320	·1401
6. 42	36. 0	·0499	9. 22	·1452	·2595	12. 32	·0315	·1379
6. 48	37. 10	·0505	9. 30	·1456	·2602	12. 36	·0316	·1383
6. 58	34. 55	·0494	9. 40	·1444	·2580	12. 42	·0311	·1361
7. 9	36. 55	·0504	9. 50	·1448	·2587	12. 52	·0314	·1375
7. 13	35. 0	·0494	9. 55	·1446	·2584	12. 57	·0313	·1370
7. 25	24. 20	·0439	10. 9	·1454	·2598	13. 5	·0315	·1379
7. 30	28. 55	·0463	10. 17	·1449	·2589	13. 23	·0321	·1405
7. 37	31. 40	·0476	10. 27	·1456	·2602	14. 24	·0324	·1419
7. 41	24. 25	·0439	10. 32	·1453	·2596	14. 47	·0328	·1436
7. 43	17. 20	·0402	10. 46	·1462	·2613	15. 12	·0327	·1432
7. 48	21. 0	·0421	11. 2	·1467	·2621	16. 1	·0320	·1401
7. 53	19. 33. 0	·0484	11. 14	·1475	·2636	16. 22	·0320	·1401
8. 8	20. 1. 0	·0629	11. 22	·1468	·2623	16. 26	·0318	·1392
8. 16	19. 47. 0	·0556	11. 30	·1471	·2629	16. 32	·0319	·1396
8. 18	45. 25	·0548	11. 37	·1469	·2625	16. 40	·0316	·1383
8. 23	36. 30	·0502	11. 50	·1473	·2632	17. 11	·0298	·1305
8. 31	39. 0	·0515	11. 58	·1470	·2627	17. 15	·0298	·1305
8. 38	33. 45	·0488	12. 0	·1472	·2631	17. 20	·0296	·1296
8. 40	31. 50	·0477	12. 14	·1468	·2623	17. 34	·0303	·1326
8. 49	35. 25	·0496	12. 22	·1529	·2731	17. 56	·0307	·1344
8. 52	35. 5	·0494	12. 30	·1473	·2632	18. 5	·0305	·1335
9. 2	31. 35	·0476	12. 36	·1506	·2691	18. 13	·0308	·1348
9. 10	30. 15	·0469	12. 41	·1531	·2735	18. 20	·0307	·1344
9. 17	33. 0	·0484	12. 49	·1483	·2649	18. 26	·0309	·1352
9. 21	33. 30	·0487	12. 56	·1496	·2673	18. 31	·0307	·1344
9. 25	33. 10	·0485	13. 1	·1472	·2631	18. 36	·0309	·1352
9. 32	35. 0	·0494	13. 11	·1447	·2585	19. 8	·0311	·1361
9. 47	30. 55	·0473	13. 12	·1455	·2600	19. 10	·0309	·1352
9. 51	31. 5	·0473	13. 13	·1446	·2584	19. 12	·0312	·1366
9. 59	29. 35	·0466	13. 19	·1451	·2593	19. 59	·0317	·1388
10. 13	33. 40	·0487	13. 20	·1446	·2584		***†	
10. 21	33. 30	·0487	13. 40	·1478	·2641	20. 22	·0318	·1392
10. 26	34. 15	·0490	14. 0	·1469	·2625	20. 32	·0319	·1396
10. 37	33. 10	·0485	14. 10	·1480	·2644	21. 0	·0321	·1405
10. 47	35. 20	·0496	14. 11	·1477	·2639	21. 15	·0321	·1405
11. 8	36. 25	·0501	14. 24	·1490	·2662	22. 4	·0322	·1410
11. 19	37. 40	·0507	14. 31	·1480	·2644	22. 29	·0321	·1405
11. 28	36. 10	·0500	14. 40	·1485	·2653	22. 59	·0319	·1396
11. 31	36. 15	·0500	14. 50	·1497	·2674	23. 20	·0320	·1401
11. 41	37. 50	·0508	14. 54	·1490	·2662	23. 35	·0320	·1401
11. 48	37. 5	·0504	15. 2	·1499	·2678	23. 40	·0319	·1396
11. 52	38. 5	·0510	15. 10	·1493	·2667	23. 49	·0321	·1405

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.

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

The value 0·8600 of Horizontal Force corresponds to 1·5368 of Gauss's Unit on the Metrical System.

The value 0·9600 of Vertical Force corresponds to 4·2033 of Gauss's Unit on the Metrical System.

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force: Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force: Expressed in terms of Gauss's Unit measured on the Metrical System.
July 8			July 8			July 8		
h m	° ′ ″		h m			h m		
12. 0	19. 38. 10	·0511	15. 19	·1499	·2678	23. 59	·0320	·1401
12. 10	37. 20	·0506	15. 30	·1481	·2646			
12. 17	19. 39. 20	·0517	15. 37	·1489	·2660			
12. 29	20. 10. 0	·0676	15. 40	·1485	·2653			
12. 38	19. 33. 55	·0489	15. 52	·1486	·2655			
12. 44	48. 25	·0564	16. 0	·1489	·2660			
12. 50	44. 20	·0543	16. 8	·1483	·2649			
12. 52	48. 50	·0566	16. 12	·1486	·2655			
	***		16. 20	·1480	·2644			
13. 26	33. 55	·0489	16. 25	·1486	·2655			
13. 30	35. 50	·0498	16. 36	·1477	·2639			
13. 32	34. 5	·0489	16. 50	·1454	·2598			
13. 37	35. 20	·0496	17. 0	·1425	·2546			
13. 38	33. 0	·0484		***				
13. 41	33. 40	·0487	17. 12	·1436	·2566			
13. 43	31. 5	·0473	17. 21	·1465	·2618			
13. 48	33. 5	·0484	17. 25	·1453	·2596			
14. 0	30. 15	·0469	17. 37	·1488	·2658			
14. 2	31. 5	·0473		***				
14. 8	29. 30	·0466	17. 50	·1477	·2639			
14. 10	30. 15	·0469		***				
14. 15	29. 50	·0467	18. 10	·1487	·2656			
14. 18	32. 45	·0482	18. 21	·1499	·2678			
14. 21	27. 10	·0453	18. 29	·1479	·2643			
14. 26	30. 45	·0472	18. 31	·1487	·2656			
14. 31	25. 55	·0447	18. 40	·1475	·2636			
14. 38	26. 50	·0451	18. 42	·1482	·2648			
14. 41	25. 15	·0443	18. 50	·1473	·2632			
14. 47	28. 50	·0462	19. 4	·1467	·2621			
14. 50	27. 30	·0455	19. 18	·1457	·2603			
14. 51	29. 25	·0465		***				
14. 59	29. 55	·0468	20. 0	·1455	·2600			
15. 0	31. 10	·0474		***				
15. 18	32. 0	·0478	20. 14	·1455	·2600			
15. 29	30. 50	·0472	20. 21	·1463	·2614			
15. 34	32. 0	·0478	20. 22	·1442	·2577			
15. 43	30. 55	·0473	20. 39	·1451	·2593			
15. 50	31. 5	·0473		***				
15. 52	29. 20	·0465	21. 21	·1444	·2580			
15. 57	30. 30	·0471		***				
15. 59	29. 0	·0463	22. 31	·1446	·2584			
16. 2	29. 50	·0467		***				
16. 9	28. 0	·0458	23. 17	·1447	·2585			
16. 16	29. 5	·0463	23. 32	·1449	·2589			
16. 20	27. 0	·0452	23. 50	·1452	·2595			
16. 27	28. 30	·0461	23. 59	·1449	·2589			
16. 30	28. 0	·0458						
16. 33	29. 20	·0465						
16. 38	27. 30	·0455						
16. 47	32. 55	·0483						
16. 54	42. 50	·0534						
17. 16	25. 5	·0442						

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force: Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force: Expressed in terms of Gauss's Unit measured on the Metrical System.
July 8								
h m	° ′ ″		h m			h m		
17. 18	19. 26. 50	·0451						
17. 31	19. 55	·0416						
17. 39	25. 55	·0447						
17. 42	23. 0	·0432						
17. 48	24. 40	·0440						
17. 50	22. 35	·0429						
18. 2	29. 55	·0468						
18. 9	25. 55	·0447						
18. 15	29. 25	·0465						
18. 18	34. 0	·0489						
18. 23	29. 30	·0466						
18. 31	32. 55	·0483						
18. 37	28. 40	·0461						
18. 45	32. 40	·0481						
18. 50	29. 40	·0466						
	***							
19. 10	29. 45	·0467						
19. 13	26. 50	·0451						
19. 16	27. 55	·0457						
19. 20	26. 25	·0449						
19. 33	29. 35	·0466						
19. 40	27. 50	·0456						
19. 50	28. 55	·0463						
19. 51	29. 50	·0467						
19. 55	27. 55	·0457						
19. 59	30. 10	·0469						
20. 6	28. 25	·0460						
20. 20	29. 0	·0463						
20. 24	27. 10	·0453						
	***							
20. 43	31. 55	·0478						
20. 59	33. 5	·0484						
21. 9	32. 30	·0481						
21. 10	33. 0	·0484						
21. 29	32. 25	·0480						
22. 29	35. 30	·0497						
22. 37	36. 55	·0504						
22. 43	36. 5	·0499						
22. 49	37. 55	·0509						
22. 51	37. 20	·0506						
23. 28	40. 15	·0521						
23. 33	41. 50	·0529						
23. 40	39. 45	·0519						
23. 45	41. 15	·0526						
23. 50	40. 55	·0525						
23. 52	41. 55	·0530						
23. 58	41. 5	·0525						
23. 59	41. 30	·0528						
Aug. 3			Aug. 3			Aug. 3		
0. 0	19. 43. 30	·0539	0. 0	·1516	·2709	0. 0	·0290	·1270
0. 7	44. 0	·0541	0. 3	·1509	·2696	0. 17	·0290	·1270

Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
Aug. 3			Aug. 3		
h m	°	°	h m	°	°
0. 0	65·5	65·1	3. 0	65·8	65·4
1. 0	65·6	65·2	9. 0	65·9	65·9
2. 0	65·7	65·5	21. 30	65·4	65·0

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature.		Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature.	
				Expressed in parts of the whole Horizontal Force.	Expressed in terms of Gauss's Unit measured on the Metrical System.		Expressed in parts of the whole Vertical Force.	Expressed in terms of Gauss's Unit measured on the Metrical System.
Aug. 3			Aug. 3			Aug. 3		
h m	° ′ ″		h m			h m		
0. 11	19. 43. 10	·0537	0. 18	·1515	·2707	0. 22	·0291	·1274
0. 17	43. 50	·0540	0. 30	·1527	·2727	0. 42	·0290	·1270
0. 37	44. 0	·0541	0. 39	·1522	·2719	0. 48	·0291	·1274
0. 40	43. 0	·0536	0. 45	·1516	·2709	1. 0	·0291	·1274
0. 53	45. 10	·0547	0. 58	·1529	·2731	1. 4	·0292	·1279
1. 0	44. 50	·0545	1. 2	·1520	·2715	1. 21	·0292	·1279
1. 7	46. 0	·0551	1. 10	·1535	·2742	1. 33	·0293	·1283
1. 22	44. 0	·0541	1. 17	·1526	·2726	1. 40	·0293	·1283
1. 32	45. 50	·0550	1. 31	·1504	·2687	1. 48	·0295	·1292
1. 38	45. 50	·0550		***		1. 52	·0294	·1288
1. 47	47. 10	·0557	1. 42	·1521	·2717	1. 53	·0294	·1288
1. 52	46. 0	·0551	1. 52	·1536	·2744	1. 56	·0292	·1279
2. 0	44. 0	·0541	2. 1	·1517	·2710	2. 2	·0294	·1288
2. 1	43. 20	·0538	2. 3	·1498	·2676	2. 3	·0294	·1288
2. 6	44. 30	·0544	2. 8	·1513	·2703	2. 12	·0296	·1296
2. 9	43. 20	·0538	2. 11	·1499	·2678	2. 16	·0294	·1288
2. 11	44. 0	·0541	2. 21	·1511	·2700	2. 20	·0295	·1292
2. 20	44. 5	·0541	2. 23	·1498	·2676	2. 28	·0295	·1292
2. 21	43. 0	·0536	2. 29	·1505	·2689	2. 32	·0299	·1309
2. 27	43. 50	·0540	2. 31	·1497	·2674	2. 35	·0298	·1305
2. 30	42. 20	·0532	2. 42	·1541	·2753	2. 37	·0299	·1309
2. 34	46. 0	·0551	2. 47	·1557	·2781	2. 39	·0298	·1305
2. 47	46. 10	·0552	2. 50	·1549	·2767	2. 40	·0300	·1313
2. 49	48. 0	·0562	2. 54	·1576	·2816	2. 42	·0299	·1309
2. 50	47. 35	·0559	3. 0	·1605	·2868	2. 43	·0302	·1322
2. 53	48. 50	·0566	3. 2	·1581	·2825	2. 49	·0303	·1326
3. 0	45. 15	·0547	3. 8	·1598	·2855	2. 55	·0303	·1326
3. 2	46. 55	·0556	3. 10	·1591	·2843	2. 58	·0301	·1317
3. 11	42. 55	·0535	3. 15	·1561	·2789	3. 1	·0303	·1326
3. 12	44. 15	·0542		***		3. 9	·0300	·1313
3. 13	42. 30	·0533	3. 21	·1543	·2756	3. 10	·0300	·1313
3. 17	44. 30	·0544	3. 30	·1529	·2731	3. 42	·0302	·1322
3. 18	42. 5	·0530	3. 35	·1516	·2709	3. 47	·0295	·1292
3. 21	44. 55	·0546	3. 40	·1528	·2729	3. 50	·0302	·1322
3. 27	44. 5	·0541	3. 43	·1514	·2705	4. 40	·0309	·1352
3. 30	46. 0	·0551	3. 48	·1533	·2738	4. 43	·0308	·1348
3. 32	45. 40	·0549	3. 51	·1439	·2571	4. 47	·0309	·1352
3. 38	47. 0	·0556	3. 58	·1475	·2636	5. 27	·0312	·1366
3. 40	46. 30	·0554	4. 19	·1505	·2689	5. 30	·0318	·1392
3. 43	47. 0	·0556	4. 32	·1522	·2719	5. 32	·0313	·1370
3. 47	48. 55	·0567	4. 40	·1532	·2737	5. 33	·0320	·1401
3. 50	37. 0	·0504	4. 44	·1524	·2722	5. 36	·0315	·1379
3. 54	43. 5	·0536	4. 57	·1533	·2738	5. 50	·0318	·1392
3. 57	42. 15	·0531	5. 4	·1539	·2749	5. 51	·0317	·1388
3. 59	43. 30	·0539	5. 10	·1533	·2738	5. 53	·0318	·1392
4. 2	42. 55	·0535	5. 28	·1531	·2735	6. 0	·0316	·1383
4. 8	43. 0	·0536	5. 32	·1591	·2843		***	
4. 30	39. 0	·0515	5. 37	·1546	·2762	6. 20	·0314	·1375
4. 32	38. 50	·0514	5. 40	·1611	·2879	6. 30	·0314	·1375
4. 40	39. 15	·0516	5. 43	·1575	·2814	6. 36	·0316	·1383
4. 44	37. 55	·0509	5. 50	·1583	·2828	6. 40	·0313	·1370
4. 56	37. 0	·0504	5. 52	·1614	·2884	6. 41	·0314	·1375

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature.		Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature.	
				Expressed in parts of the whole Horizontal Force.	Expressed in terms of Gauss's Unit measured on the Metrical System.		Expressed in parts of the whole Vertical Force.	Expressed in terms of Gauss's Unit measured on the Metrical System.
Aug. 3			Aug. 3			Aug. 3		
h m	° ′ ″		h m			h m		
5. 2	19. 37. 30	·0507	5. 55	·1604	·2866	6. 45	·0310	·1357
5. 7	37. 35	·0507	6. 0	·1620	·2895	6. 48	·0314	·1375
5. 13	36. 30	·0502	6. 9	·1603	·2864	6. 51	·0318	·1392
5. 28	32. 15	·0479	6. 21	·1561	·2789	6. 55	·0314	·1375
5. 29	38. 0	·0510	6. 28	·1564	·2794	6. 56	·0315	·1379
5. 30	34. 0	·0489	6. 31	·1553	·2774	6. 59	·0312	·1366
5. 34	37. 30	·0507	6. 38	·1583	·2828	7. 12	·0315	·1379
5. 35	30. 30	·0471	6. 47	·1509	·2696	7. 45	·0315	·1379
5. 42	28. 10	·0459	6. 50	·1528	·2729	7. 51	·0314	·1375
5. 46	29. 25	·0465	6. 57	·1570	·2805	8. 2	·0315	·1379
5. 47	28. 30	·0461	7. 5	·1516	·2709	8. 6	·0313	·1370
5. 51	30. 10	·0469	7. 24	·1548	·2765	8. 18	·0315	·1379
5. 53	28. 50	·0462	7. 32	·1559	·2785	8. 24	·0312	·1366
5. 59	31. 45	·0477	7. 33	·1554	·2776	8. 56	·0312	·1366
6. 3	30. 15	·0469	7. 37	·1566	·2798	9. 12	·0309	·1352
6. 22	36. 50	·0503	7. 40	·1559	·2785	9. 23	·0307	·1344
6. 25	35. 5	·0494	7. 43	·1567	·2799	9. 29	·0308	·1348
6. 31	36. 25	·0501	7. 54	·1551	·2771	9. 37	·0304	·1331
6. 38	33. 35	·0487	8. 4	·1553	·2774	9. 44	·0302	·1322
6. 40	34. 25	·0491	8. 12	·1534	·2740	9. 55	·0300	·1313
6. 43	30. 15	·0469	8. 22	·1551	·2771	10. 4	·0295	·1292
6. 46	34. 0	·0489	8. 28	·1530	·2733	10. 23	·0296	·1296
6. 50	33. 15	·0485	8. 30	·1521	·2717	10. 24	·0294	·1288
6. 51	37. 20	·0506	8. 38	·1531	·2735	10. 26	·0294	·1288
6. 52	34. 50	·0493	8. 41	·1519	·2714	10. 29	·0290	·1270
6. 56	35. 20	·0496	8. 52	·1525	·2724	10. 39	·0290	·1270
7. 0	33. 10	·0485	9. 0	·1539	·2749	10. 43	·0283	·1239
7. 23	35. 5	·0494	9. 5	·1543	·2756	10. 50	·0282	·1235
7. 29	34. 55	·0494	9. 10	·1536	·2744	11. 0	·0286	·1252
7. 36	35. 50	·0498	9. 16	·1543	·2756	11. 7	·0285	·1248
7. 40	35. 15	·0495	9. 26	·1518	·2712	11. 13	·0287	·1257
7. 42	35. 55	·0499	9. 32	·1538	·2747	11. 19	·0286	·1252
7. 50	34. 50	·0493	9. 48	·1506	·2691	11. 24	·0289	·1265
7. 53	35. 0	·0494	9. 58	·1516	·2709	11. 30	·0289	·1265
	***		10. 10	·1489	·2660	11. 40	·0294	·1288
8. 7	32. 55	·0483	10. 21	·1480	·2644	11. 43	·0296	·1296
8. 17	32. 40	·0481	10. 27	·1485	·2653	11. 57	·0291	·1274
8. 20	31. 50	·0477	10. 38	·1433	·2560	12. 5	·0291	·1274
8. 23	33. 0	·0484	10. 41	·1454	·2598	12. 12	·0287	·1257
8. 43	26. 0	·0447	10. 43	·1448	·2587	12. 27	·0284	·1244
8. 50	25. 0	·0442	11. 6	·1541	·2753	12. 40	·0289	·1265
9. 7	29. 45	·0467	11. 18	·1485	·2653	12. 42	·0288	·1261
9. 20	36. 40	·0502	11. 22	·1495	·2671	12. 50	·0289	·1265
9. 28	35. 0	·0494	11. 33	·1522	·2719	12. 53	·0288	·1261
9. 33	37. 15	·0505	11. 41	·1481	·2646	13. 0	·0286	·1252
9. 37	37. 5	·0504	11. 51	·1501	·2682	13. 11	·0286	·1252
9. 40	38. 40	·0513	11. 56	·1498	·2676	13. 16	·0287	·1257
9. 43	37. 10	·0505	12. 8	·1525	·2724	13. 22	·0285	·1248
9. 47	37. 20	·0506	12. 9	·1519	·2714	13. 39	·0283	·1239
9. 50	36. 40	·0502	12. 13	·1533	·2738	14. 5	·0289	·1265
9. 57	37. 40	·0507	12. 18	·1505	·2689	14. 25	·0284	·1244
10. 0	37. 20	·0506	12. 32	·1446	·2584	14. 32	·0286	·1252

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.

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

The value 0·8600 of Horizontal Force corresponds to 1·5368 of Gauss's Unit on the Metrical System.

The value 0·9600 of Vertical Force corresponds to 4·2033 of Gauss's Unit on the Metrical System.

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature.		Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature.	
				Expressed in parts of the whole Horizontal Force.	Expressed in terms of Gauss's Unit measured on the Metrical System.		Expressed in parts of the whole Vertical Force.	Expressed in terms of Gauss's Unit measured on the Metrical System.
Aug. 3			Aug. 3			Aug. 3		
h m	° ′ ″		h m			h m		
10. 3	19. 38. 0	·0510	12. 42	·1471	·2629	14. 42	·0284	·1244
10. 10	36. 0	·0499	12. 48	·1466	·2620	15. 7	·0295	·1292
10. 22	36. 10	·0500	13. 0	·1484	·2651	15. 38	·0304	·1331
10. 35	19. 34. 20	·0491	13. 11	·1486	·2655	15. 46	·0305	·1335
10. 41	18. 59. 5	·0307	13. 36	·1452	·2595	15. 47	·0304	·1331
10. 54	19. 19. 0	·0411	13. 40	·1455	·2600	15. 56	·0306	·1339
10. 59	24. 10	·0438	13. 50	·1443	·2578	16. 8	·0307	·1344
11. 8	43. 20	·0538	14. 3	·1461	·2611	16. 17	·0307	·1344
11. 12	39. 0	·0515	14. 11	·1457	·2603	16. 37	·0309	·1352
11. 18	29. 0	·0463	14. 22	·1444	·2580	17. 36	·0306	·1339
11. 28	22. 10	·0427	14. 30	·1437	·2567	18. 30	·0307	·1344
11. 37	31. 50	·0477	14. 36	·1451	·2593		***	
11. 47	17. 0	·0400	14. 40	·1447	·2585	19. 34	·0304	·1331
11. 49	19. 0	·0411	14. 59	·1484	·2651	20. 3	·0303	·1326
11. 51	17. 10	·0401	15. 4	·1479	·2643	20. 10	·0304	·1331
11. 54	19. 0	·0411	15. 10	·1491	·2664	21. 20	·0303	·1326
12. 0	16. 0	·0395	15. 16	·1479	·2643	21. 50	·0304	·1331
12. 3	21. 50	·0425	15. 21	·1489	·2660	22. 44	·0303	·1326
12. 8	21. 0	·0421	15. 24	·1477	·2639	23. 10	·0302	·1322
12. 17	29. 0	·0463	15. 30	·1493	·2667	23. 32	·0303	·1326
12. 20	31. 50	·0477	15. 31	·1480	·2644	23. 59	·0305	·1335
12. 28	28. 0	·0458	15. 36	·1484	·2651			
12. 40	17. 10	·0401	15. 46	·1493	·2667			
12. 43	20. 5	·0416	15. 52	·1487	·2656			
12. 49	19. 5	·0411	16. 1	·1491	·2664			
12. 53	22. 50	·0430	16. 8	·1485	·2653			
12. 59	22. 30	·0429	16. 18	·1489	·2660			
13. 10	19. 55	·0416	16. 27	·1483	·2649			
13. 20	22. 0	·0426	16. 35	·1481	·2646			
13. 28	19. 50	·0415	16. 49	·1491	·2664			
13. 32	20. 25	·0418	16. 55	·1489	·2660			
13. 40	19. 0	·0411	17. 0	·1481	·2646			
13. 45	21. 30	·0424	17. 4	·1489	·2660			
14. 0	23. 40	·0435	17. 5	·1485	·2653			
14. 12	28. 55	·0463	17. 8	·1488	·2658			
14. 23	26. 5	·0447	17. 10	·1481	·2646			
14. 30	29. 55	·0468	17. 15	·1487	·2656			
14. 32	28. 0	·0458	17. 22	·1481	·2646			
14. 38	31. 5	·0473	17. 34	·1484	·2651			
14. 41	28. 10	·0459	17. 41	·1478	·2641			
14. 43	29. 20	·0465	17. 49	·1486	·2655			
14. 50	23. 10	·0433	17. 51	·1481	·2646			
15. 2	27. 10	·0453	17. 56	·1489	·2660			
15. 8	26. 0	·0447	18. 0	·1476	·2638			
15. 10	29. 15	·0464	18. 6	·1485	·2653			
15. 17	27. 0	·0452	18. 11	·1475	·2636			
15. 21	31. 10	·0474	18. 21	·1489	·2660			
15. 26	27. 5	·0452	18. 25	·1481	·2646			
15. 29	31. 20	·0475	18. 29	·1486	·2655			
15. 32	29. 5	·0463	18. 31	·1480	·2644			
15. 33	29. 50	·0467	18. 35	·1486	·2655			
15. 38	28. 10	·0459	18. 39	·1477	·2639			

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				Expressed in parts of the whole Horizontal Force.	Expressed in terms of Gauss's Unit measured on the Metrical System.		Expressed in parts of the whole Vertical Force.	Expressed in terms of Gauss's Unit measured on the Metrical System.
Aug. 3			Aug. 3					
h m	° ′ ″		h m			h m		
15. 40	19. 30. 50	·0472	18. 41	·1483	·2649			
15. 50	25. 50	·0446	18. 43	·1467	·2621			
15. 55	26. 50	·0451	18. 51	·1491	·2664			
15. 59	29. 40	·0466	18. 53	·1476	·2638			
16. 2	28. 5	·0458	18. 56	·1489	·2660			
16. 8	27. 0	·0452	18. 58	·1475	·2636			
16. 18	31. 5	·0473	19. 2	·1485	·2653			
16. 23	29. 40	·0466	19. 4	·1479	·2643			
16. 29	30. 55	·0473		***				
16. 33	29. 35	·0466	19. 30	·1473	·2632			
16. 39	30. 20	·0470	19. 32	·1467	·2621			
16. 42	33. 0	·0484	19. 39	·1471	·2629			
16. 48	29. 30	·0466	19. 42	·1465	·2618			
16. 50	32. 0	·0478	19. 54	·1466	·2620			
16. 58	29. 10	·0464	20. 6	·1461	·2611			
17. 0	30. 35	·0471	20. 12	·1467	·2621			
17. 3	28. 35	·0461	20. 19	·1469	·2625			
17. 7	30. 55	·0473	20. 32	·1465	·2618			
17. 10	27. 45	·0456	20. 44	·1461	·2611			
17. 11	29. 0	·0463	20. 49	·1464	·2616			
17. 15	27. 0	·0452	21. 9	·1460	·2609			
17. 18	28. 0	·0458	21. 30	·1466	·2620			
17. 22	26. 15	·0448	21. 40	·1463	·2614			
17. 25	27. 0	·0452	21. 51	·1466	·2620			
17. 27	26. 10	·0448	22. 2	·1461	·2611			
17. 29	27. 50	·0456	22. 8	·1471	·2629			
17. 31	26. 20	·0449	22. 10	·1462	·2613			
17. 34	27. 40	·0455		***				
17. 39	25. 15	·0443	22. 26	·1469	·2625			
17. 42	26. 55	·0452	22. 33	·1471	·2629			
17. 43	25. 50	·0446	22. 58	·1483	·2649			
17. 46	27. 55	·0457	23. 6	·1477	·2639			
17. 50	26. 25	·0449	23. 22	·1476	·2638			
17. 53	29. 40	·0466	23. 30	·1467	·2621			
17. 58	25. 50	·0446	23. 37	·1473	·2632			
18. 0	29. 0	·0463	23. 41	·1466	·2620			
18. 3	27. 0	·0452	23. 51	·1469	·2625			
18. 4	28. 0	·0458	23. 58	·1465	·2618			
18. 8	26. 5	·0447	23. 59	·1468	·2623			
18. 13	29. 5	·0463						
18. 16	28. 15	·0459						
18. 20	29. 55	·0468						
18. 22	28. 25	·0460						
18. 27	29. 50	·0467						
18. 29	27. 20	·0454						
18. 31	28. 20	·0460						
18. 33	26. 40	·0450						
18. 34	28. 0	·0458						
18. 41	24. 10	·0438						
18. 43	26. 40	·0450						
18. 48	25. 55	·0447						
18. 49	28. 50	·0462						

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				Expressed in parts of the whole Horizontal Force.	Expressed in terms of Gauss's Unit measured on the Metrical System.		Expressed in parts of the whole Vertical Force.	Expressed in terms of Gauss's Unit measured on the Metrical System.
Aug. 3								
h m	° ′ ″		h m			h m		
18. 51	19. 26. 40	·0450						
18. 52	28. 55	·0463						
18. 54	25. 35	·0445						
18. 58	30. 0	·0468						
19. 3	25. 0	·0442						
19. 6	29. 0	·0463						
19. 8	25. 35	·0445						
19. 11	29. 30	·0466						
19. 13	25. 30	·0445						
19. 18	28. 10	·0459						
19. 20	24. 10	·0438						
19. 23	27. 50	·0456						
19. 29	26. 0	·0447						
19. 30	27. 5	·0452						
19. 32	26. 0	·0447						
19. 38	28. 25	·0460						
19. 46	26. 0	·0447						
19. 51	27. 0	·0452						
19. 53	25. 55	·0447						
19. 58	26. 55	·0452						
20. 0	25. 30	·0445						
20. 2	26. 50	·0451						
20. 4	25. 20	·0444						
20. 6	27. 25	·0454						
20. 9	27. 0	·0452						
20. 11	32. 45	·0482						
20. 19	30. 5	·0468						
20. 20	31. 50	·0477						
20. 22	30. 30	·0471						
20. 30	32. 5	·0478						
20. 33	30. 50	·0472						
20. 38	31. 50	·0477						
20. 42	30. 10	·0469						
20. 48	31. 25	·0475						
20. 52	30. 40	·0471						
21. 2	32. 0	·0478						
21. 13	32. 0	·0478						
21. 40	34. 30	·0492						
21. 47	34. 10	·0490						
21. 50	35. 0	·0494						
22. 0	32. 0	·0478						
22. 6	35. 30	·0497						
22. 10	34. 0	·0489						
22. 18	36. 0	·0499						
22. 23	35. 0	·0494						
22. 28	36. 25	·0501						
22. 30	36. 0	·0499						
22. 38	37. 0	·0504						
22. 43	37. 5	·0504						
22. 48	39. 40	·0518						
22. 51	38. 5	·0510						
22. 54	39. 55	·0520						

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				Expressed in parts of the whole Horizontal Force.	Expressed in terms of Gauss's Unit measured on the Metrical System.		Expressed in parts of the whole Vertical Force.	Expressed in terms of Gauss's Unit measured on the Metrical System.
Aug. 3								
h m	° ′ ″		h m			h m		
22. 58	19. 39. 45	·0519						
23. 4	39. 50	·0519						
23. 11	40. 50	·0524						
23. 19	41. 0	·0525						
23. 23	42. 0	·0530						
23. 30	42. 50	·0534						
23. 33	43. 5	·0536						
23. 37	42. 20	·0532						
23. 48	44. 0	·0541						
23. 51	43. 30	·0539						
23. 54	44. 30	·0544						
23. 59	44. 55	·0546						
Aug. 4			Aug. 4			Aug. 4		
0. 0	19. 45. 0	·0546	0. 0	·1469	·2625	0. 0	·0305	·1335
0. 3	45. 55	·0551	0. 4	·1471	·2629	0. 14	·0305	·1335
0. 10	44. 50	·0545	0. 22	·1461	·2611	0. 26	·0306	·1339
0. 20	45. 0	·0546	0. 31	·1469	·2625	0. 34	·0305	·1335
0. 33	50. 5	·0572	0. 41	·1455	·2600	0. 59	·0305	·1335
0. 36	49. 40	·0570	0. 45	·1461	·2611	1. 6	·0306	·1339
0. 42	52. 0	·0582	0. 50	·1455	·2600	1. 14	·0307	·1344
0. 44	53. 10	·0589	0. 56	·1461	·2611	1. 20	·0306	·1339
0. 48	52. 25	·0584	1. 1	·1457	·2603	1. 31	·0309	·1352
0. 51	54. 15	·0594	1. 10	·1475	·2636	1. 34	·0308	·1348
0. 54	55. 0	·0598	1. 13	·1471	·2629	1. 41	·0310	·1357
0. 59	54. 10	·0594	1. 21	·1492	·2666	1. 48	·0309	·1352
1. 1	56. 0	·0603	1. 25	·1481	·2646	1. 53	·0312	·1366
1. 6	55. 0	·0598	1. 30	·1486	·2655	1. 58	·0310	·1357
1. 14	56. 15	·0604	1. 34	·1501	·2682	2. 0	·0312	·1366
1. 23	54. 5	·0593	1. 37	·1497	·2674	2. 1	·0309	·1352
1. 28	54. 40	·0596	1. 49	·1515	·2707	2. 11	·0313	·1370
1. 32	56. 0	·0603	1. 56	·1501	·2682	2. 14	·0312	·1366
1. 37	54. 20	·0595	2. 0	·1520	·2715	2. 29	·0315	·1379
1. 42	55. 25	·0600	2. 4	·1513	·2703	2. 31	·0314	·1375
1. 46	53. 55	·0593	2. 6	·1495	·2671	2. 37	·0316	·1383
1. 52	53. 0	·0588	2. 17	·1516	·2709	2. 44	·0316	·1383
1. 56	54. 40	·0596	2. 20	·1508	·2694	2. 53	·0319	·1396
2. 0	53. 35	·0591	2. 33	·1522	·2719	2. 57	·0318	·1392
2. 3	50. 30	·0575	2. 43	·1537	·2745	3. 1	·0319	·1396
2. 10	51. 30	·0580	2. 51	·1529	·2731	3. 3	·0318	·1392
2. 12	53. 10	·0589	3. 0	·1537	·2745	3. 7	·0319	·1396
2. 19	52. 20	·0584	3. 3	·1525	·2724	3. 10	·0318	·1392
2. 20	53. 50	·0592	3. 11	·1501	·2682	3. 12	·0318	·1392
2. 23	53. 15	·0589	3. 15	·1496	·2673	3. 19	·0320	·1401
2. 28	54. 20	·0595	3. 21	·1511	·2700	3. 22	·0319	·1396
2. 33	53. 0	·0588	3. 24	·1499	·2678	3. 27	·0320	·1401
2. 36	55. 5	·0598	3. 28	·1505	·2689	3. 29	·0319	·1396
2. 41	55. 0	·0598	3. 30	·1495	·2671	3. 34	·0320	·1401
2. 48•	54. 5	·0593	3. 37	·1503	·2685	3. 37	·0318	·1392
2. 52	55. 0	·0598	3. 42	·1490	·2662	3. 40	·0319	·1396
	***		4. 1	·1501	·2682	3. 42	·0318	·1392
3. 11	49. 45	·0571	4. 5	·1509	·2696	3. 47	·0319	·1396

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.

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

The value 0·8600 of Horizontal Force corresponds to 1·5368 of Gauss's Unit on the Metrical System.

The value 0·9600 of Vertical Force corresponds to 4·2033 of Gauss's Unit on the Metrical System.

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force: Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force: Expressed in terms of Gauss's Unit measured on the Metrical System.
Aug. 4 h m	° ′ ″		Aug. 4 h m			Aug. 4 h m		
3.18	19.52.5	·0582	4.16	·1516	·2709	3.59	·0319	·1396
3.25	52.10	·0583	4.27	·1521	·2717	4.3	·0318	·1392
3.28	51.0	·0577	4.29	·1509	·2696	4.10	·0319	·1396
3.30	51.35	·0580	4.31	·1516	·2709	4.25	·0317	·1388
3.31	50.30	·0575	4.34	·1497	·2674	4.28	·0318	·1392
3.36	52.35	·0585	4.41	·1509	·2696	4.32	·0316	·1383
3.40	50.0	·0572	4.44	·1499	·2678	4.38	·0318	·1392
3.46	49.55	·0572	4.50	·1507	·2692	4.42	·0316	·1383
3.49	51.10	·0578	4.55	·1499	·2678	4.43	·0317	·1388
3.50	50.40	·0575	5.0	·1515	·2707	4.52	·0316	·1383
3.57	52.45	·0586	5.3	·1487	·2656	4.56	·0317	·1388
4.0	52.5	·0582	5.11	·1503	·2685	5.0	·0315	·1379
4.2	53.50	·0592	5.16	·1511	·2700	5.2	·0316	·1383
4.10	52.35	·0585	5.19	·1499	·2678	5.3	·0315	·1379
4.12	53.50	·0592	5.25	·1515	·2707	5.10	·0317	·1388
4.19	54.5	·0593	5.28	·1505	·2689	5.12	·0315	·1379
4.21	53.5	·0588	5.32	·1523	·2720	5.18	·0317	·1388
4.23	53.55	·0593	5.40	·1505	·2689	5.25	·0316	·1383
4.26	51.10	·0578	5.46	·1517	·2710	5.31	·0318	·1392
4.28	52.15	·0583	5.56	·1544	·2758	5.33	·0316	·1383
4.33	48.5	·0562	6.7	·1561	·2789	5.42	·0319	·1396
4.39	50.0	·0572	6.12	·1599	·2857	5.43	·0318	·1392
4.41	48.55	·0567	6.14	·1573	·2810	5.52	·0321	·1405
4.50	49.10	·0568	6.20	·1592	·2845	6.0	·0321	·1405
4.52	48.0	·0562	6.22	·1581	·2825	6.8	·0323	·1414
4.59	48.45	·0566	6.30	·1619	·2893	6.11	·0321	·1405
5.1	47.0	·0556	6.39	·1551	·2771	6.15	·0322	·1410
5.8	47.10	·0557	6.41	·1556	·2780	6.18	·0321	·1405
5.10	47.55	·0561	6.42	·1543	·2756	6.27	·0324	·1419
5.14	47.0	·0556	6.53	·1555	·2778	6.36	·0316	·1383
5.18	45.5	·0546	6.57	·1569	·2803	6.40	·0317	·1388
5.19	46.15	·0552	7.4	·1515	·2707	6.41	·0316	·1383
5.26	44.5	·0541	7.8	·1498	·2676	6.50	·0316	·1383
5.30	45.50	·0550	7.14	·1508	·2694	7.1	·0309	·1352
5.36	43.15	·0537	7.20	·1477	·2639	7.7	·0308	·1348
5.40	44.30	·0544	7.29	·1501	·2682	7.12	·0310	·1357
5.42	44.45	·0545	7.32	·1513	·2703	7.20	·0306	·1339
5.43	43.0	·0536	7.38	·1509	·2696	7.22	·0309	·1352
5.46	43.50	·0540	7.42	·1523	·2720	7.32	·0310	·1357
5.49	42.15	·0531	7.50	·1513	·2703	7.33	·0309	·1352
5.52	44.0	·0541	7.54	·1522	·2719	7.39	·0310	·1357
5.59	40.10	·0521	8.0	·1511	·2700	7.46	·0308	·1348
6.0	41.10	·0526	8.9	·1522	·2719	7.50	·0309	·1352
6.4	38.35	·0513	8.19	·1503	·2685	7.55	·0308	·1348
6.10	43.55	·0541	8.27	·1517	·2710	8.7	·0308	·1348
6.13	39.0	·0515	8.36	·1534	·2740	8.13	·0306	·1339
6.17	40.55	·0525	8.41	·1515	·2707	8.16	·0307	·1344
6.22	34.45	·0493	8.44	·1522	·2719	8.20	·0306	·1339
6.32	42.10	·0531	8.45	·1514	·2705	8.22	·0307	·1344
6.42	36.10	·0500	8.50	·1525	·2724	8.26	·0305	·1335
6.49	39.10	·0516	8.51	·1514	·2705	8.34	·0306	·1339
7.0	49.5	·0567	8.58	·1531	·2735	8.40	·0304	·1331

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force: Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force: Expressed in terms of Gauss's Unit measured on the Metrical System.
Aug. 4 h m	° ′ ″		Aug. 4 h m			Aug. 4 h m		
7.2	19.45.5	·0546	9.1	·1512	·2702	8.43	·0305	·1335
7.4	46.30	·0554	9.5	·1517	·2710	8.47	·0304	·1331
7.10	41.10	·0526	9.10	·1499	·2678	8.52	·0305	·1335
7.12	43.0	·0536	9.17	·1523	·2720	9.0	·0303	·1326
7.20	36.30	·0502	9.20	·1503	·2685	9.3	·0304	·1331
7.30	36.0	·0499	9.30	·1559	·2785	9.7	·0302	·1322
7.41	41.20	·0527	9.32	·1539	·2749	9.13	·0307	·1344
7.52	36.0	·0499	9.37	·1543	·2756	9.19	·0304	·1331
8.1	32.35	·0481	9.41	·1521	·2717	9.25	·0309	·1352
8.10	38.0	·0510	9.51	·1517	·2710	9.30	·0306	·1339
8.12	39.5	·0515	9.57	·1520	·2715	9.33	·0307	·1344
8.18	37.40	·0507	10.0	·1517	·2710	9.38	·0305	·1335
8.26	35.0	·0494	10.12	·1539	·2749	9.41	·0306	·1339
8.38	43.50	·0540	10.13	·1531	·2735	9.59	·0306	·1339
8.47	45.0	·0546	10.20	·1512	·2702	10.2	·0308	·1348
8.50	43.15	·0537	10.28	·1525	·2724	10.7	·0307	·1344
8.57	45.0	·0546	10.32	·1513	·2703	10.9	·0308	·1348
9.7	41.0	·0525	10.37	·1519	·2714	10.10	·0306	·1339
9.11	40.0	·0520	10.42	·1497	·2674	10.16	·0307	·1344
9.13	42.20	·0532	10.50	·1505	·2689	10.20	·0305	·1335
9.20	38.0	·0510	10.52	·1501	·2682	10.22	·0307	·1344
9.24	43.0	·0536	11.0	·1506	·2691	10.27	·0306	·1339
9.33	43.15	·0537	11.2	·1503	·2685	10.32	·0307	·1344
9.52	39.30	·0518	11.11	·1506	·2691	10.39	·0306	·1339
10.7	41.30	·0528	11.19	·1503	·2685	11.14	·0306	·1339
10.8	42.15	·0531	11.28	·1509	·2696	11.22	·0304	·1331
10.12	41.20	·0527	11.39	·1502	·2684	11.46	·0304	·1331
10.15	42.15	·0531	11.55	·1499	·2678	12.2	·0305	·1335
10.19	39.35	·0518	12.21	·1512	·2702	12.16	·0304	·1331
10.22	42.0	·0530	12.32	·1504	·2687	12.26	·0303	·1326
10.28	40.0	·0520	12.51	·1513	·2703	12.42	·0304	·1331
10.34	40.40	·0523	13.1	·1504	·2687	12.57	·0302	·1322
10.40	37.55	·0509	13.7	·1509	·2696	13.2	·0302	·1322
10.48	38.15	·0511	13.12	·1503	·2685	13.8	·0301	·1317
11.20	38.5	·0510	13.20	·1500	·2680	13.20	·0300	·1313
11.22	40.20	·0522	13.25	·1504	·2687	13.30	·0298	·1305
11.28	41.0	·0525	13.32	·1497	·2674	13.37	·0300	·1313
12.0	37.20	·0506	13.42	·1516	·2709	13.44	·0294	·1288
12.21	39.15	·0516	13.51	·1495	·2671	13.53	·0292	·1279
12.30	36.50	·0503	13.58	·1487	·2656	14.3	·0294	·1288
12.40	37.50	·0508	14.17	·1509	·2696	14.22	·0288	·1261
12.46	37.10	·0505	14.24	·1499	·2678	14.45	·0290	·1270
12.50	38.40	·0513	14.31	·1504	·2687	15.56	·0293	·1283
13.1	37.20	·0506	14.33	·1501	·2682	16.14	·0294	·1288
13.8	38.40	·0513	14.57	·1515	·2707	16.36	·0294	·1288
13.11	36.20	·0501	15.7	·1519	·2714	17.30	·0295	·1292
13.16	35.45	·0498	15.10	·1513	·2703	17.38	·0296	·1296
13.21	36.55	·0504	15.14	·1518	·2712	17.40	·0295	·1292
13.29	33.55	·0489	15.20	·1511	·2700	17.44	·0296	·1296
13.42	42.55	·0535	15.28	·1517	·2710	17.48	·0294	·1288
13.50	35.30	·0497	15.30	·1509	·2696	17.53	·0296	·1296
13.53	36.55	·0504	15.33	·1514	·2705	17.59	·0295	·1292

Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
Aug. 4 h m	°	°	Aug. 4 h m	°	°
0.0	65·5	65·6	22.0	65·0	65·4
9.0	65·1	65·1	23.0	65·5	65·8
21.0	64·8	65·0			

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 19°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in terms of Gauss's Unit measured on the Metrical System.
Aug. 4			Aug. 4			Aug. 4		
h m	° ′ ″		h m			h m		
13.58	19.35.15	·0495	15.49	·1499	·2678	18. 2	·0295	·1292
14.10	42.20	·0532	16. 4	·1491	·2664	18. 7	·0296	·1296
14.20	42.15	·0531	16.32	·1496	·2673	18.14	·0295	·1292
14.28	37. 0	·0504	16.59	·1495	·2671	18.20	·0296	·1296
14.29	37.40	·0507		***		18.22	·0295	·1292
14.38	32. 0	·0478	17.18	·1496	·2673	18.23	·0296	·1296
14.41	31. 0	·0473	17.39	·1501	·2682	18.26	·0295	·1292
14.48	29. 5	·0463	17.43	·1494	·2669	18.29	·0296	·1296
14.56	29.55	·0468	17.47	·1503	·2685	18.32	·0295	·1292
15. 0	28.50	·0462	17.51	·1487	·2656	18.38	·0296	·1296
15. 4	29. 5	·0463	17.57	·1504	·2687	18.40	·0295	·1292
15. 8	28.10	·0459	17.59	·1495	·2671	18.43	·0296	·1296
15.10	28. 0	·0458	18. 5	·1503	·2685	18.47	·0295	·1292
15.26	26. 0	·0447	18. 7	·1492	·2666	18.51	·0297	·1301
15.30	24.35	·0440	18.10	·1503	·2685	18.58	·0296	·1296
15.33	26.50	·0451	18.17	·1491	·2664	19.18	·0298	·1305
15.39	25.25	·0444	18.23	·1501	·2682	20. 0	·0298	·1305
15.40	27. 5	·0452	18.29	·1487	·2656	20. 4	·0297	·1301
15.48	27.10	·0453	18.31	·1495	·2671	20.18	·0298	·1305
15.49	28.15	·0459	18.37	·1481	·2646	20.26	·0297	·1301
15.52	28.10	·0459	18.41	·1494	·2669	20.39	·0299	·1309
15.55	29. 5	·0463	18.48	·1484	·2651	20.42	·0298	·1305
16. 2	29. 0	·0463	18.55	·1493	·2667	21.36	·0299	·1309
16. 8	30.50	·0472	18.58	·1487	·2656	21.46	·0298	·1305
16.10	30.10	·0469	19. 7	·1494	·2669	22.20	·0299	·1309
16.16	31.15	·0474	19. 9	·1487	·2656	22.26	·0298	·1305
16.29	31.50	·0477	19.12	·1497	·2674	23.10	·0300	·1313
16.33	31. 0	·0473	19.14	·1487	·2656	23.59	·0300	·1313
16.39	30.50	·0472	19.20	·1497	·2674			
16.41	31.50	·0477	19.23	·1491	·2664			
16.44	30.10	·0469	20. 1	·1480	·2644			
16.53	31.10	·0474	20.11	·1473	·2632			
16.59	29.50	·0467	20.23	·1469	·2625			
17. 6	31.40	·0476	20.29	·1461	·2611			
17. 9	29.40	·0466	20.45	·1473	·2632			
17.11	31. 0	·0473	20.51	·1467	·2621			
17.12	28. 5	·0458	21.10	·1461	·2611			
17.20	30.20	·0470	21.18	·1463	·2614			
17.22	28.40	·0461	21.34	·1457	·2603			
17.29	29.20	·0465	21.39	·1463	·2614			
17.32	27.20	·0454	21.52	·1458	·2605			
17.38	29.40	·0466	22. 5	·1462	·2613			
17.41	31.40	·0476	22.30	·1466	·2620			
17.46	29.20	·0465	22.50	·1465	·2618			
17.47	31. 5	·0473	23. 3	·1459	·2607			
17.51	25.55	·0447	23.12	·1471	·2629			
17.54	30.30	·0471	23.15	·1462	·2613			
17.56	29. 0	·0463	23.21	·1474	·2634			
17.58	30.30	·0471	23.22	·1461	·2611			
17.59	29. 0	·0463	23.28	·1475	·2636			
18. 1	30.40	·0471	23.31	·1468	·2623			
18. 5	27.50	·0456	23.37	·1477	·2639			

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 19°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in terms of Gauss's Unit measured on the Metrical System.
Aug. 4			Aug. 4					
h m	° ′ ″		h m			h m		
18.10	19.30.50	·0472	23.45	·1477	·2639			
18.15	27.10	·0453	23.52	·1481	·2646			
18.18	30.30	·0471	23.59	·1475	·2636			
18.20	29.30	·0466						
18.23	31.35	·0476						
18.28	28.10	·0459						
18.29	31. 5	·0473						
18.33	28. 0	·0458						
18.40	31. 0	·0473						
18.42	28.30	·0461						
18.46	29.30	·0466						
18.50	27.40	·0455						
18.56	31.25	·0475						
18.59	28. 0	·0458						
19. 3	30.20	·0470						
19.10	28.50	·0462						
19.13	32.20	·0480						
19.19	28.15	·0459						
19.22	32. 0	·0478						
19.29	31. 0	·0473						
19.31	31.40	·0476						
19.37	30.20	·0470						
19.38	31. 0	·0473						
19.41	29.45	·0467						
19.48	30.35	·0471						
19.54	30. 5	·0468						
20. 0	31.45	·0477						
20. 7	31. 0	·0473						
20.14	32.45	·0482						
20.20	31.30	·0476						
20.23	32.35	·0481						
20.28	30.55	·0473						
20.31	32. 0	·0478						
20.40	34. 0	·0489						
20.48	32.20	·0480						
20.52	34. 0	·0489						
20.56	33. 5	·0484						
21. 1	34.35	·0492						
21.11	33.30	·0487						
21.22	36.55	·0504						
21.30	35.50	·0498						
21.33	37.50	·0508						
21.38	37.15	·0505						
21.48	36.30	·0502						
22. 1	37.55	·0509						
22.10	38. 0	·0510						
22.13	37.10	·0505						
22.16	38.30	·0513						
22.20	36.35	·0502						
22.23	38.45	·0514						
22.28	35.45	·0498						
22.39	39. 0	·0515						

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.

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

The value 0·8600 of Horizontal Force corresponds to 1·5368 of Gauss's Unit on the Metrical System.

The value 0·9600 of Vertical Force corresponds to 4·2033 of Gauss's Unit on the Metrical System.

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force. Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force. Expressed in terms of Gauss's Unit measured on the Metrical System.
Aug. 4								
h m	° ′ ″		h m			h m		
22. 43	19. 38. 10	·0511						
22. 49	39. 45	·0519						
22. 51	38. 50	·0514						
22. 54	40. 0	·0520						
23. 0	39. 20	·0517						
23. 3	41. 0	·0525						
23. 8	39. 20	·0517						
23. 11	40. 0	·0520						
23. 16	39. 30	·0518						
23. 21	41. 15	·0526						
23. 23	39. 10	·0516						
23. 28	41. 15	·0526						
23. 32	40. 0	·0520						
23. 34	41. 40	·0528						
23. 38	41. 40	·0528						
23. 49	42. 10	·0531						
23. 53	42. 40	·0533						
23. 57	42. 20	·0532						
23. 59	42. 35	·0533						
Aug. 8			Aug. 8			Aug. 8		
0. 0	19. 44. 5	·0541	0. 0	·1503	·2685	0. 0	·0296	·1296
0. 7	44. 55	·0546	0. 12	·1505	·2689	0. 42	·0298	·1305
0. 49	44. 55	·0546	0. 29	·1503	·2685	1. 13	·0301	·1317
1. 13	48. 0	·0562	0. 50	·1502	·2684	1. 39	·0302	·1322
1. 42	46. 35	·0554	1. 25	·1521	·2717	2. 0	·0303	·1326
1. 49	47. 5	·0556	1. 40	·1515	·2707	2. 30	·0306	·1339
2. 2	46. 15	·0552	1. 44	·1517	·2710	2. 42	·0306	·1339
2. 7	47. 50	·0560	1. 49	·1511	·2700	4. 29	·0315	·1379
2. 10	47. 0	·0556	1. 59	·1516	·2709	4. 40	·0315	·1379
2. 22	48. 0	·0562	2. 5	·1515	·2707	5. 11	·0318	·1392
2. 30	48. 25	·0564	2. 32	·1538	·2747	5. 38	·0318	·1392
2. 47	46. 0	·0551	2. 58	·1525	·2724	6. 33	·0316	·1383
3. 1	45. 0	·0546	3. 15	·1533	·2738	6. 39	·0317	·1388
3. 10	45. 50	·0550	3. 23	·1530	·2733	6. 44	·0316	·1383
3. 20	44. 5	·0541	3. 35	·1535	·2742	7. 2	·0316	·1383
3. 31	44. 30	·0544	3. 47	·1528	·2729	7. 7	·0322	·1410
3. 39	43. 25	·0538	4. 8	·1544	·2758	7. 10	·0315	·1379
3. 51	43. 0	·0536	4. 33	·1555	·2778	7. 11	·0316	·1383
3. 59	43. 30	·0539	4. 50	·1546	·2762	7. 13	·0314	·1375
4. 4	43. 35	·0539	5. 12	·1553	·2774	7. 18	·0315	·1379
4. 21	43. 5	·0536	5. 30	·1546	·2762	7. 20	·0314	·1375
4. 24	42. 0	·0530	5. 42	·1543	·2756	7. 22	·0315	·1379
4. 28	41. 30	·0528	5. 58	·1537	·2745	7. 25	·0313	·1370
4. 32	42. 0	·0530	6. 26	·1529	·2731	7. 47	·0311	·1361
4. 46	40. 45	·0524	6. 41	·1527	·2727	7. 52	·0312	·1366
4. 52	40. 10	·0521	6. 46	·1532	·2737	7. 57	·0310	·1357
4. 56	41. 10	·0526	6. 51	·1529	·2731	8. 14	·0313	·1370
5. 0	39. 15	·0516	7. 9	·1535	·2742	8. 36	·0312	·1366
5. 4	40. 0	·0520	7. 12	·1622	·2899	9. 12	·0312	·1366
5. 20	36. 0	·0499	7. 21	·1584	·2830	9. 40	·0309	·1352
5. 29	35. 0	·0494	7. 32	·1595	·2850	10. 0	·0299	·1309

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force. Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force. Expressed in terms of Gauss's Unit measured on the Metrical System.
Aug. 8			Aug. 8			Aug. 8		
h m	° ′ ″		h m			h m		
6. 9	19. 37. 10	·0505	7. 38	·1579	·2821	10. 12	·0299	·1309
6. 15	36. 20	·0501	7. 55	·1548	·2765	10. 36:	·0306	·1339
6. 18	37. 5	·0504	8. 7	·1534	·2740	11. 16	·0297	·1301
6. 21	36. 5	·0499	8. 11	·1538	·2747	11. 37	·0294	·1288
6. 40	36. 20	·0501	8. 20	·1553	·2774	11. 52	·0295	·1292
6. 46	37. 0	·0504	8. 27	·1545	·2760	12. 13	·0285	·1248
6. 50	36. 25	·0501	8. 29	·1550	·2769	12. 16	·0286	·1252
6. 58	36. 40	·0502	8. 39	·1539	·2749	12. 41	·0258	·1129
7. 10	38. 35	·0513	9. 2	·1526	·2726	12. 51	·0269	·1177
7. 12	44. 0	·0541	9. 15	·1531	·2735	13. 18	·0282	·1235
7. 16	39. 0	·0515	9. 22	·1535	·2742	13. 26	·0280	·1226
7. 19	41. 55	·0530	9. 46	·1530	·2733	13. 35	·0282	·1235
7. 20	41. 0	·0525	9. 51	·1538	·2747	13. 55	·0279	·1221
7. 26	43. 5	·0536	10. 10	·1517	·2710	14. 19	·0276	·1208
7. 40	36. 30	·0502	10. 14	·1519	·2714	14. 24	·0276	·1208
7. 50	36. 50	·0503	10. 25	·1497	·2674	15. 8	·0266	·1164
8. 10	28. 10	·0459	10. 39	·1516	·2709	15. 23	·0264	·1156
8. 23	32. 30	·0481	10. 45	·1523	·2720	15. 31	·0265	·1160
8. 29	31. 55	·0478	10. 57	·1517	·2710	15. 38	·0268	·1173
8. 37	33. 20	·0486	11. 18	·1496	·2673	15. 51	·0260	·1138
8. 47	33. 0	·0484	11. 22	·1493	·2667	15. 58	·0262	·1147
8. 53	34. 10	·0490	11. 31	·1499	·2678	16. 7	·0260	·1138
9. 3	33. 15	·0485	11. 35	·1491	·2664	16. 14	·0261	·1142
9. 18:	36. 45	·0503	11. 50	·1485	·2653	16. 26	·0267	·1169
9. 37	34. 40	·0492	12. 9	·1499	·2678	16. 36	·0264	·1156
10. 8	22. 25	·0428	12. 19	·1488	·2658	16. 42	·0266	·1164
10. 17	24. 35	·0440	12. 31	·1526	·2726	16. 47	·0265	·1160
10. 20	21. 50	·0425	12. 48	·1477	·2639	16. 52	·0267	·1169
10. 29	24. 10	·0438	12. 58	·1467	·2621	17. 0	·0262	·1147
10. 33	28. 20	·0460	13. 3	·1479	·2643	17. 8	·0262	·1147
10. 46	33. 10	·0485	13. 12	·1479	·2643	17. 12	·0261	·1142
	***		13. 28	·1501	·2682	17. 20	·0262	·1147
11. 27	30. 25	·0470	13. 32	·1496	·2673	17. 30	·0260	·1138
11. 30	32. 0	·0478	13. 49	·1499	·2678	17. 42	·0259	·1133
11. 54	23. 0	·0432	14. 12	·1523	·2720	17. 53	·0262	·1147
12. 2	24. 5	·0437	14. 22	·1518	·2712	18. 2	·0262	·1147
12. 7	22. 55	·0431	14. 34	·1526	·2726	18. 16	·0267	·1169
12. 13	23. 40	·0435	14. 40	·1523	·2720	18. 23	·0269	·1177
12. 17	22. 15	·0427	14. 48	·1527	·2727	18. 28	·0268	·1173
12. 21	23. 0	·0432	15. 2	·1519	·2714	18. 32	·0271	·1186
12. 24	20. 0	·0416	15. 12	·1495	·2671	18. 38	·0270	·1182
12. 30	21. 55	·0426	15. 22	·1479	·2643	18. 46	·0272	·1191
12. 33	19. 5	·0411	15. 32	·1467	·2621	19. 1	·0267	·1169
12. 39	21. 0	·0421	15. 41	·1444	·2580	19. 9	·0266	·1164
12. 41	19. 40	·0414	15. 50	·1474	·2634	19. 12	·0265	·1160
12. 42	20. 20	·0418	16. 2	·1493	·2667	19. 26	·0270	·1182
12. 48	16. 25	·0397	16. 10	·1487	·2656	19. 31	·0269	·1177
12. 53	16. 5	·0395	16. 18	·1495	·2671	19. 34	·0265	·1160
12. 58	17. 25	·0402	16. 25	·1485	·2653	19. 35	·0266	·1164
13. 6	14. 55	·0390	16. 34	·1501	·2682	19. 40	·0263	·1151
13. 16	17. 10	·0401	16. 42	·1472	·2631	19. 46	·0265	·1160
13. 20	16. 55	·0400	16. 50	·1490	·2662	19. 50	·0267	·1169

Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Of V. F. Magnet.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Of V. F. Magnet.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Of V. F. Magnet.
Aug. 8	°	°	Aug. 8	°	°	Aug. 8	°	°
h m			h m			h m		
0. 0	66·6	66·2	3. 0	66·8	67·0	21. 0	65·3	65·2
1. 0	66·6	66·4	9. 0	65·8	65·8	22. 0	65·6	65·7
2. 0	66·8	66·7	12. 0	64·0	64·2	23. 0	65·9	66·1

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.
Aug. 8		
h m	° ′ ″	
13. 29	19. 20. 50	·0420
13. 36	18. 5	·0406
13. 46	21. 5	·0421
13. 52	20. 55	·0421
13. 58	22. 50	·0430
14. 10	20. 30	·0419
14. 24	21. 0	·0421
14. 30	18. 55	·0411
14. 36	21. 50	·0425
14. 47	19. 0	·0411
14. 58	19. 30	·0414
15. 7	22. 0	·0426
15. 17	30. 40	·0471
15. 25	30. 20	·0470
15. 31	33. 0	·0484
15. 42	55. 5	·0598
15. 58	35. 0	·0494
16. 0	33. 40	·0487
16. 17	22. 35	·0429
16. 22	27. 0	·0452
16. 32	39. 30	·0518
16. 40	39. 55	·0520
16. 41	38. 10	·0511
16. 43	41. 0	·0525
16. 55	57. 50	·0612
17. 1	47. 50	·0560
17. 8	46. 10	·0552
17. 11	48. 0	·0562
17. 19	47. 20	·0558
17. 27	50. 10	·0573
17. 29	48. 15	·0563
17. 36	43. 50	·0540
17. 44	46. 20	·0553
18. 8	30. 50	·0472
18. 18	33. 0	·0484
18. 22	28. 30	·0461
18. 27	30. 40	·0471
18. 30	26. 0	·0447
18. 33	24. 15	·0438
18. 38	34. 50	·0493
18. 43	33. 10	·0485
18. 48	37. 0	·0504
18. 50	36. 0	·0499
18. 57	46. 0	·0551
19. 0	47. 5	·0556
19. 7	43. 35	·0539
19. 10	45. 50	·0550
19. 11	44. 50	·0545
19. 12	47. 20	·0558
19. 15	43. 10	·0537
19. 18	45. 50	·0550
19. 21	42. 55	·0535

Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Expressed in terms of Gauss's Unit measured on the Metrical System.
Aug. 8		
h m		
16. 55	·1470	·2627
17. 0	·1479	·2643
17. 3	·1475	·2636
17. 11	·1481	·2646
17. 21	·1455	·2600
17. 31	·1461	·2611
17. 38	·1449	·2589
17. 50	·1425	·2546
17. 58	·1438	·2569
18. 7	·1415	·2528
18. 12	·1418	·2533
18. 20	·1410	·2519
18. 36	·1447	·2585
18. 41	·1415	·2528
18. 50	·1448	·2587
19. 0	·1435	·2564
19. 2	·1413	·2524
19. 8	·1431	·2557
19. 20	·1398	·2497
19. 32	·1443	·2578
19. 40	·1467	·2621
19. 43	·1391	·2485
20. 0	·1421	·2539
20. 8	·1447	·2585
20. 13	·1431	·2557
20. 14	·1468	·2623
20. 28	·1435	·2564
20. 30	·1466	·2620
20. 35	·1443	·2578
20. 47	·1468	·2623
20. 57	·1449	·2589
21. 7	·1463	·2614
21. 13	·1446	·2584
21. 19	·1464	·2616
21. 21	·1455	·2600
21. 34	·1457	·2603
	***	
21. 55	·1446	·2584
22. 0	·1456	·2602
22. 1	·1447	·2585
22. 9	·1437	·2567
22. 16	·1460	·2609
22. 26	·1429	·2553
22. 30	·1457	·2603
22. 40	·1445	·2582
22. 50	·1432	·2559
22. 56	·1449	·2589
23. 0	·1442	·2577
23. 10	·1455	·2600
23. 14	·1443	·2578
	(†)	
23. 48	·1455	·2600

Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Expressed in terms of Gauss's Unit measured on the Metrical System.
Aug. 8		
h m		
19. 56	·0266	·1164
20. 24	·0274	·1200
20. 36	·0274	·1200
20. 40	·0275	·1204
20. 51	·0275	·1204
21. 15	·0280	·1226
22. 12	·0296	·1296
22. 18	·0294	·1288
22. 22	·0298	·1305
22. 40	·0298	·1305
23. 2	·0301	·1317
23. 28	·0304	·1331
23. 59	·0305	·1335

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.
Aug. 8		
h m	° ′ ″	
19. 36	19. 56. 30	·0606
19. 39	59. 55	·0624
19. 43	46. 30	·0554
19. 49	55. 0	·0598
19. 51	51. 30	·0580
19. 55	54. 40	·0596
20. 0	47. 30	·0559
20. 7	51. 20	·0579
20. 10	47. 10	·0557
20. 11	49. 0	·0567
20. 13	44. 20	·0543
20. 17	49. 0	·0567
20. 19	47. 35	·0559
20. 21	52. 30	·0585
20. 25	46. 25	·0553
20. 27	49. 0	·0567
20. 29	41. 55	·0530
20. 30	49. 55	·0572
20. 32	43. 55	·0541
20. 36	48. 0	·0562
20. 38	40. 20	·0522
20. 39	40. 50	·0524
20. 43	40. 30	·0523
20. 47	41. 15	·0526
20. 50	38. 35	·0513
20. 51	39. 55	·0520
20. 57	36. 15	·0500
20. 59	38. 0	·0510
21. 3	36. 35	·0502
21. 9	38. 0	·0510
21. 14	34. 25	·0491
21. 18	38. 0	·0510
21. 20	35. 35	·0497
21. 23	37. 40	·0507
21. 26	36. 20	·0501
21. 30	37. 20	·0506
21. 37	37. 30	·0507
21. 39	39. 5	·0515
21. 41	38. 20	·0512
21. 43	39. 45	·0519
21. 46	37. 50	·0508
21. 48	40. 30	·0523
21. 51	39. 0	·0515
21. 55	40. 55	·0525
22. 3	38. 55	·0515
22. 8	39. 45	·0519
22. 10	39. 0	·0515
22. 11	40. 30	·0523
22. 14	40. 0	·0520
22. 20	42. 0	·0530
22. 23	38. 0	·0510
22. 30	43. 5	·0536

Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Expressed in terms of Gauss's Unit measured on the Metrical System.
Aug. 8		
h m		
23. 50	·1449	·2589
23. 59	·1459	·2607

Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Expressed in terms of Gauss's Unit measured on the Metrical System.
h m		

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.

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

The value 0·8600 of Horizontal Force corresponds to 1·5368 of Gauss's Unit on the Metrical System.

The value 0·9600 of Vertical Force corresponds to 4·2033 of Gauss's Unit on the Metrical System.

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force: Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force: Expressed in terms of Gauss's Unit measured on the Metrical System.
Aug. 8								
h m	° ′ ″		h m			h m		
22. 37	19. 40. 5	·0520						
22. 42	40. 35	·0523						
22. 47	38. 55	·0515						
23. 8	43. 10	·0537						
23. 11	41. 40	·0528						
23. 16	42. 45	·0534						
23. 22	42. 5	·0530						
23. 27	43. 5	·0536						
23. 31	42. 5	·0530						
23. 34	43. 35	·0539						
23. 36	42. 55	·0535						
23. 37	43. 20	·0538						
23. 46	42. 40	·0533						
23. 48	44. 50	·0545						
23. 50	44. 0	·0541						
23. 57	46. 0	·0551						
23. 59	45. 0	·0546						
Aug. 14			Aug. 14			Aug. 14		
0. 0	19. 44. 45	·0546	0. 0	·1495	·2671		(†)	
0. 20	45. 30	·0549	0. 30	·1491	·2664	0. 19	·0298	·1305
0. 42	43. 50	·0540	1. 1	·1509	·2696	1. 1	·0302	·1322
1. 7	46. 0	·0551	1. 21	·1502	·2684	2. 2	·0306	·1339
1. 14	44. 50	·0545	1. 41	·1497	·2674	2. 36	·0307	·1344
1. 22	44. 40	·0544	2. 4	·1504	·2687	3. 0	·0308	·1348
1. 50	43. 0	·0536	2. 14	·1502	·2684	3. 35	·0312	·1366
2. 7	43. 30	·0539	2. 50	·1512	·2702	4. 8	·0314	·1375
2. 27	42. 35	·0533	3. 1	·1509	·2696	4. 14	·0315	·1379
2. 53	43. 0	·0536	3. 20	·1521	·2717	4. 42	·0316	·1383
3. 1	42. 0	·0530	3. 30	·1529	·2731	5. 5	·0318	·1392
3. 17	43. 0	·0536	3. 57	·1529	·2731	5. 20	·0317	·1388
3. 21	42. 15	·0531	4. 7	·1522	·2719	5. 25	·0319	·1396
3. 28	43. 0	·0536	4. 30	·1529	·2731	5. 33	·0318	·1392
3. 38	42. 20	·0532	4. 33	·1527	·2727	5. 38	·0319	·1396
3. 42	42. 45	·0534	4. 37	·1528	·2729	5. 42	·0320	·1401
3. 47	42. 10	·0531	4. 42	·1527	·2727	5. 51	·0319	·1396
3. 49	42. 40	·0533	4. 54	·1530	·2733	6. 0	·0321	·1405
4. 11	40. 50	·0524	5. 1	·1528	·2729	6. 8	·0320	·1401
4. 27	41. 50	·0529	5. 9	·1531	·2735	6. 11	·0324	·1419
4. 58	38. 25	·0512	5. 18	·1529	·2731	6. 17	·0322	·1410
5. 10	39. 5	·0515	5. 25	·1522	·2719	6. 22	·0324	·1419
5. 22	37. 15	·0505	5. 31	·1528	·2729	6. 25	·0323	·1414
5. 24	38. 5	·0510	5. 37	·1524	·2722	6. 28	·0324	·1419
5. 39	37. 10	·0505	5. 48	·1530	·2733	6. 33	·0323	·1414
5. 49	40. 0	·0520	5. 58	·1518	·2712	6. 40	·0325	·1423
6. 2	36. 25	·0501	6. 8	·1527	·2727	6. 52	·0324	·1419
6. 10	37. 30	·0507	6. 10	·1521	·2717	7. 1	·0323	·1414
6. 11	39. 50	·0519	6. 17	·1557	·2781	7. 6	·0322	·1410
6. 16	38. 0	·0510	6. 19	·1555	·2778	7. 8	·0323	·1414
6. 29	41. 50	·0529	6. 22	·1557	·2781	7. 12	·0322	·1410
6. 33	41. 0	·0525	6. 26	·1554	·2776	7. 17	·0323	·1414
6. 39	38. 30	·0513	6. 31	·1560	·2787	7. 22	·0322	·1410

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force: Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force: Expressed in terms of Gauss's Unit measured on the Metrical System.
Aug. 14			Aug. 14			Aug. 14		
h m	° ′ ″		h m			h m		
6. 49	19. 36. 5	·0499	6. 32	·1558	·2783	7. 23	·0322	·1410
6. 51	36. 50	·0503	6. 35	·1566	·2798	7. 27	·0320	·1401
6. 58	35. 0	·0494	6. 39	·1561	·2789	7. 31	·0321	·1405
7. 6	30. 50	·0472	6. 51	·1569	·2803	7. 33	·0319	·1396
7. 14	31. 50	·0477	7. 0	·1565	·2796	7. 38	·0321	·1405
7. 26	25. 30	·0445	7. 2	·1554	·2776	7. 40	·0319	·1396
7. 30	26. 10	·0448	7. 10	·1561	·2789	7. 46	·0320	·1401
7. 32	25. 5	·0442	7. 11	·1554	·2776	7. 47	·0317	·1388
7. 42	27. 50	·0456	7. 17	·1559	·2785	8. 1	·0308	·1348
7. 45	27. 5	·0452	7. 21	·1551	·2771	8. 2	·0304	·1331
8. 2	37. 0	·0504	7. 26	·1555	·2778	8. 8	·0302	·1322
8. 6	37. 0	·0504	7. 28	·1551	·2771	8. 13	·0297	·1301
8. 13	32. 20	·0480	7. 31	·1565	·2796	8. 20	·0301	·1317
8. 19	29. 0	·0463	7. 37	·1555	·2778	8. 23	·0302	·1322
8. 21	25. 30	·0445	7. 41	·1539	·2749	8. 30	·0302	·1322
8. 29	19. 26. 10	·0448	7. 45	·1545	·2760	8. 50	·0247	·1082
8. 41	20. 3. 50	·0644	7. 50	·1537	·2745	9. 0	·0273	·1195
9. 0	19. 43. 50	·0540	7. 55	·1547	·2763	9. 8	·0281	·1230
9. 2	44. 10	·0542	7. 58	·1537	·2745	9. 17	·0290	·1270
9. 8	43. 0	·0536	8. 0	·1518	·2712	9. 23	·0279	·1221
9. 13	43. 10	·0537	8. 7	·1499	·2678	9. 32	·0280	·1226
9. 18	39. 45	·0519	8. 11	·1503	·2685	9. 40	·0300	·1313
9. 21	41. 45	·0529	8. 13	·1467	·2621	9. 43	·0305	·1335
9. 26	41. 0	·0525	8. 21	·1480	·2644	10. 1	·0315	·1379
9. 32	41. 50	·0529	8. 29	·1484	·2651	10. 7	·0315	·1379
9. 36	41. 20	·0527	8. 38	·1519	·2714	10. 24	·0316	·1383
9. 50	29. 0	·0463	8. 51	·1389	·2481	10. 28	·0315	·1379
9. 57	29. 30	·0466	9. 2	·1459	·2607	10. 40	·0318	·1392
10. 0	29. 5	·0463	9. 11	·1477	·2639	10. 49	·0303	·1326
10. 2	31. 50	·0477	9. 14	·1467	·2621	11. 8	·0296	·1296
10. 10	31. 10	·0474	9. 20	·1497	·2674	11. 26	·0304	·1331
10. 12	32. 0	·0478	9. 28	·1481	·2646	11. 32	·0305	·1335
10. 17	30. 40	·0471	9. 41	·1457	·2603	11. 36	·0307	·1344
10. 23	32. 10	·0479	9. 50	·1469	·2625	11. 40	·0305	·1335
10. 38	28. 10	·0459	10. 0	·1480	·2644	11. 45	·0305	·1335
10. 50	37. 15	·0505	10. 4	·1496	·2673	11. 52	·0304	·1331
11. 0	32. 5	·0478	10. 8	·1490	·2662	12. 3	·0306	·1339
11. 10	37. 0	·0504	10. 11	·1493	·2667	12. 19	·0303	·1326
	(†)		10. 16	·1486	·2655	12. 26	·0303	·1326
11. 41	14. 55	·0390	10. 30	·1493	·2667	12. 40	·0301	·1317
11. 56	19. 30	·0414	10. 38	·1484	·2651	12. 45	·0301	·1317
12. 2	18. 10	·0407	10. 47	·1499	·2678	12. 54	·0298	·1305
12. 12	21. 50	·0425	10. 53	·1487	·2656	13. 10	·0297	·1301
12. 20	25. 45	·0446	11. 0	·1497	·2674	13. 17	·0297	·1301
12. 29	23. 0	·0432	11. 3	·1492	·2666	13. 36	·0296	·1296
12. 40	24. 50	·0441	11. 8	·1481	·2646	13. 46	·0293	·1283
12. 42	23. 40	·0435	11. 15	·1470	·2627	13. 50	·0292	·1279
12. 51	26. 50	·0451	11. 30	·1487	·2656	14. 0	·0285	·1248
13. 0	24. 10	·0438	11. 32	·1479	·2643	14. 14	·0285	·1248
13. 10	25. 45	·0446	11. 44	·1491	·2664	14. 26	·0287	·1257
13. 11	25. 0	·0442	12. 0	·1481	·2646	14. 37	·0280	·1226
13. 16	22. 10	·0427	12. 9	·1484	·2651	14. 42	·0279	·1221

Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
Aug. 14			Aug. 14			Aug. 14		
h m	°	°	h m	°	°	h m	°	°
0. 0	65·7	66·4	3. 0	66·1	67·1	22. 0	65·2	65·2
1. 0	66·0	66·7	9. 0	65·9	65·9	23. 0	65·4	65·6
2. 0	66·2	67·0	21. 0	65·0	64·8			

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force. Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force. Expressed in terms of Gauss's Unit measured on the Metrical System.
Aug. 14			Aug. 14			Aug. 14		
h m	° ′ ″		h m			h m		
13.21	19.23.55	·0437	12.16	·1476	·2638	15.21	·0262	·1147
13.29	22.50	·0430	12.20	·1479	·2643	15.26	·0263	·1151
13.36	24.0	·0437	12.24	·1470	·2627	15.40	·0253	·1107
13.42	27.35	·0455	12.39	·1482	·2648	15.50	·0257	·1125
13.56	32.20	·0480	12.47	·1475	·2636	15.56	·0247	·1082
13.59	31.55	·0478	12.52	·1483	·2649	16.2	·0253	·1107
14.10	24.0	·0437	13.1	·1473	·2632	16.10	·0252	·1103
14.12	23.30	·0435	13.8	·1475	·2636	16.19	·0255	·1116
14.19	21.10	·0422	13.17	·1471	·2629	16.27	·0248	·1086
14.28	27.50	·0456	13.23	·1477	·2639	16.37	·0257	·1125
14.45	24.50	·0441	13.32	·1475	·2636	16.42	·0252	·1103
14.50	26.0	·0447	13.36	·1472	·2631	16.58	·0259	·1133
15.0	24.55	·0442	13.43	·1473	·2632	17.10	·0255	·1116
15.4	25.30	·0445	13.47	·1465	·2618	17.29	·0261	·1142
15.10	28.55	·0463	13.55	·1472	·2631	17.31	·0260	·1138
15.12	26.25	·0449	14.0	·1467	·2621	17.41	·0264	·1156
15.21	27.15	·0453	14.13	·1483	·2649	17.48	·0261	·1142
15.29	32.50	·0482	14.28	·1517	·2710	17.53	·0260	·1138
15.37	28.15	·0459	14.40	·1535	·2742	17.57	·0261	·1142
15.51	51.20	·0579	14.53	·1551	·2771	18.3	·0259	·1133
16.6	32.0	·0478	15.4	·1539	·2749	18.9	·0257	·1125
16.10	27.0	·0452	15.11	·1542	·2755	18.13	·0259	·1133
16.18	30.10	·0469	15.25	·1494	·2669	18.26	·0260	·1138
16.20	34.0	·0489	15.32	·1499	·2678	18.51	·0264	·1156
16.30	27.20	·0454	15.42	·1475	·2636	18.57	·0264	·1156
16.38	37.40	·0507	15.46	·1435	·2564	19.32	·0272	·1191
16.48	26.10	·0448	15.57	·1461	·2611	19.40	·0273	·1195
16.51	29.0	·0463	16.1	·1439	·2571	19.58	·0273	·1195
16.55	26.35	·0450	16.10	·1460	·2609	20.21	·0274	·1200
16.57	27.5	·0452	16.15	·1451	·2593	20.33	·0276	·1208
16.58	25.0	·0442	16.21	·1455	·2600	20.43	·0276	·1208
17.2	26.10	·0448	16.33	·1406	·2512	21.32	·0283	·1239
17.9	22.10	·0427	16.43	·1417	·2531	21.53	·0288	·1261
17.18	29.0	·0463	16.54	·1397	·2495	22.1	·0287	·1257
17.29	42.15	·0531	17.7	·1467	·2621	22.13	·0293	·1283
17.31	42.40	·0533	17.15	·1467	·2621	22.22	·0295	·1292
17.42	47.5	·0556	17.20	·1461	·2611	22.31	·0293	·1283
18.1	38.30	·0513	17.27	·1467	·2621	22.43	·0295	·1292
18.10	36.50	·0503	17.33	·1459	·2607	22.51	·0298	·1305
18.19	31.0	·0473	17.47	·1481	·2646	23.38	·0307	·1344
18.24	36.0	·0499	17.57	·1464	·2616	23.59	·0308	·1348
18.29	34.10	·0490	18.1	·1475	·2636			
18.40	38.0	·0510	18.5	·1473	·2632			
18.45	37.0	·0504	18.9	·1477	·2639			
18.51	39.40	·0518	18.13	·1468	·2623			
18.56	36.20	·0501	18.20	·1483	·2649			
19.1	37.30	·0507	18.28	·1475	·2636			
19.4	36.20	·0501	18.33	·1475	·2636			
19.10	38.0	·0510	18.41	·1469	·2625			
19.15	36.30	·0502	18.48	·1469	·2625			
19.19	37.20	·0506	18.55	·1453	·2596			
19.22	37.10	·0505	19.3	·1445	·2582			

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force. Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force. Expressed in terms of Gauss's Unit measured on the Metrical System.
Aug. 14			Aug. 14					
h m	° ′ ″		h m			h m		
19.44	19.50.30	·0575	19.8	·1449	·2589			
19.50	50.10	·0573	19.15	·1441	·2575			
19.56	52.0	·0582	19.32	·1439	·2571			
20.16	53.40	·0591	19.39	·1433	·2560			
20.20	51.10	·0578	19.45	·1435	·2564			
20.28	53.0	·0588	19.58	·1432	·2559			
20.33	50.45	·0576	20.18	·1438	·2569			
20.36	51.50	·0581	20.21	·1431	·2557			
20.38	50.15	·0573	20.27	·1433	·2560			
20.42	51.15	·0578	20.29	·1429	·2553			
20.49	48.15	·0563	20.37	·1428	·2551			
20.56	49.50	·0571	20.42	·1431	·2557			
21.2	47.30	·0559	20.55	·1429	·2553			
21.4	48.20	·0564	21.2	·1425	·2546			
21.12	48.50	·0566	21.11	·1429	·2553			
21.20	47.0	·0556	21.13	·1425	·2546			
21.27	47.5	·0556	21.20	·1428	·2551			
21.32	45.45	·0550	21.31	·1422	·2541			
21.37	46.50	·0555	21.38	·1425	·2546			
21.53	47.30	·0559	21.42	·1421	·2539			
22.2	44.0	·0541	21.59	·1427	·2549			
22.22	54.45	·0597	22.3	·1414	·2526			
22.36	51.0	·0577	22.10	·1402	·2505			
22.42	52.5	·0582	22.28	·1434	·2562			
22.47	51.20	·0579	22.42	·1438	·2569			
22.52	51.50	·0581	22.51	·1438	·2569			
22.56	52.50	·0586	22.58	·1444	·2580			
23.0	51.10	·0578	23.2	·1441	·2575			
23.3	52.10	·0583	23.8	·1445	·2582			
23.7	51.5	·0577	23.21	·1464	·2616			
23.13	49.45	·0571		(†)				
23.17	50.50	·0576						
23.23	48.0	·0562						
23.28	48.40	·0565						
23.31	48.15	·0563						
23.44	48.0	·0562						
23.56	48.0	·0562						
23.59	48.35	·0565						
Aug. 25			Aug. 25			Aug. 25		
0.0	19.39.0	·0515	0.0	·1513	·2703	0.0	·0309	·1352
0.9	39.40	·0518	0.2	·1512	·2702	0.47	·0311	·1361
0.16	39.40	·0518	0.11	·1515	·2707	1.30	·0312	·1366
0.43	42.15	·0531	0.25	·1515	·2707	1.42	·0315	·1379
0.50	42.0	·0530	0.50	·1521	·2717	1.47	·0314	·1375
0.56	43.10	·0537	0.55	·1518	·2712	2.2	·0316	·1383
1.12	44.0	·0541	1.1	·1525	·2724	2.26	·0315	·1379
1.33	42.20	·0532	1.17	·1522	·2719	2.56	·0318	·1392
1.46	45.0	·0546	1.34	·1507	·2692	3.3	·0318	·1392
1.51	44.25	·0543	1.47	·1518	·2712	3.38	·0320	·1401
2.2	45.0	·0546	1.51	·1515	·2707	3.58	·0322	·1410
2.36	41.40	·0528	2.9	·1519	·2714	4.4	·0321	·1405

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.

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

The value 0·8600 of Horizontal Force corresponds to 1·5368 of Gauss's Unit on the Metrical System.

The value 0·9600 of Vertical Force corresponds to 4·2033 of Gauss's Unit on the Metrical System.

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force. Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force. Expressed in terms of Gauss's Unit measured on the Metrical System.
Aug. 25			Aug. 25			Aug. 25		
h m	° ′ ″		h m			h m		
2. 59	19. 44. 0	·0541	2. 33	·1505	·2689	4. 28	·0325	·1423
3. 7	43. 0	·0536	3. 0	·1525	·2724	4. 52	·0326	·1427
3. 14	45. 0	·0546	3. 8	·1521	·2717	4. 58	·0328	·1436
3. 22	44. 0	·0541	3. 20	·1529	·2731	5. 16	·0328	·1436
3. 39	44. 20	·0543	3. 27	·1522	·2719	5. 49	·0333	·1458
3. 43	43. 40	·0539	3. 30	·1525	·2724	5. 52	·0332	·1454
4. 3	43. 30	·0539	3. 33	·1522	·2719	6. 8	·0335	·1467
4. 8	42. 40	·0533	3. 37	·1525	·2724	6. 12	·0334	·1463
4. 17	42. 45	·0534	3. 43	·1516	·2709	6. 26	·0338	·1480
4. 18	43. 20	·0538	3. 51	·1521	·2717	6. 46	·0341	·1493
4. 31	43. 50	·0540	4. 1	·1521	·2717	6. 48	·0341	·1493
4. 42	42. 20	·0532	4. 10	·1515	·2707	6. 54	·0342	·1498
4. 56	42. 10	·0531	4. 20	·1513	·2703	7. 1	·0341	·1493
5. 3	44. 40	·0544	4. 27	·1523	·2720	7. 18	·0345	·1511
5. 20	43. 50	·0540	4. 30	·1519	·2714	7. 31	·0345	·1511
5. 25	44. 55	·0546	4. 36	·1525	·2724	7. 33	·0346	·1515
5. 36	44. 0	·0541	4. 42	·1521	·2717	7. 46	·0342	·1498
5. 42	45. 5	·0546	4. 49	·1525	·2724	7. 54	·0343	·1502
5. 50	44. 10	·0542	4. 59	·1521	·2717	8. 5	·0341	·1493
5. 53	45. 50	·0550	5. 6	·1537	·2745	8. 12	·0342	·1498
5. 57	44. 10	·0542	5. 20	·1525	·2724	8. 20	·0342	·1498
6. 0	44. 15	·0542	5. 23	·1528	·2729	8. 36	·0341	·1493
6. 8	45. 50	·0550	5. 30	·1523	·2720	8. 53	·0339	·1484
6. 10	44. 10	·0542	5. 51	·1536	·2744	8. 55	·0339	·1484
6. 13	45. 50	·0550	6. 0	·1525	·2724	8. 58	·0338	·1480
6. 20	42. 5	·0530	6. 10	·1533	·2738	9. 5	·0340	·1489
6. 25	43. 50	·0540	6. 11	·1530	·2733	9. 10	·0339	·1484
6. 41	41. 20	·0527	6. 13	·1531	·2735	9. 12	·0340	·1489
6. 53	41. 20	·0527	6. 20	·1515	·2707	9. 18	·0339	·1484
6. 54	43. 50	·0540	6. 22	·1521	·2717	9. 25	·0341	·1493
7. 2	43. 0	·0536	6. 27	·1517	·2710	9. 30	·0341	·1493
7. 3	43. 50	·0540	6. 31	·1524	·2722	9. 36	·0344	·1507
7. 8	42. 0	·0530	6. 39	·1521	·2717	9. 50	·0341	·1493
7. 10	43. 0	·0536	6. 47	·1531	·2735	10. 7	·0336	·1471
7. 13	40. 55	·0525	7. 0	·1535	·2742	10. 11	·0336	·1471
7. 17	41. 50	·0529	7. 9	·1521	·2717	10. 20	·0332	·1454
7. 20	40. 10	·0521	7. 14	·1523	·2720	10. 22	·0332	·1454
7. 22	43. 0	·0536	7. 16	·1517	·2710	10. 29	·0329	·1440
7. 28	43. 50	·0540	7. 21	·1530	·2733	10. 33	·0330	·1445
7. 39	36. 50	·0503	7. 30	·1526	·2726	10. 41	·0334	·1463
7. 48	41. 55	·0530	7. 37	·1516	·2709	10. 57	·0327	·1432
7. 53	37. 0	·0504	7. 43	·1525	·2724	11. 10	·0321	·1405
7. 59	35. 30	·0497	7. 51	·1495	·2671	11. 18	·0321	·1405
8. 6	35. 15	·0495	7. 57	·1501	·2682	11. 32	·0317	·1388
8. 14	31. 0	·0473	8. 11	·1489	·2660	11. 47	·0308	·1348
8. 20	28. 30	·0461	8. 25	·1504	·2687	11. 51	·0310	·1357
8. 23	29. 40	·0466	8. 38	·1509	·2696	11. 59	·0306	·1339
8. 26	28. 50	·0462	8. 47	·1496	·2673	12. 2	·0307	·1344
8. 39	35. 0	·0494	8. 50	·1497	·2674	12. 10	·0304	·1331
8. 43	37. 10	·0505	8. 58	·1486	·2655	12. 16	·0309	·1352
8. 55	38. 40	·0513	9. 3	·1478	·2641	12. 30	·0298	·1305
9. 2	36. 0	·0499	9. 14	·1493	·2667	12. 32	·0299	·1309

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force. Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force. Expressed in terms of Gauss's Unit measured on the Metrical System.
Aug. 25			Aug. 25			Aug. 25		
h m	° ′ ″		h m			h m		
9. 10	19. 28. 5	·0458	9. 20	·1486	·2655	12. 46	·0284	·1244
9. 11	29. 20	·0465	9. 24	·1483	·2649	12. 52	·0281	·1230
9. 15	28. 50	·0462	9. 31	·1485	·2653	13. 4	·0289	·1265
9. 18	30. 35	·0471	9. 36	·1479	·2643	13. 12	·0290	·1270
9. 26	26. 55	·0452	9. 41	·1482	·2648	13. 22	·0297	·1301
9. 31	27. 55	·0457	9. 47	·1479	·2643	13. 41	·0298	·1305
9. 40	24. 0	·0437	10. 4	·1491	·2664	14. 1	·0295	·1292
9. 53	20. 0	·0416	10. 12	·1478	·2641	14. 30	·0306	·1339
10. 5	18. 50	·0410	10. 13	·1489	·2660	14. 40	·0306	·1339
10. 8	20. 0	·0416	10. 22	·1471	·2629	15. 28	·0311	·1361
10. 17	19. 40	·0414	10. 28	·1480	·2644	15. 37	·0314	·1375
10. 40	11. 50	·0373	10. 32	·1468	·2623	15. 58	·0315	·1379
10. 51	16. 20	·0397	10. 36	·1473	·2632	17. 18	·0316	·1383
10. 56	16. 10	·0396	10. 39	·1468	·2623	18. 40	·0316	·1383
11. 0	19. 0	·0411	10. 49	·1488	·2658	19. 46	·0317	·1388
11. 11	20. 45	·0420	10. 57	·1472	·2631	20. 30	·0318	·1392
11. 12	20. 0	·0416	11. 1	·1483	·2649	21. 25	·0319	·1396
11. 30	25. 40	·0445	11. 8	·1479	·2643	22. 32	·0316	·1383
11. 39	22. 15	·0427	11. 21	·1477	·2639	22. 50	·0317	·1388
11. 45	27. 55	·0457	11. 31	·1456	·2602	22. 57	·0315	·1379
11. 52	23. 5	·0432	11. 38	·1443	·2578	23. 5	·0316	·1383
12. 1	24. 55	·0442	11. 47	·1452	·2595	23. 35	·0317	·1388
12. 4	22. 45	·0430	11. 50	·1441	·2575	23. 43	·0316	·1383
12. 20	12. 0	·0374	11. 53	·1437	·2567	23. 56	·0318	·1392
12. 27	17. 0	·0400	12. 0	·1453	·2596	23. 59	·0317	·1388
12. 40	45. 40	·0549	12. 9	·1469	·2625			
12. 52	28. 0	·0458	12. 12	·1461	·2611			
12. 58	26. 30	·0450	12. 20	·1475	·2636			
13. 2	28. 20	·0460	12. 35	·1426	·2548			
13. 12	28. 0	·0458	12. 41	·1439	·2571			
13. 28	23. 0	·0432	12. 53	·1473	·2632			
13. 32	23. 45	·0436	13. 1	·1491	·2664			
13. 38	23. 0	·0432	13. 9	·1499	·2678			
13. 41	20. 20	·0418	13. 11	·1485	·2653			
13. 52	26. 50	·0451	13. 14	·1489	·2660			
14. 0	25. 0	·0442	13. 21	·1475	·2636			
14. 9	28. 35	·0461	13. 28	·1486	·2655			
14. 12	26. 30	·0450	13. 40	·1489	·2660			
14. 20	28. 40	·0461	13. 51	·1499	·2678			
14. 27	27. 20	·0454	14. 0	·1485	·2653			
14. 33	28. 45	·0462	14. 9	·1472	·2631			
14. 40	28. 40	·0461	14. 38	·1503	·2685			
14. 50	23. 30	·0435	14. 51	·1507	·2692			
14. 53	25. 0	·0442	15. 7	·1503	·2685			
15. 3	25. 0	·0442	15. 29	·1503	·2685			
15. 7	24. 15	·0438	15. 38	·1493	·2667			
15. 17	24. 45	·0441	15. 49	·1503	·2685			
15. 21	25. 45	·0446	15. 51	·1491	·2664			
15. 30	25. 0	·0442	15. 58	·1499	·2678			
15. 36	27. 0	·0452	15. 59	·1493	·2667			
15. 40	25. 0	·0442	16. 10	·1505	·2689			
15. 49	29. 50	·0467	16. 11	·1499	·2678			

Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
Aug. 25			Aug. 25		
h m	°	°	h m	°	°
0. 30	67·5	68·6	22. 0	67·5	67·7
9. 30	68·7	69·9	23. 0	67·5	67·4
21. 0	67·7	67·9			

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force. Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force. Expressed in terms of Gauss's Unit measured on the Metrical System.
Aug.25			Aug.25					
h m	° ′ ″		h m			h m		
15.52	19.28.50	·0462	16.21	·1507	·2692			
15.54	29.45	·0467	16.26	·1495	·2671			
15.58	28.25	·0460	16.34	·1503	·2685			
16.11	31. 0	·0473	16.50	·1495	·2671			
16.15	30.20	·0470	17.11	·1496	·2673			
16.21	31.35	·0476	17.19	·1491	·2664			
16.27	29.55	·0468	17.25	·1499	·2678			
16.43	32.50	·0482	17.31	·1491	·2664			
16.53	31. 0	·0473	17.42	·1504	·2687			
17. 0	31.15	·0474	17.50	·1489	·2660			
17. 3	30.25	·0470	17.57	·1499	·2678			
17.10	32.30	·0481	18. 0	·1483	·2649			
17.16	30.55	·0473	18.10	·1495	·2671			
17.22	31.40	·0476	18.20	·1502	·2684			
17.30	29.25	·0465	18.25	·1495	·2671			
17.37	31.25	·0475	18.30	·1491	·2664			
17.41	30.50	·0472	18.35	·1497	·2674			
17.44	32.15	·0479	18.40	·1490	·2662			
17.50	30. 0	·0468	18.48	·1488	·2658			
17.54	32.10	·0479	18.53	·1485	·2653			
17.59	28.40	·0461	19. 2	·1489	·2660			
18. 8	29.20	·0465	19. 9	·1486	·2655			
18.17	32.15	·0479	19.21	·1486	·2655			
18.30	31.10	·0474	19.30	·1489	·2660			
18.33	32.25	·0480	19.37	·1487	·2656			
18.42	31. 0	·0473	19.48	·1487	·2656			
18.47	32.25	·0480	19.58	·1489	·2660			
18.52	30.10	·0469	20.36	·1480	·2644			
19. 4	31.20	·0475	20.50	·1484	·2651			
19. 8	31. 0	·0473	21. 1	·1479	·2643			
19.12	31.15	·0474	21. 4	·1481	·2646			
19.19	29.25	·0465	21.11	·1478	·2641			
19.26	31. 0	·0473	21.26	·1477	·2639			
19.40	30.30	·0471	21.38	·1481	·2646			
19.45	31.20	·0475	21.51	·1475	·2636			
19.50	31. 0	·0473	22. 0	·1479	·2643			
19.58	32.20	·0480	22.10	·1476	·2638			
20. 6	31.30	·0476	22.18	·1475	·2636			
20. 9	31.35	·0476	22.25	·1477	·2639			
20.17	30.45	·0472	22.31	·1487	·2656			
20.20	31.35	·0476	22.42	·1473	·2632			
20.27	31.45	·0477	22.53	·1468	·2623			
20.36	30.30	·0471	23. 4	·1475	·2636			
20.40	31.40	·0476	23. 9	·1469	·2625			
20.46	31.20	·0475	23.20	·1472	·2631			
20.52	32.25	·0480	23.29	·1479	·2643			
21. 0	31.55	·0478	23.31	·1477	·2639			
21.10	32. 5	·0478	23.38	·1483	·2649			
21.16	33. 0	·0484	23.48	·1473	·2632			
21.21	32.30	·0481	23.52	·1473	·2632			
21.37	34.20	·0491	23.59	·1477	·2639			
21.42	34. 0	·0489						

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force. Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force. Expressed in terms of Gauss's Unit measured on the Metrical System.
Aug.25								
h m	° ′ ″		h m			h m		
21.49	19.34.25	·0491						
21.58	35.30	·0497						
22.18	36. 5	·0499						
22.29	40. 5	·0520						
22.36	38.30	·0513						
22.57	39. 0	·0515						
23. 0	39.50	·0519						
23. 7	38.45	·0514						
23. 9	39.30	·0518						
23.22	40. 0	·0520						
23.32	41.55	·0530						
23.38	42.20	·0532						
23.51	41. 5	·0525						
23.59	42.10	·0531						
Sept.17			Sept.17			Sept.17		
0. 0	19.41.20	·0527	0. 0	·1498	·2676	0. 0	·0282	·1235
0. 3	41. 0	·0525	0. 3	·1498	·2676	0.38	·0285	·1248
0. 8	42. 0	·0530	0.12	·1504	·2687	0.43	·0284	·1244
0.10	41.50	·0529	0.32	·1505	·2689	0.50	·0286	·1252
0.20	41.55	·0530	0.43	·1514	·2705	0.56	·0285	·1248
0.29	41. 5	·0525	0.51	·1509	·2696	1.23	·0287	·1257
0.40	43.10	·0537	1. 0	·1516	·2709	1.31	·0286	·1252
0.47	41.55	·0530	1. 5	·1515	·2707	3. 2	·0292	·1279
0.52	43.55	·0541	1.16	·1520	·2715	3.13	·0294	·1288
1. 4	43. 5	·0536	1.23	·1521	·2717	3.20	·0293	·1283
1.13	43.30	·0539	1.29	·1517	·2710	4. 0	·0297	·1301
1.20	44.55	·0546	1.37	·1521	·2717	4.10	·0296	·1296
1.31	43.55	·0541	1.43	·1517	·2710	4.30	·0297	·1301
1.39	42. 0	·0530	1.52	·1515	·2707	4.36	·0299	·1309
1.52	41.10	·0526	2. 5	·1517	·2710	4.56	·0297	·1301
2. 0	41.55	·0530	2.32	·1519	·2714		***	
2.10	41. 0	·0525	2.36	·1520	·2715	6.59	·0300	·1313
2.38	40.45	·0524	2.42	·1518	·2712	7.18	·0301	·1317
2.41	40.15	·0521	2.49	·1525	·2724	7.21	·0299	·1309
2.46	41. 0	·0525	2.51	·1519	·2714	7.49	·0302	·1322
2.50	40.45	·0524	2.57	·1525	·2724	7.52	·0300	·1313
2.53	41. 0	·0525	3. 0	·1518	·2712	7.58	·0301	·1317
2.58	40. 5	·0520	3. 2	·1522	·2719	8.12	·0302	·1322
3. 3	40.40	·0523	3. 6	·1521	·2717	8.21	·0300	·1313
3.10	39.50	·0519	3.10	·1518	·2712	8.24	·0302	·1322
3.18	42. 0	·0530	3.17	·1531	·2735	8.33	·0301	·1317
3.29	39. 5	·0515	3.29	·1519	·2714	9. 3	·0301	·1317
3.32	40.15	·0521	3.32	·1522	·2719	9. 7	·0300	·1313
3.46	39.55	·0520	3.37	·1519	·2714	9.13	·0302	·1322
3.53	40.55	·0525	3.50	·1518	·2712	9.26	·0290	·1270
4. 0	40. 0	·0520	3.53	·1523	·2720	9.32	·0283	·1239
4. 3	41. 0	·0525	4. 1	·1527	·2727	9.44	·0270	·1182
4.13	39. 0	·0515	4. 4	·1533	·2738	9.52	·0273	·1195
4.24	40.40	·0523	4.20	·1521	·2717	9.56	·0273	·1195
4.30	40.30	·0523	4.26	·1526	·2726	10. 6	·0280	·1226
4.39	41.55	·0530	4.37	·1532	·2737	10.13	·0286	·1252

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.

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

The value 0·8600 of Horizontal Force corresponds to 1·5368 of Gauss's Unit on the Metrical System.

The value 0·9600 of Vertical Force corresponds to 4·2033 of Gauss's Unit on the Metrical System.

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Sept. 17 h m	° ′ ″		Sept. 17 h m			Sept. 17 h m		
4. 44	19. 40. 30	·0523	4. 43	·1540	·2751	10. 29	·0286	·1252
4. 46	41. 0	·0525	4. 48	·1534	·2740	10. 42	·0279	·1221
4. 53	40. 0	·0520	4. 51	·1538	·2747	10. 50	·0278	·1217
5. 6	41. 55	·0530	5. 2	·1518	·2712	10. 53	·0273	·1195
5. 10	41. 0	·0525	5. 11	·1511	·2700	11. 0	·0278	·1217
5. 16	41. 40	·0528	5. 17	·1517	·2710	11. 2	·0284	·1244
5. 38	40. 25	·0522	5. 21	·1511	·2700	11. 8	·0286	·1252
5. 57	39. 55	·0520	5. 25	·1517	·2710	11. 14	·0276	·1208
6. 13	40. 10	·0521	5. 29	·1512	·2702	11. 20	·0277	·1213
6. 19	39. 20	·0517	5. 32	·1517	·2710	11. 26	·0282	·1235
6. 26	40. 0	·0520	5. 34	·1512	·2702	11. 32	·0274	·1200
6. 30	38. 55	·0515	5. 43	·1524	·2722	11. 40	·0276	·1208
6. 39	39. 10	·0516	5. 48	·1519	·2714	11. 43	·0272	·1191
6. 49	38. 40	·0513	5. 53	·1525	·2724	11. 52	·0270	·1182
7. 0	39. 0	·0515	6. 0	·1519	·2714	11. 56	·0272	·1191
7. 6	37. 40	·0507	6. 2	·1525	·2724	12. 0	·0269	·1177
7. 14	38. 50	·0514	6. 9	·1531	·2735	12. 2	·0271	·1186
7. 20	36. 10	·0500	6. 11	·1525	·2724	12. 10	·0266	·1164
7. 27	37. 45	·0508	6. 25	·1525	·2724	12. 22	·0277	·1213
7. 29	35. 55	·0499	6. 29	·1532	·2737	12. 30	·0278	·1217
7. 32	36. 40	·0502	6. 30	·1528	·2729	12. 34	·0271	·1186
7. 35	35. 5	·0494	6. 35	·1530	·2733	12. 40	·0274	·1200
7. 42	36. 40	·0502	6. 45	·1536	·2744	12. 52	·0268	·1173
7. 46	35. 30	·0497	6. 49	·1532	·2737	13. 2	·0272	·1191
7. 50	37. 10	·0505	6. 52	·1528	·2729	13. 8	·0270	·1182
7. 56	35. 0	·0494	6. 57	·1529	·2731	13. 15	·0272	·1191
8. 0	36. 10	·0500	6. 59	·1526	·2726	13. 25	·0268	·1173
8. 6	35. 0	·0494	7. 1	·1529	·2731	13. 33	·0272	·1191
8. 10	35. 50	·0498	7. 5	·1525	·2724	13. 41	·0265	·1160
8. 19	36. 5	·0499	7. 13	·1529	·2731	13. 53	·0277	·1213
8. 26	38. 0	·0510	7. 21	·1529	·2731	13. 58	·0276	·1208
8. 42	35. 0	·0494	7. 25	·1507	·2692	14. 2	·0278	·1217
8. 59	36. 0	·0499	7. 30	·1517	·2710	14. 10	·0274	·1200
9. 5	35. 0	·0494	7. 33	·1509	·2696	14. 40	·0282	·1235
9. 17	28. 55	·0463	7. 38	·1518	·2712	14. 43	·0282	·1235
9. 30	19. 45. 0	·0546	7. 41	·1515	·2707	14. 50	·0284	·1244
9. 48	20. 9. 40	·0674	7. 48	·1525	·2724	14. 57	·0284	·1244
10. 6	19. 38. 30	·0513	7. 53	·1532	·2737	15. 11	·0287	·1257
10. 16	19. 40	·0414	7. 59	·1513	·2703	15. 16	·0286	·1252
10. 25	19. 20	·0413	8. 2	·1517	·2710	15. 24	·0288	·1261
10. 32	24. 0	·0437	8. 12	·1517	·2710	15. 57	·0290	·1270
10. 51	9. 0	·0359	8. 20	·1533	·2738	16. 41	·0292	·1279
10. 53	9. 30	·0362	8. 25	·1529	·2731	17. 3	·0293	·1283
11. 0	6. 50	·0347	8. 32	·1548	·2765	19. 30	·0291	·1274
11. 12	11. 0	·0369	8. 40	·1536	·2744	21. 0	·0288	·1261
11. 17	9. 55	·0364	8. 49	·1525	·2724	21. 28	·0288	·1261
11. 20	10. 35	·0367	9. 3	·1516	·2709	23. 2	·0284	·1244
11. 25	10. 0	·0364	9. 18	·1489	·2660	23. 59	·0285	·1248
11. 33	17. 5	·0400	9. 27	·1513	·2703			
11. 39	12. 20	·0376	9. 32	·1504	·2687			
11. 40	14. 0	·0385	9. 37	·1516	·2709			
11. 43	5. 55	·0343	9. 54	·1441	·2575			

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force. Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force. Expressed in terms of Gauss's Unit measured on the Metrical System.
Sept. 17 h m	° ′ ″		Sept. 17 h m			h m		
11. 55	19. 23. 0	·0432	10. 0	·1446	·2584			
12. 2	13. 0	·0380	10. 2	·1444	·2580			
12. 5	11. 30	·0372	10. 8	·1455	·2600			
12. 8	12. 5	·0374	10. 12	·1445	·2582			
12. 12	11. 0	·0369	10. 22	·1472	·2631			
12. 19	14. 0	·0385	10. 32	·1484	·2651			
12. 33	25. 20	·0444	10. 49	·1445	·2582			
12. 39	23. 35	·0435	10. 52	·1447	·2585			
12. 50	28. 10	·0459	11. 0	·1427	·2549			
12. 58	25. 0	·0442	11. 8	·1431	·2557			
13. 4	23. 0	·0432	11. 15	·1444	·2580			
13. 16	15. 20	·0392	11. 20	·1431	·2557			
13. 18	15. 30	·0393	11. 28	·1428	·2551			
13. 25	12. 40	·0377	11. 35	·1447	·2585			
13. 40	20. 35	·0419	11. 40	·1468	·2623			
14. 2	39. 20	·0517	11. 43	·1462	·2613			
14. 11	33. 30	·0487	11. 46	·1476	·2638			
14. 21	29. 0	·0463	11. 55	·1463	·2614			
14. 28	30. 55	·0473	12. 0	·1482	·2648			
14. 30	28. 0	·0458	12. 4	·1476	·2638			
14. 32	28. 55	·0463	12. 12	·1480	·2644			
14. 38	26. 50	·0451	12. 27	·1443	·2578			
14. 47	29. 35	·0466	12. 50	·1508	·2694			
14. 50	28. 0	·0458	13. 11	·1467	·2621			
14. 55	30. 35	·0471	13. 26	·1469	·2625			
15. 0	30. 0	·0468	13. 32	·1464	·2616			
15. 14	31. 25	·0475	13. 40	·1471	·2629			
15. 20	29. 35	·0466	13. 47	·1452	·2595			
15. 26	31. 10	·0474	14. 0	·1487	·2656			
15. 33	30. 10	·0469	14. 4	·1497	·2674			
15. 48	29. 55	·0468	14. 11	·1491	·2664			
15. 57	30. 20	·0470	14. 17	·1501	·2682			
16. 10	29. 55	·0468	14. 21	·1499	·2678			
16. 12	30. 55	·0473	14. 29	·1509	·2696			
16. 18	30. 15	·0469	14. 31	·1503	·2685			
16. 29	30. 55	·0473	14. 37	·1512	·2702			
16. 31	31. 20	·0475	14. 43	·1517	·2710			
16. 40	30. 50	·0472	14. 51	·1510	·2698			
16. 42	32. 0	·0478	14. 57	·1513	·2703			
16. 51	32. 5	·0478	15. 3	·1503	·2685			
17. 0	32. 50	·0482	15. 18	·1495	·2671			
17. 8	31. 40	·0476	15. 24	·1489	·2660			
17. 17	31. 55	·0478	15. 55	·1495	·2671			
17. 20	31. 15	·0474	16. 10	·1491	·2664			
17. 29	32. 0	·0478	16. 30	·1494	·2669			
17. 34	30. 40	·0471	16. 41	·1490	·2662			
17. 41	31. 0	·0473	17. 1	·1491	·2664			
	***		17. 11	·1488	·2658			
17. 53	31. 0	·0473	17. 19	·1491	·2664			
17. 58	30. 10	·0469	17. 25	·1488	·2658			
18. 1	31. 5	·0473	17. 31	·1491	·2664			
18. 10	29. 20	·0465	17. 40	·1487	·2656			

Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Of V. F. Magnet.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Of V. F. Magnet.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Of V. F. Magnet.
Sept. 17 h m	°	°	Sept. 17 h m	°	°	Sept. 17 h m	°	°
0. 0	67·1	67·3	3. 0	67·3	67·4	22. 0	66·1	65·9
1. 0	67·0	67·3	9. 0	67·6	67·7	23. 0	66·3	66·0
2. 0	67·2	67·5	21. 0	66·1	65·7			

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force. Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force. Expressed in terms of Gauss's Unit measured on the Metrical System.
Sept. 17			Sept. 17					
h m	° ′ ″		h m			h m		
18. 18	19. 29. 50	·0467	17. 51	·1489	·2660			
18. 19	30. 30	·0471	18. 4	·1483	·2649			
18. 34	29. 50	·0467	19. 3	·1480	·2644			
18. 40	30. 45	·0472	19. 38	·1475	·2636			
18. 56	29. 20	·0465	19. 43	·1475	·2636			
19. 3	30. 5	·0468	19. 58	·1472	·2631			
19. 20	29. 45	·0467	20. 2	·1474	·2634			
19. 25	30. 5	·0468	20. 15	·1469	·2625			
19. 38	29. 50	·0467	20. 30	·1469	·2625			
19. 41	30. 50	·0472	20. 42	·1470	·2627			
19. 51	30. 15	·0469	21. 4	·1469	·2625			
19. 57	29. 5	·0463	21. 37	·1470	·2627			
20. 2	31. 0	·0473	21. 51	·1469	·2625			
20. 7	30. 0	·0468	22. 5	·1473	·2632			
20. 11	31. 20	·0475	22. 20	·1468	·2623			
20. 19	30. 20	·0470	22. 40	·1474	·2634			
20. 28	31. 5	·0473	22. 50	·1469	·2625			
20. 31	30. 15	·0469	23. 0	·1467	·2621			
20. 36	31. 0	·0473	23. 11	·1469	·2625			
21. 10	32. 30	·0481	23. 24	·1477	·2639			
21. 18	32. 0	·0478	23. 35	·1480	·2644			
21. 21	33. 15	·0485	23. 45	·1483	·2649			
21. 29	33. 0	·0484	23. 59	·1483	·2649			
22. 3	35. 30	·0497						
22. 20	36. 0	·0499						
22. 41	38. 20	·0512						
23. 10	40. 0	·0520						
23. 20	39. 40	·0518						
23. 28	41. 20	·0527						
23. 40	41. 15	·0526						
23. 46	42. 25	·0532						
23. 59	42. 40	·0533						
Oct. 14			Oct. 14			Oct. 14		
0. 0	19. 39. 20	·0517	0. 0	·1493	·2667		(†)	
0. 7	39. 55	·0520	0. 4	·1494	·2669	0. 36	·0337	·1476
0. 10	39. 0	·0515	0. 18	·1495	·2671	0. 51	·0338	·1480
1. 2	41. 40	·0528	0. 58	·1503	·2685	2. 32	·0339	·1484
1. 20	40. 30	·0523	1. 10	·1503	·2685	4. 20	·0341	·1493
1. 28	41. 5	·0525	1. 20	·1502	·2684	4. 31	·0341	·1493
1. 40	40. 50	·0524	1. 37	·1506	·2691	4. 51	·0342	·1498
2. 0	40. 50	·0524	2. 0	·1509	·2696	4. 54	·0341	·1493
2. 12	40. 10	·0521	2. 11	·1508	·2694	5. 2	·0343	·1502
2. 20	40. 45	·0524	2. 25	·1509	·2696	5. 10	·0341	·1493
2. 31	40. 0	·0520	2. 30	·1509	·2696	5. 13	·0342	·1498
2. 40	40. 40	·0523	2. 43	·1513	·2703	5. 44	·0342	·1498
2. 48	39. 30	·0518	2. 50	·1510	·2698	7. 24	·0343	·1502
2. 54	39. 50	·0519	2. 58	·1513	·2703	7. 55	·0342	·1498
3. 14	39. 45	·0519	3. 1	·1512	·2702	8. 41	·0343	·1502
3. 20	40. 35	·0523	3. 18	·1515	·2707	10. 18	·0342	·1498
3. 30	40. 0	·0520	3. 25	·1518	·2712	10. 21	·0352	·1541
3. 40	38. 30	·0513	3. 33	·1519	·2714	10. 27	·0342	·1498

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force. Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force. Expressed in terms of Gauss's Unit measured on the Metrical System.
Oct. 14			Oct. 14			Oct. 14		
h m	° ′ ″		h m			h m		
3. 49	19. 38. 35	·0513	3. 40	·1514	·2705	10. 32	·0343	·1502
3. 58	38. 0	·0510	3. 50	·1513	·2703	10. 36	·0340	·1489
4. 0	38. 20	·0512	3. 58	·1509	·2696	10. 40	·0342	·1498
4. 6	37. 55	·0509	4. 24	·1518	·2712	10. 42	·0339	·1484
4. 20	38. 40	·0513	4. 38	·1515	·2707	10. 46	·0340	·1489
4. 32	37. 35	·0507	4. 55	·1527	·2727	10. 47	·0344	·1507
4. 53	38. 40	·0513	5. 0	·1527	·2727	10. 48	·0329	·1440
5. 0	38. 30	·0513	5. 4	·1535	·2742	10. 50	·0334	·1463
5. 2	39. 30	·0518	5. 11	·1528	·2729	10. 52	·0329	·1440
5. 8	38. 20	·0512	5. 20	·1529	·2731	10. 54	·0331	·1449
5. 27	38. 25	·0512	5. 30	·1525	·2724	10. 57	·0326	·1427
5. 31	38. 40	·0513	5. 35	·1525	·2724	10. 58	·0328	·1436
5. 42	38. 25	·0512	5. 43	·1522	·2719	11. 1	·0325	·1423
5. 56	38. 30	·0513	5. 55	·1522	·2719	11. 10	·0329	·1440
6. 15	37. 50	·0508	6. 4	·1525	·2724	11. 12	·0325	·1423
6. 21	38. 0	·0510	6. 22	·1521	·2717	11. 20	·0335	·1467
6. 50	35. 25	·0496	6. 35	·1512	·2702	11. 22	·0319	·1396
7. 0	35. 0	·0494	6. 43	·1516	·2709	11. 30	·0309	·1352
	***		6. 49	·1515	·2707	11. 32	·0312	·1366
7. 45	35. 0	·0494	7. 5	·1519	·2714	11. 40	·0284	·1244
7. 56	33. 40	·0487	7. 12	·1517	·2710	11. 41	·0279	·1221
8. 17	34. 35	·0492	7. 23	·1523	·2720	11. 42	·0282	·1235
8. 46	34. 50	·0493	7. 37	·1522	·2719	11. 46	·0279	·1221
8. 56	35. 10	·0495	7. 41	·1526	·2726	11. 48	·0283	·1239
9. 11	34. 30	·0492	7. 49	·1525	·2724	11. 51	·0280	·1226
9. 22	35. 10	·0495	8. 12	·1525	·2724	11. 57	·0268	·1173
9. 31	35. 0	·0494	8. 42	·1519	·2714	12. 0	·0274	·1200
9. 46	36. 0	·0499	8. 48	·1515	·2707	12. 2	·0262	·1147
10. 18	35. 0	·0494	8. 56	·1516	·2709	12. 3	·0269	·1177
10. 26	41. 0	·0525	9. 1	·1513	·2703	12. 6	·0266	·1164
10. 30	46. 55	·0556	9. 11	·1516	·2709	12. 10	·0282	·1235
10. 34	45. 0	·0546	9. 20	·1521	·2717	12. 20	·0307	·1344
10. 41	59. 0	·0619	9. 23	·1524	·2722	12. 23	·0302	·1322
10. 46	53. 5	·0588	9. 30	·1520	·2715	12. 30	·0309	·1352
10. 50	58. 0	·0614	9. 43	·1523	·2720	12. 37	·0312	·1366
10. 52	57. 0	·0608	9. 57	·1520	·2715	12. 40	·0309	·1352
10. 53	59. 0	·0619	10. 8	·1525	·2724	12. 43	·0310	·1357
11. 19	44. 55	·0546	10. 14	·1525	·2724	12. 50	·0307	·1344
11. 26	48. 0	·0562	10. 28	·1613	·2882	12. 56	·0310	·1357
11. 30	44. 55	·0546	10. 32	·1595	·2850	13. 8	·0320	·1401
11. 37	51. 20	·0579	10. 35	·1609	·2875	13. 14	·0314	·1375
12. 1	19. 10	·0412	10. 40	·1597	·2853	13. 28	·0321	·1405
12. 9	22. 55	·0431	10. 50	·1647	·2942	13. 36	·0302	·1322
12. 12	18. 0	·0406	10. 51	·1569	·2803	13. 37	·0303	·1326
12. 20	6. 0	·0343	10. 53	·1605	·2868	13. 40	·0301	·1317
12. 28	14. 0	·0385	10. 56	·1577	·2817	13. 41	·0302	·1322
12. 47	33. 50	·0488	10. 58	·1585	·2832	13. 45	·0288	·1261
12. 51	31. 20	·0475	10. 59	·1554	·2776	13. 50	·0291	·1274
12. 53	31. 30	·0476	11. 7	·1548	·2765	13. 51	·0288	·1261
12. 59	29. 0	·0463	11. 15	·1574	·2812	14. 2	·0298	·1305
13. 7	28. 20	·0460	11. 16	·1540	·2751	14. 7	·0297	·1301
13. 11	29. 15	·0464	11. 21	·1637	·2925	14. 20	·0305	·1335

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.

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

The value 0·8600 of Horizontal Force corresponds to 1·5368 of Gauss's Unit on the Metrical System.

The value 0·9600 of Vertical Force corresponds to 4·2033 of Gauss's Unit on the Metrical System.

October 1. VERTICAL FORCE.—The adjustments were altered so that the readings were increased by $16^{div}\cdot55$, or by 0·00943 parts of the whole Vertical Force. It will be necessary, therefore, to diminish the indications on the days following October 1 by 0·0094 to connect them with the indications on the days preceding that date.

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in terms of Gauss's Unit measured on the Metrical System.
Oct. 14 h m	° ′ ″		Oct. 14 h m			Oct. 14 h m		
13. 22	19. 23. 5	·0432	11. 28	·1627	·2907	14. 30	·0311	·1361
13. 33	35. 30	·0497	11. 30	·1651	·2950	14. 50:	·0322	·1410
13. 41	24. 5	·0437	11. 33	·1578	·2819	14. 58	·0320	·1401
13. 47	29. 50	·0467	11. 39	·1613	·2882	15. 8	·0311	·1361
13. 50	16. 50	·0399	11. 41	·1576	·2816	15. 14	·0312	·1366
13. 51	17. 30	·0403	11. 44	·1503	·2685	15. 22	·0310	·1357
13. 53	15. 20	·0392	11. 47	·1482	·2648	15. 26	·0314	·1375
13. 57	17. 20	·0402	11. 52	·1459	·2607	15. 32	·0314	·1375
13. 58	16. 50	·0399	11. 55	·1442	·2577	15. 36	·0306	·1339
14. 0	21. 30	·0424	12. 0	·1451	·2593	15. 40	·0297	·1301
14. 7	27. 0	·0452	12. 1	·1414	·2526	15. 47	·0294	·1288
14. 9	25. 0	·0442	12. 3	·1425	·2546	15. 56	·0297	·1301
14. 18	25. 30	·0445	12. 18	·1330	·2376	16. 2	·0294	·1288
14. 19	23. 35	·0435	12. 42	·1397	·2495	16. 14	·0304	·1331
14. 22	25. 20	·0444	12. 52	·1410	·2519	16. 20	·0301	·1317
14. 30	23. 0	·0432	12. 57	·1401	·2503	16. 27	·0302	·1322
	***		13. 6	·1407	·2513	16. 46	·0310	·1357
14. 46	32. 30	·0481	13. 14	·1425	·2546	16. 49	·0309	·1352
14. 51	34. 0	·0489	13. 23	·1411	·2521	16. 56	·0310	·1357
	***		13. 30	·1416	·2530	17. 9	·0316	·1383
15. 8	52. 40	·0585	13. 35	·1433	·2560	17. 14	·0319	·1396
15. 11	46. 25	·0553	13. 47	·1399	·2499	17. 23	·0313	·1370
15. 21	49. 20	·0569	13. 51	·1424	·2544	17. 39	·0319	·1396
15. 24	46. 20	·0553	13. 52	·1409	·2517	17. 49	·0310	·1357
15. 32	52. 0	·0582		***		17. 52	·0314	·1375
15. 39	57. 15	·0609	14. 7	·1459	·2607	17. 53	·0312	·1366
15. 45	53. 0	·0588	14. 11	·1479	·2643	18. 0	·0312	·1366
15. 53	38. 20	·0512	14. 15	·1469	·2625	18. 3	·0314	·1375
16. 0	44. 0	·0541	14. 20	·1477	·2639	18. 16	·0306	·1339
16. 4	40. 30	·0523	14. 22	·1468	·2623	18. 26	·0317	·1388
16. 6	42. 55	·0535	14. 26	·1476	·2638	18. 28	·0315	·1379
16. 20	38. 25	·0512	14. 32	·1461	·2611	18. 32	·0319	·1396
16. 28	43. 0	·0536	14. 42	·1454	·2598	18. 37	·0318	·1392
16. 34	45. 0	·0546	14. 47	·1456	·2602	18. 49	·0328	·1436
16. 41	55. 25	·0600	14. 52	·1460	·2609	18. 57	·0324	·1419
16. 45	54. 55	·0598	15. 0	·1476	·2638	19. 1	·0330	·1445
16. 48	56. 0	·0603	15. 12	·1419	·2535	19. 10	·0332	·1454
16. 52	54. 20	·0595	15. 17	·1425	·2546	19. 13	·0337	·1476
17. 0	43. 25	·0538	15. 21	·1427	·2549	19. 18	·0334	·1463
17. 3	46. 45	·0555	15. 30	·1403	·2506	19. 31	·0340	·1489
17. 10	42. 55	·0535	15. 32	·1413	·2524	19. 33	·0337	·1476
17. 23	51. 30	·0580	15. 35	·1405	·2510	19. 38	·0339	·1484
17. 28	19. 49. 50	·0571	15. 41	·1421	·2539	19. 39	·0334	·1463
17. 31	20. 9. 0	·0671	15. 51	·1386	·2476	19. 40	·0337	·1476
17. 38	4. 40	·0648	16. 7	·1403	·2506	19. 41	·0334	·1463
17. 45	16. 50	·0711	16. 10	·1398	·2497	19. 44	·0340	·1489
17. 46	11. 55	·0686	16. 16	·1408	·2515	19. 46	·0339	·1484
18. 9	32. 50	·0794	16. 21	·1421	·2539	19. 48	·0342	·1498
18. 20	4. 30	·0648	16. 27	·1410	·2519	19. 52	·0347	·1520
18. 29	10. 0	·0676	16. 30	·1421	·2539	19. 59	·0345	·1511
18. 33	5. 0	·0650	16. 31	·1419	·2535	20. 2	·0347	·1520
	***		16. 38	·1431	·2557	20. 20	·0348	·1524

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in terms of Gauss's Unit measured on the Metrical System.
Oct. 14 h m	° ′ ″		Oct. 14 h m			Oct. 14 h m		
18. 40	20. 0. 0	·0624	16. 41	·1421	·2539	20. 23	·0346	·1515
18. 41	19. 58. 0	·0614	16. 49	·1432	·2559	20. 32	·0350	·1532
18. 42	20. 0. 0	·0624	16. 56	·1447	·2585	20. 40	·0350	·1532
18. 48	19. 51. 0	·0577	17. 10	·1385	·2474	20. 42	·0349	·1528
18. 52	53. 0	·0588	17. 22	·1429	·2553	20. 48	·0351	·1536
18. 59	38. 0	·0510	17. 34	·1385	·2474	20. 58	·0352	·1541
19. 0	46. 35	·0554	17. 48	·1481	·2646	21. 1	·0350	·1532
19. 4	41. 20	·0527	17. 52	·1417	·2531	21. 3	·0351	·1536
19. 6	42. 40	·0533	17. 59	·1445	·2582	21. 8	·0349	·1528
19. 8	34. 25	·0491	18. 7	·1444	·2580	21. 12	·0351	·1536
19. 10	31. 40	·0476	18. 19	·1412	·2523	21. 18	·0348	·1524
19. 11	30. 15	·0469	18. 29	·1425	·2546	21. 22	·0352	·1541
19. 12	36. 45	·0503	18. 32	·1418	·2533	21. 30	·0350	·1532
19. 20	27. 10	·0453	18. 35	·1397	·2495	21. 32	·0354	·1550
19. 21	31. 0	·0473	18. 39	·1436	·2566	21. 33	·0348	·1524
19. 29	31. 20	·0475	18. 41	·1407	·2513	21. 36	·0350	·1532
19. 30	35. 55	·0499	18. 45	·1441	·2575	21. 40	·0346	·1515
19. 31	28. 0	·0458	18. 49	·1419	·2535	21. 41	·0350	·1532
19. 37	29. 40	·0466	18. 53	·1443	·2578	21. 43	·0344	·1507
19. 38	20. 20	·0418	18. 56	·1426	·2548	21. 47	·0352	·1541
19. 40	25. 0	·0442	18. 58	·1453	·2596	21. 50	·0344	·1507
19. 46	23. 10	·0433	19. 1	·1395	·2492	21. 56	·0352	·1541
19. 50	36. 55	·0504	19. 5	·1422	·2541	22. 0	·0343	·1502
19. 56	31. 50	·0477	19. 10	·1390	·2483	22. 6	·0353	·1545
19. 58	35. 0	·0494	19. 17	·1434	·2562	22. 10	·0347	·1520
20. 3	33. 35	·0487	19. 25	·1392	·2487	22. 12	·0356	·1558
20. 14	36. 20	·0501	19. 28	·1399	·2499	22. 19	·0355	·1554
20. 22	30. 0	·0468	19. 31	·1391	·2485	22. 20	·0356	·1558
20. 32	38. 20	·0512	19. 35	·1409	·2517	22. 22	·0354	·1550
20. 43	33. 5	·0484	19. 38	·1387	·2477	22. 23	·0356	·1558
	***		19. 42	·1399	·2499	22. 28	·0355	·1554
20. 54	39. 0	·0515	19. 51	·1390	·2483	22. 31	·0362	·1585
21. 0	36. 50	·0503	19. 58	·1441	·2575	22. 38	·0365	·1598
21. 2	40. 40	·0523	20. 0	·1413	·2524	22. 40	·0361	·1580
21. 6	35. 0	·0494	20. 8	·1419	·2535	22. 42	·0365	·1598
21. 10	38. 25	·0512	20. 17	·1409	·2517	22. 45	·0364	·1594
21. 12	33. 20	·0486	20. 36	·1364	·2437	22. 50	·0374	·1638
21. 16	35. 0	·0494	20. 42	·1397	·2495	22. 52	·0372	·1629
21. 20	32. 5	·0478	20. 45	·1385	·2474	22. 55	·0376	·1646
21. 23	40. 0	·0520		(†)		22. 58	·0373	·1633
21. 28	37. 25	·0506	21. 0	·1366*	·2441*	23. 0	·0376	·1646
21. 30	42. 55	·0535	21. 19	·1380*	·2465*	23. 1	·0373	·1633
21. 31	34. 5	·0489	21. 23	·1363*	·2435*	23. 6	·0376	·1646
21. 34	38. 25	·0512	21. 30	·1386*	·2476*	23. 10	·0369	·1615
21. 39	32. 20	·0480	21. 31	·1372*	·2452*	23. 12	·0373	·1633
21. 40	40. 0	·0520	21. 34	·1394*	·2490*	23. 17	·0371	·1624
21. 41	32. 0	·0478	21. 37	·1366*	·2441*	23. 18	·0372	·1629
21. 46	44. 0	·0541	21. 39	·1374*	·2455*	23. 19	·0363	·1589
21. 50	36. 0	·0499	21. 44	·1350*	·2412*	23. 21	·0374	·1638
21. 52	46. 0	·0551	21. 45	·1366*	·2441*	23. 25	·0365	·1598
22. 0	29. 0	·0463	21. 49	·1332*	·2380*	23. 27	·0372	·1629
22. 6	43. 0	·0536	21. 51	·1364*	·2437*	23. 34	·0361	·1580

Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
Oct. 14 h m	°	°	Oct. 14 h m	°	°	Oct. 14 h m	°	°
0. 0	63·0	62·4	3. 0	62·8	62·2	22. 0	62·9	62·3
1. 0	62·2	61·8	9. 0	62·2	61·9	23. 0	63·2	62·5
2. 0	62·4	61·8	21. 0	63·2	62·4			

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force: Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force: Expressed in terms of Gauss's Unit measured on the Metrical System.
Oct. 14			Oct. 14			Oct. 14		
h m	° ′ ″		h m			h m		
22. 8	19. 30. 25	·0470	21. 55	·1345*	·2403*	23. 40	·0367	·1607
22. 12	42. 55	·0535	22. 0	·1386	·2476	23. 42	·0361	·1580
22. 18	37. 10	·0505	22. 8	·1423	·2542	23. 46	·0366	·1602
22. 22	41. 10	·0526	22. 12	·1390	·2483	23. 48	·0361	·1580
22. 26	34. 0	·0489	22. 14	·1435	·2564	23. 50	·0366	·1602
22. 37	46. 50	·0555	22. 27	·1407	·2513	23. 52	·0363	·1589
22. 41	40. 20	·0522	22. 28	·1425	·2546	23. 54	·0366	·1602
22. 48	50. 55	·0577	22. 30	·1408	·2515	23. 56	·0362	·1585
22. 50	47. 0	·0556	22. 38	·1451	·2593	23. 59	·0363	:1589
22. 51	54. 55	·0598	22. 45	·1402	·2505			
23. 0	47. 5	·0556	22. 48	·1464	·2616			
23. 1	49. 0	·0567	22. 54	·1440	·2573			
23. 7	44. 5	·0541	22. 57	·1467	·2621			
23. 10	49. 50	·0571	23. 1	·1433	·2560			
23. 11	44. 0	·0541	23. 3	·1473	·2632			
23. 17	46. 50	·0555	23. 7	·1432	·2559			
23. 19	40. 0	·0520	23. 9	·1464	·2616			
23. 23	52. 50	·0586		(†)				
23. 44	43. 0	·0536	23. 30	·1469	·2625			
23. 47	46. 0	·0551	23. 37	·1471	·2629			
23. 50	42. 10	·0531	23. 44	·1448	·2587			
23. 56	48. 0	·0562	23. 50	·1473	·2632			
23. 58	45. 55	·0551	23. 51	·1459	·2607			
23. 59	46. 20	·0553	23. 58	·1475	·2636			
			23. 59	·1464	·2616			
Oct. 15			Oct. 15			Oct. 15		
0. 0	19. 46. 20	·0553	0. 0	·1474	·2634	0. 0	·0363	·1589
0. 3	44. 30	·0544	0. 3	·1466	·2620		***	
0. 7	47. 20	·0558	0. 7	·1478	·2641	0. 16	·0361	·1580
0. 19	42. 25	·0532	0. 10	·1463	·2614	0. 22	·0362	·1585
0. 22	44. 20	·0543	0. 15	·1449	·2589	0. 30	·0361	·1580
0. 35	48. 15	·0563	0. 32	·1465	·2618		***	
0. 41	46. 40	·0554	0. 43	·1478	·2641	0. 40	·0364	·1594
0. 50	49. 15	·0568	0. 47	·1475	·2636	0. 45	·0363	:1589
1. 2	45. 50	·0550	0. 58	·1502	·2684	0. 58	·0367	·1607
1. 8	49. 5	·0567	0. 59	·1493	·2667	1. 8	·0366	·1602
1. 19	42. 0	·0530	1. 1	·1501	·2682		***	
1. 23	39. 20	·0517	1. 2	·1489	·2660	1. 30	·0370	·1620
1. 32	40. 30	·0523	1. 5	·1498	·2676		***	
1. 36	38. 5	·0510	1. 12	·1457	·2603	2. 11	·0363	·1589
1. 46	38. 20	·0512	1. 19	·1466	·2620		***	
1. 56	40. 5	·0520	1. 22	·1461	·2611	2. 39	·0367	·1607
2. 2	39. 25	·0517	1. 31	·1469	·2625	2. 59	·0366	·1602
2. 10	40. 10	·0521	1. 32	·1457	·2603	3. 2	·0368	·1611
2. 14	39. 0	·0515	1. 35	·1465	·2618	3. 5	·0365	·1598
2. 40	42. 40	·0533	1. 39	·1457	·2603	3. 9	·0368	·1611
2. 50	41. 0	·0525	1. 41	·1464	·2616	3. 17	·0369	·1615
	***		1. 43	·1458	·2605	3. 20	·0370	·1620
3. 7	41. 15	·0526	1. 48	·1463	·2614	3. 25	·0369	·1615
3. 16	39. 20	·0517	1. 51	·1457	·2603	3. 30	·0372	·1629
3. 19	40. 15	·0521	1. 57	·1463	·2614	3. 33	·0369	·1615

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force: Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force: Expressed in terms of Gauss's Unit measured on the Metrical System.
Oct. 15			Oct. 15			Oct. 15		
h m	° ′ ″		h m			h m		
3. 29	19. 34. 20	·0491	1. 59	·1456	·2602	3. 38	·0373	·1633
3. 32	34. 35	·0492	2. 9	·1465	·2618	3. 50	·0375	·1642
3. 44	22. 50	·0430	2. 13	·1459	·2607	3. 55	·0374	·1638
4. 0	29. 0	·0463	2. 21	·1461	·2611	4. 2	·0372	·1629
4. 8	24. 30	·0440	2. 40	·1483	·2649	4. 6	·0371	·1624
4. 12	26. 50	·0451	2. 43	·1479	·2643	4. 10	·0373	·1633
4. 16	26. 0	·0447	2. 58	·1479	·2643	4. 22	·0373	·1633
4. 23	29. 55	·0468	3. 1	·1475	·2636	4. 40	·0375	·1642
4. 33	27. 0	·0452	3. 6	·1469	·2625	4. 55	·0375	·1642
4. 58	29. 50	·0467	3. 12	·1481	·2646	4. 58	·0376	·1646
5. 0	25. 10	·0443	3. 21	·1486	·2655	5. 2	·0375	·1642
5. 6	31. 0	·0473	3. 28	·1482	·2648	5. 7	·0376	·1646
5. 10	32. 15	·0479	3. 31	·1495	·2671	5. 11	·0375	·1642
5. 19	29. 25	·0465	3. 36	·1480	·2644	5. 13	·0377	·1651
5. 32	37. 15	·0505	3. 41	·1499	·2678	5. 32	·0379	·1659
5. 40	36. 0	·0499	3. 51	·1509	·2696	5. 50	·0373	·1633
5. 44	32. 0	·0478	3. 57	·1499	·2678	5. 57	·0374	·1638
5. 49	33. 50	·0488	4. 0	·1501	·2682	6. 2	·0366	·1602
5. 51	31. 30	·0476	4. 4	·1479	·2643	6. 22	·0360	·1576
5. 57	21. 25	·0423	4. 10	·1486	·2655	6. 32	·0359	·1571
6. 2	30. 0	·0468	4. 12	·1479	·2643	6. 48	·0361	·1580
6. 6	23. 20	·0434	4. 14	·1481	·2646	6. 55	·0365	·1598
6. 10	30. 30	·0471	4. 29	·1463	·2614	7. 10	·0353	·1545
6. 17	34. 20	·0491	4. 34	·1470	·2627	7. 18	·0355	·1554
6. 23	33. 55	·0489	4. 39	·1468	·2623	7. 24	·0353	·1545
6. 29	37. 30	·0507	4. 40	·1473	·2632	7. 30	·0354	·1550
6. 31	37. 25	·0506	4. 50	·1475	·2636	7. 32	·0353	·1545
6. 41	39. 30	·0518	5. 0	·1465	·2618	7. 52	·0346	·1515
6. 57	21. 50	·0425	5. 5	·1479	·2643	8. 8	·0346	·1515
7. 5	35. 50	·0498	5. 12	·1469	·2625	8. 16	·0334	·1463
7. 13	12. 30	·0377	5. 31	·1487	·2656	8. 20	·0337	·1476
7. 24	35. 30	·0497	5. 41	·1475	·2636	8. 28	·0332	·1454
7. 27	19. 0	·0411	5. 47	·1480	·2644	8. 32	·0342	·1498
7. 28	19. 30	·0414	5. 50	·1469	·2625	8. 38	·0336	·1471
7. 34	15. 40	·0393	5. 51	·1470	·2627	8. 51	·0343	·1502
7. 48	38. 30	·0513	5. 58	·1465	·2618	8. 59	·0341	·1493
7. 53	36. 35	·0502	6. 2	·1489	·2660	9. 22	·0346	·1515
7. 57	38. 40	·0513	6. 4	·1463	·2614	9. 40	·0343	·1502
8. 0	41. 10	·0526	6. 10	·1481	·2646	9. 49	·0344	·1507
8. 4	34. 25	·0491	6. 13	·1471	·2629	9. 57	·0342	·1498
8. 12	47. 35	·0559	6. 21	·1465	·2618	10. 9	·0340	·1489
8. 19	34. 0	·0489	6. 31	·1475	·2636	10. 16	·0340	·1489
8. 28	2. 55	·0327	6. 33	·1469	·2625	10. 20	·0344	·1507
8. 40	32. 35	·0481	6. 41	·1450	·2591	10. 28	·0326	·1427
8. 50	12. 50	·0378	6. 50	·1445	·2582	10. 42	·0321	·1405
9. 9	21. 40	·0424	7. 3	·1489	·2660	10. 57	·0329	·1440
9. 12	18. 50	·0410	7. 6	·1494	·2669	11. 6	·0335	·1467
9. 32	28. 30	·0461	7. 11	·1444	·2580	11. 10	·0334	·1463
9. 54	24. 30	·0440	7. 23	·1495	·2671	11. 18	·0336	·1471
10. 2	23. 10	·0433	7. 31	·1448	·2587	11. 39	·0331	·1449
10. 7	23. 25	·0434	7. 43	·1488	·2658	11. 59	·0338	·1480
10. 28	40. 20	·0522	7. 52	·1471	·2629	12. 10	·0336	·1471

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.

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

The value 0·8600 of Horizontal Force corresponds to 1·5368 of Gauss's Unit on the Metrical System.

The value 0·9600 of Vertical Force corresponds to 4·2033 of Gauss's Unit on the Metrical System.

October 14. The spot of light for Horizontal Force was off the sheet in the direction of *decreasing* force from 20h. 45m. to 22h. 0m.

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in terms of Gauss's Unit measured on the Metrical System.
Oct. 15			Oct. 15			Oct. 15		
h m	° ′ ″		h m			h m		
10. 37	19. 37. 20	·0506	7. 55	·1473	·2632	12. 16	·0337	·1476
11. 0	15. 25	·0392	8. 1	·1466	·2620	12. 30	·0333	·1458
11. 30	31. 25	·0475	8. 3	·1451	·2593	12. 38	·0333	·1458
11. 40	26. 30	·0450	8. 11	·1472	·2631	12. 45	·0332	·1454
11. 49	18. 0	·0406	8. 15	·1426	·2548	12. 50	·0333	·1458
12. 5	12. 45	·0378	8. 20	·1414	·2526	12. 55	·0329	·1440
12. 18	16. 15	·0396	8. 25	·1419	·2535	13. 3	·0329	·1440
12. 23	16. 15	·0396	8. 28	·1395	·2492	13. 8	·0322	·1410
12. 26	12. 35	·0377	8. 40	·1485	·2653	13. 12	·0325	·1423
12. 43	18. 40	·0409	8. 47	·1431	·2557	13. 16	·0320	·1401
13. 3	33. 20	·0486	9. 2	·1467	·2621	13. 22	·0328	·1436
13. 10	13. 0	·0380	9. 11	·1452	·2595	13. 26	·0331	·1449
13. 12	16. 25	·0397	9. 26	·1462	·2613	13. 37	·0331	·1449
13. 19	15. 30	·0393	9. 41	·1434	·2562	13. 50	·0334	·1463
13. 28	22. 20	·0428	9. 58	·1449	·2589	13. 52	·0333	·1458
13. 30	19. 0	·0411	10. 1	·1443	·2578	14. 2	·0336	·1471
13. 36	17. 25	·0402	10. 6	·1448	·2587	14. 19	·0332	·1454
13. 41	19. 10	·0412	10. 10	·1444	·2580	14. 28	·0326	·1427
13. 49	15. 45	·0394	10. 16	·1446	·2584	14. 41	·0330	·1445
13. 51	18. 0	·0406	10. 20	·1439	·2571	14. 51	·0331	·1449
14. 0	18. 50	·0410	10. 26	·1477	·2639	14. 58	·0329	·1440
14. 8	21. 0	·0421	10. 31	·1453	·2596	15. 3	·0331	·1449
14. 15	19. 50	·0415	10. 33	·1456	·2602	15. 10	·0330	·1445
14. 29	8. 30	·0357	10. 41	·1436	·2566	15. 27	·0332	·1454
14. 41	12. 30	·0377	10. 50	·1416	·2530	15. 57	·0318	·1392
14. 46	12. 0	·0374	11. 0	·1434	·2562	16. 8	·0326	·1427
14. 50	12. 25	·0376	11. 10	·1464	·2616	16. 18	·0328	·1436
14. 55	10. 50	·0368	11. 21	·1473	·2632	16. 21	·0327	·1432
15. 0	12. 0	·0374	11. 32	·1433	·2560	16. 34	·0331	·1449
15. 34	41. 30	·0528	11. 42	·1414	·2526	16. 37	·0330	·1445
15. 54	25. 30	·0445	12. 1	·1434	·2562	16. 47	·0334	·1463
16. 0	25. 20	·0444	12. 10	·1435	·2564	16. 52	·0331	·1449
16. 10	27. 0	·0452	12. 12	·1442	·2577	16. 59	·0333	·1458
16. 12	25. 50	·0446	12. 23	·1451	·2593	17. 4	·0332	·1454
16. 17	26. 20	·0449	12. 33	·1443	·2578	17. 7	·0333	·1458
16. 23	23. 45	·0436	12. 39	·1448	·2587	17. 10	·0332	·1454
16. 46	41. 0	·0525	12. 46	·1450	·2591	17. 12	·0333	·1458
16. 49	41. 50	·0529	12. 52	·1443	·2578	17. 28	·0331	·1449
16. 57	40. 30	·0523	12. 58	·1448	·2587	17. 58	·0335	·1467
17. 0	42. 0	·0530	13. 3	·1430	·2555	18. 7	·0334	·1463
17. 6	38. 25	·0512	13. 11	·1427	·2549	18. 22	·0335	·1467
17. 17	44. 30	·0544	13. 13	·1412	·2523	18. 28	·0336	·1471
17. 25	45. 20	·0548	13. 19	·1449	·2589	18. 38	·0336	·1471
17. 30	44. 25	·0543	13. 21	·1445	·2582	19. 0	·0342	·1498
17. 40	49. 30	·0570	13. 28	·1466	·2620	19. 18	·0346	·1515
17. 49	50. 30	·0575	13. 31	·1473	·2632	19. 55	·0352	·1541
17. 58	54. 50	·0597	13. 37	·1457	·2603	20. 1	·0350	·1532
18. 16	55. 40	·0601	13. 42	·1461	·2611	20. 10	·0352	·1541
18. 24	49. 35	·0570	13. 48	·1469	·2625	20. 41	·0353	·1545
	***		13. 53	·1467	·2621	20. 43	·0354	·1550
18. 51	40. 30	·0523	13. 57	·1473	·2632	20. 55	·0354	·1550
19. 0	40. 0	·0520	14. 12	·1477	·2639	21. 30	·0356	·1558

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in terms of Gauss's Unit measured on the Metrical System.
Oct. 15			Oct. 15			Oct. 15		
h m	° ′ ″		h m			h m		
19. 14	19. 34. 0	·0489	14. 31	·1458	·2605	21. 51	·0356	·1558
19. 28	33. 30	·0487	14. 47	·1483	·2649	22. 7	·0357	·1563
19. 37	30. 20	·0470	14. 51	·1481	·2646	22. 21	·0357	·1563
19. 40	31. 10	·0474	14. 58	·1489	·2660	23. 10	·0355	·1554
19. 48	30. 10	·0469	15. 0	·1485	·2653	23. 44	·0354	·1550
19. 57	32. 5	·0478	15. 5	·1489	·2660	23. 50	·0355	·1554
20. 2	22. 0	·0426	15. 15	·1483	·2649	23. 59	·0355	·1554
20. 8	30. 20	·0470	15. 32	·1497	·2674			
20. 16	31. 55	·0478	15. 41	·1484	·2651			
20. 21	30. 5	·0468	15. 50	·1451	·2593			
20. 26	31. 50	·0477	16. 0	·1431	·2557			
20. 33	30. 0	·0468	16. 12	·1439	·2571			
20. 38	30. 10	·0469	16. 19	·1437	·2567			
20. 40	27. 55	·0457	16. 22	·1440	·2573			
20. 45	33. 0	·0484	16. 30	·1434	·2562			
20. 50	29. 55	·0468	16. 36	·1445	·2582			
21. 1	31. 40	·0476	16. 41	·1438	·2569			
	***		16. 46	·1445	·2582			
21. 20	31. 10	·0474	16. 49	·1441	·2575			
21. 42	33. 0	·0484	16. 55	·1449	·2589			
21. 55	32. 20	·0480	16. 59	·1446	·2584			
	***		17. 19	·1482	·2648			
22. 19	34. 30	·0492	17. 31	·1468	·2623			
22. 26	33. 50	·0488	17. 46	·1452	·2595			
22. 42	35. 50	·0498	17. 59	·1465	·2618			
22. 52	36. 10	·0500	18. 1	·1464	·2616			
23. 8	37. 35	·0507	18. 20	·1467	·2621			
23. 11	37. 0	·0504	18. 28	·1468	·2623			
23. 21	39. 35	·0518	18. 32	·1477	·2639			
23. 27	38. 50	·0514		***				
23. 38	40. 30	·0523	18. 53	·1468	·2623			
23. 43	39. 25	·0517	18. 59	·1471	·2629			
23. 56	42. 30	·0533	19. 8	·1471	·2629			
23. 59	42. 20	·0532	19. 12	·1469	·2625			
			19. 21	·1472	·2631			
			19. 35	·1467	·2621			
			19. 41	·1471	·2629			
				***				
			19. 59	·1469	·2625			
			20. 2	·1447	·2585			
			20. 10	·1473	·2632			
			20. 12	·1480	·2644			
			20. 21	·1468	·2623			
			20. 31	·1465	·2618			
			20. 33	·1462	·2613			
			20. 43	·1458	·2605			
			20. 49	·1471	·2629			
			20. 51	·1460	·2609			
			20. 58	·1461	·2611			
			21. 1	·1456	·2602			
			21. 11	·1452	·2595			
			21. 42	·1463	·2614			

Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
Oct. 15 h m	°	°	Oct. 15 h m	°	°	Oct. 15 h m	°	°
0. 0	63·5	62·9	3. 0	63·4	62·5	22. 0	63·5	62·8
1. 0	63·4	62·5	9. 0	63·0	62·1	23. 0	63·3	62·5
2. 0	63·7	62·9	21. 0	63·8	62·9			

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force: Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force: Expressed in terms of Gauss's Unit measured on the Metrical System.
h m	° ′ ″		Oct. 15 h m			h m		
			21. 54	·1458	·2605			
			22. 0	·1461	·2611			
			22. 10	·1467	·2621			
			22. 14	·1465	·2618			
			22. 21	·1469	·2625			
			22. 28	·1466	·2620			
			22. 39	·1470	·2627			
			22. 48	·1468	·2623			
			23. 10	·1472	·2631			
			23. 30	·1479	·2643			
			23. 42	·1477	·2639			
			23. 59	·1492	·2666			
Oct. 16			Oct. 16			Oct. 16		
0. 0	19. 42. 10	·0531	0. 0	·1488	·2658	0. 0	·0355	·1554
0. 2	41. 45	·0529	0. 11	·1477	·2639	0. 24	·0354	·1550
0. 6	43. 35	·0539	0. 15	·1481	·2646	1. 0	·0360	·1576
0. 10	41. 20	·0527	0. 18	·1475	·2636	1. 8	·0359	·1571
0. 12	42. 10	·0531	0. 30	·1490	·2662	1. 28	·0366	·1602
0. 18	41. 0	·0525	0. 37	·1491	·2664	1. 40	·0370	·1620
0. 28	43. 40	·0539	0. 41	·1488	·2658	1. 55	·0369	·1615
0. 42	42. 40	·0533	0. 48	·1491	·2664	2. 0	·0370	·1620
0. 48	42. 50	·0534	0. 52	·1485	·2653	2. 32	·0369	·1615
0. 52	41. 20	·0527	1. 0	·1489	·2660	2. 48	·0369	·1615
0. 59	42. 55	·0535	1. 8	·1470	·2627	2. 51	·0371	·1624
1. 10	38. 0	·0510	1. 15	·1485	·2653	2. 57	·0369	·1615
1. 12	38. 45	·0514	1. 27	·1493	·2667	3. 13	·0368	·1611
1. 23	36. 0	·0499	1. 32	·1495	·2671	3. 31	·0377	·1651
1. 31	34. 25	·0491	1. 41	·1505	·2689	3. 40	·0374	·1638
1. 33	36. 20	·0501	1. 56	·1494	·2669	4. 1	·0370	·1620
1. 35	35. 35	·0497	2. 2	·1505	·2689	4. 16	·0367	·1607
1. 40	38. 50	·0514	2. 13	·1503	·2685	4. 20	·0368	·1611
1. 43	39. 15	·0516	2. 21	·1505	·2689	4. 32	·0367	·1607
1. 56	37. 20	·0506	2. 31	·1509	·2696	4. 40	·0368	·1611
2. 8	38. 30	·0513	2. 39	·1506	·2691	4. 52	·0365	·1598
2. 17	36. 20	·0501	2. 50	·1514	·2705	5. 18	·0361	·1580
2. 22	35. 20	·0496	2. 53	·1519	·2714	5. 24	·0361	·1580
2. 31	36. 0	·0499	3. 1	·1506	·2691	5. 33	·0359	·1571
2. 37	35. 0	·0494	3. 15	·1489	·2660	6. 13	·0357	·1563
2. 48	36. 15	·0500	3. 31	·1539	·2749	6. 21	·0357	·1563
2. 53	38. 25	·0512	3. 35	·1529	·2731	6. 46	·0355	·1554
2. 58	37. 20	·0506	3. 40	·1536	·2744	7. 55	·0355	·1554
3. 2	38. 15	·0511	3. 41	·1532	·2737	8. 19	·0353	·1545
3. 8	38. 50	·0514	3. 45	·1533	·2738	9. 8	·0354	·1550
3. 12	37. 50	·0508	3. 52	·1523	·2720	10. 19	·0353	·1545
3. 19	34. 25	·0491	4. 1	·1517	·2710	10. 28	·0352	·1541
3. 22	35. 20	·0496	4. 5	·1521	·2717	11. 30	·0352	·1541
3. 32	39. 25	·0517	4. 11	·1505	·2689	11. 39	·0351	·1536
3. 34	34. 20	·0491	4. 16	·1497	·2674	11. 57	·0352	·1541
3. 39	36. 40	·0502	4. 21	·1502	·2684	12. 10	·0349	·1528
3. 49	38. 50	·0514	4. 29	·1503	·2685	12. 16	·0349	·1528

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force: Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force: Expressed in terms of Gauss's Unit measured on the Metrical System.
Oct. 16 h m	° ′ ″		Oct. 16 h m			Oct. 16 h m		
4. 2	19. 34. 30	·0492	4. 32	·1501	·2682	12. 32	·0345	·1511
4. 8	37. 0	·0504	4. 40	·1509	·2696	12. 50	·0349	·1528
4. 17	32. 30	·0481	4. 51	·1489	·2660	13. 2	·0347	·1520
4. 29	33. 0	·0484	5. 0	·1494	·2669	13. 18	·0349	·1528
4. 32	32. 25	·0480	5. 4	·1492	·2666	13. 40	·0345	·1511
4. 34	32. 55	·0483	5. 15	·1496	·2673	14. 18	·0341	·1493
4. 48	30. 40	·0471	5. 20	·1491	·2664	14. 26	·0342	·1497
5. 5	33. 55	·0489	5. 28	·1497	·2674	14. 43	·0332	·1454
5. 10	34. 0	·0489	5. 30	·1489	·2660	14. 58	·0331	·1449
5. 26	36. 35	·0502	5. 41	·1499	·2678	15. 8	·0331	·1449
5. 33	36. 10	·0500	5. 54	·1495	·2671	15. 26	·0335	·1467
5. 39	37. 10	·0505	6. 0	·1499	·2678	15. 41	·0331	·1449
5. 50	37. 0	·0504	6. 11	·1492	·2666	15. 52	·0332	·1454
6. 3	37. 40	·0507	6. 30	·1498	·2676	16. 2	·0330	·1445
6. 16	35. 50	·0498	6. 31	·1497	·2674	16. 26	·0330	·1445
6. 28:	37. 30	·0507	6. 41	·1498	·2676	16. 56	·0320	·1401
6. 55	35. 35	·0497	6. 48	·1495	·2671	17. 16	·0325	·1423
7. 3	36. 0	·0499	6. 58	·1498	·2676	17. 26	·0322	·1410
7. 30:	34. 40	·0492	7. 19	·1500	·2680	17. 33	·0319	·1396
7. 59:	36. 5	·0499	7. 28	·1504	·2687		***	
8. 19	32. 0	·0478	7. 31	·1501	·2682	18. 1	·0314	·1375
8. 40	28. 0	·0458	7. 43	·1505	·2689	18. 27	·0328	·1436
8. 52	27. 0	·0452	7. 48	·1502	·2684	18. 50	·0336	·1471
9. 12	33. 25	·0486	8. 1	·1506	·2691	19. 8	·0339	·1484
9. 18	32. 40	·0481	8. 18	·1501	·2682	19. 10	·0338	·1480
9. 24	33. 25	·0486	8. 40	·1501	·2682	19. 14	·0340	·1489
9. 29	33. 10	·0485	8. 50	·1500	·2680	19. 21	·0340	·1489
9. 41	35. 40	·0497	9. 0	·1506	·2691	19. 24	·0339	·1484
9. 49	36. 0	·0499	9. 9	·1503	·2685	19. 26	·0340	·1489
9. 58	35. 25	·0496	9. 20	·1494	·2669	19. 31	·0339	·1484
10. 2	36. 0	·0499	9. 35	·1501	·2682	19. 35	·0338	·1480
10. 12	35. 30	·0497	9. 40	·1499	·2678	19. 40	·0339	·1484
10. 20	36. 20	·0501	9. 44	·1500	·2680		***	
10. 40	33. 30	·0487	9. 50	·1498	·2676	19. 56	·0336	·1471
10. 48	34. 30	·0492	9. 58	·1497	·2674	20. 8	·0335	·1467
10. 55	33. 50	·0488	10. 5	·1500	·2680	20. 14	·0338	·1480
11. 2	33. 35	·0487	10. 11	·1498	·2676	20. 24	·0338	·1480
11. 8	34. 40	·0492	10. 26	·1501	·2682	20. 31	·0336	·1471
11. 14	34. 20	·0491	10. 31	·1499	·2678	20. 35	·0339	·1484
11. 20	35. 15	·0495	10. 47	·1499	·2678	20. 42	·0337	·1476
11. 30	35. 0	·0494	10. 55	·1497	·2674	20. 56	·0340	·1489
11. 36	33. 30	·0487	11. 5	·1501	·2682	21. 10	·0335	·1467
11. 50	33. 10	·0485	11. 11	·1499	·2678	21. 13	·0338	·1480
12. 1	36. 50	·0503	11. 31	·1505	·2689	21. 16	·0335	·1467
12. 13	31. 35	·0476	11. 45	·1491	·2664	21. 22	·0340	·1489
12. 23	31. 45	·0477	11. 51	·1493	·2667	21. 40	·0342	·1498
12. 43	18. 25	·0408	12. 0	·1509	·2696	21. 43	·0341	·1493
12. 57	24. 0	·0437	12. 4	·1503	·2685	21. 46	·0342	·1498
13. 3	24. 0	·0437	12. 8	·1505	·2689	21. 54	·0345	·1511
13. 8	22. 55	·0431	12. 12	·1500	·2680	21. 59	·0344	·1507
13. 28	34. 20	·0491	12. 19	·1503	·2685	22. 1	·0345	·1511
13. 39	33. 0	·0484	12. 31	·1479	·2643	22. 18	·0350	·1532

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.

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

The value 0·8600 of Horizontal Force corresponds to 1·5368 of Gauss's Unit on the Metrical System.

The value 0·9600 of Vertical Force corresponds to 4·2033 of Gauss's Unit on the Metrical System.

October 16. The spot of light for Horizontal Force was off the sheet in the direction of *decreasing* force from 20h. 7m. to 21h. 57m.

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in terms of Gauss's Unit measured on the Metrical System.
Oct. 16			Oct. 16			Oct. 16		
h m	° ′ ″		h m			h m		
13. 43	19. 34. 0	·0489	12. 42	·1481	·2646	22. 21	·0349	·1528
13. 50	32. 35	·0481	12. 58	·1507	·2692	22. 32	·0355	·1554
13. 59	33. 0	·0484	13. 6	·1505	·2689	22. 40	·0351	·1536
14. 6	32. 25	·0480	13. 14	·1513	·2703	22. 45	·0354	·1550
14. 11	33. 0	·0484	13. 30	·1496	·2673	22. 49	·0352	·1541
14. 19	31. 50	·0477	13. 48	·1487	·2656	22. 54	·0361	·1580
14. 22	32. 15	·0479	13. 56	·1493	·2667	22. 59	·0360	·1576
14. 33	38. 20	·0512	14. 0	·1490	·2662	23. 22	·0366	·1602
15. 1	28. 0	·0458	14. 11	·1495	·2671	23. 25	·0364	·1594
15. 15	28. 55	·0463	14. 16	·1491	·2664	23. 33	·0369	·1615
15. 29	32. 10	·0479	14. 19	·1493	·2667	23. 47	·0368	·1611
15. 40	27. 45	·0456	14. 25	·1492	·2666	23. 53	·0369	·1615
15. 47	28. 20	·0460	14. 31	·1507	·2692	23. 56	·0376	·1646
15. 53	30. 35	·0471	14. 51	·1479	·2643	23. 59	·0372	·1629
16. 0	29. 50	·0467	15. 8	·1491	·2664			
16. 22	39. 0	·0515	15. 16	·1486	·2655			
16. 27	40. 0	·0520	15. 19	·1489	·2660			
16. 46	53. 15	·0589	15. 22	·1487	·2656			
16. 51	50. 30	·0575	15. 30	·1494	·2669			
17. 2	44. 50	·0545	15. 33	·1493	·2667			
17. 9	46. 0	·0551	15. 45	·1505	·2689			
17. 13	45. 30	·0549	15. 55	·1514	·2705			
	***		16. 0	·1509	·2696			
17. 24	59. 5	·0619	16. 7	·1512	·2702			
17. 27	19. 58. 45	·0618	16. 11	·1505	·2689			
17. 30	20. 1. 0	·0629	16. 19	·1507	·2692			
17. 33	19. 59. 10	·0620	16. 21	·1505	·2689			
17. 39	20. 5. 40	·0653	16. 27	·1504	·2687			
17. 50	19. 54. 55	·0598	16. 35	·1499	·2678			
17. 57	56. 20	·0605	16. 47	·1489	·2660			
18. 7	43. 25	·0538	16. 59	·1465	·2618			
18. 11	45. 10	·0547	17. 5	·1455	·2600			
18. 19	41. 50	·0529	17. 9	·1459	·2607			
18. 23	34. 0	·0489	17. 20	·1479	·2643			
18. 32	36. 0	·0499	17. 22	·1475	·2636			
18. 41	28. 25	·0460	17. 30	·1482	·2648			
18. 43	30. 10	·0469	17. 35	·1469	·2625			
18. 48	28. 15	·0459	17. 40	·1480	·2644			
18. 50	30. 0	·0468	17. 48	·1494	·2669			
19. 0	27. 0	·0452	17. 55	·1467	·2621			
19. 4	27. 55	·0457	18. 0	·1459	·2607			
19. 10	26. 10	·0448	18. 5	·1423	·2542			
19. 15	29. 55	·0468	18. 11	·1454	·2598			
19. 19	29. 25	·0465	18. 18	·1445	·2582			
19. 20	31. 0	·0473	18. 21	·1433	·2560			
19. 24	26. 40	·0450	18. 25	·1444	·2580			
19. 29	31. 10	·0474		***				
19. 33	28. 15	·0459	18. 41	·1458	·2605			
19. 41	35. 10	·0495	18. 49	·1469	·2625			
19. 51	30. 10	·0469	18. 52	·1478	·2641			
20. 2	33. 55	·0489	18. 58	·1472	·2631			
20. 6	32. 25	·0480	19. 0	·1477	·2639			

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in terms of Gauss's Unit measured on the Metrical System.
Oct. 16			Oct. 16					
h m	° ′ ″		h m			h m		
20. 8	19. 37. 0	·0504	19. 4	·1468	·2623			
20. 11	34. 20	·0491	19. 11	·1485	·2653			
20. 15	43. 20	·0538	19. 15	·1469	·2625			
20. 18	42. 0	·0530	19. 20	·1492	·2666			
20. 20	46. 20	·0553		***				
20. 28	48. 10	·0563	19. 31	·1470	·2627			
20. 33	45. 25	·0548		***				
20. 39	47. 15	·0557	19. 43	·1449	·2589			
20. 49	41. 25	·0527		***				
20. 56	45. 20	·0548	19. 59	·1416	·2530			
21. 11	33. 25	·0486		***				
21. 15	35. 35	·0497	20. 7	·1386	·2476			
21. 18	28. 0	·0458		(†)				
21. 22	33. 10	·0485	21. 0	·1362*	·2434*			
21. 29	35. 30	·0497	21. 11	·1343*	·2399*			
21. 33	36. 0	·0499	21. 16	·1352*	·2416*			
21. 40	34. 50	·0493	21. 19	·1337*	·2388*			
21. 42	37. 20	·0506	21. 21	·1342*	·2398*			
21. 49	35. 30	·0497	21. 22	·1339*	·2392*			
21. 59	42. 0	·0530	21. 35	·1367*	·2442*			
22. 2	35. 25	·0496	21. 36	·1363*	·2435*			
22. 7	37. 20	·0506	21. 46	·1373*	·2453*			
22. 10	34. 30	·0492	21. 48	·1370*	·2448*			
22. 11	39. 30	·0518	21. 57	·1386	·2476			
22. 23	48. 10	·0563	21. 59	·1399	·2499			
22. 31	43. 0	·0536	22. 2	·1394	·2490			
22. 37	50. 20	·0574	22. 8	·1414	·2526			
22. 43	44. 20	·0543	22. 11	·1404	·2508			
22. 45	47. 20	·0558	22. 22	·1431	·2557			
22. 53	42. 25	·0532	22. 27	·1420	·2537			
23. 2	50. 10	·0573	22. 32	·1417	·2531			
23. 6	46. 20	·0553	22. 39	·1449	·2589			
23. 12	50. 0	·0572		***				
23. 17	47. 20	·0558	22. 44	·1427	·2549			
23. 22	55. 0	·0598	22. 50	·1411	·2521			
23. 32	46. 45	·0555	23. 1	·1449	·2589			
23. 38	49. 0	·0567	23. 4	·1439	·2571			
23. 46	44. 25	·0543	23. 15	·1471	·2629			
23. 48	44. 40	·0544	23. 16	·1457	·2603			
23. 50	44. 0	·0541	23. 20	·1495	·2671			
23. 57	56. 0	·0603	23. 21	·1449	·2589			
23. 59	49. 0	·0567		(†)				
			23. 45	·1455	·2600			
			23. 59	·1468	·2623			
Oct. 17			Oct. 17			Oct. 17		
0. 0	19. 48. 0	·0562	0. 0	·1468	·2623	0. 0	·0372	·1629
0. 2	46. 30	·0554	0. 4	·1484	·2651	0. 2	·0373	·1633
0. 8	44. 35	·0544	0. 10	·1478	·2641	0. 6	·0372	·1629
0. 9	46. 10	·0552	0. 12	·1484	·2651	0. 9	·0374	·1638
0. 14	43. 25	·0538	0. 18	·1467	·2621	0. 16	·0371	·1624
0. 32	54. 10	·0594	0. 28	·1481	·2646	0. 20	·0375	·1642

Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
Oct. 16			Oct. 16			Oct. 16		
h m	°	°	h m	°	°	h m	°	°
0. 0	63·6	62·7	3. 0	63·5	62·7	22. 0	62·7	62·0
1. 0	63·5	62·7	9. 0	63·1	62·5	23. 0	62·8	62·2
2. 0	63·4	62·6	21. 0	62·7	61·8			

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force. Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force. Expressed in terms of Gauss's Unit measured on the Metrical System.
Oct. 17 h m	° ′ ″		Oct. 17 h m			Oct. 17 h m		
0. 37	19. 45. 0	·0546	0. 35	·1488	·2658	0. 29	·0376	·1646
0. 40	48. 15	·0563	0. 41	·1467	·2621	0. 30	·0378	·1655
0. 42	46. 15	·0552	0. 48	·1485	·2653	0. 33	·0375	·1642
0. 48	48. 5	·0562	0. 51	·1466	·2620	0. 37	·0378	·1655
0. 51	45. 50	·0550	0. 58	·1477	·2639	0. 40	·0377	·1651
0. 53	50. 25	·0574	1. 1	·1498	·2676	0. 42	·0378	·1655
0. 57	45. 45	·0550	1. 10	·1505	·2689	0. 51	·0378	·1655
1. 8	50. 15	·0573	1. 11	·1499	·2678	0. 52	·0382	·1673
1. 12	47. 10	·0557	1. 18	·1525	·2724	0. 56	·0380	·1664
1. 15	51. 50	·0581	1. 25	·1508	·2694	0. 57	·0382	·1673
1. 18	47. 20	·0558	1. 30	·1525	·2724	0. 59	·0381	·1668
1. 20	50. 40	·0575	1. 36	·1481	·2646	1. 4	·0383	·1677
1. 34	41. 10	·0526	1. 49	·1526	·2726	1. 10	·0386	·1690
1. 48	54. 0	·0593	1. 52	·1505	·2689	1. 12	·0385	·1686
1. 50	19. 50. 50	·0576	2. 0	·1541	·2753	1. 13	·0390	·1708
1. 52	20. 0. 15	·0625	2. 4	·1513	·2703	1. 20	·0387	·1695
1. 59	19. 46. 0	·0551	2. 10	·1556	·2780	1. 28	·0392	·1717
2. 2	40. 25	·0522	2. 11	·1569	·2803	1. 33	·0385	·1686
2. 10	48. 0	·0562	2. 18	·1553	·2774	1. 39	·0387	·1695
2. 11	47. 10	·0557	2. 20	·1545	·2760	1. 41	·0391	·1712
2. 18	28. 40	·0461	2. 25	·1573	·2810	1. 46	·0395	·1730
2. 20	26. 35	·0450	2. 39	·1537	·2745	1. 49	·0394	·1726
2. 25	34. 20	·0491	2. 49	·1511	·2700	1. 52	·0406	·1777
2. 33	33. 50	·0488	2. 50	·1521	·2717	1. 57	·0404	·1769
2. 46	48. 40	·0565	2. 54	·1497	·2674	1. 58	·0407	·1782
2. 53	19. 46. 10	·0552	3. 0	·1527	·2727	2. 0	·0404	·1769
3. 2	20. 9. 0	·0671	3. 7	·1448	·2587	2. 7	·0412	·1804
3. 9	19. 33. 0	·0484	3. 12	·1483	·2649	2. 8	·0410	·1795
3. 12	31. 0	·0473	3. 22	·1514	·2705	2. 11	·0413	·1808
3. 25	52. 15	·0583	3. 28	·1501	·2682	2. 17	·0412	·1804
3. 33	39. 0	·0515	3. 30	·1513	·2703	2. 21	·0400	·1751
3. 44	52. 0	·0582	3. 32	·1456	·2602	2. 29	·0402	·1760
3. 52	44. 50	·0545	3. 41	·1504	·2687	2. 30	·0398	·1743
4. 0	53. 20	·0590	3. 48	·1487	·2656	2. 32	·0399	·1748
4. 5	49. 0	·0567	3. 51	·1464	·2616	2. 43	·0389	·1703
4. 9	51. 40	·0580		***		2. 47	·0392	·1717
4. 12	49. 50	·0571	4. 1	·1489	·2660	2. 51	·0389	·1703
4. 18	56. 10	·0604	4. 4	·1458	·2605	2. 55	·0391	·1712
4. 20	55. 25	·0600	4. 10	·1471	·2629	3. 0	·0386	·1690
4. 22	59. 55	·0624	4. 12	·1491	·2664	3. 3	·0396	·1734
4. 33	37. 45	·0508	4. 13	·1461	·2611	3. 10	·0409	·1790
4. 48	45. 35	·0549	4. 20	·1489	·2660	3. 14	·0401	·1755
4. 52	43. 55	·0541	4. 21	·1464	·2616	3. 18	·0402	·1760
4. 56	19. 45. 10	·0547	4. 22	·1484	·2651	3. 19	·0399	·1747
5. 7	18. 46. 50	·0243	4. 23	·1456	·2602	3. 22	·0399	·1747
5. 13	58. 10	·0303	4. 28	·1465	·2618	3. 23	·0390	·1708
5. 17	49. 50	·0259	4. 31	·1414	·2526	3. 26	·0392	·1717
5. 18	53. 30	·0279	4. 33	·1447	·2585	3. 28	·0389	·1703
5. 22	49. 0	·0255	4. 35	·1425	·2546	3. 30	·0392	·1717
5. 26	59. 55	·0312	4. 41	·1462	·2613	3. 32	·0389	·1703
5. 30	18. 57. 0	·0296	4. 43	·1481	·2646	3. 37	·0394	·1726
5. 38	19. 9. 0	·0359	4. 47	·1466	·2620	3. 46	·0388	·1699

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force. Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force. Expressed in terms of Gauss's Unit measured on the Metrical System.
Oct. 17 h m	° ′ ″		Oct. 17 h m			Oct. 17 h m		
5. 43	19. 20. 30	·0419	4. 51	·1484	·2651	3. 47	·0389	·1703
5. 45	13. 0	·0380	4. 59	·1473	·2632	3. 50	·0387	·1695
5. 48	15. 0	·0390	5. 1	·1497	·2674	3. 52	·0389	·1703
5. 52	6. 5	·0343	5. 2	·1485	·2653	3. 59	·0390	·1708
6. 0	14. 30	·0388	5. 5	·1492	·2666	4. 0	·0393	·1721
6. 4	26. 0	·0447	5. 7	·1472	·2631	4. 2	·0389	·1703
6. 7	18. 15	·0407	5. 12	·1548	·2765	4. 8	·0391	·1712
6. 12	29. 30	·0466	5. 17	·1531	·2735	4. 13	·0392	·1717
6. 17	22. 0	·0426	5. 20	·1555	·2778	4. 18	·0390	·1708
6. 24	32. 55	·0483	5. 24	·1531	·2735	4. 19	·0391	·1712
6. 29	21. 0	·0421	5. 28	·1547	·2763	4. 20	·0389	·1703
6. 35	29. 0	·0463	5. 31	·1505	·2689	4. 21	·0391	·1712
6. 38	33. 55	·0489	5. 41	·1555	·2778	4. 26	·0389	·1703
6. 40	31. 15	·0474	5. 42	·1520	·2715	4. 27	·0392	·1717
6. 51	38. 0	·0510	5. 43	·1538	·2747	4. 30	·0388	·1699
6. 54	41. 50	·0529	5. 47	·1486	·2655	4. 32	·0392	·1717
7. 0	35. 40	·0497	5. 51	·1496	·2673	4. 34	·0388	·1699
7. 5	38. 15	·0511	5. 55	·1485	·2653	4. 42	·0385	·1686
7. 9	31. 30	·0476	6. 0	·1510	·2698	4. 48	·0382	·1673
7. 12	33. 0	·0484	6. 7	·1476	·2638	4. 50	·0381	·1668
7. 29	46. 35	·0554	6. 11	·1489	·2660	4. 52	·0384	·1682
7. 36	42. 20	·0532	6. 12	·1481	·2646	4. 56	·0382	·1673
7. 47	47. 5	·0556	6. 14	·1495	·2671	5. 0	·0387	·1695
7. 50	46. 0	·0551	6. 19	·1479	·2643	5. 3	·0399	·1747
7. 53	38. 30	·0513	6. 21	·1499	·2678	5. 8	·0396	·1734
7. 56	38. 0	·0510	6. 30	·1469	·2625	5. 12	·0404	·1769
7. 59	19. 35. 0	·0494	6. 38	·1505	·2689	5. 17	·0405	·1773
	***		6. 39	·1489	·2660	5. 32	·0382	·1673
8. 5	18. 53. 0	·0276	6. 41	·1499	·2678	5. 40	·0380	·1664
8. 20	19. 35. 0	·0494	6. 46	·1491	·2664	5. 41	·0374	·1638
8. 22	32. 25	·0480	6. 50	·1504	·2687	5. 44	·0378	·1655
8. 24	38. 55	·0515	6. 52	·1490	·2662	5. 51	·0379	·1659
8. 27	35. 50	·0498	6. 58	·1492	·2666	5. 56	·0376	·1646
8. 31	38. 0	·0510	7. 1	·1480	·2644	5. 59	·0373	·1633
8. 36	27. 30	·0455	7. 6	·1491	·2664	6. 0	·0375	·1642
8. 45	41. 55	·0530	7. 10	·1480	·2644	6. 2	·0372	·1629
8. 52	32. 25	·0480	7. 17	·1499	·2678	6. 7	·0374	·1638
8. 58	41. 0	·0525	7. 20	·1494	·2669	6. 13	·0372	·1629
9. 7	44. 40	·0544	7. 25	·1513	·2703	6. 17	·0376	·1646
9. 10	40. 40	·0523	7. 30	·1503	·2685	6. 23	·0373	·1633
9. 18	39. 30	·0518	7. 32	·1495	·2671	6. 29	·0377	·1651
9. 23	33. 0	·0484	7. 39	·1479	·2643	6. 33	·0373	·1633
9. 28	31. 30	·0476	7. 41	·1501	·2682		***	
9. 37	22. 15	·0427	7. 43	·1481	·2646	6. 56	·0371	·1624
9. 56	42. 5	·0530	7. 48	·1496	·2673	7. 8	·0372	·1629
10. 2	38. 0	·0510	7. 49	·1487	·2656	7. 10	·0374	·1638
10. 16	23. 55	·0437	7. 51	·1495	·2671	7. 37	·0362	·1585
10. 18	25. 50	·0446	7. 52	·1482	·2648	7. 39	·0365	·1598
10. 21	25. 25	·0444	7. 55	·1487	·2656	7. 41	·0362	·1585
10. 27	26. 0	·0447	7. 58	·1474	·2634	7. 44	·0366	·1602
10. 38	22. 50	·0430	8. 2	·1498	·2676	7. 47	·0365	·1598
10. 46	30. 10	·0469	8. 9	·1473	·2632	7. 53	·0372	·1629

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.

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

The value 0·8600 of Horizontal Force corresponds to 1·5368 of Gauss's Unit on the Metrical System.

The value 0·9600 of Vertical Force corresponds to 4·2033 of Gauss's Unit on the Metrical System.

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Oct. 17 h m	° ′ ″		Oct. 17 h m			Oct. 17 h m		
11. 0	19. 24. 0	·0437	8. 19	·1559	·2785	8. 1	·0389	·1703
11. 8	12. 35	·0377	8. 26	·1504	·2687	8. 8	·0377	·1651
11. 15	28. 15	·0459	8. 31	·1489	·2660	8. 12	·0383	·1677
11. 26	34. 20	·0491	8. 33	·1494	·2669	8. 26	·0349	·1528
11. 34	32. 10	·0479	8. 37	·1479	·2643	8. 28	·0350	·1532
11. 36	32. 50	·0482	8. 46	·1498	·2676	8. 32	·0346	·1515
11. 46	29. 40	·0466	8. 49	·1473	·2632	8. 42	·0349	·1528
11. 51	33. 20	·0486	8. 51	·1478	·2641	8. 46	·0347	·1520
12. 8	37. 0	·0504	8. 52	·1471	·2629	8. 47	·0349	·1528
12. 17	35. 10	·0495	9. 1	·1517	·2710	8. 51	·0348	·1524
12. 25	34. 20	·0491	9. 3	·1505	·2689	8. 56	·0350	·1532
12. 40	34. 5	·0489	9. 8	·1511	·2700	9. 2	·0345	·1511
12. 56	33. 40	·0487	9. 13	·1489	·2660	9. 10	·0340	·1489
13. 0	36. 55	·0504	9. 21	·1502	·2684	9. 17	·0346	·1515
13. 3	33. 25	·0486	9. 23	·1464	·2616	9. 21	·0342	·1498
13. 7	35. 20	·0496	9. 27	·1487	·2656	9. 22	·0345	·1511
13. 15	31. 50	·0477	9. 28	·1479	·2643	9. 24	·0344	·1507
13. 23	32. 45	·0482	9. 31	·1489	·2660	9. 34	·0351	·1536
13. 27	36. 0	·0499	9. 34	·1479	·2643	9. 42	·0353	·1545
13. 37	30. 30	·0471	9. 45	·1525	·2724	9. 52	·0349	·1528
13. 48	33. 10	·0485	9. 49	·1517	·2710	10. 1	·0343	·1502
13. 56	33. 20	·0486	9. 52	·1529	·2731	10. 4	·0347	·1520
14. 10	44. 25	·0543	10. 4	·1460	·2609	10. 8	·0345	·1511
14. 24	50. 30	·0575	10. 9	·1475	·2636	10. 12	·0347	·1520
14. 41	35. 25	·0496	10. 11	·1458	·2605	10. 18	·0346	·1515
14. 47	35. 25	·0496	10. 18	·1475	·2636	10. 33	·0354	·1550
14. 58	24. 0	·0437	10. 20	·1468	·2623	10. 41	·0352	·1541
15. 20	38. 0	·0510	10. 23	·1477	·2639	10. 52	·0352	·1541
15. 36	55. 0	·0598	10. 31	·1486	·2655	10. 57	·0349	·1528
15. 41	58. 15	·0615	10. 33	·1479	·2643	11. 0	·0352	·1541
15. 50	49. 0	·0567	10. 41	·1497	·2674	11. 2	·0349	·1528
16. 3	40. 10	·0521	10. 42	·1489	·2660	11. 8	·0351	·1536
16. 15	55. 25	·0600	10. 49	·1495	·2671	11. 12	·0348	·1524
16. 28	36. 15	·0500	10. 51	·1505	·2689	11. 19	·0352	·1541
16. 38	44. 20	·0543	10. 54	·1499	·2678	11. 31	·0346	·1515
16. 47	40. 20	·0522	10. 59	·1509	·2696	11. 42	·0349	·1528
16. 58	47. 50	·0560	11. 0	·1485	·2653	11. 45	·0348	·1524
17. 8	37. 10	·0505	11. 1	·1525	·2724	11. 52	·0351	·1536
17. 20	49. 30	·0570	11. 2	·1497	·2674	12. 13	·0349	·1528
17. 29	47. 10	·0557	11. 10	·1517	·2710	13. 4	·0358	·1567
17. 36	54. 20	·0595	11. 12	·1498	·2676	13. 10	·0356	·1558
17. 53	44. 5	·0541	11. 16	·1537	·2745	13. 24	·0359	·1571
18. 15	57. 0	·0608	11. 21	·1525	·2724	13. 33	·0356	·1558
18. 30	48. 30	·0565	11. 22	·1516	·2709	14. 1	·0357	·1563
18. 47	56. 55	·0608	11. 30	·1470	·2627	14. 16	·0354	·1550
18. 58	45. 50	·0550	11. 33	·1463	·2614	14. 22	·0350	·1532
19. 10	56. 20	·0605	11. 38	·1469	·2625	14. 37	·0327	·1432
19. 27	43. 20	·0538	11. 41	·1465	·2618	14. 48	·0332	·1454
19. 38	58. 40	·0617	11. 43	·1471	·2629	14. 53	·0331	·1449
19. 54	43. 50	·0540	11. 44	·1457	·2603	15. 0	·0334	·1463
20. 2	45. 20	·0548	11. 50	·1486	·2655	15. 20	·0326	·1427
20. 6	37. 25	·0506	11. 57	·1478	·2641	15. 26	·0327	·1432

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force. Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force. Expressed in terms of Gauss's Unit measured on the Metrical System.
Oct. 17 h m	° ′ ″		Oct. 17 h m			Oct. 17 h m		
20. 12	19. 42. 10	·0531	12. 0	·1483	·2649	15. 38	·0324	·1419
20. 20	37. 30	·0507	12. 2	·1477	·2639	15. 51	·0313	·1370
20. 32	39. 10	·0516	12. 4	·1481	·2646	16. 4	·0314	·1375
20. 42	50. 50	·0576	12. 10	·1470	·2627	16. 16	·0301	·1317
20. 55	47. 30	·0559	12. 12	·1462	·2613	16. 20	·0303	·1326
20. 58	41. 20	·0527	12. 18	·1467	·2621	16. 29	·0295	·1292
21. 5	47. 0	·0556	12. 19	·1464	·2616	16. 32	·0297	·1301
21. 16	39. 25	·0517	12. 22	·1471	·2629	16. 38	·0295	·1292
21. 18	43. 50	·0540	12. 26	·1464	·2616	16. 42	·0299	·1309
21. 36	47. 20	·0558	12. 35	·1471	·2629	16. 48	·0298	·1305
21. 42	41. 25	·0527	12. 41	·1467	·2621	16. 58	·0305	·1335
21. 47	50. 0	·0572	12. 45	·1469	·2625	17. 6	·0294	·1288
21. 51	41. 20	·0527	12. 48	·1465	·2618	17. 10	·0298	·1305
21. 56	42. 10	·0531	13. 1	·1473	·2632	17. 16	·0300	·1313
22. 0	40. 20	·0522	13. 5	·1486	·2655	17. 20	·0297	·1301
22. 4	47. 0	·0556	13. 8	·1471	·2629	17. 30	·0305	·1335
22. 14	47. 50	·0560	13. 11	·1475	·2636	17. 32	·0307	·1344
22. 23	38. 10	·0511	13. 17	·1465	·2618	17. 37	·0304	·1331
22. 29	42. 0	·0530	13. 21	·1472	·2631	17. 45	·0307	·1344
22. 33	43. 10	·0537	13. 23	·1475	·2636	18. 3	·0328	·1436
22. 36	41. 20	·0527	13. 29	·1489	·2660	18. 17	·0333	·1458
22. 41	45. 0	·0546	13. 33	·1477	·2639	18. 21	·0331	·1449
22. 46	42. 5	·0530	13. 37	·1467	·2621	18. 27	·0333	·1458
22. 55	41. 0	·0525	13. 42	·1479	·2643	18. 31	·0332	·1454
23. 0	41. 30	·0528	13. 45	·1471	·2629	18. 37	·0335	·1467
23. 2	40. 20	·0522	13. 50	·1475	·2636	18. 40	·0334	·1463
23. 10	44. 0	·0541	13. 53	·1470	·2627	18. 41	·0336	·1471
23. 14	46. 50	·0555	14. 0	·1475	·2636	18. 46	·0335	·1467
23. 17	34. 20	·0491	14. 1	·1469	·2625	18. 51	·0338	·1480
23. 20	47. 25	·0558	14. 3	·1474	·2634	19. 0	·0335	·1467
23. 22	44. 25	·0543	14. 11	·1458	·2605	19. 10	·0339	·1484
	(†)		14. 21	·1485	·2653	19. 35	·0343	·1502
			14. 31	·1504	·2687	19. 45	·0342	·1498
			14. 38	·1492	·2666	19. 54	·0344	·1507
			15. 7	·1567	·2799	20. 6	·0348	·1524
			15. 20	·1551	·2771	20. 10	·0349	·1528
			15. 28	·1557	·2781	20. 12	·0348	·1524
			15. 33	·1569	·2803	20. 16	·0349	·1528
			15. 40	·1550	·2769	20. 19	·0348	·1524
			15. 42	·1555	·2778	20. 22	·0350	·1532
			15. 47	·1544	·2758	20. 26	·0348	·1524
			16. 2	·1490	·2662	20. 31	·0352	·1541
			16. 4	·1497	·2674	20. 33	·0349	·1528
			16. 8	·1475	·2636	20. 38	·0351	·1536
			16. 13	·1455	·2600	20. 40	·0349	·1528
			16. 18	·1409	·2517	20. 55	·0353	·1545
			16. 28	·1439	·2571	20. 59	·0349	·1528
			16. 35	·1452	·2595	21. 2	·0352	·1541
			16. 43	·1445	·2582	21. 7	·0350	·1532
			16. 49	·1453	·2596	21. 10	·0352	·1541
			16. 59	·1397	·2495	21. 13	·0349	·1528
			17. 2	·1406	·2512	21. 19	·0353	·1545

Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.	Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Readings of Thermometers. Of V. F. Magnet.
Oct. 17 h m	°	°	Oct. 17 h m	°	°	Oct. 17 h m	°	°
0. 0	63·3	63·0	3. 0	63·2	62·5	22. 0	63·6	63·3
1. 0	63·1	62·5	9. 0	63·5	63·0	23. 0	63·8	63·3
2. 0	62·9	62·3	21. 0	63·8	63·2			

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Expressed in terms of Gauss's Unit measured on the Metrical System.
			Oct. 17			Oct. 17		
h m	° ′ ″		h m			h m		
			17. 10	·1388	·2479	21. 22	·0354	·1550
			17. 22	·1416	·2530	21. 29	·0352	·1541
			17. 18	·1406	·2512	21. 39	·0354	·1550
			17. 23	·1399	·2499	21. 43	·0351	·1536
			17. 33	·1434	·2562	21. 50	·0358	·1567
			17. 42	·1405	·2510	21. 56	·0355	·1554
			17. 49	·1401	·2503	21. 58	·0359	·1571
			17. 52	·1384	·2472	22. 3	·0355	·1554
			18. 9	·1407	·2513	22. 6	·0359	·1571
			18. 11	·1399	·2499	22. 10	·0357	·1563
				(†)		22. 18	·0362	·1585
			21. 0	·1359*	·2428*	22. 20	·0361	·1580
			21. 17	·1348*	·2408*	22. 22	·0364	·1594
			21. 20	·1390*	·2483*	22. 33	·0368	·1611
			21. 22	·1374*	·2455*	22. 38	·0366	·1602
			21. 24	·1382*	·2469*	22. 41	·0367	·1607
			21. 31	·1378*	·2462*	22. 51	·0365	·1598
			21. 36	·1405	·2510	22. 56	·0366	·1602
			21. 41	·1395	·2492	23. 0	·0365	·1598
			21. 50	·1426	·2548	23. 2	·0364	·1594
			21. 52	·1404	·2508	23. 10	·0365	·1598
			22. 0	·1433	·2560		***	
			22. 2	·1407	·2513	23. 44	·0363	·1589
			22. 4	·1429	·2553	23. 50	·0366	·1602
			22. 7	·1410	·2519	23. 56	·0363	·1589
			22. 12	·1433	·2560	23. 59	·0369	·1615
			22. 19	·1441	·2575			
			22. 22	·1469	·2625			
			22. 30	·1449	·2589			
			22. 40	·1483	·2649			
			22. 43	·1473	·2632			
			23. 0	·1485	·2653			
			23. 4	·1487	·2656			
			23. 8	·1495	·2671			
			23. 10	·1486	·2655			
			23. 13	·1496	·2673			
			23. 17	·1438	·2569			
			23. 20	·1522	·2719			
			23. 22	·1485	·2653			
				(†)				
			23. 59	·1501	·2682			
Nov. 10			Nov. 10			Nov. 10		
0. 0	19. 42. 30	·0533	0. 0	·1541	·2753	0. 0	·0329	·1440
0. 7	50. 30	·0575	0. 3	·1537	·2745	0. 8	·0331	·1449
0. 24	40. 35	·0523	0. 14	·1555	·2778	0. 18	·0327	·1432
0. 31	39. 20	·0517	0. 18	·1529	·2731	0. 42	·0328	·1436
0. 38	40. 0	·0520	0. 21	·1532	·2737	0. 59	·0329	·1440
0. 46	42. 20	·0532	0. 29	·1523	·2720	1. 6	·0334	·1463
0. 52	41. 0	·0525	0. 33	·1528	·2729	1. 12	·0332	·1454
1. 10	57. 50	·0612	0. 37	·1521	·2717	1. 18	·0331	·1449
1. 15	55. 55	·0603	0. 42	·1534	·2740	1. 30	·0329	·1440

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Expressed in terms of Gauss's Unit measured on the Metrical System.
Nov. 10			Nov. 10			Nov. 10		
h m	° ′ ″		h m			h m		
1. 42	19. 41. 40	·0528	0. 50	·1528	·2729	1. 32	·0326	·1427
1. 52	46. 50	·0555	1. 10	·1580	·2823	1. 36	·0328	·1436
2. 0	45. 20	·0548	1. 28	·1529	·2731	1. 38	·0327	·1432
2. 12	48. 0	·0562	1. 31	·1538	·2747	1. 50	·0330	·1445
2. 20	45. 45	·0550	1. 40	·1504	·2687	1. 57	·0329	·1440
2. 33	45. 20	·0548	1. 54	·1527	·2727	2. 4	·0331	·1449
2. 38	46. 30	·0554	2. 0	·1505	·2689	2. 13	·0329	·1440
3. 7	37. 0	·0504	2. 10	·1535	·2742	2. 32	·0331	·1449
3. 18	38. 5	·0510	2. 22	·1520	·2715	2. 38	·0328	·1436
3. 22	37. 10	·0505	2. 35	·1544	·2758	2. 42	·0330	·1445
3. 45	36. 50	·0503	2. 41	·1503	·2685	2. 50	·0329	·1440
3. 48	38. 30	·0513	2. 48	·1539	·2749	3. 18	·0331	·1449
3. 58	37. 20	·0506	2. 57	·1519	·2714	3. 54	·0331	·1449
4. 23	40. 30	·0523	3. 5	·1523	·2720	3. 59	·0333	·1458
4. 28	37. 20	·0506	3. 20	·1539	·2749	4. 2	·0330	·1445
4. 31	43. 0	·0536	3. 23	·1533	·2738	4. 22	·0331	·1449
4. 40	39. 55	·0520	3. 30	·1539	·2749	4. 26	·0328	·1436
4. 47	40. 35	·0523	3. 33	·1533	·2738	4. 29	·0331	·1449
5. 6	37. 10	·0505	3. 40	·1529	·2731	4. 30	·0330	·1445
5. 26	35. 20	·0496		***		6. 26	·0332	·1454
5. 37	35. 30	·0497	3. 58	·1519	·2714	7. 17	·0331	·1449
5. 47	34. 20	·0491	4. 4	·1539	·2749	7. 26	·0332	·1454
5. 54	35. 45	·0498	4. 8	·1520	·2715	7. 31	·0330	·1445
6. 0	34. 40	·0492	4. 18	·1525	·2724	7. 38	·0332	·1454
6. 9	34. 30	·0492	4. 21	·1535	·2742		***	
6. 19	34. 50	·0493	4. 30	·1502	·2684	8. 30	·0330	·1445
6. 24	34. 25	·0491	4. 32	·1525	·2724	8. 40	·0330	·1445
6. 33	35. 30	·0497	4. 38	·1530	·2733	8. 45	·0331	·1449
6. 50	34. 25	·0491	4. 45	·1505	·2689	8. 47	·0330	·1445
7. 0	35. 20	·0496	4. 58	·1516	·2709	8. 50	·0331	·1449
7. 12	35. 30	·0497	5. 1	·1514	·2705	8. 53	·0330	·1445
7. 26	34. 30	·0492	5. 14	·1516	·2709	9. 0	·0331	·1449
7. 34	33. 55	·0489	5. 20	·1520	·2715	9. 36	·0332	·1454
7. 39	35. 25	·0496	5. 40	·1521	·2717	9. 58	·0331	·1449
8. 6	33. 50	·0488	5. 45	·1518	·2712	10. 28	·0333	·1458
8. 23	35. 15	·0495	5. 51	·1517	·2710	10. 36	·0332	·1454
8. 37	33. 25	·0486	6. 0	·1521	·2717	10. 57	·0333	·1458
8. 44	34. 20	·0491	6. 10	·1523	·2720	11. 5	·0330	·1445
8. 54	33. 0	·0484	6. 14	·1517	·2710	11. 8	·0330	·1445
9. 18	35. 40	·0497	6. 25	·1521	·2717	11. 27	·0323	·1414
9. 38	36. 20	·0501	6. 30	·1517	·2710	11. 35	·0325	·1423
9. 47	35. 40	·0497	6. 32	·1522	·2719	11. 39	·0324	·1419
9. 54	34. 10	·0490	6. 41	·1525	·2724	11. 54	·0323	·1414
10. 17	33. 50	·0488	6. 45	·1522	·2719	12. 8	·0323	·1414
10. 36	34. 40	·0492	6. 52	·1527	·2727	12. 37	·0317	·1388
10. 48	33. 20	·0486	6. 58	·1525	·2724	12. 50	·0317	·1388
11. 1	34. 40	·0492	7. 4	·1528	·2729	13. 7	·0315	·1379
11. 8	26. 0	·0447		***		13. 45	·0317	·1388
11. 19	20. 15	·0417	7. 20	·1525	·2724	14. 10	·0313	·1370
11. 22	20. 20	·0418	7. 23	·1519	·2714	14. 28:	·0314	·1375
11. 33	16. 50	·0399	7. 32	·1527	·2727	14. 40	·0311	·1361
11. 45	18. 5	·0406	7. 40	·1512	·2702	14. 51	·0313	·1370

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.

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

The value 0·8600 of Horizontal Force corresponds to 1·5368 of Gauss's Unit on the Metrical System.

The value 0·9600 of Vertical Force corresponds to 4·2033 of Gauss's Unit on the Metrical System.

October 17. The spot of light for Horizontal Force was off the sheet in the direction of *decreasing* force from 18h. 11m. to 21h. 36m.

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.
Nov. 10		
h m	° ′ ″	
11. 47	19. 18. 5	·0406
11. 54	15. 45	·0394
12. 2	15. 40	·0393
12. 27	29. 20	·0465
12. 46	23. 30	·0435
12. 50	23. 40	·0435
13. 10	18. 30	·0409
13. 38	13. 50	·0384
13. 50	14. 20	·0387
13. 56	16. 40	·0398
14. 9	17. 25	·0402
14. 16	19. 0	·0411
14. 36	27. 5	·0452
14. 44	26. 20	·0449
15. 0	34. 0	·0489
15. 10	28. 55	·0463
15. 22	35. 5	·0494
15. 40	27. 20	·0454
15. 44	28. 0	·0458
15. 56	35. 0	·0494
16. 6	39. 0	·0515
16. 19	48. 30	·0565
16. 44	26. 0	·0447
17. 6	19. 30	·0414
17. 16	25. 30	·0445
17. 25	21. 30	·0424
17. 34	25. 0	·0442
17. 38	23. 50	·0436
17. 56	29. 50	·0467
18. 1	30. 0	·0468
18. 9	29. 20	·0465
	***	
18. 34	32. 5	·0478
18. 47	31. 45	·0477
18. 56	34. 10	·0490
19. 2	34. 50	·0493
19. 9	34. 20	·0491
19. 17	33. 30	·0487
19. 20	34. 10	·0490
19. 28	32. 20	·0480
19. 42	33. 0	·0484
19. 50	34. 55	·0494
20. 0	30. 55	·0473
20. 10	36. 50	·0503
20. 12	27. 0	·0452
20. 15	30. 20	·0470
20. 18	29. 30	·0466
20. 32	31. 10	·0474
20. 37	30. 0	·0468
20. 47	32. 50	·0482
20. 52	30. 0	·0468
21. 5	34. 0	·0489
21. 10	19. 32. 50	·0482
	***	
21. 46	35. 30	·0497
21. 50	34. 10	·0490
21. 54	36. 35	·0502
21. 59	35. 45	·0498
	***	
22. 43	39. 20	·0517
23. 6	38. 20	·0512
23. 10	40. 0	·0520
23. 22	39. 55	·0520
23. 28	41. 30	·0528
23. 35	38. 30	·0513
23. 45	40. 25	·0522
23. 50	39. 25	·0517
23. 55	39. 45	·0519
23. 59	39. 25	·0517

Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Expressed in terms of Gauss's Unit measured on the Metrical System.
Nov. 10		
h m		
7. 44	·1526	·2726
7. 51	·1529	·2731
7. 55	·1527	·2727
7. 59	·1533	·2738
8. 5	·1524	·2722
8. 12	·1535	·2742
8. 15	·1531	·2735
8. 20	·1539	·2749
8. 23	·1520	·2715
8. 27	·1531	·2735
8. 33	·1533	·2738
8. 37	·1524	·2722
8. 43	·1529	·2731
8. 48	·1522	·2719
8. 51	·1534	·2740
8. 53	·1525	·2724
8. 57	·1539	·2749
8. 59	·1528	·2729
9. 9	·1533	·2738
9. 11	·1530	·2733
9. 21	·1529	·2731
9. 27	·1527	·2727
9. 29	·1521	·2717
9. 38	·1528	·2729
9. 41	·1527	·2727
9. 50	·1530	·2733
9. 57	·1524	·2722
10. 5	·1527	·2727
10. 10	·1523	·2720
10. 19	·1518	·2712
10. 32	·1523	·2720
10. 39	·1516	·2709
10. 43	·1518	·2712
10. 51	·1518	·2712
10. 55	·1516	·2709
11. 3	·1520	·2715
11. 18	·1551	·2771
11. 31	·1527	·2727
11. 40	·1547	·2763
11. 42	·1544	·2758
11. 49	·1549	·2767
12. 0	·1555	·2778
12. 11	·1553	·2774
12. 19	·1554	·2776
12. 24	·1547	·2763
12. 30	·1549	·2767
12. 41	·1520	·2715
12. 49	·1521	·2717
13. 0	·1510	·2698
13. 5	·1501	·2682
13. 10	·1503	·2685
13. 11	·1498	·2676
13. 18	·1496	·2673
13. 25	·1498	·2676
13. 31	·1489	·2660
13. 40	·1490	·2662
13. 41	·1488	·2658
13. 50	·1496	·2673
13. 52	·1491	·2664
13. 57	·1497	·2674
14. 1	·1489	·2660
14. 6	·1493	·2667
14. 15	·1486	·2655
14. 40	·1505	·2689
14. 43	·1503	·2685
14. 54	·1513	·2703
15. 3	·1516	·2709
15. 12	·1498	·2676
15. 20	·1485	·2653
15. 22	·1492	·2666
15. 29	·1495	·2671
15. 36	·1503	·2685
15. 47	·1482	·2648
15. 55	·1496	·2673
15. 57	·1494	·2669
16. 2	·1498	·2676
16. 4	·1495	·2671
16. 10	·1497	·2674
16. 12	·1495	·2671
16. 20	·1501	·2682
16. 21	·1499	·2678
16. 33	·1520	·2715
16. 37	·1516	·2709
16. 40	·1521	·2717
16. 45	·1517	·2710
16. 51	·1521	·2717
17. 1	·1525	·2724
17. 9	·1519	·2714
17. 16	·1535	·2742
17. 26	·1514	·2705
17. 33	·1518	·2712
17. 41	·1507	·2692
17. 47	·1512	·2702
17. 51	·1507	·2692
17. 54	·1511	·2700
18. 3	·1498	·2676
18. 15	·1506	·2691
18. 22	·1499	·2678
18. 26	·1504	·2687
18. 31	·1502	·2684
18. 36	·1500	·2680
18. 41	·1503	·2685
18. 43	·1499	·2678
18. 47	·1503	·2685

Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Expressed in terms of Gauss's Unit measured on the Metrical System.
Nov. 10		
h m		
14. 54	·0314	·1375
15. 6	·0307	·1344
15. 16	·0308	·1348
15. 26	·0311	·1361
15. 38	·0306	·1339
15. 50	·0311	·1361
16. 20	·0309	·1352
16. 39	·0304	·1331
17. 0	·0305	·1335
17. 9	·0309	·1352
17. 19	·0308	·1348
17. 26	·0310	·1357
17. 34	·0310	·1357
17. 48	·0313	·1370
19. 48	·0322	·1410
19. 57	·0321	·1405
20. 2	·0323	·1414
20. 10	·0319	·1396
20. 14	·0321	·1405
20. 50	·0322	·1410
20. 55	·0321	·1405
21. 0	·0322	·1410
	***	
22. 54	·0321	·1405
23. 10	·0322	·1410
23. 37	·0321	·1405
23. 44	·0323	·1414
23. 59	·0323	·1414

Greenwich Mean Solar Time.	Readings of Thermometers. Of H. F. Magnet.	Of V. F. Magnet.
Nov. 10		
h m	°	°
0. 30	62·5	61·2
8. 0	62·6	61·0
21. 0	61·8	60·4
22. 0	62·1	60·4
23. 0	62·0	60·6

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in terms of Gauss's Unit measured on the Metrical System.
h m	° ′ ″		Nov. 10 h m			h m		
			18. 51	·1499	·2678			
			18. 54	·1501	·2682			
			19. 3	·1491	·2664			
			19. 10	·1495	·2671			
			19. 12	·1491	·2664			
			19. 22	·1495	·2671			
			19. 30	·1490	·2662			
			19. 36	·1495	·2671			
			19. 42	·1493	·2667			
			19. 55	·1501	·2682			
			19. 58	·1494	·2669			
			20. 1	·1490	·2662			
			20. 10	·1507	·2692			
			20. 12	·1479	·2643			
			20. 19	·1506	·2691			
			20. 22	·1504	·2687			
			20. 32	·1512	·2702			
			20. 40	·1505	·2689			
			20. 43	·1511	·2700			
			20. 49	·1505	·2689			
			20. 53	·1511	·2700			
			21. 0	·1497	·2674			
			21. 2	·1513	·2703			
			21. 9	·1505	·2689			
			21. 11	·1511	·2700			
			21. 15	·1505	·2689			
			21. 20	·1502	·2684			

Greenwich Mean Solar Time.	Western Declination.	Excess of Western Declination above 18°, converted into Westerly Force, and expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in parts of the whole Horizontal Force.	Horizontal Force (diminished by a Constant 0·8600 nearly) uncorrected for Temperature. Expressed in terms of Gauss's Unit measured on the Metrical System.	Greenwich Mean Solar Time.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in parts of the whole Vertical Force.	Vertical Force (diminished by a Constant 0·9600 nearly) uncorrected for Temperature. Expressed in terms of Gauss's Unit measured on the Metrical System.
h m	° ′ ″		Nov. 10 h m			h m		
			21. 26	·1505	·2689			
			21. 39	·1500	·2680			
			21. 42	·1504	·2687			
			21. 47	·1501	·2682			
			21. 50	·1503	·2685			
			21. 52	·1499	·2678			
			21. 58	·1505	·2689			
			22. 1	·1501	·2682			
			22. 11	·1505	·2689			
			22. 18	·1501	·2682			
			22. 21	·1505	·2689			
			22. 37	·1503	·2685			
			22. 48	·1510	·2698			
			22. 51	·1504	·2687			
			22. 53	·1499	·2678			
			22. 58	·1503	·2685			
			22. 59	·1500	·2680			
			23. 7	·1506	·2691			
			23. 11	·1514	·2705			
			23. 18	·1510	·2698			
			23. 21	·1513	·2703			
			23. 25	·1510	·2698			
			23. 31	·1513	·2703			
			23. 39	·1493	·2667			
			23. 50	·1507	·2692			
			23. 55	·1500	·2680			
			23. 59	·1510	·2698			

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.

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

The value 0·8600 of Horizontal Force corresponds to 1·5368 of Gauss's Unit on the Metrical System.

The value 0·9600 of Vertical Force corresponds to 4·2033 of Gauss's Unit on the Metrical System.

ROYAL OBSERVATORY, GREENWICH.

RESULTS

OF

OBSERVATIONS

OF THE

MAGNETIC DIP.

1872.

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

Day and Approximate Hour, 1872.		Needle.	Length of Needle.	Magnetic Dip.	Observer.
	d h			° ′ ″	
January	4. 2	C 1	6 inches	67. 47. 6	N
	5. 1	D 1	3 „	67. 50. 25	N
	10. 2	C 2	6 „	67. 47. 34	N
	14. 23	B 1	9 „	67. 46. 32	N
	15. 1	C 1	6 „	67. 48. 34	N
	27. 2	B 2	9 „	67. 44. 18	N
	31. 0	C 2	6 „	67. 47. 0	N
	31. 1	D 2	3 „	67. 50. 45	N
	31. 2	B 2	9 „	67. 44. 34	N
February	6. 2	D 1	3 „	67. 52. 52	N
	6. 22	D 2	3 „	67. 52. 28	N
	6. 23	C 1	6 „	67. 50. 37	N
	7. 0	B 2	9 „	67. 49. 39	N
	7. 3	D 2	3 „	67. 51. 30	N
	13. 2	C 2	6 „	67. 48. 7	N
	17. 2	B 1	9 „	67. 43. 52	N
	20. 1	B 2	9 „	67. 50. 17	N
	20. 2	C 2	6 „	67. 51. 32	N
	29. 2	B 1	9 „	67. 47. 42	N
March	4. 22	C 1	6 „	67. 46. 44	N
	5. 1	C 2	6 „	67. 46. 6	N
	6. 1	D 2	3 „	67. 51. 28	N
	13. 2	D 1	3 „	67. 47. 18	N
	14. 23	B 1	9 „	67. 45. 11	N
	22. 2	C 1	6 „	67. 48. 25	N
	25. 2	D 2	3 „	67. 49. 54	N
	25. 22	C 2	6 „	67. 49. 7	N
	26. 3	C 2	6 „	67. 46. 55	N
	30. 2	B 2	9 „	67. 46. 52	N
April	6. 2	D 1	3 „	67. 49. 28	N
	9. 2	C 1	6 „	67. 46. 44	N
	11. 1	B 1	9 „	67. 47. 53	N
	12. 22	B 2	9 „	67. 50. 8	N
	13. 3	B 2	9 „	67. 45. 37	N
	17. 2	D 2	3 „	67. 51. 7	N
	20. 2	C 2	6 „	67. 47. 13	N
	23. 2	D 1	3 „	67. 49. 59	N
	26. 1	C 1	6 „	67. 48. 28	N
	29. 22	C 2	6 „	67. 47. 52	N
	30. 3	C 2	6 „	67. 46. 46	N
May	4. 2	D 1	3 „	67. 51. 14	N
	9. 23	C 1	6 „	67. 47. 38	N
	14. 2	C 2	6 „	67. 47. 26	N
	16. 2	D 2	3 „	67. 48. 26	N
	20. 2	B 1	9 „	67. 43. 59	N
	20. 23	B 2	9 „	67. 44. 37	N
	21. 0	C 1	6 „	67. 48. 5	N
	22. 23	D 2	3 „	67. 50. 10	N
	30. 0	B 1	9 „	67. 44. 53	N
	30. 23	D 1	3 „	67. 48. 15	N
June	4. 2	C 1	6 „	67. 49. 50	N
	8. 2	D 2	3 „	67. 48. 21	N
June	13. 1	C 2	6 inches	67. 45. 56	N
	14. 0	B 2	9 „	67. 47. 24	N
	14. 23	D 1	3 „	67. 49. 17	N
	19. 2	D 2	3 „	67. 45. 39	N
	22. 1	B 1	9 „	67. 47. 48	N
	23. 22	D 2	3 „	67. 48. 7	N
	23. 23	D 1	3 „	67. 50. 1	N
	24. 3	D 2	3 „	67. 45. 8	N
	28. 2	C 1	6 „	67. 44. 36	N
	29. 2	D 1	3 „	67. 47. 48	N
July	3. 2	C 2	6 „	67. 46. 55	N
	6. 2	D 2	3 „	67. 49. 38	N
	10. 1	B 1	9 „	67. 46. 41	N
	10. 2	D 1	3 „	67. 48. 14	N
	15. 22	B 2	9 „	67. 44. 7	N
	15. 23	C 1	6 „	67. 45. 57	N
	16. 3	B 2	9 „	67. 45. 32	N
	24. 22	D 2	3 „	67. 49. 23	N
	27. 1	C 2	6 „	67. 43. 56	N
	27. 2	B 1	9 „	67. 42. 58	N
	31. 0	D 1	3 „	67. 46. 52	N
	31. 2	Dover A 1	3 „	67. 47. 11	N
August	0. 22	Dover A 2	3 „	67. 49. 28	N
	1. 0	Dover A 1	3 „	67. 48. 47	N
	1. 2	D 2	3 „	67. 47. 25	N
	8. 2	C 1	6 „	67. 44. 22	N
	13. 2	D 1	3 „	67. 47. 54	N
	16. 22	C 2	6 „	67. 48. 35	N
	17. 2	D 1	3 „	67. 51. 55	N
	19. 23	B 1	9 „	67. 47. 42	N
	20. 0	C 1	6 „	67. 50. 39	N
	23. 2	C 2	6 „	67. 47. 50	N
	26. 23	D 1	3 „	67. 50. 37	N
	27. 22	D 2	3 „	67. 52. 42	N
	28. 2	B 2	9 „	67. 45. 3	N
	28. 3	D 2	3 „	67. 50. 33	N
	31. 1	B 2	9 „	67. 44. 9	N
	31. 2	B 1	9 „	67. 45. 4	N
September	5. 2	D 1	3 „	67. 48. 48	N
	7. 2	C 1	6 „	67. 48. 5	N
	10. 2	D 2	3 „	67. 51. 3	N
	13. 3	C 2	6 „	67. 49. 1	N
	14. 1	B 1	9 „	67. 46. 21	N
	18. 2	B 2	9 „	67. 47. 38	N
	18. 3	C 2	6 „	67. 49. 53	N
	24. 23	D 1	3 „	67. 50. 28	N
	25. 1	D 2	3 „	67. 49. 15	N
	25. 22	C 2	6 „	67. 48. 29	N
	29. 22	C 1	6 „	67. 49. 14	N
	30. 3	C 1	6 „	67. 48. 20	N
October	7. 2	B 1	9 „	67. 46. 35	N
	11. 23	C 2	6 „	67. 46. 50	N
	4. 2	D 1	3 „	67. 47. 43	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, 1872.	Needle.	Length of Needle.	Magnetic Dip.	Observer.	Day and Approximate Hour, 1872.	Needle.	Length of Needle.	Magnetic Dip.	Observer.
d h			° ′ ″		d h			° ′ ″	
October 19. 1	B 2	9 inches	67. 49. 48	N	November 21. 3	D 2	3 inches	67. 49. 16	N
19. 2	D 2	3 "	67. 51. 45	N	27. 0	B 1	9 "	67. 47. 28	N
23. 22	C 1	6 "	67. 44. 52	N	30. 1	B 2	9 "	67. 47. 1	N
24. 0	D 1	3 "	67. 49. 48	N					
24. 3	C 1	6 "	67. 47. 43	N	December 6. 2	D 1	3 "	67. 46. 33	N
28. 2	C 2	6 "	67. 48. 48	N	11. 2	C 1	6 "	67. 46. 51	N
28. 22	B 1	9 "	67. 46. 4	N	11. 3	D 2	3 "	67. 51. 21	N
29. 3	B 1	9 "	67. 46. 15	N	20. 2	C 2	6 "	67. 45. 57	N
					21. 1	B 1	9 "	67. 46. 0	N
November 6. 23	C 1	6 "	67. 49. 32	N	21. 2	D 1	3 "	67. 50. 22	N
9. 2	D 1	3 "	67. 48. 47	N	25. 22	D 2	3 "	67. 49. 51	N
13. 0	C 2	6 "	67. 52. 13	N	25. 23	C 2	6 "	67. 45. 14	N
13. 2	D 2	3 "	67. 52. 11	N	26. 3	D 2	3 "	67. 49. 15	N
20. 22	B 2	9 "	67. 45. 0	N	30. 2	B 2	9 "	67. 44. 1	N
21. 0	C 2	6 "	67. 47. 36	N					

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

MONTHLY MEANS OF MAGNETIC DIPS.

Month, 1872.	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	67.46.32	1	67.44.26	2	67.47.50	2
February	67.45.47	2	67.49.58	2	67.50.37	1
March	67.45.11	1	67.46.52	1	67.47.35	2
April	67.47.53	1	67.47.53	2	67.47.36	2
May	67.44.26	2	67.44.37	1	67.47.52	2
June	67.47.48	1	67.47.24	1	67.47.13	2
July	67.44.49	2	67.44.49	2	67.45.57	1
August	67.46.23	2	67.44.36	2	67.47.30	2
September	67.46.21	1	67.47.38	1	67.48.33	3
October	67.46.18	3	67.49.48	1	67.46.18	2
November	67.47.28	1	67.46. 0	2	67.49.32	1
December	67.46. 0	1	67.44. 1	1	67.46.51	1
Means	67.46. 3	Sum 18	67.46.26	Sum 18	67.47.44	Sum 21

Month, 1872.	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	67.47.17	2	67.50.25	1	67.50.45	1
February	67.49.49	2	67.52.52	1	67.51.59	2
March	67.47.23	3	67.47.18	1	67.50.41	2
April	67.47.17	3	67.49.43	2	67.51. 7	1
May	67.47.26	1	67.49.45	2	67.49.18	2
June	67.45.56	1	67.49. 2	3	67.46.49	4
July	67.45.26	2	67.47.33	2	67.49.30	2
August	67.48.12	2	67.50. 9	3	67.50.13	3
September	67.49. 8	3	67.49.38	2	67.50. 9	2
October	67.47.49	2	67.48.45	2	67.51.45	1
November	67.49.54	2	67.48.47	1	67.50.43	2
December	67.45.36	2	67.48.28	2	67.50. 9	3
Means	67.47.43	Sum 25	67.49.18	Sum 22	67.49.52	Sum 25

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 1872.

Lengths of the several Sets of Needles.	Needles.	Number of Observations with each Needle.	Mean Yearly Dips from Observations with each Needle.	Mean Yearly Dips from each Set of Needles.	Mean Yearly Dip from all the Sets of Needles.
			° ′ ″	° ′ ″	° ′ ″
9-inch Needles	B 1	18	67. 46. 3	67. 46. 15	67. 47. 51
	B 2	18	67. 46. 26		
6-inch Needles	C 1	21	67. 47. 44	67. 47. 44	
	C 2	25	67. 47. 43		
3-inch Needles	D 1	22	67. 49. 18	67. 49. 35	
	D 2	25	67. 49. 52		

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

Month and Day, 1872.	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.
			° ′ ″	° ′ ″	′ ″
February 7	D 2	3 inches	67. 52. 28	67. 51. 30	+ 0. 58
March 26	C 2	6 "	67. 49. 7	67. 46. 55	+ 2. 12
April 13	B 2	9 "	67. 50. 8	67. 45. 37	+ 4. 31
30	C 2	6 "	67. 47. 52	67. 46. 46	+ 1. 6
June 24	D 2	3 "	67. 48. 7	67. 45. 8	+ 2. 59
July 16	B 2	9 "	67. 44. 7	67. 45. 32	− 1. 25
August 28	D 2	3 "	67. 52. 42	67. 50. 33	+ 2. 9
September 30	C 1	6 "	67. 49. 14	67. 48. 20	+ 0. 54
October 24	C 1	6 "	67. 44. 52	67. 47. 43	− 2. 51
29	B 1	9 "	67. 46. 4	67. 46. 15	− 0. 11
December 26	D 2	3 "	67. 49. 51	67. 49. 15	+ 0. 36
Means	....		67. 48. 36	67. 47. 36	+ 1. 0

ROYAL OBSERVATORY, GREENWICH.

OBSERVATIONS

OF

DEFLEXION OF A MAGNET

FOR

ABSOLUTE MEASURE

OF

HORIZONTAL FORCE.

1872.

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

Month and Day, 1872.		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	25	1·0 1·3	47·4	11. 43. 15 5. 18. 45	5·438 5·470	100 100	48·0 48·0	N
February	26	1·0 1·3	50·0	11. 41. 9 5. 17. 52	5·480 5·467	100 100	51·1 50·8	N
March	11	1·0 1·3	58·5	11. 39. 53 5. 17. 4	5·470 5·482	100 100	59·7 60·5	N
April	25	1·0 1·3	59·9	11. 39. 29 5. 17. 4	5·477 5·479	100 100	63·6 62·2	N
May	23	1·0 1·3	64·0	11. 37. 55 5. 16. 27	5·478 5·477	100 100	65·8 66·3	N
June	24	1·0 1·3	80·4	11. 36. 44 5. 15. 34	5·490 5·490	100 100	82·7 81·9	N
July	15	1·0 1·3	63·9	11. 36. 0 5. 15. 21	5·483 5·486	100 100	63·8 64·8	N
August	30	1·0 1·3	68·6	11. 34. 43 5. 14. 45	5·488 5·491	100 100	70·0 70·6	N
September	11	1·0 1·3	71·5	11. 36. 13 5. 15. 28	5·497 5·496	100 100	71·1 73·1	N
October	29	1·0 1·3	54·7	11. 36. 40 5. 15. 54	5·487 5·495	100 100	55·0 58·4	N
November	28	1·0 1·3	48·6	11. 35. 43 5. 15. 30	5·497 5·490	100 100	48·8 49·8	N
December	23	1·0 1·3	51·4	11. 35. 41 5. 15. 20	5·495 5·491	100 100	53·8 51·9	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 1872.

Month and Day, 1872.		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	25	+0·10177	0·10190	−0·00313		9·00884	5·4540	0·18682	3·881	0·3961	1·790
February	26	+0·10151	0·10166	−0·00363		9·00780	5·4735	0·18392	3·873	0·3943	1·786
March	11	+0·10148	0·10155	−0·00169		9·00749	5·4760	0·18416	3·876	0·3943	1·787
April	25	+0·10145	0·10158	−0·00314		9·00748	5·4780	0·18407	3·875	0·3943	1·787
May	23	+0·10129	0·10145	−0·00388		9·00688	5·4775	0·18434	3·879	0·3941	1·789
June	24	+0·10142	0·10147	−0·00121		9·00719	5·4900	0·18356	3·874	0·3939	1·786
July	15	+0·10102	0·10110	−0·00194	−0·00277	9·00554	5·4845	0·18310	3·880	0·3929	1·789
August	30	+0·10092	0·10099	−0·00170		9·00509	5·4895	0·18272	3·880	0·3926	1·789
September	11	+0·10119	0·10127	−0·00194		9·00626	5·4965	0·18175	3·870	0·3927	1·785
October	29	+0·10095	0·10111	−0·00389		9·00542	5·4910	0·18160	3·873	0·3922	1·786
November	28	+0·10071	0·10088	−0·00414		9·00441	5·4935	0·18066	3·874	0·3913	1·786
December	23	+0·10076	0·10088	−0·00292		9·00449	5·4930	0·18094	3·875	0·3915	1·787
Means........		..	..	..	..	..	..	..	3·876	..	1·787

ROYAL OBSERVATORY, GREENWICH.

RESULTS

OF

METEOROLOGICAL OBSERVATIONS.

1872.

MONTH and DAY, 1872.	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.	Lowest.	Difference between the Dew Point Temperature and Air Temperature. Mean Daily Value.	Greatest.	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.	P.M.	Pressure in lbs. on the square foot. Greatest.	Least.	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	..	29·857	43·2	34·0	39·2	34·3	61·3	26·5	42·0	39·2	4·9	6·4	4·0	+ 1·9	SSW : SW	SSW	19·4	0·0	1·2	415	0·00
2	..	29·647	46·7	39·7	43·2	40·8	61·8	35·0	41·4	39·0	2·4	3·8	0·9	+ 6·2	SSW	SW	16·0	0·0	0·9	360	0·10
3	In Equator: Last Quarter.	29·718	46·5	36·0	41·2	37·8	77·4	29·0	41·1	38·8	3·4	8·0	1·4	+ 4·5	WSW : SW	WSW : SW : SSW	5·1	0·0	0·7	348	0·00
4	..	29·261	49·0	42·5	44·7	38·2	68·3	36·0	40·8	39·3	6·5	8·6	2·2	+ 8·3	SW : W	W by S : SW	25·1	0·1	2·3	609	0·35
5	..	28·934	51·4	37·8	44·5	39·3	77·0	32·0	41·6	39·5	5·2	10·1	2·4	+ 8·3	SW : W	WSW	30·0	0·1	3·9	614	0·44
6	..	29·400	48·9	37·3	41·2	37·4	68·5	31·0	42·1	40·0	3·8	6·5	1·2	+ 5·2	WNW : WSW : SW	WSW	17·7	0·1	1·0	438	0·30
7	..	29·285	43·2	37·2	40·4	37·5	68·5	29·6	41·9	39·8	2·9	4·4	1·4	+ 4·6	SW	SW : SSW	6·8	0·0	0·5	348	0·18
8	..	29·151	41·4	32·5	35·8	31·4	44·1	27·4	41·4	38·5	4·4	6·4	2·3	+ 0·1	WNW : W	NW : W	1·4	0·0	0·3	318	0·00
9	Greatest Declination S.	29·467	40·7	32·5	36·7	32·8	44·0	27·8	40·6	38·2	3·9	6·7	2·3	+ 0·9	WNW : NNW	NNW : NNE	2·5	0·0	0·3	297	0·08
10	Perigee: New.	29·932	39·7	32·2	35·5	34·1	54·7	25·3	39·6	36·6	1·4	6·2	0·0	− 0·4	Calm	Calm : SSW	1·0	0·0	0·0	83	0·00
11	..	29·712	50·8	39·2	44·5	43·3	54·5	33·0	39·2	36·0	1·2	4·8	0·0	+ 8·5	SSW : SW	WSW : W	3·9	0·0	0·5	325	0·17
12	..	29·992	46·3	36·0	41·3	39·3	63·3	30·9	39·0	35·9	2·0	4·4	1·2	+ 5·2	WSW	SW	1·2	0·0	0·1	241	0·00
13	..	29·693	51·0	45·3	47·7	45·7	51·0	40·2	38·6	36·3	2·0	3·6	1·3	+11·5	SW	SSW : SW	13·6	0·0	0·9	439	0·28
14	..	29·786	47·7	32·5	39·9	36·3	64·6	26·0	39·9	37·2	3·6	6·3	1·5	+ 3·6	WSW : W	WNW : W	2·2	0·0	0·3	298	0·00
15	..	29·820	42·7	28·3	35·1	31·3	69·7	20·1	40·6	38·0	3·8	9·2	0·0	− 1·3	WSW : SSW	SSW : SSE	0·1	0·0	0·0	113	0·00
16	In Equator	29·748	41·7	31·2	35·4	33·9	53·5	24·1	41·1	38·2	1·5	3·7	0·0	− 1·1	SSE : Calm	S by W : S	0·2	0·0	0·0	117	0·00
17	First Qr.	29·266	47·0	34·4	42·1	40·8	47·0	28·4	40·6	38·4	1·3	2·2	0·0	+ 5·5	SSW	SW	30·0	0·1	2·1	629	0·30
18	..	29·006	48·1	38·4	42·6	35·3	73·0	32·2	41·0	39·5	7·3	10·3	3·5	+ 5·9	SW : WSW	WSW : SW	30·0	0·1	1·7	537	0·09
19	..	29·266	45·5	35·1	39·9	37·8	67·2	30·1	41·2	39·5	2·1	5·7	0·0	+ 3·0	SSW : S	SSE : ESE : NE	0·5	0·0	0·0	155	0·02
20	..	29·416	41·7	37·2	39·0	37·2	48·2	32·9	40·8	39·2	1·8	3·3	1·6	+ 2·0	NNE	NNE	0·6	0·0	0·0	110	0·13
21	..	29·536	41·7	34·6	37·8	37·0	44·0	34·6	40·6	38·8	0·8	0·9	0·0	+ 0·6	NE : ESE	ESE : SSE	0·1	0·0	0·0	88	0·03
22	Apogee	29·289	44·0	36·6	40·2	39·5	46·1	31·0	40·6	39·0	0·7	2·4	0·0	+ 2·8	SSE : ESE	SE : S	0·9	0·0	0·1	208	0·11
23	Greatest Declination N.	28·719	48·7	41·0	43·4	41·0	58·7	36·0	40·4	38·8	2·4	6·1	1·1	+ 5·7	SSW	SSW : S	30·0	0·1	1·4	470	0·28
24	..	28·644	50·5	39·2	44·0	38·8	74·3	37·3	40·6	38·6	5·2	10·5	3·5	+ 6·1	SSE : SW : WSW	WSW : SW	30·0	0·2	3·4	570	0·50
25	Full	28·855	47·8	43·1	44·5	41·9	65·7	36·3	41·6	39·6	2·6	5·0	1·3	+ 6·4	SSW	SSW : SSE	12·0	0·0	0·8	354	0·11
26	..	29·201	48·2	39·0	43·3	41·3	77·5	33·1	42·1	40·0	2·0	4·2	0·0	+ 5·0	SSW	S : SE : ENE	1·9	0·0	0·1	157	0·10
27	..	29·685	44·9	37·6	41·1	39·4	50·9	31·3	42·4	40·6	1·7	3·7	0·0	+ 2·7	NNE : N	N by E	1·5	0·0	0·1	184	0·05
28	..	29·878	44·3	36·3	40·0	37·4	50·5	29·5	42·4	40·8	2·6	6·2	1·2	+ 1·6	N : NNE	SSW : SW	0·3	0·0	0·0	105	0·00
29	..	29·775	47·7	37·4	43·6	42·0	56·5	31·4	42·4	40·6	1·6	4·2	0·9	+ 5·3	SSW	SW	2·9	0·0	0·6	427	0·01
30	..	29·705	50·5	42·8	46·4	42·1	60·9	37·5	42·4	40·4	4·3	6·9	2·1	+ 8·3	SW	SW : SSW	2·7	0·0	0·4	375	0·00
31	In Equator	29·697	52·7	40·1	46·2	35·8	89·3	35·0	43·1	41·0	10·4	18·0	4·6	+ 8·3	SSW : SW	SSW	3·9	0·0	0·4	348	0·00
																				Sum	Sum
Means	..	29·463	46·3	37·0	41·3	38·1	61·0	31·3	41·1	38·9	3·2	6·1	1·4	+ 4·4	...	...	..	..	..	10080	3·63

BAROMETER READINGS FROM EYE-OBSERVATIONS.

The first maximum in the month was 29in·748 on the 3rd; the first minimum in the month was 29in·634 on the 2nd.
The second maximum ,, was 29in·332 on the 4th; the second minimum ,, was 29in·250 on the 4th.
The third maximum ,, was 29in·444 on the 6th; the third minimum ,, was 28in·872 on the 5th.
The fourth maximum ,, was 29in·953 on the 10th; the fourth minimum ,, was 29in·107 on the 8th.
The absolute maximum ,, was 30in·013 on the 12th; the fifth minimum ,, was 29in·676 on the 11th.
The sixth maximum ,, was 29in·902 on the 14th; the sixth minimum ,, was 29in·532 on the 13th.
The seventh maximum ,, was 29in·554 on the 21st; the seventh minimum ,, was 28in·932 on the 18th.
The eighth maximum ,, was 29in·911 on the 28th; the absolute minimum ,, was 28in·482 on the 24th.
The range in the month was 1in·531.
The mean for the month was 29in·463, being 0in·286 *lower* than the average of the preceding 31 years.

TEMPERATURE OF THE AIR.

The highest in the month was 52°·7 on the 31st; the lowest was 28°·3 on the 15th.
The range ,, was 24°·4.
The mean ,, of all the highest daily readings was 46°·3, being 3°·3 *higher* than the average of the preceding 31 years.
The mean ,, of all the lowest daily readings was 37°·0, being 3°·6 *higher* than the average of the preceding 31 years.
The mean daily range was 9°·3, being 0°·3 *less* than the average of the preceding 31 years.
The mean for the month was 41°·3, being 3°·3 *higher* than the average of the preceding 31 years.

MONTH and DAY, 1872.	ELECTRICITY.		CLOUDS AND WEATHER.	
	A.M.	P.M.	A.M.	P.M.
Jan. 1			7, h.-fr : 7, ci, ci.-s, h.-fr	ci, ci.-cu, ci.-s : ci, ci.-cu, ci.-s, w: ci.-s, cu.-s, vv
2			10, r	v, ci, ci.-s, cu : v, ci.-s, cu.-s
3			2, li.-cl, h.-fr	1, ci.-cu, cu : 4, ci, mt : 0, h, d, w
4			st.-w, h.-r : v, ci.-cu, cu, cu.-s, r, hl, w	v, ci, ci.-cu, ci.-s : 10, oc.-r, g
5			h.-g, r : v, w	8, ci, ci.-cu, ci.-s, cu, cu.-s : vv, h.-shs, hl, l, w
6			w : 8, ci.-s	v, cu, cu.-s, w : 10, r, hl, v : 0
7			v : v, r	ci, ci.-cu, v : v, h.-r
8			3, ci, ci.-cu	10, mt : 3, ci.-cu, cu, h, sl.-f : 0, h.-fr, h
9			r, sn : ci.-cu, ci.-s, cu.-s, sl.-f	v, ci, cu, cu.-s, h, mt : v, th.-r
10		0	10, th.-f	th.-f : 10, cu.-s, f : 10
11	0	0 : w	10, r	v, ci, ci.-s, f : 0, h.-d
12	w	m : 0	3, ci, ci.-cu	10, ci.-s, sl.-mt, so.-ha : 10, v
13	0	0	10, th.-r	10, r, w : 8, v
14	w	w	0, sl.-f	5, ci, ci.-s, sl.-f, th.-r: v : 0, h.-fr
15	w	w	0, h.-fr, sl.-f	2, ci, sl.-f : 7, ci, ci.-cu, ci.-s, so.-ha: 3, ci.-s, cu.-s, h, h.-fr
16	0	w	8, ci, ci.-cu, ci.-s, h.-fr	9, ci, mt : 9, cu.-s : 3, ci.-s, cu.-s
17			10, w, th.-r : 10, st.-w, r	10, h.-g, r : 10, h.-g, r
18			r, h.-g : st.-w : vv, ci.-cu, cu, cu.-s	v, ci.-cu, ci.-s, cu, w : v, r : 0, h.-d, lu.-co
19			1, h.-fr, h : 1, h	2, ci.-cu, ci.-s, cu, cu.-s, so.-ha: 10, th.-cl, lu.-ha
20			10, r : 10, r	10, oc.-r : 10, th.-r
21			10, mt	10, r : v : 10
22			10	10, r : 10, r : 10, r
23	0 : s, g-cur	sN, wP : 0	10, st.-w, r	vv, shs.-r, st.-w : vv, r : vv, r
24			h.-r, h.-g : vv, st.-w	7, ci, ci.-cu, cu, sc, st.-w: vv, r, st.-w : 0, w, lu.-co
25		sN, sp : sN	9, th.-r, w	10, th.-r : v, r : 10, h.-r
26	wN, sN : mP	sN, wN : wP	6, ci, ci.-cu, cu, ci.-s, cu.-s, r	9, h.-r : 9, th.-r
27	wN : 0	w	10	10 : v : 2, ci.-cu, ci.-s
28	m : w	0	10, mt	10, mt : v : 0
29	0	w : 0 : w	10 : 10, w	10, r, w : 10, r, w
30	0	w : 0	10, ci.-cu, ci.-s	7, ci, ci.-cu, ci.-s: li.-cl : 3, li.-cl, w
31	0	0	8, ci.-cu, w	1, ci.-cu, ci.-s : 1, ci, ci.-s : 0, a

HUMIDITY OF THE AIR.

Temperature of the Dew Point.

The highest in the month was 48°·4 on the 13th; and the lowest was 28°·3 on the 15th.

The mean ,, was 38°·1, being 3°·4 *higher* than the average of the preceding 31 years.

Elastic Force of Vapour.—The mean for the month was 0in·230, being 0in·029 *greater* than the average of the preceding 31 years.

Weight of Vapour in a Cubic Foot of Air.—The mean for the month was 2grs·7, being 0gr·4 *greater* than the average of the preceding 31 years.

Degree of Humidity.—The mean for the month was 89 (that of Saturation being represented by 100), being 1 *greater* than the average of the preceding 31 years.

Weight of a Cubic Foot of Air.—The mean for the month was 545 grains, being 9 grains *less* than the average of the preceding 31 years.

CLOUDS.

The mean amount for the month, a clear sky being represented by 0 and a cloudy sky by 10, was 6·9.

WIND.

The proportions were of N. 3, S. 14, W. 11, E. 3, and Calm 0. The greatest pressure in the month was 30lbs·0 on the square foot on the 5th, 17th, 18th, 23rd, and 24th.

RAIN.

Fell on 20 days in the month, amounting to 3in·63, as measured in the simple cylinder gauge partly sunk below the ground; being 1in·76 *greater* than the average fall of the preceding 57 years.

ELECTRICITY.—The apparatus was out of action from January 1 to 9, and the insulating lamp was not burning from January 17 to 22.

MONTH and DAY, 1872.	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.
Feb. 1	..	29·503	51·6	41·7	46·3	40·3	76·0	34·9	44·0	41·5	6·0	7·6	5·7	+ 8·5	S by W	S by W : S	14·0	0·0	1·1	461	0·00
2	Last Qr.	29·563	54·2	39·7	46·0	42·5	87·1	36·0	44·1	42·2	3·5	10·6	1·1	+ 8·3	SSW : SW	SW	4·1	0·0	0·4	319	0·03
3	..	29·752	46·0	38·1	42·0	40·5	54·5	29·7	44·6	42·8	1·5	3·8	0·0	+ 4·2	SSW	SSW : S by E : S	1·4	0·0	0·1	252	0·00
4	..	29·665	47·6	41·3	43·5	41·9	54·0	36·0	44·6	42·8	1·6	5·5	0·0	+ 5·5	S	SSW : S : S by E	1·5	0·0	0·2	284	0·02
5	..	29·540	49·0	41·5	45·5	41·5	54·1	34·6	44·6	42·8	4·0	6·3	1·1	+ 7·2	SSW : SSE	SSW : S	3·3	0·0	0·4	321	0·00
6	Greatest Declination S.	29·585	51·7	46·0	48·7	44·3	59·4	42·4	44·6	43·2	4·4	5·6	2·1	+10·1	S : SSW	SW : SSW	2·1	0·0	0·2	285	0·00
7	Perigee	29·808	53·9	43·8	46·8	41·3	87·9	36·3	44·8	43·0	5·5	10·4	0·0	+ 8·0	SW : WSW	SW : SE	2·5	0·0	0·3	279	0·18
8	..	29·791	55·5	39·3	46·1	43·3	89·0	34·0	45·4	43·6	2·8	9·8	0·0	+ 7·2	S : SW	SW : SSW	0·5	0·0	0·0	176	0·00
9	New	29·782	57·9	32·8	45·9	43·6	95·9	28·0	45·6	43·8	2·3	11·6	0·0	+ 7·0	Calm : SE	SSW	1·2	0·0	0·1	173	0·00
10	..	29·760	56·2	45·3	49·9	44·6	75·7	35·7	45·9	44·0	5·3	9·7	3·5	+11·1	S by W	S : S by E	1·3	0·0	0·1	254	0·00
11	..	29·634	54·7	43·1	47·2	42·4	104·2	36·2	46·1	44·2	4·8	9·2	3·3	+ 8·6	SSW : SSE	SE	1·0	0·0	0·1	214	0·00
12	In Equator	29·481	50·3	39·7	44·2	40·0	96·8	31·8	46·2	44·0	4·2	8·6	0·9	+ 5·8	SE	SSE	1·4	0·0	0·2	238	0·05
13	..	29·592	53·7	39·6	45·9	42·3	99·0	31·9	46·1	44·3	3·6	10·2	0·9	+ 7·6	SSE	SE : SSE	1·6	0·0	0·2	277	0·00
14	..	29·570	53·8	38·3	44·8	41·0	86·8	32·9	46·3	44·6	3·8	11·4	0·0	+ 6·6	SE : SSE	S : SE : E	0·4	0·0	0·0	142	0·03
15	..	29·485	47·9	38·6	42·2	39·8	62·7	31·3	46·3	44·6	2·4	4·6	0·0	+ 4·1	ESE : E	ENE : NNE	1·3	0·0	0·2	293	0·00
16	First Qr.	29·586	44·1	36·6	38·3	34·1	44·1	34·0	46·0	44·3	4·2	6·0	0·9	+ 0·2	NNE : N	NW : SW	1·9	0·0	0·2	290	0·02
17	..	29·635	53·0	36·6	44·2	39·0	99·8	30·6	45·6	43·5	5·2	14·4	1·5	+ 6·0	WSW	WSW : SW	2·4	0·0	0·3	357	0·02
18	..	29·556	49·9	42·0	46·3	41·6	65·2	41·1	45·4	43·2	4·7	7·4	2·0	+ 8·0	SW	SW	12·0	0·2	1·1	571	0·08
19	Apogee: Greatest Dec. N.	29·608	53·8	39·3	46·0	39·9	118·0	33·0	45·4	43·6	6·1	13·2	0·9	+ 7·5	WSW : SW	W : SW	4·0	0·0	0·4	364	0·05
20	..	29·740	52·4	37·6	44·4	38·5	106·8	30·6	45·4	43·4	5·9	13·2	2·4	+ 5·7	SW : WSW	WSW : SW	1·3	0·0	0·2	309	0·00
21	..	29·894	51·5	35·8	42·3	36·2	98·2	29·8	45·0	43·0	6·1	12·8	3·7	+ 3·5	SW : W	W : WSW	1·6	0·0	0·1	304	0·00
22	..	29·912	49·6	35·2	43·4	39·8	73·7	28·2	44·6	42·8	3·6	10·3	1·8	+ 4·4	SSW	SSW	1·5	0·0	0·1	316	0·00
23	..	29·602	51·4	40·8	43·9	41·4	63·4	34·2	44·6	42·8	2·5	6·6	0·0	+ 4·7	S by W : S : SSE	W : SW	0·7	0·0	0·1	242	0·19
24	Full	29·378	55·8	41·1	48·2	47·7	67·3	35·8	44·3	42·5	0·5	3·8	0·0	+ 8·8	S by W : S	SW	1·7	0·0	0·2	318	0·03
25	..	29·346	56·1	42·1	47·7	44·6	68·2	36·0	44·4	42·4	3·1	10·6	1·1	+ 8·1	SW	WSW : SW	1·8	0·0	0·2	330	0·05
26	..	29·484	50·2	36·5	43·1	40·4	90·2	34·1	45·0	43·3	2·7	6·1	0·0	+ 3·3	SE : NE	NNE	3·3	0·0	0·4	319	0·01
27	In Equator	30·009	46·5	34·5	39·2	31·5	103·3	24·2	45·4	43·3	7·7	11·0	3·7	− 0·7	NNE	NE : Calm	1·1	0·0	0·1	169	0·00
28	..	29·907	46·2	32·4	39·0	32·3	73·1	28·0	45·4	43·2	6·7	12·6	4·3	− 1·1	Calm : S : SW	SW : SSW	1·4	0·0	0·1	276	0·00
29	..	29·549	53·6	36·1	47·0	45·3	59·5	31·0	45·4	43·3	1·7	5·2	2·0	+ 6·9	SSW : SW	SW	18·6	0·1	1·5	623	0·01
Means	..	29·645	51·7	39·2	44·8	40·7	79·8	33·2	45·2	43·3	4·0	8·9	1·5	+ 6·0	...	...	..	..	..	Sum 8756	Sum 0·77

BAROMETER READINGS FROM EYE-OBSERVATIONS.

The first minimum in the month was 29in·404 on the 1st.
The first maximum in the month was 29in·784 on the 3rd; the second minimum ,, was 29in·492 on the 5th.
The second maximum ,, was 29in·839 on the 7th; the third minimum ,, was 29in·776 on the 8th.
The third maximum ,, was 29in·828 on the 8th; the fourth minimum ,, was 29in·463 on the 12th.
The fourth maximum ,, was 29in·611 on the 13th; the fifth minimum ,, was 29in·469 on the 15th.
The fifth maximum ,, was 29in·653 on the 17th; the sixth minimum ,, was 29in·518 on the 18th.
The sixth maximum ,, was 29in·984 on the 22nd; the absolute minimum ,, was 29in·333 on the 25th.
The absolute maximum ,, was 30in·043 on the 27th; the eighth minimum ,, was 29in·509 on the 29th.
The range in the month was 0in·710.
The mean for the month was 29in·645, being 0in·152 *lower* than the average of the preceding 31 years.

TEMPERATURE OF THE AIR.

The highest in the month was 57°·9 on the 9th; the lowest was 32°·4 on the 28th.
The range ,, was 25°·5.
The mean ,, of all the highest daily readings was 51°·7, being 6°·2 *higher* than the average of the preceding 31 years.
The mean ,, of all the lowest daily readings was 39°·2, being 5°·1 *higher* than the average of the preceding 31 years.
The mean daily range was 12°·5, being 1°·1 *greater* than the average of the preceding 31 years.
The mean for the month was 44°·8, being 5°·5 *higher* than the average of the preceding 31 years.

MONTH and DAY, 1872.	ELECTRICITY.		CLOUDS AND WEATHER.	
	A.M.	P.M.	A.M.	P.M.
Feb. 1	o	o	10	10, r : v
2	o	o : w	10, r : 5, ci, cu, w	6, ci, ci.-s, cu, cu.-s : o, d, w
3	o	o	10	10 : 10 : vv, d
4	o	o	10	10, oc.-r : v, a
5	o	o : w	10 : 10, th.-r	10, th.-r : 10, th.-r
6	o	o	10, th.-r, w	10 : 10, mt, h
7	o	o	5, ci, ci.-s	v, ci, ci.-cu, ci.-s : 10, c.-r
8	o	o : w	v, ci.-cu, cu, cu.-s	vv, ci.-cu, cu : o, d
9	o	o	10, li.-cl, f	vv,ci,ci.-cu,cu.-s: 10 : v, mt
10	o	w	li.-cl, d, mt : 10, li.-cl	v, ci, ci.-cu, ci.-s : v, d, h
11	w	w	10, ci.-cu, ci.-s, d	8, ci, ci.-s, ci.-cu : v
12	o	w : o	2, ci, ci.-s	7,ci,ci.-cu,cu.-s:8,ci,ci.-cu,ci.-s,cu.-s: 10 r
13	o	o	4, ci,-cu, cu, h.-d	1, ci, ci.-s, cu : 2, ci.-cu, ci.-s : v, d
14	o	w : s, sp	10, r : 10, th.-r	v,ci,ci.-cu,ci.-s,cu,cu.-s : o, d, th.-f
15	w	w : s, sp	10, f, d : 10, f, r	10 : 10
16	o	o : m	10 : 10, sl, r	10, glm : 10, ci.-cu : v,d,lu.-co,sqs,r
17	o	w : o	2, ci.-s, ci.-cu	4,cu,ci.-cu,cu.-s: ci.-cu,cu, th.-r: v, lu.-co, w
18			w : w, r : 10, w	10, st.-w : v, st.-w, sl.-r
19	o	o	h.-r : v, w	5,ci,ci.-s,ci.-cu,r,w: v : 10, th.-cl, lu.-ha
20	o	w : o : w	o	5, ci, ci.-cu, ci.-s : v, li.-cl, a
21	w	o	1, ci, ci.-cu, h.-fr	5, ci, ci.-cu, cu: o : th.-cl, d
22	w	w : o	10	10 : v, lu.-ha,lu.-co: v, lu.-ha
23	s N	o : w	r : 10, h.-r	9, th.-r : v, ci, ci.-s, h.-d
24	o	o : w	9, oc.-shs	10 : 10 : 10, th.-r : v
25	o	o	10 : 10, r	v : v : o
26	w	m : w	9, r	v,ci,ci.-cu,cu.-s: v : 10, th.-r
27	m	w : m	10	10 : 9, cu.-s : o
28	w : o	w	10, f	v, ci, ci.-cu, cu: v : v
29	o	o	w : 10, w, r	10, st.-w : v, st.-w, shs.-r

HUMIDITY OF THE AIR.

Temperature of the Dew Point.

The highest in the month was 50°·5 on the 24th; and the lowest was 28°·5 on the 27th.

The mean ,, was 40°·7, being 5°·7 *higher* than the average of the preceding 31 years.

Elastic Force of Vapour.—The mean for the month was 0in·254, being 0in·048 *greater* than the average of the preceding 31 years.

Weight of Vapour in a Cubic Foot of Air.—The mean for the month was 2grs·9, being 0gr·5 *greater* than the average of the preceding 31 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 31 years.

Weight of a Cubic Foot of Air.—The mean for the month was 544 grains, being 9 grains *less* than the average of the preceding 31 years.

CLOUDS.

The mean amount for the month, a clear sky being represented by 0 and a cloudy sky by 10, was 7·2.

WIND.

The proportions were of N. 1, S. 16, W. 7, E. 4, and Calm 1. The greatest pressure in the month was 18lbs·6 on the square foot on the 29th.

RAIN.

Fell on 14 days in the month, amounting to 0in·77, as measured in the simple cylinder gauge partly sunk below the ground; being 0in·78 *less* than the average fall of the preceding 57 years.

MONTH and DAY, 1872.	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	..	29·619	57·1	49·0	52·1	47·7	74·5	46·7	46·4	44·0	4·4	9·4	0·0	+11·9	WSW	W	6·8	0·0	0·7	429	0·10
2	Last Qr.	29·975	58·4	46·1	51·2	48·2	83·5	36·4	46·8	44·4	3·0	8·9	1·2	+11·0	WSW : SSW	SSW : SW	1·2	0·0	0·1	214	0·00
3	..	30·126	58·0	43·2	50·2	47·7	76·9	41·0	47·4	44·5	2·5	7·6	0·6	+10·0	SW	SW : SSW	1·1	0·0	0·1	248	0·01
4	Greatest Declination S.	30·033	60·3	37·2	47·9	42·6	116·9	30·6	48·1	45·8	5·3	19·0	1·1	+ 7·8	Calm : SSE	S : SSE	2·4	0·0	0·2	201	0·00
5	..	29·897	59·8	42·6	50·3	42·7	108·0	35·6	48·9	46·4	7·6	14·4	4·2	+10·2	S	SSW : SSE	2·7	0·0	0·4	319	0·00
6	Perigee	29·612	60·1	41·3	49·9	40·2	116·1	32·1	49·2	46·2	9·7	15·0	2·2	+ 9·8	SSE	SSE : ESE	2·4	0·0	0·3	232	0·00
7	..	29·255	60·8	37·3	48·7	43·8	107·9	26·2	49·6	46·9	4·9	17·1	1·0	+ 8·5	SSE	S by E : S	2·3	0·0	0·1	183	0·00
8	..	29·371	57·5	45·8	49·8	44·9	74·6	41·0	49·9	47·0	4·9	9·9	2·9	+ 9·5	SSW	SSW	2·3	0·0	0·4	307	0·06
9	New	29·826	55·1	35·8	43·9	39·3	86·0	30·1	50·0	47·5	4·6	13·4	1·4	+ 3·5	SW : W	N : NNE	1·0	0·0	0·1	189	0·00
10	..	30·133	49·0	28·5	38·1	32·3	95·0	20·6	49·9	47·2	5·8	13·0	0·0	− 2·5	NNE : N : W	ENE : Calm	0·2	0·0	0·0	73	0·00
11	In Equator	30·087	55·9	28·3	42·1	33·7	111·5	20·6	49·4	47·0	8·4	14·6	4·1	+ 1·2	Calm	WSW : SSE	0·4	0·0	0·0	117	0·00
12	..	29·904	55·4	33·5	44·2	39·6	96·8	24·9	48·8	46·8	4·6	14·2	1·5	+ 3·0	S : SSE	SSW : SW	0·8	0·0	0·1	190	0·00
13	..	29·720	56·9	38·3	45·1	39·4	109·8	28·2	48·6	46·6	5·7	16·6	0·0	+ 3·7	W	WSW : SW	0·2	0·0	0·0	207	0·02
14	..	29·300	55·2	36·4	45·2	37·5	111·0	30·3	48·4	46·8	7·7	16·8	1·5	+ 3·7	S	S : SE	1·6	0·0	0·2	240	0·00
15	..	29·569	58·2	38·6	47·5	41·6	107·3	28·5	48·4	46·8	5·9	15·4	0·0	+ 5·8	Calm : E	SE : SSW	0·1	0·0	0·0	134	0·00
16	..	29·820	59·3	43·3	49·7	47·4	75·2	37·5	48·8	47·2	2·3	9·5	0·0	+ 7·8	SSW : WSW	WSW : SW	1·4	0·0	0·1	288	0·00
17	First Qr.	29·842	56·8	47·0	51·3	47·0	78·0	38·0	49·0	47·6	4·3	7·8	1·9	+ 9·3	SW : WSW	WSW	1·7	0·0	0·3	308	0·00
18	Greatest Dec. N: Apogee.	29·637	53·4	41·3	45·6	41·5	87·4	34·3	49·4	47·8	4·1	12·8	0·0	+ 3·5	WNW	WNW : W	6·1	0·0	1·1	540	0·26
19	..	29·746	48·5	35·5	41·0	35·2	82·8	30·5	49·4	47·8	5·8	9·8	5·0	− 1·2	NNE : N	N by E : N	7·2	0·0	0·9	433	0·03
20	..	29·721	45·9	31·7	37·6	30·0	82·3	27·5	48·9	46·7	7·6	13·9	2·0	− 4·6	N	N : NE	1·4	0·0	0·1	233	0·00
21	..	29·519	37·2	26·2	30·3	26·4	58·0	20·0	48·2	45·8	3·9	6·2	0·0	−12·0	WSW : SSW	NNE	1·5	0·0	0·1	161	0·28
22	..	29·540	40·5	28·7	33·5	30·0	67·7	19·9	47·4	44·6	3·5	7·1	2·5	− 8·7	N by E	N : NNE	2·1	0·0	0·3	335	0·03
23	..	29·624	38·0	31·9	33·1	31·6	68·2	28·0	46·1	43·2	1·5	3·9	0·0	− 9·1	NE	ENE	1·6	0·0	0·1	246	0·51
24	..	29·487	42·4	30·6	33·8	32·6	89·8	27·8	45·3	42·0	1·2	5·3	0·0	− 8·4	ENE	ENE	0·6	0·0	0·0	171	0·00
25	Full : In Equator.	29·372	45·5	27·2	35·1	30·4	90·3	21·5	45·3	42·0	4·7	11·5	1·4	− 7·2	NE : NNE	N : WSW	1·2	0·0	0·1	173	0·01
26	..	29·397	45·3	26·1	35·2	28·5	106·7	20·2	43·6	39·2	6·7	11·7	1·0	− 7·3	WSW	W : SW	1·1	0·0	0·1	259	0·01
27	..	29·364	55·2	30·3	43·6	39·2	81·7	24·0	43·6	40·0	4·4	14·0	0·0	+ 0·7	SSW : SSE	SSW	30·0	0·0	1·2	448	0·17
28	..	29·218	56·3	44·7	51·0	50·3	67·0	44·1	45·3	41·3	0·7	4·4	0·0	+ 7·8	SW	SW	30·0	0·6	3·3	698	0·34
29	..	29·214	55·3	51·1	52·9	50·5	69·0	45·1	47·4	43·3	2·4	4·8	1·4	+ 9·3	SW	SW	10·5	0·0	0·9	408	0·21
30	..	29·125	60·5	49·5	52·8	49·1	89·0	43·9	47·8	43·5	3·7	8·2	1·8	+ 8·8	SSW	SW	1·6	0·0	0·1	174	0·05
31	..	29·363	60·1	42·5	50·1	43·2	116·6	40·0	49·0	45·0	6·9	15·0	2·9	+ 5·7	WSW	WSW : SW	3·8	0·0	0·5	400	0·04
Means	..	29·626	53·5	37·7	44·6	39·8	89·9	31·5	47·9	45·2	4·8	11·3	1·3	+ 3·0	...	...	..	..	..	Sum 8558	Sum 2·13

BAROMETER READINGS FROM EYE-OBSERVATIONS.

The first maximum in the month was 30^{in}·143 on the 3rd; the first minimum in the month was 29^{in}·230 on the 7th.
The absolute maximum ,, was 30^{in}·150 on the 10th; the second minimum ,, was 29^{in}·267 on the 14th.
The third maximum ,, was 29^{in}·906 on the 17th; the third minimum ,, was 29^{in}·557 on the 18th.
The fourth maximum ,, was 29^{in}·824 on the 19th; the fourth minimum ,, was 29^{in}·501 on the 21st.
The fifth maximum ,, was 29^{in}·658 on the 23rd; the fifth minimum ,, was 29^{in}·362 on the 25th.
The sixth maximum ,, was 29^{in}·475 on the 26th; the absolute minimum ,, was 29^{in}·099 on the 30th.
The seventh maximum ,, was 29^{in}·473 on the 31st.

The range in the month was 1^{in}·051.

The mean for the month was 29^{in}·626, being 0^{in}·124 *lower* than the average of the preceding 31 years.

TEMPERATURE OF THE AIR.

The highest in the month was 60°·8 on the 7th; the lowest was 26°·1 on the 26th.
The range ,, was 34°·7.
The mean ,, of all the highest daily readings was 53°·5, being 3°·8 *higher* than the average of the preceding 31 years.
The mean ,, of all the lowest daily readings was 37°·7, being 2°·6 *higher* than the average of the preceding 31 years.
The mean daily range was 15°·8, being 1°·2 *higher* than the average of the preceding 31 years.
The mean for the month was 44°·6, being 3°·1 *higher* than the average of the preceding 31 years.

MONTH and DAY, 1872.	ELECTRICITY. A.M.	ELECTRICITY. P.M.	CLOUDS AND WEATHER. A.M.	CLOUDS AND WEATHER. P.M.
March 1		w	10, w : 10, r, w	10, w : 10, r : 10
2	w	w	10	10, so.-ha, th.-r : 10
3	w	w	10 : 9	10 : v : 0, d
4	w	w : 0 : s	0, f	0 : 1 : 0
5	w	0	0, d	0 : 0
6	0	w : s	6, ci, ci.-cu, ci.-s, d	1, ci, cu : 1, d
7	w	m : w : 0	6, ci-cu, h.-d	li.-cl : 10, r : v
8	0	0	10, r : v, w, oc.-r	v : 0, h.-d
9	0	0 : s	2, ci, f : 9, f	10 : 3, li.-cl, h.-fr
10	w	w : wN	9, th.-cl, h.-fr, f	6, ci, ci.-s : 0, h.-fr, mt
11	s	0	2, ci, f, h.-fr	1, h : 0, h : 0, h
12	s	m : 0	5 ci, ci.-s, mt, d	6, ci, ci.-s, cu, cu.-s: v : 10, th.-r
13	w	0 : w	v, r : 8, d, sl.-f	5, ci.-cu, cu, h : 0, d
14	0	0	10, ci, ci.-s	10, ci, ci.-cu : 10
15	w	0 : w	0, h, mt, d	7, ci, ci.-cu, ci.-s, cu : 10, th.-cl, lu.-ha
16	m	0. : m : s	10, d, m	10, ci, ci.-cu, cu, cu.-s: 3, ci : 3
17	m	m	10	10 : 10, w, sl.-r
18	w	sP,sN,sp,g.-cur: wN	10, w, h.-r : v, w	v, shs.-r, hl, t : vv, shs.-r, st.-w : 10, st.-w
19	0 : sP,sN,sp,g-cur	w : 0	10, st.-w : 10, st.-w, r, hl	10, sqs : v : 0
20	0	w	8, li.-cl : 9, cu, cu.-s, mt, glm	10, mt : 10, sn : 0
21	0	sP,sN,sp,g.-cur: 0	8, ci.-cu, cu.-s, ci.-s, f, h, h.-fr : 9, gt.-glm, sn	10, gt.-glm, sn : v, sl.-sn : 0
22	0	0 : wN	9, ci, cu.-s	10, sn : 10, hl : 10, sn, h.-fr
23	ssN,ssP,sp,g-cur	ssN,sp,g.-cur : 0	10 : 10, sn	9, sn : 10 : v, sn
24	0	0	10, mt, f	v, ci.-s, ci.-cu, cu : 0, h.-fr, d
25		0 : wN	0, h.-fr : v	10, sn : v, h.-fr, sn : 10, f, h.-fr
26	0	wN : wP,ssP,g.-cur : w	0, h.-fr, h	6, ci, ci.-cu, cu, cu.-s, sl: v : 0, h.-fr
27	0	0	10 : 10, li.-cl, w	9, ci.-cu, cu, w: 10, w, r : 10, h.-g, h.-r
28	0	0	10, r, g	10, g, c.-r : 10, g
29	0	0	10, st.-w : 10, st.-w, r	10, r : vv : vv
30	0	0	10, r : 10	10, th.-r : 8 : 2, ci
31	w	0	10, w : 10, w	10, shs.-r : vv, th.-r

HUMIDITY OF THE AIR.

Temperature of the Dew Point.

The highest in the month was $52^{\circ}\cdot8$ on the 29th; and the lowest was $18^{\circ}\cdot4$ on the 21st.

The mean ,, was $39^{\circ}\cdot8$, being $3^{\circ}\cdot6$ *higher* than the average of the preceding 31 years.

Elastic Force of Vapour.—The mean for the month was $0^{in}\cdot245$, being $0^{in}\cdot030$ *greater* than the average of the preceding 31 years.

Weight of Vapour in a Cubic Foot of Air.—The mean for the month was $2^{grs}\cdot8$, being $0^{gr}\cdot3$ *greater* than the average of the preceding 31 years.

Degree of Humidity.—The mean for the month was 84 (that of Saturation being represented by 100), being 2 *greater* than the average of the preceding 31 years.

Weight of a Cubic Foot of Air.—The mean for the month was 544 grains, being 6 grains *less* than the average of the preceding 31 years.

CLOUDS.

The mean amount for the month, a clear sky being represented by 0 and a cloudy sky by 10, was $6\cdot5$.

WIND.

The proportions were of N. 6, S. 11, W. 9, E. 3, and Calm 2. The greatest pressure in the month was $30^{lbs}\cdot0$ on the square foot on the 27th and 28th.

RAIN.

Fell on 16 days in the month, amounting to $2^{in}\cdot13$, as measured in the simple cylinder gauge partly sunk below the ground; being $0^{in}\cdot54$ *greater* than the average all of the preceding 57 years.

MONTH and DAY, 1872.	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	Greatest Dec. S. LastQr: Perigee.	29.299	59.1	41.2	50.2	46.0	95.1	35.8	50.1	47.0	4.2	8.7	1.2	+ 5.6	SSE : SW	SSW	2.3	0.0	0.2	245	0.04
2	..	29.258	52.8	38.3	45.0	44.6	74.0	38.2	51.2	48.4	0.4	4.8	0.0	+ 0.2	SSE	W by S : NNW	3.7	0.0	0.3	269	0.28
3	..	29.523	49.8	37.5	41.4	36.0	85.0	32.0	51.2	48.0	5.4	11.8	3.2	− 3.6	NNW : N	NNE	2.4	0.0	0.4	329	0.03
4	..	29.754	49.2	32.3	40.4	35.5	76.3	25.0	49.9	46.7	4.9	12.4	1.1	− 4.8	W : NW	NW : NE	3.4	0.0	0.4	348	0.07
5	..	30.185	54.8	35.2	43.3	38.7	111.5	28.5	50.2	47.0	4.6	14.6	1.8	− 2.1	NE : NNE	NE : E	0.7	0.0	0.1	212	0.00
6	..	30.288	47.8	38.8	42.2	35.4	81.4	36.7	49.1	46.0	6.8	9.7	4.4	− 3.2	NNE	NNE : ESE	0.8	0.0	0.1	230	0.00
7	In Equator	30.238	60.2	32.2	45.9	41.7	112.6	24.6	48.6	46.0	4.2	13.7	2.3	+ 0.5	Calm : SW	WSW : SW	1.0	0.0	0.1	182	0.00
8	New	29.901	60.3	47.4	52.0	48.5	75.3	41.0	48.4	45.6	3.5	7.8	0.4	+ 6.6	WSW : W	W : NNW	19.8	0.1	1.2	500	0.04
9	..	30.094	58.4	40.6	48.4	38.3	117.0	31.1	49.1	46.3	10.1	18.2	6.0	+ 3.1	NNW : N	N : E	4.8	0.0	0.4	291	0.01
10	..	30.002	65.6	38.8	51.1	42.9	128.5	30.7	49.2	46.5	8.2	18.2	3.9	+ 5.9	SW : WSW	WSW : SSW	1.1	0.0	0.1	229	0.00
11	..	29.870	66.9	41.7	53.8	42.0	128.0	33.6	49.6	46.8	11.8	19.1	3.1	+ 8.7	SW	SSW : SSE	1.3	0.0	0.2	228	0.00
12	..	29.648	69.9	47.5	57.5	46.3	133.7	40.3	52.0	49.0	11.2	20.9	5.4	+12.5	SSE : S	SW	2.4	0.0	0.3	297	0.00
13	..	30.051	63.0	42.2	51.4	40.4	124.2	30.5	53.6	50.2	11.0	21.9	4.8	+ 6.5	N : NNE	N by E : Calm	2.1	0.0	0.2	189	0.00
14	Greatest Declination N.	30.060	63.5	36.8	48.0	41.1	91.0	25.3	54.4	50.7	6.9	17.3	1.4	+ 3.0	Calm	Variable	0.3	0.0	0.0	117	0.00
15	Apogee: First Quarter.	29.919	68.5	40.0	54.5	40.9	132.5	29.9	54.9	51.6	13.6	24.7	2.1	+ 9.2	W by S	NNW : N	1.7	0.0	0.2	265	0.00
16	..	29.841	58.9	44.1	49.7	38.0	108.0	33.9	55.6	52.0	11.7	18.4	6.6	+ 4.2	N by W : N	NNW	3.8	0.0	0.6	387	0.00
17	..	29.599	54.8	42.3	45.8	34.2	104.0	33.9	55.6	..	11.6	18.8	6.8	+ 0.1	NNW	NNW : N	7.2	0.1	0.9	417	0.00
18	..	29.637	55.3	38.6	43.2	36.4	109.3	28.0	54.9	51.0	6.8	16.2	3.9	− 2.8	N	NNE	12.1	0.1	0.9	409	0.04
19	..	29.701	53.5	35.0	42.0	36.5	114.5	31.9	54.6	48.8	5.5	15.0	1.4	− 4.4	NNE	N by E : ENE	2.3	0.0	0.3	264	0.04
20	..	29.436	52.7	29.6	40.5	32.4	124.6	21.3	53.6	50.6	8.1	17.8	0.0	− 6.2	NE : E	E : NE	3.0	0.0	0.3	266	0.00
21	In Equator	28.966	58.0	37.1	43.6	40.2	78.0	33.2	53.1	50.8	3.4	10.8	0.0	− 3.4	NE	ESE : S	4.9	0.0	0.6	370	0.32
22	..	29.047	57.0	40.3	47.2	40.8	120.3	33.7	51.8	49.8	6.4	12.7	2.5	0.0	SSE	S : SSE	2.4	0.0	0.2	227	0.01
23	Full	29.187	57.5	41.9	48.6	40.4	127.8	34.8	51.4	49.4	8.2	16.2	1.8	+ 1.2	S	S by W	9.5	0.0	0.8	335	0.00
24	..	29.421	59.0	44.1	49.4	41.6	128.2	36.2	51.6	49.5	7.8	15.0	3.9	+ 1.8	SW	SSW	7.0	0.1	1.0	386	0.00
25	..	29.615	63.0	43.1	51.6	43.1	130.1	35.2	51.8	49.6	8.5	17.3	1.3	+ 3.9	SSW	SSW : SSE	3.2	0.0	0.5	331	0.00
26	..	29.700	62.4	44.0	53.0	45.8	117.0	34.2	52.1	50.0	7.2	16.3	2.9	+ 5.1	SSW	SSW : SE	3.0	0.0	0.5	278	0.01
27	Perigee	29.563	69.7	50.0	57.6	49.5	131.4	45.2	52.6	51.2	8.1	16.9	3.2	+ 9.5	E	SSE : SSW	2.1	0.0	0.1	193	0.04
28	Greatest Declination S.	29.778	59.0	43.4	50.1	45.1	77.0	33.8	53.8	52.3	5.0	9.9	1.8	+ 1.7	Calm : SW	NNW	3.1	0.0	0.2	220	0.05
29	..	30.216	63.6	37.8	50.0	42.6	111.7	29.0	54.0	52.3	7.4	17.1	1.9	+ 1.2	WSW : W	Variable	0.2	0.0	0.0	98	0.00
30	Last Qr.	30.246	66.2	40.0	52.7	43.9	122.0	31.7	54.2	52.3	8.8	18.4	0.0	+ 3.4	Calm	NE : ESE	0.5	0.0	0.0	90	0.00
Means	..	29.735	59.3	40.1	48.3	41.0	109.0	32.6	52.1	49.2	7.4	15.4	2.6	+ 2.1	...	...	..	..	..	Sum 8202	Sum 0.98

BAROMETER READINGS FROM EYE-OBSERVATIONS.

The absolute maximum in the month was 30in·306 on the 7th; the first minimum in the month was 29in·220 on the 2nd.
The second maximum ,, was 30in·119 on the 9th; the second minimum ,, was 29in·861 on the 8th.
The third maximum ,, was 30in·105 on the 14th; the third minimum ,, was 29in·616 on the 12th.
The fourth maximum ,, was 29in·720 on the 19th; the fourth minimum ,, was 29in·580 on the 17th.
The fifth maximum ,, was 29in·716 on the 26th; the absolute minimum ,, was 28in·949 on the 21st.
The sixth maximum ,, was 30in·273 on the 30th; the sixth minimum ,, was 29in·553 on the 27th.
The range in the month was 1in·357.
The mean for the month was 29in·735, being 0in·034 *lower* than the average of the preceding 31 years.

TEMPERATURE OF THE AIR.

The highest in the month was 69°·9 on the 12th; the lowest was 29°·6 on the 20th.
The range ,, was 40°·3.
The mean ,, of all the highest daily readings was 59°·3, being 1°·5 *higher* than the average of the preceding 31 years.
The mean ,, of all the lowest daily readings was 40°·1, being 0°·9 *higher* than the average of the preceding 31 years.
The mean daily range was 19°·2, being 0°·7 *greater* than the average of the preceding 31 years.
The mean for the month was 48°·3, being 1°·2 *higher* than the average of the preceding 31 years.

MONTH and DAY, 1872.	ELECTRICITY.		CLOUDS AND WEATHER.	
	A.M.	P.M.	A.M.	P.M.
April 1	o	o	vv, ci, ci.-cu, cu, cu.-s, r	v, ci.-cu, cu : 10, oc.-r
2	o : sN, sp	sP : o	10, r	10, h.-r : 10, c.-r
3	o	o	10, r, w : 10, r, w	10, oc.-r : 10, oc.-r : o
4	o	o	9, r	8, ci, ci.-cu, cu, mt, r : 10, r
5	o	w : m	v, ci.-cu, cu, cu.-s	10 : 10
6	o	w : m	10	10 : v : 1
7	w	w : s, sp	o, h, d	o, h : 10, ci.-s : o, h
8	o	w : m	10, th.-r, w	v,ci,ci.-cu,cu,w: vv, r, w : o, w
9	s	o : w	o, w : 7, ci.-cu, cu, cu.-s, h, mt	v, ci, ci.-cu, cu, cu.-s : o, mt
10	w	w : s	o, h, mt	1, ci : 2, ci.-s, a
11	m	w : s, sp	5, ci, ci.-s	5, ci, ci.-s : 2, ci, ci.-s, s, a
12	w	w : m	o : ci, ci.-s	o : ci : o
13	m	w : o	o	o : o, d
14	w	m	o, h : o, h, glm	o, h, mt : o, h.-d
15	w	w : m	o, d : o	o : 2, li.-cl, a
16	w	o : w	6, ci.-cu, cu, d	7,ci,ci.-cu,cu,h: 4,ci.-cu,cu,h,w: o, w
17	o	o : sN, sp	3, ci, ci.-cu, cu, d, h, w	7,ci,ci.-cu,cu,mt,r: 8, th.-r, w : v, lu.-ha, w
18	w : ssN,ssP,sp,g.-cur	ssN,ssP,sp,g.-cur : w	10, r, st.-w : 10, r, hl, st.-w	vv, w : 10, r, hl, w
19	o	w : sN	vv : vv	8,ci,ci.-cu,cu,cu.-s: 10, r, hl : o, d, ms
20	w	w	2, ci.-cu, cu, h.-fr : 3, ci.-cu, cu, s	2, cu : vv : 10, r, w
21	o	o : w	10, r, w : 10, c.-r, w : 10, c.-r, w	v, th.-r : 10, r : v
22	sP, sN, sp, g.-cur	sN, sp : w	v, cu, cu.-s	8, cu, oc.-r : v, cu, cu.-s : v, oc.-r
23	o	w	5, ci.-cu, cu, w	v,ci,ci.-cu,cu,cu.-s,w: vv, cu, cu.-s : 3, ci, ci.-cu, cu.-s
24	o : w	ssN,ssP,sp,g.-cur : w	7, ci, ci-cu, cu, w	6, ci,ci.-cu,cu,cu.-s,r,w : 1, ci, ci.-s
25	w	w	v, ci.-s, cu, cu.-s, r	v, ci.-s, ci.-cu, cu.-s, w : vv, th.-cl, w
26	w	w	8, ci.-s, ci.-cu, cu, d, w	9, ci.-s, cu, so.-ha : 10, ci.-s, cu.-s, r, l
27	w	o	10 : ci, ci.-s	10 : 10, r
28	w	wN : w	10, r : 10, r	10, r : v : o, d
29	wN	wN : w	o : 10, h, mt	6, h, mt : 10, mt : v
30	w	o : w	o, d, mt : o, h, d	2, ci, cu, cu.-s: o : o, mt

HUMIDITY OF THE AIR.

Temperature of the Dew Point.

The highest in the month was 54°·9 on the 27th; and the lowest was 29°·6 on the 20th.

The mean ,, was 41°·0, being 0°·3 *higher* than the average of the preceding 31 years.

Elastic Force of Vapour.—The mean for the month was 0in·257, being 0in·003 *greater* than the average of the preceding 31 years.

Weight of Vapour in a Cubic Foot of Air.—The mean for the month was 2grs·9, being *the same as* the average of the preceding 31 years.

Degree of Humidity.—The mean for the month was 76 (that of Saturation being represented by 100), being 3 *less* than the average of the preceding 31 years.

Weight of a Cubic Foot of Air.—The mean for the month was 542 grains, being 1 grain *less* than the average of the preceding 31 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. 7, W. 7, E. 5, and Calm 2. The greatest pressure in the month was 19lbs·8 on the square foot on the 8th.

RAIN.

Fell on 13 days in the month, amounting to 0in·98, as measured in the simple cylinder gauge partly sunk below the ground; being 0in·74 *less* than the average fall of the preceding 57 years.

MONTH and DAY, 1872.	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.
May 1	..	30.159	68.5	37.3	53.2	40.2	141.0	28.4	54.4	52.5	13.0	23.4	0.7	+ 3.4	Calm : NE	E : SE	0.4	0.0	0.0	119	0.00
2	..	30.027	70.3	37.6	54.8	43.8	102.1	27.1	55.4	53.0	11.0	22.3	2.2	+ 4.5	SW : W	N by W : N	0.3	0.0	0.0	108	0.00
3	..	29.855	66.6	46.5	54.8	46.5	125.5	36.6	56.4	54.0	8.3	16.3	1.9	+ 4.0	N : SW	SW	4.1	0.0	0.7	340	0.00
4	In Equator	29.395	59.8	47.7	52.8	42.5	130.6	43.0	57.2	54.8	10.3	13.7	4.6	+ 1.6	WSW	WSW	21.0	0.1	2.2	593	0.09
5	..	29.426	66.1	42.5	51.9	41.3	132.2	41.0	57.4	54.4	10.6	23.9	3.6	+ 0.4	WSW : W	WSW	2.8	0.0	0.4	363	0.01
6	..	29.368	61.6	40.7	47.5	42.8	116.6	30.3	57.6	54.8	4.7	16.7	0.8	− 4.2	WSW	WSW	5.0	0.0	0.5	342	0.20
7	New	29.243	58.8	44.4	48.6	42.5	126.0	42.9	57.0	54.5	6.1	12.0	1.7	− 3.1	WSW	WSW	9.7	0.1	1.3	532	0.17
8	..	29.304	55.7	43.6	45.8	43.1	115.2	37.0	56.4	54.6	2.7	5.1	0.8	− 5.9	WSW	WSW : SW	5.8	0.0	0.6	381	0.29
9	..	29.642	56.4	43.0	47.3	43.4	102.8	39.0	56.2	54.4	3.9	10.9	0.0	− 4.0	WSW : NNW	Variable	1.3	0.0	0.1	182	0.12
10	..	30.001	55.3	41.0	47.2	39.0	100.6	39.4	55.9	53.6	8.2	13.6	2.9	− 4.0	NNE : NE	NNE	2.7	0.0	0.5	372	0.00
11	Greatest Declination N.	29.894	54.3	34.6	42.4	36.8	118.8	25.8	54.6	52.3	5.6	15.2	1.8	− 8.8	N by E	N by E : N	4.7	0.0	0.3	307	0.06
12	..	29.783	57.9	34.8	45.1	38.3	132.3	27.9	54.2	52.2	6.8	17.6	2.1	− 6.1	Variable	E : NE	2.5	0.0	0.1	190	0.00
13	Apogee	29.523	50.7	42.0	46.1	46.1	60.0	41.6	54.3	52.4	0.0	1.6	0.0	− 5.3	NNE	NNE : E	3.9	0.0	0.9	410	0.90
14	..	29.682	56.8	46.3	49.3	42.3	118.3	42.8	53.6	51.8	7.0	12.4	1.7	− 2.4	ESE	SE : E	2.3	0.0	0.3	223	0.00
15	First Qr.	29.644	59.8	44.1	49.6	44.4	112.0	38.2	53.9	52.0	5.2	10.8	1.8	− 2.4	E : NNE	N : WNW : SW	4.1	0.0	0.1	189	0.09
16	..	29.595	67.8	42.0	54.1	48.1	139.0	35.0	53.6	52.0	6.0	18.0	0.0	+ 1.8	SSW	SW : ENE	1.6	0.0	0.2	227	0.00
17	..	29.475	50.9	44.2	46.7	45.0	64.6	44.0	54.3	52.4	1.7	3.6	0.0	− 5.9	ENE	NE	2.5	0.0	0.2	280	0.29
18	..	29.423	46.5	40.2	41.4	38.5	68.3	39.3	54.1	52.3	2.9	5.2	0.9	−11.5	NE	N by E	3.8	0.0	0.7	397	0.67
19	In Equator	29.630	54.8	35.1	44.1	37.0	99.0	30.9	53.6	51.6	7.1	18.0	2.6	− 9.1	SW	SSE : SW	0.8	0.0	0.1	140	0.00
20	..	29.664	61.2	32.6	47.8	38.3	125.3	28.2	53.0	51.0	9.5	20.0	1.9	− 5.7	S	SSW : S	1.3	0.0	0.1	164	0.01
21	..	29.661	65.7	38.7	51.7	42.2	140.0	32.1	52.8	50.8	9.5	20.7	1.4	− 2.1	SSW : SW	WSW	1.7	0.0	0.2	266	0.00
22	Full	29.704	66.0	39.7	50.8	41.4	138.8	33.1	53.6	50.6	9.4	23.0	1.6	− 3.3	WSW	WSW : SW	2.2	0.0	0.2	239	0.00
23	..	29.749	64.6	39.3	49.7	40.9	131.1	32.3	54.1	52.0	8.8	20.0	1.6	− 4.6	SSW : WSW	SW	0.8	0.0	0.1	200	0.00
24	Perigee	29.864	63.3	41.7	51.7	42.8	120.2	32.6	55.0	53.0	8.9	20.0	4.0	− 2.9	WSW : NW	NNE : S	0.5	0.0	0.0	130	0.04
25	Greatest Declination S.	30.063	66.6	40.2	52.8	43.9	117.5	33.8	55.4	53.6	8.9	23.0	0.5	− 2.1	W : N	N by W	0.7	0.0	0.1	148	0.00
26	..	30.187	65.5	46.0	54.7	51.4	89.0	39.8	55.3	53.5	3.3	13.1	0.8	− 0.5	NNW:WSW:NW	NW	0.2	0.0	0.0	105	0.00
27	..	30.165	72.1	54.0	60.1	51.2	124.2	47.4	57.1	55.2	8.9	17.2	2.8	+ 4.7	WSW : N by E	NW : N	0.5	0.0	0.0	123	0.00
28	..	30.080	73.2	52.2	62.1	53.7	128.3	45.3	58.3	55.6	8.4	15.6	2.0	+ 6.4	WSW : W	WNW : W by S	1.5	0.0	0.1	220	0.00
29	Last Qr.	29.924	71.9	48.9	59.9	52.1	144.7	42.0	59.4	56.5	7.8	18.9	3.8	+ 3.9	WSW	WSW : W	1.4	0.0	0.2	231	0.00
30	..	29.858	72.2	49.0	59.2	47.3	141.5	42.5	60.4	57.4	11.9	22.4	2.6	+ 2.9	WSW : W	W : WSW	1.3	0.0	0.1	248	0.01
31	In Equator	29.808	64.9	46.5	54.2	45.8	115.7	40.3	60.4	57.4	8.4	16.0	1.3	− 1.8	WSW	WSW : W	2.4	0.0	0.1	185	0.14
Means	..	29.735	62.1	42.5	50.9	43.6	116.8	36.8	55.6	53.4	7.3	15.8	1.8	− 2.0	...	...	..	..	..	Sum 7954	Sum 3.09

BAROMETER READINGS FROM EYE-OBSERVATIONS.

The first maximum in the month was 29in·473 on the 5th; the second maximum was 30in·069 on the 10th; the third maximum was 29in·698 on the 14th; the fourth maximum was 29in·700 on the 15th; the absolute maximum was 30in·197 on the 26th.

The first minimum in the month was 29in·349 on the 4th; the absolute minimum was 29in·216 on the 7th; the third minimum was 29in·496 on the 13th; the fourth minimum was 29in·615 on the 15th; the fifth minimum was 29in·393 on the 18th; the sixth minimum was 29in·786 on the 31st.

The range in the month was 0in·981.

The mean for the month was 29in·735, being 0in·046 *lower* than the average of the preceding 31 years.

TEMPERATURE OF THE AIR.

The highest in the month was 73°·2 on the 28th; the lowest was 32°·6 on the 20th.

The range ,, was 40°·6.

The mean ,, of all the highest daily readings was 62°·1, being 2°·5 *lower* than the average of the preceding 31 years.

The mean ,, of all the lowest daily readings was 42°·5, being 1°·6 *lower* than the average of the preceding 31 years.

The mean daily range was 19°·6, being 0°·8 *less* than the average of the preceding 31 years.

The mean for the month was 50°·9, being 2°·1 *lower* than the average of the preceding 31 years.

MONTH and DAY, 1872.	ELECTRICITY.		CLOUDS AND WEATHER.	
	A.M.	P.M.	A.M.	P.M.
May 1	w	w	0, mt	0 : 0 : 0, d
2	w	0	7, th.-cl, h, mt	v, n, cu, h : 4 : 9, d
3	w	0	9, ci, ci.-cu, d	10, r, w : 10, ci.-s, ci.-cu, cu.-s : 10, th.-r, st.-w
4	0	sN, sP, sp, g-cur : 0	st.-w : 3, ci, ci.-cu, cu, st.-w	v, ci.-cu, cu, cu.-s, r, st.-w : v, st.-w
5	wN	wN : 0	w : 8, ci.-cu, cu	6, ci.-cu, cu, cu.-s : v, cu.-s, s, oc.-r
6	0	ssN, ssP, sp, g.-cur : 0	9, ci, ci.-cu, cu, th.-r	10, cu, cu.-s, r, sqs : 8, th.-cl, r, sqs
7	0 : sP, sN, g.-cur	sP, g.-cur, sN, sp : 0	10, w : 10, t.-s, l, r, hl, st.-w	vv, h.-r, st.-w : vv, ci, ci.-cu, w : vv, shs.-r, w
8	ssP, ssN, sp, g.-cur	sP, sN, sp, g.-cur : 0	w : 10, w, h.-r	vv, r, hl, w : v, w, r
9	0	ssP, ssN, sp, g.-cur : 0	10	7, ci, ci.-cu, cu, h, t.-s, l, r : 10, oc.-r, t
10	0	w : 0	8, ci, ci.-cu, cu, r	9, ci.-cu, cu, cu.-s, r, w : 9, d, w
11	0	ssP, sp, g.-cur : wN	10, r, fr.-r, sl	v, ci, ci.-cu, ci.-s, shs.-r, hl, w : v, shs.-r
12			3, cu, ci.-cu, h, mt	6, ci.-cu, cu, cu.-s : 10, r, w
13	0	0	10, r, w : 10, r, w	10, c.-r : 10, c.-r
14	0	w : 0	10, r	9, cu, cu.-s : 10, r
15	0	ss, sp, g.-cur : w	10, th.-r	5, ci, ci.-cu, cu.-s, r : 3, f, h, d
16	0	0	6, ci, ci.-s	v : 9, ci.-cu, ci.-s, cu.-s
17	wN	0	10 : 10, h.-r	10, c.-r : 10, c.-r
18	wN	0 : wN	10, r	10, oc.-r : 10, c.-r, w
19	0	0	7, ci, ci.-cu, h, w	v, h, f : v : v, ci, ci.-cu, mt
20	0	wN : 0	0, h.-fr : ci	v : 10
21	0	0	0 : 5, ci, ci.-cu	4, ci.-cu, cu : v, r
22	0	0	0 : ci.-cu, h, d	v, ci, ci.-cu, cu : ci, h, mt
23	0	0	6, ci.-cu, cu, d	v, ci.-cu, cu, cu.-s, n, r : 4, ci.-cu, cu.-s
24	0	0 : w	10, h, mt, glm	8, ci.-cu, cu, cu.-s : 10, mt, glm, r
25	0	0	0, h, mt	7, ci.-cu, cu.-s, cu : 7, h, mt
26	0	0	10, h, f, glm	10, glm, f : 10
27	0	0	8, ci-cu, h	7, cu, cu.-s, h, mt : 3, ci.-cu, ci.-s, s, h, mt
28	0	0	v, ci, ci.-cu, h, d	v, ci, ci.-cu, h, mt : 6, ci, ci.-cu, h
29	0	0	3, ci, ci.-cu, ci.-s, cu, d	v, ci.-cu, cu, cu.-s : 10
30	0	w : 0	3, ci.-cu, mt	8, ci, ci.-cu : 5, ci.-cu, ci.-s, cu.-s, h
31	w	0	9	v, shs.-r : v, shs.-r

HUMIDITY OF THE AIR.

Temperature of the Dew Point.

The highest in the month was 57°·1 on the 28th; and the lowest was 30°·8 on the 20th.

The mean ,, was 43°·6, being 1°·9 *lower* than the average of the preceding 31 years.

Elastic Force of Vapour.—The mean for the month was 0in·284, being 0in·019 *less* than the average of the preceding 31 years.

Weight of Vapour in a Cubic Foot of Air.—The mean for the month was 3grs·3, being 0gr·1 *less* than the average of the preceding 31 years.

Degree of Humidity.—The mean for the month was 76 (that of Saturation being represented by 100), being *the same as* the average of the preceding 31 years.

Weight of a Cubic Foot of Air.—The mean for the month was 539 grains, being 2 grains *less* than the average of the preceding 31 years.

CLOUDS.

The mean amount for the month, a clear sky being represented by 0 and a cloudy sky by 10, was 6·9.

WIND.

The proportions were of N. 9, S. 6, W. 11, E. 4, and Calm 1. The greatest pressure in the month was 21lbs·0 on the square foot on the 4th.

RAIN.

Fell on 15 days in the month, amounting to 3in·09, as measured in the simple cylinder gauge partly sunk below the ground; being 0in·97 *greater* than the average fall of the preceding 57 years.

MONTH and DAY, 1872.	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.
June 1	..	29·950	65·0	42·3	53·9	43·0	122·0	34·6	60·6	57·5	10·9	19·4	2·2	− 3·1	NNW : N	NW : SW	0·7	0·0	0·1	199	0·00
2	..	29·645	61·6	46·9	50·7	49·1	85·6	28·5	61·2	56·3	1·6	7·8	0·0	− 6·6	SSW	SSW : W	3·4	0·0	0·6	278	0·26
3	..	29·676	68·1	48·2	54·2	46·3	126·4	43·0	61·0	56·2	7·9	17·5	1·1	− 3·2	W : NW	NW : WSW	2·9	0·0	0·1	216	0·04
4	..	29·853	64·5	43·3	51·5	43·5	122·1	36·4	61·0	58·0	8·0	16·9	1·1	− 5·8	WSW : NW	N : NNE	1·3	0·0	0·1	185	0·04
5	..	29·918	72·1	41·9	57·3	49·3	136·0	35·4	60·4	58·3	8·0	20·7	0·9	+ 0·1	WSW	WSW : SW	1·4	0·0	0·1	211	0·00
6	New	29·690	64·0	46·2	53·1	50·4	112·0	40·0	61·0	58·8	2·7	8·6	2·1	− 3·9	SW : SSW	SSW : WSW	4·7	0·0	0·3	246	0·08
7	..	29·527	60·0	40·6	50·2	44·2	124·7	33·6	61·1	58·7	6·0	10·8	1·4	− 6·8	W : WSW	SW	5·9	0·0	0·6	349	0·18
8	Greatest Declination N.	29·529	59·3	45·4	51·3	48·1	93·7	41·2	60·6	58·5	3·2	8·2	0·9	− 6·0	SW	SSW	8·4	0·0	1·2	433	0·07
9	Apogee	29·282	61·6	50·5	53·9	47·9	109·6	49·9	60·1	58·3	6·0	11·0	2·4	− 3·8	SSW	SSW : SW	15·1	0·2	1·8	495	0·05
10	..	29·439	65·3	48·2	53·8	44·7	131·3	42·8	59·8	58·0	9·1	15·0	4·4	− 4·2	SW : WSW	WSW : WNW	6·8	0·1	1·0	429	0·02
11	..	29·423	61·8	47·7	52·7	52·5	77·3	43·2	59·2	57·3	0·2	2·7	0·0	− 5·6	SW	SSW:WSW:NW	3·2	0·0	0·3	301	0·26
12	..	29·680	65·0	47·7	55·9	52·1	99·1	42·0	58·9	57·6	3·8	11·2	1·1	− 2·7	WNW : W : W by S	W by S : W	2·4	0·0	0·2	292	0·00
13	..	29·760	72·8	55·7	61·3	52·7	130·3	54·2	58·9	57·5	8·6	18·4	3·2	+ 2·5	W	NW : N : Calm	0·7	0·0	0·1	190	0·00
14	First Qr.	29·891	76·2	50·1	62·8	52·9	142·9	44·1	59·4	58·0	9·9	19·2	0·6	+ 3·8	WSW : S	SW : SSW	0·7	0·0	0·0	143	0·00
15	In Equator	30·002	81·3	47·9	65·1	57·2	146·5	41·4	60·4	59·0	7·9	19·0	0·4	+ 6·1	SSW : SSE	SW	1·7	0·0	0·1	180	0·00
16	..	30·099	85·6	56·1	69·5	58·3	145·8	50·1	62·4	59·8	11·2	23·5	1·5	+10·5	WSW	WSW : ESE	0·4	0·0	0·0	131	0·00
17	..	29·975	86·0	57·1	71·8	57·8	150·0	51·8	64·3	61·0	14·0	23·3	0·2	+12·8	Calm : SSW	S : SSE	0·6	0·0	0·0	99	0·00
18	..	29·806	84·2	57·9	70·4	58·5	139·7	52·2	66·2	62·3	11·9	21·1	1·5	+11·3	SE : S	ESE	1·3	0·0	0·1	170	0·00
19	..	29·665	79·2	57·2	67·8	61·3	142·7	51·3	67·4	63·8	6·5	13·3	1·9	+ 8·6	E : ESE	WSW : W	1·2	0·0	0·1	192	0·12
20	..	29·817	74·2	57·6	64·4	55·6	131·0	54·8	67·2	64·6	8·8	17·2	1·1	+ 4·9	WSW : NW	NNW : NNE	1·3	0·0	0·1	200	0·03
21	Full	29·801	74·4	52·7	62·4	54·1	140·4	46·1	67·2	64·6	8·3	19·3	0·6	+ 2·5	Calm : SW	SW	3·3	0·0	0·6	258	0·04
22	Greatest Dec. S. : Perigee.	29·882	71·3	51·7	59·5	46·5	132·6	46·5	66·2	63·6	13·0	22·5	2·2	− 0·8	W : WNW	W by N : WSW	5·6	0·0	0·7	392	0·00
23	..	29·906	76·1	46·8	60·9	47·8	149·0	38·7	68·6	64·8	13·1	20·2	1·1	+ 0·2	WSW	SSW : SSE	0·7	0·0	0·0	148	0·00
24	..	29·610	78·7	51·8	65·3	54·3	144·0	42·1	68·1	65·0	11·0	20·1	4·3	+ 4·1	ESE : SE	SSE : SSW	3·1	0·0	0·1	200	0·00
25	..	29·464	69·8	58·3	61·4	55·2	119·8	53·0	68·3	65·6	6·2	12·4	2·7	− 0·2	WSW : SW	SW : W by S	4·5	0·0	0·6	351	0·03
26	..	29·706	69·9	51·8	56·9	50·7	143·0	45·2	68·3	65·3	6·2	14·9	1·4	− 4·8	W	WSW	10·0	0·1	0·5	370	0·39
27	Last Qr.	29·821	70·5	49·7	58·0	51·2	127·3	43·4	67·2	63·8	6·8	13·1	1·5	− 3·6	WSW	WSW	1·9	0·0	0·5	362	0·03
28	In Equator	29·651	73·7	55·2	61·5	52·4	147·0	54·1	65·2	62·0	9·1	17·9	2·4	0·0	SW : WSW	WSW : W	7·8	0·1	1·4	521	0·00
29	..	29·801	71·3	47·0	57·8	46·0	138·4	38·7	64·6	61·6	11·8	22·0	1·7	− 3·6	WSW : WNW	NNW : NE	0·9	0·0	0·1	214	0·00
30	..	29·766	74·4	44·8	61·3	49·3	150·2	37·2	65·8	62·4	12·0	19·5	3·8	+ 0·2	Calm : S	SW : SSW	0·8	0·0	0·1	153	0·00
Means	..	29·735	71·3	50·0	59·2	51·1	128·7	43·9	63·4	60·6	8·1	16·2	1·7	+ 0·1	...	...	..	..	..	Sum 7908	Sum 1·64

BAROMETER READINGS FROM EYE-OBSERVATIONS.

The first maximum in the month was $29^{in}\cdot962$ on the 1st; the first minimum in the month was $29^{in}\cdot606$ on the 2nd.
The second maximum ,, was $29^{in}\cdot971$ on the 5th; the second minimum ,, was $29^{in}\cdot492$ on the 7th.
The third maximum ,, was $29^{in}\cdot582$ on the 8th; the absolute minimum ,, was $29^{in}\cdot279$ on the 9th.
The fourth maximum ,, was $29^{in}\cdot534$ on the 10th; the fourth minimum ,, was $29^{in}\cdot352$ on the 11th.
The absolute maximum ,, was $30^{in}\cdot115$ on the 16th; the fifth minimum ,, was $29^{in}\cdot638$ on the 19th.
The sixth maximum ,, was $29^{in}\cdot868$ on the 20th; the sixth minimum ,, was $29^{in}\cdot737$ on the 21st.
The seventh maximum ,, was $29^{in}\cdot957$ on the 23rd; the seventh minimum ,, was $29^{in}\cdot439$ on the 25th.
The eighth maximum ,, was $29^{in}\cdot835$ on the 27th; the eighth minimum ,, was $29^{in}\cdot638$ on the 28th.
The ninth maximum ,, was $29^{in}\cdot844$ on the 29th.
The range in the month was $0^{in}\cdot836$.
The mean for the month was $29^{in}\cdot735$, being $0^{in}\cdot079$ *lower* than the average of the preceding 31 years.

TEMPERATURE OF THE AIR.

The highest in the month was 86°·0 on the 17th; the lowest was 40°·6 on the 7th.
The range ,, was 45°·4.
The mean ,, of all the highest daily readings was 71°·3, being 0°·2 *higher* than the average of the preceding 31 years.
The mean ,, of all the lowest daily readings was 50°·0, being *the same as* the average of the preceding 31 years.
The mean daily range was 21°·3, being 0°·2 *greater* than the average of the preceding 31 years.
The mean for the month was 59°·2, being 0°·2 *higher* than the average of the preceding 31 years.

MONTH and DAY, 1872.	ELECTRICITY.		CLOUDS AND WEATHER.	
	A.M.	P.M.	A.M.	P.M.
June 1	o	wN : o	4, cu, cu.-s	5, ci, ci.-s, cu.-s, h : v
2	w	o	10, r : 10, r, w	10, r : v, shs.-r
3	o	ssN, sp, g.-cur : m	v, ci.-cu, h	v, ci.-cu, r : 9, r
4	o	o	10, r : 10	7, ci, ci.-s, ci.-cu, cu.-s, r : v : 1, s
5	o	o	o, d : 2, ci.-cu, h	3, ci.-cu, h : 10
6	w : o	w : o	9, ci.-cu, cu.-s : 10, th.-r	10, th.-r : 10, th.-r
7	o	o : w	9, ci.-cu, cu, cu.-s, w, r	10, w, r : v, r : v, r
8	o	o	10, h.-r	10, fr.-r, w : 10, fr.-shs.-r, w
9	o	o	10, w, r : 9, w, ci.-cu, cu.-s, cu	10, r : vv, r, w
10	o	ssP,ssN,sp,g.-cur : o	10, th.-r, w	7, ci, ci.-cu, r : vv
11	o	o	10, th.-r	10, c.-r : 10, r
12	o	w : o	10, r	10, ci.-cu, ci.-s : 10
13	o	o	5, ci, ci.-cu, d, h	6, ci, ci.-cu, cu : v, ci, ci.-cu, h : v, h, d
14	o	o	2, ci, d, h	4, ci, ci.-cu, cu : 8, ci : o, d
15	o	w	o, d : o, d : v, ci, cu	9, cu, cu.-s : v, ci.-cu, ci.-s : 1, li.-cl
16	o	o	o, ci, h, d	6, ci, ci.-s, cu : li.-cl
17	o	o	1, ci, ci.-s, d	5, ci, ci.-cu : 6 : 10, r
18	o	o	o	3, ci, ci.-cu, cu, cu.-s : v, t : v
19	o	s,sp,g.-cur : o : o	2, ci : 10, r	6, r : 10, shs.-r : 10, shs.-r
20	o : wN	o : w	10, h : 9, ci.-cu, cu, h	v, ci.-cu, h : v : v, ci, r
21	o	o	r : v : v,ci,ci.-cu,ci.-s,cu	v, w : 10, w
22	wN	wN : w	4, ci.-cu, cu, cu.-s, w	6, ci.-cu, cu : o, d
23	w	o	3, ci, ci.-s, ci.-cu	3, ci, ci.-s, ci.-cu : o
24	o	w : sN,sp,g.-cur	4, ci, ci.-s	v,ci,ci.-cu,ci.-s: v, r : 10, t.-s, l
25	o	o	10, oc.-r : 8, ci.-cu, cu.-s, oc.-shs	10, oc.-shs, w : 7, oc.-r : v
26	o	ssP,ssN,sp,g.-cur : wN	v : v, ci : 9, ci, ci.-cu, cu	vv, h.-r, sqs : vv, fr.-h.-shs, w
27	o	o	10 : 10 : 8, cu.-s	9,ci.-cu,ci.-s,cu.-s: 10 : 10, oc.-r
28	o	o	10, w : 10, w	10, cu.-s, st.-w : v, ci.-s
29	o	o	4, ci.-cu, ci, h	3, ci, ci.-cu : o, d
30	o	o	2, ci, ci.-cu	5, ci, ci.-cu, ci.-s, cu : v, cu.-s

HUMIDITY OF THE AIR.

Temperature of the Dew Point.

The highest in the month was $65^{\circ}\cdot 2$ on the 19th; and the lowest was $39^{\circ}\cdot 2$ on the 7th.

The mean ,, was $51^{\circ}\cdot 1$, being $0^{\circ}\cdot 4$ *higher* than the average of the preceding 31 years.

Elastic Force of Vapour.—The mean for the month was $0^{in}\cdot 375$, being $0^{in}\cdot 004$ *greater* than the average of the preceding 31 years.

Weight of Vapour in a Cubic Foot of Air.—The mean for the month was $4^{grs}\cdot 2$, being $0^{gr}\cdot 1$ *greater* than the average of the preceding 31 years.

Degree of Humidity.—The mean for the month was 75 (that of Saturation being represented by 100), being 1 *greater* than the average of the preceding 31 years.

Weight of a Cubic Foot of Air.—The mean for the month was 530 grains, being 2 grains *less* than the average of the preceding 31 years.

CLOUDS.

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

WIND.

The proportions were of N. 2, S. 10, W. 14, E. 3, and Calm 1. The greatest pressure in the month was $15^{lbs}\cdot 1$ on the square foot on the 9th.

RAIN.

Fell on 15 days in the month, amounting to $1^{in}\cdot 64$, as measured in the simple cylinder gauge partly sunk below the ground; being $0^{in}\cdot 30$ *less* than the average fall of the preceding 57 years.

MONTH and DAY, 1872.	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.
July 1	..	29.719	72.3	57.2	60.5	51.7	141.5	52.0	66.2	63.0	8.8	19.2	1.7	− 0.4	S by W: SW: WNW	W by N: WSW	3.6	0.0	0.6	368	0.10
2	..	29.845	75.8	55.1	63.0	52.9	150.3	48.1	66.3	63.7	10.1	20.9	2.6	+ 1.9	SW: WSW: W	WNW: NW	2.1	0.0	0.5	311	0.01
3	..	30.030	74.5	49.2	61.7	50.3	133.8	41.0	66.0	63.2	11.4	17.7	2.3	+ 0.4	WSW: N	NNW: W	0.6	0.0	0.0	166	0.00
4	..	30.053	80.7	52.4	66.2	53.9	149.4	43.0	66.1	63.4	12.3	25.0	2.4	+ 4.7	WSW	W: NW: NNE: Calm	0.6	0.0	0.0	140	0.00
5	Greatest Dec. N: New.	29.926	85.3	56.0	70.8	53.7	158.1	49.3	67.1	63.0	17.1	27.0	1.0	+ 9.1	SW	SSW: S	0.7	0.0	0.0	152	0.00
6	Apogee	29.759	84.6	53.0	68.0	56.8	157.0	45.3	67.9	66.0	11.2	25.7	4.0	+ 6.2	Calm: NE	E: NE	3.5	0.0	0.1	144	0.20
7	..	29.563	81.4	58.1	70.7	57.4	148.6	52.0	68.4	67.0	13.3	23.1	1.0	+ 8.8	ENE: SE	SSE: SSW	2.3	0.0	0.2	186	0.00
8	..	29.634	70.6	54.0	60.5	52.8	110.4	46.2	69.4	67.2	7.7	14.6	4.2	− 1.2	SW: W	W: WSW	2.7	0.0	0.5	325	0.00
9	..	29.684	73.0	52.0	60.0	56.7	142.2	43.1	68.6	64.2	3.3	14.1	1.7	− 1.7	SW: SSW	SW: SSW	2.3	0.0	0.2	243	0.09
10	..	29.728	76.9	49.5	62.3	52.0	153.5	40.7	68.4	63.5	10.3	19.6	0.0	+ 0.5	NW: NE: SW	SW: S	1.3	0.0	0.0	139	0.00
11	..	29.697	80.0	57.0	66.8	60.3	125.0	52.0	68.4	64.0	6.5	17.2	4.7	+ 5.0	SSE: SW	SSW: ESE	3.7	0.0	0.1	158	0.46
12	In Equator	29.753	77.2	54.5	63.3	55.8	138.0	52.8	68.9	67.0	7.5	18.7	0.0	+ 1.3	WSW: W	WSW: SW	1.7	0.0	0.1	186	0.00
13	First Qr.	29.655	71.7	52.1	58.0	54.8	142.5	43.6	69.2	66.5	3.2	12.4	0.6	− 4.3	SSW	SW: NE	0.5	0.0	0.0	107	0.16
14	..	29.701	76.3	51.4	60.8	56.3	134.3	42.1	69.1	64.0	4.5	18.0	0.8	− 1.7	NNE	NNW	3.3	0.0	0.2	232	0.04
15	..	29.756	63.2	51.5	56.0	53.2	81.2	45.0	68.9	65.0	2.8	9.4	1.8	− 6.5	N: N by E	N: WSW	1.3	0.0	0.2	237	0.02
16	..	29.742	78.7	49.6	62.6	54.7	139.7	39.4	68.0	64.0	7.9	23.0	1.3	+ 0.2	W by S: NNE	WSW: W	0.7	0.0	0.1	181	0.00
17	..	29.743	66.2	52.4	57.7	54.1	90.4	42.9	67.6	63.8	3.6	10.8	0.0	− 4.5	W: NNE	NE: SE	0.2	0.0	0.0	122	0.00
18	..	29.826	76.1	47.0	59.5	57.4	145.2	38.1	67.1	65.4	2.1	18.0	0.0	− 2.4	S: NW: SW	SW	1.0	0.0	0.0	178	0.10
19	Greatest Declination S.	29.902	78.7	53.3	64.6	57.7	140.5	45.8	67.0	65.4	6.9	19.2	2.6	+ 3.0	WSW: W	WSW: SW	0.5	0.0	0.0	172	0.00
20	Perigee: Full.	29.923	83.9	54.1	69.0	58.0	156.2	44.9	67.0	65.5	11.0	21.8	0.6	+ 7.6	WSW: SW	SW: SSW	0.7	0.0	0.1	180	0.00
21	..	29.867	87.0	57.3	72.4	59.3	151.0	48.5	67.8	63.7	13.1	24.5	1.0	+10.9	S: ESE: SSW	S: SE	0.8	0.0	0.1	143	0.00
22	..	29.706	87.1	59.1	68.7	65.1	154.4	50.7	68.6	64.4	3.6	21.0	0.0	+ 7.2	SSE	SSE: SW	11.0	0.0	0.1	181	0.17
23	..	29.656	81.9	59.0	68.1	66.0	125.7	51.8	69.0	64.8	2.1	13.6	0.0	+ 6.5	WSW: NNE: NW	N: SE: S	0.2	0.0	0.0	113	0.29
24	..	29.723	83.3	59.9	70.6	67.1	130.5	55.4	69.6	65.5	3.5	17.5	1.7	+ 8.9	Calm: SW	SSE: SSW: E	0.5	0.0	0.0	118	0.00
25	In Equator	29.657	90.9	64.4	75.5	68.9	150.3	60.1	70.6	66.2	6.6	22.6	0.0	+13.7	E: NW: NE	SE: E	8.6	0.0	0.2	224	0.30
26	..	29.719	83.8	66.1	73.9	64.4	137.3	59.2	71.8	70.0	9.5	18.4	2.0	+12.0	ESE: SW	SW	1.0	0.0	0.1	157	0.12
27	Last Qr.	29.835	81.2	58.7	68.5	61.3	140.1	52.2	73.6	70.7	7.2	18.5	0.6	+ 6.5	N: WSW	SW	0.7	0.0	0.0	135	0.12
28	..	29.798	80.3	56.0	67.0	61.2	152.3	46.7	73.0	70.2	5.8	14.3	1.0	+ 4.8	SSW: SW	SW	0.8	0.0	0.0	141	0.00
29	..	29.611	78.2	59.0	67.9	61.2	142.2	52.4	73.4	69.2	6.7	18.2	0.7	+ 5.6	WSW: SW	SSW	1.1	0.0	0.1	143	0.08
30	..	29.546	74.6	52.8	61.0	59.0	103.9	45.0	73.1	69.8	2.0	12.9	0.0	− 1.4	N: SW: W	NNE: NE	2.8	0.0	0.4	229	0.10
31	..	29.773	70.1	47.4	57.9	49.3	130.4	38.9	72.6	69.8	8.6	18.4	2.7	− 4.5	NNE: N	N: WSW	1.4	0.0	0.2	233	0.00
Means	..	29.759	78.2	54.8	65.0	57.5	137.3	47.4	69.0	65.8	7.4	18.6	1.4	+ 3.1	...	...	..	..	..	Sum. 5744	Sum 2.36

BAROMETER READINGS FROM EYE-OBSERVATIONS.

The absolute maximum in the month was 30in·076 on the 4th; the first minimum in the month was 29in·662 on the 1st.
The second maximum ,, was 29in·767 on the 12th; the second minimum ,, was 29in·539 on the 7th.
The third maximum ,, was 29in·933 on the 20th; the third minimum ,, was 29in·636 on the 13th.
The fourth maximum ,, was 29in·776 on the 22nd; the fourth minimum ,, was 29in·681 on the 22nd.
The fifth maximum ,, was 29in·771 on the 24th; the fifth minimum ,, was 29in·630 on the 23rd.
The sixth maximum ,, was 29in·855 on the 27th; the sixth minimum ,, was 29in·646 on the 25th.
The seventh maximum ,, was 29in·785 on the 31st; the absolute minimum ,, was 29in·501 on the 30th.
The range in the month was 0in·575.
The mean for the month was 29in·759, being 0in·044 *lower* than the average of the preceding 31 years.

TEMPERATURE OF THE AIR.

The highest in the month was 90°·9 on the 25th; the lowest was 47°·0 on the 18th.
The range ,, was 43°·9.
The mean ,, of all the highest daily readings was 78°·2, being 4°·1 *higher* than the average of the preceding 31 years.
The mean ,, of all the lowest daily readings was 54°·8, being 1°·7 *higher* than the average of the preceding 31 years.
The mean daily range was 23°·4, being 2°·4 *greater* than the average of the preceding 31 years.
The mean for the month was 65°·0, being 3°·0 *higher* than the average of the preceding 31 years.

MONTH and DAY, 1872.	ELECTRICITY. A.M.	ELECTRICITY. P.M.	CLOUDS AND WEATHER. A.M.	CLOUDS AND WEATHER. P.M.
July 1	o	wN : w	10, h.-r : 8, ci, ci.-cu, cu	6, ci, ci.-cu, cu, cu.-s : o
2	o	w : o	10, r	6, ci.-cu, cu : v
3	o	w	1 : v, ci.-cu, h, d	6, ci, ci.-cu, h : v
4	w	wN : o : w	o, h, mt	o, h, mt : 1, s, h
5	o	w	o : o, h : 1, ci.-cu, cu, d	o : o
6	w	ssP,ssN,sp,g.-cur : o	1, ci, ci.-cu, d	v,ci,ci.-cu,t.-s,l,h.-r: 9 : v, cu.-s
7	o	w	10 : v, ci.-cu, ci.-s, d	6, ci, ci.-s, ci.-cu, r : 9, ci.-s, cu.-s
8	w	o : w	10 : 10, mt, th.-r	10 : v : v, a
9	o	sP,wN,sp,g.-cur: o	10, shs.-r : 10, r	8, cu.-s, shs.-r : v, cu, s : o
10	w	w : s, sp, g.-cur	v, ci.-cu : v, ci.-cu, cu, h, mt	4,ci,ci.-s,ci.-cu,cu,cu.-s: v
11	o	o : ssP,ssN,sp,g.-cur	10, r	v, ci.-cu, cu, cu.-s : 10, t.-s, h.-r, l
12	o	o : w	10	2, ci, ci.-cu : 2, s
13	wN	s,sp,g.-cur,sN : w	10, r : 10, th.-r, t	10, t : v, cu, cu.-s, r : 7, h, th.-r
14	o	o	6, ci, ci.-cu	5, ci, ci.-cu, cu : 10, r, sc
15	o	o	10, r : 10, th.-r	10 : v : o, h, mt
16	o	o	o, d, h	v, ci.-cu, cu, cu.-s : v, ci, ci.-cu
17	o	o	10, d	10, r : v : o
18	o : w	ssP,sN,sp,g.-cur : o	10	8, cu, cu.-s : 10, r : 7,ci.-cu,ci.-s,cu.-s,r
19	o	o	10	3, ci, ci.-cu, ci.-s : v, mt, a
20	o	o : w	1, ci, ci.-cu, cu	ci.-s : o
21	w	o : m	ci.-cu	3, ci, ci.-cu, ci.-s : o
22	ssP, ssN, sp, g.-cur	ssP,ssN,sp,g.-cur : w : o	v, ci, r : 10, t.-s, h.-r	10, t, l, h.-r : v, t : v, ci, ci.-s
23	ssP, ssN, sp, g-cur	w : o	6, h, mt : v, t, l, h.-r	9, ci.-cu, cu.-s: 10, t, l, fr.-h.-r : 10
24	w	w	10 : 9, ci.-cu, cu, cu.-s	8, ci.-cu, cu, cu.-s : 10, mt, t
25	w	w : sN,ssP,sp,g.-cur	9, ci.-s, ci.-cu, cu.-s : v	v, ci, ci.-s : v, t, l, h.-r, st.-w: ci.-s,ci.-cu,cu.-s,l
26	o	o	7, ci.-cu, cu	8, ci.-cu, ci.-s, cu.-s : 10, r
27	o		v, ci, ci-cu, cu	2, ci.-cu, cu : v, ci.-cu, cu.-s
28	o	o : w	4, cu	8, ci, cu : v, ci.-cu, cu.-s
29	o	o : w	8, ci, ci.-cu, cu	9, ci.-cu, cu.-s: 10, r : 10, h.-r
30	o	ssN,ssP,sp,g.-cur : w	10, h.-r : 10, mt : 10, mt	10, t, r : 10, th.-r
31	w	w	o : v, cu, cu.-s	7, ci.-cu, cu : 10, mt

HUMIDITY OF THE AIR.

Temperature of the Dew Point.

The highest in the month was 73°·8 on the 25th ; and the lowest was 47°·0 on the 18th.

The mean „ was 57°·5, being 3°·7 *higher* than the average of the preceding 31 years.

Elastic Force of Vapour.—The mean for the month was $0^{in}\cdot473$, being $0^{in}\cdot058$ *greater* than the average of the preceding 31 years.

Weight of Vapour in a Cubic Foot of Air.—The mean for the month was $5^{grs}\cdot3$, being $0^{gr}\cdot7$ *greater* than the average of the preceding 31 years.

Degree of Humidity.—The mean for the month was 78 (that of Saturation being represented by 100), being 3 *greater* the average of the preceding 31 years.

Weight of a Cubic Foot of Air.—The mean for the month was 524 grains, being 4 grains *less* than the average of the preceding 31 years.

CLOUDS.

The mean amount for the month, a clear sky being represented by 0 and a cloudy sky by 10, was 6·1.

WIND.

The proportions were of N. 5, S. 10, W. 11, E. 4, and Calm 1. The greatest pressure in the month was $11^{lbs}\cdot0$ on the square foot on the 22nd.

RAIN.

Fell on 16 days in the month, amounting to $2^{in}\cdot36$, as measured in the simple cylinder gauge partly sunk below the ground; being $0^{in}\cdot20$ *less* than the average fall of the preceding 57 years.

MONTH and DAY, 1872.	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.
Aug. 1	Greatest Declination N.	29·666	75·7	55·1	62·4	52·2	138·0	52·7	71·4	68·6	10·2	25·0	3·0	0·0	WSW: SW	WSW: S	0·8	0·0	0·0	158	0·00
2	..	29·452	67·2	53·3	58·3	55·4	115·6	52·0	71·0	67·6	2·9	9·4	0·0	− 4·1	SSW: W	Variable	0·7	0·0	0·0	138	0·79
3	Apogee	29·642	70·0	51·8	57·6	53·7	112·7	51·1	70·0	68·0	3·9	16·2	0·0	− 4·8	NNE: N	NNE	2·5	0·0	0·1	199	0·05
4	New	29·701	62·4	53·8	54·6	53·0	73·6	51·7	69·1	66·8	1·6	8·9	0·0	− 7·7	N	SSE: S	0·1	0·0	0·0	88	0·16
5	..	29·401	64·1	54·2	58·9	57·3	101·5	50·3	68·3	66·0	1·6	4·8	0·0	− 3·3	ESE: SE	SE: SW: W	8·0	0·0	0·2	244	0·28
6	..	29·572	73·6	53·7	61·8	54·3	139·0	47·1	67·6	65·6	7·5	16·2	1·1	− 0·3	W	SW: SSW	3·3	0·0	0·5	296	0·00
7	..	29·327	77·9	51·9	60·0	56·7	131·1	50·0	67·3	64·3	3·3	21·9	0·0	− 2·0	SSE	Variable	1·1	0·0	0·0	111	0·69
8	..	29·602	69·9	51·9	58·2	55·0	115·7	45·2	66·8	65·0	3·2	12·1	0·0	− 3·8	N	N: NW	2·4	0·0	0·2	210	0·23
9	In Equator	29·825	72·6	48·6	59·2	54·1	125·3	40·2	67·4	64·3	5·1	13·4	1·1	− 2·9	SW: SSE	SSW: SSE	1·6	0·0	0·1	179	0·00
10	..	29·502	71·8	55·5	61·4	54·0	123·0	51·0	66·6	64·3	7·4	16·0	3·2	− 0·7	SSW: SW	SW	5·0	0·0	0·8	417	0·02
11	..	29·647	67·6	55·7	59·2	49·5	124·2	42·1	66·1	64·2	9·7	13·7	2·8	− 2·9	WSW	WSW	10·0	0·2	1·7	571	0·01
12	First Qr.	29·900	70·5	52·2	59·5	47·4	123·2	46·1	65·4	60·0	12·1	19·3	3·8	− 2·5	WSW: WNW	W: NW	2·8	0·0	0·4	310	0·00
13	..	30·053	70·6	45·8	57·2	50·9	111·9	36·2	64·9	62·5	6·3	18·4	2·3	− 4·7	WSW: NW	NW: NNE: E	0·2	0·0	0·0	114	0·00
14	..	30·079	72·5	51·3	60·7	53·0	132·4	43·7	64·8	62·5	7·7	17·5	1·4	− 1·0	Calm: NE	E: SE	0·3	0·0	0·1	68	0·00
15	Greatest Declination S.	30·047	73·0	47·7	59·3	51·5	137·8	38·8	64·9	63·0	7·8	17·7	1·0	− 2·2	Calm: ENE: E	ESE	1·0	0·0	0·1	101	0·00
16	..	29·975	73·7	51·7	62·1	52·0	121·8	44·0	65·6	62·4	10·1	18·9	1·4	+ 0·8	Calm: SE	SSE: SE	0·6	0·0	0·0	107	0·00
17	Perigee	29·953	81·7	52·4	66·5	53·7	145·8	44·0	65·0	62·6	12·8	23·5	1·6	+ 5·4	Calm: SSE	SSE: ESE	1·1	0·0	0·1	132	0·00
18	Full	30·013	78·1	54·1	65·8	52·5	149·4	44·5	65·4	62·7	13·3	23·8	0·6	+ 4·8	E	E	2·8	0·0	0·3	227	0·00
19	..	29·995	75·1	52·4	64·0	51·9	146·5	42·2	65·9	63·8	12·1	21·9	1·0	+ 3·1	ENE: E	E: ENE	3·7	0·0	0·4	280	0·00
20	..	29·842	77·1	56·4	65·5	56·0	148·4	49·8	66·0	64·0	9·5	20·7	1·5	+ 4·7	ENE: E	E	3·5	0·0	0·3	280	0·00
21	In Equator	29·788	78·2	58·7	67·2	58·9	144·4	51·4	66·2	64·5	8·3	18·7	1·4	+ 6·5	ENE: E	E	1·3	0·0	0·1	182	0·00
22	..	29·826	78·0	59·1	64·8	58·5	129·3	54·2	66·6	65·0	6·3	16·7	1·7	+ 4·1	NNE	NE: NNE	1·2	0·0	0·1	236	0·00
23	..	30·005	76·8	52·5	62·2	54·5	139·3	50·6	66·4	63·6	7·7	18·7	3·4	+ 1·6	NNE	N by E: NNE	2·6	0·0	0·3	274	0·00
24	..	30·101	76·9	49·7	60·8	53·5	132·3	41·5	66·6	64·0	7·3	21·4	1·3	+ 0·3	NNE	NNE: NE: SSW	0·3	0·0	0·0	92	0·00
25	Last Qr.	29·937	79·7	54·8	67·3	56·9	133·0	47·0	67·0	65·0	10·4	18·4	0·5	+ 6·8	SW: W	SW: SSW	1·3	0·0	0·1	194	0·00
26	..	29·635	71·7	54·0	59·9	54·8	134·3	50·0	67·3	65·3	5·1	13·9	1·7	− 0·4	SW: WSW	WSW: W: NW	3·4	0·0	0·3	290	0·43
27	..	30·005	66·3	50·2	56·5	48·6	122·6	43·0	67·2	64·5	7·9	16·2	4·4	− 3·6	NNW: N	N	5·4	0·0	0·8	386	0·00
28	Greatest Declination N.	30·098	72·6	45·0	57·8	52·2	109·5	35·9	66·6	64·5	5·6	18·4	0·0	− 2·1	N: W	W: WSW	0·4	0·0	0·0	172	0·00
29	..	29·887	74·3	52·6	61·8	54·6	143·6	44·3	65·8	61·0	7·2	16·3	1·5	+ 2·1	WSW: W by S	WSW: SW	1·5	0·0	0·1	279	0·00
30	Apogee	29·642	71·1	52·7	58·9	52·8	113·8	47·0	66·0	62·4	6·1	16·6	0·4	− 0·5	SW: WSW	WSW	2·8	0·0	0·2	290	0·04
31	..	29·628	70·0	49·3	58·3	50·7	129·0	40·8	65·1	62·8	7·6	18·0	1·1	− 0·9	WSW: W: NW	WNW: W by S	3·6	0·0	0·5	324	0·00
Means	..	29·798	72·9	52·5	60·9	53·6	127·4	46·1	66·8	64·2	7·3	17·2	1·4	− 0·3	...	...	..	..	..	Sum 6949	Sum 2·70

BAROMETER READINGS FROM EYE-OBSERVATIONS.

The first maximum in the month was 29in·719 on the 4th; the second maximum ,, was 29in·588 on the 6th; the third maximum ,, was 29in·868 on the 9th; the fourth maximum ,, was 30in·095 on the 14th; the fifth maximum ,, was 30in·036 on the 19th; the sixth maximum ,, was 30in·134 on the 24th; the absolute maximum ,, was 30in·145 on the 28th.

The first minimum in the month was 29in·446 on the 2nd; the second minimum ,, was 29in·321 on the 5th; the absolute minimum ,, was 29in·303 on the 7th; the fourth minimum ,, was 29in·477 on the 10th; the fifth minimum ,, was 29in·946 on the 17th; the sixth minimum ,, was 29in·784 on the 21st; the seventh minimum ,, was 29in·580 on the 26th; the eighth minimum ,, was 29in·573 on the 31st.

The range in the month was 0in·842.

The mean for the month was 29in·798, being 0in·004 *higher* than the average of the preceding 31 years.

TEMPERATURE OF THE AIR.

The highest in the month was 81°·7 on the 17th; the lowest was 45°·0 on the 28th.

The range ,, was 36°·7.

The mean ,, of all the highest daily readings was 72°·9, being *the same as* the average of the preceding 31 years.

The mean ,, of all the lowest daily readings was 52°·5, being 0°·6 *lower* than the average of the preceding 31 years.

The mean daily range was 20°·4, being 0°·6 *greater* than the average of the preceding 31 years.

The mean for the month was 60°·9, being 0°·5 *lower* than the average of the preceding 31 years.

MONTH and DAY, 1872.	ELECTRICITY.		CLOUDS AND WEATHER.	
	A.M.	P.M.	A.M.	P.M.
August 1	w	0 : w	4, ci, ci.-cu	10, ci, ci.-cu, cu, h : 10
2	0 : ss,sp,g.-cur	ssP,ssN,sp,g-cur	10, r : 10, r	8, ci.-cu, h, mt, h.-r, l : 10, h.-r, t, l, mt
3	0	0 : sN	10, r	9, r : 10, h.-r
4	0	0 : w	10 : 10, r, gt.-glm	10, f : v : v, mt, th.-r
5	0	0	v, ci, ci.-s, r	10, oc.-h.-r : 10, shs.-r, st.-w
6	0	0 : m	0, w : v, ci, ci.-cu, cu	9, ci.-cu, ci.-s, cu, cu.-s : 10, r
7	0	ssP,ssN,sp,g.-cur : 0	10	10,ci,ci.-cu,cu,cu.-s,r,t,l : v, h.-r, t, l : v, ms
8	0	ssP,ssN,sp,g.-cur : w	10 : 9,ci,ci.-cu,cu,cu.-s,h.-r	v,ci.-cu,cu.-s,r,t : v, h.-r, t : v
9	w	0	0 : 3, ci, ci.-cu	4, ci, ci.-cu : 5, ci.-cu, cu.-s : v, r
10	0	0	9, ci.-s, ci.-cu, cu, cu.-s	10, w, r : 10, r, w
11	sP, sN	0	10, w, r	10, r : 8, li.-cl
12	0	0	7, ci, ci.-cu, cu	9 : v, ci.-s, h, ms
13	0	0	0, h, mt, d	9, ci.-cu, cu.-s, h, mt : v, ci.-cu, s, mt, d
14	0	0 : w	v : 4, ci.-cu, cu	v, ci.-cu, cu, cu.-s : vv, ci, cu.-s
15	w	w : m	6 ci, cu, cu.-s, d	10, ci.-cu, cu.-s : 0
16	0	0 : w	10, d	9, ci.-cu, cu.-s : ci,ci.-cu,ci.-s,cu,cu.-s,d
17	0	w : s,g.-cur	0 : 0	0 : 0, d
18	m	w : m	0	0 : 0
19	m	0 : w	1, ci, ci.-cu	0 : 0
20	0	w : 0	7, ci-cu, cu, cu.-s, d	3, ci.-cu, cu : v
21	0	0 : w	8, ci, cu.-s	6, ci, ci.-cu, cu, cu.-s : 8
22	0	0 : m	10, w	10, cu.-s : 9, r : 3
23	s	0 : w	7, ci, cu.-s	v, ci.-cu, cu : 0 : 0
24	0	w : m	10, mt, d	0 : 0
25	0	0 : w	9, ci.-cu	7, ci.-cu, cu : v
26	0	s,sp,g.-cur : 0	v : 5, cu.-s, ci.-cu, r	vv,cu,cu.-s,ci.-cu,r : v, shs.-r : 0, w
27	w	0	v, w : 3, ci, ci.-cu, w	10, cu.-s, w : 0, d, mt
28	0	0 : m	0, h, mt, d	0, h, mt : li.-cl
29	m	w : 0 : m	8, ci.-cu, cu, cu.-s	7, ci, ci.-cu : 0
30	0	w	10, r	10 : v, r : 0, d
31	w	sN : w	8, ci.-cu, cu.-s	v,ci.-s,cu.-s,w : v,ci,ci.-s,ci.-cu,cu.-s,r : v,ci,ci.-s,cu.-s

HUMIDITY OF THE AIR.

Temperature of the Dew Point.

The highest in the month was 62°·0 on the 21st; and the lowest was 45°·0 on the 28th.

The mean ,, was 53°·6, being 0°·1 *lower* than the average of the preceding 31 years.

Elastic Force of Vapour.—The mean for the month was $0^{in}\cdot412$, being $0^{in}\cdot004$ *less* than the average of the preceding 31 years.

Weight of Vapour in a Cubic Foot of Air.—The mean for the month was $4^{grs}\cdot5$, being $0^{gr}\cdot1$ *less* than the average of the preceding 31 years.

Degree of Humidity.—The mean for the month was 75 (that of Saturation being represented by 100), being 1 *less* than the average of the preceding 31 years.

Weight of a Cubic Foot of Air.—The mean for the month was 529 grains, being *the same as* the average of the preceding 31 years.

CLOUDS.

The mean amount for the month, a clear sky being represented by 0 and a cloudy sky by 10, was 6·2.

WIND.

The proportions were of N. 6, S. 6, W. 9, E. 7, and Calm 3. The greatest pressure in the month was $10^{lbs}\cdot0$ on the square foot on the 11th.

RAIN.

Fell on 10 days in the month, amounting to $2^{in}\cdot70$, as measured in the simple cylinder gauge partly sunk below the ground; being $0^{in}\cdot33$ *greater* than the average fall of the preceding 57 years.

MONTH and DAY, 1872.	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.
Sept. 1	..	29·752	68·1	48·3	58·2	53·6	102·2	39·0	64·6	62·3	4·6	12·6	0·0	− 0·8	WSW	SW : SSW	1·3	0·0	0·1	217	0·14
2	..	29·682	76·7	58·2	66·6	54·7	129·0	57·2	64·2	62·3	11·9	19·9	1·7	+ 7·9	SW : S by W	SSE : SE	1·2	0·0	0·1	193	0·00
3	New	29·473	81·4	58·5	69·5	59·3	137·4	51·0	64·6	62·7	10·2	21·8	2·7	+ 11·1	SSE	S by W : S	3·0	0·0	0·2	189	0·00
4	..	29·456	76·9	62·2	68·0	62·1	122·0	57·9	65·2	63·4	5·9	12·4	2·2	+ 9·8	S : SSE	S : SSW	3·5	0·0	0·5	307	0·19
5	In Equator	29·656	74·6	58·0	64·3	55·2	133·9	52·0	65·4	63·4	9·1	18·0	1·1	+ 6·3	SSW : S : SW	SSW : SSE	2·8	0·0	0·5	282	0·00
6	..	29·674	74·2	54·8	62·6	55·2	141·8	47·8	65·6	63·4	7·4	15·8	1·4	+ 4·7	S : SSW	SW : SSW	2·8	0·0	0·4	282	0·00
7	..	29·689	73·8	56·0	62·2	54·6	136·0	47·2	65·6	63·6	7·6	16·3	0·8	+ 4·4	SW : WSW	WSW	2·8	0·0	0·4	340	0·00
8	..	29·798	69·6	50·3	59·6	49·9	123·7	40·2	66·2	64·0	9·7	17·3	0·4	+ 1·8	W by S : W	WNW : WSW : SW	1·0	0·0	0·1	218	0·00
9	..	29·667	68·1	54·8	61·2	55·3	95·5	48·7	65·2	63·0	5·9	12·2	1·5	+ 3·5	SSW	SW : W	2·9	0·0	0·6	341	0·06
10	First Qr.	29·789	69·8	50·3	59·1	52·6	130·8	42·0	65·4	63·4	6·5	14·4	0·6	+ 1·4	WSW : W	WSW : SW	2·1	0·0	0·3	310	0·01
11	..	29·868	75·7	59·3	65·9	62·3	119·8	56·3	65·6	63·6	3·6	10·2	1·3	+ 8·3	WSW	WSW	3·4	0·1	0·8	440	0·00
12	Greatest Declination S.	30·052	76·0	57·5	64·6	57·9	138·2	53·5	65·2	64·0	6·7	15·3	3·8	+ 7·1	WSW	W : WNW : WSW	2·5	0·0	0·5	377	0·00
13	..	30·124	80·9	54·2	66·5	60·7	141·9	45·5	65·6	63·6	5·8	18·9	0·4	+ 9·2	WSW : W	NW : W : WSW	0·5	0·0	0·0	209	0·00
14	..	29·983	71·9	52·4	61·9	59·8	95·3	50·7	65·6	63·4	2·1	9·5	0·4	+ 4·7	WSW : W	WNW : W	1·4	0·0	0·2	274	0·00
15	Perigee	29·877	72·9	54·0	62·0	55·8	102·9	48·0	65·2	63·6	6·2	12·4	1·0	+ 4·9	W	W : N	1·2	0·0	0·1	204	0·00
16	..	29·794	67·8	47·6	56·7	49·4	124·6	38·3	65·6	63·4	7·3	17·1	1·1	− 0·2	WNW : W	WSW	1·0	0·0	0·1	235	0·00
17	Full	29·648	73·4	52·2	61·2	55·5	142·5	45·0	65·6	63·4	5·7	15·6	2·2	+ 4·5	WSW	WSW	1·4	0·0	0·2	272	0·00
18	In Equator	29·441	64·3	49·5	55·5	48·3	89·1	43·3	65·2	63·4	7·2	10·6	3·0	− 1·0	WSW	W : WSW	2·7	0·0	0·6	388	0·00
19	..	29·476	65·3	46·3	53·2	44·0	107·8	39·0	65·2	63·6	9·2	19·1	1·9	− 3·0	WSW : W	WNW : W	2·2	0·0	0·3	312	0·00
20	..	29·610	57·0	39·9	46·4	38·9	93·6	30·1	63·3	59·5	7·5	16·3	1·2	− 9·6	W : N	N : NW	1·7	0·0	0·2	249	0·00
21	..	29·561	62·6	37·6	45·4	40·6	126·0	28·0	61·3	58·4	4·8	20·1	1·4	− 10·4	W : WNW	W : NW	5·2	0·0	0·2	277	0·10
22	..	29·727	56·6	34·8	44·6	36·5	98·0	28·1	60·0	56·8	8·1	19·0	1·9	− 10·9	W : NW	NW : WSW	2·3	0·0	0·2	290	0·00
23	..	29·634	62·6	34·5	48·8	40·4	118·4	26·0	58·8	55·8	8·4	18·2	0·0	− 6·4	WSW	WSW : SW	4·2	0·0	0·4	301	0·16
24	Last Qr.	29·250	50·8	40·6	44·6	43·2	63·0	37·5	57·9	53·6	1·4	3·6	0·0	− 10·4	WSW	SW : NNW : WNW	1·7	0·0	0·1	213	0·43
25	Greatest Declination N.	29·453	57·3	38·0	47·6	40·0	116·8	29·9	57·3	55·0	7·6	14·1	2·4	− 7·2	WSW : W	W : W by N	6·8	0·0	1·3	498	0·01
26	..	29·808	57·5	41·5	48·1	41·3	102·1	33·0	56·1	54·0	6·8	12·9	4·0	− 6·5	W by N : W	WNW : W : WSW	3·7	0·0	0·8	430	0·00
27	Apogee	29·660	64·0	42·7	54·0	53·5	93·0	32·0	55·6	53·7	0·5	9·4	0·0	− 0·4	WSW	WSW	21·0	0·1	2·5	645	0·10
28	..	29·463	65·0	50·9	55·5	47·8	89·2	43·0	55·4	53·4	7·7	15·4	0·0	+ 1·3	WSW	WSW	17·3	0·1	2·8	694	0·14
29	..	29·611	64·8	45·2	53·3	46·6	113·8	40·0	55·8	53·5	6·7	16·4	0·0	− 0·8	WSW : W	WSW	6·0	0·0	0·7	359	0·05
30	..	29·747	66·5	43·5	53·5	48·2	115·1	33·1	55·6	53·0	5·3	17·8	0·0	− 0·5	WSW	WSW : SW	1·6	0·0	0·1	220	0·00
Means	..	29·681	68·2	49·1	57·4	50·8	114·8	42·1	62·6	60·3	6·6	15·1	1·3	+ 0·8	...	...	..	..	..	Sum 9566	Sum 1·39

BAROMETER READINGS FROM EYE-OBSERVATIONS.

The first maximum in the month was $29^{in}\cdot774$ on the 1st; the first minimum in the month was $29^{in}\cdot444$ on the 3rd.
The second maximum ,, was $29^{in}\cdot818$ on the 8th; the second minimum ,, was $29^{in}\cdot585$ on the 9th.
The absolute maximum ,, was $30^{in}\cdot146$ on the 13th; the third minimum ,, was $29^{in}\cdot415$ on the 18th.
The fourth maximum ,, was $29^{in}\cdot665$ on the 20th; the fourth minimum ,, was $29^{in}\cdot531$ on the 21st.
The fifth maximum ,, was $29^{in}\cdot766$ on the 22nd; the absolute minimum ,, was $29^{in}\cdot198$ on the 24th.
The sixth maximum ,, was $29^{in}\cdot905$ on the 26th; the sixth minimum ,, was $29^{in}\cdot437$ on the 28th.
The seventh maximum ,, was $29^{in}\cdot764$ on the 30th.
The range in the month was $0^{in}\cdot948$.
The mean for the month was $29^{in}\cdot681$, being $0^{in}\cdot130$ *lower* than the average of the preceding 31 years.

TEMPERATURE OF THE AIR.

The highest in the month was 81°·4 on the 3rd; the lowest was 34°·5 on the 23rd.
The range ,, was 46°·9.
The mean ,, of all the highest daily readings was 68°·2, being 0°·5 *higher* than the average of the preceding 31 years.
The mean ,, of all the lowest daily readings was 49°·1, being 0°·1 *lower* than the average of the preceding 31 years.
The mean daily range was 19°·1, being 0°·6 *greater* than the average of the preceding 31 years.
The mean for the month was 57°·4, being 0°·1 *higher* than the average of the preceding 31 years.

MONTH and DAY, 1872.	ELECTRICITY.		CLOUDS AND WEATHER.	
	A.M.	P.M.	A.M.	P.M.
Sept. 1	o	o	10	10, fr.-shs : 10, fr.-shs
2	o	o	3, ci, ci.-cu, ci.-s	5,ci,ci.-s,ci.-cu : v, r : 10, r
3	o	o	10	v,ci,ci.-cu,ci,-s: 9, v, l : 9, l
4	o	o	v, t.-s, r : 8, ci, ci.-cu, r	8, ci.-cu, cu,cu.-s: v, ci.-cu : v, l
5	o	o	4, ci, ci.-cu, ci.-s, w	5, ci, cu, cu.-s, w : 2, ci.-s, r
6	o	o	9, ci, ci,-cu, cu, cu.-s, d	8, cu, cu.-s : v, d : o, d
7	o	w : o	9, ci.-cu, cu, cu.-s, d	8, ci.-cu,cu,cu.-s : v : o
8	o	o : w	3, ci, ci.-s, ci.-cu	8, h, f : 10
9	o	o	10	10, r : 10, r
10	o	o : w	v, ci	10, cu, cu.-s : 10, r
11	o	o : w	vv, ci.-cu, cu.-s, w	10,ci.-s,cu.-s,sc,w : 8, ci.-cu, cu.-s : 1, ci
12	o	o : w	10 : 8, ci.-s, cu.-s	v : v : ci.-s
13	w	w	mt	v,ci,ci.-cu,cu,cu.-s,mt,h: vv, h, mt, d
14	o	o : w	8, ci.-cu, cu.-s, ci.-s, h, mt, d	10, cu.-s, h, mt: v : v, ci.-cu, cu.-s
15	o	o : w	10, mt	10, glm, mt : v, ci.-cu, ci.-s, lu.-co
16	o	o	10, mt : li.-cl	v, ci, cu, cu.-s : v : v
17	o	o	4, li.-cl : v, ci.-cu, cu, cu.-s	6,ci,ci.-cu,cu,cu.-s: v, r : 9,ci.-cu,cu,cu.-s
18	o	o	10 : 10, ci.-s, mt, f	10, cu.-s : v
19	o	o	o, mt, d	5,ci.-cu,cu.-s,ci.-s: v : 10, l
20	o	o : w	10, mt	10, mt, r : v : o, f
21	o	sP,sN,sp,g.-cur: w	10, ci.-cu	10, h.-r, w : v, glm, r : o, h
22	o	o	o, h, mt	o, h, mt : v : o, mt
23	o	w : o	li.-cl : 9, cu, cu.-s	7, w : 10 : 10, h.-r
24	o	o	10 : 10, r	10, c.-r : 10, c.-r : vv, shs.-r, f, l
25	o	sN,sP,sp: w : o	o : v, mt, w	10, oc.-r, w : 10, shs.-r, st.-w
26	w	wN : w : s	9, ci.-s, cu.-s, w	10, ci.-s, ci.-cu : v, ci.-s : o
27	o	o	r : 10, r, st.-w	10, r, st.-w : 10, g
28	o	o	10, st.-w : 10, st.-w, r	vv,ci.-cu,cu,cu.-s,w: vv, st.-w : o, st.-w
29	o	o	2, ci, ci.-cu, cu, mt	3,ci,ci.-cu,cu,cu.-s,mt: v, r : o
30			4, ci, ci.-cu, ci.-s	7,ci,ci.-s,ci.-cu,cu.-s : v, r : o

HUMIDITY OF THE AIR.

Temperature of the Dew Point.

The highest in the month was 66°·0 on the 11th; and the lowest was 34°·5 on the 23rd.
The mean ,, was 50°·8, being 0°·3 *lower* than the average of the preceding 31 years.

Elastic Force of Vapour.—The mean for the month was $0^{in}\cdot371$, being $0^{in}\cdot009$ *less* than the average of the preceding 31 years.

Weight of Vapour in a Cubic Foot of Air.—The mean for the month was $4^{grs}\cdot1$, being $0^{gr}\cdot1$ *less* than the average of the preceding 31 years.

Degree of Humidity.—The mean for the month was 78 (that of Saturation being represented by 100), being 2 *less* than the average of the preceding 31 years.

Weight of a Cubic Foot of Air.—The mean for the month was 531 grains, being 2 grains *less* than the average of the preceding 31 years.

CLOUDS.

The mean amount for the month, a clear sky being represented by 0 and a cloudy sky by 10, was 6·4.

WIND.

The proportions were of N. 2, S. 8, W. 19, E. 1, and Calm 0. The greatest pressure in the month was $21^{lbs}\cdot0$ on the square foot on the 27th.

RAIN.

Fell on 11 days in the month, amounting to $1^{in}\cdot39$, as measured in the simple cylinder gauge partly sunk below the ground; being $1^{in}\cdot08$ *less* than the average fall of the preceding 57 years.

MONTH and DAY, 1872.	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.	Lowest.	Difference between the Dew Point Temperature and Air Temperature. Mean Daily Value.	Greatest.	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.	P.M.	Pressure in lbs. on the square foot. Greatest.	Least.	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	..	29·592	64·8	50·0	55·6	50·1	103·2	42·3	55·4	52·8	5·5	12·1	2·1	+ 1·7	SW	SW : SSW	2·1	0·0	0·3	290	0·00
2	In Equator: New	29·267	66·6	52·0	58·5	57·5	97·9	44·9	55·4	53·0	1·0	6·7	1·3	+ 4·7	S : SW	SW : SSW	3·0	0·0	0·3	249	0·18
3	..	29·311	66·0	43·5	53·0	49·4	104·8	36·8	56·0	53·7	3·6	13·5	1·8	− 0·7	SSW : SW	SW : WNW	3·3	0·0	0·3	265	0·24
4	..	29·735	57·0	36·0	45·2	42·4	105·2	29·2	56·0	54·0	2·8	11·0	0·0	− 8·3	SSW : SSE	SE : NE : N	0·6	0·0	0·0	103	0·01
5	..	30·056	57·2	41·8	47·4	43·4	108·2	34·1	55·6	53·3	4·0	9·7	1·3	− 5·9	NNE	NE	0·8	0·0	0·1	200	0·01
6	..	30·167	61·3	35·3	47·1	40·0	118·7	29·0	54·8	52·5	7·1	15·4	0·0	− 5·8	Calm	SSE	0·2	0·0	0·0	96	0·00
7	..	30·041	63·4	37·9	50·6	43·4	109·0	29·4	54·8	52·4	7·2	15·1	0·0	− 1·9	Calm : S : SW	SW : SSW	0·8	0·0	0·1	196	0·00
8	..	29·828	61·0	43·7	51·6	51·0	81·6	36·1	54·6	52·4	0·6	2·4	0·0	− 0·5	SSW : WSW	W	0·4	0·0	0·0	210	0·07
9	First Quarter: Greatest Dec. S.	29·529	56·8	43·7	49·4	48·6	64·3	37·1	54·6	53·0	0·8	4·8	0·0	− 2·5	WSW : SW	SW : NW : W	3·0	0·0	0·3	289	0·31
10	..	29·391	56·8	37·6	46·8	40·7	115·0	29·7	54·4	52·8	6·1	12·5	1·4	− 4·8	WSW	SW : SSW	16·8	0·0	1·1	426	0·26
11	..	29·332	54·9	35·5	43·0	38·4	90·7	30·9	53·8	51·7	4·6	13·4	0·0	− 8·4	WSW : W	W : WSW	8·7	0·0	1·4	449	0·01
12	Perigee	29·517	51·7	34·0	42·3	37·9	98·0	26·7	53·0	50·0	4·4	10·6	2·0	− 8·9	WSW	W : WSW	1·4	0·0	0·2	262	0·00
13	..	29·649	53·9	34·8	43·1	38·0	86·2	26·4	52·0	49·0	5·1	9·4	0·0	− 7·8	WSW	WSW : NE	0·3	0·0	0·0	158	0·00
14	..	29·831	56·7	29·1	41·2	37·7	90·9	25·4	51·6	49·3	3·5	12·7	0·0	− 9·4	Calm	NE : Calm	0·1	0·0	0·0	79	0·00
15	In Equator	29·582	49·2	36·1	39·6	39·3	80·5	28·1	51·4	48·6	0·3	4·6	0·0	−10·7	Calm : WSW	WSW : S	0·6	0·0	0·0	166	0·00
16	Full	29·163	55·5	35·0	44·9	41·4	71·4	29·2	50·9	48·0	3·5	11·0	0·0	− 5·1	SSE: SE: SSW	SSW : SSE	2·6	0·0	0·1	216	0·09
17	..	29·442	54·3	39·2	46·8	45·5	87·9	30·3	50·9	48·0	1·3	5·6	0·0	− 3·0	ESE : E	ENE	2·5	0·0	0·1	253	0·01
18	..	29·470	54·0	43·2	47·8	47·4	61·0	41·0	50·6	47·5	0·4	2·9	0·0	− 1·8	E : Calm	E : WSW	2·6	0·0	0·1	206	0·28
19	..	29·535	53·7	41·7	47·3	46·5	67·2	34·4	50·6	47·6	0·8	7·4	0·0	− 2·0	SSE	ESE : Calm	0·5	0·0	0·0	136	0·12
20	..	29·476	54·8	49·8	51·4	51·1	58·0	49·0	49·6	46·5	0·3	1·2	0·0	+ 2·3	NE	ENE : SE	0·3	0·0	0·0	159	0·07
21	..	29·292	59·1	47·3	50·6	49·4	87·0	44·8	50·6	48·0	1·2	4·0	0·0	+ 1·7	SSW	SSW : S	0·2	0·0	0·0	136	0·28
22	Greatest Declination N.	29·362	49·8	39·9	44·5	43·4	57·3	32·0	50·9	48·2	1·1	5·5	0·0	− 4·2	Calm : NNW	WNW : Calm	0·8	0·0	0·0	107	0·23
23	..	29·578	53·5	32·6	41·1	37·2	92·3	27·8	50·6	48·0	3·9	11·8	0·0	− 7·4	SW	WSW : SSW	0·2	0·0	0·0	176	0·00
24	Last Qr: Apogee.	29·133	52·5	37·8	46·7	43·1	59·0	30·0	50·1	47·0	3·6	7·6	1·7	− 1·5	S	S : SSE	4·4	0·0	0·6	347	0·27
25	..	29·125	55·6	42·9	48·4	43·6	95·0	36·2	49·9	48·0	4·8	8·6	1·1	+ 0·5	SSW : SSE : S	S	1·7	0·0	0·2	249	0·28
26	..	29·145	54·3	46·2	49·0	47·4	68·3	39·6	49·9	48·2	1·6	4·6	0·0	+ 1·4	SSE : SSW	SSW : SW	4·8	0·0	0·1	229	0·91
27	..	29·492	58·1	45·2	49·9	45·8	93·8	37·7	49·6	48·2	4·1	9·9	0·0	+ 2·6	WSW	WSW: SSW: Calm	1·6	0·0	0·1	234	0·00
28	..	29·6c5	54·6	42·7	47·7	46·6	65·7	34·9	49·6	48·4	1·1	4·8	0·0	+ 0·7	Calm : NNE	N : W	0·8	0·0	0·1	180	0·06
29	In Equator	29·872	57·8	40·6	49·2	46·7	70·0	32·2	49·6	48·2	2·5	7·4	1·6	+ 2·4	W : W by S	WSW	3·7	0·0	0·5	376	0·01
30	..	29·477	57·5	51·6	54·2	53·9	63·3	47·0	49·9	48·0	0·3	3·2	0·0	+ 7·6	WSW	WSW	9·9	0·0	1·6	535	0·39
31	..	29·514	55·2	47·3	49·0	47·4	61·0	40·0	50·2	47·8	1·6	4·0	0·0	+ 2·5	W: NW	WSW	2·1	0·0	0·1	267	0·25
Means	..	29·533	56·7	41·1	47·8	45·0	84·3	34·6	52·2	49·8	2·9	8·2	0·5	− 2·3	...	...	..	..	..	Sum 7244	Sum 4·34

BAROMETER READINGS FROM EYE-OBSERVATIONS.

The absolute maximum in the month was 30in·199 on the 6th; the first minimum in the month was 29in·245 on the 3rd.
The second maximum ,, was 29in·572 on the 10th; the second minimum ,, was 29in·469 on the 9th.
The third maximum ,, was 29in·850 on the 14th; the third minimum ,, was 29in·156 on the 10th.
The fourth maximum ,, was 29in·526 on the 18th; the fourth minimum ,, was 29in·123 on the 16th.
The fifth maximum ,, was 29in·614 on the 19th; the fifth minimum ,, was 29in·397 on the 18th.
The sixth maximum ,, was 29in·604 on the 23rd; the sixth minimum ,, was 29in·257 on the 21st.
The seventh maximum ,, was 29in·913 on the 29th; the absolute minimum ,, was 29in·036 on the 24th.
The eighth maximum ,, was 29in·588 on the 31st; the eighth minimum ,, was 29in·453 on the 30th.
The range in the month was 1in·163.
The mean for the month was 29in·533, being 0in·171 *lower* than the average of the preceding 31 years.

TEMPERATURE OF THE AIR.

The highest in the month was 66°·6 on the 2nd; the lowest was 29°·1 on the 14th.
The range ,, was 37°·5.
The mean ,, of all the highest daily readings was 56°·7, being 1°·8 *lower* than the average of the preceding 31 years.
The mean ,, of all the lowest daily readings was 41°·1, being 2°·7 *lower* than the average of the preceding 31 years.
The mean daily range was 15°·6, being 0°·8 *greater* than the average of the preceding 31 years.
The mean for the month was 47°·8, being 2°·5 *lower* than the average of the preceding 31 years.

MONTH and DAY, 1872.	ELECTRICITY.		CLOUDS AND WEATHER.	
	A.M.	P.M.	A.M.	P.M.
Oct. 1			10, ci.-s, cu-s	9, ci, ci.-s, cu, cu.-s : v
2	o	o : w	9, ci, ci.-cu, cu-s, r	8, ci, ci.-cu, cu.-s : 10, r, l
3	o : w	ssP,ssN,sp,g.-cur : o	v, r : 4, ci, ci.-s	7,cu,cu.-s,h.-r,t,l: vv, li.-cl, r : vv, l
4	s	w : o	10, r	v : v
5	o	w	10, th.-r	v : v, ci.-cu, l
6	o	w	o, mt, f, d	3, ci, ci.-cu, cu : o
7	o	w : m	o, mt, d	o, mt : 1, s
8	w	w	10, mt	10, r, d : 10
9	w	o	10, r, mt	10 : v
10	o	w : o	o, d : v	10, oc.-r, w : 10, h.-r, st.-w : v, st.-w
11		ssP, ssN, sp, g.-cur	9, ci.-cu, cu.-s, st.-w	7, cu, cu.-s, n, r : v, mt : o
12	ss, sp, g.-cur	m : ss,sp,g.-cur	6, ci, ci.-cu	10, ci.-s, d, mt : v : v, l
13	s, sp	s : s, sp	9, li.-cl, mt	8, cu, cu.-s, mt : v, ci.-cu, cu.-s : v, f
14	o	s : o : s	o, h.-fr, f	7, cu, cu.-s, ci : 3, ci.-cu, cu : o, f
15	o	w	10, f	v,ci.-s,ci.-cu,cu.-s,f: v : o, f, d
16	o	o : m, sp	10	7,ci,cu,ci.-cu,cu.-s: vv, r : vv, r
17	o	w : s, sp	10, r : 10, f	10, cu.-s : 10
18	s	o	10, mt : 10, th.-r	10, h.-r : 10, r : o
19	w	o : w	10, mt	10, r : 10, r : 10, c.-r, f
20	o	o	10, f, mt, th.-r	10, th.-r, f : 10, mt, c.-h.-r
21	o	o	10, r : 10, r	9, ci.-cu, cu, cu.-s, oc.-r : 10, r
22	wN	o : w	10, r : 10, th.-r, glm	10, mt, f, glm : v, f : v, h, mt
23	s	w : o	f : f, d : o, f, d	o : o, mt
24	o	o	10, st.-w	10, r : 10, h.-r, w
25	o	sN,sP,sp,g.-cur : o	r : 4, ci, ci.-cu, r	9, h.-r : v,ci.-cu,cu,cu.-s: vv, r
26	sN	sN, sp, g.-cur : o	10, h.-r : 10, h.-r	vv, fr.-shs : vv, fr.-shs
27	o	m : o	2, ci, ci.-cu	3, ci, ci.-s, ci.-cu, cu, r : vv, h, mt
28	o	w	10, th.-r, f	v, mt, h : v : o
29	w		v, ci, ci.-s, d : 10, r	10, ci.-s, cu.-s, s : v, li.-cl, st.-w
30	o	o	10, r, st.-w : 10, st.-w, c.-r	10, r, gt.-glm : 10, c.-r : 10, c.-r
31	o	o : w	10, r : 10, mt	10, th.-r : vv : o

HUMIDITY OF THE AIR.

Temperature of the Dew Point.

The highest in the month was 60°·9 on the 2nd; and the lowest was 29°·1 on the 14th.
The mean „ was 45°·0, being 1°·2 *lower* than the average of the preceding 31 years.

Elastic Force of Vapour.—The mean for the month was $0^{in}\cdot299$, being $0^{in}\cdot015$ *less* than the average of the preceding 31 years.

Weight of Vapour in a Cubic Foot of Air.—The mean for the month was $3^{grs}\cdot4$, being $0^{gr}\cdot3$ *less* than the average of the preceding 31 years.

Degree of Humidity.—The mean for the month was 91 (that of Saturation being represented by 100), being 4 *greater* than the average of the preceding 31 years.

Weight of a Cubic Foot of Air.—The mean for the month was 539 grains, being *the same as* the average of the preceding 31 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. 12, W. 11, E. 3, and Calm 3. The greatest pressure in the month was $16^{lbs}\cdot8$ on the square foot on the 10th.

RAIN.

Fell on 22 days in the month, amounting to $4^{in}\cdot34$, as measured in the simple cylinder gauge partly sunk below the ground; being $1^{in}\cdot58$ *greater* than the average fall of the preceding 57 years.

ELECTRICITY.

The insulating lamp was under repair on October 1.

MONTH and DAY, 1872.	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.
Nov. 1	..	29·404	58·8	43·7	50·9	46·6	84·0	37·0	50·4	48·0	4·3	10·1	1·0	+ 4·5	WSW : SSW	SSW : WSW	21·0	0·0	1·8	530	0·10
2	..	29·184	53·9	42·6	47·3	41·1	79·1	38·2	50·6	49·0	6·2	9·0	2·2	+ 1·0	WSW : SW	WSW	12·2	0·0	1·2	486	0·13
3	..	29·702	52·4	41·6	46·3	41·3	69·3	33·0	50·6	49·0	5·0	9·6	0·0	+ 0·2	W : WNW	WNW : W	11·0	0·0	1·0	456	0·02
4	..	29·828	55·0	38·4	47·7	43·9	70·6	31·0	49·9	48·0	3·8	7·2	0·0	+ 1·8	WSW : SSW	SSW	5·7	0·0	0·7	369	0·23
5	Greatest Declination S.	29·652	61·8	51·0	55·7	53·3	86·4	46·2	49·6	47·7	2·4	4·2	0·6	+10·0	SW : WSW	WSW	4·0	0·0	0·9	416	0·08
6	Perigee	29·730	61·1	49·9	55·8	53·1	69·8	45·1	50·2	48·4	2·7	6·5	1·1	+10·3	SW	SW	8·8	0·0	1·6	556	0·00
7	..	30·140	58·3	44·1	49·7	42·6	87·3	37·0	50·9	48·8	7·1	12·4	3·3	+ 4·4	SW : WSW	W : WSW	3·5	0·0	0·7	397	0·00
8	First Qr.	30·096	57·9	43·0	51·1	48·1	82·2	34·3	50·9	48·8	3·0	9·5	1·5	+ 6·1	SW : WSW	W : WSW	3·3	0·0	0·4	320	0·00
9	..	29·886	49·9	42·0	45·7	42·1	65·5	34·6	50·9	49·0	3·6	6·7	0·7	+ 1·0	NW : WSW	W : WSW	1·2	0·0	0·1	232	0·00
10	..	29·584	44·0	34·7	39·0	35·3	61·6	32·0	50·9	49·0	3·7	8·8	0·0	− 5·4	WSW : W : WNW	NNW	16·7	0·0	0·9	422	0·24
11	In Equator	29·737	43·9	34·7	38·9	34·2	55·3	28·3	49·9	47·6	4·7	8·1	2·2	− 5·2	NNW	NNW	4·0	0·1	1·4	468	0·06
12	..	29·849	46·7	35·5	39·3	36·8	80·1	27·3	48·6	46·2	2·5	7·6	0·0	− 4·5	N : N by E	NNE	3·8	0·0	0·6	405	0·05
13	..	29·828	41·9	34·1	36·6	32·2	74·2	27·8	47·8	45·0	4·4	8·6	0·5	− 6·9	N by E	N by E	7·8	0·0	1·0	466	0·06
14	..	29·539	40·5	33·7	36·4	33·2	62·5	32·0	46·6	43·5	3·2	7·6	0·0	− 6·8	N : NNE	NNE : NE	7·0	0·0	1·8	550	0·21
15	Full	29·623	42·1	34·3	37·8	36·5	44·0	29·2	45·9	43·0	1·3	3·3	0·0	− 5·1	NE	N : NNE	12·2	0·0	1·3	413	0·27
16	..	29·372	40·7	36·2	37·3	35·0	44·3	32·0	45·0	42·2	2·3	2·8	0·0	− 5·3	NE : ENE	N : SW : S by W	1·0	0·0	0·1	194	0·01
17	..	29·508	40·9	32·9	36·0	34·9	56·0	29·1	44·4	41·0	1·1	4·4	0·0	− 6·3	S : W : WSW	WSW	0·5	0·0	0·0	165	0·03
18	Greatest Declination N.	29·250	41·0	32·3	36·8	36·8	55·5	26·8	43·8	40·0	0·0	2·3	0·0	− 5·2	WSW	SE : NE	1·7	0·0	0·1	244	0·36
19	..	29·249	45·8	36·0	39·9	38·1	52·8	33·7	43·3	40·0	1·8	4·0	0·0	− 1·9	N : WSW	SSW : SSE	2·5	0·0	0·1	209	0·08
20	..	29·343	51·9	43·8	47·1	42·5	70·0	36·5	43·1	40·3	4·6	7·0	2·2	+ 5·5	WSW : SW	SW : SSW	2·8	0·0	0·7	407	0·05
21	Apogee	29·563	54·7	42·6	48·1	44·0	74·4	36·0	42·9	40·5	4·1	10·8	1·5	+ 6·7	SSW	SSW : S	3·1	0·0	0·4	357	0·00
22	..	29·344	54·8	42·0	46·8	44·9	72·6	35·8	42·9	40·3	1·9	7·2	0·0	+ 5·6	S : SSW	SW : SSW	4·0	0·0	0·4	337	0·07
23	Last Qr.	29·030	57·0	48·0	52·5	45·4	65·7	39·2	43·6	41·3	7·1	9·5	6·4	+11·4	SSW : SW	SW	17·8	0·2	3·5	748	0·11
24	..	29·249	52·5	46·2	49·1	43·5	83·0	39·0	44·4	41·5	5·6	8·6	2·1	+ 8·1	SW	SSW : S	8·2	0·1	1·9	530	0·04
25	..	29·123	54·1	42·0	48·1	47·1	54·4	35·2	45·1	43·2	1·0	5·3	0·0	+ 7·2	SSW : SW	SSW : SW	15·0	0·0	2·0	584	0·26
26	In Equator	29·333	55·9	49·5	52·6	45·0	66·0	42·1	46·0	43·6	7·6	11·2	5·0	+11·7	SW : WSW	WSW : SW	30·0	0·8	4·3	830	0·02
27	..	29·586	55·1	46·8	50·0	43·1	72·3	42·2	46·6	43·8	6·9	16·2	2·1	+ 8·9	WSW	WSW : SW	19·0	0·0	2·0	592	0·00
28	..	29·551	48·2	41·5	45·0	44·3	53·7	40·0	47·1	45·2	0·7	3·8	0·0	+ 3·7	SW: S : WSW	WSW : SSW	1·5	0·0	0·1	222	0·04
29	..	29·241	49·7	39·3	44·2	41·5	70·3	32·6	47·2	45·5	2·7	7·1	0·0	+ 2·6	SW	SSW : SSE	1·6	0·0	0·1	224	0·26
30	New	28·810	52·2	43·0	47·1	43·6	62·0	34·1	46·8	45·0	3·5	6·4	0·9	+ 5·2	SW : S	SSW : S	3·3	0·0	0·5	351	0·14
Means	..	29·511	50·8	40·8	45·3	41·7	67·5	34·9	47·2	44·8	3·6	7·5	1·1	+ 2·1	...	...	..	..	..	Sum 12480	Sum 2·92

BAROMETER READINGS FROM EYE-OBSERVATIONS.

The first minimum in the month was 29in·144 on the 2nd.

The first maximum in the month was 29in·939 on the 4th; the second minimum ,, was 29in·594 on the 5th.
The absolute maximum ,, was 30in·211 on the 7th; the third minimum ,, was 29in·531 on the 10th.
The third maximum ,, was 29in·910 on the 12th; the fourth minimum ,, was 29in·516 on the 14th.
The fourth maximum ,, was 29in·767 on the 15th; the fifth minimum ,, was 29in·332 on the 16th.
The fifth maximum ,, was 29in·553 on the 17th; the sixth minimum ,, was 29in·070 on the 18th.
The sixth maximum ,, was 29in·321 on the 19th; the seventh minimum ,, was 29in·115 on the 19th.
The seventh maximum ,, was 29in·581 on the 21st; the eighth minimum ,, was 29in·008 on the 23rd.
The eighth maximum ,, was 29in·279 on the 24th; the ninth minimum ,, was 29in·065 on the 25th.
The ninth maximum ,, was 29in·622 on the 27th; the absolute minimum ,, was 28in·704 on the 30th.

The range in the month was 1in·507.

The mean for the month was 29in·511, being 0in·252 *lower* than the average of the preceding 31 years.

TEMPERATURE OF THE AIR.

The highest in the month was 61°·8 on the 5th; the lowest was 32°·3 on the 18th.
The range ,, was 29°·5.
The mean ,, of all the highest daily readings was 50°·8, being 1°·9 *higher* than the average of the preceding 31 years.
The mean ,, of all the lowest daily readings was 40°·8, being 3°·7 *higher* than the average of the preceding 31 years.
The mean daily range was 10°·0, being 1°·7 *less* than the average of the preceding 31 years.
The mean for the month was 45°·3, being 1°·7 *higher* than the average of the preceding 31 years.

MONTH and DAY, 1872.	ELECTRICITY. A.M.	ELECTRICITY. P.M.	CLOUDS AND WEATHER. A.M.	CLOUDS AND WEATHER. P.M.
Nov. 1	w	w	0 : 4, ci, cu, cu.-s	10, th.-r, w : v, fr.-r, st.-w
2	o	o	10, th.-r, st.-w : v, r	7,ci,ci.-cu,ci.-s : 10, r, w : 10, r, w
3	o	o	10, h.-r, st.-w : v, ci, ci.-s, h, f	4, ci, ci.-s, ci.-cu, h, f : 0, f
4	m	w : o	3, ci.-cu, cu.-s, h, mt	10, r : 10, r, st.-w
5	o	o	9, ci, ci.-s, cu.-s, r, st.-w	10, r, st.-w : v : 1, li.-cl
6	o	o : w	10, th.-r : 10, th.-r, st.-w	10, st.-w : vv, r, st.-w
7	w	w : m	li.-cl, w	ci.-cu, cu : li.-cl
8	m	m	10, ci, cu.-s, w	v, ci, ci.-s : 10 : 10
9	w : m	o : m	10, th.-cl, h, mt	10, w : 10, mt
10	o	o	7, ci, ci.-cu, ci.-s, h, mt, r	v, cu, cu.-s : 10, st.-w
11	o	w : o	10, st.-w : 10, st.-w, mt	v, ci, ci.-s, cu.-s: v, w : v, ci.-cu, cu.-s
12	o	s, sp, g.-cur : o	li.-cl : v, r : v, r	v, r, w : v : v, th.-r
13	w	o	10, th.-r : v, mt, h.-fr, w	10, w : 10, r, st.-w : 10,oc.-h.-r,st.-w
14		o	10, oc.-r : 10, sqs, hl, sl, h.-r	v,ci.-cu,cu,cu.-s,th.-r: 10, st.-w, r, sl : 10, c.-r, w, sl
15	o		10, h.-shs.-r : 10	10,c.-r,sn,st.-w: 10, st.-w, fr.-r : 10, th.-r, st.-w
16		s	10 : 10, th.-r	10, glm, f : 10, f, th.-r : 10, mt, th.-r
17	w	s : m	10, f	v, ci, ci.-s, cu.-s, f, th.-r : 10, oc.-r
18	s, sp, g.-cur	o	8, ci, ci.-cu, h, mt	10, th.-r : 10, c.-r
19	o	o	9, f	9, li.-cl, h, mt : 10, r : 10, r
20	o	s, sp, vv : o	1, ci, ci.-cu : 6, ci, ci.-cu, ci.-s, w	v, r : vv : vv, lu.-ha
21	o	o	v : 0 : 0, w	4,ci,ci.-s,ci.-cu,cu: 3,ci,ci.-cu,ci.-s: v, lu.-ha
22	o : wN	o	10, ci, ci.-s, s, r	v, r : 0 : v, d
23	o		10, r, st.-w : 10, st.-w	10,ci,ci.-s,cu.-s,st.-w: v, th.-r, w : 0, st.-w
24			v, st.-w : v, st.-w, r	v, ci.-cu, w : v, d, r, w
25			10, r, st.-w : 10, r, w	10, c.-r, h.-g : v, g : vv, g
26			vv, h.-g, r, l : vv, h.-g	10, st.-w : 10,h.-g,fr.-h.-r : th.-cl, g
27			0, g : 9, cu.-s, g	10, st.-w : 10
28			10, f	v, r : v : v, ci.-s, cu.-s
29			h.-r : 3, ci, ci.-s, mt	1, ci, ci.-s : v, r : 10, h.-r
30			2, ci.-cu : 5, ci, ci.-cu, cu, r	vv, h.-r : vv, l, w : vv, w, r

HUMIDITY OF THE AIR.

Temperature of the Dew Point.

The highest in the month was 56°·3 on the 5th; and the lowest was 29°·9 on the 13th.
The mean ,, was 41°·7, being 2°·2 *higher* than the average of the preceding 31 years.

Elastic Force of Vapour.—The mean for the month was 0in·264, being 0in·017 *greater* than the average of the preceding 31 years.

Weight of Vapour in a Cubic Foot of Air.—The mean for the month was 3grs·1, being 0gr·3 *greater* than the average of the preceding 31 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 31 years.

Weight of a Cubic Foot of Air.—The mean for the month was 541 grains, being 7 grains *less* than the average of the preceding 31 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. 6, S. 11, W. 11, E. 2, and Calm 0. The greatest pressure in the month was 30lbs·0 on the square foot on the 26th.

RAIN.

Fell on 24 days in the month, amounting to 2in·92, as measured in the simple cylinder gauge partly sunk below the ground; being 0in·61 *greater* than the average fall of the preceding 57 years.

ELECTRICITY.

The electrical apparatus was out of order from November 24 to 30.

MONTH and DAY, 1872.	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.
Dec. 1	..	29·019	50·5	41·0	46·0	43·5	62·5	33·1	46·6	44·8	2·5	5·7	0·9	+ 3·9	SSW : S	SSW : S : SSE	3·3	0·0	0·3	257	0·14
2	Greatest Declination S.	29·348	48·8	38·6	44·1	42·9	55·7	31·0	46·2	44·0	1·2	3·4	0·0	+ 1·9	Calm : E	E : NNE	4·2	0·0	0·2	251	0·13
3	Perigee	29·326	46·1	41·9	44·0	41·8	48·0	41·0	45·6	43·7	2·2	2·9	2·0	+ 1·7	NNE	N by E	3·9	0·0	0·7	385	0·14
4	..	29·635	41·9	33·0	37·2	32·7	62·2	26·1	45·4	43·2	4·5	7·4	2·8	− 5·0	N by E	N by E : N	4·6	0·0	0·8	406	0·00
5	..	29·689	45·5	27·7	35·1	29·2	54·0	19·9	44·6	41·8	5·9	10·3	2·0	− 7·1	W : WSW	SW : SSW	8·2	0·0	0·4	331	0·15
6	..	29·297	48·7	41·8	44·7	39·5	60·4	35·0	43·3	40·3	5·2	7·8	2·4	+ 2·6	WSW	SW : SSW	4·0	0·0	0·7	396	0·13
7	First Qr.	29·319	45·5	39·0	42·1	38·2	63·8	30·7	42·8	39·8	3·9	5·9	2·1	+ 0·1	NE : NW : W	WSW	3·4	0·0	0·6	404	0·44
8	..	29·162	49·3	38·2	44·3	36·3	56·6	31·3	42·4	39·5	8·0	13·0	4·6	+ 2·6	WSW	SSW : SW	30·0	0·2	3·5	667	0·27
9	In Equator	28·918	46·0	37·5	41·5	35·2	62·5	31·0	41·1	38·5	6·3	9·0	2·3	+ 0·2	WSW	W : WSW	30·0	0·1	4·4	811	0·00
10	..	28·791	40·3	34·8	37·1	35·0	45·0	27·8	40·8	38·5	2·1	4·6	0·0	− 3·9	W : WSW : SSW	NE : N : NW	3·9	0·0	0·5	344	0·17
11	..	29·335	41·9	31·6	36·7	33·9	45·0	23·0	40·4	38·8	2·8	6·2	2·7	− 4·0	NW : N	N : N by E	2·4	0·0	0·3	313	0·00
12	..	29·826	36·3	27·1	31·3	27·5	36·3	17·9	40·0	38·0	3·8	8·5	0·0	− 9·3	N : Calm	SW	0·6	0·0	0·0	199	0·00
13	..	29·557	45·3	34·6	40·3	40·3	48·2	31·2	39·2	36·8	0·0	1·6	0·0	− 0·2	SW : SSW	SW : W	3·5	0·0	0·3	302	0·12
14	Full	29·362	42·2	33·6	38·7	38·7	44·9	29·1	38·6	36·3	0·0	1·1	0·0	− 1·7	Calm : E by S	E	2·2	0·0	0·2	261	0·18
15	..	29·592	45·7	41·7	44·4	44·4	50·4	40·7	38·6	36·0	0·0	0·2	0·0	+ 4·2	E : Calm	Calm : NW	1·0	0·0	0·0	134	0·02
16	Greatest Declination N.	29·639	43·8	36·9	39·4	38·2	51·8	31·9	38·6	36·8	1·2	2·3	0·0	− 0·6	NW : WSW	ESE	3·5	0·0	0·3	269	0·31
17	..	29·196	48·4	39·0	42·0	38·2	48·4	36·8	40·0	37·6	3·8	4·2	1·4	+ 2·2	WSW	WNW	10·1	0·0	1·1	525	0·64
18	..	29·475	40·9	34·3	38·3	35·7	43·8	31·5	40·9	38·7	2·6	3·9	0·0	− 1·3	WNW	W : WSW	2·7	0·0	0·4	368	0·11
19	Apogee	29·460	41·9	33·3	38·7	38·7	48·0	27·5	41·1	39·4	0·0	1·8	0·0	− 0·7	SW : ESE : E	ESE : E : ENE	1·2	0·0	0·1	186	0·27
20	..	29·446	43·5	39·0	41·3	39·5	49·3	38·8	41·0	39·5	1·8	2·3	1·3	+ 2·2	ESE : SSE	SSE	2·1	0·0	0·2	213	0·13
21	..	29·407	50·5	41·4	46·6	44·8	62·4	36·3	41·1	39·4	1·8	4·6	0·0	+ 7·8	SSE : SSW : SW	WSW : SW	1·9	0·0	0·2	277	0·13
22	..	29·719	55·4	43·3	51·2	49·2	59·0	31·9	41·9	40·0	2·0	8·8	0·0	+12·7	WSW : S by E	SW : SSW	1·5	0·0	0·2	236	0·07
23	Last Quarter : In Equator.	29·464	53·0	45·1	48·2	44·6	65·3	43·0	43·1	41·0	3·6	6·0	1·9	+10·1	SSW	SSW	2·2	0·0	0·5	384	0·00
24	..	29·141	49·8	44·2	47·1	41·9	61·2	38·2	44·3	42·0	5·2	7·8	2·7	+ 9·3	SSW	SSW : SW	3·4	0·0	0·7	367	0·05
25	..	29·013	52·7	45·8	49·9	44·9	69·3	41·2	44·9	43·0	5·0	7·4	2·5	+12·3	SW	SW	7·3	0·1	1·2	508	0·31
26	..	29·547	53·8	44·2	48·4	44·4	79·8	37·1	45·2	43·4	4·0	8·0	0·0	+11·0	SW	WSW : SW	2·7	0·0	0·4	361	0·00
27	..	29·673	50·3	45·0	47·5	42·2	59·8	38·7	46·2	44·0	5·3	6·9	3·1	+10·2	SW	SW : SSW	3·4	0·0	0·8	433	0·00
28	..	29·532	52·7	45·7	48·5	43·7	82·4	36·2	45·6	44·2	4·8	8·6	1·5	+11·3	S by W	S	1·5	0·0	0·4	289	0·00
29	..	29·650	51·7	43·7	46·9	42·6	69·2	37·3	45·6	44·3	4·3	6·8	1·8	+ 9·6	Calm : SSW	SW : Calm	0·8	0·0	0·0	175	0·00
30	New : Greatest Dec. S.	29·780	46·7	38·7	43·5	39·5	63·7	34·5	45·6	44·2	4·0	7·5	1·3	+ 6·1	Calm : SW : W	WSW : SSW	0·9	0·0	0·1	235	0·00
31	Perigee	29·473	47·8	38·7	44·5	41·9	54·5	29·2	45·6	44·0	2·6	5·0	2·2	+ 7·0	SSW : SW	SSW	4·0	0·0	0·9	432	0·16
Means	..	29·413	47·0	38·7	42·9	39·7	56·9	32·9	42·8	40·7	3·2	5·8	1·3	+ 3·1	...	...	..	..	..	Sum 10719	Sum 4·07

BAROMETER READINGS FROM EYE-OBSERVATIONS.

The first maximum in the month was $29^{\text{in}}\cdot386$ on the 2nd; the first minimum in the month was $29^{\text{in}}\cdot267$ on the 3rd.
The second maximum ,, was $29^{\text{in}}\cdot834$ on the 5th; the second minimum ,, was $29^{\text{in}}\cdot240$ on the 6th.
The third maximum ,, was $29^{\text{in}}\cdot408$ on the 8th; the third minimum ,, was $28^{\text{in}}\cdot757$ on the 8th.
The fourth maximum ,, was $28^{\text{in}}\cdot988$ on the 9th; the absolute minimum ,, was $28^{\text{in}}\cdot689$ on the 10th.
The absolute maximum ,, was $29^{\text{in}}\cdot841$ on the 12th; the fifth minimum ,, was $29^{\text{in}}\cdot331$ on the 14th.
The sixth maximum ,, was $29^{\text{in}}\cdot727$ on the 16th; the sixth minimum ,, was $29^{\text{in}}\cdot178$ on the 17th.
The seventh maximum ,, was $29^{\text{in}}\cdot515$ on the 18th; the seventh minimum ,, was $29^{\text{in}}\cdot284$ on the 21st.
The eighth maximum ,, was $29^{\text{in}}\cdot740$ on the 22nd; the eighth minimum ,, was $28^{\text{in}}\cdot971$ on the 25th.
The ninth maximum ,, was $29^{\text{in}}\cdot723$ on the 27th; the ninth minimum ,, was $29^{\text{in}}\cdot523$ on the 28th.
The tenth maximum ,, was $29^{\text{in}}\cdot793$ on the 30th; the tenth minimum ,, was $29^{\text{in}}\cdot397$ on the 31st.
The range in the month was $1^{\text{in}}\cdot152$.
The mean for the month was $29^{\text{in}}\cdot413$, being $0^{\text{in}}\cdot397$ *lower* than the average of the preceding 31 years.

TEMPERATURE OF THE AIR.

The highest in the month was 55°·4 on the 22nd; the lowest was 27°·1 on the 12th.
The range ,, was 28°·3.
The mean ,, of all the highest daily readings was 47°·0, being 2°·0 *higher* than the average of the preceding 31 years.
The mean ,, of all the lowest daily readings was 38°·7, being 3°·2 *higher* than the average of the preceding 31 years.
The mean daily range was 8°·3, being 1°·2 *less* than the average of the preceding 31 years.
The mean for the month was 42°·9, being 2°·7 *higher* than the average of the preceding 31 years.

MONTH and DAY, 1872.	ELECTRICITY. A.M.	ELECTRICITY. P.M.	CLOUDS AND WEATHER. A.M.	CLOUDS AND WEATHER. P.M.
Dec. 1			r : v, oc.-r	vv, fr.-shs, ci, ci.-cu, cu.-s: vv, ci.-s, cu.-s, r
2			9, ci, ci.-s, mt	10 : 10, r : 10, c.-r
3			10, r	10, c.-r : 10, th.-r
4			0, w	1, ci.-cu : 0
5			2, ci, ci.-s, h, mt	v : 10, st.-w, r : 10, r, st.-w
6			th.-cl	v, ci.-cu, cu : 10, r : 10, h.-r
7			c.-h.-r : v : 2, ci.-cu, h, mt	v, ci.-cu, h, mt : v, sh.-r : 0, ms
8			vv, h.-r : 4, ci, ci.-s	0 : vv, h.-r, st.-w : vv, h.-g
9			h.-g : h.-g : 10, s, st.-w	vv : vv : v, li.-cl, a
10	m	s, sp : m : w	10, ci, ci.-s, f	10, r : 10, c.-r
11	0 : w	w : m	10, mt	v, ci, ci.-cu, cu.-s : 0, h.-fr
12	0	0	10, h, f, h.-fr	v, h, f, h.-fr : v,ci,ci.-cu,ci.-s: 8, ci.-cu
13	0	0	10 : 10, r	10, c.-r : v : 10, lu.-ha
14	0	w : 0	10, f : 10, r, f	10, th.-r : 10, r
15	0	w	10, r : 10, mt, f	10, th.-r : 10, th.-r
16	m :s,sp,g.-cur	s : 0	8, ci, ci.-s	10, f : 10, h.-r : 10,c.-h.-r,st.-w
17	sN, sp, g.-cur	0	10, c.-h.-r, st.-w : v : 10, r, w	10, c.-r, st.-w : 10, c.-r : 10, th.-r, w
18	0	0 : w	10, r, w : 10, glm, f	10, r,glm,h,mt,f : v : 6, ci.-cu
19	0	0	r : 10, h.-r	10, th.-r : 10, c.-r
20	w : m	w : 0	10, h.-r : 10, mt	10, th.-r : 10, r
21	0	w : m	10, c.-r : 10, r	10 : v : 0, f
22	0	w	v : 10, h.-r	10 : 0 : v, s
23	0	w : m	8, ci, ci.-s, cu.-s, f	v, li.-cl, w : 0, w
24	m	w : m : 0	9, ci, ci.-s, s	9, ci.-cu, cu.-s, w : 10, r, st.-w
25	0	0	vv, w : vv, st.-w	vv, oc.-r, w : vv, h.-r, w : 1, w
26	w	s	1, ci, ci.-cu, w : v, cu, cu.-s	v, cu : 0, h.-d
27	s	w	9, w	7,ci,ci.-cu,ci.-s,cu,st.-w: v, st.-w
28	w	0	3, w	2, ci, ci.-cu : 0 : 0
29	m	w : 0	1, ci, ci.-cu, ci.-s	8, ci.-s,cu,cu.-s : vv : vv
30	0	0 : w	10	v : v : v
31	0	0	9, st.-w, th.-r	10, th.-r : 10, c.-r : v, oc.-r

HUMIDITY OF THE AIR.

Temperature of the Dew Point.

The highest in the month was 52°·5 on the 22nd; and the lowest was 24°·6 on the 5th.

The mean „ was 39°·7, being 2°·8 *higher* than the average of the preceding 31 years.

Elastic Force of Vapour.—The mean for the month was 0^{in}·244, being 0^{in}·023 *greater* than the average of the preceding 31 years.

Weight of Vapour in a Cubic Foot of Air.—The mean for the month was 2^{grs}·8, being 0^{gr}·2 *greater* than the average of the preceding 31 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 31 years.

Weight of a Cubic Foot of Air.—The mean for the month was 542 grains, being 10 grains *less* than the average of the preceding 31 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. 11, W. 10, E. 4, and Calm 2. The greatest pressure in the month was 30^{lbs}·0 on the square foot on the 8th and 9th.

RAIN.

Fell on 21 days in the month, amounting to 4^{in}·07, as measured in the simple cylinder gauge partly sunk below the ground; being 2^{in}·11 *greater* than the average fall of the preceding 57 years.

ELECTRICITY.

The electrical apparatus was out of order from December 1st to 9th.

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 mercury has been sensibly stationary through a period of more than one hour.

MAXIMA.			MINIMA.			MAXIMA.			MINIMA.		
Approximate Mean Solar Time, 1872.		Reading.	Approximate Mean Solar Time, 1872.		Reading.	Approximate Mean Solar Time, 1872.		Reading.	Approximate Mean Solar Time, 1872.		Reading.
	d h m	in.		d h m	in.		d h m	in.		d h m	in.
January	2. 22. 15	29·775	January	2. 8. 0	29·620	April	29. 21. 30	30·285	April	26. 23. 50	29·551
	4. 2. 0	29·350		3. 19. 10	29·170	May	5. 10. 30	29·482	May	4. 15. 15:	29·330
	6. 10. 40:	29·472		4. 16. 50	28·740		10. 11. 0:	30·090		6. 23. 50	29·203
	9. 22. 40:	29·982		7. 14. 0:	29·030		14. 7. 40:	29·700		13. 7. 0	29·470
	11. 23. 0:	30·032		11. 1. 0:	29·676		15. 10. 40	29·720		14. 23. 55	29·610
	14. 9. 45	29·907		13. 7. 55	29·528		26. 9. 30:	30·200		17. 15. 35	29·383
	20. 21. 30	29·565		17. 15. 0	28·805	June	1. 0. 0	29·962		31. 5. 30:	29·772
	28. 10. 45:	29·935		23. 17. 20	28·208		4. 18. 30	29·983	June	2. 6. 0:	29·590
February	2. 22. 15:	29·810	February	1. 13. 15	29·340		7. 21. 0:	29·582		7. 5. 30	29·480
	6. 23. 20	29·860		4. 18. 40	29·485		10. 18. 15	29·565		9. 4. 50	29·240
	8. 11. 56	29·848		7. 17. 0	29·723		15. 20. 30:	30·120		11. 4. 35	29·312
	12. 22. 30	29·630		12. 2. 35	29·451		20. 11. 30	29·908		19. 3. 10	29·635
	16. 22. 30	29·680		15. 1. 30	29·458		22. 20. 30	29·970		21. 11. 30:	29·715
	21. 13. 30	30·015		18. 10. 35	29·512		26. 21. 25:	29·852		25. 5. 30	29·439
	27. 10. 25:	30·070		24. 21. 57	29·333		29. 11. 10	29·854		27. 18. 0:	29·603
March	3. 8. 40	30·144		29. 15. 25	29·500	July	3. 23. 0:	30·076		30. 18. 50	29·600
	9. 22. 30	30·160	March	7. 4. 0	29·220		12. 10. 45	29·770	July	7. 15. 0	29·530
	16. 20. 45	29·940		14. 4. 30	29·264		19. 20. 20	29·944		13. 5. 30:	29·620
	19. 14. 30	29·840		18. 10. 45	29·539		22. 0. 20	29·783		21. 22. 0	29·664
	22. 21. 45	29·665		21. 0. 10	29·495		24. 10. 30	29·780		23. 5. 15	29·600
	26. 14. 15	29·550		25. 15. 40	29·350		27. 0. 35	29·860		25. 15. 30	29·592
	28. 13. 40	29·280		27. 10. 55	29·145		31. 0. 50:	29·790		29. 19. 30:	29·500
	31. 10. 30:	29·480		30. 3. 15	29·086	August	3. 23. 25	29·740	August	2. 4. 10	29·434
April	6. 19. 45	30·314	April	2. 0. 0	29·220		5. 21. 50	29·620		5. 7. 15	29·308
	9. 9. 5	30·131		8. 3. 10	29·860		8. 21. 15	29·880		7. 5. 30	29·295
	13. 19. 30:	30·110		12. 0. 35	29·605		13. 12. 30:	30·110		10. 6. 30	29·468
	18. 20. 30:	29·721		17. 16. 55	29·559		18. 11. 35:	30·045		17. 4. 50	29·940
	25. 21. 25:	29·740		21. 5. 5:	28·890		23. 21. 15	30·134		21. 5. 15	29·772

MAXIMA.			MINIMA.			MAXIMA.			MINIMA.		
Approximate Mean Solar Time, 1872.		Reading.	Approximate Mean Solar Time, 1872.		Reading.	Approximate Mean Solar Time, 1872.		Reading.	Approximate Mean Solar Time, 1872.		Reading.
	d h m	in.		d h m	in.		d h m	in.		d h m	in.
August	27. 19. 40	30·150	August	26. 4. 20	29·570	November	14. 21. 15	29·770	November	14. 0. 0	29·516
	31. 22. 10	29·800		30. 16. 30	29·535		16. 21. 40	29·557		15. 22. 50	29·332
September	8. 8. 50:	29·828	September	3. 1. 20	29·440		18. 21. 55	29·327		18. 6. 40	29·050
	12. 21. 35	30·160		9. 9. 30	29·584		20. 21. 55	29·600		19. 11. 0	29·102
	20. 11. 0	29·680		18. 6. 15	29·410		23. 22. 25	29·309		23. 0. 55	28·990
	22. 11. 30:	29·801		21. 1. 0	29·511		26. 1. 20	29·390		25. 5. 15	29·047
	26. 10. 20	29·920		24. 2. 30	29·183		27. 7. 30	29·650		26. 7. 40	29·281
	29. 21. 30	29·781		27. 17. 15	29·408	December	1. 20. 50	29·400		30. 10. 40:	28·697
October	6. 10. 50:	30·208	October	2. 16. 30:	29·208		4. 20. 10	29·860	December	2. 18. 10	29·231
	9. 20. 35	29·590		9. 4. 15:	29·438		6. 0. 0	29·340		5. 13. 25	29·242
	13. 22. 30	29·865		10. 12. 20	29·110		7. 21. 10	29·415		6. 15. 0	29·075
	17. 22. 10	29·554		15. 21. 0	29·123		9. 14. 25	29·024		8. 10. 0	28·710
	18. 20. 35	29·637		18. 6. 25	29·350		11. 22. 30	29·844		10. 6. 0	28·600
	22. 20. 40	29·630		21. 17. 30:	29·214		16. 0. 5	29·730		14. 0. 55	29·330
	28. 22. 30:	29·926		24. 10. 40:	29·025		18. 8. 0:	29·524		17. 1. 15	29·168
	31. 14. 20	29·630		30. 15. 0:	29·392		21. 23. 40	29·745		20. 18. 0:	29·267
November	1. 15. 30	29·314	November	1. 7. 40	29·201		26. 15. 30	29·744		24. 19. 35	28·960
	3. 19. 35	29·947		2. 5. 15:	29·113		30. 6. 10:	29·800		28. 5. 0:	29·523
	7. 9. 45	30·241		4. 16. 45:	29·580					31. 10. 0:	29·370
	12. 8. 50	29·913		9. 18. 30	29·480						

ABSOLUTE MAXIMA AND MINIMA READINGS OF THE BAROMETER for each Month in the YEAR 1872.
[Extracted from the preceding Table.]

1872, MONTH.	Readings of the Barometer.		Range of Reading in each Month.
	Maxima.	Minima.	
	in.	in.	in.
January	30·032	28·208	1·824
February	30·070	29·333	0·737
March	30·160	29·086	1·074
April	30·314	28·890	1·424
May	30·200	29·203	0·997
June	30·120	29·240	0·880
July	30·076	29·500	0·576
August	30·150	29·295	0·855
September	30·160	29·183	0·977
October	30·208	29·025	1·183
November	30·241	28·697	1·544
December	29·860	28·600	1·260

The highest reading in the year was $30^{in}\cdot314$ on April 7. The lowest reading in the year was $28^{in}\cdot208$ on January 24.
The range of reading in the year was $2^{in}\cdot106$.

MONTHLY MEANS of RESULTS for METEOROLOGICAL ELEMENTS.

1872, 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.	gr.
January ..	29·463	52·7	28·3	24·4	46·3	37·0	9·3	41·3	38·1	0·230	2·7	0·4
February ..	29·645	57·9	32·4	25·5	51·7	39·2	12·5	44·8	40·7	0·254	2·9	0·5
March	29·626	60·8	26·1	34·7	53·5	37·7	15·8	44·6	39·8	0·245	2·8	0·5
April	29·735	69·9	29·6	40·3	59·3	40·1	19·2	48·3	41·0	0·257	2·9	0·9
May	29·735	73·2	32·6	40·6	62·1	42·5	19·6	50·9	43·6	0·284	3·3	0·9
June	29·735	86·0	40·6	45·4	71·3	50·0	21·3	59·2	51·1	0·375	4·2	1·4
July	29·759	90·9	47·0	43·9	78·2	54·8	23·4	65·0	57·5	0·473	5·3	1·5
August ...	29·798	81·7	45·0	36·7	72·9	52·5	20·4	60·9	53·6	0·412	4·5	1·5
September.	29·681	81·4	34·5	46·9	68·2	49·1	19·1	57·4	50·8	0·371	4·1	1·1
October ...	29·533	66·6	29·1	37·5	56·7	41·1	15·6	47·8	45·0	0·299	3·4	0·4
November .	29·511	61·8	32·3	29·5	50·8	40·8	10·0	45·3	41·7	0·264	3·1	0·5
December .	29·413	55·4	27·1	28·3	47·0	38·7	8·3	42·9	39·7	0·244	2·8	0·4
Means	29·636	69·9	33·7	36·1	59·8	43·6	16·2	50·7	45·2	0·309	3·5	0·8

1872, MONTH.	Mean Degree of Humidity. (Saturation = 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	89	545	6·9	20	3·63	3·83	42	41	16	34	141	352	84	22	12	0·77	325
February	86	544	7·2	14	0·77	0·88	15	36	23	94	192	282	31	4	19	0·30	302
March	84	544	6·5	16	2·13	2·21	92	62	36	47	120	249	84	17	37	0·38	276
April	76	542	5·6	13	0·98	1·22	142	83	38	61	79	153	54	65	45	0·37	273
May	76	539	6·9	15	3·09	3·13	133	84	32	30	32	219	146	47	21	0·34	257
June	75	530	6·5	15	1·64	1·62	28	14	26	42	57	307	170	57	19	0·38	264
July	78	524	6·1	16	2·36	2·33	76	50	34	73	93	234	114	40	30	0·13	185
August	75	529	6·2	10	2·70	2·78	104	61	113	58	49	139	122	33	65	0·25	224
September	78	531	6·4	11	1·39	1·45	19	0	0	28	69	238	317	49	0	0·51	319
October	91	539	6·8	22	4·34	4·52	22	50	36	52	140	213	137	16	78	0·25	234
November	87	541	7·1	24	2·92	2·89	106	42	7	13	115	293	121	23	0	1·05	416
December	88	542	7·1	21	4·07	4·10	60	33	54	46	121	258	91	32	49	0·66	346
Means	82	537	6·6	Sum 197	Sum 30·02	Sum 30·96	Sum 839	Sum 556	Sum 415	Sum 578	Sum 1208	Sum 2937	Sum 1471	Sum 405	Sum 375	0·45	285

(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, 1872.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
1	52·55	51·73	50·96	50·32	49·95	49·82	50·01	50·64	S	52·43	53·08	S
2	52·54	51·68	50·92	50·29	49·95	S	50·05	50·64	51·60	52·45	53·06	53·15
3	52·52	51·67	S	50·28	49·95	49·80	50·09	50·67	51·64	52·42	S	53·16
4	52·51	S	50·87	50·28	49·93	49·82	50·07	S	51·65	52·50	53·08	53·14
5	52·49	51·62	50·85	50·26	S	49·82	50·07	50·74	51·70	52·52	53·13	53·11
6	52·47	51·58	50·84	50·25	49·75	49·83	50·10	50·78	51·72	S	53·15	53·13
7	S	51·59	50·80	S	49·59	49·82	S	50·81	51·76	52·52	53·16	53·13
8	52·38	51·57	50·77	50·22	49·69	49·83	50·15	50·82	S	52·61	53·15	S
9	52·37	51·52	50·74	50·22	49·77	S	50·13	50·87	51·81	52·66	53·14	53·11
10	52·33	51·47	S	50·20	49·85	49·85	50·17	50·88	51·83	52·68	S	53·08
11	52·33	S	50·72	50·18	49·85	49·83	50·18	S	51·88	52·65	53·11	53·08
12	52·28	51·37	50·70	50·19	S	49·87	50·17	50·95	51·91	52·68	53·13	53·03
13	52·28	51·37	50·66	50·17	49·84	49·86	50·18	50·97	51·95	S	53·13	53·08
14	S	51·36	50·64	S	49·82	49·90	S	51·03	51·95	52·73	53·12	53·06
15	52·19	51·33	50·63	50·14	49·85	49·89	50·22	51·08	S	52·72	53·13	S
16	52·16	51·27	50·62	50·11	49·84	S	50·25	51·07	52·00	52·77	53·13	53·04
17	52·16	51·26	S	50·11	49·83	49·91	50·26	51·12	52·05	52·80	S	53·02
18	52·11	S	50·57	50·07	49·81	49·90	50·30	S	52·06	52·82	53·16	53·00
19	52·08	51·22	50·53	50·08	S	49·92	50·32	51·16	52·09	52·83	53·13	53·01
20	52·06	51·20	50·52	50·05	49·82	49·92	50·36	51·21	52·10	S	53·18	53·02
21	S	51·15	50·47	S	49·81	49·93	S	51·23	52·13	52·88	53·18	52·98
22	52·01	51·14	50·47	50·02	49·80	49·92	50·40	51·25	S	52·89	53·20	S
23	51·97	51·09	50·44	50·02	49·80	S	50·42	51·29	52·20	52·90	53·18	52·97
24	51·96	51·10	S	50·01	49·81	49·96	50·46	51·32	52·18	52·92	S	52·96
25	51·93	S	50·41	50·00	49·81	49·97	50·47	S	52·24	52·95	53·17	Christmas Day
26	51·89	51·02	50·41	49·98	S	49·97	50·49	51·42	52·27	52·94	53·18	52·93
27	51·85	51·02	50·38	50·01	49·84	49·97	50·53	51·40	52·32	S	53·18	52·92
28	S	50·96	50·38	S	49·84	49·99	S	51·43	52·33	52·98	53·18	52·91
29	51·79	50·95	Good Friday.	49·96	49·83	50·01	50·52	51·47	S	53·01	53·18	S
30	51·80		50·37	49·97	49·82	S	50·60	51·50	52·40	53·05	53·17	52·83
31	51·79		S		49·82		50·60	51·53		53·05		52·84
Means.	52·18	51·33	50·63	50·13	49·82	49·89	50·28	51·08	51·99	52·75	53·15	53·03

(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, 1872.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
1	49·86	48·28	47·99	48·10	48·53	49·81	52·06	54·95	S	57·28	55·56	S
2	49·82	48·25	47·95	48·00	48·60	S	52·17	54·97	56·76	57·27	55·41	53·31
3	49·76	48·23	S	47·97	48·63	49·89	52·29	55·06	56·85	57·23	S	53·27
4	49·68	S	47·96	47·97	48·66	49·93	52·43	S	56·84	57·20	55·29	53·16
5	49·67	48·18	47·95	47·95	S	50·06	52·56	55·27	56·89	57·20	55·22	53·12
6	49·58	48·15	47·98	47·96	48·70	50·08	52·65	55·41	56·90	S	55·22	53·05
7	S	48·10	47·94	S	48·68	50·13	S	55·50	56·95	57·08	55·15	53·01
8	49·45	48·11	47·92	47·95	48·77	50·17	52·81	55·53	S	57·01	55·08	S
9	49·38	48·13	47·90	47·97	48·83	S	52·86	55·64	56·99	56·95	55·00	52·85
10	49·35	48·10	S	47·97	48·90	50·36	53·04	55·72	57·01	56·90	S	52·77
11	49·31	S	47·96	47·98	48·92	50·35	53·16	S	57·07	56·85	54·84	52·70
12	49·25	48·06	47·98	47·97	S	50·50	53·21	55·84	57·10	56·80	54·76	52·57

(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, 1872.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
13	49·23	48·05	47·99	48·00	49·11	50·55	53·28	55·89	57·15	S	54·70	52·58
14	S	48·05	47·96	S	49·08	50·68	S	55·97	57·14	56·71	54·63	52·48
15	49·10	48·05	48·02	48·00	49·18	50·74	53·45	56·03	S	56·70	54·57	S
16	49·07	48·01	48·03	48·02	49·20	S	53·60	56·09	57·15	56·62	54·52	52·35
17	49·02	48·02	S	48·04	49·25	50·88	53·68	56·17	57·20	56·56	S	52·24
18	48·97	S	48·06	48·03	49·26	50·94	53·84	S	57·19	56·51	54·43	52·10
19	48·87	48·01	48·06	48·09	S	50·98	53·92	56·21	57·19	56·36	54·33	52·04
20	48·83	48·03	48·06	48·09	49·35	50·98	54·05	56·27	57·15	S	54·25	51·95
21	S	48·00	48·02	S	49·42	51·07	S	56·31	57·21	56·31	54·26	51·84
22	48·75	48·01	48·06	48·20	49·44	51·14	54·19	56·29	S	56·24	54·22	S
23	48·68	47·98	48·08	48·20	49·47	S	54·25	56·34	57·26	56·15	54·03	51·68
24	48·61	48·03	S	48·26	49·53	51·35	54·38	56·35	57·22	56·17	S	51·58
25	48·55	S	48·07	48·30	49·60	51·44	54·45	S	57·27	56·04	53·90	Christmas Day
26	48·46	48·00	48·11	48·35	S	51·52	54·52	56·42	57·27	55·92	53·86	51·47
27	48·43	47·97	48·10	48·42	49·73	51·61	54·57	56·45	57·37	S	53·77	51·48
28	S	47·97	48·14	S	49·73	51·74	S	56·51	57·32	55·80	53·66	51·33
29	48·32	47·96	Good Friday.	48·44	49·74	51·87	54·71	56·60	S	55·75	53·60	S
30	48·33		48·14	48·52	49·76	S	54·74	56·59	57·31	55·70	53·57	51·21
31	48·32		S		49·76		54·84	56·64		55·60		51·14
Means .	49·06	48·07	48·02	48·11	49·18	50·75	53·54	55·96	57·11	56·55	54·53	52·29

(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, 1872.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
1	47·07	46·20	47·18	47·10	49·96	52·40	57·42	61·23	S	59·01	54·50	S
2	47·06	46·26	47·12	47·21	50·10	S	57·58	61·22	61·35	58·91	54·43	51·39
3	47·01	46·31	S	47·38	50·21	52·83	57·67	61·28	61·32	58·78	S	51·39
4	46·95	S	47·23	47·56	50·31	52·97	57·85	S	61·21	58·60	54·42	51·27
5	46·88	46·42	47·32	47·67	S	53·12	58·01	61·31	61·21	58·52	54·41	51·18
6	46·76	46·46	47·47	47·76	50·52	53·22	58·12	61·34	61·20	S	54·30	51·12
7	S	46·47	47·51	S	50·62	53·25	S	61·27	61·24	58·41	54·22	50·87
8	46·62	46·52	47·60	47·81	50·74	53·38	58·34	61·18	S	58·25	54·20	S
9	46·63	46·61	47·71	47·85	50·87	S	58·53	61·15	61·28	58·06	54·16	50·45
10	46·62	46·67	S	47·91	50·93	53·62	58·80	61·08	61·30	57·90	S	50·34
11	46·57	S	47·91	48·01	50·96	53·62	58·96	S	61·32	57·74	54·04	50·26
12	46·45	46·82	47·96	48·09	S	53·73	59·00	60·90	61·31	57·60	54·00	50·18
13	46·42	46·88	47·93	48·22	51·02	53·78	59·04	60·82	61·31	S	53·89	50·03
14	S	46·94	47·89	S	51·00	53·91	S	60·87	61·20	57·24	53·70	49·86
15	46·30	47·00	47·88	48·52	51·04	54·00	59·23	60·81	S	56·96	53·45	S
16	46·31	47·00	47·90	48·73	51·05	S	59·28	60·78	61·20	56·82	53·21	49·42
17	46·33	47·06	S	48·89	51·06	54·33	59·38	60·80	61·25	56·58	S	48·90
18	46·27	S	47·92	49·02	51·07	54·32	59·45	S	61·19	56·38	52·72	48·60
19	46·15	47·05	47·93	49·15	S	54·80	59·48	60·71	61·18	56·12	52·40	48·69
20	46·15	47·05	48·01	49·21	51·24	55·08	59·53	60·78	61·01	S	52·20	48·61
21	S	47·02	48·02	S	51·28	55·44	S	60·85	61·04	55·84	52·00	48·53
22	46·08	47·05	48·07	49·34	51·21	55·69	59·56	60·83	S	55·68	51·86	S
23	46·05	47·03	47·98	49·33	51·21	S	59·67	60·98	60·79	55·53	51·72	48·51
24	45·75	47·07	S	49·32	51·27	56·33	59·86	61·08	60·51	55·49	S	48·55
25	45·79	S	47·73	49·35	51·43	56·53	60·03	S	60·31	55·40	51·55	Christmas Day
26	45·81	47·03	47·60	49·41	S	56·72	60·17	61·28	60·05	55·15	51·52	48·64

(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, 1872.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
27	45·88	47·03	47·39	49·50	51·61	56·92	60·32	61·31	59·86	*S*	51·50	48·70
28	*S*	47·09	47·28	*S*	51·73	57·13	*S*	61·41	59·56	54·80	51·50	48·80
29	46·03	47·11	Good Friday.	49·53	51·85	57·26	60·71	61·49	*S*	54·73	51·54	*S*
30	46·10		46·98	49·84	52·00	*S*	60·90	61·42	59·19	54·79	51·52	48·98
31	46·13		*S*		52·17		61·03	61·39		54·56		48·97
Means.	46·38	46·81	47·66	48·53	51·05	54·58	59·18	61·10	60·90	56·81	53·04	49·69

(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, 1872.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
1	43·76	43·90	45·10	46·31	50·72	55·45	61·26	65·75	*S*	57·58	52·53	*S*
2	43·46	43·98	45·48	46·66	51·02	*S*	61·65	65·33	63·06	57·62	52·40	48·57
3	43·38	44·22	*S*	46·94	51·37	55·21	61·82	65·04	63·10	57·75	*S*	48·41
4	43·26	*S*	46·41	46·88	51·67	55·10	62·00	*S*	63·30	57·67	51·95	48·20
5	43·35	44·29	46·60	46·53	*S*	55·08	62·27	64·02	63·62	57·38	51·75	47·87
6	43·64	44·27	46·80	46·36	51·81	55·20	62·91	63·68	63·75	*S*	52·02	47·23
7	*S*	44·48	46·88	*S*	51·73	55·51	*S*	63·38	63·80	56·62	52·36	46·64
8	43·19	44·70	46·93	46·49	51·72	55·40	63·41	63·24	*S*	56·32	52·42	*S*
9	43·00	44·98	47·18	46·99	51·61	*S*	63·52	63·12	63·54	56·17	52·15	46·41
10	42·63	44·92	*S*	47·25	51·38	55·12	63·41	62·95	63·38	56·00	*S*	46·27
11	42·48	*S*	46·80	47·61	51·11	55·06	63·13	*S*	63·17	55·60	51·65	45·97
12	42·50	45·23	46·36	48·11	*S*	55·27	63·31	62·90	63·16	55·19	51·02	45·59
13	42·69	45·20	46·20	48·77	50·88	55·40	63·50	62·80	63·39	*S*	50·44	45·14
14	*S*	45·28	46·26	*S*	50·91	55·96	*S*	62·69	63·31	54·17	49·78	44·76
15	43·25	45·30	46·34	49·42	50·99	56·55	63·10	62·52	*S*	53·60	49·18	*S*
16	42·95	45·20	46·50	49·60	51·19	*S*	62·83	62·60	63·31	53·38	48·58	44·78
17	42·58	45·00	*S*	49·81	51·39	58·20	62·41	62·80	63·21	53·14	*S*	44·53
18	42·49	*S*	47·04	49·70	51·68	59·09	62·57	*S*	62·92	53·00	48·00	44·58
19	42·70	44·91	47·11	49·45	*S*	60·03	62·42	63·40	62·80	53·00	47·46	44·62
20	42·65	45·07	46·98	49·20	50·85	60·56	62·70	63·76	62·17	*S*	47·39	44·42
21	*S*	45·03	46·50	*S*	50·79	60·92	*S*	64·10	61·57	53·09	47·50	44·50
22	42·60	44·92	45·87	48·72	51·06	61·01	63·78	64·31	*S*	53·14	47·71	*S*
23	42·55	44·77	45·09	48·65	51·52	*S*	64·23	64·61	59·83	53·12	47·87	45·22
24	42·62	44·82	*S*	48·82	51·90	61·27	64·49	64·68	59·03	52·83	*S*	45·67
25	42·93	*S*	44·06	49·05	52·12	61·46	64·80	*S*	58·50	52·53	48·38	Christmas Day
26	43·10	45·34	43·80	49·38	*S*	61·62	65·40	64·70	57·88	51·98	48·50	46·06
27	43·23	45·43	43·51	49·86	52·73	61·45	65·96	64·58	57·68	*S*	48·79	46·26
28	*S*	45·28	43·60	*S*	53·22	61·12	*S*	64·20	57·45	52·00	49·00	46·41
29	43·34	45·00	Good Friday.	50·68	53·93	61·16	66·52	63·82	*S*	52·09	49·06	*S*
30	43·40		45·14	50·70	54·53	*S*	66·48	63·60	57·71	52·11	48·82	46·48
31	43·71		*S*		55·08		66·21	63·50		52·20		46·39
Means.	43·02	44·86	45·94	48·38	51·81	57·93	63·56	63·78	61·79	54·42	49·87	46·04

(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, 1872.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
1	40·0	44·8	48·9	50·0	53·2	58·4	64·0	66·0	S	56·8	52·4	S
2	42·0	46·0	49·0	50·0	54·3	S	65·2	64·2	64·8	58·0	50·0	45·0
3	40·9	43·9	S	45·1	56·8	57·0	64·6	62·0	66·1	58·0	S	45·6
4	43·0	S	48·0	48·2	54·3	54·5	66·0	S	67·0	51·2	47·7	43·5
5	45·2	44·1	49·0	44·5	S	57·2	69·1	62·0	67·3	52·4	54·0	38·4
6	42·8	46·2	48·8	45·0	53·2	60·0	70·0	63·0	66·0	S	54·0	43·8
7	S	46·6	48·2	S	53·1	55·0	S	64·8	65·5	53·0	52·6	43·0
8	37·8	47·0	49·5	50·0	50·9	55·0	65·8	61·8	S	54·0	51·7	S
9	37·8	44·1	46·2	48·0	51·0	S	65·0	61·9	64·2	53·0	49·0	43·0
10	36·5	46·5	S	49·0	50·6	56·3	64·7	64·1	63·0	51·0	S	40·7
11	46·0	S	43·1	51·6	48·1	56·0	67·7	S	65·0	50·8	43·7	40·8
12	40·7	44·5	44·0	54·5	S	57·3	67·0	62·0	65·8	48·2	44·1	35·8
13	43·8	45·0	45·3	52·4	50·0	60·0	65·0	61·0	66·5	S	42·0	40·0
14	S	45·5	46·1	S	50·7	61·7	S	63·2	65·0	47·0	41·4	39·7
15	38·0	44·0	47·3	52·7	52·2	64·0	62·0	63·0	S	45·6	41·5	S
16	36·4	40·5	48·1	52·0	54·0	S	62·2	64·2	62·5	48·0	40·5	41·5
17	41·0	43·2	S	49·6	52·3	70·0	63·6	66·1	63·0	49·3	S	42·8
18	42·0	S	47·1	48·3	47·2	70·0	63·0	S	62·0	51·2	40·5	41·0
19	40·5	45·2	47·0	46·9	S	69·1	65·0	66·0	58·0	49·5	41·0	40·0
20	40·5	44·2	41·7	46·0	49·0	66·1	67·2	66·7	53·9	S	46·2	41·8
21	S	43·8	38·0	S	52·0	66·1	S	68·5	54·0	52·2	46·3	45·0
22	40·5	44·0	38·1	48·2	53·0	63·1	71·7	66·9	S	41·9	48·0	S
23	43·0	44·0	37·0	49·0	52·3	S	68·0	66·0	52·0	47·4	50·0	47·0
24	43·1	45·0	S	50·2	53·3	66·5	69·8	64·5	52·0	49·1	S	45·3
25	43·7	S	37·0	51·2	53·2	66·0	72·8	S	52·0	49·5	47·0	Christmas Day
26	43·0	45·9	38·1	53·1	S	62·9	73·8	65·2	53·0	49·0	49·8	47·3
27	42·8	43·0	41·3	55·5	57·9	61·5	70·6	62·5	55·3	S	50·0	46·1
28	S	41·9	49·0	S	60·2	64·0	S	61·8	57·0	50·0	48·0	46·8
29	43·0	45·2	Good Friday.	51·0	60·4	62·1	70·0	63·9	S	49·9	46·0	S
30	45·2		50·1	53·2	60·4	S	69·0	63·1	55·2	54·0	47·3	45·0
31	44·5		S		59·5		64·0	61·3		52·1		45·2
Means.	41·6	44·6	45·0	49·8	53·4	61·6	66·9	63·9	60·6	50·8	47·1	43·0

(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, 1872.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
1	43·0	48·9	54·0	56·3	64·2	64·5	66·8	71·0	S	61·3	57·8	S
2	46·0	51·0	54·6	51·2	64·1	S	71·8	64·9	73·0	64·3	51·7	44·7
3	44·8	45·5	S	46·1	64·7	62·7	71·1	63·8	76·1	63·5	S	45·4
4	44·3	S	55·5	44·6	58·7	57·2	75·1	S	70·2	50·6	51·5	42·7
5	48·0	47·8	56·8	49·0	S	67·9	80·8	63·0	61·8	54·0	59·8	36·6
6	47·0	50·0	57·7	47·4	54·8	62·5	83·0	70·5	70·9	S	57·7	47·5
7	S	49·8	56·2	S	54·9	56·8	S	71·2	71·1	62·5	55·7	44·0
8	37·5	50·9	51·9	55·0	51·2	55·2	66·2	64·1	S	58·7	57·0	S
9	36·6	52·2	48·7	54·9	53·5	S	68·5	68·8	67·4	54·1	49·4	44·9
10	35·7	52·1	S	58·4	54·2	60·8	73·3	68·5	67·4	54·5	S	39·5
11	47·8	S	50·6	62·4	48·6	56·5	76·6	S	72·4	50·4	41·3	40·3
12	43·5	46·0	57·5	68·4	S	63·2	71·5	66·8	72·8	51·2	45·1	31·0
13	47·0	51·2	49·4	59·4	51·0	66·3	64·2	64·0	76·3	S	41·9	43·2
14	S	49·0	50·9	S	52·9	73·7	S	71·2	68·6	52·7	39·0	39·0
15	40·4	45·5	53·5	63·8	57·6	76·8	61·3	72·7	S	43·0	39·7	S

(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, 1872.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
16	36 ·1	38 ·1	52 ·8	55 ·3	63 ·7	*S*	68 ·5	71 ·9	64 ·4	49 ·7	38 ·8	40 ·0
17	43 ·2	48 ·6	*S*	50 ·8	52 ·0	85 ·3	64 ·1	77 ·9	69 ·8	53 ·3	*S*	42 ·5
18	44 ·2	*S*	48 ·3	48 ·6	46 ·4	83 ·0	71 ·5	*S*	62 ·4	52 ·3	40 ·0	39 ·8
19	43 ·0	51 ·8	46 ·4	46 ·4	*S*	78 ·5	74 ·0	74 ·9	60 ·3	51 ·3	38 ·9	40 ·7
20	40 ·7	48 ·9	43 ·5	50 ·6	55 ·3	71 ·2	79 ·6	74 ·7	49 ·8	*S*	50 ·7	41 ·7
21	*S*	48 ·2	37 ·5	*S*	61 ·4	72 ·5	*S*	77 ·8	57 ·0	53 ·1	54 ·0	48 ·5
22	41 ·0	48 ·0	37 ·6	53 ·9	59 ·2	65 ·6	76 ·0	68 ·5	*S*	48 ·3	52 ·2	*S*
23	45 ·2	45 ·5	32 ·3	53 ·7	59 ·1	*S*	72 ·3	69 ·3	57 ·8	50 ·9	55 ·5	49 ·5
24	47 ·0	50 ·8	*S*	46 ·8	59 ·0	74 ·5	78 ·2	69 ·8	49 ·7	51 ·6	*S*	48 ·3
25	46 ·2	*S*	41 ·2	58 ·0	60 ·1	68 ·1	84 ·8	*S*	55 ·3	52 ·5	47 ·5	Christmas Day
26	46 ·2	48 ·7	42 ·1	60 ·1	*S*	65 ·1	81 ·6	67 ·9	56 ·0	50 ·3	54 ·0	51 ·5
27	43 ·3	43 ·6	50 ·2	66 ·4	67 ·4	65 ·8	76 ·9	64 ·4	61 ·2	*S*	53 ·3	48 ·0
28	*S*	43 ·8	55 ·1	*S*	69 ·9	71 ·4	*S*	67 ·0	60 ·0	51 ·8	47 ·4	51 ·8
29	46 ·5	50 ·6	Good Friday.	54 ·5	69 ·5	67 ·3	75 ·2	72 ·8	*S*	53 ·1	48 ·7	*S*
30	48 ·2		56 ·5	62 ·0	68 ·5	*S*	73 ·0	66 ·6	64 ·0	56 ·7	50 ·2	45 ·5
31	50 ·0		*S*		64 ·3		66 ·0	66 ·7		51 ·0		47 ·2
Means .	43 ·8	48 ·3	49 ·6	54 ·8	58 ·7	67 ·7	73 ·0	69 ·3	64 ·6	53 ·6	49 ·2	43 ·8

WEEKLY MEANS of READINGS of THERMOMETERS.

1872. 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	52·51	49·73	46·96	43·48	42·3	45·5
	8 to	14	52·33	49·33	46·55	42·75	40·4	41·4
	15 to	21	52·13	48·98	46·25	42·77	39·7	41·3
	22 to	28	51·94	48·58	45·89	42·84	42·7	44·8
	29 to February	4	51·74	48·29	46·17	43·76	44·6	48·4
February	5 to	11	51·56	48·13	46·53	44·61	45·8	50·5
	12 to	18	51·33	48·04	46·95	45·20	43·8	46·4
	19 to	25	51·15	48·01	47·05	44·92	44·4	48·9
	26 to March	3	50·97	47·97	47·09	45·27	45·7	49·2
March	4 to	10	50·81	47·94	47·47	46·80	48·3	54·5
	11 to	17	50·66	47·99	47·91	46·41	45·7	52·5
	18 to	24	50·50	48·06	47·99	46·43	41·5	40·9
	25 to	31	50·39	48·11	47·40	44·02	43·1	49·0
April	1 to April	7	50·28	47·99	47·45	46·61	47·1	49·1
	8 to	14	50·20	47·97	47·98	47·54	50·9	59·8
	15 to	21	50·09	48·05	48·92	49·53	49·3	52·6
	22 to	28	50·01	48·29	49·38	49·08	51·2	56·5
	29 to May	5	49·95	48·56	49·99	51·03	53·8	61·4
May	6 to	12	49·75	48·80	50·77	51·56	51·2	52·9
	13 to	19	49·83	49·18	51·04	51·17	51·1	53·9
	20 to	26	49·81	49·47	51·27	51·37	52·1	59·0
	27 to June	2	49·83	49·76	51·96	54·16	59·5	67·4
June	3 to	9	49·82	50·04	53·13	55·25	56·4	60·4
	10 to	16	49·87	50·53	53·78	55·56	59·2	66·2
	17 to	23	49·92	51·00	54·94	59·97	67·4	76·0
	24 to	30	49·98	51·59	56·81	61·35	63·8	68·7
July	1 to July	7	50·06	52·36	57·77	61·98	66·5	74·8
	8 to	14	50·16	53·06	58·78	63·38	65·9	70·0
	15 to	21	50·28	53·76	59·39	62·67	63·8	69·8
	22 to	28	50·46	54·39	59·93	64·78	71·1	78·3
	29 to August	4	50·61	54·88	61·06	65·89	65·9	69·0
August	5 to	11	50·82	55·51	61·22	63·40	62·9	67·7
	12 to	18	51·04	56·00	60·83	62·72	63·2	70·7
	19 to	25	51·24	56·29	60·87	64·14	66·4	72·5
	26 to September	1	51·46	56·53	61·38	64·07	62·9	67·6
September	2 to	8	51·68	56·86	61·26	63·44	66·1	70·5
	9 to	15	51·89	57·08	61·29	63·32	64·9	70·8
	16 to	22	52·07	57·18	61·15	62·66	58·9	60·6
	23 to	29	52·26	57·28	60·18	58·40	53·5	56·7
	30 to October	6	52·45	57·25	58·83	57·62	55·3	59·6
October	7 to	13	52·63	56·93	57·99	55·98	51·7	55·2
	14 to	20	52·78	56·58	56·68	53·38	48·4	50·4
	21 to	27	52·91	56·14	55·51	52·78	48·2	51·1
	28 to November	3	53·04	55·64	54·63	52·22	51·4	53·7
November	4 to	10	53·13	55·16	54·28	52·11	51·5	55·2
	11 to	17	53·13	54·67	53·71	50·11	42·2	41·0
	18 to	24	53·17	54·25	52·15	47·65	45·3	48·6
	25 to December	1	53·18	53·73	51·52	48·76	48·0	50·2
December	2 to	8	53·14	53·15	51·20	47·82	43·2	43·5
	9 to	15	53·07	52·66	50·19	45·69	40·0	39·6
	16 to	22	53·01	52·09	48·79	44·57	42·0	42·2
	23 to	31	52·91	51·41	48·74	46·07	46·1	48·8

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.

1871. Dec. $31^{d}.\ 12^{h}$. The direction of the wind was S.S.W.
1872. Jan. 31. 12. ,, ,, S.S.W., which implies no change.

On Jan. 10. 22, $22^{d}.\ 22^{h}$, $28^{d}.\ 9^{h}.\ 20^{m}$, the trace was shifted to the next set of lines downwards; on Jan. $19^{d}.\ 22^{h}$, $26^{d}.\ 20^{h}.\ 30^{m}$, the trace was shifted to the next set of lines upwards, implying direct motion of 1080°, and retrograde motion of 720°.

Therefore the whole excess of direct motion in the month of January was 360°.

1872. Jan. $31^{d}.\ 12^{h}$. The direction of the wind was S.S.W.
Feb. 29. 12. ,, ,, W.S.W., which implies a direct motion of 45°.

On Feb. 1. 22, $11^{d}.\ 22^{h}$, $27^{d}.\ 22^{h}$, the trace was shifted to the next set of lines downwards; on Feb. $10^{d}.\ 23^{h}.\ 45^{m}$, $13^{d}.\ 2^{h}.\ 40^{m}$, $14^{d}.\ 9^{h}.\ 20^{m}$, $25^{d}.\ 22^{h}$, the trace was shifted to the next set of lines upwards, implying direct motion of 1080°, and retrograde motion of 1440°.

Therefore the whole excess of retrograde motion in the month of February was 315°.

1872. Feb. $29^{d}.\ 12^{h}$. The direction of the wind was W.S.W.
March 31. 12. ,, ,, S., which implies a retrograde motion of 67½°.

On March 6. 22, $14^{d}.\ 22^{h}$, $21^{d}.\ 0^{h}.\ 30^{m}$, $23^{d}.\ 22^{h}$, $28^{d}.\ 8^{h}.\ 40^{m}$, the trace was shifted to the next set of lines upwards; on March $7^{d}.\ 22^{h}$, $10^{d}.\ 22^{h}$, $15^{d}.\ 22^{h}$, $20^{d}.\ 22^{h}$, $25^{d}.\ 20^{h}.\ 40^{m}$, the trace was shifted to the next set of lines downwards, implying retrograde motion of 1800°, and direct motion of 1800°.

Therefore the whole excess of retrograde motion in the month of March was 67½°.

1872. March $31^{d}.\ 12^{h}$. The direction of the wind was S.
April 30. 12. ,, ,, S.E., which implies a direct motion of 315°.

On April 30. 0, the trace was shifted to the second set of lines downwards; and on April $6^{d}.\ 22^{h}$, $9^{d}.\ 22^{h}$, $13^{d}.\ 22^{h}$, $14^{d}.\ 9^{h}.\ 15^{m}$, $21^{d}.\ 10^{h}.\ 50^{m}$, $26^{d}.\ 2^{h}.\ 45^{m}$, $29^{d}.\ 20^{h}.\ 50^{m}$, to the next set of lines downwards, implying direct motion of 3240°.

Therefore the whole excess of direct motion in the month of April was 3555°.

1872. April $30^{d}.\ 12^{h}$. The direction of the wind was S.E.
May 31. 12. ,, ,, N.W., which implies a retrograde motion of 180°.

On May 1. 22, $9^{d}.\ 8^{h}.\ 20^{m}$, $24^{d}.\ 9^{h}$, $29^{d}.\ 2^{h}.\ 50^{m}$, the trace was shifted to the next set of lines downwards; on May $9^{d}.\ 22^{h}$, $14^{d}.\ 21^{h}$, 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 May was 540°.

1872. May $31^{d}.\ 12^{h}$. The direction of the wind was N.W.
June 30. 12. ,, ,, S., which implies a retrograde motion of 135°.

On June 13. 20. 45^{m}, the trace was shifted to the second set of lines downwards, and on June $5^{d}.\ 23^{h}.\ 50^{m}$, $29^{d}.\ 22^{h}$, to the next set of lines downwards; on June $4^{d}.\ 2^{h}.\ 45^{m}$, $4^{d}.\ 8^{h}.\ 40^{m}$, $14^{d}.\ 21^{h}$, $15^{d}.\ 0^{h}$, $17^{d}.\ 0^{h}$, $17^{d}.\ 2^{h}.\ 40^{m}$, $24^{d}.\ 3^{h}.\ 45^{m}$, the trace was shifted to the next set of lines upwards, implying direct motion of 1440°, and retrograde motion of 2520°.

Therefore the whole excess of retrograde motion in the month of June was 1215°.

1872. June $30^{d}.\ 12^{h}$. The direction of the wind was S.
July 31. 12. ,, ,, W.S.W., which implies a direct motion of 67½°.

On July 6. 0, the trace was shifted to the second set of lines upwards; and on July $3^{d}.\ 2^{h}.\ 45^{m}$, $18^{d}.\ 8^{h}.\ 55^{m}$, $19^{d}.\ 2^{h}.\ 45^{m}$, $21^{d}.\ 6^{h}.\ 45^{m}$, to the next set of lines upwards; on July $4^{d}.\ 9^{h}$, $6^{d}.\ 2^{h}.\ 45^{m}$, $7^{d}.\ 22^{h}$, $9^{d}.\ 22^{h}$, $13^{d}.\ 8^{h}.\ 45^{m}$, $17^{d}.\ 20^{h}.\ 45^{m}$, $22^{d}.\ 22^{h}$, $23^{d}.\ 8^{h}.\ 30^{m}$, $29^{d}.\ 22^{h}$, the trace was shifted to the next set of lines downwards, implying retrograde motion of 2160°, and direct motion of 3240°.

Therefore the whole excess of direct motion in the month of July was 1147½°.

1872. July $31^{d}. 12^{h}$. The direction of the wind was W.S.W.
Aug. 31. 12. ,, ,, W.S.W., which implies no change.
On Aug. 1. 0, $2^{d}. 0^{h}$, $2^{d}. 2^{h}. 30^{m}$, $4^{d}. 21^{h}$, $4^{d}. 22^{h}$, $7^{d}. 20^{h}. 40^{m}$, $20^{d}. 8^{h}. 40^{m}$, the trace was shifted to the next set of lines upwards, and on Aug. $7^{d}. 0^{h}$, to the second set of lines upwards; on Aug. $2^{d}. 8^{h}. 40^{m}$, $3^{d}. 21^{h}. 15^{m}$, $5^{d}. 9^{h}. 15^{m}$, $7^{d}. 8^{h}. 30^{m}$, $24^{d}. 22^{h}$, the trace was shifted to the next set of lines downwards, implying retrograde motion of 3240°, and direct motion of 1800°.
Therefore the whole excess of retrograde motion in the month of August was 1440°.

1872. Aug. $31^{d}. 12^{h}$. The direction of the wind was W.S.W.
Sept. 30. 12. ,, ,, S.W., which implies a retrograde motion of $22\frac{1}{2}$°.
On Sept. 3. 3, the trace was shifted to the next of lines downwards, implying direct motion of 360°.
Therefore the whole excess of direct motion in the month of September was $337\frac{1}{2}$°.

1872. Sept. $30^{d}. 12^{h}$. The direction of the wind was S.W.
Oct. 31. 12. ,, ,, W.S.W., which implies a direct motion of $22\frac{1}{2}$°.
On Oct. 7. 0, $17^{d}. 22^{h}$, $20^{d}. 7^{h}. 45^{m}$, the trace was shifted to the next set of lines downwards; on Oct. $4^{d}. 8^{h}. 45^{m}$, $16^{d}. 22^{h}$, $18^{d}. 3^{h}$, $27^{d}. 22^{h}$, the trace was shifted to the next set of lines upwards, implying direct motion of 1080°, and retrograde motion of 1440°.
Therefore the whole excess of retrograde motion in the month of October was $337\frac{1}{2}$°.

1872. Oct. $31^{d}. 12^{h}$. The direction of the wind was W.S.W.
Nov. 30. 12. ,, ,, S., which implies a retrograde motion of $67\frac{1}{2}$°.
On Nov. 18. 20. 50^{m}, the trace was shifted to the next set of lines upwards, implying retrograde motion of 360°.
Therefore the whole excess of retrograde motion in the month of November was $427\frac{1}{2}$°.

1872. Nov. $30^{d}. 12^{h}$. The direction of the wind was S.
Dec. 31. 12. ,, ,, W.S.W., which implies a direct motion of $67\frac{1}{2}$°.
On Dec. 2. 9, $6^{d}. 22^{h}$, $10^{d}. 3^{h}$, $13^{d}. 22^{h}$, $18^{d}. 22^{h}$, the trace was shifted to the next set of lines upwards; on Dec. $14^{d}. 22^{h}$, $20^{d}. 22^{h}$, the trace was shifted to the next set of lines downwards, implying retrograde motion of 1800°, and direct motion of 720°.
Therefore the whole excess of retrograde motion in the month of December was $1012\frac{1}{2}$°.

The whole excess of direct motion to the end of the year was 1125°.

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 1871, December $31^{d}. 12^{h}$	96·55
On 1872, December $31^{d}. 12^{h}$	99·70

Implying an excess of direct motion, during the year, of 3·15 revolutions, or 1134°.

AMOUNT OF RAIN COLLECTED IN EACH MONTH OF THE YEAR 1872.

1872, 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.	Cylinder partly sunk in the Ground read daily.	Cylinder partly sunk in the Ground read Monthly.
	in.	in.	in.	in.	in.	in.	in.
January	1·96	2·10	2·53	2·50	3·39	3·63	3·83
February	0·42	0·54	0·61	0·59	0·70	0·77	0·88
March	0·93	0·98	1·50	1·53	2·09	2·13	2·21
April	0·39	0·50	0·68	0·93	0·93	0·98	1·22
May	1·66	1·74	2·28	2·76	2·97	3·09	3·13
June	1·06	1·14	1·29	1·30	1·58	1·64	1·62
July	1·84	1·88	2·06	2·03	2·27	2·36	2·33
August	2·17	2·31	2·50	2·61	2·63	2·70	2·78
September	0·92	0·96	1·13	1·16	1·38	1·39	1·45
October	3·26	3·46	3·86	3·99	4·34	4·34	4·52
November	1·43	1·58	2·06	2·20	2·58	2·92	2·89
December	2·49	2·79	3·17	3·60	3·93	4·07	4·10
Sums	18·53	19·98	23·67	25·20	28·79	30·02	30·96

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
The Two Cylinder Gauges partly sunk in the Ground	155	3	0	5

In the month of November the syphon of the self-registering rain-gauge of Osler's Anemometer was examined and set in order by Mr. Browning. It will be noted that the results by the two gauges at this elevation differ, the amounts by the self-registering gauge being at all times somewhat less than those given by the other. In consequence of this difference the receiving surfaces of the two gauges and their scales of measurement were examined and found to be correct. Experiments were then tried with the tumbling bucket of the syphon apparatus, and it was found that a small quantity of water was lost by leakage, which will account for the differences between the two results. The values given by the second gauge are correct.

ROYAL OBSERVATORY, GREENWICH.

OBSERVATIONS

OF

LUMINOUS METEORS.

1872.

Month and Day, 1872.		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	2	8. 9. 30	W.	2	Bluish-white	1·5	Slight	30	1
"		8. 32. 0	W.	2	Bluish-white	0·5	None	10	2
"		8. 34. 0	W.	1	Yellowish	1	Fine	25	3
"		10. 12. 55	W.	1	Yellowish	1·5	Slight	6	4
"		10. 21. 26	W.	1	Bluish-white	1	Train	15	5
"		10. 25. 19	W.	2	Bluish-white	. . .	None	40	6
"		10. 28. 23	W.	2	Bluish-white	1	None	20	7
"		10. 38. 36	W	1	Yellowish	2	Train	15	8
"		10. 41. 33	W.	1	Bluish-white	1·5	Slight	25	9
"		10. 45. 19	W.	> 1	Bluish-white	. . .	Train	10	10
"		10. 57. 20	M.	1	Bluish-white	0·7	None	10	11
"		10. 59. 3	W.	1	Bluish-white	1	None	20	12
"		11. 4. 30	M.	Jupiter	Bluish-white	1	Train	15	13
"		11. 5. 38	W.	1	Bluish-white	1·5	Slight	25	14
"		11. 5. 39	M.	2	Bluish-white	0·7	Train	10	15
"		11. 7. 0	W.	1	Bluish-white	1·5	Slight	25	16
"		11. 9. 0	W.	1	Yellowish	1	Train	7	17
"		11. 16. 30	M.	3	Bluish-white	0·5	Train	7	18
"		11. 17. 0	W.	3	Bluish-white	. . .	None	7	19
"		13. 22. 0	N.	3	Bluish-white	0·4	None	6	20
January	3	8. 13. 0	N.	Jupiter	Bluish-white	> 1	Fine	35	21
January	6	8. 56. 0	N.	> 1	Bluish-white	2	Fine	..	22
"		10. 32. 30	N.	2	Bluish-white	0·7	Train	12	23
January	7	6. 24. 16	M.	1	Bluish-white	0·7	Train	7	24
February	2	8. 52. 50	M.	1	Bluish-white	1·5	Fine	15	25
February	3	8. 7. 54	M.	1	Bluish-white	1·5	Train	15	26
February	11	6. 11. 30	M.	2	Bluish-white	1·5	Train	10	27
"		9. 27. 0	M.	3	Bluish-white	0·7	Slight	15	28
"		10. 15. 20	M.	2	Bluish-white	1·0	Train	10	29
February	19	10. 21. 0	N.	Jupiter × 3	Bright light blue	3	Train	15	30
March	9	9. 9. 40	M.	2	Bluish-white	1	Slight	12	31
March	13	8. 6. 0	N.	2	Bluish-white	1	Train	5	32
April	3	8. 57. 0	M.	1	White	4·5	Fine	20	33
April	11	8. 8. 0	M., C.	> 1	Bluish-white	1·5	Fine	15	34
April	19	10. 42. 15	M.	2	Bluish-white	1	Train	10	35
"		10. 43. 10	M.	1	White	1·5	Fine	7	36
"		11. 1. 25	M.	2	Bluish-white	0·7	Train	5	37
"		11. 13. 50	M.	3	Bluish-white	0·7	Train	10	38
"		11. 19. 38	M.	3	Bluish-white	1	Train	15	39
"		11. 27. 12	M.	2	Bluish-white	0·7	Train	10	40
August	7	10. 1. 43	N., C.	2	Bluish-white	0·6	Train	10	41
"		10. 21. 18	N.	1	Bluish-white	0·7	Train	13	42
"		10. 45. 7	N., C.	> 1	White	> 1	Very fine	7	43
"		11. 36. 35	N., S.	3	Bluish-white	0·4	None	..	44
"		11. 49. 12	N.	4	Bluish-white	0·5	None	4	45
"		11. 54. 15	S.	2	Bluish-white	. . .	None	..	46
"		12. 14. 54	C.	1	White	. . .	Train	..	47

No. for Reference.	Path of Meteor through the Stars.
1	Directed from β Ursæ Majoris towards β Canis Minoris.
2	From direction of γ Ursæ Majoris towards λ Ursæ Majoris.
3	Passed about 1° above Aldebaran from direction of ζ Tauri.
4	Shot across λ Andromedæ in direction of ο Andromedæ.
5	Passed across ζ Leporis in direction of β Leporis.
6	From direction of β Persei passed down towards α Ceti.
7	From direction of α Trianguli towards ξ Tauri.
8	Passed about 2° above α Cygni, apparently from direction of ω towards ξ Cygni.
9	Directed from β Ursæ Minoris towards β Cassiopeiæ.
10	From direction of γ Draconis towards α Cygni.
11	From direction of β Pegasi passed a little below γ Pegasi.
12	From a point about 5° above π Leonis towards α Hydræ.
13	From a point between α and β Ursæ Majoris passed in direction of θ Aurigæ.
14	Directed from ε Ursæ Majoris to a point slightly below π Leonis.
15	From direction of κ Ursæ Majoris passed across γ Cassiopeiæ.
16	From direction of ε Ursæ Majoris passed nearly midway between π and θ Leonis.
17	Shot upwards from a point about midway between β Ursæ Minoris and δ Ursæ Majoris towards κ Draconis.
18	From direction of Capella passed across γ Cassiopeiæ.
19	Shot from α Hydræ in continuation of line joining that star and π Leonis.
20	Passed across η Leonis, moving from direction of ι Cancri. Path nearly at right angles to joining-line of γ and η Leonis.
21	From center of Auriga passed midway between β Tauri and ι Aurigæ, across Aldebaran, and about 10° beyond.
22	From about 5° left of α Cygni passed midway between α and γ Pegasi and a few degrees beyond.
23	From direction of ζ Ursæ Majoris passed between γ Ursæ Minoris and θ Draconis.
24	From direction of β Aurigæ passed a few degrees below β Tauri.
25	From direction of a point about 2° to the left of Polaris passed across α Cephei.
26	From γ Orionis passed in direction of α Ceti.
27	From direction of θ Ursæ Majoris passed about 3° below Jupiter.
28	From a point just before θ Ursæ Majoris passed across 2 Lyncis.
29	From γ Leonis passed just below η in direction of ο Leonis.
30	From a point nearly midway between Procyon and Sirius moved on a path nearly parallel to Procyon and α Orionis: sky hazy: [lunar halo.
31	Passed across ι Draconis in direction of κ Cephei.
32	From between β and θ Ursæ Minoris disappeared about midway between γ and η Ursæ Minoris.
33	Passed across *d* Camelopardali from direction of Capella, moving in direction of χ Draconis.
34	From direction of a point between μ Leonis and μ Ursæ Majoris passed across Castor.
35	Passed between δ and ζ Lyræ across δ Cygni.
36	From direction of π Herculis passed between β and δ Herculis.
37	From direction of a point about 5° above α Lyræ passed across π Lyræ.
38	From direction of a point a little above α Lyræ passed across θ Cygni.
39	From a few degrees to the left of α Lyræ to β Draconis.
40	From ζ Herculis passed a little below β Herculis.
41	Passed between α and β Lyræ and across ξ and μ Herculis.
42	Across Delphinus and midway between β and θ Aquilæ.
43	Fell from direction of ζ Aquilæ, passed close to θ Serpentis.
44	At about altitude 25° in South, moving towards West with inclination of about 35° from horizontal: path nearly at right angles [to line of stars in Aquila.
45	Directed from α Pegasi passed midway between γ Pegasi and α Andromedæ.
46	Disappeared midway between α and β Pegasi, moving from direction of Delphinus.
47	Directed from α Andromedæ passed between γ and α Pegasi.

Month and Day, 1872.		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	7	12. 16. 4	C., S.	1	White	1·5	Train	..	1
	"	12. 20. 57	N.	1	Bluish-white	1	Train	12	2
August	8	9. 34. 43	C.	2	White	0·7	Train	8	3
	"	9. 56. 13	S.	3	Bluish-white	0·7	None	5	4
	"	10. 10. 40	S.	4	White	1	None	6	5
	"	10. 14. 13	C.	2	White	0·7	Train	6	6
	"	10. 15. 28	S.	3	Bluish-white	1·3	None	8	7
	"	10. 33. 3	C.	2	Bluish-white	1·5	Train	10	8
	"	10. 39. 21	S.	4	White	0·5	None	3	9
	"	10. 51. 54	W.	2	Bluish-white	0·5	None	4	10
	"	10. 59. 51	W.	1	White	1	None	6	11
	"	11. 10. 23	C.	1	Red	0·5	Very fine	12	12
	"	11. 10. 33	S.	4	Bluish-white	0·7	Train	7	13
	"	11. 21. 48	W., S.	1	Bluish-white	. . .	None	6	14
	"	11. 26. 17	W., C.	1	Bluish-white	1·5	Fine	30	15
	"	11. 35. 49	S.	3	Bluish-white	0·8	None	9	16
	"	11. 36. 23	W.	1	Bluish-white	1	Train	8	17
	"	11. 40. 43	C.	1	Bluish-white	1	Very fine	12	18
	"	11. 45. 18	W., S.	2	Bluish-white	0·5	None	..	19
	"	11. 51. 39	W.	1	White	1	Train	15	20
	"	11. 55. 38	C.	2	Bluish-white	0·3	None	4	21
	"	11. 56. 25	S.	2	Bluish-white	0·5	None	10	22
	"	12. 53. 0	N.	2	Bluish-white	0·7	Train	10	23
	"	12. 53. 35	N.	3	Bluish-white	0·4	None	4	24
	"	12. 58. 45	N.	1	Bluish-white	0·7	Train	18	25
	"	13. 34. 0	N.	> 1	White	0·8	Train	12	26
	"	13. 34. 5	N.	1	Bluish-white	0·7	Train	8	27
	"	14. 27. 45	N.	> Jupiter	Bright white	1·5	Very fine; 4 secs.	..	28
	"	14. 32. 55	N.	2	Bluish-white	0·7	Train	10	29
	"	15. 7. 45	N.	1	Bluish-white	0·5	Train	10	30
August	9	9. 12. 56	C.	3	Bluish-white	. . .	Slight	4	31
	"	9. 41. 23	S.	3	Bluish-white	1	Train	7	32
August	10	9. 45. 34	C.	3	Bluish-white	0·3	Train	10	33
	"	10. 11. 37	C.	2	Bluish-white	0·3	Fine	14	34
	"	10. 15. 21	C.	2	Bluish-white	0·2	Train	10	35
	"	10. 33. 7	C.	3	Bluish-white	0·4	None	..	36
	"	10. 37. 4	C.	4	Bluish-white	. . .	Very faint	..	37
	"	10. 47. 9	C.	4	Bluish-white	0·2	Very slight	4	38
	"	10. 52. 59	S.	2	Bluish-white	0·5	None	7	39
	"	10. 53. 56	S.	3	White	2	None	5	40
	"	10. 54. 29	C.	2	Blue	0·5	Fine	12	41
	"	10. 58. 40	C.	. . .	. . .	0·3	Train	8	42
	"	10. 59. 54	S.	2	Bluish-white	0·7	None	7	43
	"	11. 4. 37	C., S.	1	Bluish-white	0·8	Splendid	18	44
	"	11. 4. 52	S.	1	Bluish-white	1·5	Train	7	45
	"	11. 6. 35	C.	. . .	Bluish-white	0·8	Train	15	46
	"	12. 0. 15	S.	3	Bluish-white	0·4	None	5	47
	"	12. 0. 48	S.	4	Bluish-white	0·3	None	5	48
	"	12. 3. 59	C.	4	Bluish-white	. . .	Faint	5	49
	"	12. 9. 1	W.	1	Bluish-white	1	None	10	50
	"	12. 9. 8	W., S.	1	Bluish-white	1·5	Fine	15	51
	"	12. 9. 23	C.	1	Bluish-white	. . .	Faint	3	52
	"	12. 13. 13	C.	3	Bluish-white	. . .	Faint	5	53
	"	12. 20. 53	S.	1	Bluish-white	1·2	Train	16	54
	"	12. 34. 28	W., S.	1	Bluish	. . .	. . .	..	55
	"	13. 16. 38	S.	2	Bluish-white	0·8	None	5	56
	"	13. 17. 28	C.	2	Bluish-white	0·4	Slight	..	57

No. for Reference.	Path of Meteor through the Stars.
1	From a point about 5° below and to the left of α Andromedæ passed close to γ Pegasi.
2	Passed between γ and ε Cygni towards β Cygni.
3	From direction of α Lyræ towards Arcturus.
4	From ι Draconis passed *y* Ursæ Majoris and disappeared close to ε Ursæ Majoris.
5	From direction of λ Draconis passed *y* Ursæ Majoris and disappeared close to λ Coronæ.
6	Pursued a path almost parallel to line joining β Pegasi and α Andromedæ, and about 8° from that line.
7	Passed by γ and β Delphini towards γ Aquilæ.
8	From a point about 3° below α Pegasi passed close to ζ and disappeared near θ Pegasi.
9	From direction of η Cassiopeiæ passed midway between φ and ν Andromedæ towards β Andromedæ.
10	From direction of ζ Ophiuchi towards α Coronæ.
11	Fell almost perpendicularly downwards from a point about 3° west of Polaris towards horizon.
12	Shot upwards from horizon almost perpendicularly between α and β Arietis.
13	From λ Andromedæ passed *a* Lacertæ and disappeared near υ Cygni.
14	Passed downwards from direction of ε Cassiopeiæ at an angle of 45° towards the horizon.
15	From direction of ε Cassiopeiæ passed above Polaris towards η Draconis.
16	From direction of *e* Aquilæ passed close by *d* Aquilæ and disappeared near υ Sagittarii.
17	Passed towards horizon in continuation of line joining α Persei and *c* Camelopardali.
18	From the direction of α Cassiopeiæ passed by κ and ι Andromedæ to a point a little above β Pegasi.
19	Passed perpendicularly down between α and γ Aurigæ.
20	From a point about 1° above Polaris passed towards β Ursæ Minoris.
21	Passed horizontally about 6° below Polaris.
22	From the direction of χ Ursæ Majoris passed by γ Böotis and disappeared near δ Böotis.
23	Passed midway between ζ Draconis and γ Ursæ Minoris from direction of Cassiopeia.
24	Passed across γ Böotis, moving from λ Böotis.
25	Passed between α and τ Ursæ Majoris, moving from Cassiopeia towards β Ursæ Majoris.
26	From a point 10° below γ Pegasi fell towards the horizon, moving from the direction of a point 5° to the right of α Andromedæ.
27	Directed from α Persei, started about 7° above Capella and moved parallel to line joining Capella and β Aurigæ.
28	From ε Cygni passed close to α and β Delphini. Cast a strong light.
29	From α Pegasi to θ Piscium.
30	Passed midway between α Lyræ and α Cygni, and at right angles to line joining those stars, moving towards α Aquilæ.
31	Shot downwards from a point 25° south of Arcturus and about 45° above horizon.
32	From the direction of μ Herculis passed about midway between o and B Herculis towards M Herculis.
33	Pursued a path about 10° in length, about 8° below Polaris.
34	Passed about 2° south of α Lyræ.
35	Passed a little above α and β Aquarii.
36	Passed close to θ Cygni towards α Cygni. Path if prolonged backwards would cut γ Draconis.
37	Pursued a path a short distance from and parallel to line joining β and ι Pegasi.
38	Pursued a path near and parallel to line joining θ and *u* Herculis.
39	Directed from ε Equulei passed midway between θ and η Aquilæ and disappeared near ι Aquilæ.
40	From direction of β Piscium passed θ Pegasi and disappeared near ε Pegasi.
41	From a point a little above *u* Herculis to a point a little above ο Herculis.
42	From direction of Delphinus passed midway between β and θ Aquilæ.
43	From the direction of ε Equulei passed midway between I and θ Aquilæ, and disappeared 2° below θ Aquilæ.
44	From β Aquarii to μ Aquarii.
45	Appeared about 4° below ε Aquarii and disappeared near α Capricorni.
46	Shot perpendicularly downwards about 12° west of α Aquilæ.
47	From direction of *k* Aquarii passed midway between θ Aquilæ and *u* Capricorni.
48	From ι Pegasi disappeared near β Equulei.
49	From a point about 12° east of α Cygni passed towards that star.
50	Fell almost vertically downwards from ζ Aquilæ.
51	Fell from β Pegasi between θ and ε Pegasi.
52	Passed through the center of Cassiopeia, close to θ Cassiopeiæ.
53	Passed about 5° below Polaris.
54	From direction of Polaris, disappeared near ε Ursæ Majoris.
55	Very fine meteor; seen through mist; stars could not be seen. Apparently fell from Polaris.
56	From ζ Cygni, passed by *v* Vulpeculæ, and disappeared near 5 Vulpeculæ.
57	Passed about 6° east of a line joining Polaris and α Ursæ Majoris.

Month and Day, 1872.		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	13. 18. 38	W.	1	White	1	Fine streak	. .	1
	”	13. 18. 43	W.	1	Bluish-white	. . .	Streak	Very short	2
	”	13. 20. 57	C.	1	. . .	0·8	Fine	. .	3
	”	13. 24. 5	C.	. . .	Bluish-white	1	Fine	16	4
	”	13. 25. 32	S.	3	Bluish-white	0·4	None	4	5
	”	13. 26. 53	W.	1	Bluish-white	1	Train	15	6
	”	13. 27. 23	W.	1	Bluish-white	1	Fine	20	7
	”	13. 28. 15	C.	2	Bluish-white	0·6	Fine	6	8
	”	13. 28. 27	S.	2	Bluish-white	0·7	Train 0·5 sec.	12	9
August	11	9. 22. 38	C.	3	Bluish-white	0·2	Slight	4	10
	”	9. 28. 20	C.	2	Bluish-white	0·3	None	7	11
	”	9. 38. 19	C.	3	Bluish-white	0·2	. . .	3	12
	”	9. 46. 28	C.	2	Bluish-white	. . .	Slight	. .	13
	”	9. 49. 8	S.	1	Bluish-white	0·7	Train 1 sec.	14	14
	”	9. 53. 49	B.	3	Bluish	0·5	Short	5	15
	”	9. 59. 18	C.	4	Bluish-white	. . .	Slight	Short	16
	”	9. 59. 21	S.	3	Bluish-white	0·4	None	5	17
	”	9. 59. 45	B.	3	Bluish-white	0·5	Train	Short	18
	”	10. 5. 59	S.	3	Bluish-white	0·5	None	7	19
	”	10. 6. 9	S.	3	Bluish-white	0·4	None	. .	20
	”	10. 6. 21	C.	1	White	0·8	Fine	7	21
	”	10. 6. 41	B.	Jupiter × 2	Bluish	0·7	Train, sparks	15	22
	”	10. 9. 37	N.	2	Bluish-white	< 1	Train	. .	23
	”	10. 9. 39	N.	2	Bluish-white	0·7	Train	. .	24
	”	10. 12. 34	S.	4	Bluish-white	0·3	. . .	6	25
	”	10. 13. 24	B., C.	1	Bluish-white	0·8	Train	7	26
	”	10. 14. 56	S.	4	Bluish-white	0·4	None	7	27
	”	10. 20. 28	C.	3	Bluish-white	0·3	Slight	4	28
	”	10. 24. 43	S.	4	Bluish-white	0·4	None	5	29
	”	10. 30. 7	C.	2	Bluish-white	0·6	Train	10	30
	”	10. 32. 24	B.	> 1	Bluish-white	1	Fine	10	31
	”	10. 36. 6	B.	2	Bluish-white	0·5	Slight	7	32
	”	10. 38. 9	S.	1	Bluish-white	0·5	Train	. .	33
	”	10. 39. 38	C.	3	Bluish-white	0·6	Slight	4	34
	”	10. 40. 8	C.	4	White	0·2	Faint	. .	35
	”	10. 42. 13	B.	1	Bluish-white	0·5	Train	5	36
	”	10. 46. 1	C., S.	2	. . .	0·4	None	5	37
	”	10. 48. 27	B.	2	Bluish-white	0·5	Train	5	38
	”	10. 50. 50	C.	2	Bluish-white	. . .	None	4	39
	”	10. 55. 4	S.	4	Bluish-white	0·3	None	4	40
	”	11. 1. 17	C.	. . .	Bluish-white	0·8	. . .	10	41
	”	11. 1. 58	S.	5	Bluish-white	0·4	None	5	42
	”	11. 5. 50	C.	. . .	Red	1·2	Fine	17	43
	”	11. 5. 55	S.	1	Bluish-white	1·5	Train	19	44
	”	11. 10. 52	C.	. . .	Bluish-white	0·8	Train	10	45
	”	11. 14. 21	C.	. . .	Bluish-white	0·8	Fine	9	46
	”	11. 14. 36	S.	4	Bluish-white	. . .	None	5	47
	”	11. 15. 12	S.	4	Bluish-white	0·4	None	6	48
	”	11. 15. 19	B., C.	1	Bright blue	0·5	Fine	5	49
	”	11. 19. 36	C.	. . .	Bluish-white	0·7	Train	12	50
	”	11. 19. 48	B.	Jupiter × 2	Bluish-white	1	Long	20	51
	”	11. 22. 26	S.	3	Bluish-white	0·3	None	8	52
	”	11. 22. 50	C.	. . .	Bluish-white	0·7	Train	8	53
	”	11. 32. 24	C.	. . .	Bluish-white	1·2	None	20	54
	”	11. 35. 43	C.	. . .	Bluish-white	1·0	None	20	55
	”	11. 41. 17	C.	. . .	Bluish-white	0·3	None	4	56
	”	11. 53. 48	C.	. . .	Red	0·6	Slight	8	57
	”	12. 11. 54	C.	. . .	Bluish-white	0·2	None	4	58
	”	12. 14. 46	C.	. . .	Bluish-white	0·2	None	3	59
	”	12. 19. 25	C.	. . .	Yellowish	1·3	Very fine	13	60

No. for Reference.	Path of Meteor through the Stars.
1	Directed from ι Persei in line prolonged from β Persei.
2	Almost stationary about midway between β and ι Persei.
3	From direction of Polaris towards ε Ursæ Majoris.
4	From a point a little west of Polaris to α Ursæ Majoris.
5	From the direction of ο Cygni passed η Cygni, moving towards β Cygni.
6	Passed from direction of ε Cygni towards θ Aquilæ.
7	Pursued a path parallel to that of preceding meteor, and about 10° from it.
8	Passed between β and γ Ursæ Minoris towards δ Ursæ Majoris.
9	From the direction of χ Herculis, disappeared near θ Herculis.
10	Passed about 5° below β Ursæ Majoris.
11	From the direction of β Pegasi to a point a little below ε Pegasi.
12	Passed about 1° above α Ursæ Majoris in direction of γ Ursæ Majoris.
13	Passed a short distance below γ Pegasi, and disappeared behind a cloud.
14	From direction of γ Equulei passed close by β Aquilæ and disappeared near δ Aquilæ.
15	From direction of β Andromedæ towards φ Piscium.
16	Passed about 14° above α Cassiopeiæ.
17	Fell towards the horizon at an angle of 35° from ε Aquarii.
18	From a point close to β passed between γ and κ Cassiopeiæ.
19	From direction of β Equulei disappeared near γ Aquilæ.
20	Appeared 3° below δ Equulei, passed close by ε Equulei; crossed the path of preceding meteor.
21	Passed between ε and μ Cygni.
22	From direction of β Pegasi passed across g Pegasi. A very fine meteor.
23	Passed across ε Ursæ Majoris from direction of β Ursæ Minoris.
24	Across γ Ursæ Majoris from κ Draconis.
25	From near δ Aquilæ passed midway between ι and ν Aquilæ.
26	From the direction of γ Cassiopeiæ passed about midway between α and β Cassiopeiæ.
27	Appeared near 19 Aquilæ, and disappeared midway between β and θ Aquilæ.
28	Passed about 20° above Ursa Major and 10° west of Polaris.
29	From direction of F Herculis passed midway between ξ and μ Herculis, and disappeared near u Herculis.
30	From direction of γ Aquilæ towards 19 Aquilæ.
31	From a little above β Andromedæ passed between δ and ε Andromedæ.
32	From direction of γ Cassiopeiæ to γ Cephei.
33	From 2° below k Quadrantis passed close by b Quadrantis, and disappeared about 4° below e Quadrantis.
34	Passed a little above μ Aquarii.
35	Passed a little east of β Aquarii.
36	From μ towards τ Andromedæ.
37	Appeared about 1° below η Aquilæ, and fell towards horizon at an angle of 45°.
38	From direction of β passed between α and ζ Cassiopeiæ.
39	Shot perpendicularly downwards about 6° west of Polaris and between ε and η Ursæ Minoris.
40	Pursued a path a short distance from and parallel to line joining β and k Aquarii.
41	Shot almost perpendicularly downwards between β and γ Ursæ Majoris, about 2° from γ Ursæ Majoris.
42	From direction of β Aquilæ passed 1½° below μ Aquilæ and disappeared near 19 Aquilæ.
43	Shot from β Aquilæ, between θ and η Aquilæ, towards the horizon at an angle of 70°.
44	Appeared near δ Lyræ, passed α Cygni, and disappeared near 14 Andromedæ.
45	From direction of Polaris passed between α and δ Ursæ Majoris.
46	From a point about 10° east of Polaris towards α Ursæ Majoris.
47	Appeared about 4° below e Delphini, disappeared between β and ε Equulei.
48	From direction of q Pegasi disappeared midway between ι and θ Piscium.
49	From direction of c passed close to β Pegasi.
50	Shot down towards horizon from α Lyræ by δ Herculis.
51	From γ towards β Boötis.
52	Appeared midway between g Andromedæ and η Pegasi, passed midway between τ and υ Cygni, and disappeared at λ Cygni.
53	Shot downwards towards ζ Herculis from a point about 20° N.W. of α Lyræ.
54	From near ε Delphini to ε Cygni.
55	From α Cassiopeiæ to α Cephei.
56	Shot downwards close by γ Andromedæ.
57	Shot downwards between α and β Andromedæ, near the latter.
58	Passed ζ Pegasi.
59	Passed across γ Trianguli.
60	From a point about 15° above, shot towards the Pleiades.

Month and Day, 1872.		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. 24. 40	C.	. . .	Bluish-white	0·4	Train	6	1
"		12. 28. 5	C.	1	Yellowish	0·8	Very brilliant	16	2
"		12. 28. 6	C.	1	Yellowish	0·7	Brilliant	12	3
"		12. 41. 23	C.	. . .	Bluish-white	0·4	Train	6	4
August	12	10. 52. 7	N.	2	Bluish-white	0·8	None	. .	5
"		11. 54. 47	N.	2	Bluish-white	0·8	Train	10	6
"		11. 56. 12	N.	1	White	0·7	Train	12	7
"		12. 3. 24	N.	3	Bluish-white	0·5	None	7	8
"		12. 6. 25	N.	2	Bluish-white	0·9	Train	12	9
"		12. 35. 47	N.	1	Bluish-white	1	Fine	15	10
"		12. 43. 41	N.	2	Bluish-white	0·5	Train	7	11
"		12. 43. 45	N.	3	Bluish-white	0·6	None	8	12
"		12. 50. 2	N.	2	Bluish-white	0·5	Train	10	13
"		12. 54. 47	N.	2	Bluish-white	0·5	Train	6	14
August	13	10. 8. 30	S.	2	Reddish	0·4	Curved	4	15
"		10. 14. 9	B.	1	Bluish-white	0·5	Fine	10	16
"		10. 41. 31	C.	2	Bluish-white	. . .	Slight	8	17
"		10. 57. 1	N.	2	Bluish-white	0·5	Train	. .	18
"		11. 7. 55	S.	4	Bluish-white	0·5	. . .	5	19
August	14	10. 38. 20	N.	1	Bluish-white	0·5	Train	9	20
"		10. 52. 30	S.	1	Bluish-white	0·4	Train	5	21
"		11. 10. 5	S.	Jupiter × 2	Red	2·3	Train 0·3 sec.	16	22
August	15	9. 31. 29	C.	Jupiter	Red	1·5	Fine train	16	23
August	25	13. 14. 50	N.	Jupiter	Bluish-white	. . .	Train	. .	24
September	29	10. 42. 15	N.	> 1	Bluish-white	0·7	Train	. .	25
"		10. 42. 20	N.	Jupiter	Bluish-white	< 1	Train	. .	26
November	11	11. 5. 53	W.	2	Bluish-white	1	None	10	27
"		11. 37. 55	N.	2	Bluish-white	0·6	Train	12	28
"		12. 16. 3	C.	1	Bluish-white	2	. . .	8	29
"		12. 47. 48	N.	3	Bluish-white	0·4	None	5	30
"		12. 58. 7	N.	2	Bluish-white	. . .	Slight	12	31
"		13. 0. 9	S.	1	Bluish-white	1	Train	10	32
"		13. 2. 10	S.	1	Bluish-white	0·4	Train	7	33
"		13. 11. 53	C.	2	Bluish-white	1	Slight	9	34
"		13. 37. 8	W.	1	Yellow	1	None	. .	35
"		14. 10. 31	B.	2	Bluish-white	0·7	Long	15	36
"		14. 40. 13	N.	2	Bluish-white	0·5	. . .	5	37
"		14. 52. 56	C.	2	Bluish-white	0·5	Slight	8	38
"		15. 3. 41	N.	3	Bluish-white	0·5	None	. .	39
"		15. 9. 30	N.	2	Bluish-white	0·4	Train	7	40
"		15. 13. 48	N.	1	Bluish-white	0·6	Train	3	41
"		15. 59. 34	N., C.	3	Bluish-white	0·6	None	8	42
November	21	9. 32. 4	S.	1	Bluish-white	0·4	Fine	14	43
November	24	5. 25. 50	N.	1	Bluish-white	. . .	Train	. .	44
November	26	9. 45. 57	C.	2	Bluish-white	0·5	Slight	6	45
"		9. 59. 12	C.	3	Bluish-white	0·6	Faint	7	46
"		10 24. 59	N.	3	Bluish-white	. . .	None	4	47
"		10. 29. 53	N.	4	Bluish-white	. . .	None	4	48
"		10. 36. 25	C.	1	Bluish-white	0·8	. . .	9	49
"		11. 17. 1	N.	1	Bluish-white	. . .	Train	6	50
"		11. 25. 37	N.	3	Bluish-white	. . .	None	. .	51

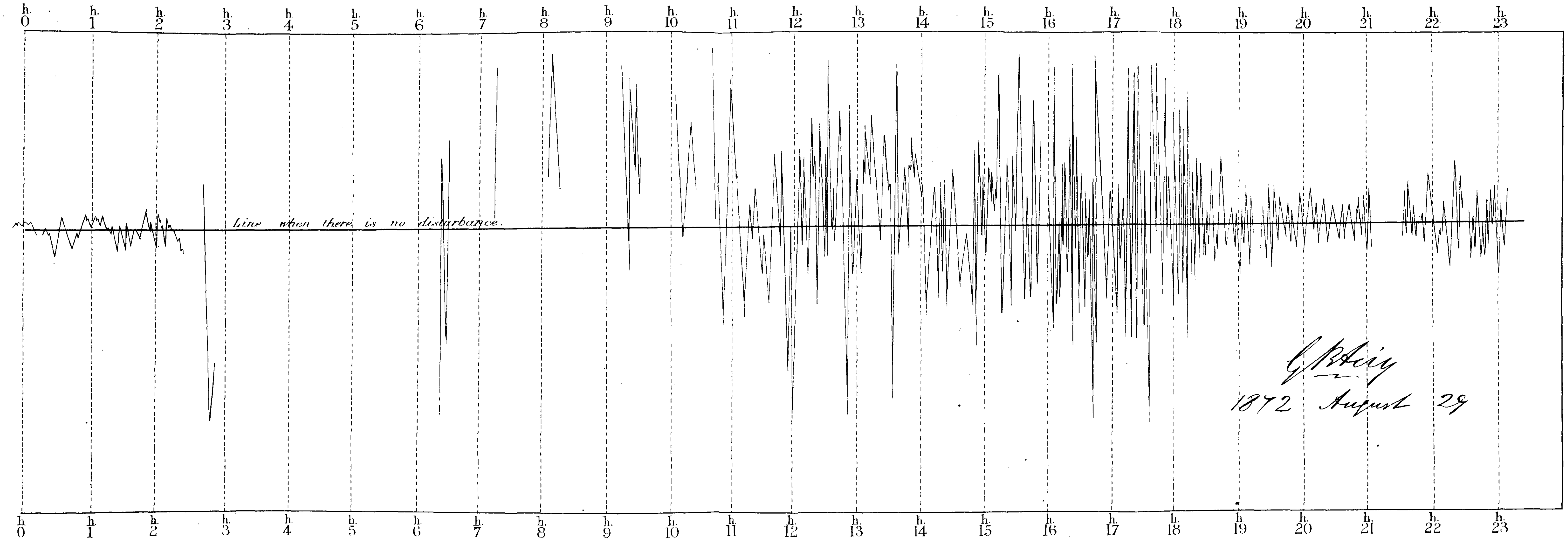
No. for Reference.	Path of Meteor through the Stars.
1	Passed near β Persei.
2	Shot from a point a little below β Andromedæ towards α Persei.
3	Appeared about 5° S. of β Andromedæ and pursued a path towards γ Pegasi.
4	Shot downwards about 2° south of Capella.
5	From near γ Boötis fell parallel to line joining η Ursæ Majoris and 12 Canum Venaticorum.
6	From direction of α Cassiopeiæ passed across ν Ursæ Majoris.
7	Fell parallel to line joining γ Cephei and Polaris moving from direction of α Cassiopeiæ.
8	Center of path across η Ursæ Majoris, moving from direction of β Ursæ Minoris.
9	From near ι Herculis passed across σ Herculis and disappeared at γ Boötis.
10	Passed between α and β Lyræ to a point between α Herculis and α Ophiuchi.
11	From near ε Pegasi to a point between α and γ Aquarii.
12	From ε Pegasi towards β Capricorni.
13	Across β Aquarii to a point about 3° below β Capricorni.
14	From direction of α Lyræ passed between σ and τ Herculis, moving towards γ Coronæ Borealis.
15	Appeared about 2° to the east of α Ursæ Majoris, passed to a point 2° west and above that star.
16	Fell perpendicularly towards horizon about 3° to left of β Pegasi.
17	From a little to east of α Cygni to a point near γ Cygni.
18	Passed midway between α and β Persei moving from direction of γ Cassiopeiæ.
19	From direction of ξ Cephei passed close by δ Cephei and disappeared near 9 Lacertæ.
20	Passed across ε Ursæ Majoris, moving from direction of κ Draconis.
21	From about 3° above α Aquilæ fell towards the horizon at an angle of 40° to the right of that star.
22	Appeared about 3° N. of α Lyræ and pursued a path nearly horizontal towards δ Ursæ Minoris. A very fine meteor.
23	From a point a little below α Cassiopeiæ towards γ Persei.
24	From direction of α Persei towards Capella.
25	From direction of α Persei to Aries.
26	Across η to ζ Pegasi.
27	Shot towards horizon in center of line joining γ Ursæ Minoris and η Draconis.
28	From direction of Polaris to α Ursæ Majoris.
29	Shot across the zenith from near Aldebaran.
30	From the Pleiades towards Aldebaran.
31	From direction of θ Ursæ Majoris to ω Ursæ Majoris.
32	From a point about 5° N. of Castor to a point about 5° south of that star.
33	Appeared very near to β Aurigæ, and pursued a nearly horizontal path towards the north.
34	Appeared at a point a little above ε and disappeared a little below μ Geminorum.
35	Passed from direction of Regulus towards γ Leporis.
36	From midway between Capella and β Aurigæ towards θ Ursæ Majoris.
37	Passed across γ and α Persei, moving towards γ Andromedæ.
38	Appeared about midway between Procyon and ζ Orionis, and disappeared near the latter star.
39	Passed across κ Draconis, moving from direction of α Aurigæ.
40	Passed about 4° above α Ursæ Majoris, moving from direction of λ Ursæ Majoris.
41	From a point about 5° above ζ Leonis pursued a path in continuation of line joining γ and ζ Leonis.
42	Nearly perpendicularly to right of Cassiopeia.
43	From a little below η Aurigæ disappeared near δ Tauri.
44	Slow motion; seen moving from direction of Perseus across Ursa Major; view of end of path lost through intervention of houses.
45	Shot parallel to and about 5° N. of line joining α and β Aurigæ.
46	Appeared a little to the right of β Tauri and disappeared near ζ Tauri.
47	Passed between χ Piscium and η Andromedæ, moving from direction of γ Andromedæ.
48	Moving from direction of ι Andromedæ towards φ Andromedæ.
49	Appeared about midway between β and κ Orionis, and shot in direction of β Canis Majoris.
50	From 1° below and to left of ι Aurigæ to a point about 1° above β Tauri.
51	From κ towards λ Ursæ Majoris.

Month and Day, 1872.		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	28	10. 25. 37	W., C.	1	Bluish-white	0·8	Train	6	1
	,,	10. 30. 26	N.	2	Bluish-white	0·8	Train	..	2
	,,	11. 3. 17	C., S.	1	Bluish-white	0·6	Train	16	3
	,,	11. 5. 0	W.	1	Bluish-white	1·5	None	30	4
	,,	11. 7. 5	W.	2	Bluish-white	0·5	None	5	5
	,,	11. 37. 29	N.	2	Bluish-white	..	Train	8	6
	,,	11. 37. 35	W.	1	Bluish-white	1	None	15	7
	,,	11. 48. 54	N., S.	4	Bluish-white	0·5	None	5	8
	,,	11. 52. 52	N.	1	Bluish-white	..	Train	8	9
November	30	10. 39. 29	B.	2	Bluish-white	0·5	Slight	5	10
December	1	10. 53. 49	W.	1	Yellowish	1·5	Slight	25	11
December	4	10. 35. 25	C.	2	Bluish-white	0·5	None	6	12
	,,	10. 40. 24	C.	3	Bluish-white	0·3	None	4	13
	,,	10. 46. 22	B.	2	Reddish	0·5	Slight	3	14
	,,	11. 44. 57	S.	1	Bluish-white	0·7	Train	10	15
	,,	12. 34. 30	C.	2	Bluish-white	0·6	..	7	16
	,,	12. 37. 17	N., B.	3	Bluish-white	0·5	None	7	17
	,,	12. 41. 22	N.	3	Bluish-white	1	Train	6	18
	,,	12. 51. 59	N.	1	Bluish-white	..	Train	12	19
	,,	13. 52. 0	N.	1	Bluish-white	0·8	Train	12	20
December	7	8. 58. 15	S.	> Jupiter	Bluish-white	2·4	Fine	17	21
	,,	10. 15. 15	N.	1	..	0·5	Train	5	22
	,,	10. 26. 0	C.	1	Bluish-white	0·5	None	6	23
	,,	10. 49. 33	C.	2	Bluish-white	0·6	Slight	7	24
	,,	10. 57. 13	N.	1	Bluish-white	0·5	Train	6	25
	,,	11. 23. 15	B.	3	Bluish-white	0·3	None	5	26
	,,	11. 30. 48	N.	2	Bluish-white	..	Train	7	27
	,,	11. 31. 21	B.	1	Bluish-white	0·7	Train	10	28
	,,	11. 36. 12	N.	3	Bluish-white	0·5	None	5	29
	,,	11. 36. 43	B.	3	Bluish-white	..	Slight	7	30
	,,	11. 39. 7	N.	2	Bluish-white	0·5	Train	6	31
	,,	11. 40. 51	B.	2	Bluish-white	0·5	Train	5	32
	,,	11. 44. 8	N.	2	Bluish-white	0·7	Train	8	33
	,,	11. 48. 57	N.	3	Bluish-white	0·5	Train	7	34
	,,	11. 52. 28	S.	3	Bluish-white	0·3	None	7	35
	,,	11. 56. 22	C., S.	2	Bluish-white	0·5	Slight	7	36
	,,	12. 0. 32	C.	2	Bluish-white	0·4	None	8	37
	,,	12. 2. 20	S.	2	..	0·3	Slight	..	38
	,,	12. 7. 42	C.	3	Bluish-white	0·4	None	6	39
	,,	12. 18. 57	C., S.	1	Bluish-white	1	Train	10	40

No. for Reference.	Path of Meteor through the Stars.
1	Directed from β Tauri, moved towards Castor.
2	Passed between λ and κ Draconis, moving parallel to line joining α and δ Ursæ Majoris.
3	From a little below β Eridani fell towards the horizon at an angle of 45° to the right.
4	Passed downwards towards horizon, parallel to line joining β and γ Orionis.
5	Passed towards Regulus from direction of Castor.
6	From λ to ε Geminorum.
7	Passed downwards towards horizon on line parallel to ζ and γ Leonis directed from θ Ursæ Majoris.
8	Fell nearly perpendicularly from below ο Eridani, moving from direction of Pleiades.
9	From a point about 5° below and to right of β Leporis, moving in continuation of line joining β and θ Leporis.
10	From direction of β Orionis fell towards horizon at an angle of 45°.
11	Passed close below γ Geminorum towards *g* Geminorum.
12	Shot downwards from near ε to ζ Geminorum.
13	From near ξ towards *f* Geminorum.
14	Passed towards a point midway between Castor and Pollux at right angles to line joining those stars.
15	From direction of γ Geminorum across λ and disappeared near *q* Orionis.
16	Appeared at a point midway between Castor and Regulus, moved towards the latter.
17	From direction of θ Ursæ Majoris passed between γ and χ Ursæ Majoris.
18	At a point nearly midway between Procyon and Sirius, moving from direction of ζ Orionis.
19	From a point about 2° above (towards α) to a point 2° below δ Ursæ Majoris.
20	From near α Orionis moved towards β Orionis.
21	From about 1° to the right of β Tauri towards γ Orionis.
22	Passed close to α Ceti, and fell nearly perpendicularly towards η Eridani.
23	Appeared about 4° below α Orionis directed towards β Canis Majoris.
24	From near β Tauri towards ζ Tauri.
25	Passed between κ and ι Ursæ Majoris, moving from direction of θ Aurigæ.
26	Passed parallel to line joining ζ and γ Geminorum.
27	From near θ Geminorum moved on a path nearly parallel to θ and β Aurigæ.
28	Shot perpendicularly downwards to left of Sirius.
29	Passed from direction of ι Aurigæ across ξ Persei.
30	From direction of Procyon; line of path if prolonged would cut ζ Orionis.
31	Passed about 5° below Pleiades from direction of τ Tauri.
32	From Jupiter towards horizon at an angle of 45°.
33	From a point about 5° below β Aurigæ moved towards κ Ursæ Majoris.
34	From a point below and to the right of ο Ceti moved in continuation of line passing from point a little above γ Ceti to ο Ceti.
35	From direction of α Cancri passed close below λ Canis Minoris.
36	Appeared near θ Geminorum, disappeared a little N. of Castor.
37	Appeared about midway between κ and ζ and passed across θ Ursæ Majoris.
38	Described a curved path starting from between Sirius and γ Canis Majoris to a point between Sirius and ζ Canis Majoris.
39	Bisected a line joining Regulus and η Leonis at right angles.
40	Appeared near γ Orionis, passed close to κ Orionis towards E Eridani.

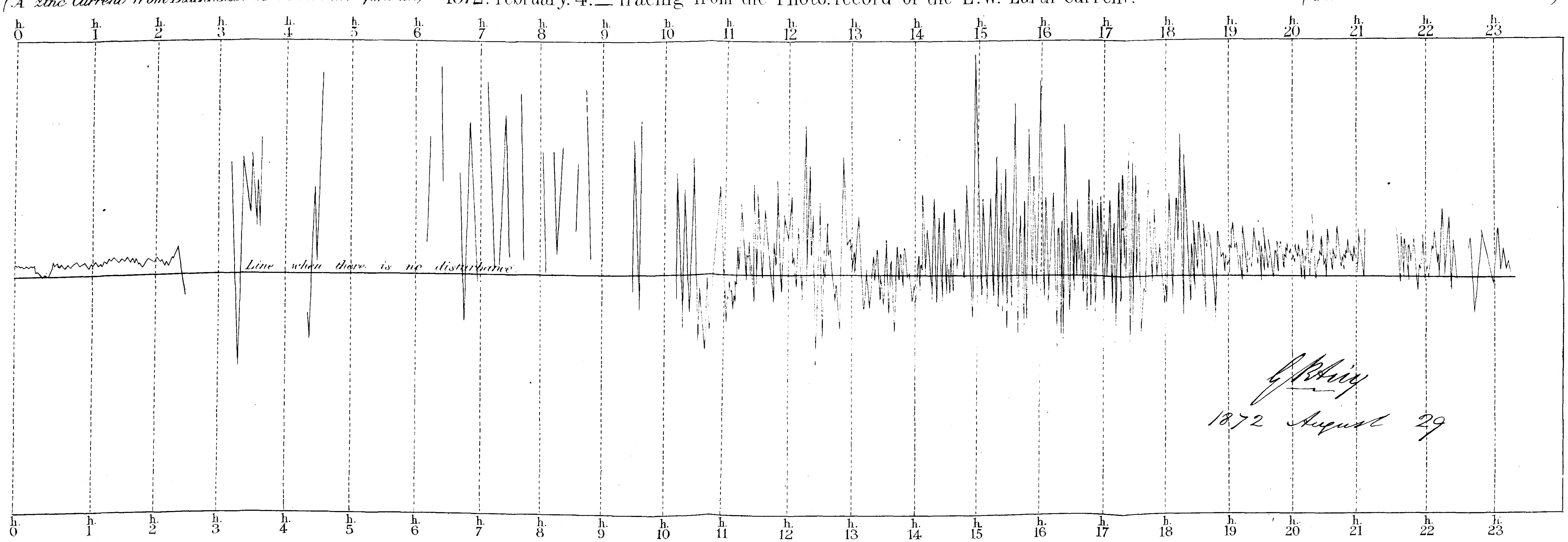
ROYAL OBSERVATORY, GREENWICH. **SHEET I.**

(A zinc current from Angerstein's Wharf throws the trace upwards.) 1872. February. 4.__ Tracing from the Photo. record of the N.-S. Earth Current. *(Angerstein's Wharf – Lady Well.)*



ROYAL OBSERVATORY, GREENWICH.

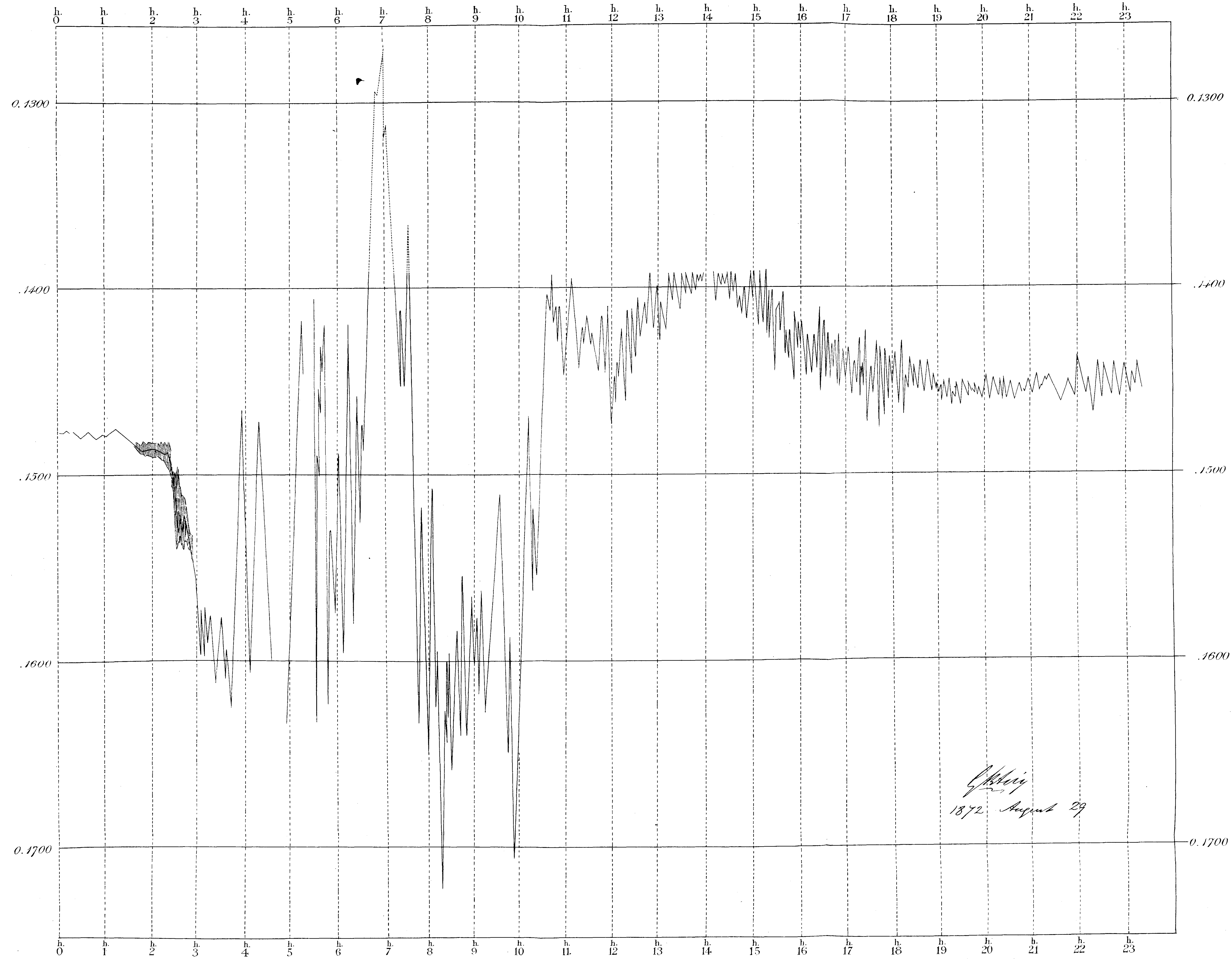
(A zinc Current from Blackheath throws the trace upwards.) 1872. February. 4.__ Tracing from the Photo. record of the E.W. Earth-Current. *(Blackheath.– North Kent Junction.)*



1872. February. 4 — Tracing from the Photo. record of the Horizontal Force Magnet,

AT THE ROYAL OBSERVATORY GREENWICH.

SHEET 2.



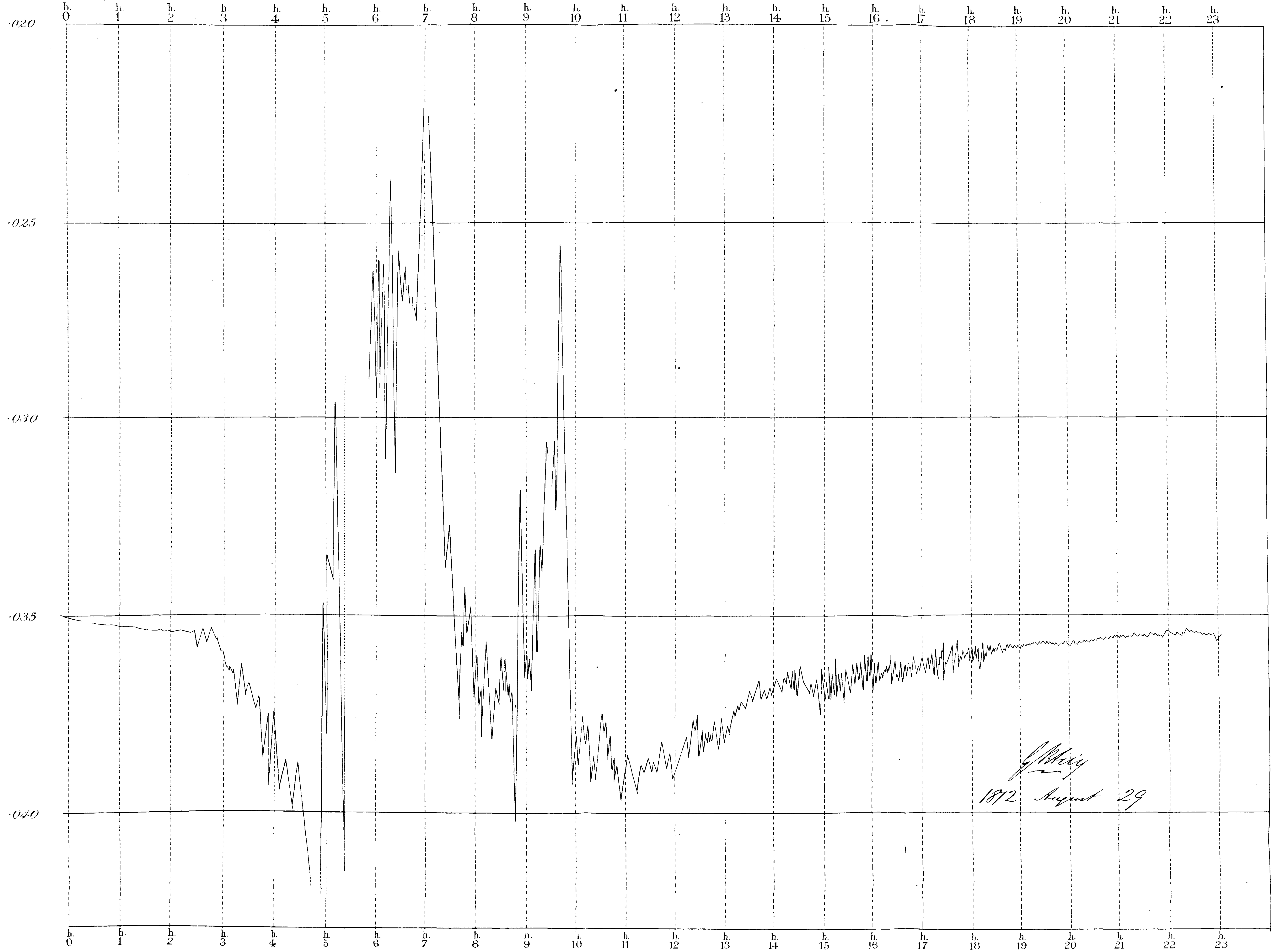
John King & Co. 181, Upper Thames St. E.C.

Scale of Measure of horizontal directive force (measured from an arbitrary zero) in terms of the whole horizontal directive force.

1872. February. 4 — Tracing from the Photo. record of the Vertical Force Magnet,

AT THE ROYAL OBSERVATORY GREENWICH.

SHEET 3.



Scale of Measure of vertical force (measured from an arbitrary zero) in terms of the whole vertical force.

John King & Co. 181, Upper Thames St. E.C.

1872. February. 4 — Copy of the Phot. Register of Western Declination

At the Royal Observatory, Greenwich.

Sheet 4.