RESULTS

OF THE

MAGNETICAL AND METEOROLOGICAL OBSERVATIONS

MADE AT

THE ROYAL OBSERVATORY, GREENWICH,

IN THE YEAR

1883:

UNDER THE DIRECTION OF

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ASTRONOMER ROYAL.

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ROYAL OBSERVATORY, GREENWICH.

RESULTS

OF

MAGNETICAL AND METEOROLOGICAL OBSERVATIONS.

1883.

GREENWICH MAGNETICAL AND METEOROLOGICAL OBSERVATIONS, 1883.

INTRODUCTION.

§ 1. *Personal Establishment and Arrangements.*

During the year 1883 the establishment of Assistants in the Magnetical and Meteorological Department of the Royal Observatory consisted of William Ellis, Superintendent, and William Carpenter Nash, Assistant, who had the aid usually of four Computers. The names of the Computers who were employed at different times during the year are, John A. Greengrass, William Hugo, Ernest E. McClellan, Frank Finch, and Frederick C. Robinson.

Mr. Ellis controls and superintends the whole of the work of the Department. Mr. Nash is charged generally with the instrumental adjustments, the determination of the values of instrumental constants, and the more delicate magnetic observations. He also specially superintends the Meteorological Reductions. The routine magnetical and meteorological observations have been in general made by the Computers.

§ 2. *General Description of the Buildings and Instruments of the Magnetical and Meteorological Observatory.*

The Magnetical and Meteorological Observatory was erected in the year 1838. Its northern face is distant about 170 feet south-south-east from the nearest point of the South-East Dome, and about 35 feet south from the carpenters' workshop. On its east stands the New Library (erected at the end of the year 1881), in the construction of which non-magnetic bricks were used, and every care was taken to exclude iron. The Magnetical and Meteorological Observatory 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 is that of a cross, the arms of the cross being nearly in the directions of the cardinal magnetic points as they were in 1838. The northern arm is longer than the others, and is separated from them by a partition, and used as a computing room; the stove which warms this room, and its flue, are of copper. The remaining portion, consisting of the eastern, southern, and western arms, is known as the Upper Magnet Room. The upper declination magnet and its theodolite for determination of absolute declination, are placed in the southern arm, an opening in the roof allowing circumpolar stars to be observed by the theodolite for determination of the position of the astronomical meridian. Both the magnet and its theodolite are supported on piers built from the ground. In the eastern arm is placed the Thomson electrometer for photographic record of the variations of atmospheric electricity, its water cistern being supported by a platform fixed to the western side of the southern arm, near the ceiling. The Standard barometer is suspended near the point of junction of the southern and western arms. The sidereal clock, Grimalde and Johnson, is fixed at the junction of the eastern and southern arms, and there is in addition a mean solar chronometer, McCabe No. 649, for general use. A mean solar clock (Molyneux), transferred from the Astronomical Department, was set up in the northern arm during the year 1883.

Until the year 1863 the horizontal and vertical force magnets were also located in the Upper Magnet Room, the upper declination magnet being up to that time employed for photographic record of the variations of declination, as well as for absolute measure of the element. But experience having shown that the horizontal and vertical force magnets were subject in the upper room to too great variations of temperature, a room known as the Magnet Basement was in the year 1864 excavated below the Upper Magnet Room, and the horizontal and vertical force magnets, as well as a new declination magnet for photographic record of declination, were mounted therein, in order that they might be less exposed to changes of temperature. The Magnet Basement is of the same dimensions as the Upper Magnet Room. The lower declination magnet and the horizontal force and vertical force magnets, as now located in the Basement, are used entirely for record of the variations of the respective magnetic elements. The declination magnet is suspended in the southern arm, immediately under the upper declination magnet, in order that the position of the latter should not be affected thereby; the horizontal and vertical force magnets are placed in the eastern and western arms respectively, in positions nearly underneath those which they occupied when in the Upper Magnet Room. All are mounted on or suspended from supports carried by piers built from the ground. A photographic barometer is fixed to the northern wall of the Basement, and an apparatus for photographic registration of earth currents is placed near the southern wall of the eastern arm. A mean solar clock of peculiar construction for interruption of the photographic traces at each hour is fixed to the pier which supports the upper declination theodolite. Another mean solar clock is attached to the western wall of the southern arm. On the northern wall, near the photographic barometer, is fixed the Sidereal standard clock of the Astronomical Observatory, Dent 1906, communicating with the chronograph and with clocks of the Astronomical Department by means of underground wires. This clock is placed in the Magnet Basement, because of its nearly uniform temperature.

The Basement is warmed when necessary by a gas stove (of copper), and ventilated by means of a large copper tube nearly two feet in diameter, which receives the flues from the stove and all gas-lights and passes through the Upper Magnet Room to a revolving cowl above the roof. Each of the arms of the Basement has a well window facing the south, but these wells are usually closely stopped.

A platform erected above the roof of the Magnet House is used for the observation of meteors. The sunshine instrument and a rain gauge are placed on a table on this platform.

An apparatus for naphthalizing the gas used for the photographic registration is mounted in a small detached zinc-built room adjacent to the computing room on its western side.

To the south of the Magnet House, in what is known as the Magnet Ground, is an open shed, consisting principally of a roof supported on four posts, under which is placed the photographic dry-bulb and wet-bulb thermometer apparatus. On the roof of this shed there is fixed an ozone box and a rain gauge, and close to its north-western corner are placed the earth thermometers, the upper portions of which, projecting above the ground, are protected by a small wooden hut. About 25 feet to the west of the photographic thermometers is situated the thermometer stand carrying the thermometers used for eye observations, and adjacent thereto on the north side are several rain gauges.

The Magnet Ground is bounded on its south side by a range of seven rooms, known as the Magnet Offices. No. 1 is used as a general store room, and in it is placed the Watchman's Clock; Nos. 2, 3, and 4 are used for photographic purposes in connexion with the Photoheliograph, placed in a dome adjoining No. 3, on its south side; Nos. 5 and 6 are store rooms. The Dip instrument and Deflexion apparatus remained in Office No. 7 until the spring of the present year 1883, when they were removed to the New Library. Previous to adopting this new position, observations with the magnet used in Deflexion experiments were made both in Office No. 7 and in the New Library, from which it appeared that its time of vibration was identical in both positions. This change became necessary in consequence of the proximity of the new building in which the Lassell reflecting telescope was in course of erection. Communication being made between the new Lassell building and Office No. 7, the latter became available as an ante-room and means of approach to that building.

To the south of the Magnet House, in what is known as the Magnet Ground, are placed the thermometers for solar and terrestrial radiation; they are laid on short grass, and freely exposed to the sky.

Two Anemometers, Osler's, giving continuous record of direction and pressure of wind and amount of rain, and Robinson's, giving continuous record of velocity, are fixed, the former above the north-western turret of the Octagon Room (the ancient part of the Observatory), the latter above the small building on the roof of the Octagon Room.

On 1883 March 3 the iron tube of the Lassell reflecting telescope was brought into the South Ground, and on March 9 the iron work supports of the same. On December 31 the iron work of the dome was brought into the same ground. A careful examination of the magnetic registers on each of these occasions shows that no disturbance of the declination, horizontal force, or vertical force magnets was caused by the location of these masses of iron in the South Ground, at a distance of more than 100 feet from the magnets.

Regular observation of the principal magnetical and meteorological elements was commenced in the autumn of the year 1840, and has been continued, with some additions to the subjects of observation, to the present time. Until the end of the year 1847 observations were in general made every two hours, but at the beginning of the year 1848 these were superseded by the introduction of the method of photographic registration, by which means a continuous record of the various elements is obtained.

For information on many particulars concerning the history of the Magnetical and Meteorological Observatory, especially in regard to alterations not recited in this volume, which from time to time have been made, the reader is referred to the Introduction to the Magnetical and Meteorological Observations for the year 1880 and previous years, and to the Descriptions of the Buildings and Grounds, with accompanying Plans, given in the Volumes of Astronomical Observations for the years 1845 and 1862.

§ 3. *Subjects of Observation in the year* 1883.

These comprise determinations of absolute magnetic declination, horizontal force, and dip; continuous photographic record of the variations of declination, horizontal force, and vertical force, and of the earth currents indicated in two distinct lines of wire; eye observation of the ordinary meteorological instruments, including the barometer, dry and wet bulb thermometers, and radiation and earth thermometers; continuous photographic record of the variations of the barometer, dry and wet bulb thermometers, and electrometer (for atmospheric electricity); continuous automatic record of the direction, pressure, and velocity of the wind, and of the amount of rain; registration of the duration of sunshine, and amount of ozone; observation of some of the principal meteor showers; general record of ordinary atmospheric changes of weather, including numerical estimation of the amount of cloud; and other occasional phenomena.

§ 4. *Magnetic Instruments.*

UPPER DECLINATION MAGNET AND ITS THEODOLITE.—The upper declination magnet is by Meyerstein of Göttingen: it is a bar of hard steel, 2 feet long, 1½ inch broad, and about ¼ inch thick, and is employed solely for the determination of absolute declination. The magnet carrier was also made by Meyerstein, since however altered by Troughton and Simms; the magnet is fixed therein by two pinching screws. To a stalk extending upwards from the magnet carrier is attached the torsion circle, which consists of two circular brass discs, one turning independently on the other on their common vertical axis, the lower and graduated portion being firmly fixed to the stalk of the magnet carrier; to the upper portion carrying the vernier is attached, by a hook, the suspension skein. This is of silk, and consists of several fibres united by juxtaposition, without apparent twist; its length is about 6 feet.

The magnet, with its suspending skein, &c., is carried by a braced wooden tripod stand, whose feet rest on slates covering brick piers, built from the ground and rising through the Magnet Basement nearly to the roof. The upper end of the suspension skein is attached to a short square wooden rod, sliding in the corresponding square hole of a fixed wooden bracket. To the upper end of the rod is fixed a leather strap, which, passing over two brass pulleys carried by the upper portion of the tripod stand, is attached to a cord which passes down to a small windlass fixed to the stand. Thus in raising or lowering the magnet, an operation necessary in determinations of its collimation error, no alteration is made in the length of the suspension skein. The magnet is inclosed in a double rectangular wooden box (one box within another), both boxes being covered with gilt paper on their exterior and interior sides, and having holes at their south and north ends; for illumination of the magnet-collimator and for viewing the collimator by the theodolite telescope respectively. The holes in the outer box are covered with glass. The magnet-collimator is formed by a diagonally placed cobweb cross, and a lens of 13 inches focal length and nearly 2 inches aperture, carried respectively by two sliding frames fixed by pinching screws to the south and north arms of the magnet. The cobweb cross is in the principal focus of the lens, and its image in the theodolite telescope is well seen. From the lower side of the magnet carrier a rod extends downwards, terminating below the magnet box in a horizontal brass bar immersed in water, for the purpose of checking small vibrations of the magnet.

The theodolite, by which the position of the upper declination magnet is observed, is by Troughton and Simms. It is planted about 7 feet north of the magnet. The radius of its horizontal circle is 8·3 inches, and the circle is divided to 5′, and read, by three verniers, to 5″. The theodolite has three foot-screws, which rest in brass channels let into the stone pier placed upon the brick pier which rises from the ground through the Magnet Basement. The length of the telescope is 21 inches, and the aperture of its object glass 2 inches: it is carried by a horizontal transit axis 10½ inches long, supported on Y's carried by the central vertical axis of the theodolite. The eye-piece has one fixed horizontal wire and one vertical wire moved by a micrometer-screw, the field of view in the observation of stars being illuminated through the pivot of the transit-axis on that side of the telescope which carries the micrometer-head. The value of one division of the striding level is considered to be equal to 1″·05. The opening in the roof of the Magnet House permits of observation of circumpolar stars as high as δ Ursæ Minoris above the pole and as low as β Cephei below the pole. A fixed mark, consisting of a small hole in a plate of metal, placed on one of the buildings of the Astronomical Observatory, at a distance of about 270 feet from the theodolite, affords an additional check on the continued steadiness of the theodolite.

The inequality of the pivots of the axis of the theodolite telescope was found from several independent determinations made at different times to be very small. It appears that when the level indicates the axis to be horizontal the pivot at the illuminated end of the axis is really too low by $1^{\text{div}}\cdot3$, equivalent to 1″·4.

The value in arc of one revolution of the telescope-micrometer is 1′. 34″·2.

The reading for the line of collimation of the theodolite telescope was found, by ten double observations, 1883 June 14, to be $100^{\text{r}}\cdot277$, and by ten double observations, 1883 December 12, $100^{\text{r}}\cdot334$. The value used throughout the year 1883 was $100^{\text{r}}\cdot250$.

The effect of the plane glass in front of the outer box of the declination-magnet at that end of the box towards the theodolite was determined by ten double observations made on 1881 September 8, which showed that in the ordinary position of the glass the theodolite readings were diminished by 18″·6. Other sets of observations, made on 1882 September 14 and 1883 December 12, gave 20″·1 and 18″·9 respectively. The mean of these, 19″·2, has been added to all readings throughout the year 1883.

The error of collimation of the magnet collimator is found by observing the position of the magnet, first with its collimator in the usual position (above the magnet), then with the collimator reversed (or with the magnet placed in its carrier with the collimator below), repeating the observations several times. The value used during the year 1883 was 26′. 5″·2, being the mean of determinations made on 1879 December 9, 1880 October 26, 1881 September 8, 1883 September 12, and 1883 December 13, giving respectively 26′. 2″·2, 25′. 56″·6, 26′. 18″·9, 26′. 15″·0, and 25′. 53″·5. With the collimator in its usual position, above the magnet, the quantity 26′. 5″·2 has to be subtracted from all readings.

The effect of torsion of the suspending skein is eliminated by turning the lower portion of the torsion-circle until a brass bar (of the same size as the magnet, and weighted with lead weights to be also of equal weight), inserted in place of the magnet, rests in the plane of the magnetic meridian. The brass bar is thus inserted usually about once a month, and whenever the adjustment is found not to have been sufficiently close, the observed positions of the magnet are corrected for the amount by which the magnet is deflected from the meridian by the torsion force of the skein. Such correction is determined experimentally, with the magnet in position, by changing the reading of the torsion circle by a definite amount, usually 90°, thus giving the skein the same amount of azimuthal twist, and observing, by the theodolite, the displacement in the position of the magnet thereby produced, from which is derived the ratio of the torsion force of the skein to the earth's magnetic force. In this way the torsion force of the skein was, on 1882 September 13, found to be $\frac{1}{126}$th part of the earth's magnetic force; and, on 1883 December 12, $\frac{1}{137}$th part. During the year 1883 the plane in which the suspension skein was free from torsion so nearly coincided with the magnetic meridian that no correction of the absolute measures of magnetic declination for deviation from the plane of no torsion was at any time required.

The time of vibration of the upper declination magnet under the influence of terrestrial magnetism was found on 1880 December 29 to be $30^{s}\cdot78$, on 1881 September 9, $31^{s}\cdot30$, on 1882 September 14, $31^{s}\cdot20$, and on 1883 December 13, $31^{s}\cdot15$.

The reading of the azimuthal circle of the theodolite corresponding to the astronomical meridian is determined about once in each month by observation of the stars Polaris and δ Ursæ Minoris. The fixed mark is usually observed weekly. The concluded mean reading of the circle for the south astronomical meridian (deduced entirely from the observations of the polar stars), used during the year 1883 for reduction of the observations of the declination magnet, was until September 30, 27°. 3′. 18″·6, and from October 1 to the end of the year, 27°. 3′. 58″·5.

In regard to the manner of making and reducing observations made with the upper declination magnet, the observer on looking into the theodolite telescope sees the image of the diagonally placed cross of the magnet collimator vibrating alternately right and left. The time of vibration of the magnet being about 30 seconds, the observer first applies his eye to the telescope about one minute, or two vibrations, before the pre-arranged time of observation, and, with the vertical wire carried by the telescope-micrometer, bisects the magnet-cross at its next extreme limit of vibration, reading the micrometer. He similarly observes the next following extreme vibration, in the opposite direction, and so on, taking in all four readings. The mean of each pair of adjacent readings of the micrometer is taken, giving three means, and the mean of these three is taken as the adopted reading. In practice this is done by adding the first and fourth readings to twice the second and third, and dividing the sum by 6. Should the magnet be nearly free from vibration, two bisections only of the cross are made, one at the vibration next before the pre-arranged time, the other at the vibration following. The verniers of the theodolite-circle are then read. The excess of the adopted micrometer-reading above the reading for the line of collimation of the telescope being converted into arc and applied to the mean circle-reading, and also the corrections for collimation of the magnet and for collimation of the plane glass in front of its box, the concluded circle-reading corresponding to the position of the magnet is found. The difference between this reading and the adopted reading of the circle for the south astronomical meridian gives, when, as is usually the case, no correction for torsion of the skein is necessary, the observed value of absolute declination, afterwards used for determining the value of the photographed base line on the photographic register of the lower declination magnet. The times of observation of the upper declination magnet are usually $1^h. 5^m$, $3^h. 5^m$, $9^h. 5^m$, and $21^h. 5^m$ of Greenwich mean time, reckoning from noon.

LOWER DECLINATION MAGNET.—The lower declination magnet is used simply for the purpose of obtaining a photographic register of the variations of magnetic declination. It is by Troughton and Simms, and is of the same dimensions as the upper declination magnet, being 2 feet long, $1\frac{1}{2}$ inch broad, and $\frac{1}{4}$ inch thick. The magnet is suspended, in the Magnet Basement, immediately below the upper declination magnet, in order that the absolute measure of declination by the upper magnet should not be affected by the proximity of the lower magnet.

The manner of suspension of the magnet is in general similar to that of the upper declination magnet, the suspension pulleys being carried by a small pier built on one of the crossed slates resting on the brick piers rising up from the ground. The length of free suspending skein is about 6 feet, but, unlike the arrangement adopted for the upper magnet, the skein is itself carried over the suspension pulleys. The position of the azimuthal plane in which the brass bar rests, when substituted for the magnet, is examined from time to time, and adjustment made as necessary, to keep this plane in or near the magnetic meridian, such exact adjustment as is required for the upper declination-magnet not being necessary in this case.

To destroy the small accidental vibrations to which the magnet would be otherwise liable, it is encircled by a damper consisting of a copper bar, about 1 inch square, which is bent into a long oval form, the plane of the oval being vertical; a lateral bend is made in the upper bar of the oval to avoid interference with the suspension piece of the magnet. The effect of the damper is to reduce the amplitude of the oscillation after every complete or double vibration of the magnet in the proportion of 5 : 2 nearly.

In regard to photographic arrangements, it may be convenient, before proceeding to speak of the details peculiar to each instrument, to remark that the general principle adopted for obtaining continuous photographic record is the same for all instruments. For the register of each indication an accurately turned cylinder of ebonite is provided, the axis of the cylinder being placed parallel to the direction of the change of indication to be registered. If, as is usually the case, there are two indications whose movements are in the same direction, both may be registered on the same cylinder: thus the movements in the case of magnetic declination and horizontal magnetic force, being both horizontal, can be registered on different parts of one cylinder with axis horizontal: so also can two different galvanic earth currents. The movements in the case of vertical magnetic force, and of the barometer, being both vertical, can similarly be registered on different parts of one cylinder having its axis vertical, as also can the indications of the dry-bulb and wet-bulb thermometers. In the electrometer the movement is horizontal, for which a horizontal cylinder is provided, no other register being made on this cylinder.

The cylinder is in each case driven by chronometer or accurate clock-work to ensure uniform motion. The pivots of the horizontal cylinders turn on anti-friction wheels: the vertical cylinders rest on a circular plate turning on anti-friction wheels, the driving mechanism being placed below. A sheet of sensitized paper being wrapped round the cylinder, and a cylindrical glass cover, open at one end, slipped over it, the cylinder so prepared is placed in position, and connected with the clock-movement: it is then ready to receive the photographic record, the optical arrangements for producing which will be found explained in the special description of each particular instrument. In the early part of the year 1883 the cylindrical glass cover (excepting for the electrometer) was discarded, a slender brass clip being henceforth used to hold the sheet in position. The sheets are removed from the cylinders and fresh sheets supplied every day, usually at noon. On each sheet, where necessary, a reference line is also photographed, the arrangements for which will be more particularly described in each special case. All parts of the apparatus and all parts of the paths of light are protected, as found necessary, by wood or zinc casings or tubes, blackened on the inside, in order to prevent stray exterior light from reaching the photographic paper.

In June 1882 the photographic process for so many years employed, as described in the concluding section of the Introduction to previous volumes, was discarded, and a dry paper process introduced, the argentic-gelatino-bromide-paper, as prepared by Messrs. Morgan and Kidd of Richmond (Surrey), being used with ferrous oxalate development. The greater sensitiveness of this paper permits diminution of the effective surface of the magnet mirrors, and allows also the use of smaller gas flames. In the case of the vertical force magnet the old and comparatively heavy mirror has been replaced by a small and light mirror with manifest advantage, as will be seen in the description of the vertical force magnet. The new paper works equally well at all seasons of the year, and any loss of register on account of photographic failure is now extremely rare.

Referring now specially to the lower declination magnet, there is attached to the magnet carrier, for the purpose of obtaining photographic register of the motions of the magnet, a concave mirror of speculum metal, 5 inches in diameter (reduced by a stop, on the introduction of the new photographic paper, to an effective diameter of about 1 inch), which thus partakes in all the angular movements of the magnet. The revolving ebonite cylinder is 11½ inches long and 14¼ inches in circumference: it is supported, in an approximately east and west position, on brass uprights carried by a metal plate, the whole being planted on a firm wooden platform, the supports of which rest on blocks driven into the ground. The platform is placed midway between the declination and horizontal force magnets, in order that the variations of magnetic declination and horizontal force may both be registered on the same cylinder, which makes one complete revolution in 26 hours.

The light used for obtaining the photographic record is that given by a flame of coal gas, charged with the vapour of coal naphtha. A vertical slit about $0^{\text{in}}\cdot 3$ long and $0^{\text{in}}\cdot 01$ wide, placed close to the light, is firmly supported on the pier which carries the magnet. It stands slightly out of the straight line joining the mirror and the registering cylinder, and its distance from the concave mirror of the magnet is about 25 inches. The distance of the axis of the registering cylinder from the concave mirror is 134·4 inches. Immediately above the cylinder, and parallel to its axis, are placed two long reflecting prisms (each 11 inches in length) facing opposite ways towards the mirrors carried by the declination and horizontal force magnets respectively. The front surface of each prism is convex, being a portion of a horizontal cylinder. The light of the declination lamp, after passing through the vertical slit, falls on the concave mirror, and is thence reflected as a converging beam to form an image of the slit on the convex surface of the reflecting prism, by the action of which it is reflected downwards to the paper on the cylinder as a small spot of light. A small azimuthal adjustment of the concave mirror allows the position of the spot to be so adjusted that it shall fall not at the centre of the cylinder but rather towards its western side, in order that the declination trace shall not interfere with that of horizontal force, which is made to fall towards the eastern side of the cylinder. The special advantage of the arrangement here described is that the registers of both magnets are made at the same part of the circumference of the cylinder, a line joining the two spots being parallel to its axis, so that when the traces on the paper are developed, the parts of the two registers which appear in juxtaposition correspond to the same Greenwich time.

By means of a small prism, fixed near the registering cylinder, the light from another lamp is made to form a spot of light in a fixed position on the cylinder, so that, as the cylinder revolves, a reference or base line is traced out on the paper, from which, in the interpretation of the records, the curve ordinates are measured.

A clock of special construction, arranged by Messrs. E. Dent and Co., acting upon a small shutter placed near the declination slit, cuts off the light from the mirror two minutes before each hour, and lets it in again two minutes after the hour, thus producing at each hour a visible interruption in the trace, and so ensuring accuracy as regards time scale. By means of another shutter the observer occasionally cuts off the light for a few minutes, registering the times at which it was cut off and at which it was again let in. The visible interruptions thus made at definite times in the trace obviate any possibility of error being made by wrong numeration of the hourly breaks.

The usual hour of changing the photographic sheet is noon, but on Sundays, and occasionally on other days, this rule is in some measure departed from. To obviate any uncertainty that might arise on such occasions from the interference of the two ends of a trace slightly longer than 24 hours, it was, as has been mentioned, arranged that one revolution of the cylinder should be made in 26 hours. The actual length of 24 hours on the sheet is about 13·3 inches.

The scale for measurement of ordinates of the photographic curve is thus determined. The distance from the concave mirror to the surface of the cylinder, in the actual path of the ray of light through the prism, is practically the same as the horizontal distance of the centre of the cylinder from the mirror, 134·4 inches. 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, representing a change of 1° of magnetic declination, is equal to 4·691 inches on the photographic paper. A small strip of cardboard is therefore prepared, graduated on this scale to degrees and minutes. The ordinates of the curve as referred to the base line being measured for the times at which absolute values of declination were determined by the upper declination magnet, usually four times daily, the apparent value of the base line, as inferred from each observation, is found. The process assumes that the movements of the upper and lower declination magnets are precisely similar. The separate base line values being divided into groups, usually monthly, a mean base line value is adopted for use through each group. This adopted base line value is written upon every sheet. Then, by the same pasteboard scale, there is laid down, conveniently near to the photographic trace, a new base line, whose ordinate represents some whole number of degrees or other convenient quantity. Thus every sheet carries its own scale of magnetic measure. From the new base line the hourly ordinates (see page *xxviii*) are measured.

During the month of March the photographic trace was found on some days to be evidently anomalous. The cause of this was not at first discovered. Ultimately, on March 31, it was found that an end of the filament of thread attaching the temporary stop, for reduction of the aperture of the magnet mirror, at times touched the cover of the magnet. This being remedied, the anomalous appearances ceased. Examination of the photographs then showed that it would be necessary to reject the declination traces of March 8, 9, 20, 21, 28, 29, and 30 as being untrustworthy. And from June 21 to June 24 there is no available register. On June 21 the suspension skein gave way; it was replaced by a new one, and registration recommenced on June 23, but on account of stretching of the thread the register could not be employed until June 25.

HORIZONTAL FORCE MAGNET.—The horizontal force magnet, for measure of the variations of horizontal magnetic force, was furnished by Meyerstein of Göttingen, and like the two declination magnets, is 2 feet long, 1½ inch broad, and about ¼ inch thick. For support of its suspension skein the back and sides of its brick pier rise through the eastern arm of the Magnet Basement to the Upper Magnet Room, being there covered by a slate slab, to the top of which a brass plate is attached, carrying, immediately above the magnet, two brass pulleys, with their axes in the same east and west line; and at the back of the pier, and opposite to these pulleys, two others, with their axes similarly in an east and west line: these constitute the upper suspension piece, and support the upper portions of the two branches of the suspension skein. The two lower pulleys, having their axes in the same horizontal plane, and their grooves in the same vertical plane, are attached to a small horizontal bar which forms the upper portion of the torsion circle: it carries the verniers for reading the torsion circle, and can be turned independently of the lower and graduated portion of the torsion circle, below which, and in rigid connexion with it, is the magnet carrier.

The suspension skein is led under the two pulleys carried by the upper portion of the torsion circle, its two branches then rise up and pass over the front pulleys of the upper suspension piece, thence to and over the back pulleys, thence descending to a single pulley, round which the two branches are tied: from this pulley a cord goes to a small windlass fixed to the back of the pier. The effective length of each of the two branches of the suspension skein is about $7^{ft}\ 6^{in}$. The distance between the branches of the skein, where they pass over the upper pulleys, is $1^{in}{\cdot}14$: at the lower pulleys the distance between the branches is $0^{in}{\cdot}80$. The two branches are not intended to hang in one plane, but are to be so twisted that their torsion force will maintain the magnet in a direction very nearly east and west magnetic, the marked end being west. In this state an increase of horizontal magnetic force draws the marked end of the magnet towards the north, whilst a diminution of horizontal force allows the torsion force to draw the marked end towards the south. An oval copper bar, exactly similar to that used with the lower declination magnet, is applied also to the horizontal force magnet, for the purpose of diminishing the small accidental vibrations.

Below the magnet carrier there is attached a small plane mirror to which is directed a small telescope for the purpose of observing by reflexion the graduations of a horizontal opal glass scale, attached to the southern wall of the eastern arm of the basement. The magnet, with its plane mirror, hangs within a double rectangular box, covered with gilt paper in the same way as was described for the upper declination magnet. The numbers of the fixed scale increase from east to west, so that when the magnet is inserted in its usual position, with its marked end towards the west, increasing readings of the scale, as seen in the telescope, denote increasing horizontal force. The normal to the scale that meets the centre of the plane mirror is situated at the division 51 of the scale nearly, the distance of the scale from the centre of the plane mirror being 90·84 inches. The angle between the normal to the scale, which coincides nearly with the normal to the axis of the magnet, and the axis of the fixed telescope is about 38°, the plane of the mirror being therefore inclined about 19° to the axis of the magnet.

To adjust the magnet so that it shall be truly transverse to the magnetic meridian, which position is necessary in order that the indications of the instrument may apply truly to changes in the magnitude of horizontal magnetic force, without regard to changes of direction, the time of vibration of the magnet and the reading of the fixed scale are determined for different readings of the torsion circle. In regard to the interpretation of such experiments the following explanation may be premised.

Suppose that the magnet is suspended in its carrier with its marked end in a magnetic westerly direction, not exactly west but in any westerly direction, and suppose that, by means of the fixed telescope, the reading of the scale is taken. The position of the axis of the magnet is thereby defined. Now let the magnet be taken out of its carrier, and replaced with its marked end easterly. The terrestrial magnetic force will now act, as regards torsion, in the direction opposite to that in which it acted before, and the magnet will take up a different position. But by turning the torsion circle, and thereby changing the amount and direction of the torsion force produced by the oblique tension of the two branches of the suspending skein, the magnet may be made to take the same position as before, but with reversed direction of poles, which will be proved by the reading of the scale, as seen in the fixed telescope, being the same. The reading of the torsion circle will now be different, the effect of the operation being to give the difference of torsion circle reading for the same position of the magnet axis, but with the marked end opposite ways, without however affording any information as to whether the magnet axis is accurately transverse to the magnetic meridian, inasmuch as the same operation can be performed whether the magnet axis be transverse or not.

But there is another observation which will indicate whether the magnet axis is or is not accurately transverse. Let the time of vibration be, in addition, taken in each position of the magnet. Resolve the terrestrial magnetic forces acting on the poles of the magnet each 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, 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, if there were no other force, the time of vibration would also be the same. But there is another force, the longitudinal force, and when the marked end is northerly this tends from the centre of the magnet's length, and when it is southerly it tends towards the centre of the magnet's length, and in a vibration of given extent this produces force, in one case increasing that due to the torsion, and in the other case diminishing it. The times of vibration will therefore 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 is this. Find the readings of the torsion circle which, with the magnet in reversed positions, will give the same readings of the scale and the same time of vibration for the magnet. With such readings of the torsion circle the magnet is, in either position, transverse to the meridian, and the difference of readings is the difference between the position in which the terrestrial magnetism acting on the magnet twists it one way and the position in which the same force twists it the opposite way, and is therefore double of the angle due to the torsion force of the suspending lines when they, in either position, neutralize the force of terrestrial magnetism.

The present suspension skein was mounted on 1880 December 30, and on December 31 the following observations were made:—

1880, Day.	The Marked End of the Magnet.							
	West.				East.			
	Torsion-Circle Reading.	Scale Reading.	Difference of Scale Readings for change of 1° of Torsion-Circle Reading.	Mean of the Times of Vibration.	Torsion-Circle Reading.	Scale Reading.	Difference of Scale Readings for change of 1° of Torsion-Circle Reading.	Mean of the Times of Vibration.
	°	div.	div.	s	°	div.	div.	s
Dec. 31	144	36·80	8·46	21·30	227	32·52	7·55	20·50
	145	45·26	7·89	21·12	228	40·07	7·28	20·62
	146	53·15	8·94	20·94	229	47·35	7·97	20·76
	147	62·09	8·06	20·74	230	55·32	7·94	20·90
	148	70·15		20·54	231	63·26	8·67	21·00
					232	71·93		21·12

From these observations it appeared that the times of vibration and scale readings were sensibly the same when the torsion circle read 146°. 15′, marked end west, and 230°. 0′, marked end east, the difference being 83°. 45′. Half this difference, or 41°. 52′·5, is therefore the angle of torsion when the magnet is transverse to the meridian. The values similarly found from other sets of observations made on 1882 January 3, 1883 February 16, 1883 December 31, and 1885 January 1, were respectively 42°. 9′, 41°. 56′, 42°. 1′·5, and 42°. 9′. The value adopted in the reduction of the observations during the year 1883 was 42°. 0′.

The adopted reading of torsion-circle, for transverse position of the magnet, the marked end being west, was 146° throughout the year.

The angle through which the magnet turns to produce a change of one division of scale reading, and the corresponding variation of horizontal force in terms of the whole horizontal force, is thus found.

The length of $30^{\text{div}}\cdot85$ of the fixed scale is exactly 12 inches, and the distance of the centre of the face of the plane mirror from the scale 90·84 inches; consequently the angle at the mirror subtended by one division of the scale is 14′. 43″·2, or for change of one division of scale-reading the magnet is turned through an angle of 7′. 21″·6.

The variation of horizontal force, in terms of the whole horizontal force, producing angular motion of the magnet corresponding to change of one division of scale reading = cotan. angle of torsion × value of one division in terms of radius. Using the numbers above given, the change of horizontal force corresponding to change of one division of scale-reading was found to be 0·002378, which value has been used throughout the year 1883 for conversion of the observed scale-readings into parts of the whole horizontal force.

In regard to the manner of making observations with the horizontal force magnet. A fine vertical wire is fixed in the field of view of the observing telescope, across which the graduations of the fixed scale, as reflected by the plane mirror carried by the magnet, are seen to pass alternately right and left as the magnet oscillates, and the scale reading for the extreme points of vibration is easily taken. The hours of observation are usually 1ʰ, 3ʰ, 9ʰ, and 21ʰ of Greenwich mean time. Remarking that the time of vibration of the magnet is about 20 seconds, and that the observer looks into the telescope about 40 seconds before the pre-arranged time, the manner of making the observation is generally similar to that already described for the upper declination magnet.

A thermometer, the bulb of which reaches considerably below the attached scale, is so planted in a nearly upright position on the outer magnet box that the bulb projects into the interior of the inner box containing the magnet. Readings of this thermometer are usually taken at 0ʰ, 1ʰ, 2ʰ, 3ʰ, 9ʰ, 21ʰ, 22ʰ, and 23ʰ. Its index error is insignificant.

The photographic record of the movements of the horizontal force magnet is made on the same revolving cylinder as is used for record of the motions of the lower declination magnet. And as described for that magnet, there is also attached to the carrier of the horizontal force magnet a concave mirror, 4 inches in diameter, reduced by a stop (on the introduction of the new photographic paper) to an effective diameter of about 1 inch. The arrangements as regards lamp, slit, and other parts are precisely similar to those for the lower declination magnet already described, and may be perfectly understood by reference to that description (pages *xii* and *xiii*), in which was incidentally included an explanation of some parts specially referring to register of horizontal force. The distance of the vertical slit from the concave mirror of the magnet is about 21 inches, and the distance of the axis of the registering cylinder from the concave mirror is 136·8 inches, the slit standing slightly out of the straight line joining the mirror and the registering cylinder. The same base line is used for measure of the horizontal force ordinates, and the register is similarly interrupted at each hour by the clock, and occasionally by the observer, for determination of time scale, the length of which is of course the same as that for declination.

The scale for measure of ordinates of the photographic curve is thus constructed. The distance from the concave mirror to the surface of the cylinder, in the actual path of the ray of light through the prism is (as for declination) practically the same as the horizontal distance of the centre of the cylinder from the mirror, or

136·8 inches. But, because of the reflexion at the concave mirror, the double of this measure, or 273·6 inches, is the distance that determines the extent of motion on the cylinder of the spot of light, which, in inches, for a change of 0·01 part of the whole horizontal force will therefore be 273·6 × tan. angle of torsion × 0·01. Taking for angle of torsion 42°. 0′ the movement of the spot of light on the cylinder for a change of 0·01 of horizontal force is thus found to be 2·464 inches, and with this unit the pasteboard scale for measure of the curve ordinates for the year 1883 was prepared. The ordinates being measured for the times at which eye observations of the scale were made, combination of the measured ordinates with the observed scale readings converted into parts of the whole horizontal force, gives an apparent value of the base line for each observation. These being divided into groups, mean base line values are adopted, written on the sheets, and new base lines laid down, from which the hourly ordinates (see page *xxviii*) are measured, exactly in the same way as described for declination.

The indications of horizontal force are in a slight degree affected by the small changes of temperature to which the Magnet Basement is subject. The temperature coefficient of the magnet was determined by artificially heating the Magnet Basement to different temperatures, and observing the change of position of the magnet thereby produced. This process seems preferable to others in which was observed the effect which the magnet, when inclosed within a copper trough or box and artificially heated by hot water or hot air to different temperatures, produced on another suspended magnet, since the result obtained includes the entire effect of temperature upon all the various parts of the mounting of the magnet, as well as on the magnet itself. Referring to previous volumes for details, it is sufficient here to state that from a series of experiments made in the early part of the year 1868 on the principle mentioned, it appeared that when the marked end of the horizontal force magnet was to the west (its ordinary position) a change of 1° of temperature (Fahrenheit) produced a change of ·000174 of the whole horizontal force, a smaller number of observations made with the marked end of the magnet east indicating that a change of 1° of temperature produced a change of ·000187 of horizontal force, increase of temperature in both cases being accompanied by decrease of magnetic force. It is concluded that an increase of 1° of temperature produces a decrease of ·00018 of horizontal force.

VERTICAL FORCE MAGNET.—The vertical force magnet, for measure of the variations of vertical magnetic force, is by Troughton and Simms. It is lozenge shaped, being broad at the centre and pointed at the ends, and is mounted on a solid brick pier capped with stone, situated in the western arm of the basement, its position being nearly symmetrical with that of the horizontal force magnet in the eastern arm.

The supporting frame consists of two pillars, connected at their bases, on whose tops are the agate planes upon which rest the extreme parts of the continuous steel knife edge, attached to the magnet carrier by clamps and pinching screws. The knife edge, eight inches long, passes through an aperture in the magnet. The axis of the magnet is approximately transverse to the magnetic meridian, its marked end being east; its axis of vibration is thus nearly north and south magnetic. The magnet carrier is of iron; at its southern end there is fixed a small plane mirror for use in eye observations, whose plane makes with the axis of the magnet an angle of $52\frac{3}{4}^{\circ}$ nearly. A telescope fixed to the west side of the brick pier supporting the theodolite of the upper declination magnet is directed to the mirror, for observation by reflexion of the divisions of a vertical opal glass scale fixed to the pier that carries the telescope, very near to the telescope itself. The numbers of this fixed scale increase downwards, so that when the magnet is placed in its usual position with the marked end east, increasing readings of the scale, as seen in the telescope, denote increasing vertical force.

The magnet is placed excentrically between the bearing parts of its knife edge, nearer to the southern side, leaving a space of about four inches in the northern part of the iron frame, in which the concave mirror used for the photographic register is planted. Two screw stalks, carrying adjustible screw weights, are fixed to the magnet carrier, near its northern side; one stalk is horizontal, and a change in the position of the weight affects the position of equilibrium of the magnet; the other stalk is vertical, and change in the position of its weight affects the delicacy of the balance, and so varies the magnitude of its change of position produced by a given change in the vertical force of terrestrial magnetism.

In the year 1882 Messrs. Troughton and Simms substituted for the old mirror of 4 inches diameter a much lighter mirror of 1 inch diameter, and also lowered the position of the knife-edge bar with respect to the magnet so as to permit of a diminution of the adjustible counterpoise weights which as well as the mirror appear to largely affect the temperature correction of this balance-magnet. The use of a smaller and much lighter mirror was rendered possible by the much greater sensitiveness of the new photographic paper introduced in 1882 June.

The whole is enclosed in a rectangular box, resting upon the pier before mentioned, and having apertures, covered with glass, opposite to the two mirrors carried by the magnet.

The time of vibration of the magnet in the vertical plane is observed usually about once in each week, or more often should it appear to be desirable. From observations made on 31 days between January 1 and June 29 the time of vibration was found to be $13^{s}\cdot708$; from observations made on 3 days between June 30 and

July 2, $17^{s}\cdot163$; and from observations made on 49 days between July 3 and December 31, $21^{s}\cdot679$. The time of vertical vibration was increased on June 30 and again on July 3 by slight shift of the screw weight on the vertical stalk in order that equal changes of amplitude in the horizontal and vertical force photographs should more nearly correspond to equal changes of absolute magnetic force.

The time of vibration of the magnet in the horizontal plane is determined by suspending the magnet with all its attached parts from a tripod stand, its broad side being in a plane parallel to the horizon, so that its moment of inertia is the same as when in observation. A telescope, with a wire in its focus, being directed to the plane mirror carried by the magnet, a scale of numbers is placed on the floor, at right angles to the long axis of the magnet, which scale, by reflexion, can be seen in the fixed telescope. The magnet is observed only when swinging through a small arc. Observations made in the way described on 1883 April 4 gave for the time of vibration of the magnet in the horizontal plane = $17^{s}\cdot171$. This value is used throughout the year 1883.

The length of the normal to the fixed vertical scale that meets the face of the plane mirror is 186·07 inches, and $30^{div}\cdot85$ of the scale correspond to 12 inches. Consequently the angle which one division of the scale subtends, as seen from the mirror, is $7'.\ 11''\cdot2$, or the angular movement of the normal to the mirror, corresponding to a change of one division of scale reading, is $3'.\ 35''\cdot6$.

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 ratio of the cosine of the angle which the normal to the mirror makes with the magnet to unity, or in the ratio of the sine of the angle which the plane of the mirror makes with the magnet to unity. This angle, as already stated, is $52\frac{3}{4}^{\circ}$, therefore dividing the result just obtained, $3'.\ 35''\cdot6$, by Sin. $52\frac{3}{4}^{\circ}$, the angular motion of the magnet corresponding to a change of one division of scale reading is found to be $4'.\ 30''\cdot9$.

The variation of vertical force, in terms of the whole vertical force, producing angular motion of the magnet corresponding to change of one division of scale reading = cotan. dip $\times \left(\frac{T'}{T}\right)^2 \times$ value of one division in terms of radius, in which T' is the time of vibration of the magnet in the horizontal plane, and T that in the vertical plane. From January 1 to June 29, assuming $T' = 17^{s}\cdot171$, $T = 13^{s}\cdot708$, and dip = $67^{\circ}.\ 32'$, the change of vertical force corresponding to change of one division of scale reading was found to be 0·000852; from June 30 to July 2, with the same value for T', and assuming $T = 17^{s}\cdot163$, and dip = $67^{\circ}.\ 30\frac{1}{2}'$, it was found to be 0·000544; from July 3 to December 31 with the same value for T', and assuming $T = 21^{s}\cdot679$, and dip = $67^{\circ}.\ 31'$, it was found to be 0·000341. These values have been severally used during the periods mentioned for conversion of the observed scale readings into parts of the whole vertical force.

The hours of observation of the vertical force magnet are the same as those for the horizontal force magnet, and the method of observation is precisely similar, the time of vertical vibration being substituted for that of horizontal. The wire in the fixed telescope is here horizontal, and as the magnet oscillates the divisions of the scale are seen to pass upwards and downwards in the field of view.

In the same way as described for the horizontal force magnet a thermometer is provided whose bulb projects into the interior of the magnet box. Readings are taken usually at 0^h, 1^h, 2^h, 3^h, 9^h, 21^h, 22^h, and 23^h. Its index error is insignificant.

The photographic register of the movements of the vertical force magnet is made on a cylinder of the same size as that used for declination and horizontal force, driven also by chronometer movement. The cylinder is here placed vertical instead of horizontal, and opportunity is taken to register on the same cylinder the variations of the barometer. The slit is horizontal, and other arrangements are generally similar to those already described for declination and horizontal force. The concave mirror carried by the magnet is 1 inch in diameter, and the slit is distant from it about 22 inches, being placed a little out of the straight line joining the mirror and the registering cylinder. There is a slight deviation in the further optical arrangements. Instead of a reflecting prism (as for declination and horizontal force) the converging horizontal beam from the concave mirror falls on a system of plano-convex cylindrical lenses, placed in front of the cylinder, with their axes parallel to that of the cylinder. The trace is made on the western side of the cylinder, the position of the magnet being so adjusted that the spot of light shall fall also on the lower part of the sheet. A base line is photographed, and the record is interrupted at each hour by the clock, and occasionally by the observer, for establishment of time scale, in the same way as for the other magnets. The length of the time scale is the same as that for the other magnetic registers.

The scale for measure of ordinates of the photographic curve is determined as follows:—The distance from the concave mirror to the surface of the registering cylinder is 100·2 inches. But the double of this measure, or 200·4 inches, is the distance that determines the extent of motion on the cylinder of the spot of light, which, in inches, for a change of 0·01 part of the whole vertical force, will therefore be $= 200{\cdot}4 \times \tan.\ \text{dip} \times \left(\frac{T}{T'}\right)^2 \times 0{\cdot}01$. Using the values of T, T′, and of dip, before given (page *xxi*), the movement of the spot of light on the cylinder for a change of 0·01 of vertical force is thus found to be, for the period January 1 to June 29, 3·089 inches, for the period June 30 to July 2, 4·836 inches, and from July 3 to December 31, 7·718 inches, and with these units the scales for measure of the curve ordinates were constructed. Base line values are then determined, and written on the sheets, and new base lines laid down, from which the hourly ordinates (see page *xxviii*) are measured, exactly in the same way as was described for horizontal force.

In regard to the temperature correction of the vertical force magnet, it is only necessary here to say that, according to a series of experiments made in a similar manner to those for the horizontal force magnet (page *xix*), it appeared that an increase of 1° of temperature (Fahrenheit) produced an apparent increase of 0·00020 of vertical force. The value of the coefficient is thus much less than was found in the old state of the magnet with the large mirror, although still not following the ordinary law of increase of temperature producing loss of magnetic power. In practice a nearly uniform temperature is as far as possible maintained.

DIP INSTRUMENT.—The instrument with which the observations of magnetic dip have been made during the year 1883 is that which is known as Airy's instrument. Until the beginning of the month of May it was mounted on a stout block of wood in the Magnet Office No. 7. It was then removed to the New Library and placed on a slate slab supported by a braced wooden stand built up from the ground independently of the floor of the Library. The plan of the instrument was arranged by Sir G. B. Airy so that the points of the needles should be viewed by microscopes and if necessary observed whilst the needles were in a state of vibration, that there should be power of employing needles of different lengths, and that the field of view of each microscope should be illuminated from the side opposite to the observer, in such way that the needle point should form a dark image in the bright field.

The instrument is adapted to the observation of needles of 9 inches, 6 inches, and 3 inches in length. The main portion of the instrument, that in which the needle under observation is placed, consists of a square box made of gun metal (carefully selected to ensure freedom from iron), with back and front of glass. Six microscopes, so planted as to command the points of the three different lengths of needles, are attached to a horizontal axis which allows them to be turned round in the vertical plane so as to follow the points of the needles in the different positions which in observation they take up. The object glasses and field glasses of the microscopes are within the front glass plate, their eye glasses being outside, and turning with them on the same axis. Upon the plane side of each field glass (the side next the object glass and on which the image of the needle point is formed) a scale is etched. And on the inner side of the front glass plate is etched the graduated circle, divided to 10′, and read by two verniers to 10″. The verniers (thin plates of metal, with notches instead of lines, being thus adapted to transmitted light) are carried by the horizontal axis, inside of the front glass plate, their reading lenses, attached to the same axis, being outside. Proper clamp with slow motion is provided. The microscopes and verniers are illuminated by one gas lamp, the light from which falling on eight corresponding prisms is thereby directed to each separate microscope and vernier. The prisms are carried behind the back glass plate on a circular frame in such way that, on reversion of the instrument in azimuth, the whole set of prisms can at one motion of the frame be shifted so as to bring each one again opposite to its proper microscope or vernier.

Since the instrument has been placed in the New Library artificial light has not been employed in making the observation.

The whole of the apparatus is planted upon a circular horizontal plate, admitting of rotation in azimuth: a graduated circle near the circumference of the plate is read by two fixed verniers.

A brass zenith point needle, having points corresponding in position to the three different lengths of dip needles, is used to determine the zenith point for each particular length of needle.

The instrument carries two levels, one parallel to the plane of the vertical circle, the other at right angles to that plane, by means of which the instrument is from time to time adjusted in level. The readings of the first-mentioned level are also regularly employed to correct the apparent value of dip for any small outstanding error of level: the correction seldom exceeds a very few seconds.

The needles in regular use are of the ordinary construction, they are two 9-inch needles, B_1 and B_2, two 6-inch needles, C_1 and C_2, and two 3-inch needles, D_1 and D_2.

The observations were made in the New Library from the beginning of the month of May.

DEFLEXION INSTRUMENT.—The observations of deflexion of a magnet in combination with observations of vibration of the deflecting magnet, for determination of the absolute intensity of magnetism, are made with a unifilar instrument, which, with the exception of some slight modification of the mechanical arrangements, is similar to those issued from the Kew Observatory. Until the beginning of March it was mounted on a block of wood in the Magnet Office No. 7, on the south side of the Dip instrument. It was then moved to the New Library and supported on a slate slab in the same way as the Dip instrument.

The deflected magnet, whose use is merely to ascertain the ratio which the power of the deflecting magnet at a given distance bears to the power of terrestrial magnetism, is 3 inches long, and carries a small plane mirror, to which is directed a telescope fixed to and rotating with the frame that carries also the suspension piece of the deflected magnet: a scale fixed to the telescope is seen by reflexion at the plane mirror. The deflecting magnet is a hollow cylinder 4 inches long, containing in its internal tube a collimator, by means of which in another apparatus its time of vibration is observed. In observations of deflexion the deflecting magnet is placed on the transverse deflection rod, carried by the rotating frame, at the distances 1·0 foot and 1·3 foot of the engraved scale from the deflected magnet, and with one end towards the deflected magnet. Observations are made at the two distances mentioned, with the deflecting magnet both east and west of the deflected magnet, and also with its poles in reversed positions. The fixed horizontal circle is 10 inches in diameter: it is graduated to 10′, and read by two verniers to 10″. The March observation and all following observations were made in the New Library.

It will be convenient in this case to include with the description of the instrument an account of the method of reduction employed, in which the Kew precepts and generally the Kew notation are followed. Previous to the establishment of the instrument at the Royal Observatory the values of the various instrumental constants, as determined at the Kew Observatory, were kindly communicated by Professor Balfour Stewart, and have been since used in the reduction of all observations made with the instrument at Greenwich.

The instrumental constants as thus furnished are as follows:—

The increase in the magnetic moment of the deflecting magnet produced by the inducing action of a magnetic force equal to unity of the English system of absolute measurement $= \mu = 0{\cdot}00015587$.

The correction for decrease of the magnetic moment of the deflecting magnet required in order to reduce to the temperature 35° Fahrenheit $= q = 0{\cdot}00013126\ (t - 35) + 0{\cdot}000000259\ (t - 35)^2$: t representing the temperature at which the observation is made.

Moment of inertia of the deflecting magnet $= K$. At temperature 30°, log. $K = 0{\cdot}66643$: at temperature $90° = 0{\cdot}66679$.

The distance on the deflection rod from $1^{\text{ft.}}{\cdot}0$ east to $1^{\text{ft.}}{\cdot}0$ west of the engraved scale, at temperature 62°, is too long by 0·0034 inch, and the distance from $1^{\text{ft.}}{\cdot}3$ east to $1^{\text{ft.}}{\cdot}3$ west is too long by 0·0053 inch.

The adopted value of K was confirmed in the year 1878 by a new and entirely independent determination made at the Royal Observatory, giving log. K at temperature $30° = 0{\cdot}66727$.

If, in the deflection observation, $r =$ apparent distance of centre of deflecting magnet from deflected magnet, corrected for scale error and temperature (taking expansion of scale for $1° = {\cdot}00001$), and $u =$ observed angle of deflexion, then putting $A_1 = \frac{1}{2}\ r^3 \sin. u \left\{1 + \frac{2\mu}{r^3} + q\right\}$, in which $r = 1{\cdot}0$ foot; and $A_2 =$ corresponding expression for $r = 1{\cdot}3$ foot; $P = \frac{A_1 - A_2}{A_1 - \frac{A_2}{(1{\cdot}3)^2}}$; but this is not convenient for logarithmic computation, especially as the logarithms of A_1 and A_2 are, in the calculation, first obtained. The difference between A_1 and A_2 being small, P may be taken equal to (Log. A_1 — Log. A_2) $\frac{1\cdot 69}{(1\cdot 69 - 1)\,\text{modulus}}$ = (Log. A_1 — Log. A_2) × 5·64. A mean value of P is adopted from various observations; then m being the magnetic moment of the deflecting magnet, and X the Horizontal component of the Earth's magnetic force, $\frac{m}{X} = A_1 \times \left(1 - \frac{P}{1}\right)$ from observation at distance 1·0 foot, or $= A_2 \times \left(1 - \frac{P}{1\cdot 69}\right)$ from that at distance 1·3 foot. The mean of these is adopted for the true value of $\frac{m}{X}$.

For determination, from the observed vibrations, of the value of mX, let T_1 = time of vibration of the deflecting magnet corrected for rate and arc of vibration, then $T^2 = T_1^2 \left\{ 1 + \frac{H}{F} + \mu \frac{X}{m} - q \right\}$, in which $\frac{H}{F}$ is the ratio of the torsion force of the suspension thread of the deflecting magnet to the earth's directive force. And $mX = \frac{\pi^2 K}{T^2}$. The adopted time of vibration is the mean of 100 vibrations observed immediately before, and 100 observed immediately after the observations of deflexion.

From the combination of the values of $\frac{m}{X}$ and mX, m and X are immediately found. The computation is made with reference to English measure, taking as units of length and weight the foot and grain, but it is desirable to express X also in metric measure. If the English foot be supposed equal to α times the millimètre, and the grain equal to β times the milligramme, then for reduction to metric measure $\frac{m}{X}$ and mX must be multiplied by α^3 and $\alpha^2\beta$ respectively, or X must be multiplied by $\sqrt{\frac{\beta}{\alpha}}$. Taking the mètre as equal to 39·37079 inches, and the gramme as equal to 15·43249 grains, the factor by which X is to be multiplied in order to obtain X in metric measure is $0\cdot 46108 = \frac{1}{2\cdot 1689}$. The values of X in metric measure thus derived from those in English measure are given in the proper table. Values of X in terms of the centimètre and gramme, known as the C.G.S. unit (centimètre-gramme-second unit), are readily obtained by dividing those referred to the millimètre and milligramme by 10.

EARTH CURRENT APPARATUS.—For observation of the spontaneous galvanic currents which in some measure are almost always discoverable in the earth, and which are occasionally very powerful, two insulated wires having earth connexions at Angerstein Wharf (on the bank of the River Thames near Charlton) and Lady Well for one circuit; and at the Morden College end of the Blackheath Tunnel and the North Kent East Junction of the South-Eastern Railway for the other circuit, have been employed. The connecting wires pass from the Royal Observatory to the Greenwich Railway Station and thence, by kind permission of the Directors of the

South-Eastern Railway Company, along the lines of the South-Eastern Railway to the respective earths, in each case a copper plate. The direct distance between the earth plates of the Angerstein Wharf—Lady Well circuit is 3 miles, and the azimuth of the line, reckoning from magnetic north towards east, 50°; in the Blackheath—North Kent East circuit the direct distance is 2½ miles, and the azimuth, from magnetic north towards west, 46°. The actual lengths of wire in the circuitous courses which the wires necessarily take in order to reach the Observatory registering apparatus are about 7½ miles and 5 miles respectively. The identity of the four branches is tested from time to time as appears necessary.

In each circuit at the Royal Observatory there is placed a horizontal galvanometer, having its magnet suspended by a hair. Each galvanometer coil contains 150 turns of No. 29 copper wire, or the double coil of each instrument consists of 300 turns of wire. They are placed on opposite sides of the registering cylinder, which is of course horizontal. One galvanometer stands towards one end of the cylinder, and the other towards the other end, and each carries, on a light stalk extending downwards from its magnet, a small plane mirror. Immediately above the cylinder are placed two long reflecting prisms which, except that they are each but half the length of the cylinder, and are placed end to end, are generally similar to those used for magnetic declination and horizontal force, the front convex surface facing opposite ways, each one towards the mirror of its respective galvanometer. In each case the light of a gas lamp, passing through a vertical slit and a vertical cylindrical lens, falls upon the galvanometer mirror, which reflects the converging beam to the convex surface of the reflecting prism, by whose action it is made to form on the paper on the cylinder a small spot of light; thus all the azimuthal motions of the galvanometer magnet are registered. The extent of trace for each galvanometer is thus confined to half the length of the cylinder, which is of the same size as those used for the magnetic registers. The arrangements for turning the cylinder, automatically determining the time scale, and forming a base line are similar to those which have been before described. When the traces on the paper are developed the parts of the registers which appear in juxtaposition correspond, as for declination and horizontal force, to the same Greenwich time, and the scale of time is of the same length as for the magnetic registers.

§ 5. *Magnetic Reductions.*

The results given in the Magnetic Section refer to the astronomical day, commencing at noon.

Before proceeding to discuss the photographic records of magnetic declination, horizontal force, and vertical force, they were divided into two groups, one including all days on which the traces showed no particular disturbance, and which therefore were suitable for the determination of diurnal inequality; the other comprising days of unusual and violent disturbance, when the traces were so irregular that it appeared impossible to treat them except by the exhibition of every motion of each magnet through the day. Following the principle of separation hitherto adopted, there are 5 days in the year 1883 which have been classed as days of great disturbance. These are February 24, April 3, 24, September 15 and 16. Other days or periods of lesser disturbance were January 25, 26, February 1, 2, 3, 4, 22, 27, 28, March 1, 2, 26. 8^h to 28. 8^h, April 19, 25, May 20, 21, June 29. 16^h to July 1. 16^h, July 8, 9, 10, 11, 29, 30, 31, August 1, 18, September 18, October 5, 16, 19. 6^h to 20^h, 20. 4^h to 11^h, November 1. 4^h to 3. 4^h, 19. 8^h to 20. 8^h, and 21. 13^h to 23. 13^h.

Separating the days of great disturbance, to be spoken of hereafter the photographic sheets for the remaining available days, including those of lesser disturbance, were thus treated. Through each photographic trace a pencil line was drawn representing the general form of the curve, without its petty irregularities. The ordinates of these pencil curves were then measured, with the proper pasteboard scales, at every hour, the measures being entered in a form having double argument, the vertical argument ranging through the 24 hours of the astronomical day, and the horizontal argument through the days of a calendar month, the means of the numbers standing in the vertical columns giving the mean daily value of the element, and the means of the numbers in the horizontal columns the mean monthly value at each hour of the day. Tables I. and II. contain the results for declination, Tables III. to VI. those for horizontal force, with corresponding tables of temperature, and Tables VII. to X. those for vertical force, with corresponding tables of temperature. Table XI. gives the collected monthly values for declination, horizontal force, and vertical force, and Table XII. the mean diurnal inequalities for the year.

The temperature of the horizontal and vertical force magnets was maintained so nearly uniform through each day that the determination of the diurnal inequalities of horizontal and vertical force should possess great exactitude. It was not possible under the circumstances to maintain similar uniformity of temperature through the seasons, a point however of less importance. In preceding years the results for horizontal and vertical force have been given uncorrected for temperature, leaving the correction to be applied when the results for series of years are collected for discussion; but commencing with the year 1883 it has been thought well to add also, in Tables III., V., VII., and IX., results corrected for temperature, in order to render them more immediately available. In Tables XI. and XII., only results corrected for temperature are given. The corrected mean daily and mean hourly values of horizontal force given in Tables III. and V. respectively are obtained by applying to the uncorrected values the correction $(t^{\circ}-32^{\circ}) \times {\cdot}00018$, where t° is the temperature (Fahrenheit), and to those of vertical force, Tables VII. and IX., the correction $-(t^{\circ}-32^{\circ}) \times {\cdot}00020$. The corrections applied are founded on the daily and hourly values of temperature given in Tables IV., VI., VIII., and X.

In order to economise space the daily values as exhibited in Tables III. and VII., both uncorrected and corrected, have been diminished by constants. The division ═══ in these Tables and in Table XI. indicates that the instrument has been disturbed for experiment, or for some adjustment, whereby the continuity of the values has been broken, the constants deducted being different before and after each break. In the interval between two breaks the constant deducted remains the same, and that deducted in Tables III. and VII. from the corrected values differs from that deducted from the uncorrected values by some multiple of 100. In Tables II., V., IX., and XII. the separate hourly values of the different elements have been simply diminished by the smallest hourly value.

The variations of declination are given in the sexagesimal division of the circle, and those of horizontal and vertical force in terms of ·00001 of the whole horizontal and vertical forces respectively taken as units. In Tables XI. and XII. they have been also expressed in terms of ·00001 of Gauss's absolute unit, as referred to the metrical system of the millimètre-milligramme-second.

The factors for conversion from the former to the latter system of measures are as follows:—

For variation of declination, expressed in minutes, the factor is

$$\text{H. F. in metrical measure} \times \sin 1' = 1{\cdot}810 \times \sin 1' = 0{\cdot}0005265.$$

For variation of horizontal force, the factor is

$$\text{H. F. in metrical measure} = 1{\cdot}810,$$

and for variation of vertical force

$$\begin{aligned}\text{V. F. in metrical measure} &= \text{H. F. in metrical measure} \times \tan \text{dip},\\ &= 1{\cdot}810 \times \tan 67^{\circ}.\ 31\tfrac{1}{2}' = 4{\cdot}375.\end{aligned}$$

The measures as referred to the millimètre-milligramme-second are convertible into measures on the centimètre-gramme-second (C. G. S.) system by dividing by 10.

Tables XIII. and XIV. exhibit respectively the diurnal range of declination and horizontal force on each separate day, as determined from the 24 hourly ordinates of each element measured from the photographic register (as explained on page *xxviii*), and the monthly means of these numbers. The results for horizontal force are corrected for temperature. The monthly means for declination are such as, in the volume for 1881 and in previous volumes, have been given in the final column of Table III.; the daily values have only been given since the year 1882.

The magnetic diurnal inequalities of declination, horizontal force, and vertical force, for each month and for the year, have this year been treated by the method of harmonic analysis. The values of the coefficients contained in Table XV. have been thus computed, 0 representing the value at 0^h, 1 that at 1^h, and so on.

$$\begin{aligned}
m &= \frac{1}{24}\,(0+1+2\ldots\ldots22+23).\\
12\,a_1 &= 0-12 + (\overline{1+23} - \overline{11+13})\cos 15^\circ + (\overline{2+22} - \overline{10+14})\cos 30^\circ\\
&\quad + (\overline{3+21} - \overline{9+15})\cos 45^\circ + (\overline{4+20} - \overline{8+16})\cos 60^\circ\\
&\quad + (\overline{5+19} - \overline{7+17})\cos 75^\circ.\\
12\,b_1 &= 6-18 + (\overline{5+7} - \overline{17+19})\sin 75^\circ + (\overline{4+8} - \overline{16+20}\ \sin 60^\circ\\
&\quad + (\overline{3+9} - \overline{15+21})\sin 45^\circ + (\overline{2+10} - \overline{14+22})\sin 30^\circ\\
&\quad + (\overline{1+11} - \overline{13+23})\sin 15^\circ.\\
12\,a_2 &= \overline{0+12} - \overline{6+18} + (\overline{1+11+13+23} - \overline{5+7+17+19})\cos 30^\circ\\
&\quad + (\overline{2+10+14+22} - \overline{4+8+16+20})\cos 60^\circ.\\
12\,b_2 &= \overline{3+15} - \overline{9+21} + (\overline{2+4+14+16} - \overline{8+10+20+22})\sin 60^\circ\\
&\quad + (\overline{1+5+13+17} - \overline{7+11+19+23})\sin 30^\circ.\\
12\,a_3 &= \overline{0+8+16} - \overline{4+12+20} + (\overline{1+7+9+15+17+23} - \overline{3+5+11+13+19+21})\cos 45^\circ.\\
12\,b_3 &= \overline{2+10+18} - \overline{6+14+22} + (\overline{1+3+9+11+17+19} - \overline{5+7+13+15+21+23})\sin 45^\circ.\\
12\,a_4 &= \overline{0+6+12+18} - \overline{3+9+15+21}\\
&\quad + (\overline{1+5+7+11+13+17+19+23} - \overline{2+4+8+10+14+16+20+22})\cos 60^\circ.\\
12\,b_4 &= (\overline{1+2+7+8+13+14+19+20} - \overline{4+5+10+11+16+17+22+23})\sin 60^\circ.
\end{aligned}$$

The values of the coefficients c_1, and of the constant angles α contained in Table XVI., are then determined by means of the following relations :—

$$\frac{a_1}{b_1} = \tan\alpha \qquad\qquad c_1 = \frac{a_1}{\sin\alpha} = \frac{b_1}{\cos\alpha}.$$

Similarly for c_2, β, &c.

Finally, the values of the angles α^1, β^1, &c. were thus found. Calling the Sun's hour angle east at mean solar noon $= h$, then—

$$\begin{aligned}
\alpha^1 &= \alpha + h\\
\beta^1 &= \beta + 2h\\
\&c. &= \&c.,
\end{aligned}$$

a mean value of h for the month being employed.

The values of a_5 and b_5 for the diurnal inequalities for the year were also calculated, but could not be conveniently included in Table XV.; they are as follows:—

1883.	a_5.	b_5.
	′	′
Declination............	+0·06	−0·01
Horizontal Force.......	−0·4	+0·7
Vertical Force.........	−0·7	+0·5

In order to give some indication of the accuracy with which the results of observation are represented by the harmonic formula, the sums of squares of residuals remaining after the introduction of m and of each successive pair of terms of the expression on page (xii), corresponding to the single terms of the expressions on page (xiii), have been calculated for the mean diurnal inequalities for the year (columns 1, 2, and 3 of Table XII.). The respective sums of squares of residuals are as follows:—

SUMS OF SQUARES OF RESIDUALS OF DIURNAL INEQUALITIES.

For the Year 1883.	Declination.	Horizontal Force.	Vertical Force.
	′		
Sums of Squares of Observed Values (Table XII)............	373·31	456197·1	22969·6
Sums of Squares of Residuals after the introduction of m......	155·75	79094·2	4863·6
" " a_1 and b_1	56·13	20465·3	2418·2
" " a_2 and b_2	10·02	3655·2	368·6
" " a_3 and b_3	1·22	611·4	33·5
" " a_4 and b_4	0·13	10·2	12·6
" " a_5 and b_5	0·08	1·4	4·2

The unit in the case of horizontal and vertical force being ·00001 of the whole horizontal and vertical forces respectively, it thus appears that there would be no advantage in carrying the approximation (Table XV.) beyond the determination of a_4, b_4.

As regards Magnetic dip, the result of each separate observation of dip with each of the six needles in ordinary use is given in Table XVII., and in Table XVIII. the concluded monthly and yearly values for each needle.

The results of the observations for Absolute measure of horizontal force contained in Table XIX. require no special remark, the method of reduction and all necessary explanation having been given with the description of the instrument.

No numerical discussion of Earth Current records is contained in the present volume.

In the treatment of disturbed days it has been the custom in previous years to measure out for each element all salient points of the curves and to print the numerical values. But, commencing with the year 1882, it has been considered preferable to give instead reduced copies of the actual photographic curves (reproduced by photolithography from full-sized tracings of the original photographs), adding thereto copies of the corresponding earth current curves. The registers thus exhibited are those for the days of great and of lesser disturbance mentioned on page *xxviii*.

The plates are preceded by a brief description of *all* significant magnetic motions (superposed on the ordinary diurnal movement) recorded throughout the year. These, in combination with the plates, give very complete information on magnetic disturbances during the year 1883, affording thereby, it is hoped, facilities for making comparison with solar phenomena.

Referring now again to the plates, it may be remarked that on each day, with few exceptions, five distinct registers are given, viz.: declination, horizontal force, vertical force, and the two earth currents, all necessary information for proper understanding of the plates being given in the notes on page (xxiv). No attempt has been made to determine earth current scales in terms of any electrical unit, but it may be stated that the instrumental conditions are similar for the two circuits, excepting that the communicating wire of the E_1 circuit is longer than that of the E_2 circuit in the proportion of 3 to 2, and that the distances between the earth plates of the former and of the latter are in the proportion of 6 to 5.

The indications of horizontal and vertical force are given precisely as registered; they are therefore affected, slightly as compared with the amount of motion on disturbed days, by the small recorded changes of temperature of the magnets. The observed temperatures being inserted on the plates, reference to the temperature coefficients of the magnets, given at page *xix* for horizontal force, and page *xxiii* for vertical force, will show the effect produced. Briefly, an increase of nearly 6° of temperature throws the horizontal force curve upward by 0·001 of the whole horizontal force; an increase of 5° of temperature throws the vertical force curve downward by 0·001 of the whole vertical force.

The original photographs have been reduced in the proportion of 20 to 11 on the plates, and the corresponding scale values are :—

——	Length in Inches				
	Of 1° of Declination throughout the Year.	Of 0·01 of Horizontal Force throughout the Year.	Of 0·01 of Vertical Force.		
			January 1 to June 29.	June 30 to July 2.	July 3 to December 31.
	in.	in.	in.	in.	in.
On the Photographs -	4·691	2·464	3·089	4·836	7·718
On the Plates -	2·580	1·355	1·699	2·660	4·245

The scales actually attached to the plates are, however, so arranged as to correspond with the tables of the magnetic section, that is to say, the unit employed in the case of horizontal force and vertical force is ·00001 of the whole horizontal and vertical forces respectively.

But the preceding scale values are not immediately comparable for the different elements, and it will therefore be desirable to refer them all to the same unit, say 0·01 of the horizontal force.

Now, the transverse force represented by a variation of 1° of Declination

$$= \cdot 0175 \text{ of Horizontal Force}$$

$$\text{and Vertical Force} = \text{Horizontal Force} \times \text{tan. dip } [\text{dip} = 67^\circ.\ 31\tfrac{1}{2}']$$

$$= \text{Horizontal Force} \times 2 \cdot 4172$$

whence we have the following equivalent scale values for the different elements, as applying to the plates :—

Length of Unit, equivalent to 0·01 of Horizontal Force.				
For Declination Curve throughout the Year.	For Horizontal Force Curve throughout the Year.	For Vertical Force Curve.		
		January 1 to June 29.	June 30 to July 2.	July 3 to December 31.
in.	in.	in.	in.	in.
1·47	1·36	0·70	1·10	1·76

It may be convenient to give also comparative scale values for the different systems of absolute measurement, viz. :—

Foot-grain-second, or British unit, in terms of which Mean H. F. for 1883 = 3·926
Millimètre-milligramme-second, or Metric unit, „ „ „ = 1·810
Centimètre-gramme-second, or C. G. S. unit, „ „ „ = 0·1810

Dividing therefore the scale values last given by 3·926, 1·810, and 0·1810 respectively, the following comparative scale values for each of the elements on the plates as referred to 0·01 of these units respectively are found:—

UNIT.	LENGTH OF 0·01 OF UNIT.				
	Declination throughout the Year.	Horizontal Force throughout the Year.	Vertical Force.		
			January 1 to June 29.	June 30 to July 2.	July 3 tc December 31.
	in.	in.	in.	in.	in.
British - -	0·38	0·35	0·18	0·28	0·45
Metric - -	0·81	0·75	0·39	0·61	0·97
C. G. S. - -	8·1	7·5	3·9	6·1	9·7

Slight interruptions in the traces on the plates are due to various causes. In the originals there are breaks at each hour for time scale, so slight however that, in the copies, the traces could usually be made continuous without fear of error: in a few cases, however, this could not be done, as at 6^h on October 5. Further, to check the numeration of hours, the observer interrupts the register at definite times for about five minutes, usually at or near 2^h. 30^m, 8^h. 30^m, and 21^h. 30^m, and at somewhat different times on Sundays. The interruption in the earth-current registers is greater than in the other registers because of the necessity of also temporarily disconnecting the wires for determination of the instrumental zeros. A weekly clearing of the gas pipes also causes a somewhat longer interruption, usually at about 22^h, as on January 26^d. 22$\frac{1}{2}^h$.

As regards other interruptions, the register of declination was lost from June 29. 21^h to 30. 1$\frac{1}{2}^h$ on account of the stretching of the new suspension skein mounted on June 23 having thrown the register off the cylinder. From April 3. 23^h to 4. 3^h the vertical force magnet was dismounted, in order to determine its time of vibration in the horizontal plane, and on June 30 the register was accidentally lost; from November 23. 0$\frac{1}{2}^h$ to 2^h it was also lost during removal of the driving chronometer for oiling.

As respects earth currents there is loss of register on February 24, 27, 28, March 1 and 26, due to accidental displacement of the trace or interruption of the register.

The original photographic records were first traced on thin paper, the separate records on each day being arranged one under another on the same sheet, and great attention being paid to accuracy as regards the scale of time. Each sheet containing the records for one or more days was then reduced by photo-lithography, in the proportion of 20 to 11, to bring it to a convenient size for insertion in the printed volume.

§ 6. *Meteorological Instruments.*

STANDARD BAROMETER.—The standard barometer, mounted in 1840 on the southern wall of the western arm of the upper magnet room, is Newman No. 64. Its tube is $0^{in}\cdot565$ in diameter, and the depression of the mercury due to capillary action is $0^{in}\cdot002$, but no correction is applied on this account. The cistern is of glass, and the graduated scale and attached rod are of brass; at its lower end the rod terminates in a point of ivory, which in observation is made just to meet the reflected image of the point as seen in the mercury. The scale is divided to $0^{in}\cdot05$, subdivided by vernier to $0^{in}\cdot002$.

The readings of this barometer until 1866 August 20 are considered to be coincident with those of the Royal Society's flint-glass standard barometer. It then became necessary to remove the sliding rod, for repair of its slow motion screw, which was completed on August 30. Before the removal of the rod the barometer had been compared with three other barometers, one of which, during repair of the rod, was used for the daily readings. After restoration of the rod comparison was again made with the same three barometers with the result that (all three auxiliary barometers giving accordant results) the readings of the standard, in its new state, required a correction of $-0^{in}\cdot006$, which correction has been applied to every observation, commencing on 1866 August 30.

An elaborate comparison of the standard barometers of the Greenwich and Kew Observatories, made, under the direction of the Kew Committee, by Mr. Whipple, Superintendent of the Kew Observatory, in the spring of the year 1877, showed that the difference between the two barometers (after applying to the Greenwich barometer readings the correction $-0^{in}\cdot006$) did not exceed $0^{in}\cdot001$. (*Proceedings of the Royal Society*, vol. 27, page 76.)

The height of the barometer cistern above the mean level of the sea is 159 feet, being $5^{ft}\ 2^{in}$ above Mr. Lloyd's reference mark in the then transit room, now the Astronomer Royal's official room (*Philosophical Transactions*, 1831).

The barometer is usually read at 21^h, 0^h, 3^h, 9^h (astronomical reckoning). Each reading is corrected by application of the index correction above mentioned, and reduced to the temperature 32° by means of Table II. of the "Report of the

Committee of Physics" of the Royal Society. The readings thus found are used to determine the value of the instrumental base line on the photographic record.

PHOTOGRAPHIC BAROMETER.—The barometric record is made on the same cylinder as is used for magnetic vertical force, the register being arranged to fall on the upper half of the cylinder, on its eastern side. A syphon barometer fixed to the northern wall of the Magnet Basement is employed, the bore of the upper and lower extremities of the tube being about 1·1 inch. A metallic float is partly supported by a counterpoise acting on a light lever, leaving a definite part of its weight to be supported by the mercury. The lever carries at its other end a vertical plate of blackened mica, having a small horizontal slit, whose distance from the fulcrum is about eight times that of the point of connexion with the float, and whose vertical movement is therefore about four times that of the ordinary barometric column. The light of a gas lamp, passing through this slit and falling on a cylindrical lens, forms a spot of light on the paper. The barometer can, by screw action, be raised or lowered so as to keep the photographic trace in a convenient part of the sheet. A base line is traced on the sheet, and the record is interrupted at each hour by the clock and occasionally by the observer in the same way as for the magnetic registers. The length of the time scale is also the same.

The barometric scale is determined by experimentally comparing the measured movement on the paper with the observed movement of the standard barometer; one inch of barometric movement is thus found = $4^{\text{in}}\cdot 39$ on the paper. Ordinates measured for the times of observation of the standard barometer, combined with the corrected readings of the standard barometer, give apparent values of the base line, from which mean values for each day are formed; these are written on the sheets and new base lines drawn, from which the hourly ordinates (see page *xlvi*) are measured as for the magnetic registers.

As regards the effect of temperature, it will be understood from the construction of the apparatus that the photographic record is influenced only by the expansion of the column of mercury (about 4 inches in length) in the lower tube of the barometer, and from this circumstance, in combination with the near uniformity of temperature in the basement, no appreciable differential effect is produced on the photographic register.

DRY AND WET BULB THERMOMETERS.—The dry and wet bulb thermometers and maximum and minimum self-registering thermometers, both dry and wet, are mounted on a revolving frame planned by Sir G. B. Airy. A vertical axis fixed in the ground, in a position about 35 feet south of the south-west angle of the Magnetic Observatory, carries the frame, which consists 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 3 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, and the air passes freely between all the boards. The dry and wet bulb thermometers are mounted near the centre of the vertical board, with their bulbs about 4 feet from the ground; the maximum and minimum thermometers for air temperature are placed towards one side of the vertical board, and those for evaporation temperature towards the other side, with their bulbs at about the same level as those of the dry and wet bulb thermometers. A small roof projecting from the frame protects the thermometers from rain. The frame is turned in azimuth as necessary to keep the inclined side always towards the sun.

The corrections to be applied to the thermometers in ordinary use (except the earth thermometers) are determined usually once each year for the whole extent of scale actually employed, by comparison with the standard thermometer, No. 515, kindly supplied to the Royal Observatory by the Kew Committee of the Royal Society.

The dry and wet bulb thermometers are Negretti and Zambra, Nos. 45354 and 45355 respectively. Until February 28 the correction applied to dry bulb readings was —0°·1, and from March 1 —0°·2. The correction applied to wet bulb readings was —0°·1 throughout.

The self-registering thermometers for temperature of air and evaporation are all by Negretti and Zambra. The maximum thermometers are on Negretti and Zambra's principle, the minimum thermometers are of Rutherford's construction. To the readings of No. 8527 for maximum temperature of the air has been applied a correction of —0°·9; to those of No. 4386, for minimum temperature of the air, until February 28 a correction of —0°·2 was applied: from March 1 a correction of —0°·3 was applied. The readings of No. 44285 for maximum temperature of evaporation required until February 28 a correction of —0°·4, and the readings of No. 3627 for minimum temperature of evaporation a correction of +1°·2: from March 1 corrections of —0°·5 and +1°·3 respectively were applied.

The dry and wet bulb thermometers are usually read at 21^{h}, 0^{h}, 3^{h}, 9^{h} (astronomical reckoning). Readings of the maximum and minimum thermometers are usually taken at 21^{h} and 9^{h}. Those of the dry and wet bulb thermometers are employed to correct the indications of the photographic dry and wet bulb thermometers.

PHOTOGRAPHIC DRY AND WET BULB THERMOMETERS.—About 28 feet south-south-east of the south-east angle of the Magnetic Observatory, and about 25 feet east-north-east of the stand carrying the thermometers for eye-observation already described, is an open shed, 10 ft. 6 in. square, standing upon posts 8 feet high, under which are placed the photographic thermometers, the dry-bulb towards the east and the wet-bulb towards the west. Their bulbs are 8 inches in length and 0·4 inch internal bore, and their centres are about 4 feet above the ground. A registering cylinder of ebonite, 10 inches long and 19 inches in circumference, is placed with its axis vertical between the stems of the two thermometers. The registers are made simultaneously on opposite sides of the cylinder, and to avoid any accidental overlapping of the two registers the cylinder is made to revolve once in about 52 hours. The thermometer frames are covered by metal plates having longitudinal slits, so that light can pass through the slit only above the surface of the mercury. At each degree a fine cross wire is placed, thicker at the decades of degrees, and also at 32°, 52°, and 72°. A gas lamp is placed about 9 inches from each thermometer (east of the dry-bulb and west of the wet-bulb), and in each case the light, condensed by a cylindrical lens with axis vertical, shines through the tube above the mercury, and forms a well-defined line of light upon the paper. In August 1883 it was found that the cylindrical lenses could with advantage be dispensed with. They were in consequence removed. As the cylinder revolves horizontally under the light passing through the thermometer tube, the paper thus 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. When the sheet is developed the whole of that part of the paper which in each case passed the slit above the mercury will show photographic trace, with thin white lines corresponding to the degrees, the lower part of the paper remaining white; thus the boundary of the photographic trace indicates the varying temperature. The time scale is determined by interruption of the traces made by the observer at registered times, usually three times a day. The length of 24 hours on each of the thermometer traces is about 9 inches.

RADIATION THERMOMETERS.—These thermometers are placed in the Magnet Ground, a little south of the Magnet House. The thermometer for solar radiation is a self-registering mercurial maximum thermometer by Negretti and Zambra, No. 38592; its bulb is blackened, and the thermometer is enclosed in a glass sphere from which the air has been exhausted. The thermometer for radiation to the sky is a self-registering spirit minimum thermometer of Rutherford's construction, by Horne and Thornthwaite, No. 3120. The thermometers are laid on short grass; they require no correction for index error.

EARTH THERMOMETERS.—These thermometers were made by Adie, of Edinburgh, under the superintendence of Professor J. D. Forbes. They are placed at the north-west corner of the photographic thermometer shed.

The thermometers are four in number, 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 being attached in its whole length to a slender piece of wood. The thermometer No. 1 was dropped into the hole to such a depth that the centre 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 centre of its bulb was 12 French feet below the surface; Nos. 3 and 4 till the centres 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, 8·5, 10·0, 11·0, and 14·5 inches respectively are in each case tube with narrow bore. The length of 1° on the scales is 1·9 inch, 1·1 inch, 0·9 inch, and 0·5 inch in each case respectively. The ranges of the scales are for No. 1, 46°·0 to 55°·5; No. 2, 43°·0 to 58°·0; No. 3, 44°·0 to 62°·0; and for No. 4, 37°·0 to 68°·0.

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 each tube, from the bulb to the graduated scale, is very small; in that part to which the scale is attached it is larger; the fluid in the tubes is alcohol tinged red; the scales are of opal glass.

In consequence of the ranges of scale having in previous years been found insufficient, fluid has at times been removed from or added to the thermometers as necessary, proper corresponding alteration being made in the positions of the attached scales. Information in regard to these changes will be found in previous Introductions.

The parts of the tubes above the ground are protected by a small wooden hut fixed to the ground; the sides of the hut are perforated with numerous holes, and it has a double roof; in the north face is a plate of glass, through which the readings are taken. Within the hut are two small thermometers, one, No. 5, with bulb one inch in the ground, another, No. 6, whose bulb is freely exposed in the centre of the hut.

These thermometers are read every day at noon, and the readings are given without correction. The index errors of Nos. 1, 2, 3, and 4 are unknown; No. 5 appears to read too high by 0°·2, and No. 6 by 0°·4.

THAMES THERMOMETERS.—Observations of the temperature of the water of the river Thames, which had been discontinued in the year 1879 in consequence of inability to find a suitable station after the placing of the police ship "Royalist" on the river bank, were resumed in the year 1883, under the direction of the Corporation of the City of London. The thermometers are placed at the end of one of the jetties of the Foreign Cattle Market at Deptford, the record including observations (by means of two Six's self-registering thermometers made by Negretti and Zambra) of the maximum and minimum temperature of the water at a depth of two feet below the surface, and also near the bottom of the river, the thermometers being read daily at 21^h (astronomical reckoning). By arrangement with the officers of the Corporation a copy of the record is furnished weekly to the Royal Observatory, in order that the readings of the surface thermometers may be included in the tables of "Daily Results of Meteorological Observations," page (xxvi) in which the highest and lowest readings recorded each morning at 21^h are entered to the same civil day. The observations, made by Mr. G. Philcox, Clerk of the Market, were commenced on June 3. In the months of July, August, and September, omissions due to accidental causes occurred. The Royal Observatory authorities are not responsible for the accuracy of the observations.

OSLER'S ANEMOMETER. — This self-registering anemometer, devised by A. Follett Osler, is fixed above the north-western turret of the ancient part of the Observatory. For direction of the wind a large vane, from which a vertical shaft proceeds down to the registering table within the turret, gives motion, by a pinion fixed at its lower end, to a rack-work carrying a pencil. A collar on the vane shaft bears upon anti-friction rollers, running in a cup of oil, rendering the vane very sensitive to changes of direction in light winds. The pencil marks a paper fixed to a board moved horizontally and uniformly by a clock, in a direction transverse to that of the motion of the pencil. The paper carries lines corresponding to the positions of N., E., S., and W. of the vane, with transversal hour-lines. The vane is 60 feet above the adjacent ground, and 215 feet above the mean level of the sea. A fixed mark on the north-eastern turret, in a known azimuth, as determined by celestial observation, is used for examining at any time the position of the direction plate over the registering table, to which reference is made by means of a direction pointer when adjusting a new sheet on the travelling board.

For the pressure of the wind the construction is as follows. At a distance of 2 feet below the vane there is placed a circular pressure plate having an area of $1\frac{1}{3}$ square feet, or 192 square inches, which, moving with the vane, and being thereby kept directed towards the wind, acts against a combination of springs in such way that, with a light wind, slender springs are first brought into action, but, as the wind increases, stiffer springs come into play. For a detailed account of the arrangement adopted the reader is referred to the Introduction for the year 1866. [Until 1866 the pressure plate was a square plate, 1 foot square, for which in that year a circular plate, having an area of 2 square feet, was substituted and employed until the spring of the year 1880, when the present circular plate, having an area of 1⅓ square feet, was introduced.] A short flexible chain, fixed to a cross bar in connexion with the pressure plate, passing over a pulley in the upper part of the shaft is then attached to a copper wire running down the centre of the shaft to the registering table, just before reaching which the wire communicates with a short length of silk cord, which, led round a pulley, gives horizontal motion to the arm carrying the pressure pencil. In 1882 September a flexible brass chain was substituted for the connecting copper wire, an alteration which has greatly increased the delicacy of movement of the pressure pencil, every small movement of the pressure plate being now registered. The scale for pressure, in lbs. on the square foot, is experimentally determined from time to time as appears necessary; the pressure pencil is brought to zero by a light spiral spring.

A rain gauge of peculiar construction forms part of the apparatus: this is described under the heading "Rain Gauges."

A new sheet of paper is applied to the instrument every day at noon. The scale of time is equal in length to that of the magnetic registers.

ROBINSON'S ANEMOMETER.—This instrument, mounted above the small building on the roof of the Octagon Room, is constructed on the principle described by the late Dr. Robinson in the *Transactions of the Royal Irish Academy*, Vol. XXII. The revolving hemispherical cups are 56 feet above the adjacent ground, and 211 feet above the mean level of the sea. The motion is given by the pressure of the wind on four hemispherical cups, each 5 inches in diameter, the centre of each cup being 15 inches distant from the vertical axis of rotation. 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. An endless screw acts on a train of wheels furnished with indices for reading off the amount of motion of the air in miles, and a pinion on the axis of one of the wheels draws upwards a rack, to which is attached a rod passing down to the pencil, which marks the paper placed on the vertical revolving cylinder in the chamber below. A motion of the pencil upwards through a space of one inch represents horizontal motion of the air through 100 miles.

The cylinder is driven by a clock in the usual way, and makes one revolution in 24 hours. A new sheet of paper is applied every day at noon. The scale of time is equal in length to that of Osler's Anemometer and the magnetic registers.

It is assumed, in accordance with the experiments made by Dr. Robinson, that the horizontal motion of the air is three times the space described by the centres of the cups. To verify this conclusion experiments were made in the year 1860 in Greenwich Park with the anemometer then in use, not the same as that now employed. The instrument was fixed to the end of a horizontal arm, which was made to revolve round a vertical axis. For more detailed account of these experiments see the Introduction for 1880. With the arm revolving in the direction N., E., S., W., opposite to the direction of rotation of the cups, for movement of the instrument through one mile 1·15 was registered; with the arm revolving in the direction N., W., S., E., in the same direction as the rotation of the cups, 0·97 was registered. This was considered to confirm sufficiently the accuracy of the assumption.

RAIN GAUGES.—During the year 1883 eight rain-gauges were employed, placed at different elevations above the ground, complete information in regard to which will be found at page (lxxii) of the Meteorological Section.

The gauge No. 1 forms part of the Osler Anemometer apparatus, and is self-registering, the record being made on the sheet on which the direction and pressure of the wind are recorded. The receiving surface is a rectangular opening 10 × 20 inches, equal to 200 square inches. The collected water passes into a vessel suspended by spiral springs, which lengthen as the water accumulates, until 0·25 inch is collected, the water then discharges itself by means of the following modification of the syphon. A vertical copper tube, open at both ends, is fixed in the receiver, with one end just projecting below the bottom. Over this tube there is loosely placed, in the receiver, a larger tube, closed at the top. The accumulating water, having risen to the top of the inner tube, begins to flow off into a small tumbling bucket, fixed in a globe placed underneath, and carried by the receiver. When full the bucket falls over, throwing the water into a small exit pipe at the lower part of the globe—the only outlet. The water filling the bore of the pipe creates a partial vacuum in the globe sufficient to cause the longer leg of the syphon to act, and the whole remaining contents of the receiver then run off, through the globe, to a waste pipe. The spiral springs at the same time shorten, and raise the receiver. The gradual descent of the water vessel as the rain falls, and the immediate ascent on discharge of the water, act upon a pencil, and cause a corresponding trace to be made on the paper fixed to the moving board of the anemometer. The rain scale on the paper was determined experimentally by passing a known quantity of water through the receiver. The continuous record thus gives complete information on the rate of the fall of rain.

Gauge No. 2 is a ten-inch circular gauge, placed close to gauge No. 1, its receiving surface being precisely at the same level. The gauge is read daily.

Gauges Nos. 3, 4, and 5 are eight-inch circular gauges, placed respectively on the roof of the Octagon Room, over the roof of the Magnetic Observatory, and on the roof of the Photographic Thermometer Shed. All are read daily.

Gauges Nos. 6, 7, and 8 are also eight-inch circular gauges, placed on the ground south of the Magnetic Observatory; No. 6 is the old daily gauge, No. 7 the old monthly gauge, and No. 8 an additional gauge brought into use in July 1881, as a check on the readings of Nos. 6 and 7, the monthly amounts collected by these gauges having occasionally shown greater differences than seemed proper. All three gauges have been read daily since the beginning of July 1881.

The gauges are also read at midnight on the last day of each calendar month.

ELECTROMETER.—The electric potential of the atmosphere is measured by means of a Thomson self-recording electrometer, constructed by Mr. White of Glasgow.

For a very full description of the principle of the electrometer reference may be made to Sir William Thomson's "Report on Electrometers and Electrostatic Measurements," contained in the *British Association Report* for the year 1867. It will be sufficient here to give a general description of the instrument which, with its registering apparatus, is planted in the Upper Magnet Room on the slate slab which carries the suspension pulleys of the Horizontal Force Magnet. A thin flat needle of aluminium, carrying immediately above it a small light mirror, is suspended, on the bifilar principle, by two silk fibres from an insulated support within a large Leyden jar. A little strong sulphuric acid is placed in the bottom of the jar, and from the lower side of the needle depends a platinum wire, kept stretched by a weight, which connects the needle with the sulphuric acid, that is with the inner coating of the jar. A positive charge of electricity being given to the needle and jar, this charge is easily maintained at a constant potential by means of a small electric machine or replenisher forming part of the instrument, and by which the charge can be either increased or decreased at pleasure. A gauge is provided for the purpose of indicating at any moment the amount of charge. The needle hangs within four insulated quadrants, which may be supposed to be formed by cutting a circular flat brass box into quarters, and then slightly separating them. The opposite quadrants are placed in metallic connexion.

The value of the electric potential of the atmosphere is obtained by means of Sir William Thomson's water-dropping apparatus. For this purpose a rectangular cistern of copper, capable of holding above 30 gallons of water, is placed near the ceiling on the west side of the south arm of the Upper Magnet Room. The cistern rests on four pillars of glass, each one encircled and nearly completely enclosed by a glass vessel containing sulphuric acid. A pipe passing out from the cistern, through the south face of the building, extends about six feet into the atmosphere, the nozzle from which the water flows being about ten feet above the ground; the water passing out through a very small hole, and breaking almost immediately into drops, the cistern is brought to the same electrical potential as that point of the atmosphere, which potential is, by means of a connecting wire, communicated to one of the pairs of electrometer quadrants, the other pair being connected to earth. The varying atmospheric potential thus influences the motions of the included needle, causing it to be deflected from zero in one direction or the other, according as the atmospheric potential is greater or less than that of the earth, that is according as it is positive or negative.

The small mirror carried by the needle is used for the purpose of obtaining photographic record of its motions. The light of a gas-lamp, falling through a slit upon the mirror, is thence reflected, and by means of a plano-convex cylindrical lens is brought to a focus at the surface of a horizontal cylinder of ebonite, nearly 7 inches long and 16 inches in circumference, which is turned by clock-work. A second fixed mirror, by means of the same gas-lamp, causes a reference line to be traced round the cylinder. The actual zero is found by cutting off the cistern communication, and placing the pairs of quadrants in metallic connexion with each other and with earth. The break of register at each hour is made by the driving-clock of the electrometer cylinder itself. Other photographic arrangements are generally similar to those which have been described for other instruments.

The scale of time is equal in length to that of the magnetic registers.

Inconvenience is sometimes caused by cobwebs making connexion between the cistern or its pipe and the walls of the building, and in winter, interruptions occasionally occur owing to the freezing of the water in the exit pipe.

SUNSHINE INSTRUMENT.—This instrument, contrived by the late Mr. J. F. Campbell, and kindly given by him to the Royal Observatory, consists of a very accurately formed sphere of glass, nearly 4 inches in diameter, supported concentrically within a well turned hemispherical metal bowl in such a manner that the image of the sun, formed when the sun shines, falls always on the concave surface of the bowl. A strip of blackened millboard being fixed in the bowl, the sun, when shining, burns away the surface at the points at which the image successively falls, by which means the record of periods of sunshine is obtained. The strip is removed after sunset, and a new one fixed ready for the following day. The place of the meridian is marked on the strip before removing it from the bowl. A series of time scales, suitable for different periods of the year, having been prepared, the proper scale is selected and placed against the record, which is then easily transferred to a sheet of paper specially ruled with equal vertical spaces to represent hours, each sheet containing the record for one calendar month. The daily sums, and sums during each hour (reckoning from apparent noon) through the month are thus readily formed. The recorded durations are to be understood as indicating the amount of *bright* sunshine, no register being obtained when the sun shines faintly through fog or cloud, neither is any register usually obtained when the sun's altitude is less than 5°. The instrument is placed on a table upon the platform above the Magnetic Observatory.

OZONOMETER.—This apparatus is fixed on the south-west corner of the roof of the Photographic Thermometer shed, at a height of about 10 feet from the ground. The box in which the papers are exposed is of wood: it is about 8 inches square, blackened inside, and so constructed that there is free circulation of air through the box, without exposure of the paper to light. The papers exposed at 21^h, 3^h, and 9^h are collected respectively at 3^h, 9^h, and 21^h, and the degree of tint produced is compared with a scale of graduated tints, numbered from 0 to 10. The value of ozone for the civil day is determined by taking the degree of tint obtained at each hour of collection as proportional to the period of exposure. Thus to form the values for any given civil day, three-fourths of the value registered at 21^h, the values registered at 3^h and 9^h, and one-fourth of that registered at the following 21^h, are added together, the resulting sum (which appears in the tables of "Daily Results of the Meteorological Observations") being taken as the value referring to the civil day. The means of the 21^h, 3^h, and 9^h values, as observed, are also given for each month in the foot notes.

§ 7. *Meteorological Reductions.*

The results given in the Meteorological section refer in general to the civil day, commencing at midnight.

All results in regard to atmospheric pressure, temperature of the air and of evaporation with deductions therefrom, and atmospheric electricity, are derived from the photographic records, excepting that the maximum and minimum values of air temperature are those given by eye-observation of the ordinary maximum and minimum thermometers at 21^h and 9^h (astronomical reckoning), reference being made, however, to the photographic register when necessary to obtain the values corresponding to the civil day from midnight to midnight. The hourly readings of the photographic traces for the elements mentioned are entered into a form having double argument, the horizontal argument ranging through the 24 hours of the civil day, and the vertical argument through the days of a calendar month. It should be mentioned that before measuring out the electrometer ordinates, a pencil line was first drawn through the trace to represent the general form of the curve in the way described for the magnetic registers (page *xxviii*), excepting that no day has been omitted on account of unusual electrical disturbance, as it has been found difficult to decide on any limit of disturbance beyond which it would seem proper, as regards determination of diurnal inequality, to reject the results. The ordinates of the pencil curve, drawn as described, are expressed, in the tables which follow, in thousandths of an inch instead of inches, as in former years, and the zero is taken as 0 instead of 10·000, positive and negative potential being denoted by positive and negative numbers respectively. Then, for all the photographic elements, the means of the numbers standing in the vertical columns of the monthly forms, into which the values are entered, give the mean monthly photographic values for each hour of the day, the means of the numbers in the horizontal columns giving the mean daily value.

To correct the photographic values of barometer and dry and wet bulb thermometers for small instrumental error, the means of the photographic readings at 21^h, 0^h, 3^h, and 9^h in each month are compared with the corresponding corrected mean readings of the standard barometer and standard dry and wet bulb thermometers, as given by eye-observation. A correction applicable to the photographic reading at each of these hours is thus obtained, and, by interpolation, corrections for the intermediate hours are found. The mean of the twenty-four hourly corrections in each month is adopted as the correction applicable to each mean daily value in the month. Thus mean hourly and mean daily values of the several elements are obtained for each month. The process of correction is equivalent to giving photographic indications in terms of corrected standard barometer, and in terms of the standard dry and wet bulb thermometers exposed on the free stand.

The mean daily temperature of the dew-point and degree of humidity are deduced from the mean daily temperatures of the air and of evaporation by use of Glaisher's *Hygrometrical Tables*. The factors by which the dew-point given in these tables is calculated were 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 and wet bulb thermometers, combining observations made at the Royal Observatory, Greenwich, with others made in India and at Toronto. The factors are given in the following table.

Table of Factors by which the Difference between the Readings of the Dry-Bulb and Wet-Bulb Thermometers is to be Multiplied in order to produce the Corresponding Difference between the Dry-Bulb Temperature and that of the Dew-Point.

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		

In the same way the mean hourly values of the dew-point and degree of humidity in each month (pages (lv) and (lvi)) have been calculated from the corresponding mean hourly values of air and evaporation temperatures (pages (liv) and (lv)).

The excess of the mean temperature of the air on each day above the average of 20 years, given in the "Daily Results of Meteorological Observations," is found by comparing the numbers contained in column 6 with a table of average daily temperatures found by smoothing the accidental irregularities of the numbers given in Table LXXVII. of the "Reduction of Greenwich Meteorological Observations, 1847–1873," which are similarly deduced from photographic records. The smoothed numbers are given in the following table.

ADOPTED VALUES of MEAN TEMPERATURE of the AIR, deduced from TWENTY-FOUR HOURLY READINGS on each Day, for every Day of the Year, as obtained from the PHOTOGRAPHIC RECORDS for the Period 1849–1868.

Day of the Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
1	38°·1	40°·5	40°·3	45°·3	48°·7	57°·5	61°·6	62°·6	60°·1	54°·7	47°·0	41°·5
2	37·9	40·6	40·4	45·7	48·9	57·7	61·5	62·7	60·0	54·4	46·7	41·8
3	37·8	40·7	40·5	46·1	49·1	57·9	61·4	62·7	59·8	54·0	46·4	42·1
4	37·7	40·7	40·5	46·4	49·4	58·1	61·4	62·7	59·7	53·7	46·0	42·4
5	37·6	40·6	40·5	46·6	49·7	58·2	61·5	62·7	59·5	53·4	45·6	42·6
6	37·6	40·4	40·5	46·7	50·0	58·3	61·7	62·7	59·3	53·0	45·2	42·7
7	37·6	40·2	40·6	46·8	50·3	58·4	61·9	62·7	59·0	52·7	44·7	42·8
8	37·7	39·9	40·6	46·8	50·6	58·5	62·2	62·7	58·8	52·5	44·3	42·8
9	37·7	39·6	40·7	46·9	50·8	58·5	62·5	62·7	58·5	52·3	43·8	42·8
10	37·8	39·3	40·7	46·9	51·1	58·6	62·7	62·7	58·3	52·1	43·4	42·7
11	37·9	39·1	40·8	47·0	51·4	58·7	62·9	62·7	58·1	51·9	43·0	42·5
12	38·1	38·9	40·8	47·1	51·8	58·8	63·1	62·6	58·0	51·7	42·6	42·2
13	38·2	38·8	40·9	47·2	52·1	58·9	63·3	62·5	57·8	51·6	42·3	41·8
14	38·3	38·7	41·0	47·4	52·5	59·1	63·4	62·4	57·6	51·4	42·0	41·5
15	38·4	38·7	41·1	47·5	52·9	59·3	63·4	62·3	57·4	51·3	41·8	41·1
16	38·5	38·8	41·2	47·6	53·3	59·5	63·5	62·1	57·3	51·2	41·6	40·8
17	38·6	38·9	41·3	47·8	53·7	59·7	63·5	61·9	57·1	51·1	41·5	40·5
18	38·8	39·0	41·4	47·9	54·1	59·9	63·4	61·8	56·9	51·0	41·5	40·2
19	38·9	39·2	41·4	48·0	54·4	60·2	63·3	61·6	56·8	50·8	41·4	40·0
20	39·1	39·3	41·5	48·1	54·7	60·5	63·2	61·4	56·6	50·6	41·3	39·8
21	39·3	39·5	41·6	48·2	55·0	60·8	63·0	61·3	56·4	50·4	41·2	39·6
22	39·5	39·6	41·7	48·2	55·3	61·1	62·9	61·3	56·2	50·1	41·1	39·4
23	39·6	39·7	41·8	48·3	55·5	61·4	62·8	61·2	56·1	49·7	41·0	39·3
24	39·7	39·8	42·0	48·3	55·7	61·7	62·7	61·1	55·9	49·4	41·0	39·3
25	39·8	39·9	42·3	48·4	55·9	61·9	62·7	61·0	55·8	49·1	40·9	39·2
26	39·9	40·0	42·6	48·4	56·1	62·0	62·7	60·9	55·7	48·8	40·8	39·1
27	40·0	40·1	43·0	48·4	56·3	62·0	62·6	60·8	55·5	48·5	40·8	39·0
28	40·1	40·2	43·4	48·5	56·5	61·9	62·6	60·7	55·4	48·2	40·9	38·8
29	40·2		43·8	48·5	56·8	61·8	62·6	60·6	55·2	47·9	41·0	38·7
30	40·3		44·3	48·6	57·0	61·7	62·6	60·4	54·9	47·6	41·2	38·5
31	40·4		44·8		57·3		62·6	60·3		47·3		38·3
Means	38·7	39·7	41·5	47·5	53·1	59·8	62·6	61·9	57·5	51·0	42·7	40·8

The mean of the twelve monthly values is 49°·7.

The daily register of rain contained in column 18 is that recorded by the gauge No. 6, whose receiving surface is 5 inches above the ground. This gauge is usually read at 21^h and 9^h. The continuous record of Osler's self-registering gauge shows whether the amounts measured at 21^h are to be placed to the same, or to the preceding civil day; and in cases in which rain fell both before and after midnight, also gives the means of ascertaining the proper proportion of the 21^h amount which should be placed to each civil day. The number of days of rain given in the foot notes, and in the abstract tables, pages (liii) and (lxxii), is formed from the records of this gauge. In this numeration only those days are counted on which the fall amounted to or exceeded $0^{in}\cdot005$.

The indications of atmospheric electricity are derived from Thomson's Electrometer. Occasionally, during interruption of photographic registration, the results depend on eye observations.

No particular explanation of the anemometric results seems necessary. It may be understood generally that the greatest pressures usually occur in gusts of short duration.

The mean amount of cloud given in a foot note on the right-hand page, and in the abstract table, page (liii), is the mean found from observations made usually at 21^h, 0^h, 3^h, and 9^h, of each day.

For understanding the divisions of time under the headings "Clouds and Weather" and "Electricity," the following remarks are necessary:—In regard to Clouds and Weather, the day is divided by columns into two parts (from midnight to noon, and from noon to midnight), and each of these parts is subdivided into two or three parts by colons (:). Thus, when there is a single colon in the first column, it denotes that the indications 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. In regard to Electricity the results are included in one column; in this case the colons divide the whole period of 24 hours (midnight to midnight).

The notation employed for Clouds and Weather is as follows, it being understood that for clouds Howard's Nomenclature is used. The figure denotes the proportion of sky covered by cloud, an overcast sky being represented by 10.

a	denotes	*aurora borealis*	glm	denotes	*gloom*
ci	...	*cirrus*	gt-glm	...	*great gloom*
ci-cu	...	*cirro-cumulus*	h	...	*haze*
ci-s	...	*cirro-stratus*	slt-h	...	*slight haze*
cu	...	*cumulus*	hl	...	*hail*
cu-s	...	*cumulo-stratus*	l	...	*lightning*
d	...	*dew*	li-cl	...	*light clouds*
hy-d	...	*heavy dew*	lu-co	...	*lunar corona*
f	...	*fog*	lu-ha	...	*lunar halo*
slt-f	...	*slight fog*	m	...	*mist*
tk-f	...	*thick fog*	slt-m	...	*slight mist*
fr	...	*frost*	n	...	*nimbus*
ho-fr	...	*hoar frost*	p-cl	...	*partially cloudy*
g	...	*gale*	r	...	*rain*
hy-g	...	*heavy gale*	c-r	...	*continued rain*

fr-r	denotes	*frozen rain*
fq-r	...	*frequent rain*
hy-r	...	*heavy rain*
c-hy-r	...	*continued heavy rain*
m-r	...	*misty rain*
fq-m-r	...	*frequent misty rain*
oc-m-r	...	*occasional misty rain*
oc-r	...	*occasional rain*
sh-r	...	*shower of rain*
shs-r	...	*showers of rain*
slt-r	...	*slight rain*
oc-slt-r	...	*occasional slight rain*
th-r	...	*thin rain*
fq-th-r	...	*frequent thin rain*
oc-th-r	...	*occasional thin rain*
hy-sh	...	*heavy shower*
slt-sh	...	*slight shower*
fq-shs	...	*frequent showers*
hy-shs	...	*heavy showers*
fq-hy-shs	...	*frequent heavy showers*
oc-hy-shs	...	*occasional heavy showers*
li-shs	...	*light showers*
oc-shs	denotes	*occasional showers*
s	...	*stratus*
sc	...	*scud*
li-sc	...	*light scud*
sl	...	*sleet*
sn	...	*snow*
oc-sn	...	*occasional snow*
slt-sn	...	*slight snow*
so-ha	...	*solar halo*
sq	...	*squall*
sqs	...	*squalls*
fq-sqs	...	*frequent squalls*
hy-sqs	...	*heavy squalls*
fq-hy-sqs	...	*frequent heavy squalls*
oc-sqs	...	*occasional squalls*
t	...	*thunder*
t-sm	...	*thunder storm*
th-cl	...	*thin clouds*
v	...	*variable*
vv	...	*very variable*
w	...	*wind*
st-w	...	*strong wind*

The following is the notation employed for Electricity:—

N	denotes	*negative*
P	...	*positive*
m	...	*moderate*
w	denotes	*weak*
s	...	*strong*
v	...	*variable*

The duplication of the letter denotes intensity of the modification described, thus, s s, is very strong; v v, very variable. 0 indicates zero potential, and a dash "—" accidental failure of the apparatus.

The remaining columns in the tables of "Daily Results" seem to require no special remark; all necessary explanation regarding the results therein contained will be found in the notes at the foot of the left-hand page, or in the descriptions of the several instruments given in § 6.

In regard to the comparisons of the extremes and means, &c. of meteorological elements with average values, contained in the foot notes, it may be mentioned that the photographic barometric results are compared with the corresponding barometric results, 1854–1873, and the photographic thermometric results and deductions therefrom with the corresponding thermometric results, 1849–1868 (see "Reduction of Greenwich Meteorological Observations 1847–1873"). Other deductions, from eye observations, are compared with averages for the period 1841–1882.

The tables of Meteorological Abstracts following the tables of "Daily Results" require no lengthened explanation.

It may be pointed out that the monthly means for barometer and temperature of the air and of evaporation contained in the tables referring to diurnal inequality, pages (liv) and (lv), do not in some cases agree with the true monthly means given in the daily results, pages (xxvi) to (xlviii), and in the table on page (liii), in consequence of occasional interruption of the photographic register, at which times daily values to complete the daily results could be supplied from the eye observations, as mentioned in the foot notes, but hourly values, for the diurnal inequality tables, could not be so supplied. In such cases however the means given with these tables are the proper means to be used in connexion with the numbers standing immediately above them, for formation of the actual diurnal inequality.

The table "Abstract of the Changes of the Direction of the Wind" as derived from Osler's Anemometer, page (lxii), has been this year entirely remodelled with the object of showing every change of direction of the wind occurring throughout the year whenever such change amounted to two nautical points or 22½°. It is to be understood that the change from one direction to another during the interval between the times mentioned in each line of the table was generally gradual. All complete turnings of the vane which were evidently of accidental nature, and which in the year 1881 and in previous years had been included, are here omitted. Between any time given in the second column and that next following in the first column no change of direction in general occurred varying from that given by so much as one point or 11¼°. From the numbers given in this table the monthly and yearly excess of motion, page (lxvi), is formed. By direct motion it is to be understood that the change of direction occurred in the order N, E, S, W, N, &c., and by retrograde motion that the change occurred in the order N, W, S, E, N, &c.

In regard to Electric potential of the atmosphere, in addition to giving the hourly values in each month, including all available days, the days in each month have been since the year 1882 further divided into two groups, one containing all days on which the rainfall amounted to or exceeded $0^{\text{in}}\cdot020$, the other including only days on which no rainfall was recorded, the values of daily rainfall given in column 18 of the "Daily Results of Meteorological Observations" being adopted in selecting the days. These additional tables are given on pages (lxx) and (lxxi) respectively.

In regard to the observations of Luminous Meteors it is simply necessary to say that in general only special meteor showers are watched for, such as those of

April, August, and November. The observers of meteors in the year 1883 were Mr. Nash, Mr. Greengrass, Mr. Hugo, Mr. McClellan, and Mr. Finch ; their observations are distinguished by the initials N, G, H, M, and F respectively.

Royal Observatory, Greenwich,
1885 May 8.

W. H. M. CHRISTIE.

ROYAL OBSERVATORY, GREENWICH.

RESULTS

OF

MAGNETICAL OBSERVATIONS

(EXCLUDING THE DAYS OF GREAT MAGNETIC DISTURBANCE).

1883.

TABLE I.—MEAN MAGNETIC DECLINATION WEST FOR EACH ASTRONOMICAL DAY.

(Each result is the mean of 24 hourly ordinates from the photographic register.)

1883.

Day of Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
	18°	18°	18°	18°	18°	18°	18°	18°	18°	18°	18°	18°
d	′	′	′	′	′	′	′	′	′	′	′	′
1	18·4	18·7	19·1	18·6	15·6	14·9	13·6	15·1	11·1	12·4	13·3	11·6
2	18·6	19·2	18·2	17·5	16·9	16·6	13·6	13·3	10·8	12·5	12·1	12·7
3	18·6	18·8	18·6	..	16·5	14·8	13·0	13·5	12·5	12·4	13·6	12·2
4	18·2	18·3	18·1	18·1	15·7	14·1	13·5	13·1	12·6	12·7	14·1	12·7
5	17·6	18·2	18·5	16·4	16·2	13·8	12·8	13·3	11·2	12·8	13·0	12·7
6	19·1	19·1	18·4	17·5	17·0	..	13·5	..	13·6	12·6	13·9	12·9
7	..	18·6	20·2	17·7	16·7	12·7	15·0	13·8	13·3	13·6	13·3	12·8
8	18·5	18·1	..	18·0	15·7	14·0	14·8	13·3	13·1	12·4	13·0	13·0
9	18·4	18·5	..	18·3	16·8	13·8	14·1	12·8	12·9	12·5	13·4	13·8
10	17·5	18·7	19·5	18·7	16·6	13·5	12·7	13·5	12·6	12·9	12·9	12·3
11	18·5	18·9	19·1	18·4	16·0	13·9	14·1	13·7	12·7	12·8	12·7	13·2
12	18·6	18·6	20·1	18·1	15·5	14·7	13·3	12·7	12·3	12·1	12·9	11·7
13	19·2	19·3	20·7	17·8	15·3	14·5	13·4	12·9	12·7	12·6	12·8	12·6
14	18·7	18·8	19·0	17·6	16·0	14·1	14·9	12·7	12·7	12·8	13·0	13·0
15	18·9	18·6	18·0	17·6	14·5	14·4	13·9	13·8	..	12·5	12·7	12·7
16	19·0	19·2	19·5	18·1	16·4	13·4	13·2	13·3	..	11·0	12·5	12·8
17	18·3	18·3	19·5	17·5	16·1	14·7	12·8	13·0	12·8	13·6	12·8	12·1
18	17·7	19·0	17·8	16·5	16·8	15·0	12·9	11·2	13·1	13·1	12·4	13·3
19	18·1	18·8	19·5	15·8	16·6	14·5	12·9	12·7	12·5	12·9	12·2	12·3
20	18·1	18·5	..	17·6	15·8	14·6	12·6	12·8	12·2	12·2	13·7	12·8
21	..	17·2	..	17·6	16·5	..	13·6	12·6	12·8	13·7	13·6	12·9
22	18·3	17·3	17·8	17·3	16·6	..	14·3	12·6	12·5	13·6	12·3	12·3
23	18·9	18·9	18·1	17·3	15·2	..	13·2	12·7	12·4	13·1	12·1	12·9
24	18·6	..	19·9	..	15·5	..	13·2	13·7	10·8	12·8	11·6	12·4
25	19·0	18·2	19·4	18·3	15·5	14·6	12·9	13·0	12·9	13·2	11·5	12·4
26	17·8	17·1	19·8	17·2	16·0	14·6	14·1	12·7	12·4	12·8	11·8	12·6
27	18·1	17·3	22·5	18·0	14·0	13·6	13·4	13·1	12·3	13·0	12·3	11·7
28	..	18·8	..	16·6	15·2	13·4	13·3	12·5	13·1	12·7	11·9	12·6
29	18·0		..	16·5	14·9	13·3	14·0	12·5	12·3	12·5	12·2	12·4
30	18·0		..	16·8	14·3	13·9	13·6	12·3	11·8	12·6	11·6	12·2
31	18·3		18·6		14·8		13·0	12·6		13·0		12·5

TABLE II.—MONTHLY MEAN DIURNAL INEQUALITY OF MAGNETIC DECLINATION WEST.

(The results in each month are diminished by the smallest hourly value.)

1883.

Hour, Greenwich Mean Solar Time.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
h	′	′	′	′	′	′	′	′	′	′	′	′
0	4·5	6·5	6·8	9·3	9·4	9·8	9·7	9·3	9·8	8·7	6·0	4·7
1	5·3	7·5	8·6	11·4	10·2	10·7	11·8	10·6	11·2	10·1	6·6	5·3
2	5·1	7·6	9·2	11·4	9·7	10·9	12·3	10·3	10·4	9·5	6·1	5·1
3	4·1	7·0	7·8	10·0	8·5	10·4	10·8	8·8	8·4	8·0	5·1	4·0
4	3·2	5·2	6·7	8·2	6·9	9·1	8·6	6·7	6·1	5·7	4·1	3·4
5	2·9	4·1	4·9	6·4	5·4	7·5	7·1	5·2	4·6	4·5	3·5	2·8
6	2·5	2·8	3·1	5·0	4·4	6·1	5·7	4·2	4·1	4·0	2·4	2·6
7	1·5	2·8	2·5	4·0	3·8	5·3	4·8	4·0	3·6	2·8	2·2	2·3
8	0·7	2·4	2·4	4·1	3·5	4·8	4·4	3·7	2·8	2·0	1·8	1·5
9	0·0	1·0	1·9	4·1	3·6	4·4	4·3	3·3	2·2	2·0	1·0	0·4
10	0·0	0·2	1·8	3·7	3·7	4·5	4·2	3·2	2·2	2·1	0·8	0·0
11	0·3	0·0	1·5	3·4	3·3	4·3	3·7	3·2	2·4	2·2	0·1	0·1
12	0·5	0·6	1·2	3·5	3·6	4·1	3·3	2·9	2·5	2·1	0·0	0·4
13	0·9	1·6	1·6	3·4	3·2	4·2	2·8	2·8	2·3	2·4	0·3	0·6
14	1·3	1·9	2·2	3·4	3·0	3·8	2·6	2·8	2·4	2·0	0·6	1·0
15	1·5	2·2	2·0	3·1	2·8	3·0	2·3	2·6	2·4	2·4	0·5	1·2
16	1·3	2·5	1·9	2·8	2·4	2·0	1·9	2·2	2·2	2·5	1·2	1·2
17	1·4	2·3	2·0	2·6	1·4	0·9	0·9	1·6	1·8	2·5	1·7	1·4
18	1·3	2·3	2·4	2·1	0·5	0·3	0·1	0·8	1·4	2·5	1·5	1·7
19	1·0	2·5	1·9	1·0	0·0	0·0	0·0	0·0	0·4	1·3	1·0	1·7
20	1·0	2·2	0·8	0·0	0·2	0·4	0·2	0·0	0·0	0·0	0·7	1·4
21	1·3	2·0	0·0	0·3	1·5	1·9	1·4	1·2	0·8	0·2	1·0	1·4
22	2·6	2·7	1·3	2·5	3·8	4·6	3·5	3·3	3·4	2·4	2·4	2·4
23	3·7	4·3	3·9	5·7	6·9	7·6	6·7	6·4	6·8	6·0	4·6	3·7
Means	′ 2·00	′ 3·09	′ 3·27	′ 4·64	′ 4·24	′ 5·03	′ 4·71	′ 4·13	′ 3·92	′ 3·66	′ 2·30	′ 2·10

TABLE III.—MEAN HORIZONTAL MAGNETIC FORCE (diminished by a Constant) FOR EACH ASTRONOMICAL DAY.

(*Each result is the mean of* 24 *hourly ordinates from the photographic register, expressed in terms of the whole Horizontal Force, the unit in the table being* ·00001 *of the whole Horizontal Force. The letters u and c indicate respectively values uncorrected for, and corrected for temperature.*)

1883.

Day of Month.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.	
	u	*c*	*u*	*c*	*u*	*c*	*u*	*c*	*u*	*c*	*u*	*c*	*u*	*c*	*u*	*c*	*u*	*c*	*u*	*c*	*u*	*c*	*u*	*c*
d																								
1	193	209	145	129	313	314	364	362	351	355	473	521	398	547	375	489	451	585	477	514	396	424	270	287
2	213	205	145	135	339	319	289	314	386	367	392	461	404	581	378	508	488	605	515	541	325	347	294	325
3	231	233	133	135	370	347	..	..	416	382	398	468	408	594	421	567	445	554	497	514	373	383	343	366
4	262	258	171	171	380	355	203	235	412	393	385	455	460	606	421	561	469	562	532	542	424	432	383	386
5	223	223	170	166	323	329	215	247	394	414	401	472	418	544	445	593	446	526	367	383	478	496	416	408
6	210	211	170	160	350	328	211	217	402	437	..	..	463	600	..	..	442	512	410	431	470	495	435	409
7	..	..	255	248	310	285	279	253	386	420	462	483	500	639	408	541	487	555	448	475	483	498	436	412
8	149	132	260	269	254	212	300	262	426	444	460	507	495	644	441	557	488	559	425	485	483	510	423	400
9	161	140	288	286	261	207	248	238	433	435	439	503	475	619	460	568	507	583	442	505	477	511	364	359
10	146	165	340	331	285	233	266	270	432	432	465	531	429	567	535	636	503	594	445	507	540	548	444	461
11	171	189	368	345	290	244	275	286	449	456	495	542	424	559	458	570	535	635	445	512	540	537	392	401
12	177	176	348	340	309	273	282	305	437	468	482	549	424	540	476	602	525	639	402	464	455	457	338	340
13	182	183	364	365	192	174	273	284	477	524	450	551	452	562	437	599	429	542	433	490	438	452	377	409
14	207	199	312	301	208	209	334	337	463	523	493	599	461	555	418	592	450	571	468	525	423	422	401	435
15	161	163	337	326	258	248	377	381	503	570	501	581	473	544	405	546	..	..	343	408	493	483	443	463
16	201	194	330	334	288	260	358	364	442	516	548	583	450	523	404	521	..	..	346	411	480	485	461	447
17	183	185	297	300	289	280	365	369	447	516	473	502	416	502	477	613	213	339	330	376	456	458	409	393
18	175	181	389	380	294	284	308	332	351	404	477	522	456	533	280	445	320	464	363	392	473	502	395	388
19	206	207	383	385	368	355	307	315	320	355	479	525	422	501	320	478	294	440	438	471	425	450	390	404
20	160	162	361	377	380	370	322	319	321	339	486	537	445	532	309	474	331	461	367	384	314	331	434	458
21	..	..	331	347	233	224	354	346	260	291	460	520	447	527	356	548	373	489	439	444	326	352	411	432
22	215	185	235	244	258	227	373	372	320	374	434	498	505	566	341	531	413	507	428	434	084	106	388	410
23	269	215	328	317	285	248	384	384	298	377	436	526	568	639	304	477	457	548	418	438	288	298	428	456
24	209	176	..	..	325	279	..	..	343	449	431	545	457	538	337	503	390	498	438	468	416	438	460	476
25	119	119	310	320	307	274	231	230	374	472	453	570	465	547	318	486	373	498	459	519	506	524	390	389
26	94	97	331	334	189	164	262	272	427	492	483	573	477	566	331	492	383	507	421	485	512	526	392	391
27	149	143	334	333	168	143	317	343	423	470	474	563	436	523	357	528	451	555	436	500	430	477	365	372
28	..	..	278	295	227	210	385	409	409	456	485	597	435	526	313	495	449	540	464	518	450	507	324	343
29	220	239			289	282	424	433	410	464	538	689	439	545	421	594	448	519	499	558	327	366	335	346
30	253	232			375	365	432	435	463	506	409	571	305	423	447	611	493	544	490	543	338	364	373	368
31	228	209			343	342			423	464			299	427	452	607			485	525			..	..

On February 16 and December 31 experiments were made for determination of the angle of torsion, thus, in each case, breaking the continuity of the values.

TABLE IV.—MEANS of READINGS of the THERMOMETER placed within the box inclosing the HORIZONTAL FORCE MAGNET, for each Astronomical Day.

1883.

Day of Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d 1	60°·7	58°·9	59°·9	59°·6	60°·0	62°·4	68°·1	66°·1	67°·2	61°·9	61°·3	60°·7
2	59·4	59·2	58·6	61·1	58·7	63·6	69·6	67·0	66·2	61·2	61·0	61·5
3	59·9	59·9	58·5	..	57·9	63·6	70·1	67·9	65·9	60·7	60·4	61·1
4	59·5	59·8	58·4	61·5	58·7	63·6	67·9	67·6	64·9	60·3	60·2	60·0
5	59·8	59·6	60·1	61·6	60·9	63·7	66·8	68·0	64·2	60·7	60·8	59·3
6	59·9	59·2	58·6	60·1	61·7	..	67·4	..	63·6	61·0	61·2	58·4
7	..	59·4	58·4	58·4	61·7	60·9	67·5	67·1	63·6	61·3	60·6	58·4
8	58·8	60·3	57·5	57·7	60·8	62·4	68·0	66·2	63·7	63·1	61·3	58·5
9	58·6	59·7	56·8	59·2	59·9	63·3	67·8	65·8	64·0	63·3	61·6	59·5
10	60·9	59·3	56·9	60·0	59·8	63·5	67·4	65·4	64·8	63·2	60·2	60·7
11	60·8	58·5	57·2	60·4	60·1	62·4	67·2	66·0	65·4	63·5	59·6	60·3
12	59·7	59·3	57·8	61·1	61·5	63·5	66·3	66·8	66·1	63·2	59·9	59·9
13	59·9	59·9	58·8	60·4	62·4	65·4	65·9	68·8	66·1	63·0	60·5	61·6
14	59·4	59·1	59·9	60·0	63·1	65·7	65·0	69·5	66·5	62·9	59·7	61·6
15	59·9	59·1	59·2	60·0	63·5	64·2	63·7	67·6	..	63·4	59·2	60·9
16	59·4	60·0	58·2	60·1	63·9	61·7	63·8	66·3	..	63·4	60·0	59·0
17	59·9	59·9	59·3	60·0	63·6	61·4	64·6	67·3	66·8	62·4	59·9	58·9
18	60·1	59·3	59·2	61·1	62·7	62·3	64·1	68·9	67·8	61·4	61·4	59·4
19	59·9	59·9	59·1	60·2	61·8	62·4	64·2	68·5	67·9	61·6	61·2	60·5
20	59·9	60·6	59·2	59·6	60·8	62·6	64·6	68·9	67·0	60·7	60·7	61·1
21	..	60·6	59·3	59·4	61·5	63·1	64·2	70·4	66·2	60·0	61·2	61·0
22	58·1	60·3	58·0	59·7	62·8	63·3	63·2	70·4	65·0	60·1	61·0	61·0
23	56·8	59·2	57·7	59·8	64·1	64·8	63·7	69·4	64·8	60·9	60·3	61·3
24	57·9	..	57·2	..	65·7	66·1	64·3	69·0	65·8	61·4	61·0	60·6
25	59·8	60·4	57·9	59·7	65·2	66·3	64·4	69·1	66·7	63·1	60·8	59·7
26	59·9	60·0	58·4	60·3	63·4	64·8	64·7	68·7	66·6	63·4	60·6	59·7
27	59·5	59·7	58·4	61·2	62·4	64·7	64·6	69·3	65·6	63·3	62·4	60·2
28	..	60·7	58·8	61·1	62·4	66·0	64·9	69·9	64·8	62·8	62·9	60·8
29	60·9		59·4	60·3	62·8	68·2	65·6	69·4	63·7	63·1	61·9	60·4
30	58·6		59·2	59·9	62·1	68·8	66·3	68·9	62·6	62·7	61·2	59·5
31	58·7		59·7		62·1		66·9	68·4		62·0		..
Means	59°·51	1^{d} to 15^{d}, 59°·41 16^{d} to 28^{d}, 60°·05.	58°·57	60°·13	61°·87	63°·96	65°·90	68°·09	65°·49	62°·10	60°·81	60°·18

TABLE V.—MONTHLY MEAN DIURNAL INEQUALITY OF HORIZONTAL MAGNETIC FORCE.

(The results are expressed in terms of the whole Horizontal Force, diminished in each case by the smallest hourly value, the unit in the table being ·00001 *of the whole Horizontal Force. The letters u and c indicate respectively values uncorrected for, and corrected for temperature.)*

1883.

Hour, Greenwich Mean Solar Time.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.	
	u	*c*	*u*	*c*	*u*	*c*	*u*	*c*	*u*	*c*	*u*	*c*	*u*	*c*	*u*	*c*	*u*	*c*	*u*	*c*	*u*	*c*	*u*	*c*
h																								
0	17	21	0	0	6	8	11	12	33	39	77	79	90	97	67	69	38	44	26	30	22	23	13	13
1	42	49	21	25	51	58	59	64	77	87	114	119	148	159	111	117	103	113	86	92	46	50	39	41
2	49	60	55	61	83	94	111	118	124	138	160	169	203	218	148	157	141	154	135	144	77	83	50	52
3	54	66	71	80	116	131	161	170	161	177	202	214	255	272	188	200	146	161	173	183	85	91	55	57
4	50	63	61	70	134	151	182	192	189	206	211	224	284	303	194	208	166	182	174	185	111	117	58	60
5	62	76	63	73	129	148	217	229	224	242	243	258	287	307	198	214	180	198	190	202	113	119	67	70
6	63	77	75	86	137	158	241	254	238	257	255	271	306	328	200	217	197	216	196	208	132	138	70	73
7	65	80	79	91	145	167	225	240	235	255	270	288	313	337	211	230	206	226	195	208	140	145	70	73
8	61	77	82	95	138	162	221	238	218	239	273	293	276	301	212	233	204	226	201	215	148	153	63	67
9	59	76	84	97	155	181	202	220	195	217	240	261	255	282	215	238	204	227	201	216	145	150	58	62
10	57	73	74	86	150	174	197	214	173	193	215	234	244	269	205	226	194	215	212	226	138	143	51	55
11	59	73	64	74	156	177	203	218	166	184	195	212	237	260	196	215	188	207	211	224	149	153	49	52
12	58	71	71	80	144	163	188	202	171	187	190	206	223	243	192	209	194	211	192	203	130	134	60	63
13	58	69	79	86	146	163	172	184	162	176	176	190	215	233	186	201	189	205	183	193	125	128	64	67
14	59	69	74	80	142	157	167	178	151	163	173	185	210	226	176	189	176	190	181	190	129	132	61	63
15	66	75	72	76	139	152	169	178	135	145	159	169	208	222	170	182	176	188	183	190	131	134	69	71
16	75	82	87	89	136	146	161	168	123	132	155	163	199	210	160	170	185	195	198	204	145	147	77	79
17	86	92	108	109	134	142	162	168	122	129	137	143	183	192	155	163	180	188	207	212	157	159	87	88
18	94	98	118	117	145	151	175	179	104	109	102	106	140	147	134	140	176	183	205	209	154	155	98	99
19	89	92	121	119	137	141	149	152	70	73	70	73	91	95	105	109	142	147	179	181	131	132	91	92
20	76	77	97	93	97	98	114	115	32	33	42	43	55	57	64	66	89	92	116	117	90	90	69	69
21	43	43	64	59	57	56	52	52	6	5	7	6	13	13	24	24	32	33	40	40	39	39	33	33
22	18	18	20	16	17	16	14	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4
23	0	0	11	8	0	0	0	0	11	14	27	29	32	34	17	18	10	11	0	1	2	2	0	0
Means corrected for Temperature	65·7		73·8		124·7		156·6		141·7		164·0		200·2		158·1		158·8		161·4		109·0		58·5	

TABLE VI.—MONTHLY MEANS of READINGS of the THERMOMETER placed within the box inclosing the HORIZONTAL FORCE MAGNET, at each of the ordinary Hours of Observation.

1883.

Hour, Greenwich Mean Solar Time.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	For the Year.
h	°	°	°	°	°	°	°	°	°	°	°	°	°
0	59·4	59·5	58·3	59·9	61·7	63·7	65·7	67·9	65·4	62·0	60·7	60·1	62·03
1	59·6	59·8	58·6	60·1	61·9	63·9	65·9	68·1	65·5	62·1	60·9	60·2	62·21
2	59·7	59·9	58·8	60·2	62·1	64·1	66·2	68·2	65·8	62·3	61·0	60·2	62·38
3	59·9	60·0	59·0	60·3	62·3	64·3	66·3	68·4	65·9	62·3	61·0	60·2	62·50
9	60·1	60·3	59·6	60·9	62·6	64·8	66·9	69·0	66·3	62·6	60·9	60·4	62·86
21	59·1	59·3	58·1	59·9	61·3	63·6	65·3	67·7	65·0	61·8	60·6	60·1	61·83
22	59·1	59·3	58·1	59·9	61·4	63·6	65·4	67·7	65·0	61·8	60·6	60·1	61·84
23	59·1	59·4	58·1	59·8	61·5	63·7	65·5	67·8	65·0	61·9	60·6	60·1	61·89

TABLE VII.—MEAN VERTICAL MAGNETIC FORCE (diminished by a Constant) FOR EACH ASTRONOMICAL DAY.

(*Each result is the mean of* 24 *hourly ordinates from the photographic register, expressed in terms of the whole Vertical Force, the unit in the table being* ·00001 *of the whole Vertical Force. The letters u and c indicate respectively values uncorrected for, and corrected for temperature.*)

1883.

Day of Month.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.	
	u	*c*	*u*	*c*	*u*	*c*	*u*	*c*	*u*	*c*	*u*	*c*	*u*	*c*	*u*	*c*	*u*	*c*	*u*	*c*	*u*	*c*	*u*	*c*
d																								
1	764	697	654	617	703	635	..	..	493	433	516	412	..	..	520	345	463	263	305	216	264	171	175	105
2	733	688	638	601	668	627	..	..	468	434	597	474	..	..	527	333	441	263	268	191	237	152	172	104
3	737	669	660	609	640	604	..	..	433	413	573	452	685	431	533	324	437	268	245	177	257	187	168	102
4	717	653	653	599	619	594	570	484	439	407	554	431	633	419	540	335	397	244	234	171	237	170	127	79
5	713	652	647	596	655	596	551	466	474	400	542	422	597	401	544	334	385	245	270	198	232	149	93	50
6	718	660	639	599	606	580	519	466	490	398	..	..	589	384	562	359	376	246	275	201	242	156	60	41
7	695	661	640	589	586	571	468	446	502	412	490	419	581	373	536	342	360	228	282	192	230	152	53	37
8	680	645	663	596	554	563	458	444	480	408	518	412	614	399	526	347	364	228	329	194	227	134	52	35
9	655	623	652	598	541	553	478	435	465	411	552	425	591	378	495	331	364	223	341	200	235	140	76	38
10	685	613	639	596	531	531	483	427	457	408	553	424	572	368	455	296	378	219	344	202	201	134	84	21
11	680	607	625	595	515	514	483	420	445	390	527	423	547	347	467	296	388	223	341	198	174	122	90	39
12	668	612	637	590	508	498	485	410	472	387	534	408	558	379	480	289	412	230	327	199	171	112	93	43
13	667	611	658	595	552	522	480	416	488	383	579	419	539	362	516	285	439	262	310	190	172	105	118	36
14	653	606	665	619	574	522	467	413	523	404	601	437	543	385	539	300	435	252	312	195	139	85	155	75
15	673	615	650	607	557	525	454	397	555	425	572	439	498	366	511	308	..	..	337	210	104	57	130	73
16	663	612	652	598	521	518	461	403	577	438	493	400	491	353	475	293	..	..	323	194	120	57	72	51
17	671	612	661	596	537	505	455	394	556	423	463	374	496	348	475	274	531	335	334	226	123	65	72	43
18	685	622	641	582	544	510	471	390	547	434	487	382	485	345	537	306	493	281	293	204	151	72	76	31
19	689	627	642	573	529	494	474	412	531	433	494	387	480	338	534	309	505	292	271	180	147	68	95	28
20	704	639	660	579	525	501	502	450	462	384	504	393	484	334	542	307	480	284	270	199	181	108	98	17
21	684	647	670	587	515	494	471	428	496	401	518	399	473	332	566	305	447	272	223	167	153	76	106	27
22	660	638	701	625	518	528	466	422	527	403	510	387	451	331	572	315	410	256	227	162	217	142	101	23
23	615	620	683	630	487	503	454	410	568	421	564	413	442	308	556	318	394	237	237	156	174	110	100	19
24	618	599	..	..	481	493	..	..	594	434	590	411	466	322	537	303	410	235	252	160	164	89	87	16
25	663	613	690	615	485	480	470	419	594	445	611	432	466	318	537	300	445	255	291	165	170	97	84	27
26	667	619	680	615	485	473	472	408	577	463	577	428	469	314	519	291	445	262	305	174	172	105	80	22
27	638	605	673	614	522	507	503	419	542	452	569	421	477	326	498	259	404	242	312	182	210	110	78	18
28	635	588	710	629	520	497	512	433	535	441	596	426	478	321	508	257	385	237	307	186	228	116	116	44
29	674	612			526	487	504	441	548	444	647	432	448	283	500	263	370	246	296	170	205	108	106	38
30	628	600			510	478	494	435	523	435	..	..	505	331	482	250	333	231	283	167	181	97	65	20
31	626	596			524	478			527	437			552	361	474	255			276	174			45	6

On April 4 experiments were made for determination of the time of vibration of the magnet in the horizontal plane; on July 3 the time of vibration of the magnet in the vertical plane was altered; and at the end of the year the instrument was re-adjusted; thus, in each case, breaking the continuity of the values.

TABLE VIII.—MEANS of READINGS of the THERMOMETER placed within the box inclosing the VERTICAL FORCE MAGNET, for each Astronomical Day.

1883.

Day of Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d 1	60°·4	58°·8	60°·4	. .	60°·0	62°·2	° . .	65°·8	67°·0	61°·5	61·7	60°·5
2	59·3	58·9	59·1	. .	58·7	63·2	. .	66·7	65·9	60·8	61·3	60·4
3	60·4	59·5	58·8	. .	58·0	63·0	69·7	67·4	65·4	60·4	60·5	60·3
4	60·2	59·7	58·3	61·3	58·6	63·1	67·7	67·2	64·7	60·2	60·4	59·4
5	60·0	59·5	59·9	61·3	60·7	63·0	66·8	67·5	64·0	60·6	61·1	59·1
6	59·9	59·0	58·3	59·6	61·6	. .	67·3	67·1	63·5	60·7	61·3	57·9
7	58·7	59·6	57·8	58·1	61·5	60·5	67·4	66·7	63·6	61·5	60·9	57·8
8	58·7	60·3	56·5	57·7	60·6	62·3	67·8	66·0	63·8	63·8	61·6	57·9
9	58·6	59·7	56·4	59·2	59·7	63·4	67·6	65·2	64·0	64·1	61·8	58·9
10	60·6	59·2	57·0	59·8	59·4	63·4	67·2	65·0	64·9	64·1	60·4	60·1
11	60·6	58·5	57·1	60·1	59·8	62·2	67·0	65·6	65·3	64·1	59·6	59·6
12	59·8	59·4	57·5	60·7	61·3	63·3	66·0	66·5	66·1	63·4	59·9	59·5
13	59·8	60·1	58·5	60·2	62·3	65·0	65·8	68·5	65·8	63·0	60·4	61·1
14	59·4	59·3	59·6	59·7	63·0	65·2	64·9	69·0	66·2	62·8	59·7	61·0
15	59·9	59·2	58·6	59·9	63·5	63·6	63·6	67·2	. .	63·4	59·4	59·8
16	59·6	59·7	57·2	59·9	64·0	61·7	63·9	66·1	. .	63·4	60·1	58·1
17	59·9	60·2	58·6	60·0	63·6	61·4	64·4	67·0	66·8	62·4	59·9	58·4
18	60·2	59·9	58·7	61·0	62·7	62·3	64·0	68·6	67·6	61·4	61·0	59·3
19	60·1	60·4	58·8	60·1	61·9	62·3	64·1	68·2	67·7	61·6	61·0	60·3
20	60·3	61·0	58·2	59·6	60·9	62·6	64·5	68·7	66·8	60·6	60·6	61·1
21	58·8	61·2	58·1	59·1	61·7	63·0	64·0	70·1	65·7	59·8	60·8	61·0
22	58·1	60·8	56·5	59·2	63·2	63·2	63·0	69·8	64·7	60·3	60·8	60·9
23	56·7	59·6	56·2	59·2	64·3	64·6	63·7	68·9	64·9	61·1	60·2	61·0
24	58·0	. .	56·4	. .	65·0	65·9	64·2	68·7	65·8	61·6	60·7	60·5
25	59·5	60·7	57·2	59·6	64·5	66·0	64·4	68·9	66·5	63·3	60·7	59·9
26	59·4	60·3	57·6	60·2	62·7	64·5	64·8	68·4	66·2	63·5	60·3	59·9
27	58·7	60·0	57·8	61·2	61·5	64·4	64·5	69·0	65·1	63·5	62·0	60·0
28	59·4	61·0	58·2	60·9	61·7	65·5	64·8	69·5	64·4	63·1	62·6	60·6
29	60·1		58·9	60·2	62·2	67·8	65·3	68·8	63·2	63·3	61·8	60·4
30	58·4		58·6	59·9	61·4	. .	65·7	68·6	62·1	62·8	61·2	59·2
31	58·5		59·3		61·5		66·5	68·0		62·1		59·0
Means	59°·42	59°·84	58°·06	59°·92	61°·66	63°·52	65°·54	67°·70	65°·27	62°·20	60°·79	59°·77

TABLE IX.—MONTHLY MEAN DIURNAL INEQUALITY OF VERTICAL MAGNETIC FORCE.

(*The results are expressed in terms of the whole Vertical Force, diminished in each case by the smallest hourly value, the unit in the table being* ·00001 *of the whole Vertical Force. The letters u and c indicate respectively values uncorrected for, and corrected for temperature.*)

1883.

Hour, Greenwich Mean Solar Time.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.	
	u	*c*	*u*	*c*	*u*	*c*	*u*	*c*	*u*	*c*	*u*	*c*	*u*	*c*	*u*	*c*	*u*	*c*	*u*	*c*	*u*	*c*	*u*	*c*
h 0	9	3	0	0	9	2	5	0	2	0	0	0	12	3	0	0	8	0	2	0	13	9	6	6
1	15	4	14	10	24	10	18	9	19	13	13	8	24	10	12	7	23	10	13	7	25	16	12	11
2	26	13	26	19	46	28	40	28	39	30	32	25	46	30	30	22	41	25	29	22	38	28	21	19
3	31	16	41	32	68	46	58	43	53	42	50	39	71	52	48	37	57	39	43	34	45	35	26	23
4	32	17	50	41	83	60	69	53	67	55	67	55	90	70	64	52	71	52	54	45	46	36	27	24
5	33	18	52	43	89	65	80	63	80	68	85	71	103	82	71	57	76	56	57	47	48	39	26	23
6	34	19	54	45	86	62	88	70	85	72	92	77	112	90	70	55	74	53	54	44	46	37	26	23
7	35	20	50	40	79	54	84	65	83	70	94	78	111	87	66	50	73	51	54	44	42	34	25	21
8	35	20	47	37	73	47	77	57	81	67	87	69	102	77	63	45	72	49	50	39	39	31	25	21
9	31	16	44	34	67	40	73	52	73	59	79	60	90	64	60	41	69	45	45	34	34	27	24	20
10	26	12	35	27	57	32	68	49	66	54	69	52	81	57	53	36	61	39	39	29	27	21	19	15
11	22	10	28	21	48	26	60	43	62	52	66	51	73	52	48	33	57	37	36	28	24	18	17	14
12	18	7	22	17	43	23	54	38	58	50	57	44	64	45	47	34	55	38	34	27	18	13	12	9
13	16	7	14	10	40	23	53	39	47	41	51	40	55	39	43	32	47	32	30	25	11	7	9	7
14	12	4	11	9	32	17	50	38	46	42	47	38	48	34	41	32	44	31	29	25	6	2	7	5
15	10	4	11	10	23	11	49	39	43	41	47	40	43	31	40	33	39	28	30	27	3	0	6	5
16	8	3	13	14	24	14	49	41	47	48	47	41	45	36	41	37	37	28	27	26	4	2	4	3
17	6	2	12	15	25	18	48	42	50	53	52	48	47	40	43	41	36	29	26	26	4	2	2	2
18	3	1	11	15	22	17	46	42	50	55	50	48	51	47	46	46	39	34	28	30	4	3	0	0
19	3	2	12	18	25	23	47	44	45	52	43	44	51	49	43	45	41	39	33	36	5	5	0	1
20	4	5	11	18	28	28	40	39	38	47	37	39	44	45	34	38	36	36	36	41	10	10	2	3
21	1	3	9	18	20	23	26	27	24	35	26	30	29	32	18	24	25	27	27	33	8	9	2	4
22	0	1	2	10	9	11	12	13	8	17	14	17	13	15	7	13	12	14	13	17	0	1	1	3
23	0	0	0	6	0	0	0	0	0	5	5	5	0	0	0	5	0	1	0	3	2	2	3	5
Means corrected for Temperature	8·6		21·2		28·3		38·9		44·5		42·5		45·3		34·0		33·0		28·7		16·1		11·1	

TABLE X.—MONTHLY MEANS of READINGS of the THERMOMETER placed within the box inclosing the VERTICAL FORCE MAGNET, at each of the ordinary Hours of Observation.

1883.

Hour, Greenwich Mean Solar Time.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	For the Year.
h 0	59°·4	59°·8	57°·9	59°·8	61°·6	63°·3	65°·5	67°·5	65°·2	62°·2	60°·8	59°·7	61°·89
1	59·6	60·0	58·2	60·0	61·8	63·5	65·7	67·8	65·5	62·4	61·0	59·8	62·11
2	59·7	60·1	58·4	60·1	62·0	63·7	65·8	67·9	65·6	62·4	61·1	59·9	62·24
3	59·8	60·2	58·7	60·3	62·1	63·9	66·0	68·1	65·7	62·5	61·0	59·9	62·34
9	59·8	60·3	58·9	60·6	62·3	64·2	66·3	68·5	66·0	62·6	60·9	59·9	62·53
21	59·0	59·4	57·4	59·5	61·0	63·1	64·9	67·2	64·7	61·8	60·5	59·6	61·50
22	59·0	59·4	57·4	59·5	61·1	63·1	64·9	67·2	64·7	61·8	60·5	59·7	61·54
23	59·1	59·5	57·5	59·5	61·3	63·3	65·1	67·3	64·8	61·9	60·5	59·6	61·62

TABLE XI.—MEAN MAGNETIC DECLINATION, HORIZONTAL FORCE, and VERTICAL FORCE in each MONTH.

(The results for Horizontal Force and Vertical Force are corrected for temperature.)

Month.	DECLINATION WEST in Arc.	HORIZONTAL FORCE in terms of the whole Horizontal Force (diminished by a Constant).	VERTICAL FORCE in terms of the whole Vertical Force (diminished by a Constant).	DECLINATION diminished by 17° and expressed as Westerly Force.	HORIZONTAL FORCE (diminished by a Constant).	VERTICAL FORCE (diminished by a Constant).
				in terms of GAUSS'S METRICAL UNIT.		
	° ′					
January	18. 18·4	187	628	4128	338	2748
February	18. 18·5	Feb. 1–15 247 Feb. 16–28 330	602	4133	Feb. 1–15 447 Feb. 16–28 597	2634
March	18. 19·2	270	528	4170	489	2310
April	18. 17·5	318	426	4080	576	1864
May	18. 15·8	438	419	3991	793	1833
June	18. 14·2	536	417	3907	970	1824
July	18. 13·5	552	354	3870	999	1549
August	18. 13·0	544	304	3843	985	1330
September	18. 12·4	533	252	3812	965	1103
October	18. 12·8	476	187	3833	862	818
November	18. 12·7	439	115	3828	795	503
December	18. 12·6	398	42	3822	720	184
Means	° ′ 18. 15·0	....	....	3951	....	....
Number of Column	1	2	3	4	5	6

The unit in columns 2 and 3 is ·00001 of the whole Horizontal and Vertical Forces respectively; in columns 4, 5, and 6 the unit is ·00001 of the Millimètre-Milligramme-Second Unit, or ·000001 of the Centimètre-Gramme-Second (C.G.S.) Unit, in terms of which Units the values of whole Horizontal Force (applicable to columns 4 and 5) are 1·810 and 0·1810 respectively for the year, and of whole Vertical Force (applicable to column 6) 4·375 and 0·4375 respectively for the year.

HORIZONTAL FORCE.—On February 16 and December 31 experiments were made for determination of the angle of torsion, thus, in each case, breaking the continuity of the values.

VERTICAL FORCE.—On April 4 experiments were made for determination of the time of vibration of the magnet in the horizontal plane; on July 3 the time of vibration of the magnet in the vertical plane was altered; and at the end of the year the instrument was re-adjusted; thus, in each case, breaking the continuity of the values.

TABLE XII.—MEAN DIURNAL INEQUALITIES of MAGNETIC DECLINATION, HORIZONTAL FORCE, and VERTICAL FORCE for the Year 1883.

(Each result is the mean of the twelve monthly mean values, the annual means for each element being diminished by the smallest hourly value. The results for Horizontal Force and Vertical Force are corrected for temperature.)

Hour, Greenwich Mean Solar Time.	Inequality of			Inequality of		
	DECLINATION WEST in Arc.	HORIZONTAL FORCE in terms of the whole Horizontal Force.	VERTICAL FORCE in terms of the whole Vertical Force.	DECLINATION expressed as WESTERLY FORCE	HORIZONTAL FORCE	VERTICAL FORCE
				in terms of GAUSS'S METRICAL UNIT.		
0^{h}	7′·30	30·5	0·0	384·3	55·2	0·0
1	8·53	75·5	7·7	449·1	136·7	33·7
2	8·39	115·0	22·2	441·7	208·2	97·1
3	7·16	144·5	34·6	377·0	261·5	151·4
4	5·58	157·7	44·8	293·8	285·4	196·0
5	4·33	172·3	50·8	228·0	311·9	222·2
6	3·33	184·6	52·0	175·3	334·1	227·5
7	2·72	189·3	49·3	143·2	342·6	215·7
8	2·26	185·9	44·7	119·0	336·5	195·6
9	1·77	179·9	39·1	93·2	325·6	171·1
10	1·62	170·0	33·4	85·3	307·7	146·1
11	1·46	165·0	30·2	76·9	298·7	132·1
12	1·48	158·6	26·8	77·9	287·1	117·2
13	1·59	152·2	23·3	83·7	275·5	101·9
14	1·67	146·1	21·2	87·9	264·4	92·8
15	1·59	142·8	20·5	83·7	258·5	89·7
16	1·43	143·1	22·5	75·3	259·0	98·4
17	1·13	143·0	24·6	59·5	258·8	107·6
18	0·83	135·4	26·3	43·7	245·1	115·1
19	0·32	111·5	27·9	16·8	201·8	122·1
20	0·00	73·5	27·2	0·0	133·0	119·0
21	0·50	27·9	20·2	26·3	50·5	88·4
22	2·33	0·0	9·1	122·7	0·0	39·8
23	4·94	4·1	0·8	260·1	7·4	3·5
Means - -	3′·01	125·3	27·5	158·5	226·9	120·2
Number of Column -	1	2	3	4	5	6

The unit in columns 2 and 3 is ·00001 of the whole Horizontal and Vertical Forces respectively; in columns 4, 5, and 6 the unit is ·00001 of the Millimètre-Milligramme-Second Unit or ·000001 of the Centimètre-Gramme-Second (C.G.S.) Unit, in terms of which Units the values of whole Horizontal Force (applicable to columns 4 and 5) are 1·810 and 0·1810 respectively, and of whole Vertical Force (applicable to column 6) are 4·375 and 0·4375 respectively.

TABLE XIII.—DIURNAL RANGE of DECLINATION and HORIZONTAL FORCE, on each ASTRONOMICAL DAY, as deduced from the TWENTY-FOUR HOURLY MEASURES of ORDINATES of the PHOTOGRAPHIC REGISTER.

(The Declination is expressed in minutes of arc: for Horizontal Force the unit is ·00001 of the whole Horizontal Force. The results for Horizontal Force are corrected for temperature.)

1883.

Day of Month.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.	
	Dec.	H.F.	Dec.	H.F.	Dec.	H.F.	Dec.	H.F.	Dec.	H.F.	Dec.	H.F.	Dec.	H.F.	Dec.	H.F.	Dec.	H.F.	Dec.	H.F.	Dec.	H.F.	Dec.	H.F.
d	′		′		′		′		′		′		′		′		′		′		′		′	
1	7·7	100	19·1	470	16·0	240	10·2	180	9·2	440	12·8	230	16·2	460	13·9	320	16·6	250	9·3	280	16·6	400	15·0	260
2	5·7	90	18·3	240	11·7	240	9·5	90	9·4	300	15·8	370	12·3	250	10·1	260	15·3	430	8·2	290	26·8	560	10·4	140
3	4·7	100	13·7	260	8·1	200	..	..	10·4	260	11·3	200	8·3	370	9·0	210	15·3	330	8·5	230	12·2	370	3·9	160
4	5·5	170	12·9	170	6·1	220	11·4	300	13·4	300	12·0	260	14·9	330	15·2	300	10·5	250	10·5	410	7·6	280	6·7	160
5	7·7	220	8·6	130	8·7	190	13·3	330	11·5	240	11·9	560	14·1	270	15·6	530	13·9	190	17·7	390	6·9	170	3·2	140
6	7·4	200	7·8	180	12·3	180	11·4	280	10·3	340	..	..	15·2	310	..	..	14·2	290	11·4	390	7·9	280	3·2	80
7	..	..	6·3	180	7·1	320	12·5	310	10·8	230	11·0	310	14·0	430	12·5	330	12·5	240	12·0	320	7·6	270	3·0	50
8	7·8	80	5·7	120	..	210	14·9	290	13·0	270	12·8	260	16·7	350	10·0	220	12·8	300	11·5	260	6·9	250	7·5	230
9	5·0	100	7·1	140	..	230	14·7	350	10·0	290	13·7	300	11·2	400	8·5	190	14·1	330	10·3	240	4·1	180	9·8	280
10	6·9	100	7·3	230	11·1	160	12·4	370	11·0	260	12·7	280	13·4	360	6·3	270	12·0	240	11·0	260	5·7	180	10·0	230
11	3·1	100	8·2	190	11·3	240	13·1	310	11·6	310	9·7	280	11·6	440	12·3	230	11·1	290	13·0	330	7·6	170	5·7	150
12	4·7	140	6·8	180	14·5	290	13·8	290	9·9	260	7·5	220	10·0	230	8·6	180	11·6	330	15·0	300	8·1	170	11·7	180
13	6·3	160	6·4	170	10·7	330	13·0	250	11·1	230	7·6	260	10·4	380	12·5	230	15·9	360	12·3	420	8·4	200	5·1	240
14	4·9	160	12·4	170	8·6	290	12·0	260	10·7	270	13·8	250	16·4	470	10·0	160	11·7	280	13·9	330	9·3	190	6·8	140
15	6·5	130	4·8	160	9·2	190	10·8	280	10·5	280	11·0	290	10·6	580	14·3	370	..	..	16·4	290	6·9	190	3·0	70
16	6·7	150	5·1	190	11·3	250	13·4	290	12·5	300	16·5	220	11·7	570	10·8	190	..	..	18·7	490	6·0	250	5·0	90
17	8·2	180	13·4	210	13·6	240	12·4	270	12·0	410	12·4	410	12·9	420	11·0	270	10·0	280	12·2	410	6·4	140	12·2	310
18	6·0	170	5·7	160	9·1	250	15·9	380	10·7	220	13·0	420	20·3	620	16·1	380	13·2	430	16·1	460	6·5	180	9·3	170
19	5·7	160	5·6	210	10·8	220	22·0	360	12·3	250	8·4	320	17·4	420	14·6	490	11·3	310	12·4	360	15·1	340	10·1	150
20	7·5	170	8·4	260	..	200	11·5	420	13·9	670	12·1	370	16·0	380	10·6	260	12·2	370	19·1	290	11·6	290	6·2	220
21	..	..	14·6	280	..	350	9·4	270	16·1	510	..	290	15·6	330	13·8	320	12·1	290	8·5	250	10·0	530	5·1	140
22	9·3	130	20·6	260	14·1	220	11·5	340	10·0	420	..	690	16·0	280	14·7	460	8·5	260	12·6	180	19·3	500	5·1	150
23	5·4	100	10·2	160	10·7	240	12·2	280	10·2	350	..	380	16·7	300	13·1	400	12·7	260	7·2	230	15·4	410	4·5	190
24	6·2	270	..	..	9·0	260	..	..	11·9	260	..	320	20·3	450	10·8	250	19·3	340	7·9	290	7·2	170	6·0	180
25	12·9	200	9·5	230	8·0	220	10·3	480	10·0	290	13·6	580	13·8	310	12·0	230	13·1	330	8·8	220	4·2	130	8·8	180
26	13·7	170	5·7	180	16·5	500	9·9	400	11·3	310	15·2	690	10·5	500	12·8	250	8·1	220	8·6	290	4·3	140	4·7	230
27	8·4	160	15·7	260	21·3	270	12·9	290	14·0	330	13·6	450	10·4	300	13·7	410	9·3	310	10·0	270	7·6	180	8·2	170
28	..	..	13·5	270	..	310	11·5	310	8·2	270	13·1	280	9·5	250	13·3	370	13·8	280	10·5	210	9·1	220	6·6	160
29	7·7	80			..	380	9·0	270	12·8	280	11·3	340	8·0	470	12·5	260	15·8	250	9·2	210	5·5	180	8·3	170
30	9·9	130			..	320	12·4	290	9·9	320	17·5	550	14·5	400	6·3	200	10·6	260	10·2	190	7·5	150	5·7	190
31	9·6	130			10·7	220			9·0	260			19·2	680	10·1	200			11·5	230			6·2	..

TABLE XIV.—MONTHLY MEAN DIURNAL RANGE of DECLINATION and HORIZONTAL FORCE, as deduced from the numbers contained in Table XIII.

(The Declination is expressed in minutes of arc: for Horizontal Force the unit is ·00001 of the whole Horizontal Force. The results for Horizontal Force are corrected for temperature.)

1883.

Month.	Declination.	Horizontal Force.
	′	
January	7·2	145
February	10·1	210
March	11·3	257
April	12·4	305
May	11·2	314
June	12·4	358
July	13·8	397
August	11·8	291
September	12·8	296
October	11·8	301
November	9·3	256
December	7·0	174
	′	
Means	10·9	275

TABLE XV.—VALUES of the CO-EFFICIENTS in the PERIODICAL EXPRESSION

$$V_t = m + a_1 \cos t + b_1 \sin t + a_2 \cos 2t + b_2 \sin 2t + a_3 \cos 3t + b_3 \sin 3t + a_4 \cos 4t + b_4 \sin 4t$$

(in which t is the time from mean solar noon converted into arc at the rate of 15° to each hour, and V_t the mean value of the magnetic element at the time t for each month and for the year, as given in Tables II., V., IX., and XII., the values for Horizontal Force and Vertical Force being corrected for temperature.).

The values of the co-efficients for Declination are given in minutes of arc: for Horizontal Force and Vertical Force the unit is ·00001 of the whole Horizontal and Vertical Forces respectively.

Month.	m	a_1	b_1	a_2	b_2	a_3	b_3	a_4	b_4
	DECLINATION WEST.								
	′	′	′	′	′	′	′	′	′
January	2·00	+ 1·77	+ 0·52	+ 0·46	+ 1·00	+ 0·32	+ 0·02	+ 0·23	+ 0·10
February	3·09	+ 2·38	+ 0·81	+ 0·29	+ 1·46	+ 0·45	+ 0·42	+ 0·02	+ 0·52
March	3·27	+ 2·11	+ 1·67	+ 0·63	+ 1·95	+ 0·39	+ 1·09	+ 0·17	+ 0·38
April	4·64	+ 2·06	+ 2·61	+ 1·44	+ 2·25	+ 0·75	+ 1·09	+ 0·28	+ 0·24
May	4·24	+ 2·09	+ 2·32	+ 1·91	+ 1·55	+ 0·78	+ 0·42	+ 0·17	− 0·01
June	5·03	+ 2·21	+ 3·22	+ 1·88	+ 1·68	+ 0·46	+ 0·17	+ 0·07	− 0·03
July	4·71	+ 2·61	+ 3·37	+ 1·79	+ 1·87	+ 0·62	+ 0·78	0·00	+ 0·17
August	4·13	+ 2·23	+ 2·38	+ 1·77	+ 1·70	+ 0·90	+ 0·65	+ 0·17	+ 0·17
September	3·92	+ 2·65	+ 2·91	+ 1·76	+ 1·85	+ 1·05	+ 0·69	+ 0·48	+ 0·26
October	3·66	+ 2·32	+ 1·60	+ 1·29	+ 1·94	+ 0·87	+ 0·93	+ 0·62	+ 0·16
November	2·30	+ 2·24	+ 1·08	+ 0·49	+ 0·93	+ 0·68	+ 0·45	+ 0·29	+ 0·07
December	2·10	+ 1·83	+ 0·60	+ 0·22	+ 0·77	+ 0·40	+ 0·12	+ 0·28	+ 0·28
For the Year	3·01	+ 2·21	+ 1·85	+ 1·16	+ 1·58	+ 0·64	+ 0·57	+ 0·23	+ 0·19
	HORIZONTAL FORCE.								
January	65·7	− 19·6	− 0·9	− 21·0	+ 5·6	− 5·4	+ 11·8	+ 1·1	+ 6·9
February	73·8	− 26·4	− 4·2	− 28·9	+ 0·8	− 9·9	+ 13·4	− 2·6	+ 9·0
March	124·7	− 63·1	+ 19·8	− 30·8	+ 12·0	− 14·8	+ 15·8	− 3·4	+ 6·2
April	156·6	− 76·9	+ 46·2	− 49·4	+ 13·2	− 15·5	+ 11·8	+ 3·0	+ 6·2
May	141·7	− 66·5	+ 79·4	− 33·7	+ 25·4	− 1·9	+ 3·4	+ 6·3	+ 4·6
June	164·0	− 71·5	+ 91·9	− 28·6	+ 26·5	+ 8·5	+ 9·3	+ 1·0	+ 7·0
July	200·2	− 78·2	+ 101·1	− 35·5	+ 47·3	+ 3·1	+ 13·4	+ 3·5	+ 3·7
August	158·1	− 71·3	+ 59·2	− 22·9	+ 29·5	− 1·8	+ 19·9	0·0	+ 6·4
September	158·8	− 75·8	+ 38·2	− 33·8	+ 25·7	− 1·5	+ 22·9	+ 5·5	+ 11·3
October	161·4	− 76·6	+ 27·1	− 43·2	+ 25·2	− 10·8	+ 31·2	+ 3·1	+ 6·2
November	109·0	− 55·6	+ 8·3	− 33·6	+ 10·7	− 2·8	+ 19·2	+ 4·0	+ 5·3
December	58·5	− 18·1	− 3·5	− 24·0	+ 9·0	− 4·9	+ 10·1	+ 3·5	+ 8·4
For the Year	125·3	− 58·3	+ 38·6	− 32·1	+ 19·2	− 4·8	+ 15·2	+ 2·1	+ 6·8
	VERTICAL FORCE.								
January	8·6	− 1·7	+ 8·8	− 3·0	0·0	− 0·8	+ 0·1	− 1·3	+ 0·9
February	21·2	− 2·3	+ 13·5	− 10·4	− 1·8	− 3·7	− 0·1	− 1·9	− 1·2
March	28·3	− 3·1	+ 19·4	− 14·3	+ 0·1	− 8·3	− 1·8	− 2·1	+ 0·3
April	38·9	− 13·8	+ 11·0	− 17·6	+ 0·4	− 5·7	− 0·2	− 1·5	+ 1·1
May	44·5	− 15·7	+ 9·0	− 19·0	− 1·8	− 6·0	+ 1·3	− 0·2	+ 0·7
June	42·5	− 16·1	+ 13·1	− 19·6	− 2·7	− 4·5	− 1·4	+ 0·4	+ 0·1
July	45·3	− 13·8	+ 20·0	− 22·6	− 3·5	− 8·0	− 0·7	+ 0·3	+ 1·4
August	34·0	− 9·7	+ 5·9	− 16·8	+ 1·4	− 6·5	+ 0·5	− 0·2	− 0·2
September	33·0	− 9·7	+ 10·2	− 13·3	− 0·6	− 8·0	+ 0·2	− 2·0	+ 1·2
October	28·7	− 5·3	+ 5·7	− 12·8	− 1·3	− 7·7	− 1·2	− 3·4	+ 1·3
November	16·1	+ 1·2	+ 17·7	− 5·3	+ 0·5	− 3·3	+ 1·7	− 1·1	+ 0·9
December	11·1	− 0·2	+ 11·4	− 1·8	+ 1·1	− 1·0	+ 0·6	− 1·5	− 0·1
For the Year	27·5	− 7·5	+ 12·1	− 13·1	− 0·7	− 5·3	− 0·1	− 1·2	+ 0·5

TABLE XVI.—VALUES of the CO-EFFICIENTS and CONSTANT ANGLES in the PERIODICAL EXPRESSIONS

$$V_t = m+c_1 \sin(t+\alpha) + c_2 \sin(2t+\beta) + c_3 \sin(3t+\gamma) + c_4 \sin(4t+\delta)$$

$$V_{t'} = m+c_1 \sin(t'+\alpha') + c_2 \sin(2t'+\beta') + c_3 \sin(3t'+\gamma') + c_4 \sin(4t'+\delta')$$

(in which t and t' are the times from mean solar noon and apparent solar noon respectively converted into arc at the rate of 15° to each hour, and V_t, $V_{t'}$ the mean value of the magnetic element at the time t or t' for each month and for the year, as given in Tables II., V., IX., and XII., the values for Horizontal Force and Vertical Force being corrected for temperature).

The values of the co-efficients for Declination are given in minutes of arc: for Horizontal Force and Vertical Force the unit is ·00001 of the whole Horizontal and Vertical Forces respectively.

Month.	m	c_1	α	α'	c_2	β	β'	c_3	γ	γ'	c_4	δ	δ'
						DECLINATION WEST.							
	′	′	° ′	° ′	′	° ′	° ′	′	° ′	° ′	′	° ′	° ′
January	2·00	1·84	73. 27	75. 52	1·10	24. 45	29. 35	0·32	86. 53	94. 8	0·25	66. 38	76. 18
February	3·09	2·52	71. 11	74. 41	1·49	11. 20	18. 20	0·62	47. 18	57. 48	0·52	1. 50	15. 50
March	3·27	2·69	51. 38	55. 46	2·05	17. 55	22. 11	1·15	19. 42	26. 6	0·41	25. 1	33. 33
April	4·64	3·32	38. 14	38. 15	2·67	32. 33	32. 35	1·32	34. 34	34. 37	0·37	48. 18	48. 22
May	4·24	3·13	42. 2	41. 10	2·47	50. 55	49. 11	0·89	61. 33	58. 57	0·17	94. 52	91. 24
June	5·03	3·90	34. 32	34. 38	2·52	48. 19	48. 31	0·49	69. 44	70. 2	0·07	113. 38	114. 2
July	4·71	4·27	37. 45	39. 7	2·59	43. 48	46. 32	0·99	38. 34	42. 40	0·17	1. 26	6. 54
August	4·13	3·27	43. 9	44. 5	2·46	46. 10	48. 2	1·10	54. 14	57. 2	0·25	45. 16	49. 0
September	3·92	3·33	52. 52	51. 35	2·55	43. 37	41. 3	1·26	56. 47	52. 56	0·55	61. 43	56. 35
October	3·66	2·82	55. 25	51. 54	2·33	33. 44	26. 42	1·28	43. 6	32. 33	0·64	75. 43	61. 39
November	2·30	2·49	64. 19	60. 40	1·05	27. 57	20. 39	0·82	56. 30	45. 33	0·29	77. 16	62. 40
December	2·10	1·92	71. 45	70. 47	0·80	15. 44	13. 48	0·42	73. 22	70. 28	0·40	44. 45	40. 53
For the Year	3·01	2·88	50. 3	50. 3	1·96	36. 20	36. 20	0·86	48. 23	48. 23	0·30	50. 30	50. 30
						HORIZONTAL FORCE.							
			° ′	° ′		° ′	° ′		° ′	° ′		° ′	° ′
January	65·7	19·6	267. 22	269. 47	21·7	285. 3	289. 53	12·9	335. 33	342. 48	7·0	8. 53	18. 33
February	73·8	26·7	260. 51	264. 21	29·0	271. 31	278. 31	16·7	323. 25	333. 55	9·4	343. 46	357. 46
March	124·7	66·1	287. 25	289. 33	33·0	291. 18	295. 34	21·7	316. 50	323. 14	7·1	331. 11	339. 43
April	156·6	89·7	301. 1	301. 2	51·2	284. 58	285. 0	19·5	307. 19	307. 22	6·9	25. 47	25. 51
May	141·7	103·6	320. 3	319. 11	42·2	307. 1	305. 17	3·9	330. 43	328. 7	7·8	53. 55	50. 27
June	164·0	116·5	322. 8	322. 14	39·0	312. 50	313. 2	12·5	42. 28	42. 46	7·1	8. 28	8. 52
July	200·2	127·8	322. 16	323. 38	59·1	323. 5	325. 49	13·7	13. 9	17. 15	5·1	43. 53	49. 21
August	158·1	92·7	309. 43	310. 39	37·3	322. 12	324. 4	20·0	354. 51	357. 39	6·4	0. 0	3. 44
September	158·8	84·9	296. 44	295. 27	42·4	307. 16	304. 42	22·9	356. 8	352. 17	12·6	25. 43	20. 35
October	161·4	81·2	289. 28	285. 57	50·0	300. 16	293. 14	33·0	340. 56	330. 23	6·9	26. 25	12. 21
November	109·0	56·2	278. 29	274. 50	35·2	287. 42	280. 24	19·4	351. 41	340. 44	6·6	36. 56	22. 20
December	58·5	18·5	258. 55	257. 57	25·6	290. 41	288. 45	11·2	334. 13	331. 19	9·1	22. 41	18. 49
For the Year	125·3	69·9	303. 29	303. 29	37·4	300. 54	300. 54	15·9	342. 26	342. 26	7·1	16. 59	16. 59
						VERTICAL FORCE.							
			° ′	° ′		° ′	° ′		° ′	° ′		° ′	° ′
January	8·6	8·9	349. 15	351. 40	3·0	269. 21	274. 11	0·8	273. 24	280. 39	1·5	304. 44	314. 24
February	21·2	13·7	350. 17	353. 47	10·6	260. 21	267. 21	3·7	268. 50	279. 20	2·2	238. 51	252. 51
March	28·3	19·6	350. 57	353. 5	14·3	270. 28	274. 44	8·5	257. 26	263. 50	2·1	277. 58	286. 30
April	38·9	17·7	308. 22	308. 23	17·6	271. 25	271. 27	5·7	268. 20	268. 23	1·8	306. 36	306. 40
May	44·5	18·1	299. 41	298. 49	19·1	264. 34	262. 50	6·1	282. 27	279. 51	0·8	340. 58	337. 30
June	42·5	20·8	309. 6	309. 12	19·8	262. 14	262. 26	4·7	252. 28	252. 46	0·4	78. 41	79. 5
July	45·3	24·3	325. 22	326. 44	22·9	261. 8	263. 52	8·1	265. 22	269. 28	1·4	11. 59	17. 27
August	34·0	11·3	301. 15	302. 11	16·9	274. 40	276. 32	6·5	274. 28	277. 16	0·3	223. 53	227. 37
September	33·0	14·1	316. 26	315. 9	13·3	267. 25	264. 51	8·0	271. 41	267. 50	2·3	302. 2	296. 54
October	28·7	7·8	317. 18	313. 47	12·9	264. 6	257. 4	7·7	260. 47	250. 14	3·7	290. 50	276. 46
November	16·1	17·7	4. 2	0. 23	5·3	275. 13	267. 55	3·7	297. 22	286. 25	1·4	308. 40	294. 4
December	11·1	11·4	358. 47	357. 49	2·1	301. 7	299. 11	1·1	301. 36	298. 42	1·5	267. 13	263. 21
For the Year	27·5	14·3	328. 13	328. 13	13·1	266. 58	266. 58	5·3	269. 6	269. 6	1·3	293. 20	293. 20

TABLE XVII.—SEPARATE RESULTS of OBSERVATIONS of MAGNETIC DIP made in the Year 1883.

Day and Hour, 1883.	Needle.	Magnetic Dip.	Observer.	Day and Hour, 1883.	Needle.	Magnetic Dip.	Observer.	Day and Hour, 1883.	Needle.	Magnetic Dip.	Observer.
d h		° ′ ″		d h		° ′ ″		d h		° ′ ″	
Jan. 4. 2	B 1	67.32.28	N	May 5. 1	C 1	67.30.30	N	Sept. 7. 2	C 2	67.30.52	N
5. 2	C 1	67.34.16	N	10.23	D 1	67.33.21	N	14. 0	C 1	67.30.57	N
9. 1	B 2	67.32.32	N	11. 0	D 2	67.31.27	N	14. 1	D 1	67.31.33	N
19. 1	D 1	67.33.54	N	15. 1	C 2	67.30.21	N	18. 0	D 2	67.33.18	N
22. 3	D 2	67.33.41	N	17. 0	B 1	67.28.57	N	19. 1	B 2	67.31.46	N
25. 0	C 2	67.35.34	N	23. 1	B 1	67.29.56	N	19. 2	C 2	67.31. 1	N
26. 1	B 1	67.36. 3	N	28. 2	B 2	67.30.48	N	26. 0	B 1	67.32.27	N
26. 2	D 1	67.35. 2	N	29.23	C 1	67.29.54	N	26. 2	C 1	67.31.42	N
29.23	D 2	67.34.11	N	30. 1	C 2	67.29.54	N	26.23	D 1	67.32.13	N
30. 1	B 2	67.32.41	N	30. 2	D 1	67.29.41	N	28. 1	B 2	67.31.29	N
30. 2	B 1	67.32.11	N	31. 0	D 2	67.31.11	N	28. 2	D 2	67.32.10	N
31. 1	C 2	67.34.15	N	31. 1	B 2	67.29.44	N	29. 1	B 1	67.32.14	N
Feb. 3. 1	C 1	67.35.43	N	June 7. 1	C 1	67.30. 0	N	Oct. 5. 2	C 2	67.28.53	N
9. 2	C 2	67.34.21	N	8. 0	D 1	67.30.41	N	10. 1	D 1	67.30. 5	N
15. 0	B 1	67.32.56	N	8. 1	D 2	67.30. 5	N	18. 2	C 1	67.31.16	N
20.23	B 2	67.30.31	N	13. 1	C 2	67.30.47	N	19. 1	B 1	67.29.55	N
21. 0	C 1	67.33.33	N	13. 2	D 1	67.30.52	N	19. 2	D 2	67.31.26	N
21. 2	D 1	67.33.15	N	20. 0	B 1	67.29.58	N	26. 0	B 2	67.32.10	N
23. 2	D 2	67.35.26	N	20. 2	B 2	67.28.58	N	26. 2	D 1	67.30.50	N
24. 1	D 1	67.34.32	N	21. 2	D 2	67.29.50	N	30. 0	C 2	67.31.36	N
28. 1	B 2	67.33.37	N	27. 0	C 1	67.32.55	N	30.23	B 1	67.30.17	N
28. 2	D 2	67.34.36	N	27. 2	C 2	67.29.47	N	31. 0	B 2	67.30.21	N
				27.23	B 2	67.29.42	N	31. 2	C 1	67.29.44	N
				28. 1	C 1	67.30.28	N				
Mar. 7. 0	C 2	67.33.26	N	July 5. 1	C 2	67.31.10	N	Nov. 2. 1	D 2	67.32.15	N
8. 2	D 2	67.34. 1	N	6. 2	D 1	67.29. 1	N	7. 2	C 2	67.31.20	N
16. 1	C 1	67.33.59	N	12. 1	D 2	67.30.36	N	15. 1	C 1	67.33.21	N
16. 2	D 1	67.34.53	N	17. 1	C 1	67.30.39	N	17. 1	D 1	67.31.55	N
21. 1	B 1	67.31.33	N	17. 2	D 1	67.31. 5	N	20. 0	B 1	67.33. 4	N
21.23	B 2	67.31.48	N	19. 1	B 1	67.30.17	N	20. 1	B 2	67.31.45	N
22. 0	D 2	67.33.50	N	24. 1	B 2	67.28.35	N	27. 0	C 2	67.32. 6	N
28. 1	C 2	67.33.22	N	27. 1	C 2	67.30. 0	N	27. 1	C 1	67.31.25	N
30. 0	B 1	67.33.24	N	27. 2	C 1	67.29.59	N	28. 0	D 2	67.33.32	N
30. 2	D 1	67.33.43	N	28. 1	D 1	67.31.17	N	29. 2	B 1	67.31.32	N
31. 1	C 1	67.33. 3	N	31. 1	B 1	67.30.36	N	30. 1	B 2	67.31.37	N
Apr. 5. 1	C 1	67.34.36	N	Aug. 13.23	B 2	67.30. 9	N	Dec. 6. 2	D 2	67.32. 0	N
12. 0	C 2	67.33.26	N	14. 1	B 1	67.29.40	N	11. 2	D 1	67.30.54	N
12. 1	D 2	67.33.33	N	15. 2	C 1	67.29.36	N	14. 1	C 2	67.30.37	N
13. 0	D 1	67.33.14	N	15. 3	D 1	67.28.18	N	19. 0	B 1	67.31.27	N
13. 2	C 1	67.31.38	N	17. 2	C 2	67.29. 3	N	19. 1	C 2	67.31.37	N
20. 2	B 1	67.28.15	N	22. 1	D 1	67.30.40	N	19. 2	C 1	67.31.23	N
25. 1	D 1	67.28.41	N	22. 2	D 2	67.30. 2	N	21. 1	B 2	67.30.26	N
26. 1	C 2	67.29.39	N	23. 1	C 2	67.29.57	N	21. 2	D 2	67.31.53	N
				24. 2	C 1	67.30.11	N	28. 1	B 2	67.31.15	N
				30. 0	B 1	67.30.41	N				
				30. 1	B 2	67.30. 0	N				
				31. 0	D 1	67.29.15	N				
				31. 1	D 2	67.30.23	N				

The needles B 1 and B 2 are 9 inches in length; C 1 and C 2, 6 inches; and D 1 and D 2, 3 inches.
The initial N is that of Mr. Nash.

TABLE XVIII.—MONTHLY and YEARLY MEANS of MAGNETIC DIP in the YEAR 1883.

Monthly Means of Magnetic Dip.

Month, 1883.	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. 33. 34	3	67. 32. 37	2	67. 34. 16	1
February	67. 32. 56	1	67. 32. 4	2	67. 34. 38	2
March	67. 32. 29	2	67. 31. 48	1	67. 33. 31	2
April	67. 28. 15	1	....	..	67. 33. 7	2
May	67. 29. 27	2	67. 30. 16	2	67. 30. 12	2
June	67. 29. 58	1	67. 29. 20	2	67. 31. 8	3
July	67. 30. 27	2	67. 28. 35	1	67. 30. 19	2
August	67. 30. 11	2	67. 30. 4	2	67. 29. 54	2
September	67. 32. 21	2	67. 31. 37	2	67. 31. 20	2
October	67. 30. 6	2	67. 31. 16	2	67. 30. 30	2
November	67. 32. 18	2	67. 31. 41	2	67. 32. 23	2
December	67. 31. 27	1	67. 30. 51	2	67. 31. 23	1
Means	67. 31. 20	21	67. 31. 0	20	67. 31. 46	23

Month, 1883.	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. 34. 55	2	67. 34. 28	2	67. 33. 56	2
February	67. 34. 21	1	67. 33. 54	2	67. 35. 1	2
March	67. 33. 24	2	67. 34. 18	2	67. 33. 55	2
April	67. 31. 33	2	67. 30. 57	2	67. 33. 33	1
May	67. 30. 7	2	67. 31. 31	2	67. 31. 19	2
June	67. 30. 17	2	67. 30. 46	2	67. 29. 58	2
July	67. 30. 35	2	67. 30. 28	3	67. 30. 36	1
August	67. 29. 30	2	67. 29. 24	3	67. 30. 13	2
September	67. 30. 56	2	67. 31. 53	2	67. 32. 44	2
October	67. 30. 15	2	67. 30. 27	2	67. 31. 26	1
November	67. 31. 43	2	67. 31. 55	1	67. 32. 53	2
December	67. 31. 7	2	67. 30. 54	1	67. 31. 56	2
Means	67. 31. 26	23	67. 31. 37	24	67. 32. 21	21

The monthly means have been formed without reference to the hour at which the observation on each day was made.

In combining the monthly results, to form annual means, weights have been given proportional to the number of observations.

COLLECTED YEARLY MEANS of MAGNETIC DIP for each of the NEEDLES, and GENERAL MEAN for the Year 1883.

Lengths of the several Sets of Needles.	Needles.	Number of Observations with each Needle.	Mean Yearly Dip from Observations with each Needle.	Mean Yearly Dip from each Set of Needles.	Mean Yearly Dip from all the Sets of Needles.
			° ′ ″	° ′ ″	° ′ ″
9-inch Needles	B 1 B 2	21 20	67. 31. 20 67. 31. 0	67. 31. 10	67. 31. 35
6-inch Needles	C 1 C 2	23 23	67. 31. 46 67. 31. 26	67. 31. 36	
3-inch Needles	D 1 D 2	24 21	67. 31. 37 67. 32. 21	67. 31. 59	

TABLE XIX.—DETERMINATION OF THE ABSOLUTE HORIZONTAL MAGNETIC FORCE IN THE YEAR 1883.

Abstract of the Observations of Deflexion and Vibration.

Month and Day, 1883.		Distances of Centres of Magnets.	Temperature.	Observed Deflexion.	Mean of the Times of Vibration of Deflecting Magnet.	Number of Vibrations.	Temperature.	Observer.
		ft.	°	° ' "	s		°	
January	31	1·0 1·3	45·0	10. 40. 52 4. 50 21	5·648 5·643	100 100	47·1 45·1	N
February	22	1·0 1·3	52·0	10. 40. 10 4. 50. 4	5·659 5·661	100 100	52·3 52·3	N
March	29	1·0 1·3	50·7	10. 38. 19 4. 49. 44	5·649 5·658	100 100	50·1 51·9	N
April	24	1·0 1·3	44·4	10. 38. 11 4. 49. 44	5·643 5·639	100 100	44·8 45·4	N
May	29	1·0 1·3	63·0	10. 37. 29 4. 49. 19	5·654 5·656	100 100	63·5 63·9	N
June	26	1·0 1·3	63·4	10. 37. 9 4. 48. 50	5·658 5·655	100 100	64·1 63·6	N
July	26	1·0 1·3	60·9	10. 37. 16 4. 49. 0	5·673 5·658	100 100	61·2 62·1	N
August	29	1·0 1·3	66·8	10. 35. 42 4. 48. 38	5·663 5·657	100 100	66·8 66·8	N
September	27	1·0 1·3	61·0	10. 36. 52 4. 48. 50	5·661 5·662	100 100	61·5 61·7	N
October	30	1·0 1·3	53·6	10. 36. 34 4. 48. 40	5·653 5·657	100 100	53·8 53·7	N
November	28	1·0 1·3	54·6	10. 37. 7 4. 49. 1	5·671 5·668	100 100	54·2 54·7	N
December	20	1·0 1·3	48·4	10. 36. 36 4. 48. 46	5·658 5·659	100 100	47·3 47·7	N

The deflecting magnet is placed on the east side of the suspended magnet, with its marked pole alternately east and west, and on the west side with its marked pole also alternately east and west: the deflexion given in the table above is the mean of the four deflexions observed in these positions of the magnets.

The initial N is that of Mr. Nash.

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

Computation of the Values of Absolute Measure of Horizontal Force.

Month and Day, 1883.		In English Measure.									In Metric Measure.
		Apparent Value of A_1.	Apparent Value of A_2.	Apparent Value of P.	Mean Value of P.	Log. $\frac{m}{X}$	Adopted Time of Vibration of Deflecting Magnet.	Log. m X.	Value of m.	Value of X.	Value of X.
							s				
January	31	0·09282	0·09280	+0·00034	+0·00020	8·96752	5·6455	0·15635	0·3647	3·930	1·812
February	22	0·09282	0·09282	+0·00006		8·96759	5·6600	0·15454	0·3640	3·922	1·808
March	29	0·09254	0·09270	−0·00417	−0·00294	8·96770	5·6535	0·15551	0·3644	3·926	1·810
April	24	0·09242	0·09260	−0·00474		8·96719	5·6410	0·15705	0·3649	3·935	1·814
May	29	0·09262	0·09276	−0·00389		8·96804	5·6550	0·15576	0·3647	3·925	1·810
June	26	0·09257	0·09261	−0·00096		8·96759	5·6565	0·15553	0·3644	3·926	1·810
July	26	0·09255	0·09262	−0·00192		8·96756	5·6655	0·15447	0·3639	3·922	1·808
August	29	0·09242	0·09260	−0·00485		8·96720	5·6600	0·15564	0·3643	3·928	1·811
September	27	0·09249	0·09257	−0·00209		8·96730	5·6615	0·15506	0·3641	3·925	1·810
October	30	0·09234	0·09240	−0·00169		8·96653	5·6550	0·15554	0·3639	3·931	1·813
November	28	0·09243	0·09253	−0·00259		8·96705	5·6695	0·15334	0·3632	3·919	1·807
December	20	0·09226	0·09235	−0·00248		8·96623	5·6585	0·15441	0·3633	3·927	1·811
Means		..	..	..	..	..	..	..	..	3·926	1·810

The value of X in English Measure is referred to the Foot-Grain-Second unit, and in Metric Measure to the Millimètre-Milligramme-Second unit. To obtain X in the Centimètre-Gramme-Second (C.G.S.) unit, the values in the last column of the table must be divided by 10.

ROYAL OBSERVATORY, GREENWICH.

MAGNETIC DISTURBANCES

AND

EARTH CURRENTS.

1883.

MAGNETIC DISTURBANCES in DECLINATION, HORIZONTAL FORCE, and VERTICAL FORCE, and EARTH CURRENTS; recorded at the ROYAL OBSERVATORY, GREENWICH, in the Year 1883.

The following notes give a brief description of all magnetic movements (superposed on the ordinary diurnal movement) exceeding 3′ in Declination, 0·001 in Horizontal Force, or 0·0003 in Vertical Force, as taken from the photographic records of the respective Magnetometers. The movements in Horizontal and Vertical Force are expressed in parts of the whole Horizontal and Vertical Force respectively. When any one of the three elements is not specifically mentioned it is to be understood that the movement, if any, was insignificant. Any failure or want of register is specially indicated.

The term "wave" is used to indicate a movement in one direction and return; "double wave" a movement in one direction and return with continuation in the opposite direction and return; "two successive waves" consecutive wave movements in the same direction; "fluctuations" a number of movements in both directions. The extent and direction of the movement are indicated in brackets, + denoting an increase and − a decrease of the magnetic element. In the case of fluctuations the sign ± denotes positive and negative movements of generally equal extent.

In all cases of magnetic movement the earth-current photographs show corresponding earth currents, but it has not been thought necessary to refer to these in detail.

Magnetic movements which do not admit of brief description in this way are exhibited with their corresponding earth currents on accompanying plates.

The time is Greenwich Mean Solar Time (Astronomical Reckoning, commencing at noon).

1883.

January 1. 0^{h} to 3^{h} Fluctuations in Dec. (± 2′). 1^{h} to $2\frac{1}{2}^{h}$ Wave in H.F. (− ·0025). $6\frac{1}{2}^{h}$ to 9^{h} Fluctuations in Dec. (± 2′): in H.F. small.

2. $5\frac{1}{2}^{h}$ to 7^{h} Wave in Dec. (− 5′).

4. 14^{h} to 16^{h} Double wave in Dec. (+ 2′ to − 2′).

5. $8\frac{1}{2}^{h}$ to 16^{h} Wave in Dec. (− 12′), followed by fluctuations (± 2′): fluctuations in H.F. (± ·001), with wave at 13^{h} (+ ·003).

6. Waves in Dec. 5^{h} to $6\frac{1}{2}^{h}$ (− 10′), 8^{h} to 9^{h} (− 5′). Fluctuations in H.F. 1^{h} to 11^{h} (± ·002).

7. No register of Dec. or H.F.

8. $6\frac{1}{2}^{h}$ Wave in Dec. (− 8′): in H.F. (+ ·0015).

9. $6\frac{1}{2}^{h}$ Wave in Dec. (− 8′): in H.F. (− ·0015).

10. 9^{h} to $10\frac{1}{2}^{h}$ Wave in Dec. (− 4′), followed by small fluctuations to 17^{h}.

16. 13^{h} Wave in H.F. (+ ·0015).

17. 4^{h} Wave in Dec. (− 15′), followed by small fluctuations: in H.F. small fluctuations throughout the day.

18. $6\frac{1}{2}^{h}$ to 8^{h} Sharp wave in Dec. (− 13′), followed till 14^{h} by small fluctuations. 5^{h} to 14^{h} Small fluctuations in H.F. (± ·001).

20. $6\frac{1}{2}^{h}$ to 8^{h} Wave in Dec. (− 5′): in H.F. (+ ·001).

21. No register of Dec. or H.F.

22. $7\frac{3}{4}^{h}$ to $10\frac{1}{2}^{h}$ Wave in Dec. (− 6′): fluctuations in H.F. (± ·001).

24. 5^{h} to 15^{h} Fluctuations in Dec. (± 4′): in H.F. (± ·001), with wave at $7\frac{1}{4}^{h}$ (− ·003).

25, 26. See Plate I.

27. 3^{h} to 16^{h} Fluctuations in Dec. (± 3′): in H.F. (± ·001).

28. No register of Dec. or H.F.

29. 4^{h} to 13^{h} Fluctuations in Dec. (± 2′). 8^{h} to 13^{h} Fluctuations in H.F. (± ·0005).

31. Waves in Dec. at 8^{h} (− 6′); at 13^{h} (− 5′).

February 1, 2, 3, 4. See Plates I. and II.

5. $4\frac{1}{2}^{h}$ to $6\frac{1}{2}^{h}$ Wave in Dec. (− 3′): in H.F. (− ·001). $9\frac{3}{4}^{h}$ to $11\frac{1}{2}^{h}$ Wave in Dec. (− 8′): in H.F. (+ ·002), followed by small fluctuations to 15^{h}.

6. Waves in Dec. $3\frac{3}{4}^{h}$ to $6\frac{1}{2}^{h}$ (− 12′); 8^{h} to $9\frac{1}{2}^{h}$ (− 13′). $3\frac{1}{2}^{h}$ to $9\frac{1}{2}^{h}$ Fluctuations in H.F. (± ·001).

9. 14^{h} Wave in Dec. (+ 4′).

10. 3^{h} Double wave in Dec. (− 2′ to + 2′): in H.F. (− ·0005 to + ·0005).

14. 0^{h} to $2\frac{1}{2}^{h}$ Fluctuations in Dec. (± 3′): in H.F. (± ·001). $5\frac{1}{2}^{h}$ to $6\frac{1}{2}^{h}$ Wave in Dec. (− 3′): in H.F. (− ·002). 10^{h} to 13^{h} Wave in Dec. (− 8′): fluctuations in H.F. (± ·0007).

15. 11^{h} to 17^{h} Fluctuations in Dec. (± 4′): in H.F. (± ·001): in V.F. (± ·0002).

1883.
February 17. Waves in Dec. $4\frac{1}{2}^{\rm h}$ to $6^{\rm h}$ (− 3′) ; $8^{\rm h}$ to $14^{\rm h}$ (− 10′), with superposed fluctuations (± 2′). Waves in H.F. $0\frac{1}{2}^{\rm h}$ to $2^{\rm h}$ (− ·0015) ; $4^{\rm h}$ to $6^{\rm h}$ (− ·0015) ; $8^{\rm h}$ to $14^{\rm h}$ (− ·002), with small superposed fluctuations.
18. $16^{\rm h}$ to $17^{\rm h}$ Wave in Dec. (+ 7′) : in H.F. (+ ·001).
19. $12\frac{1}{2}^{\rm h}$ to $16^{\rm h}$ Fluctuations in Dec. (± 2′). $13\frac{1}{2}^{\rm h}$ Wave in H.F. (+ ·0015).
20. $0^{\rm h}$ to $2^{\rm h}$ Fluctuations in Dec. (± 3′) : in H.F. small. $4^{\rm h}$ to $5^{\rm h}$ Wave in Dec. (− 5′) : in H.F. (− ·0015).
21. $8\frac{1}{2}^{\rm h}$ to $13^{\rm h}$ Wave in Dec. (− 10′), with superposed fluctuations (± 3′) : in H.F. (− ·002) with small superposed fluctuations. $13^{\rm h}$ to $18^{\rm h}$ Fluctuations in Dec. (± 2′).
22. See Plate III.
23. $0^{\rm h}$ to $16^{\rm h}$ Fluctuations in Dec. (± 3′) : in H.F. (± ·001).
24. See Plate III.
25. Small movements in Dec. H.F. and V.F. throughout the day.
26. $6\frac{1}{4}^{\rm h}$ Wave in Dec. (− 8′). $5\frac{3}{4}^{\rm h}$ Wave in H.F. (− ·0015).
27, 28. March 1, 2. See Plates IV. and V.
March 3. $1^{\rm h}$ to $13^{\rm h}$ Fluctuations in Dec. (± 4′) : in H.F. (± ·002) : in V.F. (± ·0002).
4. $3^{\rm h}$ to $17^{\rm h}$ Fluctuations in Dec. (± 3′) : in H.F. (± ·0005).
6. $3\frac{3}{4}^{\rm h}$ Sharp movement in Dec. (+ 3′) : in H.F. (+ ·0025) : in V.F. (+ ·0002). Waves in Dec. $7^{\rm h}$ to $9\frac{1}{4}^{\rm h}$ (− 12′); $11\frac{1}{2}^{\rm h}$. to $12\frac{3}{4}^{\rm h}$. (− 10′) ; $14\frac{1}{4}^{\rm h}$ to $15\frac{3}{4}^{\rm h}$ (− 7′) ; $17\frac{1}{2}^{\rm h}$ to $18\frac{1}{4}^{\rm h}$ (+ 5′). Wave in H.F. $11\frac{1}{2}^{\rm h}$ to $13\frac{1}{2}^{\rm h}$ (+ ·003). Fluctuations in H.F. $17^{\rm h}$ to $21^{\rm h}$ (± ·001).
7. $5^{\rm h}$ to $6\frac{1}{4}^{\rm h}$ Wave in Dec. (− 6′) : in H.F. (− ·0015). $13^{\rm h}$ to $22^{\rm h}$ Fluctuations in Dec. (± 4′). $8\frac{1}{2}^{\rm h}$ to $10\frac{1}{2}^{\rm h}$ and $13^{\rm h}$ to $18^{\rm h}$ Fluctuations in H.F. (± ·001).
8. Register of Dec. not trustworthy. $7\frac{1}{2}^{\rm h}$ to $17^{\rm h}$ Fluctuations in H.F. (± ·0015). $8^{\rm h}$ to $10^{\rm h}$ Fluctuations in V.F. (± ·0002).
9. Register of Dec. not trustworthy.
10. $9\frac{1}{4}^{\rm h}$. to $10\frac{1}{4}^{\rm h}$ Double wave in Dec. (+ 4′ to − 6′) : in H.F. (− ·0003 to + ·001).
12. $17^{\rm h}$ to $21^{\rm h}$ Wave in Dec. (+ 12′), with superposed fluctuations : fluctuations in H.F. (± ·0005) : in V.F. (± ·0003).
14. $1^{\rm h}$. Wave in H.F. (− ·001). $7\frac{1}{4}^{\rm h}$ Wave in Dec. (− 3′) : in H.F. (− ·001) : in V.F. (− ·0001).
17. $2\frac{3}{4}^{\rm h}$. Sharp wave in Dec. (− 3′). $10^{\rm h}$ to $13^{\rm h}$ Fluctuations in Dec. (± 2′) : in H.F. (± ·0007).
20. Register of Dec. not trustworthy. $11^{\rm h}$ to $13^{\rm h}$ and $16^{\rm h}$ to $19^{\rm h}$ Fluctuations in H.F. (± ·0007).
21. Register of Dec. not trustworthy. $10^{\rm h}$ to $12^{\rm h}$ Wave in H.F. (+ ·0035), with small fluctuations throughout the day. $14^{\rm h}$ to $16^{\rm h}$ Wave in V.F. (− ·0007).
22. $6^{\rm h}$ to $7^{\rm h}$ Wave in Dec. (− 11′) : double wave in H.F. (− ·002 to + ·003) : in V.F. (− ·0002 to + ·0002). $10\frac{1}{4}^{\rm h}$ Wave in Dec. (+ 3′) : in H.F. (+ ·001) : in V.F. (− ·0001).
23. $7^{\rm h}$ Wave in Dec. (− 5′), followed by small fluctuations to $11^{\rm h}$. $1^{\rm h}$ to $11^{\rm h}$ Fluctuations in H.F. (± ·0005).
24. $10^{\rm h}$ to $11^{\rm h}$ Wave in H.F. (+ ·0015).
26. $8^{\rm h}$ to 28. $8^{\rm h}$. See Plates V. and VI.
28. $8^{\rm h}$ to $10^{\rm h}$ Fluctuations in Dec. (± 2′), after $10^{\rm h}$ register of Dec. not trustworthy. $8^{\rm h}$ to $18^{\rm h}$ Fluctuations in H.F. (± ·0015) : in V.F. (± ·0002).
29. Register of Dec. not trustworthy. $3^{\rm h}$ to $5\frac{1}{2}^{\rm h}$ Double wave in H.F. (− ·0025 to + ·0025). $8^{\rm h}$ to $17^{\rm h}$ Fluctuations in H.F. (± ·0015).
April 2. $5^{\rm h}$ Wave in Dec. (− 3′) : in H.F. (+ ·001).
2. $18^{\rm h}$ to 4. $18^{\rm h}$. See Plates VI. and VII.
5. $4^{\rm h}$ to $11^{\rm h}$ Fluctuations in Dec. (± 3′), with wave at $10\frac{1}{2}^{\rm h}$ (− 9′). $1^{\rm h}$ to $12^{\rm h}$ Fluctuations in H.F. (± ·0015) : in V.F. (± ·0002), with wave at $10\frac{1}{2}^{\rm h}$ (− ·0004).
6. $7^{\rm h}$ Wave in Dec. (− 5′) : in H.F. (+ ·001).
8. $7^{\rm h}$ Wave in Dec. (− 5′) : double wave in H.F. (− ·0006 to + ·0008). $6\frac{3}{4}^{\rm h}$ Wave in V.F. (− ·0002).
12. $10\frac{1}{4}^{\rm h}$ Wave in Dec. (− 5′). $6^{\rm h}$ to $11^{\rm h}$ Fluctuations in H.F. (± ·0005).
13. $6^{\rm h}$ to $8^{\rm h}$ Wave in Dec. (− 6′) : fluctuations in H.F. (± ·001).
15. $10^{\rm h}$ to $15^{\rm h}$ Double wave in Dec. (− 4′ to + 4′).
18. $8^{\rm h}$ to $20^{\rm h}$ Fluctuations in Dec. (± 4′) : in H.F. (± ·001).
19. See Plate VII.
20. $5\frac{1}{2}^{\rm h}$. to $7^{\rm h}$ Wave, steep at commencement, in Dec. (− 10′) : in H.F. (+ ·0035). $5\frac{1}{2}^{\rm h}$ to $6^{\rm h}$ Wave in V.F. (+ ·0003).

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April 24, 25. See Plates VII. and VIII.
26. 4^h to 16^h Fluctuations in Dec. (± 4′): in H.F. (± ·001): in V.F. small.
30. 7^h to 11^h Fluctuations in Dec. (± 3′): in H.F. (± ·0005).
May 1. 11^h to 17^h Fluctuations in Dec. (± 4′): in H.F. (± ·0005): in V.F. small.
2. 7^h to 13^h Fluctuations in Dec. (± 3′): in H.F. (± ·001).
4. $10\frac{1}{2}^h$ to 12^h Double wave in Dec. (+ 2′ to − 3′).
6. 0^h to 6^h Fluctuations in H.F. (± ·001).
8. 10^h to 12^h Wave in Dec. (− 6′). 0^h to 6^h Fluctuations in H.F. (± ·0007).
15. $23\frac{1}{2}^h$ Wave in H.F. (+ ·0015).
16. 2^h to 7^h Fluctuations in Dec. (± 2′): in H.F. (± ·001): in V.F. (± ·0002).
17. $2\frac{3}{4}^h$ to 4^h Fluctuations in Dec. (± 1′): in H.F. (± ·001). $11\frac{1}{2}^h$ to $12\frac{1}{2}^h$ Wave in Dec. (+ 5′): in H.F. (+ ·0025): in V.F. (+ ·0002).
20, 21. See Plate VIII.
22. 10^h to 18^h Fluctuations in Dec. (± 5′). 4^h to 18^h Fluctuations in H.F. (± ·0015).
23. $4\frac{1}{2}^h$ Wave in Dec. (− 4′): in H.F. (+ ·002), preceded by fluctuations (± ·0007).
24. $8\frac{1}{2}^h$ Wave in Dec. (− 3′): in H.F. (+ ·002). $11\frac{1}{2}^h$ Wave in Dec. (− $1\frac{1}{2}$′): in H.F. (+ ·0007).
26. 7^h to $9\frac{1}{2}^h$ Double wave in Dec. (− 3′ to + 2′). 3^h to 6^h Fluctuations in H.F. (± ·001).
27. 7^h to 15^h Fluctuations in Dec. (± 3′): in H.F. (± ·001).
29. 3^h to 4^h Double wave in H.F. (+ ·001 to − ·0006).
30. 8^h to 20^h Fluctuations in Dec. (± 3′). $8\frac{3}{4}^h$ Wave in H.F. (+ ·0015). $16\frac{1}{2}^h$ to 20^h Fluctuations in H.F. (± ·0006).
31. 1^h to $4\frac{1}{2}^h$ Fluctuations in H.F. (± ·0007).
June 1. 6^h to 20^h Fluctuations in Dec. (± 4′): in H.F. (± ·001).
2. 0^h to 6^h No register of Dec. H.F. or V.F. 6^h to 16^h Fluctuations in Dec. (± 3′): in H.F. (± ·001): in V.F. (± ·0002).
3. 1^h to 6^h Fluctuations in H.F. (± ·0006).
5. 17^h to 6. 8^h Fluctuations in Dec. (± 2′): in H.F. (± ·002): in V.F. small.
6. 8^h to 7. 4^h No register of Dec. H.F. or V.F.
7. 7^h to $8\frac{1}{2}^h$ Wave in Dec. (− 4′): double wave in H.F. (− ·0005 to + ·0005).
8. 2^h to $2\frac{3}{4}^h$ Wave in Dec. (+ 2′): in H.F. (+ ·002): in V.F. small. 6^h to 20^h Fluctuations in Dec. (± 2′): in H.F. (± ·0005).
9. $8\frac{1}{2}^h$ Wave in Dec. (− 3′). 2^h to 9^h Fluctuations in H.F. (± ·001).
10. $9\frac{1}{4}^h$ to $10\frac{1}{2}^h$ Wave in Dec. (+ 3′). 6^h to 10^h Fluctuations in H.F. (± ·0005).
13. 11^h to 15^h Fluctuations in Dec. (± $1\frac{1}{2}$′). 4^h to 13^h Fluctuations in H.F. (± ·0005).
15. 3^h to 8^h Fluctuations in H.F. (± ·0005).
16. 14^h to $15\frac{3}{4}^h$ Wave in Dec. (+ 11′), followed till 20^h by fluctuations (± 3′). 12^h to 20^h Fluctuations in H.F. (± ·0005): in V.F. (± ·0003).
17. Fluctuations throughout the day, in Dec. (± 7′): in H.F. (± ·002): in V.F. (± ·0002).
18. 4^h to 19^h Fluctuations in Dec. (± 3′). 0^h to 20^h Fluctuations in H.F. (± ·0015): in V.F. small.
19. 1^h to 20^h Fluctuations in H.F. (± ·001).
20. 8^h to 15^h Fluctuations in Dec. (± 4′). 3^h to 15^h Fluctuations in H.F. (± ·0005). 13^h to 15^h Wave in V.F. (− ·0003).
21. No register of Dec.
22. No register of Dec. Fluctuations throughout the day in H.F. (± ·0015): in V.F. (± ·0002).
23. 8^h Wave in Dec. (− 3′); after 13^h no register of Dec. 8^h Wave in H.F. (+ ·001), preceded and followed from 0^h to 19^h by fluctuations (± ·002).
24. No register of Dec. 2^h to 16^h Fluctuations in H.F. (± ·0005).
25. 4^h to 9^h Fluctuations in Dec. (± 2′): in H.F. (± ·001).
26. 2^h to 12^h Fluctuations in H.F. (± ·001).
26. 17^h to 27. 17^h Fluctuations in Dec. (± 5′): in H.F. (± ·003): in V.F. (± ·0001).
29. 16^h to July 1. 16^h. See Plate IX.
July 2. $14\frac{3}{4}^h$ Sharp wave in Dec. (+ 3′): in H.F. (+ ·0008), preceded by fluctuations from 1^h (± ·0005): in V.F. (+ ·0001).

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July 3. $2\frac{1}{2}^{h}$ to 9^{h} Fluctuations in H.F. (± ·0007).

5. 12^{h} to 16^{h} Fluctuations in Dec. (± 3′): in H.F. (± ·0007): in V.F. (± ·00015). $20\frac{1}{2}^{h}$ Wave in V.F. (− ·0003).

6. $12\frac{1}{4}^{h}$ to $19\frac{1}{2}^{h}$ Fluctuations in Dec. (± 3′): in H.F. (± ·0005): in V.F. (± ·0001).

7. 1^{h} to 9^{h} Fluctuations in Dec. (± 2′): in H.F. (± ·001). 17^{h} to 22^{h} Fluctuations in Dec. (± 4′): in H.F. (± ·0005): in V.F. (± ·00015).

8, 9, 10, 11. See Plates IX. and X.

14. 0^{h} to $4\frac{1}{2}^{h}$ Fluctuations in Dec. (± 5′), with wave at $3\frac{1}{2}^{h}$ (− 15′): fluctuations in H.F. (± ·002), in V.F. (± ·0003).

15. 2^{h} to 19^{h} Fluctuations in Dec. (± 3′): in H.F. (± ·002): in V.F. (± ·0002).

16. 6^{h} to 11^{h} Fluctuations in Dec. (± 3′). 2^{h} to 12^{h} Fluctuations in H.F. (± ·0015): in V.F. (± ·0002).

17. $20\frac{3}{4}^{h}$ Sharp double wave in Dec. (+ 5′ to − 5′): sharp wave in H.F. (+ ·0015): in V.F. (− ·0004): followed by small fluctuations in all elements until 23^{h}.

18. 6^{h} to 16^{h} Fluctuations in Dec. (± 3′). $1\frac{1}{4}^{h}$ to 3^{h} Wave in H.F. (− ·004), followed by fluctuations to 16^{h} (± ·002). 1^{h} to 16^{h} Fluctuations in V.F. (± ·0002).

19. $11\frac{1}{4}^{h}$ Wave in Dec. (+ 4′). $10\frac{3}{4}^{h}$ Wave in H.F. (+ ·001), preceded by small fluctuations from 5^{h}. $14\frac{1}{2}^{h}$ to $16\frac{1}{2}^{h}$ Wave in Dec. (+ 4′).

22. $13\frac{1}{2}^{h}$ Sharp movement in Dec. (+ 2′): in H.F. (+ ·001): in V.F. (+ ·0001).

23. 15^{h} to 21^{h} Fluctuations in Dec. (± 3′).

24. 3^{h} to 16^{h} Fluctuations in Dec. (± 5′): in H.F. (± ·001): in V.F. (± ·0002).

26. $2\frac{3}{4}^{h}$ Sharp movement in Dec. (+ 3′): in H.F. (+ ·0025): in V.F. (+ ·0003). $6\frac{1}{2}^{h}$ to 8^{h} Wave in Dec. (− 10′), followed by fluctuations (± 2′) till 15^{h}: in H.F. (+ ·003), with fluctuations 3^{h} to 15^{h} (± ·001). 3^{h} to 15^{h} Fluctuations in V.F. (± ·0001): $18\frac{3}{4}^{h}$ Wave in Dec. (− 3′): in H.F. (− ·001).

27. 0^{h} to 6^{h} Fluctuations in H.F. (± ·001): in V.F. small.

28. $2\frac{3}{4}^{h}$ Wave in H.F. (+ ·001).

29, 30, 31, August 1. See Plates XI. and XII.

August 2. Waves in Dec. $8\frac{1}{2}^{h}$ to 10^{h} (− 3′); $14\frac{1}{2}^{h}$ to 16^{h} (+ 4′). Fluctuations in H.F. 5^{h} to 10^{h} (± ·0005).

5. $3\frac{1}{2}^{h}$ Sharp wave in Dec. (− 3′): in H.F. (− ·003), preceded by fluctuations from 0^{h} (± ·0005): in V.F. (− ·0003). $8\frac{1}{2}^{h}$ to $9\frac{1}{2}^{h}$ Wave in Dec. (− 3′). $14\frac{1}{4}^{h}$ to $15\frac{1}{2}^{h}$ Wave in Dec. (+ 5′): movement in V.F. (− ·0002).

6. 0^{h} to $8\frac{1}{2}^{h}$ Fluctuations in Dec. (± 2′): in H.F. (± ·0005). $8\frac{1}{2}^{h}$ to $21\frac{1}{2}^{h}$ No register of Dec. or H.F. $9\frac{1}{2}^{h}$ to 12^{h} Wave in V.F. (− ·001).

7. 9^{h} to 16^{h} Fluctuations in Dec. (± 6′): in H.F. (± ·001): in V.F. (± ·0003).

10. 23^{h} to 11 15^{h} Fluctuations in Dec. (± $1\frac{1}{2}$′): in H.F. (± ·0005): in V.F. (± ·0001).

13. $9\frac{1}{4}^{h}$ Wave in Dec. (− 3′): in H.F. (+ ·0015), preceded by fluctuations from 2^{h} (± ·0005): in V.F. (+ ·0001).

14. 8^{h} to 14^{h} Fluctuations in Dec. (± 4′). 1^{h} to 14^{h} Fluctuations in H.F. (± ·0005). $21\frac{3}{4}^{h}$ to 24^{h} Fluctuations in H.F. (± ·001): in V.F. (± ·00015).

17. $18\frac{1}{2}^{h}$ Sharp double wave in Dec. (+ 2′ to − 2′): wave in H.F. (− ·0005): in V.F. (− ·0002).

18. See Plate XIII.

19. 9^{h} to 12^{h} Fluctuations in Dec. (± 2′): long wave in H.F. (+ ·0025), with superposed fluctuations: fluctuations in V.F. (± ·0001).

22. 11^{h} to 14^{h} Fluctuations in Dec. (± 5′). 0^{h} to 14^{h} Fluctuations in H.F. (± ·001): in V.F. (± ·0002).

23. 8^{h} to $14\frac{1}{2}^{h}$ Fluctuations in Dec. (± 2′). 3^{h} to $14\frac{1}{2}^{h}$ Fluctuations in H.F. (± ·0005): in V.F. small.

27. 1^{h} to 7^{h} Fluctuations in Dec. (± 4′): in H.F. (± ·0005): in V.F. (± ·0005). 19^{h} to 23^{h} Fluctuations in Dec. (± 3′): in V.F. (± ·0004).

30. $7\frac{1}{2}^{h}$ to 9^{h} Wave in Dec. (− 3′).

September 1. $8\frac{1}{2}^{h}$ to 16^{h} Fluctuations in Dec. (± 2′): in H.F. (± ·0005): in V.F. small.

2. $8\frac{1}{2}^{h}$ to $9\frac{1}{2}^{h}$ Wave in Dec. (− 7′): in H.F. (+ ·002), with fluctuations 0^{h} to 17^{h} (± ·0015). 12^{h} to $15\frac{1}{2}^{h}$ Double wave in Dec. (− 8′ to + 5′): fluctuations in V.F. (± ·00015).

3. 9^{h} to 11^{h} Wave in Dec. (− 6′): fluctuations in H.F. (± ·0005): in V.F. small.

4. $13\frac{1}{4}^{h}$ to $14\frac{1}{2}^{h}$ Double wave in Dec. (+ 4′ to − 2′): wave in H.F. (+ ·0017): movement in V.F. (− ·0004).

1883.

September 5. 2^h to $12\frac{1}{4}^h$ Fluctuations, commencing suddenly, in Dec. (± 4′): in H.F. (± ·001): in V.F. small. $12\frac{1}{4}^h$ to $12\frac{3}{4}^h$ Steep wave in Dec. (+ 17′). $12\frac{1}{4}^h$ Movement in H.F. (+ ·0025): in V.F. (− ·001).

7. $0\frac{1}{2}^h$ to 3^h Fluctuations in Dec. (± 2′): in H.F. (± ·0015): in V.F. (± ·0002).

9. 2^h to 12^h Fluctuations in H.F. (± ·0005).

10. 6^h to 9^h Fluctuations in Dec. (± 2′).

12. $11\frac{1}{2}^h$ Sharp movement in Dec. (+ 2′): in H.F. (+ ·002): in V.F. (+ ·0002). $15\frac{1}{2}^h$ to $16\frac{1}{2}^h$ Wave in Dec. (+ 10′): in H.F. (− ·0015): in V.F. (+ ·0002).

13. $9\frac{1}{2}^h$ to $11\frac{1}{2}^h$ Double wave in Dec. (− 4′ to + 5′): in V.F. (− ·0002 to + ·0002). $1\frac{1}{2}^h$ to $11\frac{1}{2}^h$ Fluctuations in H.F. (± ·001).

14. $8\frac{1}{2}^h$ to 10^h Wave in Dec. (− 5′). 5^h to 10^h Fluctuations in H.F. (± ·0005).

15. 12^h to 17. 12^h. See Plates XIII. and XIV.

18. See Plate XIV.

19. 1^h Very sharp double wave in Dec. (+ $2\frac{1}{2}$′ to −$2\frac{1}{2}$′): in H.F. (+ ·001 to − ·0025): in V.F. (+ ·00015 to − ·0003). 12^h Small wave in Dec. (+ 2′): in H.F. (+ ·001): in V.F. small.

23. 0^h to 3^h Fluctuations in Dec. (± 2′): in H.F. (± ·0005): in V.F. small.

24. 8^h to 19^h Fluctuations in Dec. (± 7′): in H.F. (± ·0015): in V.F. (± ·0001).

25. 0^h to 19^h Fluctuations in Dec. (± 5′): in H.F. (± ·001): in V.F. (± ·0002).

26. $7\frac{1}{2}^h$ to 9^h Wave in Dec. (− 5′): in H.F. (− ·0015): in V.F. small.

28. 1^h to $2\frac{1}{2}^h$ Wave in H.F. (− ·003). 7^h to 20^h Fluctuations in Dec. (± 2′): in H.F. (± ·0007).

29. 8^h to 13^h Fluctuations in Dec. (± 5′): in V.F. (± ·0002). $0\frac{1}{2}^h$ to 13^h Fluctuations in H.F. (± ·0005).

30. 7^h to 11^h Fluctuations in Dec. (± 2′): in H.F. (± ·0005).

October 4. From 6^h Fluctuations in Dec. (± 2′): in H.F. (± ·0005).

5. See Plate XV.

6. 3^h to 14^h Fluctuations in Dec. (± 5′): in H.F. (± ·002): in V.F. (± ·0002).

11. 4^h to $5\frac{1}{2}^h$ Wave in Dec. (− 5′).

12. $8\frac{1}{2}^h$ to 10^h Wave in Dec. (− 4′): in H.F. (− ·001). $12\frac{3}{4}^h$ to 14^h Double wave in Dec. (+ 3′ to − 8′): wave in H.F. (+ ·002): movement in V.F. (− ·0004).

13. $21\frac{3}{4}^h$ Sharp wave in Dec. (− 7′): in H.F. (− ·0025): in V.F. (− ·0002).

15. 1^h to 18^h Fluctuations in Dec. (± 5′): in H.F. (± ·0015): in V.F. (± ·0004).

16. See Plate XVI.

17. 13^h to $13\frac{3}{4}^h$ Wave in Dec. (+ 5′).

18. 4^h to 12^h Fluctuations in Dec. (± 5′): in H.F. (± ·0007): in V.F. small.

19. 6^h to 20^h, and October 20. 4^h to 11^h. See Plate XVI.

21. $18\frac{1}{2}^h$ to 20^h Wave in Dec. (+ 5′).

22. 10^h to 11^h Wave in Dec. (− 4′).

25. 19^h to 26. 1^h Fluctuations in Dec. (± 4′): in H.F. (± ·001): in V.F. small.

27. $7\frac{1}{2}^h$ to $8\frac{1}{2}^h$ Wave in Dec. (− 4′).

November 1. 4^h to 3. 4^h. See Plates XVI. and XVII.

3. $20\frac{1}{2}^h$ to 4. 6^h Fluctuations, commencing suddenly, in Dec. (± 3′): in H.F. (± ·001): in V.F. (± ·0002).

5. $6\frac{1}{2}^h$ to 8^h Wave in Dec. (− 9′). 6^h to $7\frac{1}{4}^h$ Wave in H.F. (− ·002). $6\frac{3}{4}^h$ to $7\frac{1}{4}^h$ Movement in V.F. (+ ·0002).

7. $10\frac{1}{2}^h$ to $11\frac{1}{2}^h$ Wave in Dec. (− 3′): in H.F. (+ ·001).

8. $9\frac{1}{2}^h$ to $10\frac{1}{2}^h$ Wave in Dec. (− 3′). $9\frac{1}{4}^h$ to $10\frac{1}{4}^h$ Wave in H.F. (+ ·001): in V.F. (− ·00015).

9. $7\frac{1}{2}^h$ to 8^h Wave in Dec. (− 2′): in H.F. (+ ·0005).

12. 6^h to 7^h Wave in Dec. (− 7′). $5\frac{3}{4}^h$ to 7^h Wave in H.F. (− ·0015). 6^h to $7\frac{1}{2}^h$ Wave in V.F. (+ ·0002). $11\frac{1}{4}^h$ to 13^h Wave in Dec. (− 5′). $11\frac{1}{4}^h$ to $12\frac{1}{2}^h$ Wave in H.F. (+ ·0025). $11\frac{1}{2}^h$ Movement in V.F. (− ·0003).

13. 13^h to 14^h Wave in Dec. (+ 5′). 12^h to 15^h Fluctuations in H.F. (± ·0005): in V.F. (± ·0001).

18. $8\frac{1}{2}^h$ to $9\frac{1}{2}^h$ Wave in H.F. (− ·001).

19. 8^h to 20. 8^h. See Plate XVII.

20. 12^h to 18^h Fluctuations in Dec. (± 3′): in H.F. (± ·0005): in V.F. (± ·0001).

21. 4^h to 12^h Fluctuations in Dec. (± 3′): in H.F. (± ·0005): in V.F. small.

21. 13^h to 23. 13^h. See Plate XVIII.

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November 27. $2\frac{1}{2}^{h}$ to $4\frac{1}{2}^{h}$ Wave in Dec. (+ 6′): in H.F. (− ·0025).

28. 3^{h} to 4^{h} Wave in Dec. (− 4′). 5^{h} to 6^{h} Wave in Dec. (− 7′): in H.F. (− ·002): in V.F. (− ·00015). $10\frac{3}{4}^{h}$ to 12^{h} Wave in Dec. (− 5′): in H.F. (+ ·002): in V.F. (+ ·0001).

30. 10^{h} to 13^{h} Double wave in Dec. (− 3′ to + 5′).

December 1. 5^{h} to 20^{h} Fluctuations in Dec. (± 5′): in H.F. (± ·001): in V.F. (± ·0002).

2. $9\frac{1}{2}^{h}$ to 11^{h} Wave in Dec. (− 12′): fluctuations in H.F. (± ·0015). $9\frac{1}{2}^{h}$ to $10\frac{1}{4}^{h}$ Movement in V.F. (− ·0004).

4. $9\frac{1}{2}^{h}$ to 11^{h} Wave in Dec. (− 4′).

7. $8\frac{1}{4}^{h}$ to 9^{h} Wave in Dec. (− 2′).

8. 7^{h} to 15^{h} Fluctuations in Dec. (± 5′): in H.F. (± ·0015): in V.F. small.

9. 0^{h} to 8^{h} Fluctuations in Dec. (± 3′): in H.F. (± ·001): in V.F. small.

10. $10\frac{3}{4}^{h}$ to 12^{h} Wave in Dec. (− 6′): in H.F. (+ ·002): in V.F. (+ ·0002).

11. 5^{h} to 18^{h} Fluctuations in Dec. (± 4′): in H.F. (± ·001), with wave 13^{h} to 15^{h} (+ ·0002). $13\frac{3}{4}^{h}$ to $14\frac{1}{4}^{h}$ Movement in V.F. (− ·0004).

12. 6^{h} to 15^{h} Fluctuations in Dec. (± 6′): in H.F. (± ·001): in V.F. (± ·00015).

14. 4^{h} to $5\frac{1}{2}^{h}$ Wave in Dec. (− 6′). 8^{h} to 12^{h} Fluctuations in Dec. (± 2′). 4^{h} to 12^{h} Fluctuations in H.F. (± ·0015): in V.F. small.

17. 8^{h} to 11^{h} Double crested wave in Dec. (− 20′ and − 10′). $9\frac{1}{4}^{h}$ to 11^{h} Double wave in H.F. (+ ·003 to − ·002). $8\frac{1}{2}^{h}$ to 11^{h} Fluctuations in V.F. (± ·0002).

18. 3^{h} to 12^{h} Fluctuations in Dec. (± 4′): in H.F. (± ·001): in V.F. (± ·0002).

19. 5^{h} to 6^{h} Wave in Dec. (− 6′): in H.F. (− ·001): in V.F. (− ·0001). 9^{h} to 11^{h} Wave in Dec. (− 8′): in H.F. (+ ·0015).

21. 8^{h} to 9^{h} Wave in Dec. (− 3′).

23. $8\frac{1}{2}^{h}$ to $9\frac{1}{2}^{h}$ Wave in Dec. (− 4′).

24. 14^{h} to 21^{h} Fluctuations in Dec. (± 2′). 11^{h} to 19^{h} Fluctuations in H.F. (± ·0005): in V.F. small.

25. 0^{h} to 7^{h} Fluctuations in Dec. (± 3′), with wave $4\frac{1}{2}^{h}$ to 6^{h} (− 12′). 1^{h} to 7^{h} Fluctuations in H.F. (± ·001): in V.F. small.

26. 15^{h} to 20^{h} Fluctuations in Dec. (± 2′). 16^{h} to 20^{h} Shallow wave in H.F. (+ ·0015).

27. 11^{h} to 20^{h} Fluctuations in Dec. (± 4′): in H.F. (± ·001): in V.F. (± ·0001).

28. $2\frac{1}{2}^{h}$ to 5^{h} Wave in Dec. (− 7′).

29. $10\frac{1}{2}^{h}$ to 16^{h} Fluctuations in Dec. (± 2′): in H.F. small, with wave at $10\frac{3}{4}^{h}$ (+ ·0015).

EXPLANATION OF THE PLATES.

The magnetic motions figured on the Plates are—

(1.) Those for days or periods of great disturbance—February 24, April 2. 18^h to 4. 18^h, 24, September 15. 12^h to 17. 12^h.

(2.) Those for days or periods of lesser disturbance—January 25, 26, February 1, 2, 3, 4, 22, 27, 28, March 1, 2, 26. 8^h to 28. 8^h, April 19, 25, May 20, 21, June 29. 16^h to July 1. 16^h, July 8, 9, 10, 11, 29, 30, 31, August 1, 18, September 18, October 5, 16, 19. 6^h to 20^h, 20. 4^h to 11^h, November 1. 4^h to 3. 4^h, 19. 8^h to 20. 8^h, 21. 13^h to 23. 13^h.

The day is the astronomical day commencing at Greenwich mean noon.

The magnetic declination, horizontal force, and vertical force are indicated by the letters D., H., and V. respectively; the declination (west) is expressed in minutes of arc, for horizontal and vertical force the unit is ·00001 of the whole horizontal and vertical forces respectively, the corresponding scales being given on the sides of each diagram.

Downward motion indicates increase of declination and of horizontal and vertical force.

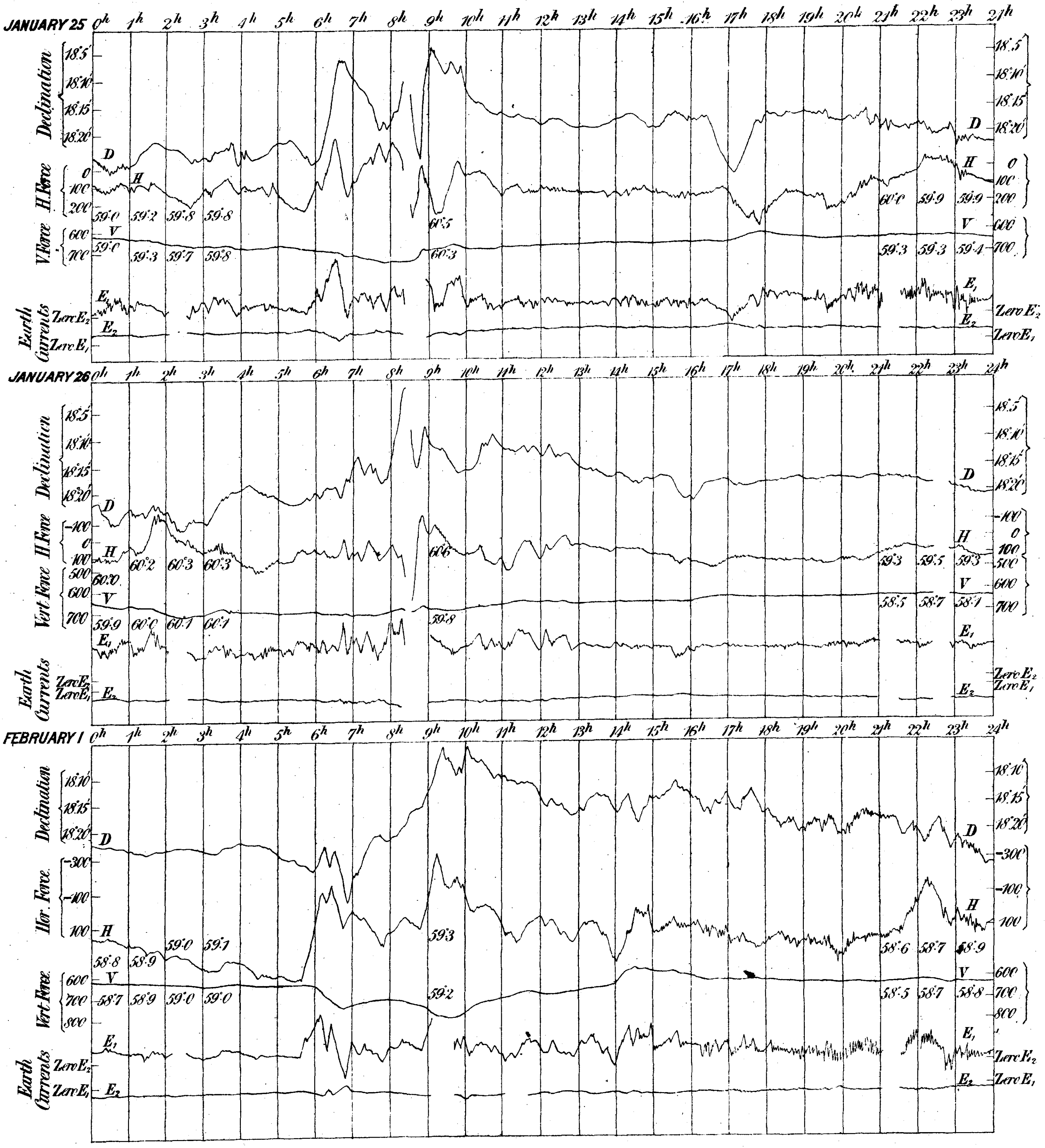
The earth current register E_1 is that of the line Angerstein Wharf—Lady Well, making an angle of 50° with the magnetic meridian, reckoning from north to east. The E_2 register is that of the line Blackheath—North Kent East, making an angle of 46° with the magnetic meridian, reckoning from north to west. Zero E_1 and Zero E_2 indicate the respective instrumental zeros.

Downward motion of earth current register indicates in the E_1 circuit the passage of a current, corresponding to that from the copper pole of a battery, in the direction Angerstein Wharf to Lady Well (N.E. to S.W.), and in the E_2 circuit to the passage of a similar current in the direction Blackheath to North Kent East (S.E. to N.W.)

An arrow (↑) indicates that the register was out of range of registration in the direction of the arrow-head. Other causes of interruption are stated in the Introduction. July 29. From 11^h 40^m to 12^h 0^m the vertical force register was accidentally lost just at the time at which a sudden movement is shown in all the other registers.

The temperatures (Fahrenheit) given in small figures on the Diagrams represent those of the horizontal and vertical force magnets at the corresponding hours of observation, usually 0^h, 1^h, 2^h, 3^h, 9^h, 21^h, 22^h, 23^h.

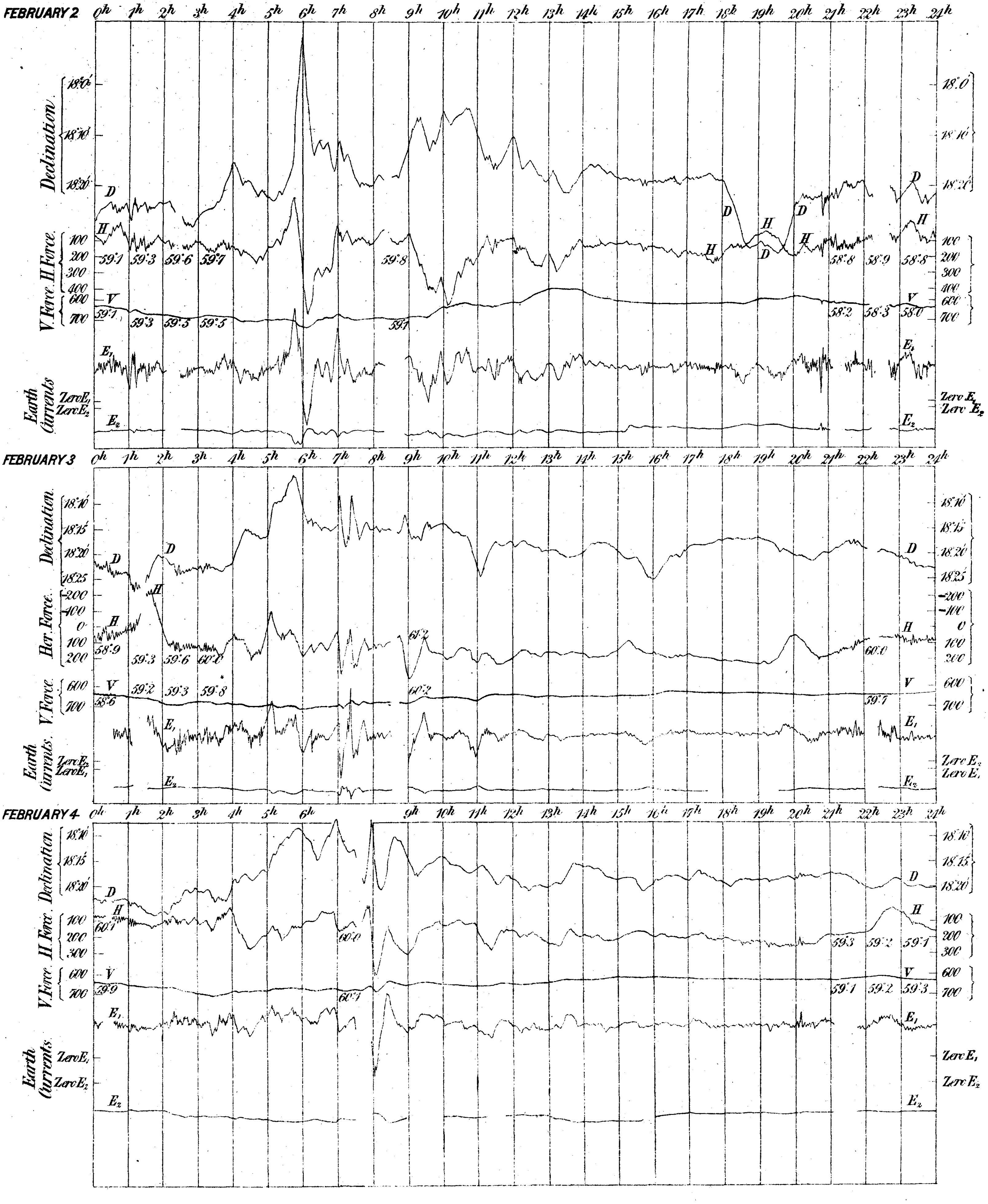
Magnetic Disturbances and Earth Currents recorded at the Royal Observatory Greenwich, 1883.



Dangerfield. Lith 22 Bedford St. Covent Garden. 9114.

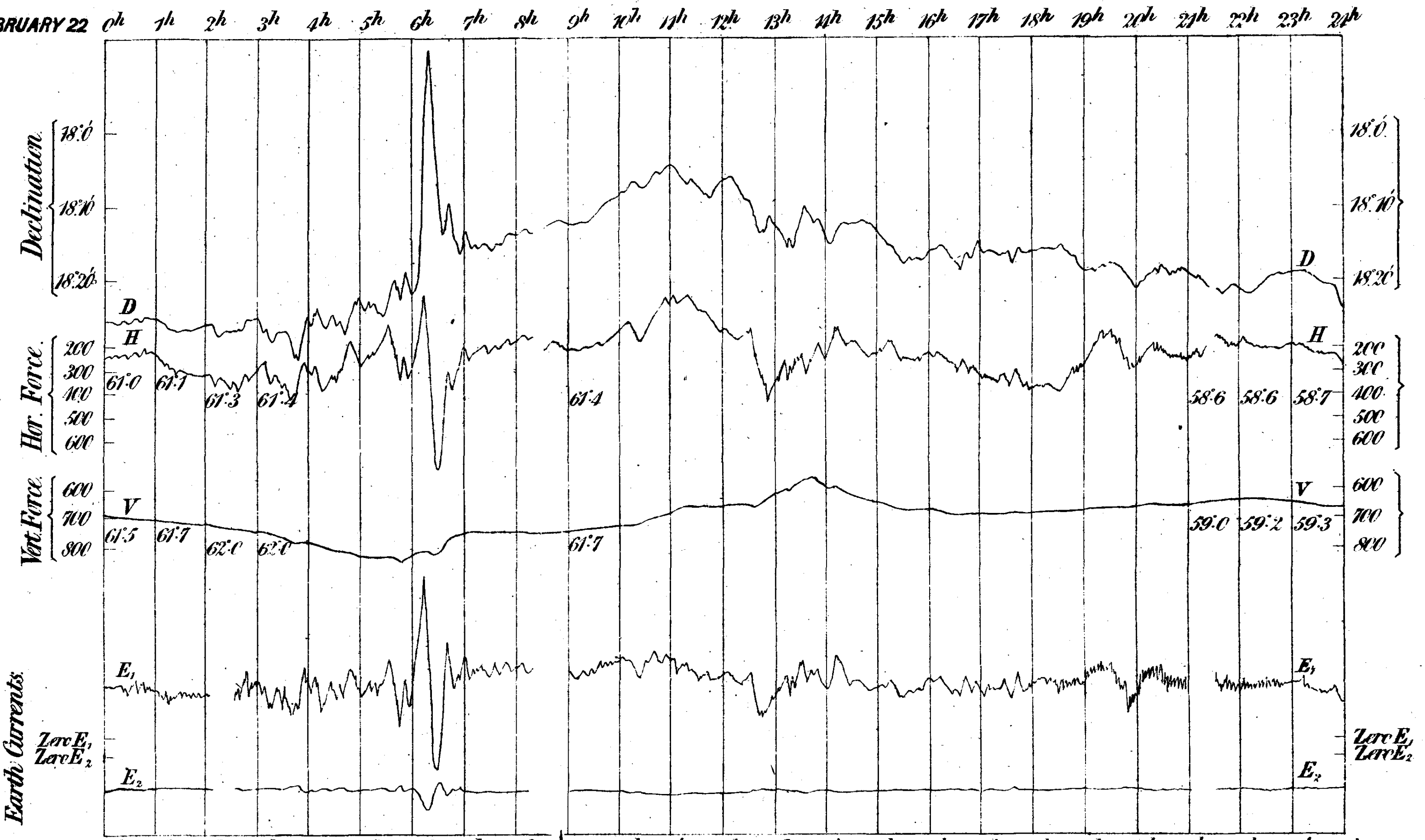
Plate II.

Magnetic Disturbances and Earth Currents recorded at the Royal Observatory Greenwich, 1883.

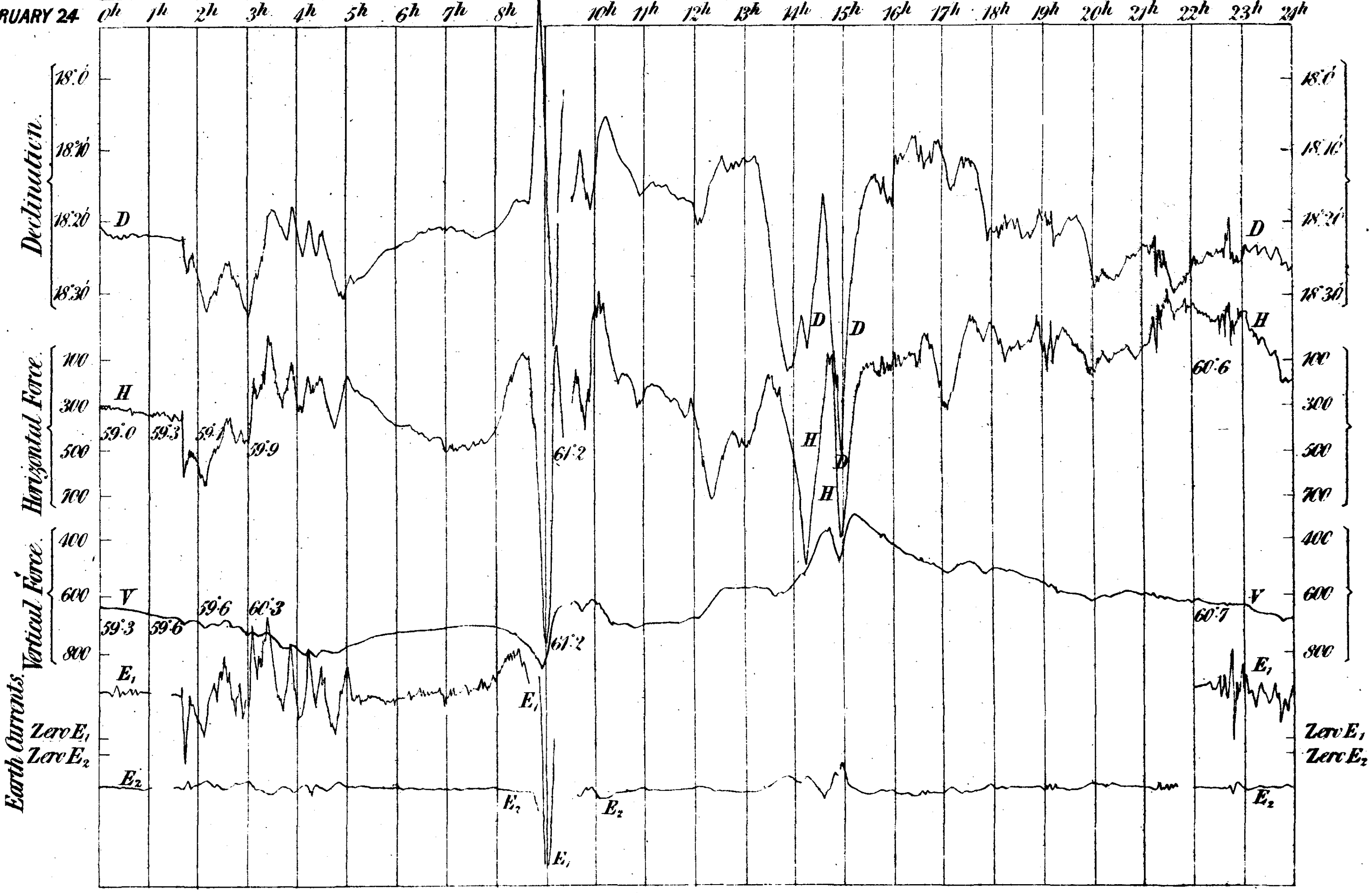


Magnetic Disturbances and Earth Currents recorded at the Royal Observatory Greenwich, 1883.

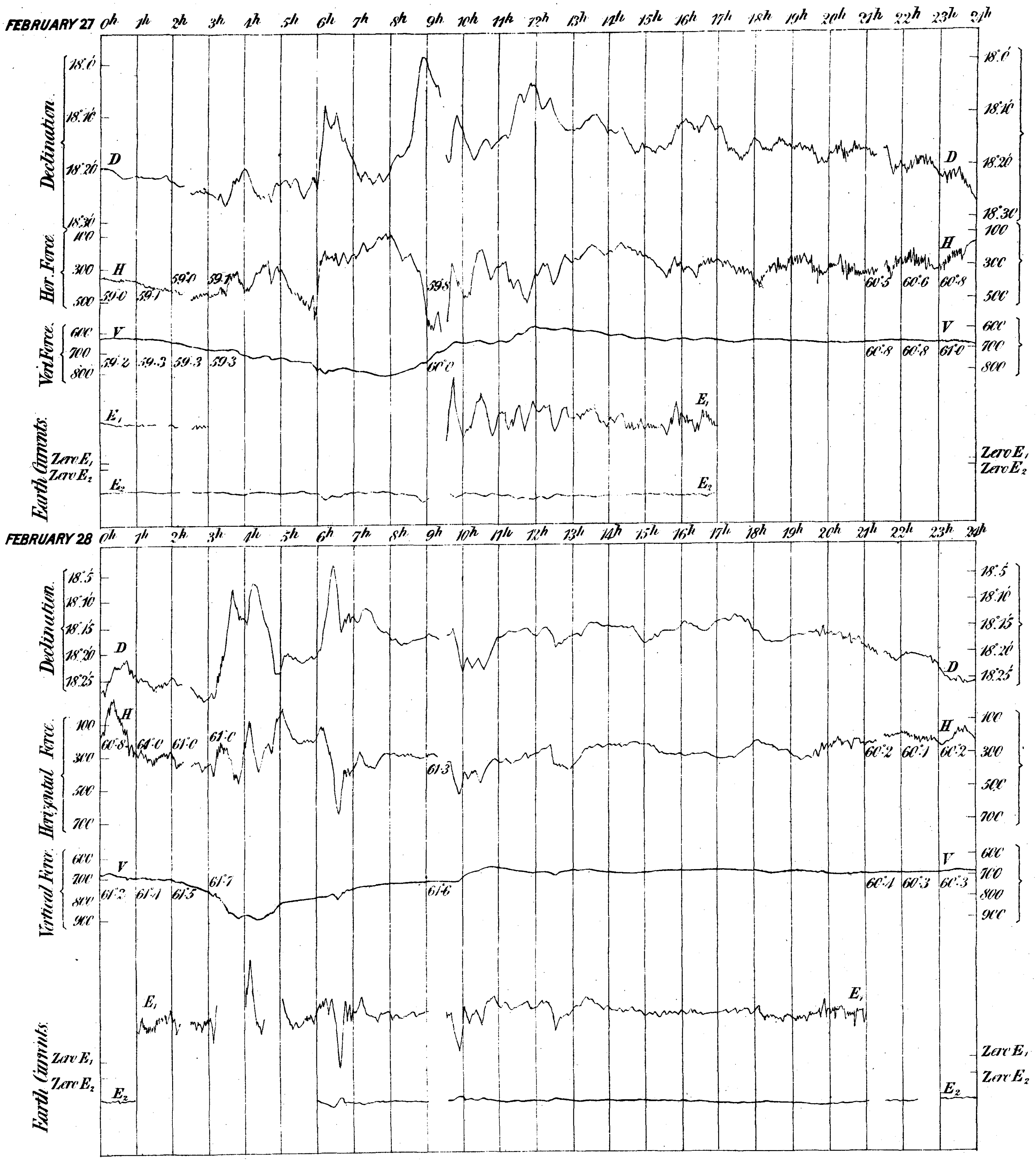
FEBRUARY 22



FEBRUARY 24



Magnetic Disturbances and Earth Currents recorded at the Royal Observatory Greenwich, 1883.



Dangerfield. Lith. 22. Bedford St. Covent Garden. 9114.

Magnetic Disturbances and Earth Currents recorded at the Royal Observatory Greenwich, 1883.

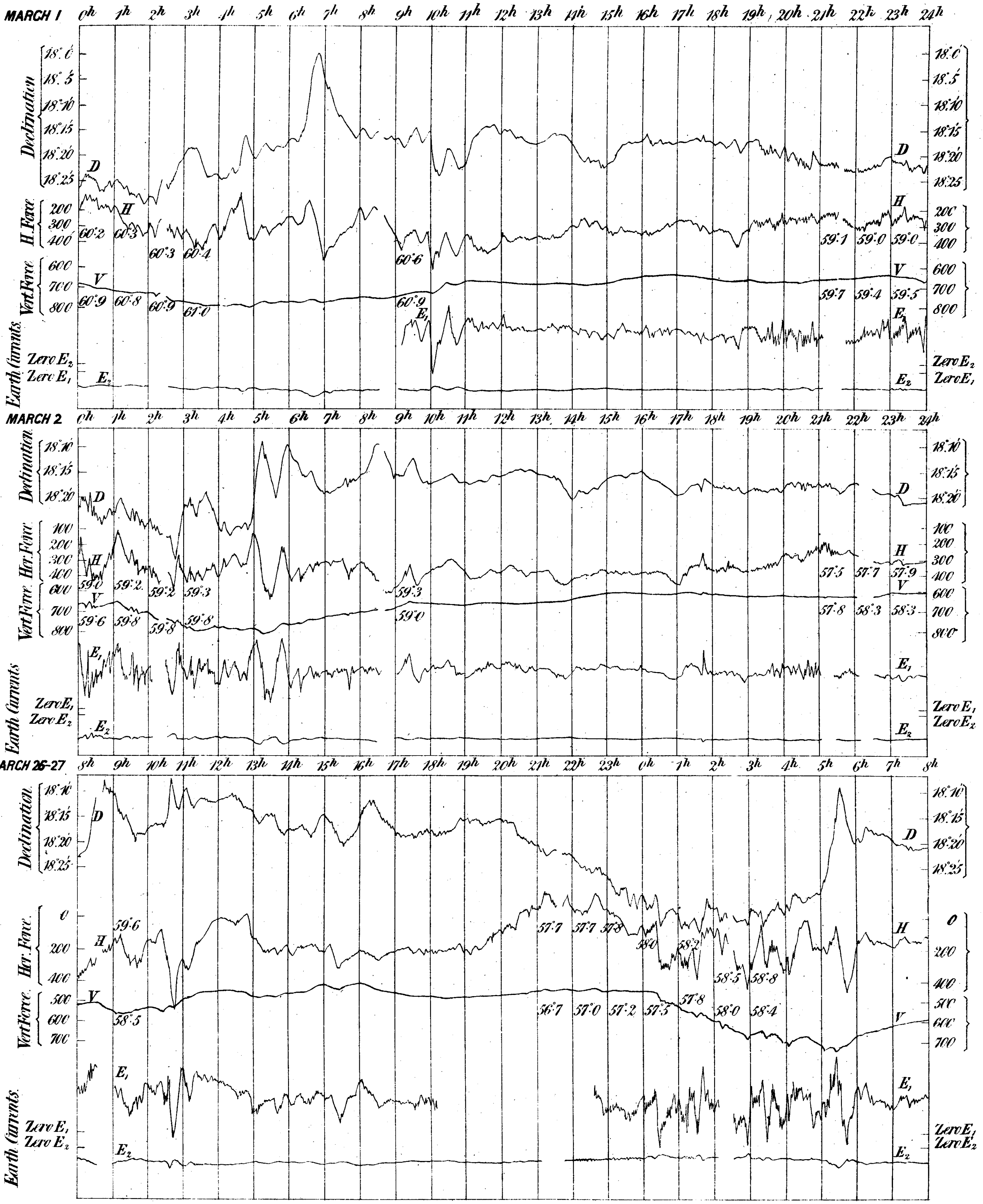
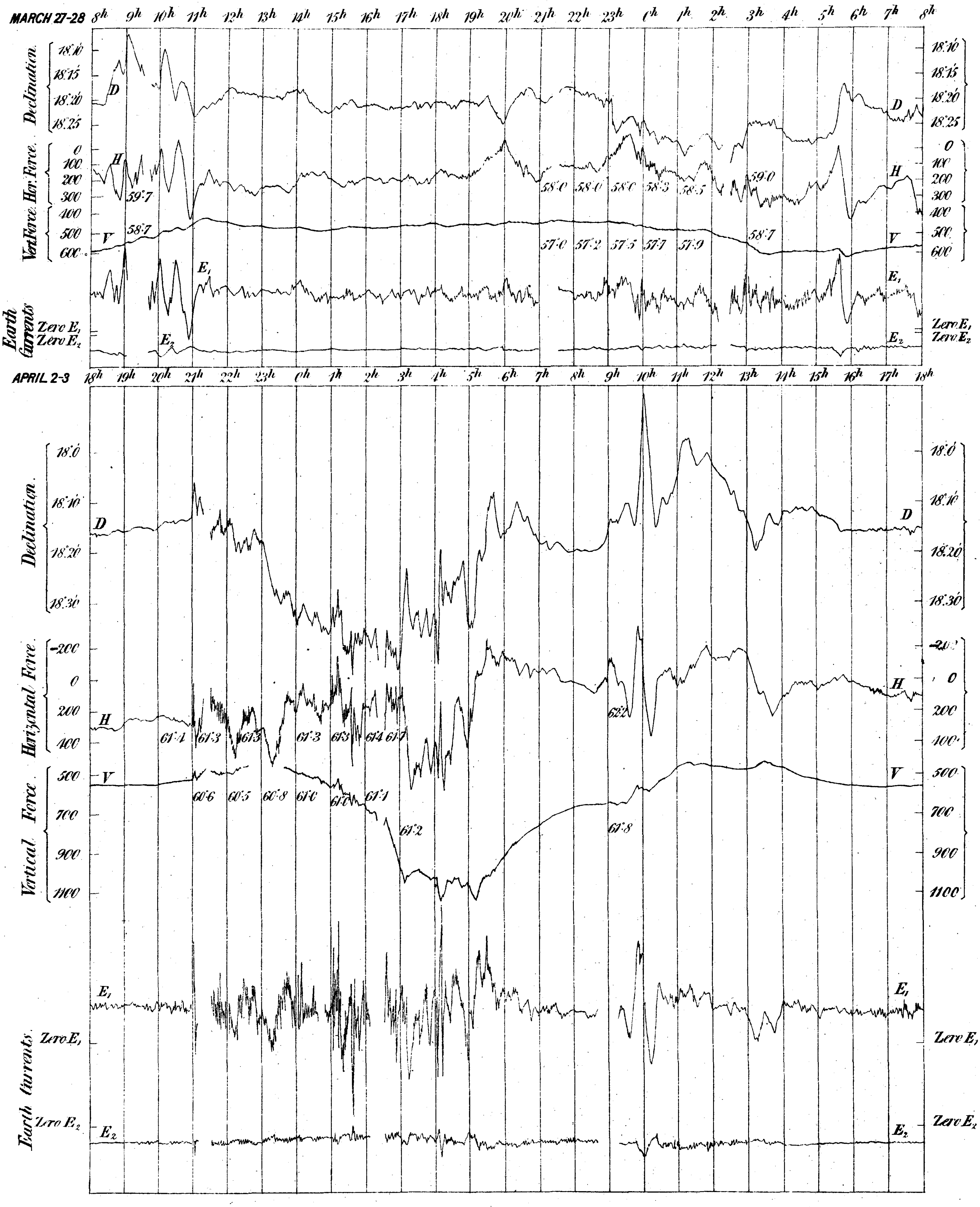


Plate VI.

Magnetic Disturbances and Earth Currents recorded at the Royal Observatory Greenwich, 1883.



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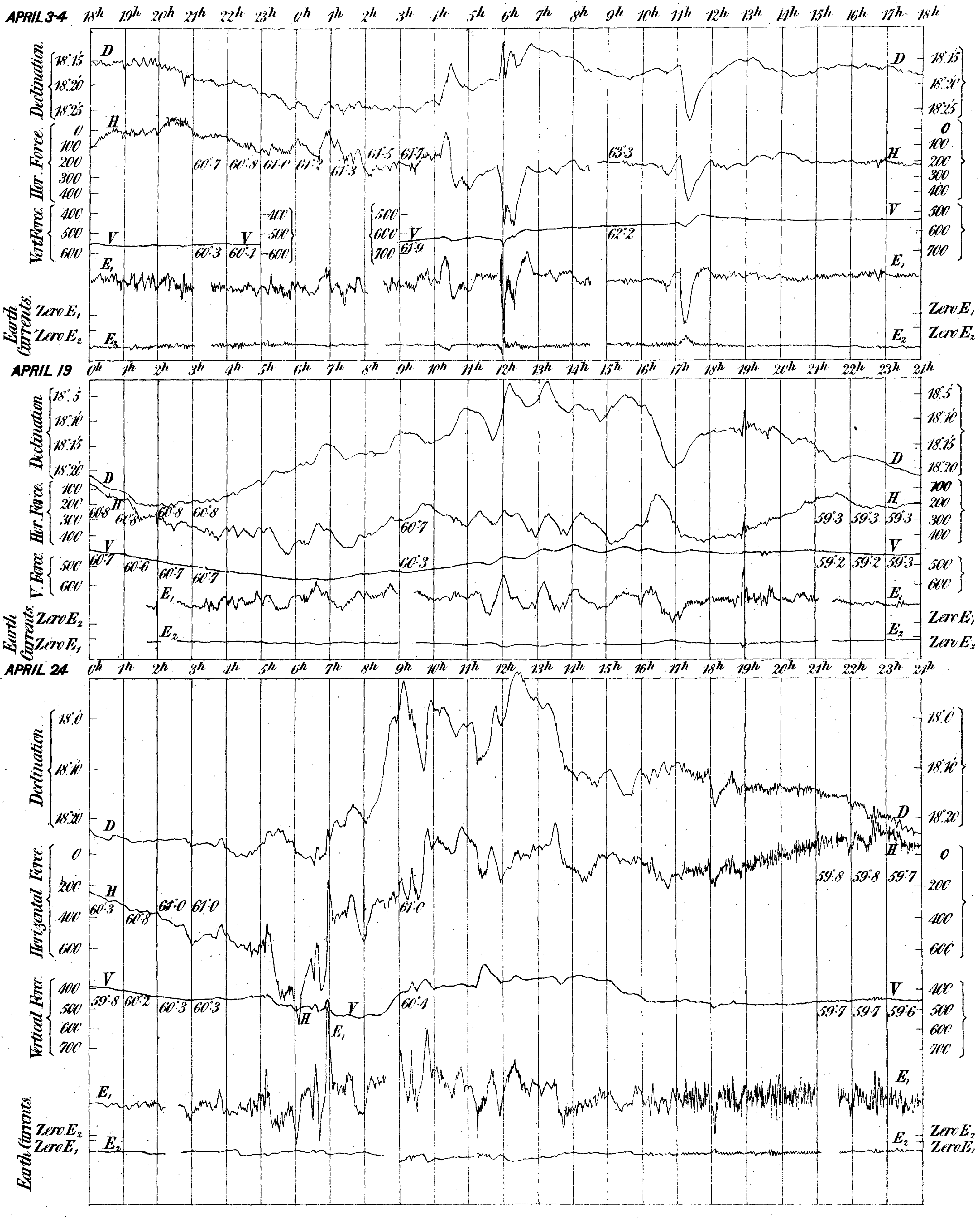

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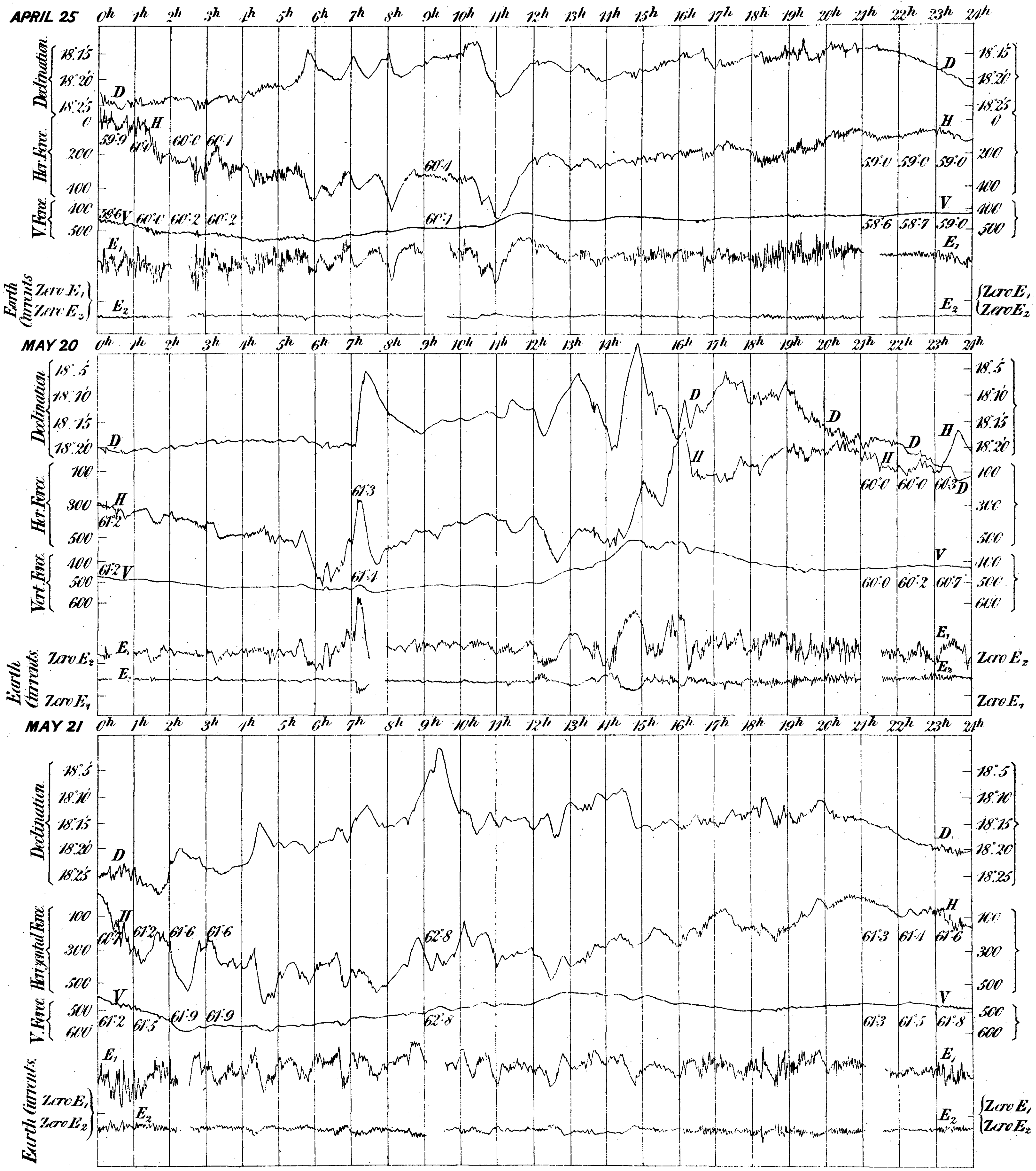

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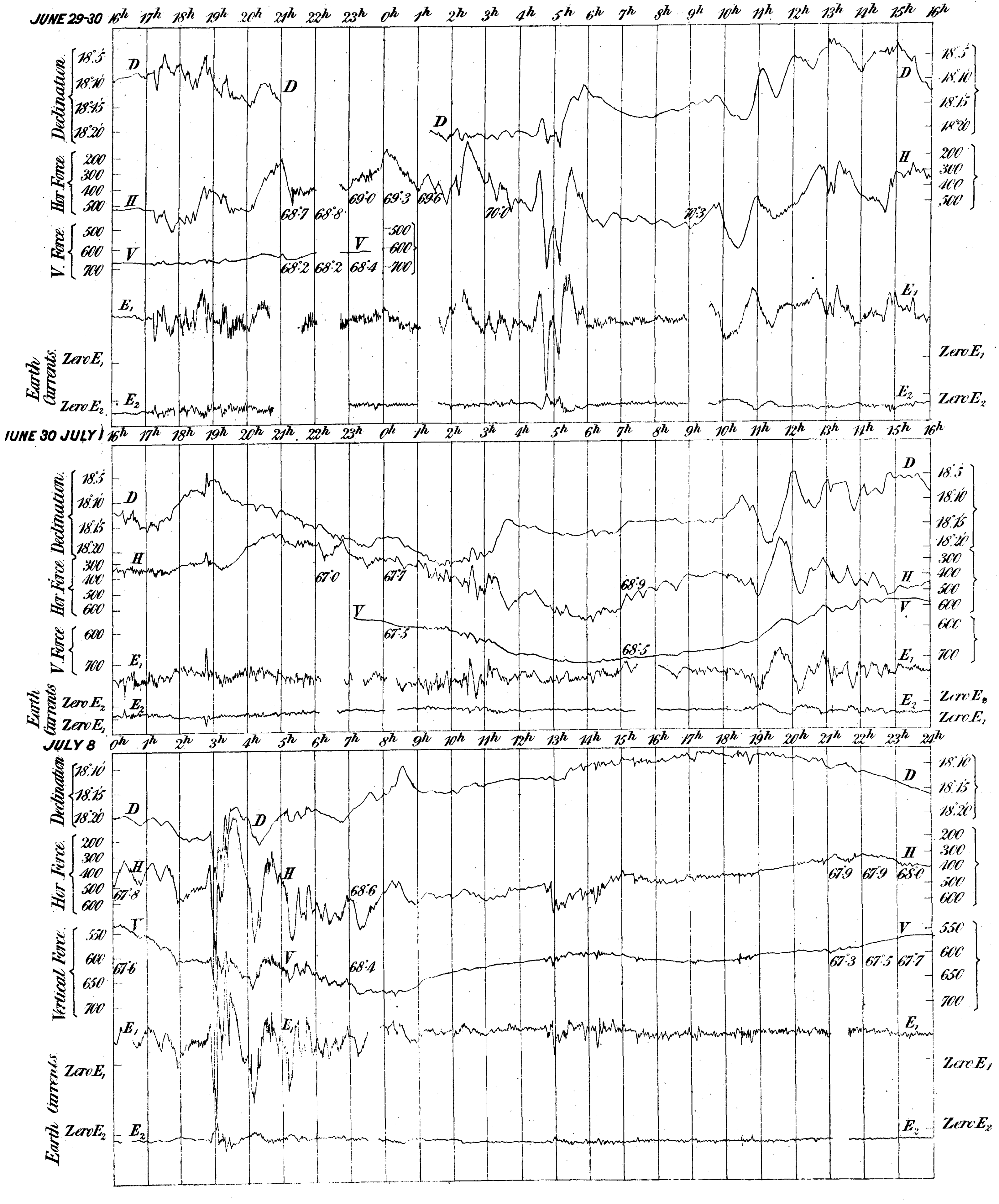

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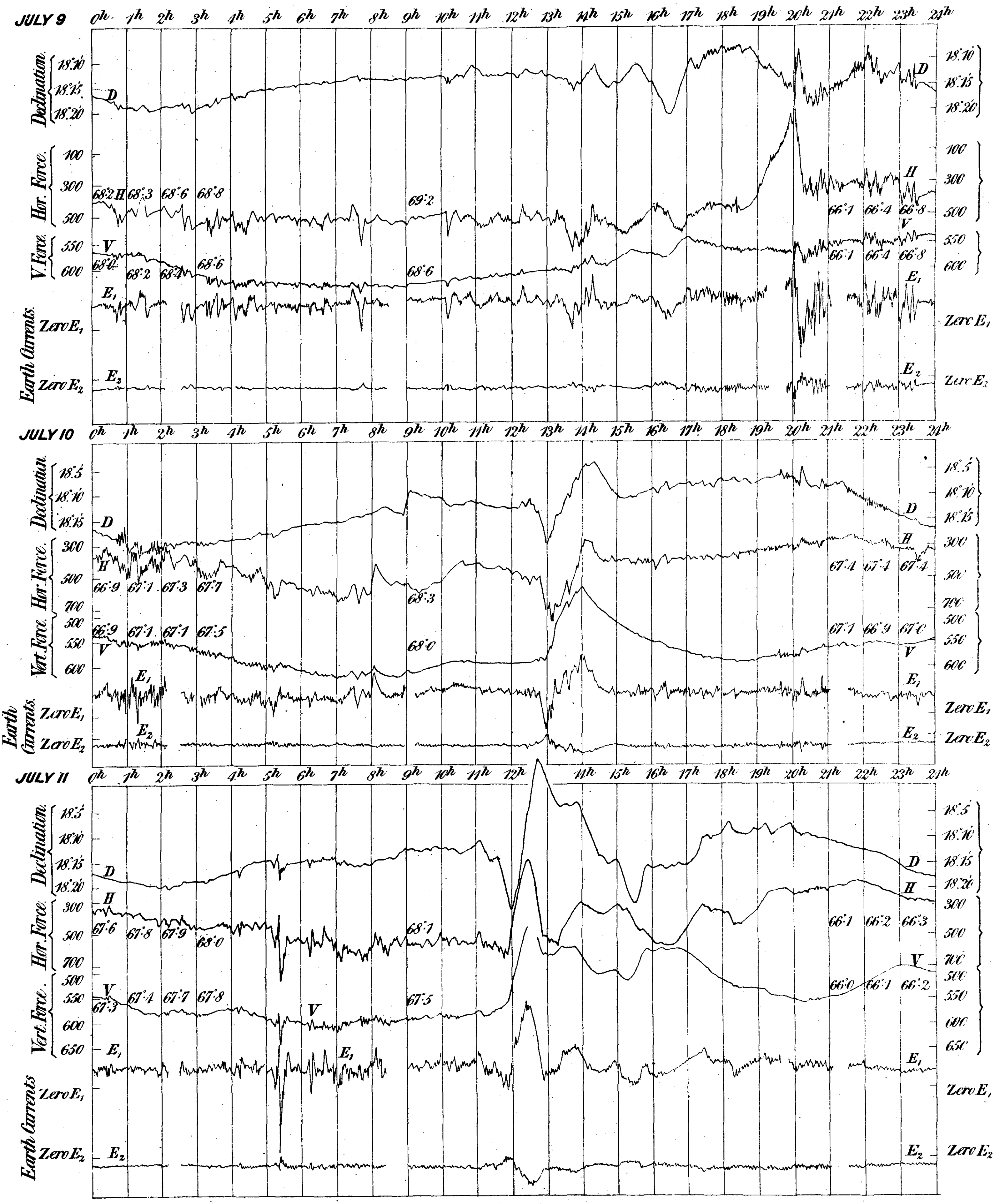
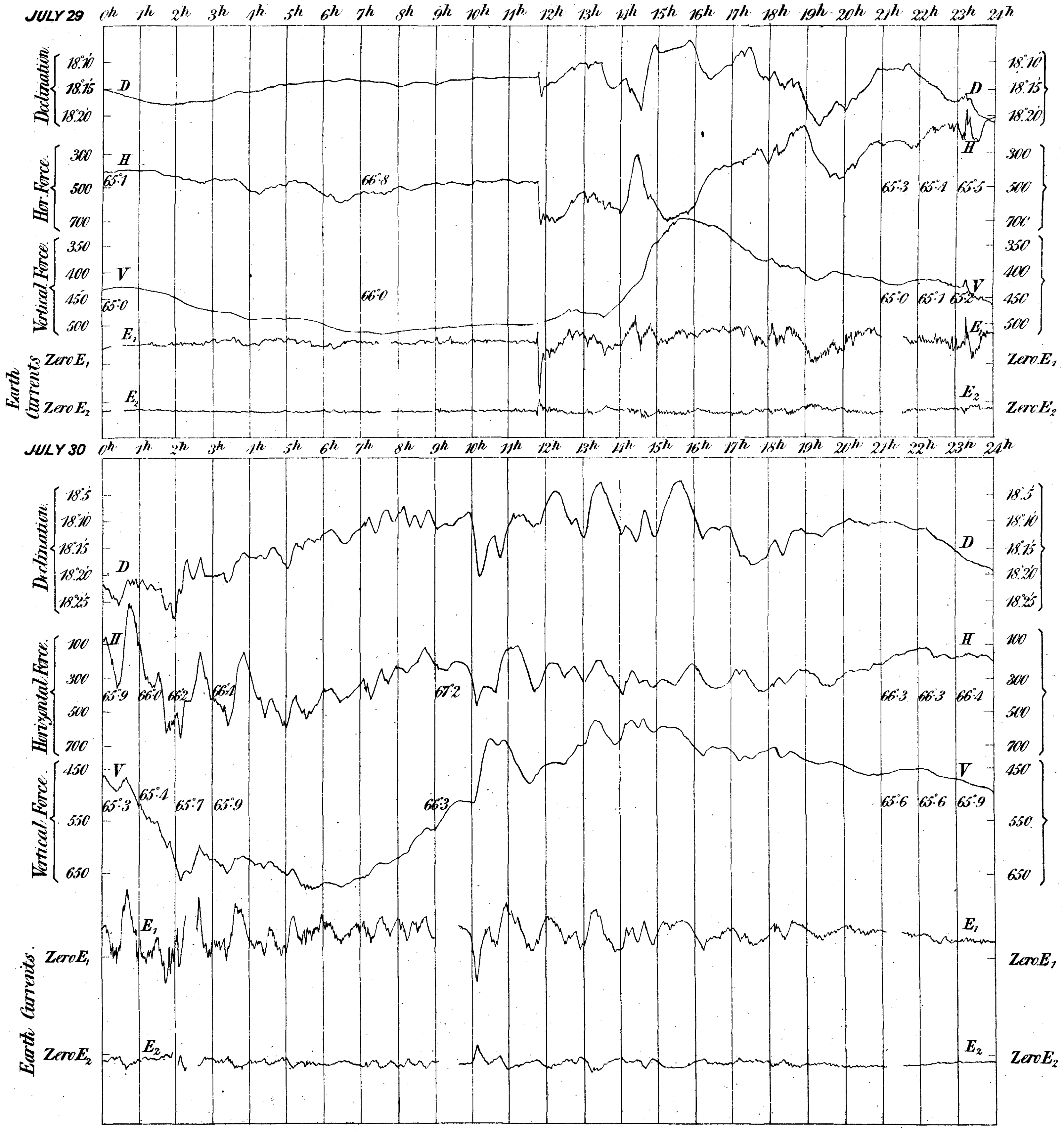


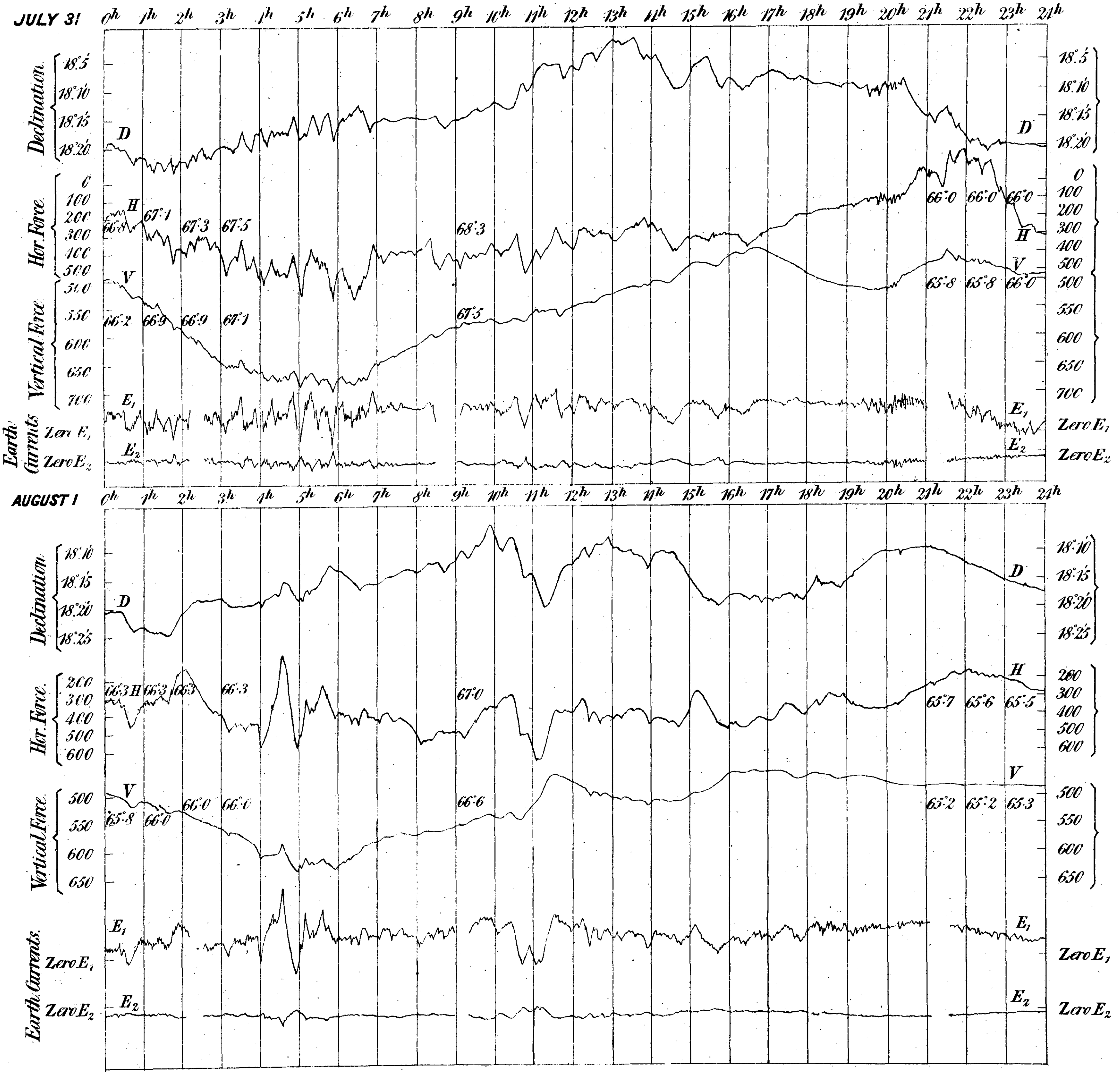
Plate XI.

Magnetic Disturbances and Earth Currents recorded at the Royal Observatory Greenwich, 1883.



Dangerfield. Lith. 22. Bedford St. Covent Garden. 9115.

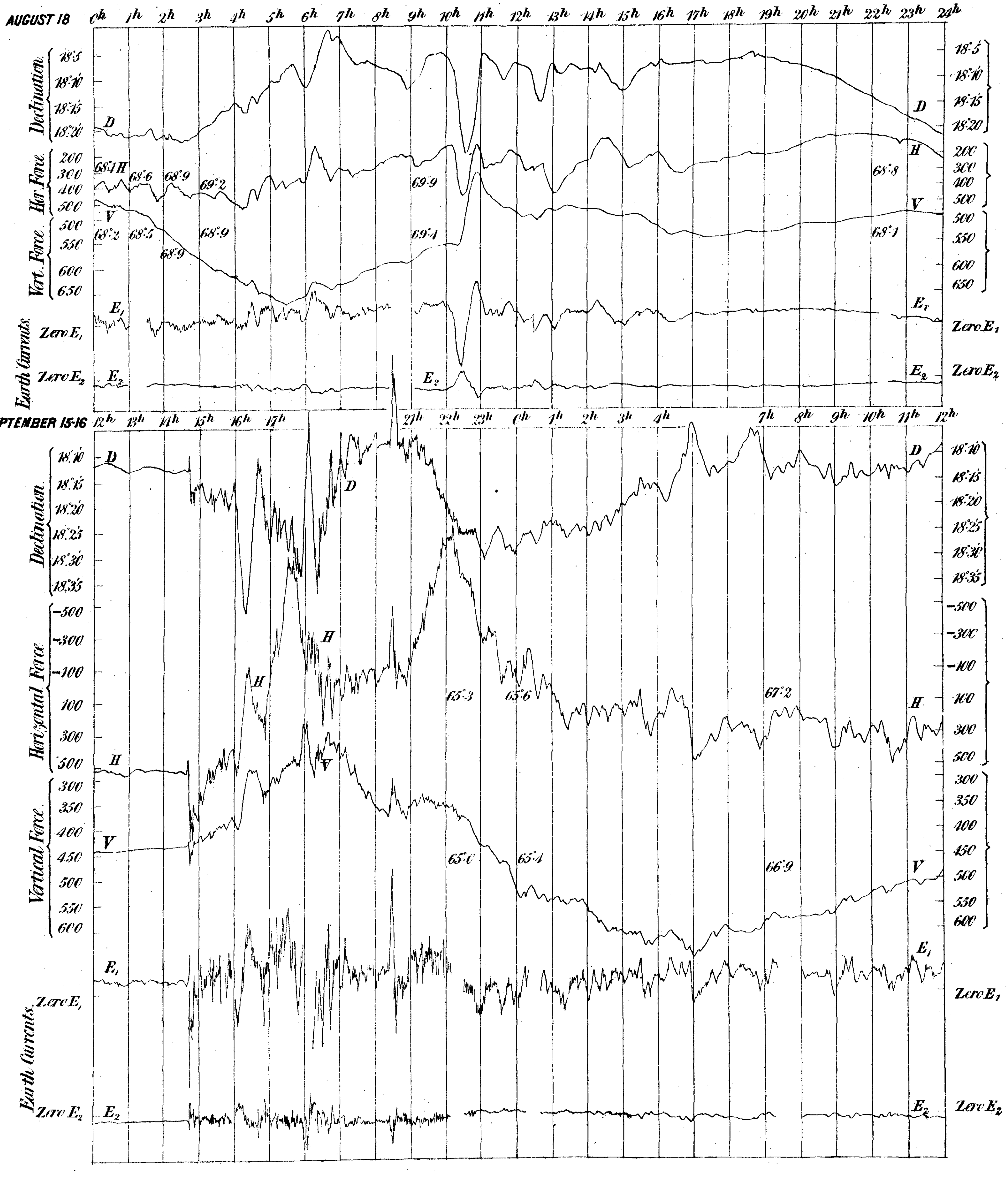
Magnetic Disturbances and Earth Currents recorded at the Royal Observatory Greenwich, 1883.



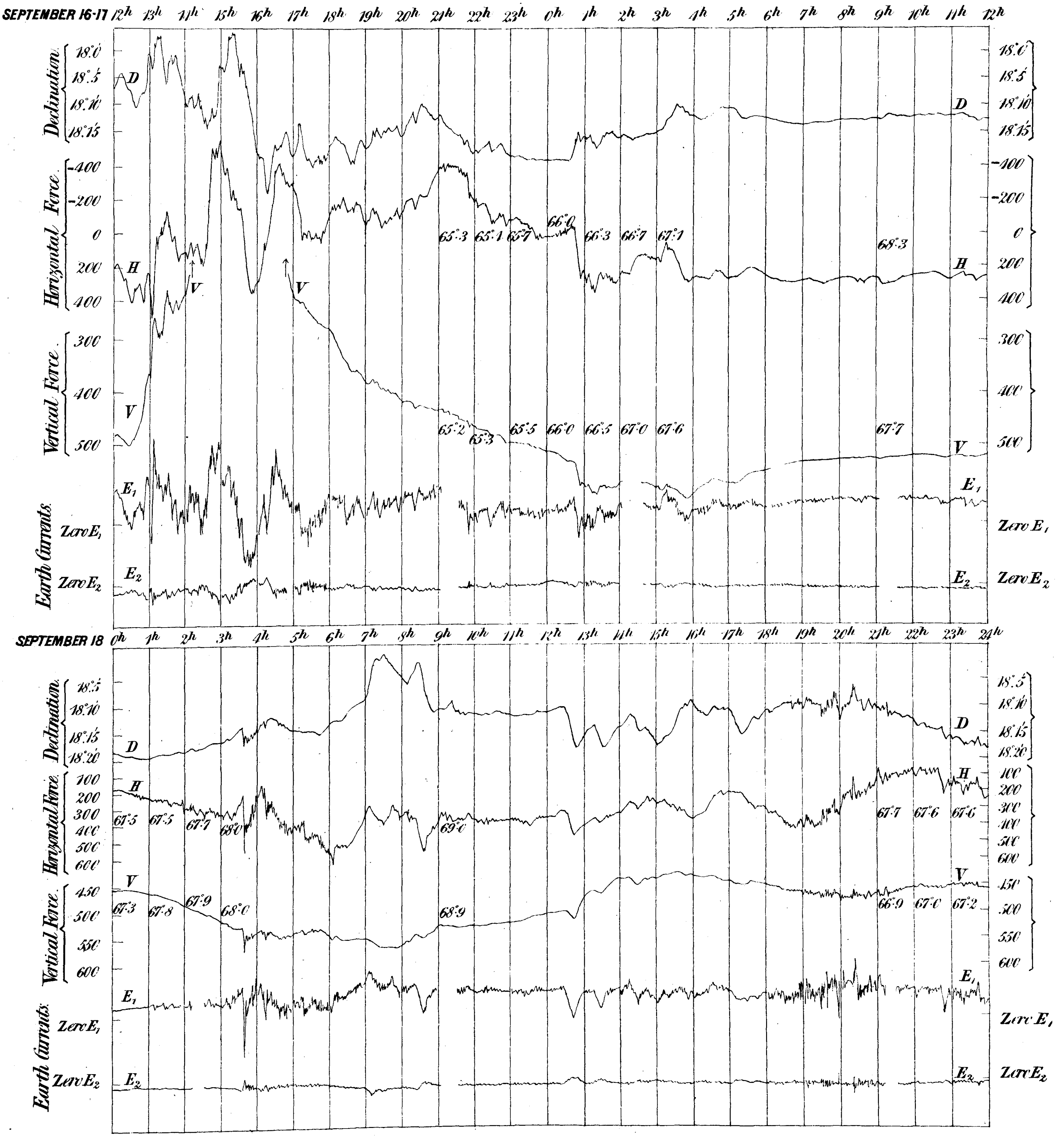
Dangerfield. Lith. 22. Bedford St. Covent Garden. 1115.

Plate XIII.

Magnetic Disturbances and Earth Currents recorded at the Royal Observatory Greenwich, 1883.

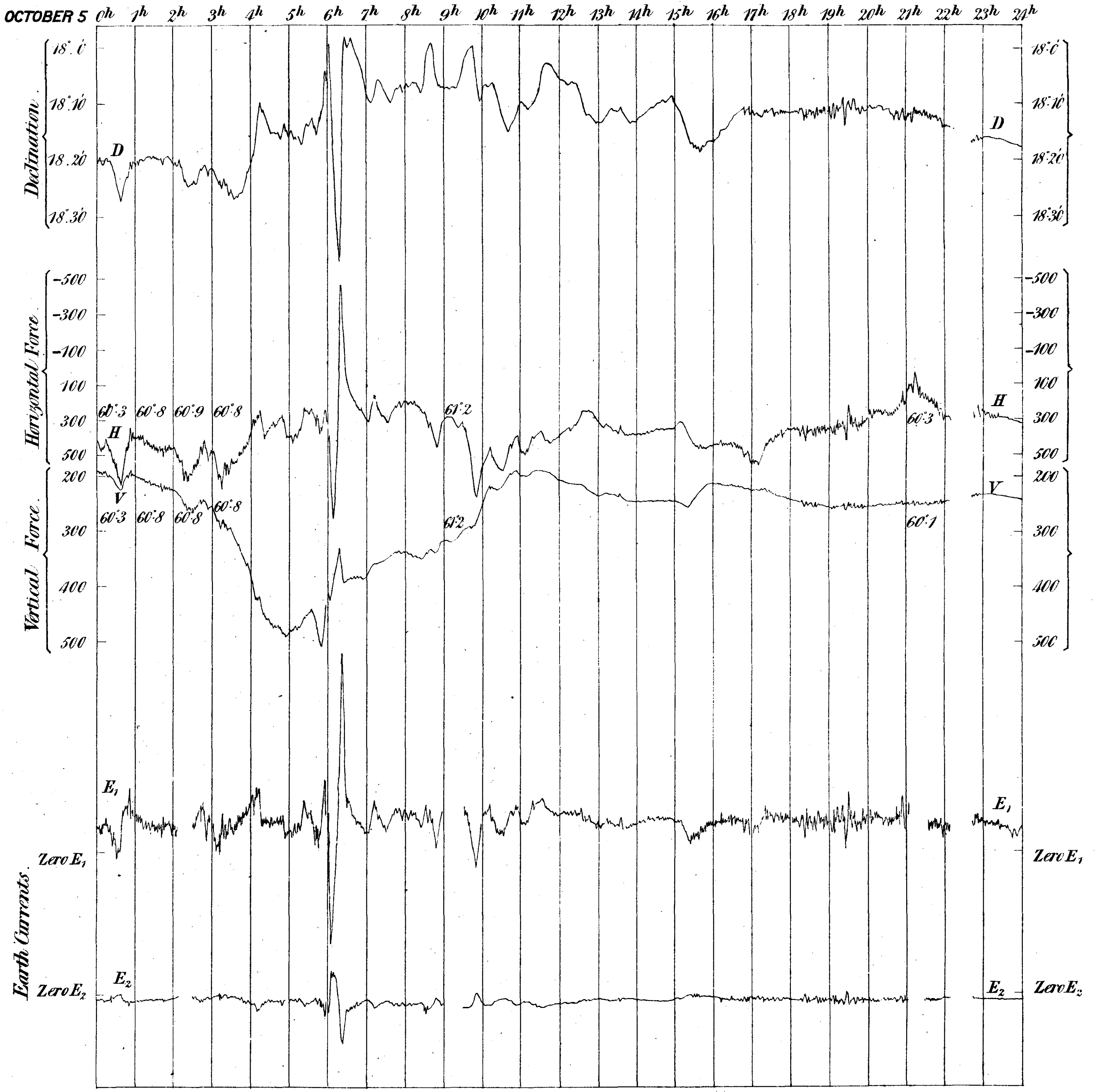


Magnetic Disturbances and Earth Currents recorded at the Royal Observatory Greenwich, 1883.



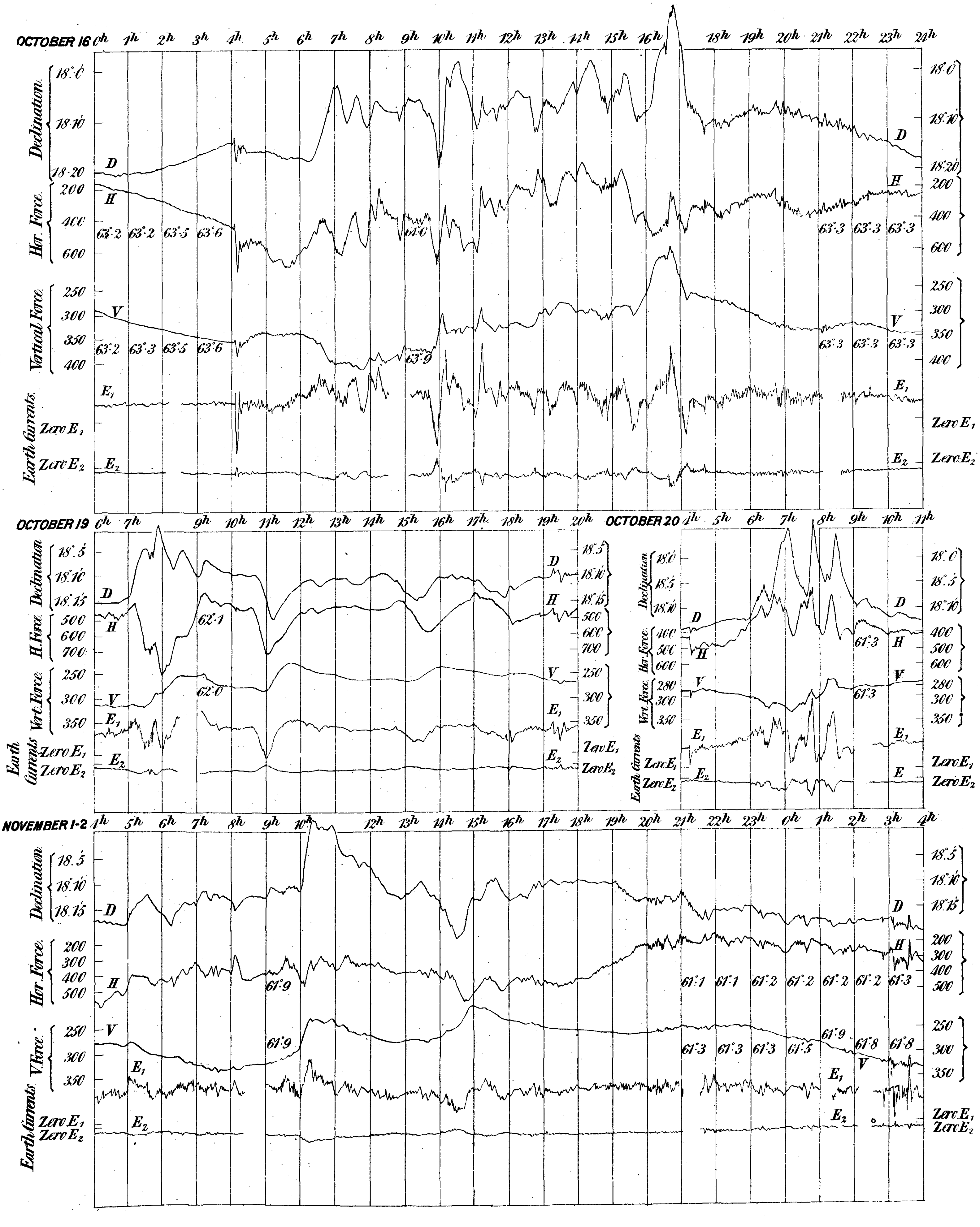
Dangerfield. Lith. 22. Bedford St. Covent Garden. 9116.

Magnetic Disturbances and Earth Currents recorded at the Royal Observatory Greenwich, 1883.



DANGERFIELD LITH 22 BEDFORD ST. COVENT GARDEN. 9116.

Magnetic Disturbances and Earth Currents recorded at the Royal Observatory Greenwich, 1883.



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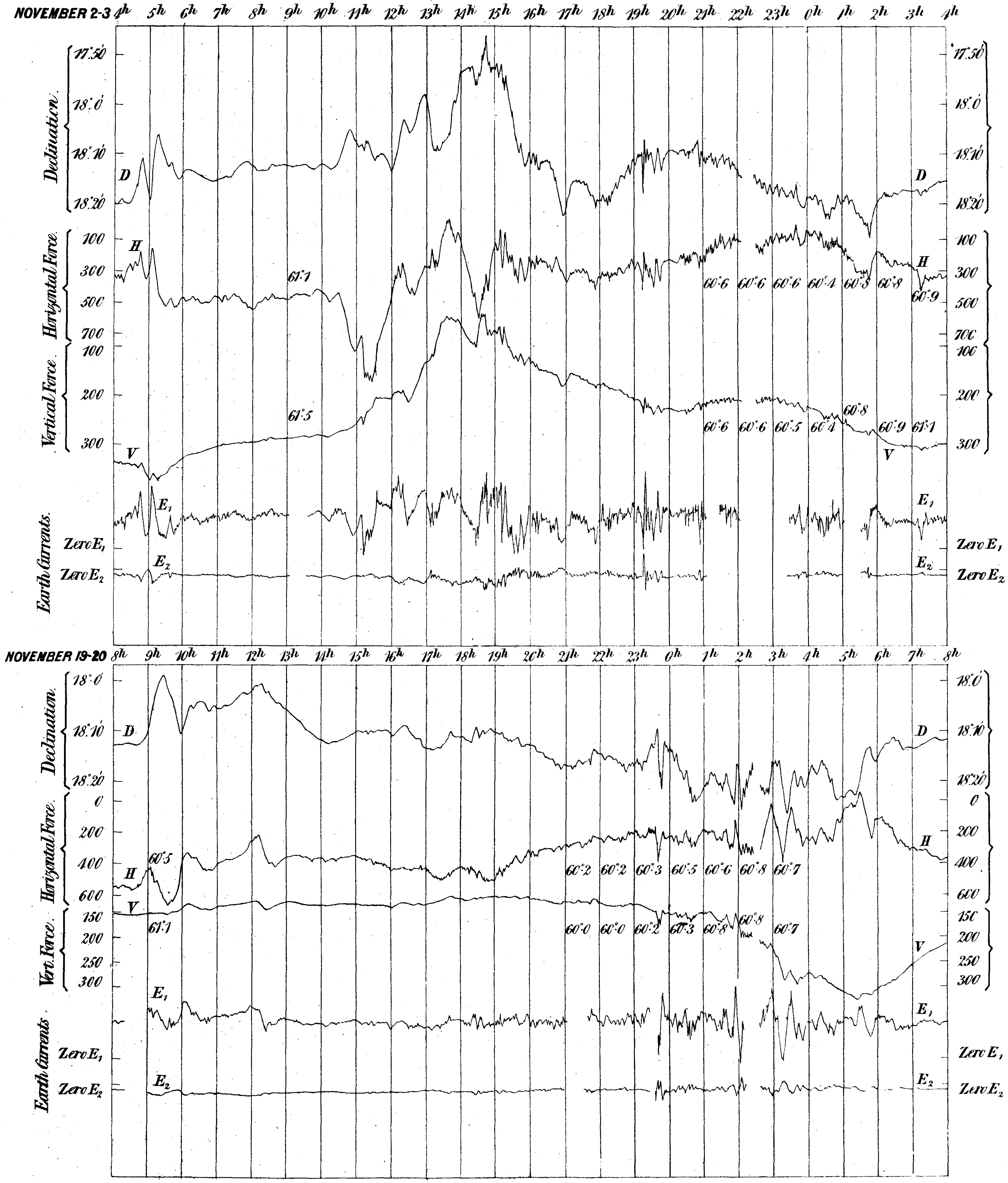
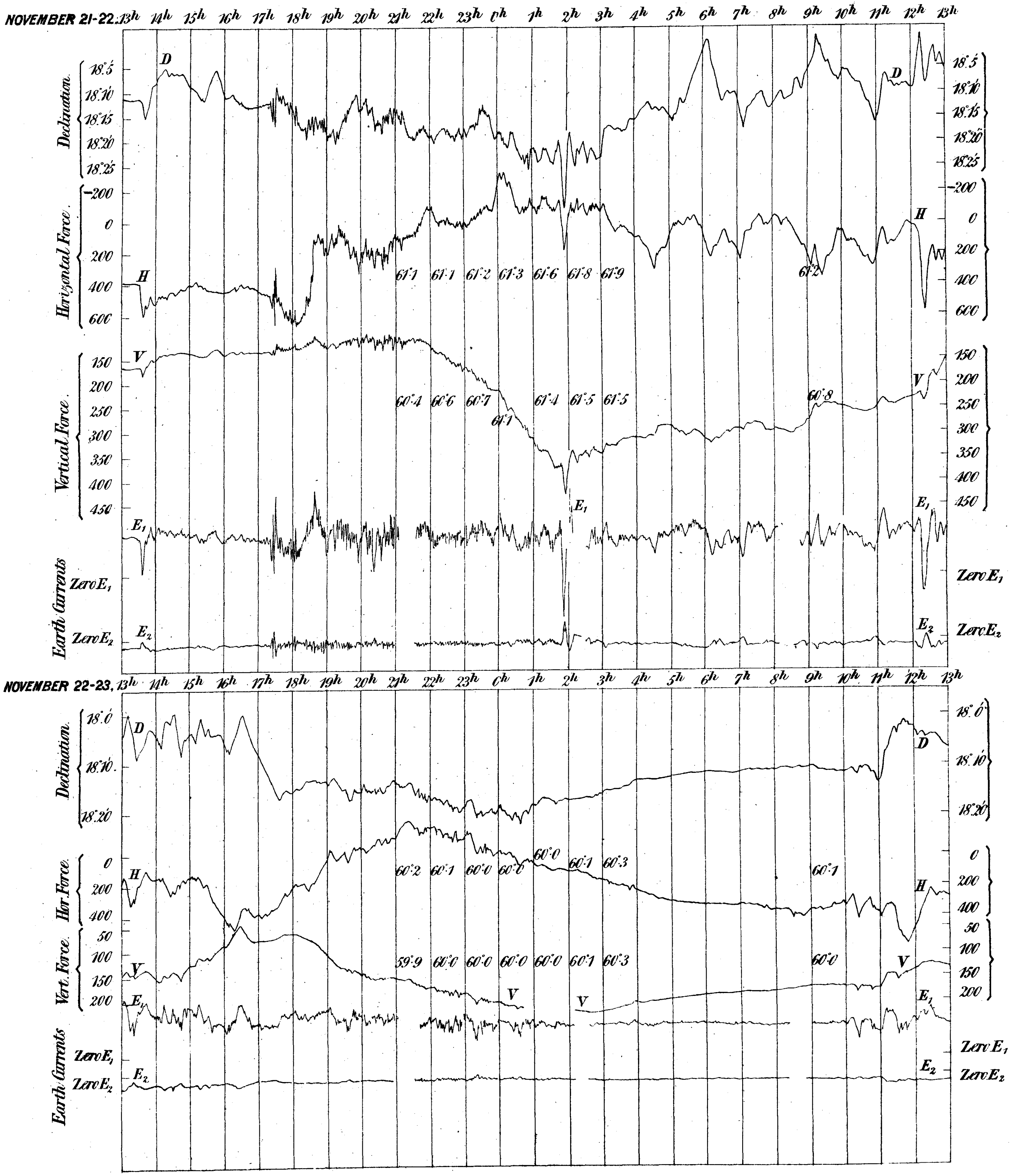


Magnetic Disturbances and Earth Currents recorded at the Royal Observatory Greenwich, 1883.



ROYAL OBSERVATORY, GREENWICH.

RESULTS

OF

METEOROLOGICAL OBSERVATIONS.

1883.

MONTH and DAY, 1883.	Phases of the Moon.	BAROMETER.	TEMPERATURE.							Difference between the Air Temperature and Dew Point Temperature.			Degree of Humidity (Saturation = 100).	TEMPERATURE.				Rain collected in Gauge No. 6, whose receiving surface is 5 inches above the Ground.	Daily Amount of Ozone.	Electricity.
			Of the Air.					Of Evaporation.	Of the Dew Point.					Of Radiation.		Of the Water of the Thames at Deptford.				
		Mean of 24 Hourly Values (corrected and reduced to 32° Fahrenheit).	Highest.	Lowest.	Daily Range.	Mean of 24 Hourly Values.	Excess above Average of 20 Years.	Mean of 24 Hourly Values.	Deduced Mean Daily Value.	Mean.	Greatest.	Least.		Highest in Sun's Rays.	Lowest on the Grass.	Highest.	Lowest.			
		in.	°	°	°	°	°	°	°	°	°	°		°	°	°	°	in.		
Jan. 1	Last Qr.	29·624	55·0	51·7	3·3	53·1	+15·0	52·2	51·3	1·8	4·4	0·8	94	63·2	49·5	..	..	0·120	5·3	wP
2	..	29·519	51·8	43·2	8·6	47·9	+10·0	45·0	41·8	6·1	9·0	4·2	81	84·0	39·8	..	..	0·062	11·5	wP : mP
3	..	29·812	47·8	42·0	5·8	45·5	+ 7·7	42·7	39·5	6·0	8·2	4·0	80	48·0	37·4	..	..	0·000	0·0	wP : vP, wN
4	..	30·019	45·3	37·5	7·8	42·3	+ 4·6	39·9	37·0	5·3	8·8	3·4	82	48·7	31·0	..	..	0·000	0·0	mP : sP
5	..	30·035	49·2	37·5	11·7	44·0	+ 6·4	43·2	42·2	1·8	3·6	0·2	94	61·0	30·9	..	..	0·144	3·0	vN, wP
6	..	30·221	45·2	36·1	9·1	40·9	+ 3·3	40·0	38·9	2·0	4·2	0·5	93	66·0	29·4	..	..	0·000	0·0	wP
7	Greatest Declination S.	30·256	41·0	36·0	5·0	38·6	+ 1·0	37·6	36·3	2·3	4·1	0·0	92	52·2	32·9	..	..	0·000	0·2	wP : mP
8	..	30·024	41·3	30·3	11·0	36·8	− 0·9	35·0	32·5	4·3	9·7	1·6	85	71·3	26·3	..	..	0·032	0·8	wP : mP, mN
9	New	29·590	38·2	32·2	6·0	35·2	− 2·5	33·2	30·0	5·2	8·3	1·8	81	72·4	27·0	..	..	0·011	0·0	mP : mP, wN
10	..	29·423	42·6	35·5	7·1	39·1	+ 1·3	38·5	37·7	1·4	2·6	0·0	95	49·8	34·3	..	..	0·000	0·0	wP : mP
11	..	29·427	40·5	38·0	2·5	40·0	+ 2·1	39·5	38·8	1·2	1·8	0·5	96	43·7	35·0	..	..	0·006	0·0	wP
12	Perigee	29·369	40·9	37·3	3·6	39·0	+ 0·9	38·2	37·2	1·8	3·9	0·0	94	50·6	36·5	..	..	0·000	2·0	wP : sP
13	In Equator	29·170	44·7	34·4	10·3	40·4	+ 2·2	39·6	38·6	1·8	3·1	0·0	94	61·1	29·5	..	..	0·020	0·0	wP, wN : mP
14	..	29·342	42·2	33·7	8·5	38·5	+ 0·2	37·6	36·4	2·1	3·5	0·0	93	66·4	29·0	..	..	0·000	0·0	mP
15	..	29·225	48·2	38·4	9·8	43·6	+ 5·2	42·5	41·2	2·4	4·6	0·4	91	63·6	32·0	..	..	0·325	0·0	wP, wN : sP, sN
16	First Qr.	29·593	43·0	34·6	8·4	39·6	+ 1·1	38·8	37·8	1·8	4·2	0·0	94	51·0	28·3	..	..	0·130	0·0	mN : mP
17	..	29·961	49·2	32·8	16·4	43·3	+ 4·7	42·5	41·5	1·8	3·1	0·5	94	62·8	26·7	..	..	0·004	6·2	wP
18	..	30·002	50·6	43·7	6·9	48·3	+ 9·5	47·5	46·6	1·7	2·5	0·8	94	58·0	36·0	..	..	0·046	3·8	wP
19	Greatest Declination N.	30·095	49·5	33·0	16·5	44·0	+ 5·1	43·2	42·2	1·8	4·4	0·0	94	55·1	29·8	..	..	0·034	3·5	mP : wP
20	..	30·066	48·8	41·1	7·7	46·4	+ 7·3	45·4	44·3	2·1	4·0	0·0	93	51·3	37·3	..	..	0·023	5·0	wP : vP
21	..	30·211	47·8	41·4	6·4	44·7	+ 5·4	44·1	43·4	1·3	2·6	0·4	95	52·4	37·3	..	..	0·010	4·5	wP
22	..	30·352	41·9	35·6	6·3	39·8	+ 0·3	38·4	36·6	3·2	6·0	0·0	89	53·9	28·5	..	..	0·000	1·3	wP : mP
23	Full	30·430	39·0	29·6	9·4	34·1	− 5·5	32·6	30·0	4·1	7·6	0·0	84	82·7	22·9	..	..	0·000	8·5	mP : sP : sP
24	..	30·004	36·9	28·8	8·1	34·2	− 5·5	32·4	29·3	4·9	7·4	2·6	81	45·3	21·9	..	..	0·053	2·5	sP : vP, mN
25	..	29·394	42·4	34·8	7·6	39·0	− 0·8	37·1	34·6	4·4	10·6	0·9	85	61·0	28·8	..	..	0·098	2·8	mN, sP
26	..	29·078	47·2	33·3	13·9	39·9	0·0	36·5	32·1	7·8	15·2	2·9	74	78·8	29·2	..	..	0·040	6·0	vP, sN : mP
27	In Equator	29·408	50·0	33·2	16·8	41·1	+ 1·1	38·3	34·8	6·3	10·9	0·7	79	63·8	28·8	..	..	0·181	7·2	mP : vN, vP : mP
28	Apogee	29·825	49·8	35·2	14·6	42·4	+ 2·3	39·0	34·9	7·5	10·7	2·1	75	82·5	29·9	..	..	0·008	12·0	mP
29	..	29·396	52·1	40·7	11·4	48·4	+ 8·2	47·1	45·7	2·7	5·0	0·9	91	56·9	38·0	..	..	0·346	11·5	wP : vN, mP
30	..	29·458	44·5	35·0	9·5	38·8	− 1·5	36·5	33·4	5·4	9·7	2·0	82	76·6	29·5	..	..	0·000	3·2	mP
31	Last Qr.	29·355	41·5	29·2	12·3	35·8	− 4·6	34·7	33·0	2·8	7·8	0·0	90	60·7	23·4	..	..	0·000	0·0	mP
Means	..	29·732	45·4	36·3	9·1	41·4	+ 2·7	40·0	38·1	3·4	6·2	1·0	88·4	61·1	31·5	..	..	Sum 1·693	3·3	..
Number of Column for Reference.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

The results apply to the civil day.

The mean reading of the Barometer (Column 2) and the mean temperatures of the Air and Evaporation (Columns 6 and 8) are deduced from the photographic records. The average temperature (Column 7) is that determined from the reduction of the photographic records from 1849 to 1868. The temperature of the Dew Point (Column 9) and the Degree of Humidity (Column 13) are deduced from the corresponding temperatures of the Air and Evaporation by means of Glaisher's Hygrometrical Tables. The mean difference between the Air and Dew Point Temperatures (Column 10) is the difference between the numbers in Columns 6 and 9, and the Greatest and Least Differences (Columns 11 and 12) are deduced from the 24 hourly photographic measures of the Dry-bulb and Wet-bulb Thermometers.

The values given in Columns 3, 4, 5, 14, 15, 16, and 17 are derived from eye-readings of self-registering thermometers.

The mean reading of the *Barometer* for the month was 29$^{\text{in}}$·732, being 0$^{\text{in}}$·003 *higher* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 55°·0 on January 1; the lowest in the month was 28°·8 on January 24; and the range was 26°·2.

The mean of all the highest daily readings in the month was 45°·4, being 2°·3 *higher* than the average for the 42 years, 1841–1882.

The mean of all the lowest daily readings in the month was 36°·3, being 2°·8 *higher* than the average for the 42 years, 1841–1882.

The mean of the daily ranges was 9°·1, being 0°·5 *less* than the average for the 42 years, 1841–1882.

The mean for the month was 41°·4, being 2°·7 *higher* than the average for the 20 years, 1849–1868.

MONTH and DAY, 1883.	Daily Duration of Sunshine.	Sun above Horizon.	WIND AS DEDUCED FROM SELF-REGISTERING ANEMOMETERS.						CLOUDS AND WEATHER.	
			OSLER'S.					ROBINSON'S.		
			General Direction.		Pressure on the Square Foot.			Horizontal Movement of the Air.		
			A.M.	P.M.	Greatest.	Least.	Mean of 24 Hourly Measures.		A.M.	P.M.
	hours.	hours.			lbs.	lbs.	lbs.	miles.		
Jan. 1	0·0	7·9	SSW : SW	SW	9·0	0·0	1·9	521	10, r : 10, r : 10, sc, m.-r	10, sc, m.-r : 10, sc, m.-r : v, sc, oc.-m.-r, w
2	3·5	7·9	SW : WSW	WSW	13·5	0·2	4·4	711	p.-cl : 1, sqs	5,sc,ci.-cu,w,slt.-sh: 1, sqs, shs.-r : 10, sqs
3	0·0	7·9	W : WNW	NW	9·0	0·0	1·3	371	10, w : 10	10 : 10, slt.-f
4	0·0	7·9	Calm : ESE	SE : SSE	0·0	0·0	0·0	124	10 : 10	10 : 1, s, d
5	0·1	7·9	SSE : S : SSW	SSW : WSW	1·2	0·0	0·1	230	10, r : p.-cl, cu.-s, ci.-cu	10, cu.-s, ci.-cu, sc, r: 10, r : 0, d
6	1·1	8·0	WNW : NW : N	N : NNE	0·9	0·0	0·0	200	1, s, d : 9	7, ci.-cu, ci.-s, cu.-s : 10 : 10
7	0·7	8·0	NNE : NE	ENE	1·7	0·0	0·1	250	10 : 2, ci, ci.-cu	9 : 10
8	4·6	8·0	E : ENE	ENE : E	3·9	0·0	0·2	264	10 : 10 : 1, li.-cl	0 : 10, r : 10, oc.-slt.-r
9	4·0	8·1	E	E : ESE	8·0	0·0	2·1	434	10 : 10 :4,ci.-cu,w,ho.-fr	2, ci.-cu, w : 10, sl, slt.-r
10	0·0	8·1	ESE : E	E	3·7	0·0	0·2	273	10 : 10	9, cu.-s, ci.-cu : 10
11	0·0	8·1	ESE	ESE : E	0·2	0·0	0·0	189	10 : 10, oc.-m.-r	10 : 10, slt.-r
12	0·0	8·2	E : ESE	E : ESE	0·3	0·0	0·0	168	10 : 9, ci.-cu, ci.-s	10 : 10
13	0·1	8·2	E : ESE	ENE : NE	1·9	0·0	0·0	210	10 : 10 : fq.-th.-r, so.-ha	9, slt.-r : p.-cl, lu.-ha : 0
14	0·5	8·2	NE : Calm	ESE : SSE	0·2	0·0	0·0	165	0 : 8, ci, ci.-s	9, ci.-cu : p.-cl, s, th.-cl, lu.-ha
15	0·1	8·3	SSE : S : SW	SSW : S : SSE	4·2	0·0	0·1	219	p.-cl,slt.-r: 10, c.-r : 10	8, ci.-s, ci, so.-ha: v : 10, hy.-r
16	0·0	8·3	NE : NW	W : SW	0·4	0·0	0·0	176	10, r : 10, r : 10,glm,th.-r	4, ci.-cu, th.-cl, h : 0, ho.-fr, slt.-f
17	0·0	8·3	SSW	SSW	2·4	0·0	0·2	312	p.-cl : 10	10 : 10
18	0·0	8·4	SSW	SSW : WSW	4·0	0·0	0·6	379	10 : 10, slt.-r : 10, sc, m.-r	10, sc, m.-r : 10, m.-r : 0, slt.-h
19	0·0	8·4	SW : S	S : SSW	4·0	0·0	0·5	283	li.-cl : p.-cl, f : 8, th.-cl, f	10, r, sc : 10 : 10, sc
20	0·0	8·5	SW : NE	S : SE	4·0	0·0	0·3	233	10, slt.-r : 10, glm, th.-r	10, glm, m.-r : 10, fq.-th.-r : f
21	0·0	8·5	ESE : SE	E : SE : SSE	0·0	0·0	0·0	88	p.-cl, f : 10, slt.-f	10 : 10
22	0·0	8·6	S : NE : E	ENE : E : ESE	0·9	0·0	0·0	154	10 : 10	9 : v, li.-cl
23	5·1	8·6	SE	SE : SSE	1·0	0·0	0·1	202	p.-cl : 0, ho.-fr : p.-cl	4, ci, ci.-cu, ci.-s : 1, ci : 0, ho.-fr
24	0·2	8·7	SSE : S : SSW	S	9·7	0·0	1·3	378	0, ho.-fr : p.-cl, s, ho.-fr : 8, th.-cl	10 : 10, fr.-r, sn, r, w
25	3·0	8·7	SSW : W : WNW	W : SW : SSE	12·3	0·0	1·5	413	10, r, w : 1, m, ho.-fr, h	2, th.-cl, ci.-cu, h: p.-cl : 10,sc,w,fq.-th.-r
26	4·8	8·8	SW : WSW	WSW : SW	15·7	0·3	4·6	747	10, w, sh.-r : 0, w	4, ci.-cu, cu, cu.-s, w : 0
27	0·1	8·8	WSW : SW : SSW	SW : WSW	28·0	0·2	5·7	813	0 : 10, w, r	10, sc, st.-w, r : v, st.-w : 0, w
28	3·2	8·9	WSW : SW	SW : SSW	12·0	0·0	3·0	616	0, w : 0	3, ci, ci.-cu, so.-ha : 10, w, th.-r
29	0·0	8·9	SW	SSW : N : SW	21·5	0·0	6·2	683	10, sc, w : 10, slt.-r, st.-w	10, sc, hy.-r, w : 10, sc, slt.-r
30	3·3	9·0	WSW : SW	WSW : SW	7·6	0·0	2·0	473	10 : 3, ci, ci.-s, li.-cl, ho.-fr	5, ci.-cu, cu.-s, slt.-sh: 0 : 0, ho.-fr
31	0·0	9·0	S : SE : ENE	ENE : NE	1·7	0·0	0·2	218	0, ho.-fr : 3, ci, cu.-s, h, so.-ha	9, th.-cl, ci.-cu : 10
Means	1·1	8·4	...	...	..	..	1·2	339		
Number of Column for Reference.	21	22	23	24	25	26	27	28	29	30

The mean *Temperature of Evaporation* for the month was 40°·0, being 2°·6 *higher* than
The mean *Temperature of the Dew Point* for the month was 38°·1, being 2°·7 *higher* than
The mean *Degree of Humidity* for the month was 88·4, being 1·1 *greater* than
The mean *Elastic Force of Vapour* for the month was $0^{in}\cdot230$, being $0^{in}\cdot023$ *greater* than
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was $2^{grs}\cdot7$, being $0^{gr}\cdot3$ *greater* than
The mean *Weight of a Cubic Foot of Air* for the month was 550 grains, being 2 grains *less* than
} the average for the 20 years, 1849–1868.

The mean amount of *Cloud* for the month (a clear sky being represented by 0 and an overcast sky by 10) was 7·2.

The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·13. The maximum daily amount of *Sunshine* was 5·1 hours on January 23.

The highest reading of the *Solar Radiation Thermometer* was 84°·0 on January 2; and the lowest reading of the *Terrestrial Radiation Thermometer* was 21°·9 on January 24.

The mean daily distribution of *Ozone* was, for the 12 hours ending 9 a.m., 1·9; for the 6 hours ending 3 p.m., 0·6; and for the 6 hours ending 9 p.m., 0·8.

The *Proportions of Wind* referred to the cardinal points were N. 3, E. 10, S. 10, and W. 7. One day was calm.

The *Greatest Pressure of the Wind* in the month was $28^{lbs}\cdot0$ on the square foot on January 27. The mean daily *Horizontal Movement of the Air* for the month was 339 miles; the greatest daily value was 813 miles on January 27; and the least daily value 88 miles on January 21.

Rain fell on 19 days in the month, amounting to $1^{in}\cdot693$, as measured by gauge No. 6 partly sunk below the ground; being $0^{in}\cdot352$ *less* than the average fall for the 42 years, 1841–1882.

MONTH and DAY, 1883.	Phases of the Moon.	BAROMETER.	TEMPERATURE.							Difference between the Air Temperature and Dew Point Temperature.			Degree of Humidity (Saturation = 100).	TEMPERATURE.				Rain collected in Gauge No. 6, whose receiving surface is 5 inches above the Ground.	Daily Amount of Ozone.	Electricity.
			Of the Air.					Of Evaporation.	Of the Dew Point.					Of Radiation.		Of the Water of the Thames at Deptford.				
		Mean of 24 Hourly Values (corrected and reduced to 32° Fahrenheit).	Highest.	Lowest.	Daily Range.	Mean of 24 Hourly Values.	Excess above Average of 20 Years.	Mean of 24 Hourly Values.	Deduced Mean Daily Value.	Mean.	Greatest.	Least.		Highest in Sun's Rays.	Lowest on the Grass.	Highest.	Lowest.			
		in.	°	°	°	°	°	°	°	°	°	°		°	c	°	°	in.		
Feb. 1	..	29·317	41·8	32·0	9·8	36·0	− 4·5	35·2	34·0	2·0	4·8	0·0	93	55·2	27·0	..	..	0·070	2·0	wP, wN : mP, mN
2	..	28·907	48·4	36·4	12·0	43·8	+ 3·2	41·9	39·7	4·1	6·7	2·2	86	64·0	33·0	..	..	0·398	18·5	wP, wN : vN
3	Greatest Declination S.	29·533	45·5	36·5	9·0	40·4	− 0·3	38·0	34·9	5·5	9·7	1·7	81	90·0	31·4	..	..	0·002	4·5	wP : mP
4	..	29·894	50·3	36·7	13·6	42·5	+ 1·8	40·3	37·6	4·9	11·1	1·8	84	86·5	31·8	..	..	0·000	0·0	wP : mP
5	..	30·045	50·2	37·2	13·0	42·3	+ 1·7	40·3	37·9	4·4	11·3	1·1	85	88·8	30·7	..	..	0·000	0·7	wP : mP
6	..	29·890	45·2	33·4	11·8	38·9	− 1·5	37·1	34·7	4·2	9·9	1·5	86	93·8	27·3	..	..	0·000	6·2	wP : mP
7	New	29·690	44·0	36·7	7·3	39·7	− 0·5	38·6	37·2	2·5	4·4	0·0	91	60·4	31·8	..	..	0·109	8·7	wP, wN : wP
8	..	29·468	53·1	39·4	13·7	46·4	+ 6·5	45·8	45·1	1·3	2·4	0·6	96	58·9	38·9	..	..	0·156	5·2	wP
9	Perigee : In Equator.	29·581	48·4	38·2	10·2	42·7	+ 3·1	40·8	38·6	4·1	9·0	0·7	86	88·0	34·2	..	..	0·496	2·2	mN : mP
10	..	29·309	48·7	41·6	7·1	46·6	+ 7·3	45·0	43·2	3·4	7·7	1·9	89	51·7	35·9	..	..	0·466	22·0	wwN, wwP : wN, wP
11	..	29·432	47·8	39·8	8·0	43·8	+ 4·7	40·9	37·5	6·3	12·6	1·3	78	98·3	34·8	..	..	0·180	5·5	wN, wP : mP
12	..	29·406	49·1	41·2	7·9	45·8	+ 6·9	43·1	40·0	5·8	12·4	2·9	81	72·0	35·3	..	..	0·224	18·3	wwP : vN, wP
13	..	29·683	48·7	37·9	10·8	42·8	+ 4·0	40·2	37·1	5·7	10·5	2·3	81	94·7	31·0	..	..	0·010	7·7	wP : vN, vP : mP
14	First Qr.	29·760	47·0	40·5	6·5	44·7	+ 6·0	43·2	41·5	3·2	5·1	2·1	89	53·7	32·9	..	..	0·125	15·0	wwP : wwN
15	..	29·814	54·4	39·0	15·4	46·7	+ 8·0	44·8	42·7	4·0	7·2	2·3	87	101·3	33·0	..	..	0·100	11·2	wwP : vP, vN
16	Greatest Declination N.	30·258	45·7	32·5	13·2	38·4	− 0·4	36·3	33·5	4·9	11·7	2·1	83	60·6	26·4	..	..	0·000	0·0	vP
17	..	30·161	47·1	30·9	16·2	39·6	+ 0·7	37·1	33·9	5·7	10·1	0·9	80	81·3	26·2	..	..	0·000	1·8	mP
18	..	29·832	45·4	34·3	11·1	40·6	+ 1·6	39·0	37·0	3·6	7·0	0·9	87	62·1	27·5	..	..	0·482	5·2	wP, vN : vP
19	..	29·938	41·6	32·0	9·6	38·1	− 1·1	36·7	34·8	3·3	6·6	1·0	88	49·0	25·7	..	..	0·009	0·0	vP
20	..	30·104	48·3	34·9	13·4	42·8	+ 3·5	41·5	39·9	2·9	4·0	1·9	90	56·3	30·9	..	..	0·050	1·0	mP : wP
21	..	30·246	52·2	44·3	7·9	48·6	+ 9·1	46·8	44·9	3·7	4·6	2·6	87	61·0	41·1	..	..	0·001	3·7	wP
22	Full	30·314	55·0	38·8	16·2	49·6	+10·0	47·1	44·4	5·2	9·8	2·3	83	76·0	31·0	..	..	0·000	2·2	wP : mP
23	In Equator	30·616	50·1	33·9	16·2	41·4	+ 1·7	38·6	35·1	6·3	11·6	3·0	79	80·8	27·1	..	..	0·000	0·0	vP
24	..	30·500	52·1	34·2	17·9	42·1	+ 2·3	40·8	39·2	2·9	7·8	0·4	90	80·7	30·1	..	..	0·000	0·0	mP
25	Apogee	30·499	47·8	42·5	5·3	45·4	+ 5·5	43·8	41·9	3·5	5·2	0·7	88	58·2	35·5	..	..	0·000	0·0	wP : mP
26	..	30·439	47·4	35·7	11·7	42·0	+ 2·0	40·7	39·1	2·9	6·9	0·7	90	90·1	30·2	..	..	0·000	0·0	wP : mP
27	..	30·291	48·1	36·8	11·3	42·9	+ 2·8	40·9	38·6	4·3	8·4	0·9	85	77·7	31·5	..	..	0·010	0·0	wP : vP
28	..	30·302	55·2	44·8	10·4	47·5	+ 7·3	45·4	43·1	4·4	11·2	0·6	86	87·8	36·9	..	..	0·000	0·0	wP, wN : vP
Means	..	29·901	48·5	37·2	11·3	42·9	+ 3·3	41·1	38·8	4·1	8·2	1·4	86·0	74·2	31·8	..	..	Sum 2·888	5·1	..
Number of Column for Reference.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

The results apply to the civil day.

The mean reading of the Barometer (Column 2) and the mean temperatures of the Air and Evaporation (Columns 6 and 8) are deduced from the photographic records. The average temperature (Column 7) is that determined from the reduction of the photographic records from 1849 to 1868. The temperature of the Dew Point (Column 9) and the Degree of Humidity (Column 13) are deduced from the corresponding temperatures of the Air and Evaporation by means of Glaisher's Hygrometrical Tables. The mean difference between the Air and Dew Point Temperatures (Column 10) is the difference between the numbers in Columns 6 and 9, and the Greatest and Least Differences (Columns 11 and 12) are deduced from the 24 hourly photographic measures of the Dry-bulb and Wet-bulb Thermometers.

The values given in Columns 3, 4, 5, 14, 15, 16, and 17 are derived from eye-readings of self-registering thermometers.

The mean reading of the *Barometer* for the month was $29^{\mathrm{in}}{\cdot}901$, being $0^{\mathrm{in}}{\cdot}069$ *higher* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 55°·2 on February 28; the lowest in the month was 30°·9 on February 17; and the range was 24°·3.

The mean of all the highest daily readings in the month was 48°·5, being 3°·0 *higher* than the average for the 42 years, 1841–1882.

The mean of all the lowest daily readings in the month was 37°·2, being 2°·8 *higher* than the average for the 42 years, 1841–1882.

The mean of the daily ranges was 11°·3, being 0°·2 *greater* than the average for the 42 years, 1841–1882.

The mean for the month was 42°·9, being 3°·3 *higher* than the average for the 20 years, 1849–1868.

MONTH and DAY, 1883.	Daily Duration of Sunshine.	Sun above Horizon.	Wind as deduced from Self-registering Anemometers. Osler's. General Direction. A.M.	P.M.	Pressure on the Square Foot. Greatest.	Least.	Mean of 24 Hourly Measures.	Robinson's. Horizontal Movement of the Air.	CLOUDS AND WEATHER. A.M.	P.M.
	hours.	hours.			lbs.	lbs.	lbs.	miles.		
Feb. 1	0·8	9·1	N : SW	W : SE	6·6	0·0	0·3	187	10 : h, glm, f, ho.-fr	tk.-f : 7, cu.-s, r
2	0·1	9·2	SSE : S	SSW : SW	28·5	0·6	7·2	812	10, w, r : 10, sc, w, fq.-r	10, sc, m.-r, w : 10, sc, r, g
3	4·4	9·2	SW : SSW	SSW	9·7	0·3	2·3	509	10, w : 3, ci, ci.-s, li.-shs	5,cu.-s,ci.-cu,slt.-sh: 0 : 10
4	5·0	9·3	WSW	WSW : SSW	2·4	0·0	0·4	322	10, slt-sh : 2, ci.-cu	1, ci.-cu : 0 : v
5	2·5	9·3	S : SSE	SSE : SE : ESE	1·2	0·0	0·0	212	p.-cl : 9,ci.-s,th.-cl,so.-ha	7,ci.-cu,cu.-s,ci.-s,th.-cl: 0, d
6	6·8	9·4	E : ESE	ESE : SE	2·5	0·0	0·1	226	0, ho.-fr : 1, ci	2, cu, ci.-cu : 0, hy.-d
7	0·0	9·4	SE : SSE	SE : E	4·8	0·0	0·5	206	0, d : 10, sc, r	10 : 10
8	0·0	9·5	SE : SSE	SSW : NW	3·4	0·0	0·5	303	10 : 10, m.-r	10 : 10, fq.-m.-r : 10, c.-r
9	2·9	9·6	N : NW : WSW	SW : S	10·5	0·0	0·5	315	10, c.-r : 10, m.-r	8,cu.-s,ci.-cu : 0 : v, w
10	0·0	9·6	S : SSW	S : SSW	24·0	0·0	5·9	724	10, w, r : 10, sc, w, slt.-r	10, sc, r : 10, sc, r, w : 7, sc, th.-cl
11	4·1	9·7	S : WSW	SW : SSE	13·0	0·0	1·7	482	hy.-r, hy.-sqs : 2, ci, ci.-cu	6, sc, hl, w : v
12	0·3	9·8	S : SSE	SSE : SSW	10·7	0·0	2·9	534	0 : v, r, w	10, w, c.-r : 10
13	5·3	9·8	SSW : SW	SW : S	4·0	0·0	0·5	325	10 : 2,th.-cl,sc,slt.-sh,hl	5, cu, ci.-cu, th.-cl : 0, d
14	0·0	9·9	S	S : SSW	14·3	0·1	4·1	580	0, h : 10,sc, m.-r, w	10, sc, fq.-th.-r, w : 10, sc. fq.-m.-r, w
15	1·2	9·9	SSW	SW : WSW	8·4	0·0	1·0	376	10, sc, slt.-r : 8,ci,ci.-s,sc,oc.-slt.-r	9, sc, fq.-r : v
16	1·5	10·0	W : WSW	NW : SW : S	1·5	0·0	0·1	210	v, ho.-fr : 0, ho.-fr, f, h	4, ci.-cu, h, slt.-f : th.-cl, ho.-fr, slt.-f
17	1·4	10·1	SE : SSE	S : SSE	3·8	0·0	0·6	299	0, ho.-fr : 9	9, ci.-cu. cu.-s : 10
18	0·0	10·1	SSE	N : WNW : WSW	2·4	0·0	0·5	246	10 : 10, hy.-r : 10,hy.-r,f,glm	10,r,gt.-glm,f : 0 : 0, h
19	0·0	10·2	WSW : W : NW	NNW : N	1·9	0·0	0·1	205	10 : 10, slt.-f, ho.-fr	10, m.-r : 10
20	0·0	10·3	SW	SW	4·0	0·0	0·6	357	10, lu.-ha : 10, sc : 10, th.-r	10, fq.-m.-r : 10, fq.-m.-r : 10
21	0·0	10·3	WSW : SW	SW	3·6	0·0	1·0	440	10, cu.-s; s : 10, sc	10 : vv
22	0·3	10·4	SW : WSW	WSW : NW : NNW	5·4	0·0	1·7	456	10 : 10, sc	9, ci, ci.-cu : 2, ci.-cu, h, d
23	6·2	10·5	WSW	WSW : SW	1·6	0·0	0·1	255	0, ho.-fr : 0, m, h	0, h : 0, d
24	2·8	10·5	SW : WSW	WSW	2·0	0·0	0·2	308	0, d : 10, m	5, ci, cu.-s, h : 0, m, d : 10
25	0·0	10·6	W : NW : WSW	WSW : SW	0·3	0·0	0·0	141	10 : 10, m	10, glm, m : 10
26	1·3	10·7	WSW : SW	SW	1 0	0·0	0·0	223	10 : 10, f	5,th.-cl,ci.-cu: 0, d : v, d
27	0·7	10·7	SW : W	W : WSW	2·4	0·0	0·2	313	10 : 10, glm	9,cu.-s,ci.-cu : v, h : 10, slt.-r
28	1·0	10·8	WSW : NNW	NW : WSW	0·9	0·0	0·0	207	10 : 10, f, glm, slt.-r	8,cu.-s,ci.-cu,th.-cl,h: 4, m, slt.-f
Means	1·7	9·9	...	...	..	..	1·2	349		
Number of Column for Reference.	21	22	23	24	25	26	27	28	29	30

The mean *Temperature of Evaporation* for the month was $41^{\circ}\cdot 1$, being $3^{\circ}\cdot 2$ *higher* than
The mean *Temperature of the Dew Point* for the month was $38^{\circ}\cdot 8$, being $3^{\circ}\cdot 4$ *higher* than
The mean *Degree of Humidity* for the month was 86·0, being 1·2 *greater* than
The mean *Elastic Force of Vapour* for the month was $0^{in}\cdot 236$, being $0^{in}\cdot 029$ *greater* than
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was $2^{grs}\cdot 7$, being $0^{gr}\cdot 3$ *greater* than
The mean *Weight of a Cubic Foot of Air* for the month was 551 grains, being 3 grains *less* than
} the average for the 20 years, 1849–1868.

The mean amount of *Cloud* for the month (a clear sky being represented by 0 and an overcast sky by 10) was 6·7.

The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·17. The maximum daily amount of *Sunshine* was 6·8 hours on February 6.

The highest reading of the *Solar Radiation Thermometer* was $101^{\circ}\cdot 3$ on February 15; and the lowest reading of the *Terrestrial Radiation Thermometer* was $25^{\circ}\cdot 7$ on February 19.

The mean daily distribution of *Ozone* was, for the 12 hours ending 9 a.m., 3·2; for the 6 hours ending 3 p.m., 0·8; and for the 6 hours ending 9 p.m., 1·1.

The *Proportions of Wind* referred to the cardinal points were N. 2, E. 3, S. 13, and W. 10.

The *Greatest Pressure of the Wind* in the month was $28^{lbs}\cdot 5$ on the square foot on February 2. The mean daily *Horizontal Movement of the Air* for the month was 349 miles; the greatest daily value was 812 miles on February 2; and the least daily value 141 miles on February 25.

Rain fell on 15 days in the month, amounting to $2^{in}\cdot 888$, as measured by gauge No. 6 partly sunk below the ground; being $1^{in}\cdot 405$ *greater* than the average fall for the 42 years, 1841–1882.

MONTH and DAY, 1883.	Phases of the Moon.	BAROMETER.	TEMPERATURE.							Difference between the Air Temperature and Dew Point Temperature.			Degree of Humidity (Saturation = 100).	TEMPERATURE.				Rain collected in Gauge No. 6, whose receiving surface is 5 inches above the Ground.	Daily Amount of Ozone.	Electricity.
			Of the Air.					Of Evaporation.	Of the Dew Point.					Of Radiation.		Of the Water of the Thames at Deptford.				
		Mean of 24 Hourly Values (corrected and reduced to 32° Fahrenheit).	Highest.	Lowest.	Daily Range.	Mean of 24 Hourly Values.	Excess above Average of 20 Years.	Mean of 24 Hourly Values.	Deduced Mean Daily Value.	Mean.	Greatest.	Least.		Highest in Sun's Rays.	Lowest on the Grass.	Highest.	Lowest.			
		in.	°	°	°	°	°	°	°	°	°	°		°	°	°	°	in.		
Mar. 1	..	30·278	48·6	41·0	7·6	45·7	+ 5·4	43·5	41·0	4·7	6·1	2·2	84	65·8	37·9	..	..	0·134	0·8	vP, wN : mP
2	Last Quarter: GreatestDec.S.	30·440	45·4	35·5	9·9	40·6	+ 0·2	38·1	34·9	5·7	9·2	2·9	81	84·7	30·0	..	..	0·000	6·2	mP
3	..	30·504	49·1	30·8	18·3	39·2	− 1·3	36·6	33·2	6·0	15·3	0·6	80	107·1	24·0	..	..	0·000	0·0	mP : sP
4	..	30·505	49·9	29·2	20·7	39·1	− 1·4	36·6	33·3	5·8	13·9	0·7	80	104·3	24·9	..	..	0·000	0·0	mP
5	..	30·387	52·1	30·7	21·4	39·8	− 0·7	37·8	35·2	4·6	13·6	0·0	84	89·8	23·9	..	..	0·003	0·0	wP : vP
6	..	29·991	43·3	30·2	13·1	36·9	− 3·6	33·7	29·2	7·7	14·5	5·4	74	97·5	26·2	..	..	0·006	0·0	wP : wN, wP
7	..	29·759	38·5	28·2	10·3	33·1	− 7·5	31·2	27·5	5·6	9·8	1·2	79	81·4	26·0	..	..	0·052	2·0	vP, wN
8	..	29·610	37·0	23·8	13·2	28·8	−11·8	27·7	23·7	5·1	10·5	0·0	81	103·6	21·0	..	..	0·060	0·0	— : vP, vN : —
9	New: In Equator: Perigee.	29·773	37·3	23·4	13·9	29·3	−11·4	27·3	20·5	8·8	10·5	2·6	68	99·5	20·8	..	..	0·026	0·0	— : vP
10	..	29·683	36·7	22·6	14·1	29·2	−11·5	28·0	23·9	5·3	7·2	0·0	79	93·3	20·0	..	..	0·000	0·0	sP
11	..	29·524	40·4	25·6	14·8	33·8	− 7·0	31·2	26·5	7·3	9·6	3·0	74	70·2	19·2	..	..	0·000	0·3	— : mP
12	..	29·664	40·4	27·9	12·5	33·3	− 7·5	31·0	26·6	6·7	13·4	1·3	76	92·6	23·3	..	..	0·007	5·7	mP : vP, vN
13	..	29·810	44·3	26·9	17·4	35·1	− 5·8	31·8	26·6	8·5	15·6	1·9	69	78·0	21·6	..	..	0·016	0·0	vP
14	..	29·559	43·7	32·4	11·3	36·5	− 4·5	34·8	32·4	4·1	9·9	0·6	86	66·5	31·0	..	..	0·006	0·5	vP
15	GreatestDec.N. First Quarter.	29·473	39·4	26·6	12·8	33·2	− 7·9	31·2	27·3	5·9	10·1	2·1	78	96·3	22·0	..	..	0·007	1·5	mP : vP
16	..	29·398	41·1	23·9	17·2	32·7	− 8·5	30·4	25·7	7·0	13·3	0·0	74	81·3	17·3	..	..	0·002	2·0	vP
17	..	29·351	49·4	32·1	17·3	38·0	− 3·3	35·5	32·1	5·9	15·7	1·0	79	101·7	27·8	..	..	0·045	0·0	mP : vP, vN
18	..	29·475	45·4	30·5	14·9	36·9	− 4·5	34·1	30·1	6·8	14·1	0·0	77	88·6	26·9	..	..	0·003	0·0	sP
19	..	29·557	43·3	33·3	10·0	37·5	− 3·9	36·4	34·9	2·6	5·7	0·2	91	64·7	30·9	..	..	0·292	0·0	vP : wP, sN
20	..	29·468	41·0	36·7	4·3	38·6	− 2·9	37·5	36·0	2·6	3·6	0·5	91	47·9	36·0	..	..	0·020	2·5	vP
21	..	29·498	41·5	34·5	7·0	37·6	− 4·0	36·0	33·8	3·8	7·0	2·1	86	78·1	34·5	..	..	0·000	3·2	vP
22	In Equator	29·910	36·2	29·8	6·4	32·4	− 9·3	29·8	24·2	8·2	11·0	4·9	71	101·9	29·0	..	..	0·000	15·0	vP
23	Full	29·979	38·4	25·5	12·9	31·8	−10·0	29·3	23·4	8·4	14·9	1·4	70	98·0	20·0	..	..	0·000	9·2	mP
24	Apogee	29·760	46·8	20·6	26·2	33·5	− 8·5	31·0	26·3	7·2	14·7	0·7	74	92·0	14·3	..	..	0·011	0·0	vP
25	..	29·492	44·0	26·0	18·0	36·1	− 6·2	32·2	26·4	9·7	16·9	0·3	67	90·6	20·2	..	..	0·000	5·2	sP
26	..	29·086	46·7	28·8	17·9	36·9	− 5·7	33·7	29·2	7·7	17·6	2·2	74	105·7	24·0	..	..	0·003	4·8	sP : sP, sN
27	..	29·402	45·1	24·7	20·4	34·4	− 8·6	31·7	27·2	7·2	15·2	0·6	74	105·8	19·3	..	..	0·003	0·0	mP : sP, sN
28	..	29·905	45·4	27·7	17·7	36·0	− 7·4	31·7	25·2	10·8	18·0	4·2	64	97·9	22·0	..	..	0·000	0·5	vP : vP, wN
29	..	29·869	49·1	28·5	20·6	40·3	− 3·5	35·6	29·5	10·8	17·0	6·6	65	104·5	22·5	..	..	0·000	3·2	mP
30	Greatest Declination S.	29·348	51·6	37·7	13·9	46·1	+ 1·8	43·5	40·5	5·6	9·9	1·8	82	65·3	30·5	..	..	0·087	10·2	wP, vN : vP
31	Last Qr.	29·761	56·7	32·7	24·0	43·5	− 1·3	39·5	34·8	8·7	16·6	1·6	72	109·4	27·0	..	..	0·000	2·0	sP : vP
Means	..	29·749	44·1	29·3	14·8	36·3	− 5·2	33·8	29·7	6·6	12·3	1·7	76·9	89·2	25·0	..	..	Sum 0·783	2·4	....
Number of Column for Reference.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

The results apply to the civil day.

The mean reading of the Barometer (Column 2) and the mean temperatures of the Air and Evaporation (Columns 6 and 8) are deduced from the photographic records. The average temperature (Column 7) is that determined from the reduction of the photographic records from 1849 to 1868. The temperature of the Dew Point (Column 9) and the Degree of Humidity (Column 13) are deduced from the corresponding temperatures of the Air and Evaporation by means of Glaisher's Hygrometrical Tables. The mean difference between the Air and Dew Point Temperatures (Column 10) is the difference between the numbers in Columns 6 and 9, and the Greatest and Least Differences (Columns 11 and 12) are deduced from the 24 hourly photographic measures of the Dry-bulb and Wet-bulb Thermometers.

The values given in Columns 3, 4, 5, 14, 15, 16, and 17 are derived from eye-readings of self-registering thermometers.

The mean reading of the *Barometer* for the month was 29in·749, being 0in·027 *higher* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 56°·7 on March 31; the lowest in the month was 20°·6 on March 24; and the range was 36°·1.
The mean of all the highest daily readings in the month was 44°·1, being 5°·9 *lower* than the average for the 42 years, 1841–1882.
The mean of all the lowest daily readings in the month was 29°·3, being 6°·0 *lower* than the average for the 42 years, 1841–1882.
The mean of the daily ranges was 14°·8, being 0°·1 *greater* than the average for the 42 years, 1841–1882.
The mean for the month was 36°·3, being 5°·2 *lower* than the average for the 20 years, 1849–1868.

MONTH and DAY, 1883.	Daily Duration of Sunshine.	Sun above Horizon.	WIND AS DEDUCED FROM SELF-REGISTERING ANEMOMETERS.						CLOUDS AND WEATHER.	
			OSLER'S.					ROBINSON'S.		
			General Direction.		Pressure on the Square Foot.			Horizontal Movement of the Air.	A.M.	P.M.
			A.M.	P.M.	Greatest.	Least.	Mean of 24 Hourly Measures.			
	hours.	hours.			lbs.	lbs.	lbs.	miles.		
Mar. 1	0·0	10·8	WSW: NW: NNE	NNE: NE: E	3·8	0·0	0·2	299	10 : 10, hy.-sh : 10	10 : 10
2	1·1	10·9	NE: ENE	ENE: E	2·7	0·0	0·2	267	10 : 10	9,cu.-s,ci.-cu : p.-cl : 2
3	8·6	11·0	NE: E	E	2·0	0·0	0·1	192	0 : 0	0 : 0, d
4	8·5	11·1	NE: ENE	ENE: ESE: E	2·0	0·0	0·1	187	0, ho.-fr : 0, ho.-fr	0 : 0
5	4·4	11·1	NE: N	NE: N: NNW	1·7	0·0	0·1	141	0 : 0, f	0, h : 0, h, slt.-f : th.-cl, h
6	3·7	11·2	NNW: N	N: NNW	24·4	0·1	5·3	620	10 : oc.-sn, w	6, cu.-s, oc.-sn, w : v, w
7	1·8	11·2	NNW: N	NNW	11·7	0·3	3·4	510	v, w : 10, w	10, sn, w : v, sn
8	5·5	11·3	NNW: N: NNE	NNE	9·7	0·1	2·0	476	10, sn : 1, ci.-cu, th.-cl, fr	7, sn : 4, oc.-sn, fr
9	7·1	11·4	NNE	NE: NNE	4·8	0·0	1·1	421	p.-cl, sn : 1	4, ci.-cu, cu.-s, cu, slt.-sn : 0, ho.-fr
10	2·9	11·4	NNE: N	NE: N	3·5	0·0	0·5	315	0 : 1, ci.-cu	8, cu.-s, cu, slt.-sn : 10, slt.-sn
11	0·9	11·5	NW: WSW: NNW	NNW	8·3	0·0	1·1	333	10 : 8,cu.-s,ci.-cu,oc.-sn,oc.-slt.-r	10, slt.-r, slt.-sn : v, slt.-sn
12	4·5	11·6	NNW	N: NNW	8·4	0·0	1·4	369	0 : p.-cl : 7,cu.-s,ci.-cu,sn	9, cu, cu.-s, slt.-sn : 0, ho.-fr
13	4·2	11·6	W: WSW: NW	W: WSW	1·8	0·0	0·4	303	0, ho.-fr : 0, h, m, ho.-fr	6, cu, cu.-s, m : 9, m, slt.-r, sl
14	0·7	11·7	NW: WSW	N: NE	0·3	0·0	0·0	155	10, slt.-sn : 1, m	9, cu, cu.-s, m : 10, slt.-sh, slt.-m
15	2·1	11·8	ENE	NE: ENE: N	4·3	0·0	0·4	257	10 : 3,cu,ci.-cu,slt.-sn	7, oc.-sn : vv, oc.-sn, f
16	1·3	11·8	SW: WSW	WSW	6·7	0·0	0·9	395	10, slt.-sn : 10	8,cu.-s,cu,slt.-sn: 10, slt.-sn, slt.-r : v
17	5·8	11·9	WSW	SW	8·4	0·0	0·8	353	0 : 2, ci.-cu, cu	7,cu.-s,cu,oc.-shs,sl : 10, oc.-r
18	0·5	12·0	SW: SSW	SSW: SSE: ESE	0·4	0·0	0·0	168	10 : 10, slt.-m	10 : 10
19	0·1	12·0	NNE	NNE: N	2·3	0·0	0·2	241	10 : 10	10, r : 10, c.-r
20	0·0	12·1	ENE	ENE	5·2	0·0	0·8	393	10, oc.-r : 10	10 : 10
21	0·3	12·2	ENE	ENE	8·8	0·0	1·3	489	10, sc : 10, sc, w	10, sc, w : 10, sc, w
22	3·4	12·2	ENE	ENE	17·5	0·6	3·3	741	10, w : 8,cu,cu.-s,th.-cl,slt.-sn,st.-w	8, ci.-cu, cu.-s, st.-w : 9, w
23	9·6	12·3	ENE	ENE: NE	12·0	0·0	1·9	565	w : 0, w	0, w : 0
24	5·0	12·4	N: W	NW: NNE	6·8	0·0	0·4	279	0, ho.-fr : 0, h, m, ho.-fr	3, h : 10, slt.-r : 10
25	9·7	12·4	NNW: NW	WSW: SW	5·4	0·0	0·8	324	10 : 3,ci.-cu,th.-cl,h,m	0, h : p.-cl : v, slt.-r
26	4·6	12·5	WSW: NNW	NW: NNW: WSW	2·8	0·0	0·4	250	10 : v, ci.-cu	6,th.-cl,cu.-s: 10, slt.-sn, sl : 0, slt.-h
27	5·3	12·6	WSW: NNW: N	N: SW	4·5	0·0	0·4	214	0 : 7, li.-cl	5,cu,ci.-cu,slt.-sn: 4, cu, ci.-cu : 0, f
28	6·8	12·6	SW: WSW: NNW	NNW: NW: SW	2·2	0·0	0·2	201	f : 6, ci.-cu, cu.-s	5, cu, cu.-s : 0, f, ho.-fr
29	5·5	12·7	S: SSE	S: SSE	5·4	0·0	1·1	362	f : 1, s, th.-cl	6,ci.-s,ci,th.-cl: p.-cl, h : v
30	0·1	12·8	SSE: S	SSW: WSW	9·2	0·0	2·8	528	10, w 10, sc, li.-shs, w	10, sc, w, m.-r : 0
31	4·4	12·8	SW: WSW	WNW: NNW: NNE	1·1	0·0	0·1	200	0, d : 7, ci, so.-ha, m	7, th.-cl, cu.-s, cu, h : 0, d
Means	3·8	11·8	. . .	. . .	. .	. .	1·0	340		
Number of Column for Reference.	21	22	23	24	25	26	27	28	29	30

The mean *Temperature of Evaporation* for the month was 33°·8, being 5°·2 *lower* than
The mean *Temperature of the Dew Point* for the month was 29°·7, being 6°·3 *lower* than
The mean *Degree of Humidity* for the month was 76·9, being 4·0 *less* than
The mean *Elastic Force of Vapour* for the month was $0^{\text{in}}{\cdot}165$, being $0^{\text{in}}{\cdot}047$ *less* than
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was $1^{\text{grs}}{\cdot}9$, being $0^{\text{gr}}{\cdot}6$ *less* than
The mean *Weight of a Cubic Foot of Air* for the month was 556 grains, being 6 grains *greater* than
} the average for the 20 years, 1849–1868.

The mean amount of *Cloud* for the month (a clear sky being represented by 0 and an overcast sky by 10) was 5·6.

The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·32. The maximum daily amount of *Sunshine* was 9·7 hours on March 25.

The highest reading of the *Solar Radiation Thermometer* was 109°·4 on March 31; and the lowest reading of the *Terrestrial Radiation Thermometer* was 14°·3 on March 24.

The mean daily distribution of *Ozone* was, for the 12 hours ending 9 a.m., 1·2; for the 6 hours ending 3 p.m., 0·7; and for the 6 hours ending 9 p.m., 0·5.

The *Proportions of Wind* referred to the cardinal points were N. 12, E. 8, S. 4, and W. 7.

The *Greatest Pressure of the Wind* in the month was $24^{\text{lbs}}{\cdot}4$ on the square foot on March 6. The mean daily *Horizontal Movement of the Air* for the month was 340 miles; the greatest daily value was 741 miles on March 22; and the least daily value 141 miles on March 5.

Rain fell on 14 days in the month, amounting to $0^{\text{in}}{\cdot}783$, as measured by gauge No. 6 partly sunk below the ground; being $0^{\text{in}}{\cdot}666$ *less* than the average fall for the 42 years, 1841–1882.

MONTH and DAY, 1883.	Phases of the Moon.	BAROMETER.	TEMPERATURE.							Difference between the Air Temperature and Dew Point Temperature.			Degree of Humidity (Saturation = 100).	TEMPERATURE.				Rain collected in Gauge No. 6, whose receiving surface is 5 inches above the Ground.	Daily Amount of Ozone.	Electricity.
		Mean of 24 Hourly Values (corrected and reduced to 32° Fahrenheit).	Of the Air.					Of Evaporation.	Of the Dew Point.					Of Radiation.		Of the Water of the Thames at Deptford.				
			Highest.	Lowest.	Daily Range.	Mean of 24 Hourly Values.	Excess above Average of 20 Years.	Mean of 24 Hourly Values.	Deduced Mean Daily Value.	Mean.	Greatest.	Least.		Highest in Sun's Rays.	Lowest on the Grass.	Highest.	Lowest.			
		in.	°	°	°	°	°	°	°	°	°	°		°	°	°	°	in.		
Apr. 1	..	30·095	55·4	29·5	25·9	42·5	− 2·8	38·2	33·0	9·5	19·4	2·9	70	109·3	20·5	..	..	0·000	0·0	mP
2	..	29·944	64·1	28·4	35·7	47·1	+ 1·4	42·4	37·1	10·0	18·6	0·9	69	118·6	20·3	..	..	0·000	0·0	sP : mP : sP
3	..	30·008	66·3	36·4	29·9	51·4	+ 5·3	47·2	42·9	8·5	16·6	2·8	73	105·8	27·7	..	..	0·000	0·0	mP, mN : vP, wN
4	..	30·054	64·3	43·6	20·7	52·9	+ 6·5	49·6	46·3	6·6	15·2	1·5	79	101·8	36·4	..	..	0·000	0·0	vP
5	In Equator	30·061	69·1	41·6	27·5	54·6	+ 8·0	49·8	45·2	9·4	19·4	0·4	70	120·6	34·0	..	..	0·000	0·0	vP
6	..	30·335	58·1	37·6	20·5	48·0	+ 1·3	43·4	38·3	9·7	20·7	1·8	69	118·7	31·0	..	..	0·000	4·0	vP
7	Perigee : New. :	30·444	53·9	33·1	20·8	42·6	− 4·2	39·4	35·5	7·1	17·2	0·3	77	127·3	28·0	..	..	0·000	1·8	vP : mP
8	..	30·345	54·5	35·0	19·5	44·2	− 2·6	40·3	35·7	8·5	18·2	1·6	72	113·8	26·0	..	..	0·000	5·2	wP : mP
9	..	30·205	58·1	28·2	29·9	44·4	− 2·5	40·1	35·1	9·3	20·0	2·9	70	106·0	18·6	..	..	0·000	0·0	— : vP
10	..	30·205	54·4	35·3	19·1	44·3	− 2·6	40·3	35·6	8·7	16·2	1·8	71	110·9	26·0	..	..	0·000	0·0	vP
11	Greatest Declination N.	30·156	57·0	28·7	28·3	43·9	− 3·1	40·5	36·5	7·4	14·1	0·0	75	78·0	20·9	..	..	0·000	0·0	vP, wN
12	..	30·003	59·3	36·7	22·6	46·0	− 1·1	42·2	37·8	8·2	19·2	0·9	74	120·0	31·0	..	..	0·000	1·5	mP
13	..	29·732	54·9	36·7	18·2	44·5	− 2·7	41·4	37·8	6·7	13·4	1·8	77	106·2	35·8	..	..	0·000	4·5	vP : vP, wN
14	First Qr.	29·686	50·4	34·9	15·5	44·0	− 3·4	42·4	40·5	3·5	10·3	1·0	87	62·0	25·0	..	..	0·001	0·0	mP, mN
15	..	29·714	61·6	39·3	22·3	50·0	+ 2·5	44·6	38·9	11·1	18·8	1·0	66	115·9	27·8	..	..	0·000	0·0	mP
16	..	29·850	58·4	39·6	18·8	48·1	+ 0·5	43·0	37·4	10·7	20·4	2·0	67	122·3	30·0	..	..	0·000	0·0	mP, wN
17	..	29·793	57·1	35·0	22·1	46·4	− 1·4	41·5	35·9	10·5	18·6	3·1	68	117·4	28·0	..	..	0·000	6·5	mP
18	In Equator	29·398	66·0	41·5	24·5	53·3	+ 5·4	47·9	42·5	10·8	19·3	3·8	67	120·1	32·6	..	..	0·010	13·5	wP : vP, vN
19	..	29·492	49·0	44·9	4·1	47·0	− 1·0	46·0	44·9	2·1	4·8	0·6	93	67·0	41·9	..	..	0·546	0·0	sP, sN : wN, vP
20	Apogee	29·890	59·2	43·1	16·1	48·9	+ 0·8	45·6	42·1	6·8	12·9	2·5	78	111·0	38·5	..	..	0·010	0·2	vP
21	..	30·045	53·0	38·4	14·6	44·4	− 3·8	41·7	38·5	5·9	10·9	0·9	79	123·5	33·6	..	..	0·015	0·8	vP, vN : mP
22	Full	29·997	52·7	37·6	15·1	43·6	− 4·6	40·6	37·1	6·5	14·9	1·8	77	123·2	32·8	..	..	0·010	0·0	wP : vP, mN : mP
23	..	29·665	43·8	32·6	11·2	38·0	−10·3	36·2	33·8	4·2	13·6	0·0	85	99·5	31·3	..	..	0·268	0·0	vP : ssP, ssN
24	..	29·409	51·8	31·7	20·1	41·0	− 7·3	38·9	36·3	4·7	9·2	0·9	83	93·2	27·8	..	..	0·057	0·0	mP, wN : mP, mN
25	..	29·470	56·4	36·4	20·0	44·5	− 3·9	41·4	37·8	6·7	17·4	1·4	77	114·7	30·0	..	..	0·004	0·0	vP, wN : vP
26	Greatest Declination S.	29·532	60·1	32·6	27·5	47·6	− 0·8	43·2	38·3	9·3	20·1	0·0	71	122·1	27·1	..	..	0·000	0·8	mP
27	..	29·281	58·1	46·5	11·6	52·5	+ 4·1	49·2	45·9	6·6	11·4	2·4	79	88·9	43·5	..	..	0·143	6·2	mP : mP, mN
28	..	29·250	59·4	48·9	10·5	51·8	+ 3·3	50·5	49·2	2·6	7·8	0·2	91	103·8	48·1	..	..	0·421	0·0	vN : vP
29	..	29·307	59·2	47·7	11·5	51·5	+ 3·0	49·5	47·5	4·0	10·6	0·6	86	94·2	46·0	..	..	0·217	0·5	wN, wP : mP
30	Last Qr.	29·509	61·4	40·6	20·8	50·3	+ 1·7	45·9	41·3	9·0	18·0	0·4	72	117·0	33·4	..	..	0·000	6·5	mP : vP, wN
Means	..	29·829	57·6	37·4	20·2	47·0	− 0·5	43·4	39·5	7·5	15·6	1·4	75·7	107·8	31·1	..	..	Sum 1·702	1·7	..
Number of Column for Reference.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

The results apply to the civil day.

The mean reading of the Barometer (Column 2) and the mean temperatures of the Air and Evaporation (Columns 6 and 8) are deduced from the photographic records. The average temperature (Column 7) is that determined from the reduction of the photographic records from 1849 to 1868. The temperature of the Dew Point (Column 9) and the Degree of Humidity (Column 13) are deduced from the corresponding temperatures of the Air and Evaporation by means of Glaisher's Hygrometrical Tables. The mean difference between the Air and Dew Point Temperatures (Column 10) is the difference between the numbers in Columns 6 and 9, and the Greatest and Least Differences (Columns 11 and 12) are deduced from the 24 hourly photographic measures of the Dry-bulb and Wet-bulb Thermometers. The results on April 15 for Air and Evaporation Temperatures are deduced from eye-observations on account of failure of the photographic registers.

The values given in Columns 3, 4, 5, 14, 15, 16, and 17 are derived from eye-readings of self-registering thermometers.

The mean reading of the *Barometer* for the month was $29^{\text{in}}\cdot829$, being $0^{\text{in}}\cdot026$ *higher* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was $69^\circ\cdot1$ on April 5; the lowest in the month was $28^\circ\cdot2$ on April 9; and the range was $40^\circ\cdot9$.

The mean of all the highest daily readings in the month was $57^\circ\cdot6$, being *the same as* the average for the 42 years, 1841–1882.

The mean of all the lowest daily readings in the month was $37^\circ\cdot4$, being $1^\circ\cdot8$ *lower* than the average for the 42 years, 1841–1882.

The mean of the daily ranges was $20^\circ\cdot2$, being $1^\circ\cdot8$ *greater* than the average for the 42 years, 1841–1882.

The mean for the month was $47^\circ\cdot0$, being $0^\circ\cdot5$ *lower* than the average for the 20 years, 1849–1868.

MONTH and DAY, 1883.	Daily Duration of Sunshine.	Sun above Horizon.	WIND AS DEDUCED FROM SELF-REGISTERING ANEMOMETERS.						CLOUDS AND WEATHER.	
			OSLER'S.					ROBINSON'S.		
			General Direction.		Pressure on the Square Foot.			Horizontal Movement of the Air.	A.M.	P.M.
			A.M.	P.M.	Greatest.	Least.	Mean of 24 Hourly Measures.			
	hours.	hours.			lbs.	lbs.	lbs.	miles.		
April 1	9·4	12·9	NE	ESE	2·6	0·0	0·1	170	0, slt.-f : 5,ci.-s,ci,ci.-cu,h	3, ci, ci.-cu, h : 0
2	9·8	13·0	ESE	SSE	2·3	0·0	0·2	170	0 : 0	4, ci.-cu, cu, cu.-s : 0, d
3	5·9	13·0	Variable	WNW	0·3	0·0	0·0	110	0, m : 2, li.-cl, m, f, glm	5, li.-cl, cu, ci.-cu, f : 0, f
4	2·2	13·1	SW : WSW	SW : S	0·4	0·0	0·0	186	0, f : p.-cl : 9, m	8, cu.-s, ci.-cu, h : 5, cu.-s, th.-cl
5	7·8	13·2	SW	WSW : NW : N	2·3	0·0	0·1	216	0 : p.-cl,m,d : 2,ci.-cu,ci,slt.-m	5, ci, cu, cu.-s : 0, h
6	9·2	13·2	NNE : NE	ENE : ESE	4·5	0·0	1·0	384	10 : 6,ci.-cu,ci.-s,th.-cl	0 : 0
7	7·7	13·3	NNE : ENE	ESE : E	2·2	0·0	0·3	244	0 : 9	4,cu,ci.-cu,ci.-s : 0 : vv
8	9·6	13·4	NE	E : ESE	2·0	0·0	0·3	225	v : 2, ci.-cu	0 : 0
9	7·8	13·4	N : NE	NE : E	0·2	0·0	0·0	84	0, ho.-fr : 0, m, slt.-h	6,cu.-s,ci.-cu,li.-cl: 0, slt.-m : 0, slt.-m
10	5·8	13·5	N : NNE	N : NE	4·0	0·0	0·8	253	0, slt.-m : 10 : 10	6,cu.-s,ci.-cu,ci,so.-ha: 0 : 0
11	0·0	13·6	Calm : S : SW	NW : N	1·0	0·0	0·1	72	0 : 10, slt.-f	9, th.-cl : 10
12	2·9	13·6	NNE:NNW: N	NNE : ESE	2·7	0·0	0·4	137	10 : 10	7, ci, ci.-s : 9
13	0·0	13·7	SE : SSE : SW	W : NW : NE	0·5	0·0	0·1	115	10 : 10	9,cu.-s,ci.-cu: 10 : v
14	0·0	13·7	Calm : SW	SSW : NNW	0·5	0·0	0·0	112	0 : 10, slt.-f, glm	10, glm, slt.-f, m.-r : 10, slt.-f : 6,ci.-cu,s,th.-cl
15	2·0	13·8	WSW	WSW	4·5	0·0	0·4	330	p.-cl, s, th.-cl : 8, ci.-cu, ci.-s	9, ci.-cu, ci.-s : 8
16	6·4	13·9	W	WNW : WSW	2·7	0·0	0·2	300	p.-cl : 7, li.-cl	4, ci.-cu, cu, cu.-s : 0, lu.-ha
17	9·3	13·9	SW : SSW	SSW : SE	3·8	0·0	0·4	291	0 : 4, cu, ci.-cu, ci	5, cu.-s, cu, ci.-cu : v
18	1·8	14·0	SE : S	S	7·8	0·0	0·6	316	10, th.-cl : 6, cu, ci.-cu, ci	8,ci.-cu,cu.-s,li.-shs: 10, sh.-r
19	0·0	14·1	Variable	NW . NNW	0·9	0·0	0·0	145	10, li.-shs : 10, c.-r : 10, r, glm, f	10, fq.-th.-r, glm : 10, m
20	0·9	14·1	N : NNW	N : NNE	2·7	0·0	0·3	269	10 : 8, ci.-cu, ci	9, cu.-s, cu, ci.-cu : 9, slt.-r
21	2·1	14·2	N : NE	ENE : NE	4·2	0·0	0·9	374	10, slt.-r : 8, cu.-s, cu	10, cu.-s, cu : vv, d, slt.-sh
22	8·4	14·2	NE	ENE : NE	5·0	0·0	0·8	370	v : 6, ci.-cu, cu, li.-shs	8,ci.-cu,cu,hl: 0 : v
23	2·0	14·3	N : NE	E : NNE	7·8	0·0	0·9	306	v : 8, cu,cu.-s, ci.-cu,slt.-sn	9, cu.-s, cu, sn : 7
24	0·9	14·4	NNE : NE	NE : N	5·0	0·0	0·7	343	10 : 10, oc.-shs	9, oc.-shs, hl : 10
25	3·9	14·4	NNW : NW : W	SW : SSW	2·3	0·0	0·2	228	10 : 8, m	7,cu.-s,cu,slt.-r: 0 : 0
26	10·3	14·5	SE : SSE	SE : E	5·8	0·0	1·1	309	p.-cl,th.-cl: v, s, ci.-s: v, li.-cl	4, ci.-cu, cu, ci.-s : 10
27	0·0	14·5	E : ESE	SE	2·7	0·0	0·2	222	10 : 10, oc.-slt.-r	10, r : 10 : 10, r
28	0·0	14·6	Calm: WSW: NW	N	0·0	0·0	0·0	127	10, r : 10, r	10 : 10, r : 10, c.-r
29	0·4	14·7	NW : WNW	NW : SW	1·1	0·0	0·0	199	10, c.-r : 10, slt.-r	10, li.-shs : v
30	6·5	14·7	WSW	Variable .	1·2	0·0	0·1	201	v : 3, cu.-s, ci.-cu	7, cu.-s, cu, ci.-cu : v, li.-cl
Means	4·4	13·8	...	...	..	..	0·3	227		
Number of Column for Reference.	21	22	23	24	25	26	27	28	29	30

The mean *Temperature of Evaporation* for the month was 43°·4, being 0°·5 *lower* than
The mean *Temperature of the Dew Point* for the month was 39°·5, being 0°·8 *lower* than
The mean *Degree of Humidity* for the month was 75·7, being 1·2 *less* than
The mean *Elastic Force of Vapour* for the month was 0$^{\text{in}}$·242, being 0$^{\text{in}}$·008 *less* than
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was 2$^{\text{grs}}$·8, being 0$^{\text{gr}}$·1 *less* than
The mean *Weight of a Cubic Foot of Air* for the month was 545 grains, being 1 grain *greater* than
} the average for the 20 years, 1849–1868.

The mean amount of *Cloud* for the month (a clear sky being represented by 0 and an overcast sky by 10) was 6·4.

The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·32. The maximum daily amount of *Sunshine* was 10·3 hours on April 26.

The highest reading of the *Solar Radiation Thermometer* was 127°·3 on April 7; and the lowest reading of the *Terrestrial Radiation Thermometer* was 18°·6 on April 9.

The mean daily distribution of *Ozone* was, for the 12 hours ending 9 a.m., 0·8; for the 6 hours ending 3 p.m., 0·5; and the 6 hours ending 9 p.m., 0·4.

The *Proportions of Wind* referred to the cardinal points were N. 10, E. 7, S. 6, and W. 6. One day was calm.

The *Greatest Pressure of the Wind* in the month was 7$^{\text{lbs}}$·8 on the square foot on April 18 and 23. The mean daily *Horizontal Movement of the Air* for the month was 227 miles; the greatest daily value was 384 miles on April 6; and the least daily value 72 miles on April 11.

Rain fell on 10 days in the month, amounting to 1$^{\text{in}}$·702, as measured by gauge No. 6 partly sunk below the ground; being 0$^{\text{in}}$·035 *greater* than the average fall for the 42 years, 1841–1882.

MONTH and DAY, 1883.	Phases of the Moon.	BAROMETER.	TEMPERATURE.							Difference between the Air Temperature and Dew Point Temperature.			Degree of Humidity (Saturation = 100).	TEMPERATURE.				Rain collected in Gauge No. 6, whose receiving surface is 5 inches above the Ground.	Daily Amount of Ozone.	Electricity.
			Of the Air.					Of Evaporation.	Of the Dew Point.					Of Radiation.		Of the Water of the Thames at Deptford.				
		Mean of 24 Hourly Values (corrected and reduced to 32° Fahrenheit).	Highest.	Lowest.	Daily Range.	Mean of 24 Hourly Values.	Excess above Average of 20 Years.	Mean of 24 Hourly Values.	Deduced Mean Daily Value.	Mean.	Greatest.	Least.		Highest in Sun's Rays.	Lowest on the Grass.	Highest.	Lowest.			
		in.	°	°	°	°	°	°	°	°	°	°		°	°	°	°	in.		
May 1	..	29·579	61·0	41·7	19·3	50·5	+ 1·8	46·5	42·3	8·2	20·0	0·0	75	124·9	36·0	..	..	0·000	0·0	wP : mP
2	..	29·715	49·8	40·3	9·5	44·3	— 4·6	40·8	36·7	7·6	12·0	3·7	74	88·0	38·3	..	..	0·000	0·8	vP : mP
3	In Equator	29·663	55·9	35·5	20·4	43·8	— 5·3	40·8	37·3	6·5	13·6	2·1	77	125·1	32·0	..	..	0·046	4·2	mP : vP, vN
4	..	29·665	52·3	30·3	22·0	40·5	— 8·9	37·9	34·6	5·9	14·9	0·0	80	117·4	23·9	..	..	0·000	0·0	sP : vP, vN
5	Perigee	29·667	56·1	30·8	25·3	44·0	— 5·7	40·8	37·1	6·9	16·8	0·0	76	127·9	26·0	..	..	0·000	0·0	mP
6	New	29·669	67·0	41·5	25·5	53·0	+ 3·0	49·0	45·0	8·0	16·9	1·1	74	128·1	36·7	..	..	0·000	0·0	— : mP
7	..	29·526	59·4	40·0	19·4	49·3	— 1·0	46·9	44·3	5·0	11·4	1·5	83	103·3	30·0	..	..	0·116	0·0	wP : vP, vN : mP
8	..	29·400	50·1	38·8	11·3	46·1	— 4·5	45·2	44·2	1·9	5·0	0·0	94	83·8	28·8	..	..	0·316	0·0	vP, vN : wN, wP
9	Greatest Declination N.	29·358	47·0	41·4	5·6	44·9	— 5·9	44·0	42·9	2·0	3·8	0·0	93	57·0	40·5	..	..	0·012	0·0	wP : wN, vP
10	..	29·462	47·3	38·1	9·2	41·6	— 9·5	40·5	39·1	2·5	6·5	0·5	92	78·8	33·0	..	..	0·223	0·0	vP, vN
11	..	29·715	55·5	35·7	19·8	43·3	— 8·1	40·9	38·0	5·3	15·0	0·0	83	123·5	29·3	..	..	0·129	5·5	sP : ssP, ssN
12	..	29·703	56·4	41·1	15·3	51·4	— 0·4	50·3	49·2	2·2	4·0	0·0	92	75·0	40·6	..	..	0·335	12·5	wP, wN : wP
13	First Qr.	29·778	69·3	50·7	18·6	58·6	+ 6·5	53·7	49·3	9·3	16·7	2·0	71	129·7	49·0	..	..	0·000	14·0	wP : mP
14	..	29·756	66·1	50·6	15·5	56·3	+ 3·8	53·9	51·6	4·7	10·8	0·2	85	117·5	45·3	..	..	0·177	11·0	wP : vP, vN
15	..	29·922	70·4	50·5	19·9	58·7	+ 5·8	55·8	53·2	5·5	12·4	0·0	82	133·1	42·0	..	..	0·000	0·0	wP
16	In Equator	30·115	74·3	47·7	26·6	60·0	+ 6·7	55·8	52·1	7·9	17·3	0·0	75	136·7	38·2	..	..	0·000	1·0	wP
17	..	30·185	66·5	43·8	22·7	55·7	+ 2·0	50·2	45·0	10·7	21·1	2·3	68	133·3	38·0	..	..	0·000	4·5	wP
18	Apogee	30·042	65·0	46·7	18·3	55·0	+ 0·9	48·7	42·6	12·4	19·0	5·2	63	121·8	36·0	..	..	0·000	7·5	wP, wN : wN, vP
19	..	29·845	62·9	49·0	13·9	54·5	+ 0·1	48·9	43·5	11·0	16·5	7·4	66	123·8	35·9	..	..	0·000	5·5	wP, wN
20	..	29·876	56·1	46·1	10·0	51·9	— 2·8	49·1	46·3	5·6	8·0	2·8	81	86·5	39·0	..	..	0·001	5·7	wP, wN
21	..	29·995	69·1	39·5	29·6	54·5	— 0·5	49·4	44·5	10·0	19·3	0·2	69	141·0	29·1	..	..	0·000	9·0	mP
22	Full	29·992	74·1	42·4	31·7	58·7	+ 3·4	52·0	46·0	12·7	21·6	3·3	63	140·8	32·0	..	..	0·000	12·7	vP
23	Greatest Declination S.	29·949	78·4	49·0	29·4	64·1	+ 8·6	57·2	51·5	12·6	21·9	2·6	63	141·7	36·7	..	..	0·000	0·0	wP : wN : mP
24	..	29·905	81·0	49·0	32·0	63·3	+ 7·6	56·1	50·1	13·2	27·0	2·8	62	146·4	38·4	..	..	0·000	0·0	mP : vP
25	..	29·713	73·9	47·6	26·3	61·0	+ 5·1	56·8	53·1	7·9	14·6	0·6	76	133·1	37·7	..	..	0·000	0·0	vP : mP
26	..	29·461	59·9	50·6	9·3	54·9	— 1·2	54·2	53·5	1·4	3·0	0·0	95	77·7	41·0	..	..	0·352	0·0	mP, mN : wP, wN
27	..	29·787	69·0	47·8	21·2	56·3	0·0	51·5	47·0	9·3	19·1	1·8	71	139·8	39·0	..	..	0·000	1·2	mP
28	..	29·890	71·0	44·1	26·9	57·0	+ 0·5	51·2	45·9	11·1	20·9	2·1	66	138·0	35·0	..	..	0·000	18·2	mP : vP
29	Last Qr.	29·861	73·5	48·7	24·8	58·7	+ 1·9	53·5	48·9	9·8	16·7	6·0	70	142·1	41·3	..	..	0·000	4·5	mP : vP
30	In Equator	30·008	63·2	47·9	15·3	55·6	— 1·4	50·8	46·3	9·3	16·0	3·8	71	94·2	42·7	..	..	0·000	0·0	mP : wP, wN : wP
31	..	30·031	72·4	42·7	29·7	57·5	+ 0·2	51·5	46·0	11·5	21·6	1·0	65	143·1	34·1	..	..	0·000	2·8	vP
Means	..	29·782	63·7	43·5	20·1	53·1	— 0·1	49·2	45·4	7·7	14·9	1·7	76·0	117·8	36·3	..	..	Sum 1·707	3·9	..
Number of Column for Reference.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

The results apply to the civil day.

The mean reading of the Barometer (Column 2) and the mean temperatures of the Air and Evaporation (Columns 6 and 8) are deduced from the photographic records. The average temperature (Column 7) is that determined from the reduction of the photographic records from 1849 to 1868. The temperature of the Dew Point (Column 9) and the Degree of Humidity (Column 13) are deduced from the corresponding temperatures of the Air and Evaporation by means of Glaisher's Hygrometrical Tables. The mean difference between the Air and Dew Point Temperatures (Column 10) is the difference between the numbers in Columns 6 and 9, and the Greatest and Least Differences (Columns 11 and 12) are deduced from the 24 hourly photographic measures of the Dry-bulb and Wet-bulb Thermometers. The results on May 25 and 26 for Evaporation Temperature depend partly on values inferred from eye-observations, on account of accidental loss of the photographic trace.

The values given in Columns 3, 4, 5, 14, 15, 16, and 17 are derived from eye-readings of self-registering thermometers.

The mean reading of the *Barometer* for the month was 29in·782, being 0in·005 *higher* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 81°·0 on May 24; the lowest in the month was 30°·3 on May 4; and the range was 50°·7.
The mean of all the highest daily readings in the month was 63°·7, being 0°·6 *lower* than the average for the 42 years, 1841–1882.
The mean of all the lowest daily readings in the month was 43°·5, being 0°·3 *lower* than the average for the 42 years, 1841–1882.
The mean of the daily ranges was 20°·1, being 0°·4 *less* than the average for the 42 years, 1841–1882.
The mean for the month was 53°·1, being 0°·1 *lower* than the average for the 20 years, 1849–1868.

MONTH and DAY, 1883.	Daily Duration of Sunshine.	Sun above Horizon.	WIND AS DEDUCED FROM SELF-REGISTERING ANEMOMETERS.						CLOUDS AND WEATHER.	
			OSLER'S.					ROBINSON'S.		
			General Direction.		Pressure on the Square Foot.			Horizontal Movement of the Air.		
			A.M.	P.M.	Greatest.	Least.	Mean of 24 Hourly Measures.		A.M.	P.M.
	hours.	hours.			lbs.	lbs.	lbs.	miles.		
May 1	8·3	14·8	N : NE : ENE	ENE : NNE	6·9	0·0	1·1	400	li.-cl : 9	6,cu.-s,cu,ci.-cu: vv : 10
2	0·3	14·8	NNE : N	N	3·6	0·0	1·0	381	10 : 10	9, cu.-s, ci.-cu : 10
3	4·0	14·9	NNW : N	NNE : ENE	1·8	0·0	0·2	204	v : 8, cu.-s, cu, ci.-cu	10, slt.-r : 10, fq.-r : vv
4	3·9	14·9	NNE : N	NE : N	2·6	0·0	0·1	186	0, ho.-fr : 7, cu.-s, ci.-cu	6,cu,ci.-cu,cu.-s,sl: vv, ci.-cu, li.-cl
5	6·5	15·0	N : NE	ENE : ESE : NNE	2·3	0·0	0·2	215	0 : 7, ci.-cu, cu.-s	3, cu, ci.-cu, ci : 10
6	6·4	15·1	N : NE	ENE : NNE	4·6	0·0	0·6	369	10 : 6, ci.-cu,cu.-s,so.-ha	9 : v, m
7	2·4	15·1	NE : ENE	SW : SSW	1·6	0·0	0·1	198	p.-cl : 10, fq.-r	9, cu.-s, cu : p.-cl : 0
8	0·0	15·2	SW : NE	NE : N : SE	0·0	0·0	0·0	107	v : 10, h.-r	10, oc.-r : 10, oc.-r
9	0·0	15·2	N : NNE	N : NNE	1·7	0·0	0·3	246	10 : 10	10, slt.-r : 10
10	0·2	15·3	NNE : NNW	W : WSW	1·1	0·0	0·1	214	10, hy.-r : 10, fq.-r, glm	10,fq.-th.-r, glm: vv, m.-r : 0
11	6·0	15·3	WSW : W	SW : NW	3·8	0·0	0·6	300	3 : 7, cu, cu.-s,ci.-cu,li.-shs	9, cu.-s, cu, r, sn, t glm: 10, oc.-r, glm
12	0·0	15·4	SE : SSW : SW	SW	8·5	0·0	2·2	488	10, c.-r : 10, sc, c.-r	10, sc, slt.-sh : 10
13	9·9	15·4	SSW : SW	SSW : SSE : S	7·7	0·0	1·7	408	10 : 5, cu, ci.-cu	3, cu, ci.-cu : p.-cl : v, li.-cl
14	0·0	15·5	SW : S	SW : SSW	1·2	0·0	0·0	149	v : 10, s, ci.-s	10, fq.-th.-r 0, hy.-r
15	4·1	15·5	W : NE	NE : ESE	0·6	0·0	0·0	120	v : 0, h	9,cu,cu.-s,ci.-cu: p.-cl : 1, li.-cl, d
16	12·7	15·6	NE	NE: ESE: ENE	1·6	0·0	0·1	242	li.-cl : 3, li.-cl, so.-ha	2, ci, ci.-cu : 0 : 0, d
17	10·6	15·6	NE : ENE	ESE	0·3	0·0	0·0	146	0, d : 0	6,ci.-s,ci,so.-ha : p.-cl : v,m,h, lu.-co
18	6·9	15·7	WSW : NNW	NW : NNW: SW	2·6	0·0	0·4	259	th.-cl, h : 5, ci.-cu, ci, th.-cl,so.-ha	6, th.-cl, h, so.-ha : 3, th.-cl, lu.-co
19	1·4	15·7	W : NW	NNW	3·7	0·0	0·9	352	10 : 9	9, cu.-s, cu : 10
20	0·0	15·8	NNW	ESE	0·2	0·0	0·0	90	10 : 10	10, th.-r : 10
21	10·4	15·8	SE : ESE	SE : S : SSW	0·1	0·0	0·0	106	th.-cl : 1, ci.-cu	4, cu, ci.-cu, ci : 9, th.-cl, lu.-ha
22	12·9	15·9	SSW	SW	1·0	0·0	0·1	175	p.-cl : 0 : 0	1,li.-cl,ci.-cu: 1, li.-cl : v, cu.-s, li.-cl
23	13·6	15·9	WSW	WSW : W	4·0	0·0	0·7	296	1, th.-cl, d : 0	0 : 0
24	13·7	16·0	WSW : SW	SW : SSW	1·3	0·0	0·2	219	0, m : 0	0 : 0, d
25	6·4	16·0	SW : NE	ENE : SSW : SE	1·1	0·0	0·0	138	0 : v, ci.-cu	9, th.-cl, ci.-cu, so.-ha : 0, slt.-m
26	0·0	16·0	Calm : NNW	N : NNW	3·0	0·0	0·2	176	0, slt.-m : 10, fq.-r, m, glm	10, fq.-th.-r, glm : 10, fq.-r, glm
27	6·8	16·1	Variable	SW : S	0·7	0·0	0·0	168	10 : 7, cu, ci.-cu, m	4, cu.-s, ci.-cu : 3, ci.-cu, li.-cl
28	13·1	16·1	S : SW	SW : SSW	2·8	0·0	0·4	290	0 : 1, li.-cl	2, cu, ci, ci.-cu : 6, s, ci.-s, li.-cl
29	3·8	16·1	SSE : SSW	SW : W	2·7	0·0	0·3	301	p.-cl : 7, ci.-cu, cu.-s	8,cu,cu.-s,ci.-cu,slt.-sh : 9
30	3·2	16·2	WSW : NNW : SSE	SSE : SW	0·1	0·0	0·0	123	p.-cl : 9, m, glm	7, cu, cu.-s, ci.-cu : 9
31	10·6	16·2	SW : SE : SSW	SSW : SSE	1·6	0·0	0·0	161	0 : 0 : p.-cl	7, cu.-s, cu : 0
Means	5·7	15·6	...	...	..	..	0·4	233		
Number of Column for Reference.	21	22	23	24	25	26	27	28	29	30

The mean *Temperature of Evaporation* for the month was 49°·2, being 0°·3 *higher* than
The mean *Temperature of the Dew Point* for the month was 45°·4, being 0°·3 *higher* than
The mean *Degree of Humidity* for the month was 76·0, being 0·6 *greater* than
The mean *Elastic Force of Vapour* for the month was 0^{in}·304, being 0^{in}·003 *greater* than
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was 3^{grs}·4, being *the same as*
The mean *Weight of a Cubic Foot of Air* for the month was 538 grains, being *the same as*
} the average for the 20 years, 1849–1868.

The mean amount of *Cloud* for the month (a clear sky being represented by 0 and an overcast sky by 10) was 6·3.

The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·37. The maximum daily amount of *Sunshine* was 13·7 hours on May 24.

The highest reading of the *Solar Radiation Thermometer* was 146°·4 on May 24; and the lowest reading of the *Terrestrial Radiation Thermometer* was 23°·9 on May 4.

The mean daily distribution of *Ozone* was, for the 12 hours ending 9 a.m., 1·4; for the 6 hours ending 3 p.m., 1·0; and for the 6 hours ending 9 p.m., 1·5.

The *Proportions of Wind* referred to the cardinal points were N. 9, E. 6, S. 9, and W. 7.

The *Greatest Pressure of the Wind* in the month was 8^{lbs}·5 on the square foot on May 12. The mean daily *Horizontal Movement of the Air* for the month was 233 miles; the greatest daily value was 488 miles on May 12; and the least daily value 90 miles on May 20.

Rain fell on 9 days in the month, amounting to 1^{in}·707, as measured by gauge No. 6 partly sunk below the ground; being 0^{in}·296 *less* than the average fall for the 42 years, 1841–1882.

MONTH and DAY, 1883.	Phases of the Moon.	BAROMETER.	TEMPERATURE.							Difference between the Air Temperature and Dew Point Temperature.			Degree of Humidity (Saturation = 100).	TEMPERATURE.				Rain collected in Gauge No. 6, whose receiving surface is 5 inches above the Ground.	Daily Amount of Ozone.	Electricity.
		Mean of 24 Hourly Values (corrected and reduced to 32° Fahrenheit).	Of the Air.					Of Evaporation.	Of the Dew Point.					Of Radiation.		Of the Water of the Thames at Deptford.				
			Highest.	Lowest.	Daily Range.	Mean of 24 Hourly Values.	Excess above Average of 20 Years.	Mean of 24 Hourly Values.	Deduced Mean Daily Value.	Mean.	Greatest.	Least.		Highest in Sun's Rays.	Lowest on the Grass.	Highest.	Lowest.			
		in.	°	°	°	°	°	°	°	°	°	°		°	°	°	°	in.		
June 1	..	29·875	74·4	40·8	33·6	59·3	+ 1·8	52·7	46·9	12·4	21·2	2·6	63	135·6	31·9	..	..	0·000	6·2	mP
2	Perigee	29·925	74·3	47·6	26·7	61·0	+ 3·3	55·9	51·5	9·5	18·7	1·1	71	110·8	40·9	..	..	0·000	5·0	mP : mN, wP : mP
3	..	29·982	71·9	47·6	24·3	60·3	+ 2·4	54·1	48·6	11·7	21·6	1·4	65	136·7	38·0	64·1	61·0	0·000	0·0	mP : wP, wN : vP
4	..	29·822	74·1	46·1	28·0	60·2	+ 2·1	55·3	51·0	9·2	15·6	2·3	71	138·1	42·0	63·3	62·0	0·000	0·8	wP
5	New : Greatest DecN.	29·680	75·0	48·4	26·6	60·3	+ 2·1	51·6	44·0	16·3	29·2	5·7	55	137·2	42·6	63·3	61·5	0·000	5·2	wP, wN
6	..	29·651	68·3	44·8	23·5	55·6	− 2·7	51·4	47·4	8·2	16·9	0·0	74	140·8	42·0	63·1	61·0	0·000	2·5	mP
7	..	29·591	56·1	47·7	8·4	51·6	− 6·8	50·4	49·2	2·4	5·4	0·6	92	77·3	42·9	62·3	61·3	0·013	7·0	..
8	..	29·631	68·1	47·7	20·4	57·6	− 0·9	53·8	50·3	7·3	15·8	0·0	77	130·6	39·0	62·1	61·0	0·000	1·5	mP
9	..	29·705	73·4	45·7	27·7	59·1	+ 0·6	55·2	51·7	7·4	19·3	0·2	77	145·2	37·9	62·1	62·0	0·000	0·0	mP
10	..	29·776	73·1	47·6	25·5	59·5	+ 0·9	55·0	51·0	8·5	21·6	0·6	74	136·3	39·8	62·9	62·0	0·000	5·0	mP
11	..	29·960	59·0	47·5	11·5	53·3	− 5·4	50·7	48·1	5·2	10·1	2·5	82	74·2	40·0	62·6	61·0	0·000	0·0	wP : vP
12	In Equator : First Quarter.	30·122	76·8	41·5	35·3	59·4	+ 0·6	53·5	48·3	11·1	24·7	0·7	67	130·0	31·0	61·6	61·0	0·000	0·0	mP, mN : wP, wN
13	..	30·190	75·5	54·3	21·2	65·1	+ 6·2	59·0	54·0	11·1	19·0	4·4	68	131·9	45·1	62·1	62·0	0·000	2·0	mP : wP, wN
14	Apogee	30·052	77·2	54·6	22·6	65·1	+ 6·0	59·4	54·7	10·4	20·6	1·9	70	130·0	47·3	62·8	62·8	0·000	0·0	wP : wN : wN, wP
15	..	29·708	63·6	46·6	17·0	55·8	− 3·5	52·8	50·0	5·8	12·0	1·5	82	109·0	43·1	64·1	63·0	0·109	2·0	wP : vN, vP
16	..	29·651	64·3	44·1	20·2	50·8	− 8·7	47·1	43·2	7·6	20·5	1·9	76	123·1	38·0	62·6	61·5	0·058	1·0	vP, vN
17	..	29·753	63·4	40·4	23·0	51·9	− 7·8	47·8	43·7	8·2	16·0	2·0	74	129·7	32·0	62·0	61·0	0·003	0·0	mP : ssP, ssN
18	..	29·767	68·2	46·4	21·8	56·0	− 3·9	50·8	45·9	10·1	18·7	2·9	69	128·7	38·1	61·9	61·0	0·000	0·0	mP, wN
19	..	29·715	65·2	48·6	16·6	55·1	− 5·1	52·0	49·0	6·1	14·2	0·8	81	108·3	42·7	61·9	61·8	0·011	1·0	vP, vN
20	Greatest Dec S.: Full.	29·692	62·9	47·7	15·2	54·5	− 6·0	51·5	48·6	5·9	10·8	0·6	80	133·6	41·5	61·9	61·0	0·070	8·0	wP : wP, vN
21	..	29·713	67·6	50·7	16·9	56·4	− 4·4	54·0	51·7	4·7	14·2	0·0	85	141·8	48·7	61·7	61·0	0·219	1·5	ssN, wP : ssP, ssN
22	..	29·831	69·4	49·8	19·6	56·8	− 4·3	53·5	50·4	6·4	14·4	1·4	79	122·8	47·9	61·6	60·8	0·008	3·2	vP, wN : mP
23	..	29·839	74·4	52·3	22·1	61·1	− 0·3	56·9	53·2	7·9	19·8	0·6	76	141·9	45·6	61·6	61·0	0·000	18·0	vP
24	..	29·782	76·2	57·6	18·6	64·4	+ 2·7	59·7	55·8	8·6	18·9	1·3	74	141·7	56·3	64·1	62·0	0·010	8·2	wP
25	..	29·632	78·6	53·2	25·4	63·2	+ 1·3	59·6	56·6	6·6	19·0	0·2	79	143·0	48·0	63·6	62·0	0·126	6·8	vP, vN
26	In Equator	29·617	67·2	50·4	16·8	55·4	− 6·6	53·1	50·9	4·5	12·3	1·6	86	136·3	45·2	63·6	62·0	0·377	15·7	wP : ssP, ssN : sP, sN
27	LastQr.	29·729	65·4	49·3	16·1	57·5	− 4·5	54·5	51·8	5·7	11·8	1·2	82	126·7	44·2	63·1	61·5	0·059	16·3	wP
28	..	29·765	71·2	56·5	14·7	62·2	+ 0·3	60·0	58·1	4·1	9·5	1·1	87	126·1	52·0	63·6	62·5	0·013	13·2	wP
29	..	29·829	84·8	54·5	30·3	69·9	+ 8·1	63·6	58·7	11·2	25·5	0·9	67	139·8	47·6	63·9	63·9	0·000	3·0	wP : mP
30	Perigee	29·828	83·5	56·0	27·5	69·3	+ 7·6	64·2	60·3	9·0	18·4	0·8	73	136·3	48·0	64·9	64·5	0·267	4·5	vP, vN
Means	..	29·794	70·8	48·9	21·9	58·9	− 0·8	54·6	50·8	8·1	17·2	1·4	75·2	128·1	42·6	(28 days) 62·8	(28 days) 61·8	Sum 1·343	4·6	..
Number of Column for Reference.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

The results apply to the civil day.

The mean reading of the Barometer (Column 2) and the mean temperatures of the Air and Evaporation (Columns 6 and 8) are deduced from the photographic records. The average temperature (Column 7) is that determined from the reduction of the photographic records from 1849 to 1868. The temperature of the Dew Point (Column 9) and the Degree of Humidity (Column 13) are deduced from the corresponding temperatures of the Air and Evaporation by means of Glaisher's Hygrometrical Tables. The mean difference between the Air and Dew Point Temperatures (Column 10) is the difference between the numbers in Columns 6 and 9, and the Greatest and Least Differences (Columns 11 and 12) are deduced from the 24 hourly photographic measures of the Dry-bulb and Wet-bulb Thermometers. The results on June 7 for Barometer and for Air and Evaporation Temperatures, are deduced from eye-observations, on account of accidental failure of photographic registration.

The values given in Columns 3, 4, 5, 14, 15, 16 and 17 are derived from eye-readings of self-registering thermometers.

The mean reading of the *Barometer* for the month was $29^{\text{in}}\cdot794$, being $0^{\text{in}}\cdot034$ *lower* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 84°·8 on June 29; the lowest in the month was 40°·4 on June 17; and the range was 44°·4.

The mean of all the highest daily readings in the month was 70°·8, being 0°·1 *lower* than the average for the 42 years, 1841–1882.

The mean of all the lowest daily readings in the month was 48°·9, being 1°·0 *lower* than the average for the 42 years, 1841–1882.

The mean of the daily ranges was 21°·9, being 0°·9 *greater* than the average for the 42 years, 1841–1882.

The mean for the month was 58°·9, being 0°·8 *lower* than the average for the 20 years, 1849–1868.

MONTH and DAY, 1883.	Daily Duration of Sunshine.	Sun above Horizon.	WIND AS DEDUCED FROM SELF-REGISTERING ANEMOMETERS. Osler's. General Direction. A.M.	P.M.	Pressure on the Square Foot. Greatest.	Least.	Mean of 24 Hourly Measures.	Robinson's. Horizontal Movement of the Air.	CLOUDS AND WEATHER. A.M.	P.M.
	hours.	hours.			lbs.	lbs.	lbs.	miles.		
June 1	6·3	16·2	Calm : SE : SSW	SSW	1·0	0·0	0·0	149	0 : 7, ci, ci.-s, so.-ha	8, cu.-s, cu, ci.-cu : 0
2	7·0	16·3	WSW	NE : E	1·2	0·0	0·0	127	0 : 2, th.-cl, m, h	7, cu.--s, ci.-cu, cu, h: 0
3	13·6	16·3	NE : ENE	NE	7·0	0·0	1·4	382	0, f : 0	0 : 0
4	9·2	16·3	NNE : NE	ENE : NE	4·6	0·0	1·0	380	v : 10 : v	0 : 0
5	12·9	16·4	NNE : NE	ENE : NE	4·8	0·0	1·3	412	0 : 1, cu	1, ci.-cu : 0
6	11·3	16·4	ENE	ESE : E	2·7	0·0	0·4	261	0 : 2, ci.-cu	1, ci.-cu : 4, ci.-s, ci, s, d
7	0·0	16·4	ENE : NE : NNE	NNE : NE : SE	0·5	0·0	0·0	102	10 : 10, slt.-sh	10, slt.-r : 10 slt.-sh : vv, h, m
8	4·6	16·4	SE : ESE	SE : E	0·0	0·0	0·0	121	p.-cl : 10 : 8, ci.-cu	8,ci.-cu,cu.-s: p.-cl : 2, h, d
9	6·1	16·4	SE : ENE	ESE : E	1·1	0·0	0·0	135	0, h, m, f, hy.-d: li.-cl : 8, ci.-cu	5, ci.-cu, cu, cu.-s : 5, cu.-s, s, h
10	9·0	16·5	NE	NE : E : ESE	1·2	0·0	0·0	167	0 : 4, cu, ci.-cu	6, th.-cl, so.-ha : v, th.-cl, m
11	0·2	16·5	NNE	NNE	2·1	0·0	0·2	271	p.-cl, m : 10, sc, fq.-m.-r	10, sc : 1, th.-cl
12	5·4	16·5	NNE : NW	NNW : N	1·0	0·0	0·1	164	li.-cl : 2, th.-cl, h, m	7, ci.-cu, cu.-s : 9, cu.-s
13	5·3	16·5	N : NNW	N : NE : SSE	0·2	0·0	0·0	158	vv : 9, s, ci.-s, ci.-cu	8, cu.-s, cu : 8, cu.-s, th.-cl
14	6·4	16·5	S : SW : NNW	NW : N	0·3	0·0	0·0	129	v : 10	7, cu, ci.-cu, cu.-s, h: p.-cl : 3, ci.-cu, th.-cl
15	0·3	16·5	N : NNW	SW : W	2·8	0·0	0·2	237	0, h : p.-cl : 10, slt.-r	10, r : 10, shs.-r
16	3·9	16·5	W : WSW : NW	NW : WSW	6·6	0·0	0·8	321	10, r : 10, oc.-shs	6, cu, ci.-cu: oc.-shs : v
17	7·3	16·6	SW : WSW	W : WSW	4·5	0·0	0·1	240	v : 8, cu, li.-shs	vv, ci, ci.-cu : 4,ci.-cu, ci.-s,s, li.-cl
18	4·0	16·6	WSW : SW : WNW	N	1·0	0·0	0·0	153	p.-cl, cu.-s, ci.-cu: 7, cu, cu.-s	7, cu, ci.-cu, cu.-s : 10, slt.-r
19	1·0	16·6	NNW : W : SW	NE : S : SW	0·0	0·0	0·0	123	10 : 10, slt.-r	9, cu.-s, cu, li.-shs : 10, cu.-s
20	1·4	16·6	SW : SSE	SE : E	4·6	0·0	0·1	212	10 : 10, slt.-r	8, cu, ci.-cu, cu.-s : 10, r
21	2·9	16·6	E : ESE	E : NE : NNE	1·3	0·0	0·0	153	10, hy.-r : 9, ci.-cu, cu	10, cu.-s, cu, li.-shs, t: 10, fq.-r
22	1·6	16·6	NNE : SW	SW	2·4	0·0	0·1	221	10, shs.-r : 10, th.-cl, m	9, cu.-s, cu, so.-ha : li.-shs : 10, m, r
23	7·8	16·6	SW	SSW	2·0	0·0	0·1	225	v : 3, li.-cl, ci.-cu	4, ci.-cu, ci : 10
24	5·0	16·6	SSW	SSW	1·0	0·0	0·1	201	10 : 9, cu.-s, cu, ci.-cu	9, cu.-s, cu, ci.-cu : p.-cl : 8,cu.-s,li.-cl,l
25	3·0	16·6	Variable	SW	1·6	0·0	0·1	186	10, r : 8, ci.-cu,cu.-s,li.-shs	8, cu, ci.-cu : 9, r
26	3·6	16·5	SW	SSW	4·3	0·0	0·1	303	10 : 8,cu,ci.-cu,shs.-r	10, cu.-s, hy.-r, hl, l, t: 4, ci.-cu, shs.-r
27	2·5	16·5	SSW	SSW	5·0	0·0	0·5	341	li.-cl : 8, cu, ci.-cu, sc	9, sc, cu.-s, ci.-cu : 10, li.-shs : 10, shs.-r
28	3·0	16·5	SSW : SW	SW : S	5·0	0·0	0·6	365	10, li.-shs : 10, sc, m.-r	7, cu, ci.-cu : p.-cl : v
29	10·7	16·5	SSE : SE	SSE : E	1·0	0·0	0·0	166	0 : 1, cu	5, cu.-s, cu : 7, th.-cl, l, t
30	8·2	16·5	SW	SW	1·3	0·0	0·1	197	t.-sm, hy.-r : 5, ci.-cu	8, cu.-s, cu, t: p.-cl : 0
Means	5·5	16·5	...	...	..	..	0·2	220		
Number of Column for Reference.	21	22	23	24	25	26	27	28	29	30

The mean *Temperature of Evaporation* for the month was 54°·6, being 0°·6 *lower* than
The mean *Temperature of the Dew Point* for the month was 50°·8, being 0°·4 *lower* than
The mean *Degree of Humidity* for the month was 75·2, being 1·9 *greater* than
The mean *Elastic Force of Vapour* for the month was $0^{\text{in}}{\cdot}371$, being $0^{\text{in}}{\cdot}006$ *less* than
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was $4^{\text{grs}}{\cdot}2$, being *the same as*
The mean *Weight of a Cubic Foot of Air* for the month was 531 grains, being *the same as*
} the average for the 20 years, 1849–1868.

The mean amount of *Cloud* for the month (a clear sky being represented by 0 and an overcast sky by 10) was 6·7.

The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·33. The maximum daily amount of *Sunshine* was 13·6 hours on June 3.

The highest reading of the *Solar Radiation Thermometer* was 145°·2 on June 9; and the lowest reading of the *Terrestrial Radiation Thermometer* was 31°·0 on June 12.

The mean daily distribution of *Ozone* was, for the 12 hours ending 9 a.m., 1·8; for the 6 hours ending 3 p.m., 1·5; and for the 6 hours ending 9 p.m., 1·3.

The *Proportions of Wind* referred to the cardinal points were N. 8, E. 8, S. 8, and W. 6.

The *Greatest Pressure of the Wind* in the month was $7^{\text{lbs}}{\cdot}0$ on the square foot on June 3. The mean daily *Horizontal Movement of the Air* for the month was 220 miles the greatest daily value was 412 miles on June 5; and the least daily value 102 miles on June 7.

Rain fell on 13 days in the month, amounting to $1^{\text{in}}{\cdot}343$, as measured by gauge No. 6 partly sunk below the ground; being $0^{\text{in}}{\cdot}710$ *less* than the average fall for the 42 years, 1841–1882.

MONTH and DAY, 1883.	Phases of the Moon.	BAROMETER.	TEMPERATURE.							Difference between the Air Temperature and Dew Point Temperature.			Degree of Humidity (Saturation = 100).	TEMPERATURE.				Rain collected in Gauge No. 6, whose receiving surface is 5 inches above the Ground.	Daily Amount of Ozone.	Electricity.
		Mean of 24 Hourly Values (corrected and reduced to 32° Fahrenheit).	Of the Air.					Of Evaporation.	Of the Dew Point.					Of Radiation.		Of the Water of the Thames at Deptford.				
			Highest.	Lowest.	Daily Range.	Mean of 24 Hourly Values.	Excess above Average of 20 Years.	Mean of 24 Hourly Values.	Deduced Mean Daily Value.	Mean.	Greatest.	Least.		Highest in Sun's Rays.	Lowest on the Grass.	Highest.	Lowest.			
		in.	°	°	°	°	°	°	°	°	°	°		°	°	°	°	in.		
July 1	..	29·924	79·3	50·5	28·8	64·9	+ 3·3	59·2	54·5	10·4	19·5	1·8	69	140·2	42·2	65·3	64·8	0·000	7·3	mP
2	..	29·872	83·3	53·7	29·6	69·4	+ 7·9	62·1	56·4	13·0	25·0	1·7	63	149·3	47·9	66·6	66·0	0·000	15·5	mP : wP : vP, vN
3	Greatest Declination N.	29·711	79·3	59·7	19·6	68·1	+ 6·7	63·8	60·4	7·7	13·1	1·8	76	134·4	53·0	68·2	..	0·123	8·7	sP, sN : mP, sN
4	New	29·669	73·4	52·7	20·7	61·5	+ 0·1	57·2	53·5	8·0	16·7	2·2	76	132·6	48·0	68·2	66·0	0·000	7·0	mP
5	..	29·707	73·3	50·8	22·5	60·3	− 1·2	55·8	51·9	8·4	17·1	1·0	74	140·3	46·3	68·2	..	0·000	15·0	mP
6	..	29·671	74·7	49·6	25·1	62·5	+ 0·8	57·0	52·3	10·2	20·0	0·8	70	142·0	41·9	68·2	..	0·000	16·2	mP
7	..	29·679	73·4	55·4	18·0	63·5	+ 1·6	58·4	54·1	9·4	16·2	3·4	72	143·5	48·1	67·7	67·0	0·000	8·5	wP : mP
8	..	29·702	78·1	57·0	21·1	64·3	+ 2·1	59·2	54·9	9·4	20·1	0·8	72	151·6	53·1	67·2	67·0	0·164	12·2	vP : mP : vP, sN
9	In Equator	29·666	76·1	56·4	19·7	63·8	+ 1·3	60·2	57·2	6·6	14·8	0·8	79	137·7	48·5	68·0	66·5	0·009	13·5	mP
10	..	29·721	74·1	52·7	21·4	62·2	− 0·5	57·1	52·7	9·5	18·5	3·0	71	135·0	44·3	67·2	66·0	0·000	7·5	mP : vP
11	..	29·512	73·7	55·5	18·2	61·7	− 1·2	57·0	52·9	8·8	20·2	1·9	74	143·9	50·9	66·9	65·8	0·008	13·2	mP : wP, wN
12	First Quarter : Apogee.	29·398	64·7	53·7	11·0	58·3	− 4·8	55·9	53·7	4·6	9·9	0·0	85	98·5	49·5	66·1	65·0	0·218	12·5	wP : vP, wN
13	..	29·508	72·3	52·7	19·6	60·6	− 2·7	56·4	52·8	7·8	15·8	1·0	75	141·7	48·0	65·9	65·0	0·000	12·0	vP
14	..	29·582	65·0	51·0	14·0	56·5	− 6·9	54·7	53·0	3·5	10·4	0·6	88	122·5	46·2	65·1	65·0	0·471	2·5	mP : sP, sN : vN, vP
15	..	29·696	65·1	46·8	18·3	53·4	−10·0	49·8	46·2	7·2	16·7	1·4	77	129·7	40·0	65·1	64·0	0·089	2·0	mP : sP, sN
16	..	29·948	62·3	43·6	18·7	54·6	− 8·9	50·0	45·6	9·0	13·3	4·6	71	112·1	36·6	65·1	63·0	0·004	1·0	mP : vP, wN : vP
17	Greatest Declination S.	29·856	64·0	52·3	11·7	57·7	− 5·8	54·1	50·8	6·9	13·5	2·6	78	113·3	46·5	63·1	62·5	0·000	2·7	vP
18	..	29·747	64·5	49·7	14·8	56·7	− 6·7	52·1	47·8	8·9	15·8	1·8	72	123·0	43·9	61·6	..	0·000	0·0	vP : vP, wN
19	..	29·618	69·4	46·4	23·0	56·8	− 6·5	52·4	48·4	8·4	18·4	1·0	73	139·7	37·0	61·9	61·0	0·000	0·0	vP, vN
20	Full	29·552	65·1	47·6	17·5	57·3	− 5·9	54·3	51·6	5·7	14·8	0·4	81	96·7	40·1	61·1	60·0	0·178	1·5	vP, wN
21	..	29·424	64·1	50·2	13·9	55·9	− 7·1	53·3	50·9	5·0	12·5	0·2	84	130·4	47·4	61·1	61·0	0·170	13·2	wP : sP, sN : vP, vN
22	..	29·608	65·2	48·2	17·0	54·8	− 8·1	51·2	47·8	7·0	14·4	2·1	76	113·5	41·0	60·6	..	0·095	3·0	vN, vP
23	..	29·629	66·2	47·7	18·5	56·4	− 6·4	53·4	50·6	5·8	12·7	1·3	81	115·7	39·9	60·6	..	0·003	5·2	mP : vP
24	In Equator	29·606	68·5	51·6	16·9	58·3	− 4·4	53·8	49·8	8·5	16·9	0·0	73	126·8	43·7	60·5	..	0·282	5·0	vP, wN
25	Perigee	29·802	66·2	50·4	15·8	57·2	− 5·5	52·7	48·6	8·6	16·0	2·8	73	123·2	43·6	60·9	60·5	0·005	0·0	vP : vP, wN
26	..	29·918	68·5	50·6	17·9	58·7	− 4·0	54·7	51·1	7·6	14·9	2·4	76	120·8	44·1	60·6	..	0·004	0·0	vP, wN
27	Last Qr.	29·967	66·5	49·9	16·6	57·3	− 5·3	54·2	51·4	5·9	11·4	2·4	81	124·7	39·8	61·1	60·0	0·018	5·0	mP : vP, wN
28	..	29·918	73·6	52·5	21·1	60·1	− 2·5	54·7	50·0	10·1	19·6	3·6	69	132·3	47·0	61·1	60·0	0·000	0·0	mP : vP
29	..	29·721	74·0	46·6	27·4	59·8	− 2·8	54·5	49·8	10·0	18·9	2·5	70	132·7	37·2	61·1	60·5	0·044	1·8	mP : vP
30	Greatest Declination N.	29·464	69·8	52·6	17·2	58·6	− 4·0	56·1	53·8	4·8	12·1	0·8	84	119·3	49·1	61·6	61·0	0·084	15·2	— : vP
31	..	29·551	76·6	53·5	23·1	61·6	− 1·0	58·4	55·7	5·9	16·9	0·9	81	132·1	47·7	61·9	..	0·029	0·0	wP : vP, vN
Means	..	29·689	70·7	51·3	19·3	59·8	− 2·9	55·6	51·9	7·8	16·0	1·7	75·6	129·0	44·9	64·1	(22 days) 63·5	Sum 1·998	6·7	....
Number of Column for Reference.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

The results apply to the civil day.

The mean reading of the Barometer (Column 2) and the mean temperatures of the Air and Evaporation (Columns 6 and 8) are deduced from the photographic records. The average temperature (Column 7) is that determined from the reduction of the photographic records from 1849 to 1868. The temperature of the Dew Point (Column 9) and the Degree of Humidity (Column 13) are deduced from the corresponding temperatures of the Air and Evaporation by means of Glaisher's Hygrometrical Tables. The mean difference between the Air and Dew Point Temperatures (Column 10) is the difference between the numbers in Columns 6 and 9, and the Greatest and Least Differences (Columns 11 and 12) are deduced from the 24 hourly photographic measures of the Dry-bulb and Wet-bulb Thermometers.

The values given in Columns 3, 4, 5, 14, 15, 16, and 17 are derived from eye-readings of self-registering thermometers.

The mean reading of the *Barometer* for the month was 29in·689, being 0in·120 *lower* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 83°·3 on July 2; the lowest in the month was 43°·6 on July 16; and the range was 39°·7.
The mean of all the highest daily readings in the month was 70°·7, being 3°·5 *lower* than the average for the 42 years, 1841–1882.
The mean of all the lowest daily readings in the month was 51°·3, being 1°·9 *lower* than the average for the 42 years, 1841–1882.
The mean of the daily ranges was 19°·3, being 1°·7 *less* than the average for the 42 years, 1841–1882.
The mean for the month was 59°·8, being 2°·9 *lower* than the average for the 20 years, 1849–1868.

MONTH and DAY, 1883.	Daily Duration of Sunshine.	Sun above Horizon.	WIND AS DEDUCED FROM SELF-REGISTERING ANEMOMETERS. OSLER'S. General Direction. A.M.	P.M.	Pressure on the Square Foot. Greatest.	Least.	Mean of 24 Hourly Measures.	ROBINSON'S. Horizontal Movement of the Air.	CLOUDS AND WEATHER. A.M.	P.M.
	hours.	hours.			lbs.	lbs.	lbs.	miles.		
July 1	12·0	16·5	SW : SSW	SW : SSW	2·1	0·0	0·1	212	0 : 6, cu, ci.-cu	6, cu.-s, cu, ci.-cu : 0
2	13·2	16·5	SE	SSE : ESE	2·7	0·0	0·2	207	0 : 2, ci, ci.-cu	2, cu, ci.-cu : 3, li.-cl : l, t
3	3·1	16·4	SE : S	SW : SSW	1·9	0·0	0·2	197	p.-cl, hy.-r, l, t : 7, ci.-cu	8, th.-cl : 10, slt.-sh : 7, l, t
4	6·5	16·4	SW : SE : S	SSW	4·7	0·0	0·7	247	10 : 9, li.-shs, t	7, cu.-s, cu : 0
5	10·8	16·4	SSW	SSW	4·0	0·0	0·7	299	0 : 0 : 9,cu,ci.-cu,slt.-sh	6, cu, ci.-cu : 1, th.-cl, s, ci.-s, d
6	6·4	16·4	Calm : SE	S : SSW	1·1	0·0	0·1	186	p.-cl,ci.-s,s,li.-cl : 7, ci, ci.-s, ci.-cu	9,cu.-s,cu,ci.-cu : p.-cl : 1, cu.-s, l
7	4·2	16·3	SSW : SW	SSW	3·0	0·0	0·4	273	p.-cl : 9, cu.-s, cu	9, cu.-s, cu, ci.-cu : 9, s, ci.-s
8	5·5	16·3	SSW : SW	SSW : SE	2·0	0·0	0·2	215	p.-cl : 6, cu, cu.-s	7, cu, cu.-s : v,so.-ha,slt.-r : 10, r, l, t
9	1·6	16·3	SSE : SSW : SW	WSW : SW	4·0	0·0	0·9	348	10, sh.-r : 9, ci.-cu	9, cu, ci.-cu : 2, cu, ci.-cu, li.-cl
10	6·2	16·3	WSW	SW : SSW	2·6	0·0	0·5	305	p.-cl, cu.-s : 3, li.-cl, cu	8, cu, cu.-s, slt.-sh : 10
11	7·1	16·2	SSW : S	SW	12·0	0·0	2·3	460	10 : 10, m.-r	5, sc, cu, m.-r, w : vv, w
12	0·0	16·2	SW : SSW	SSW : SW	7·6	0·0	1·3	354	10 : 10, sc, fq.-th.-r, w	10, sc, r : v
13	8·7	16·2	SW : WSW	SW : SSW	4·0	0·0	0·9	362	v : 7, cu, cu.-s	5, cu, ci.-cu : 1, li.-cl
14	2·2	16·1	SSW : NW : NE	S : NNW : WNW	4·4	0·0	0·3	189	li.-cl : 10, glm, li.-shs, t	8,glm,t.-sm,r : t.-sm, hy.-r : 10, shs.-r
15	7·5	16·1	WSW : WNW	WNW : WSW : NNW	6·3	0·0	0·9	308	10 : 6, cu.-s, cu	8, cu.-s, cu, t.-sm, hl : 1, li.-cl
16	4·1	16·1	WSW : W	WSW	3·6	0·0	0·6	335	0 : p.-cl : 10	10 : 10, li.-shs
17	0·4	16·0	WSW	WSW	8·2	0·3	1·7	477	10 : 10	10, w : vv
18	2·1	16·0	W : WNW	WNW : NW	2·5	0·0	0·6	278	v : 10	10 : 10
19	3·2	16·0	WSW	WNW : SW	1·7	0·0	0·1	164	10 : 8, ci-cu, ci	9, cu.-s, n, th.-r : 7,cu.-s,th.-cl,h,so.-ha
20	0·5	15·9	ENE : ESE	SE : SSW	1·0	0·0	0·1	130	10, ci.-s, s : 10	10, slt.-r : 10, r
21	4·4	15·9	S : WSW	WSW : W	5·6	0·0	1·1	360	10, sh.-r : 6, cu, cu.-s, hy.-r	8, t.-sm, shs.-r : 7, cu.-s, oc.-slt.-r
22	0·9	15·8	WSW : W	W : WNW : SW	6·1	0·0	1·6	438	10, sh.-r : 10, slt.-sh	9, shs.-r : 5, s, ci.-s, li.-cl
23	2·6	15·8	SW : WSW	SW : S : WNW	1·7	0·0	0·3	253	li.-cl : 9, cu.-s, ci	10, ci.-cu, cu, slt.-r : 10, oc.-slt.-r
24	5·6	15·7	W : N : NNW	NNW : NW	3·9	0·0	0·7	246	p.-cl, hy.-r : 7, ci.-cu, ci.-s	7, cu.-s, ci.-cu : 10
25	1·7	15·7	WNW : WSW	W : NW : WSW	2·7	0·0	0·3	241	p.-cl : 9, ci.-s, s, m	9, cu.-s, ci.-cu : 10, li.-shs
26	5·5	15·7	WSW : NNW	N : NE	1·7	0·0	0·2	187	10 : 8,cu.-s,cu,ci.-cu,slt.-m	8, cu.-s, ci.-cu, slt.-m : v, ci.-cu, m, slt.-sh
27	3·0	15·6	NNW	NNW : NNE : N	6·7	0·0	1·2	337	v, d : 10 : 10	10, li.-shs : 10
28	7·0	15·6	NNW : N	NNW : ENE : SW	3·5	0·0	0·6	244	10 : p.-cl	5, ci, ci.-s, th.-cl : v, ci, ci.-cu
29	8·1	15·5	SW	SW : SSW	3·5	0·0	0·3	247	0 : 3, cu, ci	7, cu, cu.-s, ci, so.-ha : v, m, hy.-sh
30	0·3	15·5	SE : SSE : S	SSW	1·2	0·0	0·1	181	10, hy.-sh : 9, cu.-s	9, ci.-cu, cu.-s, li.-shs : 9, cu.-s
31	4·3	15·4	SSW : WSW	SW : WSW	3·2	0·0	0·2	188	10 : 10 : v	5, cu, r, t : 10, slt.-r, t
Means	4·8	16·0	...	...	..	..	0·6	273		
Number of Column for Reference.	21	22	23	24	25	26	27	28	29	30

The mean *Temperature of Evaporation* for the month was 55°·6, being 2°·1 *lower* than
The mean *Temperature of the Dew Point* for the month was 51°·9, being 1°·8 *lower* than
The mean *Degree of Humidity* for the month was 75·6, being 2·6 *greater* than
The mean *Elastic Force of Vapour* for the month was 0$^{\text{in}}$·386, being 0$^{\text{in}}$·027 *less* than
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was 4$^{\text{grs}}$·3, being 0$^{\text{gr}}$·3 *less* than
The mean *Weight of a Cubic Foot of Air* for the month was 528 grains, being *the same as*
} the average for the 20 years, 1849–1868.

The mean amount of *Cloud* for the month (a clear sky being represented by 0 and an overcast sky by 10) was 7·5.

The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·30. The maximum daily amount of *Sunshine* was 13·2 hours on July 2.

The highest reading of the *Solar Radiation Thermometer* was 151°·6 on July 8; and the lowest reading of the *Terrestrial Radiation Thermometer* was 36°·6 on July 16.

The mean daily distribution of *Ozone* was, for the 12 hours ending 9 a.m., 3·3; for the 6 hours ending 3 p.m., 1·6; and for the 6 hours ending 9 p.m., 1·8.

The *Proportions of Wind* referred to the cardinal points were N. 4, E. 2, S. 12, and W. 13.

The *Greatest Pressure of the Wind* in the month was 12$^{\text{lbs}}$·0 on the square foot on July 11. The mean daily *Horizontal Movement of the Air* for the month was 273 miles; the greatest daily value was 477 miles on July 17; and the least daily value 130 miles on July 20.

Rain fell on 16 days in the month, amounting to 1$^{\text{in}}$·998, as measured by gauge No. 6 partly sunk below the ground; being 0$^{\text{in}}$·434 *less* than the average fall for the 42 years, 1841–1882.

MONTH and DAY, 1883.	Phases of the Moon.	BAROMETER.	TEMPERATURE.							Difference between the Air Temperature and Dew Point Temperature.			Degree of Humidity (Saturation = 100).	TEMPERATURE.				Rain collected in Gauge No. 6, whose receiving surface is 5 inches above the Ground.	Daily Amount of Ozone.	Electricity.
			Of the Air.					Of Evaporation.	Of the Dew Point.					Of Radiation.		Of the Water of the Thames at Deptford.				
		Mean of 24 Hourly Values (corrected and reduced to 32° Fahrenheit).	Highest.	Lowest.	Daily Range.	Mean of 24 Hourly Values.	Excess above Average of 20 Years.	Mean of 24 Hourly Values.	Deduced Mean Daily Value.	Mean.	Greatest.	Least.		Highest in Sun's Rays.	Lowest on the Grass.	Highest.	Lowest.			
		in.	°	°	°	°	°	°	°	°	°	°		°	°	°	°	in.		
Aug. 1	..	29·839	68·7	52·0	16·7	59·9	− 2·7	55·2	51·1	8·8	17·8	2·1	73	124·0	47·8	62·7	62·5	0·069	0·0	vP : wN, vP
2	..	30·001	73·4	51·7	21·7	61·2	− 1·5	56·5	52·4	8·8	16·9	2·6	74	125·7	45·2	63·1	62·0	0·000	6·0	mP : wP, wN
3	New	30·032	71·8	53·9	17·9	61·6	− 1·1	58·0	54·9	6·7	14·9	0·6	79	117·3	46·9	63·1	62·0	0·000	0·0	vP, wN
4	..	30·034	73·2	53·2	20·0	61·3	− 1·4	58·9	56·9	4·4	14·0	0·0	86	123·2	46·0	63·1	63·0	0·000	5·5	wP
5	..	29·931	70·2	56·9	13·3	61·9	− 0·8	60·1	58·6	3·3	7·4	0·4	89	107·7	56·0	63·9	61·8	0·016	5·5	wP
6	In Equator	29·763	71·3	57·5	13·8	62·3	− 0·4	59·4	56·9	5·4	14·8	0·6	83	127·3	50·0	63·4	61·4	0·066	8·0	wP, wN
7	..	29·781	72·0	52·0	20·0	61·5	− 1·2	56·8	52·7	8·8	17·1	0·2	74	121·8	44·7	63·1	63·0	0·000	0·5	vvP, wN
8	..	29·669	62·8	49·7	13·1	57·1	− 5·6	54·6	52·3	4·8	11·6	0·8	84	106·3	42·3	63·7	62·5	0·190	10·5	mP : vP, wN : vvP, ssN
9	Apogee	29·451	69·3	51·5	17·8	59·2	− 3·5	53·5	48·4	10·8	18·9	1·7	68	133·7	43·5	62·6	61·8	0·000	14·5	vP, wN
10	..	29·453	68·9	49·7	19·2	57·5	− 5·2	52·6	48·1	9·4	19·1	3·4	71	138·0	42·7	62·1	61·0	0·004	4·5	mP : vvN : wN, vP
11	First Qr.	29·726	72·3	51·5	20·8	59·3	− 3·4	54·3	49·8	9·5	18·9	3·2	71	138·3	42·0	62·1	61·0	0·000	6·0	mP : vvP
12	..	29·976	74·4	46·3	28·1	59·5	− 3·1	55·0	51·0	8·5	17·8	0·8	74	134·5	36·5	61·5	61·2	0·000	3·8	mP
13	Greatest Declination S.	29·786	83·3	54·7	28·6	68·3	+ 5·8	59·9	53·3	15·0	27·2	5·3	58	148·2	48·9	63·5	63·0	0·000	11·0	mP
14	..	29·598	77·2	57·0	20·2	66·5	+ 4·1	60·3	55·3	11·2	22·1	3·2	67	147·6	51·0	63·1	62·0	0·006	8·3	vP : mN, mP
15	..	29·530	70·0	55·3	14·7	60·2	− 2·1	56·0	52·3	7·9	17·1	2·1	75	118·1	51·0	..	..	0·050	6·0	vP, wN
16	..	29·831	67·5	49·0	18·5	58·0	− 4·1	51·7	46·0	12·0	18·7	4·4	64	115·0	40·0	..	..	0·000	2·0	vP, wN
17	..	29·902	70·4	47·9	22·5	59·6	− 2·3	57·5	55·7	3·9	5·9	1·8	87	101·7	39·4	..	..	0·000	2·0	mP
18	Full	29·977	76·1	55·6	20·5	65·1	+ 3·3	61·1	57·8	7·3	17·3	0·4	78	126·0	44·5	63·1	63·0	0·007	0·0	wP : wN, mP
19	..	30·077	79·1	52·5	26·6	63·0	+ 1·4	59·4	56·4	6·6	17·7	0·4	79	150·2	40·0	64·3	63·8	0·004	0·2	wP
20	In Equator	29·967	81·9	46·4	35·5	63·0	+ 1·6	57·6	53·0	10·0	26·3	0·4	70	144·0	32·8	64·1	63·0	0·000	3·8	wP : vP
21	Perigee	29·979	85·1	58·3	26·8	69·1	+ 7·8	62·1	56·6	12·5	26·3	3·4	64	139·8	52·9	64·6	64·0	0·000	2·0	mP : wP, wN
22	..	30·001	75·3	58·6	16·7	65·9	+ 4·6	62·7	60·1	5·8	12·1	2·3	82	113·2	49·2	65·1	65·0	0·007	0·0	vP, vN
23	..	30·089	77·0	50·7	26·3	62·8	+ 1·6	57·2	52·4	10·4	22·8	1·4	69	133·0	43·0	65·1	64·5	0·000	0·0	vP
24	..	30·083	76·4	44·8	31·6	61·0	− 0·1	55·6	50·9	10·1	24·7	0·0	70	144·6	35·2	65·1	64·0	0·000	0·0	vP
25	Last Qr.	29·995	77·4	50·7	26·7	63·1	+ 2·1	58·2	54·1	9·0	23·6	0·0	73	146·9	38·9	65·1	65·0	0·000	0·0	vP : wP
26	Greatest Declination N.	29·948	78·4	49·1	29·3	63·8	+ 2·9	57·7	52·7	11·1	23·5	0·0	67	120·5	42·0	..	..	0·000	0·0	vP
27	..	29·863	77·4	54·8	22·6	65·1	+ 4·3	58·2	52·6	12·5	22·3	3·2	64	122·0	44·0	..	..	0·000	0·0	wP
28	..	29·798	78·4	58·0	20·4	65·8	+ 5·1	59·7	54·7	11·1	21·9	2·5	68	140·6	49·7	..	..	0·000	0·5	wP, wN
29	..	29·683	72·1	56·7	15·4	63·9	+ 3·3	59·4	55·6	8·3	15·1	3·6	75	109·3	46·0	..	..	0·000	3·5	wP, wN
30	..	29·717	76·6	54·5	22·1	62·7	+ 2·3	58·6	55·1	7·6	19·2	1·7	77	152·7	43·2	..	..	0·009	0·0	vP
31	..	29·561	64·7	55·6	9·1	59·0	− 1·3	57·5	56·1	2·9	9·3	0·6	91	94·8	46·3	..	..	0·281	0·0	vvP, vvN
Means	..	29·840	74·0	52·8	21·2	62·2	+ 0·3	57·6	53·7	8·5	18·1	1·7	74·3	127·9	44·6	(22 days) 63·5	(22 days) 62·7	Sum 0·709	3·4	..
Number of Column for Reference.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

The results apply to the civil day.

The mean reading of the Barometer (Column 2) and the mean temperatures of the Air and Evaporation (Columns 6 and 8) are deduced from the photographic records. The average temperature (Column 7) is that determined from the reduction of the photographic records from 1849 to 1868. The temperature of the Dew Point (Column 9) and the Degree of Humidity (Column 13) are deduced from the corresponding temperatures of the Air and Evaporation by means of Glaisher's Hygrometrical Tables. The mean difference between the Air and Dew Point Temperatures (Column 10) is the difference between the numbers in Columns 6 and 9, and the Greatest and Least Differences (Columns 11 and 12) are deduced from the 24 hourly photographic measures of the Dry-bulb and Wet-bulb Thermometers.

The values given in Columns 3, 4, 5, 14, 15, 16, and 17 are derived from eye-readings of self-registering thermometers.

The mean reading of the *Barometer* for the month was $29^{\text{in}}{\cdot}840$, being $0^{\text{in}}{\cdot}041$ *higher* than the average for the 20 years, 1854–1875.

TEMPERATURE OF THE AIR.

The highest in the month was 85°·1 on August 21; the lowest in the month was 44°·8 on August 24; and the range was 40°·3.
The mean of all the highest daily readings in the month was 74°·0, being 1°·2 *higher* than the average for the 42 years, 1841–1882.
The mean of all the lowest daily readings in the month was 52°·8, being 0°·4 *lower* than the average for the 42 years, 1841–1882.
The mean of the daily ranges was 21°·2, being 1°·6 *greater* than the average for the 42 years, 1841–1882.
The mean for the month was 62°·2, being 0°·3 *higher* than the average for the 20 years, 1849–1868.

MONTH and DAY, 1883.	Daily Duration of Sunshine.	Sun above Horizon.	WIND AS DEDUCED FROM SELF-REGISTERING ANEMOMETERS.						CLOUDS AND WEATHER.	
			OSLER'S.					ROBINSON'S.		
			General Direction.		Pressure on the Square Foot.			Horizontal Movement of the Air.		
			A.M.	P.M.	Greatest.	Least.	Mean of 24 Hourly Measures.		A.M.	P.M.
	hours.	hours.			lbs.	lbs.	lbs.	miles.		
Aug. 1	3·5	15·3	WSW : WNW	WSW : WNW	2·7	0·0	0·3	262	10, sh.-r : 5, ci.-cu, cu	9, cu, ci.-cu : v, slt.-r
2	1·9	15·3	WSW	NW : WSW	1·1	0·0	0·1	160	th.-cl : 10	9, cu, cu.-s, n, t : 10
3	3·1	15·2	WSW . NNW	Variable	0·8	0·0	0·1	141	p.-cl : 10, slt.-shs	7,cu.-s,cu,ci,oc.-slt.-r,glm: v, m
4	3·5	15·2	Calm : SW	SW	0·9	0·0	0·0	130	m : 10, m, m.-r	8, ci.-cu : 7, cu.-s, th.-cl
5	0·2	15·1	WSW	WSW : SW	1·5	0·0	0·2	239	10 : 10, oc.-th.-r	10, oc.-m,-r : 10
6	1·0	15·1	SW	WSW	3·7	0·0	0·3	254	10 : 10, slt.-shs	9,cu.-s,ci.-cu,oc.-m.-r: v, shs.-r
7	4·9	15·0	WSW: N : NW	N : NW	2·0	0·0	0·1	185	v : 3, ci.-cu, h	8, cu.-s, cu, ci.-cu : v, th.-cl
8	0·9	15·0	SW	SW	10·1	0·0	1·5	443	v : 9,th.-cl,cu.-s,sc,slt.-r	10, sc, r, w : 10, fq.-r, w, t: vv
9	9·6	14·9	SW: WSW: W	WSW	7·8	0·1	1·5	464	o : 4,li.-cl,cu,cu.-s,w	6, cu, cu.-s, w : o, l, w
10	11·0	14·9	SW : WSW	WSW	12·0	0·5	2·5	614	o, w, l :8,cu,cu.-s,ci.-cu,st.-w,oc.-slt.-r	6,cu,cu.-s,slt.-sh,st.-w: v, st.-w
11	7·3	14·8	WSW	W : WSW	5·5	0·0	1·4	406	10, slt.-r : 9, ci.-cu, ci.-s	7, ci.-cu, cu.-s : 2, cu.-s, h
12	6·1	14·7	SW	SW : SSW : SSE	2·4	0·0	0·2	178	o : p.-cl, cu	8, cu, ci.-cu, ci : 9, cu.-s, li.-cl
13	10·9	14·7	SSE : SSW	SW : S	4·4	0·0	0·9	287	li.-cl : v, ci, ci.-cu, ci.-s	o : o
14	11·6	14·6	SW	SW	13·5	0·0	3·1	481	10 : 3, cu, w	3, li.-cl,cu,w: 1, st.-w : v, slt.-sh, w
15	4·5	14·6	SW	WSW : W	9·2	0·1	3·0	497	10, w : 9,ci.-cu,cu.-s,li.-shs,w	9,ci.-cu,cu.-s,li.-shs,w: 10, sh.-r
16	4·9	14·5	NW	NW : SW	6·0	0·0	1·2	360	10, slt.-r : 9	7, cu.-s, ci.-cu : 1, li.-cl, d, lu.-ha
17	0·4	14·4	SSW	SSW : SW	2·5	0·0	0·3	261	o, d : 10, m.-r	10 : 10, oc.-m.-r
18	4·0	14·4	WSW: W: NNW	NE	0·7	0·0	0·0	124	10 : 10, oc.-slt.-r: p.-cl, glm	5, cu, ci.-cu, h : 2, h, m
19	4·8	14·3	Calm : NE : SE	SE : E	1·4	0·0	0·1	110	th.-cl, m : 4, ci, ci.-cu	5, cu, ci.-cu : 4, li.-cl
20	6·4	14·3	Calm : E : SE	SE : SW : SSE	1·0	0·0	0·1	106	li.-cl : v, f, m	2, cu, ci.-cu, ci : 6, cu.-s, li.-cl, m
21	4·5	14·2	Variable	SW : N : SSW	0·9	0·0	0·0	106	10 : 9, m	6, ci.-cu, cu : o, m, d
22	0·2	14·1	SW : Calm : N	N	0·7	0·0	0·1	130	v : 6, cu.-s, cu,ci.-cu,m,glm	9, glm, m, slt.-sh : p.-cl : 3, li.-cl, m, h
23	11·1	14·1	N : NNE	NE : E	1·2	0·0	0·1	171	10 : o, slt.-m	2, li.-cl : o : o,d,slt.-h,m
24	11·1	14·0	Calm : NE	ENE : ESE : E	1·5	0·0	0·2	148	o,m,hy.-d,slt.-f: o, f : o	o : o, slt.-h, slt.-m, d
25	7·7	13·9	ENE : ESE	SE : NE : Calm	0·6	0·0	0·1	99	o, m, d : 8, th.-cl, tk.-f	o : th.-cl : o, h, m, d
26	7·9	13·9	SE : SW : WSW	WNW : SW	1·6	0·0	0·1	155	o, m, f : 7, th.-cl, f, m	10, th.-cl, m : th.-cl : o
27	0·3	13·8	SW	SW : WSW	3·1	0·0	0·6	293	o : 10, s, ci.-s	10,th.-cl,so.-ha: p.-cl, slt.-sh : v
28	9·0	13·8	WSW : WNW	W : WSW	2·6	0·0	0·7	301	o : 8, ci.-cu, cu.-s,m	o : o : v, h, m, d
29	0·2	13·7	WSW : W	WNW : WSW : SW	5·1	0·0	1·1	365	10, w : 10, sc, oc.-m.-r	9, sc,cu,cu.-s: p.-cl : o
30	4·3	13·7	SW	SW	4·5	0·0	1·2	336	p.-cl : 10	7, ci.-cu, ci : 10 : 10, oc.-th.-r
31	0·0	13·6	WSW	WSW: NE:NNW	1·4	0·0	0·1	136	10, oc.-shs : 10, th.-r	10, fq.-th.-r : fq.-th.-r : 10, hy.-r
Means	5·1	14·5	...	...	..	..	0·7	256		
Number of Column for Reference.	21	22	23	24	25	26	27	28	29	30

The mean *Temperature of Evaporation* for the month was 57°·6, being 0°·3 *lower* than
The mean *Temperature of the Dew Point* for the month was 53°·7, being 0°·7 *lower* than
The mean *Degree of Humidity* for the month was 74·3, being 2·2 *less* than
The mean *Elastic Force of Vapour* for the month was 0$^{\text{in}}$·413, being 0$^{\text{in}}$·011 *less* than
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was 4$^{\text{grs}}$·6, being 0$^{\text{gr}}$·1 *less* than
The mean *Weight of a Cubic Foot of Air* for the month was 528 grains, being *the same as*
} the average for the 20 years, 1849–1868

The mean amount of *Cloud* for the month (a clear sky being represented by 0 and an overcast sky by 10) was 6·3.

The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·35. The maximum daily amount of *Sunshine* was 11·6 hours on August 14.

The highest reading of the *Solar Radiation Thermometer* was 152°·7 on August 30; and the lowest reading of the *Terrestrial Radiation Thermometer* was 32°·8 on August 20.

The mean daily distribution of *Ozone* was, for the 12 hours ending 9 a.m., 1·1; for the 6 hours ending 3 p.m., 1·0; and for the 6 hours ending 9 p.m., 1·3.

The *Proportions of Wind* referred to the cardinal points were N. 4, E. 3, S. 9, and W. 14. One day was calm.

The *Greatest Pressure of the Wind* in the month was 13$^{\text{lbs}}$·5 on the square foot on August 14. The mean daily *Horizontal Movement of the Air* for the month was 256 miles; the greatest daily value was 614 miles on August 10; and the least daily value 99 miles on August 25.

Rain fell on 10 days in the month, amounting to 0$^{\text{in}}$·709, as measured by gauge No. 6 partly sunk below the ground; being 1$^{\text{in}}$·749 *less* than the average fall for the 42 years, 1841–1882.

MONTH and DAY, 1883.	Phases of the Moon.	BAROMETER.	TEMPERATURE.							Difference between the Air Temperature and Dew Point Temperature.			Degree of Humidity (Saturation = 100).	TEMPERATURE.				Rain collected in Gauge No. 6, whose receiving surface is 5 inches above the Ground.	Daily Amount of Ozone.	Electricity.
		Mean of 24 Hourly Values (corrected and reduced to 32° Fahrenheit).	Of the Air.					Of Evaporation.	Of the Dew Point.					Of Radiation.		Of the Water of the Thames at Deptford.				
			Highest.	Lowest.	Daily Range.	Mean of 24 Hourly Values.	Excess above Average of 20 Years.	Mean of 24 Hourly Values.	Deduced Mean Daily Value.	Mean.	Greatest.	Least.		Highest in Sun's Rays.	Lowest on the Grass.	Highest.	Lowest.			
		in.	°	°	°	°	°	°	°	°	°	°		°	°	°	°	in.		
Sept. 1	New	29·295	68·2	51·3	16·9	57·7	− 2·4	54·9	52·4	5·3	13·5	0·4	83	130·8	41·3	..	..	0·070	7·0	mP : vP, vN
2	In Equator	28·741	61·9	54·7	7·2	58·8	− 1·2	56·5	54·4	4·4	7·8	1·9	85	95·3	53·5	..	..	0·275	15·2	wP : wwP, vN
3	..	29·232	67·1	51·8	15·3	58·5	− 1·3	53·9	49·8	8·7	16·9	4·2	74	128·2	46·0	..	..	0·015	11·2	wP : mP, sN
4	..	29·558	66·1	48·2	17·9	54·8	− 4·9	50·5	46·4	8·4	19·4	1·7	73	122·1	39·0	..	..	0·000	7·5	vvP, vvN
5	..	29·685	64·1	46·0	18·1	53·0	− 6·5	50·0	47·0	6·0	14·8	1·0	80	118·0	36·5	..	..	0·404	0·0	wP, wN : mP
6	Apogee	29·793	59·0	41·5	17·5	51·2	− 8·1	49·4	47·6	3·6	11·4	0·4	88	89·1	33·0	..	..	0·000	0·0	wP
7	..	29·721	62·3	47·6	14·7	54·5	− 4·5	51·2	48·0	6·5	16·7	1·9	78	107·6	38·1	..	..	0·000	0·0	mP : vP
8	..	29·771	66·1	48·6	17·5	55·9	− 2·9	52·7	49·7	6·2	17·6	1·1	81	114·0	37·5	..	..	0·117	0·0	wP : mP
9	First Qr.	29·946	70·1	41·6	28·5	55·1	− 3·4	51·0	47·1	8·0	19·3	0·0	75	127·8	31·0	..	..	0·000	2·0	sP : mP
10	Greatest Declination S.	29·788	65·4	50·8	14·6	58·0	− 0·3	55·1	52·5	5·5	11·3	0·0	82	88·3	42·9	..	..	0·140	8·7	wP
11	..	29·843	60·1	54·3	5·8	56·6	− 1·5	56·3	56·0	0·6	3·4	0·0	98	74·9	53·0	..	..	1·370	2·2	wP, wN
12	..	29·987	72·8	53·0	19·8	59·8	+ 1·8	57·9	56·3	3·5	12·1	0·0	89	125·9	43·5	..	..	0·010	0·0	wP
13	..	30·043	70·4	52·5	17·9	58·6	+ 0·8	57·0	55·6	3·0	13·3	0·0	89	128·7	41·8	..	..	0·000	3·0	wP : mP
14	..	29·910	73·1	52·6	20·5	59·8	+ 2·2	56·9	54·4	5·4	16·4	0·0	83	128·1	45·8	..	..	0·000	0·0	wP : mP
15	..	29·800	66·0	51·6	14·4	57·7	+ 0·3	55·7	53·9	3·8	9·7	0·0	87	100·3	42·6	..	..	0·000	1·0	vP, wN
16	In Equator: Full	29·968	73·2	48·1	25·1	58·6	+ 1·3	55·7	53·1	5·5	16·9	0·0	82	116·6	40·4	60·1	59·8	0·000	0·0	vP
17	..	30·031	77·1	48·6	28·5	60·2	+ 3·1	57·0	54·2	6·0	20·4	0·0	81	126·3	40·8	60·1	60·0	0·000	0·0	wP : vvP, vN
18	Perigee	30·012	75·1	49·8	25·3	61·6	+ 4·7	58·7	56·2	5·4	15·0	0·0	83	133·3	41·2	60·7	60·0	0·000	0·0	vP
19	..	29·904	75·1	50·8	24·3	61·1	+ 4·3	57·3	54·0	7·1	18·9	0·0	78	121·0	43·0	..	..	0·000	0·0	wP : mP
20	..	29·602	62·8	52·7	10·1	57·9	+ 1·3	56·6	55·4	2·5	4·6	0·8	92	77·0	43·5	61·1	61·0	0·061	1·0	wP, wN : wP
21	..	29·548	59·0	49·4	9·6	54·1	− 2·3	53·9	53·7	0·4	2·7	0·0	99	89·8	38·1	61·1	60·0	0·167	0·0	vP, wN
22	Greatest Declination N.	29·558	60·7	49·0	11·7	54·7	− 1·5	53·3	51·9	2·8	7·0	0·0	90	80·1	40·0	..	..	0·006	0·2	wP : mP
23	Last Qr.	29·854	67·5	42·1	25·4	54·6	− 1·5	52·0	49·5	5·1	16·9	0·0	82	121·2	32·3	60·1	60·0	0·000	1·8	mP
24	..	29·571	67·3	53·4	13·9	59·6	+ 3·7	58·1	56·8	2·8	9·4	0·6	91	109·2	47·1	60·4	60·0	0·230	4·5	— : mP
25	..	29·645	69·2	54·3	14·9	60·7	+ 4·9	57·8	55·3	5·4	13·9	0·6	83	135·0	47·0	60·9	60·3	0·004	2·3	wP : mP
26	..	29·570	69·7	53·9	15·8	59·8	+ 4·1	57·1	54·7	5·1	13·7	0·0	84	128·8	47·6	61·1	60·2	0·063	3·8	— : mP
27	..	29·495	65·2	51·4	13·8	56·5	+ 1·0	53·7	51·1	5·4	11·6	2·0	82	122·9	45·0	60·3	60·0	0·105	4·5	wP : vvP, vN
28	..	29·430	64·2	49·5	14·7	55·9	+ 0·5	53·4	51·0	4·9	14·2	0·4	85	116·5	42·3	59·7	59·4	0·066	4·0	mP : vP : —
29	In Equator	29·090	59·4	47·0	12·4	52·2	− 3·0	50·2	48·2	4·0	12·0	0·0	86	129·7	43·4	59·3	59·0	0·452	4·0	— : vP, vN : vvP, vvN
30	..	29·178	54·9	44·2	10·7	49·1	− 5·8	48·3	47·4	1·7	3·8	0·0	94	96·0	40·9	58·7	58·2	0·260	0·0	vvP, vvN
Means	..	29·652	66·4	49·7	16·8	56·9	− 0·6	54·4	52·1	4·8	12·8	0·6	84·6	112·7	41·9	..	..	Sum 3·815	2·8	..
Number of Column for Reference.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

The results apply to the civil day.

The mean reading of the Barometer (Column 2) and the mean temperatures of the Air and Evaporation (Columns 6 and 8) are deduced from the photographic records. The average temperature (Column 7) is that determined from the reduction of the photographic records from 1849 to 1868. The temperature of the Dew Point (Column 9) and the Degree of Humidity (Column 13) are deduced from the corresponding temperatures of the Air and Evaporation by means of Glaisher's Hygrometrical Tables. The mean difference between the Air and Dew Point Temperatures (Column 10) is the difference between the numbers in Columns 6 and 9, and the Greatest and Least Differences (Columns 11 and 12) are deduced from the 24 hourly photographic measures of the Dry-bulb and Wet-bulb Thermometers.

The values given in Columns 3, 4, 5, 14, 15, 16 and 17 are derived from eye-readings of self-registering thermometers.

The mean reading of the *Barometer* for the month was 29in·652, being 0in·135 *lower* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 77°·1 on September 17; the lowest in the month was 41°·5 on September 6; and the range was 35°·6.

The mean of all the highest daily readings in the month was 66°·4, being 1°·0 *lower* than the average for the 42 years, 1841–1882.

The mean of all the lowest daily readings in the month was 49°·7, being 0°·6 *higher* than the average for the 42 years, 1841–1882.

The mean of the daily ranges was 16°·8, being 1°·5 *less* than the average for the 42 years, 1841–1882.

The mean for the month was 56°·9, being 0°·6 *lower* than the average for the 20 years, 1849–1868.

MONTH and DAY, 1883.	Daily Duration of Sunshine.	Sun above Horizon.	WIND AS DEDUCED FROM SELF-REGISTERING ANEMOMETERS.						CLOUDS AND WEATHER.	
			OSLER'S.					ROBINSON'S.		
			General Direction.		Pressure on the Square Foot.			Horizontal Movement of the Air.		
			A.M.	P.M.	Greatest.	Least.	Mean of 24 Hourly Measures.		A.M.	P.M.
	hours.	hours.			lbs	lbs.	lbs.	miles.		
Sept. 1	2·5	13·5	W : SW : SSW	SSW : S : SSE	7·0	0·0	0·9	292	10 : 6, cu.-s, ci.-cu	10, slt.-r : 10, fq.-r
2	0·5	13·4	SSE : S	S : SSW : SW	18·8	0·8	5·6	663	10, li.-shs, w : 10, sc, shs.-r, st.-w	10, sc, fq.-r, st.-w : 10, sc, st.-w, sl.-r
3	6·0	13·4	SW	WSW : SW	17·0	0·5	4·8	663	p.-cl, st.-w : 9, st.-w	8,cu.-s,cu,li.-shs,w: v, slt.-sh : 1
4	6·3	13·3	WSW : WNW	W : SW	3·4	0·0	0·6	320	0 : 3, cu, ci.-cu, h, m	7,cu.-s,ci.-cu: vv, oc.-slt.-r: v, h
5	4·0	13·2	SSW : NNW	N : NNE	5·6	0·0	0·5	238	10, hy.-r : 10, r, slt.-m	6, cu, ci.-cu, ci.-s : 0, d
6	0·0	13·2	SW : WSW	SW : WSW	5·6	0·0	0·7	278	0, d : 10, slt.-m, slt.-r	10, oc.-m.-r : 10, oc.-m.-r : 0, slt.-h,hy.-d
7	0·5	13·1	WSW	WSW : SW	7·2	0·0	1·2	387	v, s, ci.-s : 10	10, so.-ha : 10
8	4·8	13·0	SW	NW : NNW	4·3	0·0	0·9	326	10 : 10, fq.-r	6, cu.-s, cu : 0 : 0, d
9	9·6	13·0	SW	S : SSE	0·6	0·0	0·0	136	v, d : 0, m, h	2, cu, ci.-s : 8, ci.-s, li.-cl
10	0·0	12·9	SE	SSE : ESE	1·8	0·0	0·1	217	li.-cl : 10, slt.-r	10 : 10, fq.-r
11	0·0	12·9	ESE : NNE	NNE : N	1·9	0·0	0·1	218	10, hy.-r : 10, hy.-r	10, oc.-m.-r : 10, hy.-shs
12	3·4	12·8	N	N : ENE : E	0·2	0·0	0·0	155	10 : 10, slt.-m	5, cu.-s, cu, ci.-cu : 0, m, hy.-d, f
13	3·3	12·7	NNE	NNE	0·5	0·0	0·0	184	f : 10, f, m.-r	6,ci.-cu,cu.-s: h v, slt.-m
14	6·1	12·7	NNE	ENE : ESE	0·9	0·0	0·0	189	p.-cl : 9	3, cu.-s, cu : v : 0, hy.-d
15	3·7	12·6	NNE : N	SSW : SW	0·2	0·0	0·0	144	v, m : 7, th.-cl, h, m	2, h, th.-cl : 0, h, m, hy.-d
16	6·6	12·6	SW	WSW : NW : Calm	0·0	0·0	0·0	84	0, m, hy.-d : 0, f, m, h	0, h, slt.-m : 0, m, d, f
17	6·5	12·5	Calm : NE : ESE	SE	0·0	0·0	0·0	82	0, f : 0, h, slt.-f	4, ci.-cu, cu, t : 4, cu.-s, li.-cl, h, m, d, lu.-ha
18	7·8	12·4	ENE : SE	SSE	0·3	0·0	0·0	115	0, slt.-f, hy.-d : 0, slt.-f	3, ci.-cu, li.-cl : 0, h, hy.-d, lu.-ha, lu.-co
19	6·1	12·3	ENE : SE	SSE : ESE	0·4	0·0	0·0	122	0, tk.-f : 3, cu, ci.-cu	1, ci, ci.-cu : 2, th.-cl, lu.-ha
20	0·0	12·3	ESE : ENE	SE : SSW	0·0	0·0	0·0	117	th.-cl : 10, oc.-r	10, oc.-r : p.-cl : 5,li.-cl, lu.-ha,l
21	0·3	12·2	Variable	SW : Calm	0·0	0·0	0·0	83	li.-cl, hy.-d, f : 10, r, m, f	9, cu.-s, r, slt.-f : v, m, f
22	0·0	12·2	NE : NNE : N	NNW : N	1·1	0·0	0·0	152	10 : 10, slt.-r, slt.-m	10, slt.-sh : v, li.-cl
23	8·4	12·1	SW : SE : S	SSW : SSE	1·0	0·0	0·0	150	li.-cl : 0, tk.-f	0 : 0 : v
24	1·9	12·0	SSE : SSW	WSW : SW	7·5	0·0	1·4	397	10, r : 10, c.-r, w	9, ci.-cu, cu.-s : v
25	6·0	11·9	SW : WSW	WSW : SSW	4·0	0·0	0·5	316	v : 6,li.-cl,ci.-cu,cu.-s,sc	6, li.-shs : vv : v, th.-cl, d
26	5·3	11·9	SSE : SW	SW	13·0	0·0	2·4	480	10, hy.-sh : v, sc, m.-r, w	4, w : 0, hy.-d
27	4·9	11·8	SW	SW : WSW	7·3	0·0	1·6	442	0 : 4, cu, ci.-cu, w	8, hy.-shs : vv : v
28	5·2	11·7	SW : WSW	SW : SSE : SSW	3·6	0·0	0·7	345	10 : 9, ci.-cu, ci.-s	7, cu.-s, cu : 10, fq.-m.-r : 10, r
29	5·7	11·7	W : WSW	WSW : SW	4·1	0·0	0·9	345	10, r : 8,cu,cu.-s,slt.-m,slt.-sh	6,cu,ci.-cu,sh.-r,hl: 10, hy.-r : 10, fq.-shs
30	0·7	11·6	N : NNW	NE : N : NNW	9·6	0·0	1·0	352	10, r : 10, sc, fq.-r, w	10, fq.-shs, w: 10, shs.-r : 10, slt.-r
Means	3·9	12·6	...	...	..	..	0·8	266		
Number of Column for Reference.	21	22	23	24	25	26	27	28	29	30

The mean *Temperature of Evaporation* for the month was 54°·4, being 0°·1 *higher* than
The mean *Temperature of the Dew Point* for the month was 52°·1, being 0°·7 *higher* than
The mean *Degree of Humidity* for the month was 84·6, being 4·5 *greater* than
The mean *Elastic Force of Vapour* for the month was 0^{in}·389, being 0^{in}·010 *greater* than
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was 4^{grs}·3, being 0^{gr}·1 *greater* than
The mean *Weight of a Cubic Foot of Air* for the month was 531 grains, being 1 grain *less* than
} the average for the 20 years, 1849–1868.

The mean amount of *Cloud* for the month (a clear sky being represented by 0 and an overcast sky by 10) was 6·1.

The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·31. The maximum daily amount of *Sunshine* was 9·6 hours on September 9.

The highest reading of the *Solar Radiation Thermometer* was 135°·0 on September 25; and the lowest reading of the *Terrestrial Radiation Thermometer* was 31°·0 on September 9.

The mean daily distribution of *Ozone* was, for the 12 hours ending 9 a.m., 1·5; for the 6 hours ending 3 p.m., 0·5; and for the 6 hours ending 9 p.m., 0·8.

The *Proportions of Wind* referred to the cardinal points were N. 6, E. 5, S. 11, and W. 7. One day was calm.

The *Greatest Pressure of the Wind* in the month was 18^{lbs}·8 on the square foot on September 2. The mean daily *Horizontal Movement of the Air* for the month was 266 miles; the greatest daily value was 663 miles on September 2 and 3; and the least daily value 82 miles on September 17.

Rain fell on 17 days in the month, amounting to 3^{in}·815, as measured by gauge No. 6 partly sunk below the ground; being 1^{in}·520 *greater* than the average fall for the 42 years, 1841–1882.

MONTH and DAY, 1883.	Phases of the Moon.	BAROMETER.	TEMPERATURE.							Difference between the Air Temperature and Dew Point Temperature.			Degree of Humidity (Saturation = 100).	TEMPERATURE.				Rain collected in Gauge No. 6, whose receiving surface is 5 inches above the Ground.	Daily Amount of Ozone.	Electricity.
		Mean of 24 Hourly Values (corrected and reduced to 32° Fahrenheit).	Of the Air.					Of Evaporation.	Of the Dew Point.					Of Radiation.		Of the Water of the Thames at Deptford.				
			Highest.	Lowest.	Daily Range.	Mean of 24 Hourly Values.	Excess above Average of 20 Years.	Mean of 24 Hourly Values.	Deduced Mean Daily Value.	Mean.	Greatest.	Least.		Highest in Sun's Rays.	Lowest on the Grass.	Highest.	Lowest.			
		in.	°	°	°	°	°	°	°	°	°	°		°	°	°	°	in.		
Oct. 1	New	29·549	55·5	44·7	10·8	49·2	− 5·5	46·1	42·8	6·4	12·0	0·8	78	110·0	38·0	58·3	57·0	0·030	0·0	— : vP, vN : vP
2	..	29·779	54·9	40·3	14·6	46·8	− 7·6	43·5	39·8	7·0	14·4	0·4	78	111·6	33·1	55·9	55·5	0·043	0·0	vvP : vP, wN
3	Apogee	29·444	49·1	41·4	7·7	46·3	− 7·7	45·2	44·0	2·3	4·0	1·3	92	66·7	32·1	55·3	53·5	0·249	0·0	wP, wN : ssN, vP
4	..	29·413	52·5	40·5	12·0	47·6	− 6·1	45·3	42·8	4·8	7·6	1·1	84	60·0	34·5	54·3	53·5	0·052	1·0	vP, vN
5	..	29·890	53·9	44·7	9·2	48·8	− 4·6	45·3	41·5	7·3	13·8	1·7	76	93·3	38·0	53·3	52·5	0·027	3·0	vP : vP, vN
6	..	30·050	58·3	40·3	18·0	48·8	− 4·2	46·2	43·4	5·4	10·8	1·1	82	108·8	31·5	53·4	51·8	0·000	2·0	vP : mP
7	Greatest Declination S.	30·258	55·4	41·0	14·4	48·6	− 4·1	46·7	44·7	3·9	7·6	0·2	87	68·5	32·7	53·6	51·2	0·000	0·0	vP : mP
8	..	30·321	61·5	49·9	11·6	55·0	+ 2·5	53·9	52·8	2·2	4·9	0·8	92	74·0	49·3	..	..	0·000	3·0	wP, wN : vP
9	First Qr.	30·189	59·2	48·4	10·8	54·5	+ 2·2	52·8	51·2	3·3	7·0	0·8	89	76·9	40·0	52·4	52·0	0·000	0·0	wP : mP
10	..	29·868	62·1	43·7	18·4	52·3	+ 0·2	50·8	49·3	3·0	10·3	0·0	90	99·8	36·9	52·9	52·5	0·000	0·0	mP
11	..	29·715	56·2	47·6	8·6	51·6	− 0·3	50·8	50·0	1·6	3·8	0·0	94	76·2	38·1	53·1	52·5	0·000	0·0	wP, wN
12	..	29·869	56·1	42·5	13·6	50·3	− 1·4	49·4	48·4	1·9	6·2	0·0	94	70·0	32·8	52·9	51·0	0·000	0·0	wP : vP
13	..	29·890	60·9	40·6	20·3	50·5	− 1·1	49·7	48·9	1·6	10·1	0·0	94	99·8	32·8	52·9	52·5	0·000	1·3	wP : mP
14	In Equator	29·728	64·6	46·3	18·3	54·7	+ 3·3	52·7	50·8	3·9	13·9	0·0	87	107·3	35·1	53·3	52·8	0·303	8·5	wP : vP, wN
15	..	29·551	59·1	48·5	10·6	53·3	+ 2·0	50·5	47·7	5·6	13·1	0·0	81	108·4	41·8	53·1	53·0	0·089	7·5	vP : mP, wN
16	Full: Perigee.	29·276	60·3	50·0	10·3	54·6	+ 3·4	52·0	49·5	5·1	10·6	1·6	82	97·7	45·4	53·1	53·0	0·246	7·7	wN, wP : mP
17	..	29·289	59·2	45·8	13·4	53·6	+ 2·5	49·9	46·3	7·3	15·4	1·4	76	114·3	40·0	53·5	53·5	0·279	6·3	vP, vN
18	..	29·786	55·6	42·4	13·2	48·3	− 2·7	44·2	39·7	8·6	15·4	5·0	72	113·9	36·1	53·9	52·5	0·000	9·7	mP
19	..	29·677	56·2	46·7	9·5	50·0	− 0·8	48·4	46·7	3·3	6·1	0·6	89	60·1	41·6	52·7	52·0	0·109	7·0	wwP : vP
20	Greatest Declination N.	29·548	51·8	39·1	12·7	46·4	− 4·2	43·7	40·6	5·8	11·8	2·3	81	76·4	31·8	52·9	51·8	0·000	2·0	mP : sP
21	..	29·652	56·2	38·6	17·6	45·4	− 5·0	43·1	40·5	4·9	13·4	0·2	83	93·2	31·0	51·1	51·0	0·020	0·0	mP : sP, sN
22	Last Qr.	29·827	51·1	36·7	14·4	43·1	− 7·0	41·6	39·8	3·3	9·0	0·0	88	85·0	29·6	51·1	50·8	0·000	0·0	vP, wN : vP
23	..	29·621	56·8	40·0	16·8	49·1	− 0·6	47·4	45·5	3·6	6·4	1·3	88	73·7	31·1	50·9	50·0	0·123	0·0	vP, wN
24	..	29·607	57·6	43·2	14·4	51·2	+ 1·8	49·3	47·3	3·9	8·8	0·4	87	84·6	33·9	50·5	49·8	0·006	1·0	mP
25	..	29·657	61·4	54·9	6·5	57·8	+ 8·7	55·1	52·7	5·1	8·0	1·9	83	81·9	49·9	50·9	49·8	0·000	3·5	wP
26	..	29·829	59·1	52·7	6·4	55·2	+ 6·4	53·1	51·1	4·1	8·4	1·8	87	78·3	50·1	51·6	51·5	0·011	3·5	wP : vP
27	In Equator	29·893	62·9	45·5	17·4	54·8	+ 6·3	53·0	51·2	3·6	9·1	0·0	87	91·5	37·5	..	..	0·000	0·0	wP : mP
28	..	30·019	59·8	42·9	16·9	51·6	+ 3·4	50·3	49·0	2·6	10·8	0·0	91	100·5	36·7	51·4	50·8	0·005*	0·0	wP : mP
29	..	30·063	57·8	47·3	10·5	51·9	+ 4·0	51·6	51·3	0·6	3·8	0·0	98	70·7	40·2	51·9	51·6	0·002	1·0	wP
30	Apogee: New	30·247	54·1	46·3	7·8	50·2	+ 2·6	49·0	47·7	2·5	7·2	0·0	92	64·1	39·0	52·1	52·0	0·000	0·0	wP : vP
31	..	30·115	52·3	47·3	5·0	49·7	+ 2·4	47·7	45·6	4·1	6·8	2·5	87	61·1	46·0	52·1	52·0	0·000	0·0	mP
Means	..	29·794	57·1	44·5	12·6	50·7	− 0·4	48·7	46·5	4·1	9·4	0·9	86·1	86·4	37·6	(29 days) 52·9	(29 days) 52·2	Sum 1·594	2·2	....
Number of Column for Reference.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

The results apply to the civil day.

The mean reading of the Barometer (Column 2) and the mean temperatures of the Air and Evaporation (Columns 6 and 8) are deduced from the photographic records. The average temperature (Column 7) is that determined from the reduction of the photographic records from 1849 to 1868. The temperature of the Dew Point (Column 9) and the Degree of Humidity (Column 13) are deduced from the corresponding temperatures of the Air and Evaporation by means of Glaisher's Hygrometrical Tables. The mean difference between the Air and Dew Point Temperatures (Column 10) is the difference between the numbers in Columns 6 and 9, and the Greatest and Least Differences (Columns 11 and 12) are deduced from the 24 hourly photographic measures of the Dry-bulb and Wet-bulb Thermometers. The results for October 13 for Air and Evaporation Temperatures are deduced from eye-observations on account of failure of the photographic registers.

The values given in Columns 3, 4, 5, 14, 15, 16, and 17 are derived from eye-readings of self-registering thermometers.

* Rainfall (Column 18). The amount given for October 28 is derived from dew.

The mean reading of the *Barometer* for the month was 29in·794, being 0in·074 *higher* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 64°·6 on October 14; the lowest in the month was 36°·7 on October 22; and the range was 27°·9.

The mean of all the highest daily readings in the month was 57°·1, being 1°·0 *lower* than the average for the 42 years, 1841–1882.

The mean of all the lowest daily readings in the month was 44°·5, being 1°·0 *higher* than the average for the 42 years, 1841–1882.

The mean of the daily ranges was 12°·6, being 1°·9 *less* than the average for the 42 years, 1841–1882.

The mean for the month was 50°·7, being 0°·4 *lower* than the average for the 20 years, 1849–1868.

MONTH and DAY, 1883.	Daily Duration of Sunshine.	Sun above Horizon.	Wind as deduced from Self-registering Anemometers. Osler's. General Direction. A.M.	Wind as deduced from Self-registering Anemometers. Osler's. General Direction. P.M.	Osler's. Pressure on the Square Foot. Greatest.	Osler's. Pressure on the Square Foot. Least.	Osler's. Pressure on the Square Foot. Mean of 24 Hourly Measures.	Robinson's. Horizontal Movement of the Air.	Clouds and Weather. A.M.	Clouds and Weather. P.M.
	hours.	hours.			lbs.	lbs.	lbs.	miles		
Oct. 1	3·5	11·6	NNW : N	NNW : NW	6·3	0·0	1·7	422	10 : 9, ci.-cu, ci.-s, w	7, cu.-s, cu, ci.-cu : v, th.-cl, slt.-sh
2	7·8	11·5	NNW	NNW:WNW:WSW	5·2	0·0	1·3	373	10, r : 1, li.-cl	5, ci.-cu, cu : v, h, f, d
3	0·0	11·4	SW	WSW: W: WNW	2·8	0·0	0·5	360	10, r : 10, th.-r	10, c.-r : v : v, h, m
4	0·0	11·4	W : NNW	N : NNW	17·0	0·0	5·0	607	10 : 10 : 10,sc,st.-w,r	10, sc, fq.-th.-r, st.-w: 10, sc, w
5	1·4	11·3	NNW	NNW : NW	4·0	0·0	1·1	346	10 : 10	7,cu.-s,ci.-cu: 10 : vv, d
6	6·9	11·2	NNW : N	N	4·4	0·0	0·5	296	10 : 1	5, cu, ci.-cu : 0, hy.-d
7	0·0	11·2	SW : WSW	WSW	0·0	0·0	0·0	147	0, hy.-d : 9, th.-cl, glm, f	10, slt.-f, slt.-sh : 10, slt.-f
8	0·0	11·1	SW	SW	0·0	0·0	0·0	111	10 f : 10, f, glm	10 : 10
9	0·0	11·0	SW	SW : S	0·0	0·0	0·0	116	10 : 10	10 : vv, m, d
10	2·2	11·0	SW : Calm : SE	SE	0·0	0·0	0·9	79	0, hy.-d : 10, slt.-f, m	5,ci.-cu,cu,li.-cl: v, li.-cl, m : 10, f
11	0·0	10·9	Calm : W	Calm : N	0·3	0·0	0·0	75	10, f : 10, f, gt.-glm	10, f : 10, f
12	0·7	10·9	NNE	NE : Calm	0·2	0·0	0·0	136	10, slt.-f : 10	9, ci.-cu, ci.-s : v, f
13	2·4	10·8	Calm : SE	SSE	1·0	0·0	0·0	129	10, slt.-f : 8, f	8, ci.-cu, cu.-s : v, th.-cl, sc, lu.-co
14	4·3	10·7	SE : SSE	S : SSE	7·4	0·0	0·8	287	li.-cl : 8, ci.-cu, ci.-s	7, ci.-s, li.-cl: 10, fq.-r : 10, fq.-r
15	5·3	10·7	SW	SW : S : SSE	12·3	0·0	1·2	364	10, r : 1, li.-cl	5, cu, ci.-cu : vv, slt.-sh : 10, sc, lu.-ha, r, w
16	3·0	10·6	SSW	SW : SSW	10·2	0·0	3·2	559	10, w, r : 2, ci, li.-cl, w, slt.-sh	9, sc, w : 4, ci.-cu
17	4·5	10·5	SSW: SW: WSW	SSW : SW	20·5	0·0	3·5	644	0 : w : v, w	7,cu.-s,ci.-cu: p.-cl, hy.-sh,hy.-sqs: 1, hy.-sqs
18	7·8	10·5	WSW : SW	WSW : SW	8·6	0·3	3·0	594	li.-cl, w : 6, cu.-s, ci.-cu, w	4, cu.-s, cu, ci.-cu,w: 9, ci.-cu, ci.-s
19	0·0	10·4	SW : SSW	S : NW : WSW	7·1	0·0	1·2	430	10 : 10, r	10, sc, c.-r : 7, cu.-s, ci.-cu, ci.-s
20	0·4	10·3	WSW	WSW	3·9	0·0	0·6	341	10 : 10, sc	9,cu.-s,ci.-cu,h: p.-cl : 0
21	7·1	10·3	WSW	WSW	2·8	0·0	0·7	297	0 : 0	6, cu, ci.-cu, slt.-sh: 0, h, m
22	1·1	10·2	WSW : N	N : W : SSW	0·3	0·0	0·0	183	m : 10	9,cu.-s,cu,slt.-f: 0, m : v, m, d
23	0·2	10·2	SSW : SW	WSW : SW	4·2	0·0	0·9	376	10 : 10, r	9, sc, li.-shs : v
24	0·2	10·1	WSW	SW : WSW	7·0	0·0	0·8	370	10 : 5, ci.-cu	10, oc.-slt.-r : 10, fq.-m.-r, w
25	1·7	10·0	SW	SW	10·9	0·2	3·1	579	10, w : 8, ci.-cu, sc, w	10, sc, oc.-slt.-r : 10
26	0·0	10·0	SW : SSW	SSW : S : SSE	1·7	0·0	0·1	240	10 : 8, ci.-cu, cu.-s, oc.-m.-r	10 : 10, slt.-sh
27	4·0	9·9	S : SW : W	SW : SE : S	0·0	0·0	0·0	161	10 : vv, ci.-cu	6, ci, ci.-cu, cu.-s : 0, d, slt.-f
28	4·8	9·8	SE : E	E	1·1	0·0	0·0	138	0, f : 8, ci.-cu, f, m	0 : 0, d : 10, f, m
29	0·6	9·8	E	E : ENE	0·0	0·0	0·0	130	10 f : 10, f, m.-r	7, cu.-s, cu, ci.-cu : vv, hy.-d, slt.-f
30	0·0	9·7	NE : ENE	ENE	0·4	0·0	0·0	147	10, slt.-f : 10, slt.-f	10 : 10, m
31	0·0	9·7	E : ESE	ESE : SE	0·0	0·0	0·0	75	10, m : 10, m	10, glm : 10
Means	2·3	10·6	...	...	..	..	0·9	294		
Number of Column for Reference.	21	22	23	24	25	26	27	28	29	30

The mean *Temperature of Evaporation* for the month was 48°·7, being 0°·2 *lower* than
The mean *Temperature of the Dew Point* for the month was 46°·5, being 0°·3 *lower* than
The mean *Degree of Humidity* for the month was 86·1, being *the same as*
The mean *Elastic Force of Vapour* for the month was $0^{\text{in}}\cdot317$, being $0^{\text{in}}\cdot004$ *less* than
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was $3^{\text{grs}}\cdot6$, being *the same as*
The mean *Weight of a Cubic Foot of Air* for the month was 540 grains, being 1 grain *greater* than
} the average for the 20 years, 1849–1868.

The mean amount of *Cloud* for the month (a clear sky being represented by 0 and an overcast sky by 10) was 7·2.

The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·22. The maximum daily amount of *Sunshine* was 7·8 hours on October 2 and 18.

The highest reading of the *Solar Radiation Thermometer* was 114°·3 on October 17; and the lowest reading of the *Terrestrial Radiation Thermometer* was 29°·6 on October 22.

The mean daily distribution of *Ozone* was, for the 12 hours ending 9 a.m., 1·3; for the 6 hours ending 3 p.m., 0·7; and for the 6 hours ending 9 p.m., 0·2.

The *Proportions of Wind* referred to the cardinal points were N. 6, E. 5, S. 10, and W. 9. One day was calm.

The *Greatest Pressure of the Wind* in the month was $20^{\text{lbs}}\cdot5$ on the square foot on October 17. The mean daily *Horizontal Movement of the Air* for the month was 294 miles; the greatest daily value was 644 miles on October 17; and the least daily value 75 miles on October 11 and 31.

Rain fell on 14 days in the month, amounting to $1^{\text{in}}\cdot594$, as measured by gauge No. 6 partly sunk below the ground; being $1^{\text{in}}\cdot398$ *less* than the average fall for the 42 years, 1841–1882.

MONTH and DAY, 1883.	Phases of the Moon.	BAROMETER.	TEMPERATURE.							Difference between the Air Temperature and Dew Point Temperature.			Degree of Humidity (Saturation = 100).	TEMPERATURE.				Rain collected in Gauge No. 6, whose receiving surface is 5 inches above the Ground.	Daily Amount of Ozone.	Electricity.
		Mean of 24 Hourly Values (corrected and reduced to 32° Fahrenheit).	Of the Air.					Of Evaporation.	Of the Dew Point.					Of Radiation.		Of the Water of the Thames at Deptford.				
			Highest.	Lowest.	Daily Range.	Mean of 24 Hourly Values.	Excess above Average of 20 Years.	Mean of 24 Hourly Values.	Deduced Mean Daily Value.	Mean.	Greatest.	Least.		Highest in Sun's Rays.	Lowest on the Grass.	Highest.	Lowest.			
		in.	°	°	°	°	°	°	°	°	°	°		°	°	°	°	in.		
Nov. 1	..	30·071	52·1	45·7	6·4	48·2	+ 1·2	46·2	44·0	4·2	7·2	2·7	86	66·9	44·5	51·7	51·6	0·000	0·0	mP
2	..	29·965	50·1	43·6	6·5	46·0	− 0·7	45·0	43·9	2·1	4·2	0·2	93	70·6	43·6	51·9	51·6	0·000	0·0	vP : mP
3	Greatest Declination S.	29·871	47·8	44·4	3·4	46·2	− 0·2	45·5	44·7	1·5	3·8	0·7	95	50·0	42·0	51·1	50·5	0·019	0·0	vP : wN, wP : wN
4	..	29·630	51·6	38·6	13·0	46·0	0·0	44·9	43·7	2·3	7·4	0·0	92	58·3	35·1	51·3	51·0	0·330	2·0	mP : wN, mP
5	..	29·419	50·1	39·3	10·8	44·7	− 0·9	42·5	39·9	4·8	10·1	0·6	84	94·0	34·0	50·9	50·2	0·241	3·5	mP : mP, wN
6	..	28·979	56·1	38·3	17·8	49·3	+ 4·1	47·9	46·4	2·9	4·8	1·5	90	77·7	31·5	50·6	50·2	0·228	4·5	wwP : vP, sN
7	..	29·394	47·6	33·5	14·1	40·3	− 4·4	39·6	38·7	1·6	9·2	0·0	94	66·0	26·4	49·6	49·5	0·136	0·0	mP : sP, sN
8	First Qr.	29·533	50·1	37·6	12·5	42·8	− 1·5	41·9	40·8	2·0	8·2	0·0	93	77·8	30·2	49·1	48·6	0·045	0·0	mP
9	..	29·509	53·9	40·8	13·1	47·6	+ 3·8	45·6	43·4	4·2	9·4	1·5	87	85·1	33·3	48·7	48·4	0·015	0·0	wP : mP, vN
10	In Equator	29·506	45·1	37·2	7·9	41·1	− 2·3	38·7	35·7	5·4	11·7	1·2	81	65·3	31·0	47·9	47·6	0·006	0·0	mP
11	..	29·602	45·9	35·5	10·4	40·3	− 2·7	38·4	36·0	4·3	9·0	0·7	85	59·7	30·5	46·9	46·8	0·000	0·0	mP
12	..	29·636	44·1	29·2	14·9	35·9	− 5·7	35·6	33·8	3·1	7·0	0·0	89	64·8	24·0	46·6	45·4	0·000	0·0	mP : sP
13	..	29·880	45·6	27·8	17·8	36·8	− 5·5	35·7	34·2	2·6	8·1	0·0	91	70·5	23·7	45·4	44·0	0·000	0·0	mP
14	Perigee : Full	29·999	43·1	29·9	13·2	37·2	− 4·8	35·4	32·9	4·3	10·8	0·3	85	53·5	25·6	45·6	45·0	0·000	0·0	mP
15	..	29·826	43·1	29·7	13·4	36·2	− 5·6	34·6	32·2	4·0	8·5	0·0	86	63·4	27·2	44·4	42·0	0·010	1·5	mP
16	Greatest Declination N.	29·574	49·6	38·3	11·3	44·8	+ 3·2	43·4	41·8	3·0	6·7	0·2	90	60·9	34·0	43·5	42·4	0·121	6·5	wN, wP : mP
17	..	29·590	50·9	33·8	17·1	40·8	− 0·7	39·4	37·7	3·1	7·6	0·2	89	91·0	30·0	43·6	42·4	0·177	7·5	mP : vvP, vvN : mP
18	..	29·752	50·9	33·8	17·1	41·0	− 0·5	39·2	36·9	4·1	9·2	0·8	86	58·8	29·7	43·6	41·8	0·006	1·5	mP : sP : vP
19	..	29·776	50·9	40·2	10·7	45·1	+ 3·7	42·8	40·1	5·0	13·9	0·8	83	78·0	36·5	43·3	42·2	0·024	0·0	wP : mP
20	..	29·792	48·6	38·9	9·7	42·9	+ 1·6	40·2	37·0	5·9	11·1	3·7	80	80·5	34·8	43·1	42·5	0·045	5·0	wP, mN : vP, mN : mP
21	Last Qr.	29·808	52·1	38·5	13·6	44·8	+ 3·6	42·0	38·7	6·1	12·6	3·1	79	67·3	32·8	42·5	41·5	0·011	0·2	wP : mP
22	..	29·635	50·0	41·0	9·0	44·4	+ 3·3	42·3	39·8	4·6	8·4	1·8	84	68·0	38·5	42·5	41·8	0·085	0·8	mP : sP, sN
23	In Equator	29·597	45·1	34·7	10·4	40·1	− 0·9	38·9	37·3	2·8	6·4	0·0	90	59·5	32·4	42·5	42·2	0·227	2·0	vvP, vvN : sP
24	..	29·390	52·0	37·2	14·8	46·8	+ 5·8	45·0	43·0	3·8	8·2	1·0	87	77·1	32·0	42·1	41·2	0·311	8·0	wN, wP : vP
25	..	28·963	55·1	47·0	8·1	51·6	+10·7	49·9	48·2	3·4	6·7	0·8	89	61·3	43·0	42·9	42·8	0·294	8·0	—: wP : vvP, vvN
26	Apogee	29·058	50·2	40·0	10·2	45·4	+ 4·6	43·4	41·1	4·3	7·1	1·9	85	72·1	35·6	44·3	43·5	0·348	6·0	vvP, vN : wP : mP
27	..	29·760	49·6	37·5	12·1	43·7	+ 2·9	41·9	39·8	3·9	9·2	1·7	86	72·0	33·0	44·9	44·5	0·000	0·3	mP
28	..	30·125	56·2	45·7	10·5	50·1	+ 9·2	48·8	47·4	2·7	6·8	0·0	91	83·8	41·2	43·7	43·6	0·000	0·7	wP : mP
29	New	30·178	48·2	38·1	10·1	44·1	+ 3·1	43·6	43·0	1·1	5·3	0·0	96	73·3	34·4	44·3	43·5	0·011*	0·0	mP
30	..	30·017	51·1	39·7	11·4	46·5	+ 5·3	45·6	44·6	1·9	5·0	0·0	94	64·1	33·1	44·3	43·5	0·154	0·0	wP : wP, wN
Means	..	29·661	49·6	37·8	11·7	43·7	+ 1·0	42·1	40·2	3·5	8·1	0·8	88·0	69·7	33·5	46·1	45·4	Sum 2·844	1·9	..
Number of Column for Reference	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

The results apply to the civil day.

The mean reading of the Barometer (Column 2) and the mean temperatures of the Air and Evaporation (Columns 6 and 8) are deduced from the photographic records. The average temperature (Column 7) is that determined from the reduction of the photographic records from 1849 to 1868. The temperature of the Dew Point (Column 9) and the Degree of Humidity (Column 13) are deduced from the corresponding temperatures of the Air and Evaporation by means of Glaisher's Hygrometrical Tables. The mean difference between the Air and Dew Point Temperatures (Column 10) is the difference between the numbers in Columns 6 and 9, and the Greatest and Least Differences (Columns 11 and 12) are deduced from the 24 hourly photographic measures of the Dry-bulb and Wet-bulb Thermometers. The results for November 12 for Air and Evaporation Temperatures are deduced from eye-observations on account of failure of the photographic registers.

The values given in Columns 3, 4, 5, 14, 15, 16 and 17 are derived from eye-readings of self-registering thermometers.
* Rainfall (Column 18). The amount given for November 29 is derived from dew.

The mean reading of the *Barometer* for the month was 29$^{\text{in}}$·661, being 0$^{\text{in}}$·110 *lower* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.
The highest in the month was 56°·2 on November 28; the lowest in the month was 27°·8 on November 13; and the range was 28°·4.
The mean of all the highest daily readings in the month was 49°·6, being 0°·8 *higher* than the average for the 42 years, 1841–1882.
The mean of all the lowest daily readings in the month was 37°·8, being 0°·4 *higher* than the average for the 42 years, 1841–1882.
The mean of the daily ranges was 11°·7, being 0°·3 *greater* than the average for the 42 years, 1841–1882.
The mean for the month was 43°·7, being 1°·0 *higher* than the average for the 20 years, 1849–1868.

MONTH and DAY, 1883.	Daily Duration of Sunshine.	Sun above Horizon.	WIND AS DEDUCED FROM SELF-REGISTERING ANEMOMETERS.						CLOUDS AND WEATHER.	
			OSLER'S.					ROBINSON'S.		
			General Direction.		Pressure on the Square Foot.			Horizontal Movement of the Air.		
			A.M.	P.M.	Greatest.	Least.	Mean of 24 Hourly Measures.		A.M.	P.M.
	hours.	hours.			lbs.	lbs.	lbs.	miles.		
Nov. 1	1·5	9·6	Calm: ESE	ESE	0·0	0·0	0·0	85	10 : 10	7, ci.-cu : 10 : 10
2	0·0	9·5	ESE: S	ESE	0·0	0·0	0·0	71	10 : 10	10 : 10 : 10, oc.-m.-r
3	0·0	9·5	Calm: W	NNW: WSW	0·0	0·0	0·0	89	10, glm : 10,gt.-glm,oc.-m.-r	10, slt.-f, fq.-m.-r : 10, slt.-f
4	0·0	9·4	SW: SSW	SW: W: WSW	11·5	0·0	0·9	426	10 : 10, sc	10, r, w : 0, d
5	4·9	9·4	WSW	WSW:SSW:SSE	4·5	0·0	0·6	398	0, hy.-d : 0	6,ci.-cu,ci,ci.-s,so.-ha: 10, li.-shs : 10, hy.-r
6	0·0	9·3	S: SW	NNW: NW	6·2	0·0	1·1	451	10, r : 10, sc, r, glm	10, sc, r : 10, slt.-sh : 0, h, m
7	0·7	9·2	SW	SE	0·0	0·0	0·0	105	0, m, hy.-d, f : v, f	7, ci, ci.-s : 10, r, slt.-f
8	2·4	9·2	SW	SW: SSW	2·7	0·0	0·1	250	10, slt.-f : 10	6, ci, cu : v, li.-cl : 10, r
9	2·1	9·1	SW: WSW	WSW	4·2	0·0	0·5	366	10 : 9, ci.-cu, ci.-s	9,ci,ci.-cu,cu.-s,slt.-r: 0
10	3·6	9·1	WSW: NW	WNW: WSW	4·0	0·0	1·1	418	p.-cl : p.-cl, m, m.-r	3, cu,ci.-cu, ci, h : 0 : v
11	1·1	9·0	WSW: W	Variable	4·2	0·0	0·5	274	p.-cl : 3, li.-cl, m, h	3, ci, h, m : p.-cl, m : 10, slt.-f
12	4·6	9·0	NNE: N	N: NNW	0·0	0·0	0·0	116	10, slt.-f : 1, th.-cl, m, ho.-fr	1, th.-cl, h : 0, h, m : 0, h, tk.-f, ho.-fr
13	5·3	8·9	WSW: W: N	N: NNW	0·4	0·0	0·0	174	f, h, ho.-fr : 0, m, ho.-fr	1, li.-cl : 0 : v, slt.-f, h, ho.-fr
14	0·9	8·9	WSW	NNW	3·3	0·0	0·1	213	0,h,slt.-f,ho.-fr: p.-cl, cu, ci.-cu,f: v, f	1, li.-cl,ci,h : 10, slt.-sh : 9
15	4·0	8·8	WSW: SW	SW: SSE	0·6	0·0	0·0	196	8, ci.-cu, ho.-fr : 8, ci.-cu, ho.-fr, slt.-f, h	1, cu, h : 10, oc.-slt.-r
16	0·3	8·8	SSE: SW	SW	10·5	0·0	0·8	374	10, c.-r, w : 10, slt.-r	8, cu.-s,ci-cu: p.-cl : 0, d
17	0·8	8·7	SSW: S	S: WSW	8·8	0·0	1·0	405	0, ho.-fr : 8, ci.-cu, slt.-sh	9, sc,hy.-r,w: 0 : 1, li.-cl
18	2·7	8·7	WSW	SW: SSW	3·9	0·0	0·3	322	0 : 8, ci.-cu, slt.-f	7,th.-cl,ci.-cu: 10 : 10, oc.-slt.-r
19	4·1	8·6	W: WSW	WSW: SW	5·9	0·0	0·8	438	v : 10, slt.-r	2, cu, ci.-cu, w : 1, th.-cl
20	3·1	8·6	SW: WSW	WSW	11·8	0·0	1·7	584	p.-cl : 5,ci.-cu, ci.-s,slt.-r,w	v, ci,ci.-cu,glm,slt.-r: v, cu.-s, ci.-cu
21	1·4	8·5	SW: SSW	SW: WSW	11·5	0·0	1·1	509	li.-cl : 9, ci.-s, m.-r	6, sc, ci,ci.-cu,w,slt.-shs: vv
22	0·6	8·5	SW: SSW	SW	4·5	0·0	0·6	396	v : 8,ci.-cu,ci.-s,slt.-sh	9,cu.-s,glm,hy.-sh,hl: 10
23	1·4	8·4	SW: NNW: W	W: SW: SSW	3·0	0·0	0·1	259	hy.-r : 6, th.-cl, h	2, li.-cl : 0, slt.-f, h : v
24	2·1	8·4	S: SW	SW: SSW: S	10·4	0·0	1·5	497	0 : hy.-r, w : 5,ci.-cu,cu.-s,w	8, cu.-s, ci.-cu : 10, slt.-r, w
25	0·0	8·3	SSW	SSW	13·7	0·0	3·0	632	10, w, r : 10, sc, w, r	10, r, sqs : v, sqs : v, shs.-r,sqs
26	2·0	8·3	S: SSW	SW: WSW	6·2	0·0	0·7	421	10,fq.-hy.-shs,sqs: 6, ci, ci.-s, hy.-sh	3, ci.-cu, n, cu.-s : 0, d
27	3·5	8·2	SW	SW: SSW	2·3	0·0	0·1	307	0, ho.-fr : 5, ci	1, th.-cl : 7
28	4·2	8·2	SSW	SSW: S	2·4	0·0	0·2	316	p.-cl, d : 5, ci.-cu, th.-cl	2, th.-cl : 0
29	3·5	8·2	S: SSE	SE: SW	0·3	0·0	0·0	205	v, hy.-d : 1, li.-cl	4, li.-cl : p.-cl : v
30	0·4	8·1	SW	SW: SSW: NNW	4·5	0·0	0·5	367	v, d : 7, ci, li.-sc	8, ci, sc : 10, r : 10, r, w
Means	2·0	8·8	...	...	..	..	0·6	322		
Number of Column for Reference.	21	22	23	24	25	26	27	28	29	30

The mean *Temperature of Evaporation* for the month was 42°·1, being 0°·9 *higher* than
The mean *Temperature of the Dew Point* for the month was 40°·2, being 0°·9 *higher* than
The mean *Degree of Humidity* for the month was 88·0, being 0·7 *greater* than
The mean *Elastic Force of Vapour* for the month was 0^{in}·249, being 0^{in}·009 *greater* than
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was 2^{grs}·9, being 0^{gr}·1 *greater* than
The mean *Weight of a Cubic Foot of Air* for the month was 546 grains, being 3 grains *less* than
} the average for the 20 years, 1849–1868.

The mean amount of *Cloud* for the month (a clear sky being represented by 0 and an overcast sky by 10) was 5·9.

The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·23. The maximum daily amount of *Sunshine* was 5·3 hours on November 13.

The highest reading of the *Solar Radiation Thermometer* was 94°·0 on November 5; and the lowest reading of the *Terrestrial Radiation Thermometer* was 23°·7 on November 13.

The mean daily distribution of *Ozone* was, for the 12 hours ending 9 a.m., 1·3; for the 6 hours ending 3 p.m., 0·3; and for the 6 hours ending 9 p.m., 0·3.

The *Proportions of Wind* referred to the cardinal points were N. 2, E. 2, S. 13, and W. 12. One day was calm.

The *Greatest Pressure of the Wind* in the month was 13^{lbs}·7 on the square foot on November 25. The mean daily *Horizontal Movement of the Air* for the month was 322 miles; the greatest daily value was 632 miles on November 25; and the least daily value 71 miles on November 2.

Rain fell on 21 days in the month, amounting to 2^{in}·844, as measured by gauge No. 6 partly sunk below the ground; being 0^{in}·615 *greater* than the average fall for the 42 years, 1841–1882.

MONTH and DAY, 1883.	Phases of the Moon.	BAROMETER.	TEMPERATURE.							Difference between the Air Temperature and Dew Point Temperature.			Degree of Humidity (Saturation = 100).	TEMPERATURE.				Rain collected in Gauge No. 6, whose receiving surface is 5 inches above the Ground.	Daily Amount of Ozone.	Electricity.
		Mean of 24 Hourly Values (corrected and reduced to 32° Fahrenheit).	Of the Air.					Of Evaporation.	Of the Dew Point.					Of Radiation.		Of the Water of the Thames at Deptford.				
			Highest.	Lowest.	Daily Range.	Mean of 24 Hourly Values.	Excess above Average of 20 Years.	Mean of 24 Hourly Values.	Deduced Mean Daily Value.	Mean.	Greatest.	Least.		Highest in Sun's Rays.	Lowest on the Grass.	Highest.	Lowest.			
		in.	°	°	°	°	°	°	°	°	°	°		°	°	°	°	in.		
Dec. 1	Greatest Declination S.	30·068	45·2	36·6	8·6	42·8	+ 1·3	40·6	38·0	4·8	7·5	2·4	84	52·0	30·1	44·3	44·0	0·042	0·0	wN, wP : mP
2	..	30·132	44·8	36·6	8·2	41·3	− 0·5	39·6	37·5	3·8	5·5	1·2	87	49·2	30·1	44·5	44·1	0·004	0·0	mP : vP, vN : mP
3	..	29·687	53·2	38·0	15·2	46·0	+ 3·9	44·1	41·9	4·1	9·9	2·1	87	53·2	34·3	44·3	43·8	0·004	0·0	mP : wP : vP, vN
4	..	29·578	45·7	36·5	9·2	40·3	− 2·1	36·7	32·1	8·2	11·2	3·8	72	59·0	31·4	44·1	43·8	0·035	4·0	sN, vP : mP
5	..	29·924	41·1	32·8	8·3	36·6	− 6·0	34·4	31·2	5·4	7·6	2·3	81	53·5	28·8	43·5	42·8	0·000	0·0	mP : sP
6	..	29·985	35·6	28·4	7·2	32·0	−10·7	30·4	26·7	5·3	7·8	0·9	79	62·4	24·7	42·5	41·8	0·015	0·0	mP : vP, vN : —
7	First Qr.	30·334	37·8	31·5	6·3	33·8	− 9·0	31·7	28·0	5·8	9·1	2·7	79	68·2	26·7	41·4	40·8	0·000	0·0	— : sP : sP
8	In Equator	30·290	35·3	31·6	3·7	33·9	− 8·9	32·0	28·7	5·2	7·6	3·7	81	36·8	28·0	40·3	39·2	0·000	0·0	vP
9	..	30·097	38·5	32·9	5·6	35·8	− 7·0	33·3	29·5	6·3	7·9	5·0	77	42·5	31·3	39·5	39·3	0·000	0·0	mP : —
10	..	29·765	47·6	38·5	9·1	43·1	+ 0·4	41·8	40·2	2·9	4·8	0·0	90	60·1	35·2	39·9	38·4	0·211	0·0	— : vP, vN
11	..	29·487	50·0	40·1	9·9	45·0	+ 2·5	42·7	40·0	5·0	8·2	0·6	83	56·9	34·3	39·3	38·4	0·175	1·8	wN, wP : vP
12	Perigee	29·614	50·0	39·7	10·3	43·6	+ 1·4	39·9	35·5	8·1	13·4	0·9	74	50·9	33·5	39·9	39·4	0·121	2·2	vN, vP : mP
13	..	29·757	54·0	40·0	14·0	49·3	+ 7·5	46·7	43·9	5·4	9·0	2·1	82	76·5	33·7	39·9	39·4	0·006	1·5	wP
14	Full : Greatest Dec. N.	29·561	54·2	41·1	13·1	49·7	+ 8·2	47·3	44·7	5·0	10·5	1·6	84	57·9	37·0	41·6	40·8	0·015	4·5	wP : mP
15	..	29·568	45·9	37·5	8·4	41·5	+ 0·4	39·6	37·2	4·3	6·1	3·0	86	61·0	34·0	42·3	42·0	0·002	0·5	mP
16	..	29·565	39·5	33·7	5·8	37·5	− 3·3	36·2	34·4	3·1	6·0	0·3	88	53·7	30·5	42·3	42·0	0·077	3·5	vP : vvP, vvN
17	..	30·136	38·9	34·0	4·9	35·8	− 4·7	34·9	33·5	2·3	4·8	0·0	92	46·0	30·1	41·7	41·4	0·010	0·0	mP
18	..	30·196	40·0	33·2	6·8	36·5	− 3·7	35·1	33·1	3·4	7·7	1·8	88	44·1	30·8	41·3	40·8	0·000	2·0	mP, wN : vP
19	..	30·106	43·8	38·8	5·0	41·3	+ 1·3	39·0	36·1	5·2	7·5	1·1	82	51·8	32·8	40·9	40·5	0·000	0·0	wP : vP
20	In Equator	29·856	47·1	35·7	11·4	42·5	+ 2·7	41·1	39·4	3·1	4·0	1·8	89	50·8	33·0	40·4	40·2	0·000	5·0	mP
21	Last Qr.	29·722	48·8	40·2	8·6	44·7	+ 5·1	42·8	40·6	4·1	9·0	1·5	86	65·1	36·2	40·6	40·5	0·000	1·0	wP : mP
22	..	29·764	50·7	41·7	9·0	46·2	+ 6·8	43·7	40·8	5·4	8·6	3·1	83	73·1	38·9	41·1	41·0	0·000	3·0	mP
23	..	30·076	49·2	31·5	17·7	42·3	+ 3·0	39·6	36·3	6·0	10·6	2·8	80	49·3	27·8	41·3	41·0	0·000	0·5	mP : sP
24	Apogee	30·338	48·0	34·0	14·0	43·4	+ 4·1	42·9	42·3	1·1	4·2	0·4	96	50·8	33·0	41·5	41·4	0·000	3·5	vP : wP : mP
25	..	30·389	44·5	38·5	6·0	42·4	+ 3·2	42·4	42·4	0·0	0·9	0·0	100	45·4	38·5	41·9	41·8	0·003	0·7	wP
26	..	30·356	41·9	36·7	5·2	39·4	+ 0·3	39·4	39·4	0·0	0·7	0·0	100	46·6	36·7	41·6	41·5	0·022	3·3	wP
27	..	30·231	38·2	34·2	4·0	36·9	− 2·1	36·9	36·9	0·0	0·7	0·0	100	40·9	34·2	42·1	41·8	0·024	0·0	wP : vP
28	Greatest Declination S.	30·142	40·6	38·2	2·4	39·4	+ 0·6	39·3	39·2	0·2	0·9	0·0	99	42·5	38·0	42·5	41·8	0·018	0·0	wP : wN, wP
29	New	30·078	40·3	37·4	2·9	38·5	− 0·2	38·2	37·8	0·7	1·7	0·0	98	46·3	37·4	42·5	42·0	0·027	0·8	wP : vP
30	..	30·175	38·2	35·9	2·3	37·2	− 1·3	36·5	35·5	1·7	5·0	0·2	94	40·2	34·9	42·6	42·5	0·019	4·2	wP : mP
31	..	30·285	38·1	35·0	3·1	36·2	− 2·1	34·6	32·2	4·0	5·5	2·9	86	41·3	34·3	41·9	41·8	0·003	0·0	wP : vP
Means	..	29·976	44·1	36·1	7·9	40·5	− 0·3	38·8	36·6	3·9	6·6	1·6	86·7	52·5	32·9	41·7	41·3	Sum 0·833	1·4	..
Number of Column for Reference.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

The results apply to the civil day.

The mean reading of the Barometer (Column 2) and the mean temperatures of the Air and Evaporation (Columns 6 and 8) are deduced from the photographic records. The average temperature (Column 7) is that determined from the reduction of the photographic records from 1849 to 1868. The temperature of the Dew Point (Column 9) and the Degree of Humidity (Column 13) are deduced from the corresponding temperatures of the Air and Evaporation by means of Glaisher's Hygrometrical Tables. The mean difference between the Air and Dew Point Temperatures (Column 10) is the difference between the numbers in Columns 6 and 9, and the Greatest and Least Differences (Columns 11 and 12) are deduced from the 24 hourly photographic measures of the Dry-bulb and Wet-bulb Thermometers.

The values given in Columns 3, 4, 5, 14, 15, 16, and 17 are derived from eye-readings of self-registering thermometers.

The mean reading of the *Barometer* for the month was 29in·976, being 0in·185 *higher* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 54°·2 on December 14; the lowest in the month was 28°·4 on December 6; and the range was 25°·8.
The mean of all the highest daily readings in the month was 44°·1, being 0°·3 *lower* than the average for the 42 years, 1841–1882.
The mean of all the lowest daily readings in the month was 36°·1, being 1°·1 *higher* than the average for the 42 years, 1841–1882.
The mean of the daily ranges was 7°·9, being 1°·4 *less* than the average for the 42 years, 1841–1882.
The mean for the month was 40°·5, being 0°·3 *lower* than the average for the 20 years, 1849–1868.

MONTH and DAY, 1883.	Daily Duration of Sunshine.	Sun above Horizon.	WIND AS DEDUCED FROM SELF-REGISTERING ANEMOMETERS.						CLOUDS AND WEATHER.	
			OSLER'S.					ROBINSON'S.		
			General Direction.		Pressure on the Square Foot.			Horizontal Movement of the Air.	A.M.	P.M.
			A.M.	P.M.	Greatest.	Least.	Mean of 24 Hourly Measures.			
	hours.	hours.			lbs.	lbs.	lbs.	miles.		
Dec. 1	0·0	8·1	NNW	NNW : WNW	10·0	0·0	1·4	430	10, li.-shs, w : 10, sc, m.-r, w	10, m.-r : 0 : 2, li.-cl, m, d
2	0·0	8·1	WSW : W	W : WNW : WSW	1·2	0·0	0·1	298	v : 10, m. fq.-m.-r	10, oc.-m.-r : p.-cl, li.-cl, slt.-f, d
3	0·0	8·0	SW	WSW : NW	11·5	0·0	1·8	527	li.-cl : 10	10 : 10, w : v, hy.-sqs
4	3·2	8·0	NNW	NNW	17·5	0·0	4·1	642	10, hy.-sqs, li.-shs : 2, li.-cl, w	0, w : 0
5	0·8	8·0	NNW : NW	NNW	4·1	0·0	0·9	359	0 : 9, ho.-fr, slt.-sn	2, ci.-cu, th.-cl : 0, h
6	1·4	8·0	NNW : N	N : NNE	10·5	0·0	2·1	497	0 : v, sn, w	3, ci.-cu, cu, sn, w : vv : 10, slt.-sn
7	2·6	7·9	N : NNE	N : NNW : NW	3·0	0·0	0·6	310	p.-cl : 9, cu.-s, cu	4, ci.-cu, ci-.s, ci : 10
8	0·0	7·9	NW : SW	SW	0·0	0·0	0·0	159	10 : 10, slt.-f	10, slt.-f : 10
9	0·0	7·9	SSW : SW	SSE : SSW	0·5	0·0	0·0	178	10 : 10, slt.-f, glm	10, slt.-f : 10, slt.-r
10	0·0	7·9	SSW	SSW : SW	3·9	0·0	0·4	398	10 : 10, m.-r	10, sc, oc.-m.-r : 10, r
11	0·3	7·8	SW : WNW	WNW : SW	10·5	0·0	1·5	548	10, r, w : 3, li.-cl, ci.-cu	6, cu.-s, cu : 10, w
12	0·0	7·8	W	WNW : WSW	26·5	0·2	3·7	842	10, g, hy.-sh : 8, ci.-cu, ci, st.-w	9, cu.-s, w : p.-cl : v, lu.-co
13	1·4	7·8	WSW : SW	WSW	11·7	0·0	1·7	616	10 : 9, slt.-r	5, sc, ci, ci.-cu, w : 10, sc
14	0·0	7·8	WSW : SW	WSW	11·5	0·0	2·0	690	10 : 10, w, sc, oc.-m.-r	9, sc, m.-r, w : 6, ci.-cu
15	0·3	7·8	WSW : SW	WSW	10·2	0·0	1·4	530	0 : 1, li.-cl	6, th.-cl, ci.-cu, slt.-r : 10, oc.-slt.-r, w : 0, w
16	0·4	7·8	WSW : NNW	NNW	11·7	0·0	2·7	509	0 : 7, ci.-cu	3, ci, h, oc.-sn, w : v, sc, li.-cl, oc.-sn, sl, r, w
17	0·0	7·7	NNW	NNW	6·8	0·0	1·8	419	10, slt.-r : 9, sc, slt.-r	9, sc : 10
18	0·0	7·7	NNW : NW : SW	WSW	1·5	0·0	0·1	252	10 : 9, th.-cl, f	8, slt.-f : 10 : 10, slt.-r
19	0·0	7·7	NW	WNW : WSW	3·5	0·0	0·5	325	10, m.-r : 7, li.-cl, slt.-m	5, ci.-cu, ci, cu.-s : 10, slt.-f
20	0·0	7·7	WSW	WSW	4·1	0·0	0·7	402	10 : 10, slt.-f	9, cu.-s, ci.-cu : 10
21	0·8	7·7	SW : WSW	WSW : SW	4·1	0·0	0·6	399	10 : 10	8, cu, ci.-cu, li.-cl : 0, h : 10
22	0·9	7·7	SW	SW	8·7	0·0	1·9	525	10 : 10, th.-cl, so.-ha	6, ci.-cu, th.-cl : v, m.-r
23	0·0	7·7	SW : W : NW	NNW : SSW	6·4	0·0	0·6	307	p.-cl : 2, th.-cl, h	8, th.-cl : v, f
24	0·0	7·7	SSW : SW	WSW : W	1·9	0·0	0·2	291	10, f : 10, slt.-f, oc.-m.-r	10 : 10
25	0·0	7·7	W : WSW	Calm : SE	0·0	0·0	0·0	97	10, f : 10, f	10, f : 10, f, m.-r
26	0·0	7·8	SE	SE : ENE	0·0	0·0	0·0	62	10, f, m.-r : 10, f	10, f, m.-r : 10, f, m.-r
27	0·0	7·8	SE : SW	NE : SE	0·0	0·0	0·0	90	10, f, m.-r : 10, f, oc.-m.-r	10, f, glm, fq.-m.-r : 10, fq.-m.-r : 10
28	0·0	7·8	Variable	Calm : SE	0·0	0·0	0·0	85	10 : 10, slt.-f, glm	10, slt.-f, glm, m.-r : 10, f, m.-r
29	0·0	7·8	SE : ENE	E : ENE	0·2	0·0	0·0	81	10, m.-r : 10, slt.-f, oc.-m.-r	10, m.-r, slt.-f : 10, oc.-m.-r
30	0·0	7·8	E : NE	NE	1·0	0·0	0·2	236	10 : 10, m.-r	10, oc.-m.-r : 10
31	0·0	7·8	NE	NE : ENE	4·2	0·0	0·7	354	10 : 10	10 : 10, oc.-m.-r
Means	0·4	7·8	...	...	..	..	1·0	370		
Number of Column for Reference.	21	22	23	24	25	26	27	28	29	30

The mean *Temperature of Evaporation* for the month was 38°·8, being 0°·5 *lower* than
The mean *Temperature of the Dew Point* for the month was 36°·6, being 0°·8 *lower* than
The mean *Degree of Humidity* for the month was 86·7, being 1·1 *less* than
The mean *Elastic Force of Vapour* for the month was $0^{\text{in}}\cdot217$, being $0^{\text{in}}\cdot007$ *less* than
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was $2^{\text{grs}}\cdot5$, being $0^{\text{gr}}\cdot1$ *less* than
The mean *Weight of a Cubic Foot of Air* for the month was 555 grains, being 4 grains *greater* than
} the average for the 20 years, 1849–1868.

The mean amount of *Cloud* for the month (a clear sky being represented by 0 and an overcast sky by 10) was 8·0.

The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·05. The maximum daily amount of *Sunshine* was 3·2 hours on December 4.

The highest reading of the *Solar Radiation Thermometer* was 76°·5 on December 13; and the lowest reading of the *Terrestrial Radiation Thermometer* was 24°·7 on December 6.

The mean daily distribution of *Ozone* was, for the 12 hours ending 9 a.m., 0·7; for the 6 hours ending 3 p.m., 0·4; and for the 6 hours ending 9 p.m., 0·3.

The *Proportions of Wind* referred to the cardinal points were N. 8, E. 3, S. 7, and W. 12. One day was calm.

The *Greatest Pressure of the Wind* in the month was $26^{\text{lbs}}\cdot5$ on the square foot on December 12. The mean daily *Horizontal Movement of the Air* for the month was 370 miles; the greatest daily value was 842 miles on December 12; and the least daily value 62 miles on December 26.

Rain fell on 15 days in the month, amounting to $0^{\text{in}}\cdot833$, as measured by gauge No. 6 partly sunk below the ground; being $0^{\text{in}}\cdot972$ *less* than the average fall for the 42 years, 1841–1882.

(1) Maxima and Minima Barometer-Readings,

Highest and Lowest Readings of the Barometer, reduced to 32° Fahrenheit, as extracted from the Photographic Records.

MAXIMA.			MINIMA.			MAXIMA.			MINIMA.		
Approximate Greenwich Mean Solar Time, 1883.		Reading.	Approximate Greenwich Mean Solar Time, 1883.		Reading.	Approximate Greenwich Mean Solar Time, 1883.		Reading.	Approximate Greenwich Mean Solar Time, 1883.		Reading.
	d h m	in.		d h m	in.		d h m	in.		d h m	in.
January	0. 22. 25	29·675	January	2. 9. 0	29·440	April	6. 13. 45	30·479	April	9. 5. 30:	30·121
	4. 14. 15	30·057		5. 4. 45	29·990		9. 22. 50	30·241		13. 5. 0:	29·655
	6. 21. 0	30·298		10. 12. 0	29·376		16. 9. 45	29·926		18. 3. 30	29·317
	11. 9. 0	29·472		12. 18. 20	29·102		21. 9. 0	30·078		24. 3. 30	29·370
	13. 22. 50	29·410		14. 17. 30	29·135		25. 18. 15	29·586		27. 15. 45	29·232
	18. 16. 0	30·165		19. 13. 5	29·979	May	1. 21. 0	29·730	May	3. 2. 45	29·628
	22. 21. 15	30·486		24. 15. 0	29·380		4. 11. 0	29·690		5. 3. 45	29·633
	24. 22. 40	29·497		25. 15. 30	28·904		5. 10. 10	29·697		8. 16. 20	29·312
	26. 18. 15	29·574		27. 3. 30	29·211		11. 8. 45	29·793		11. 17. 0	29·652
	27. 22. 50	29·980		29. 2. 30	29·305		12. 21. 40	29·825		13. 15. 45	29·710
	30. 8. 40	29·526		31. 4. 30	29·280		16. 20. 15	30·223		19. 5. 0	29·821
February	1. 0. 40	29·384	February	2. 4. 35	28·772		21. 10. 20	30·030		26. 0. 10	29·393
	4. 22. 35	30·085		7. 23. 50	29·385		27. 12. 0	29·904		29. 0. 15	29·826
	9. 5. 30	29·663		10. 15. 15	29·075		30. 13. 20	30·073	June	1. 4. 30	29·834
	11. 7. 35	29·699		12. 3. 50	29·248	June	2. 15. 0	30·010		7. 6. 0	29·587
	13. 11. 25	29·866		14. 3. 30	29·685		12. 20. 35	30·228		15. 14. 30	29·576
	14. 20. 20	29·809		15. 2. 0	29·753		17. 11. 40	29·811		19. 15. 0	29·657
	16. 0. 0	30·341		18. 2. 50	29·766		21. 22. 30	29·860		25. 16. 0	29·565
	20. 22. 0	30·285		21. 17. 50	30·192		27. 0. 5	29·759		27. 14. 55	29·679
	22. 23. 35	30·664		24. 4. 0	30·441		28. 19. 0	29·872		29. 15. 5	29·774
	24. 23. 40	30·521		27. 4. 0	30·246	July	1. 9. 20	29·942	July	3. 23. 0	29·635
	27. 23. 35	30·355	March	0. 15. 15	30·156		5. 10. 55	29·740		6. 5. 15	29·620
March	3. 10. 20	30·540		7. 15. 50	29·510		7. 20. 5	29·737		8. 16. 0	29·582
	8. 22. 10	29·802		11. 5. 50	29·464		9. 12. 0	29·765		12. 6. 0	29·306
	12. 20. 50	29·857		14. 18. 50	29·445		16. 2. 25	29·997		20. 17. 0	29·390
	15. 9. 5	29·508		17. 4. 0	29·332		22. 8. 35	29·719		23. 15. 0	29·530
	18. 11. 55	29·608		20. 15. 30:	29·405		27. 8. 35	29·991		30. 5. 0	29·434
	22. 10. 5	30·045		24. 7. 0	29·615	August	4. 0. 5	30·064	August	6. 14. 25	29·676
	24. 11. 30	29·690		25. 15. 45	29·034		7. 10. 15	29·886		8. 15. 0	29·410
	28. 12. 0	30·043		30. 1. 25	29·210		8. 22. 30	29·483		10. 0. 25	29·425
April	0. 22. 40	30·148	April	2. 4. 0	29·870		11. 22. 55	30·008		14. 16. 25	29·477

HIGHEST and LOWEST READINGS of the BAROMETER, reduced to 32° Fahrenheit, as extracted from the PHOTOGRAPHIC RECORDS—*continued.*

MAXIMA.		MINIMA.		MAXIMA.		MINIMA.	
Approximate Greenwich Mean Solar Time, 1883.	Reading.	Approximate Greenwich Mean Solar Time, 1883.	Reading.	Approximate Greenwich Mean Solar Time, 1883.	Reading.	Approximate Greenwich Mean Solar Time, 1883.	Reading.
d h m	in.	d h m	in.	d h m	in.	d h m	in.
August 16. 10. 30	29·942	August 17. 6. 40	29·866	October 25. 23. 0	29·870	October 26. 15. 0	29·785
18. 20. 0	30·115	20. 3. 40	29·914	27. 22. 20	30·066	28. 14. 35	29·975
23. 12. 5	30·121	27. 15. 55	29·790	30. 0. 0	30·269	November 0. 15. 15	30·035
27. 19. 50	29·858	28. 16. 35	29·624	November 1. 8. 0	30·101	2. 16. 15	29·834
29. 9. 50	29·754	September 2. 3. 55	28·623	3. 8. 45	29·930	4. 4. 35	29·371
September 4. 7. 50	29·648	4. 17. 0	29·577	4. 21. 35	29·495	5. 21. 40	28·799
5. 12. 50	29·890	6. 18. 0	29·700	8. 6. 0	29·601	9. 18. 0	29·437
7. 11. 20	29·765	7. 21. 35	29·676	10. 22. 20	29·655	11. 14. 35	29·524
8. 21. 25	29·997	10. 15. 0	29·746	13. 21. 20	30·040	15. 18. 50	29·460
12. 21. 0	30·096	14. 16. 15	29·781	16. 13. 0	29·704	17. 2. 10	29·376
16. 22. 0	30·051	21. 17. 20	29·463	17. 22. 25	29·834	18. 10. 50	29·700
22. 22. 30	29·914	24. 0. 0	29·445	19. 6. 25	29·836	19. 18. 50	29·727
25. 8. 30	29·744	25. 20. 35	29·497	20. 14. 5	29·948	21. 0. 40	29·680
26. 7. 30	29·572	27. 4. 0	29·453	21. 10. 5	29·809	22. 15. 35	29·456
27. 20. 5	29·525	29. 14. 30	29·013	23. 6. 30:	29·704	25. 2. 5	28·877
29. 21. 10	29·139	30. 0. 25	29·078	28. 11. 5	30·237	30. 9. 10	29·825
October 2. 7. 0	29·820	October 3. 16. 10	29·192	December 1. 9. 25	30·214	December 3. 11. 35	29·415
4. 23. 15	29·951	5. 6. 15	29·894	4. 22. 20	29·959	5. 19. 20	29·866
7. 21. 40	30·357	10. 17. 30	29·681	7. 9. 40	30·395	10. 15. 10	29·248
12. 11. 10	29·913	14. 12. 3	29·513	11. 5. 50	29·669	11. 13. 5	29·263
14. 23. 50	29·614	15. 23. 45	29·236	12. 13. 10	29·921	14. 0. 10	29·425
16. 9. 0	29·324	16. 17. 35	29·114	14. 17. 30	29·692	15. 13. 25	29·305
17. 1. 15	29·410	17. 6. 55	29·236	17. 12. 0	30·265	18. 10. 25	30·072
18. 8. 50	29·956	19. 4. 10	29·350	18. 22. 10	30·176	20. 18. 0	29·684
19. 11. 50	29·600	20. 3. 57	29·496	24. 22. 0	30·410	29. 3. 20	30·045
22. 7. 0	29·875	23. 2. 25	29·543	30. 21. 30	30·346		
23. 23. 45	29·667	24. 7. 0	29·567				

The readings in the above table are accurate, but the times are occasionally liable to uncertainty, as the barometer will sometimes remain at its extreme reading without sensible change for a considerable interval of time. In such cases the time given is the middle of the stationary period, the symbol : denoting that the reading has been sensibly the same through a period of more than one hour.

HIGHEST AND LOWEST READINGS OF THE BAROMETER in each Month for the YEAR 1883.

[Extracted from the preceding Table.]

1883, MONTH.	Readings of the Barometer.		Range.
	Highest.	Lowest.	
	in.	in.	in.
January	30·486	28·904	1·582
February	30·664	28·772	1·892
March	30·540	29·034	1·506
April	30·479	29·232	1·247
May	30·223	29·312	0·911
June	30·228	29·565	0·663
July	29·997	29·306	0·691
August	30·121	29·410	0·711
September	30·096	28·623	1·473
October	30·357	29·114	1·243
November	30·237	28·799	1·438
December	30·410	29·248	1·162

The highest reading in the year was 30in·664 on February 23. The lowest reading in the year was 28in·623 on September 2.

The range of reading in the year was 2in·041.

MONTHLY RESULTS of METEOROLOGICAL ELEMENTS for the YEAR 1883.

1883, MONTH.	Mean Reading of the Barometer.	TEMPERATURE OF THE AIR.								Mean Temperature of Evaporation.	Mean Temperature of the Dew Point.	Mean Degree of Humidity. (Saturation = 100.)
		Highest.	Lowest.	Range in the Month.	Mean of all the Highest.	Mean of all the Lowest.	Mean of the Daily Ranges.	Monthly Mean.	Excess of Mean above Average of 20 Years.			
	in.	°	°	°	°	°	°	°	°	°	°	
January ..	29·732	55·0	28·8	26·2	45·4	36·3	9·1	41·4	+ 2·7	40·0	38·1	88·4
February..	29·901	55·2	30·9	24·3	48·5	37·2	11·3	42·9	+ 3·3	41·1	38·8	86·0
March	29·749	56·7	20·6	36·1	44·1	29·3	14·8	36·3	− 5·2	33·8	29·7	76·9
April	29·829	69·1	28·2	40·9	57·6	37·4	20·2	47·0	− 0·5	43·4	39·5	75·7
May	29·782	81·0	30·3	50·7	63·7	43·5	20·1	53·1	− 0·1	49·2	45·4	76·0
June	29·794	84·8	40·4	44·4	70·8	48·9	21·9	58·9	− 0·8	54·6	50·8	75·2
July......	29·689	83·3	43·6	39·7	70·7	51·3	19·3	59·8	− 2·9	55·6	51·9	75·6
August ...	29·840	85·1	44·8	40·3	74·0	52·8	21·2	62·2	+ 0·3	57·6	53·7	74·3
September.	29·652	77·1	41·5	35·6	66·4	49·7	16·8	56·9	− 0·6	54·4	52·1	84·6
October ...	29·794	64·6	36·7	27·9	57·1	44·5	12·6	50·7	− 0·4	48·7	46·5	86·1
November .	29·661	56·2	27·8	28·4	49·6	37·8	11·7	43·7	+ 1·0	42·1	40·2	88·0
December .	29·976	54·2	28·4	25·8	44·1	36·1	7·9	40·5	− 0·3	38·8	36·6	86·7
Means	29·783	Highest. 85·1	Lowest. 20·6	Annual Range. 64·5	57·7	42·1	15·6	49·4	− 0·3	46·6	43·6	81·1

1883, MONTH.	Mean Elastic Force of Vapour.	Mean Weight of Vapour in a Cubic Foot of Air.	Mean Weight of a Cubic Foot of Air.	Mean Amount of Ozone.	Mean Amount of Cloud. (0–10.)	RAIN.		WIND.										
						Number of Rainy Days.	Amount collected in Gauge No. 6 whose receiving Surface is 5 Inches above the Ground.	From Osler's Anemometer.										From Robinson's Anemometer.
								Number of Hours of Prevalence of each Wind, referred to different Points of Azimuth.								Number of Calm or nearly Calm Hours.	Mean Daily Pressure on the Square Foot.	Mean Daily Horizontal Movement of the Air.
								N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.			
	in.	grs.	grs.				in.	h	h	h	h	h	h	h	h	h	lbs.	miles.
January...	0·230	2·7	550	3·3	7·2	19	1·693	17	67	138	99	102	224	60	23	14	1·18	339
February..	0·236	2·7	551	5·1	6·7	15	2·888	29	4	14	91	143	265	89	36	1	1·18	349
March	0·165	1·9	556	2·4	5·6	14	0·783	163	180	97	11	41	99	63	90	0	1·02	340
April.....	0·242	2·8	545	1·7	6·4	10	1·702	116	139	75	78	53	111	54	64	30	0·34	227
May......	0·304	3·4	538	3·9	6·3	9	1·707	117	137	40	52	89	193	53	51	12	0·37	233
June......	0·371	4·2	531	4·6	6·7	13	1·343	91	142	74	69	85	176	35	37	11	0·24	220
July......	0·386	4·3	528	6·7	7·5	16	1·998	48	15	13	50	120	306	125	60	7	0·63	273
August ...	0·413	4·6	528	3·4	6·3	10	0·709	50	41	38	34	40	319	141	50	31	0·68	256
September.	0·389	4·3	531	2·8	6·1	17	3·815	103	72	25	94	84	239	49	26	28	0·80	266
October...	0·317	3·6	540	2·2	7·2	14	1·594	88	40	60	56	82	262	76	48	32	0·94	294
November .	0·249	2·9	546	1·9	5·9	21	2·844	47	9	22	45	116	338	104	27	12	0·58	322
December .	0·217	2·5	555	1·4	8·0	15	0·833	104	50	33	39	37	220	120	122	19	1·02	370
Sums	..	..	..	..	..	173	21·909	973	896	629	718	992	2752	969	634	197	..	..
Means	0·293	3·3	542	3·3	6·7	..	..	..	..	..	..	..	..	..	..	..	0·75	291

The greatest recorded pressure of the wind on the square foot in the year was 28·5 lbs. on February 2.
The greatest recorded daily horizontal movement of the air „ „ 842 miles on December 12.
The least recorded daily horizontal movement of the air „ „ 62 miles on December 26.

MONTHLY MEAN READING of the BAROMETER at every HOUR of the DAY, as deduced from the PHOTOGRAPHIC RECORDS.

Hour, Greenwich Mean Solar Time (Civil reckoning).	1883.												Yearly Means.
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
Midnight	29·721	29·895	29·759	29·843	29·784	29·809	29·703	29·847	29·663	29·787	29·674	29·964	29·787
1^{h}. a.m.	29·719	29·891	29·757	29·840	29·780	29·805	29·696	29·843	29·658	29·786	29·669	29·958	29·784
2 ,,	29·723	29·886	29·751	29·835	29·776	29·801	29·691	29·838	29·652	29·779	29·667	29·958	29·780
3 ,,	29·725	29·880	29·743	29·831	29·772	29·797	29·686	29·835	29·647	29·774	29·661	29·957	29·776
4 ,,	29·726	29·879	29·740	29·829	29·772	29·797	29·686	29·834	29·645	29·772	29·656	29·955	29·774
5 ,,	29·72-	29·882	29·743	29·830	29·776	29·800	29·687	29·839	29·643	29·773	29·652	29·955	29·776
6 ,,	29·732	29·885	29·744	29·836	29·781	29·803	29·691	29·845	29·647	29·777	29·649	29·961	29·779
7 ,,	29·737	29·890	29·750	29·841	29·787	29·808	29·695	29·851	29·649	29·788	29·650	29·969	29·785
8 ,,	29·747	29·899	29·756	29·844	29·790	29·810	29·696	29·855	29·654	29·799	29·654	29·980	29·790
9 ,,	29·755	29·904	29·759	29·844	29·789	29·810	29·697	29·857	29·656	29·808	29·657	29·988	29·794
10 ,,	29·760	29·912	29·762	29·844	29·788	29·809	29·695	29·855	29·654	29·811	29·662	29·994	29·795
11 ,,	29·760	29·914	29·761	29·840	29·787	29·809	29·692	29·853	29·650	29·814	29·660	29·990	29·794
Noon	29·748	29·911	29·757	29·834	29·784	29·806	29·689	29·849	29·647	29·807	29·655	29·983	29·789
1^{h}. p.m.	29·739	29·902	29·748	29·827	29·780	29·801	29·686	29·843	29·646	29·799	29·647	29·974	29·783
2 ,,	29·729	29·897	29·740	29·819	29·777	29·796	29·683	29·837	29·643	29·792	29·644	29·974	29·778
3 ,,	29·727	29·895	29·735	29·811	29·772	29·790	29·678	29·830	29·641	29·784	29·647	29·978	29·774
4 ,,	29·727	29·895	29·732	29·808	29·770	29·786	29·676	29·827	29·641	29·783	29·656	29·983	29·774
5 ,,	29·729	29·899	29·736	29·807	29·766	29·784	29·674	29·824	29·644	29·788	29·663	29·986	29·775
6 ,,	29·729	29·909	29·743	29·810	29·771	29·784	29·675	29·823	29·650	29·799	29·672	29·988	29·779
7 ,,	29·727	29·915	29·748	29·816	29·777	29·790	29·679	29·827	29·659	29·801	29·675	29·990	29·784
8 ,,	29·724	29·918	29·753	29·825	29·786	29·797	29·686	29·835	29·664	29·807	29·676	29·991	29·789
9 ,,	29·721	29·922	29·755	29·828	29·797	29·807	29·692	29·838	29·666	29·811	29·677	29·989	29·792
10 ,,	29·715	29·925	29·755	29·829	29·798	29·810	29·695	29·839	29·667	29·811	29·674	29·985	29·792
11 ,,	29·713	29·926	29·755	29·830	29·801	29·809	29·697	29·839	29·667	29·810	29·671	29·981	29·792
Means	29·732	29·901	29·749	29·829	29·782	29·801	29·689	29·840	29·652	29·794	29·661	29·976	29·784
Number of Days employed.	31	28	31	30	31	29	31	31	30	31	30	31	..

MONTHLY MEAN TEMPERATURE of the AIR at every HOUR of the DAY, as deduced from the PHOTOGRAPHIC RECORDS.

Hour, Greenwich Mean Solar Time (Civil reckoning).	1883.												Yearly Means.
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
	°	°	°	°	°	°	°	°	°	°	°	°	°
Midnight	41·0	41·5	33·8	42·5	47·7	53·2	55·1	57·3	53·7	48·4	42·6	39·9	46·4
1^{h}. a.m.	40·8	41·4	33·4	42·1	47·2	52·7	54·5	57·0	53·3	48·2	42·4	39·7	46·1
2 ,,	40·7	41·1	33·1	41·4	46·9	52·0	54·1	56·4	52·8	48·0	42·3	39·5	45·7
3 ,,	40·4	41·0	33·0	41·0	46·5	51·6	53·7	56·1	52·5	48·1	42·1	39·6	45·5
4 ,,	40·3	41·0	32·5	40·8	46·1	51·5	53·7	55·8	52·5	48·1	41·7	39·6	45·3
5 ,,	40·2	40·5	32·3	40·4	46·2	52·3	54·1	55·6	52·3	48·1	41·7	39·5	45·3
6 ,,	40·0	40·5	32·3	40·8	47·7	54·1	55·3	56·3	52·4	48·2	41·7	39·4	45·7
7 ,,	39·9	40·7	32·6	42·2	50·0	56·3	57·2	58·2	53·3	48·7	41·7	39·5	46·7
8 ,,	39·8	40·9	33·9	44·9	52·6	59·1	59·6	60·8	54·8	49·5	42·0	39·5	48·1
9 ,,	40·2	41·8	36·0	47·6	55·1	61·4	61·9	63·0	57·0	51·1	43·2	40·1	49·8
10 ,,	41·2	43·2	38·1	49·9	56·9	63·5	63·6	65·6	59·4	52·6	44·7	40·8	51·6
11 ,,	42·6	44·6	39·6	51·4	58·5	64·9	64·6	67·2	61·3	53·9	46·2	41·5	53·0
Noon	43·6	45·3	40·8	52·7	59·8	66·2	65·6	68·7	62·7	54·7	47·4	42·1	54·1
1^{h}. p.m.	43·9	46·1	41·5	54·0	60·2	66·9	66·0	69·9	63·5	55·1	48·0	42·3	54·8
2 ,,	44·0	46·7	41·3	54·3	60·4	66·9	66·8	70·3	63·7	55·2	47·8	42·2	55·0
3 ,,	43·8	46·6	41·2	54·4	60·4	67·2	66·5	69·9	63·2	54·9	47·2	42·0	54·8
4 ,,	43·0	46·1	40·8	53·8	59·6	66·1	65·5	68·9	62·3	53·7	45·8	41·6	53·9
5 ,,	42·4	44·9	39·6	52·3	58·6	64·8	64·1	67·6	60·6	52·5	44·8	41·1	52·8
6 ,,	41·9	44·0	38·3	50·6	56·8	63·2	62·7	65·7	58·6	51·3	44·3	40·7	51·5
7 ,,	41·5	43·1	37·1	48·4	54·9	61·2	61·2	63·6	57·0	50·4	43·8	40·4	50·2
8 ,,	41·2	42·7	36·1	46·6	52·4	58·7	59·1	61·7	55·7	49·7	43·6	40·3	49·0
9 ,,	41·0	42·4	35·3	45·3	50·9	56·6	57·4	60·1	54·8	49·1	43·5	40·2	48·1
10 ,,	40·8	42·2	34·7	44·3	49·7	55·5	56·5	59·1	54·2	48·7	43·3	39·9	47·4
11 ,,	40·5	42·0	34·3	43·6	48·7	54·4	55·7	58·2	53·7	48·4	43·3	39·8	46·9
Means	41·4	42·9	36·3	46·9	53·1	59·2	59·8	62·2	56·9	50·7	44·0	40·5	49·5
Number of Days employed.	31	28	31	29	31	29	31	31	30	30	29	31	..

MONTHLY MEAN TEMPERATURE of EVAPORATION at every HOUR of the DAY, as deduced from the PHOTOGRAPHIC RECORDS.

Hour, Greenwich Mean Solar Time (Civil reckoning).	1883.												Yearly Means.
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
Midnight	39°·7	40°·1	32°·6	41°·1	46°·0	51°·5	53°·2	55°·5	52°·9	47°·3	41°·6	38°·5	45°·0
1h. a.m.	39·5	40·0	32·2	40·6	45·5	51·2	52·8	55·2	52·6	47·1	41·3	38·4	44·7
2 „	39·4	39·9	31·9	40·1	45·2	50·7	52·5	54·8	52·1	47·0	41·2	38·4	44·4
3 „	39·3	39·8	31·7	39·9	45·0	50·5	52·3	54·5	51·9	46·8	41·2	38·4	44·3
4 „	39·3	39·6	31·4	39·8	44·9	50·3	52·3	54·2	51·8	46·9	40·9	38·4	44·2
5 „	39·2	39·3	31·1	39·3	45·0	50·9	52·6	54·1	51·5	47·0	40·9	38·3	44·1
6 „	39·1	39·3	31·1	39·6	46·2	52·1	53·4	54·6	51·7	47·1	40·8	38·1	44·4
7 „	39·0	39·4	31·5	40·6	47·6	53·7	54·4	55·8	52·2	47·4	41·0	38·2	45·1
8 „	38·7	39·6	32·3	42·4	49·0	55·1	55·7	57·1	53·2	48·0	41·3	38·3	45·9
9 „	39·0	40·3	33·8	43·9	50·6	56·3	56·7	58·2	54·7	49·0	42·1	38·6	46·9
10 „	39·7	41·3	34·8	45·1	51·8	57·1	57·4	59·2	56·0	49·9	43·2	39·3	47·9
11 „	40·6	42·3	35·7	45·7	52·4	57·8	58·0	59·7	57·0	50·6	44·1	39·7	48·6
Noon	41·4	42·8	36·3	46·5	53·1	58·3	58·4	60·1	57·2	50·9	44·6	40·0	49·1
1h. p.m.	41·7	43·3	36·8	47·2	53·3	58·6	58·5	60·7	57·5	51·1	44·9	40·1	49·5
2 „	41·8	43·5	36·9	47·4	53·4	58·7	59·2	61·1	57·7	51·1	44·7	39·9	49·6
3 „	41·6	43·4	36·9	47·5	53·5	58·5	58·9	61·0	57·4	50·9	44·2	39·7	49·5
4 „	41·1	43·1	36·5	47·4	53·0	58·3	58·4	60·5	57·1	50·6	43·4	39·3	49·1
5 „	40·6	42·4	35·9	46·6	52·5	57·8	57·9	60·0	56·5	49·9	42·7	39·0	48·5
6 „	40·2	41·8	35·2	45·7	51·5	56·9	57·1	59·4	55·7	49·4	42·5	38·8	47·8
7 „	40·0	41·4	34·5	44·6	50·1	55·9	56·5	58·6	54·9	48·8	42·2	38·7	47·2
8 „	39·7	41·0	33·9	43·7	48·7	54·8	55·6	57·8	54·4	48·1	41·9	38·6	46·5
9 „	39·5	40·8	33·4	42·8	47·8	53·9	54·8	57·3	53·7	47·7	42·0	38·6	46·0
10 „	39·5	40·7	33·0	42·2	47·1	53·2	54·2	56·6	53·2	47·3	41·9	38·4	45·6
11 „	39·3	40·6	32·7	41·7	46·6	52·5	53·7	56·1	52·8	47·2	41·9	38·3	45·3
Means	40·0	41·1	33·8	43·4	49·2	54·8	55·6	57·6	54·4	48·6	42·4	38·8	46·6
Number of Days employed.	31	28	31	29	31	29	31	31	30	30	29	31	..

MONTHLY MEAN TEMPERATURE of the DEW POINT at every HOUR of the DAY, as deduced by GLAISHER'S TABLES from the corresponding AIR and EVAPORATION TEMPERATURES.

Hour, Greenwich Mean Solar Time (Civil reckoning).	1883.												Yearly Means.
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
Midnight	38°·0	38°·3	30°·4	39°·4	44°·1	49°·8	51°·4	53°·9	52°·1	46°·1	40°·4	36°·7	43°·4
1h. a.m.	37·9	38·2	30·0	38·8	43·6	49·7	51·2	53·6	51·9	45·9	40·0	36·7	43·1
2 „	37·8	38·4	29·6	38·5	43·3	49·4	50·9	53·3	51·4	45·9	39·9	37·0	42·9
3 „	37·9	38·3	29·1	38·5	43·4	49·4	50·9	53·0	51·3	45·4	40·1	36·8	42·8
4 „	38·0	37·8	29·1	38·6	43·6	49·1	50·9	52·7	51·1	45·6	39·9	36·8	42·8
5 „	37·9	37·8	28·5	37·9	43·7	49·5	51·1	52·7	50·7	45·8	39·9	36·7	42·7
6 „	37·9	37·8	28·5	38·1	44·5	50·1	51·6	53·0	51·0	45·9	39·7	36·4	42·9
7 „	37·8	37·8	29·3	38·7	45·1	51·3	51·8	53·6	51·1	46·0	40·2	36·5	43·3
8 „	37·3	38·0	29·5	39·5	45·4	51·5	52·2	53·9	51·6	46·4	40·5	36·7	43·5
9 „	37·5	38·4	30·5	39·8	46·3	51·9	52·2	54·2	52·6	46·8	40·8	36·7	44·0
10 „	37·8	39·0	30·3	40·0	47·1	51·7	52·2	54·0	53·0	47·2	41·5	37·4	44·3
11 „	38·2	39·6	30·6	39·8	47·0	51·9	52·5	53·7	53·3	47·4	41·7	37·4	44·4
Noon	38·8	39·9	30·6	40·3	47·2	51·9	52·5	53·4	52·5	47·3	41·5	37·4	44·4
1h. p.m.	39·1	40·1	31·0	40·5	47·2	52·0	52·4	53·6	52·5	47·3	41·5	37·4	44·5
2 „	39·2	39·9	31·4	40·7	47·2	52·1	53·1	54·0	52·7	47·2	41·3	37·1	44·7
3 „	39·0	39·8	31·5	40·8	47·4	51·6	52·8	54·2	52·5	47·1	40·8	36·8	44·5
4 „	38·8	39·7	31·1	41·1	47·2	52·0	52·6	54·0	52·7	47·6	40·7	36·4	44·5
5 „	38·4	29·5	31·0	40·8	47·1	52·0	52·7	54·0	53·0	47·3	40·3	36·4	44·4
6 „	38·1	39·2	31·0	40·6	46·6	51·6	52·3	54·2	53·1	47·5	40·4	36·4	44·3
7 „	38·1	39·4	30·8	40·5	45·5	51·3	52·4	54·4	53·0	47·1	40·3	36·5	44·1
8 „	37·8	39·0	30·6	40·4	44·9	51·3	52·5	54·5	53·2	46·4	39·9	36·4	43·9
9 „	37·6	38·9	30·4	39·9	44·6	51·4	52·5	54·9	52·6	46·2	40·2	36·5	43·8
10 „	37·9	38·9	30·2	39·7	44·3	51·0	52·0	54·4	52·2	45·8	40·2	36·4	43·6
11 „	37·8	38·9	30·0	39·5	44·4	50·6	51·8	54·2	51·9	45·9	40·2	36·3	43·5
Means	38·1	38·9	30·2	39·7	45·4	51·0	52·0	53·8	52·2	46·5	40·5	36·7	43·8

MONTHLY MEAN DEGREE of HUMIDITY (Saturation = 100) at every HOUR of the DAY, as deduced by GLAISHER'S TABLES from the corresponding AIR and EVAPORATION TEMPERATURES.

Hour, Greenwich Mean Solar Time (Civil reckoning).	1883.												Yearly Means.
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
Midnight	90	89	87	89	88	88	88	88	94	92	92	89	90
1^{h}. a.m.	90	89	87	89	88	90	89	88	95	92	91	90	90
2 ,,	90	91	87	90	88	91	89	89	95	93	91	91	90
3 ,,	91	90	85	91	90	92	90	89	96	91	93	90	91
4 ,,	92	89	87	92	92	92	90	90	96	92	94	90	91
5 ,,	92	90	86	91	92	90	90	90	95	92	94	90	91
6 ,,	93	90	86	90	89	86	88	89	95	92	93	90	90
7 ,,	93	90	87	88	84	83	82	85	92	91	94	90	88
8 ,,	91	90	84	82	77	76	77	79	89	90	94	90	85
9 ,,	90	89	80	75	73	71	71	73	85	85	91	88	81
10 ,,	88	85	73	69	70	66	67	67	80	82	89	88	77
11 ,,	85	83	71	65	66	63	65	62	75	78	85	87	74
Noon	83	82	67	64	63	61	63	58	69	76	81	84	71
1^{h}. p.m.	83	80	67	60	62	60	62	56	67	75	78	84	70
2 ,,	83	78	68	60	62	60	62	56	68	75	79	83	69
3 ,,	83	78	69	60	62	57	62	56	68	75	79	83	69
4 ,,	83	79	69	62	64	61	63	58	71	79	83	83	71
5 ,,	86	82	72	66	66	63	66	62	76	83	85	83	74
6 ,,	87	83	75	69	68	66	69	67	82	87	86	85	77
7 ,,	88	86	78	74	70	71	74	73	86	89	87	87	80
8 ,,	88	86	81	80	76	76	79	78	92	89	87	87	83
9 ,,	88	88	82	82	79	83	84	83	92	90	88	87	85
10 ,,	90	89	83	84	82	86	85	85	93	90	89	88	87
11 ,,	90	89	84	85	85	87	88	86	94	92	89	88	88
Means	88	86	79	77	76	76	77	75	85	86	88	87	82

TOTAL AMOUNT of SUNSHINE registered in each HOUR of the DAY in each MONTH, as derived from the Records of CAMPBELL'S SELF-REGISTERING INSTRUMENT, for the YEAR 1883.

1883, Month.	Registered Duration of Sunshine in the Hour ending																Total registered Duration of Sunshine in each Month.	Corresponding aggregate Period during which the Sun was above Horizon.	Mean Altitude of the Sun at Noon.
	5^{h}. a.m.	6^{h}. a.m.	7^{h}. a.m.	8^{h}. a.m.	9^{h}. a.m.	10^{h}. a.m.	11^{h}. a.m.	Noon.	1^{h}. p.m.	2^{h}. p.m.	3^{h}. p.m.	4^{h}. p.m.	5^{h}. p.m.	6^{h}. p.m.	7^{h}. p.m	8^{h}. p.m.			
	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	°
January ..	..	..	..	..	0·7	4·5	7·9	7·8	5·5	5·2	2·8	..	..	..	..	..	34·4	259·1	18
February .	..	..	..	0·2	2·8	5·5	5·5	7·2	8·3	9·6	7·0	2·4	0·1	..	..	..	48·6	277·9	26
March ...	..	..	0·2	3·1	9·1	14·8	15·7	17·5	16·4	12·3	12·0	9·9	6·7	0·7	..	..	118·4	366·9	37
April	..	0·3	3·5	7·4	10·8	13·2	12·5	11·8	12·4	14·4	12·7	13·9	12·4	7·4	0·3	..	133·0	414·9	48
May	..	4·7	9·1	12·9	15·0	17·2	17·9	18·3	15·6	13·2	13·8	12·8	11·8	10·5	5·3	..	178·1	482·1	57
June . ..	..	3·1	8·7	11·9	12·7	13·2	15·1	13·4	14·5	14·9	14·9	12·4	12·1	11·5	5·1	..	163·5	494·5	62
July	0·1	5·2	9·3	9·9	11·5	14·1	13·8	11·4	12·7	13·5	13·2	11·8	9·8	8·1	4·3	..	148·7	496·8	60
August ..	..	1·8	5·1	8·9	9·7	14·1	15·0	16·6	16·9	16·6	15·3	13·6	11·8	9·3	2·1	..	156·8	449·1	52
September	..	..	..	4·0	8·0	10·7	12·7	16·9	14·6	16·5	13·6	11·1	6·9	1·1	..	..	116·1	376·9	41
October	..	..	..	1·5	4·7	8·1	10·4	10·5	10·0	9·1	9·9	4·2	1·5	..	..	..	69·9	328·7	30
November	..	..	..	..	0·9	4·4	7·6	11·4	13·5	12·7	9·8	0·9	..	..	..	..	61·2	264·4	20
December	..	..	..	..	..	0·1	1·2	3·1	4·2	2·9	0·6	..	..	..	..	..	12·1	242·7	16

The hours are reckoned from apparent noon.

The total registered duration of sunshine during the year was 1240·8 hours; the corresponding aggregate period during which the Sun was above the horizon was 4454·0 hours; the mean proportion for the year (constant sunshine = 1) was therefore 0·279.

(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 of the Year.

1883.

Days of the Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
1	52·21	51·37	50·65	49·97	49·34	49·02	49·20	49·88	50·82	51·63	52·26	52·47
2	52·17	51·37	50·63	49·95	49·31	49·00	49·21	49·93	50·83	51·65	52·27	52·47
3	52·14	51·35	50·62	49·92	49·30	49·03	49·23	49·95	50·85	51·67	52·28	52·47
4	52·13	51·33	50·59	49·93	49·27	49·02	49·25	49·99	50·89	51·69	52·29	52·44
5	52·10	51·31	50·55	49·88	49·25	49·01	49·26	50·02	50·90	51·73	52·31	52·43
6	52·06	51·26	50·53	49·86	49·27	49·02	49·28	50·05	50·94	51·75	52·34	52·43
7	52·05	51·23	50·50	49·84	49·25	49·00	49·30	50·07	50·97	51·76	52·31	52·44
8	52·01	51·22	50·45	49·81	49·21	49·00	49·32	50·09	51·00	51·81	52·34	52·42
9	51·97	51·19	50·40	49·80	49·20	49·03	49·34	50·13	51·03	51·83	52·37	52·43
10	51·96	51·15	50·42	49·76	49·17	49·00	49·36	50·15	51·07	51·84	52·36	52·45
11	51·93	51·14	50·40	49·75	49·18	49·00	49·37	50·18	51·07	51·87	52·36	52·43
12	51·92	51·11	50·38	49·73	49·16	49·03	49·40	50·23	51·12	51·88	52·35	52·42
13	51·88	51·08	50·35	49·72	49·16	49·03	49·41	50·27	51·13	51·93	52·37	52·44
14	51·85	51·05	50·33	49·67	49·15	49·03	49·43	50·29	51·18	51·96	52·37	52·43
15	51·83	51·04	50·32	49·67	49·15	49·03	49·46	50·30	51·20	51·98	52·38	52·42
16	51·81	51·00	50·27	49·64	49·14	49·01	49·48	50·34	51·24	51·99	52·42	52·37
17	51·81	50·97	50·27	49·63	49·13	49·03	49·52	50·38	51·29	52·02	52·41	52·33
18	51·78	50·95	50·25	49·61	49·10	49·03	49·53	50·40	51·31	52·03	52·41	52·34
19	51·74	50·90	50·23	49·57	49·10	49·04	49·55	50·44	51·33	52·04	52·43	52·35
20	51·73	50·88	50·20	49·57	49·08	49·05	49·58	50·46	51·33	52·05	52·43	52·35
21	51·68	50·87	50·18	49·54	49·08	49·06	49·59	50·50	51·37	52·07	52·45	52·35
22	51·66	50·84	50·15	49·53	49·09	49·07	49·60	50·53	51·39	52·10	52·45	52·32
23	51·62	50·81	50·12	49·48	49·08	49·09	49·65	50·55	51·43	52·11	52·43	52·31
24	51·57	50·77	50·11	49·46	49·06	49·10	49·67	50·59	51·46	52·14	52·40	52·32
25	51·56	50·75	50·07	49·45	49·05	49·11	49·70	50·62	51·50	52·17	52·47	52·30
26	51·54	50·74	50·06	49·44	49·04	49·12	49·73	50·65	51·53	52·18	52·45	52·27
27	51·53	50·71	50·04	49·42	49·04	49·13	49·75	50·67	51·54	52·21	52·46	52·25
28	51·50	50·70	50·03	49·39	49·04	49·15	49·79	50·70	51·57	52·23	52·48	52·24
29	51·49		50·02	49·37	49·04	49·17	49·81	50·72	51·58	52·22	52·47	52·26
30	51·44		50·00	49·35	49·01	49·18	49·83	50·75	51·57	52·25	52·48	52·20
31	51·41		49·98		49·01		49·87	50·77		52·25		52·18
Means.	51·81	51·04	50·29	49·66	49·14	49·05	49·50	50·34	51·21	51·97	52·39	52·37

The mean of the twelve monthly values is 50°·73.

(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 Noon on every Day of the Year.

1883.

Days of the Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
1	49·82	48·62	47·47	46·53	46·83	48·51	51·50	53·93	55·33	55·90	54·93	52·90
2	49·73	48·61	47·47	46·50	46·85	48·60	51·60	54·00	55·33	55·88	54·87	52·80
3	49·62	48·52	47·45	46·44	46·90	48·73	51·67	54·01	55·41	55·87	54·80	52·71
4	49·60	48·50	47·43	46·43	46·90	48·84	51·70	54·07	55·48	55·87	54·79	52·61
5	49·57	48·47	47·40	46·39	46·97	48·92	51·80	54·10	55·50	55·89	54·75	52·48
6	49 49	48·39	47·39	46·33	47·03	49·03	51·90	54·18	55·53	55·90	54·72	52·42
7	49·46	48·31	47·36	46·31	47·04	49·10	51·96	54·20	55·60	55·88	54·60	52·36
8	49·44	48·29	47·32	46·29	47·09	49·21	52·07	54·20	55·64	55·90	54·60	52·26

(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 Noon on every Day of the Year—*concluded.*

1883.												
Days of the Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
9	49·41	48·22	47·32	46·28	47·10	49·34	52·16	54·26	55·70	55·88	54·60	52·20
10	49·40	48·12	47·33	46·27	47·13	49·44	52·26	54·30	55·76	55·86	54·52	52·18
11	49·38	48·10	47·32	46·21	47·20	49·50	52·32	54·36	55·76	55·80	54·46	52·08
12	49·38	48·01	47·29	46·23	47·28	49·66	52·43	54·42	55·81	55·77	54·40	51·99
13	49·33	47·92	47·28	46·27	47·33	49·76	52·55	54·53	55·82	55·79	54·35	51·96
14	49·30	47·90	47·27	46·25	47·38	49·87	52·63	54·56	55·89	55·77	54·28	51·87
15	49·30	47·88	47·24	46·30	47·41	49·98	52·73	54·53	55·87	55·70	54·22	51·72
16	49·25	47·80	47·20	46·31	47·48	50·02	52·83	54·58	55·90	55·67	54·23	51·61
17	49·26	47·79	47·18	46·32	47·49	50·16	52·97	54·63	55·92	55·61	54·16	51·52
18	49·22	47·76	47·14	46·39	47·52	50·27	53·03	54·70	55·95	55·56	54·05	51·41
19	49·17	47·69	47·11	46·40	47·58	50·36	53·18	54·76	55·92	55·49	54·01	51·36
20	49·09	47·68	47·03	46·41	47·60	50·45	53·23	54·80	55·88	55·47	53·93	51·28
21	49·10	47·64	47·01	46·47	47·69	50·58	53·28	54·89	55·84	55·42	53·90	51·20
22	49·05	47·62	46·95	46·50	47·75	50·68	53·35	54·88	55·88	55·38	53·79	51·09
23	48·99	47·60	46·90	46·50	47·82	50·80	53·46	54·92	55·91	55·33	53·67	51·01
24	48·92	47·58	46·88	46·55	47·88	50·90	53·54	54·99	55·90	55·31	53·59	50·92
25	48·90	47·55	46·81	46·60	47·92	51·00	53·59	55·02	55·95	55·31	53·53	50·86
26	48·89	47·55	46·78	46·67	47·99	51·05	53·66	55·09	55·96	55·27	53·40	50·79
27	48·86	47·52	46·71	46·70	48·06	51·11	53·73	55·11	55·92	55·22	53·28	50·69
28	48·80	47·50	46·69	46·72	48·14	51·21	53·79	55·17	55·94	55·10	53·22	50·61
29	48·80		46·64	46·74	48·24	51·34	53·83	55·19	55·92	55·10	53·10	50·54
30	48·73		46·61	46·80	48·30	51·43	53·86	55·24	55·85	55·06	53·00	50·48
31	48·68		46·56		48·41		53·92	55·27		55·00		50·39
Means .	49·22	47·97	47·11	46·44	47·49	49·99	52·79	54·61	55·77	55·58	54·12	51·62

The mean of the twelve monthly values is 51°·06.

(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 Noon on every Day of the Year.

1883.												
Days of the Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
1	47·41	46·46	46·08	44·33	47·79	52·67	56·47	58·23	60·10	58·66	55·18	50·61
2	47·58	46·44	46·10	44·37	47·90	52·80	56·62	58·32	60·09	58·58	55·11	50·57
3	47·71	46·30	46·17	44·42	48·03	52·97	56·82	58·39	60·18	58·43	55·09	50·56
4	47·90	46·19	46·21	44·51	48·18	53·12	56·99	58·42	60·13	58·28	55·03	50·49
5	48·03	46·13	46·21	44·61	48·29	53·27	57·26	58·50	60·05	58·13	54·98	50·39
6	48·09	46·09	46·26	44·78	48·38	53·43	57·53	58·59	59·96	57·93	54·90	50·29
7	48·10	46·03	46·24	44·97	48·40	53·58	57·71	58·63	59·90	57·69	54·69	50·17
8	48·10	46·00	46·20	45·20	48·43	53·84	57·91	58·65	59·79	57·51	54·58	50·00
9	48·06	45·91	46·18	45·41	48·53	54·10	58·09	58·72	59·69	57·33	54·46	49·79
10	47·98	45·72	46·08	45·66	48·61	54·29	58·21	58·79	59·54	57·20	54·25	49·59
11	47·87	45·67	45·96	45·81	48·72	54·35	58·31	58·84	59·40	57·04	54·09	49·30
12	47·76	45·72	45·79	46·00	48·80	54·58	58·44	58·89	59·35	56·94	53·89	49·10
13	47·61	45·79	45·61	46·17	48·83	54·79	58·59	58·94	59·22	56·90	53·70	48·97
14	47·51	45·90	45·48	46·25	48·84	54·90	58·66	58·93	59·19	56·85	53·49	48·84
15	47·43	45·97	45·30	46·41	48·90	54·98	58·70	58·89	59·10	56·71	53·21	48·74

(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 Noon on every Day of the Year—*concluded.*

1883.												
Days of the Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
16	47·36	45·99	45·16	46·52	49·03	55·09	58·73	58·92	59·11	56·65	53·02	48·70
17	47·28	46·01	45·03	46·61	49·20	55·26	58·76	59·07	59·14	56·57	52·70	48·70
18	47·20	46·09	44·93	46·72	49·40	55·40	58·70	59·20	59·17	56·47	52·41	48·67
19	47·11	45·98	44·83	46·80	49·67	55·40	58·68	59·26	59·13	56·40	52·21	48·59
20	47·14	45·97	44·75	46·92	49·90	55·43	58·58	59·29	59·06	56·31	52·00	48·51
21	47·10	45·91	44·72	47·08	50·20	55·50	58·47	59·40	59·03	56·22	51·81	48·40
22	47·10	45·87	44·69	47·18	50·42	55·50	58·39	59·39	59·09	56·09	51·62	48·28
23	47·12	45·82	44·64	47·28	50·64	55·59	58·37	59·47	59·10	55·96	51·42	48·19
24	47·14	45·89	44·66	47·38	50·80	55·61	58·30	59·60	59·06	55·80	51·30	48·15
25	47·16	45·92	44·60	47·46	51·00	55·69	58·20	59·69	59·04	55·66	51·10	48·10
26	47·10	46·00	44·55	47·48	51·23	55·76	58·19	59·79	58·95	55·49	50·80	48·10
27	47·00	46·00	44·49	47·51	51·53	55·90	58·17	59·86	58·88	55·38	50·72	48·06
28	46·85	46·04	44·43	47·51	51·82	56·09	58·18	59·91	58·82	55·31	50·75	48·03
29	46·75		44·40	47·56	52·07	56·28	58·19	59·92	58·78	55·22	50·70	48·01
30	46·58		44·36	47·68	52·22	56·38	58·17	60·01	58·67	55·21	50·67	48·00
31	46·49		44·31		52·48		58·23	60·02		55·10		47·93
Means.	47·41	45·99	45·30	46·22	49·62	54·75	58·08	59·11	59·36	56·71	53·00	49·03

The mean of the twelve monthly values is 52°·05.

(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 Noon on every Day of the Year.

1883.												
Days of the Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
1	46·22	42·81	43·91	41·67	48·13	55·80	60·53	60·50	62·88	58·39	53·78	47·30
2	46·62	42·57	44·11	41·93	48·40	55·90	61·11	60·79	62·44	57·88	53·60	47·27
3	46·71	42·40	44·22	42·26	48·59	56·14	61·69	60·80	62·11	57·28	53·40	47·05
4	46·59	42·23	44·12	42·83	48·40	56·43	62·20	60·90	61·71	56·70	53·21	46·83
5	46·32	42·50	43·91	43·49	48·12	57·00	62·50	60·93	61·31	56·13	52·88	46·60
6	46·00	42·54	43·81	44·17	48·14	57·51	62·59	61·11	60·90	55·78	52·41	46·08
7	45·70	42·50	43·66	44·90	48·52	57·80	62·50	61·20	60·41	55·49	52·07	45·38
8	45·41	42·39	43·19	45·31	48·90	57·98	62·58	61·18	60·00	55·30	51·67	44·69
9	44·92	42·45	42·70	45·61	48·89	57·91	62·64	61·10	59·81	55·36	51·30	44·21
10	44·42	42·80	42·19	45·73	48·70	58·10	62·80	60·91	59·60	55·66	51·08	43·98
11	44·03	43·16	41·72	45·80	48·40	58·30	62·63	60·80	59·50	55·60	50·70	43·98
12	43·95	43·37	41·37	45·76	48·11	58·49	62·70	60·81	59·52	55·59	50·10	44·19
13	43·90	43·48	41·09	45·89	48·32	58·31	62·61	60·97	59·52	55·51	49·52	44·40
14	43·84	43·49	40·88	46·09	48·90	58·61	62·29	61·23	59·79	55·38	48·81	44·60
15	43·71	43·50	40·82	46·11	49·80	58·93	62·00	61·66	59·93	55·25	48·22	45·08
16	43·71	43·63	40·80	46·15	50·52	58·90	61·48	61·81	60·11	55·34	47·80	45·12
17	43·70	43·49	40·61	46·40	51·19	58·51	60·92	61·77	60·16	55·29	47·61	44·90
18	43·60	43·10	40·67	46·58	51·81	58·11	60·59	61·65	60·25	55·22	47·41	44·41
19	43·90	42·89	40·82	46·80	52·33	57·84	60·42	61·71	60·36	54·89	47·20	44·09
20	44·13	42·66	40·96	47·10	52·54	57·72	60·20	61·88	60·35	54·55	47·20	43·97

(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 Noon on every Day of the Year—*concluded.*

1883.

Days of the Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
21	44·40	42·59	41·12	47·11	52·70	57·70	59·98	62·10	60·26	54·28	47·19	43·92
22	44·57	43·08	41·20	47·22	52·80	57·72	59·80	62·42	59·94	53·72	47·03	44·16
23	44·60	43·50	41·10	47·11	53·22	57·90	59·60	62·73	59·68	53·35	46·90	44·34
24	44·20	43·60	40·93	46·95	53·90	58·23	59·44	62·80	59·30	53·00	46·71	44·02
25	43·55	43·50	40·74	46·57	54·60	58·91	59·50	62·79	59·34	52·93	46·67	44·49
26	43·15	43·60	40·69	46·53	55·13	59·37	59·61	62·90	59·42	53·23	47·00	44·63
27	42·95	43·72	40·75	46·62	55·40	59·40	59·73	62·94	59·48	53·61	47·26	44·62
28	42·70	43·78	40·80	47·08	55·39	59·24	59·80	62·91	59·40	53·86	47·16	44·60
29	42·67		40·72	47·52	55·57	59·39	60·00	62·91	59·12	53·86	47·26	44·52
30	43·09		40·88	47·90	55·79	59·83	60·19	63·01	58·80	53·91	47·30	44·40
31	43·15		41·30		55·90		60·40	62·90		53·85		44·22
Means.	44·40	43·05	41·80	45·71	51·20	58·07	61·13	61·75	60·18	55·04	49·35	44·90

The mean of the twelve monthly values is 51°·38.

(V.)—Reading of a Thermometer whose bulb is sunk to the depth of 1 inch below the surface of the soil, at Noon on every Day of the Year.

1883.

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

(V.)—Reading of a Thermometer whose bulb is sunk to the depth of 1 inch below the surface of the soil, at Noon on every Day of the Year—*concluded.*

1883.

Days of the Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
26	39·4	42·9	37·4	46·7	59·0	61·3	60·0	65·0	61·2	55·0	46·0	42·0
27	39·3	42·2	36·3	50·4	57·6	60·6	60·3	65·4	59·0	55·0	43·0	41·2
28	39·5	44·6	36·4	50·0	58·0	61·9	60·2	66·0	57·7	54·0	48·0	41·6
29	45·6		39·2	50·0	61·2	66·0	62·0	65·0	56·3	53·1	45·0	42·1
30	40·9		43·6	49·8	58·0	68·7	61·8	64·0	53 2	52·4	45·3	40·7
31	37·4		41·5		58·0		63·0	63·9		52·0		39·2
Means.	41·9	42·0	38·2	47·1	53·9	61·2	62·5	63·6	58·9	52·4	45·1	41·6

The mean of the twelve monthly values is 50°·70.

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

1883.

Days of the Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
1	53·9	33·6	47·0	52·9	57·0	70·9	74·6	63·0	65·8	54·6	51·3	44·1
2	49·0	47·4	42·2	60·0	47·9	68·8	78·6	68·9	58·9	52·8	47·8	44·8
3	45·8	43·2	46·5	54·3	52·0	71·3	75·2	64·5	63·9	50·0	46·5	46·2
4	43·1	46·4	46·3	58·9	48·1	72·8	67·7	63·9	62·9	50·2	49·7	41·1
5	47·8	47·2	40·9	62·1	51·4	72·1	69·4	63·7	59·2	53·2	49·6	38·2
6	43·6	43·6	40·2	54·1	63·8	67·9	71·8	67·8	56·6	55·2	54·0	36·1
7	39·9	40·0	37·9	52·1	52·6	57·3	69·5	66·8	59·8	51·0	40·5	37·2
8	39·1	48·2	36·2	52·2	49·3	65·8	71·7	61·0	60·1	57·0	45·0	34 7
9	34·9	44·2	36·7	51·0	46·9	71·0	70·2	62·4	64·7	56·7	53·2	35·7
10	40·3	48·0	34·7	48·3	42·7	70·2	70·0	64·6	63·7	57·9	42·1	47·8
11	41·0	44·7	37·8	47·0	51·1	56·0	64·5	65·8	59·8	54·8	45·1	44·4
12	40·5	47·1	38·6	55·0	52·4	66·1	65·2	69·5	66·0	54·1	40·5	43·5
13	43·1	46·4	39·0	54·3	63·8	73·6	67·2	76·9	61·3	59·6	42·8	52·1
14	41·1	46·5	38·2	45·0	63·1	71·9	64·1	74·6	67·3	62·0	39·8	53·7
15	44·6	51·2	37·4	56·8	68·2	62·3	60·3	64·4	64·0	57·5	37·9	42·8
16	39·7	39·0	37·8	55·6	71·0	53·2	59·4	61·8	67·9	58·4	48·0	38·3
17	46·7	44·0	45·1	53·3	66·1	58·8	63·1	66·3	71·6	56·3	49·0	38·5
18	49·9	41·6	41·9	61·2	61·7	63·2	61·9	70·2	73·4	54·8	40·2	35·3
19	44·8	40·6	42·9	48·2	59·0	58·5	67·1	71·3	70·9	50·8	48·8	41·3
20	46·7	44·2	39·3	50·6	55·3	57·8	63·6	73·4	61·1	49·8	48·0	44·8
21	46·9	49·3	39·9	51·1	63·7	64·3	59·2	78·1	57·8	53·7	51·2	48·3
22	41·6	50·1	33·9	47·7	70·1	63·3	58·1	71·9	58·3	49·4	47·8	48·4
23	38·2	44·1	36·9	44·8	73·7	68·6	64·2	70·6	63·6	52·9	40·8	42·9
24	36·1	43·2	38·0	46·1	73·6	69·7	64·7	72·3	61·8	54·2	50·4	46·8
25	38·7	47·0	38·3	50·2	72·8	71·8	60·6	72·6	68·9	61·3	53·2	43·0
26	41·6	42·0	42·2	56·9	59·3	64·0	62·2	73·7	67·8	57·7	47·0	41·8
27	47·0	43·2	40·9	58·3	63·0	63·5	63·8	73·7	63·5	60·3	46·7	40·0
28	45·3	48·4	42·5	51·2	66·9	68·0	65·6	72·4	63·5	59·9	54·8	40·9
29	51·4		47·3	52·1	71·4	78·2	68·6	66·7	57·8	54·8	47·5	39·9
30	41·8		49·1	55·9	60·3	78·5	65·0	68·6	50·8	53·9	48·0	38·6
31	36·7		50·7		68·5		69·3	64·6		51·6		37·8
Means.	43·3	44·8	40·8	52·9	60·2	66·6	66·3	68·6	63·1	55·0	46·9	42·2

The mean of the twelve monthly values is 54°·22.

ABSTRACT of the CHANGES of the DIRECTION of the WIND, as derived from the Records of OSLER'S ANEMOMETER in the Year 1883.

(It is to be understood that the direction of the wind was nearly constant in the intervals between the times given in the second column and those next following in the first column.)

Greenwich Mean Solar Time.		Change of Direction.		Amount of Motion.	
From	To	From	To	Direct.	Retrograde.
January.				°	°
d h	d h				
0. 12	0. 16	S.S.W.	S.W.	22½	
1. 6	2. 18	S.W.	W.N.W.	67½	
2. 18	2. 22	W.N.W.	W.S.W.		45
2. 22	3. 3	W.S.W.	N.W.	67½	
3. 8½	3. 12	N.W.	E.S.E.	157½	
3. 23	4. 2	E.S.E.	S.S.E.	45	
4. 17	4. 22	S.S.E.	S.S.W.	45	
5. 2	5. 3	S.S.W.	S.S.E.		45
5. 4	5. 8	S.S.E.	W.S.W.	90	
5. 13	5. 15	W.S.W.	W.N.W.	45	
5. 20	5. 22	W.N.W.	N.	67½	
6. 5	7. 17	N.	E.	90	
13. 1	13. 6	E.	N.E.		45
13. 21	13. 23	N.E.	S.W.	180	
13. 23	14. 0	S.W.	S.E.		90
14. 1	14. 3	S.E.	E.		45
14. 4	14. 6	E.	S.S.E.	67½	
14. 10	14. 11	S.S.E.	S.	22½	
14. 17	14. 18	S.	W.	90	
14. 18	14. 20	W.	S.S.W.		67½
15. 3	15. 8	S.S.W.	S.S.E.		45
15. 8	15. 11	S.S.E.	W.	112½	
15. 11	15. 12	W.	S.S.E.	247½	
15. 13	15. 15	S.S.E.	N.E.		112½
15. 16	15. 17	N.E.	N.W.	270	
15. 23	16. 0	N.W.	N.N.W.	22½	
16. 0¾	16. 1	N.N.W.	W.		67½
16. 3	16. 7	W.	S.W.		45
16. 12	16. 13	S.W.	S.S.W.		22½
17. 14	18. 8	S.S.W.	W.	67½	
18. 8	18. 17	W.	S.S.W.		67½
18. 17	18. 19½	S.S.W.	E.S.E.		90
18. 19¾	18. 21	E.S.E.	S.	67½	
19. 2	19. 22	S.	W.S.W.	67½	
19. 22	19. 23	W.S.W.	N.E.	157½	
20. 0½	20. 3	N.E.	S.S.W.	157½	
20. 5	20. 6	S.S.W.	E.S.E.		90
20. 7	20. 9	E.S.E.	S.S.E.	45	
20. 12½	20. 14	S.S.E.	E.N.E.		90
20. 15	20. 18	E.N.E.	E.S.E.	45	
21. 6	21. 12	E.S.E.	S.	67½	
21. 15	21. 18	S.	N.		180
21. 19	22. 4	N.	E.	90	
22. 6	22. 13	E.	S.E.	45	
23. 2	23. 14	S.E.	S.	45	
24. 11	24. 13	S.	S.S.W.	22½	
24. 14½	24. 16	S.S.W.	W.	67½	
25. 2	25. 6	W.	S.		90
25. 12	25. 13	S.	S.W.	45	
25. 16	25. 18	S.W.	W.S.W.	22½	
26. 17	26. 21	W.S.W.	S.S.W.		45
26. 23	27. 13	S.S.W.	W.	67½	
27. 15	27. 21	W.	S.W.		45
28. 3	28. 7	S.W.	S.S.W.		22½
28. 10	28. 12	S.S.W.	S.W.	22½	
29. 3	29. 4½	S.W.	W.	45	
Jan.—*cont.*				°	°
d h	d h				
29. 4½	29. 5	W.	N.	90	
29. 6¼	29. 6½	N.	S.W.	225	
30. 13	30. 14	S.W.	S.		45
30. 16	30. 20	S.	E.N.E.		112½
31. 7	31. 12	E.N.E.	N.N.E.		45
			Sums	3172½	1552½
February.					
0. 15	0. 21	N.N.E.	N.N.W.		45
0. 21	0. 22	N.N.W.	S.W.		112½
1. 0	1. 1	S.W.	W.	45	
1. 2½	1. 5	W.	S.E.	225	
1. 9	1. 10	S.E.	S.S.E.	22½	
1. 21	2. 7	S.S.E.	S.W.	67½	
3. 12	3. 15	S.W.	W.S.W.	22½	
4. 3	4. 10	W.S.W.	S.		67½
4. 17	4. 19	S.	S.S.E.		22½
5. 3	5. 6	S.S.E.	E.S.E.		45
6. 7	6. 21	E.S.E.	S.S.E.	45	
6. 22	7. 1	S.S.E.	E.S.E.		45
7. 3	7. 3½	E.S.E.	E.N.E.		45
7. 5	7. 9	E.N.E.	S.E.	67½	
7. 21	8. 1	S.E.	S.S.W.	67½	
8. 10	8. 12	S.S.W.	N.	157½	
8. 19	8. 22	N.	W.S.W.		112½
9. 2	9. 6	W.S.W.	S.S.W.		45
10. 1	10. 2	S.S.W.	S.		22½
10. 14½	10. 17	S.	W.N.W.	112½	
10. 17	10. 17½	W.N.W.	W.S.W.		45
11. 2	11. 9	W.S.W.	S.S.E.		90
11. 10	11. 12	S.S.E.	S.	22½	
12. 5	12. 23	S.	S.W.	45	
13. 4	13. 7	S.W.	S.		45
13. 20	15. 3	S.	S.W.	45	
15. 9	16. 2	S.W.	N.W.	90	
16. 4	16. 7	N.W.	S.S.E.		157½
18. 0	18. 0¼	S.S.E.	N.	202½	
18. 3	18. 10	N.	W.S.W.		112½
18. 15	19. 5	W.S.W.	N.	112½	
19. 8	19. 11	N.	S.W.		135
21. 21	22. 4	S.W.	W.	45	
22. 4	22. 7	W.	N.N.W.	67½	
22. 10	22. 12	N.N.W.	W.S.W.		90
24. 11	24. 15	W.S.W.	N.N.W.	90	
24. 18	24. 20	N.N.W.	S.W.		112½
26. 14	26. 17	S.W.	W.N.W.	67½	
26. 18	27. 6	W.N.W.	W.S.W.		45
27. 21	27. 22	W.S.W.	N.	112½	
27. 23	28. 12	N.	W.S.W.		112½
			Sums	1732½	1507½
March.				°	°
d h	d h				
0. 16	0. 20	W.S.W.	N.N.E.	135	
1. 3	1. 11	N.N.E.	E.	67½	
1. 13	1. 16	E.	N.E.		45
1. 18	2. 4	N.E.	E.	45	
2. 5	2. 18	E.	N.E.		45
2. 19	2. 22	N.E.	E.	45	
3. 12	3. 13	E.	N.E.		45
4. 0	4. 6	N.E.	E.S.E.	67½	
4. 6	4. 18	E.S.E.	N.		112½
4. 19	4. 21	N.	N.E.	45	
5. 2	5. 7	N.E.	W.N.W.		112½
5. 7	5. 20	W.N.W.	N.	67½	
7. 21	7. 22	N.	N.N.E.	22½	
9. 14	9. 16	N.N.E.	N.		22½
10. 13	10. 16	N.	W.S.W.		112½
10. 19¾	10. 20	W.S.W.	N.N.W.	90	
11. 23	12. 0	N.N.W.	N.	22½	
12. 6	12. 12	N.	W.		90
12. 22	12. 23	W.	N.N.W.	67½	
13. 0	13. 12	N.N.W.	S.S.W.		135
13. 14	13. 16	S.S.W.	N.N.W.	135	
13. 18	13. 20	N.N.W.	W.S.W.		90
13. 23	14. 10	W.S.W.	E.N.E.	180	
15. 8	15. 11	E.N.E.	W.S.W.		180
17. 3	17. 20	W.S.W.	S.S.W.		45
18. 4	18. 11	S.S.W.	E.		112½
18. 13	18. 14	E.	N.N.E.		67½
19. 3	19. 5	N.N.E.	N.		22½
19. 9	19. 13	N.	E.N.E.	67½	
23. 7	23. 14	E.N.E.	N.		67½
23. 17	23. 18	N.	W.S.W.		112½
23. 20	24. 2	W.S.W.	N.W.	67½	
24. 6¾	24. 7¼	N.W.	N.N.E.	67½	
24. 11	24. 17	N.N.E.	N.N.W.		45
24. 22	25. 6	N.N.W.	S.W.		112½
25. 8	25. 15	S.W.	W.	45	
25. 15	25. 16	W.	N.N.W.	67½	
26. 9	26. 11	N.N.W.	W.S.W.		90
26. 16	26. 20	W.S.W.	N.	112½	
27. 8	27. 10	N.	S.W.		135
27. 16	27. 19	S.W.	W.	45	
27. 19¾	27. 20	W.	N.N.W.	67½	
28. 4	28. 10	N.N.W.	S.		157½
29. 22	30. 6	S.	W.S.W.	67½	
30. 10	30. 17	W.S.W.	S.S.W.		45
30. 17	31. 9	S.S.W.	N.E.	202½	
31. 11	31. 12	N.E.	N.		45
			Sums	1800	2047½
April.					
0. 12	0. 22	N.	E.	90	
1. 4	1. 7	E.	E.S.E.	22½	
1. 21	1. 23	E.S.E.	S.	67½	

ABSTRACT of the CHANGES of the DIRECTION of the WIND—*continued.*

Greenwich Mean Solar Time.		Change of Direction.		Amount of Motion.	
From	To	From	To	Direct.	Retrograde.
April—*cont.*				°	°
d h	d h				
1. 23	2. 0	S.	S.S.E.		22½
2. 10	2. 13	S.S.E.	S.E.	337½	
2. 13	2. 22	S.E.	W.		585
2. 23	3. 0	W.	N.N.E.	112½	
3. 0¾	3. 14	N.N.E.	S.W.		157½
3. 18	4. 0	S.W.	W.N.W.	67½	
4. 0	4. 8	W.N.W.	S.		112½
4. 9	5. 4	S.	N.W.	135	
5. 8	5. 8½	N.W.	N.	45	
5. 13	6. 5	N.	E.S.E.	112½	
6. 9	6. 16	E.S.E.	N.N.E.		90
6. 19	7. 0	N.N.E.	E.	67½	
7. 13	7. 14	E.	N.E.		45
8. 0	8. 6	N.E.	E.S.E.	67½	
8. 7	8. 16	E.S.E.	N.N.W.		135
8. 19	8. 20	N.N.W.	E.	112½	
8. 20	9. 2	E.	N.		90
9. 3½	9. 7	N.	S.	180	
9. 7	9. 10	S.	E.		90
9. 12	9. 12¼	E.	N.		90
10. 5	10. 8	N.	N.E.	45	
10. 16¾	10. 17	N.E.	S.	135	
10. 21	11. 1	S.	W.	90	
11. 1	11. 7	W.	N.	90	
12. 3	12. 3¼	N.	E.	90	
12. 4	12. 12	E.	S.E.	45	
12. 16	13. 4	S.E.	N.W.	180	
13. 6	13. 7	N.W.	N.E.	90	
13. 14	13. 17	N.E.	S.S.W.	157½	
14. 7½	14. 9	S.S.W.	N.	157½	
14. 11	14. 14	N.	W.S.W.		112½
15. 12	15. 20	W.S.W.	W.N.W.	45	
16. 2	16. 18	W.N.W.	S.S.W.		90
17. 6	17. 11	S.S.W.	S.E.		67½
17. 14	17. 19	S.E.	S.	45	
18. 15	18. 17	S.	N.	180	
18. 17¼	18. 17½	N.	N.N.E.		337½
18. 17½	18. 23	N.N.E.	S.W.		157½
18. 23	19. 5	S.W.	N.N.W.	112½	
19. 20	20. 0	N.N.W.	N.	22½	
20. 13	20. 19	N.	N.E.	45	
21. 23	21. 23½	N.E.	E.	45	
21. 23½	22. 15	E.	N.		90
22. 19	23. 0	N.	E.N.E.	67½	
23. 4	23. 7	E.N.E.	N.N.E.	315	
23. 17	23. 21	N.N.E.	N.E.	22½	
24. 8	24. 9	N.E.	N.		45
24. 13	24. 22	N.	W.		90
24. 23	25. 9	W.	S.		90
25. 13	25. 16	S.	E.		90
25. 18	25. 20	E.	S.E.	45	
26. 4	26. 5	S.E.	E.		45
26. 19	27. 0	E.	S.S.E.	67½	
27. 0	27. 3	S.S.E.	S.E.		22½
27. 13¾	27. 14	S.E.	N.E.		90
27. 16¾	27. 17	N.E.	W.S.W.		157½
27. 20	28. 0	W.S.W.	N.	112½	
28. 11	28. 14	N.	W.N.W.		67½
28. 23	29. 9	W.N.W.	S.W.	292½	
April—*cont.*				°	°
d h	d h				
29. 17	30. 0	S.W.	W.	45	
30. 0	30. 4	W.	N.	90	
30. 4	30. 4½	N.	S.W.		135
30. 6¼	30. 6½	S.W.	E.		135
30. 9	30. 12	E.	N.N.E.		67½
			Sums	4050	3307½
May.					
0. 12	0. 15	N.N.E.	N.		22½
0. 16	0. 21	N.	E.N.E.	67½	
1. 3	1. 19	E.N.E.	N.		67½
3. 5	3. 6	N.	E.N.E.	67½	
3. 8	3. 18	E.N.E.	N.		67½
4. 6	4. 7½	N.	E.N.E.	67½	
4. 7½	4. 15	E.N.E.	N.		67½
4. 20	5. 5	N.	E.S.E.	112½	
5. 6	5. 12	E.S.E.	N.		112½
5. 14	6. 2	N.	E.N.E.	67½	
6. 5	6. 8	E.N.E.	N.N.E.		45
6. 18	6. 20	N.N.E.	E.N.E.	45	
6. 23	6. 23½	E.N.E.	S.	112½	
7. 0	7. 0¼	S.	S.W.		315
7. 19	7. 22	S.W.	N.E.		180
8. 2	8. 5	N.E.	N.		45
8. 9½	8. 13	N.	N.	360	
8. 22	8. 23	N.	N.N.E.	22½	
9. 19	9. 21	N.N.E.	N.N.W.		45
9. 23	10. 0	N.N.W.	W.S.W.		90
10. 18	10. 19	W.S.W.	W.	22½	
10. 23	11. 0	W.	S.W.		45
11. 2	11. 6	S.W.	N.	135	
11. 6	11. 8	N.	S.W.	225	
11. 10	11. 12	S.W.	S.E.		90
11. 12	11. 23	S.E.	S.W.	90	
13. 0	13. 6	S.W.	S.S.E.		67½
13. 8	13. 15	S.S.E.	S.W.	67½	
14. 7	14. 12	S.W.	S.E.		90
14. 12	14. 22	S.E.	N.E.	270	
15. 4¾	15. 5	N.E.	E.S.E.	67½	
15. 11	15. 15	E.S.E.	N.E.		67½
16. 3	16. 4	N.E.	E.S.E.	67½	
16. 9	16. 15	E.S.E.	N.E.		67½
16. 17	16. 22	N.E.	E.S.E.	67½	
17. 9	17. 13	E.S.E.	W.S.W.	135	
17. 17	17. 18	W.S.W.	N.N.W.	90	
18. 9	18. 10½	N.N.W.	S.W.		112½
18. 12	18. 23½	S.W.	N.N.W.	112½	
19. 21	19. 23	N.N.W.	E.S.E.		225
20. 19	21. 2	E.S.E.	S.S.W.	90	
22. 8	23. 4	S.S.W.	W.	67½	
23. 9	24. 3	W.	S.S.W.		67½
24. 19	24. 20	S.S.W.	E.N.E.		135
25. 1	25. 4	E.N.E.	S.S.W.	135	
25. 5	25. 7	S.S.W.	E.S.E.		90
25. 8	25. 14	E.S.E.	W.S.W.	135	
25. 17	25. 18	W.S.W.	S.S.E.		90
25. 20	25. 21½	S.S.E.	N.N.W.		180
May—*cont.*				°	°
d h	d h				
26. 16½	26. 17	N.N.W.	W.N.W.		45
26. 20	27. 0	W.N.W.	S.W.	292½	
27. 3	27. 9	S.W.	S.		45
27. 18	27. 22	S.	S.W.	45	
28. 2	28. 15	S.W.	S.S.E.		67½
28. 18	28. 19¼	S.S.E.	S.W.	67½	
29. 4	29. 7	S.W.	W.	45	
29. 19	29. 19½	W.	N.N.W.	67½	
29. 20	29. 23	N.N.W.	S.S.E.		180
30. 8	30. 10	S.S.E.	S.W.	67½	
30. 19	30. 19½	S.W.	S.E.		90
30. 21	30. 22	S.E.	S.S.W.	67½	
31. 9	31. 12	S.S.W.	S.S.E.		45
			Sums	3352½	2857½
June.					
0. 12	0. 17	S.S.E.	E.S.E.		45
0. 20	0. 21	E.S.E.	S.S.W.	90	
1. 10	1. 14	S.S.W.	W.S.W.	45	
1. 22	2. 6	W.S.W.	E.S.E.	225	
2. 10	2. 16	E.S.E.	N.N.E.		90
2. 17	2. 19	N.N.E.	N.E.	22½	
5. 12	6. 1	N.E.	E.S.E.	67½	
6. 10	6. 17	E.S.E.	N.N.E.		90
7. 5	7. 13	N.N.E.	S.S.E.	135	
7. 15	7. 17	S.S.E.	E.S.E.		45
8. 8	8. 10	E.S.E.	S.S.E.	45	
8. 13	8. 16	S.S.E.	E.N.E.		90
9. 23	10. 3	E.N.E.	N.		67½
10. 3	10. 4	N.	E.S.E.	112½	
10. 10	10. 12	E.S.E.	N.N.E.		90
11. 20	11. 20¼	N.N.E.	S.		202½
11. 21	11. 21¼	S.	N.N.W.	157½	
12. 18	12. 20	N.N.W.	N.	22½	
13. 3	13. 9	N.	S.	180	
13. 17	13. 21	S.	N.N.W.	157½	
14. 1	14. 4	N.N.W.	W.		67½
14. 5	14. 9	W.	N.	450	
15. 0	15. 1	N.	S.S.W.		157½
15. 1	15. 6	S.S.W.	W.	67½	
15. 21	16. 0	W.	N.N.W.	67½	
16. 0	16. 14	N.N.W.	S.W.		112½
16. 17	17. 2	S.W.	N.N.W.	112½	
17. 2	17. 15	N.N.W.	S.W.		112½
17. 20	18. 3	S.W.	N.	135	
18. 23	18. 23¼	N.	S.W.		135
19. 1	19. 1¼	S.W.	N.E.	180	
19. 6	19. 11	N.E.	S.W.	180	
19. 15	19. 20	S.W.	S.S.E.		67½
20. 6	20. 10	S.S.E.	E.		67½
20. 13	21. 0	E.	S.	90	
21. 0	21. 8	S.	N.		180
21. 20	21. 21	N.	S.		180
21. 21	22. 2	S.	S.W.	45	
23. 7	23. 9	S.W.	S.S.W.		22½
24. 11	24. 16	S.S.W.	S.E.		427½

ABSTRACT of the CHANGES of the DIRECTION of the WIND—*continued.*

Greenwich Mean Solar Time.		Change of Direction.		Amount of Motion.	
From	To	From	To	Direct.	Retrograde.
June—*cont.*				°	°
d h	d h				
24. 23	25. 0	S.E.	S.W.	90	
26. 19	27. 5	S.W.	S.		45
27. 11	28. 0	S.	S.W.	45	
28. 8	28. 19	S.W.	E.S.E.		112½
28. 20	28. 22	E.S.E.	S.S.E.	45	
29. 6	29. 8	S.S.E.	E.		67½
29. 12	29. 18	E.	S.W.	495	
			Sums	3262½	2475
July.					
1. 8	1. 15	S.W.	S.E.		90
2. 21	3. 0	S.E.	S.S.W.	45	
3. 13	3. 18	S.S.W.	W.	67½	
3. 18	3. 20	W.	E.		180
3. 21	4. 0	E.	S.S.W.	112½	
5. 12	5. 18	S.S.W.	E.S.E.		90
5. 19	6. 4	E.S.E.	S.S.W.	90	
8. 6	8. 9	S.S.W.	E.S.E.		90
8. 12	9. 4	E.S.E.	W.	157½	
9. 5	9. 8	W.	S.W.		45
10. 2	10. 18	S.W.	S.		45
10. 20	11. 1	S.	S.W.	45	
13. 19	13. 23	S.W.	N.E.	180	
14. 0	14. 0½	N.E.	N.	315	
14. 0½	14. 1	N.	S.		180
14. 3¾	14. 5	S.	N.N.W.	157½	
14. 6¾	14. 16	N.N.W.	W.S.W.		90
14. 18	15. 6	W.S.W.	N.N.W.	90	
15. 8	15. 14	N.N.W.	W.S.W.		90
17. 14	17. 22	W.S.W.	N.W.	67½	
18. 11	18. 17	N.W.	S.W.		90
18. 18	18. 22	S.W.	W.S.W.	22½	
19. 10	19. 12	W.S.W.	S.S.E.	270	
19. 13	19. 14	S.S.E.	E.N.E.		90
19. 19	20. 8	E.N.E.	S.	112½	
20. 16	21. 10	S.	W.	90	
22. 8	22. 10	W.	S.W.		45
23. 3	23. 6	S.W.	S.		45
23. 8	23. 10	S.	W.	90	
23. 14½	23. 17	W.	N.	90	
23. 23	24. 16	N.	W.S.W.		112½
25. 0	25. 6	W.S.W.	N.W.	67½	
25. 8	25. 10	N.W.	W.S.W.		67½
25. 18	26. 2	W.S.W.	N.	112½	
26. 5	26. 6	N.	E.N.E.	67½	
26. 8	26. 12	E.N.E.	N.N.W.		90
28. 3	28. 5	N.N.W.	E.N.E.	90	
28. 8	28. 9	E.N.E.	S.W.	157½	
29. 7	29. 13	S.W.	S.E.		90
29. 14	30. 0	S.E.	S.S.W.	67½	
30. 15	30. 19	S.S.W.	W.S.W.	45	
31. 8	31. 9½	W.S.W.	N.N.E.	135	
31. 9½	31. 12	N.N.E.	W.S.W.		135
			Sums	2745	1665
August.				°	°
d h	d h				
0. 12	0. 15	W.S.W.	W.N.W.	45	
0. 17½	0. 19	W.N.W.	W.S.W.		45
1. 22	2. 2	W.S.W.	N.N.W.	90	
2. 6	2. 7	N.N.W.	S.W.		112½
2. 9	2. 11	S.W.	W.	45	
2. 17	2. 18¼	W.	N.N.W.	67½	
3. 3	3. 5	N.N.W.	S.W.		112½
3. 6	3. 10	S.W.	S.W.	360	
5. 23	6. 0	S.W.	W.S.W.	22½	
6. 13	6. 15	W.S.W.	N.	112½	
6. 20	7. 2	N.	W.		90
7. 4	7. 6	W.	N.	90	
7. 9	7. 10	N.	S.W.		135
8. 15	8. 19	S.W.	W.	45	
8. 22	9. 0	W.	W.S.W.		22½
11. 12	11. 14	W.S.W.	S.W.		22½
12. 3	12. 14	S.W.	S.E.		90
12. 15	13. 1	S.E.	S.W.	90	
14. 20	15. 15	S.W.	N.W.	90	
16. 8	16. 9	N.W.	S.S.W.		112½
17. 2	17. 14	S.S.W.	W.	67½	
17. 20	18. 2	W.	N.E.	135	
18. 19	18. 21	N.E.	S.S.E.	112½	
19. 0	19. 2	S.S.E.	E.		67½
19. 23	20. 0	E.	S.S.W.	112½	
20. 0	20. 4	S.S.W.	E.		112½
20. 5	20. 11	E.	W.	180	
20. 13	20. 21	W.	S.S.E.		112½
20. 22	21. 0	S.S.E.	S.S.W.		315
21. 4	21. 5	S.S.W.	N.	157½	
21. 6½	21. 10	N.	S.S.W.	202½	
21. 15	21. 21	S.S.W.	N.	157½	
22. 21	22. 23	N.	N.E.	45	
23. 4	23. 5	N.E.	E.	45	
23. 9	23. 16	E.	N.N.E.		67½
23. 19	24. 3	N.N.E.	E.S.E.	90	
24. 8	24. 16	E.S.E.	N.E.		67½
24. 18	25. 0	N.E.	S.E.	90	
25. 15	26. 0	S.E.	W.N.W.	157½	
26. 7	26. 10	W.N.W.	S.W.		67½
27. 7	27. 9	S.W.	W.	45	
27. 10	27. 11	W.	W.S.W.		22½
27. 22	28. 0	W.S.W.	W.	22½	
28. 3	28. 9	W.	S.W.		45
28. 16	28. 22	S.W.	W.	45	
29. 5	29. 10	W.	S.W.		45
30. 11	30. 23	S.W.	W.	45	
31. 0	31. 5	W.	N.E.		225
31. 8	31. 12	N.E.	N.W.		90
			Sums	2767½	1980
September.					
0. 12	0. 21	N.W.	S.S.W.		112½
1. 1	1. 5	S.S.W.	S.S.E.		45
1. 14	2. 7	S.S.E.	S.W.	67½	
Sept.—*cont.*				°	°
d h	d h				
3. 11	3. 21	S.W.	W.N.W.	67½	
3. 23	4. 10	W.N.W.	S.S.W.		90
4. 15	4. 17	S.S.W.	N.	157½	
5. 12	5. 14	N.	S.W.		135
7. 22	8. 0	S.W.	N.W.	90	
8. 12	8. 14	N.W.	S.W.		90
8. 20	8. 20¼	S.W.	N.N.E.		202½
8. 21½	8. 22	N.N.E.	S.	157½	
8. 23	9. 12	S.	S.E.		45
9. 17	10. 4	S.E.	S.	45	
10. 6	10. 8	S.	E.S.E.		67½
10. 15	11. 8	E.S.E.	N.		112½
12. 2	12. 7	N.	E.S.E.	112½	
12. 7	12. 13	E.S.E.	N.N.E.		90
13. 23½	14. 6	N.N.E.	S.E.	112½	
14. 7½	14. 13	S.E.	N.		135
14. 23	15. 0	N.	S.W.		135
16. 0	16. 9	S.W.	S.E.	270	
16. 11	16. 15	S.E.	N.N.E.		472½
16. 22	17. 0	N.N.E.	S.E.	112½	
17. 10	17. 12	S.E.	E.N.E.		67½
17. 21	18. 2	E.N.E.	S.S.E.	90	
18. 9	18. 11	S.S.E.	E.N.E.		90
18. 20	18. 21	E.N.E.	S.E.	67½	
19. 6	19. 7	S.E.	E.S.E.		22½
20. 3	20. 5	E.S.E.	S.S.W.	90	
20. 17	20. 20	S.S.W.	S.E.	292½	
20. 20	21. 3	S.E.	S.W.		270
21. 7	21. 8	S.W.	S.S.W.	337½	
21. 9	21. 9¼	S.S.W.	N.		202½
21. 10½	21. 12	N.	N.E.	405	
21. 15	21. 22	N.E.	N.		45
22. 12	22. 20	N.	S.E.		225
22. 21	23. 0	S.E.	S.S.W.	67½	
23. 3	23. 11	S.S.W.	S.E.		67½
23. 12	24. 2	S.E.	W.S.W.	112½	
24. 5	24. 8	W.S.W.	S.W.		22½
25. 7	25. 15	S.W.	S.S.E.		67½
25. 17	25. 23	S.S.E.	S.W.	67½	
28. 3	28. 6	S.W.	S.		45
28. 8	28. 13	S.	W.	90	
28. 14	29. 0	W.	S.W.		45
29. 10	29. 11½	S.W.	N.	135	
29. 12	29. 16	N.	N.		360
29. 17	29. 23½	N.	N.W.		45
29. 23½	30. 1	N.W.	N.E.	90	
30. 1	30. 12	N.E.	N.N.W.		67½
			Sums	3037½	3375
October.					
0. 12	0. 14½	N.N.W.	N.W.		22½
0. 14½	0. 15½	N.W.	N.	45	
1. 0	1. 6	N.	N.W.		45

ABSTRACT of the CHANGES of the DIRECTION of the WIND—*continued.*

Greenwich Mean Solar Time.		Change of Direction.		Amount of Motion.	
From	To	From	To	Direct.	Retrograde.
				°	°
Oct.—*cont.*					
d h	d h				
1. 13	1. 14	N.W.	N.N.W.	22½	
2. 3	2. 13	N.N.W.	S.W.		112½
3. 0	3. 4	S.W.	W.	45	
3. 17	3. 18	W.	N.N.W.	67½	
4. 0	4. 1	N.N.W.	N.	22½	
4. 15	5. 6	N.	W.N.W.		67½
5. 6	5. 6½	W.N.W.	N.	67½	
6. 13	6. 15	N.	W.S.W.		112½
7. 5	7. 9	W.S.W.	S.W.		22½
9. 6	9. 9	S.W.	S.	315	
9. 12	9. 13	S.	W.S.W.	90	
9. 13½	9. 17	W.S.W.	S.E.		112½
10. 11	10. 12	S.E.	E.N.E.		67½
10. 20	10. 23	E.N.E.	W.	202½	
11. 0	11. 12	W.	N.E.	135	
12. 12	12. 13	N.E.	S.E.	90	
12. 23	13. 3	S.E.	S.	45	
13. 7	13. 13	S.	S.E.		45
13. 17	13. 22	S.E.	S.	45	
14. 12	14. 12½	S.	W.	90	
14. 12½	14. 14	W.	S.W.		45
15. 2	15. 5	S.W.	S.		45
15. 14	15. 23	S.	S.W.	45	
16. 18	16. 20	S.W.	W.	45	
16. 20	17. 4	W.	S.S.W.		67½
17. 7	17. 8	S.S.W.	W.S.W.	45	
18. 3	19. 2	W.S.W.	S.		67½
19. 3	19. 5½	S.	N.N.W.	157½	
19. 5½	19. 8	N.N.W.	W.S.W.		90
21. 17½	21. 18	W.S.W.	N.	112½	
22. 2	22. 7	N.	S.S.W.		157½
22. 19	23. 6	S.S.W.	W.S.W.	45	
23. 23	24. 2	W.S.W.	S.S.W.		45
24. 5	24. 9	S.S.W.	W.S.W.	45	
24. 10	24. 12	W.S.W.	S.W.		22½
25. 15	26. 8	S.W.	S.S.E.		67½
26. 12	26. 13	S.S.E.	S.	22½	
26. 19	27. 0	S.	W.	90	
27. 0	27. 4	W.	E.S.E.		157½
27. 4½	27. 8	E.S.E.	S.S.W.	90	
27. 9½	27. 23	S.S.W.	E.		112½
29. 9	29. 14	E.	N.N.E.		67½
29. 18	30. 12	N.N.E.	E.	67½	
31. 3	31. 12	E.	S.S.E.	67½	
			Sums	2115	1552½
November.					
0. 13½	0. 14	S.S.E.	E.S.E.		45
1. 20	2. 0	E.S.E.	S.S.W.	90	
2. 0	2. 3	S.S.W.	E.S.E.		90
2. 20	3. 2	E.S.E.	N.N.W.	225	
Nov.—*cont.*					
d h	d h				
3. 5	3. 7	N.N.W.	S.W.		112½
3. 15	3. 16	S.W.	S.S.W.		22½
3. 18	4. 0	S.S.W.	S.W.	22½	
4. 4	4. 5	S.W.	W.N.W.	67½	
4. 5½	4. 10	W.N.W.	W.S.W.		45
5. 3	5. 10	W.S.W.	S.S.E.		90
5. 11	5. 15	S.S.E.	S.W.	67½	
5. 23½	5. 23¾	S.W.	N.	135	
6. 5	6. 11½	N.	W.S.W.		112½
6. 18	6. 20	W.S.W.	S.		67½
6. 21	7. 0	S.	S.S.W.	382½	
7. 2	7. 4	S.S.W.	S.E.		67½
7. 10	7. 12	S.E.	S.W.		270
7. 23	8. 0	S.W.	W.S.W.	22½	
8. 2	8. 7	W. .W.	S.S.W.		45
8. 11	8. 23	S. .W.	W.S.W.	45	
9. 20	9. 21	W.S.W.	N.N.W.	90	
9. 21	10. 5	N.N.W.	W.S.W.		90
10. 22	10. 23	W.S.W.	W.N.W.	45	
11. 2	11. 19	W.N.W.	N.		292½
12. 3	12. 8	N.	N.N.W.		22½
12. 10	12. 10¼	N.N.W.	W.S.W.		90
12. 17	12. 21	W.S.W.	N.	112½	
13. 7	13. 13	N.	W.S.W.		112½
13. 23	13. 23½	W.S.W	N.W.	67½	
14. 10	14. 19	N.W.	S.W.		90
15. 4	15. 7	S.W.	S.S.E.		67½
15. 19	15. 22	S S E.	S.W.	67½	
16. 10	16. 17	S.W.	S.		45
17. 2	17. 3¼	S.	W.N.W.	112½	
17. 3¼	17. 5	W.N.W.	W S.W.		45
18. 0	18. 4	W.S.W.	S.		67½
18. 5	18. 13	S.	W.	90	
18. 15	18. 19	W.	S.W.		45
18. 20	19. 0	S.W.	W.	45	
19. 2	19. 7	W.	S.W.		45
19. 17	19. 23	S.W.	W.S.W.	22½	
20. 7	20. 16	W.S.W.	S.S.W.		45
20. 20	21. 2	S.S.W.	W.	67½	
21. 2	21. 19	W.	S.S.W.		67½
21. 22	22. 0	S.S.W.	S.W.	22½	
22. 16	22. 16¼	S.W.	N.		225
22. 19	22. 21	N.	S.W.		135
22. 21	22. 22	S.W.	W.	45	
23. 0	23. 12	W.	S.		90
23. 15	23. 22	S.	S.W.	45	
24. 2	24. 7	S.W.	S.		45
24. 8	24. 10	S.	S.S.W.	22½	
25. 21	26. 0	S.S.W.	S.W.	22½	
27. 0	27. 2	S.W.	S.S.W.		22½
28. 4	28. 16	S.S.W.	S.S.E.		45
29. 2	29. 8	S.S.E.	S.W.	67½	
30. 2	30. 4	S.W.	S.S.W.		22½
30. 9	30. 9½	S.S.W.	N.N.W.	135	
			Sums	2137½	2677½
December.					
d h	d h				
1. 9	1. 13	N.N.W.	W.S.W.		90
1. 21	2. 3	W.S.W.	W.N.W.	45	
2. 6	2. 19	W.N.W.	S.W.		67½
2. 23	3. 0	S.W.	W.S.W.	22½	
3. 6	3. 14	W.S.W.	N.N.W.	90	
5. 19	5. 22	N.N.W.	N.N.E.	45	
7. 0	7. 11	N.N.E.	N.W.		67½
7. 14	7. 17	N.W.	S.W.		90
9. 0	9. 1	S.W.	S.S.E.		67½
9. 1	9. 2	S.S.E.	S.S.W.	45	
10. 12	10. 16	S.S.W.	W.N.W.	90	
11. 2	11. 8	W.N.W.	S.W.		67½
11. 13	11. 13¼	S.W.	W.N.W.	67½	
12. 7	12. 14	W.N.W.	S.W.		67½
12. 17	12. 22	S.W.	W.S.W.	22½	
15. 15	15. 18	W.S.W.	N.N.W.	90	
17. 18	17. 23	N.N.W.	W.S.W.		90
18. 10	18. 16	W.S.W.	N.N.W.	90	
18. 19	19. 13	N.N.W.	S.W.		112½
19. 17	19. 19	S.W.	W.S.W.	22½	
20. 20	21. 1	W.S.W.	W.	22½	
21. 3	21. 5	W.	S.W.		45
22. 13	23. 3	S.W.	N.N.W.	112½	
23. 5½	23. 6	N.N.W.	S.S.W.	225	
23. 19	23. 23	S.S.W.	W.S.W.	45	
24. 4	24. 12	W.S.W.	W.N.W.	45	
24. 15	24. 17	W.N.W.	W.S.W.		45
25. 0	25. 3	W.S.W.	S.S.W.	315	
25. 7	25. 9	S.S.W.	E.S.E.		90
25. 15	25. 21	E.S.E.	S.S.E.	405	
25. 23	26. 7	S.S.E.	E.		67½
26. 12	27. 0	E.	W.	180	
27. 0	27. 3	W.	N.E.	135	
27. 8	27. 13	N.E.	S.	135	
27. 16	28. 0	S.	S.W.	405	
28. 0	28. 1	S.W.	S.S.E.		67½
28. 7	28. 10	S.S.E.	E.S.E.		45
28. 21	28. 23	E.S.E.	E.		22½
29. 14	29. 18	E.	N.N.E.		67½
30. 2	30. 20	N.N.E.	E.N.E.	45	
31. 11	31. 12	E.N.E.	E.	22½	
			Sums	2722½	1170

ABSTRACT of the CHANGES of the DIRECTION of the WIND—*concluded.*

EXCESS of MOTION in each MONTH.

	Direct.	Retrograde.		Direct.	Retrograde.
	°	°		°	°
January	1620		July	1080	
February	225		August	787½	
March		247½	September		337½
April	742½		October	562½	
May	495		November		540
June	787½		December	1552½	

The whole excess of direct motion for the year was 6°727½.

MEAN HOURLY MEASURES of the HORIZONTAL MOVEMENT of the AIR in each Month, and GREATEST and LEAST HOURLY MEASURES, as derived from the Records of ROBINSON'S ANEMOMETER.

Hour ending	1883.												Mean for the Year.
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
h	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.
1 a.m.	14·3	13·5	12·2	7·7	8·5	8·7	9·3	9·0	8·6	11·5	12·7	14·7	10·9
2 a.m.	13·8	13·2	11·6	8·0	8·6	8·0	8·7	9·0	9·1	11·2	12·7	15·1	10·8
3 a.m.	13·4	14·1	12·3	7·7	8·5	7·3	8·7	9·2	8·9	11·0	12·8	15·4	10·8
4 a.m.	12·8	14·3	11·7	7·5	8·1	7·1	8·9	9·4	9·3	11·5	13·4	15·6	10·8
5 a.m.	12·7	14·1	11·8	7·7	7·5	7·3	8·6	8·2	9·5	11·4	13·0	15·1	10·6
6 a.m.	12·6	14·1	12·1	7·4	7·3	7·4	9·4	7·8	9·4	11·2	13·5	14·6	10·6
7 a.m.	14·2	14·2	12·5	8·0	7·4	7·3	10·2	8·5	10·7	12·1	13·9	14·7	11·1
8 a.m.	13·4	14·5	12·6	9·2	7·9	7·7	11·2	9·2	10·6	12·0	13·4	14·0	11·3
9 a.m.	12·7	13·9	13·3	9·9	8·3	8·5	11·8	10·0	11·3	12·4	13·0	14·7	11·6
10 a.m.	13·5	13·9	14·2	10·6	8·8	9·3	12·5	10·9	12·3	13·3	14·0	15·1	12·4
11 a.m.	14·7	14·5	16·6	11·7	9·8	10·0	12·9	11·8	13·5	13·7	14·5	15·6	13·3
Noon.	15·3	15·7	18·0	11·9	11·3	10·0	13·4	12·3	13·7	13·7	14·0	16·1	13·8
1 p.m.	15·5	16·3	18·4	11·9	11·7	10·3	13·7	12·1	13·7	13·9	14·2	16·4	14·0
2 p.m.	16·0	16·6	18·1	12·0	11·8	10·8	14·1	13·0	14·6	13·7	15·3	16·8	14·4
3 p.m.	15·8	16·6	18·0	12·5	11·9	11·4	14·8	12·9	14·4	13·4	15·7	16·8	14·5
4 p.m.	14·6	15·9	16·8	11·7	12·2	11·4	15·3	14·2	13·5	12·7	14·3	15·9	14·0
5 p.m.	13·7	15·2	16·7	11·1	11·6	12·1	14·5	14·2	12·8	12·9	13·2	16·3	13·7
6 p.m.	13·9	13·5	15·6	10 5	11·4	11·4	13·8	13·2	11·6	12·2	12·8	15·9	13·0
7 p.m.	13·7	14·0	14·1	9·5	10·9	10·1	11·7	11·2	10·3	11·5	12·4	14·5	12·0
8 p.m.	14·1	13·9	13·3	9·1	10·5	9·9	11·2	11·2	10·9	12·3	13·5	16·0	12·2
9 p.m.	14·4	14·7	12·5	8·7	10·1	8·6	10·0	10·1	10·2	11·6	12·5	15·4	11·6
10 p.m.	14·2	13·8	12·6	8·1	9 9	8·5	9·6	10·5	9·8	11·5	12·4	14·8	11·3
11 p.m.	14·7	14·5	12·6	7·6	9·7	8·6	9·4	9·3	8·9	11·9	12·3	15·1	11·2
Midnight.	14·5	14·0	12·5	7·0	9·5	8·5	9·4	9·2	8·6	11·3	12·7	15·0	11·0
Means	14·1	14·5	14·2	9·5	9·7	9·2	11·4	10·7	11·1	12·2	13·4	15·4	12·1
Greatest Hourly Measures -	57	49	39	28	29	24	33	34	35	39	39	53	..
Least Hourly Measures -	1	1	1	0	0	0	1	0	0	0	0	0	..

MEAN ELECTRICAL POTENTIAL of the ATMOSPHERE, from THOMSON'S ELECTROMETER, for each CIVIL DAY.

(Each result is the Mean of Twenty-four Hourly Ordinates from the Photographic Register. The scale employed is arbitrary : the sign + indicates positive potential.)

1883.

Days of the Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d												
1	+ 39	+ 270	+ 261	+ 550	+ 302	+ 417	+ 417	+ 178	+ 278	..	+ 388	+ 254
2	+ 177	− 292	+ 368	+ 574	+ 436	+ 291	+ 269	+ 243	− 27	+ 252	+ 360	+ 413
3	+ 140	+ 340	+ 534	+ 325	+ 324	+ 293	+ 165	+ 140	+ 189	− 208	+ 31	+ 294
4	+ 544	+ 395	+ 484	+ 418	+ 492	+ 208	+ 455	+ 141	+ 149	+ 184	+ 301	+ 385
5	+ 71	+ 260	+ 361	+ 452	+ 505	+ 132	+ 288	+ 200	+ 218	+ 256	+ 384	+ 551
6	+ 258	+ 325	+ 215	+ 305	..	+ 295	+ 370	+ 145	+ 213	+ 490	+ 148	..
7	+ 288	+ 190	+ 221	+ 293	+ 187	..	+ 289	+ 214	+ 341	+ 413	+ 514	..
8	+ 195	+ 47	..	+ 298	+ 57	+ 287	+ 265	+ 180	+ 281	+ 181	+ 578	+ 597
9	+ 349	+ 11	..	..	+ 133	+ 429	+ 299	+ 147	+ 512	+ 342	+ 349	..
10	+ 330	− 37	..	+ 467	− 131	+ 280	+ 321	− 28	+ 113	+ 344	+ 478	..
11	+ 189	+ 258	..	+ 288	+ 140	+ 211	+ 152	+ 430	+ 63	+ 118	+ 565	+ 293
12	+ 369	− 166	+ 507	+ 482	+ 58	+ 51	+ 284	+ 492	+ 143	+ 196	+ 620	+ 295
13	+ 321	+ 311	+ 528	+ 288	+ 291	+ 336	+ 273	+ 370	+ 110	+ 266	+ 604	+ 152
14	+ 426	+ 14	+ 432	+ 96	+ 76	+ 17	− 270	− 1	+ 214	+ 157	+ 466	+ 210
15	+ 237	+ 124	+ 438	+ 577	+ 154	− 150	− 130	+ 216	+ 116	+ 320	+ 555	+ 428
16	+ 32	+ 383	+ 541	+ 322	+ 209	− 274	+ 368	+ 173	+ 442	+ 185	+ 202	+ 232
17	+ 253	+ 463	+ 560	+ 350	+ 142	+ 283	+ 335	+ 325	+ 199	+ 240	+ 324	+ 375
18	+ 158	− 103	+ 615	+ 140	+ 52	+ 202	+ 269	+ 217	+ 278	+ 490	+ 594	+ 394
19	+ 320	+ 252	− 399	− 88	+ 80	+ 35	+ 185	+ 233	+ 328	+ 237	+ 372	+ 232
20	+ 205	+ 192	+ 213	+ 390	+ 83	+ 180	+ 231	+ 223	+ 195	+ 500	+ 352	+ 355
21	+ 247	+ 100	+ 185	+ 372	+ 217	− 177	− 128	+ 232	+ 189	+ 533	+ 418	+ 329
22	+ 294	+ 145	+ 261	+ 444	+ 228	+ 283	+ 136	+ 120	+ 155	+ 386	+ 364	+ 233
23	+ 668	+ 351	+ 495	+ 38	+ 184	+ 308	+ 313	+ 239	+ 272	+ 293	+ 386	+ 518
24	+ 545	+ 295	+ 473	+ 468	+ 444	+ 210	+ 127	+ 329	..	+ 238	+ 208	+ 308
25	+ 324	+ 277	+ 701	+ 285	+ 372	+ 143	+ 215	+ 206	+ 159	+ 175	..	+ 134
26	+ 374	+ 328	+ 292	+ 454	+ 28	− 348	+ 233	+ 265	..	+ 347	+ 152	+ 234
27	+ 221	+ 318	+ 534	+ 316	+ 321	+ 248	+ 262	+ 137	+ 73	+ 350	+ 624	+ 255
28	+ 497	+ 254	+ 296	− 252	+ 368	+ 201	+ 300	+ 156	..	+ 353	+ 237	+ 145
29	+ 22		+ 520	+ 209	+ 343	+ 295	+ 389	+ 112	..	+ 185	+ 346	+ 284
30	+ 447		+ 197	+ 310	+ 257	+ 83	..	+ 264	− 150	+ 261	+ 179	+ 221
31	+ 540		+ 621		+ 269		+ 64	+ 137		+ 404		+ 282
Means -	+ 293	+ 189	+ 387	+ 316	+ 221	+ 164	+ 225	+ 208	+ 194	+ 283	+ 383	+ 311

The mean of the twelve monthly values is + 264.

MONTHLY MEAN ELECTRICAL POTENTIAL of the ATMOSPHERE, from THOMSON'S ELECTROMETER, at every HOUR of the DAY.

(The results depend on the Photographic Register, using all days of complete record. The scale employed is arbitrary: the sign + indicates positive potential.)

Hour, Greenwich Mean Solar Time (Civil reckoning).	1883.												Yearly Means.
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
Midnight	+ 245	+ 241	+ 475	+ 367	+ 320	+ 249	+ 366	+ 341	+ 263	+ 314	+ 374	+ 258	+ 318
1h. a.m.	+ 248	+ 198	+ 449	+ 345	+ 329	+ 259	+ 339	+ 313	+ 160	+ 310	+ 292	+ 256	+ 291
2 „	+ 213	+ 186	+ 458	+ 329	+ 311	+ 290	+ 312	+ 257	+ 145	+ 297	+ 224	+ 263	+ 274
3 „	+ 188	+ 152	+ 447	+ 301	+ 301	+ 280	+ 341	+ 263	+ 183	+ 241	+ 248	+ 258	+ 267
4 „	+ 181	+ 135	+ 412	+ 273	+ 221	+ 231	+ 347	+ 256	+ 167	+ 204	+ 305	+ 260	+ 249
5 „	+ 215	+ 89	+ 352	+ 253	+ 224	+ 303	+ 275	+ 186	+ 156	+ 212	+ 297	+ 262	+ 235
6 „	+ 208	+ 61	+ 387	+ 281	+ 259	+ 299	+ 304	+ 168	+ 154	+ 189	+ 309	+ 233	+ 238
7 „	+ 213	+ 62	+ 387	+ 265	+ 289	+ 280	+ 363	+ 237	+ 160	+ 174	+ 258	+ 250	+ 245
8 „	+ 235	+ 63	+ 416	+ 297	+ 272	+ 246	+ 395	+ 295	+ 146	+ 226	+ 362	+ 238	+ 266
9 „	+ 273	+ 77	+ 472	+ 353	+ 169	+ 191	+ 285	+ 257	+ 137	+ 258	+ 404	+ 251	+ 261
10 „	+ 253	+ 106	+ 418	+ 286	+ 70	+ 2	+ 199	+ 185	+ 152	+ 221	+ 360	+ 202	+ 204
11 „	+ 300	+ 87	+ 365	+ 217	+ 42	− 44	+ 107	+ 94	+ 153	+ 172	+ 352	+ 269	+ 176
Noon	+ 355	+ 137	+ 335	+ 169	+ 57	− 55	+ 114	+ 49	+ 142	+ 160	+ 392	+ 299	+ 180
1h. p.m.	+ 394	+ 176	+ 290	+ 154	+ 130	− 116	+ 18	+ 67	+ 168	+ 220	+ 426	+ 312	+ 187
2 „	+ 396	+ 245	+ 304	+ 283	+ 94	− 52	+ 144	+ 59	+ 147	+ 248	+ 391	+ 337	+ 216
3 „	+ 348	+ 219	+ 294	+ 300	+ 137	− 40	+ 38	+ 85	+ 177	+ 263	+ 422	+ 362	+ 217
4 „	+ 357	+ 242	+ 219	+ 214	+ 106	+ 24	− 105	+ 31	+ 206	+ 268	+ 465	+ 379	+ 200
5 „	+ 398	+ 251	+ 227	+ 233	+ 236	− 1	− 95	+ 47	+ 153	+ 367	+ 499	+ 393	+ 226
6 „	+ 387	+ 332	+ 350	+ 233	+ 152	+ 204	+ 152	+ 136	+ 201	+ 370	+ 528	+ 371	+ 285
7 „	+ 406	+ 365	+ 356	+ 415	+ 284	+ 198	+ 266	+ 190	+ 220	+ 384	+ 485	+ 379	+ 329
8 „	+ 300	+ 353	+ 466	+ 497	+ 291	+ 221	+ 259	+ 353	+ 295	+ 464	+ 475	+ 408	+ 365
9 „	+ 300	+ 301	+ 489	+ 533	+ 285	+ 386	+ 348	+ 375	+ 360	+ 446	+ 462	+ 400	+ 390
10 „	+ 321	+ 256	+ 453	+ 534	+ 354	+ 321	+ 345	+ 374	+ 325	+ 429	+ 437	+ 424	+ 381
11 „	+ 295	+ 211	+ 470	+ 458	+ 363	+ 269	+ 280	+ 364	+ 292	+ 353	+ 416	+ 406	+ 348
Means -	+ 293	+ 189	+ 387	+ 316	+ 221	+ 164	+ 225	+ 208	+ 194	+ 283	+ 383	+ 311	+ 264
Number of Days employed -	31	28	27	29	30	29	30	31	26	30	29	27	..

MONTHLY MEAN ELECTRICAL POTENTIAL of the ATMOSPHERE, from THOMSON'S ELECTROMETER, on RAINY DAYS, at every HOUR of the DAY.

(The results depend on the Photographic Register, using all days on which the rainfall amounted to or exceeded $0^{in}\cdot020$. The scale employed is arbitrary: the sign + indicates positive potential.)

Hour, Greenwich Mean Solar Time (Civil reckoning).	1883.												Yearly Means.
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
Midnight	+ 146	+ 158	+ 375	− 50	+ 344	− 56	+ 255	+ 262	+ 252	+ 298	+ 368	− 30	+ 193
1h. a.m.	+ 183	+ 90	+ 308	− 43	+ 377	− 50	+ 206	+ 298	+ 28	+ 275	+ 216	+ 56	+ 162
2 „	+ 112	+ 92	+ 318	− 13	+ 388	+ 61	+ 145	+ 106	+ 19	+ 283	+ 57	+ 152	+ 143
3 „	+ 77	+ 43	+ 280	+ 130	+ 391	+ 61	+ 275	+ 270	+ 158	+ 208	+ 114	+ 154	+ 180
4 „	+ 105	+ 22	+ 235	+ 83	+ 146	− 99	+ 305	+ 310	+ 148	+ 171	+ 227	+ 224	+ 156
5 „	+ 175	− 54	− 65	− 2	+ 121	+ 175	+ 135	− 84	+ 155	+ 211	+ 186	+ 260	+ 101
6 „	+ 153	− 74	+ 130	+ 77	+ 146	+ 204	+ 161	− 186	+ 158	+ 175	+ 209	+ 173	+ 111
7 „	+ 141	− 82	+ 237	− 33	+ 259	+ 239	+ 311	+ 188	+ 137	+ 145	+ 96	+ 237	+ 156
8 „	+ 177	− 122	+ 298	0	+ 199	+ 275	+ 414	+ 338	+ 74	+ 235	+ 261	+ 188	+ 195
9 „	+ 205	− 125	+ 317	+ 102	− 127	+ 221	+ 183	+ 318	+ 36	+ 285	+ 330	+ 239	+ 165
10 „	+ 129	− 29	+ 235	+ 158	− 264	− 46	+ 108	+ 178	+ 88	+ 185	+ 319	+ 275	+ 111
11 „	+ 172	+ 15	+ 233	+ 160	− 338	− 165	− 64	− 26	+ 128	+ 112	+ 327	+ 294	+ 71
Noon	+ 275	− 56	+ 192	− 123	− 336	− 285	− 8	+ 154	+ 115	+ 16	+ 348	+ 346	+ 53
1h. p.m.	+ 351	+ 49	+ 193	− 340	− 4	− 653	− 220	+ 130	+ 75	+ 95	+ 358	+ 334	+ 31
2 „	+ 348	+ 79	+ 132	+ 110	− 160	− 291	+ 68	+ 104	+ 35	+ 116	+ 265	+ 358	+ 97
3 „	+ 276	+ 52	− 93	+ 272	+ 47	− 447	− 123	+ 186	+ 88	+ 105	+ 283	+ 364	+ 84
4 „	+ 263	+ 48	− 128	− 103	+ 68	− 199	− 439	+ 184	+ 182	+ 68	+ 399	+ 346	+ 57
5 „	+ 349	+ 125	− 102	− 110	+ 266	− 169	− 403	+ 110	+ 11	+ 297	+ 457	+ 393	+ 102
6 „	+ 300	+ 228	+ 345	+ 48	− 137	+ 101	+ 53	+ 164	+ 202	+ 199	+ 524	+ 391	+ 201
7 „	+ 331	+ 231	+ 120	+ 388	+ 222	− 126	+ 288	− 76	+ 13	+ 212	+ 421	+ 334	+ 197
8 „	+ 224	+ 187	+ 83	+ 482	+ 114	− 149	+ 211	+ 366	+ 137	+ 418	+ 470	+ 389	+ 244
9 „	+ 215	+ 148	+ 122	+ 588	+ 20	+ 313	+ 351	+ 250	+ 287	+ 442	+ 502	+ 410	+ 304
10 „	+ 241	+ 18	+ 125	+ 592	+ 215	+ 157	+ 197	+ 256	+ 241	+ 434	+ 479	+ 441	+ 283
11 „	+ 237	− 27	+ 327	+ 388	+ 259	+ 43	+ 62	+ 314	+ 191	+ 356	+ 434	+ 370	+ 246
Means -	+ 216	+ 42	+ 176	+ 115	+ 92	− 37	+ 103	+ 171	+ 123	+ 223	+ 319	+ 279	+ 152
Number of Days employed -	15	12	6	6	8	8	11	5	10	11	14	8	..

MONTHLY MEAN ELECTRICAL POTENTIAL of the ATMOSPHERE, from THOMSON'S ELECTROMETER, on NON-RAINY DAYS, at every HOUR of the DAY.

(The results depend on the Photographic Register, using only those days on which no rainfall was recorded. The scale employed is arbitrary: the sign + indicates positive potential.)

Hour, Greenwich Mean Solar Time (Civil reckoning).	1883.												Yearly Means.
	January.	February.	March.	April.	May.	June	July.	August.	September.	October.	November.	December.	
Midnight	+ 312	+ 338	+ 473	+ 520	+ 337	+ 394	+ 428	+ 352	+ 316	+ 335	+ 344	+ 485	+ 386
1^h. a.m.	+ 281	+ 298	+ 458	+ 497	+ 334	+ 391	+ 399	+ 296	+ 295	+ 347	+ 356	+ 413	+ 364
2 "	+ 284	+ 285	+ 433	+ 452	+ 307	+ 394	+ 404	+ 256	+ 267	+ 324	+ 383	+ 405	+ 349
3 "	+ 269	+ 250	+ 423	+ 405	+ 289	+ 384	+ 386	+ 226	+ 242	+ 272	+ 383	+ 385	+ 326
4 "	+ 231	+ 225	+ 412	+ 377	+ 265	+ 365	+ 385	+ 228	+ 223	+ 229	+ 376	+ 346	+ 305
5 "	+ 232	+ 185	+ 417	+ 350	+ 279	+ 346	+ 369	+ 243	+ 192	+ 213	+ 401	+ 333	+ 297
6 "	+ 249	+ 146	+ 420	+ 366	+ 321	+ 329	+ 392	+ 259	+ 186	+ 195	+ 420	+ 316	+ 300
7 "	+ 273	+ 158	+ 385	+ 368	+ 314	+ 291	+ 416	+ 264	+ 207	+ 189	+ 409	+ 309	+ 299
8 "	+ 297	+ 197	+ 396	+ 418	+ 307	+ 227	+ 411	+ 305	+ 226	+ 218	+ 449	+ 310	+ 313
9 "	+ 349	+ 239	+ 491	+ 480	+ 286	+ 176	+ 354	+ 308	+ 241	+ 239	+ 514	+ 309	+ 332
10 "	+ 384	+ 223	+ 475	+ 375	+ 207	+ 11	+ 285	+ 261	+ 218	+ 238	+ 453	+ 165	+ 275
11 "	+ 446	+ 259	+ 396	+ 291	+ 204	+ 5	+ 228	+ 177	+ 173	+ 204	+ 446	+ 281	+ 259
Noon	+ 449	+ 273	+ 385	+ 309	+ 226	+ 72	+ 172	+ 111	+ 153	+ 237	+ 547	+ 321	+ 271
1^h. p.m.	+ 455	+ 305	+ 409	+ 309	+ 203	+ 103	+ 164	+ 137	+ 237	+ 284	+ 560	+ 384	+ 296
2 "	+ 470	+ 378	+ 450	+ 338	+ 209	+ 104	+ 202	+ 151	+ 265	+ 311	+ 576	+ 398	+ 321
3 "	+ 429	+ 385	+ 386	+ 286	+ 183	+ 104	+ 135	+ 104	+ 231	+ 352	+ 532	+ 412	+ 295
4 "	+ 464	+ 403	+ 342	+ 261	+ 123	+ 131	+ 83	+ 81	+ 211	+ 381	+ 543	+ 449	+ 289
5 "	+ 467	+ 345	+ 393	+ 313	+ 233	+ 166	+ 73	+ 71	+ 232	+ 401	+ 549	+ 439	+ 307
6 "	+ 506	+ 421	+ 430	+ 335	+ 265	+ 241	+ 235	+ 138	+ 160	+ 469	+ 562	+ 417	+ 348
7 "	+ 542	+ 470	+ 523	+ 442	+ 310	+ 321	+ 290	+ 214	+ 371	+ 487	+ 569	+ 449	+ 416
8 "	+ 515	+ 499	+ 554	+ 511	+ 364	+ 351	+ 338	+ 333	+ 439	+ 495	+ 531	+ 479	+ 451
9 "	+ 505	+ 434	+ 584	+ 509	+ 397	+ 410	+ 440	+ 418	+ 448	+ 462	+ 453	+ 466	+ 461
10 "	+ 508	+ 448	+ 567	+ 498	+ 420	+ 409	+ 527	+ 432	+ 420	+ 449	+ 426	+ 465	+ 464
11 "	+ 469	+ 422	+ 511	+ 524	+ 416	+ 352	+ 425	+ 409	+ 394	+ 371	+ 443	+ 479	+ 435
Means -	+ 391	+ 316	+ 446	+ 397	+ 283	+ 253	+ 314	+ 241	+ 264	+ 321	+ 468	+ 384	+ 340
Number of Days employed -	11	11	10	17	20	16	12	19	12	17	9	11	..

AMOUNT OF RAIN COLLECTED IN EACH MONTH OF THE YEAR 1883.

1883, MONTH.	Number of Rainy Days.	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 Magnetic Observatory.	On the Roof of the Photographic Thermometer Shed.	Gauges partly sunk in the ground.		
		No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.	No. 7.	No. 8.
		in.	in.	in.	in.	in.	in.	in.	in.
January	19	0·890	0·882	1·192	1·364	1·600	1·693	1·643	1·707
February	15	1·656	1·666	2·014	2·328	2·718	2·888	2·798	2·883
March	14	0·316	0·323	0·492	0·587	0·757	0·783	0·704	0·746
April	10	1·296	1·312	1·499	1·564	1·665	1·702	1·641	1·650
May	9	1·187	1·249	1·440	1·521	1·610	1·707	1·602	1·634
June	13	0·978	0·954	1·143	1·242	1·326	1·343	1·211	1·276
July	16	1·422	1·404	1·688	1·818	1·932	1·998	1·811	1·914
August	10	0·347	0·353	0·532	0·612	0·669	0·709	0·626	0·675
September	17	2·607	2·737	3·234	3·566	3·740	3·815	3·678	3·684
October	14	0·870	0·804	1·171	1·406	1·521	1·594	1·492	1·550
November	21	1·633	1·568	2·182	2·404	2·670	2·844	2·743	2·791
December	15	0·366	0·355	0·544	0·663	0·796	0·833	0·784	0·800
Sums	173	13·568	13·607	17·131	19·075	21·004	21·909	20·733	21·310
Height of receiving Surface above the ground.	..	ft. in. 50. 8	ft. in. 50. 8	ft. in. 38. 4	ft. in. 21. 9	ft. in. 10. 0	ft. in. 0. 5	ft. in. 0. 5	ft. in. 0. 5
Height of receiving Surface above mean sea level.	..	ft. in. 205. 6	ft. in. 205. 6	ft. in. 193. 2	ft. in. 176. 7	ft. in. 164. 10	ft. in. 155. 3	ft. in. 155. 3	ft. in. 155. 3

ROYAL OBSERVATORY, GREENWICH.

OBSERVATIONS

OF

LUMINOUS METEORS.

1883.

Month and Day, 1883.	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				s		°	
January 16	10. 1. 0	G.	2	Bluish-white	0·3	None	5	1
„	10. 20. 0	G.	1	Bluish-white	0·6	Slight	10	2
March 3	9. 20. 32	F.	2	Bluish-white	0·5	None	12	3
„	9. 36. 31	F.	1	Yellow	1·0	Slight	15	4
„	10. 2. 50	F.	1	Bluish-white	1·5	Slight	10	5
„	10. 32. 1	F.	2	Bluish-white	1·0	None	10	6
April 25	10. 25. 0	G.	1	Bluish-white	0·5	Slight	15	7
„	10. 30. 0	G.	< 1	Bluish-white	0·8	Fine	10	8
„	10. 40. 0	G.	2	Bluish-white	0·7	Train	7	9
April 30	10. 32. 4	M.	2	Bluish-white	0·5	Slight	12	10
„	10. 38. 19	M.	2	Bluish-white	0·4	None	10	11
„	10. 51. 13	M.	2	Bluish-white	0·5	Slight	10	12
„	10. 54. 8	M.	3	Bluish-white	0·3	None	6	13
August 8	9. 13. 0	G.	1	Bluish-white	1	Train	7	14
„	9. 30. 0	G.	1	Bluish-white	0·7	Train	..	15
„	10. 25. 21	G.	2	Bluish	0·6	Slight	5	16
„	10. 55. 50	G.	Jupiter	Bluish-white	1·5	Splendid	25 to 30	17
„	11. 27. 10	G.	1	Bluish-white	0·8	Fine	10	18
„	11. 30. 5	G.	2	Bluish-white	0·7	Train	..	19
„	11. 32. 20	G.	1	Bluish-white	0·8	Train	7	20
„	11. 40. 0	G.	2	Bluish-white	0·7	None	6	21
August 9	9. 59. 6	M.	2	Bluish-white	0·3	None	7	22
„	10. 15. 35	M.	3	Bluish-white	0·3	None	5	23
„	10. 23. 0	M.	2	Bluish-white	0·5	Slight	8	24
„	10. 36. 17	M.	1	Bluish-white	0·8	Slight	10	25
„	10. 40. 5	H.	1	White	1	Train	10	26
„	10. 47. 21	M.	2	Bluish-white	0·7	Slight	8	27
„	10. 49. 25	H.	2	Bluish-white	0·5	..	2	28
„	10. 53. 56	M.	3	Bluish-white	0·4	None	5	29
„	10. 55. 35	H.	3	Bluish-white	0·4	None	3	30
„	10. 59. 10	H.	3	White	..	None	5	31
„	11. 5. 51	H. & M.	1	Yellow	1·0	Slight	8	32
„	11. 11. 55	H. & M.	2 increasing to > 1.	Bluish-white	2	Train	12	33
„	11. 17. 2	H.	> 1	Bluish-white	2	Fine	20	34
„	11. 20. 3	M.	1	Bluish-white	1·0	Fine	12	35
„	11. 24. 10	H.	3	Bluish-white	..	None	10	36
„	11. 36. 50	H.	3	Bluish-white	0·5	Slight	5	37
„	11. 39. 34	H.	2	Bluish-white	..	None	5	38
„	11. 40. 49	M.	1	Bluish-white	1·5	Very fine (remained visible about $1{\cdot}5^{s}$).	25	39
„	11. 45. 0	H.	2	White	1	Train	10	40
„	11. 51. 43	H.	3	Bluish-white	0·5	None	5	41
„	11. 52. 35	H.	3	Bluish-white	0·5	..	5	42
„	11. 55. 0	H.	3	Bluish-white	0·5	None	3	43
„	11. 55. 0	M.	2	Bluish-white	0·7	Slight	8	44
„	11. 57. 55	H.	> 1	Bluish-white	1	Train	10	45
„	12. 4. 5	H.	1	White	2	Fine	25	46
„	12. 14. 45	H.	2	Bluish-white	0·5	None	3	47
„	12. 15. 19	M.	2	Bluish-white	0·5	None	7	48
„	12. 18. 35	H.	3	Bluish-white	0·5	None	3	49
„	12. 21. 0	H.	1	Yellow	1	Fine	10	50
„	12. 22. 9	M.	1	Bluish-white	0·8	None	10	51
„	12. 24. 35	H.	1	Bluish-white	0·2	Train	3	52
„	12. 26. 15	H.	2	Yellow	0·5	None	..	53
„	12. 29. 25	H.	1	Yellow	0·5	Train	6	54
„	12. 40. 39	M.	1	Yellow	0·8	Slight	12	55

August 8. Clouds very variable between $9\frac{1}{2}^{h}$ and $10\frac{1}{4}^{h}$, afterwards until 11^{h} the sky was generally free from cloud. From 11^{h} until $13^{h}\ 20^{m}$ the amount of cloud was small, but after $11^{h}\ 40^{m}$ no further meteors were seen.

No. for Reference.	Path of Meteor through the Stars.
1	From near α Orionis moved towards γ Orionis.
2	Appeared near Aldebaran, and shot across and disappeared a little below α Ceti.
3	From a few degrees above Aldebaran moved towards γ Persei.
4	From ζ Ursæ Majoris shot across β Canum Venaticorum.
5	From a little above Capella moved towards a point a few degrees above β Persei.
6	From near Pollux moved towards Procyon.
7	From direction of Polaris passed midway between Capella and Castor.
8	Passed between ε and δ Virginis from direction of ζ Boötis.
9	Passed across ε and ρ Boötis.
10	Appeared near δ Draconis and disappeared a little to the right of ι Cephei.
11	From a point near ζ Ursæ Majoris passed across and disappeared beyond β Ursæ Minoris.
12	From a point near β Leonis passed between and disappeared beyond Regulus and η Leonis.
13	From a point near Polaris disappeared a little beyond γ Cephei.
14	From direction of ο Ursæ Majoris passed above μ Ursæ Majoris towards horizon.
15	From direction of ε Cassiopeiæ moved towards α Ursæ Majoris.
16	Passed across ζ Ursæ Majoris towards horizon nearly at right angles to line joining ζ and ε Ursæ Majoris.
17	Appeared near γ Draconis passed across β Herculis towards horizon.
18	From near η Draconis disappeared near α Coronæ.
19	Appeared near β Ursæ Majoris passed between β and γ Boötis moving towards ε Boötis.
20	Shot from a point near β Cassiopeiæ towards α Cygni.
21	From direction of α Lyræ towards α Ophiuchi.
22	From a point midway between β and γ Trianguli disappeared near α Trianguli.
23	From near η Pegasi to β Pegasi.
24	Appeared near β Cassiopeiæ disappeared near δ Cassiopeiæ.
25	Appeared near α Pegasi disappeared near γ Aquarii.
26	From direction of α Persei shot across θ Ursæ Majoris.
27	From a point near β Pegasi to a point near α Pegasi.
28	From β Camelopardali towards β Aurigæ.
29	From near β Pegasi towards μ Pegasi.
30	From a point 2° above β Arietis towards η Piscium.
31	From a point about 3° above γ Pegasi towards α Trianguli.
32	From direction of γ Persei across a point 3° below β Andromedæ.
33	From direction of a point 1° below γ Persei passed midway between γ Andromedæ and β Trianguli, curved path.
34	From λ Draconis passed 2° above η Ursæ Majoris.
35	From direction of β Camelopardali disappeared a few degrees to right of ο Ursæ Majoris.
36	Appeared near ι Ursæ Majoris disappeared 3° below β Ursæ Majoris.
37	From a point 1° above γ Persei towards γ Andromedæ.
38	From direction of α Cassiopeiæ across β Pegasi.
39	Appeared near β Ursæ Minoris passed across and disappeared a little below ε Ursæ Majoris.
40	From γ Andromedæ towards α Trianguli.
41	From direction of α Persei moved from the Pleiades towards horizon.
42	From α Arietis towards β Andromedæ.
43	From direction of α Persei across α Arietis.
44	Appeared near γ Persei disappeared about 4° below γ Andromedæ.
45	From direction of ε Cassiopeiæ across Polaris.
46	Shot across β Persei and ε Arietis.
47	From a point 2° above α Persei towards γ Andromedæ.
48	From direction of α Persei passed across β Persei.
49	From direction of a point about 3° above α Ursæ Majoris across δ Ursæ Majoris.
50	From direction of a point midway between α and γ Pegasi across ψ^2 Aquarii.
51	From direction of Capella moved towards and disappeared near ι Aurigæ.
52	From a point 2° above α Persei moved towards Polaris.
53	From direction of α Persei across ι Aurigæ.
54	From direction of a point 2° above the Pleiades passed across ο Tauri.
55	From direction of α Persei passed across Capella.

Month and Day, 1883.	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				s		°	
August 9	12.41.25	H.	2	. . .	0·5	Train	5	1
”	12.43.25	H.	1	Bluish-white	1	Train	10	2
”	12.46. 5	H.	1	White	1	Train	10	3
”	12.46.23	M.	2	Bluish-white	0·6	None	8	4
”	12.47. 1	M.	1	Bluish-white	0·7	Train	10	5
”	12.47.55	H.	> 1	Yellow	..	None	..	6
”	12.49.25	H.	2	Yellow	0·5	. . .	5	7
”	12.50. 5	H.	2	Bluish-white	0·3	None	5	8
”	12.52.30	M.	> 1	Yellow	1·0	Fine	15	9
”	13. 6. 5	H.	1	Bluish-white	1	Train	10	10
”	13. 6.56	M.	2	Bluish-white	0·5	None	7	11
”	13.11. 5	H.	1	. . .	1	. . .	10	12
”	13.11.54	M.	1	Yellow	0·8	Fine	10	13
”	13.13.56	M.	1	Bluish-white	0·7	Slight	10	14
”	13.21.35	H.	1	White	0·5	Train	5	15
”	13.23.49	M.	2	Bluish-white	0·5	None	8	16
August 10	10.54.35	G.	1	Bluish-white	0·6	Slight	7	17
”	10.55.55	G.	2	Bluish-white	0·7	Train	6	18
”	10.58.25	G.	2	Bluish-white	0·8	Train	12	19
”	11. 5.25	G.	1	Bluish-white	0·7	Slight	10	20
”	11.16. 0	G.	3	Bluish-white	0·4	None	8	21
”	11.18. 5	G.	2	Bluish-white	0·6	Slight	7	22
”	11.20. 0	G.	3	Bluish-white	0·5	Slight	7	23
”	11.30. 5	G.	1	Bluish-white	0·9	Fine	12	24
”	11.31.45	G.	1	Bluish-white	0·7	Train	9	25
”	11.37. 5	G.	3	Bluish-white	0·5	None	6	26
”	11.38.15	G.	2	Bluish-white	0·4	Slight	5	27
”	11.45. 5	H.	1	Bluish-white	0·5	Train	5	28
”	11.46.20	G.	Jupiter	Bluish-white	1·5	Very Fine	45	29
”	11.50. 5	G.	1	Bluish-white	0·8	Fine	30	30
August 11	9.27.21	G.	1	Bluish-white	0·6	Train	25	31
”	9.51.16	G.	2	Bluish-white	0·8	Slight	15	32
”	9.58.34	G.	3	Bluish-white	0·5	Slight	7	33
”	10. 6. 2	G.	3	Bluish-white	0·4	Slight	5	34
”	10. 7.54	M.	2	Bluish-white	0·6	None	10	35
”	10. 9. 6	G.	3	Bluish-white	0·5	Train	6	36
”	10.12.13	M.	2	Bluish-white	0·7	Slight	12	37
”	10.17.43	M.	3	Bluish-white	0·4	None	8	38
”	10.22.28	G.	> 1	Bluish-white	0·6	None	7	39
”	10.59. 8	G.	Jupiter	Bluish-white	0·8	Fine	..	40
”	11. 1. 0	M.	2	Bluish-white	0·8	Train	12	41
”	11. 2.54	M.	1	Bluish-white	0·7	Train	15	42
”	11. 6.36	G.	1	Bluish-white	1·0	Fine	28	43
”	11.11.25	G.	1	Bluish-white	0·6	Slight	20	44
”	11.11.59	M.	2	Bluish-white	0·6	Slight	10	45
”	11.18.16	G.	2	Bluish-white	0·7	Train	20	46
”	11.19.28	M.	1	Bluish-white	1·0	Train	15	47
”	11.22.36	G.	2	Bluish-white	0·7	Train	15	48
”	11.23.14	M.	2	Bluish-white	0·6	None	10	49
”	11.25.34	M.	2	Bluish-white	0·5	None	8	50
”	11.25.59	G.	2	Bluish-white	0·6	Train	8	51
”	11.28.58	G.	1	Bluish-white	0·8	Fine	20	52
”	11.28.58	M.	2	Bluish-white	0·8	Slight	15	53
”	11.32.16	G.	1	Bluish-white	0·8	Fine	15	54
”	11.33.35	M.	2	Bluish-white	0·6	None	10	55
”	11.36.36	G.	2	Bluish-white	0·7	Train	10	56
”	11.38.25	M.	2	Bluish-white	0·5	Slight	10	57
”	11.40.16	G.	1	Bluish-white	0·8	Fine	12	58
”	11.41.23	M.	1	Yellow	0·9	Train	15	59
”	11.47. 0	M.	3	Bluish-white	0.3	None	..	60
”	11.52.56	M.	2	Bluish-white	0·5	Slight	12	61

August 10. After 11^{h} 50^{m} the sky became generally cloudy.

No. for Reference.	Path of Meteor through the Stars.
1	From direction of δ Persei across ι Aurigæ.
2	From direction of κ Draconis passed midway between β and γ Ursæ Majoris.
3	Appeared 1° above β Ursæ Majoris disappeared 2° below γ Ursæ Majoris.
4	From direction of the Pleiades disappeared near Aldebaran.
5	From near Capella disappeared below θ Aurigæ.
6	From direction of a point 2° to left of Pleiades moved towards horizon on the prolongation of a line joining that point and α [Persei.
7	Path similar to that of preceding meteor.
8	From direction of a point midway between α and δ Persei across the Pleiades.
9	From direction of κ Draconis passed midway between β and γ Ursæ Majoris.
10	From direction of a point 1° above α Persei disappeared near β Ursæ Majoris.
11	From direction of ζ Ursæ Majoris disappeared about 3° about δ Ursæ Majoris.
12	From direction of Polaris shot across ι Draconis.
13	From α Ursæ Majoris passed across β Ursæ Majoris.
14	From direction of ε Aurigæ passed midway between β and ν Aurigæ.
15	From direction of γ Persei across β Arietis.
16	From direction of the Pleiades disappeared near Aldebaran.
17	From near β Ursæ Minoris towards η Draconis.
18	Appeared near α Persei and disappeared near β Camelopardali.
19	From a point about midway between β and γ Ursæ Minoris towards β Boötis.
20	From near β Cephei towards γ Draconis.
21	Appeared near δ Ursæ Majoris and disappeared a little above α Canum Venaticorum.
22	From near β Cassiopeiæ towards α Cephei.
23	From near κ Draconis to ι Draconis.
24	Shot from near α Draconis and disappeared at a point between β and γ Boötis.
25	Shot from a point about midway betweeen β and γ Persei towards Polaris.
26	From β Persei towards Aries. Sky too misty to trace stars.
27	A bright meteor. From β Persei towards Aries, but the stars were not visible on account of mist.
28	Appeared near a point about 2° to left of α Aquilæ and passed between α and β Aquilæ.
29	Shot from Polaris and disappeared a little below and to west of α Lyræ.
30	From γ Cygni to α Aquilæ.
31	From near η Ursæ Majoris towards Arcturus.
32	Shot from a point about midway between γ and δ Ursæ Majoris towards α Canum Venaticorum.
33	From near α Andromedæ to a point about midway between α and γ Pegasi.
34	Shot from a point about midway between β and γ Ursæ Majoris and disappeared a little above χ Ursæ Majoris.
35	From direction of ζ Pegasi towards θ Pegasi.
36	From near ι Ursæ Majoris towards ψ Ursæ Majoris.
37	Appeared near α Persei passed across and disappeared beyond δ Persei.
38	Appeared near α Lyræ and moved towards 99 Herculis.
39	Appeared near Capella and disappeared near β Aurigæ.
40	Shot from a point midway between Arcturus and ε Boötis towards horizon.
41	From direction of β Andromedæ moved towards α Arietis.
42	Appeared near α Andromedæ, moved towards and disappeared about 3° to left of γ Pegasi.
43	From near γ Cassiopeiæ to Polaris.
44	Moved from α Sagittæ to 111 Herculis.
45	Appeared near α Ursæ Majoris and disappeared a little beyond β Ursæ Majoris.
46	Moved from a point about midway between α and γ Persei, towards Capella.
47	From direction of α Persei disappeared below ε Persei.
48	From α Andromedæ towards α Pegasi.
49	From direction of β Trianguli moved towards α Arietis.
50	Appeared near α Ursæ Majoris and passed midway between β and γ Ursæ Majoris.
51	Moved from a point about midway between α and β Ursæ Majoris and disappeared at a point about midway between γ and δ [Ursæ Majoris.
52	Shot from β Persei towards the Pleiades.
53	From direction of β Pegasi disappeared about 3° to left of 70 Pegasi.
54	Moved from a point about midway between α and γ Cassiopeiæ towards γ Persei.
55	From direction of β Ursæ Minoris moved towards κ Draconis.
56	Appeared near λ Draconis and disappeared near γ Ursæ Majoris.
57	From near α Persei passed across β Persei.
58	Moved from a point midway between α Andromedæ and γ Pegasi towards a point about 5° to left of α Pegasi.
59	Appeared near ε Cassiopeiæ and disappeared about 2° to the left of γ Persei.
60	From direction of β Cassiopeiæ towards α Cassiopeiæ.
61	Appeared near α Andromedæ and moved towards γ Pegasi.

Month and Day, 1883.		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				s		°	
August	11	11.55.51	G.	2	Bluish-white	0·6	Train	7	1
„		11.56.49	M.	> 1	Bluish-white	1·0	Fine; 2s	20	2
„		11.57.59	G.	1	Bluish-white	0·7	None	10	3
„		11.59. 5	G.	1	Bluish-white	0·6	Train	12	4
„		12. 4.13	M.	1	Bluish-white	0·7	Train	10	5
„		12. 5. 6	G.	1	Bluish-white	0·8	Train	10	6
„		12.23.49	G.	2	Bluish-white	0·6	Slight	10	7
„		12.24.22	M.	2	Bluish-white	0·6	Train	10	8
„		12.26.36	G.	1	Bluish-white	0·7	Fine	7	9
„		12.27.20	M.	2	Bluish-white	0·6	Slight	10	10
„		12.27.41	G.	1	Bluish-white	0·6	None	6	11
„		12.29.11	G.	1	Bluish-white	0·5	Train	5	12
„		12.30. 1	M.	1	Yellow	1·2	Fine	18	13
„		12.32.12	G.	1	Bluish-white	0·8	Fine; 1s	10	14
„		12.36. 1	G.	1	Bluish-white	0·7	Train	7	15
„		12.38.58	G.	1	Bluish-white	0·8	Fine	10	16
„		12.40.22	M.	1	Blue	0·8	Train	12	17
„		12.42.41	G.	1	Bluish-white	0·7	None	15	18
„		12.46.51	M.	2	Bluish-white	0·5	Slight	10	19
„		12.53.24	M.	2	Bluish-white	0·5	None	8	20
„		12.55.26	G.	2	Bluish-white	0·8	Train	..	21
„		12.57. 6	G.	2	Bluish-white	0·7	Train	8	22
„		12.57.11	G.	2	Bluish-white	0·7	None	6	23
„		12.57.58	M.	2	Bluish-white	0·5	None	8	24
„		12.58.12	M.	3	Bluish-white	0·4	None	..	25
„		12.58.40	M.	1	Bluish-white	1·0	Train	15	26
„		13. 2. 1	G.	> 1	Bluish-white	1·5	Splendid; 10° visible for 2s.	25	27
„		13. 4.52	M.	1	Bluish-white	0·8	Fine	12	28
„		13.10. 1	M.	2	Bluish-white	0·5	Slight	8	29
„		13.13.21	G.	1	Bluish-white	0·8	Fine	9	30
„		13.16.20	G.	2	Bluish-white	0·5	None	6	31
„		13.16.20	M.	3	Bluish-white	0·3	None	6	32
„		13.17.59	G.	1	Bluish-white	0·7	Train	15	33
„		13.22.22	G.	2	Bluish-white	0·7	Train	7	34
„		13.22.45	M.	3	Bluish-white	0·5	None	5	35
„		13.25.10	M.	1	Blue	1·0	Fine	25	36
„		13.25.56	G.	2	Bluish-white	0·6	None	7	37
„		13.26.46	G.	2	Bluish-white	0·7	Train	20	38
„		13.29. 8	G.	1	Bluish-white	0·8	Train	15	39
„		13.29.10	M.	2	Bluish-white	0·8	Train	12	40
„		13.35.29	M.	1	Blue	1·3	Fine	20	41
„		13.35.55	G.	2	Bluish-white	0·6	Train	10	42
„		13.37.36	G.	2	Bluish-white	0·7	None	8	43
„		13.38.47	M.	> 1	Bluish-white	1·5	Fine	25	44
„		13.38.59	M.	2	Bluish-white	0·7	Slight	10	45
„		13.39.23	G.	1	Bluish-white	0·8	Train	..	46
August	13	9.45.35	G.	3	Bluish-white	0·6	..	..	47
„		11.29. 5	M.	2	Bluish-white	0·7	..	12	48
„		11.30.51	G.	2	Bluish-white	0·7	Train	14	49
„		11.37.25	M.	3	Bluish-white	0·4	..	8	50
„		11.39.20	H.	2	Bluish-white	0·5	None	10	51
„		11.44.16	H.	3	Bluish-white	0·5	None	5	52
„		11.53. 4	G.	2	Bluish-white	0·6	Slight	8	53
„		11.53.37	M.	2	Bluish-white	0·6	..	10	54
„		11.57.21	M.	3	Bluish-white	0·5	..	8	55
October	6	9. 3.29	N.	> Venus	Brilliant white	3 to 4	Magnificent	60	56
„		9.45. 7	G.	1	Bluish-white	1	Train	8	57
„		10.19.34	G.	1	Bluish-white	0·8	Slight	40	58
„		10.39.37	G.	1	Bluish-white	0·6	Train	10	59

August 11. The meteors were numerous. The observers judged that there were as many more meteors seen as were noted, the paths of which, from the rapidity of their appearance, could not be observed.

No. for Reference.	Path of Meteor through the Stars.
1	From near ο Ursæ Majoris towards β Ursæ Majoris.
2	Appeared near Capella and passed across and disappeared below θ Aurigæ.
3	From near β Persei to α Arietis.
4	Moved from γ Andromedæ and disappeared near α Arietis.
5	From direction of ε Persei passed midway between ο and ζ Persei.
6	From β to γ Ursæ Majoris.
7	From near β Arietis to ε Piscium.
8	From near β Trianguli moved towards α Arietis.
9	Moved from Capella to β Aurigæ.
10	From direction of β Andromedæ passed midway between α and β Trianguli.
11	From β Trianguli to α Arietis.
12	Moved from α to β Persei.
13	Appeared near ε Persei and disappeared near the Pleiades.
14	Moved from a point midway between α and β Trianguli towards γ Pegasi.
15	Moved from about midway between α and γ Ceti towards η Eridani.
16	From α Aquilæ towards 2 Aquilæ.
17	From direction of the Pleiades towards Saturn.
18	From a little below ζ Persei to Saturn.
19	From a point about 2° to right of α Draconis passed midway between ζ and ε Ursæ Majoris.
20	From direction of β Cygni towards 1 Vulpeculæ.
21	From near β Tauri to horizon.
22	From α Persei to γ Andromedæ.
23	From Capella to a little below β Aurigæ.
24	Shot from Capella towards β Aurigæ.
25	From direction of α Persei towards δ Persei.
26	From near the Pleiades passed across Aldebaran.
27	From a point midway between β Andromedæ and α Trianguli towards γ Pegasi.
28	From direction of ζ Ursæ Majoris towards γ Ursæ Majoris.
29	From a point about midway between α and β Ursæ Majoris towards γ Ursæ Majoris.
30	From Aldebaran towards horizon.
31	From a little below γ Ursæ Majoris vertically downwards.
32	From direction of α Pegasi towards ξ Pegasi.
33	From α Andromedæ to α Pegasi.
34	From near β Aquilæ to δ Aquilæ.
35	From near α Lyræ towards κ Lyræ.
36	From near the Pleiades moved towards β Tauri.
37	From α to δ Aquilæ.
38	From γ Draconis to ε Herculis.
39	From near β Trianguli to γ Pegasi.
40	From direction of β Pegasi towards α Pegasi.
41	From direction of α Persei towards Capella.
42	From Aldebaran towards horizon.
43	From δ Persei to Capella.
44	Appeared near β Andromedæ and disappeared near α Arietis.
45	From direction of η Pegasi passed across β Pegasi.
46	Appeared near β Aurigæ and moved towards horizon.
47	From Capella to horizon.
48	From direction of β Ursæ Minoris towards κ Draconis.
49	Moved from direction of β Andromedæ to γ Pegasi.
50	From direction of α Ursæ Majoris towards β Ursæ Majoris.
51	From direction of α Andromedæ passed midway between ε and θ Pegasi.
52	From direction of α Persei moved across α Trianguli.
53	Moved from direction of α Ursæ Majoris towards γ Ursæ Majoris.
54	Appeared near γ Persei and disappeared near δ Persei.
55	From direction of α Trianguli moved towards α Arietis.
56	Approximately from direction of Capella, passing across κ and α Draconis to a cluster of small stars in Hercules. Increased in brilliancy about centre of path.
57	From β Cephei to κ Draconis.
58	From a few degrees above ζ Ursæ Majoris fell towards left, at an inclination of about 40°.
59	Passed about 5° to left of Polaris, moving towards γ Ursæ Minoris.

Month and Day, 1883.	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				s		°	
October 16	9. 47. 42	H.	1	White	1	None	10	1
"	10. 3. 22	H.	2	Yellow	0·5	Slight	5	2
October 22	8. 27. 13	H.	2	Bluish-white	1	Train	10	3
"	8. 43. 13	H.	> 1	Red	2	Train	20	4
October 28	7. 16. ±	H.	> 1	Bluish-white	2	...	30	5
October 29	9. 27. ±	H.	> 1	Bluish-white	3	...	40	6
November 4	10. 11. 5	N.	> Jupiter	Metallic Bluish-white	2	Brilliant	25	7
November 6	11. 47. 30	N.	2 increasing to > 1	Greenish-blue	1·5	Train	12	8
November 13	13. 1. 0	N.	2	White	0·4	...	4	9
"	13. 3. 43	G.	1	Bluish-white	0·6	Train	17	10
"	13. 5. 40	G.	1	Bluish-white	0·7	Fine	10	11
"	13. 28. 7	N.	Saturn	Yellowish	1·5	Train	15	12
"	14. 11. 54	G.	> 1	White	0·9	Fine; 2^{s}	15	13
"	14. 16. 1	G.	1	Bluish-white	1·5	Train	10	14
"	14. 40. 1	G.	> 1	White	1·5	Fine	30	15
"	15. 30. 11	G.	Jupiter × 2	Bluish-white	2	Long and Brilliant; 3^{s}	18	16
"	15. 45. 1	G.	2	White	0·8	...	10	17
November 20	11. 24. ±	H.	2 increasing to Jupiter × 2	White	2	Fine	Length of visible path, 30°	18

No. for Reference.	Path of Meteor through the Stars.
1	From direction of β Cygni shot across ζ Cygni.
2	From direction of α Lyræ passed about 2° below α Aquilæ.
3	From direction of δ Persei shot towards a point about 3° below α Arietis.
4	Passed across a point 2° below Saturn and disappeared about 5° below β Aurigæ.
5	Appeared 30° above and moved towards horizon in prolongation of line joining points 2° to right of α Andromedæ and midway between α and γ Pegasi.
6	Moved from a point about 2° below α Andromedæ and shot across the constellation Cygnus.
7	Passed across β Ceti at angle of 45°. Moving from near θ Ceti [β Ceti near centre of track]. The meteor cast a strong light.
8	Passed nearly midway between δ Ursæ Majoris and β Ursæ Minoris crossing κ and α Draconis. Burst and threw off sparks.
9	Described a short path about 3° to right of Jupiter moving to left at angle of 45°.
10	Appeared near Jupiter moving in direction of Procyon.
11	From direction of Procyon towards Sirius.
12	Passed 5° above γ Geminorum moving directly towards Jupiter.
13	Moved from a point a little below δ Leonis and disappeared a few degrees below Regulus.
14	Shot from near Regulus and disappeared about 10° below, its path being a prolongation of a line joining Regulus and δ Leonis.
15	Shot from a point about midway between Jupiter and Mars moving in direction of Sirius.
16	Appeared near Jupiter and moved towards and disappeared a little below Procyon.
17	Shot downwards from Mars at an angle of about 45° to the right (stars invisible, thin cloud prevalent).
18	Appeared about 2° to left of Aldebaran and shot across η Orionis. The meteor appeared to attain greater velocity after reaching its maximum size. The complete path could not be seen on account of intervening objects.