# RESULTS

OF THE

# MAGNETICAL AND METEOROLOGICAL OBSERVATIONS

MADE AT

# THE ROYAL OBSERVATORY, GREENWICH,

IN THE YEAR

1885:

UNDER THE DIRECTION OF

W. H. M. CHRISTIE, M.A. F.R.S.

ASTRONOMER ROYAL.

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# GREENWICH MAGNETICAL AND METEOROLOGICAL OBSERVATIONS, 1885.

## INTRODUCTION.

### § 1. *Personal Establishment and Arrangements.*

During the year 1885 the establishment of Assistants in the Magnetical and Meteorological Department of the Royal Observatory consisted of William Ellis, Superintendent, and William Carpenter Nash, Assistant, aided usually by four Computers. The names of the Computers employed at different times during the year are, William Hugo, Ernest E. McClellan, Frederick C. Robinson, Edward Finch, Herbert F. Willoughby, Frank Hope, and Frank H. Letchford.

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 are 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 rests on four glass insulators supported by a platform fixed to the western side of the southern arm, near the ceiling. The Standard barometer is suspended near the 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 exposed in the upper room to large variations of temperature, a room known as the Magnet Basement (in which the variations of temperature are very much smaller) was excavated in the year 1864 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. 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, to avoid mutual interference; 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 up with bags packed with straw or jute.

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.

The Dip instrument and Deflexion apparatus are placed in the New Library. Each instrument rests on a heavy slate slab supported by strong wooden framework rising from brick work built into the ground.

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 to the thermometer stand on the north side are several rain gauges. Between the rain gauges and the Magnet House are placed the thermometers for solar and terrestrial radiation; they are laid on short grass, and freely exposed to the sky.

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; No. 7 forms an ante-room and means of approach to the Lassell dome.

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 ground south of the Magnet Offices (known as the South Ground), and on

March 9 the iron supports of the same. On 1883 December 31 the iron work of the dome was brought into the same ground, and on 1884 June 26 the iron gutter of the dome, in 16 pieces, weighing together about 2 tons 6 cwt. 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.

In order to determine the effect of a mass of iron on the magnets, experiments were made on 1884 July 2, with 4, 8, 12, and 16 pieces of the gutter respectively, placed at a distance of 25 feet from the declination magnet in a direction south-east (magnetic) from it, so that the maximum effect would be produced. The following are the results for the deflexions of the Upper Declination magnet:—

| | Mean Deflexion. | |
|---|---|---|
| | ′ | ″ |
| With 4 pieces of the iron gutter - - - | 1 | 4 |
| ,, 8 pieces ,, - - - | 2 | 2 |
| ,, 12 pieces ,, - - - - | 3 | 12 |
| ,, 16 pieces ,, - - - | 3 | 40 |

Each piece weighs nearly 3 cwt.

As the effect of a mass of iron on a magnet varies as the sine of twice its magnetic azimuth divided by the cube of its distance from the magnet, these experiments show that the deflection caused by the whole of the iron in the Lassell instrument and dome (which is at a distance of 100 feet and very nearly in the magnetic meridian of the declination magnet) would be quite insensible.

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 have been made from time to time, 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* 1885.

The observations 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 observations 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; observations of some of the principal meteor showers; general record of ordinary atmospheric changes of weather, including numerical estimation of the amount of cloud, and occasional phenomena.

In previous years the time used throughout the magnetic section was Greenwich astronomical time, reckoning from noon to noon; and generally, in the Meteorological Section, Greenwich civil time, reckoning from midnight to midnight. Commencing with the present year 1885 Greenwich civil time, reckoning from midnight to midnight and counting from 0 to 24 hours, is employed throughout both sections.

## § 4. *Magnetic Instruments.*

UPPER DECLINATION MAGNET AND ITS THEODOLITE.—The upper declination magnet, employed solely for the determination of absolute declination, is by Meyerstein of Göttingen: it is a bar of hard steel, 2 feet long, $1\frac{1}{2}$ inch broad, and about $\frac{1}{4}$ inch thick, attached by two pinching screws to the magnet carrier, also by Meyerstein, but since altered by Troughton and Simms. To a stalk extending upwards from the magnet carrier is attached the torsion circle, which consists of two circular brass discs, one turning independently of 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 externally and internally with gilt paper, and having holes at their south and north ends, for illumination of the magnet-collimator and for viewing the collimator with 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 by two sliding frames fixed by pinching screws to the south and north arms of the magnet respectively. 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 $10\frac{1}{2}$ 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 its continued steadiness.

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 $1^{div}\cdot 3$, 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, 1884 December 11, to be $100^{r}\cdot342$, by ten double observations, 1885 July 31, $100^{r}\cdot307$, and by ten double observations, 1885 December 8, $100^{r}\cdot254$. The value used until June 5 was $100^{r}\cdot350$, and from June 6 to the end of the year $100^{r}\cdot300$.

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 1883 December 12, which showed that in the ordinary position of the glass the theodolite readings were diminished by 18″·9. Other sets of observations, made on 1884 December 11 and 1885 December 8, gave 19″·5 and 18″·4 respectively. The mean of these, 18″·9, has been added to all readings throughout the year 1885.

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 1885 was 26′. 6″·9, being the mean of determinations made on 1881 September 8, 1882 September 12, 1883 December 13, 1884 December 12, and 1885 December 18, giving respectively 26′. 18″·9, 26′. 15″·0, 25′. 53″·5, 26′. 2″·9, and 26′. 4″·3. With the collimator in its usual position, above the magnet, the quantity 26′. 6″·9 has been 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 displacement of the magnet from the meridian by the torsion 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 that amount of azimuthal twist, and observing, with the theodolite, the change in the position of the magnet thereby produced, from which is derived the ratio of the couple due to torsion of the skein to the couple due to the earth's horizontal magnetic force. This ratio was, on 1882 September 13, found to be $\frac{1}{126}$, on 1883 December 12, $\frac{1}{137}$, on 1884 December 12, $\frac{1}{132}$, and on 1885 December 10, $\frac{1}{137}$. During the year 1885 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 30ˢ·78, on 1881 September 9, 31ˢ·30, on 1882 September 14, 31ˢ·20, on 1883 December 13, 31ˢ·15, on 1884 December 11, 31ˢ·17, and on 1885 December 18, 31ˢ·15.

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 or 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 1885 for reduction of the observations of the declination magnet, was until June 5, 27°. 3′. 33″·3, and from June 6 to the end of the year, 27°. 6′. 28″·0.

In regard to the manner of making observations with the upper declination magnet:—The observer on looking into the theodolite telescope sees the image of the diagonal cross of the magnet collimator vibrating alternately right and left. The time of vibration of the magnet being about 30 seconds, he 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 adopted. 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 $9^h. 5^m$, $13^h. 5^m$, $15^h. 5^m$, and $21^h. 5^m$ of Greenwich civil time, reckoning from midnight.

LOWER DECLINATION MAGNET.—The lower declination magnet is used simply for the purpose of obtaining 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, 1½ inch broad, and ¼ 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 a 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 being horizontal, a horizontal cylinder is provided.

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 each 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 held by a slender brass clip, the cylinder thus 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. The cylindrical glass cover as used in former years was employed for the electrometer cylinder until August when a brass clip was applied for holding the sensitized paper in the same way as for the other cylinders. The sheets are removed from the cylinders and fresh sheets supplied every day, usually at noon. On each sheet, 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 light from reaching the photographic paper.

In June 1882 the photographic process employed for so many years 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 acts 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 $11\frac{1}{2}$ inches long and $14\frac{1}{4}$ 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 $0^{in}\cdot3$ long and $0^{in}\cdot01$ 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. The concave mirror can be so adjusted in azimuth on the magnet that the spot 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 on the cylinder in a fixed position, 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 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 admits it 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 admitted again. 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 not strictly followed. 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 has been 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, with the cardboard 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.

From June 30 to July 10 and again from December 2 to 4 the driving chronometer was in the hands of Messrs. E. Dent and Co. for repair.

HORIZONTAL FORCE MAGNET.—The horizontal force magnet, for measure of the variations of horizontal magnetic force, was made by Meyerstein of Göttingen, and like the two declination magnets, is 2 feet long, $1\frac{1}{2}$ inch broad, and about $\frac{1}{4}$ 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 $1^{in}\cdot14$: at the lower pulleys the distance between the branches is $0^{in}\cdot80$. The two branches are not intended to hang in one plane, but are to be so twisted that their torsion 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 marked end to recede towards the south under the influence of torsion. 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 so as to reverse the direction of the torsion 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 poles reversed, which will be proved by the reading of the scale, as seen in the fixed telescope, being the same. We thus obtain two readings of the torsion circle corresponding to the same direction of the magnet axis, but with the marked end opposite ways, without however possessing 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, in addition, the time of vibration be 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 force, in one case increases that due to the torsion, and in the other case diminishes 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, and the times of vibration in both positions of the magnet become the same.

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 of torsion of the suspending lines for which, in either position, the force of terrestrial magnetism is neutralized by the torsion.

The present suspension skein was mounted on 1880 December 30. On 1885 January 1 the following observations were made for determination of the angle of torsion :—

| 1885, 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 |
| Jan. 1 | 145 | 49·54 | | 21·16 | 229 | 48·22 | | 20·64 |
| | | | 9·20 | | | | 8·05 | |
| | 146 | 58·74 | | 21·02 | 230 | 56·27 | | 20·78 |
| | | | 7·26 | | | | 7·66 | |
| | 147 | 66·00 | | 20·78 | 231 | 63·93 | | 20·98 |

From these observations it appeared that the times of vibration and scale readings were sensibly the same when the torsion circle read 146°. 25′, marked end west, and 230°. 43′, marked end east, the difference being 84°. 18′. Half this difference, or 42°. 9′, is therefore the angle of torsion when the magnet is transverse to the meridian. The value similarly found from another set of observations made on 1886 January 1 was 42°. 11′·5. The value adopted in the reduction of the observations during the year 1885 was 42°. 10′.

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 $30^{div}·85$ 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 0·002364, which value has been used throughout the year 1885 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 $9^h$, $13^h$, $15^h$, and $21^h$ of Greenwich civil time (reckoning from midnight). 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 prearranged 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 $9^h$, $10^h$, $11^h$, $12^h$, $13^h$, $14^h$, $15^h$, and $21^h$, Greenwich civil time. An index correction of $-0^\circ\cdot3$, has been applied to all readings.

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°. 10′ the movement of the spot of light on the cylinder for a change of 0·01 of horizontal force is thus found to be 2·478 inches, and with this unit the cardboard scale for measure of the ordinates 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 between January 3 and February 21 of the year 1868 on the principle mentioned, in temperatures ranging from 48°·2 to 61°·5, 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 an apparent change of ·000174 of the whole horizontal force, a smaller number of observations made with the marked end of the magnet east, in temperatures ranging from 49°·0 to 60°·9, indicating that a change of 1° of temperature produced an apparent 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 an apparent decrease of ·00018 of horizontal force.

In July and December photographic registration was interrupted owing to failure of the driving chronometer as mentioned on page *xiv*.

VERTICAL FORCE MAGNET.—The vertical force magnet, for measure of the variations of vertical magnetic force, is by Troughton and Simms. It is 1 ft. 6 ins. long and lozenge shaped, being broad at the centre and pointed at the ends; it 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 vertical plane through 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 adjustable 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 adjustable 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 49 observations made during the course of the year this was found to be $18^{s}\cdot589$.

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, so as to be seen, by reflexion, in the fixed telescope. The magnet is observed only when swinging through a small arc. Observations made in the way described on 1884 December 30 gave for the time of vibration of the magnet in the horizontal plane, $17^{s}\cdot027$. This value has been used throughout the year 1885.

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″·2, or the angular movement of the normal to the mirror, corresponding to a change of one division of scale reading, is 3′. 35″·6.

But the angular movement of the normal to the mirror is equal to the angular movement of the magnet multiplied by the sine of the angle which the plane of the mirror makes with a vertical plane through the magnet. This angle, as already stated, is $52\frac{3}{4}°$, therefore dividing the result just obtained, 3′. 35″·6, by Sin. $52\frac{3}{4}°$, the angular motion of the magnet corresponding to a change of one division of scale reading is found to be 4′. 30″·9.

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. Assuming $T' = 17^{s}\cdot027$, $T = 18^{s}\cdot589$, and dip = 67°. 28′, the change of vertical force corresponding to change of one division of scale reading was found to be 0·0004572, and this value has been used throughout the year 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.

As in the case of the horizontal force magnet a thermometer is provided whose bulb projects into the interior of the magnet box. Readings are taken usually at $9^{h}$, $10^{h}$, $11^{h}$, $12^{h}$, $13^{h}$, $14^{h}$, $15^{h}$, and $21^{h}$, Greenwich civil time. An index correction of −0°·3, has been applied to all readings.

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 the variations of the barometer are also registered on it. 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 falling on 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 on the lower part of the sheet to avoid interference with the barometer trace. 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, 5·757 inches, and with this unit the scale for measure of the ordinates was constructed for use throughout the year. Base line values were then determined, and written on the sheets, and new base lines laid down, from which the hourly ordinates (see page *xxviii*) were 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 between October 17 and 23, 1882 in a similar manner to those for the horizontal force magnet (page *xix*), and in temperatures ranging from 59°·3 to 64°·9 it appeared that an increase of 1° of temperature (Fahrenheit) produced an apparent increase of 0·00020 of vertical force, a value which succeeding experiments have closely confirmed. 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.

From January 1 to 19 the driving chronometer was in the hands of Messrs. E. Dent and Co. for cleaning and repair.

DIP INSTRUMENT.—The instrument with which the observations of magnetic dip are made is that which is known as Airy's instrument. It is mounted in the New Library on a slate slab supported by a braced wooden stand built up from the ground independently of the floor. 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, turn on a horizontal axis so as to follow the points of the needles in the different positions which in observation they take up. The needle pivots rest on agate bearings. 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 by means of which the position of the needle points is noted. And on the inner side of the front glass plate is etched the graduated circle, $9\frac{3}{4}$ inches in diameter, divided to 10′, and read by two verniers to 10″. The verniers (thin plates of metal, with notches instead of lines, for use with transmitted light) are carried by the horizontal axis, inside the front glass plate, their reading lenses, attached to the same axis, being outside. A suitable clamp with slow motion is provided. The microscopes and verniers can be 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 a 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 adjusted in level from time to time. 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 of arc.

Observations are made only in the plane of the magnetic meridian, and the following is a description of the method of proceeding. The needle to be used is first magnetised by double touch, giving it nine strokes on each of its sides: it is then placed in position in the instrument, the microscope scale readings are taken, and the verniers of the vertical graduated circle are read: the readings of the level parallel to the plane of this circle are also read. The instrument is then reversed in azimuth and a second observation made. The needle pivots are then reversed on the agate bearings, and two observations in reversed positions of the instrument again made. The needle is then removed from the instrument and remagnetised so as to reverse the direction of its poles, and four more observations are made in the way just described. The mean of the eight partial values of dip thus found, corrected for error of level, gives the final value of dip which appears in the printed results.

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 $D_2$. Needle $B_2$ was taken away by Mr. Dover on February 2 to fit a new axis; it was returned on February 6.

DEFLEXION INSTRUMENT.—The observations of deflexion of a magnet in combination with observations of vibration of the deflecting magnet, for determination of the absolute measure of horizontal magnetic force, 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. It is mounted in the New Library on a slate slab in the same way as the Dip instrument.

The deflected magnet, used 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 deflexion 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″.

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 these 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 inductive action of unit magnetic force in the English system of absolute measurement $= \mu = 0·00015587$.

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

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

The distance on the deflexion rod from $1^{ft}·0$ east to $1^{ft}·0$ west of the engraved scale, at temperature 62°, is too long by 0·0034 inch, and the distance from $1^{ft}·3$ east to $1^{ft}·3$ west is too long by 0·0053 inch. The coefficient of expansion of the scale for 1° is ·00001.

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° = 0·66727.

Let $m =$ Magnetic moment of deflecting or vibrating magnet.

$X =$ Horizontal component of Earth's magnetic force.

Then, if in the two deflexion observations, $r_1$, $r_2$ be the apparent distances of centre of deflecting magnet from deflected magnet, corrected for scale error and temperature (about 1·0 and 1·3 foot).

$u_1$, $u_2$ the observed angles of deflexion.

$$A_1 = \tfrac{1}{2} r_1^3 \sin. u_1 \left\{1 + \frac{2\mu}{r_1^3} + c\right\}$$

$$A_2 = \tfrac{1}{2} r_2^3 \sin. u_2 \left\{1 + \frac{2\mu}{r_2^3} + c\right\}$$

$$P = \frac{A_1 - A_2}{\frac{A_1}{r_1^2} - \frac{A_2}{r_2^2}} A_2$$ [P being a constant depending on the distribution of magnetism in the deflecting and deflected magnets],

we have :—

$$\frac{m}{X} = A_1 \left(1 - \frac{P}{r_1^2}\right), \text{ from observation at distance } r_1.$$

$$\frac{m}{X} = A_2 \left(1 - \frac{P}{r_2^2}\right), \text{ from observation at distance } r_2.$$

The mean of these is adopted as the true value of $\frac{m}{X}$.

In calculating the value of $P$ as well as the values of the four factors within brackets, the distances $r_1$ and $r_2$ are taken as being equal to 1·0 ft. and 1·3 ft. respectively.

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, $\frac{H}{F}$ = ratio of the couple due to torsion of the suspending thread to the couple due to the Earth's magnetic force. [This is obtained from the formula $\frac{H}{F} = \frac{\theta}{90^\circ - \theta}$, where $\theta$ = the angle through which the magnet is deflected by a twist of 90° in the thread.]

$$\text{Then } T^2 = T_1^2 \left\{ 1 + \frac{H}{F} + \mu \frac{X}{m} - c \right\}$$

$$\text{and } mX = \frac{\pi^2 K}{T^2}.$$

The adopted time of vibration is the mean of 100 vibrations observed immediately before, and of 100 vibrations 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 $\alpha$ times the millimètre, and the grain equal to $\beta$ times the milligramme, then for reduction to metric measure $\frac{m}{X}$ and $mX$ must be multiplied by $\alpha^3$ 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 which are special and used for no other purpose 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 $2\frac{1}{2}$ 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 $7\frac{1}{2}$ 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 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 surfaces facing opposite ways, each towards the mirror of its respective galvanometer. In each case the light of a gas lamp, passing through a vertical slit and a cylindrical lens having its axis vertical, 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 civil day, commencing at midnight.

*d* 2

Before the photographic records of magnetic declination, horizontal force, and vertical force are discussed, they are divided into two groups, one including all days on which the traces show no particular disturbance, and which therefore are suitable for the determination of diurnal inequality; the other comprising days of unusual and violent disturbance, when the traces are so irregular that it appears 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 4 days in the year 1885 which have been classed as days of great disturbance. These are March 15–16, May 13–14, 25–26, and June 24–25. Other days of lesser disturbance are January 22–23, February 5–6, 12–13, May 10, 26–27, 27–28, 28–29, June 25–26, July 17–18, August 1–2, 27–28, 28–29, September 4–5, 15–16, 16–17, 22–23, 23–24, November 10–11, 11–12, and December 7–8. When two days are mentioned it is to be understood that the reference is to one set of photographic sheets extending usually from noon to noon, including the last half and the first half of two consecutive civil days.

Separating the 4 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 civil 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. In the formation of diurnal inequalities it is unimportant whether a day omitted be a complete civil day, or the parts of two successive civil days making together a whole day, although in the latter case the results are not available for daily values. The omissions actually made in forming Tables II., V., and IX., on account of disturbed days, are the days commencing March 15, $12^h$, May 13, $0^h$, May 25, $12^h$, and June 25, $0^h$; the omissions in Tables I., III., and VII. for the same reason are March 15, 16, May 13, 25, 26, and June 25. 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 considered desirable 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 $(t-32) \times \cdot 00018$, where $t$ is the temperature in degrees Fahrenheit, and to those of vertical force, Tables VII. and IX., the correction $-(t-32) \times \cdot 00020$. 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 adjustment, or that for some reason 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

$$\text{H. F. in metrical measure} \times \sin 1' = 1\cdot 8156 \times \sin 1' = 0\cdot 0005281.$$

For variation of horizontal force, the factor is

$$\text{H. F. in metrical measure} = 1\cdot 8156,$$

and for variation of vertical force

$$\text{V. F. in metrical measure} = \text{H. F. in metrical measure} \times \tan \text{dip},$$
$$= 1\cdot 8156 \times \tan 67^{\circ}.28 = 4\cdot 3760.$$

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

Table XIII. exhibits 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 being corrected for temperature, The first portion of Table XIV. contains the difference between the greatest and least hourly mean values in each month, for declination, horizontal force, and vertical force, as extracted from Table II., and columns $c$ of Tables V. and IX. In the second portion of the table there are given for each month the numerical sums of the deviations of the 24 hourly values from the mean, taken without regard to sign.

The magnetic diurnal inequalities of declination, horizontal force, and vertical force, for each month and for the year, have been treated by the method of harmonic analysis, and the results are given on the concluding pages of Tables XV. and XVI. The values of the coefficients contained in Table XV. have been thus computed, 0 representing the value at $0^h$ (midnight), 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 $\alpha$ 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 $c_2$, $\beta$, &c.

Finally, the values of the angles $\alpha'$, $\beta'$, &c. were thus found. Calling the Sun's hour angle east at mean midnight $= h$, then—

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

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:—

| 1885. | $a_5$. | $b_5$. |
|---|---|---|
| Declination | −0′·10 | −0′·06 |
| Horizontal Force | +1·0 | −1·5 |
| Vertical Force | +1·0 | −0·3 |

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 (xiv), corresponding to the single terms of the expressions on page (xvii), 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 1885. | Declination. | Horizontal Force. | Vertical Force. |
|---|---|---|---|
| | ′ | | |
| Sums of Squares of Observed Values (Table XII) | 308·91 | 311649·8 | 23549·5 |
| Sums of Squares of Residuals after the introduction of $m$ | 147·03 | 50127·8 | 4027·0 |
| " " $a_1$ and $b_1$ | 46·57 | 15958·5 | 1997·5 |
| " " $a_2$ and $b_2$ | 9·20 | 3540·5 | 360·8 |
| " " $a_3$ and $b_3$ | 1·20 | 583·2 | 44·2 |
| " " $a_4$ and $b_4$ | 0·30 | 46·6 | 16·3 |
| " " $a_5$ and $b_5$ | 0·14 | 7·2 | 3·5 |

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 $a_4$, $b_4$.

In the corresponding tables in 1883 and 1884 the reference is to the astronomical day commencing at noon. But civil reckoning counting from midnight to midnight having been introduced throughout the magnetical and meteorological section in the present year 1885, it has been considered desirable to reprint the values for 1883 and 1884 with such transformation as would convert them into values referring to the civil day. Such values are given in the first and second pages of Tables XV. and XVI. respectively.

As regards Magnetic Dip, the result of each complete 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 was formerly the custom to measure out for each element all salient points of the curves and to print the numerical values. But, since the year 1882, it has been considered preferable to give instead of these tables reduced copies of the actual photographic curves (reproduced by photo-lithography 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 1885, affording thereby, it is hoped, facilities for making comparison with solar phenomena.

In regard to the plates, it may be remarked that on each day five distinct registers are usually 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 (xxix). No attempt has yet 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.

An additional plate (XI.) exhibits the registers of declination, horizontal force, and vertical force on four quiet days, which may be taken as types of the ordinary diurnal movement at four seasons of the year. These are given for the civil day as exhibiting more clearly the character of the diurnal movement. The earth currents on these days are very small.

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 *xxii* for vertical force, will show the effect produced. Briefly, an increase of $5\frac{1}{2}°$ 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. | Of 0·01 of Horizontal Force. | Of 0·01 of Vertical Force. |
| | in. | in. | in. |
| On the Photographs - | 4·691 | 2·478 | 5·757 |
| On the Plates - | 2·580 | 1·363 | 3·166 |

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 units for horizontal force and vertical force are ·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 = ·0175 of Horizontal Force

and Vertical Force = Horizontal Force × tan. dip [dip = 67°. 28′]
= Horizontal Force × 2·4102

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. | For Horizontal Force Curve. | For Vertical Force Curve. |
| in. | in. | in. |
| 1·47 | 1·36 | 1·31 |

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 1885 | = 3·9376 |
| Millimètre-milligramme-second, or | Metric unit, " " " | = 1·8156 |
| Centimètre-gramme-second, or | C. G. S. unit, " " " | = 0·18156 |

Dividing therefore the scale values last given by 3·9376, 1·8156, and 0·18156 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. | Horizontal Force. | Vertical Force. |
| | in. | in. | in. |
| British - - | 0·37 | 0·35 | 0·33 |
| Metric - - | 0·81 | 0·75 | 0·72 |
| C. G. S. - - | 8·1 | 7·5 | 7·2 |

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. Further, to check the numeration of hours, the observer interrupts the register at definite times for about five minutes, usually at or near $9^h. 30^m$, $14^h. 30^m$, and $20^h. 30^m$ Greenwich civil time, 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 $10^h$, as on August $29^d. 10^h$. Explanation in regard to other accidental interruptions will be found on page (xxix).

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 two 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 a comparison was again made with the same three barometers, from which it appeared that the readings of the standard, in its new state, required a correction of $-0^{in}\cdot006$, all three auxiliary barometers giving accordant results. This correction has been applied to every observation since 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 $9^h$, $12^h$ (noon), $15^h$, $21^h$ (civil 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 siphon 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, and that of the intermediate portion 0·3 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 = $4^{in}\cdot39$ 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 the diurnal change of temperature in the basement is very small, no appreciable differential effect is produced on the photographic register by the expansion of the column of mercury.

From January 1 to 19 the driving chronometer was in the hands of Messrs. E. Dent and Co. for the purpose of cleaning and repair.

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 and 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 several times during the day (whether cloudy or clear) so as to keep the inclined side always towards the sun. In 1878 September, a circular table 3 feet in diameter was fixed, below the frame, round the supporting post, at a height of 2 feet 6 inches above the ground, with the object of protecting the thermometers from radiation from the ground.

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. The correction $-0^{\circ}\cdot2$ has been applied to dry bulb readings, and $-0^{\circ}\cdot1$ to wet bulb readings 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 a correction of $-0^{\circ}\cdot9$ has been applied, and to those of No. 4386, for minimum temperature of the air, a correction of $-0^{\circ}\cdot3$ until March 6, and a correction of $-0^{\circ}\cdot2$ after that date. The readings of No. 44285 for maximum temperature of evaporation, and those of No. 3627 for minimum temperature of evaporation required until March 6, corrections of $-0^{\circ}\cdot5$ and $+1^{\circ}\cdot6$ respectively, and after that date corrections of $-0^{\circ}\cdot4$ and $+1^{\circ}\cdot9$ respectively.

The dry and wet bulb thermometers are usually read at $9^h$, $12^h$ (noon), $15^h$, $21^h$ (civil reckoning). Readings of the maximum and minimum thermometers are usually taken at $9^h$ and $21^h$. 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. The 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 shines through the tube above the mercury, and forms a well-defined line of light upon the paper. 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.

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, corresponding alterations 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, but no corrections have been applied.

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 $9^h$ (civil 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 (xxxii) in which the highest and lowest readings recorded each morning at $9^h$ are entered to the same civil day. The observations are made by Mr. G. Philcox, Clerk of the Market. The Royal Observatory authorities are however not responsible for the accuracy of the observations.

OSLER'S ANEMOMETER. — This self-registering anemometer, devised by A. Follett Osler, for continuous registration of the direction and pressure of the wind and of the amount of rain, is fixed above the north-western turret of the ancient part of the Observatory. For the 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 (with its plane vertical) having an area of $1\frac{1}{3}$ square feet, or 192 square inches, which, moving with the vane in azimuth, 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 $1\frac{1}{3}$ square feet, was introduced.] A short flexible snake chain, fixed to a cross bar in connexion with the pressure plate, and passing over a pulley in the upper part of the shaft is attached to a brass chain (formerly a copper wire) running down the centre of the shaft to the registering table, just before reaching which the chain communicates with a short length of silk cord, which, led round a pulley, gives horizontal motion to the arm carrying the pressure pencil. The substitution of the flexible brass chain for the copper wire 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. On June 7 the snake chain broke; it was renewed on June 12; and from October 22 to November 3 the driving clock was under repair, during which period, although no continuous register of pressure could be obtained, the greatest and least pressures and the general direction of the wind could still be recorded.

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 the same as that of the magnetic registers.

ROBINSON'S ANEMOMETER.—This instrument is constructed on the principle described by the late Dr. Robinson in the *Transactions of the Royal Irish Academy*, Vol. XXII. for registration of the horizontal movement of the air, is mounted above the small building on the roof of the Octagon Room. 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 revolving hemispherical cups are 56 feet above the adjacent ground, and 211 feet above the mean level of the sea.

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 the same as that of Osler's Anemometer and of 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 and for previous years. 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 1885 eight rain-gauges were employed, placed at different elevations above the ground, complete information in regard to which will be found at page (lxxix) 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 (200 square inches in area). 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 siphon. A vertical copper tube, open at both ends, is fixed in the receiver, with one end just projecting below the bottom. Over this tube a larger tube, closed at the top, is loosely placed. 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 siphon 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 at $9^h$ Greenwich civil time.

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 at $9^h$ G. C. T.

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. The positions of these gauges were slightly shifted on April 1, 1884. No 6 is read daily usually at $9^h$, $15^h$ and $21^h$ G. C. T., and Nos. 7 and 8 at $9^h$ only.

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 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 diminished 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.

Sir William Thomson's water-dropping apparatus is used to collect the atmospheric electricity. 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

*f* 2

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, (about ten feet above the ground), having a very small hole, through which the water passes and breaks almost immediately into drops. The cistern is thus brought to the same electrical potential as that of the atmosphere, near the nozzle, and this potential is communicated by means of a connecting wire 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.

In the latter part of the month of September the indications of the instrument became unsatisfactory, the cause of which was not at first discovered. After various examinations it was ultimately found on October 15 that the southern thread of the bifilar system was too long. This was corrected and the indications at once assumed their normal condition. The values of electrical potential given during the month of September may probably be to some extent doubtful.

The scale of time is the same as that of the magnetic registers.

Interruptions sometimes occur through cobwebs making connexion between the cistern or its pipe and the walls of the building, and, in winter, from the occasional freezing of the water in the exit pipe.

SUNSHINE INSTRUMENT.—This instrument, contrived by the late Mr. J. F. Campbell, and presented by him to the Royal Observatory, consists of a 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 where 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 for each hour (reckoning from *apparent* midnight) 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, or 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 $9^h$, $15^h$, and $21^h$ are collected respectively at $15^h$, $21^h$, and $9^h$, 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 $9^h$, the values registered at $15^h$ and $21^h$, and one-fourth of that registered at the following $9^h$, 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 on a scale of 0 to 30. The means of the $9^h$, $15^h$, and $21^h$ values, as observed, are also given for each month in the foot notes.

## § 7. *Meteorological Reductions.*

The results given in the Meteorological section refer 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 $9^h$ and $21^h$ (civil 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. 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. 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. In measuring the electrometer ordinates a scale of inches is used, and the values given in the tables which follow are expressed in thousandths of an inch, positive and negative potential being denoted by positive and negative numbers respectively.

To correct the photographic indications of barometer and dry and wet bulb thermometers for small instrumental error, the means of the photographic readings at $9^h$, $12^h$ (noon), $15^h$, and $21^h$ 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 temperature and degree of humidity in each month (pages (lxi) and (lxii)) have been calculated from the corresponding mean hourly values of air and evaporation temperatures (pages (lx) and (lxi)).

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 $9^h$, $15^h$, and $21^h$ G. C. T. The continuous record of Osler's self-registering gauge shows whether the amounts measured at $9^h$ 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 $9^h$ 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 (lix) and (lxxix), is formed from the records of this gauge. In this numeration only those days are counted on which the fall amounted to or exceeded $0^{in}$·005.

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 (lix), is the mean found from observations made usually at $9^h$, $12^h$ (noon), $15^h$, and $21^h$, of each civil 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 $6^h$, and those following it to the interval from $6^h$ 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* | oc-shs | denotes | *occasional showers* |
| fq-r | ... | *frequent rain* | s | ... | *stratus* |
| hy-r | ... | *heavy rain* | sc | ... | *scud* |
| c-hy-r | ... | *continued heavy rain* | li-sc | ... | *light scud* |
| m-r | ... | *misty rain* | sl | ... | *sleet* |
| fq-m-r | ... | *frequent misty rain* | sn | ... | *snow* |
| oc-m-r | ... | *occasional misty rain* | oc-sn | ... | *occasional snow* |
| oc-r | ... | *occasional rain* | slt-sn | ... | *slight snow* |
| sh-r | ... | *shower of rain* | so-ha | ... | *solar halo* |
| shs-r | ... | *showers of rain* | sq | ... | *squall* |
| slt-r | ... | *slight rain* | sqs | ... | *squalls* |
| oc-slt-r | ... | *occasional slight rain* | fq-sqs | ... | *frequent squalls* |
| th-r | ... | *thin rain* | hy-sqs | ... | *heavy squalls* |
| fq-th-r | ... | *frequent thin rain* | fq-hy-sqs | ... | *frequent heavy squalls* |
| oc-th-r | ... | *occasional thin rain* | oc-sqs | ... | *occasional squalls* |
| hy-sh | ... | *heavy shower* | t | ... | *thunder* |
| slt-sh | ... | *slight shower* | t-sm | ... | *thunder storm* |
| fq-shs | ... | *frequent showers* | th-cl | ... | *thin clouds* |
| hy-shs | ... | *heavy showers* | v | ... | *variable* |
| fq-hy-shs | ... | *frequent heavy showers* | vv | ... | *very variable* |
| oc-hy-shs | ... | *occasional heavy showers* | w | ... | *wind* |
| li-shs | ... | *light showers* | st-w | ... | *strong wind* |

The following is the notation employed for Electricity:—

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

The duplication of the letter denotes intensity of the modification described, thus, ss, is very strong; vv, 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 1841–1884.

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 (lx) and (lxi), do not in some cases agree with the true monthly means given in the daily results, pages (xxxii) to (liv), and in the table on page (lix), 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 (lxviii), exhibits every change of direction of the wind occurring throughout the year whenever such change amounted to two nautical points or $22\frac{1}{2}°$. 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 $11\frac{1}{4}°$. From the numbers given in this table the monthly and yearly excess of motion, page (lxxiii), 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 $0^{in}\cdot020$, 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 (lxxvii) and (lxxviii) 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 1885 were Mr. Nash, Mr. McClellan, Mr. Finch, Mr. Hope, and Mr. Letchford; their observations are distinguished by the initials N, M, F, H, and L respectively.

Royal Observatory, Greenwich,
1887, April 11.

W. H. M. CHRISTIE.

ROYAL OBSERVATORY, GREENWICH.

# RESULTS

OF

# MAGNETICAL OBSERVATIONS

(EXCLUDING THE DAYS OF GREAT MAGNETIC DISTURBANCE).

1885.

## TABLE I.—MEAN MAGNETIC DECLINATION WEST FOR EACH CIVIL DAY.

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

1885.

| Day of Month. | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 18° | 18° | 18° | 18° | 18° | 18° | 18° | 18° | 17° | 17° | 17° | 17° |
| d | ′ | ′ | ′ | ′ | ′ | ′ | ′ | ′ | ′ | ′ | ′ | ′ |
| 1 | 4·8 | 4·5 | 3·8 | 3·6 | 3·4 | 2·2 | .. | 2·3 | 61·7 | 59·4 | 60·2 | .. |
| 2 | 5·6 | 4·2 | 4·3 | 3·0 | 3·5 | 1·4 | .. | 1·6 | 61·9 | 59·7 | 60·0 | .. |
| 3 | 4·5 | 4·6 | 3·8 | 4·0 | 2·8 | 3·1 | .. | 1·3 | 61·3 | 59·7 | 60·2 | .. |
| 4 | 4·6 | 5·0 | 4·1 | 3·1 | 2·7 | 2·4 | .. | 1·9 | 59·5 | 59·6 | 59·9 | .. |
| 5 | 4·7 | 4·7 | 3·7 | 3·0 | 2·2 | .. | .. | 1·4 | 59·4 | 59·5 | 60·4 | 59·2 |
| 6 | 5·5 | 3·9 | 3·0 | 3·3 | 1·7 | .. | .. | 1·4 | 60·2 | 59·1 | 60·0 | 58·6 |
| 7 | 5·0 | 4·5 | 4·4 | 2·9 | 2·1 | 1·6 | .. | 2·1 | 60·3 | 60·3 | 60·0 | 58·5 |
| 8 | 4·6 | 4·3 | 3·9 | 3·5 | 2·4 | 1·3 | .. | 1·0 | 60·7 | 60·4 | 59·8 | 56·6 |
| 9 | 3·3 | 4·8 | 4·5 | 2·9 | 2·9 | 1·7 | .. | 2·0 | 60·1 | 59·8 | 59·6 | 57·2 |
| 10 | 5·1 | 5·7 | 3·1 | 2·8 | 2·8 | 2·0 | .. | 1·0 | 60·2 | 59·5 | 60·6 | 57·8 |
| 11 | 5·0 | 3·2 | 2·9 | 3·2 | 3·0 | 2·4 | 1·4 | 2·1 | 60·4 | 59·3 | 60·7 | 57·7 |
| 12 | 5·6 | 3·0 | 4·0 | 3·2 | 3·1 | 2·1 | 1·7 | 1·3 | 60·8 | 58·5 | 60·2 | 57·5 |
| 13 | 5·2 | 4·2 | 5·1 | 4·3 | .. | 2·1 | 2·9 | 1·8 | 60·4 | 59·8 | 59·1 | 57·1 |
| 14 | 5·1 | 4·2 | 4·9 | 2·2 | 3·3 | 2·4 | 1·9 | 1·6 | 60·8 | 60·3 | 58·4 | 56·7 |
| 15 | 5·1 | 4·3 | .. | 2·1 | 2·4 | 1·4 | 2·5 | 1·9 | 60·2 | 59·7 | 58·5 | 56·4 |
| 16 | 4·8 | 3·7 | .. | 2·8 | 1·9 | 2·5 | 1·6 | 1·6 | 61·2 | 59·5 | 58·7 | 56·5 |
| 17 | 4·6 | 4·3 | 2·6 | 2·9 | 2·3 | 2·0 | 0·8 | 0·6 | 60·9 | 58·8 | 59·4 | 57·1 |
| 18 | 4·6 | 4·3 | 4·4 | 2·3 | 2·8 | 1·9 | 1·1 | 1·4 | 60·7 | 58·8 | 60·5 | 57·0 |
| 19 | 5·1 | 4·3 | 3·7 | 3·4 | 2·3 | 1·4 | 1·3 | 0·6 | 60·6 | 59·0 | 59·8 | 57·8 |
| 20 | 4·6 | 4·5 | 2·9 | 2·9 | 2·7 | 2·4 | 0·9 | 0·8 | 60·2 | 59·0 | 59·4 | 57·5 |
| 21 | 4·7 | 5·4 | 1·3 | 3·9 | 2·2 | 1·7 | 1·1 | 1·6 | 60·9 | 58·9 | 59·6 | 56·7 |
| 22 | 4·3 | 3·6 | 3·5 | 3·2 | 2·5 | 0·3 | 2·0 | 1·4 | 61·0 | 60·4 | 60·2 | 56·3 |
| 23 | 5·5 | 4·5 | 4·6 | 2·5 | 2·9 | 0·6 | 1·4 | 1·0 | 59·8 | 58·9 | 60·6 | 57·5 |
| 24 | 4·3 | 4·1 | 3·1 | 2·7 | 3·7 | 1·5 | 1·8 | 1·4 | 59·3 | 58·8 | 59·7 | 58·0 |
| 25 | 5·0 | 4·1 | 2·7 | 2·5 | .. | .. | 1·3 | 1·3 | 60·2 | 59·3 | 59·3 | 57·9 |
| 26 | 4·4 | 3·7 | 3·4 | 3·4 | .. | 2·6 | 1·2 | 0·9 | 61·3 | 59·0 | 59·7 | 57·7 |
| 27 | 4·6 | 4·9 | 4·4 | 4·8 | 3·0 | 1·7 | 0·4 | 1·5 | 61·1 | 59·2 | 59·3 | 57·6 |
| 28 | 5·1 | 3·3 | 4·2 | 3·8 | 3·2 | 2·1 | 2·3 | 2·5 | .. | 58·9 | 59·1 | 58·9 |
| 29 | 3·7 | | 4·2 | 2·3 | 2·3 | .. | 0·7 | 2·8 | .. | 59·0 | 59·0 | 57·4 |
| 30 | 5·3 | | 3·9 | 2·7 | 1·3 | .. | 1·1 | 2·2 | 60·0 | 59·5 | 58·3 | 57·3 |
| 31 | 4·4 | | 3·9 | | 2·1 | | 1·4 | 1·7 | | 59·0 | | 56·0 |

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

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

1885.

| Hour, Greenwich Civil Time. | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ′ | ′ | ′ | ′ | ′ | ′ | ′ | ′ | ′ | ′ | ′ | ′ |
| Midn. | 0·4 | 0·1 | 1·3 | 2·9 | 3·3 | 3·4 | 3·8 | 2·5 | 0·0 | 0·1 | 0·4 | 0·5 |
| 1h | 0·6 | 0·0 | 1·4 | 2·8 | 2·9 | 3·0 | 3·6 | 2·4 | 0·4 | 0·2 | 0·7 | 1·1 |
| 2 | 1·1 | 0·6 | 1·4 | 2·6 | 2·9 | 2·9 | 3·3 | 2·2 | 0·6 | 0·7 | 1·1 | 1·3 |
| 3 | 1·9 | 0·6 | 1·9 | 2·4 | 2·6 | 2·9 | 3·1 | 2·0 | 0·5 | 0·9 | 1·6 | 1·8 |
| 4 | 1·9 | 0·7 | 1·8 | 2·1 | 1·9 | 2·4 | 2·2 | 1·4 | 0·5 | 0·9 | 1·6 | 2·3 |
| 5 | 2·0 | 0·5 | 1·6 | 2·0 | 1·1 | 0·8 | 0·9 | 1·0 | 0·9 | 1·1 | 1·8 | 2·3 |
| 6 | 2·0 | 0·6 | 1·9 | 1·9 | 0·6 | 0·0 | 0·0 | 0·3 | 0·7 | 1·2 | 1·8 | 2·3 |
| 7 | 1·8 | 0·9 | 1·7 | 0·9 | 0·0 | 0·0 | 0·0 | 0·0 | 0·6 | 1·0 | 1·6 | 2·2 |
| 8 | 1·5 | 1·0 | 0·4 | 0·0 | 0·1 | 0·3 | 0·6 | 0·7 | 0·4 | 0·3 | 1·3 | 1·7 |
| 9 | 1·4 | 1·0 | 0·0 | 0·4 | 1·6 | 1·5 | 1·7 | 2·6 | 1·4 | 0·0 | 1·2 | 1·6 |
| 10 | 2·2 | 1·9 | 1·5 | 2·4 | 4·1 | 3·9 | 4·2 | 5·2 | 3·8 | 1·2 | 2·0 | 2·2 |
| 11 | 3·4 | 3·7 | 4·6 | 5·4 | 7·3 | 6·9 | 7·4 | 8·2 | 6·6 | 3·5 | 3·8 | 2·8 |
| Noon | 4·6 | 5·4 | 7·7 | 9·0 | 9·8 | 9·8 | 10·4 | 10·4 | 8·8 | 5·8 | 5·2 | 3·8 |
| 13h | 6·0 | 6·0 | 9·3 | 11·2 | 11·0 | 11·5 | 11·5 | 11·4 | 9·6 | 7·3 | 5·9 | 4·5 |
| 14 | 5·2 | 5·4 | 9·5 | 10·7 | 10·6 | 11·7 | 11·7 | 10·5 | 9·2 | 7·3 | 5·5 | 4·1 |
| 15 | 4·2 | 4·2 | 8·3 | 8·9 | 9·3 | 10·4 | 10·5 | 8·8 | 7·2 | 6·4 | 4·7 | 3·0 |
| 16 | 3·6 | 3·1 | 6·4 | 7·3 | 7·6 | 8·9 | 9·0 | 6·7 | 5·3 | 4·7 | 3·7 | 2·8 |
| 17 | 3·3 | 2·7 | 5·1 | 5·8 | 5·8 | 7·3 | 7·1 | 4·9 | 3·8 | 3·5 | 2·9 | 2·0 |
| 18 | 2·9 | 2·7 | 4·3 | 4·7 | 4·6 | 6·0 | 5·8 | 3·9 | 2·7 | 2·8 | 2·2 | 1·5 |
| 19 | 2·5 | 1·8 | 3·4 | 4·0 | 4·0 | 5·2 | 5·3 | 4·0 | 1·5 | 1·6 | 1·7 | 1·4 |
| 20 | 1·6 | 0·8 | 3·1 | 3·6 | 3·7 | 5·1 | 5·3 | 3·6 | 0·6 | 0·8 | 1·0 | 0·6 |
| 21 | 0·8 | 0·7 | 2·3 | 3·5 | 3·4 | 4·6 | 5·2 | 3·0 | 1·3 | 0·3 | 0·4 | 0·3 |
| 22 | 0·1 | 0·6 | 1·5 | 3·2 | 3·3 | 4·3 | 4·8 | 3·2 | 1·1 | 0·3 | 0·0 | 0·0 |
| 23 | 0·0 | 0·3 | 1·6 | 3·0 | 3·2 | 4·0 | 4·2 | 3·0 | 0·6 | 0·3 | 0·2 | 0·0 |
| Means | 2·29′ | 1·89′ | 3·42′ | 4·20′ | 4·36′ | 4·87′ | 5·07′ | 4·25′ | 2·84′ | 2·17′ | 2·18′ | 1·92′ |

### TABLE III.—MEAN HORIZONTAL MAGNETIC FORCE (diminished by a Constant) FOR EACH CIVIL 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.)*

1885.

| Day of Month. | January. | | February. | | March. | | April. | | May. | | June. | | July. | | August. | | September. | | October. | | November. | | December. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d | *u* | *c* | *u* | *c* | *u* | *c* | *u* | *c* | *u* | *c* | *u* | *c* | *u* | *c* | *u* | *c* | *u* | *c* | *u* | *c* | *u* | *c* | *u* | *c* |
| 1 | .. | .. | 607 | 588 | 553 | 565 | 612 | 592 | 636 | 665 | 648 | 707 | .. | .. | 605 | 784 | 702 | 779 | 788 | 823 | 773 | 765 | 830 | 861 |
| 2 | 560 | 434 | 590 | 583 | 549 | 540 | 530 | 559 | 684 | 701 | 627 | 701 | .. | .. | 570 | 724 | 719 | 794 | 770 | 818 | 802 | 815 | .. | .. |
| 3 | 561 | 426 | 575 | 580 | 617 | 581 | 474 | 493 | 669 | 672 | 648 | 733 | .. | .. | 583 | 730 | 753 | 862 | 769 | 822 | 855 | 885 | .. | .. |
| 4 | 547 | 475 | 582 | 581 | 747 | 665 | 489 | 488 | 669 | 691 | 630 | 754 | .. | .. | 635 | 772 | 765 | 887 | 763 | 792 | 854 | 894 | .. | .. |
| 5 | 578 | 553 | 547 | 527 | 757 | 673 | 554 | 508 | 638 | 656 | .. | .. | .. | .. | 636 | 797 | 690 | 798 | 820 | 843 | 877 | 875 | 812 | 802 |
| 6 | 572 | 536 | 540 | 524 | 750 | 658 | 614 | 576 | 677 | 663 | .. | .. | .. | .. | 701 | 854 | 757 | 861 | 831 | 835 | 850 | 817 | 705 | 689 |
| 7 | 538 | 508 | 604 | 603 | 675 | 641 | 613 | 585 | 682 | 651 | 652 | 772 | .. | .. | 672 | 825 | 804 | 917 | 822 | 845 | 808 | 829 | 658 | 653 |
| 8 | 518 | 482 | 563 | 562 | 672 | 615 | 547 | 524 | 655 | 631 | 702 | 831 | .. | .. | 618 | 763 | 802 | 910 | 818 | 817 | 762 | 742 | 640 | 622 |
| 9 | 469 | 432 | 563 | 553 | 681 | 634 | 502 | 513 | 651 | 657 | 749 | 843 | .. | .. | 656 | 813 | 728 | 831 | 808 | 807 | 797 | 807 | 688 | 639 |
| 10 | 556 | 537 | 573 | 548 | 698 | 619 | 505 | 532 | 629 | 666 | 795 | 855 | .. | .. | 650 | 817 | 653 | 743 | 817 | 817 | 715 | 730 | 733 | 679 |
| 11 | 522 | 496 | 682 | 623 | 801 | 646 | 540 | 577 | 545 | 563 | 735 | 750 | 710 | 851 | 654 | 802 | 679 | 764 | 827 | 814 | 662 | 676 | 750 | 681 |
| 12 | 528 | 479 | 636 | 600 | 770 | 634 | 533 | 571 | 560 | 569 | 732 | 770 | 702 | 860 | 645 | 783 | 712 | 784 | 755 | 746 | 685 | 693 | 808 | 730 |
| 13 | 531 | 479 | 449 | 532 | 588 | 581 | 528 | 559 | .. | .. | 719 | 793 | 730 | 856 | 660 | 785 | 700 | 793 | 730 | 750 | 767 | 767 | 870 | 797 |
| 14 | 551 | 495 | 470 | 551 | 556 | 579 | 530 | 561 | 419 | 446 | 668 | 758 | 693 | 801 | 643 | 742 | 760 | 866 | 763 | 765 | 763 | 779 | 855 | 827 |
| 15 | 552 | 519 | 577 | 613 | .. | .. | 499 | 543 | 524 | 553 | 720 | 813 | 697 | 815 | 661 | 763 | 683 | 816 | 764 | 779 | 758 | 739 | 798 | 799 |
| 16 | 542 | 512 | 588 | 649 | .. | .. | 523 | 569 | 519 | 554 | 690 | 770 | 702 | 831 | 643 | 761 | 556 | 681 | 763 | 815 | 738 | 732 | 765 | 768 |
| 17 | 546 | 512 | 582 | 621 | 628 | 512 | 574 | 606 | 534 | 587 | 695 | 766 | 689 | 823 | 626 | 754 | 619 | 726 | 847 | 864 | 742 | 718 | 815 | 826 |
| 18 | 508 | 480 | 574 | 567 | 589 | 546 | 576 | 608 | 544 | 595 | 722 | 776 | 711 | 842 | 635 | 787 | 640 | 735 | 826 | 843 | 637 | 625 | 806 | 817 |
| 19 | 518 | 486 | 588 | 539 | 573 | 539 | 556 | 628 | 604 | 614 | 717 | 788 | 677 | 821 | 660 | 775 | 672 | 755 | 875 | 874 | 640 | 638 | 792 | 773 |
| 20 | 519 | 482 | 730 | 617 | 703 | 593 | 567 | 616 | 639 | 674 | 710 | 784 | 702 | 868 | 672 | 779 | 719 | 782 | 820 | 835 | 681 | 698 | 787 | 769 |
| 21 | 561 | 488 | 691 | 572 | 658 | 524 | 561 | 586 | 569 | 604 | 728 | 776 | 700 | 874 | 678 | 802 | 784 | 873 | 815 | 834 | 682 | 694 | 805 | 809 |
| 22 | 434 | 348 | 552 | 502 | 716 | 548 | 588 | 632 | 618 | 688 | 687 | 743 | 661 | 831 | 695 | 808 | 741 | 820 | 835 | 850 | 738 | 728 | 784 | 798 |
| 23 | 439 | 369 | 613 | 594 | 646 | 588 | 636 | 678 | 667 | 725 | 676 | 757 | 642 | 783 | 679 | 786 | 695 | 795 | 787 | 803 | 775 | 755 | 770 | 755 |
| 24 | 480 | 409 | 629 | 635 | 606 | 560 | 671 | 677 | 661 | 700 | 723 | 828 | 669 | 820 | 691 | 811 | 691 | 765 | 793 | 801 | 740 | 743 | 753 | 726 |
| 25 | 516 | 436 | 719 | 686 | 721 | 563 | 637 | 655 | .. | .. | .. | .. | 638 | 803 | 715 | 844 | 679 | 713 | 780 | 768 | 760 | 758 | 767 | 749 |
| 26 | 549 | 493 | 752 | 687 | 771 | 609 | 686 | 690 | .. | .. | 574 | 650 | 591 | 803 | 700 | 826 | 705 | 709 | 806 | 818 | 754 | 788 | 772 | 776 |
| 27 | 570 | 547 | 707 | 664 | 677 | 615 | 645 | 673 | 611 | 682 | 618 | 680 | 589 | 821 | 747 | 868 | 642 | 623 | 755 | 784 | 791 | 811 | 793 | 771 |
| 28 | 569 | 550 | 612 | 629 | 664 | 612 | 548 | 588 | 581 | 663 | 690 | 763 | 610 | 807 | 700 | 807 | .. | .. | 772 | 772 | 815 | 834 | 819 | 786 |
| 29 | 613 | 604 | | | 654 | 584 | 592 | 634 | 597 | 683 | .. | .. | 562 | 742 | 654 | 748 | .. | .. | 773 | 782 | 833 | 843 | 738 | 713 |
| 30 | 511 | 509 | | | 651 | 596 | 652 | 671 | 600 | 666 | .. | .. | 579 | 749 | 661 | 745 | 813 | 866 | 735 | 732 | 860 | 898 | 782 | 745 |
| 31 | 583 | 566 | | | 653 | 602 | | | 660 | 716 | | | 619 | 786 | 708 | 791 | | | 796 | 790 | | | 827 | 826 |

At the end of the year experiments were made for determination of the angle of torsion, thus 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 Civil Day.

1885.

| Day of Month. | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d 1 | ° .. | 58°·74 | 60°·45 | 58°·63 | 61°·42 | 63°·07 | ° .. | 69°·72 | 64°·07 | 61°·71 | 59°·34 | 61°·49 |
| 2 | 52·77 | 59·39 | 59·31 | 61·39 | 60·74 | 63·91 | .. | 68·35 | 63·95 | 62·46 | 60·52 | .. |
| 3 | 52·26 | 60·07 | 57·76 | 60·83 | 59·94 | 64·49 | .. | 67·95 | 65·83 | 62·69 | 61·45 | .. |
| 4 | 55·79 | 59·70 | 55·21 | 59·74 | 61·01 | 66·63 | .. | 67·39 | 66·54 | 61·39 | 61·99 | .. |
| 5 | 58·40 | 58·64 | 55·12 | 57·23 | 60·79 | .. | .. | 68·74 | 65·76 | 61·04 | 59·66 | 59·24 |
| 6 | 57·79 | 58·88 | 54·64 | 57·67 | 59·01 | .. | .. | 68·28 | 65·57 | 59·99 | 57·93 | 58·89 |
| 7 | 58·09 | 59·69 | 57·88 | 58·24 | 58·04 | 66·47 | .. | 68·27 | 66·04 | 61·05 | 60·97 | 59·49 |
| 8 | 57·81 | 59·69 | 56·61 | 58·50 | 58·44 | 66·95 | .. | 67·83 | 65·76 | 59·74 | 58·65 | 58·80 |
| 9 | 57·75 | 59·20 | 57·16 | 60·40 | 60·11 | 64·98 | .. | 68·52 | 65·50 | 59·75 | 60·33 | 57·06 |
| 10 | 58·70 | 58·42 | 55·42 | 61·29 | 61·83 | 63·09 | .. | 69·04 | 64·78 | 59·79 | 60·59 | 56·80 |
| 11 | 58·33 | 56·51 | 51·14 | 61·87 | 60·80 | 60·59 | 67·60 | 67·98 | 64·51 | 59·06 | 60·57 | 55·94 |
| 12 | 57·05 | 57·80 | 52·19 | 61·89 | 60·29 | 61·91 | 68·57 | 67·45 | 63·82 | 59·30 | 60·18 | 55·43 |
| 13 | 56·92 | 64·42 | 59·41 | 61·49 | .. | 63·90 | 66·78 | 66·74 | 64·95 | 60·92 | 59·81 | 55·71 |
| 14 | 56·66 | 64·31 | 61·05 | 61·51 | 61·31 | 64·80 | 65·82 | 65·27 | 65·65 | 59·89 | 60·65 | 58·21 |
| 15 | 57·94 | 61·76 | .. | 62·24 | 61·41 | 64·95 | 66·36 | 65·46 | 67·14 | 60·59 | 58·70 | 59·86 |
| 16 | 58·08 | 63·14 | .. | 62·35 | 61·69 | 64·21 | 66·93 | 66·33 | 66·75 | 62·63 | 59·47 | 59·96 |
| 17 | 57·91 | 61·93 | 53·34 | 61·55 | 62·74 | 63·69 | 67·20 | 66·91 | 65·73 | 60·72 | 58·46 | 60·41 |
| 18 | 58·21 | 59·41 | 57·38 | 61·55 | 62·62 | 62·80 | 67·04 | 68·25 | 65·05 | 60·69 | 59·10 | 60·39 |
| 19 | 58·00 | 57·04 | 57·90 | 63·79 | 60·34 | 63·71 | 67·77 | 66·14 | 64·39 | 59·73 | 59·64 | 58·69 |
| 20 | 57·69 | 53·51 | 53·66 | 62·49 | 61·68 | 63·92 | 69·00 | 65·72 | 63·29 | 60·60 | 60·75 | 58·82 |
| 21 | 55·74 | 53·15 | 52·35 | 61·16 | 61·70 | 62·43 | 69·46 | 66·64 | 64·72 | 60·86 | 60·44 | 60·00 |
| 22 | 55·00 | 57·02 | 50·47 | 62·18 | 63·67 | 62·92 | 69·25 | 66·06 | 64·13 | 60·59 | 59·24 | 60·55 |
| 23 | 55·90 | 58·70 | 56·53 | 62·09 | 62·99 | 64·29 | 67·58 | 65·75 | 65·37 | 60·66 | 58·66 | 58·96 |
| 24 | 55·84 | 60·08 | 57·21 | 60·10 | 61·96 | 65·59 | 68·16 | 66·45 | 63·90 | 60·20 | 59·93 | 58·30 |
| 25 | 55·36 | 57·94 | 51·00 | 60·82 | .. | .. | 68·94 | 66·93 | 61·64 | 59·09 | 59·66 | 58·76 |
| 26 | 56·65 | 56·16 | 50·82 | 60·01 | .. | 63·98 | 71·57 | 66·79 | 60·01 | 60·44 | 61·66 | 60·01 |
| 27 | 58·50 | 57·39 | 56·35 | 61·36 | 63·69 | 63·25 | 72·65 | 66·52 | 58·75 | 61·42 | 60·90 | 58·55 |
| 28 | 58·71 | 60·69 | 56·89 | 61·99 | 64·34 | 63·87 | 70·73 | 65·69 | .. | 59·79 | 60·85 | 57·94 |
| 29 | 59·27 | | 55·88 | 62·11 | 64·53 | .. | 69·79 | 65·01 | .. | 60·28 | 60·35 | 58·39 |
| 30 | 59·66 | | 56·71 | 60·83 | 63·44 | .. | 69·25 | 64·45 | 62·68 | 59·59 | 61·91 | 57·75 |
| 31 | 58·86 | | 56·94 | | 62·89 | | 69·07 | 64·38 | | 59·46 | | 59·75 |
| Means | 57°·19 | 59°·05 | 55°·75 | 60°·91 | 61°·55 | 64°·02 | 68°·55 | 66°·94 | 64°·51 | 60°·52 | 60°·08 | 58°·72 |

From February 12 to March 27 the basement was alternately heated and cooled several times for determination of the temperature co-efficients of the horizontal force and vertical force magnets.

## 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.)*

1885.

| Hour, Greenwich Civil 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* |
| Midn. | 63 | 71 | 21 | 29 | 96 | 108 | 168 | 183 | 140 | 152 | 174 | 187 | 190 | 209 | 194 | 211 | 201 | 211 | 169 | 174 | 71 | 76 | 22 | 30 |
| 1h | 69 | 76 | 13 | 20 | 93 | 103 | 167 | 181 | 147 | 158 | 167 | 178 | 177 | 193 | 192 | 207 | 186 | 195 | 161 | 165 | 70 | 74 | 24 | 31 |
| 2 | 71 | 77 | 19 | 25 | 94 | 103 | 159 | 171 | 142 | 151 | 162 | 172 | 168 | 182 | 182 | 195 | 175 | 183 | 160 | 164 | 70 | 74 | 29 | 35 |
| 3 | 79 | 84 | 30 | 35 | 96 | 103 | 165 | 175 | 138 | 146 | 163 | 171 | 160 | 172 | 174 | 185 | 173 | 180 | 168 | 171 | 80 | 83 | 31 | 36 |
| 4 | 86 | 90 | 36 | 40 | 111 | 116 | 170 | 178 | 134 | 141 | 166 | 172 | 152 | 162 | 171 | 180 | 178 | 184 | 177 | 180 | 91 | 93 | 39 | 43 |
| 5 | 93 | 96 | 51 | 54 | 119 | 123 | 170 | 176 | 117 | 122 | 151 | 156 | 139 | 146 | 164 | 171 | 191 | 196 | 184 | 186 | 105 | 107 | 56 | 59 |
| 6 | 104 | 106 | 57 | 58 | 129 | 131 | 174 | 178 | 95 | 99 | 111 | 114 | 115 | 120 | 135 | 141 | 181 | 185 | 188 | 190 | 116 | 117 | 63 | 65 |
| 7 | 96 | 97 | 55 | 55 | 125 | 125 | 160 | 162 | 60 | 63 | 68 | 69 | 75 | 78 | 88 | 92 | 136 | 138 | 172 | 173 | 108 | 108 | 69 | 71 |
| 8 | 83 | 83 | 42 | 41 | 93 | 92 | 122 | 122 | 29 | 30 | 36 | 36 | 33 | 33 | 39 | 41 | 79 | 80 | 138 | 139 | 88 | 88 | 56 | 57 |
| 9 | 49 | 48 | 23 | 21 | 44 | 41 | 62 | 60 | 12 | 12 | 12 | 10 | 7 | 5 | 0 | 0 | 15 | 15 | 79 | 79 | 44 | 43 | 31 | 31 |
| 10 | 20 | 20 | 2 | 1 | 5 | 3 | 17 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 11 | 0 | 0 | 19 | 19 | 9 | 8 | 13 | 14 |
| 11 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 11 | 12 | 26 | 27 | 10 | 11 | 43 | 46 | 28 | 29 | 0 | 0 | 0 | 0 | 0 | 0 |
| Noon | 6 | 6 | 0 | 1 | 28 | 31 | 31 | 33 | 27 | 30 | 87 | 90 | 62 | 66 | 94 | 99 | 73 | 75 | 22 | 23 | 4 | 5 | 9 | 10 |
| 13h | 44 | 46 | 25 | 28 | 69 | 72 | 74 | 78 | 65 | 71 | 133 | 138 | 109 | 115 | 149 | 157 | 137 | 140 | 58 | 61 | 34 | 37 | 27 | 30 |
| 14 | 66 | 69 | 42 | 47 | 99 | 105 | 109 | 117 | 110 | 118 | 168 | 175 | 163 | 172 | 175 | 185 | 155 | 161 | 100 | 104 | 59 | 64 | 27 | 31 |
| 15 | 69 | 74 | 39 | 45 | 108 | 117 | 154 | 165 | 141 | 150 | 197 | 207 | 203 | 215 | 199 | 212 | 156 | 164 | 111 | 116 | 61 | 67 | 26 | 31 |
| 16 | 74 | 80 | 17 | 24 | 102 | 112 | 172 | 185 | 172 | 182 | 235 | 246 | 210 | 224 | 208 | 223 | 174 | 183 | 111 | 116 | 55 | 61 | 30 | 36 |
| 17 | 73 | 80 | 9 | 17 | 91 | 102 | 189 | 203 | 209 | 220 | 250 | 263 | 218 | 234 | 207 | 223 | 196 | 206 | 121 | 126 | 52 | 58 | 14 | 21 |
| 18 | 62 | 70 | 17 | 25 | 101 | 114 | 180 | 196 | 226 | 239 | 263 | 277 | 234 | 253 | 220 | 238 | 194 | 204 | 133 | 139 | 67 | 73 | 14 | 21 |
| 19 | 52 | 61 | 33 | 42 | 109 | 123 | 185 | 203 | 218 | 232 | 273 | 288 | 236 | 257 | 236 | 255 | 191 | 202 | 147 | 153 | 67 | 73 | 20 | 28 |
| 20 | 44 | 54 | 17 | 27 | 113 | 128 | 184 | 203 | 204 | 219 | 263 | 280 | 237 | 260 | 234 | 255 | 191 | 203 | 152 | 158 | 63 | 69 | 17 | 26 |
| 21 | 37 | 48 | 9 | 20 | 124 | 140 | 177 | 198 | 184 | 200 | 235 | 253 | 229 | 254 | 223 | 245 | 185 | 198 | 148 | 154 | 61 | 67 | 8 | 18 |
| 22 | 41 | 51 | 11 | 21 | 116 | 131 | 167 | 186 | 173 | 188 | 210 | 226 | 217 | 240 | 215 | 235 | 194 | 206 | 161 | 167 | 65 | 71 | 4 | 13 |
| 23 | 54 | 63 | 16 | 25 | 106 | 119 | 164 | 181 | 156 | 169 | 201 | 216 | 199 | 220 | 208 | 226 | 195 | 206 | 171 | 176 | 69 | 74 | 16 | 24 |
| Means corrected for Temperature | 64·6 | | 29·2 | | 97·6 | | 147·9 | | 129·3 | | 164·6 | | 159·2 | | 168·0 | | 156·0 | | 130·5 | | 66·2 | | 31·7 | |

## 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.

1885.

| Hour, Greenwich Civil Time. | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. | For the Year. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| h | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° |
| 9 | 57·01 | 58·81 | 55·40 | 60·50 | 61·32 | 63·61 | 68·04 | 66·49 | 64·31 | 60·41 | 59·89 | 58·57 | 61·20 |
| 10 | 57·03 | 58·83 | 55·45 | 60·54 | 61·32 | 63·71 | 68·14 | 66·56 | 64·31 | 60·42 | 59·92 | 58·61 | 61·24 |
| 11 | 57·04 | 58·85 | 55·53 | 60·61 | 61·37 | 63·80 | 68·25 | 66·66 | 64·33 | 60·42 | 59·93 | 58·57 | 61·28 |
| Noon | 57·07 | 58·96 | 55·68 | 60·70 | 61·47 | 63·92 | 68·38 | 66·78 | 64·40 | 60·46 | 60·00 | 58·62 | 61·37 |
| 13h | 57·14 | 59·06 | 55·69 | 60·85 | 61·58 | 63·99 | 68·50 | 66·93 | 64·45 | 60·54 | 60·11 | 58·69 | 61·46 |
| 14 | 57·23 | 59·13 | 55·88 | 61·04 | 61·69 | 64·12 | 68·65 | 67·06 | 64·58 | 60·60 | 60·21 | 58·77 | 61·58 |
| 15 | 57·33 | 59·23 | 56·05 | 61·23 | 61·82 | 64·27 | 68·87 | 67·23 | 64·70 | 60·64 | 60·28 | 58·84 | 61·71 |
| 21 | 57·67 | 59·51 | 56·45 | 61·80 | 62·17 | 64·72 | 69·55 | 67·75 | 65·01 | 60·68 | 60·29 | 59·09 | 62·06 |

## TABLE VII.—MEAN VERTICAL MAGNETIC FORCE (diminished by a Constant) FOR EACH CIVIL 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.)*

1885.

| 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 | .. | .. | 609 | 565 | 613 | 574 | 511 | 479 | 567 | 492 | 620 | 502 | 619 | 486 | 662 | 408 | 507 | 366 | 445 | 345 | 335 | 304 | 344 | 272 |
| 2 | .. | .. | 610 | 556 | 582 | 562 | 559 | 484 | 554 | 487 | 620 | 485 | 611 | 468 | 630 | 401 | 497 | 357 | 446 | 336 | 343 | 293 | 324 | 281 |
| 3 | .. | .. | 632 | 561 | 558 | 568 | 558 | 499 | 532 | 473 | 627 | 477 | 628 | 470 | 623 | 404 | 530 | 355 | 448 | 329 | 350 | 288 | 314 | 267 |
| 4 | .. | .. | 627 | 566 | 507 | 541 | 528 | 481 | 538 | 461 | 665 | 476 | 624 | 459 | 607 | 397 | 539 | 357 | 451 | 360 | 365 | 290 | 306 | 266 |
| 5 | .. | .. | 602 | 564 | 493 | 533 | 470 | 453 | 546 | 483 | 678 | 469 | 648 | 464 | 616 | 383 | 528 | 356 | 397 | 312 | 344 | 314 | 287 | 258 |
| 6 | .. | .. | 581 | 539 | 482 | 531 | 460 | 429 | 532 | 486 | 700 | 510 | 670 | 480 | 621 | 394 | 544 | 367 | 381 | 314 | 308 | 307 | 295 | 267 |
| 7 | .. | .. | 588 | 532 | 536 | 538 | 474 | 435 | 506 | 477 | 670 | 491 | 678 | 486 | 630 | 404 | 538 | 351 | 396 | 309 | 341 | 280 | 288 | 251 |
| 8 | .. | .. | 609 | 550 | 520 | 545 | 479 | 438 | 497 | 469 | 682 | 502 | 653 | 470 | 616 | 405 | 559 | 383 | 383 | 324 | 324 | 298 | 280 | 256 |
| 9 | .. | .. | 586 | 568 | 503 | 518 | 514 | 451 | 494 | 433 | 656 | 513 | 640 | 483 | 610 | 390 | 552 | 384 | 374 | 315 | 327 | 268 | 241 | 248 |
| 10 | .. | .. | 565 | 548 | 473 | 527 | 524 | 444 | 520 | 422 | 617 | 498 | 638 | 471 | 611 | 380 | 533 | 377 | 367 | 309 | 348 | 288 | 224 | 230 |
| 11 | .. | .. | 523 | 531 | 376 | 495 | 531 | 435 | 575 | 487 | 583 | 512 | 663 | 456 | 620 | 405 | 527 | 376 | 362 | 314 | 373 | 314 | 202 | 231 |
| 12 | .. | .. | 544 | 516 | 399 | 485 | 548 | 447 | 519 | 454 | 573 | 484 | 688 | 475 | 608 | 400 | 501 | 359 | 357 | 308 | 359 | 304 | 176 | 215 |
| 13 | .. | .. | 704 | 554 | 542 | 512 | 553 | 447 | .. | .. | 613 | 495 | 666 | 489 | 583 | 398 | 506 | 343 | 374 | 304 | 348 | 296 | 170 | 204 |
| 14 | .. | .. | 697 | 550 | 573 | 513 | 544 | 440 | 535 | 459 | 638 | 503 | 645 | 480 | 558 | 406 | 520 | 341 | 362 | 302 | 351 | 279 | 208 | 192 |
| 15 | .. | .. | 658 | 551 | .. | .. | 557 | 452 | 543 | 463 | 644 | 505 | 638 | 464 | 534 | 380 | 568 | 360 | 371 | 295 | 326 | 292 | 250 | 204 |
| 16 | .. | .. | 657 | 525 | .. | .. | 547 | 461 | 525 | 442 | 639 | 514 | 639 | 461 | 552 | 375 | 567 | 368 | 398 | 283 | 302 | 257 | 259 | 213 |
| 17 | .. | .. | 655 | 548 | 443 | 518 | 517 | 447 | 534 | 434 | 625 | 510 | 611 | 432 | 560 | 370 | 579 | 399 | 390 | 310 | 271 | 245 | 256 | 202 |
| 18 | .. | .. | 595 | 536 | 503 | 504 | 528 | 437 | 538 | 444 | 597 | 499 | 622 | 439 | 585 | 375 | 556 | 390 | 385 | 311 | 283 | 248 | 262 | 208 |
| 19 | .. | .. | 531 | 534 | 534 | 536 | 589 | 453 | 504 | 444 | 593 | 475 | 632 | 429 | 562 | 394 | 530 | 383 | 354 | 296 | 275 | 228 | 257 | 238 |
| 20 | 549 | 554 | 442 | 528 | 427 | 520 | 576 | 476 | 511 | 418 | 610 | 492 | 650 | 427 | 545 | 388 | 500 | 381 | 365 | 296 | 287 | 220 | 250 | 227 |
| 21 | 502 | 533 | 460 | 536 | 407 | 513 | 541 | 480 | 524 | 432 | 596 | 500 | 675 | 443 | 548 | 379 | 491 | 343 | 365 | 287 | 294 | 232 | 255 | 209 |
| 22 | 512 | 552 | 553 | 551 | 382 | 524 | 538 | 462 | 540 | 427 | 583 | 481 | 681 | 452 | 553 | 384 | 511 | 376 | 374 | 302 | 282 | 234 | 264 | 208 |
| 23 | 520 | 546 | 566 | 554 | 460 | 491 | 547 | 457 | 550 | 451 | 597 | 468 | 647 | 445 | 555 | 389 | 515 | 355 | 365 | 291 | 268 | 236 | 265 | 237 |
| 24 | 524 | 547 | 588 | 556 | 476 | 496 | 545 | 484 | 542 | 451 | 628 | 469 | 633 | 424 | 557 | 382 | 508 | 383 | 368 | 304 | 273 | 221 | 236 | 219 |
| 25 | 513 | 547 | 559 | 563 | 365 | 480 | 544 | 475 | .. | .. | .. | .. | 660 | 429 | 566 | 370 | 466 | 383 | 352 | 313 | 284 | 232 | 218 | 201 |
| 26 | 517 | 521 | 535 | 570 | 348 | 457 | 548 | 485 | .. | .. | 627 | 505 | 703 | 412 | 569 | 372 | 427 | 375 | 351 | 285 | 314 | 229 | 224 | 178 |
| 27 | 553 | 520 | 555 | 558 | 438 | 457 | 540 | 454 | 600 | 468 | 627 | 514 | 742 | 429 | 565 | 382 | 409 | 386 | 373 | 299 | 322 | 256 | 217 | 197 |
| 28 | 575 | 532 | 634 | 574 | 462 | 471 | 588 | 494 | 567 | 421 | 605 | 482 | 719 | 443 | 570 | 404 | .. | .. | 340 | 299 | 317 | 253 | 171 | 166 |
| 29 | 582 | 525 | | | 457 | 481 | 602 | 502 | 651 | 504 | 610 | 473 | 688 | 432 | 530 | 378 | 409 | 306 | 335 | 282 | 315 | 263 | 123 | 108 |
| 30 | 617 | 562 | | | 464 | 470 | 578 | 503 | 633 | 509 | 603 | 474 | 648 | 400 | 526 | 384 | 435 | 316 | 336 | 297 | 330 | 246 | 99 | 101 |
| 31 | 620 | 574 | | | 474 | 474 | | | 622 | 507 | | | 650 | 401 | 516 | 371 | | | 324 | 285 | | | .. | .. |

At the end of the year the magnet was readjusted, thus 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 Civil Day.**

1885.

| Day of Month. | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d 1 | ° .. | 59°·19 | 58°·97 | 58°·61 | 60°·74 | 62°·92 | 63°·64 | 69°·71 | 64°·04 | 62°·01 | 58°·55 | 60°·61 |
| 2 | .. | 59·70 | 57·98 | 60·76 | 60·35 | 63·74 | 64·16 | 68·44 | 63·98 | 62·50 | 59·49 | 59·15 |
| 3 | .. | 60·55 | 56·51 | 59·95 | 59·94 | 64·48 | 64·92 | 67·95 | 65·77 | 62·95 | 60·12 | 59·35 |
| 4 | .. | 60·07 | 55·30 | 59·34 | 60·85 | 66·44 | 65·23 | 67·49 | 66·08 | 61·55 | 60·76 | 59·02 |
| 5 | .. | 58·91 | 54·99 | 57·84 | 60·16 | 67·47 | 66·22 | 68·65 | 65·59 | 61·26 | 58·51 | 58·45 |
| 6 | .. | 59·10 | 54·56 | 58·56 | 59·32 | 66·51 | 66·51 | 68·36 | 65·87 | 60·34 | 57·04 | 58·40 |
| 7 | .. | 59·81 | 56·91 | 58·96 | 58·43 | 65·94 | 66·58 | 68·30 | 66·33 | 61·36 | 60·03 | 58·85 |
| 8 | .. | 59·94 | 55·74 | 59·07 | 58·40 | 66·01 | 66·17 | 67·54 | 65·80 | 59·94 | 58·32 | 58·20 |
| 9 | .. | 57·88 | 56·24 | 60·13 | 60·07 | 64·16 | 64·84 | 68·02 | 65·41 | 59·95 | 59·94 | 56·66 |
| 10 | .. | 57·87 | 54·31 | 60·99 | 61·89 | 62·96 | 65·36 | 68·56 | 64·82 | 59·91 | 60·01 | 56·68 |
| 11 | .. | 56·59 | 51·04 | 61·82 | 61·38 | 60·53 | 67·33 | 67·74 | 64·55 | 59·41 | 59·96 | 55·54 |
| 12 | .. | 58·41 | 52·70 | 62·06 | 60·27 | 61·45 | 67·65 | 67·38 | 64·10 | 59·46 | 59·75 | 55·07 |
| 13 | .. | 64·49 | 58·51 | 62·28 | .. | 62·90 | 65·84 | 66·25 | 65·15 | 60·52 | 59·59 | 55·28 |
| 14 | .. | 64·34 | 59·99 | 62·19 | 60·81 | 63·76 | 65·26 | 64·61 | 65·94 | 60·01 | 60·61 | 57·81 |
| 15 | .. | 62·36 | .. | 62·26 | 61·01 | 63·97 | 65·69 | 64·72 | 67·38 | 60·78 | 58·70 | 59·30 |
| 16 | .. | 63·58 | .. | 61·30 | 61·16 | 63·24 | 65·92 | 65·83 | 66·97 | 62·75 | 59·26 | 59·30 |
| 17 | .. | 62·36 | 53·24 | 60·50 | 62·01 | 62·76 | 65·95 | 66·50 | 66·00 | 60·99 | 58·31 | 59·69 |
| 18 | .. | 59·95 | 56·96 | 61·56 | 61·68 | 61·91 | 66·13 | 67·51 | 65·29 | 60·70 | 58·75 | 59·71 |
| 19 | .. | 56·85 | 56·89 | 63·81 | 60·01 | 62·90 | 67·16 | 65·40 | 64·33 | 59·89 | 59·34 | 57·94 |
| 20 | 56·74 | 52·69 | 52·36 | 61·99 | 61·64 | 62·90 | 68·14 | 64·86 | 62·97 | 60·45 | 60·33 | 58·15 |
| 21 | 55·45 | 53·21 | 51·71 | 60·07 | 61·61 | 61·78 | 68·60 | 65·46 | 64·38 | 60·90 | 60·10 | 59·31 |
| 22 | 55·02 | 57·08 | 49·89 | 60·79 | 62·65 | 62·10 | 68·45 | 65·46 | 63·76 | 60·59 | 59·41 | 59·80 |
| 23 | 55·71 | 57·60 | 55·43 | 61·49 | 61·95 | 63·47 | 67·08 | 65·31 | 64·99 | 60·69 | 58·61 | 58·39 |
| 24 | 55·86 | 58·59 | 56·01 | 60·05 | 61·54 | 64·96 | 67·44 | 65·76 | 63·25 | 60·19 | 59·61 | 57·85 |
| 25 | 55·28 | 56·82 | 51·27 | 60·44 | .. | .. | 68·56 | 66·80 | 61·14 | 58·97 | 59·60 | 57·87 |
| 26 | 56·79 | 55·24 | 51·54 | 60·13 | .. | 63·08 | 71·54 | 66·84 | 59·61 | 60·29 | 61·27 | 59·29 |
| 27 | 58·64 | 56·84 | 56·06 | 61·32 | 63·60 | 62·64 | 72·67 | 66·15 | 58·16 | 60·71 | 60·29 | 57·99 |
| 28 | 59·14 | 59·98 | 56·54 | 61·71 | 64·32 | 63·16 | 70·78 | 65·29 | .. | 59·06 | 60·20 | 57·24 |
| 29 | 59·87 | | 55·80 | 61·99 | 64·36 | 63·85 | 69·81 | 64·60 | 62·14 | 59·63 | 59·61 | 57·74 |
| 30 | 59·75 | | 56·72 | 60·74 | 63·18 | 63·47 | 69·39 | 64·11 | 62·96 | 58·94 | 61·21 | 56·90 |
| 31 | 59·31 | | 57·01 | | 62·75 | | 69·44 | 64·24 | | 58·97 | | .. |
| Means | 57°·30 | 58°·93 | 55°·21 | 60°·76 | 61°·29 | 63°·64 | 67°·18 | 66°·58 | 64°·37 | 60°·51 | 59°·58 | 58°·18 |

From February 12 to March 27 the basement was alternately heated and cooled several times for determination of the temperature co-efficients of the horizontal force and vertical force magnets.

## 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.)*

1885.

| Hour, Greenwich Civil 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* |
| Midn. | 18 | 11 | 34 | 26 | 60 | 54 | 58 | 45 | 61 | 52 | 49 | 40 | 54 | 44 | 35 | 22 | 25 | 17 | 23 | 21 | 17 | 13 | 20 | 16 |
| 1h | 10 | 5 | 31 | 25 | 55 | 50 | 53 | 43 | 56 | 49 | 45 | 37 | 49 | 41 | 32 | 21 | 21 | 14 | 22 | 20 | 13 | 10 | 16 | 13 |
| 2 | 6 | 2 | 29 | 24 | 52 | 49 | 51 | 43 | 50 | 44 | 41 | 35 | 46 | 41 | 28 | 19 | 20 | 14 | 20 | 19 | 10 | 7 | 12 | 10 |
| 3 | 7 | 5 | 25 | 21 | 48 | 47 | 47 | 41 | 45 | 41 | 41 | 37 | 46 | 43 | 25 | 18 | 19 | 14 | 17 | 16 | 9 | 7 | 9 | 8 |
| 4 | 8 | 7 | 21 | 18 | 44 | 45 | 42 | 38 | 47 | 45 | 44 | 42 | 47 | 46 | 26 | 21 | 19 | 15 | 14 | 14 | 9 | 8 | 8 | 8 |
| 5 | 9 | 10 | 17 | 15 | 43 | 46 | 39 | 38 | 49 | 48 | 46 | 46 | 50 | 52 | 30 | 27 | 20 | 18 | 13 | 13 | 9 | 9 | 8 | 9 |
| 6 | 6 | 8 | 13 | 12 | 40 | 44 | 37 | 38 | 50 | 51 | 44 | 45 | 47 | 51 | 31 | 30 | 21 | 20 | 12 | 13 | 7 | 8 | 9 | 10 |
| 7 | 7 | 11 | 13 | 14 | 42 | 48 | 39 | 42 | 51 | 53 | 44 | 47 | 44 | 50 | 32 | 33 | 23 | 23 | 13 | 14 | 8 | 9 | 9 | 11 |
| 8 | 4 | 9 | 13 | 15 | 41 | 49 | 38 | 44 | 43 | 47 | 38 | 43 | 38 | 47 | 25 | 28 | 21 | 23 | 16 | 18 | 8 | 10 | 9 | 12 |
| 9 | 1 | 8 | 12 | 15 | 29 | 39 | 27 | 35 | 31 | 36 | 26 | 33 | 24 | 35 | 15 | 20 | 13 | 16 | 14 | 16 | 6 | 9 | 6 | 10 |
| 10 | 0 | 4 | 1 | 2 | 16 | 23 | 14 | 20 | 13 | 17 | 17 | 22 | 14 | 21 | 5 | 8 | 7 | 10 | 7 | 9 | 2 | 3 | 5 | 8 |
| 11 | 1 | 3 | 0 | 0 | 8 | 13 | 3 | 7 | 0 | 3 | 6 | 9 | 4 | 8 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 1 | 5 | 8 |
| Noon | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 13h | 3 | 0 | 12 | 5 | 10 | 7 | 11 | 6 | 15 | 11 | 11 | 8 | 12 | 9 | 17 | 10 | 16 | 12 | 5 | 2 | 14 | 10 | 9 | 7 |
| 14 | 18 | 13 | 25 | 17 | 27 | 22 | 33 | 25 | 40 | 33 | 26 | 21 | 34 | 28 | 35 | 25 | 32 | 25 | 15 | 11 | 25 | 19 | 19 | 16 |
| 15 | 26 | 18 | 38 | 28 | 45 | 38 | 54 | 42 | 63 | 53 | 38 | 30 | 50 | 41 | 54 | 41 | 48 | 39 | 33 | 29 | 34 | 27 | 23 | 19 |
| 16 | 30 | 21 | 41 | 31 | 61 | 53 | 65 | 52 | 78 | 67 | 50 | 41 | 64 | 54 | 63 | 49 | 57 | 47 | 43 | 39 | 37 | 30 | 23 | 19 |
| 17 | 37 | 28 | 44 | 34 | 69 | 60 | 77 | 63 | 92 | 81 | 63 | 53 | 73 | 61 | 69 | 54 | 60 | 50 | 44 | 40 | 38 | 31 | 23 | 18 |
| 18 | 41 | 31 | 47 | 36 | 70 | 60 | 82 | 66 | 101 | 89 | 69 | 58 | 78 | 65 | 67 | 51 | 58 | 47 | 44 | 41 | 35 | 29 | 24 | 19 |
| 19 | 43 | 33 | 49 | 38 | 68 | 58 | 82 | 65 | 99 | 87 | 71 | 59 | 78 | 64 | 60 | 43 | 55 | 44 | 42 | 39 | 33 | 27 | 24 | 19 |
| 20 | 41 | 30 | 50 | 39 | 66 | 55 | 76 | 58 | 94 | 81 | 67 | 54 | 72 | 56 | 56 | 38 | 51 | 39 | 39 | 36 | 33 | 27 | 23 | 17 |
| 21 | 38 | 27 | 47 | 36 | 62 | 50 | 70 | 51 | 83 | 70 | 63 | 49 | 67 | 50 | 49 | 30 | 45 | 33 | 36 | 33 | 30 | 24 | 20 | 14 |
| 22 | 35 | 25 | 42 | 32 | 59 | 49 | 66 | 49 | 73 | 61 | 57 | 45 | 62 | 47 | 45 | 28 | 36 | 25 | 30 | 27 | 25 | 20 | 18 | 13 |
| 23 | 31 | 23 | 40 | 31 | 57 | 49 | 63 | 48 | 69 | 59 | 54 | 43 | 59 | 47 | 38 | 23 | 31 | 21 | 25 | 23 | 21 | 16 | 17 | 13 |
| Means corrected for Temperature | 13·9 | | 21·4 | | 42·0 | | 40·0 | | 49·1 | | 37·4 | | 41·7 | | 26·6 | | 23·6 | | 20·6 | | 14·7 | | 12·4 | |

## 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.

1885.

| Hour, Greenwich Civil Time. | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. | For the Year. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| h | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° |
| 9 | 56·85 | 58·55 | 54·71 | 60·19 | 60·93 | 63·20 | 66·57 | 66·04 | 64·03 | 60·33 | 59·31 | 57·96 | 60·72 |
| 10 | 57·01 | 58·63 | 54·83 | 60·28 | 60·98 | 63·29 | 66·74 | 66·15 | 64·06 | 60·35 | 59·38 | 58·00 | 60·81 |
| 11 | 57·12 | 58·70 | 54·93 | 60·40 | 61·04 | 63·38 | 66·90 | 66·32 | 64·17 | 60·35 | 59·40 | 58·02 | 60·89 |
| Noon | 57·24 | 58·92 | 55·22 | 60·62 | 61·21 | 63·54 | 67·08 | 66·47 | 64·29 | 60·47 | 59·53 | 58·13 | 61·06 |
| 13h | 57·37 | 59·06 | 55·34 | 60·84 | 61·39 | 63·69 | 67·25 | 66·65 | 64·42 | 60·61 | 59·67 | 58·24 | 61·21 |
| 14 | 57·47 | 59·11 | 55·46 | 61·00 | 61·55 | 63·81 | 67·38 | 66·78 | 64·54 | 60·65 | 59·75 | 58·29 | 61·32 |
| 15 | 57·59 | 59·19 | 55·57 | 61·19 | 61·68 | 63·94 | 67·54 | 66·93 | 64·64 | 60·66 | 59·79 | 58·35 | 61·42 |
| 21 | 57·73 | 59·26 | 55·81 | 61·54 | 61·83 | 64·25 | 67·95 | 67·27 | 64·81 | 60·61 | 59·77 | 58·47 | 61·61 |

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, 1885. | 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. 4·8 | 488 | 543 | 3422 | 886 | 2376 |
| February | 18. 4·3 | 590 | 549 | 3396 | 1071 | 2402 |
| March | 18. 3·7 | 594 | 512 | 3364 | 1078 | 2241 |
| April | 18. 3·1 | 590 | 463 | 3332 | 1071 | 2026 |
| May | 18. 2·6 | 641 | 461 | 3306 | 1164 | 2017 |
| June | 18. 1·9 | 766 | 492 | 3269 | 1391 | 2153 |
| July | 18. 1·5 | 818 | 452 | 3248 | 1485 | 1978 |
| August | 18. 1·5 | 789 | 389 | 3248 | 1433 | 1702 |
| September | 18. 0·5 | 795 | 365 | 3195 | 1443 | 1597 |
| October | 17. 59·4 | 808 | 307 | 3137 | 1467 | 1343 |
| November | 17. 59·7 | 769 | 267 | 3153 | 1396 | 1168 |
| December | 17. 57·4 | 757 | 218 | 3031 | 1374 | 954 |
| Means | 18. 1·7 | .... | .... | 3258 | .... | .... |
| Number of Column | 1 | 2 | 3 | 4 | 5 | 6 |

The units in columns 2 and 3 are ·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 1·8156 and 0·18156 respectively for the year, and of whole Vertical Force (applicable to column 6) 4·3760 and 0·43760 respectively for the year.

HORIZONTAL FORCE.—At the end of the year experiments were made for determination of the angle of torsion, thus breaking the continuity of the values.

VERTICAL FORCE.—At the end of the year the magnet was readjusted, thus breaking the continuity of the values.

TABLE XII.—MEAN DIURNAL INEQUALITIES of MAGNETIC DECLINATION, HORIZONTAL FORCE, and VERTICAL FORCE for the Year 1885.

*(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 Civil 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. | | |
| Midnight | ′ 0·87 | 129·0 | 30·0 | 45·9 | 234·2 | 131·3 |
| 1h | 0·90 | 124·1 | 27·2 | 47·5 | 225·3 | 119·0 |
| 2 | 1·03 | 120·0 | 25·5 | 54·4 | 217·9 | 111·6 |
| 3 | 1·16 | 120·7 | 24·7 | 61·3 | 219·1 | 108·1 |
| 4 | 0·95 | 123·9 | 25·5 | 50·2 | 225·0 | 111·6 |
| 5 | 0·64 | 125·0 | 27·5 | 33·8 | 226·9 | 120·3 |
| 6 | 0·42 | 117·6 | 27·4 | 22·2 | 213·5 | 119·9 |
| 7 | 0·20 | 94·9 | 29·5 | 10·6 | 172·3 | 129·1 |
| 8 | 0·00 | 62·5 | 28·6 | 0·0 | 113·5 | 125·2 |
| 9 | 0·51 | 22·7 | 22·6 | 26·9 | 41·2 | 98·9 |
| 10 | 2·19 | 0·0 | 12·2 | 115·7 | 0·0 | 53·4 |
| 11 | 4·61 | 2·7 | 4·5 | 243·5 | 4·9 | 19·7 |
| Noon | 6·87 | 31·4 | 0·0 | 362·8 | 57·0 | 0·0 |
| 13h | 8·08 | 73·4 | 7·1 | 426·7 | 133·3 | 31·1 |
| 14 | 7·76 | 104·6 | 21·2 | 409·8 | 189·9 | 92·8 |
| 15 | 6·47 | 122·5 | 33·6 | 341·7 | 222·4 | 147·0 |
| 16 | 5·07 | 131·6 | 41·8 | 267·7 | 238·9 | 182·9 |
| 17 | 3·83 | 138·4 | 47·7 | 202·3 | 251·3 | 208·7 |
| 18 | 2·99 | 146·4 | 49·2 | 157·9 | 265·8 | 215·3 |
| 19 | 2·34 | 152·1 | 47·9 | 123·6 | 276·2 | 209·6 |
| 20 | 1·79 | 149·1 | 44·1 | 94·5 | 270·7 | 193·0 |
| 21 | 1·46 | 141·9 | 38·8 | 77·1 | 257·6 | 169·8 |
| 22 | 1·18 | 136·9 | 35·0 | 62·3 | 248·6 | 153·2 |
| 23 | 1·01 | 133·9 | 32·9 | 53·3 | 243·1 | 144·0 |
| Means - - | ′ 2·60 | 104·4 | 28·5 | 137·2 | 189·5 | 124·8 |
| Number of Column - | 1 | 2 | 3 | 4 | 5 | 6 |

The units in columns 2 and 3 are ·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 1·8156 and 0·18156 respectively, and of whole Vertical Force (applicable to column 6) are 4·3760 and 0·43760 respectively.

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

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

1885.

| 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 | 5·3 | .. | 2·3 | 80 | 6·8 | 300 | 10·6 | 350 | 11·8 | 260 | 14·4 | 380 | .. | .. | 18·0 | 340 | 12·5 | 320 | 10·3 | 290 | 10·7 | 240 | .. | 300 |
| 2 | 12·8 | 440 | 5·2 | 80 | 11·0 | 280 | 11·9 | 210 | 12·6 | 220 | 14·6 | 380 | .. | .. | 9·3 | 340 | 10·7 | 350 | 8·2 | 220 | 5·6 | 150 | .. | .. |
| 3 | 9·0 | 160 | 5·9 | 40 | 8·2 | 240 | 13·1 | 300 | 13·4 | 200 | 11·1 | 350 | .. | .. | 10·3 | 370 | 9·2 | 330 | 11·7 | 230 | 6·0 | 170 | .. | .. |
| 4 | 5·6 | 150 | 5·2 | 140 | 8·6 | 160 | 12·1 | 240 | 12·1 | 240 | 15·0 | 370 | .. | .. | 12·8 | 240 | 17·5 | 360 | 7·5 | 250 | 7·4 | 160 | .. | .. |
| 5 | 3·7 | 140 | 9·2 | 400 | 9·6 | 150 | 12·0 | 250 | 12·9 | 190 | .. | .. | .. | .. | 10·3 | 230 | 15·8 | 320 | 7·9 | 160 | 5·6 | 160 | 2·8 | 100 |
| 6 | 9·0 | 190 | 8·5 | 270 | 12·8 | 170 | 14·5 | 240 | 12·9 | 250 | .. | .. | .. | .. | 9·9 | 200 | 10·4 | 210 | 9·5 | 260 | 6·9 | 150 | 10·4 | 430 |
| 7 | 4·2 | 110 | 4·2 | 110 | 7·5 | 160 | 13·0 | 220 | 12·0 | 210 | 11·9 | 280 | .. | .. | 14·6 | 410 | 12·0 | 250 | 11·9 | 280 | 13·9 | 160 | 10·8 | 210 |
| 8 | 9·7 | 170 | 7·4 | 130 | 8·2 | 100 | 18·9 | 370 | 16·1 | 180 | 8·1 | 220 | .. | .. | 12·3 | 420 | 11·8 | 230 | 9·5 | 260 | 13·3 | 290 | 11·7 | 260 |
| 9 | 13·2 | 280 | 6·8 | 120 | 8·6 | 110 | 8·0 | 230 | 11·8 | 230 | 11·1 | 370 | .. | .. | 11·4 | 260 | 12·6 | 230 | 10·8 | 260 | 8·3 | 120 | 7·6 | 180 |
| 10 | 7·7 | 170 | 19·2 | 300 | 11·3 | 170 | 11·6 | 240 | 19·1 | 160 | 9·1 | 250 | .. | .. | 10·7 | 470 | 11·2 | 420 | 10·0 | 210 | 11·9 | 310 | 6·2 | 100 |
| 11 | 5·1 | 160 | 6·1 | 80 | 11·2 | 180 | 11·6 | 230 | 17·6 | 290 | 12·8 | 330 | 15·1 | 250 | 13·5 | 350 | 12·1 | 340 | 10·6 | 240 | 15·4 | 480 | 3·1 | 140 |
| 12 | 5·8 | 180 | 16·2 | 390 | 12·9 | 150 | 10·1 | 230 | 10·7 | 270 | 11·0 | 330 | 12·6 | 310 | 15·4 | 360 | 12·6 | 310 | 12·3 | 280 | 7·6 | 240 | 2·5 | 100 |
| 13 | 3·6 | 130 | 11·5 | 190 | 19·9 | 200 | 13·9 | 250 | .. | .. | 14·5 | 340 | 11·4 | 240 | 10·2 | 210 | 13·1 | 320 | 11·0 | 220 | 3·6 | 180 | 4·2 | 140 |
| 14 | 4·9 | 80 | 6·2 | 110 | 9·3 | 180 | 11·2 | 240 | 10·6 | 290 | 18·1 | 370 | 12·6 | 300 | 14·0 | 250 | 10·7 | 350 | 8·9 | 340 | 4·2 | 110 | 6·5 | 190 |
| 15 | 4·7 | 120 | 4·9 | 130 | .. | .. | 15·2 | 320 | 12·4 | 310 | 15·1 | 240 | 13·4 | 330 | 12·5 | 270 | 23·6 | 250 | 11·7 | 240 | 5·3 | 130 | 3·9 | 90 |
| 16 | 7·7 | 90 | 7·8 | 120 | .. | .. | 14·5 | 230 | 9·7 | 340 | 12·4 | 280 | 10·0 | 310 | 13·2 | 340 | 18·0 | 330 | 8·3 | 350 | 3·1 | 90 | 2·2 | 50 |
| 17 | 7·3 | 100 | 9·3 | 130 | 9·5 | 150 | 12·3 | 310 | 10·6 | 290 | 11·4 | 230 | 13·4 | 510 | 8·9 | 270 | 8·5 | 290 | 7·4 | 200 | 2·9 | 80 | 4·2 | 110 |
| 18 | 7·9 | 140 | 11·8 | 160 | 8·6 | 110 | 12·9 | 270 | 9·2 | 320 | 11·5 | 320 | 11·9 | 270 | 11·9 | 250 | 11·0 | 280 | 7·3 | 150 | 15·6 | 400 | 7·5 | 140 |
| 19 | 8·3 | 130 | 7·9 | 180 | 11·1 | 210 | 13·6 | 210 | 11·0 | 250 | 12·7 | 340 | 11·4 | 360 | 10·8 | 340 | 6·8 | 240 | 7·9 | 150 | 8·0 | 150 | 5·1 | 130 |
| 20 | 6·0 | 100 | 6·3 | 80 | 16·6 | 280 | 11·1 | 320 | 8·7 | 390 | 15·3 | 270 | 10·2 | 200 | 11·8 | 340 | 7·3 | 280 | 9·7 | 150 | 7·3 | 90 | 7·9 | 130 |
| 21 | 11·6 | 170 | 9·1 | 290 | 15·5 | 280 | 11·3 | 310 | 11·9 | 340 | 12·2 | 290 | 10·7 | 350 | 12·2 | 320 | 9·1 | 170 | 6·2 | 180 | 5·5 | 100 | 4·9 | 180 |
| 22 | 15·2 | 480 | 12·5 | 260 | 11·9 | 160 | 9·6 | 190 | 10·7 | 240 | 16·0 | 370 | 12·1 | 340 | 12·5 | 260 | 13·7 | 330 | 11·5 | 250 | 5·9 | 140 | 9·3 | 150 |
| 23 | 9·5 | 250 | 6·7 | 100 | 10·6 | 190 | 10·0 | 240 | 13·1 | 280 | 11·9 | 330 | 13·8 | 250 | 10·9 | 290 | 18·5 | 280 | 10·0 | 310 | 6·5 | 120 | 6·5 | 110 |
| 24 | 6·6 | 200 | 7·1 | 120 | 10·4 | 170 | 11·3 | 190 | 16·7 | 280 | 14·0 | 390 | 14·8 | 310 | 11·9 | 300 | 13·3 | 180 | 7·7 | 210 | 5·8 | 110 | 8·0 | 100 |
| 25 | 7·4 | 210 | 6·3 | 70 | 9·6 | 160 | 13·3 | 240 | .. | .. | .. | .. | 17·2 | 350 | 10·6 | 230 | 15·1 | 260 | 9·5 | 250 | 8·4 | 130 | 4·1 | 130 |
| 26 | 3·4 | 180 | 7·0 | 160 | 11·2 | 150 | 13·3 | 220 | .. | .. | 16·1 | 520 | 11·7 | 280 | 17·2 | 310 | 10·7 | 260 | 7·6 | 150 | 8·5 | 140 | 6·7 | 130 |
| 27 | 5·7 | 240 | 14·6 | 320 | 10·5 | 200 | 13·1 | 310 | 9·0 | 480 | 13·2 | 350 | 13·2 | 350 | 15·6 | 370 | 12·9 | 400 | 11·4 | 250 | 6·0 | 90 | 4·2 | 120 |
| 28 | 10·5 | 160 | 9·1 | 290 | 9·9 | 140 | 15·9 | 410 | 11·3 | 490 | 11·9 | 350 | 14·8 | 310 | 20·4 | 290 | .. | .. | 9·2 | 110 | 5·1 | 110 | 10·6 | 160 |
| 29 | 6·8 | 250 | | | 11·6 | 230 | 8·3 | 220 | 15·7 | 380 | .. | .. | 10·6 | 360 | 15·0 | 290 | .. | .. | 5·5 | 230 | 3·8 | 160 | 2·8 | 110 |
| 30 | 13·1 | 300 | | | 12·9 | 250 | 10·4 | 270 | 12·2 | 450 | .. | .. | 14·0 | 390 | 12·2 | 330 | 9·3 | 360 | 11·2 | 340 | 3·5 | 110 | 5·0 | 150 |
| 31 | 2·4 | 60 | | | 14·0 | 260 | | | 15·1 | 460 | | | 11·6 | 430 | 13·0 | 360 | | | 14·3 | 230 | | | 4·5 | 140 |
| Means - | 7·5 | 185 | 8·4 | 173 | 11·0 | 189 | 12·3 | 262 | 12·5 | 296 | 13·0 | 330 | 12·7 | 324 | 12·7 | 310 | 12·5 | 295 | 9·6 | 234 | 7·4 | 169 | 6·0 | 153 |

The mean of the twelve monthly values is, for Declination 10′·5, and for Horizontal Force 243.

TABLE XIV.—MONTHLY MEAN DIURNAL RANGE, and SUMS of HOURLY DEVIATIONS from MEAN, for DECLINATION, HORIZONTAL FORCE, and VERTICAL FORCE, as deduced from the Monthly Mean Diurnal Inequalities, Tables II., V., and IX.

*(The Declination is expressed in minutes of arc: the units for Horizontal Force and Vertical Force are ·00001 of the whole Horizontal and Vertical Forces respectively. The results for Horizontal Force and Vertical Force are corrected for temperature.)*

| Month, 1885. | Difference between the Greatest and Least of 24 Hourly Values. | | | Sums of the 24 Hourly Deviations from the Mean Value. | | |
|---|---|---|---|---|---|---|
| | Declination. | Horizontal Force. | Vertical Force. | Declination. | Horizontal Force. | Vertical Force. |
| | ′ | | | ′ | | |
| January | 6·0 | 106 | 33 | 30·2 | 496 | 223 |
| February | 6·0 | 58 | 39 | 36·3 | 307 | 246 |
| March | 9·5 | 140 | 60 | 55·6 | 688 | 304 |
| April | 11·2 | 203 | 66 | 58·9 | 1218 | 305 |
| May | 11·0 | 239 | 89 | 62·5 | 1474 | 430 |
| June | 11·7 | 288 | 59 | 68·4 | 1681 | 285 |
| July | 11·7 | 260 | 65 | 67·0 | 1719 | 301 |
| August | 11·4 | 255 | 54 | 63·9 | 1515 | 265 |
| September | 9·6 | 211 | 50 | 62·9 | 1230 | 275 |
| October | 7·3 | 190 | 41 | 48·0 | 1059 | 245 |
| November | 5·9 | 117 | 31 | 33·1 | 510 | 206 |
| December | 4·5 | 71 | 19 | 22·5 | 299 | 95 |
| Means | 8·8 | 178 | 50 | 50·8 | 1016 | 265 |

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 Greenwich mean midnight 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 1883, as given in Tables II., V., IX., and XII. of that year, 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: the units for Horizontal Force and Vertical Force are ·00001 of the whole Horizontal and Vertical Forces respectively.

| Month, 1883. | $m$ | $a_1$ | $b_1$ | $a_2$ | $b_2$ | $a_3$ | $b_3$ | $a_4$ | $b_4$ |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 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 | − 2·01 | + 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 XV.—*continued.*—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 Greenwich mean midnight 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 1884, as given in Tables II., V., IX., and XII. of that year, 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: the units for Horizontal Force and Vertical Force are ·00001 of the whole Horizontal and Vertical Forces respectively.

| Month, 1884. | $m$ | $a_1$ | $b_1$ | $a_2$ | $b_2$ | $a_3$ | $b_3$ | $a_4$ | $b_4$ |
|---|---|---|---|---|---|---|---|---|---|
| | DECLINATION WEST. | | | | | | | | |
| | ′ | ′ | ′ | ′ | ′ | ′ | ′ | ′ | ′ |
| January | 1·99 | − 1·80 | − 1·09 | + 0·45 | + 1·03 | − 0·76 | − 0·38 | + 0·31 | + 0·28 |
| February | 3·16 | − 1·82 | − 1·58 | + 0·29 | + 1·85 | − 0·65 | − 0·74 | + 0·25 | + 0·33 |
| March | 4·27 | − 2·78 | − 2·16 | + 1·27 | + 2·08 | − 1·20 | − 0·92 | + 0·48 | + 0·27 |
| April | 4·92 | − 2·77 | − 2·62 | + 2·07 | + 2·34 | − 1·12 | − 1·18 | + 0·31 | + 0·25 |
| May | 4·73 | − 2·26 | − 2·60 | + 2·21 | + 1·63 | − 0·84 | − 0·42 | + 0·18 | + 0·07 |
| June | 5·26 | − 2·68 | − 3·55 | + 2·03 | + 1·83 | − 0·60 | − 0·53 | − 0·06 | − 0·01 |
| July | 4·45 | − 2·34 | − 2·85 | + 1·80 | + 1·21 | − 0·83 | − 0·43 | + 0·02 | + 0·14 |
| August | 3·44 | − 2·76 | − 2·03 | + 1·89 | + 1·28 | − 1·02 | − 0·58 | + 0·26 | + 0·22 |
| September | 3·50 | − 2·83 | − 1·76 | + 1·74 | + 1·59 | − 1·07 | − 0·81 | + 0·54 | + 0·14 |
| October | 3·46 | − 2·22 | − 1·57 | + 1·16 | + 1·77 | − 0·89 | − 0·82 | + 0·62 | + 0·30 |
| November | 2·28 | − 1·85 | − 0·70 | + 0·48 | + 1·40 | − 0·66 | − 0·48 | + 0·35 | + 0·40 |
| December | 2·43 | − 1·82 | − 0·41 | − 0·03 | + 1·06 | − 0·54 | − 0·22 | + 0·24 | + 0·27 |
| For the Year | 3·22 | − 2·33 | − 1·91 | + 1·28 | + 1·59 | − 0·85 | − 0·63 | + 0·29 | + 0·22 |
| | HORIZONTAL FORCE. | | | | | | | | |
| January | 95·9 | + 37·8 | − 7·4 | − 38·4 | + 6·4 | + 10·5 | − 10·4 | − 0·4 | + 9·9 |
| February | 134·9 | + 56·6 | + 2·5 | − 44·7 | + 7·4 | + 19·8 | − 13·1 | + 0·9 | + 10·7 |
| March | 160·9 | + 75·7 | − 17·3 | − 43·4 | + 23·3 | + 5·7 | − 22·0 | + 1·6 | + 13·6 |
| April | 180·3 | + 88·6 | − 51·3 | − 47·1 | + 23·5 | + 11·6 | − 20·3 | + 4·6 | + 9·2 |
| May | 115·7 | + 47·5 | − 61·5 | − 24·1 | + 18·7 | − 8·8 | − 6·1 | + 4·2 | + 2·9 |
| June | 143·2 | + 64·6 | − 74·1 | − 33·5 | + 22·8 | − 3·9 | − 5·8 | + 6·5 | + 1·7 |
| July | 164·5 | + 69·0 | − 68·7 | − 23·9 | + 26·4 | − 9·2 | − 19·4 | + 6·1 | + 5·3 |
| August | 134·0 | + 55·2 | − 61·1 | − 16·5 | + 24·3 | − 7·7 | − 18·2 | + 4·4 | + 7·4 |
| September | 172·3 | + 68·5 | − 49·8 | − 24·9 | + 38·5 | − 6·4 | − 27·2 | + 5·0 | + 11·1 |
| October | 143·8 | + 73·9 | − 11·8 | − 35·1 | + 22·0 | + 6·6 | − 24·5 | + 1·5 | + 7·5 |
| November | 94·1 | + 44·1 | + 9·8 | − 33·9 | + 1·2 | + 10·1 | − 14·9 | − 0·5 | + 8·9 |
| December | 65·5 | + 18·4 | + 5·6 | − 28·9 | + 9·2 | + 9·8 | − 10·7 | − 1·5 | + 8·2 |
| For the Year | 125·8 | + 58·3 | − 32·1 | − 32·9 | + 18·6 | + 3·2 | − 16·0 | + 2·7 | + 8·0 |
| | VERTICAL FORCE. | | | | | | | | |
| January | 8·1 | + 0·3 | − 8·6 | − 1·7 | + 1·8 | + 2·1 | − 1·6 | − 1·0 | − 0·1 |
| February | 16·5 | + 5·6 | − 12·0 | − 5·6 | − 0·5 | + 3·9 | + 1·0 | − 1·9 | − 0·9 |
| March | 33·5 | + 9·1 | − 12·8 | − 12·9 | − 1·8 | + 9·4 | + 0·1 | − 3·3 | + 0·9 |
| April | 53·2 | + 19·2 | − 14·7 | − 21·2 | − 2·8 | + 8·5 | − 1·2 | − 2·5 | + 1·5 |
| May | 59·0 | + 25·7 | − 9·8 | − 20·8 | + 1·0 | + 6·7 | − 0·5 | − 1·5 | + 1·2 |
| June | 47·6 | + 20·8 | − 13·8 | − 21·3 | − 0·4 | + 4·4 | + 2·7 | + 0·3 | 0·0 |
| July | 35·0 | + 11·1 | − 11·8 | − 13·8 | + 0·6 | + 6·2 | − 0·7 | − 2·6 | + 0·4 |
| August | 39·7 | + 13·3 | − 9·0 | − 16·3 | + 2·9 | + 6·9 | − 2·3 | − 2·5 | + 1·2 |
| September | 25·8 | + 5·4 | − 8·3 | − 11·1 | − 0·6 | + 6·2 | − 0·8 | − 2·0 | + 1·2 |
| October | 27·5 | + 5·1 | − 10·8 | − 10·0 | 0·0 | + 6·7 | − 0·3 | − 2·8 | + 1·2 |
| November | 19·3 | − 0·4 | − 13·5 | − 5·0 | + 4·2 | + 3·4 | − 2·1 | − 2·1 | + 1·3 |
| December | 9·5 | + 0·1 | − 10·5 | − 1·1 | + 0·5 | + 1·7 | − 1·0 | − 1·3 | + 0·7 |
| For the Year | 29·4 | + 9·6 | − 11·3 | − 11·7 | + 0·4 | + 5·5 | − 0·6 | − 1·9 | + 0·7 |

Table XV.—*concluded.*—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 Greenwich mean midnight 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 1885, as given in Tables II., V., IX., and XII. of that year, 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: the units for Horizontal Force and Vertical Force are ·00001 of the whole Horizontal and Vertical Forces respectively.

| Month, 1885. | $m$ | $a_1$ | $b_1$ | $a_2$ | $b_2$ | $a_3$ | $b_3$ | $a_4$ | $b_4$ |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Declination West. | | | | |
| | ′ | ′ | ′ | ′ | ′ | ′ | ′ | ′ | ′ |
| January | 2·29 | − 1·76 | − 0·59 | + 0·04 | + 0·96 | − 0·53 | − 0·19 | + 0·23 | + 0·27 |
| February | 1·89 | − 2·00 | − 0·98 | + 0·60 | + 0·76 | − 0·47 | − 0·28 | + 0·27 | + 0·22 |
| March | 3·42 | − 2·36 | − 2·10 | + 0·69 | + 1·82 | − 0·67 | − 0·97 | + 0·35 | + 0·44 |
| April | 4·20 | − 2·19 | − 2·49 | + 1·39 | + 1·94 | − 0·77 | − 1·02 | + 0·41 | + 0·33 |
| May | 4·36 | − 2·53 | − 2·58 | + 1·95 | + 1·69 | − 0·76 | − 0·47 | + 0·16 | + 0·07 |
| June | 4·87 | − 2·41 | − 3·39 | + 1·73 | + 1·76 | − 0·73 | − 0·53 | − 0·05 | + 0·09 |
| July | 5·07 | − 2·34 | − 3·36 | + 1·95 | + 1·63 | − 0·75 | − 0·51 | − 0·09 | + 0·11 |
| August | 4·25 | − 3·02 | − 2·30 | + 2·18 | + 1·20 | − 0·92 | − 0·41 | + 0·12 | + 0·09 |
| September | 2·84 | − 3·41 | − 1·54 | + 1·53 | + 1·34 | − 0·73 | − 0·68 | + 0·25 | + 0·02 |
| October | 2·17 | − 2·33 | − 1·35 | + 0·57 | + 1·62 | − 0·40 | − 0·74 | + 0·29 | + 0·27 |
| November | 2·18 | − 1·92 | − 0·53 | + 0·36 | + 1·11 | − 0·43 | − 0·33 | + 0·24 | + 0·20 |
| December | 1·92 | − 1·36 | + 0·17 | + 0·09 | + 0·82 | − 0·33 | − 0·21 | + 0·17 | + 0·18 |
| For the Year | 2·60 | − 2·30 | − 1·76 | + 1·09 | + 1·39 | − 0·62 | − 0·53 | + 0·20 | + 0·19 |
| | | | | | Horizontal Force. | | | | |
| January | 64·6 | + 15·1 | + 8·9 | − 22·7 | + 16·2 | + 13·1 | − 9·3 | − 0·3 | + 6·0 |
| February | 29·2 | + 3·5 | + 6·0 | − 12·9 | + 6·4 | + 2·4 | − 11·7 | 0·0 | + 7·4 |
| March | 97·6 | + 34·7 | − 13·0 | − 26·2 | + 10·5 | + 5·8 | − 25·4 | − 2·4 | + 10·5 |
| April | 147·9 | + 63·6 | − 27·4 | − 43·4 | + 19·6 | + 13·5 | − 16·3 | − 0·4 | + 8·1 |
| May | 129·3 | + 64·3 | − 69·0 | − 34·2 | + 22·1 | − 2·8 | − 1·0 | + 1·7 | + 0·6 |
| June | 164·6 | + 64·3 | − 92·0 | − 31·9 | + 31·3 | − 11·4 | − 11·5 | + 3·4 | + 2·2 |
| July | 159·2 | + 74·0 | − 83·0 | − 24·4 | + 30·7 | − 2·4 | − 17·3 | − 0·6 | + 3·8 |
| August | 168·0 | + 67·1 | − 71·7 | − 16·4 | + 35·8 | − 10·7 | − 20·8 | + 6·1 | + 5·2 |
| September | 156·0 | + 64·5 | − 36·5 | − 25·2 | + 33·7 | − 0·2 | − 26·4 | + 14·5 | + 6·6 |
| October | 130·5 | + 62·1 | + 7·6 | − 33·8 | + 11·8 | + 12·2 | − 21·7 | + 0·2 | + 10·6 |
| November | 66·2 | + 23·3 | + 10·6 | − 24·6 | + 8·3 | + 8·2 | − 15·7 | + 1·0 | + 8·3 |
| December | 31·7 | + 2·3 | + 13·7 | − 13·5 | + 4·8 | + 5·9 | − 8·3 | + 1·2 | + 7·1 |
| For the Year | 104·4 | + 44·9 | − 28·8 | − 25·8 | + 19·3 | + 2·8 | − 15·4 | + 2·0 | + 6·4 |
| | | | | | Vertical Force. | | | | |
| January | 13·9 | + 4·3 | − 11·2 | − 6·9 | − 3·9 | + 1·1 | − 1·2 | − 0·5 | − 1·3 |
| February | 21·4 | + 10·3 | − 11·0 | − 5·9 | − 0·2 | + 3·1 | + 0·3 | − 2·8 | + 1·0 |
| March | 42·0 | + 15·7 | − 4·2 | − 13·3 | − 1·1 | + 8·4 | + 3·1 | − 1·9 | 0·0 |
| April | 40·0 | + 14·3 | − 9·8 | − 14·7 | − 1·7 | + 7·6 | + 3·0 | − 2·4 | + 0·8 |
| May | 49·1 | + 17·7 | − 17·1 | − 21·5 | − 2·8 | + 7·5 | + 0·6 | − 0·8 | + 1·7 |
| June | 37·4 | + 13·0 | − 4·4 | − 15·4 | − 3·6 | + 4·4 | + 0·6 | − 0·5 | + 0·2 |
| July | 41·7 | + 13·3 | − 5·7 | − 17·6 | − 0·5 | + 6·5 | + 0·3 | − 1·1 | 0·0 |
| August | 26·6 | + 3·7 | − 10·7 | − 14·7 | + 2·2 | + 7·1 | − 0·9 | − 0·7 | + 0·5 |
| September | 23·6 | + 2·1 | − 13·9 | − 12·5 | + 0·8 | + 5·2 | − 0·3 | − 2·1 | + 0·5 |
| October | 20·6 | + 6·7 | − 11·9 | − 8·7 | − 1·0 | + 4·5 | + 2·6 | − 2·4 | − 0·6 |
| November | 14·7 | + 2·1 | − 11·4 | − 5·9 | + 0·7 | + 2·9 | − 1·3 | − 1·9 | + 0·1 |
| December | 12·4 | + 1·5 | − 4·6 | − 2·6 | + 0·3 | + 2·9 | 0·0 | − 0·7 | + 0·7 |
| For the Year | 28·5 | + 8·7 | − 9·6 | − 11·6 | − 0·9 | + 5·1 | + 0·6 | − 1·5 | + 0·3 |

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 Greenwich mean midnight and apparent midnight 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 1883, as given in Tables II., V., IX., and XII. of that year, 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: the units for Horizontal Force and Vertical Force are ·00001 of the whole Horizontal and Vertical Forces respectively.

| Month, 1883. | $m$ | $c_1$ | $\alpha$ | $\alpha'$ | $c_2$ | $\beta$ | $\beta'$ | $c_3$ | $\gamma$ | $\gamma'$ | $c_4$ | $\delta$ | $\delta'$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | DECLINATION WEST. | | | | | | | |
| | ′ | ′ | ° ′ | ° ′ | ′ | ° ′ | ° ′ | ′ | ° ′ | ° ′ | ′ | ° ′ | ° ′ |
| January | 2·00 | 1·84 | 253. 27 | 255. 52 | 1·10 | 24. 45 | 29. 35 | 0·32 | 266. 53 | 274. 8 | 0·25 | 66. 38 | 76. 18 |
| February | 3·09 | 2·52 | 251. 11 | 254. 41 | 1·49 | 11. 20 | 18. 20 | 0·62 | 227. 18 | 237. 48 | 0·52 | 1. 50 | 15. 50 |
| March | 3·27 | 2·69 | 231. 38 | 233. 46 | 2·05 | 17. 55 | 22. 11 | 1·15 | 199. 42 | 206. 6 | 0·41 | 25. 1 | 33. 33 |
| April | 4·64 | 3·32 | 218. 14 | 218. 15 | 2·67 | 32. 33 | 32. 35 | 1·32 | 214. 34 | 214. 37 | 0·37 | 48. 18 | 48. 22 |
| May | 4·24 | 3·13 | 222. 2 | 221. 10 | 2·47 | 50. 55 | 49. 11 | 0·89 | 241. 33 | 238. 57 | 0·17 | 94. 52 | 91. 24 |
| June | 5·03 | 3·90 | 214. 32 | 214. 38 | 2·52 | 48. 19 | 48. 31 | 0·49 | 249. 44 | 250. 2 | 0·07 | 113. 38 | 114. 2 |
| July | 4·71 | 4·27 | 217. 45 | 219. 7 | 2·59 | 43. 48 | 46. 32 | 0·99 | 218. 34 | 222. 40 | 0·17 | 1. 26 | 6. 54 |
| August | 4·13 | 3·27 | 223. 9 | 224. 5 | 2·46 | 46. 10 | 48. 2 | 1·10 | 234. 14 | 237. 2 | 0·25 | 45. 16 | 49. 0 |
| September | 3·92 | 3·33 | 232. 52 | 231. 35 | 2·55 | 43. 37 | 41. 3 | 1·26 | 236. 47 | 232. 56 | 0·55 | 61. 43 | 56. 35 |
| October | 3·66 | 2·82 | 235. 25 | 231. 54 | 2·33 | 33. 44 | 26. 42 | 1·28 | 223. 6 | 212. 33 | 0·64 | 75. 43 | 61. 39 |
| November | 2·30 | 2·49 | 244. 19 | 240. 40 | 1·05 | 27. 57 | 20. 39 | 0·82 | 236. 30 | 225. 33 | 0·29 | 77. 16 | 62. 40 |
| December | 2·10 | 1·92 | 251. 45 | 250. 47 | 0·80 | 15. 44 | 13. 48 | 0·42 | 253. 22 | 250. 28 | 0·40 | 44. 45 | 40. 53 |
| For the Year | 3·01 | 2·88 | 230. 3 | 230. 3 | 1·96 | 36. 20 | 36. 20 | 0·86 | 228. 23 | 228. 23 | 0·30 | 50. 30 | 50. 30 |
| | | | | | | HORIZONTAL FORCE. | | | | | | | |
| | | | ° ′ | ° ′ | | ° ′ | ° ′ | | ° ′ | ° ′ | | ° ′ | ° ′ |
| January | 65·7 | 19·6 | 87. 22 | 89. 47 | 21·7 | 285. 3 | 289. 53 | 12·9 | 155. 33 | 162. 48 | 7·0 | 8. 53 | 18. 33 |
| February | 73·8 | 26·7 | 80. 51 | 84. 21 | 29·0 | 271. 31 | 278. 31 | 16·7 | 143. 25 | 153. 55 | 9·4 | 343. 46 | 357. 46 |
| March | 124·7 | 66·1 | 107. 25 | 109. 33 | 33·0 | 291. 18 | 295. 34 | 21·7 | 136. 50 | 143. 14 | 7·1 | 331. 11 | 339. 43 |
| April | 156·6 | 89·7 | 121. 1 | 121. 2 | 51·2 | 284. 58 | 285. 0 | 19·5 | 127. 19 | 127. 22 | 6·9 | 25. 47 | 25. 51 |
| May | 141·7 | 103·6 | 140. 3 | 139. 11 | 42·2 | 307. 1 | 305. 17 | 3·9 | 150. 43 | 148. 7 | 7·8 | 53. 55 | 50. 27 |
| June | 164·0 | 116·5 | 142. 8 | 142. 14 | 39·0 | 312. 50 | 313. 2 | 12·5 | 222. 28 | 222. 46 | 7·1 | 8. 28 | 8. 52 |
| July | 200·2 | 127·8 | 142. 16 | 143. 38 | 59·1 | 323. 5 | 325. 49 | 13·7 | 193. 9 | 197. 15 | 5·1 | 43. 53 | 49. 21 |
| August | 158·1 | 92·7 | 129. 43 | 130. 39 | 37·3 | 322. 12 | 324. 4 | 20·0 | 174. 51 | 177. 39 | 6·4 | 0. 0 | 3. 44 |
| September | 158·8 | 84·9 | 116. 44 | 115. 27 | 42·4 | 307. 16 | 304. 42 | 22·9 | 176. 8 | 172. 17 | 12·6 | 25. 43 | 20. 35 |
| October | 161·4 | 81·2 | 109. 28 | 105. 57 | 50·0 | 300. 16 | 293. 14 | 33·0 | 160. 56 | 150. 23 | 6·9 | 26. 25 | 12. 21 |
| November | 109·0 | 56·2 | 98. 29 | 94. 50 | 35·2 | 287. 42 | 280. 24 | 19·4 | 171. 41 | 160. 44 | 6·6 | 36. 56 | 22. 20 |
| December | 58·5 | 18·5 | 78. 55 | 77. 57 | 25·6 | 290. 41 | 288. 45 | 11·2 | 154. 13 | 151. 19 | 9·1 | 22. 41 | 18. 49 |
| For the Year | 125·3 | 69·9 | 123. 29 | 123. 29 | 37·4 | 300. 54 | 300. 54 | 15·9 | 162. 26 | 162. 26 | 7·1 | 16. 59 | 16. 59 |
| | | | | | | VERTICAL FORCE. | | | | | | | |
| | | | ° ′ | ° ′ | | ° ′ | ° ′ | | ° ′ | ° ′ | | ° ′ | ° ′ |
| January | 8·6 | 8·9 | 169. 15 | 171. 40 | 3·0 | 269. 21 | 274. 11 | 0·8 | 93. 24 | 100. 39 | 1·5 | 304. 44 | 314. 24 |
| February | 21·2 | 13·7 | 170. 17 | 173. 47 | 10·6 | 260. 21 | 267. 21 | 3·7 | 88. 50 | 99. 20 | 2·2 | 238. 51 | 252. 51 |
| March | 28·3 | 19·6 | 170. 57 | 173. 5 | 14·3 | 270. 28 | 274. 44 | 8·5 | 77. 26 | 83. 50 | 2·1 | 277. 58 | 286. 30 |
| April | 38·9 | 17·7 | 128. 22 | 128. 23 | 17·6 | 271. 25 | 271. 27 | 5·7 | 88. 20 | 88. 23 | 1·8 | 306. 36 | 306. 40 |
| May | 44·5 | 18·1 | 119. 41 | 118. 49 | 19·1 | 264. 34 | 262. 50 | 6·1 | 102. 27 | 99. 51 | 0·8 | 340. 58 | 337. 30 |
| June | 42·5 | 20·8 | 129. 6 | 129. 12 | 19·8 | 262. 14 | 262. 26 | 4·7 | 72. 28 | 72. 46 | 0·4 | 78. 41 | 79. 5 |
| July | 45·3 | 24·3 | 145. 22 | 146. 44 | 22·9 | 261. 8 | 263. 52 | 8·1 | 85. 22 | 89. 28 | 1·4 | 11. 59 | 17. 27 |
| August | 34·0 | 11·3 | 121. 15 | 122. 11 | 16·9 | 274. 40 | 276. 32 | 6·5 | 94. 28 | 97. 16 | 0·3 | 223. 53 | 227. 37 |
| September | 33·0 | 14·1 | 136. 26 | 135. 9 | 13·3 | 267. 25 | 264. 51 | 8·0 | 91. 41 | 87. 50 | 2·3 | 302. 2 | 296. 54 |
| October | 28·7 | 7·8 | 137. 18 | 133. 47 | 12·9 | 264. 6 | 257. 4 | 7·7 | 80. 47 | 70. 14 | 3·7 | 290. 50 | 276. 46 |
| November | 16·1 | 17·7 | 184. 2 | 180. 23 | 5·3 | 275. 13 | 267. 55 | 3·7 | 117. 22 | 106. 25 | 1·4 | 308. 40 | 294. 4 |
| December | 11·1 | 11·4 | 178. 47 | 177. 49 | 2·1 | 301. 7 | 299. 11 | 1·1 | 121. 36 | 118. 42 | 1·5 | 267. 13 | 263. 21 |
| For the Year | 27·5 | 14·3 | 148. 13 | 148. 13 | 13·1 | 266. 58 | 266. 58 | 5·3 | 89. 6 | 89. 6 | 1·3 | 293. 20 | 293. 20 |

TABLE XVI.—*continued.*—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 Greenwich mean midnight and apparent midnight 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 1884, as given in Tables II., V., IX., and XII. of that year, 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: the units for Horizontal Force and Vertical Force are ·00001 of the whole Horizontal and Vertical Forces respectively.

| Month, 1884. | $m$ | $c_1$ | $\alpha$ | $\alpha'$ | $c_2$ | $\beta$ | $\beta'$ | $c_3$ | $\gamma$ | $\gamma'$ | $c_4$ | $\delta$ | $\delta'$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | DECLINATION WEST. | | | | | | | |
| | ′ | ′ | ° ′ | ° ′ | ′ | ° ′ | ° ′ | ′ | ° ′ | ° ′ | ′ | ° ′ | ° ′ |
| January | 1·99 | 2·10 | 238. 45 | 241. 9 | 1·12 | 23. 42 | 28. 30 | 0·85 | 243. 32 | 250. 44 | 0·42 | 47. 58 | 57. 34 |
| February | 3·16 | 2·41 | 228. 59 | 232. 28 | 1·87 | 8. 49 | 15. 47 | 0·99 | 221. 20 | 231. 47 | 0·41 | 38. 2 | 51. 58 |
| March | 4·27 | 3·52 | 232. 7 | 234. 12 | 2·44 | 31. 22 | 35. 32 | 1·51 | 232. 36 | 238. 51 | 0·56 | 60. 26 | 68. 46 |
| April | 4·92 | 3·82 | 226. 34 | 226. 32 | 3·13 | 41. 28 | 41. 24 | 1·63 | 223. 22 | 223. 16 | 0·40 | 51. 4 | 50. 56 |
| May | 4·73 | 3·45 | 221. 1 | 220. 9 | 2·75 | 53. 36 | 51. 52 | 0·94 | 243. 23 | 240. 47 | 0·19 | 70. 4 | 66. 36 |
| June | 5·26 | 4·45 | 217. 5 | 217. 13 | 2·73 | 48. 3 | 48. 19 | 0·80 | 228. 13 | 228. 37 | 0·06 | 263. 9 | 263. 41 |
| July | 4·45 | 3·69 | 219. 24 | 220. 47 | 2·17 | 56. 10 | 58. 56 | 0·94 | 242. 24 | 246. 33 | 0·15 | 9. 50 | 15. 22 |
| August | 3·44 | 3·42 | 233. 41 | 234. 34 | 2·28 | 55. 52 | 57. 38 | 1·17 | 240. 21 | 243. 0 | 0·34 | 50. 1 | 53. 33 |
| September | 3·50 | 3·33 | 238. 12 | 236. 51 | 2·35 | 47. 35 | 44. 53 | 1·34 | 232. 51 | 228. 48 | 0·55 | 75. 39 | 70. 15 |
| October | 3·46 | 2·72 | 234. 40 | 231. 7 | 2·12 | 33. 18 | 26. 12 | 1·20 | 227. 21 | 216. 42 | 0·69 | 64. 7 | 49. 55 |
| November | 2·28 | 1·97 | 249. 16 | 245. 39 | 1·48 | 18. 54 | 11. 40 | 0·82 | 233. 46 | 222. 55 | 0·53 | 41. 46 | 27. 18 |
| December | 2·43 | 1·87 | 257. 12 | 256. 19 | 1·06 | 358. 36 | 356. 50 | 0·58 | 247. 36 | 244. 57 | 0·36 | 41. 41 | 38. 9 |
| For the Year | 3·22 | 3·01 | 230. 39 | 230. 39 | 2·04 | 38. 55 | 38. 55 | 1·05 | 233. 29 | 233. 29 | 0·37 | 52. 54 | 52. 54 |
| | | | | | | HORIZONTAL FORCE. | | | | | | | |
| | | | ° ′ | ° ′ | | ° ′ | ° ′ | | ° ′ | ° ′ | | ° ′ | ° ′ |
| January | 95·9 | 38·5 | 101. 0 | 103. 24 | 39·0 | 279. 27 | 284. 15 | 14·8 | 134. 46 | 141. 58 | 9·9 | 357. 50 | 7. 26 |
| February | 134·9 | 56·6 | 87. 28 | 90. 57 | 45·3 | 279. 22 | 286. 20 | 23·8 | 123. 27 | 133. 54 | 10·7 | 4. 54 | 18. 50 |
| March | 160·9 | 77·7 | 102. 54 | 104. 59 | 49·3 | 298. 17 | 302. 27 | 22·7 | 165. 22 | 171. 37 | 13·7 | 6. 39 | 14. 59 |
| April | 180·3 | 102·4 | 120. 6 | 120. 4 | 52·6 | 296. 28 | 296. 24 | 23·4 | 150. 12 | 150. 6 | 10·3 | 26. 24 | 26. 16 |
| May | 115·7 | 77·7 | 142. 21 | 141. 29 | 30·5 | 307. 51 | 306. 7 | 10·7 | 235. 26 | 232. 50 | 5·1 | 55. 51 | 52. 23 |
| June | 143·2 | 98·3 | 138. 56 | 139. 4 | 40·5 | 304. 16 | 304. 32 | 6·9 | 213. 56 | 214. 20 | 6·7 | 75. 4 | 75. 36 |
| July | 164·5 | 97·3 | 134. 53 | 136. 16 | 35·6 | 317. 52 | 320. 38 | 21·5 | 205. 32 | 209. 41 | 8·1 | 49. 19 | 54. 51 |
| August | 134·0 | 82·4 | 137. 54 | 138. 47 | 29·3 | 325. 51 | 327. 37 | 19·8 | 202. 50 | 205. 29 | 8·6 | 30. 58 | 34. 30 |
| September | 172·3 | 84·7 | 125. 59 | 124. 38 | 45·8 | 327. 4 | 324. 22 | 27·9 | 193. 20 | 189. 17 | 12·2 | 24. 13 | 18. 49 |
| October | 143·8 | 74·8 | 99. 2 | 95. 29 | 41·4 | 302. 4 | 294. 58 | 25·4 | 165. 0 | 154. 21 | 7·7 | 11. 18 | 357. 6 |
| November | 94·1 | 45·2 | 77. 27 | 73. 50 | 33·9 | 272. 3 | 264. 49 | 18·0 | 146. 4 | 135. 13 | 8·9 | 356. 30 | 342. 2 |
| December | 65·5 | 19·2 | 73. 8 | 72. 15 | 30·3 | 287. 36 | 285. 50 | 14·5 | 137. 25 | 134. 46 | 8·4 | 349. 40 | 346. 8 |
| For the Year | 125·8 | 66·6 | 118. 50 | 118. 50 | 37·8 | 299. 33 | 299. 33 | 16·4 | 168. 48 | 168. 48 | 8·5 | 18. 38 | 18. 38 |
| | | | | | | VERTICAL FORCE. | | | | | | | |
| | | | ° ′ | ° ′ | | ° ′ | ° ′ | | ° ′ | ° ′ | | ° ′ | ° ′ |
| January | 8·1 | 8·6 | 178. 6 | 180. 30 | 2·5 | 317. 44 | 322. 32 | 2·6 | 128. 19 | 135. 31 | 1·0 | 261. 56 | 271. 32 |
| February | 16·5 | 13·2 | 155. 8 | 158. 37 | 5·6 | 265. 15 | 272. 13 | 4·0 | 75. 35 | 86. 2 | 2·1 | 243. 20 | 257. 16 |
| March | 33·5 | 15·7 | 144. 34 | 146. 39 | 13·0 | 261. 55 | 266. 5 | 9·4 | 89. 42 | 95. 57 | 3·4 | 284. 34 | 292. 54 |
| April | 53·2 | 24·2 | 127. 26 | 127. 24 | 21·4 | 262. 30 | 262. 26 | 8·6 | 98. 4 | 97. 58 | 2·9 | 301. 40 | 301. 32 |
| May | 59·0 | 27·5 | 110. 47 | 109. 55 | 20·8 | 272. 44 | 271. 0 | 6·7 | 94. 39 | 92. 3 | 1·9 | 307. 41 | 304. 13 |
| June | 47·6 | 24·9 | 123. 37 | 123. 45 | 21·3 | 269. 1 | 269. 17 | 5·2 | 58. 21 | 58. 45 | 0·3 | 90. 0 | 90. 32 |
| July | 35·0 | 16·2 | 136. 36 | 137. 59 | 13·8 | 272. 25 | 275. 11 | 6·2 | 96. 6 | 100. 15 | 2·6 | 277. 46 | 283. 18 |
| August | 39·7 | 16·1 | 124. 15 | 125. 8 | 16·6 | 280. 10 | 281. 56 | 7·3 | 108. 30 | 111. 9 | 2·7 | 296. 29 | 300. 1 |
| September | 25·8 | 9·9 | 146. 52 | 145. 31 | 11·1 | 266. 41 | 263. 59 | 6·3 | 97. 1 | 92. 58 | 2·4 | 300. 58 | 295. 34 |
| October | 27·5 | 11·9 | 154, 38 | 151. 5 | 10·0 | 270. 0 | 262. 54 | 6·7 | 92. 30 | 81. 51 | 3·1 | 292. 14 | 278. 2 |
| November | 19·3 | 13·5 | 181. 31 | 177. 54 | 6·5 | 309. 44 | 302. 30 | 4·0 | 122. 28 | 111. 37 | 2·5 | 301. 58 | 287. 30 |
| December | 9·5 | 10·5 | 179. 22 | 178. 29 | 1·2 | 293. 34 | 291. 48 | 1·9 | 122. 3 | 119. 24 | 1·5 | 298. 32 | 295. 0 |
| For the Year | 29·4 | 14·8 | 139. 33 | 139. 33 | 11·7 | 272. 0 | 272. 0 | 5·5 | 95. 52 | 95. 52 | 2·1 | 289. 49 | 289. 49 |

TABLE XVI.—*concluded.*—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 Greenwich mean midnight and apparent midnight 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 1885, as given in Tables II., V., IX., and XII. of that year, 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: the units for Horizontal Force and Vertical Force are ·00001 of the whole Horizontal and Vertical Forces respectively.

| Month, 1885. | $m$ | $c_1$ | $\alpha$ | $\alpha'$ | $c_2$ | $\beta$ | $\beta'$ | $c_3$ | $\gamma$ | $\gamma'$ | $c_4$ | $\delta$ | $\delta'$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | DECLINATION WEST. | | | | | | | |
| | ′ | ′ | ° ′ | ° ′ | ′ | ° ′ | ° ′ | ′ | ° ′ | ° ′ | ′ | ° ′ | ° ′ |
| January | 2·29 | 1·85 | 251. 22 | 253. 47 | 0·96 | 2. 14 | 7. 4 | 0·56 | 250. 5 | 257. 20 | 0·36 | 40. 24 | 50. 4 |
| February | 1·89 | 2·23 | 243. 58 | 247. 28 | 0·97 | 38. 19 | 45. 19 | 0·55 | 239. 12 | 249. 42 | 0·34 | 50. 54 | 64. 54 |
| March | 3·42 | 3·16 | 228. 16 | 230. 24 | 1·95 | 20. 50 | 25. 6 | 1·18 | 214. 38 | 221. 2 | 0·56 | 38. 50 | 47. 22 |
| April | 4·20 | 3·31 | 221. 17 | 221. 18 | 2·39 | 35. 30 | 35. 32 | 1·28 | 217. 2 | 217. 5 | 0·53 | 50. 55 | 50. 59 |
| May | 4·36 | 3·61 | 224. 26 | 223. 34 | 2·58 | 49. 5 | 47. 21 | 0·89 | 238. 21 | 235. 45 | 0·18 | 68. 12 | 64. 44 |
| June | 4·87 | 4·16 | 215. 30 | 215. 36 | 2·46 | 44. 30 | 44. 42 | 0·90 | 233. 50 | 234. 8 | 0·10 | 330. 1 | 330. 25 |
| July | 5·07 | 4·09 | 214. 54 | 216. 16 | 2·55 | 50. 7 | 52. 51 | 0·90 | 235. 43 | 239. 49 | 0·14 | 321. 4 | 326. 32 |
| August | 4·25 | 3·79 | 232. 45 | 233. 40 | 2·49 | 61. 2 | 62. 52 | 1·01 | 246. 12 | 248. 57 | 0·15 | 53. 24 | 57. 4 |
| September | 2·84 | 3·74 | 245. 43 | 244. 26 | 2·03 | 48. 45 | 46. 11 | 0·99 | 226. 58 | 223. 7 | 0·26 | 85. 8 | 80. 0 |
| October | 2·17 | 2·69 | 239. 56 | 236. 25 | 1·71 | 19. 28 | 12. 26 | 0·84 | 208. 30 | 197. 57 | 0·39 | 47. 9 | 33. 5 |
| November | 2·18 | 1·99 | 254. 35 | 250. 56 | 1·16 | 18. 8 | 10. 50 | 0·54 | 232. 51 | 221. 54 | 0·31 | 50. 9 | 35. 33 |
| December | 1·92 | 1·37 | 276. 57 | 275. 59 | 0·83 | 5. 58 | 4. 2 | 0·39 | 237. 26 | 234. 32 | 0·25 | 43. 22 | 39. 30 |
| For the Year | 2·60 | 2·89 | 232. 40 | 232. 40 | 1·77 | 38. 8 | 38. 8 | 0·82 | 229. 41 | 229. 41 | 0·27 | 46. 14 | 46. 14 |
| | | | | | | HORIZONTAL FORCE. | | | | | | | |
| | | | ° ′ | ° ′ | | ° ′ | ° ′ | | ° ′ | ° ′ | | ° ′ | ° ′ |
| January | 64·6 | 17·5 | 59. 23 | 61. 48 | 27·9 | 305. 24 | 310. 14 | 16·1 | 125. 32 | 132. 47 | 6·0 | 357. 13 | 6. 53 |
| February | 29·2 | 6·9 | 30. 31 | 34. 1 | 14·4 | 296. 37 | 303. 37 | 11·9 | 168. 23 | 178. 53 | 7·4 | 359. 41 | 13. 41 |
| March | 97·6 | 37·0 | 110. 35 | 112. 43 | 28·2 | 291. 57 | 296. 13 | 26·1 | 167. 11 | 173. 35 | 10·7 | 347. 13 | 355. 45 |
| April | 147·9 | 69·3 | 113. 17 | 113. 18 | 47·6 | 294. 21 | 294. 23 | 21·2 | 140. 19 | 140. 22 | 8·1 | 357. 3 | 357. 7 |
| May | 129·3 | 94·3 | 137. 2 | 136. 10 | 40·7 | 302. 56 | 301. 12 | 3·0 | 251. 13 | 248. 37 | 1·8 | 71. 49 | 68. 21 |
| June | 164·6 | 112·2 | 145. 3 | 145. 9 | 44·7 | 314. 29 | 314. 41 | 16·2 | 224. 41 | 224. 59 | 4·0 | 57. 37 | 58. 1 |
| July | 159·2 | 111·3 | 138. 17 | 139. 39 | 39·2 | 321. 30 | 324. 14 | 17·4 | 187. 59 | 192. 5 | 3·9 | 350. 43 | 356. 11 |
| August | 168·0 | 98·2 | 136. 54 | 137. 49 | 39·4 | 335. 28 | 337. 18 | 23·4 | 207. 22 | 210. 7 | 8·0 | 49. 29 | 53. 9 |
| September | 156·0 | 74·1 | 119. 30 | 118. 13 | 42·1 | 323. 14 | 320. 40 | 26·4 | 180. 30 | 176. 39 | 15·9 | 65. 23 | 60. 15 |
| October | 130·5 | 62·6 | 83. 4 | 79. 33 | 35·8 | 289. 18 | 282. 16 | 24·9 | 150. 46 | 140. 13 | 10·6 | 1. 8 | 347. 4 |
| November | 66·2 | 25·6 | 65. 30 | 61. 51 | 26·0 | 288. 32 | 281. 14 | 17·7 | 152. 25 | 141. 28 | 8·4 | 7. 9 | 352. 33 |
| December | 31·7 | 13·9 | 9. 36 | 8. 38 | 14·3 | 289. 29 | 287. 33 | 10·2 | 144. 37 | 141. 43 | 7·2 | 9. 36 | 5. 44 |
| For the Year | 104·4 | 53·4 | 122. 41 | 122. 41 | 32·2 | 306. 48 | 306. 48 | 15·7 | 169. 48 | 169. 48 | 6·7 | 17. 46 | 17. 46 |
| | | | | | | VERTICAL FORCE. | | | | | | | |
| | | | ° ′ | ° ′ | | ° ′ | ° ′ | | ° ′ | ° ′ | | ° ′ | ° ′ |
| January | 13·9 | 12·0 | 159. 2 | 161. 27 | 7·9 | 240. 20 | 245. 10 | 1·6 | 135. 37 | 142. 52 | 1·4 | 201. 2 | 210. 42 |
| February | 21·4 | 15·1 | 136. 42 | 140. 12 | 5·9 | 268. 8 | 275. 8 | 3·1 | 84. 14 | 94. 44 | 3·0 | 289. 35 | 303. 35 |
| March | 42·0 | 16·2 | 104. 59 | 107. 7 | 13·4 | 265. 30 | 269. 46 | 8·9 | 69. 32 | 75. 56 | 1·9 | 270. 0 | 278. 32 |
| April | 40·0 | 17·3 | 124. 23 | 124. 24 | 14·8 | 263. 27 | 263. 29 | 8·2 | 68. 22 | 68. 25 | 2·5 | 288. 26 | 288. 30 |
| May | 49·1 | 24·6 | 133. 59 | 133. 7 | 21·7 | 262. 40 | 260. 56 | 7·5 | 85. 30 | 82. 54 | 1·9 | 334. 19 | 330. 51 |
| June | 37·4 | 13·8 | 108. 29 | 108. 35 | 15·8 | 256. 43 | 256. 55 | 4·4 | 81. 54 | 82. 12 | 0·6 | 291. 48 | 292. 12 |
| July | 41·7 | 14·5 | 113. 7 | 114. 29 | 17·6 | 268. 27 | 271. 11 | 6·5 | 87. 43 | 91. 49 | 1·1 | 270. 0 | 275. 28 |
| August | 26·6 | 11·4 | 161. 3 | 161. 58 | 14·8 | 278. 22 | 280. 12 | 7·2 | 97. 9 | 99. 54 | 0·9 | 305. 40 | 309. 20 |
| September | 23·6 | 14·1 | 171. 24 | 170. 7 | 12·6 | 273. 48 | 271. 14 | 5·2 | 93. 36 | 89. 45 | 2·2 | 283. 27 | 278. 19 |
| October | 20·6 | 13·6 | 150. 40 | 147. 9 | 8·8 | 263. 40 | 256. 38 | 5·2 | 59. 55 | 49. 22 | 2·5 | 256. 37 | 242. 33 |
| November | 14·7 | 11·6 | 169. 42 | 166. 3 | 5·9 | 276. 27 | 269. 9 | 3·2 | 113. 20 | 102. 23 | 1·9 | 272. 17 | 257. 41 |
| December | 12·4 | 4·8 | 162. 23 | 161. 25 | 2·6 | 276. 32 | 274. 36 | 2·9 | 89. 50 | 86. 56 | 1·0 | 312. 32 | 308. 40 |
| For the Year | 28·5 | 13·0 | 137. 50 | 137. 50 | 11·7 | 265. 35 | 265. 35 | 5·1 | 83. 28 | 83. 28 | 1·5 | 281. 4 | 281. 4 |

TABLE XVII.—SEPARATE RESULTS of OBSERVATIONS of MAGNETIC DIP made in the Year 1885.

| Day and Hour, Civil, 1885. | Needle. | Magnetic Dip. | Observer. | Day and Hour, Civil, 1885. | Needle. | Magnetic Dip. | Observer. | Day and Hour, Civil, 1885. | Needle. | Magnetic Dip. | Observer. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| d h | | ° ′ ″ | | d h | | ° ′ ″ | | d h | | ° ′ ″ | |
| Jan. 6. 12 | C 1 | 67. 29. 58 | N | May 1. 13 | C 1 | 67. 29. 2 | N | Sept. 3. 13 | C 1 | 67. 28. 33 | N |
| 9. 12 | C 2 | 67. 29. 35 | N | 8. 14 | C 2 | 67. 26. 42 | N | 3. 14 | D 2 | 67. 27. 22 | N |
| 9. 13 | D 2 | 67. 29. 50 | N | 13. 14 | D 1 | 67. 30. 40 | N | 11. 14 | C 2 | 67. 27. 16 | N |
| 12. 14 | D 1 | 67. 29. 1 | N | 21. 13 | D 2 | 67. 29. 34 | N | 15. 13 | D 1 | 67. 28. 40 | N |
| 16. 13 | B 1 | 67. 28. 9 | N | 22. 13 | B 1 | 67. 26. 26 | N | 15. 14 | D 2 | 67. 27. 13 | N |
| 21. 14 | C 2 | 67. 28. 29 | N | 22. 14 | B 2 | 67. 27. 6 | N | 21. 14 | B 1 | 67. 27. 9 | N |
| 23. 12 | B 2 | 67. 31. 30 | N | 28. 14 | C 2 | 67. 28. 45 | N | 23. 14 | B 2 | 67. 29. 11 | N |
| 29. 11 | C 1 | 67. 27. 4 | N | 29. 13 | B 2 | 67. 28. 43 | N | 25. 13 | D 2 | 67. 28. 26 | N |
| 29. 13 | D 1 | 67. 27. 22 | N | | | | | 25. 14 | D 1 | 67. 28. 18 | N |
| 29. 14 | B 1 | 67. 26. 23 | N | | | | | 29. 11 | B 1 | 67. 29. 13 | N |
| 30. 13 | D 2 | 67. 30. 30 | N | | | | | 29. 12 | B 2 | 67. 28. 18 | N |
| 31. 13 | D 1 | 67. 29. 16 | N | | | | | 30. 14 | C 1 | 67. 27. 12 | N |
| Feb. 4. 13 | B 1 | 67. 27. 37 | N | June 5. 14 | C 1 | 67. 24. 6 | N | Oct. 2. 14 | C 2 | 67. 28. 11 | N |
| 10. 14 | B 2 | 67. 30. 38 | N | 10. 14 | C 2 | 67. 25. 34 | N | 12. 14 | D 2 | 67. 27. 0 | N |
| 12. 12 | C 1 | 67. 27. 13 | N | 13. 14 | D 1 | 67. 25. 26 | N | 14. 13 | B 2 | 67. 27. 3 | N |
| 13. 14 | C 2 | 67. 31. 15 | N | 15. 14 | C 1 | 67. 25. 57 | N | 14. 14 | D 1 | 67. 28. 45 | N |
| 18. 14 | D 2 | 67. 30. 56 | N | 19. 14 | B 1 | 67. 25. 37 | N | 16. 14 | C 1 | 67. 29. 0 | N |
| 21. 13 | C 1 | 67. 27. 44 | N | 20. 13 | D 2 | 67. 28. 24 | N | 20. 14 | D 2 | 67. 27. 7 | N |
| 23. 14 | D 1 | 67. 30. 32 | N | 24. 12 | B 2 | 67. 26. 35 | N | 20. 15 | D 1 | 67. 28. 14 | N |
| 24. 11 | B 2 | 67. 28. 42 | N | 26. 14 | C 2 | 67. 28. 25 | N | 24. 13 | C 1 | 67. 27. 37 | N |
| 25. 13 | B 1 | 67. 27. 42 | N | 29. 14 | D 1 | 67. 27. 58 | N | 27. 13 | B 1 | 67. 26. 21 | N |
| 25. 14 | C 2 | 67. 27. 16 | N | 30. 13 | C 1 | 67. 27. 50 | N | 28. 13 | B 2 | 67. 27. 34 | N |
| 26. 13 | D 2 | 67. 29. 5 | N | | | | | 28. 14 | C 2 | 67. 27. 21 | N |
| | | | | | | | | 30. 14 | B 1 | 67. 26. 1 | N |
| Mar. 4. 13 | D 1 | 67. 30. 50 | N | July 2. 14 | D 2 | 67. 26. 48 | N | Nov. 7. 14 | C 1 | 67. 26. 50 | N |
| 11. 13 | C 2 | 67. 27. 12 | N | 8. 13 | B 2 | 67. 28. 6 | N | 13. 13 | D 2 | 67. 27. 4 | N |
| 11. 14 | C 1 | 67. 26. 50 | N | 8. 14 | D 1 | 67. 26. 50 | N | 13. 14 | D 1 | 67. 28. 45 | N |
| 13. 14 | D 2 | 67. 30. 1 | N | 14. 14 | C 1 | 67. 26. 59 | N | 16. 14 | C 2 | 67. 26. 52 | N |
| 21. 13 | D 1 | 67. 30. 31 | N | 17. 13 | C 2 | 67. 26. 38 | N | 20. 13 | B 2 | 67. 26. 50 | N |
| 24. 12 | B 1 | 67. 26. 10 | N | 17. 14 | B 2 | 67. 26. 36 | N | 25. 14 | C 1 | 67. 27. 11 | N |
| 24. 13 | B 2 | 67. 28. 32 | N | 20. 14 | B 1 | 67. 26. 51 | N | 26. 13 | C 2 | 67. 26. 57 | N |
| 26. 14 | C 1 | 67. 26. 50 | N | 24. 14 | D 2 | 67. 26. 46 | N | 26. 14 | B 1 | 67. 26. 53 | N |
| 27. 13 | C 2 | 67. 25. 52 | N | 28. 14 | D 1 | 67. 26. 26 | N | 27. 12 | B 2 | 67. 25. 37 | N |
| 31. 13 | B 1 | 67. 27. 11 | N | 30. 12 | B 2 | 67. 27. 32 | N | 27. 13 | D 1 | 67. 26. 12 | N |
| | | | | 30. 13 | B 1 | 67. 26. 32 | N | | | | |
| Apr. 2. 14 | C 1 | 67. 27. 57 | N | Aug. 10. 14 | C 1 | 67. 26. 48 | N | Dec. 2. 14 | C 1 | 67. 27. 35 | N |
| 9. 14 | C 2 | 67. 29. 57 | N | 12. 13 | B 1 | 67. 28. 10 | N | 9. 13 | C 2 | 67. 27. 58 | N |
| 11. 13 | D 1 | 67. 28. 18 | N | 12. 14 | B 2 | 67. 28. 6 | N | 11. 14 | D 2 | 67. 27. 33 | N |
| 17. 13 | B 1 | 67. 27. 56 | N | 13. 14 | C 2 | 67. 25. 49 | N | 16. 14 | B 1 | 67. 28. 11 | N |
| 17. 14 | D 2 | 67. 31. 3 | N | 14. 13 | B 1 | 67. 25. 40 | N | 18. 14 | D 1 | 67. 28. 33 | N |
| 22. 12 | B 2 | 67. 26. 55 | N | 18. 13 | D 1 | 67. 27. 19 | N | 22. 13 | B 2 | 67. 27. 17 | N |
| 23. 13 | C 2 | 67. 29. 4 | N | 18. 14 | D 2 | 67. 26. 29 | N | 22. 14 | C 2 | 67. 25. 51 | N |
| 23. 14 | C 1 | 67. 27. 10 | N | 19. 14 | B 2 | 67. 26. 24 | N | 24. 12 | B 1 | 67. 27. 26 | N |
| 28. 14 | D 1 | 67. 30. 37 | N | 20. 14 | C 2 | 67. 27. 17 | N | 24. 13 | B 2 | 67. 27. 55 | N |
| 29. 13 | B 2 | 67. 27. 16 | N | 25. 14 | D 2 | 67. 26. 25 | N | 28. 13 | D 2 | 67. 28. 20 | N |
| 29. 14 | D 2 | 67. 30. 23 | N | 28. 11 | B 1 | 67. 27. 32 | N | | | | 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 1885.

Monthly Means of Magnetic Dip.

| Month, 1885. | 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. 27. 16 | 2 | 67. 31. 30 | 1 | 67. 28. 31 | 2 |
| February | 67. 27. 40 | 2 | 67. 29. 40 | 2 | 67. 27. 28 | 2 |
| March | 67. 26. 40 | 2 | 67. 28. 32 | 1 | 67. 26. 50 | 2 |
| April | 67. 27. 56 | 1 | 67. 27. 5 | 2 | 67. 27. 34 | 2 |
| May | 67. 26. 26 | 1 | 67. 27. 55 | 2 | 67. 29. 2 | 1 |
| June | 67. 25. 37 | 1 | 67. 26. 35 | 1 | 67. 25. 58 | 3 |
| July | 67. 26. 42 | 2 | 67. 27. 25 | 3 | 67. 26. 59 | 1 |
| August | 67. 27. 7 | 3 | 67. 27. 15 | 2 | 67. 26. 48 | 1 |
| September | 67. 28. 11 | 2 | 67. 28. 45 | 2 | 67. 27. 52 | 2 |
| October | 67. 26. 11 | 2 | 67. 27. 18 | 2 | 67. 28. 19 | 2 |
| November | 67. 26. 53 | 1 | 67. 26. 14 | 2 | 67. 27. 0 | 2 |
| December | 67. 27. 48 | 2 | 67. 27. 36 | 2 | 67. 27. 35 | 1 |
| Means | 67. 27. 6 | 21 | 67. 27. 50 | 22 | 67. 27. 24 | 21 |

| Month, 1885. | 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. 29. 2 | 2 | 67. 28. 33 | 3 | 67. 30. 10 | 2 |
| February | 67. 29. 16 | 2 | 67. 30. 32 | 1 | 67. 30. 1 | 2 |
| March | 67. 26. 32 | 2 | 67. 30. 40 | 2 | 67. 30. 1 | 1 |
| April | 67. 29. 30 | 2 | 67. 29. 28 | 2 | 67. 30. 43 | 2 |
| May | 67. 27. 43 | 2 | 67. 30. 40 | 1 | 67. 29. 34 | 1 |
| June | 67. 27. 0 | 2 | 67. 26. 42 | 2 | 67. 28. 24 | 1 |
| July | 67. 26. 38 | 1 | 67. 26. 38 | 2 | 67. 26. 47 | 2 |
| August | 67. 26. 33 | 2 | 67. 27. 19 | 1 | 67. 26. 27 | 2 |
| September | 67. 27. 16 | 1 | 67. 28. 29 | 2 | 67. 27. 40 | 3 |
| October | 67. 27. 46 | 2 | 67. 28. 30 | 2 | 67. 27. 3 | 2 |
| November | 67. 26. 55 | 2 | 67. 27. 28 | 2 | 67. 27. 4 | 1 |
| December | 67. 26. 55 | 2 | 67. 28. 33 | 1 | 67. 27. 56 | 2 |
| Means | 67. 27. 39 | 22 | 67. 28. 30 | 21 | 67. 28. 24 | 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 1885.

| 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<br>B 2 | 21<br>22 | 67. 27. 6<br>67. 27. 50 | 67. 27. 28 | |
| 6-inch Needles | C 1<br>C 2 | 21<br>22 | 67. 27. 24<br>67. 27. 39 | 67. 27. 32 | 67. 27. 49 |
| 3-inch Needles | D 1<br>D 2 | 21<br>21 | 67. 28. 30<br>67. 28. 24 | 67. 28. 27 | |

## TABLE XIX.—DETERMINATIONS OF THE ABSOLUTE VALUE OF HORIZONTAL MAGNETIC FORCE IN THE YEAR 1885.

### Abstract of the Observations of Deflexion of a Magnet for Absolute Measure of Horizontal Force.

| Month and Day (Civil Reckoning) 1885. | 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 23 | 1·0<br>1·3 | 50·6 | 10. 33. 8<br>4. 47. 17 | 5·668<br>5·663 | 100<br>100 | 47·6<br>47·9 | N |
| February 24 | 1·0<br>1·3 | 55·0 | 10. 31. 36<br>4. 46. 24 | 5·662<br>5·662 | 100<br>100 | 53·5<br>54·1 | N |
| March 25 | 1·0<br>1·3 | 50·7 | 10. 31. 43<br>4. 46. 45 | 5·660<br>5·660 | 100<br>100 | 49·2<br>50·6 | N |
| April 24 | 1·0<br>1·3 | 56·7 | 10. 31. 4<br>4. 46. 24 | 5·661<br>5·670 | 100<br>100 | 56·3<br>57·4 | N |
| May 20 | 1·0<br>1·3 | 52·9 | 10. 31. 16<br>4. 46. 26 | 5·668<br>5·662 | 100<br>100 | 52·6<br>53·3 | N |
| June 24 | 1·0<br>1·3 | 68·1 | 10. 29. 22<br>4. 45. 30 | 5·670<br>5·670 | 100<br>100 | 69·4<br>71·1 | N |
| July 22 | 1·0<br>1·3 | 68·1 | 10. 27. 44<br>4. 44. 56 | 5·678<br>5·672 | 100<br>100 | 68·9<br>69·6 | N |
| August 20 | 1·0<br>1·3 | 59·4 | 10. 30. 0<br>4. 45. 54 | 5·669<br>5·667 | 100<br>100 | 58·9<br>60·2 | N |
| September 22 | 1·0<br>1·3 | 61·2 | 10. 29. 9<br>4. 45. 28 | 5·666<br>5·675 | 100<br>100 | 61·7<br>63·4 | N |
| October 21 | 1·0<br>1·3 | 55·0 | 10. 30. 3<br>4. 45. 55 | 5·673<br>5·667 | 100<br>100 | 54·0<br>54·1 | N |
| November 17 | 1·0<br>1·3 | 51·4 | 10. 29. 39<br>4. 45. 43 | 5·670<br>5·668 | 100<br>100 | 48·9<br>49·8 | N |
| December 23 | 1·0<br>1·3 | 57·1 | 10. 29. 23<br>4. 45. 29 | 5·668<br>5·672 | 100<br>100 | 54·3<br>54·2 | 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 Horizontal Force in Absolute Measure.

| Month and Day (Civil Reckoning) 1885. | 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 23 | 0·09179 | 0·09191 | −0·00321 | −0·00306 | 8·96415 | 5·6655 | 0·15291 | 0·3619 | 3·9299 | 1·8120 |
| February 24 | 0·09164 | 0·09170 | −0·00152 | | 8·96328 | 5·6620 | 0·15388 | 0·3619 | 3·9382 | 1·8159 |
| March 25 | 0·09159 | 0·09174 | −0·00406 | | 8·96328 | 5·6600 | 0·15389 | 0·3619 | 3·9382 | 1·8159 |
| April 24 | 0·09159 | 0·09173 | −0·00361 | | 8·96323 | 5·6655 | 0·15351 | 0·3617 | 3·9368 | 1·8152 |
| May 20 | 0·09156 | 0·09168 | −0·00305 | | 8·96305 | 5·6650 | 0·15335 | 0·3616 | 3·9369 | 1·8152 |
| June 24 | 0·09153 | 0·09162 | −0·00243 | | 8·96283 | 5·6700 | 0·15372 | 0·3616 | 3·9395 | 1·8164 |
| July 22 | 0·09130 | 0·09144 | −0·00384 | | 8·96185 | 5·6750 | 0·15292 | 0·3609 | 3·9404 | 1·8169 |
| August 20 | 0·09148 | 0·09161 | −0·00338 | | 8·96270 | 5·6680 | 0·15332 | 0·3614 | 3·9383 | 1·8159 |
| September 22 | 0·09139 | 0·09150 | −0·00293 | | 8·96221 | 5·6705 | 0·15311 | 0·3611 | 3·9396 | 1·8165 |
| October 21 | 0·09142 | 0·09154 | −0·00327 | | 8·96239 | 5·6700 | 0·15262 | 0·3610 | 3·9365 | 1·8151 |
| November 17 | 0·09130 | 0·09142 | −0·00321 | | 8·96183 | 5·6690 | 0·15246 | 0·3607 | 3·9384 | 1·8159 |
| December 23 | 0·09136 | 0·09144 | −0·00226 | | 8·96200 | 5·6700 | 0·15265 | 0·3608 | 3·9384 | 1·8159 |
| Means ....... | .. | .. | .. | .. | .. | .. | .. | .. | 3·9376 | 1·8156 |

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 Centimetre-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.

1885.

MAGNETIC DISTURBANCES in DECLINATION, HORIZONTAL FORCE, and VERTICAL FORCE, and EARTH CURRENTS, recorded at the ROYAL OBSERVATORY, GREENWICH, in the Year 1885.

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 Civil Time (commencing at midnight, and counting the hours from 0 to 24).

1885.

January 2. $5^h$ to 3. $4^h$ Fluctuations in Dec. (± 8′): in H.F. (± ·0015): no register of V.F.

3. $18^h$ to 4. $3^h$ Fluctuations in Dec. (± 2′): in H.F. (± ·0005): no register of V.F.

4. $19^h$ to $22^h$ Fluctuations in Dec. (± 3′): in H.F. small: no register of V.F.

8. $17^h$ to 9. $6^h$ Fluctuations in Dec. (± 5′): in H.F. (± ·0015): no register of V.F.

9. $17^h$ to 10. $5^h$ Fluctuations in Dec. (± 2′): in H.F. small: no register of V.F.

10. $17\frac{1}{2}^h$ to $19\frac{1}{4}^h$ Wave in Dec. (− 4′): in H.F. (− ·001). 10. $23^h$ to 11. $2^h$ Fluctuations in Dec. (± 2′): in H.F. (± ·0005). No register of V.F.

11. $17\frac{1}{2}^h$ to $19^h$ Wave in Dec. (− 9′). $15^h$ to $19^h$ Fluctuations in H.F. (± ·0005). $22\frac{1}{2}^h$ to $23\frac{1}{4}^h$ Wave in Dec. (− 3′): in H.F. (+ ·0005). No register of V.F.

12. $17^h$ to 13. $5^h$ Fluctuations in Dec. (± 2′): in H.F. (± ·001): no register of V.F.

17. $22^h$ to $23\frac{1}{2}^h$ Wave in Dec. (− 6′). 17. $18^h$ to 18. $5^h$ Fuctuations in H.F. (± ·0005). No register of V.F.

18. $3^h$ to $5^h$ Wave in Dec. (− 5′). $18\frac{3}{4}^h$ to $19\frac{1}{2}^h$ Wave in Dec. (− 6′): in H.F. (− ·001). $22\frac{1}{2}^h$ to $23\frac{1}{2}^h$ Wave in Dec. (+ 8′): in H.F. (+ ·003). No register of V.F.

19. $22^h$ to $23\frac{1}{2}^h$ Fluctuations in Dec. (± 3′): in H.F. (± ·0005): in V.F. small.

20. $20\frac{1}{2}^h$ to $22^h$ Double wave in Dec. (− 4′ to + 2′): in H.F. (− ·0005 to + ·001): in V.F. (− ·0001 to + ·0001).

21. $21^h$ to 22. $3^h$ Fluctuations in Dec. (± 6′): in H.F. (± ·001): in V.F. small.

22. $12^h$ to 23. $12^h$. See Plate I.

23. $12^h$ to $16^h$ Fluctuations in Dec. (± 3′): in H.F. (± ·001): in V.F. small.

27. $19^h$ to 28. $3^h$ Fluctuations in Dec. (± 3′): in H.F. (± ·0005): in V.F. small.

1885.

January 29. $20^h$ to 30. $8^h$ Fluctuations in Dec. (± 6′): in H.F. (± ·002). 29. $23\frac{3}{4}^h$ to 30. $2^h$ Wave in V.F. (— ·0007).

30. $12^h$ to $15^h$ Fluctuations in Dec. (± 3′): in H.F. (± ·0005): in V.F. small.

February 4. $17^h$ to $19^h$ Wave in Dec. (— 5′).

5. $12^h$ to 6. $12^h$. See Plate I.

6. $19^h$ to 7. $3^h$ Fluctuations in Dec. (±2′): in H.F. (± ·0005): in V.F. small.

8. $14^h$ to 9. $2^h$ Fluctuations in Dec. (± 4′). 8 $16\frac{1}{2}^h$ to $17\frac{1}{2}^h$ Wave in H.F. (— ·0015). 8. $21\frac{3}{4}^h$ to $22\frac{3}{4}^h$ Wave in H.F. (+ ·0015).

10. $10\frac{1}{2}^h$ to $16\frac{1}{2}^h$ Fluctuations in Dec. (± 5′): in H.F. (± ·001): in V.F. (± ·0002). $19^h$ to $21\frac{1}{2}^h$ Two successive waves in Dec. (— 12′ and — 8′): in H.F. (+ ·003 and + ·001).

11. $1\frac{3}{4}^h$ to $3^h$ Wave in Dec. (+ 4′): in H.F. (+ ·001): in V.F. (+ ·0001). $20^h$ to $22^h$ Fluctuations in Dec. (±3′): in H.F. (± ·0005): in V.F. small.

12. $2\frac{1}{2}^h$ to $5\frac{1}{2}^h$ Fluctuations in Dec. (± 7′). $2\frac{1}{2}^h$ to $6^h$ Two successive waves in H.F., the first steep at commencement (+ ·0023 and + ·003). $3^h$ to $9^h$ Long wave in V.F. (— ·0012).

12. $12^h$ to 13. $12^h$. See Plate II.

13. $12^h$ to 14. $1^h$ Fluctuations in Dec. (± 4′): in H.F. (± ·001): in V.F. (± ·0001).

16. $20^h$ to 17. $1^h$ Fluctuations in Dec. (± 2′): in H.F. (± ·0008).

17. $21^h$ to 18. $3^h$ Fluctuations in Dec. (± 5′): in H.F. (± ·0018): in V.F. (± ·0002).

18. $19^h$ to $20\frac{1}{4}^h$ Wave in Dec. (— 12′): in H.F. (+ ·002). 18. $22^h$ to 19. $1^h$ Double wave in Dec. (+ 5′ to — 6′): fluctuations in H.F. (± ·001): in V.F. (± ·0001).

21. $1^h$ to $5^h$ Fluctuations in Dec. (± 2′): in H.F. small. 21. $22^h$ to 22. $6^h$ Fluctuations in Dec. (± 2′), with double-crested wave 22. $0\frac{1}{2}^h$ to $2^h$ (— 9′ and — 7′): fluctuations in H.F. (± ·0005): in V.F. small.

22. $19^h$ to $20\frac{1}{4}^h$ Wave in Dec. (— 8′): in H.F. (+ ·0025.)

27. $3^h$ to $17^h$ Fluctuations in Dec. (± 2′): in H.F. (± ·001): in V.F. (± ·0001).

28. $16^h$ to March 1. $4^h$ Fluctuations in Dec. (± 5′): in H.F. (± ·0015): in V.F. (± ·0002).

March 1. $17^h$ to 2. $4^h$ Fluctuations in Dec. (± 5′): in H.F. (± ·001): in V.F. (± ·0001).

3. $17\frac{1}{2}^h$ to $18\frac{1}{2}^h$. Wave in Dec. (— 5′). 3. $22\frac{1}{2}^h$ to 4. $0\frac{1}{2}^h$ Wave in Dec. (— 5′).

4. $2^h$ to $6^h$ Fluctuations in Dec. (± 2′).

12. $16^h$ to $23^h$ Fluctuations in Dec. (± 3′): in H.F. (± ·001): in V.F. small.

13. $13\frac{3}{4}^h$ to $15^h$ Fluctuations in Dec. (± 5′): in H.F. (± ·002): in V.F. (± ·0003). $21^h$ to $22\frac{1}{2}^h$ Wave in Dec., steep at commencement, (— 14′). $17^h$ to $23\frac{1}{2}^h$ Fluctuations in H.F. (± ·0005), with wave $20\frac{1}{2}^h$ to $22^h$ (+ ·002): fluctuations in V.F. small.

14. $15^h$ to $19^h$ Fluctuations in Dec. (± 2′). $16^h$ to $22^h$ Fluctuations in H.F. (± ·0005), with wave $16\frac{1}{2}^h$ to $17\frac{3}{4}^h$ (— ·0025): in V.F. fluctuations small.

15. $0^h$ to $1^h$ Wave in Dec. (+ 6′).

15. $8^h$ to 16. $8^h$. See Plate II.

20. $0^h$ to $2^h$ Fluctuations in Dec. (± 3′): in H.F. (± ·001). 20. $14^h$ to 21. $8^h$ Fluctuations in Dec. (± 5′): in H.F. (± ·001): in V.F. (± ·0001).

21. $20^h$ to $23^h$ Fluctuations in Dec. (± 2′). $20\frac{1}{2}^h$ to $21\frac{1}{2}^h$ Wave in H.F. (+ ·0025).

23. $13^h$ to $18^h$ Fluctuations in Dec. (± 2′): in H.F. (± ·001): in V.F. small.

24. $21\frac{1}{2}^h$ to $22\frac{1}{2}^h$ Wave in Dec. (— 4′).

1885.

April 1. $5^h$ to $21^h$ Fluctuations in Dec. (± 4′): in V.F. small. $5^h$ to $8^h$ Double-crested wave in H.F. (+ ·0025 and + ·003), followed till $21^h$ by fluctuations (± ·0015).

3. $16^h$ to $17^h$ Wave in Dec. (− 7′): in H.F. (+ ·0025): in V.F. (+ ·0002). $18\frac{3}{4}^h$ to $20^h$ Wave in H.F. (+ ·002).

8. $1^h$ to $10^h$ Fluctuations in Dec. (± 6′): in H.F. (± ·0015): in V.F. small. 8. $23\frac{1}{2}^h$ to 9. $1^h$ Wave in Dec. (− 6′): in H.F. (+ ·0015).

11. $21\frac{1}{2}^h$ to $22\frac{1}{2}^h$ Double wave in H.F. (+ ·001 to − ·001).

12. $22^h$ to 13. $7^h$ Fluctuations in Dec. (± 5′): in H.F. (± ·001): in V.F. small.

13. $14^h$ to $19^h$ Fluctuations in H.F. (± ·001).

15. $16^h$ to $17\frac{1}{4}^h$ Wave in Dec. (+ 5′): in H.F. (+ ·0035): in V.F. small fluctuations. 15. $20\frac{3}{4}^h$ to 16. $0\frac{1}{2}^h$ Double-crested wave in Dec. (− 10′ and −7′): fluctuations in H.F. (± ·001): in V.F. small.

17. $4\frac{1}{2}^h$ to $7^h$ Wave in Dec. (+ 10′). $5\frac{1}{4}^h$ to $7^h$ Wave in H.F. (+ ·0025): fluctuations in V.F. small.

18. $21\frac{1}{2}^h$ to $23^h$ Wave in Dec. (− 6′).

19. $17^h$ to $21^h$ Fluctuations in Dec. (±3′). $12^h$ to $20^h$ Fluctuations in H.F. (± ·001).

20. $21^h$ to 21. $4^h$ Fluctuations in Dec. (± 3′): in H.F. (± ·0015).

24. $15^h$ to 25. $2^h$ Fluctuations in Dec. (± 2′): in H.F. (± ·001).

25. $20^h$ to $21^h$ Wave in Dec. (− 3′): in H.F. (+ ·001).

26. $19^h$ to 27. $8^h$ Fluctuations in Dec. (± 5′): in V.F. small. 26. $13^h$ to 27. $22^h$ Fluctuations in H.F. (± ·0015).

28. $0\frac{3}{4}^h$ to $16^h$ Fluctuations in Dec. (± 3′). $0\frac{3}{4}^h$ Sharp movement in H.F. (+ ·002), followed till $20^h$ by fluctuations (± ·001): in V.F. small fluctuations.

May 2. $13^h$ to $19^h$ Fluctuations in H.F. (± ·001). $21\frac{1}{2}^h$ to $23^h$ Wave in H.F. (+ ·002).

5. $22^h$ to 6. $4^h$ Fluctuations in Dec. (± 5′): in H.F. (± ·001): in V.F. (± ·0001).

6. $13^h$ to $19^h$ Fluctuations in H.F. (± ·001).

7. $20^h$ to 8. $5^h$ Fluctuations in Dec. (± 2′). 7. $13^h$ to 8. $5^h$ Fluctuations in H.F. (± ·0005).

10. $0^h$ to 11. $0^h$. See Plate III.

11. $15^h$ to 12. $10^h$ Fluctuations in Dec. (± 7′): in H.F. (± ·0015): in V.F. (± ·0002).

12. $23\frac{1}{2}^h$ to 13. $1^h$ Wave in Dec. (− 5′): in H.F. (+ ·0015).

13. $12^h$ to 14. $12^h$. See Plate III.

15. $19^h$ to 16. $3^h$ Fluctuations in Dec. (± 4′). 15. $13^h$ to 16. $3^h$ Fluctuations in H.F. (± ·001): in V.F. (± ·0001).

16. $20\frac{3}{4}^h$ to $22^h$ Wave in Dec. (− 5′). 16. $16^h$ to 17. $2^h$ Fluctuations in H.F. (± ·001): in V.F. (± ·0002).

17. $0\frac{1}{4}^h$ to $1\frac{1}{2}^h$ Wave in Dec. (+ 7′). 17. $21^h$ to 18. $9^h$ Fluctuations in Dec. (± 2′). 17. $14^h$ to 18. $9^h$ Fluctuations in H.F. (± ·001): in V.F. small.

18. $13^h$ to $22^h$ Fluctuations in H.F. (± ·001).

20. $15\frac{1}{2}^h$ to $17^h$ Wave in H.F. (+ ·0025), followed till $22^h$ by fluctuations (± ·0005).

24. $11^h$ to $18^h$ Fluctuations in H.F. (± ·0015).

25. $12^h$ to 29. $12^h$. See Plates IV. and V.

29. $20^h$ to 30. $8^h$ Fluctuations in Dec. (± 3′). 29. $13^h$ to 30. $3^h$ Fluctuations in H.F. (± ·001): in V.F. small.

30. $15^h$ to 31. $4^h$ Fluctuations in Dec. (± 2′): in H.F. (± ·001): in V.F. small.

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June 1. $23^h$ to 2. $5^h$ Fluctuations in Dec. (± 2′). 1. $16^h$ to 2. $5^h$ Fluctuations in H.F. (± ·0005).

4. $0^h$ to $8^h$ Fluctuations in Dec. (±3′): in H.F. (±·001). 4. $12^h$ to 5. $0^h$ Fluctuations in Dec. (± 2′): in H.F. (± ·001): in V.F. small.

5. $0^h$ to $12^h$ No register of Dec. or H.F. $12^h$ to $20^h$ Fluctuations in H.F. (± ·0005).

6. $0^h$ to $18^h$ No register of Dec. or H.F.

10. $21\frac{1}{2}^h$ to $23^h$ Wave in Dec. (− 6′). $14^h$ to $22\frac{1}{2}^h$ Fluctuations in H.F. (± ·001), terminating with wave $21\frac{1}{2}^h$ to $22\frac{1}{2}^h$ (+ ·002).

11. $1^h$ to $6^h$ Fluctuations in Dec. (± 3′): in H.F. (± ·0005). $11^h$ to $19^h$ Fluctuations in H.F. (± ·001).

13. $14^h$ to $19^h$ Fluctuations in H.F. (± ·001).

15. $23\frac{3}{4}^h$ to 16. $0\frac{1}{2}^h$ Wave in Dec. (+ 5′).

17. $18^h$ to $23^h$ Fluctuations in Dec. (± 2′): in H.F. (± ·001).

18. $21^h$ to $23^h$ Fluctuations in Dec. (± 2′). $14^h$ to $23^h$. Fluctuations in H.F. (± ·001): in V.F. small.

20. $5^h$ to $18^h$ Fluctuations in Dec. (± 2′), with wave $13^h$ to $14\frac{1}{2}^h$ (+ 10′): fluctuations in H.F. (± ·0015), with wave $13^h$ to $14\frac{1}{2}^h$ (+ ·007): fluctuations in V.F. (± ·0002).

22. $21^h$ to 23. $2^h$ Flat serrated wave in Dec. (− 8′). 22. $19^h$ to 23. $2^h$ Fluctuations in H.F. (± ·0015): in V.F. (± ·0002).

24. $12^h$ to 26. $12^h$. See Plates V. and VI.

29. $14^h$ to July 10. $14^h$ No register of Dec. or H.F.

July 1. $14^h$ to $21^h$ Fluctuations in V.F. (± ·0002): no register of Dec. or H.F.

4. $14^h$ to $18^h$ Fluctuations in V.F. (± ·0001): no register of Dec. or H.F.

11. $12^h$ to $17^h$ Fluctuations in H.F. (± ·001). 11. $23^h$ to 12. $3^h$ Fluctuations in Dec. (± 2′): in H.F. (± ·0005).

12. $17^h$ to $23^h$ Fluctuations in H.F. (± ·001).

13. $2^h$ to $5^h$ Wave in Dec. (+ 6′). $13^h$ to $18^h$ Fluctuations in H.F. (± ·001).

15. $13^h$ to $18^h$ Fluctuations in H.F. (± ·001).

16. $17^h$ to $19^h$ Irregular wave in H.F., sharp at commencement (+ ·0015).

17. $12^h$ to 18. $12^h$. See Plate VI.

18. $13\frac{1}{2}^h$ to $14^h$ Wave in H.F. (+ ·002). $18\frac{1}{4}^h$ to $19^h$ Wave in Dec. (− 7′). $15^h$ to $20^h$ Fluctuations in H.F. (± ·0005), with wave $18\frac{1}{2}^h$ to $19\frac{1}{4}^h$ (+·002). $13^h$ to $20^h$ Fluctuations in V.F. (± ·0002).

19. $21^h$ to 20. $8^h$ Fluctuations in Dec. (± 2′). 19. $15^h$ to 20. $6^h$ Fluctuations in H.F. (± ·0005).

21. $22^h$ to $23\frac{1}{2}^h$ Wave in Dec. (+ 4′). $18^h$ to $23^h$ Fluctuations in H.F. (±·0008).

22. $18^h$ to 23. $4^h$ Fluctuations in H.F. (± ·0007).

23. $2^h$ to $6^h$ Fluctuations in Dec. (± 3′).

25. $0\frac{1}{2}^h$ to $1\frac{3}{4}^h$ Wave in Dec. (+ 10′), followed till $8^h$ by fluctuations (±2′). $0\frac{1}{2}^h$ to $8^h$ Fluctuations in H.F. (± ·0005). $1^h$ to $2^h$ Wave in V.F. (− ·0004). $15^h$ to $18^h$ Fluctuations in Dec. (± 3′). $11^h$ to $18^h$ Fluctuations in H.F. (± ·002): in V.F. small.

28. $1^h$ to $7^h$ Fluctuations in Dec. (± 2′): in H.F. (± ·001): in V.F. small. $13^h$ to $20^h$ Fluctuations in H.F. (± ·001). $22\frac{1}{2}^h$ to $23\frac{1}{2}^h$ Wave in Dec. (+ 5′): in H.F. (+ ·0015): in V.F. (+ ·0001).

29. $22^h$ to 30. $2^h$ Fluctuations in Dec. (± 4′): in H.F. (± ·0015).

30. $0\frac{1}{2}^h$ to $1^h$ Decrease of V.F. (− ·0006).

31. $17\frac{3}{4}^h$ to $20\frac{1}{2}^h$ Irregular wave in H.F. (+ ·002).

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August 1. $2^h$ to $5^h$ Fluctuations in Dec. ($\pm$ 2′): in H.F. ($\pm$ ·0005): in V.F. small.

1. $8^h$ to 2. $8^h$. See Plate VI.

2. $20^h$ to 3. $8^h$ Fluctuations in Dec. ($\pm$ 2′). 2. $14^h$ to 3. $8^h$ Fluctuations in H.F. ($\pm$ ·001): in V.F. small.

3. $11\frac{1}{2}^h$ to $12\frac{1}{2}^h$ Wave in H.F. (+ ·0015). $14^h$ to $19^h$ Fluctuations in H.F. ($\pm$ ·0015).

4. $2\frac{1}{2}^h$ to $4^h$ Wave in Dec. (+5′). $16^h$ to $18^h$ Fluctuations in Dec. ($\pm$ 3′). $14^h$ to $19^h$ Fluctuations in H.F. ($\pm$ ·001).

5. $0^h$ to $7^h$ Fluctuations in Dec. ($\pm$ 3′): in H.F. ($\pm$ ·001). 5. $23^h$ to 6. $0^h$ Wave in H.F. (+ ·0015).

6. $23\frac{3}{4}^h$ to 8. $2^h$ Fluctuations in Dec. ($\pm$ 4′), with double-crested wave 7. $22\frac{1}{2}^h$ to 8. $0\frac{1}{4}^h$ (+ 8′ and + 13′): fluctuations in H.F. ($\pm$ ·002): in V.F. ($\pm$ ·0002), terminating with wave 7. $22\frac{1}{2}^h$ to 8. $2^h$ (− ·001).

8. $13^h$ to $22^h$ Fluctuations in Dec. ($\pm$ 2′): in H.F. ($\pm$ ·001): in V.F. small.

10. $0\frac{1}{4}^h$ to $2^h$ Wave in Dec. (+ 6′): in H.F. (+ ·002). $0\frac{1}{4}^h$ to $1^h$ Wave in V.F. (+ ·0002).

16. $19^h$ to $23\frac{1}{2}^h$ Fluctuations in Dec. ($\pm$ 2′): in H.F. ($\pm$ ·001).

20. $1\frac{1}{3}^h$ to $3^h$ Double wave in Dec. (+ 4′ to − 8′). $1\frac{1}{3}^h$ to $2\frac{1}{2}^h$ Wave in H.F. (+ ·0035): in V.F. (− ·0004). $20^h$ to $22^h$ Wave in Dec. (− 5′). $14^h$ to $22^h$ Fluctuations in H.F. ($\pm$ ·001): in V.F. small.

21. $0^h$ to $10^h$ Fluctuations in Dec. ($\pm$ 4′): in H.F. ($\pm$ ·001): in V.F. ($\pm$ ·0002). $14^h$ to $20^h$ Fluctuations in H.F. ($\pm$ ·001).

22. $14^h$ to 23. $1^h$ Fluctuations in Dec. ($\pm$ 2′): in H.F. ($\pm$ ·001): in V.F. small.

25. $22^h$ to 26. $2^h$ Fluctuations in Dec. ($\pm$ 5′): in H.F. ($\pm$ ·0005).

27. $12^h$ to $29^h$. 12. See Plate VII.

29. $12^h$ to 30. $4^h$ Fluctuations in Dec. ($\pm$ 5′): in H.F. ($\pm$ ·002): in V.F. ($\pm$ ·0002).

30. $22^h$ to 31. $4^h$ Fluctuations in Dec. ($\pm$ 3′): in H.F. ($\pm$ ·001): in V.F. small.

31. $17^h$ to September 1. $1^h$ Fluctuations in Dec. ($\pm$ 3′): in H.F. ($\pm$ ·001): in V.F. small.

September 2. $4^h$ to $6\frac{1}{2}^h$ Wave in Dec. (+ 5′). $12^h$ to $19^h$ Fluctuations in H.F. ($\pm$ ·0005).

3. $14^h$ to $19^h$ Fluctuations in H.F. ($\pm$ ·001).

4. $1^h$ to $14^h$ Fluctuations in Dec. ($\pm$ 3′): in H.F. ($\pm$ ·0015).

4. $14^h$ to 5. $14^h$. See Plate VII.

5. $14^h$ to $19^h$ Fluctuations in Dec. ($\pm$ $1\frac{1}{2}$′): in H.F. ($\pm$ ·001): in V.F. ($\pm$ ·0001).

6. $19^h$ to 7. $2^h$ Fluctuations in Dec. ($\pm$ 5′): in H.F. ($\pm$ ·001). 6. $21\frac{1}{2}^h$ to $22^h$ Decrease of V.F. (−·0006).

8. $17\frac{1}{4}^h$ to $18\frac{3}{4}^h$ Wave in Dec. (− 9′), followed till 9. $5^h$ by fluctuations ($\pm$ 2′). 8. $12^h$ to 9. $2^h$ Fluctuations in H.F. ($\pm$ ·001): in V.F. ($\pm$ ·0001).

11. $13^h$ to $18^h$ Fluctuations in H.F. ($\pm$ ·001).

12. $19\frac{1}{2}^h$ to $21^h$ Wave in Dec. (− 4′). 12. $23\frac{1}{2}^h$ to 13. $1^h$ Wave in Dec. (− 5′). 12. $14^h$ to 13. $2^h$ Fluctuations in H.F. ($\pm$ ·001): in V.F. small.

13. $19\frac{3}{4}^h$ to $21^h$ Wave in Dec. (− 5′).

14. $19^h$ to 15. $6^h$ Fluctuations in Dec. ($\pm$ 3′): in H.F. ($\pm$ ·001): in V.F. small.

15. $12^h$ to 17. $12^h$. See Plate VIII.

17. $14^h$ to $21^h$ Fluctuations in Dec. ($\pm$ 3′): in H.F. ($\pm$ ·0005): in V.F. small.

18. $12^h$ to 19. $1^h$ Fluctuations in Dec. ($\pm$ 2′): in H.F. ($\pm$ ·001): in V.F. small.

20. $22^h$ to 21. $5^h$ Fluctuations in Dec. ($\pm$ 4′): in H.F. ($\pm$ ·0005).

22. $12^h$ to 24. $12^h$. See Plates VIII. and IX.

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September 24. $22^h$ to 25. $8^h$ Fluctuations in Dec. (± 4′): in H.F. (± ·001): in V.F. (± ·0002).

25. $16^h$ to $20\frac{1}{2}^h$ Fluctuations in Dec. (± 3′): in H.F. (± ·001): in V.F. small.

26. $0\frac{3}{4}^h$ to $2^h$ Wave in Dec. (+ 4′): in H.F. (+ ·001): in V.F. (+ ·0001). $12^h$ to $19^h$ Fluctuations in H.F. (± ·001).

27. $12^h$ to $23^h$ Fluctuations in Dec. (± 2′), with double wave $21\frac{1}{4}^h$ to $22\frac{1}{2}^h$ (+7′ to −5′): fluctuations in H.F. (± ·001), with double wave $20\frac{3}{4}^h$ to $22\frac{1}{2}^h$ (+ ·0045 to − ·0015): fluctuations in V.F. small, with wave $21^h$ to $22\frac{1}{2}^h$ (− ·0006).

27. $23^h$ to 28. $12^h$ No register of Dec., H.F., or V.F.

29. $23\frac{1}{4}^h$ to 30. $0\frac{1}{4}^h$ Wave in H.F. (+ ·001).

30. $2^h$ to $3\frac{1}{4}^h$ Wave in Dec. (+ 8′). $2\frac{1}{2}^h$ to $3\frac{1}{2}^h$ Wave in H.F. (+ ·0015): in V.F. (− ·0002).

October 1. $2^h$ to $8^h$ Fluctuations in Dec. (± 3′): in H.F. (± ·0005). $19\frac{1}{2}^h$ to $20\frac{1}{4}^h$. Wave in Dec. (− 6′): in H.F. (− ·001): in V.F. (− ·0001).

2. $23\frac{1}{2}^h$ to 3. $3^h$ Double wave in Dec. (+ 4′ to − 8′).

9. $1^h$ to $4^h$ Fluctuations in Dec. (± 3′): in H.F. (± ·001). $15\frac{1}{2}^h$ to $16\frac{1}{2}^h$ Wave in Dec. (− 4′): in H.F. (− ·001). 9. $23^h$ to 10. $1^h$ Wave in Dec. (− 7′): in V.F. (− ·0003). 9. $22\frac{1}{2}^h$ to 10. $0^h$ Double wave in H.F. (+ ·002 to − ·001).

11. $22^h$ to 12. $2^h$ Wave in Dec. (− 7′). 11. $23^h$ to 12. $2^h$. Fluctuations in H.F. (± ·001).

12. $17^h$ to 13. $0^h$ Fluctuations in Dec. (± 5′): in H.F. (± ·0005), with wave $21\frac{2}{3}^h$ to $23\frac{1}{4}^h$ (+·002): in V.F. (± ·0001), with wave 12. $21^h$ to 13. $0^h$ (− ·0004).

13. $10^h$ to $15^h$ Fluctuations in Dec. (± 3′): in H.F. (± ·0005): in V.F. small. $18^h$ to $20^h$ Wave in Dec. (−8′): in H.F. (+ ·0015).

14. $5^h$ to 15. $9^h$ Fluctuations in Dec. (± 3′): in H.F. (± ·001): in V.F. small.

15. $14^h$ to 16. $18^h$ Fluctuations in Dec. (± 5′): in H.F. (± ·0015): in V.F. (± ·0001).

18. $23^h$ to 19. $0\frac{1}{2}^h$ Wave in Dec. (+ 5′). 18. $23\frac{1}{2}^h$ to 19. $0\frac{1}{2}^h$ Wave in H.F. (+ ·0015). 18. $23^h$ to 19. $0^h$ Decrease of V.F. (− ·0003).

22. $11^h$ to $19^h$ Fluctuations in Dec. (± 3′): in H.F. (± ·0007): in V.F. small.

23. $9^h$. to $11\frac{1}{2}^h$ Wave in Dec. (+ 6′): in H.F. (− ·003). $18^h$ to $22^h$ Fluctuations in Dec. (± 2′): in H.F. (± ·0005).

24. $0^h$ to $4^h$ Fluctuations in Dec. (± 2′). $15\frac{1}{2}^h$ to $17\frac{1}{4}^h$ Wave in Dec. (− 6′). $15\frac{1}{2}^h$ to $16\frac{3}{4}^h$ Wave in H.F. (− ·0015). $20^h$ to $21\frac{1}{2}^h$ Wave in Dec. (− 3′).

27. $16^h$ to 28. $6^h$ Fluctuations in Dec. (± 2′): in H.F. (± ·0007), with wave 27. $22\frac{1}{2}^h$ to $23\frac{1}{2}^h$ (+ ·002).

28. $13\frac{1}{2}^h$ to $13\frac{3}{4}^h$ Wave in Dec. (+ 4′): in H.F. (+ ·001): in V.F. (+ ·0002).

29. $2\frac{1}{2}^h$ to $3\frac{1}{2}^h$ Wave in Dec. (+ 7′). $2\frac{3}{4}^h$ to $3\frac{3}{4}^h$ Wave in H.F. (+ ·0015). $17^h$ to $23^h$ Fluctuations in Dec. (± 3′): in H.F. (± ·0007).

30. $20^h$ to $22^h$ Wave in Dec. (− 5′).

31. $1^h$ to $15^h$ Fluctuations in Dec. (± 2′): in H.F. (± ·001). $20^h$ to $22^h$ Wave in Dec. (− 13′): in H.F. (− ·0015): in V.F., double wave (− ·0002 to + ·0002).

November 1. $2^h$ to $6^h$ Fluctuations in Dec. (± 3′): in H.F. (± ·001). $12^h$ to $18^h$ Fluctuations in Dec. (± 2′): in H.F. (± ·0007): in V.F. small.

7. $15^h$ to 8. $6^h$ Fluctuations in Dec. (± 5′): in H.F. (± ·001), with waves 7. $21\frac{1}{4}^h$ to $22\frac{1}{2}^h$ (+ ·0032), and 8. $0\frac{1}{2}^h$ to $2^h$ (+ ·0026): fluctuations in V.F. (± ·0003).

8. $21^h$ to $23^h$ Wave in H.F. (+ ·002).

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November 9. $1\frac{1}{4}^h$ to $2\frac{3}{4}^h$ Wave in Dec. (+ 4′). 9. $19^h$ to 10. $6^h$ Fluctuations in Dec. (± 6′): in H.F. (± ·001): in V.F. small.

10. $12^h$ to 12. $12^h$. See Plates IX. and X.

12. $17\frac{1}{2}^h$ to $19^h$ Wave in Dec. (− 4′). 12. $23^h$ to 13. $3^h$ Fluctuations in Dec. (± 2′).

18. $18^h$ to $22^h$ Fluctuations in Dec. (± 4′): in H.F. (± ·002): in V.F. (± ·0002).

19. $0^h$ to $7^h$ Fluctuations in Dec. (± 4′): in H.F. (± ·001): in V.F. (± ·0001). 19. $16^h$ to 20. $1^h$ Fluctuations in Dec. (± 3′): in H.F. (± ·0015).

20. $17^h$ to $18\frac{1}{2}^h$ Wave in Dec. (− 4′). 20. $21^h$ to 21. $0^h$ Fluctuations in Dec. (± 3′): in H.F. (± ·0005).

22. $16\frac{3}{4}^h$ to $18^h$ Wave in Dec. (− 4′). $12^h$ to $18^h$ Fluctuations in H.F. (± ·0005).

24. $23^h$ to 25. $7^h$ Fluctuations in Dec. (± 2′): in H.F. (± ·0005).

December 1. $16^h$ to $18^h$ Wave in H.F. (− ·002). 1. $21^h$ to 2. $0^h$ Wave in H.F. (− ·003). Register of Dec. not trustworthy.

6. $16^h$ to 7. $7^h$ Fluctuations in Dec. (± 4′), with wave 6. $17^h$ to $18\frac{1}{2}^h$ (− 12′): in H.F. (± ·001), with wave 6. $16\frac{3}{4}^h$ to $18\frac{1}{4}^h$ (− ·003): in V.F. small, with wave 6. $16\frac{1}{2}^h$ to $19^h$ (+ ·0005).

7. $12^h$ to 8. $12^h$. See Plate X.

8. $14\frac{3}{4}^h$ to $16^h$ Wave in Dec. (− 6′). $16\frac{3}{4}^h$ to $18\frac{1}{2}^h$ Wave in Dec. (− 13′), followed till 9. $3^h$ by fluctuations (± 4′). 8. $14^h$ to 9. $2^h$ Fluctuations in H.F. (± ·0015): in V.F. small.

9. $17^h$. to $10.2^h$ Fluctuations in Dec. (± 2′): in H.F. (± ·0005).

14. $19^h$ to $22^h$ Irregular wave in Dec. (− 6′): in H.F. (− ·0015).

18. $19^h$ to $22^h$ Fluctuations in Dec. (± 3′): in H.F. (± ·0005): in V.F. small.

20. $1\frac{1}{2}^h$ to $2\frac{1}{2}^h$ Wave in Dec. (+ 5′): in H.F. (+ ·0015): in V.F. (+ ·0001). $22^h$ to $23\frac{1}{2}^h$ Wave in Dec. (− 7′).

22. $1^h$ to $4^h$ Wave in Dec. (− 8′). $0^h$ to $4^h$ Fluctuations in H.F. (± ·0007).

28. $12^h$ to 29. $0^h$ Fluctuations in Dec. (± 2′): in H.F. (± ·001): in V.F. small.

## EXPLANATION OF THE PLATES.

The magnetic motions figured on the Plates are—

(1.) Those for days of great disturbance—March 15–16, May 13–14, 25–26, June 24–25.

(2.) Those for days of lesser disturbance—January 22–23, February 5–6, 12–13, May 10, 26–27, 27–28, 28–29, June 25–26, July 17–18, August 1–2, 27–28, 28–29, September 4–5, 15–16, 16–17, 22–23, 23–24, November 10–11, 11–12, December 7–8.

(3.) Those for four quiet days, January 26, April 5, August 14, November 17, which are given as types of the ordinary diurnal movement at four seasons of the year. The earth currents on these days are very small.

The day is the civil day commencing at Greenwich mean midnight, and counting the hours from 0 to 24.

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, the units for horizontal and vertical force are ·00001 of the whole horizontal and vertical forces respectively, the corresponding scales being given on the sides of each diagram. Equal changes of amplitude in the several registers correspond nearly to equal changes of absolute magnetic force.

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

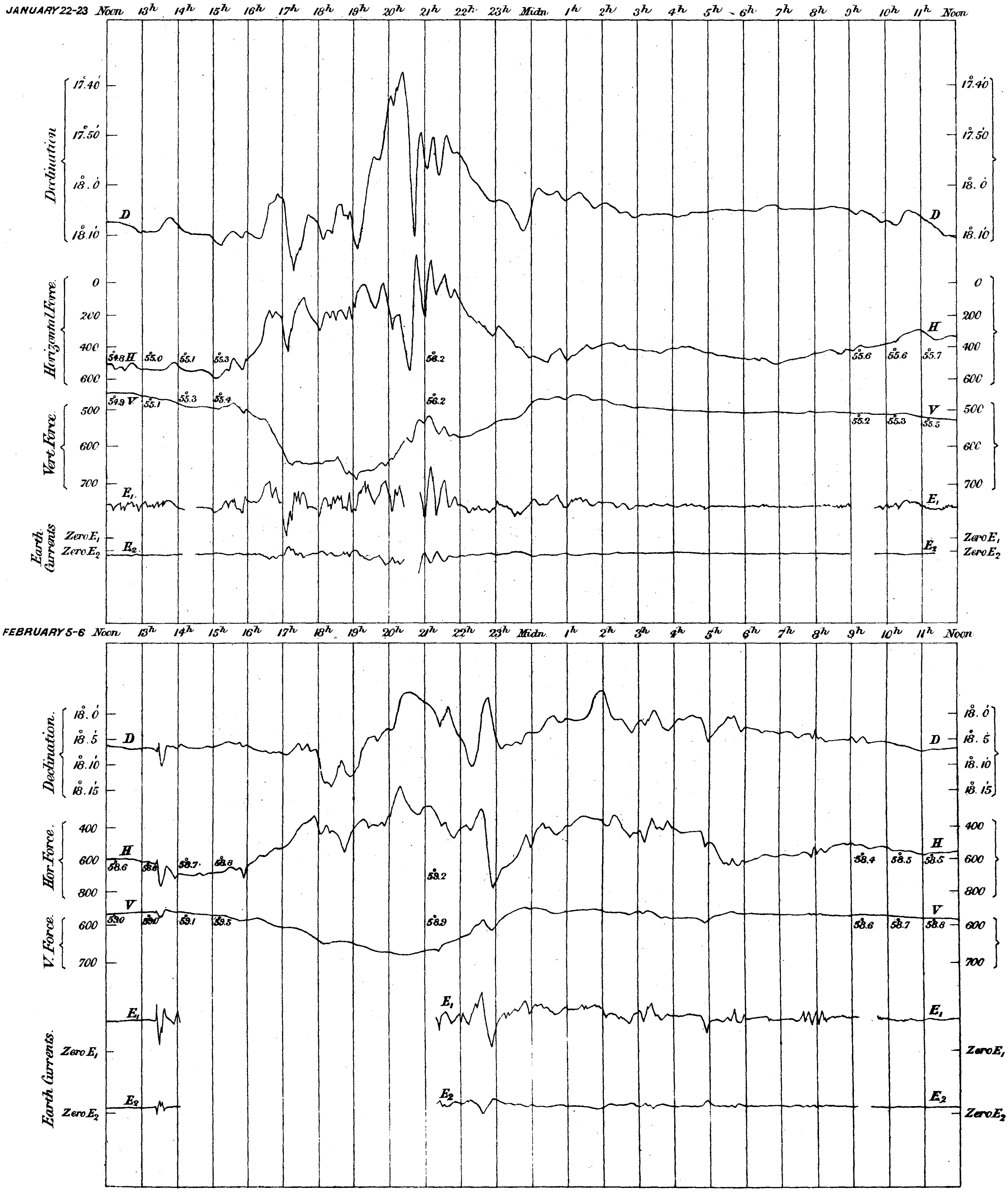
The earth current register $E_1$ is that of the line Angerstein Wharf—Lady Well, making an angle of 50° with the magnetic meridian, reckoning from north to east. The $E_2$ register is that of the line Blackheath—North Kent East, making an angle of 46° with the magnetic meridian, reckoning from north to west. Zero $E_1$ and Zero $E_2$ indicate the respective instrumental zeros. On July 17–18, September 22–23, 23–24, the earth current motions are not given, as the apparatus was arranged on those days to record on a much larger scale for determination of the diurnal inequality.

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.)

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 $9^h$, $10^h$, $11^h$, $12^h$, $13^h$, $14^h$, $15^h$, $21^h$. The greater variation of temperature shown on February 12–13 and March 15–16 is due to the magnet basement having been alternately heated and cooled for determination of the temperature co-efficients of the horizontal force and vertical force magnets.

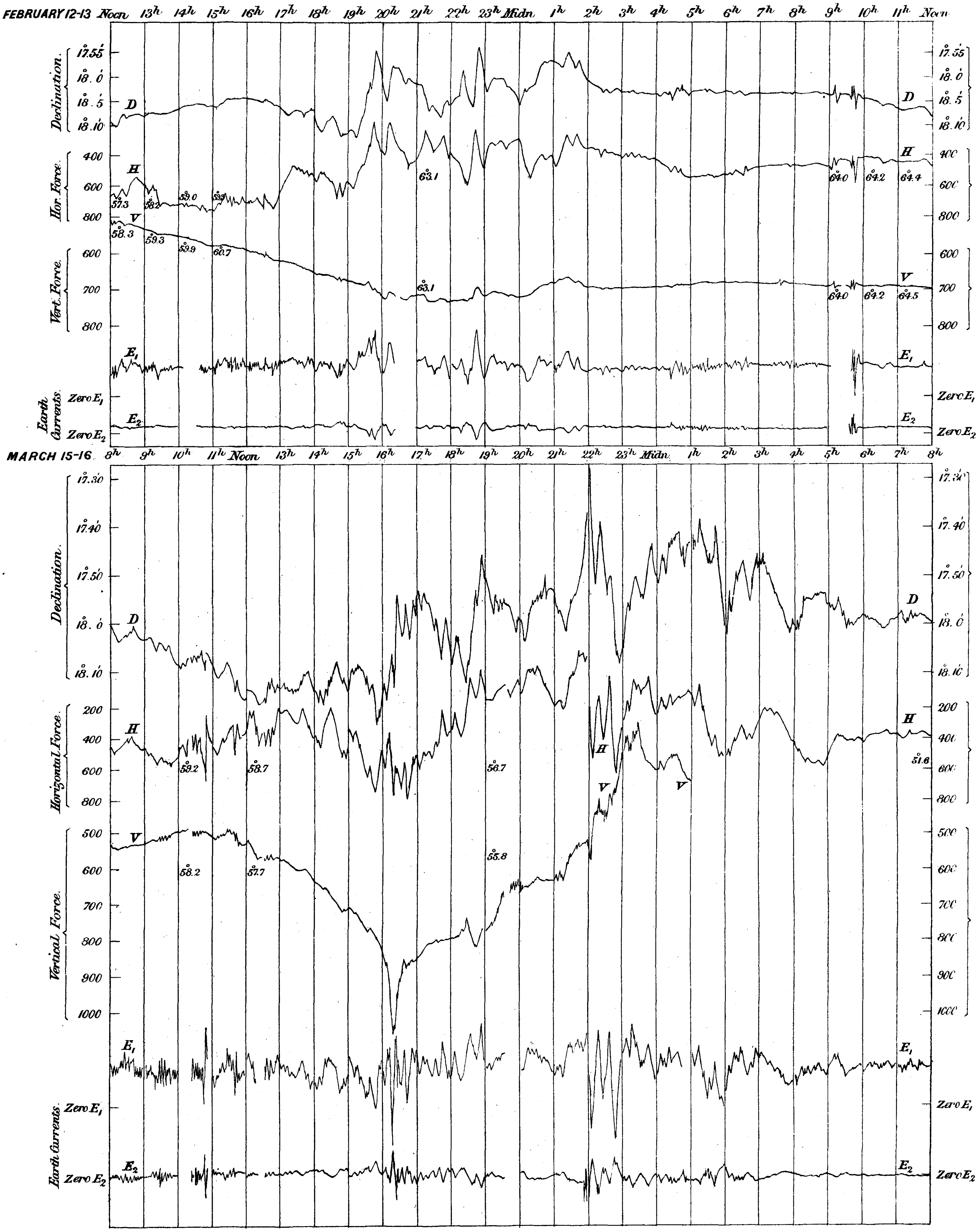
From March 16. $1^h$ to $8^h$ the vertical force register cannot be given, the magnet having been thrown into vibration by currents of air during temperature experiments. From February 5. $14^h$ to $21^h$ the earth current registers were accidentally lost. There are other smaller interruptions not calling for special explanation.

*Magnetic Disturbances and Earth Currents recorded at the Royal Observatory, Greenwich, 1885.*



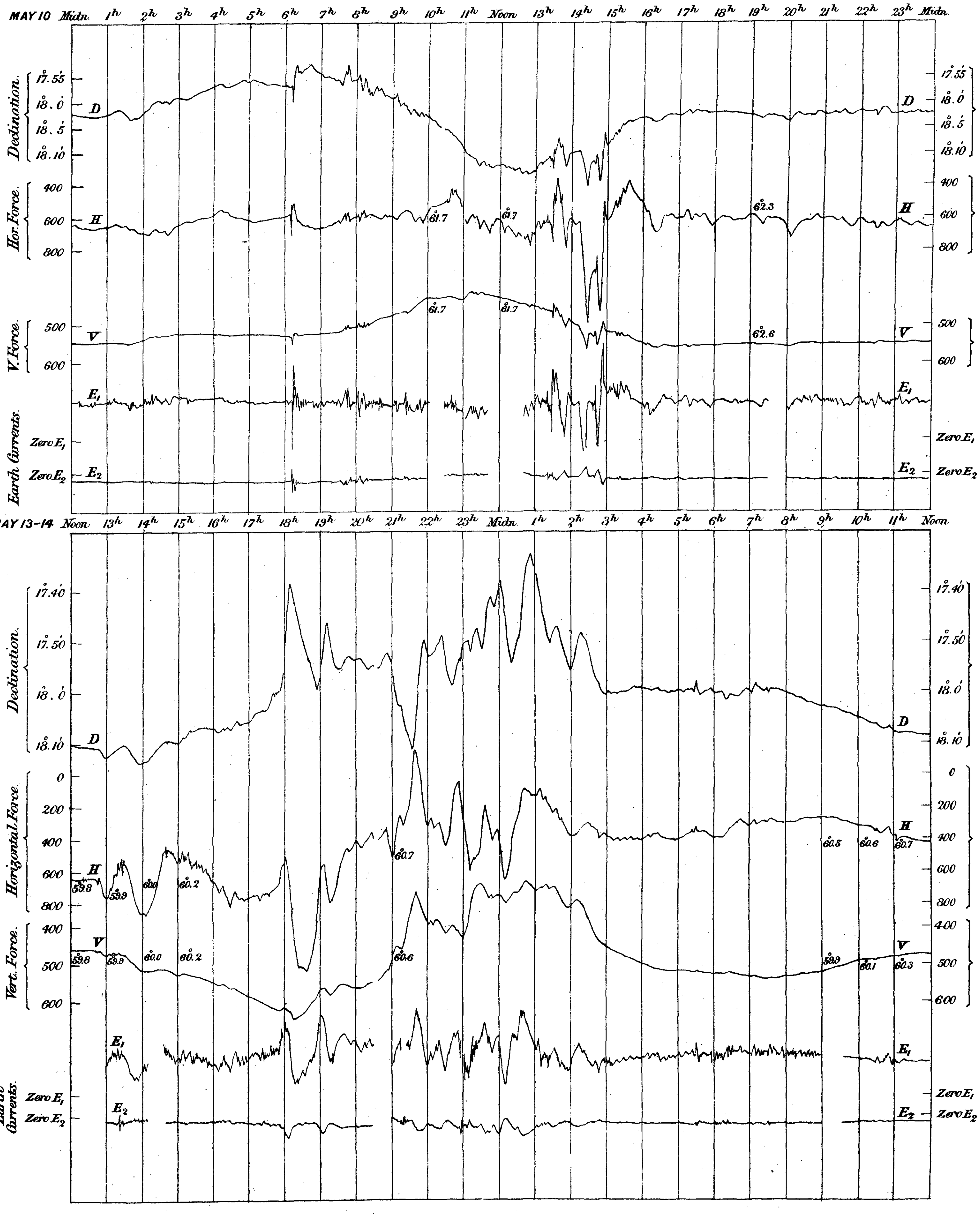

DANGERFIELD. LITH. 22, BEDFORD ST. COVENT GARDEN. 13493.2.87

# Magnetic Disturbances and Earth Currents recorded at the Royal Observatory, Greenwich, 1885.



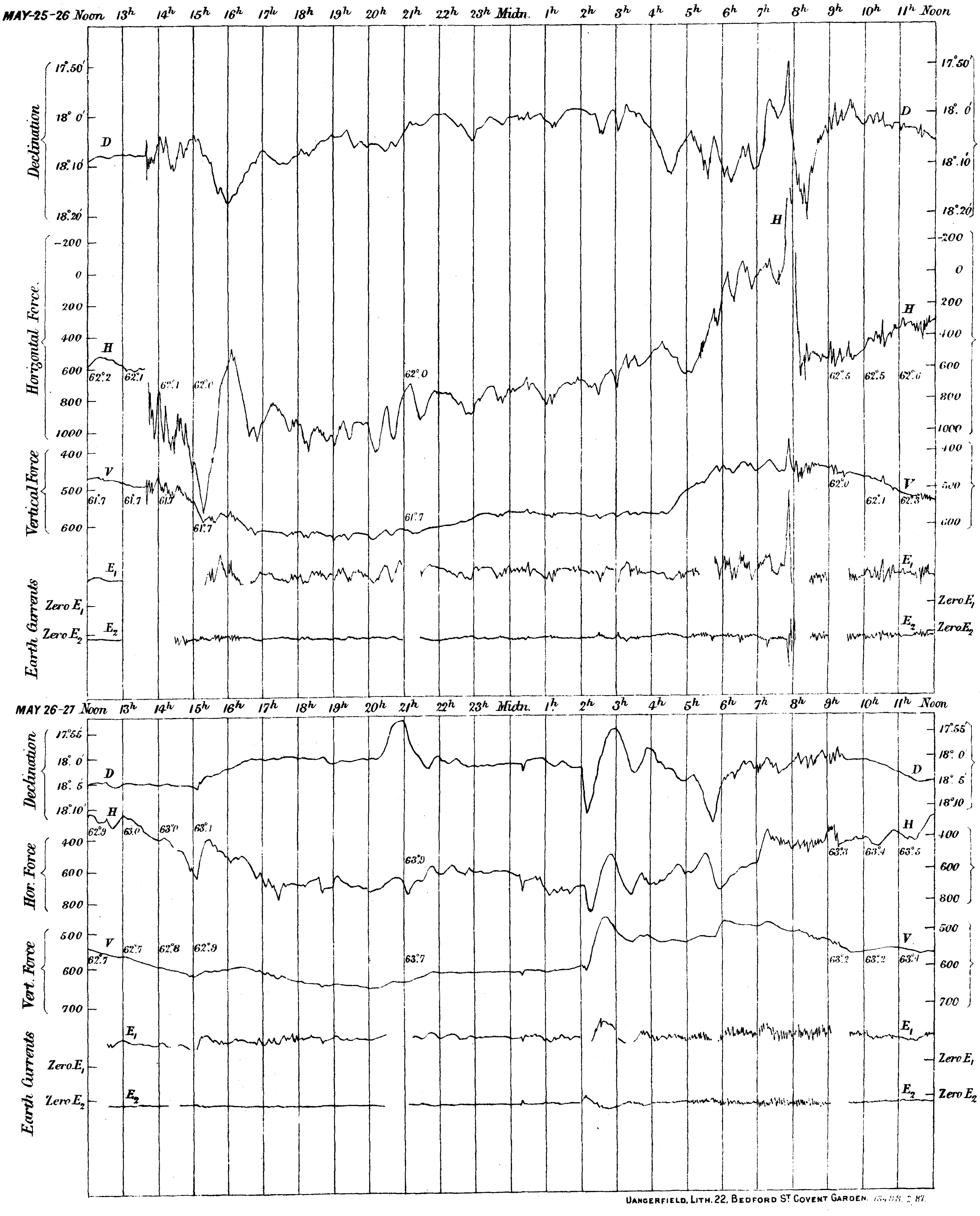

Dangerfield, Lith. 22, Bedford St. Covent Garden. 13499.2.87.

# Magnetic Disturbances and Earth Currents recorded at the Royal Observatory, Greenwich, 1885.



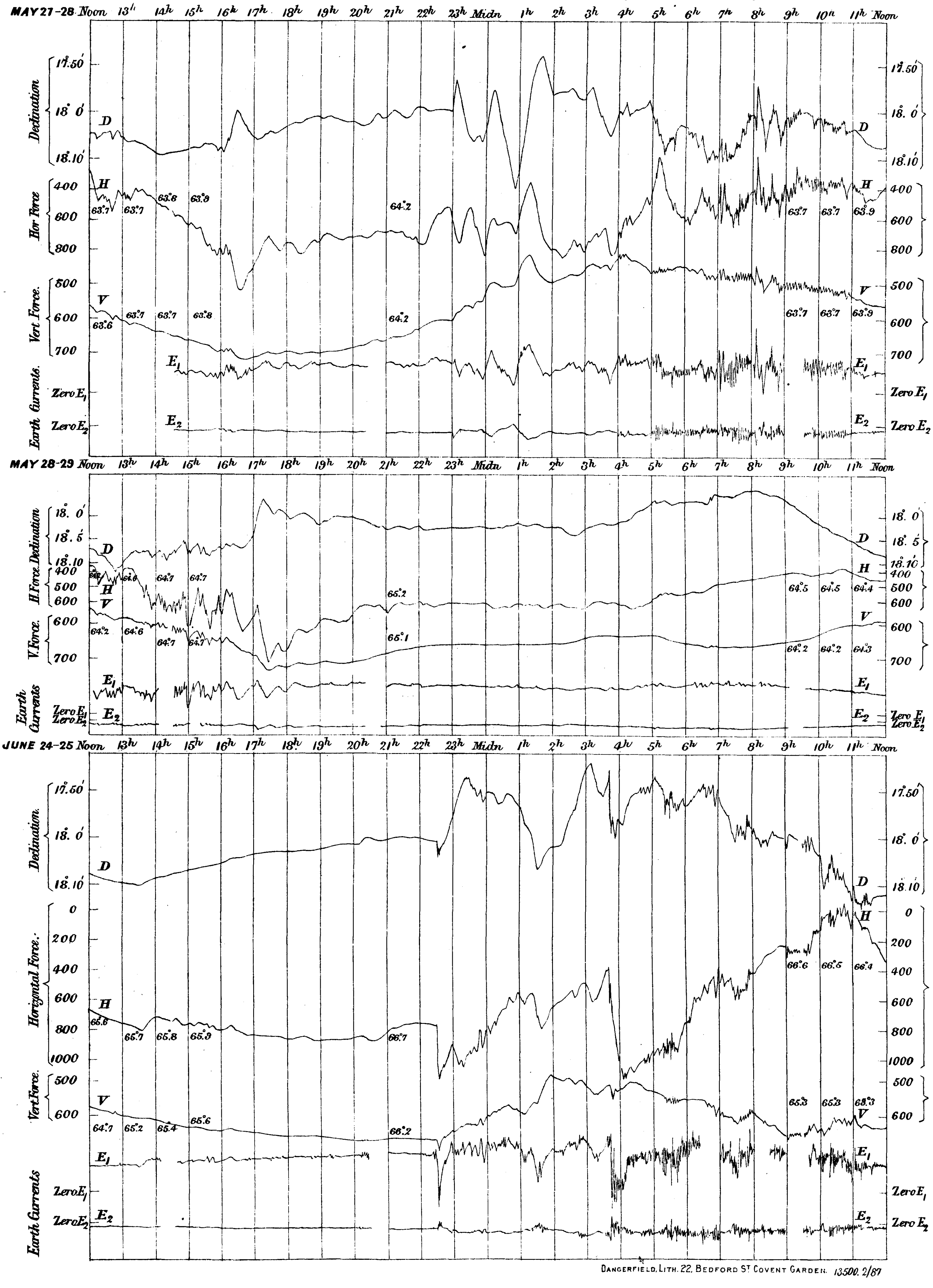

Dangerfield, Lith. 22, Bedford St. Covent Garden. 13493.2.87.

## Magnetic Disturbances and Earth Currents recorded at the Royal Observatory, Greenwich, 1885.



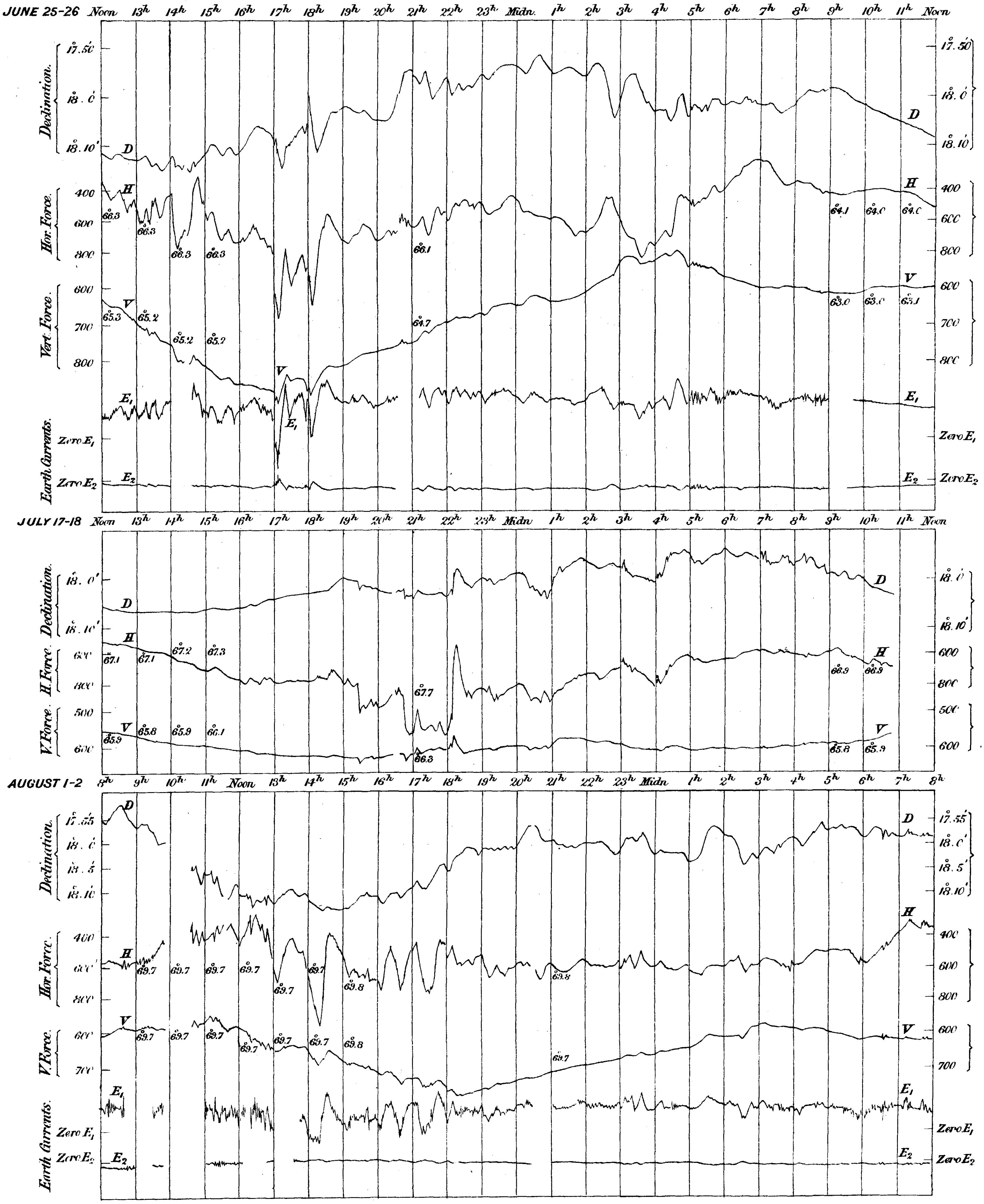

UANGERFIELD, LITH. 22, BEDFORD ST COVENT GARDEN.

## Magnetic Disturbances and Earth Currents recorded at the Royal Observatory, Greenwich, 1885.



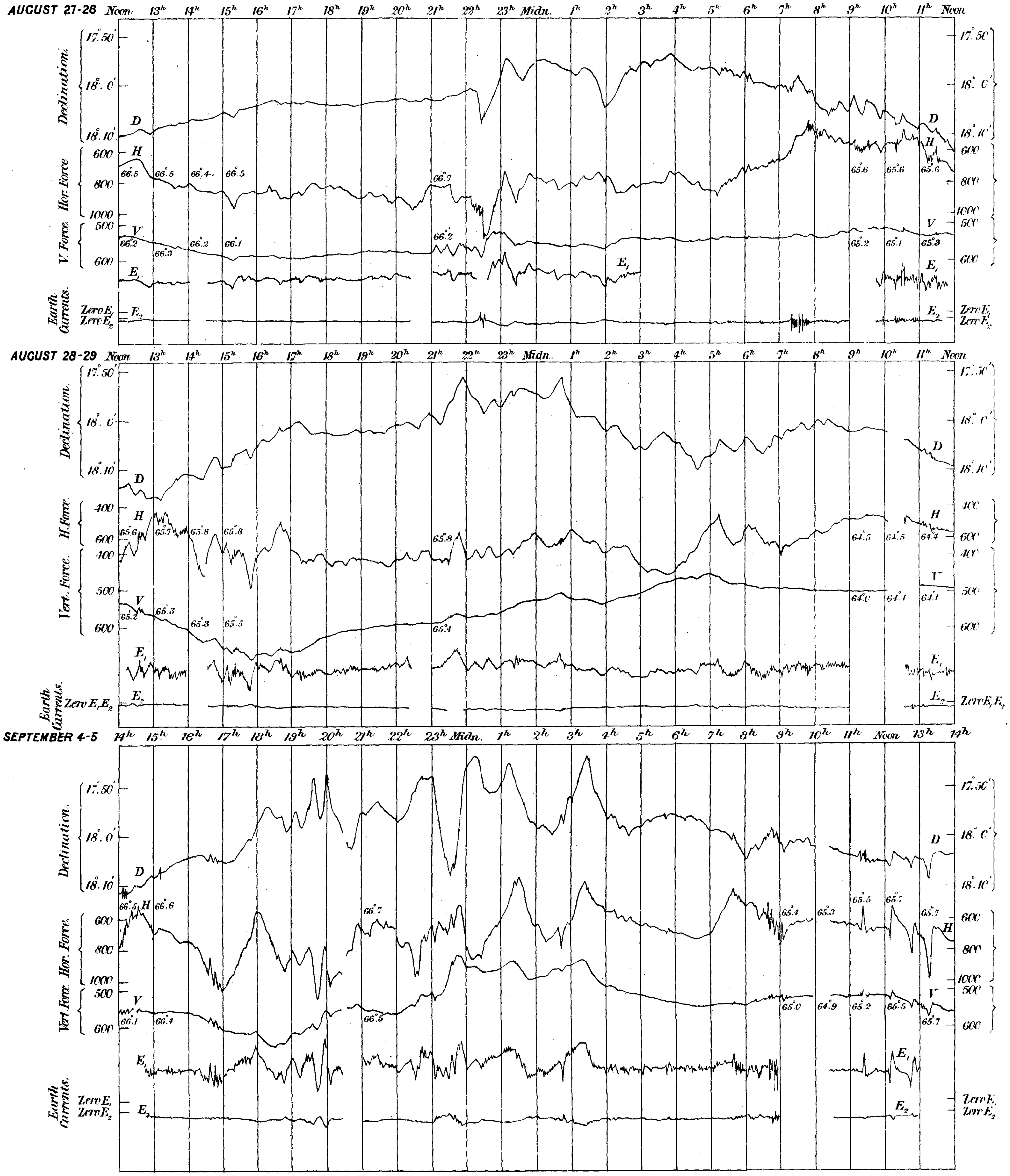

Dangerfield, Lith. 22, Bedford St. Covent Garden. 13500. 2/87

# Magnetic Disturbances and Earth Currents recorded at the Royal Observatory, Greenwich, 1885.



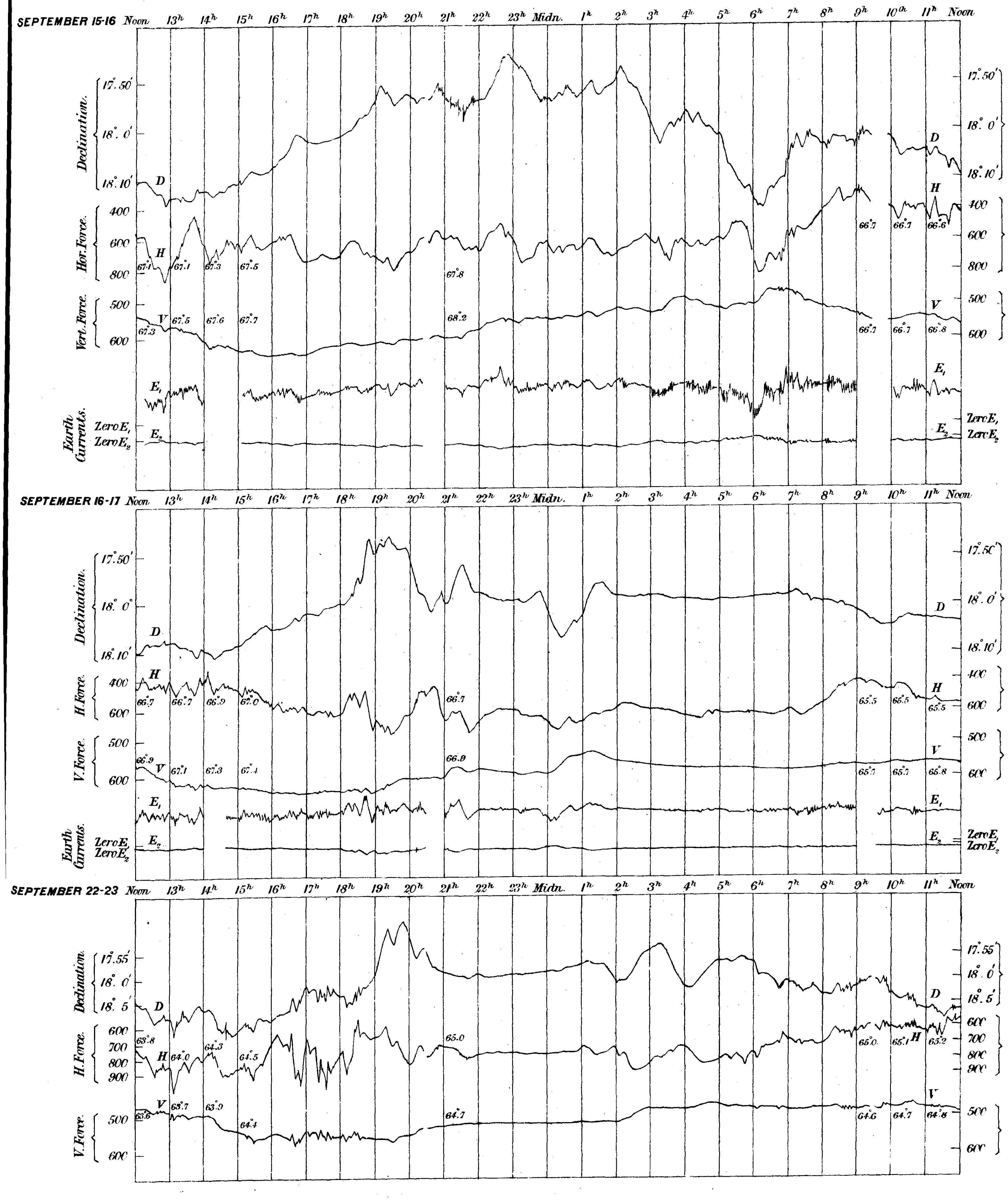

DANGERFIELD, LITH. 22, BEDFORD ST. COVENT GARDEN. 13439. 2. 87.

*Magnetic Disturbances and Earth Currents recorded at the Royal Observatory, Greenwich, 1885.*



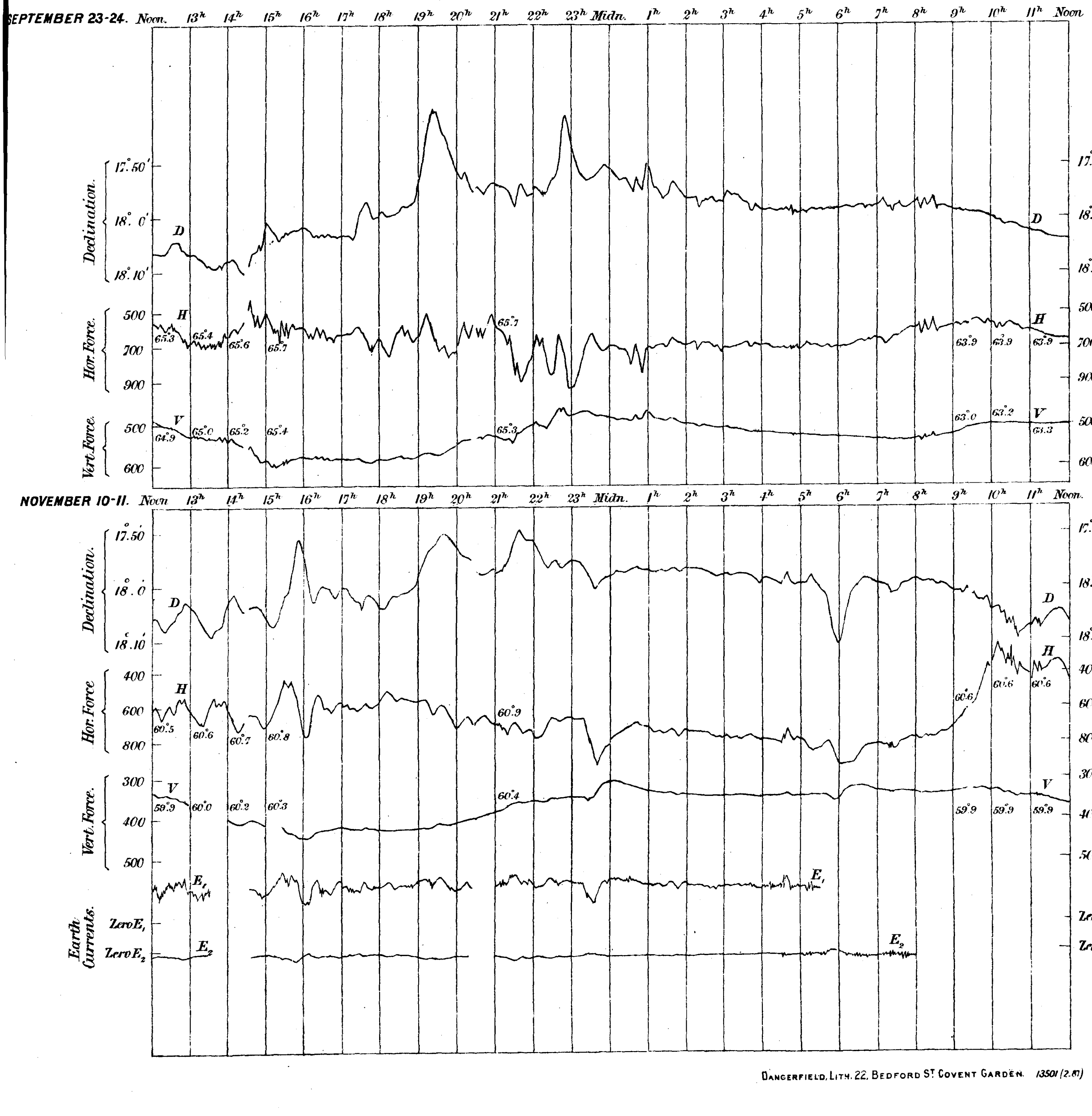

DANGERFIELD, LITH. 22, BEDFORD ST. COVENT GARDEN. 13501.(2.87)

*Magnetic Disturbances and Earth Currents recorded at the Royal Observatory, Greenwich, 1885.*



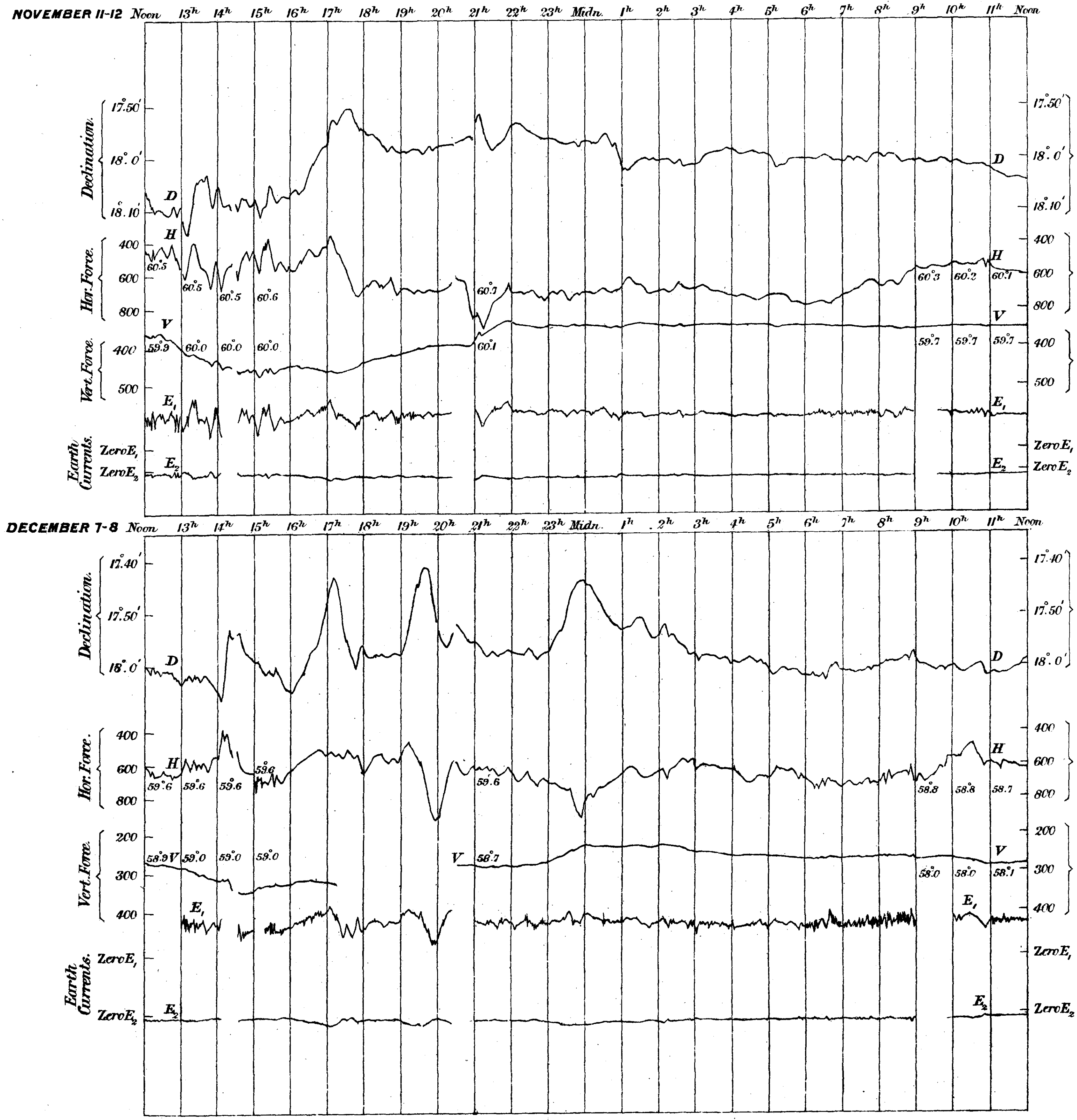

DANGERFIELD, LITH. 22, BEDFORD ST. COVENT GARDEN. 13501(2.87)

# Magnetic Disturbances and Earth Currents recorded at the Royal Observatory, Greenwich, 1885.



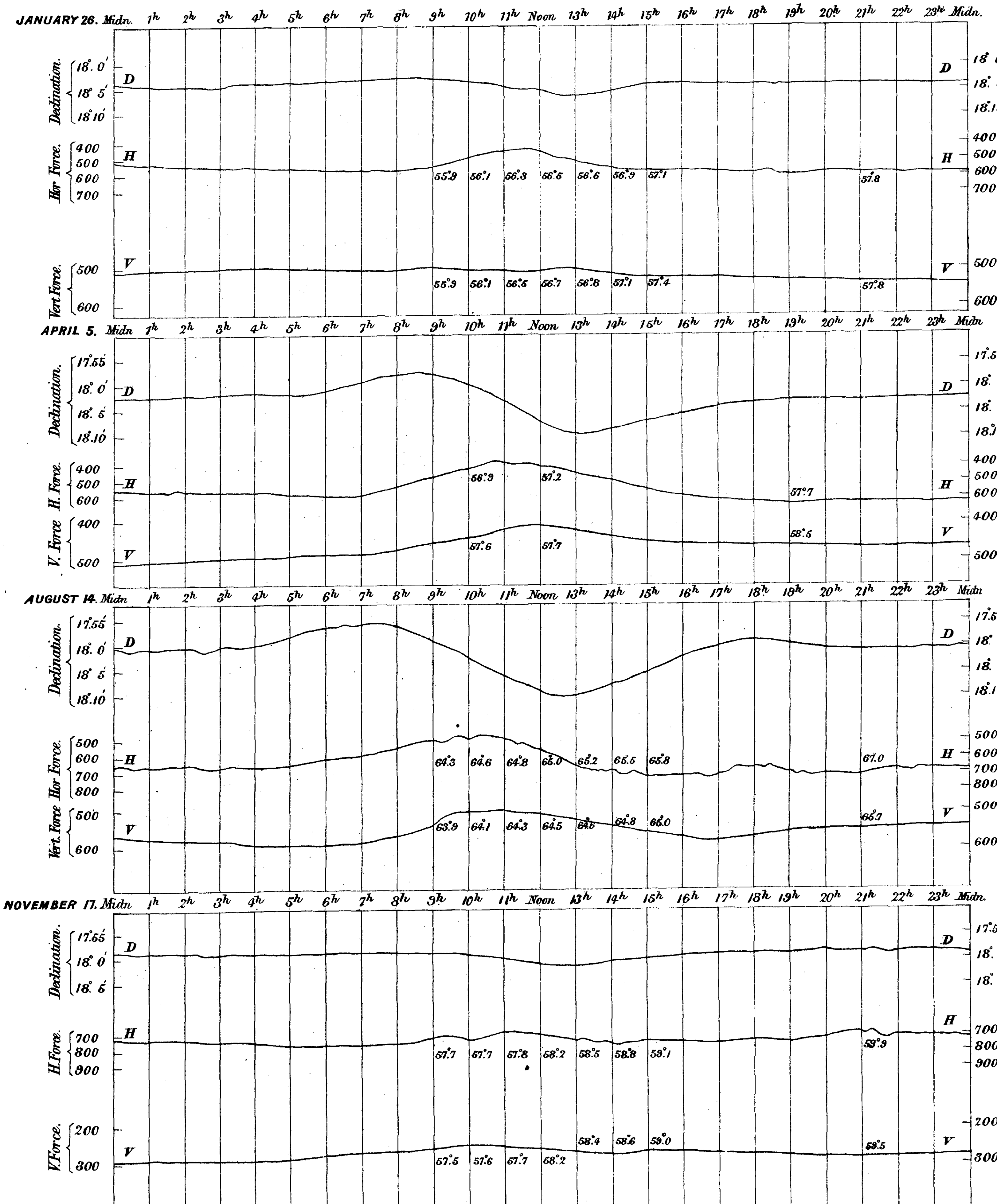

DANGERFIELD, LITH. 22, BEDFORD ST. COVENT GARDEN. 13501 (2.86)

*Magnetic Disturbances and Earth Currents recorded at the Royal Observatory, Greenwich, 1885.*




Dangerfield, Lith. 22, Bedford St. Covent Garden. 13501(2.87)

## Types of Magnetic Diurnal Variations at four seasons of the year, recorded at the Royal Observatory, Greenwich, 1885.




DANGERFIELD. LITH. 22, BEDFORD ST. COVENT GARDEN. 13500. 2/87.

ROYAL OBSERVATORY, GREENWICH.

# RESULTS

OF

# METEOROLOGICAL OBSERVATIONS.

1885.

| MONTH and DAY, 1885. | Phases of the Moon. | BAROMETER. Mean of 24 Hourly Values (corrected and reduced to 32° Fahrenheit). | TEMPERATURE. Of the Air. Highest. | Lowest. | Daily Range. | Mean of 24 Hourly Values. | Excess above Average of 20 Years. | Of Evaporation. Mean of 24 Hourly Values. | Of the Dew Point. Deduced Mean Daily Value. | Difference between the Air Temperature and Dew Point Temperature. Mean. | Greatest. | Least. | Degree of Humidity (Saturation = 100). | TEMPERATURE. Of Radiation. Highest in Sun's Rays. | Lowest on the Grass. | Of the Water of the Thames at Deptford. Highest. | Lowest. | Rain collected in Gauge No. 6, whose receiving surface is 5 inches above the Ground. | Daily Amount of Ozone. | Electricity. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | in. | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | | ° | ° | ° | ° | in. | | |
| Jan. 1 | Full | 30·201 | 33·0 | 25·5 | 7·5 | 30·9 | − 7·2 | 29·8 | 26·9 | 4·0 | 6·1 | 1·1 | 83 | 34·7 | 20·6 | 39·9 | 37·0 | 0·000 | 0·0 | sP |
| 2 | .. | 29·961 | 34·0 | 29·7 | 4·3 | 31·8 | − 6·1 | 30·0 | 25·8 | 6·0 | 7·7 | 3·1 | 78 | 35·7 | 29·7 | 39·9 | 37·0 | 0·000 | 2·0 | mP : sP |
| 3 | .. | 29·827 | 33·7 | 31·9 | 1·8 | 33·2 | − 4·6 | 31·9 | 29·4 | 3·8 | 5·2 | 1·6 | 86 | 39·9 | 31·9 | 39·5 | 36·6 | 0·004 | 9·0 | mP : sP |
| 4 | .. | 29·958 | 40·0 | 31·7 | 8·3 | 34·8 | − 2·9 | 34·2 | 33·2 | 1·6 | 3·0 | 0·6 | 94 | 49·3 | 28·0 | 39·1 | 37·2 | 0·000 | 0·0 | sP : ssP : sP |
| 5 | .. | 29·878 | 46·7 | 38·5 | 8·2 | 43·1 | + 5·5 | 42·2 | 41·1 | 2·0 | 5·1 | 0·0 | 93 | 52·7 | 35·0 | 37·7 | 37·0 | 0·016 | 0·0 | vP |
| 6 | In Equator | 30·051 | 39·7 | 28·4 | 11·3 | 35·7 | − 1·9 | 34·1 | 31·6 | 4·1 | 7·8 | 1·5 | 85 | 52·9 | 20·5 | 36·9 | 35·5 | 0·000 | 0·0 | sP : ssP |
| 7 | .. | 30·192 | 40·3 | 29·2 | 11·1 | 35·0 | − 2·6 | 33·9 | 32·1 | 2·9 | 6·9 | 0·7 | 89 | 58·7 | 26·0 | 37·7 | 35·5 | 0·000 | 1·0 | sP : ssP |
| 8 | Last Qr. | 29·706 | 41·3 | 33·3 | 8·0 | 38·0 | + 0·3 | 36·7 | 34·9 | 3·1 | 6·0 | 1·1 | 89 | 53·0 | 30·2 | 37·9 | 36·5 | 0·079 | 3·0 | vP : vP, vN |
| 9 | .. | 29·576 | 40·1 | 26·6 | 13·5 | 34·8 | − 2·9 | 33·9 | 32·5 | 2·3 | 8·3 | 0·0 | 91 | 57·1 | 19·7 | 38·4 | 37·5 | 0·038 | 0·0 | vP |
| 10 | .. | 29·058 | 50·6 | 35·9 | 14·7 | 43·7 | + 5·9 | 42·3 | 40·6 | 3·1 | 6·0 | 0·9 | 89 | 53·0 | 33·3 | 37·7 | 37·5 | 0·432 | 1·5 | mP : wN, vP |
| 11 | .. | 28·858 | 44·3 | 36·2 | 8·1 | 40·3 | + 2·4 | 37·4 | 33·7 | 6·6 | 9·7 | 3·9 | 77 | 66·6 | 33·0 | 38·0 | 37·6 | 0·003 | 4·5 | mP : vP, sN |
| 12 | .. | 29·460 | 36·4 | 31·6 | 4·8 | 34·1 | − 4·0 | 31·5 | 27·0 | 7·1 | 11·0 | 4·1 | 74 | 47·2 | 28·0 | 38·0 | 38·0 | 0·010 | 0·0 | mP : vP, vN |
| 13 | Apogee: Greatest Dec. S. | 29·458 | 34·1 | 28·9 | 5·2 | 32·3 | − 5·9 | 31·1 | 28·5 | 3·8 | 6·1 | 1·9 | 86 | 40·9 | 26·0 | 37·5 | 37·0 | 0·048 | 0·0 | vP : sP |
| 14 | .. | 29·638 | 35·2 | 29·4 | 5·8 | 32·4 | − 5·9 | 31·1 | 28·3 | 4·1 | 8·7 | 1·4 | 85 | 45·1 | 27·6 | 37·0 | 37·0 | 0·034 | 0·0 | vP : sP, wN |
| 15 | .. | 29·806 | 37·4 | 33·9 | 3·5 | 35·8 | − 2·6 | 35·0 | 33·8 | 2·0 | 2·7 | 0·8 | 92 | 42·9 | 32·2 | 37·0 | 36·5 | 0·121 | 0·0 | wN, wP : vP, wN |
| 16 | New | 29·828 | 37·1 | 33·9 | 3·2 | 35·5 | − 3·0 | 34·0 | 31·7 | 3·8 | 5·5 | 1·1 | 86 | 41·0 | 33·3 | 36·5 | 36·0 | 0·012 | 0·0 | vP |
| 17 | .. | 29·883 | 37·7 | 33·3 | 4·4 | 35·4 | − 3·2 | 34·4 | 32·8 | 2·6 | 4·7 | 0·3 | 90 | 51·0 | 32·3 | 36·8 | 36·5 | 0·048 | 0·0 | wP : mP |
| 18 | .. | 29·956 | 37·0 | 34·3 | 2·7 | 35·7 | − 3·1 | 34·7 | 33·2 | 2·5 | 3·5 | 1·6 | 91 | 41·0 | 34·1 | 36·0 | 36·0 | 0·000 | 0·0 | mP |
| 19 | .. | 30·028 | 36·1 | 32·4 | 3·7 | 34·8 | − 4·1 | 34·1 | 32·9 | 1·9 | 3·1 | 1·2 | 93 | 36·6 | 32·4 | 37·0 | 36·5 | 0·000 | 0·8 | mP : vP |
| 20 | .. | 29·916 | 33·5 | 26·0 | 7·5 | 32·2 | − 6·9 | 31·2 | 29·0 | 3·2 | 4·8 | 0·0 | 87 | 37·4 | 20·0 | 37·6 | 36·0 | 0·000 | 2·2 | vP : sP |
| 21 | In Equator | 29·805 | 31·9 | 24·6 | 7·3 | 28·6 | −10·7 | 27·6 | 23·9 | 4·7 | 9·9 | 0·0 | 82 | 52·6 | 17·8 | 36·2 | 36·2 | 0·000 | 0·0 | mP : sP |
| 22 | .. | 29·848 | 35·3 | 22·3 | 13·0 | 30·4 | − 9·1 | 29·7 | 27·8 | 2·6 | 5·3 | 1·0 | 89 | 40·5 | 16·9 | 36·5 | 36·5 | 0·000 | 0·0 | sP : vP |
| 23 | .. | 29·898 | 36·0 | 26·7 | 9·3 | 30·6 | − 9·0 | 30·0 | 28·4 | 2·2 | 3·9 | 0·0 | 91 | 50·8 | 21·1 | 36·4 | 36·4 | 0·000 | 0·0 | sP |
| 24 | First Qr. | 29·943 | 36·9 | 27·3 | 9·6 | 31·9 | − 7·8 | 31·2 | 29·6 | 2·3 | 5·5 | 0·0 | 92 | 47·4 | 25·4 | 36·0 | 36·0 | 0·000 | 0·0 | sP |
| 25 | .. | 29·952 | 42·0 | 24·7 | 17·3 | 32·4 | − 7·4 | 31·5 | 29·6 | 2·8 | 8·1 | 0·0 | 89 | 75·4 | 19·0 | 36·2 | 36·0 | 0·000 | 0·5 | sP |
| 26 | .. | 29·845 | 44·3 | 28·4 | 15·9 | 37·6 | − 2·3 | 37·0 | 36·2 | 1·4 | 4·2 | 0·0 | 95 | 65·8 | 23·2 | 36·0 | 35·4 | 0·047 | 3·2 | mP |
| 27 | Greatest Declination N. | 29·716 | 50·3 | 40·5 | 9·8 | 44·7 | + 4·7 | 43·5 | 42·1 | 2·6 | 5·7 | 0·0 | 91 | 81·9 | 37·9 | 35·6 | 35·6 | 0·017 | 5·8 | wP : mP |
| 28 | .. | 29·621 | 49·9 | 42·6 | 7·3 | 47·1 | + 7·0 | 46·0 | 44·8 | 2·3 | 5·5 | 0·7 | 92 | 54·2 | 39·5 | 36·5 | 36·4 | 0·000 | 2·5 | wP |
| 29 | Perigee | 29·349 | 52·8 | 48·1 | 4·7 | 49·5 | + 9·3 | 47·4 | 45·1 | 4·4 | 7·2 | 1·3 | 86 | 63·5 | 46·2 | 38·0 | 38·0 | 0·023 | 4·5 | wP : vP |
| 30 | Full | 29·132 | 51·1 | 45·7 | 5·4 | 48·0 | + 7·7 | 46·4 | 44·6 | 3·4 | 6·5 | 0·8 | 89 | 73·0 | 43·7 | 39·9 | 39·4 | 0·107 | 10·8 | wP, wN |
| 31 | .. | 28·929 | 48·3 | 40·6 | 7·7 | 44·8 | + 4·4 | 43·5 | 42·0 | 2·8 | 5·5 | 0·6 | 90 | 54·2 | 36·9 | 41·1 | 39·9 | 0·385 | 10·5 | wP, wN : vP, vN |
| Means | .. | 29·719 | 40·2 | 32·3 | 7·9 | 36·6 | − 2·1 | 35·4 | 33·3 | 3·3 | 6·1 | 1·0 | 87·9 | 51·5 | 29·1 | 37·6 | 36·8 | Sum 1·424 | 2·0 | .. |
| 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 January 1 to 19 for Barometer are deduced from eye-observations, on account of temporary interruption of the photographic register.

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$^{in}$·719, being 0$^{in}$·010 *lower* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 52°·8 on January 29; the lowest in the month was 22°·3 on January 22; and the range was 30°·5.
The mean of all the highest daily readings in the month was 40°·2, being 3°·0 *lower* than the average for the 44 years, 1841–1884.
The mean of all the lowest daily readings in the month was 32°·3, being 1°·4 *lower* than the average for the 44 years, 1841–1884.
The mean of the daily ranges was 7°·9, being 1°·7 *less* than the average for the 44 years, 1841–1884.
The mean for the month was 36°·6, being 2°·1 *lower* than the average for the 20 years, 1849–1868.

| MONTH and DAY, 1885. | Daily Duration of Sunshine. | Sun above Horizon. | Wind as deduced from Self-registering Anemometers. — Osler's. — General Direction — A.M. | General Direction — P.M. | Pressure on the Square Foot. — Greatest. | Pressure on the Square Foot. — Least. | 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. | | |
| Jan. 1 | 0·0 | 7·9 | ESE : SE | E : ESE | 0·0 | 0·0 | 0·00 | 98 | p.-cl,ho.-fr: 10 : 10 | 10 : 10 |
| 2 | 0·0 | 7·9 | ESE | SE | 1·7 | 0·0 | 0·09 | 219 | 10 : 10 | 10 : 10 |
| 3 | 0·0 | 7·9 | SE | SE : E | 1·4 | 0·0 | 0·08 | 189 | 10 : 10 | 10 : 10, sl |
| 4 | 0·0 | 7·9 | SE : Calm | SW : SSE | 0·2 | 0·0 | 0·00 | 101 | 10 : 10, slt.-f | 10 : 10, slt.-f : v |
| 5 | 0·0 | 7·9 | SSW | SSW : N | 3·6 | 0·0 | 0·39 | 314 | p.-cl,li.-cl,slt.-r: p.-cl : 10, m.-r | 10, m.-r : 10, fq.-m.-r : 9, th.-cl |
| 6 | 1·4 | 8·0 | N : WSW | WSW | 0·2 | 0·0 | 0·01 | 220 | th.-cl : 0,tk.-f,ho.-fr: 0, f | 0 : 0, slt.-f : 0, ho.-fr |
| 7 | 4·2 | 8·0 | WSW : SW | SW : SSW | 0·3 | 0·0 | 0·00 | 230 | 0, ho.-fr : 0, ho.-fr | 0 : 0, ho.-fr |
| 8 | 0·0 | 8·0 | S : SSW | SSW : WSW | 8·7 | 0·0 | 1·69 | 400 | 0, ho.-fr : 0 : 8,cu.-s,sc,w | 10, w : 10, fq.-r, w : v, th.-cl |
| 9 | 1·5 | 8·1 | SW : S | SSW : WSW | 3·7 | 0·0 | 0·28 | 219 | 0 : 0,ho.-fr,tk.-f: v,ci,ci.-cu,li.-cl,f | 6, ci, ci.-cu : 10, r : 9 |
| 10 | 0·0 | 8·1 | WSW : SW | WSW | 22·5 | 0·0 | 3·36 | 590 | v : 10, r, sc, w | 10, sc,slt.-r,w: 10,fq.-r,w,hy.-sq: 0, w |
| 11 | 0·8 | 8·1 | WSW : W | WSW : NW : NNW | 13·7 | 0·6 | 4·36 | 704 | 0, w : li.-cl, w | 10,slt.-r,st.-w: 10 : v, w |
| 12 | 0·6 | 8·2 | NNW | NNW | 11·5 | 0·5 | 3·87 | 565 | 0, w : 0,w,ho.-fr: 1, w | 8,ci.-cu,li.-cl,cu.-s,slt.-sn: v,oc.-sn: vv, oc.-sn |
| 13 | 0·0 | 8·2 | NW : NNW | NNW | 8·0 | 0·0 | 1·37 | 360 | v : 10, oc.-sn | 10, oc.-sn : 10, sn |
| 14 | 0·0 | 8·2 | NNW : NNE | NNE : NNW ; N | 9·8 | 0·0 | 1·56 | 403 | 10 : 10, slt.-sn | v,ci.-cu,cu.-s,li.-cl: 10, sn : 10,oc.-sn,oc.-r |
| 15 | 0·0 | 8·3 | NNE : NE | NNE | 5·7 | 0·0 | 1·83 | 499 | 10 : 10, r : 10, slt.-r | 10, oc.-slt.-r : 10, oc.-slt.-r |
| 16 | 0·0 | 8·3 | NE | NE : ENE | 13·0 | 0·0 | 3·61 | 604 | 10 : 10, sc, w | 10, sc, w : 10, st.-w, th.-r |
| 17 | 0·0 | 8·3 | E : ESE | E : ENE | 9·4 | 0·0 | 1·47 | 391 | 10 : 10 | 10 : 10 |
| 18 | 0·0 | 8·4 | ENE : E | E : ESE | 5·3 | 0·0 | 0·51 | 230 | 10 : 10 | 10 : 10 |
| 19 | 0·0 | 8·4 | ENE | NE : ENE : SE | 0·0 | 0·0 | 0·00 | 108 | 10 : 10 | 10, th.-r : 10, oc.-th.-r |
| 20 | 0·0 | 8·5 | NE | NE : E | 0·6 | 0·0 | 0·00 | 102 | 10 : 10 | 10 : v : 0, ho.-fr |
| 21 | 2·0 | 8·5 | E : ESE | SE : E | 1·1 | 0·0 | 0·04 | 177 | v, fr : 9, ci.-cu, cu.-s | v : 10 : v, ho.-fr |
| 22 | 0·0 | 8·6 | E : SE | SE : E | 0·2 | 0·0 | 0·00 | 121 | 0, ho.-fr : p.-cl, ho.-fr : 10 | 10 : 10 : v, tk.-f |
| 23 | 0·9 | 8·6 | ENE : E | ESE : E | 0·6 | 0·0 | 0·01 | 148 | 10, tk.-f, ho.-fr : 10, f, ho.-fr | 1, li.-cl, m : li.-cl : 8,li.-cl,ho.-fr,slt.-f |
| 24 | 0·0 | 8·7 | E : ESE | ESE : E | 0·2 | 0·0 | 0·00 | 124 | 10, slt.-f, ho.-fr : 9, th.-cl, slt.-f | 10 : 10, th.-cl : 2,th.-cl,m,ho.-fr |
| 25 | 4·7 | 8·7 | ENE | SE : SSE | 0·7 | 0·0 | 0·03 | 154 | 0, ho.-fr : 0, ho.-fr, slt.-f | 0, m : 0, ho.-fr, lu.-co |
| 26 | 0·0 | 8·8 | SSE : S | S : SSE | 1·8 | 0·0 | 0·24 | 240 | ho.-fr : 10, slt.-f | 10, r : 10, r |
| 27 | 0·7 | 8·8 | S : SSW | SW | 8·0 | 0·0 | 1·49 | 435 | 10 : 10 : 9,ci.-cu,li.-cl | 7,ci.-cu,cu,cu.-s,shs.-r : v, th.-cl, lu.-ha; lu.-co |
| 28 | 0·0 | 8·9 | SSW | SSW | 10·2 | 0·0 | 3·10 | 573 | v : 10 | 10, sc, w, th.-r : 10, w, oc.-th.-r |
| 29 | 0·0 | 8·9 | SSW | SSW : S | 9·0 | 0·0 | 3·16 | 545 | 10 : 9,ci.-cu,ci.-s,oc.-slt.-r | 10, oc.-slt.-r : v,cu.-s,li.-cl,lu.-ha,lu.-co |
| 30 | 0·1 | 9·0 | SSE : SSW | SSW : S | 11·0 | 0·0 | 1·40 | 413 | v, li.-cl : 10, sc, r | 10, sc, slt.-r : 10, sc, fq.-r |
| 31 | 0·0 | 9·0 | SW : S | SSW | 18·0 | 0·0 | 2·92 | 559 | p.-cl : v, sc, r, w | v, ci.-cu, cu.-s,oc.-r : v, oc.-r, l, t, hl, m |
| Means | 0·5 | 8·4 | ... | ... | .. | .. | 1·19 | 324 | | |
| Number of Column for Reference. | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |

The mean *Temperature of Evaporation* for the month was 35°·4, being 2°·0 *lower* than
The mean *Temperature of the Dew Point* for the month was 33°·3, being 2°·1 *lower* than
The mean *Degree of Humidity* for the month was 87·9, being 0·6 *greater* than
The mean *Elastic Force of Vapour* for the month was 0in·190, being 0in·017 *less* than
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was 2grs·3, being 0gr·1 *less* than
The mean *Weight of a Cubic Foot of Air* for the month was 555 grains, being 3 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 7·9.
The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·06. The maximum daily amount of *Sunshine* was 4·7 hours on January 25.
The highest reading of the *Solar Radiation Thermometer* was 81°·9 on January 27; and the lowest reading of the *Terrestrial Radiation Thermometer* was 16°·9 on January 22.
The mean daily distribution of *Ozone* for the 12 hours ending 9h. was 1·7; for the 6 hours ending 15h. was 0·3; and for the 6 hours ending 21h. was 0·0.
The *Proportions of Wind* referred to the cardinal points were N. 5, E. 10, S. 11, and W. 5.
The *Greatest Pressure of the Wind* in the month was 22lbs·5 on the square foot on January 10. The mean daily *Horizontal Movement of the Air* for the month was 324 miles; the greatest daily value was 704 miles on January 11; and the least daily value was 98 miles on January 1.
*Rain* fell on 15 days in the month, amounting to 1in·424, as measured by gauge No. 6 partly sunk below the ground; being 0in·607 *less* than the average fall for the 44 years, 1841-1884.

| MONTH and DAY, 1885. | Phases of the Moon. | BAROMETER. Mean of 24 Hourly Values (corrected and reduced to 32° Fahrenheit). | TEMPERATURE. Of the Air. Highest. | TEMPERATURE. Of the Air. Lowest. | TEMPERATURE. Of the Air. Daily Range. | TEMPERATURE. Of the Air. Mean of 24 Hourly Values. | TEMPERATURE. Of the Air. Excess above Average of 20 Years. | TEMPERATURE. Of Evaporation. Mean of 24 Hourly Values. | TEMPERATURE. Of the Dew Point. Deduced Mean Daily Value. | Difference between the Air Temperature and Dew Point Temperature. Mean. | Difference … Greatest. | Difference … Least. | Degree of Humidity (Saturation = 100). | TEMPERATURE. Of Radiation. Highest in Sun's Rays. | TEMPERATURE. Of Radiation. Lowest on the Grass. | TEMPERATURE. Of the Water of the Thames at Deptford. Highest. | TEMPERATURE. Of the Water of the Thames at Deptford. Lowest. | Rain collected in Gauge No. 6, whose receiving surface is 5 inches above the Ground. | Daily Amount of Ozone. | Electricity. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | in. | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | | ° | ° | ° | ° | in. | | |
| Feb. 1 | .. | 29·040 | 49·2 | 41·5 | 7·7 | 44·8 | + 4·3 | 43·3 | 41·6 | 3·2 | 6·9 | 1·5 | 89 | 70·1 | 40·0 | 41·4 | 39·9 | 0·246 | 12·5 | wP : vP, vN |
| 2 | .. | 29·076 | 54·1 | 41·6 | 12·5 | 47·5 | + 6·9 | 44·8 | 41·9 | 5·6 | 11·6 | 1·3 | 82 | 81·6 | 38·7 | 45·3 | 41·9 | 0·031 | 9·2 | wP : vP, vN |
| 3 | In Equator | 29·113 | 48·8 | 37·0 | 11·8 | 43·8 | + 3·1 | 41·8 | 39·5 | 4·3 | 7·8 | 0·5 | 84 | 71·4 | 33·5 | 44·0 | 42·9 | 0·009 | 4·5 | wP : vP, vN |
| 4 | .. | 29·185 | 47·2 | 34·5 | 12·7 | 40·8 | + 0·1 | 39·9 | 38·8 | 2·0 | 7·1 | 0·0 | 93 | 82·1 | 31·2 | 43·9 | 43·9 | 0·274 | 0·5 | vP : vP, vN |
| 5 | .. | 29·264 | 47·5 | 32·4 | 15·1 | 39·3 | − 1·3 | 37·5 | 35·2 | 4·1 | 7·7 | 1·2 | 86 | 84·9 | 29·2 | 45·1 | 44·1 | 0·018 | 1·5 | mP : mP, vN |
| 6 | Last Qr. | 29·552 | 48·4 | 36·4 | 12·0 | 43·3 | + 2·9 | 41·5 | 39·4 | 3·9 | 6·3 | 1·4 | 86 | 67·3 | 33·0 | 42·7 | 42·7 | 0·016 | 5·0 | mP : wP, wN |
| 7 | .. | 29·542 | 51·3 | 40·1 | 11·2 | 45·7 | + 5·5 | 43·3 | 40·6 | 5·1 | 11·2 | 2·0 | 83 | 89·8 | 35·9 | 42·4 | 41·9 | 0·010 | 17·0 | wP : mP : sP |
| 8 | .. | 29·519 | 51·5 | 39·7 | 11·8 | 46·5 | + 6·6 | 45·3 | 44·0 | 2·5 | 4·6 | 0·8 | 92 | 64·3 | 36·0 | 42·1 | 42·1 | 0·210 | 12·5 | vP : wP, wN |
| 9 | .. | 29·468 | 46·6 | 37·4 | 9·2 | 41·5 | + 1·9 | 38·6 | 35·0 | 6·5 | 10·7 | 3·0 | 78 | 83·4 | 33·0 | 41·9 | 41·9 | 0·034 | 1·5 | wP : mP : sP, sN |
| 10 | Apogee: Greatest Dec. S. | 29·815 | 49·5 | 33·8 | 15·7 | 42·1 | + 2·8 | 40·5 | 38·5 | 3·6 | 8·6 | 0·7 | 88 | 81·9 | 28·8 | 41·9 | 41·9 | 0·000 | 0·0 | mP : sP : mP |
| 11 | .. | 29·857 | 54·8 | 43·6 | 11·2 | 49·1 | +10·0 | 47·2 | 45·1 | 4·0 | 10·0 | 0·2 | 87 | 77·1 | 39·5 | 42·4 | 42·1 | 0·000 | 0·0 | wP : mP |
| 12 | .. | 29·959 | 57·8 | 42·0 | 15·8 | 48·8 | + 9·9 | 47·2 | 45·4 | 3·4 | 9·0 | 0·2 | 89 | 91·8 | 38·0 | 43·0 | 42·9 | 0·000 | 0·0 | vP : mP |
| 13 | .. | 29·841 | 50·1 | 44·9 | 5·2 | 47·5 | + 8·7 | 46·1 | 44·6 | 2·9 | 4·4 | 0·8 | 90 | 55·2 | 44·5 | 44·1 | 43·9 | 0·002 | 0·2 | vP : sP |
| 14 | .. | 29·594 | 49·0 | 45·5 | 3·5 | 47·1 | + 8·4 | 46·0 | 44·8 | 2·3 | 5·7 | 0·4 | 92 | 57·9 | 43·4 | 44·0 | 42·9 | 0·006 | 1·8 | mP |
| 15 | New | 29·357 | 51·1 | 45·6 | 5·5 | 48·2 | + 9·5 | 47·8 | 47·4 | 0·8 | 2·1 | 0·2 | 97 | 59·1 | 43·4 | 44·9 | 44·9 | 0·234 | 7·0 | wP, vN : wP, wN |
| 16 | .. | 29·068 | 51·2 | 48·4 | 2·8 | 49·6 | +10·8 | 49·3 | 49·0 | 0·6 | 1·5 | 0·0 | 98 | 56·4 | 47·5 | 45·8 | 45·3 | 0·582 | 3·0 | wP, wN |
| 17 | In Equator | 29·162 | 48·6 | 36·0 | 12·6 | 41·6 | + 2·7 | 41·1 | 40·5 | 1·1 | 3·3 | 0·0 | 96 | 52·5 | 32·0 | 46·8 | 46·4 | 0·126 | 0·0 | vP, wN |
| 18 | .. | 29·439 | 43·6 | 34·0 | 9·6 | 37·6 | − 1·4 | 35·3 | 32·1 | 5·5 | 11·7 | 1·7 | 81 | 71·3 | 28·2 | 46·8 | 46·4 | 0·000 | 0·0 | mP : vP |
| 19 | .. | 29·613 | 41·7 | 29·8 | 11·9 | 35·3 | − 3·9 | 33·8 | 31·5 | 3·8 | 8·7 | 0·0 | 86 | 63·8 | 22·7 | 45·8 | 45·4 | 0·000 | 0·0 | sP : vP |
| 20 | .. | 29·570 | 39·1 | 31·0 | 8·1 | 34·9 | − 4·4 | 33·2 | 30·4 | 4·5 | 6·7 | 1·2 | 83 | 50·3 | 27·5 | 44·8 | 43·9 | 0·000 | 4·0 | mP : sP |
| 21 | .. | 29·954 | 40·4 | 26·9 | 13·5 | 33·6 | − 5·9 | 31·2 | 26·8 | 6·8 | 12·2 | 3·4 | 75 | 89·8 | 23·7 | 43·4 | 43·4 | 0·000 | 1·8 | vP : sP |
| 22 | First Qr. | 29·696 | 45·1 | 33·0 | 12·1 | 40·3 | + 0·7 | 39·3 | 38·0 | 2·3 | 6·0 | 0·0 | 92 | 54·6 | 31·7 | 42·1 | 40·7 | 0·056 | 5·2 | vP, wN |
| 23 | .. | 29·797 | 52·8 | 35·4 | 17·4 | 43·8 | + 4·1 | 42·4 | 40·7 | 3·1 | 6·7 | 0·0 | 89 | 96·5 | 32·5 | 40·4 | 39·5 | 0·007 | 4·8 | vP : mP |
| 24 | Greatest Declination N. | 29·618 | 58·3 | 42·4 | 15·9 | 49·2 | + 9·4 | 44·9 | 40·3 | 8·9 | 14·4 | 2·6 | 71 | 101·6 | 37·8 | 40·4 | 39·9 | 0·000 | 5·2 | vP : sP |
| 25 | Perigee | 29·769 | 51·2 | 42·5 | 8·7 | 46·9 | + 7·0 | 45·7 | 44·4 | 2·5 | 6·2 | 0·4 | 92 | 62·0 | 38·7 | 40·1 | 39·9 | 0·268 | 1·2 | vP, vN : vN, sP |
| 26 | .. | 29·895 | 51·1 | 41·2 | 9·9 | 46·6 | + 6·6 | 44·5 | 42·1 | 4·5 | 8·2 | 0·2 | 85 | 88·8 | 37·5 | 41·9 | 41·3 | 0·008 | 16·0 | wP : mP |
| 27 | .. | 29·677 | 51·9 | 46·7 | 5·2 | 48·3 | + 8·2 | 47·1 | 45·8 | 2·5 | 4·4 | 1·0 | 92 | 60·3 | 44·6 | 42·9 | 41·7 | 0·146 | 18·2 | wP, wN : vP |
| 28 | .. | 29·780 | 51·7 | 38·2 | 13·5 | 46·1 | + 5·9 | 45·0 | 43·8 | 2·3 | 5·9 | 0·0 | 92 | 77·0 | 36·0 | 44·3 | 42·7 | 0·052 | 4·5 | wP : vP, vN |
| Means | .. | 29·544 | 49·4 | 38·6 | 10·8 | 43·9 | + 4·3 | 42·3 | 40·3 | 3·7 | 7·5 | 0·9 | 87·4 | 73·0 | 35·3 | 43·4 | 42·7 | Sum 2·335 | 4·9 | .. |
| 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 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$^{in}$·544, being 0$^{in}$·288 *lower* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 58°·3 on February 24; the lowest in the month was 26°·9 on February 21; and the range was 31°·4.

The mean of all the highest daily readings in the month was 49°·4, being 3°·8 *higher* than the average for the 44 years, 1841–1884.

The mean of all the lowest daily readings in the month was 38°·6, being 4°·1 *higher* than the average for the 44 years, 1841–1884.

The mean of the daily ranges was 10°·8, being 0°·3 *less* than the average for the 44 years, 1841–1884.

The mean for the month was 43°·9, being 4°·3 *higher* than the average for the 20 years, 1849–1868.

| MONTH and DAY, 1885. | 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 | 1·0 | 9·1 | SSW | SW : SSW | 5·0 | 0·0 | 0·08 | 442 | 10, cu.-s, ci.-s, s : 10, glm, r | 10 : v, oc.-r |
| 2 | 1·2 | 9·2 | SSW : S | SSW | 11·2 | 0·0 | 1·28 | 592 | 10 : 10, r : 7,ci.-s,th.-cl | v, li.-cl, w, slt.-r : v, oc.-r |
| 3 | 1·1 | 9·2 | SSW : S | SW : S | 4·2 | 0·0 | 0·10 | 403 | 0 : li.-ci : v,li.-cl,sc,slt.-r | 8, li.-cl, slt.-r : 1, li.-cl, d |
| 4 | 1·7 | 9·3 | S : SSE | S : SW | 3·4 | 0·0 | 0·03 | 298 | 1, li.-cl, d : li.-cl : 2,ci.-s,cu.-s | 8,ci.-cu,cu.-s,sc : 10, fq.-r : v, slt.-r |
| 5 | 1·6 | 9·3 | SW : SSW | SW : WSW | 5·9 | 0·0 | 0·19 | 444 | 0, ho.-fr : 0 : 8, ci.-cu | v, slt.-r : 0 : 0 |
| 6 | 0·1 | 9·4 | SW : SSW | SSW | 12·0 | 0·0 | 1·85 | 531 | 0 : 4,th.-cl,s : 9, ci.-cu, s | 10, sc, slt.-r : 10, slt.-r, w |
| 7 | 3·0 | 9·4 | SW | SW | 5·0 | 0·0 | 0·50 | 449 | p.-cl : 4, li.-cl | 4, th.-cl, cu, cu.-s : 0, d |
| 8 | 0·0 | 9·5 | SSW | SSW : SW | 12·0 | 0·0 | 2·57 | 606 | p.-cl : 10, sc, m.-r | 10, oc.-r, st.-w : v, st.-w, r |
| 9 | 5·3 | 9·6 | WSW | WSW : SW | 6·5 | 0·0 | 0·96 | 554 | 0 : 1,li.-cl,ci.-cu,ci.-s | 3, ci.-cu,cu.-s: v, r : v, l |
| 10 | 1·4 | 9·6 | SW | SW : SSW | 0·0 | 0·0 | 0·00 | 225 | p.-cl : 8, ci.-cu,th.-cl,m | 8,ci.-cu,th.-cl,slt.-r: 10, oc.-slt.-r : 10, oc.-slt.-r |
| 11 | 0·0 | 9·7 | SSW: SW: WSW | WSW: SW | 5·0 | 0·0 | 0·42 | 362 | 10 : 10, sc | 8, ci.-cu, cu.-s : 1, h |
| 12 | 1·9 | 9·8 | SW : SSW | SW : SSW | 4·0 | 0·0 | 0·31 | 310 | v : 9,cu.-s,li.-cl: 10 | 6,ci.-cu,ci.-s,cu,-s : 8 : 10 |
| 13 | 0·0 | 9·8 | SW | SSW : SW | 3·3 | 0·0 | 0·64 | 334 | 10 : 10 | 10, sc : 10 |
| 14 | 0·0 | 9·9 | SW | SSW | 3·6 | 0·0 | 0·73 | 338 | 10 : 10,ci.-cu,cu.-s,slt.-r | 10, m.-r : 10 |
| 15 | 0·0 | 9·9 | S : SSW | SSW | 3·8 | 0·0 | 0·30 | 291 | 10, r : 10, fq.-r | 10, m.-r : 10, r |
| 16 | 0·0 | 10·0 | SW : SSW | SSW : SW | 2·7 | 0·0 | 0·10 | 239 | 10, r : 10, r | 10, r : 10, slt.-r |
| 17 | 0·0 | 10·1 | WNW : NE | WSW:NNW:N | 2·5 | 0·0 | 0·11 | 183 | 10, r : 10, r, m, glm | 10, gt.-glm : 10 |
| 18 | 1·8 | 10·1 | NW : NNW | WNW : SW | 4·1 | 0·0 | 0·55 | 279 | 10 : 10 : 5,ci.-cu,ci.-s | 3,ci.-cu,ci-s,th.-cl : 0 : 0 |
| 19 | 1·6 | 10·2 | SW : NNE | NE : ENE | 0·5 | 0·0 | 0·05 | 184 | 0, ho.-fr : 0, ho.-fr, h, glm | 0, h : 1, li.-cl, m |
| 20 | 0·0 | 10·3 | NE | NE : NNE | 6·8 | 0·0 | 1·62 | 405 | p.-cl : 10 | 10, sh.-r : v, ho.-fr |
| 21 | 7·1 | 10·3 | NE : ESE | ESE : SE : SSE | 6·3 | 0·0 | 0·64 | 254 | 0, ho.-fr : 0, ho.-fr : 1, li.-cl | 0 : 0 : 10 |
| 22 | 0·0 | 10·4 | SSE : S | SSW : SW | 8·1 | 0·0 | 2·52 | 432 | 10 : 10, sc, slt.-r | 10, sc, fq.-r : 10, slt.-r : v, li.-cl |
| 23 | 0·8 | 10·5 | SW : SSW | SSW : S : SSE | 9·1 | 0·0 | 2·18 | 432 | p.-cl : 9, ci.-cu, ci.-s, sc | 9, sh.-r : v,ci.-cu,ci.-s,li.-cl,lu.-co |
| 24 | 7·5 | 10·5 | SSE : SSW | SSW | 6·7 | 0·0 | 1·48 | 344 | 0 : 0 | 1, th.-cl : 7, li.-cl : 8,li.-cl,lu.-co |
| 25 | 0·0 | 10·6 | Variable | SSW | 2·1 | 0·0 | 0·02 | 231 | p.-cl, lu.-ha : 10, r, m, glm | 10, r : 0 : v |
| 26 | 0·7 | 10·7 | SSW : SSE : S | SSW: S | 6·3 | 0·0 | 1·27 | 385 | p.-cl, d : 9, ci.-cu, ci.-s | 10 : 10, r |
| 27 | 0·0 | 10·7 | S : SSW | SSW | 6·0 | 0·0 | 0·82 | 355 | 10 : 10, r : 10, fq.-r | 10, fq.-r : v : v |
| 28 | 0·0 | 10·8 | SSW | SW : NNE | 4·0 | 0·0 | 0·25 | 203 | 10 : 10 | 10 : 10, glm, r : v |
| Means | 1·4 | 9·9 | ... | ... | .. | .. | 0·77 | 361 | | |
| Number of Column for Reference. | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |

The mean *Temperature of Evaporation* for the month was $42^{\circ}\cdot3$, being $4^{\circ}\cdot4$ *higher* than
The mean *Temperature of the Dew Point* for the month was $40^{\circ}\cdot3$, being $4^{\circ}\cdot9$ *higher* than
The mean *Degree of Humidity* for the month was 87·4, being 2·6 *greater* than
The mean *Elastic Force of Vapour* for the month was $0^{in}\cdot250$, being $0^{in}\cdot043$ *greater* than
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was $2^{grs}\cdot9$, being $0^{gr}\cdot5$ *greater* than
The mean *Weight of a Cubic Foot of Air* for the month was 543 grains, being 11 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 7·3.

The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·14. The maximum daily amount of *Sunshine* was 7·5 hours on February 24.

The highest reading of the *Solar Radiation Thermometer* was $101^{\circ}\cdot6$ on February 24; and the lowest reading of the *Terrestrial Radiation Thermometer* was $22^{\circ}\cdot7$ on February 19.

The mean daily distribution of *Ozone* for the 12 hours ending 9h. was 3·0; for the 6 hours ending 15h. was 1·1; and for the 6 hours ending 21h. was 0·8.

The *Proportions of Wind* referred to the cardinal points were N. 2, E. 2, S. 15, and W. 9.

The *Greatest Pressure of the Wind* in the month was $12^{lbs}\cdot0$ on the square foot on February 6 and 8. The mean daily *Horizontal Movement of the Air* for the month was 361 miles; the greatest daily value was 606 miles on February 8; and the least daily value was 183 miles on February 17.

*Rain* fell on 19 days in the month, amounting to $2^{in}\cdot335$, as measured by gauge No. 6 partly sunk below the ground; being $0^{in}\cdot820$ *greater* than the average fall for the 44 years, 1841–1884.

| MONTH and DAY, 1885. | Phases of the Moon. | BAROMETER. Mean of 24 Hourly Values (corrected and reduced to 32° Fahrenheit). | TEMPERATURE. Of the Air. Highest. | TEMPERATURE. Of the Air. Lowest. | TEMPERATURE. Of the Air. Daily Range. | TEMPERATURE. Of the Air. Mean of 24 Hourly Values. | TEMPERATURE. Of the Air. Excess above Average of 20 Years. | TEMPERATURE. Of Evaporation. Mean of 24 Hourly Values. | TEMPERATURE. Of the Dew Point. Deduced Mean Daily Value. | Difference between the Air Temperature and Dew Point Temperature. Mean. | Difference between the Air Temperature and Dew Point Temperature. Greatest. | Difference between the Air Temperature and Dew Point Temperature. Least. | Degree of Humidity (Saturation = 100). | TEMPERATURE. Of Radiation. Highest in Sun's Rays. | TEMPERATURE. Of Radiation. Lowest on the Grass. | TEMPERATURE. Of the Water of the Thames at Deptford. Highest. | TEMPERATURE. Of the Water of the Thames at Deptford. Lowest. | Rain collected in Gauge No. 6, whose receiving surface is 5 inches above the Ground. | Daily Amount of Ozone. | Electricity. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | in. | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | | ° | ° | ° | ° | in. | | |
| Mar. 1 | Full | 29·974 | 46·2 | 32·9 | 13·3 | 38·2 | − 2·1 | 36·9 | 35·1 | 3·1 | 10·9 | 0·0 | 89 | 103·0 | 30·6 | 44·8 | 44·2 | 0·000 | 0·0 | sP |
| 2 | In Equator | 29·891 | 46·0 | 30·3 | 15·7 | 37·4 | − 3·0 | 35·6 | 33·1 | 4·3 | 11·0 | 0·0 | 85 | 95·3 | 23·8 | 45·3 | 44·3 | 0·000 | 4·7 | sP : mP : sP |
| 3 | .. | 29·443 | 45·1 | 34·2 | 10·9 | 41·0 | + 0·5 | 39·9 | 38·5 | 2·5 | 5·5 | 0·2 | 91 | 55·6 | 29·6 | 44·8 | 44·7 | 0·343 | 17·8 | mP : vN, vP |
| 4 | .. | 29·276 | 55·9 | 40·2 | 15·7 | 46·6 | + 6·1 | 44·1 | 41·3 | 5·3 | 16·2 | 0·2 | 83 | 108·7 | 37·4 | 44·2 | 43·9 | 0·060 | 1·5 | vN, vP |
| 5 | .. | 29·325 | 54·4 | 35·9 | 18·5 | 44·8 | + 4·3 | 43·0 | 40·9 | 3·9 | 10·4 | 0·0 | 86 | 92·7 | 29·0 | 44·3 | 43·9 | 0·000 | 0·0 | sP : vP |
| 6 | .. | 29·215 | 44·1 | 35·8 | 8·3 | 38·1 | − 2·4 | 37·2 | 36·0 | 2·1 | 3·8 | 1·0 | 92 | 64·3 | 34·1 | 44·8 | 44·7 | 0·196 | 0·0 | vP, vN |
| 7 | .. | 29·826 | 44·6 | 29·2 | 15·4 | 36·5 | − 4·1 | 34·6 | 31·8 | 4·7 | 10·8 | 0·3 | 84 | 89·6 | 22·6 | 44·2 | 43·9 | 0·000 | 0·0 | vP |
| 8 | Last Qr. | 29·691 | 41·5 | 26·8 | 14·7 | 36·2 | − 4·4 | 34·6 | 32·2 | 4·0 | 9·7 | 0·0 | 86 | 61·5 | 20·5 | 43·8 | 43·4 | 0·000 | 0·2 | sP : vP |
| 9 | Greatest Dec. S.: Apogee. | 29·841 | 44·2 | 32·0 | 12·2 | 38·4 | − 2·3 | 35·7 | 32·1 | 6·3 | 13·2 | 0·7 | 78 | 93·6 | 28·0 | 43·2 | 42·4 | 0·015 | 0·8 | vP, vN : sP |
| 10 | .. | 30·162 | 43·5 | 28·7 | 14·8 | 35·6 | − 5·1 | 33·4 | 30·0 | 5·6 | 10·1 | 1·5 | 80 | 98·5 | 22·1 | 42·7 | 42·1 | 0·000 | 1·0 | sP : vP |
| 11 | .. | 30·313 | 43·4 | 31·1 | 12·3 | 38·1 | − 2·7 | 35·6 | 32·2 | 5·9 | 9·7 | 1·2 | 79 | 62·0 | 26·7 | 41·9 | 41·7 | 0·000 | 0·0 | vP |
| 12 | .. | 30·292 | 50·1 | 28·9 | 21·2 | 39·6 | − 1·2 | 37·7 | 35·2 | 4·4 | 11·5 | 0·9 | 85 | 98·5 | 21·1 | 41·3 | 40·9 | 0·000 | 0·0 | vP |
| 13 | .. | 30·319 | 46·9 | 37·2 | 9·7 | 41·5 | + 0·6 | 39·7 | 37·4 | 4·1 | 8·2 | 1·4 | 87 | 81·7 | 32·2 | 40·7 | 39·9 | 0·000 | 2·0 | mP : vP |
| 14 | .. | 30·390 | 50·2 | 34·5 | 15·7 | 40·7 | − 0·3 | 39·1 | 37·1 | 3·6 | 10·9 | 0·2 | 87 | 97·6 | 26·4 | 41·4 | 40·9 | 0·000 | 2·0 | mP : sP |
| 15 | .. | 30·314 | 52·2 | 25·2 | 27·0 | 39·1 | − 2·0 | 36·8 | 33·8 | 5·3 | 13·8 | 0·0 | 82 | 102·0 | 21·0 | 42·9 | 40·9 | 0·000 | 0·0 | vP |
| 16 | New: In Equator. | 30·260 | 51·9 | 29·5 | 22·4 | 40·7 | − 0·5 | 38·3 | 35·3 | 5·4 | 12·2 | 0·0 | 81 | 87·3 | 22·0 | 42·3 | 40·9 | 0·000 | 0·0 | sP : vP |
| 17 | .. | 29·903 | 55·1 | 33·6 | 21·5 | 43·2 | + 1·9 | 39·7 | 35·5 | 7·7 | 18·8 | 0·3 | 75 | 105·9 | 26·7 | 41·7 | 41·4 | 0·035 | 0·2 | sP : vP |
| 18 | .. | 29·497 | 49·2 | 35·2 | 14·0 | 41·8 | + 0·4 | 39·3 | 36·2 | 5·6 | 14·5 | 0·2 | 82 | 93·1 | 26·1 | 42·4 | 41·9 | 0·012 | 0·8 | vP, sN : vP, vN |
| 19 | .. | 29·846 | 47·0 | 32·1 | 14·9 | 37·8 | − 3·6 | 34·5 | 30·0 | 7·8 | 14·7 | 1·6 | 74 | 103·7 | 27·7 | 42·4 | 41·9 | 0·000 | 1·0 | sP : vP, vN |
| 20 | .. | 29·648 | 60·2 | 32·8 | 27·4 | 46·1 | + 4·6 | 42·5 | 38·4 | 7·7 | 12·7 | 2·0 | 75 | 96·8 | 27·1 | 42·9 | 42·9 | 0·000 | 0·0 | vP |
| 21 | .. | 29·681 | 48·1 | 39·2 | 8·9 | 43·2 | + 1·6 | 38·8 | 33·5 | 9·7 | 14·5 | 5·1 | 69 | 81·9 | 33·5 | 43·4 | 42·9 | 0·000 | 1·5 | vP, wN |
| 22 | .. | 29·762 | 42·1 | 30·5 | 11·6 | 36·5 | − 5·2 | 35·1 | 33·1 | 3·4 | 9·7 | 0·0 | 88 | 92·3 | 25·0 | 42·9 | 42·9 | 0·749 | 4·5 | vP, vN : vP |
| 23 | Greatest Dec. N.: First Q.: Perigee | 30·114 | 42·9 | 28·9 | 14·0 | 36·0 | − 5·8 | 33·9 | 30·8 | 5·2 | 11·0 | 0·0 | 81 | 99·4 | 22·7 | 42·9 | 42·9 | 0·000 | 0·0 | vP |
| 24 | .. | 30·086 | 46·3 | 27·8 | 18·5 | 36·2 | − 5·8 | 33·7 | 30·0 | 6·2 | 13·0 | 0·0 | 78 | 112·9 | 20·6 | 43·4 | 43·1 | 0·000 | 0·5 | vP |
| 25 | .. | 30·076 | 46·6 | 31·3 | 15·3 | 38·9 | − 3·4 | 35·3 | 30·5 | 8·4 | 13·6 | 3·3 | 72 | 103·5 | 26·3 | 43·4 | 42·9 | 0·000 | 1·5 | wP : vP |
| 26 | .. | 29·873 | 51·8 | 34·0 | 17·8 | 41·4 | − 1·2 | 38·9 | 35·8 | 5·6 | 12·6 | 0·9 | 81 | 104·4 | 30·9 | 42·9 | 42·9 | 0·086 | 5·8 | mP : vP |
| 27 | .. | 29·768 | 50·6 | 38·1 | 12·5 | 44·4 | + 1·4 | 40·3 | 35·5 | 8·9 | 15·7 | 0·7 | 71 | 97·7 | 32·5 | 42·9 | 42·9 | 0·000 | 2·2 | vP |
| 28 | .. | 30·114 | 52·7 | 32·1 | 20·6 | 41·4 | − 2·0 | 37·4 | 32·4 | 9·0 | 18·5 | 2·6 | 71 | 102·7 | 25·9 | 43·5 | 43·2 | 0·000 | 1·8 | mP : vP |
| 29 | In Equator | 29·893 | 51·5 | 33·6 | 17·9 | 41·9 | − 1·9 | 38·3 | 33·9 | 8·0 | 16·2 | 1·8 | 75 | 110·0 | 28·2 | 43·3 | 42·9 | 0·000 | 5·2 | mP : sP |
| 30 | Full | 29·993 | 55·8 | 36·4 | 19·4 | 44·6 | + 0·3 | 39·7 | 34·0 | 10·6 | 19·0 | 2·8 | 66 | 113·6 | 25·0 | 44·4 | 43·9 | 0·000 | 0·0 | mP |
| 31 | .. | 30·081 | 57·8 | 29·8 | 28·0 | 44·1 | − 0·7 | 39·1 | 33·2 | 10·9 | 19·6 | 5·7 | 65 | 111·5 | 21·0 | 44·5 | 44·5 | 0·000 | 0·0 | sP : vP, vN |
| Means | .. | 29·899 | 49·0 | 32·5 | 16·5 | 40·3 | − 1·2 | 37·7 | 34·3 | 6·0 | 12·6 | 1·1 | 79·9 | 94·2 | 26·7 | 43·2 | 42·8 | Sum 1·496 | 1·8 | .. |
| 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 results on March 7 and 8 for Barometer 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 29in·899, being 0in·177 *higher* than the average for the 20 years, 1854–1873.

**TEMPERATURE OF THE AIR.**

The highest in the month was 60°·2 on March 20; the lowest in the month was 25°·2 on March 15; and the range was 35°·0.
The mean of all the highest daily readings in the month was 49°·0, being 1°·0 *lower* than the average for the 44 years, 1841–1884.
The mean of all the lowest daily readings in the month was 32°·5, being 2°·7 *lower* than the average for the 44 years, 1841–1884.
The mean of the daily ranges was 16°·5, being 1°·8 *greater* than the average for the 44 years, 1841–1884.
The mean for the month was 40°·3, being 1°·2 *lower* than the average for the 20 years, 1849–1868.

| MONTH and DAY, 1885. | Daily Duration of Sunshine. | Sun above Horizon. | WIND AS DEDUCED FROM SELF-REGISTERING ANEMOMETERS. Osler's. General Direction. A.M. | Osler's. General Direction. P.M. | Osler's. Pressure on the Square Foot. Greatest. | Pressure on the Square Foot. Least. | 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. | | |
| Mar. 1 | 3·9 | 10·8 | NNE: NE | ENE: ESE: E | 2·2 | 0·0 | 0·16 | 216 | v : 9, cu.-s | 6, cu, cu.-s : 3 |
| 2 | 2·0 | 10·9 | ENE: ESE: SE | SE: ESE | 1·4 | 0·0 | 0·11 | 184 | v, ho.-fr : 9, ci.-cu | 8, ci.-cu, ci.-s: p.-cl : 10 |
| 3 | 0·0 | 11·0 | ESE: SE | SE: SSE | 4·0 | 0·0 | 0·59 | 274 | 10 : 10, fq.-r | 10, fq.-r : 10, hy.-r |
| 4 | 4·8 | 11·1 | WSW | WSW: SW | 3·7 | 0·0 | 0·48 | 317 | v, r : 3, ci.-cu, li.-cl | 6, ci.-cu, cu, cu.-s : 9, li.-cl |
| 5 | 2·1 | 11·1 | SW | SW: NNW | 3·2 | 0·0 | 0·12 | 241 | p.-cl : 8, ci.-cu | 9, ci.-cu, cu, cu.-s, slt.-r: v |
| 6 | 0·0 | 11·2 | NNE: N | NNW: NNE: NE | 5·2 | 0·0 | 1·33 | 389 | 10 : 10, slt.-r | 10, fq.-r : 10, fq.-r |
| 7 | 3·5 | 11·2 | NE: NNE | NE: Calm: SSW | 3·9 | 0·0 | 0·16 | 160 | p.-cl : v, f | 3, ci.-cu, li.-cl : v, f |
| 8 | 1·0 | 11·3 | Variable | SE: Calm | 0·0 | 0·0 | 0·00 | 79 | v, f : 9, th.-cl, slt.-f, glm | 10, m : 10, m |
| 9 | 4·0 | 11·4 | NE | NE | 8·1 | 0·0 | 2·72 | 465 | p.-cl, r : 3, ci.-cu, ci.-s | 8, ci.-cu, cu.-s : v, ci.-cu |
| 10 | 0·9 | 11·4 | NNE: NE | NE: ENE | 3·6 | 0·0 | 0·48 | 281 | v : 10 | 10 : p.-cl : 0 |
| 11 | 0·4 | 11·5 | NE | ENE | 3·1 | 0·0 | 0·60 | 282 | v : 10 | 10 : v |
| 12 | 3·7 | 11·6 | NE | NE | 4·6 | 0·0 | 0·90 | 309 | 0, ho.-fr : 0, ho.-fr : 3, ci.-cu | 7, ci.-cu, cu.-s : v, ci.-cu |
| 13 | 2·5 | 11·6 | NE | ENE | 6·3 | 0·0 | 1·97 | 423 | 10 : 10 | 9, ci.-cu, cu.-s : 10 |
| 14 | 3·3 | 11·7 | ENE | ENE: ESE | 2·7 | 0·0 | 0·29 | 250 | 10 : 10, m.-r | 6, ci.-cu, cu, cu.-s : 0, slt.-f |
| 15 | 6·2 | 11·8 | Variable | ENE: SE: SW | 0·1 | 0·0 | 0·00 | 122 | 0, f, ho.-fr : 0, h, tk.-f | 0 : 0, a |
| 16 | 4·3 | 11·8 | SW: WSW | NNW | 0·6 | 0·0 | 0·04 | 175 | 0, ho.-fr : 0, m : 1, th.-cl, h, m | 5, ci.-cu, cu.-s, li.-cl: 7 : 0, h, slt.-f |
| 17 | 9·1 | 11·9 | SW: WSW | WSW: SW | 6·7 | 0·0 | 1·80 | 414 | 0 : 0 : 2, li.-cl | 3, ci : 0 : v, r |
| 18 | 1·9 | 12·0 | WSW: WNW | N | 4·7 | 0·0 | 0·88 | 309 | 10, r : 10 : 9, cu, cu.-s | 8, ci.-cu, cu, cu.-s, slt.-r: 8, li.-cl : 3, li.-cl |
| 19 | 5·3 | 12·0 | N | N: NW: SW | 4·5 | 0·0 | 0·84 | 272 | 0 : 2, th.-cl | 6, ci.-cu, cu, cu.-s: p.-cl, slt.-f : 0 |
| 20 | 1·4 | 12·1 | SW | W: WNW: NNW | 8·0 | 0·2 | 2·43 | 490 | v : 10 | 8, cu, cu.-s : v |
| 21 | 1·5 | 12·2 | W: WNW: NNW | NW: NNW | 7·7 | 0·0 | 1·59 | 382 | 0 : p.-cl : 8, ci.-cu, cu.-s | 8, ci.-cu, cu, cu.-s : 10 |
| 22 | 0·7 | 12·2 | SE: E: ENE | ENE: NE | 7·0 | 0·0 | 1·21 | 297 | 10, r, sn : 10, sn | p.-cl : 0 |
| 23 | 2·9 | 12·3 | NNE: N | N: NNE: ENE | 4·1 | 0·0 | 0·69 | 246 | 0 : 5, th.-cl | 10 : p.-cl : v |
| 24 | 2·0 | 12·4 | Calm: S | SW: ESE: SSE | 0·5 | 0·0 | 0·03 | 111 | p.-cl : 9, ci.-cu, ci.-s | 9, ci.-cu, cu.-s : 10, th.-cl |
| 25 | 5·7 | 12·4 | SE | E: SE: S | 0·5 | 0·0 | 0·02 | 118 | v : 2, li.-cl | 7, ci.-cu, cu, cu.-s : 9, lu.-ha |
| 26 | 1·3 | 12·5 | SSW: SW | SSW | 9·0 | 0·0 | 1·92 | 393 | 10 : 10 : 8, ci.-cu, ci.-s | 9, ci.-cu, ci.-s, w : 10, fq.-r, w |
| 27 | 3·0 | 12·6 | WSW: NW | NNW | 12·5 | 0·1 | 3·02 | 494 | p.-cl : v, w | 6, ci.-cu, cu, cu.-s: 2 : 1 |
| 28 | 8·3 | 12·6 | NNW: N | N: SSE: S | 3·3 | 0·0 | 0·20 | 185 | 2, li.-cl : 0 | v, ci.-cu, li.-cl : 1, li.-cl |
| 29 | 3·6 | 12·7 | S: SSW | SSW: SSE | 5·5 | 0·0 | 0·52 | 301 | p.-cl : 8, ci, so.-ha | 8, ci, ci.-s, so.-ha : 5, li.-cl |
| 30 | 8·7 | 12·8 | ESE: E | E: NE | 2·3 | 0·0 | 0·07 | 169 | p.-cl, m : 2, li.-cl, m | 1, ci : 0 |
| 31 | 7·7 | 12·8 | NE: N | Variable: S | 0·6 | 0·0 | 0·03 | 160 | 0 : 2, li.-cl, ci.-cu, m | 0 : 10 : v, th.-cl, m |
| Means | 3·4 | 11·8 | ... | ... | .. | .. | 0·81 | 274 | | |
| Number of Column for Reference. | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |

The mean *Temperature of Evaporation* for the month was 37°·7, being 1°·3 *lower* than } the average for the 20 years, 1849–1868.
The mean *Temperature of the Dew Point* for the month was 34°·3, being 1°·7 *lower* than } the average for the 20 years, 1849–1868.
The mean *Degree of Humidity* for the month was 79·9, being 1·0 *less* than } the average for the 20 years, 1849–1868.
The mean *Elastic Force of Vapour* for the month was 0in·198, being 0in·014 *less* than } the average for the 20 years, 1849–1868.
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was 2grs·3, being 0gr·2 *less* than } the average for the 20 years, 1849–1868.
The mean *Weight of a Cubic Foot of Air* for the month was 554 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 6·3.
The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·29. The maximum daily amount of *Sunshine* was 9·1 hours on March 17.
The highest reading of the *Solar Radiation Thermometer* was 113°·6 on March 30; and the lowest reading of the *Terrestrial Radiation Thermometer* was 20°·5 on March 8.
The mean daily distribution of *Ozone* for the 12 hours ending 9h. was 1·0; for the 6 hours ending 15h. was 0·6; and for the 6 hours ending 21h. was 0·2.
The *Proportions of Wind* referred to the cardinal points were N. 9, E. 9, S. 7, and W. 5. One day was calm.
The *Greatest Pressure of the Wind* in the month was 12lbs·5 on the square foot on March 27. The mean daily *Horizontal Movement of the Air* for the month was 274 miles; the greatest daily value was 494 miles on March 27; and the least daily value was 79 miles on March 8.
*Rain* fell on 8 days in the month, amounting to 1in·496, as measured by gauge No. 6 partly sunk below the ground; being 0in·064 *greater* than the average fall for the 44 years, 1841–1884.

| MONTH and DAY, 1885. | Phases of the Moon. | BAROMETER. Mean of 24 Hourly Values (corrected and reduced to 32° Fahrenheit). | TEMPERATURE. Of the Air. Highest. | Of the Air. Lowest. | Of the Air. Daily Range. | Of the Air. Mean of 24 Hourly Values. | Of the Air. Excess above Average of 20 Years. | Of Evaporation. Mean of 24 Hourly Values. | Of the Dew Point. Deduced Mean Daily Value. | Difference between the Air Temperature and Dew Point Temperature. Mean. | Greatest. | Least. | Degree of Humidity (Saturation = 100). | TEMPERATURE. Of Radiation. Highest in Sun's Rays. | Of Radiation. Lowest on the Grass. | Of the Water of the Thames at Deptford. Highest. | Of the Water of the Thames at Deptford. Lowest. | Rain collected in Gauge No. 6, whose receiving surface is 5 inches above the Ground. | Daily Amount of Ozone. | Electricity. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | in. | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | | ° | ° | ° | ° | in. | | |
| Apr. 1 | .. | 29·685 | 60·5 | 36·5 | 24·0 | 47·1 | + 1·8 | 42·4 | 37·1 | 10·0 | 19·4 | 1·8 | 69 | 111·4 | 31·7 | 44·9 | 44·4 | 0·000 | 0·0 | mP : vP, vN |
| 2 | .. | 29·819 | 52·1 | 34·5 | 17·6 | 42·7 | − 3·0 | 38·3 | 33·0 | 9·7 | 18·3 | 1·4 | 70 | 112·9 | 28·5 | 45·3 | 44·9 | 0·000 | 0·5 | vP, wN |
| 3 | .. | 30·010 | 50·4 | 30·8 | 19·6 | 40·2 | − 5·9 | 36·5 | 31·7 | 8·5 | 18·3 | 0·0 | 71 | 118·0 | 24·5 | 45·3 | 44·9 | 0·000 | 1·5 | sP : vP |
| 4 | .. | 29·815 | 49·2 | 28·1 | 21·1 | 38·5 | − 7·9 | 35·4 | 31·3 | 7·2 | 16·8 | 0·0 | 75 | 111·3 | 23·8 | 45·8 | 45·7 | 0·000 | 4·0 | vP : sP |
| 5 | Greatest Declination S. | 29·507 | 53·2 | 29·9 | 23·3 | 40·7 | − 5·9 | 37·4 | 33·2 | 7·5 | 15·7 | 1·7 | 75 | 113·0 | 23·8 | 46·2 | 45·7 | 0·000 | 2·0 | sP |
| 6 | Apogee | 29·099 | 55·2 | 37·5 | 17·7 | 44·4 | − 2·3 | 41·9 | 38·9 | 5·5 | 13·2 | 0·9 | 81 | 114·0 | 30·0 | 46·1 | 44·9 | 0·148 | 14·0 | vP, sN : sP |
| 7 | Last Qr. | 29·268 | 54·8 | 32·8 | 22·0 | 42·2 | − 4·6 | 40·4 | 38·2 | 4·0 | 11·6 | 0·0 | 86 | 115·2 | 22·9 | 45·8 | 45·8 | 0·000 | 6·0 | ssP : vP |
| 8 | .. | 29·383 | 43·3 | 38·7 | 4·6 | 40·8 | − 6·0 | 39·8 | 38·6 | 2·2 | 3·5 | 0·0 | 92 | 48·8 | 37·3 | 46·4 | 45·9 | 0·000 | 0·0 | vP, vN |
| 9 | .. | 29·392 | 45·1 | 39·1 | 6·0 | 41·6 | − 5·3 | 39·5 | 36·9 | 4·7 | 7·7 | 2·3 | 84 | 60·7 | 38·5 | 45·8 | 45·4 | 0·000 | 0·0 | wP, wN : vP |
| 10 | .. | 29·382 | 44·1 | 37·0 | 7·1 | 40·9 | − 6·0 | 39·6 | 38·0 | 2·9 | 6·9 | 0·0 | 90 | 55·6 | 31·0 | 45·8 | 45·7 | 0·052 | 0·0 | vP, vN |
| 11 | .. | 29·485 | 51·0 | 35·8 | 15·2 | 42·6 | − 4·4 | 41·7 | 40·6 | 2·0 | 8·4 | 0·0 | 93 | 94·8 | 29·4 | 45·6 | 45·4 | 0·000 | 1·2 | vP : mP |
| 12 | .. | 29·616 | 54·2 | 37·4 | 16·8 | 44·3 | − 2·8 | 42·3 | 39·9 | 4·4 | 14·0 | 0·0 | 85 | 112·4 | 30·5 | 46·4 | 45·3 | 0·000 | 5·2 | mP : sP |
| 13 | In Equator | 29·728 | 50·2 | 35·8 | 14·4 | 42·2 | − 5·0 | 40·7 | 38·9 | 3·3 | 8·8 | 0·0 | 89 | 88·0 | 28·7 | 46·2 | 45·3 | 0·000 | 9·5 | mP : vP : sP |
| 14 | .. | 29·716 | 50·6 | 34·6 | 16·0 | 42·0 | − 5·4 | 39·2 | 35·7 | 6·3 | 10·7 | 2·2 | 79 | 109·2 | 28·9 | 44·9 | 44·9 | 0·000 | 6·5 | sP : vP |
| 15 | New | 29·653 | 54·1 | 36·9 | 17·2 | 43·5 | − 4·0 | 40·9 | 37·8 | 5·7 | 12·2 | 0·0 | 80 | 119·8 | 31·7 | 45·2 | 45·1 | 0·307 | 1·5 | vP, wN : vP, vN |
| 16 | .. | 29·590 | 53·7 | 41·1 | 12·6 | 45·2 | − 2·4 | 44·5 | 43·7 | 1·5 | 5·4 | 0·0 | 95 | 87·5 | 40·1 | 45·8 | 44·9 | 0·804 | 0·0 | sN : vP, vN |
| 17 | .. | 29·831 | 62·0 | 38·6 | 23·4 | 49·2 | + 1·4 | 45·6 | 41·8 | 7·4 | 17·5 | 0·0 | 76 | 120·6 | 32·3 | 45·8 | 45·5 | 0·000 | 0·0 | mP : vP : sP |
| 18 | Perigee | 29·967 | 68·6 | 36·3 | 32·3 | 51·6 | + 3·7 | 48·2 | 44·8 | 6·8 | 16·0 | 0·0 | 78 | 123·3 | 29·0 | 46·6 | 46·4 | 0·000 | 0·0 | sP : vP |
| 19 | Greatest Declination N. | 30·114 | 69·1 | 38·6 | 30·5 | 53·3 | + 5·3 | 48·0 | 42·7 | 10·6 | 21·4 | 0·0 | 67 | 126·0 | 29·2 | 47·8 | 47·8 | 0·000 | 0·0 | sP : vP |
| 20 | .. | 30·069 | 73·6 | 40·6 | 33·0 | 57·6 | + 9·5 | 49·5 | 42·2 | 15·4 | 27·7 | 4·0 | 57 | 126·4 | 32·2 | 49·3 | 49·3 | 0·000 | 1·2 | vP |
| 21 | First Qr. | 29·935 | 72·0 | 44·3 | 27·7 | 58·2 | +10·0 | 49·5 | 41·7 | 16·5 | 28·1 | 6·1 | 54 | 126·5 | 36·1 | 51·2 | 50·3 | 0·000 | 5·0 | mP : vP |
| 22 | .. | 29·659 | 67·5 | 49·4 | 18·1 | 57·5 | + 9·3 | 50·9 | 44·9 | 12·6 | 18·5 | 4·4 | 63 | 124·9 | 36·8 | 52·7 | 51·4 | 0·000 | 12·8 | mP : vP |
| 23 | .. | 29·496 | 60·1 | 44·4 | 15·7 | 50·8 | + 2·5 | 48·7 | 46·5 | 4·3 | 8·9 | 0·6 | 86 | 119·9 | 38·5 | 54·3 | 52·3 | 0·088 | 10·8 | vP, vN |
| 24 | .. | 29·393 | 60·0 | 42·1 | 17·9 | 51·2 | + 2·9 | 48·2 | 45·1 | 6·1 | 13·5 | 0·7 | 80 | 108·4 | 37·0 | 55·2 | 52·8 | 0·023 | 15·5 | wP : vP, vN |
| 25 | .. | 29·221 | 62·2 | 48·7 | 13·5 | 53·8 | + 5·4 | 49·7 | 45·7 | 8·1 | 16·0 | 2·4 | 74 | 120·8 | 43·8 | 55·2 | 53·6 | 0·150 | 17·8 | vP, vN |
| 26 | In Equator | 29·421 | 62·2 | 47·1 | 15·1 | 53·7 | + 5·3 | 48·9 | 44·2 | 9·5 | 14·8 | 5·0 | 70 | 124·0 | 42·6 | 54·7 | 54·2 | 0·000 | 11·0 | wP : mP, vN |
| 27 | .. | 29·539 | 66·0 | 44·8 | 21·2 | 54·5 | + 6·1 | 50·1 | 45·8 | 8·7 | 17·1 | 1·7 | 72 | 121·3 | 35·0 | 55·7 | 54·4 | 0·003 | 0·2 | vP, wN |
| 28 | .. | 29·525 | 67·7 | 42·0 | 25·7 | 55·4 | + 6·9 | 50·8 | 46·5 | 8·9 | 18·0 | 0·2 | 72 | 131·9 | 33·7 | 55·7 | 55·7 | 0·303 | 7·0 | wP, wN : vP, vN |
| 29 | Full | 29·522 | 59·3 | 44·4 | 14·9 | 51·5 | + 3·0 | 49·3 | 47·1 | 4·4 | 10·4 | 0·0 | 85 | 112·0 | 37·0 | 56·2 | 56·2 | 0·171 | 6·8 | vP, vN : vP, wN |
| 30 | .. | 29·646 | 60·3 | 40·1 | 20·2 | 51·0 | + 2·4 | 48·1 | 45·1 | 5·9 | 14·6 | 0·2 | 81 | 111·2 | 33·8 | 56·0 | 56·0 | 0·000 | 1·8 | mP : vP |
| Means | .. | 29·616 | 57·7 | 38·9 | 18·8 | 47·6 | + 0·2 | 44·2 | 40·6 | 7·0 | 14·5 | 1·2 | 77·6 | 109·0 | 32·6 | 48·9 | 48·3 | Sum 2·049 | 4·7 | .. |
| 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·616, being 0in·187 *lower* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 73°·6 on April 20; the lowest in the month was 28°·1 on April 4; and the range was 45°·5.

The mean of all the highest daily readings in the month was 57°·7, being 0°·2 *higher* than the average for the 44 years, 1841–1884.

The mean of all the lowest daily readings in the month was 38°·9, being 0°·2 *lower* than the average for the 44 years, 1841–1884.

The mean of the daily ranges was 18°·8, being 0°·4 *greater* than the average for the 44 years, 1841–1884.

The mean for the month was 47°·6, being 0°·2 *higher* than the average for the 20 years, 1849–1868.

| MONTH and DAY, 1885. | 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. | | |
| April 1 | 10.1 | 12.9 | S : SW | SW : N | 5.6 | 0.0 | 0.80 | 405 | 1, li.-cl, s : 1, li.-cl, ci.-cu | 1, li.-cl : p.-cl, th.-cl : 10, slt.-r |
| 2 | 5.6 | 13.0 | N | NNE : NE | 6.0 | 0.0 | 1.21 | 419 | 10 : p.-cl | 5,ci.-cu,cu,ci.-s: 2, li.-cl : 0 |
| 3 | 10.2 | 13.0 | NE : NNE | NE : ENE | 6.5 | 0.0 | 0.62 | 347 | 0 : 2, ci.-cu | 2, ci.-cu, cu : 0 |
| 4 | 9.5 | 13.1 | NE : ENE | ENE : NE | 8.7 | 0.0 | 0.64 | 332 | p.-cl : 6, cu, cu.-s | 1,ci.-cu,cu,cu.-s: p.-cl : 1, th.-cl |
| 5 | 5.7 | 13.2 | NE | S : SE | 3.7 | 0.0 | 0.28 | 224 | p.-cl : 8, cu, cu.-s | 5, cu, cu.-s : p.-cl |
| 6 | 1.9 | 13.2 | SE : S | S : SE | 8.2 | 0.0 | 0.44 | 257 | 10, r : 10, oc.-r | 8,cu,cu.-s,slt.-r: 2 : 2, th.-cl |
| 7 | 2.5 | 13.3 | ESE : NE | NE : NNE | 6.2 | 0.0 | 0.56 | 317 | p.-cl, f : 10, th.-cl, m | 9, cu, cu.-s : 10, slt.-r |
| 8 | 0.0 | 13.4 | N | N : NNW | 11.5 | 0.5 | 1.39 | 455 | 10 : 10, w | 10, oc.-slt.-r, w : 10, oc.-slt.-r, w |
| 9 | 0.0 | 13.4 | NNW | NNW : NW | 6.8 | 0.0 | 1.29 | 455 | 10 : 10, oc.-shs, sl | 10, oc.-slt.-r, glm : 10, oc.-slt.-r |
| 10 | 0.0 | 13.5 | WSW : WNW | W : WSW | 1.2 | 0.0 | 0.06 | 253 | 10, slt.-r : 10,oc.-slt.-r,m,glm | 10, oc.-slt.-r, m : v, slt.-r, f |
| 11 | 0.4 | 13.6 | SW : NE | NE : ENE | 1.3 | 0.0 | 0.08 | 156 | v, m : 10 : 9,cu, cu.-s | 9, cu.-s : 7, li.-cl, cu.-s |
| 12 | 4.7 | 13.6 | NNE : NE | ENE : E | 1.5 | 0.0 | 0.08 | 167 | 10 : 10 | 6, cu : 2 : v |
| 13 | 0.1 | 13.7 | ENE : NE | ENE : E | 1.2 | 0.0 | 0.18 | 223 | 10 : 10 | 10 : 9 : v |
| 14 | 2.0 | 13.7 | ENE : NE | ENE : E | 2.5 | 0.0 | 0.21 | 247 | p.-cl : 9, ci.-cu, cu.-s | 9, cu, cu.-s : 5 : v |
| 15 | 4.1 | 13.8 | ENE : E | E | 5.8 | 0.0 | 0.45 | 290 | 10 : 10 : v, ci.-cu | 7, ci.-cu : 10, hy.-r |
| 16 | 0.0 | 13.9 | NE | N : NNE | 2.3 | 0.0 | 0.12 | 224 | 10, c.-r : 10, c.-r | 10, oc.-r : 10, oc.-r : v |
| 17 | 7.9 | 13.9 | N : NNE | E : NE : NNE | 4.0 | 0.0 | 0.30 | 270 | 2 : 5, li.-cl | 4, ci.-cu, ci, so.-ha : 0 |
| 18 | 10.4 | 14.0 | N : NNE | N : NE | 4.8 | 0.0 | 0.50 | 227 | 0 : 0, m : 0 | 0 : 0, m |
| 19 | 11.6 | 14.1 | NE | E : Calm | 1.0 | 0.0 | 0.03 | 152 | 0, m : 0 | 0 : 0 |
| 20 | 10.9 | 14.1 | SW | WSW : SW | 2.4 | 0.0 | 0.36 | 242 | 0 : 0, m | 1, li.-cl : 0 : 9 |
| 21 | 12.4 | 14.2 | SW | SW : SSW | 5.9 | 0.0 | 0.97 | 336 | 0 : 0 | 0 : 0 : 1, li.-cl |
| 22 | 10.0 | 14.2 | S : SSE : SSW | SW : SSW | 6.5 | 0.0 | 1.61 | 419 | 2, li.-cl : 3, li.-cl | 3, li.-cl : 6, li.-cl : 9 |
| 23 | 2.2 | 14.3 | SW : SSW | NW : SW | 5.4 | 0.0 | 0.69 | 281 | p.-cl : 10, slt.-r | v,shs.-r,glm: 10, li.-shs : 1, li.-cl |
| 24 | 0.4 | 14.4 | SSW : S | S : SSE | 5.3 | 0.0 | 1.42 | 338 | v : 9, cu.-s, slt.-sh | 10, slt.-r : 10, r |
| 25 | 9.3 | 14.4 | SSE : S : SSW | SSW : S | 13.8 | 0.0 | 4.25 | 594 | 10, r, w : 6, cu.-s, st.-w | 5, cu, cu.-s, st.-w : v, sh.-r |
| 26 | 8.4 | 14.5 | SSW | SSW : SE | 6.0 | 0.0 | 1.25 | 359 | p.-cl : 6, cu, cu.-s | 8, cu, cu.-s : 9, slt.-r |
| 27 | 5.3 | 14.5 | NNE : N | NNE : N : SE | 1.7 | 0.0 | 0.03 | 129 | p.-cl : v, ci.-cu | 7, cu, cu.-s : v, li.-cl, h, m |
| 28 | 11.8 | 14.6 | SW : S : SSE | S : SSE | 6.4 | 0.0 | 0.93 | 259 | li.-cl : 1, li.-cl | 3, cu : v : 10, r |
| 29 | 0.6 | 14.7 | SSE : S | WSW | 1.8 | 0.0 | 0.17 | 215 | 10, hy.-r : 9, ci.-cu, glm | 10, slt.-r, glm : 1, m |
| 30 | 2.1 | 14.7 | WSW : NNW | NE : SE : SW | 2.0 | 0.0 | 0.16 | 196 | 1, li.-cl,d : 8, li.-cl, m | 10 : 10 |
| Means | 5.3 | 13.8 | ... | ... | .. | .. | 0.70 | 293 | | |
| Number of Column for Reference. | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |

The mean *Temperature of Evaporation* for the month was 44°.2, being 0°.3 *higher* than the average for the 20 years, 1849-1868.
The mean *Temperature of the Dew Point* for the month was 40°.6, being 0°.3 *higher* than the average for the 20 years, 1849-1868.
The mean *Degree of Humidity* for the month was 77.6, being 0.7 *greater* than the average for the 20 years, 1849-1868.
The mean *Elastic Force of Vapour* for the month was 0in.253, being 0in.003 *greater* than the average for the 20 years, 1849-1868.
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was 2grs.9, being *the same as* the average for the 20 years, 1849-1868.
The mean *Weight of a Cubic Foot of Air* for the month was 541 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 0.38. The maximum daily amount of *Sunshine* was 12.4 hours on April 21.
The highest reading of the *Solar Radiation Thermometer* was 131°.9 on April 28; and the lowest reading of the *Terrestrial Radiation Thermometer* was 22°.9 on April 7.
The mean daily distribution of *Ozone* for the 12 hours ending 9 h. was 2.5; for the 6 hours ending 15 h. was 1.4; and for the 6 hours ending 21 h. was 0.8.
The *Proportions of Wind* referred to the cardinal points were N. 9, E. 8, S. 8, and W. 5.
The *Greatest Pressure of the Wind* in the month was 13lbs.8 on the square foot on April 25. The mean daily *Horizontal Movement of the Air* for the month was 293 miles; the greatest daily value was 594 miles on April 25; and the least daily value was 129 miles on April 27.
*Rain* fell on 9 days in the month, amounting to 2in.049, as measured by gauge No. 6 partly sunk below the ground; being 0in.394 *greater* than the average fall for the 44 years, 1841-1884.

| MONTH and DAY, 1885. | Phases of the Moon. | BAROMETER. Mean of 24 Hourly Values (corrected and reduced to 32° Fahrenheit). | TEMPERATURE. Of the Air. Highest. | Of the Air. Lowest. | Of the Air. Daily Range. | Of the Air. Mean of 24 Hourly Values. | Of the Air. Excess above Average of 20 Years. | Of Evaporation. Mean of 24 Hourly Values. | Of the Dew Point. Deduced Mean Daily Value. | Difference between the Air Temperature and Dew Point Temperature. Mean. | Greatest. | Least. | Degree of Humidity (Saturation = 100). | TEMPERATURE. Of Radiation. Highest in Sun's Rays. | Of Radiation. Lowest on the Grass. | Of the Water of the Thames at Deptford. Highest. | Of the Water of the Thames at Deptford. Lowest. | Rain collected in Gauge No. 6, whose receiving surface is 5 inches above the Ground. | Daily Amount of Ozone. | Electricity. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | in. | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | | ° | ° | ° | ° | in. | | |
| May 1 | .. | 29·455 | 58·4 | 40·6 | 17·8 | 49·7 | + 1·0 | 46·5 | 43·1 | 6·6 | 11·8 | 2·5 | 78 | 109·0 | 34·0 | 56·5 | 55·7 | 0·003 | 16·2 | vP, wN |
| 2 | .. | 29·468 | 59·0 | 41·6 | 17·4 | 49·1 | + 0·2 | 45·9 | 42·5 | 6·6 | 13·4 | 1·1 | 78 | 126·4 | 31·5 | 56·1 | 56·1 | 0·046 | 11·0 | vP, vN |
| 3 | Greatest Declination S. | 29·475 | 65·0 | 37·1 | 27·9 | 50·0 | + 0·9 | 46·0 | 41·8 | 8·2 | 21·1 | 0·0 | 74 | 129·8 | 29·7 | 55·7 | 55·6 | 0·000 | 3·0 | vP |
| 4 | Apogee | 29·348 | 58·2 | 43·1 | 15·1 | 49·2 | − 0·2 | 46·7 | 44·0 | 5·2 | 11·4 | 1·5 | 83 | 117·9 | 34·5 | 56·2 | 55·8 | 0·027 | 0·0 | wP, wN : vP, vN |
| 5 | .. | 29·345 | 50·9 | 43·2 | 7·7 | 45·9 | − 3·8 | 44·3 | 42·5 | 3·4 | 9·2 | 0·4 | 88 | 90·5 | 42·8 | 56·1 | 55·2 | 0·220 | 1·8 | wP, wN |
| 6 | .. | 29·206 | 56·0 | 40·8 | 15·2 | 46·1 | − 3·9 | 44·7 | 43·1 | 3·0 | 9·4 | 0·2 | 90 | 120·7 | 40·0 | 55·2 | 55·0 | 0·369 | 5·2 | wP, vN : vP, vN |
| 7 | Last Qr. | 29·488 | 55·1 | 35·2 | 19·9 | 42·7 | − 7·6 | 40·2 | 37·2 | 5·5 | 15·6 | 0·5 | 82 | 111·0 | 28·0 | 55·1 | 54·8 | 0·119 | 3·0 | wP, vN : vP, sN |
| 8 | .. | 29·747 | 56·7 | 31·8 | 24·9 | 43·2 | − 7·4 | 40·0 | 36·2 | 7·0 | 15·2 | 0·3 | 77 | 120·0 | 25·1 | 54·5 | 53·8 | 0·021 | 5·2 | vP : vP, vN |
| 9 | .. | 29·756 | 61·1 | 37·7 | 23·4 | 47·7 | − 3·1 | 43·7 | 39·3 | 8·4 | 17·5 | 3·7 | 73 | 127·2 | 30·0 | 53·7 | 53·3 | 0·024 | 10·2 | vP : vP, vN |
| 10 | In Equator | 29·740 | 57·2 | 39·6 | 17·6 | 47·7 | − 3·4 | 43·1 | 38·0 | 9·7 | 18·8 | 3·3 | 70 | 119·8 | 31·0 | .. | .. | 0·003 | 10·2 | vP, wN : vP |
| 11 | .. | 29·887 | 58·7 | 36·6 | 22·1 | 45·5 | − 5·9 | 41·2 | 36·3 | 9·2 | 17·6 | 3·4 | 71 | 123·0 | 28·0 | 53·2 | 52·3 | 0·000 | 2·2 | vP : vP, wN |
| 12 | .. | 29·947 | 57·8 | 33·2 | 24·6 | 46·7 | − 5·1 | 42·2 | 37·1 | 9·6 | 19·2 | 0·2 | 70 | 120·2 | 23·2 | 52·5 | 52·3 | 0·000 | 4·5 | vP |
| 13 | .. | 29·689 | 55·2 | 33·7 | 21·5 | 46·3 | − 5·8 | 41·6 | 36·3 | 10·0 | 17·2 | 1·7 | 69 | 117·0 | 23·9 | 52·7 | 52·3 | 0·000 | 9·5 | vP : mP |
| 14 | New | 29·665 | 59·2 | 35·1 | 24·1 | 47·4 | − 5·1 | 42·4 | 36·8 | 10·6 | 18·8 | 1·7 | 67 | 123·8 | 28·6 | 52·5 | 52·3 | 0·010 | 0·0 | vP : vP, vN |
| 15 | .. | 29·768 | 62·0 | 37·8 | 24·2 | 48·8 | − 4·1 | 44·2 | 39·2 | 9·6 | 20·1 | 1·4 | 69 | 111·6 | 29·2 | 52·7 | 52·6 | 0·000 | 2·2 | vP, wN |
| 16 | Perigee: Greatest Dec. N. | 29·643 | 62·4 | 41·9 | 20·5 | 49·7 | − 3·6 | 46·2 | 42·5 | 7·2 | 16·6 | 2·6 | 76 | 124·0 | 35·4 | 52·7 | 52·7 | 0·061 | 0·8 | vP, vN : sN, wP |
| 17 | .. | 29·578 | 57·1 | 41·8 | 15·3 | 47·6 | − 6·1 | 44·4 | 40·9 | 6·7 | 14·2 | 1·8 | 78 | 107·2 | 37·5 | 52·9 | 52·9 | 0·036 | 3·0 | wP, mN : vP, vN |
| 18 | .. | 29·723 | 57·6 | 38·9 | 18·7 | 46·8 | − 7·3 | 42·8 | 38·4 | 8·4 | 17·4 | 2·4 | 73 | 112·5 | 34·4 | 52·5 | 52·5 | 0·021 | 1·0 | vP, vN : vP, wN |
| 19 | .. | 29·778 | 59·0 | 38·2 | 20·8 | 47·6 | − 6·8 | 43·7 | 39·4 | 8·2 | 14·4 | 0·5 | 74 | 113·9 | 32·1 | 53·2 | 52·8 | 0·042 | 9·2 | vP |
| 20 | .. | 29·353 | 54·7 | 42·6 | 12·1 | 48·5 | − 6·2 | 46·5 | 44·4 | 4·1 | 7·6 | 0·9 | 86 | 88·6 | 38·0 | 53·3 | 52·8 | 0·085 | 21·5 | mP, vN : mP, wN |
| 21 | First Qr. | 29·217 | 60·5 | 39·8 | 20·7 | 48·6 | − 6·4 | 45·9 | 43·0 | 5·6 | 11·6 | 1·5 | 81 | 127·6 | 35·0 | 52·7 | 52·4 | 0·097 | 10·2 | vP, vN |
| 22 | .. | 29·196 | 55·1 | 44·1 | 11·0 | 48·5 | − 6·8 | 46·8 | 45·0 | 3·5 | 8·4 | 0·8 | 88 | 99·2 | 39·7 | 53·7 | 53·0 | 0·393 | 7·5 | vP, vN |
| 23 | In Equator | 29·507 | 61·1 | 42·9 | 18·2 | 50·8 | − 4·7 | 47·0 | 43·0 | 7·8 | 15·8 | 1·8 | 75 | 125·0 | 37·7 | 53·7 | 52·8 | 0·068 | 11·2 | mP : vP, vN |
| 24 | .. | 29·772 | 63·7 | 43·0 | 20·7 | 52·0 | − 3·7 | 47·6 | 43·1 | 8·9 | 15·8 | 2·0 | 72 | 122·5 | 38·8 | 52·7 | 52·7 | 0·015 | 5·2 | wP : vP, wN |
| 25 | .. | 29·809 | 56·0 | 41·0 | 15·0 | 49·1 | − 6·8 | 47·1 | 44·9 | 4·2 | 9·2 | 0·8 | 86 | 80·9 | 34·2 | 54·1 | 52·8 | 0·094 | 8·8 | vP, vN |
| 26 | .. | 29·761 | 66·1 | 51·5 | 14·6 | 56·2 | + 0·1 | 54·2 | 52·3 | 3·9 | 9·9 | 0·8 | 87 | 108·4 | 50·3 | 53·7 | 53·6 | 0·004 | 6·5 | wP |
| 27 | .. | 29·786 | 69·9 | 49·7 | 20·2 | 59·1 | + 2·8 | 55·6 | 52·5 | 6·6 | 13·0 | 0·9 | 79 | 136·3 | 45·0 | 54·7 | 54·3 | 0·000 | 8·2 | wP |
| 28 | Full | 29·709 | 74·8 | 54·2 | 20·6 | 62·5 | + 6·0 | 58·2 | 54·6 | 7·9 | 16·7 | 1·9 | 75 | 136·1 | 47·6 | 56·7 | 55·7 | 0·000 | 4·5 | wP : mP |
| 29 | .. | 29·773 | 68·3 | 48·5 | 19·8 | 58·0 | + 1·2 | 54·0 | 50·4 | 7·6 | 14·9 | 0·4 | 76 | 136·4 | 42·5 | 57·7 | 57·7 | 0·349 | 15·2 | wP, vN : vP, wN |
| 30 | Greatest Declination S. | 29·879 | 67·0 | 46·4 | 20·6 | 55·4 | − 1·6 | 51·7 | 48·2 | 7·2 | 16·7 | 1·0 | 77 | 129·7 | 40·7 | 58·6 | 58·6 | 0·004 | 8·8 | wP : vP |
| 31 | Apogee | 29·903 | 66·9 | 49·7 | 17·2 | 57·6 | + 0·3 | 52·0 | 46·9 | 10·7 | 20·3 | 0·8 | 68 | 125·2 | 44·4 | 59·3 | 57·3 | 0·000 | 4·8 | vP |
| Means | .. | 29·625 | 60·3 | 41·3 | 19·0 | 49·8 | − 3·3 | 46·3 | 42·7 | 7·1 | 14·8 | 1·4 | 77·1 | 117·5 | 35·3 | (30 days) 54·5 | (30 days) 54·1 | Sum 2·111 | 6·8 | .. |
| 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·625, being 0in·152 *lower* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 74°·8 on May 28; the lowest in the month was 31°·8 on May 8; and the range was 43°·0.
The mean of all the highest daily readings in the month was 60°·3, being 4°·0 *lower* than the average for the 44 years, 1841–1884.
The mean of all the lowest daily readings in the month was 41°·3, being 2°·4 *lower* than the average for the 44 years, 1841–1884.
The mean of the daily ranges was 19°·0, being 1°·5 *less* than the average for the 44 years, 1841–1884.
The mean for the month was 49°·8, being 3°·3 *lower* than the average for the 20 years, 1849–1868.

| MONTH and DAY, 1885. | 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. | | |
| May 1 | 5·6 | 14·8 | SW : SSW | S : SW : SSW | 9·7 | 0·0 | 1·20 | 333 | p.-cl : v,li.-cl,cu,cu.-s,slt.-r | v, oc.-slt.-r : v, li.-cl |
| 2 | 5·4 | 14·8 | S : SSW | WSW : SW | 3·8 | 0·0 | 0·10 | 187 | p.-cl, sh.-r : 8, cu, cu.-s | 8, cu, cu.-s, shs.-r : 0 |
| 3 | 8·0 | 14·9 | SW : N : E | ESE : SSE : NNE | 2·0 | 0·0 | 0·02 | 118 | v : p.-cl, cu | 2, cu, t : 3, th.-cl |
| 4 | 2·3 | 14·9 | NNE | ENE : NE | 1·7 | 0·0 | 0·13 | 180 | p.-cl : 10, sh.-r, hl | 8, cu, cu.-s, slt.-r : 10, r |
| 5 | 0·0 | 15·0 | NNE : NE | NE : SE | 0·7 | 0·0 | 0·01 | 140 | 10, r : 10 | 10, slt.-r : 10, hy.-shs |
| 6 | 1·1 | 15·1 | SSE | NNE | 3·3 | 0·0 | 0·33 | 210 | 10, slt.-sh : v, hy.-r | 8, shs.-r : 10, fq.-r : 10, fq.-r |
| 7 | 1·6 | 15·1 | N | W : SW | 4·4 | 0·0 | 0·33 | 208 | 10 : 9, cu, cu.-s | 8, ci.-cu, cu, cu.-s, r : v, li.-cl, ho.-fr, m |
| 8 | 8·3 | 15·2 | SW : WSW | SW | 4·0 | 0·0 | 0·42 | 248 | 0 : 5, cu, cu.-s | 6, cu, cu.-s : v, r, hl : 0 |
| 9 | 10·1 | 15·2 | WSW | WSW : SW | 7·0 | 0·1 | 1·54 | 386 | v : 8, cu, cu.-s | 5,cu,cu.-s,r,hl : v : v, r |
| 10 | 4·6 | 15·3 | WSW | W : WSW | 6·0 | 0·0 | 1·75 | 413 | v : 9, cu, cu.-s | 7, cu, cu.-s : 2, li.-cl |
| 11 | 6·8 | 15·3 | WSW : NNW | N : ENE : S | 5·0 | 0·0 | 1·03 | 292 | p.-cl : 9, cu, cu.-s, li.-shs | 6, cu,cu.-s, ci.-cu : 1, li.-cl, d, m |
| 12 | 9·2 | 15·4 | WSW : NNE | NE : ESE | 2·1 | 0·0 | 0·09 | 157 | 0 : 1, ci.-cu | 3, li.-cl, cu : 3, li.-cl : 8, th.-cl, d |
| 13 | 10·1 | 15·4 | SE : ESE | E : NE | 4·3 | 0·0 | 0·55 | 226 | p.-cl : 1, th.-cl, so.-ha | 1, so.-ha : 1, s, d |
| 14 | 8·7 | 15·5 | NE : NNE | N : NNE | 9·2 | 0·0 | 0·76 | 276 | 0, d : p.-cl : 6,cu,cu.-s,sh.-r | 5, cu, slt.-r : 5 : v |
| 15 | 5·9 | 15·5 | NNW : WSW | W WSW | 3·0 | 0·0 | 0·38 | 204 | 0 : 8,ci.-cu,cu.-s,m,glm | 9, li.-cl, cu.-s : 0 |
| 16 | 6·2 | 15·6 | SW : W | WSW : SW | 9·0 | 0·0 | 1·95 | 400 | p.-cl, cu.-s : 5, li.-cl, li.-sh | v,ci.-cu,cu.-s,shs.-r,t : v, shs.-r |
| 17 | 4·6 | 15·6 | WSW : W | W : NNW | 8·0 | 0·0 | 1·24 | 332 | p.-cl : 10, sh.-r | v, cu, cu.-s, shs.-r, t : v |
| 18 | 5·4 | 15·7 | NNW | NW : N : NNW | 3·3 | 0·0 | 0·82 | 314 | 10, sh.-r : p.-cl : 9, cu.-s | 6,ci.-cu,cu,cu.-s,li.-cl : v, li.-cl, cu.-s, slt.-r |
| 19 | 4·6 | 15·7 | SW : SSW | SSW : SSE | 3·0 | 0·0 | 0·41 | 214 | p.-cl : 0 : 4, cu, cu.-s | 10, oc.-slt.-r : 10, fq.-r |
| 20 | 0·3 | 15·8 | SSW : SSE | SSW | 6·7 | 0·0 | 1·34 | 346 | p.-cl : 10, r, sc | 10, sc, r : v |
| 21 | 4·0 | 15·8 | S : SW | SSW | 4·4 | 0·0 | 0·83 | 296 | th.-cl : 10, shs.-r, hl, l, t | 8, ci.-cu, cu, cu.-s : v, hy.-sh |
| 22 | 1·5 | 15·9 | SE : E : NW | W : SW | 10·5 | 0·0 | 1·65 | 378 | v : 10, hy.-r : 10, fq.-r | 9, fq.-r, w : v, li.-cl, shs.-r, w |
| 23 | 8·5 | 15·9 | SW : WSW | WSW : SW | 8·4 | 0·0 | 1·57 | 403 | p.-cl : 6,cu,cu.-s,oc.-slt.-r | 10, shs.-r, l, t : v, ci.-cu |
| 24 | 9·2 | 16·0 | SW : WSW | WSW : SW | 6·3 | 0·0 | 1·85 | 433 | 10, sh.-r : 7, cu, cu.-s | 7,ci.-cu,cu.-s,slt.-r : 10, oc.-slt.-r : 0, d |
| 25 | 0·3 | 16·0 | SW : SSW | SSE : SSW | 4·7 | 0·0 | 0·40 | 266 | v : 10, fq.-shs | 10, fq.-r : 10 |
| 26 | 1·8 | 16·0 | SW : WSW | SW : SSW | 3·1 | 0·0 | 0·60 | 320 | 10 : 10, sc | 10 : v, ci.-s, s, lu.-ha |
| 27 | 8·1 | 16·1 | SW | SSW : SE | 2·0 | 0·0 | 0·25 | 243 | 10 : 10 | 5, ci.-cu, cu.-s : v, ci.-s, th.-cl, lu.-ha |
| 28 | 7·7 | 16·1 | S : SSW | SSW | 3·9 | 0·0 | 0·48 | 240 | 10, cu.-s : 10 : 7,ci.-cu,th.-cl | 5, ci, ci.-cu, cu : p.-cl |
| 29 | 8·7 | 16·1 | SW | SW : SSW | 8·1 | 0·0 | 1·36 | 343 | 10 : 10, hy.-r : 8,cu,cu.-s,li.-cl | 5, ci.-cu, cu, w : 0, d |
| 30 | 4·1 | 16·2 | SSW : SW | SW : SSW | 4·2 | 0·0 | 0·94 | 331 | 1, li.-cl, d : 9, cu, cu.-s | 9, cu, cu.-s, slt.-r : 10, slt.-r |
| 31 | 9·2 | 16·2 | W | W : NW | 6·2 | 0·0 | 0·73 | 313 | v : 6, ci.-cu, cu | 7, ci.-cu, cu : v |
| Means | 5·5 | 15·6 | ... | ... | .. | .. | 0·81 | 282 | | |
| Number of Column for Reference. | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |

The mean *Temperature of Evaporation* for the month was 46°·3, being 2°·6 *lower* than
The mean *Temperature of the Dew Point* for the month was 42°·7, being 2°·4 *lower* than
The mean *Degree of Humidity* for the month was 77·1, being 1·7 *greater* than
The mean *Elastic Force of Vapour* for the month was 0in·274, being 0in·027 *less* than
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was 3grs·1, being 0gr·3 *less* than
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 6·8.

The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·35. The maximum daily amount of *Sunshine* was 10·1 hours on May 9 and 13.

The highest reading of the *Solar Radiation Thermometer* was 136°·4 on May 29; and the lowest reading of the *Terrestrial Radiation Thermometer* was 23°·2 on May 12.

The mean daily distribution of *Ozone* for the 12 hours ending 9h was 3·5; for the 6 hours ending 15h was 2·0; and for the 6 hours ending 21h was 1·3.

The *Proportions of Wind* referred to the cardinal points were N. 5, E. 3, S. 12, and W. 11.

The *Greatest Pressure of the Wind* in the month was 10lbs·5 on the square foot on May 22. The mean daily *Horizontal Movement of the Air* for the month was 282 miles; the greatest daily value was 433 miles on May 24; and the least daily value was 118 miles on May 3.

*Rain* fell on 19 days in the month, amounting to 2in·111, as measured by gauge No. 6 partly sunk below the ground; being 0in·138 *greater* than the average fall for the 44 years, 1841–1884.

| MONTH and DAY, 1885. | Phases of the Moon. | BAROMETER. Mean of 24 Hourly Values (corrected and reduced to 32° Fahrenheit). | TEMPERATURE. Of the Air. Highest. | Lowest. | Daily Range. | Mean of 24 Hourly Values. | Excess above Average of 20 Years. | Of Evaporation. Mean of 24 Hourly Values. | Of the Dew Point. Deduced Mean Daily Value. | Difference between the Air Temperature and Dew Point Temperature. Mean. | Greatest. | Least. | Degree of Humidity (Saturation = 100). | TEMPERATURE. Of Radiation. Highest in Sun's Rays. | Lowest on the Grass. | Of the Water of the Thames at Deptford. Highest. | Lowest. | Rain collected in Gauge No. 6, whose receiving surface is 5 inches above the Ground. | Daily Amount of Ozone. | Electricity. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | in. | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | | ° | ° | ° | ° | in. | | |
| June 1 | .. | 30·074 | 68·2 | 45·2 | 23·0 | 56·4 | − 1·1 | 51·1 | 46·2 | 10·2 | 18·9 | 1·9 | 69 | 131·0 | 36·0 | 59·8 | 58·3 | 0·000 | 1·2 | vP, wN |
| 2 | .. | 30·073 | 77·5 | 44·0 | 33·5 | 61·1 | + 3·4 | 54·7 | 49·1 | 12·0 | 22·3 | 2·7 | 65 | 137·2 | 35·3 | 59·8 | 58·3 | 0·000 | 3·2 | wP : vP |
| 3 | .. | 29·881 | 76·8 | 47·9 | 28·9 | 63·4 | + 5·5 | 55·2 | 48·3 | 15·1 | 25·3 | 4·0 | 58 | 137·0 | 38·8 | 61·2 | 59·7 | 0·000 | 8·5 | mP |
| 4 | .. | 29·713 | 84·7 | 55·1 | 29·6 | 69·9 | +11·8 | 59·9 | 52·2 | 17·7 | 29·6 | 7·4 | 53 | 139·6 | 45·7 | 61·8 | 60·7 | 0·000 | 6·8 | wP : mP |
| 5 | .. | 29·689 | 81·5 | 60·6 | 20·9 | 67·5 | + 9·3 | 61·1 | 56·0 | 11·5 | 21·9 | 3·8 | 66 | 140·3 | 54·3 | 65·8 | 63·1 | 0·000 | 8·5 | vP : vP, wN |
| 6 | Last Qr. | 29·811 | 66·1 | 55·8 | 10·3 | 60·1 | + 1·8 | 58·9 | 57·8 | 2·3 | 4·2 | 0·4 | 93 | 95·0 | 54·0 | 65·8 | 62·7 | 0·269 | 2·2 | vP, vN : vP |
| 7 | In Equator | 29·692 | 76·0 | 55·5 | 20·5 | 64·2 | + 5·8 | 60·8 | 58·0 | 6·2 | 14·3 | 0·2 | 80 | 143·5 | 50·9 | 65·3 | 62·7 | 0·000 | 7·2 | wP : mP |
| 8 | .. | 29·580 | 65·6 | 53·3 | 12·3 | 60·2 | + 1·7 | 59·1 | 58·1 | 2·1 | 3·8 | 0·4 | 93 | 95·5 | 53·3 | 66·8 | 63·7 | 0·868 | 2·0 | sP, wN : wP |
| 9 | .. | 29·806 | 62·4 | 49·4 | 13·0 | 54·5 | − 4·0 | 52·5 | 50·5 | 4·0 | 10·8 | 0·2 | 86 | 88·2 | 41·5 | 66·6 | 63·7 | 0·030 | 0·0 | wP |
| 10 | .. | 30·133 | 64·3 | 45·0 | 19·3 | 54·4 | − 4·2 | 49·8 | 45·3 | 9·1 | 17·5 | 0·8 | 71 | 132·6 | 37·0 | 65·3 | 63·7 | 0·000 | 0·0 | wP : vP |
| 11 | .. | 30·198 | 66·4 | 39·4 | 27·0 | 53·9 | − 4·8 | 48·9 | 44·0 | 9·9 | 19·4 | 1·3 | 69 | 131·8 | 30·1 | 64·3 | 63·2 | 0·000 | 4·0 | sP : mP |
| 12 | New | 30·151 | 75·7 | 43·4 | 32·3 | 59·9 | + 1·1 | 54·4 | 49·5 | 10·4 | 18·9 | 2·5 | 68 | 121·0 | 37·3 | 62·8 | 62·7 | 0·000 | 0·0 | vP, wN |
| 13 | Perigee : Greatest Dec. N. | 30·017 | 76·3 | 47·9 | 28·4 | 63·0 | + 4·1 | 55·6 | 49·3 | 13·7 | 23·3 | 1·0 | 61 | 139·6 | 40·5 | 63·8 | 62·5 | 0·000 | 0·0 | vP |
| 14 | .. | 29·903 | 82·7 | 47·3 | 35·4 | 64·4 | + 5·3 | 58·1 | 52·9 | 11·5 | 25·0 | 1·0 | 66 | 142·0 | 38·5 | 64·2 | 63·5 | 0·000 | 2·0 | vP |
| 15 | .. | 29·898 | 71·1 | 51·0 | 20·1 | 59·6 | + 0·3 | 56·4 | 53·5 | 6·1 | 12·6 | 1·6 | 81 | 124·8 | 43·8 | 64·8 | 63·7 | 0·000 | 0·2 | vP, wN : wP, wN |
| 16 | .. | 29·833 | 65·9 | 50·0 | 15·9 | 57·9 | − 1·6 | 53·2 | 49·0 | 8·9 | 16·3 | 2·0 | 72 | 133·2 | 43·8 | 64·8 | 64·2 | 0·000 | 0·8 | wP, wN |
| 17 | .. | 29·694 | 62·5 | 47·2 | 15·3 | 55·7 | − 4·0 | 52·5 | 49·5 | 6·2 | 12·9 | 1·8 | 80 | 117·9 | 38·5 | 64·3 | 63·7 | 0·081 | 0·0 | wP : vP |
| 18 | .. | 29·768 | 74·7 | 41·4 | 33·3 | 57·8 | − 2·1 | 52·7 | 48·1 | 9·7 | 19·3 | 0·7 | 70 | 138·3 | 33·1 | 63·8 | 63·2 | 0·000 | 1·5 | vP, wN : vP |
| 19 | First Quarter : In Equator. | 29·622 | 70·6 | 51·3 | 19·3 | 60·0 | − 0·2 | 57·5 | 55·3 | 4·7 | 10·1 | 1·2 | 85 | 133·2 | 46·0 | 63·8 | 63·5 | 0·030 | 5·0 | wP |
| 20 | .. | 29·395 | 66·8 | 50·3 | 16·5 | 58·5 | − 2·0 | 54·2 | 50·3 | 8·2 | 18·2 | 1·5 | 74 | 139·8 | 45·5 | 63·8 | 63·2 | 0·277 | 1·5 | wP : vP, vN |
| 21 | .. | 29·785 | 66·0 | 46·7 | 19·3 | 55·3 | − 5·5 | 49·5 | 44·0 | 11·3 | 19·6 | 4·2 | 66 | 133·1 | 40·6 | 61·8 | 61·7 | 0·000 | 0·0 | wP |
| 22 | .. | 29·942 | 68·6 | 47·7 | 20·9 | 56·8 | − 4·3 | 52·4 | 48·4 | 8·4 | 15·3 | 2·1 | 73 | 138·5 | 38·8 | 63·3 | 61·7 | 0·000 | 5·5 | wP : vP |
| 23 | .. | 29·882 | 66·6 | 54·7 | 11·9 | 59·8 | − 1·6 | 57·6 | 55·7 | 4·1 | 6·5 | 1·7 | 87 | 95·2 | 53·5 | 61·8 | 61·7 | 0·000 | 6·0 | wP |
| 24 | .. | 29·727 | 82·8 | 54·1 | 28·7 | 68·2 | + 6·5 | 61·0 | 55·4 | 12·8 | 25·5 | 2·1 | 63 | 152·0 | 46·4 | 62·3 | 62·2 | 0·000 | 6·5 | wP : wP, wN |
| 25 | .. | 29·815 | 60·0 | 52·5 | 7·5 | 56·6 | − 5·3 | 55·1 | 53·8 | 2·8 | 4·6 | 1·8 | 90 | 67·4 | 51·8 | 62·8 | 62·7 | 0·111 | 0·0 | wP, wN |
| 26 | Greatest Declination S. | 30·018 | 61·8 | 47·4 | 14·4 | 55·1 | − 6·9 | 51·3 | 47·7 | 7·4 | 13·7 | 1·6 | 76 | 90·4 | 40·0 | 63·3 | 62·2 | 0·000 | 3·0 | wP |
| 27 | Full | 30·074 | 71·9 | 44·7 | 27·2 | 57·9 | − 4·1 | 52·1 | 46·9 | 11·0 | 21·2 | 1·7 | 67 | 139·6 | 37·2 | 62·3 | 61·7 | 0·000 | 0·0 | wP : vP |
| 28 | Apogee | 29·911 | 72·0 | 46·7 | 25·3 | 59·5 | − 2·4 | 53·6 | 48·4 | 11·1 | 24·3 | 3·4 | 67 | 145·2 | 37·1 | 62·3 | 61·7 | 0·000 | 6·0 | mP |
| 29 | .. | 29·781 | 70·9 | 51·9 | 19·0 | 57·5 | − 4·3 | 54·0 | 50·8 | 6·7 | 16·2 | 1·6 | 79 | 122·3 | 47·8 | 63·0 | 61·9 | 0·000 | 0·0 | vP |
| 30 | .. | 29·835 | 70·3 | 48·1 | 22·2 | 58·9 | − 2·8 | 52·6 | 47·0 | 11·9 | 20·9 | 4·4 | 65 | 136·4 | 37·2 | 60·1 | 59·9 | 0·000 | 0·0 | vP : vP, wN |
| Means | .. | 29·857 | 70·9 | 49·2 | 21·7 | 59·6 | − 0·2 | 54·9 | 50·7 | 8·9 | 17·1 | 2·0 | 73·1 | 126·1 | 42·5 | 63·4 | 62·2 | Sum 1·666 | 2·7 | .. |
| 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·857, being 0in·029 *higher* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 84°·7 on June 4; the lowest in the month was 39°·4 on June 11; and the range was 45°·3.

The mean of all the highest daily readings in the month was 70°·9, being 0°·1 *higher* than the average for the 44 years, 1841–1884.

The mean of all the lowest daily readings in the month was 49°·2, being 0°·7 *lower* than the average for the 44 years, 1841–1884.

The mean of the daily ranges was 21°·7, being 0°·7 *greater* than the average for the 44 years, 1841–1884.

The mean for the month was 59°·6, being 0°·2 *lower* than the average for the 20 years, 1849–1868.

| MONTH and DAY, 1885. | 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 | 7·3 | 16·2 | SW : NW | N : SE | 2·3 | 0·0 | 0·17 | 181 | v, s, li.-cl, m : p.-cl, cu, cu.-s, m | 5, ci.-cu, cu, cu.-s : 1, th.-cl |
| 2 | 13·5 | 16·3 | SW | SW : SSW | 2·6 | 0·0 | 0·38 | 228 | 0 : 0 | 1, li.-cl : 0, d |
| 3 | 13·6 | 16·3 | S | S | 3·4 | 0·0 | 0·37 | 213 | 0, d : 0 : 3, ci | 2, ci : 1, li.-cl, d |
| 4 | 13·4 | 16·3 | S : SW | SW : S | 3·1 | 0·0 | 0·52 | 270 | 0, d : 0 | 1, ci : 0 |
| 5 | 12·6 | 16·4 | S : SW | SW | 5·0 | 0·0 | 1·16 | 357 | 0 : 0 : 1, ci | 3, li.-cl : p.-cl : 10, oc.-r |
| 6 | 0·0 | 16·4 | SW | WSW : NE : ESE | 2·4 | 0·0 | 0·15 | 183 | 10, fq.-r : 10, fq.-r | 10, r, slt.-f : 10 |
| 7 | 6·0 | 16·4 | ESE : SW | SW | ..* | .. | .. | 235 | 10 8, cu, cu.-s | 4, ci, cu, so.-ha : 10 |
| 8 | 0·0 | 16·4 | SW : NNE : ESE | ESE : NNW | .. | .. | .. | 153 | 10 : 10, hy.-r | 10, fq.-r : 10, fq.-r |
| 9 | 0·8 | 16·4 | N : NNE | NNE : NE | .. | .. | .. | 231 | 10 : 10, th-r | 10, th.-r : p.-cl : 1, th.-cl, m |
| 10 | 10·0 | 16·5 | NE | NE : ESE | .. | .. | .. | 251 | p.-cl : 2, li.-cl, ci.-cu | 5, cu : 5, cu : 2, th.-cl, s |
| 11 | 12·4 | 16·5 | ENE | ENE : SSE | .. | .. | .. | 161 | 0, m : 0 : 1, li.-cl | 1, li.-cl : 2, li.-cl |
| 12 | 13·3 | 16·5 | SW : S | SSW : ESE | .. | .. | .. | 139 | 0 : 0, h | 0, h : 0 |
| 13 | 12·8 | 16·5 | Calm : NE | ESE | 1·0 | 0·0 | 0·09 | 120 | 0 : 0, h | 0 : 0 |
| 14 | 12·4 | 16·5 | ENE | E : ESE | 1·0 | 0·0 | 0·05 | 127 | 0 : 0, h | 0 : 1, li.-cl : 0 |
| 15 | 3·6 | 16·5 | N | NNE : ESE : E | 2·1 | 0·0 | 0·35 | 238 | p.-cl : 10 | 8, ci.-cu, cu, cu.-s : p.-cl |
| 16 | 10·9 | 16·5 | ENE : ESE | E : ENE | 8·0 | 0·0 | 1·73 | 360 | p.-cl : 6, li.-cl | 2, ci, ci.-cu : 10, fq.-th.-r |
| 17 | 1·0 | 16·6 | ENE | NE | 6·0 | 0·0 | 0·75 | 293 | 10 : 10, r : 10 | 10 : v : 3, li.-cl |
| 18 | 9·0 | 16·6 | SW | WSW : SW | 4·0 | 0·0 | 0·50 | 225 | p.-cl : 6, th.-cl | 7, cu, cu.-s : 1, li.-cl, s |
| 19 | 0·7 | 16·6 | SW | SW | 6·3 | 0·0 | 1·65 | 406 | p.-cl, d : 10, sh.-r : 10 | 10, oc.-slt.-r : 10, sc |
| 20 | 4·2 | 16·6 | SW : WSW | WSW : NW : W | 12·0 | 0·0 | 3·77 | 574 | 10, slt.-r : 10, w : 10, st.-w, oc.-slt.-r | 9, slt.-r, st.-w : v, fq.-r |
| 21 | 8·2 | 16·6 | W : NW | NW : WNW | 7·2 | 0·0 | 1·60 | 468 | v : 10 | 8, ci.-cu, cu, cu.-s : v, cu.-s, li.-cl |
| 22 | 5·1 | 16·6 | WSW | SW | 3·9 | 0·0 | 0·51 | 324 | 2, li.-cl : 6, li.-cl, cu | 9, cu, cu.-s, slt.-r : 10, oc.-slt.-r |
| 23 | 0·0 | 16·6 | SW | SSW : SSE | 0·9 | 0·0 | 0·03 | 205 | 10 : 10 | 10, oc.-slt.-r : 10, oc.-slt.-r |
| 24 | 8·8 | 16·6 | SE : SSE | S : N | 2·9 | 0·0 | 0·05 | 195 | v, ci.-s, s, li.-cl : 4, li.-cl | 6, ci, ci.-cu, cu : 10, slt.-r |
| 25 | 0·0 | 16·6 | NNE : N | N : NNE | 3·9 | 0·0 | 0·73 | 344 | 10, r : 10 | 10 : 10 |
| 26 | 0·0 | 16·5 | NNE | NE | 5·0 | 0·0 | 1·19 | 418 | 10 : 10 | 10 : v |
| 27 | 13·1 | 16·5 | NE | ENE : E | 3·7 | 0·0 | 0·37 | 290 | 0 : 1, li.-cl | 0 : 0 |
| 28 | 9·6 | 16·5 | NE : ENE | ENE : E | 5·2 | 0·0 | 0·65 | 288 | 0 : 0 | 0 : 0 : 10 |
| 29 | 2·0 | 16·5 | NE : NNE | NNE | 5·3 | 0·0 | 1·01 | 328 | 10, slt.-r : 10 | 9, li.-cl : 9, li.-cl |
| 30 | 7·9 | 16·5 | NNE | NNE : NE | 4·8 | 0·0 | 1·00 | 330 | 10 : 4, li.-cl | 6, ci.-cu : v, h |
| Means | 7·1 | 16·5 | ... | ... | .. | .. | (24 days) 0·78 | 271 | | |
| 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°·9, being 0°·3 *lower* than the average for the 20 years, 1849–1868.
The mean *Temperature of the Dew Point* for the month was 50°·7, being 0°·5 *lower* than the average for the 20 years, 1849–1868.
The mean *Degree of Humidity* for the month was 73·1, being 0·2 *less* than the average for the 20 years, 1849–1868.
The mean *Elastic Force of Vapour* for the month was 0in·370, being 0in·007 *less* than the average for the 20 years, 1849–1868.
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was 4grs·1, being 0gr·1 *less* than the average for the 20 years, 1849–1868.
The mean *Weight of a Cubic Foot of Air* for the month was 532 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 5·5.
The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·43. The maximum daily amount of *Sunshine* was 13·6 hours on June 3.
The highest reading of the *Solar Radiation Thermometer* was 152°·0 on June 24; and the lowest reading of the *Terrestrial Radiation Thermometer* was 30°·1 on June 11.
The mean daily distribution of *Ozone* for the 12 hours ending 9h was 1·1; for the 6 hours ending 15h was 1·1; and for the 6 hours ending 21h was 0·5.
The *Proportions of Wind* referred to the cardinal points were N. 9, E. 8, S. 8, and W. 5.
The *Greatest Pressure of the Wind* in the month was 12lbs·0 on the square foot on June 20. The mean daily *Horizontal Movement of the Air* for the month was 271 miles; the greatest daily value was 574 miles on June 20; and the least daily value was 120 miles on June 13.
*Rain* fell on 7 days in the month, amounting to 1in·666, as measured by gauge No. 6 partly sunk below the ground; being 0in·375 *less* than the average fall for the 44 years, 1841–1884.

* The chain of the pressure apparatus gave way on June 7, and was renewed on June 12.

| MONTH and DAY, 1885. | Phases of the Moon. | Barometer. Mean of 24 Hourly Values (corrected and reduced to 32° Fahrenheit). | Temperature. Of the Air. Highest. | Of the Air. Lowest. | Of the Air. Daily Range. | Of the Air. Mean of 24 Hourly Values. | Of the Air. Excess above Average of 20 Years. | Of Evaporation. Mean of 24 Hourly Values. | Of the Dew Point. Deduced Mean Daily Value. | Difference between the Air Temperature and Dew Point Temperature. Mean. | Greatest. | Least. | Degree of Humidity (Saturation = 100). | Temperature. Of Radiation. Highest in Sun's Rays. | Of Radiation. Lowest on the Grass. | Of the Water of the Thames at Deptford. Highest. | Of the Water of the Thames at Deptford. Lowest. | Rain collected in Gauge No. 6, whose receiving surface is 5 inches above the Ground. | Daily Amount of Ozone. | Electricity. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | in. | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | | ° | ° | ° | ° | in. | | |
| July 1 | .. | 29·971 | 68·0 | 49·0 | 19·0 | 57·9 | − 3·7 | 52·6 | 47·8 | 10·1 | 18·4 | 3·2 | 69 | 118·2 | 40·0 | 62·6 | 62·1 | 0·000 | 3·2 | wP, wN |
| 2 | .. | 30·009 | 74·3 | 46·0 | 28·3 | 60·4 | + 1·1 | 54·6 | 49·5 | 10·9 | 22·4 | 1·9 | 67 | 138·8 | 38·0 | 62·8 | 62·2 | 0·000 | 5·8 | wP : vP, wN |
| 3 | .. | 29·985 | 77·3 | 54·0 | 23·3 | 64·1 | + 2·7 | 56·9 | 50·9 | 13·2 | 21·6 | 6·5 | 62 | 134·5 | 49·7 | 62·8 | 61·7 | 0·000 | 0·0 | wP, wN |
| 4 | In Equator | 30·016 | 76·2 | 51·0 | 25·2 | 65·0 | + 3·6 | 58·6 | 53·4 | 11·6 | 21·4 | 2·6 | 66 | 128·4 | 42·7 | 63·2 | 63·1 | 0·000 | 5·0 | wP : vP, wN |
| 5 | Last Qr. | 30·048 | 82·0 | 55·8 | 26·2 | 67·3 | + 5·8 | 61·0 | 56·0 | 11·3 | 24·6 | 2·5 | 66 | 138·2 | 47·7 | 63·3 | 63·1 | 0·000 | 2·0 | wP : wP, wN |
| 6 | .. | 30·047 | 84·7 | 54·0 | 30·7 | 68·1 | + 6·4 | 60·4 | 54·3 | 13·8 | 25·8 | 2·1 | 61 | 147·1 | 44·3 | 64·8 | 64·2 | 0·000 | 0·0 | vP, wN : vP |
| 7 | .. | 29·995 | 75·2 | 53·1 | 22·1 | 62·4 | + 0·5 | 57·6 | 53·7 | 8·7 | 16·9 | 0·4 | 73 | 153·9 | 43·1 | 66·8 | 64·7 | 0·000 | 6·5 | vP, wN : vP |
| 8 | .. | 29·921 | 72·7 | 54·0 | 18·7 | 61·2 | − 1·0 | 58·2 | 55·6 | 5·6 | 12·1 | 1·9 | 82 | 142·8 | 44·0 | 65·8 | 64·9 | 0·019 | 5·5 | wP : mP |
| 9 | .. | 30·005 | 74·2 | 46·2 | 28·0 | 61·2 | − 1·3 | 55·0 | 49·6 | 11·6 | 20·6 | 2·1 | 66 | 118·5 | 34·5 | 64·8 | 64·7 | 0·000 | 0·0 | mP, wN : vN, vP |
| 10 | Greatest Declination N. | 29·981 | 83·0 | 47·8 | 35·2 | 65·6 | + 2·9 | 57·4 | 50·7 | 14·9 | 29·2 | 0·4 | 58 | 154·0 | 39·0 | 64·8 | 63·7 | 0·000 | 3·0 | wP : vP |
| 11 | .. | 29·886 | 84·6 | 49·9 | 34·7 | 66·7 | + 3·8 | 59·6 | 53·9 | 12·8 | 22·4 | 2·8 | 64 | 151·6 | 41·0 | 67·6 | 67·2 | 0·000 | 5·0 | vP |
| 12 | Perigee : New | 29·862 | 69·1 | 53·5 | 15·6 | 61·6 | − 1·5 | 59·2 | 57·2 | 4·4 | 11·3 | 0·6 | 86 | 114·1 | 46·0 | 64·8 | 63·7 | 0·416 | 0·0 | vP, sN : wP |
| 13 | .. | 29·865 | 74·4 | 51·5 | 22·9 | 61·0 | − 2·3 | 56·6 | 52·8 | 8·2 | 22·7 | 0·6 | 75 | 136·2 | 45·0 | 67·8 | 62·7 | 0·056 | 0·0 | wP, wN : wP, vN |
| 14 | .. | 29·998 | 72·4 | 47·2 | 25·2 | 59·8 | − 3·6 | 54·9 | 50·6 | 9·2 | 20·7 | 0·6 | 71 | 136·4 | 38·5 | 66·8 | 65·7 | 0·000 | 1·0 | vP : wP, wN |
| 15 | .. | 30·012 | 78·6 | 48·5 | 30·1 | 62·5 | − 0·9 | 55·8 | 50·0 | 12·5 | 23·4 | 0·0 | 64 | 145·0 | 39·5 | 66·8 | 66·5 | 0·000 | 1·0 | wP |
| 16 | .. | 29·860 | 75·1 | 52·9 | 22·2 | 61·6 | − 1·9 | 56·0 | 51·2 | 10·4 | 20·9 | 3·8 | 69 | 141·1 | 43·2 | 66·8 | 66·2 | 0·006 | 3·0 | wP : vP |
| 17 | In Equator | 29·836 | 71·6 | 53·3 | 18·3 | 60·5 | − 3·0 | 54·2 | 48·7 | 11·8 | 19·8 | 4·4 | 65 | 137·2 | 44·0 | 66·8 | 66·2 | 0·000 | 0·0 | mP : wP, wN |
| 18 | .. | 29·771 | 73·3 | 53·2 | 20·1 | 62·2 | − 1·2 | 58·1 | 54·6 | 7·6 | 14·9 | 3·8 | 77 | 131·9 | 42·5 | 66·2 | 65·7 | 0·000 | 3·0 | vP : wP |
| 19 | First Qr. | 29·685 | 74·6 | 59·3 | 15·3 | 64·2 | + 0·9 | 60·8 | 58·0 | 6·2 | 12·4 | 1·9 | 80 | 143·7 | 57·8 | 65·6 | 64·7 | 0·006 | 6·2 | wP |
| 20 | .. | 29·762 | 79·4 | 59·2 | 20·2 | 66·0 | + 2·8 | 62·1 | 59·0 | 7·0 | 15·0 | 1·9 | 79 | 154·9 | 50·0 | 66·6 | 65·2 | 0·000 | 5·8 | wP |
| 21 | .. | 30·117 | 74·4 | 57·7 | 16·7 | 63·8 | + 0·8 | 60·3 | 57·4 | 6·4 | 14·4 | 2·5 | 80 | 142·3 | 47·9 | 66·3 | 65·2 | 0·000 | 0·8 | wP |
| 22 | .. | 30·237 | 76·9 | 50·5 | 26·4 | 64·1 | + 1·2 | 58·2 | 53·3 | 10·8 | 22·3 | 2·3 | 68 | 148·4 | 39·0 | 66·6 | 63·7 | 0·000 | 2·2 | wP : vP |
| 23 | .. | 30·156 | 76·7 | 44·7 | 32·0 | 61·1 | − 1·7 | 55·4 | 50·5 | 10·6 | 23·5 | 1·0 | 69 | 156·4 | 32·6 | 66·6 | 65·7 | 0·000 | 2·0 | vP |
| 24 | Greatest Declination S. | 30·100 | 77·6 | 45·8 | 31·8 | 63·2 | + 0·5 | 56·9 | 51·6 | 11·6 | 22·3 | 1·0 | 66 | 155·5 | 34·8 | 66·0 | 64·5 | 0·000 | 0·0 | vP : mP |
| 25 | Apogee | 30·123 | 87·1 | 49·7 | 37·4 | 68·1 | + 5·4 | 60·3 | 54·2 | 13·9 | 29·7 | 1·8 | 61 | 145·8 | 40·9 | 66·6 | 65·9 | 0·000 | 0·0 | vP, wN |
| 26 | .. | 30·125 | 90·2 | 56·4 | 33·8 | 72·6 | + 9·9 | 65·0 | 59·3 | 13·3 | 25·8 | 4·4 | 63 | 145·0 | 46·0 | .. | .. | 0·000 | 0·0 | wP : mP |
| 27 | Full | 30·110 | 87·0 | 58·3 | 28·7 | 69·7 | + 7·1 | 64·2 | 60·0 | 9·7 | 21·1 | 1·3 | 71 | 161·3 | 49·0 | 67·8 | 66·9 | 0·000 | 1·0 | vP : wP |
| 28 | .. | 30·156 | 75·4 | 58·1 | 17·3 | 63·5 | + 0·9 | 57·1 | 51·7 | 11·8 | 21·1 | 4·7 | 65 | 162·0 | 57·7 | 68·3 | 67·7 | 0·000 | 6·8 | vP |
| 29 | .. | 30·120 | 71·3 | 57·4 | 13·9 | 61·7 | − 0·9 | 55·3 | 49·8 | 11·9 | 18·7 | 7·6 | 66 | 148·7 | 57·4 | 68·3 | 67·2 | 0·000 | 3·8 | mP : wP : mP |
| 30 | .. | 30·086 | 75·4 | 56·4 | 19·0 | 62·8 | + 0·2 | 56·8 | 51·7 | 11·1 | 21·4 | 5·9 | 67 | 150·4 | 55·6 | 67·3 | 66·5 | 0·000 | 1·5 | wP : vP |
| 31 | In Equator | 30·027 | 75·3 | 54·4 | 20·9 | 61·5 | − 1·1 | 55·9 | 51·1 | 10·4 | 21·8 | 3·4 | 70 | 151·0 | 53·7 | 66·8 | 66·1 | 0·000 | 0·0 | vP : mP |
| Means | .. | 29·996 | 77·0 | 52·5 | 24·5 | 63·6 | + 1·0 | 57·9 | 53·2 | 10·4 | 20·6 | 2·6 | 69·2 | 143·0 | 44·7 | (30 days) 65·9 | (30 days) 64·9 | Sum 0·503 | 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·996, being 0in·187 *higher* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 90°·2 on July 26; the lowest in the month was 44°·7 on July 23; and the range was 45°·5.
The mean of all the highest daily readings in the month was 77°·0, being 2°·9 *higher* than the average for the 44 years, 1841–1884.
The mean of all the lowest daily readings in the month was 52°·5, being 0°·6 *lower* than the average for the 44 years, 1841–1884.
The mean of the daily ranges was 24°·5, being 3°·5 *greater* than the average for the 44 years, 1841–1884.
The mean for the month was 63°·6, being 1°·0 *higher* than the average for the 20 years, 1849–1868.

| MONTH and DAY, 1885. | 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 | 4·2 | 16·5 | Variable | NE : SE : S | 0·9 | 0·0 | 0·02 | 107 | 10 : p.-cl, m :3,li.-cl,m,glm | 9,ci.-cu,cu,cu.-s,glm : v, li.-cl |
| 2 | 9·0 | 16·5 | Calm : SE | SE : SW | 1·0 | 0·0 | 0·06 | 118 | p.-cl, s, li.-cl : 0 | 4, ci, cu : 10 |
| 3 | 3·5 | 16·4 | SW | ENE : SW | 0·2 | 0·0 | 0·00 | 126 | 10 : 7, li.-cl, h | 8, cu, cu.-s, glm : v, cu, m, h |
| 4 | 4·9 | 16·4 | WSW : NNE | NNE | 1·3 | 0·0 | 0·02 | 136 | 0 : 0, m, h : v,cu,cu.-s,h | 9, ci.-cu, cu.-s : v, li.-cl |
| 5 | 4·1 | 16·4 | N | NNW : NNE : SW | 1·0 | 0·0 | 0·03 | 150 | p.-cl : 9, cu, cu.-s, m, h | 8, cu, cu.-s : v, cu, cu.-s, li.-cl |
| 6 | 12·1 | 16·4 | NW : N : W | SW : W | 2·0 | 0·0 | 0·13 | 190 | 0 : 0, h, m | 1, cu, h : 1, li.-cl |
| 7 | 6·5 | 16·3 | SW | SW | 4·0 | 0·0 | 0·44 | 320 | 0 : 6, li.-cl | 8, ci.-cu, ci -s, li.-cl : 9, cu.-s, li.-cl |
| 8 | 1·9 | 16·3 | SW | SW : WSW | 2·5 | 0·0 | 0·15 | 269 | 10, slt.-r : 10, slt.-r | 10, slt.-r : li.-cl : v,ci.-cu,li.-cl |
| 9 | 10·9 | 16·3 | WSW : NNW | Variable | 0·3 | 0·0 | 0·00 | 138 | 0 : 0, m, h : 2,ci.-cu,cu,h | 1,ci.-cu,cu,h: 0, h : 0, h |
| 10 | 12·5 | 16·3 | Variable | Variable | 0·5 | 0·0 | 0·01 | 120 | 0, f : 0 | 0 : 0 |
| 11 | 12·5 | 16·2 | SW : SSW | SW | 3·9 | 0·0 | 0·48 | 238 | 0 : 0 : 4, ci.-cu, ci | 7, ci.-cu, cu.-s, li.-cl : 1, li.-cl |
| 12 | 1·6 | 16·2 | WSW | N : NE : ESE | 1·3 | 0·0 | 0·04 | 171 | v, sh.-r : 10, hy.-r : 10, r, glm | 10 : p.-cl : 2, li.-cl, m |
| 13 | 4·5 | 16·2 | Calm : WSW : WNW | Variable | 1·2 | 0·0 | 0·07 | 149 | p.-cl : 10, m : 9, th.-cl, m | 7, cu, cu.-s : v, shs.-r, l, t |
| 14 | 8·2 | 16·1 | N | N : SE | 1·1 | 0·0 | 0·05 | 149 | 0, m : 3, ci.-cu, cu | 7, ci.-cu, cu, cu.-s : 1, li.-cl, m |
| 15 | 8·8 | 16·1 | SW : WSW | SW | 3·0 | 0·0 | .. | 232 | 0, m 3, li.-cl | 6, ci, ci.-cu, cu : v |
| 16 | 5·2 | 16·1 | SW : WSW | W : WNW | 5·6 | 0·0 | 0·94 | 322 | 0 : 10 : 10, cu.-s | 8, cu, cu.-s : 10 |
| 17 | 3·5 | 16·0 | WSW : WNW | W : SW | 1·9 | 0·0 | 0·38 | 259 | 10 : 10 | 8, ci.-cu, cu.-s : v, li.-cl, cu.-s |
| 18 | 1·0 | 16·0 | SW | SW | 5·7 | 0·0 | 0·97 | 348 | 10 : 10 : 9, cu.-s | 10 : 10, sc |
| 19 | 2·6 | 16·0 | SW | SW | 6·5 | 0·0 | 1·65 | 430 | 10 : 10 | 10, oc.-slt.-r : 10, sh.-r |
| 20 | 1·7 | 15·9 | SW : WSW | WSW | 4·4 | 0·0 | 0·87 | 378 | 10 : 10, slt.-r | 9, cu, cu.-s : v, cu.-s, li.-cl |
| 21 | 1·7 | 15·9 | WSW : ENE | E | 1·2 | 0·0 | 0·05 | 178 | p.-cl : 10 | 7, ci.-cu, cu.-s : 10 |
| 22 | 13·0 | 15·8 | ENE : E | E : ESE | 2·1 | 0·0 | 0·19 | 226 | v, li.-cl : 1, ci | 0 : 0 |
| 23 | 12·2 | 15·8 | NE : ENE | E : ESE | 1·7 | 0·0 | 0·10 | 182 | 0 : 1, li.-cl, m : 3, cu | 1, li.-cl : 0, slt.-m, d |
| 24 | 12·3 | 15·7 | NE : ENE | E : ESE | 1·4 | 0·0 | 0·04 | 151 | 0, d, slt.-f : 0, m | 0 : 0, m |
| 25 | 12·4 | 15·7 | Calm : WNW | NNE : SW | 0·2 | 0·0 | 0·00 | 98 | 0, f : 0, h, f | 1, li.-cl, h : 1, li.-cl |
| 26 | 12·3 | 15·7 | SW : N | N : ESE | 1·9 | 0·0 | 0·05 | 160 | 1, li.-cl, slt.-f : 1, th.-cl, m, h | 2, cu, slt.-h : 0, slt.-h, m |
| 27 | 11·0 | 15·6 | E : NE | E : ENE | 2·8 | 0·0 | 0·24 | 215 | 1, s, f : 2, li.-cl, m | 2, cu, li.-cl : v : 10 |
| 28 | 8·2 | 15·6 | ENE : NE | ENE : NE | 5·8 | 0·0 | 0·81 | 386 | 10 : 10 : 7, ci.-cu, cu | 2, ci.-cu : 2, ci.-cu : 10, w |
| 29 | 1·6 | 15·5 | NE | ENE : NE | 3·8 | 0·0 | 0·57 | 350 | 10 : 10 : 9, cu, cu.-s | 9, cu.-s : 10 |
| 30 | 6·4 | 15·5 | NE | NE | 3·9 | 0·0 | 0·33 | 318 | 10 : 10 : 7, ci.-cu, cu | 3, ci.-cu : p.-cl : 10 |
| 31 | 7·4 | 15·4 | NE | NE : NNE | 2·7 | 0·0 | 0·28 | 282 | 10 : 10 : p.-cl | 4, li.-cl, ci.-cu : 10 |
| Means | 7·0 | 16·0 | ... | ... | .. | .. | (30dys) 0·30 | 222 | | |
| 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°·9, being 0°·2 *higher* than
The mean *Temperature of the Dew Point* for the month was 53°·2, being 0°·5 *lower* than
The mean *Degree of Humidity* for the month was 69·2, being 3·8 *less* than
The mean *Elastic Force of Vapour* for the month was 0in·406, being 0in·007 *less* than
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was 4grs·5, being 0gr·1 *less* than
The mean *Weight of a Cubic Foot of Air* for the month was 530 grains, being 2 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 5·4.

The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·44. The maximum daily amount of *Sunshine* was 13·0 hours on July 22.

The highest reading of the *Solar Radiation Thermometer* was 162°·0 on July 28; and the lowest reading of the *Terrestrial Radiation Thermometer* was 32°·6 on July 23.

The mean daily distribution of *Ozone* for the 12 hours ending 9h was 1·2; for the 6 hours ending 15h was 0·4; and for the 6 hours ending 21h was 0·8.

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

The *Greatest Pressure of the Wind* in the month was 6lbs·5 on the square foot on July 19. The mean daily *Horizontal Movement of the Air* for the month was 222 miles; the greatest daily value was 430 miles on July 19; and the least daily value was 98 miles on July 25.

*Rain* fell on 5 days in the month, amounting to 0in·503, as measured by gauge No. 6 partly sunk below the ground; being 1in·904 *less* than the average fall for the 44 years, 1841–1884.

| MONTH and DAY, 1885. | Phases of the Moon. | BAROMETER. Mean of 24 Hourly Values (corrected and reduced to 32° Fahrenheit). | TEMPERATURE. Of the Air. Highest. | Of the Air. Lowest. | Of the Air. Daily Range. | Of the Air. Mean of 24 Hourly Values. | Of the Air. Excess above Average of 20 Years. | Of Evaporation. Mean of 24 Hourly Values. | Of the Dew Point. Deduced Mean Daily Value. | Difference between the Air Temperature and Dew Point Temperature. Mean. | Greatest. | Least. | Degree of Humidity (Saturation = 100). | TEMPERATURE. Of Radiation. Highest in Sun's Rays. | Of Radiation. Lowest on the Grass. | Of the Water of the Thames at Deptford. Highest. | Of the Water of the Thames at Deptford. Lowest. | Rain collected in Gauge No. 6, whose receiving surface is 5 inches above the Ground. | Daily Amount of Ozone. | Electricity. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | in. | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | | ° | ° | ° | ° | in. | | |
| Aug. 1 | .. | 29·940 | 69·0 | 54·1 | 14·9 | 60·7 | − 1·9 | 55·5 | 51·0 | 9·7 | 15·8 | 3·0 | 70 | 122·4 | 48·9 | 66·8 | 65·7 | 0·000 | 1·0 | mP : vP |
| 2 | .. | 29·896 | 72·3 | 54·2 | 18·1 | 60·0 | − 2·7 | 54·7 | 50·0 | 10·0 | 17·6 | 4·7 | 69 | 158·1 | 52·8 | 64·8 | 61·9 | 0·000 | 5·0 | mP |
| 3 | Last Qr. | 29·860 | 65·1 | 49·0 | 16·1 | 57·7 | − 5·0 | 53·5 | 49·7 | 8·0 | 13·9 | 3·0 | 75 | 105·7 | 41·5 | 65·6 | 65·2 | 0·000 | 0·0 | wP : vP, vN |
| 4 | .. | 29·752 | 72·9 | 46·9 | 26·0 | 58·6 | − 4·1 | 54·9 | 51·6 | 7·0 | 18·0 | 0·2 | 77 | 144·9 | 39·1 | 65·3 | 64·7 | 0·030 | 0·0 | vP : vP, wN |
| 5 | .. | 29·773 | 67·6 | 51·2 | 16·4 | 58·2 | − 4·5 | 56·6 | 55·2 | 3·0 | 8·6 | 0·0 | 89 | 116·5 | 44·3 | 65·6 | 65·1 | 0·186 | 5·0 | wP : vP, vN |
| 6 | .. | 29·745 | 74·0 | 52·4 | 21·6 | 61·0 | − 1·7 | 57·8 | 55·0 | 6·0 | 19·8 | 0·0 | 81 | 149·1 | 42·8 | 65·6 | 64·9 | 0·207 | 1·0 | mP : sP, sN |
| 7 | Greatest Declination N. | 29·613 | 71·0 | 51·1 | 19·9 | 58·8 | − 3·9 | 55·5 | 52·5 | 6·3 | 16·6 | 0·0 | 80 | 148·1 | 43·2 | 65·2 | 64·7 | 0·031 | 10·2 | vP, vN |
| 8 | .. | 29·718 | 72·6 | 52·7 | 19·9 | 61·7 | − 1·0 | 56·2 | 51·5 | 10·2 | 20·9 | 1·8 | 70 | 143·4 | 45·1 | 65·0 | 64·5 | 0·000 | 1·5 | wP : vP, wN |
| 9 | Perigee | 29·744 | 73·7 | 53·3 | 20·4 | 61·6 | − 1·1 | 57·4 | 53·8 | 7·8 | 16·7 | 1·4 | 76 | 132·7 | 46·4 | 64·6 | 63·9 | 0·017 | 7·2 | mP |
| 10 | New | 29·501 | 75·5 | 55·8 | 19·7 | 63·2 | + 0·5 | 58·8 | 55·1 | 8·1 | 17·5 | 2·7 | 75 | 139·5 | 47·5 | 63·8 | 63·7 | 0·000 | 13·5 | wP : vP |
| 11 | .. | 29·584 | 73·6 | 54·6 | 19·0 | 61·3 | − 1·4 | 56·3 | 52·0 | 9·3 | 18·9 | 3·6 | 72 | 151·1 | 46·3 | 64·6 | 63·7 | 0·000 | 8·5 | wP |
| 12 | .. | 29·618 | 70·4 | 52·1 | 18·3 | 59·4 | − 3·2 | 55·4 | 51·8 | 7·6 | 15·8 | 1·5 | 76 | 134·6 | 42·3 | 64·8 | 63·7 | 0·067 | 13·2 | wP : wP, wN |
| 13 | In Equator | 29·829 | 69·6 | 50·0 | 19·6 | 57·7 | − 4·8 | 51·5 | 45·9 | 11·8 | 21·1 | 2·4 | 65 | 141·3 | 41·0 | 64·3 | 62·7 | 0·000 | 3·8 | wP, wN : vP, wN |
| 14 | .. | 30·131 | 68·6 | 40·2 | 28·4 | 54·9 | − 7·5 | 49·3 | 43·9 | 11·0 | 21·2 | 1·5 | 66 | 118·3 | 30·4 | 62·8 | 62·2 | 0·000 | 0·0 | mP : vP, wN |
| 15 | .. | 30·128 | 76·1 | 43·6 | 32·5 | 59·4 | − 2·9 | 52·4 | 46·2 | 13·2 | 23·8 | 1·5 | 61 | 154·7 | 32·7 | 62·4 | 62·3 | 0·000 | 5·0 | vP : vP, vN |
| 16 | .. | 30·059 | 79·4 | 49·2 | 30·2 | 63·5 | + 1·4 | 56·0 | 49·7 | 13·8 | 24·8 | 4·2 | 61 | 143·5 | 39·7 | 62·8 | 62·7 | 0·000 | 0·0 | mP : vP |
| 17 | First Qr. | 29·928 | 80·2 | 48·7 | 31·5 | 63·8 | + 1·9 | 57·2 | 51·7 | 12·1 | 21·4 | 4·2 | 65 | 150·2 | 36·9 | 63·3 | 62·9 | 0·000 | 2·0 | vP, wN |
| 18 | .. | 29·924 | 66·3 | 46·9 | 19·4 | 58·4 | − 3·4 | 54·5 | 51·0 | 7·4 | 12·6 | 2·8 | 77 | 108·5 | 36·0 | 63·3 | 63·2 | 0·000 | 0·0 | mP : wP : vP |
| 19 | .. | 29·900 | 64·8 | 45·6 | 19·2 | 54·8 | − 6·8 | 50·7 | 46·8 | 8·0 | 12·7 | 3·4 | 74 | 106·0 | 34·7 | 62·8 | 62·7 | 0·000 | 0·0 | mP : wP : mP |
| 20 | Greatest Declination S. | 29·736 | 67·3 | 51·9 | 15·4 | 55·9 | − 5·5 | 52·7 | 49·7 | 6·2 | 13·3 | 1·2 | 81 | 139·8 | 50·0 | 62·6 | 62·1 | 0·123 | 0·0 | mP : vP, vN |
| 21 | Apogee | 29·683 | 62·4 | 52·5 | 9·9 | 56·4 | − 4·9 | 53·4 | 50·6 | 5·8 | 10·1 | 1·6 | 81 | 103·8 | 44·8 | 62·3 | 61·7 | 0·001 | 0·0 | mP : vP, vN |
| 22 | .. | 29·657 | 65·7 | 50·7 | 15·0 | 56·7 | − 4·6 | 54·4 | 52·3 | 4·4 | 10·8 | 0·2 | 85 | 108·3 | 40·0 | 62·2 | 61·7 | 0·021 | 0·0 | vP |
| 23 | .. | 29·722 | 63·2 | 48·7 | 14·5 | 55·7 | − 5·5 | 52·8 | 50·1 | 5·6 | 11·8 | 0·0 | 82 | 89·4 | 38·0 | 62·6 | 61·7 | 0·000 | 0·0 | wP : vP |
| 24 | .. | 29·825 | 70·6 | 47·9 | 22·7 | 58·3 | − 2·8 | 54·4 | 50·9 | 7·4 | 16·0 | 0·8 | 76 | 112·3 | 38·0 | 61·4 | 61·3 | 0·000 | 0·0 | wP : vP |
| 25 | Full | 29·845 | 74·8 | 46·7 | 28·1 | 59·6 | − 1·4 | 54·8 | 50·5 | 9·1 | 21·1 | 0·0 | 72 | 144·3 | 38·2 | 61·6 | 61·5 | 0·000 | 0·0 | wP : vP |
| 26 | .. | 29·817 | 74·0 | 49·0 | 25·0 | 59·6 | − 1·3 | 55·9 | 52·6 | 7·0 | 20·3 | 0·2 | 78 | 135·9 | 38·1 | 61·8 | 61·2 | 0·000 | 5·5 | wP |
| 27 | .. | 29·757 | 62·3 | 50·9 | 11·4 | 56·1 | − 4·7 | 54·5 | 53·0 | 3·1 | 8·6 | 0·2 | 89 | 94·5 | 43·5 | 61·8 | 61·2 | 0·613 | 11·0 | vP, vN : wP |
| 28 | In Equator | 29·683 | 63·9 | 52·1 | 11·8 | 57·1 | − 3·6 | 53·6 | 50·4 | 6·7 | 12·2 | 0·2 | 78 | 119·8 | 43·5 | 61·6 | 60·7 | 0·001 | 4·8 | wP |
| 29 | .. | 29·671 | 70·1 | 49·1 | 21·0 | 57·4 | − 3·2 | 51·5 | 46·1 | 11·3 | 20·0 | 4·2 | 66 | 143·2 | 41·5 | 60·8 | 60·2 | 0·000 | 4·0 | wP : mP |
| 30 | .. | 29·827 | 64·3 | 46·6 | 17·7 | 54·9 | − 5·5 | 49·6 | 44·5 | 10·4 | 18·4 | 4·8 | 67 | 142·4 | 37·5 | 59·8 | 59·7 | 0·000 | 4·0 | wP : mP : vP |
| 31 | .. | 29·874 | 62·8 | 47·6 | 15·2 | 54·1 | − 6·2 | 50·8 | 47·6 | 6·5 | 10·8 | 2·7 | 78 | 103·5 | 39·9 | 59·8 | 59·7 | 0·025 | 3·8 | wP : wP, wN |
| Means | .. | 29·798 | 69·8 | 49·8 | 20·0 | 58·6 | − 3·3 | 54·3 | 50·4 | 8·2 | 16·5 | 1·9 | 74·6 | 129·2 | 41·4 | 63·3 | 62·7 | Sum 1·322 | 3·5 | .. |
| 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 $29^{\text{in.}}\cdot798$, being $0^{\text{in.}}\cdot001$ *lower* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 80°·2 on August 17; the lowest in the month was 40°·2 on August 14; and the range was 40°·0.
The mean of all the highest daily readings in the month was 69°·8, being 3°·2 *lower* than the average for the 44 years, 1841–1884.
The mean of all the lowest daily readings in the month was 49°·8, being 3°·4 *lower* than the average for the 44 years, 1841–1884.
The mean of the daily ranges was 20°·0, being 0°·2 *greater* than the average for the 44 years, 1841–1884.
The mean for the month was 58°·6, being 3°·3 *lower* than the average for the 20 years, 1849–1868.

| MONTH and DAY, 1885. | 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. | | |
| Aug. 1 | 1·4 | 15·3 | NNE | NNE : NE | 2·5 | 0·0 | 0·43 | 310 | 10 : 10 | 9,ci.-cu,cu.-s: 10 : 10 |
| 2 | 2·0 | 15·3 | NE : NNE | NNE | 3·2 | 0·0 | 0·26 | 281 | 10 : 9 | 10 : 10 |
| 3 | 0·0 | 15·2 | NNE : NE | NNE : NE | 1·8 | 0·0 | 0·07 | 183 | 10 : 10 | 10 : 5, li.-cl |
| 4 | 3·9 | 15·2 | Variable | E : NE : NNE | 2·0 | 0·0 | 0·05 | 147 | p.-cl : 10 : 5,li.-cl,cu,cu.-s | 8, ci.-cu, cu, cu.-s : 10, oc.-r |
| 5 | 0·2 | 15·1 | Variable | W : NNE | 0·0 | 0·0 | 0·00 | 118 | p.-cl, m : 10, slt.-f, slt.-r | 9, ci.-cu,cu.-s,oc.-r : v, m, oc.-r, l, t |
| 6 | 5·6 | 15·1 | SSE : E | ESE : SE : S | 1·5 | 0·0 | 0·03 | 112 | 10 : 2, li.-cl | 9, cu, cu.-s, oc.-r, t : v, cu.-s, li.-cl |
| 7 | 6·7 | 15·0 | S : SW | SW : WSW | 3·0 | 0·0 | 0·20 | 261 | p.-cl : 6,cu,cu.-s,shs.-r,t | 7, cu, cu.-s, shs.-r, t: v, li.-cl, shs.-r |
| 8 | 10·4 | 15·0 | WSW : W | W : WSW | 9·0 | 0·0 | 1·60 | 427 | 10 : p.-cl, cu.-s | 6,ci,cu,cu.-s : p.-cl : 1, li.-cl, m,h |
| 9 | 4·5 | 14·9 | SW : SSW | SSW : SSE | 5·0 | 0·0 | 0·67 | 286 | v : 10, r | v : 3, cu.-s |
| 10 | 3·9 | 14·9 | SSW | SW | 9·2 | 0·0 | 1·95 | 438 | v : 10 | 6,ci.-cu,li.-cl: v, slt.-r : o, l, w |
| 11 | 7·9 | 14·8 | SW : WSW | WSW : SW | 10·0 | 0·0 | 1·72 | 453 | 2, li.-cl, l : v, cu, th.-r, w | 7, ci.-cu, cu, cu.-s : v, th.-r |
| 12 | 3·6 | 14·7 | SW | SW | 12·4 | 0·0 | 2·42 | 475 | 10 : 9, cu.-s, w | 8,cu,cu.-s,oc.-slt.-r,st.-w: v, fq.-shs, w |
| 13 | 10·6 | 14·7 | WSW : WNW | NW : N | 7·0 | 0·0 | 1·40 | 412 | v : v, cu, cu.-s | 6, cu, cu.-s : 3, li.-cl : 1, li.-cl, h |
| 14 | 7·9 | 14·6 | SW : NNW | NW : NNE : S | 0·1 | 0·0 | 0·00 | 138 | v : 10, m, glm | 3, ci.-cu, h : 1, th.-cl, h |
| 15 | 10·0 | 14·6 | SW : S | SW | 0·0 | 0·0 | 0·00 | 124 | o : 1,li.-cl,ci.-s,s : 1, th.-cl | 1, ci : v, th.-cl, h, m |
| 16 | 9·9 | 14·5 | SE : Calm : WSW | WSW | 0·1 | 0·0 | 0·00 | 150 | v : o | 3, ci : 1, li.-cl |
| 17 | 4·6 | 14·4 | WSW : NW | NW : N | 2·6 | 0·0 | 0·23 | 219 | o : 7, ci, ci.-s, m | 8, cu.-s, li.-cl : 1, li.-cl |
| 18 | 0·1 | 14·4 | NNW : N | NNE | 1·2 | 0·0 | 0·06 | 218 | v, cu.-s, s : 10 | 10 : v : o |
| 19 | 0·1 | 14·3 | N | N | 1·7 | 0·0 | 0·27 | 253 | o : v : 10 | 10 : 10 |
| 20 | 2·3 | 14·3 | NNW | N | 7·3 | 0·0 | 0·96 | 321 | 10 : 10, slt.-r | v, cu, cu.-s, t.-sm : v, li.-cl |
| 21 | 2·0 | 14·2 | N : NNW | NW : N : NNE | 2·7 | 0·0 | 0·23 | 202 | v : 7, ci.-cu, cu.-s, m | 8, ci.-cu, cu.-s, th.-cl, m: v, slt.-sh |
| 22 | 0·7 | 14·1 | N : WSW : NW | NNW : N : NNE | 2·1 | 0·0 | 0·07 | 152 | 10, r : 10 | 9, ci.-cu, cu : v, li.-cl : o, m, d |
| 23 | 0·3 | 14·1 | N | N : NNE | 0·6 | 0·0 | 0·01 | 137 | 10 : 10 | 10 : v : p.-cl |
| 24 | 2·8 | 14·0 | Calm : SE : SW | SE | 0·0 | 0·0 | 0·00 | 79 | 10 : p.-cl, m, h | 9, th.-cl, h : v, h : o,slt.-h,m,d |
| 25 | 7·2 | 13·9 | Calm : SE | ESE : E | 1·6 | 0·0 | 0·07 | 121 | o, m : tk.-f : o, h, m | 4,cu.-s, ci.-cu, li.-cl : v,th.-cl,ci.-s,cu.-s,lu.-ha |
| 26 | 4·0 | 13·9 | ENE | ENE | 7·3 | 0·0 | 1·14 | 330 | p.-cl : 8,ci.-cu,cu.-s,li.-cl | 8, cu, cu.-s : p.-cl, w : 10 |
| 27 | 1·2 | 13·8 | ENE : E : ESE | E : ENE | 4·0 | 0·0 | 0·67 | 295 | 10, hy.-r : 10, c.-r | 9, ci.-cu, cu.-s, slt.-r: v, li.-cl |
| 28 | 0·9 | 13·8 | ENE | ENE | 10·0 | 0·0 | 2·20 | 441 | v, th.-cl : 9, w | 10 : 10 |
| 29 | 9·3 | 13·7 | ENE : NE | NE : NNE | 10·5 | 0·1 | 2·96 | 519 | 10 : 8, cu, cu.-s | 5, cu, li.-cl, w : v, s, w |
| 30 | 4·8 | 13·7 | NNE | NNE : NE | 4·4 | 0·0 | 0·75 | 294 | o : 4, ci.-cu, li.-cl | 9, ci.-cu, cu.-s : v, li.-cl, cu.-s |
| 31 | 0·0 | 13·6 | SE | ESE : ENE | 1·0 | 0·0 | 0·02 | 140 | 10 : 10, oc.-slt.-r | 10, oc.-r : 10 |
| Means | 4·2 | 14·5 | ... | ... | .. | .. | 0·66 | 259 | | |
| 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°·3, being 3°·6 *lower* than
The mean *Temperature of the Dew Point* for the month was 50°·4, being 4°·0 *lower* than
The mean *Degree of Humidity* for the month was 74·6, being 1·9 *less* than
The mean *Elastic Force of Vapour* for the month was $0^{in}$·366, being $0^{in}$·058 *less* than
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was $4^{grs}$·1, being $0^{gr}$·6 *less* than
The mean *Weight of a Cubic Foot of Air* for the month was 532 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 6·9.

The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·29. The maximum daily amount of *Sunshine* was 10·6 hours on August 13.

The highest reading of the *Solar Radiation Thermometer* was 158°·1 on August 2; and the lowest reading of the *Terrestrial Radiation Thermometer* was 30°·4 on August 14.

The mean daily distribution of *Ozone* for the 12 hours ending $9^h$ was 1·6; for the 6 hours ending $15^h$ was 1·1; and for the 6 hours ending $21^h$ was 0·8.

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

The *Greatest Pressure of the Wind* in the month was $12^{lbs}$·4 on the square foot on August 12. The mean daily *Horizontal Movement of the Air* for the month was 259 miles; the greatest daily value was 519 miles on August 29; and the least daily value was 79 miles on August 24.

*Rain* fell on 10 days in the month, amounting to $1^{in}$·322, as measured by gauge No. 6 partly sunk below the ground; being $1^{in}$·056 *less* than the average fall for the 44 years, 1841–1884.

| MONTH and DAY, 1885. | Phases of the Moon. | BAROMETER. Mean of 24 Hourly Values (corrected and reduced to 32° Fahrenheit). | TEMPERATURE. Of the Air. Highest. | TEMPERATURE. Of the Air. Lowest. | TEMPERATURE. Of the Air. Daily Range. | TEMPERATURE. Of the Air. Mean of 24 Hourly Values. | TEMPERATURE. Of the Air. Excess above Average of 20 Years. | TEMPERATURE. Of Evaporation. Mean of 24 Hourly Values. | TEMPERATURE. Of the Dew Point. Deduced Mean Daily Value. | Difference between the Air Temperature and Dew Point Temperature. Mean. | Difference between the Air Temperature and Dew Point Temperature. Greatest. | Difference between the Air Temperature and Dew Point Temperature. Least. | Degree of Humidity (Saturation = 100). | TEMPERATURE. Of Radiation. Highest in Sun's Rays. | TEMPERATURE. Of Radiation. Lowest on the Grass. | TEMPERATURE. Of the Water of the Thames at Deptford. Highest. | TEMPERATURE. Of the Water of the Thames at Deptford. Lowest. | Rain collected in Gauge No. 6, whose receiving surface is 5 inches above the Ground. | Daily Amount of Ozone. | Electricity. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | in. | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | | ° | ° | ° | ° | in. | | |
| Sept. 1 | .. | 29.928 | 67.9 | 45.1 | 22.8 | 55.6 | − 4.5 | 50.5 | 45.7 | 9.9 | 19.4 | 2.3 | 70 | 142.4 | 34.1 | 59.6 | 59.2 | 0.000 | 6.0 | wP : mP |
| 2 | Last Qr. | 29.748 | 66.4 | 43.2 | 23.2 | 57.3 | − 2.7 | 53.8 | 50.6 | 6.7 | 11.5 | 2.5 | 78 | 108.1 | .. | 59.6 | 59.5 | 0.088 | 10.8 | wP : wP, wN |
| 3 | Greatest Declination N. | 29.473 | 73.7 | 53.8 | 19.9 | 62.4 | + 2.6 | 59.2 | 56.5 | 5.9 | 16.6 | 0.2 | 81 | 132.2 | 47.0 | 60.6 | 60.2 | 0.172 | 9.5 | wP, vN : wP |
| 4 | .. | 29.426 | 70.4 | 51.9 | 18.5 | 59.2 | − 0.5 | 56.1 | 53.3 | 5.9 | 16.0 | 0.0 | 82 | 114.1 | 45.0 | 60.3 | 59.7 | 0.058 | 9.5 | wP, wN : vP |
| 5 | .. | 29.411 | 71.2 | 51.7 | 19.5 | 58.6 | − 0.9 | 55.7 | 53.1 | 5.5 | 16.7 | 1.0 | 82 | 129.0 | 44.2 | 61.6 | 60.2 | 0.062 | 4.2 | wP : wP, vN |
| 6 | Perigee | 29.510 | 75.1 | 48.8 | 26.3 | 59.3 | 0.0 | 55.3 | 51.7 | 7.6 | 19.8 | 0.0 | 76 | 135.0 | 41.8 | 60.3 | 59.7 | 0.000 | 4.0 | wP |
| 7 | .. | 29.424 | 62.2 | 51.6 | 10.6 | 56.7 | − 2.3 | 56.0 | 55.4 | 1.3 | 3.2 | 0.0 | 95 | 107.8 | 43.4 | 60.8 | 60.2 | 0.709 | 6.0 | wP, vN : vP, vN |
| 8 | New | 29.575 | 71.1 | 51.1 | 20.0 | 57.9 | − 0.9 | 55.4 | 53.2 | 4.7 | 14.8 | 0.0 | 84 | 125.8 | 43.8 | 60.2 | 59.7 | 0.114 | 0.8 | wP : wP, wN |
| 9 | In Equator | 29.552 | 66.4 | 50.1 | 16.3 | 57.2 | − 1.3 | 53.0 | 49.1 | 8.1 | 19.1 | 0.2 | 74 | 123.5 | 43.0 | 61.2 | 60.5 | 0.190 | 2.8 | wP, vN : vP, vN |
| 10 | .. | 29.598 | 65.1 | 47.4 | 17.7 | 54.8 | − 3.5 | 52.4 | 50.1 | 4.7 | 12.9 | 0.0 | 84 | 120.6 | 40.2 | 60.8 | 59.7 | 0.610 | 3.5 | wP : vP, vN |
| 11 | .. | 29.395 | 60.2 | 48.0 | 12.2 | 53.9 | − 4.2 | 51.0 | 48.2 | 5.7 | 13.9 | 0.0 | 81 | 87.8 | 41.0 | 59.8 | 59.1 | 0.260 | 0.2 | wP, wN : vP |
| 12 | .. | 29.736 | 62.7 | 47.8 | 14.9 | 55.6 | − 2.4 | 53.3 | 51.1 | 4.5 | 7.6 | 2.2 | 86 | 81.7 | 40.8 | 59.6 | 58.8 | 0.049 | 2.8 | wP |
| 13 | .. | 29.816 | 66.4 | 50.7 | 15.7 | 59.1 | + 1.3 | 56.0 | 53.2 | 5.9 | 12.4 | 0.6 | 81 | 106.1 | 45.5 | 58.8 | 58.5 | 0.010 | 6.8 | wP : mP |
| 14 | .. | 29.813 | 70.8 | 49.7 | 21.1 | 60.0 | + 2.4 | 58.4 | 57.0 | 3.0 | 9.0 | 0.0 | 90 | 114.9 | 44.4 | 59.4 | 58.8 | 0.003 | 2.8 | wP |
| 15 | .. | 29.717 | 76.4 | 57.7 | 18.7 | 64.2 | + 6.8 | 59.7 | 56.0 | 8.2 | 19.4 | 0.9 | 75 | 126.0 | 55.8 | 60.0 | 59.3 | 0.000 | 3.2 | wP |
| 16 | First Qr.: Greatest Dec. S. | 29.867 | 68.6 | 53.8 | 14.8 | 58.9 | + 1.6 | 56.4 | 54.2 | 4.7 | 11.0 | 0.2 | 84 | 110.4 | 48.9 | 60.8 | 59.9 | 0.218 | 9.2 | wP : vP, vN |
| 17 | .. | 29.790 | 59.6 | 50.0 | 9.6 | 54.9 | − 2.2 | 54.0 | 53.1 | 1.8 | 4.9 | 0.0 | 94 | 78.3 | 43.0 | 60.8 | 60.2 | 0.487 | 0.0 | wP, wN : wP |
| 18 | Apogee | 29.865 | 64.4 | 48.5 | 15.9 | 54.4 | − 2.5 | 52.9 | 51.4 | 3.0 | 10.4 | 0.0 | 90 | 101.8 | 41.2 | 60.8 | 59.7 | 0.000 | 0.2 | wP, wN |
| 19 | .. | 29.814 | 57.9 | 47.8 | 10.1 | 54.2 | − 2.6 | 53.5 | 52.8 | 1.4 | 4.9 | 0.0 | 95 | 74.6 | 39.8 | 60.4 | 59.7 | 0.141 | 5.8 | wP |
| 20 | .. | 29.896 | 67.4 | 45.0 | 22.4 | 55.9 | − 0.7 | 53.0 | 50.3 | 5.6 | 14.0 | 0.0 | 83 | 127.0 | 38.2 | 60.0 | 58.8 | 0.000 | 1.2 | wP |
| 21 | .. | 29.972 | 64.9 | 46.2 | 18.7 | 57.6 | + 1.2 | 54.3 | 51.3 | 6.3 | 15.7 | 0.4 | 80 | 108.4 | 38.5 | 60.3 | 58.8 | 0.014 | 0.8 | wP |
| 22 | .. | 30.121 | 70.2 | 42.8 | 27.4 | 56.1 | − 0.1 | 53.3 | 50.7 | 5.4 | 13.0 | 0.0 | 82 | 116.0 | 35.0 | 60.4 | 59.2 | 0.000 | 3.0 | vP |
| 23 | .. | 30.002 | 68.2 | 53.0 | 15.2 | 59.9 | + 3.8 | 57.7 | 55.8 | 4.1 | 8.8 | 0.9 | 87 | 107.3 | 48.6 | 59.9 | 59.7 | 0.060 | 0.0 | wP |
| 24 | In Equator: Full | 29.888 | 56.9 | 43.2 | 13.7 | 51.4 | − 4.5 | 47.8 | 44.1 | 7.3 | 12.7 | 0.8 | 77 | 89.8 | 34.0 | 60.0 | 59.3 | 0.103 | 0.0 | wP : vP |
| 25 | .. | 29.710 | 55.2 | 40.6 | 14.6 | 46.2 | − 9.6 | 43.7 | 40.8 | 5.4 | 10.2 | 1.1 | 83 | 109.2 | 32.1 | 59.3 | 56.8 | 0.014 | 0.0 | .. |
| 26 | .. | 29.714 | 54.9 | 35.8 | 19.1 | 44.6 | −11.1 | 41.2 | 37.3 | 7.3 | 15.8 | 1.9 | 75 | 104.9 | 28.0 | 59.3 | 58.2 | 0.000 | 0.0 | .. |
| 27 | .. | 29.738 | 51.7 | 30.6 | 21.1 | 41.7 | −13.8 | 40.3 | 38.6 | 3.1 | 9.7 | 0.0 | 89 | 85.5 | 22.3 | 55.1 | 54.8 | 0.009 | 0.0 | .. |
| 28 | .. | 29.800 | 54.1 | 37.3 | 16.8 | 45.7 | − 9.7 | 42.8 | 39.5 | 6.2 | 13.0 | 0.0 | 79 | 87.0 | 28.0 | 55.5 | 55.2 | 0.000 | 0.5 | .. |
| 29 | .. | 29.611 | 60.0 | 45.8 | 14.2 | 54.3 | − 0.9 | 53.3 | 52.3 | 2.0 | 5.5 | 0.0 | 93 | 78.3 | 35.2 | 55.7 | 55.3 | 0.287 | 1.5 | .. |
| 30 | Greatest Declination N. | 29.450 | 61.1 | 48.2 | 12.9 | 54.5 | − 0.4 | 53.1 | 51.7 | 2.8 | 7.6 | 0.0 | 90 | 97.1 | 40.6 | 55.1 | 54.8 | 0.074 | 3.8 | .. |
| Means | .. | 29.712 | 64.7 | 47.2 | 17.5 | 55.4 | − 2.1 | 52.8 | 50.3 | 5.1 | 12.3 | 0.5 | 83.3 | 107.7 | (29 days) 40.1 | 59.5 | 58.8 | Sum 3.732 | 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 29in·712, being 0in·075 *lower* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 76°·4 on September 15; the lowest in the month was 30°·6 on September 27; and the range was 45°·8.

The mean of all the highest daily readings in the month was 64°·7, being 2°·7 *lower* than the average for the 44 years, 1841–1884.

The mean of all the lowest daily readings in the month was 47°·2, being 2°·0 *lower* than the average for the 44 years, 1841–1884.

The mean of the daily ranges was 17°·5, being 0°·8 *less* than the average for the 44 years, 1841–1884.

The mean for the month was 55°·4, being 2°·1 *lower* than the average for the 20 years, 1849–1868.

| MONTH and DAY, 1885. | 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. | | |
| Sept. 1 | 4·2 | 13·5 | ENE | ESE | 1·5 | 0·0 | 0·05 | 210 | v : 9, ci.-cu, th.-cl | 7, ci.-cu, cu, cu.-s : 0 |
| 2 | 0·2 | 13·4 | E : SE : SSE | SSE : S | 2·5 | 0·0 | 0·19 | 204 | v : 10, oc.-r | 10, fq.-r : 10, oc.-r |
| 3 | 6·4 | 13·4 | SSW : SW | SW | 4·6 | 0·0 | 0·55 | 282 | 10, hy.-r : 10, r : p.-cl, cu | 5,ci.-cu,cu,cu.-s,slt.-r: 0 |
| 4 | 4·8 | 13·3 | S : SSE : SW | SW | 3·1 | 0·0 | 0·25 | 243 | 0 : p.-cl : 10, shs.-r | 8,cu,cu.-s,ci.-cu : v : 0 |
| 5 | 6·5 | 13·2 | SSW : WSW | SW | 6·0 | 0·0 | 0·67 | 330 | 0 : v, ci.-cu, cu, th.-cl | 6,ci.-cu,cu,cu.-s,sh.-r: v, cu, li.-cl |
| 6 | 4·7 | 13·2 | SW : WSW | WSW:SSW:SSE | 1·4 | 0·0 | 0·08 | 223 | v : p.-cl, cu | 7, cu, cu.-s : 3, s |
| 7 | 0·3 | 13·1 | SE : SSE : SW | SSE : WSW | 0·6 | 0·0 | 0·00 | 154 | v, sh.-r : p.-cl : 10, fq.-r, t | 10, fq.-r : 10, fq.-r |
| 8 | 2·9 | 13·0 | WSW : WNW | WSW : SSW | 5·3 | 0·0 | 0·67 | 303 | 10 : 10, glm : 9, m | 8,ci.-cu,cu,cu.-s,m: p.-cl : 10, fq.-r |
| 9 | 8·8 | 13·0 | WSW | W : WSW | 9·8 | 0·0 | 2·25 | 491 | v, hy.-r : li.-cl : 6, cu, cu.-s | 3,cu,cu.-s,ci.-cu,w: li.-sh : 0 |
| 10 | 2·4 | 12·9 | WSW | SSW : SE : E | 2·6 | 0·0 | 0·38 | 275 | 0 : 1, s : 6,th.-cl,slt.-r | 10, slt.-r : 10, fq.-r : 10, hy.-r |
| 11 | 2·0 | 12·9 | ENE : NNW | NNW:WNW:WSW | 17·5 | 0·0 | 2·55 | 463 | 10, hy.-r : 10, slt.-r : 10,sc,slt.-r,st.-w | 9, cu, cu.-s : v : 1, th.-cl |
| 12 | 0·0 | 12·8 | SW : SSW | SW | 17·8 | 0·0 | 3·17 | 490 | 10, th.-cl : 10, slt.-r : 10, fq.-r | 10, oc.-r, st.-w : 10, slt.-r, st.-w |
| 13 | 0·6 | 12·7 | WSW | WSW : SW | 7·0 | 0·0 | 1·21 | 357 | v, slt.-r : 10, li.-cl | 9, li.-cl, so.-ha : 1, li.-cl, hy.-d |
| 14 | 2·4 | 12·7 | S : SW | SW | 7·9 | 0·0 | 1·42 | 345 | 10 : 10 | 9, cu, cu.-s : v, th.-cl |
| 15 | 9·3 | 12·6 | SW : SSW | SW | 6·7 | 0·0 | 0·94 | 342 | v : 1, li.-cl | 2, li.-cl, ci.-cu : p.-cl : v, li.-cl |
| 16 | 1·5 | 12·6 | WSW : SW | SSW | 3·9 | 0·0 | 0·34 | 246 | 10, th.-r : 10 | 9,cu,cu.-s,li.-cl: 10, r : 10, oc.-r |
| 17 | 0·1 | 12·5 | SE : NE | NE | 1·4 | 0·0 | 0·13 | 207 | 10, fq.-r : 10, fq.-r | 10 : v, li.-cl : v, hy.-d, f |
| 18 | 1·5 | 12·4 | NNE | N : ENE : S | 0·1 | 0·0 | 0·00 | 130 | v, f : 10 | 6, cu, ci.-cu, h: 3, th.-cl : 0, h, d |
| 19 | 0·0 | 12·3 | S : SW | SW : WSW | 9·2 | 0·0 | 1·02 | 312 | p.-cl : 10, r | 10, slt.-r : v, cu, li.-cl |
| 20 | 8·8 | 12·3 | WSW | SW | 3·7 | 0·0 | 0·18 | 285 | 0 : 2, li.-cl | 4, ci.-cu : v, cu.-s, ci.-s |
| 21 | 5·3 | 12·2 | SW : NNW | N : SSW | 4·7 | 0·0 | 0·17 | 228 | 10 : 10,glm,slt.-r: v | 0 : 0, m, d, lu.-co |
| 22 | 9·6 | 12·2 | SSW : S | SW | 1·2 | 0·0 | 0·06 | 178 | 0 : 0, tk.-f : 1, cu | 2,ci.-cu,cu,li.-cl: 0 : 10, cu.-s |
| 23 | 0·3 | 12·1 | SW : WSW | WSW : NNW | 1·8 | 0·0 | 0·10 | 249 | 10 : 9, th.-cl, so.-ha | 10, slt.-r : 10, fq.-r |
| 24 | 2·0 | 12·0 | NNW : NW | NW : WNW | 4·8 | 0·0 | 0·36 | 308 | 10, r : v, li.-cl, so.-ha | 8, cu, cu.-s, ci, ci.-cu : 1, li.-cl, slt.-b, d |
| 25 | 1·5 | 11·9 | WSW : NW : N | N | 4·2 | 0·0 | 0·13 | 238 | p.-cl : 9, cu.-s, cu | 8, cu, cu.-s, n, r, sn, t: v, cu.-s, li.-cl |
| 26 | 6·6 | 11·9 | N | NNE : N | 1·4 | 0·0 | 0·10 | 195 | 1, li.-cl, d : 1,li.-cl,ci.-cu,cu.-s,m | 5, ci.-cu, cu, cu.-s : 3, li.-cl, m |
| 27 | 0·8 | 11·8 | WSW : NNE | NNE : N | 2·0 | 0·0 | 0·07 | 149 | p.-cl : 10, m, glm | v, slt.-sh : 0, hy.-d |
| 28 | 2·7 | 11·7 | NNW : WSW | NW : W : SW | 1·7 | 0·0 | 0·09 | 199 | hy.-d, f : 10, glm, f : v,f,li.-cl,cu | 8, cu, li.-cl : p.-cl, cu.-s |
| 29 | 0·0 | 11·7 | SSW : NW | Variable | 3·0 | 0·0 | 0·41 | 209 | 10, r : 10, c.-r : 10 | 10, sh.-r : 10, f : vv, f |
| 30 | 0·3 | 11·6 | SW | SW | 12·0 | 0·0 | 2·36 | 424 | 10 : 10, slt.-r | 10, sc, fq.-r : v, r : 0 |
| Means | 3·2 | 12·6 | ... | ... | .. | .. | 0·66 | 276 | | |
| Number of Column for Reference. | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |

The mean *Temperature of Evaporation* for the month was 52°·8, being 1°·5 *lower* than
The mean *Temperature of the Dew Point* for the month was 50°·3, being 1°·1 *lower* than
The mean *Degree of Humidity* for the month was 83·3, being 3·2 *greater* than
The mean *Elastic Force of Vapour* for the month was $0^{in}$·365, being $0^{in}$·014 *less* than
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was $4^{grs}$·1, being $0^{gr}$·1 *less* than
The mean *Weight of a Cubic Foot of Air* for the month was 533 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 6·8.

The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·25. The maximum daily amount of *Sunshine* was 9·6 hours on September 22.

The highest reading of the *Solar Radiation Thermometer* was 142°·4 on September 1; and the lowest reading of the *Terrestrial Radiation Thermometer* was 22°·3 on September 27.

The mean daily distribution of *Ozone* for the 12 hours ending $9^h$ was 1·9; for the 6 hours ending $15^h$ was 0·9; and for the 6 hours ending $21^h$ was 0·5.

The *Proportions of Wind* referred to the cardinal points were N. 5, E. 3, S. 11, and W. 11.

The *Greatest Pressure of the Wind* in the month was $17^{lbs}$·8 on the square foot on September 12. The mean daily *Horizontal Movement of the Air* for the month was 276 miles; the greatest daily value was 491 miles on September 9; and the least daily value was 130 miles on September 18.

*Rain* fell on 21 days in the month, amounting to $3^{in}$·732, as measured by gauge No. 6 partly sunk below the ground; being $1^{in}$·407 *greater* than the average fall for the 44 years, 1841–1884.

| MONTH and DAY, 1885. | Phases of the Moon. | Barometer. Mean of 24 Hourly Values (corrected and reduced to 32° Fahrenheit). | Temperature of the Air. Highest. | Temperature of the Air. Lowest. | Temperature of the Air. Daily Range. | Temperature of the Air. Mean of 24 Hourly Values. | Temperature of the Air. Excess above Average of 20 Years. | Temperature of Evaporation. Mean of 24 Hourly Values. | Temperature of the Dew Point. Deduced Mean Daily Value. | Difference between the Air Temperature and Dew Point Temperature. Mean. | Difference. Greatest. | Difference. Least. | Degree of Humidity (Saturation = 100). | Temperature of Radiation. Highest in Sun's Rays. | Temperature of Radiation. Lowest on the Grass. | Temperature of the Water of the Thames at Deptford. Highest. | Temperature of the Water of the Thames at Deptford. Lowest. | Rain collected in Gauge No. 6, whose receiving surface is 5 inches above the Ground. | Daily Amount of Ozone. | Electricity. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | in. | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | | ° | ° | ° | ° | in. | | |
| Oct. 1 | Last Qr. | 29.503 | 58.3 | 44.5 | 13.8 | 49.9 | − 4.8 | 46.7 | 43.3 | 6.6 | 13.0 | 2.3 | 79 | 105.7 | 35.8 | 55.9 | 55.3 | 0.100 | 5.5 | .. |
| 2 | .. | 29.758 | 59.8 | 44.6 | 15.2 | 52.5 | − 1.9 | 49.7 | 46.9 | 5.6 | 9.1 | 2.7 | 82 | 94.9 | 37.0 | 55.7 | 54.8 | 0.010 | 7.2 | .. |
| 3 | Perigee | 29.693 | 59.3 | 44.0 | 15.3 | 52.8 | − 1.2 | 48.8 | 44.8 | 8.0 | 14.6 | 1.0 | 75 | 105.3 | 34.0 | 55.7 | 55.2 | 0.036 | 1.5 | .. |
| 4 | .. | 29.703 | 59.9 | 39.2 | 20.7 | 49.2 | − 4.5 | 46.6 | 43.8 | 5.4 | 13.5 | 1.3 | 82 | 105.6 | 29.6 | 54.2 | 53.3 | 0.007 | 4.5 | .. |
| 5 | .. | 29.485 | 52.9 | 43.0 | 9.9 | 48.9 | − 4.5 | 46.3 | 43.5 | 5.4 | 9.8 | 2.0 | 82 | 67.4 | 37.0 | 54.7 | 53.8 | 0.067 | 4.5 | .. |
| 6 | .. | 29.478 | 55.5 | 39.6 | 15.9 | 48.7 | − 4.3 | 46.7 | 44.6 | 4.1 | 11.6 | 0.8 | 86 | 98.1 | 32.1 | 54.3 | 53.3 | 0.288 | 2.0 | .. |
| 7 | In Equator | 29.580 | 54.5 | 41.0 | 13.5 | 48.3 | − 4.4 | 45.2 | 41.8 | 6.5 | 13.4 | 2.2 | 79 | 89.1 | 34.0 | 54.1 | 52.8 | 0.122 | 0.0 | .. |
| 8 | New | 29.470 | 55.1 | 36.9 | 18.2 | 47.0 | − 5.5 | 44.9 | 42.6 | 4.4 | 9.6 | 1.1 | 85 | 77.1 | 29.7 | 52.2 | 50.8 | 0.138 | 0.0 | .. |
| 9 | .. | 29.182 | 53.3 | 43.1 | 10.2 | 47.3 | − 5.0 | 44.7 | 41.8 | 5.5 | 11.6 | 1.3 | 82 | 89.9 | 37.0 | 52.2 | 51.6 | 0.020 | 0.0 | .. |
| 10 | .. | 28.950 | 50.2 | 44.6 | 5.6 | 47.1 | − 5.0 | 45.5 | 43.7 | 3.4 | 8.6 | 0.8 | 89 | 60.1 | 41.2 | 51.7 | 51.0 | 0.444 | 0.2 | .. |
| 11 | .. | 29.350 | 49.8 | 36.2 | 13.6 | 45.3 | − 6.6 | 42.7 | 39.7 | 5.6 | 10.5 | 2.1 | 81 | 79.3 | 26.5 | 50.9 | 50.8 | 0.023 | 0.8 | .. |
| 12 | .. | 29.521 | 49.9 | 31.5 | 18.4 | 41.9 | − 9.8 | 39.7 | 37.0 | 4.9 | 9.7 | 0.0 | 84 | 74.2 | 22.2 | 51.7 | 49.0 | 0.000 | 0.0 | .. |
| 13 | .. | 29.646 | 47.1 | 37.9 | 9.2 | 43.1 | − 8.5 | 40.2 | 36.7 | 6.4 | 9.7 | 3.5 | 78 | 55.6 | 31.5 | 51.7 | 49.3 | 0.030 | 0.0 | .. |
| 14 | Greatest Declination S. | 29.627 | 48.2 | 40.5 | 7.7 | 43.8 | − 7.6 | 42.8 | 41.6 | 2.2 | 7.7 | 0.7 | 92 | 77.4 | 40.1 | 50.2 | 48.8 | 0.182 | 0.0 | .. |
| 15 | .. | 29.887 | 54.1 | 43.4 | 10.7 | 48.5 | − 2.8 | 45.8 | 42.9 | 5.6 | 14.8 | 0.2 | 81 | 103.2 | 38.1 | 49.8 | 48.8 | 0.010 | 0.0 | .. : vP |
| 16 | First Quarter : Apogee. | 29.873 | 59.4 | 42.9 | 16.5 | 51.6 | + 0.4 | 49.4 | 47.2 | 4.4 | 12.0 | 0.2 | 85 | 105.9 | 36.0 | 49.8 | 48.8 | 0.197 | 2.0 | vP, vN : sP |
| 17 | .. | 29.975 | 56.2 | 36.8 | 19.4 | 47.3 | − 3.8 | 46.3 | 45.2 | 2.1 | 6.8 | 0.0 | 93 | 78.1 | 29.7 | 49.8 | 49.6 | 0.000 | 0.0 | vP |
| 18 | .. | 29.972 | 50.7 | 42.2 | 8.5 | 46.8 | − 4.2 | 45.9 | 44.9 | 1.9 | 3.6 | 0.2 | 94 | 57.0 | 37.0 | 50.2 | 49.8 | 0.000 | 0.0 | mP : vP : mP |
| 19 | .. | 29.891 | 52.0 | 41.2 | 10.8 | 45.0 | − 5.8 | 43.3 | 41.3 | 3.7 | 9.7 | 0.2 | 87 | 104.7 | 34.9 | 50.1 | 49.8 | 0.009 | 0.0 | vP : sP, vN |
| 20 | .. | 29.781 | 50.2 | 39.3 | 10.9 | 44.1 | − 6.5 | 41.4 | 38.2 | 5.9 | 10.1 | 2.9 | 79 | 89.1 | 33.9 | 50.5 | 49.8 | 0.000 | 0.0 | sP : vP |
| 21 | In Equator | 29.598 | 53.2 | 39.7 | 13.5 | 45.1 | − 5.3 | 43.2 | 41.0 | 4.1 | 11.2 | 1.7 | 86 | 87.6 | 35.1 | 49.9 | 48.8 | 0.016 | 1.0 | vP, wN : sP, vN |
| 22 | .. | 29.402 | 51.4 | 39.3 | 12.1 | 45.0 | − 5.1 | 43.4 | 41.5 | 3.5 | 7.0 | 0.9 | 88 | 79.8 | 32.4 | 49.8 | 48.8 | 0.000 | 0.0 | mP : sP |
| 23 | Full | 29.270 | 48.4 | 40.1 | 8.3 | 46.0 | − 3.7 | 45.2 | 44.3 | 1.7 | 2.7 | 0.2 | 94 | 54.2 | 32.4 | 49.8 | 48.6 | 0.550 | 0.0 | vP, vN |
| 24 | .. | 29.106 | 47.6 | 43.7 | 3.9 | 45.2 | − 4.2 | 44.1 | 42.8 | 2.4 | 5.5 | 0.4 | 91 | 57.0 | 40.0 | 49.4 | 48.4 | 0.362 | 0.0 | vP, vN |
| 25 | .. | 29.434 | 49.6 | 36.8 | 12.8 | 42.7 | − 6.4 | 40.4 | 37.7 | 5.0 | 9.0 | 1.0 | 83 | 69.3 | 29.8 | 47.6 | 47.6 | 0.000 | 1.5 | sP |
| 26 | .. | 29.059 | 57.1 | 43.0 | 14.1 | 50.1 | + 1.3 | 48.3 | 46.4 | 3.7 | 9.0 | 0.8 | 87 | 77.0 | 31.9 | 48.4 | 47.5 | 0.199 | 9.5 | mP : vP, vN : sP |
| 27 | .. | 29.194 | 49.9 | 39.0 | 10.9 | 45.9 | − 2.6 | 43.1 | 39.9 | 6.0 | 11.3 | 2.9 | 80 | 80.2 | 32.0 | 48.2 | 47.9 | 0.000 | 0.0 | vP : sP |
| 28 | Greatest Dec. N. : Perigee. | 29.331 | 48.6 | 37.4 | 11.2 | 43.2 | − 5.0 | 40.8 | 37.9 | 5.3 | 8.8 | 3.0 | 81 | 80.0 | 30.2 | 47.8 | 45.9 | 0.005 | 0.0 | vP : vP, vN |
| 29 | .. | 29.622 | 50.4 | 39.8 | 10.6 | 44.6 | − 3.3 | 42.2 | 39.4 | 5.2 | 9.9 | 2.1 | 82 | 81.3 | 32.0 | 47.6 | 46.9 | 0.002 | 0.0 | vP : sP, sN |
| 30 | Last Qr. | 29.751 | 46.9 | 32.3 | 14.6 | 41.3 | − 6.3 | 39.8 | 37.9 | 3.4 | 10.3 | 0.3 | 88 | 64.0 | 25.4 | 47.4 | 45.9 | 0.012 | 0.2 | ssP : vP, vN |
| 31 | .. | 29.243 | 46.4 | 40.4 | 6.0 | 44.0 | − 3.3 | 43.3 | 42.5 | 1.5 | 3.5 | 0.4 | 94 | 57.2 | 39.0 | 47.0 | 46.3 | 0.581 | 0.8 | vP, vN |
| Means | .. | 29.527 | 52.4 | 40.1 | 12.3 | 46.5 | − 4.5 | 44.4 | 42.0 | 4.5 | 9.6 | 1.3 | 84.8 | 80.8 | 33.5 | 50.9 | 50.0 | Sum 3.410 | 1.3 | .. |
| 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 29in·527, being 0in·193 *lower* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 59°·9 on October 4; the lowest in the month was 31°·5 on October 12; and the range was 28°·4.
The mean of all the highest daily readings in the month was 52°·4, being 5°·6 *lower* than the average for the 44 years, 1841–1884.
The mean of all the lowest daily readings in the month was 40°·1, being 3°·4 *lower* than the average for the 44 years, 1841–1884.
The mean of the daily ranges was 12°·3, being 2°·2 *less* than the average for the 44 years, 1841–1884.
The mean for the month was 46°·5, being 4°·5 *lower* than the average for the 20 years, 1849–1868.

| MONTH and DAY, 1885. | 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. | | |
| Oct. 1 | 5·3 | 11·6 | SW: WSW | WSW | 5·4 | 0·0 | 0·90 | 411 | v,sq,hy.-r : li.-cl,sh.-r: 3, li.-cl | 7,cu,cu.-s,ci.-cu,slt.-shs : 0, hy.-d, l |
| 2 | 0·1 | 11·5 | WSW: SW | SW | 10·2 | 0·0 | 1·69 | 473 | th.-cl,hy.-d: 10 : 10 | 10 : 10, slt.-r, st.-w |
| 3 | 7·4 | 11·4 | SW: WNW | WNW: WSW | 7·3 | 0·0 | 1·21 | 359 | 10, r, w : li.-cl : 1,ci.-cu,li.-cl | 4,ci.-cu,cu,cu.-s: v : 0, hy.-d |
| 4 | 2·9 | 11·4 | SW | WSW: SW | 5·8 | 0·0 | 0·24 | 291 | p.-cl, d : p.-cl, ci | 7, ci, cu, slt.-r : v, sh.-r |
| 5 | 0·0 | 11·3 | SW: WSW | WSW | 13·5 | 0·0 | 0·73 | 450 | 10, w : 10, sh.-r | 10, sh.-r : v : 0, d |
| 6 | 2·8 | 11·2 | WSW | SW: SSW | 15·0 | 0·0 | 0·85 | 454 | p.-cl : 5, li.-cl | 10, fq.-r, w : 10, oc.-r, st.-w |
| 7 | 6·4 | 11·2 | NW | NW: SW | 10·2 | 0·0 | 0·63 | 364 | 10, sh.-r, w : 1, li.-cl | 4, ci.-cu, cu.-s, cu : 0, f |
| 8 | 0·0 | 11·1 | SW: SSW | SW: WSW | 9·8 | 0·0 | 0·67 | 400 | 0 : p.-cl : 10, r | 9, cu.-s,fq.-r: v : 10, oc.-r |
| 9 | 2·3 | 11·0 | WSW: W: WNW | WNW: SW | 2·8 | 0·0 | 0·21 | 325 | 10, sh.-r : 8,cu.-s,li.-cl,slt.-sh | 8, cu, cu.-s : v |
| 10 | 0·0 | 11·0 | SW: SE: NE | N | 8·5 | 0·0 | 1·38 | 398 | v : 10, hy.-r : 10, c.-r | 10, w : 10 |
| 11 | 0·1 | 10·9 | N | N: NNW | 13·0 | 0·0 | 1·72 | 420 | 10, slt.-r : 10, s, w | v, w : 0, slt.-m |
| 12 | 0·2 | 10·9 | WNW: W: N | N: NNW | 7·9 | 0·0 | 0·92 | 315 | p.-cl, ho.-fr : 5, li.-cl, slt.-f | 9, ci, ci.-cu, w : 9, li.-cl |
| 13 | 0·0 | 10·8 | NNW | NNW: WNW | 6·7 | 0·0 | 1·68 | 464 | v : 10 | 10, oc.-slt.-r : 10, oc.-slt.-r |
| 14 | 0·1 | 10·7 | NW: W | WSW: SW | 4·3 | 0·0 | 0·65 | 324 | 10, r : 10, c.-r : 10, slt.-r | 10, r : 10, fq.-th.-r |
| 15 | 6·7 | 10·7 | SE: ESE | ENE: NE | 5·1 | 0·0 | 0·77 | 321 | v : 1, li.-cl | 4,cu.-s,ci.-cu,ci.-s,th.-cl: 10, th.-r |
| 16 | 6·7 | 10·6 | ENE: ESE: SSE | SE: ESE | 3·9 | 0·0 | 0·41 | 245 | 10, hy.-r : 2, ci.-cu, li.-cl | 1, li.-cl :1,li.-cl,lu.-ha,lu.-co,hy.-d,f |
| 17 | 0·1 | 10·5 | Variable | WSW: NNW | 0·0 | 0·0 | 0·00 | 76 | tk.-f : 10, tk.-f | 10, slt.-f : 10, f |
| 18 | 0·0 | 10·5 | WSW: NNE | NNE: NE | 0·2 | 0·0 | 0·01 | 137 | 10, f : 10, f | 10, slt.-f, slt.-r : 10, li.-cl |
| 19 | 3·4 | 10·4 | NE | NNE | 1·8 | 0·0 | 0·28 | 255 | p.-cl : 7,ci.-cu,cu.-s,li.-cl | 9, cu.-s : 10, oc.-slt.-r : 10, oc.-th.-r |
| 20 | 1·6 | 10·3 | N | NNE | 1·4 | 0·0 | 0·16 | 207 | 10 : 10 | 9, cu, cu.-s : 10 : 10 |
| 21 | 0·1 | 10·3 | SW: S: SE | S: ESE | 0·4 | 0·0 | 0·00 | 125 | 10 : 10 | 10, cu.-s, slt.-r : 10 |
| 22 | 0·5 | 10·2 | E: ENE | E: ESE | 0·4 | 0·0 | 0·00 | 169 | 10 : 9, cu.-s, li.-cl | 10 : 10 |
| 23 | 0·0 | 10·2 | ESE | ESE: SE | 3·6 | 0·0 | .. | 207 | 10 : 10, r | 10, c.-r : 10, fq.-r, f |
| 24 | 0·0 | 10·1 | SW: W: WNW | W: WNW | 5·8 | 0·0 | .. | 381 | 10, hy.-r : 10, glm, r | 10 : 10, oc.-shs |
| 25 | 3·6 | 10·0 | WNW: W | WSW: SW: S | 0·9 | 0·0 | .. | 285 | p.-cl : 1, li.-cl, slt.-f | 3, li.-cl, s, h, m : v, li.-cl |
| 26 | 0·1 | 10·0 | SW: WSW | W: WNW | 7·5 | 0·0 | .. | 484 | v : 10, r, w | 9, cu.-s, r : v : 10 |
| 27 | 3·6 | 9·9 | W: WNW | WNW: W: WSW | 12·0 | 0·0 | .. | 480 | v : 5,cu.-s,ci.-cu,li.-cl,w | 7,cu,cu.-s,li.-cl,w: 0 : 1, li.-cl |
| 28 | 3·8 | 9·8 | WSW: NW | WNW | 7·1 | 0·0 | .. | 525 | 0 : v, m, h | 9, ci.-cu, cu.-s : v, cu.-s, li.-cl, sh.-r |
| 29 | 2·2 | 9·8 | NW: N | N | 3·0 | 0·0 | .. | 349 | 10 : 9, cu.-s | 9, ci.-cu, cu.-s, slt.-r: v |
| 30 | 0·0 | 9·7 | Calm: Variable | SE: ESE | 0·5 | 0·0 | .. | 156 | v, li.-cl : v, li.-cl, so.-ha | 9 : 10, oc.-th.-r |
| 31 | 0·0 | 9·7 | ESE: E | N | 11·3 | 0·0 | .. | 320 | 10, m.-r : 10, hy.-r | 10, fq.-slt.-r, gt.-glm: 10, oc.-r, w |
| Means | 1·9 | 10·6 | ... | ... | .. | .. | (22days) 0·69 | 328 | | |
| Number of Column for Reference. | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |

The mean *Temperature of Evaporation* for the month was 44°·4, being 4°·5 *lower* than
The mean *Temperature of the Dew Point* for the month was 42°·0, being 4°·8 *lower* than
The mean *Degree of Humidity* for the month was 84·8, being 1·3 *less* than
The mean *Elastic Force of Vapour* for the month was 0in·267, being 0in·054 *less* than
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was 3grs·1, being 0gr·5 *less* than
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 7·7.

The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·18. The maximum daily amount of *Sunshine* was 7·4 hours on October 3.

The highest reading of the *Solar Radiation Thermometer* was 105°·9 on October 16; and the lowest reading of the *Terrestrial Radiation Thermometer* was 22°·2 on October 12.

The mean daily distribution of *Ozone* for the 12 hours ending 9h was 0·8; for the 6 hours ending 15h was 0·2; and for the 6 hours ending 21h was 0·3.

The *Proportions of Wind* referred to the cardinal points were N. 8, E. 5, S. 6, and W. 11. One day was calm.

The *Greatest Pressure of the Wind* in the month was 15lbs·0 on the square foot on October 6. The mean daily *Horizontal Movement of the Air* for the month was 328 miles; the greatest daily value was 525 miles on October 28; and the least daily value was 76 miles on October 17.

*Rain* fell on 23 days in the month, amounting to 3in·410, as measured by gauge No. 6 partly sunk below the ground; being 0in·494 *greater* than the average fall for the 44 years, 1841–1884.

| MONTH and DAY, 1885. | Phases of the Moon. | BAROMETER. Mean of 24 Hourly Values (corrected and reduced to 32° Fahrenheit). | TEMPERATURE. Of the Air. Highest. | Of the Air. Lowest. | Of the Air. Daily Range. | Of the Air. Mean of 24 Hourly Values. | Of the Air. Excess above Average of 20 Years. | Of Evaporation. Mean of 24 Hourly Values. | Of the Dew Point. Deduced Mean Daily Value. | Difference between the Air Temperature and Dew Point Temperature. Mean. | Greatest. | Least. | Degree of Humidity (Saturation = 100). | TEMPERATURE. Of Radiation. Highest in Sun's Rays. | Of Radiation. Lowest on the Grass. | Of the Water of the Thames at Deptford. Highest. | Of the Water of the Thames at Deptford. Lowest. | Rain collected in Gauge No. 6, whose receiving surface is 5 inches above the Ground. | Daily Amount of Ozone. | Electricity. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | in. | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | | ° | ° | ° | ° | in. | | |
| Nov. 1 | .. | 29·704 | 50·1 | 35·5 | 14·6 | 42·8 | − 4·2 | 40·9 | 38·7 | 4·1 | 9·7 | 1·9 | 85 | 92·0 | 26·9 | 46·8 | 46·1 | 0·006 | 0·0 | vP : sP |
| 2 | .. | 29·948 | 55·8 | 37·0 | 18·8 | 47·2 | + 0·5 | 45·3 | 43·2 | 4·0 | 7·6 | 1·5 | 87 | 94·3 | 27·3 | 46·8 | 46·4 | 0·000 | 0·0 | sP : vP |
| 3 | In Equator | 29·868 | 52·4 | 45·3 | 7·1 | 49·6 | + 3·2 | 48·6 | 47·6 | 2·0 | 3·4 | 0·6 | 93 | 62·5 | 37·8 | 46·4 | 45·9 | 0·091 | 3·0 | vP : wP : vP |
| 4 | .. | 29·696 | 52·9 | 38·5 | 14·4 | 47·2 | + 1·2 | 46·5 | 45·7 | 1·5 | 3·7 | 0·0 | 95 | 57·8 | 31·5 | 46·6 | 45·9 | 0·350 | 0·2 | vP, wN : vP, ssN |
| 5 | .. | 29·554 | 47·5 | 38·7 | 8·8 | 42·9 | − 2·7 | 41·0 | 38·7 | 4·2 | 7·3 | 2·1 | 85 | 65·0 | 30·5 | 46·8 | 46·4 | 0·023 | 0·8 | vP : sP, vN |
| 6 | New | 30·015 | 46·1 | 31·6 | 14·5 | 40·7 | − 4·5 | 38·7 | 36·2 | 4·5 | 9·9 | 0·8 | 84 | 56·2 | 23·3 | 46·3 | 45·7 | 0·000 | 2·0 | sP |
| 7 | .. | 30·160 | 52·0 | 36·0 | 16·0 | 45·0 | + 0·3 | 43·1 | 40·9 | 4·1 | 8·0 | 0·0 | 86 | 62·0 | 26·5 | 45·8 | 45·1 | 0·000 | 0·0 | sP |
| 8 | .. | 30·152 | 45·5 | 30·1 | 15·4 | 40·4 | − 3·9 | 40·0 | 39·5 | 0·9 | 2·9 | 0·0 | 97 | 51·5 | 23·8 | 44·9 | 44·9 | 0·000 | 0·0 | sP : vP |
| 9 | .. | 30·111 | 45·4 | 42·8 | 2·6 | 44·0 | + 0·2 | 43·1 | 42·0 | 2·0 | 3·1 | 0·0 | 93 | 47·3 | 42·0 | 45·2 | 44·9 | 0·020 | 0·0 | vP |
| 10 | Greatest Declination S. | 30·117 | 47·0 | 42·8 | 4·2 | 44·7 | + 1·3 | 44·6 | 44·5 | 0·2 | 1·3 | 0·0 | 99 | 49·1 | 42·0 | 45·0 | 44·7 | 0·089 | 0·0 | vP |
| 11 | .. | 30·090 | 44·2 | 41·1 | 3·1 | 43·0 | 0·0 | 42·8 | 42·6 | 0·4 | 1·8 | 0·0 | 98 | 47·2 | 41·1 | 45·6 | 44·9 | 0·041 | 0·0 | vP : sP |
| 12 | .. | 30·012 | 43·2 | 41·1 | 2·1 | 42·2 | − 0·4 | 41·4 | 40·4 | 1·8 | 3·3 | 1·1 | 94 | 45·0 | 40·8 | 44·9 | 44·9 | 0·000 | 0·0 | vP : mP : sP |
| 13 | Apogee | 29·813 | 49·7 | 41·1 | 8·6 | 44·8 | + 2·5 | 44·0 | 43·0 | 1·8 | 3·6 | 0·0 | 94 | 57·0 | 40·7 | 44·9 | 44·5 | 0·000 | 0·2 | vP : mP |
| 14 | First Qr. | 29·560 | 47·5 | 39·6 | 7·9 | 44·5 | + 2·5 | 43·8 | 43·0 | 1·5 | 3·5 | 0·2 | 95 | 52·0 | 35·5 | 44·9 | 44·9 | 0·137 | 0·8 | mP : vP, vN |
| 15 | .. | 29·907 | 42·1 | 30·3 | 11·8 | 37·2 | − 4·6 | 35·8 | 33·9 | 3·3 | 8·4 | 1·3 | 88 | 79·8 | 24·5 | 44·9 | 44·9 | 0·000 | 0·0 | sP : ssP |
| 16 | .. | 30·197 | 43·4 | 28·1 | 15·3 | 36·2 | − 5·4 | 33·8 | 30·3 | 5·9 | 13·9 | 0·8 | 79 | 79·1 | 19·5 | 44·9 | 44·4 | 0·005 | 0·0 | sP : ssP |
| 17 | .. | 30·070 | 42·0 | 29·7 | 12·3 | 35·7 | − 5·8 | 33·2 | 29·4 | 6·3 | 10·8 | 3·1 | 77 | 72·6 | 22·8 | 44·9 | 43·9 | 0·000 | 0·0 | sP |
| 18 | In Equator | 29·776 | 41·5 | 30·8 | 10·7 | 35·2 | − 6·3 | 33·6 | 31·1 | 4·1 | 6·9 | 0·5 | 84 | 73·3 | 26·2 | 43·4 | 42·9 | 0·000 | 0·0 | sP |
| 19 | .. | 29·755 | 46·0 | 31·8 | 14·2 | 40·6 | − 0·8 | 38·7 | 36·3 | 4·3 | 7·5 | 0·5 | 85 | 57·0 | 27·1 | 42·4 | 41·4 | 0·000 | 0·2 | sP : mP |
| 20 | .. | 29·727 | 44·8 | 39·2 | 5·6 | 42·4 | + 1·1 | 40·4 | 38·0 | 4·4 | 7·3 | 3·1 | 85 | 53·7 | 36·0 | 42·3 | 40·9 | 0·005 | 0·8 | vP : ssP, mN |
| 21 | .. | 29·467 | 43·6 | 33·9 | 9·7 | 39·6 | − 1·6 | 38·5 | 37·1 | 2·5 | 4·8 | 0·2 | 91 | 72·5 | 29·8 | 42·3 | 40·9 | 0·001 | 0·0 | ssP |
| 22 | Full | 29·301 | 48·0 | 39·1 | 8·9 | 42·1 | + 1·0 | 41·5 | 40·8 | 1·3 | 3·4 | 0·0 | 95 | 64·3 | 36·5 | 41·9 | 40·9 | 0·001 | 0·0 | wP : vP : wP |
| 23 | .. | 29·314 | 43·0 | 38·4 | 4·6 | 40·2 | − 0·8 | 39·0 | 37·5 | 2·7 | 5·3 | 0·7 | 90 | 52·0 | 30·0 | 41·9 | 40·9 | 0·000 | 0·0 | wP : vP : sP |
| 24 | Greatest Dec. N: Perigee. | 29·292 | 43·3 | 38·6 | 4·7 | 40·3 | − 0·7 | 40·1 | 39·9 | 0·4 | 1·4 | 0·0 | 98 | 54·8 | 35·1 | 41·4 | 41·4 | 0·391 | 0·0 | vP, vN |
| 25 | .. | 29·186 | 48·1 | 39·6 | 8·5 | 45·3 | + 4·4 | 45·2 | 45·1 | 0·2 | 1·0 | 0·0 | 99 | 57·0 | 33·9 | 40·9 | 40·9 | 0·251 | 0·0 | vP, vN |
| 26 | .. | 29·187 | 53·4 | 45·2 | 8·2 | 48·0 | + 7·2 | 47·7 | 47·4 | 0·6 | 3·0 | 0·0 | 98 | 53·4 | 44·1 | .. | .. | 0·529 | 2·8 | mP : vP, vN |
| 27 | .. | 29·303 | 52·2 | 46·3 | 5·9 | 50·3 | + 9·5 | 47·3 | 44·1 | 6·2 | 10·6 | 2·2 | 80 | 76·2 | 44·0 | .. | .. | 0·100 | 7·2 | vP, vN : sP |
| 28 | .. | 29·265 | 57·1 | 41·8 | 15·3 | 51·1 | +10·2 | 49·5 | 47·9 | 3·2 | 8·0 | 1·6 | 89 | 63·7 | 36·0 | .. | .. | 0·165 | 7·0 | wP, wN : vP |
| 29 | Last Qr. | 29·512 | 57·1 | 38·7 | 18·4 | 49·5 | + 8·5 | 48·7 | 47·9 | 1·6 | 2·9 | 0·4 | 94 | 60·0 | 33·4 | .. | .. | 0·281 | 0·7 | vP, wN : wP |
| 30 | In Equator | 29·607 | 58·2 | 42·5 | 15·7 | 53·0 | +11·8 | 51·8 | 50·6 | 2·4 | 4·0 | 0·2 | 92 | 63·6 | 37·5 | 47·8 | 47·8 | 0·341 | 2·3 | wP : vP |
| Means | .. | 29·722 | 48·1 | 37·8 | 10·3 | 43·5 | + 0·8 | 42·3 | 40·8 | 2·7 | 5·6 | 0·8 | 90·3 | 62·4 | 32·9 | (26 days) 44·6 | (26 days) 44·1 | Sum 2·827 | 0·9 | .. |
| 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 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·722, being 0in·049 *lower* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 58°·2 on November 30; the lowest in the month was 28°·1 on November 16; and the range was 30°·1.
The mean of all the highest daily readings in the month was 48°·1, being 0°·7 *lower* than the average for the 44 years, 1841–1884.
The mean of all the lowest daily readings in the month was 37°·8, being 0°·4 *higher* than the average for the 44 years, 1841–1884.
The mean of the daily ranges was 10°·3, being 1°·1 *less* than the average for the 44 years, 1841–1884.
The mean for the month was 43°·5, being 0°·8 *higher* than the average for the 20 years, 1849–1868.

| MONTH and DAY, 1885. | Daily Duration of Sunshine. | Sun above Horizon. | Wind as deduced from Self-registering Anemometers. Osler's. General Direction. A.M. | General Direction. 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. | Clouds and Weather. P.M. |
|---|---|---|---|---|---|---|---|---|---|---|
| | hours. | hours. | | | lbs. | lbs. | lbs. | miles. | | |
| Nov. 1 | 4·5 | 9·6 | NNE | N : WSW | 9·3 | 0·0 | .. | 355 | 10, m.-r, w : 1, li.-cl | 6, cu.-s, cu, slt.-f : v, slt.-f, ho.-fr |
| 2 | 2·4 | 9·5 | WSW | WSW | 0·3 | 0·0 | .. | 204 | 10 : 10, m : v | 6, li.-cl : v, li.-cl |
| 3 | 0·0 | 9·5 | SW | SW | 3·6 | 0·0 | .. | 375 | v, r : 10, r | 10 : 10, oc.-slt.-r |
| 4 | 0·0 | 9·4 | SSW : SW : N | N : WSW | 3·3 | 0·0 | 0·28 | 292 | 10 : 10, slt.-r : 10, c.-r, gt.-glm | 10, c-r : v, h : 0 |
| 5 | 0·2 | 9·4 | SW : WSW : SSW | NW | 5·5 | 0·0 | 1·00 | 407 | 0 : 0 : 9, ci.-cu | 9, li.-cl, cu.-s : v, d |
| 6 | 0·0 | 9·3 | NW : WSW | WSW : SSW | 0·8 | 0·0 | 0·07 | 192 | 0, ho.-fr : 10, slt.-f | 7, li.-cl, h, slt.-f : 10 |
| 7 | 0·0 | 9·2 | SSW : SSE | SSE : ESE | 0·0 | 0·0 | 0·00 | 101 | 10 : 10, slt.-f | 10 : v : 0, tk.-f, ho.-fr |
| 8 | 0·0 | 9·2 | ENE | NE : ENE | 0·1 | 0·0 | 0·00 | 137 | tk.-f : 10, slt.-f | 10, fq.-m.-r, slt.-f : 10, oc.-m.-r, slt.-f |
| 9 | 0·0 | 9·1 | NE | ENE | 0·5 | 0·0 | 0·02 | 185 | 10 : 10, th.-r | 10, fq.-m.-r : 10, fq.-m.-r |
| 10 | 0·0 | 9·1 | NE : ENE | ENE : E | 1·0 | 0·0 | 0·04 | 190 | 10, m.-r : 10, m.-r | 10 : 10, slt.-r |
| 11 | 0·0 | 9·0 | E : NE | NE : E | 0·8 | 0·0 | 0·00 | 158 | 10 : 10, fq.-th.-r | 10, fq.-th.-r : 10, oc.-th.-r |
| 12 | 0·0 | 9·0 | ESE : SSE | SSE : SSW | 0·0 | 0·0 | 0·00 | 71 | 10 : 10 | 10, oc.-m.-r, glm : 10 |
| 13 | 0·0 | 8·9 | WSW : SSW | SW | 0·3 | 0·0 | 0·02 | 159 | 10 : 10, oc.-m.-r | 10 : 10 |
| 14 | 0·0 | 8·9 | SW : WSW | WSW : NNE : NNW | 3·7 | 0·0 | 0·17 | 243 | 10 : slt.-r | 10, oc.-r : 10, oc.-r : v |
| 15 | 5·6 | 8·8 | NNE | NNE : ENE | 4·3 | 0·0 | 0·65 | 279 | 10 : p.-cl, cu.-s | 3, cu.-s : 0, ho.-fr |
| 16 | 5·8 | 8·8 | ENE : E : ESE | ESE | 3·3 | 0·0 | 0·47 | 257 | 0, ho.-fr : slt.-sh : 0 | 0 : 0 |
| 17 | 6·6 | 8·7 | ESE : E | E : ESE | 7·4 | 0·0 | 1·08 | 341 | 0, ho.-fr : 0, ho.-fr | 0 : 0 |
| 18 | 2·4 | 8·7 | ESE : E : ENE | ENE | 2·6 | 0·0 | 0·41 | 275 | 0, ho.-fr : 2, li.-cl, m, ho.-fr | 6, li.-cl, ci.-cu : v, ci.-cu, li.-cl, cu.-s, lu.-co, ho.-fr |
| 19 | 0·0 | 8·6 | NE : ENE | ENE : E | 4·4 | 0·0 | 0·75 | 353 | 10, fr : 10 | 10 : 10 |
| 20 | 0·0 | 8·6 | E : ESE | ESE | 4·4 | 0·0 | 0·60 | 327 | 10, : 10, slt.-r | 10 : 10, sh.-r |
| 21 | 2·8 | 8·5 | ESE | ESE : E | 1·4 | 0·0 | 0·17 | 219 | v, li.-cl : 0, ho.-fr | v, cu.-s : 10, slt.-shs |
| 22 | 0·0 | 8·5 | E : ENE | ENE | 1·4 | 0·0 | 0·18 | 240 | p.-cl : 10, slt.-r | 10, oc.-slt.-r : 10 |
| 23 | 0·0 | 8·4 | NE | NNE : ENE | 1·0 | 0·0 | 0·12 | 209 | 10 : 10 | 10 : 10, slt.-f |
| 24 | 0·0 | 8·4 | ESE | ESE | 1·1 | 0·0 | 0·05 | 203 | 10 : 10, hy.-r | 10, fq.-r : 10, oc.-r |
| 25 | 0·0 | 8·3 | ESE : E | E : ESE | 1·1 | 0·0 | 0·02 | 153 | 10, hy.-r : 10, tk.-f | 10, slt.-r : 10, fq.-r |
| 26 | 0·0 | 8·3 | ESE : SE | SE : SW | 5·3 | 0·0 | 0·61 | 315 | 10, fq.-r : 10 | 10, r : 10, fq.-r |
| 27 | 1·0 | 8·2 | SW : WSW | WSW : SW | 11·7 | 0·4 | 3·10 | 582 | 10, sh.-r, w : p.-cl, cu.-s, sh.-r, w | 9, cu.-s, ci.-cu, li.-cl, w : v, cu.-s, th.-r, w |
| 28 | 0·0 | 8·2 | SW | WSW : W | 14·7 | 0·0 | 4·00 | 692 | 10, th.-r, sc, st.-w : 10, sc, st.-w | 9 : p.-cl : 0 |
| 29 | 0·0 | 8·2 | SW : SE | SW | 9·5 | 0·0 | 1·00 | 445 | 0 : 10, hy.-r : 10, c.-hy.-r | 10, oc.-r : 10, r |
| 30 | 0·0 | 8·1 | WSW | N : NW | 10·3 | 0·0 | 1·39 | 468 | 10, w : 10, sc, w | 10, glm, fq.-r : 0, d, m |
| Means | 1·0 | 8·8 | ... | ... | .. | .. | (27dys.) 0·60 | 281 | | |
| 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°·3, being 1°·1 *higher* than the average for the 20 years, 1849–1868.
The mean *Temperature of the Dew Point* for the month was 40°·8, being 1°·5 *higher* than the average for the 20 years, 1849–1868.
The mean *Degree of Humidity* for the month was 90·3, being 3·0 *greater* than the average for the 20 years, 1849–1868.
The mean *Elastic Force of Vapour* for the month was $0^{in}·255$, being $0^{in}·015$ *greater* than the average for the 20 years, 1849–1868.
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 average for the 20 years, 1849–1868.
The mean *Weight of a Cubic Foot of Air* for the month was 547 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 7·7.

The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·11. The maximum daily amount of *Sunshine* was 6·6 hours on November 17.

The highest reading of the *Solar Radiation Thermometer* was 94°·3 on November 2; and the lowest reading of the *Terrestrial Radiation Thermometer* was 19°·5 on November 16.

The mean daily distribution of *Ozone* for the 12 hours ending $9^h$ was 0·7; for the 6 hours ending $15^h$ was 0·1; and for the 6 hours ending $21^h$ was 0·1.

The *Proportions of Wind* referred to the cardinal points were N. 5, E. 12, S. 7, and W. 6.

The *Greatest Pressure of the Wind* in the month was $14^{lbs}·7$ on the square foot on November 28. The mean daily *Horizontal Movement of the Air* for the month was 281 miles; the greatest daily value was 692 miles on November 28; and the least daily value was 71 miles on November 12.

*Rain* fell on 17 days in the month, amounting to $2^{in}·827$, as measured by gauge No. 6 partly sunk below the ground; being $0^{in}·612$ *greater* than the average fall for the 44 years, 1841–1884.

| MONTH and DAY, 1885. | Phases of the Moon. | BAROMETER. Mean of 24 Hourly Values (corrected and reduced to 32° Fahrenheit). | TEMPERATURE. Of the Air. Highest. | Of the Air. Lowest. | Of the Air. Daily Range. | Of the Air. Mean of 24 Hourly Values. | Of the Air. Excess above Average of 20 Years. | Of Evaporation. Mean of 24 Hourly Values. | Of the Dew Point. Deduced Mean Daily Value. | Difference between the Air Temperature and Dew Point Temperature. Mean. | Greatest. | Least. | Degree of Humidity (Saturation = 100). | TEMPERATURE. Of Radiation. Highest in Sun's Rays. | Of Radiation. Lowest on the Grass. | Of the Water of the Thames at Deptford. Highest. | Of the Water of the Thames at Deptford. Lowest. | Rain collected in Gauge No. 6, whose receiving surface is 5 inches above the Ground. | Daily Amount of Ozone. | Electricity. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | in. | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | | ° | ° | ° | ° | in. | | |
| Dec. 1 | .. | 30·021 | 47·8 | 37·5 | 10·3 | 42·8 | + 1·3 | 41·2 | 39·3 | 3·5 | 7·6 | 0·9 | 87 | 59·8 | 31·0 | 48·7 | 48·3 | 0·000 | 0·0 | mP : vP |
| 2 | .. | 30·071 | 46·6 | 33·5 | 13·1 | 40·5 | − 1·3 | 39·1 | 37·3 | 3·2 | 5·9 | 1·0 | 89 | 68·3 | 29·4 | 48·1 | 47·8 | 0·000 | 0·0 | sP |
| 3 | .. | 29·850 | 50·0 | 43·5 | 6·5 | 47·2 | + 5·1 | 45·9 | 44·5 | 2·7 | 4·4 | 0·6 | 91 | 55·9 | 38·0 | 47·4 | 46·4 | 0·102 | 4·0 | vP |
| 4 | .. | 29·535 | 49·6 | 37·7 | 11·9 | 45·0 | + 2·6 | 42·4 | 39·4 | 5·6 | 11·3 | 2·1 | 81 | 63·0 | 33·5 | 46·3 | 44·9 | 0·115 | 6·0 | vP, vN |
| 5 | .. | 29·500 | 41·9 | 34·7 | 7·2 | 38·4 | − 4·2 | 36·7 | 34·4 | 4·0 | 5·5 | 0·5 | 86 | 48·5 | 30·5 | 45·2 | 44·7 | 0·305 | 0·0 | mP : vP, vN |
| 6 | New | 29·328 | 40·5 | 34·8 | 5·7 | 38·0 | − 4·7 | 37·2 | 36·1 | 1·9 | 4·4 | 0·7 | 93 | 49·1 | 31·2 | 43·8 | 42·9 | 0·007 | 0·0 | vP : sP |
| 7 | Greatest Declination S. | 29·666 | 39·6 | 33·2 | 6·4 | 36·6 | − 6·2 | 34·7 | 32·0 | 4·6 | 7·2 | 1·2 | 84 | 45·1 | 28·9 | 43·3 | 41·4 | 0·040 | 0·2 | vP, vN : sP |
| 8 | .. | 29·920 | 34·8 | 27·0 | 7·8 | 31·6 | −11·2 | 30·5 | 27·9 | 3·7 | 7·0 | 0·0 | 85 | 48·1 | 23·0 | 41·4 | 39·7 | 0·000 | 1·8 | vP : ssP : sP |
| 9 | .. | 30·115 | 35·3 | 25·2 | 10·1 | 31·2 | −11·6 | 28·7 | 22·2 | 9·0 | 10·5 | 3·5 | 68 | 48·1 | 21·3 | 39·9 | 37·9 | 0·009 | 0·0 | sP : vP |
| 10 | Apogee | 30·166 | 33·0 | 27·5 | 5·5 | 30·9 | −11·8 | 30·1 | 28·0 | 2·9 | 6·7 | 0·4 | 88 | 51·3 | 22·1 | 38·5 | 36·4 | 0·000 | 0·0 | wP : ssP |
| 11 | .. | 30·301 | 32·9 | 23·3 | 9·6 | 28·2 | −14·3 | 26·8 | 21·3 | 6·9 | 10·8 | 2·2 | 74 | 39·0 | 18·8 | 37·4 | 35·4 | 0·000 | 0·0 | ssP : vP |
| 12 | .. | 30·171 | 38·0 | 23·8 | 14·2 | 34·4 | − 7·8 | 32·7 | 29·8 | 4·6 | 7·8 | 1·8 | 83 | 40·8 | 21·1 | 36·3 | 34·9 | 0·000 | 0·2 | ssP |
| 13 | .. | 30·092 | 43·1 | 35·7 | 7·4 | 40·6 | − 1·2 | 39·1 | 37·2 | 3·4 | 5·5 | 1·5 | 88 | 45·9 | 31·6 | 35·0 | 34·5 | 0·007 | 3·8 | sP : vP |
| 14 | First Qr. | 30·206 | 46·4 | 41·3 | 5·1 | 43·9 | + 2·4 | 43·1 | 42·1 | 1·8 | 2·9 | 0·9 | 94 | 52·8 | 38·3 | 35·0 | 34·5 | 0·002 | 0·0 | wP : sP |
| 15 | In Equator | 30·291 | 50·2 | 34·7 | 15·5 | 43·2 | + 2·1 | 41·2 | 38·8 | 4·4 | 13·2 | 0·2 | 84 | 80·8 | 27·9 | 35·5 | 35·0 | 0·000 | 0·0 | ssP : vP : ssP |
| 16 | .. | 30·296 | 46·5 | 32·9 | 13·6 | 39·7 | − 1·1 | 38·9 | 37·9 | 1·8 | 5·2 | 0·2 | 94 | 68·5 | 27·3 | 35·5 | 34·5 | 0·000 | 0·0 | vP : sP |
| 17 | .. | 30·307 | 49·1 | 44·0 | 5·1 | 46·6 | + 6·1 | 46·1 | 45·5 | 1·1 | 2·1 | 0·0 | 96 | 50·9 | 40·0 | 36·9 | 36·0 | 0·000 | 0·0 | vP |
| 18 | .. | 30·299 | 47·3 | 40·1 | 7·2 | 44·7 | + 4·5 | 44·2 | 43·6 | 1·1 | 2·2 | 0·2 | 96 | 47·7 | 40·0 | 38·4 | 37·5 | 0·028 | 1·5 | vP |
| 19 | .. | 30·101 | 40·1 | 37·1 | 3·0 | 38·1 | − 1·9 | 37·4 | 36·4 | 1·7 | 3·1 | 0·2 | 94 | 41·2 | 36·1 | 39·4 | 38·4 | 0·000 | 4·5 | vP |
| 20 | .. | 29·965 | 46·0 | 37·9 | 8·1 | 43·0 | + 3·2 | 42·1 | 41·0 | 2·0 | 4·0 | 0·9 | 93 | 46·7 | 37·3 | 40·0 | 39·9 | 0·000 | 0·0 | vP |
| 21 | Full | 29·960 | 48·2 | 41·8 | 6·4 | 45·4 | + 5·8 | 44·4 | 43·2 | 2·2 | 3·4 | 0·2 | 92 | 55·8 | 38·8 | 40·9 | 39·9 | 0·002 | 0·0 | mP : vP |
| 22 | Greatest Declination N. | 30·115 | 45·8 | 39·8 | 6·0 | 43·4 | + 4·0 | 42·6 | 41·6 | 1·8 | 4·2 | 0·2 | 94 | 46·5 | 35·4 | 41·9 | 40·1 | 0·006 | 0·0 | vP |
| 23 | Perigee | 30·361 | 42·5 | 31·6 | 10·9 | 36·2 | − 3·1 | 34·7 | 32·5 | 3·7 | 5·5 | 2·1 | 87 | 44·3 | 27·6 | 41·9 | 40·9 | 0·000 | 0·0 | vP : ssP |
| 24 | .. | 30·306 | 39·4 | 28·0 | 11·4 | 32·4 | − 6·9 | 31·4 | 29·3 | 3·1 | 5·5 | 0·0 | 88 | 56·6 | 20·9 | 42·4 | 40·9 | 0·000 | 0·0 | ssP |
| 25 | .. | 30·203 | 39·8 | 26·7 | 13·1 | 34·4 | − 4·8 | 33·9 | 33·1 | 1·3 | 3·5 | 0·0 | 95 | 39·9 | 23·2 | 40·9 | 39·7 | 0·006 | 2·0 | sP |
| 26 | .. | 30·220 | 41·2 | 37·7 | 3·5 | 39·5 | + 0·4 | 38·9 | 38·1 | 1·4 | 2·8 | 0·9 | 95 | 42·8 | 35·7 | 41·3 | 40·9 | 0·003 | 0·0 | mP : sP |
| 27 | .. | 30·302 | 39·4 | 30·8 | 8·6 | 36·8 | − 2·2 | 36·2 | 35·4 | 1·4 | 4·3 | 0·0 | 95 | 41·3 | 26·5 | 40·4 | 39·9 | 0·000 | 1·0 | vP : sP |
| 28 | In Equator: Last Quarter. | 29·796 | 47·7 | 35·4 | 12·3 | 42·0 | + 3·2 | 40·4 | 38·4 | 3·6 | 5·7 | 2·3 | 88 | 53·7 | 31·8 | 40·3 | 39·9 | 0·243 | 3·2 | vP, vN |
| 29 | .. | 29·696 | 38·3 | 29·5 | 8·8 | 35·4 | − 3·3 | 32·5 | 28·0 | 7·4 | 10·1 | 3·8 | 74 | 59·2 | 26·0 | 40·4 | 39·9 | 0·028 | 0·8 | mP : sP : vN, vP |
| 30 | .. | 29·902 | 40·5 | 27·7 | 12·8 | 32·7 | − 5·8 | 31·9 | 30·3 | 2·4 | 7·5 | 0·0 | 91 | 42·8 | 25·0 | 39·4 | 38·9 | 0·222 | 1·0 | vP : vP, mN |
| 31 | .. | 29·758 | 47·9 | 40·5 | 7·4 | 45·3 | + 7·0 | 43·9 | 42·3 | 3·0 | 4·2 | 0·9 | 89 | 50·4 | 39·0 | 38·9 | 38·4 | 0·002 | 0·0 | wP, wN |
| Means | .. | 30·026 | 42·9 | 34·0 | 8·9 | 39·0 | − 1·8 | 37·7 | 35·7 | 3·3 | 5·9 | 0·9 | 88·3 | 51·1 | 30·2 | 40·7 | 39·7 | Sum 1·127 | 1·0 | .. |
| 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 30in·026, being 0in·235 *higher* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 50°·2 on December 15; the lowest in the month was 23°·3 on December 11; and the range was 26°·9.
The mean of all the highest daily readings in the month was 42°·9, being 1°·5 *lower* than the average for the 44 years, 1841–1884.
The mean of all the lowest daily readings in the month was 34°·0, being 1°·1 *lower* than the average for the 44 years, 1841–1884.
The mean of the daily ranges was 8°·9, being 0°·4 *less* than the average for the 44 years, 1841–1884.
The mean for the month was 39°·0, being 1°·8 *lower* than the average for the 20 years, 1849–1868.

| Month and Day, 1885. | 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. | | |
| Dec. 1 | 0·0 | 8·1 | WSW | WNW: WSW | 3·0 | 0·0 | 0·14 | 291 | 1, th.-cl : 0, m | 1, cu, li.-cl, m : 0, m, h, d |
| 2 | 3·1 | 8·1 | SW | SSW | 1·8 | 0·0 | 0·13 | 271 | 0, ho.-fr : 1, li.-cl | 6, ci.-cu, li.-cl, cu.-s : 9, m |
| 3 | 0·0 | 8·0 | SW | SW | 9·4 | 0·0 | 0·84 | 423 | 10 : 10, m.-r | 10, m.-r : 10, oc.-m.-r, st.-w |
| 4 | 1·0 | 8·0 | SW: WSW | WSW | 13·7 | 0·3 | 2·28 | 684 | 10, st.-w : 10, st.-w, r | 3,cu.-s,li.-cl,sh.-r,st.-w: v, r, sq : 0 |
| 5 | 0·0 | 8·0 | WSW | SW: ENE | 3·5 | 0·0 | 0·70 | 338 | v : 7,ci.-cu,li.-cl,so.-ha | 10, m : 10, r : 10, c.-r |
| 6 | 0·0 | 8·0 | NE: NNE | NE: ENE | 2·0 | 0·0 | 0·21 | 252 | 10, slt.-r : v, li.-cl, m, h | 10, slt.-m, oc.-slt.-r : 10, oc.-slt.-r |
| 7 | 0·0 | 7·9 | ENE | ESE: ENE | 3·3 | 0·0 | 0·50 | 335 | 10, sh.-r : 10, slt.-sh | 8, ci.-cu, cu.-s, slt.-r: v, li.-cl |
| 8 | 3·1 | 7·9 | NE: NNE | NNE | 5·2 | 0·0 | 1·12 | 372 | v : 0, ho.-fr | 1, li.-cl : 0, ho.-fr |
| 9 | 1·3 | 7·9 | N: NNW | NNW: WSW | 6·2 | 0·0 | 0·50 | 322 | 0, ho.-fr : 3, li.-cl, m | 5,li.-cl,slt.-f: p.-cl : 10, slt.-sn |
| 10 | 4·1 | 7·9 | N | N: NNW | 7·7 | 0·0 | 1·14 | 299 | 10 : v, cu.-s, li.-cl | 1, li.-cl : 0, m, h |
| 11 | 0·0 | 7·8 | W: WSW: NW | N: NNW: WSW | 0·4 | 0·0 | 0·00 | 91 | 0, fr : glm, f | 6, cu.-s, li.-cl : f |
| 12 | 0·0 | 7·8 | SW: WSW | WSW | 0·9 | 0·0 | 0·06 | 179 | f : 10, slt.-f | 10 : 10 : v |
| 13 | 0·0 | 7·8 | WSW | WSW | 1·3 | 0·0 | 0·26 | 314 | v : 10 | p.-cl, sh.-r : p.-cl, oc.-m.-r |
| 14 | 0·0 | 7·8 | WSW | SW | 0·2 | 0·0 | 0·01 | 167 | 10 : 10 : 9, cu.-s | 10, f : 10, slt.-f |
| 15 | 3·6 | 7·8 | SW: SSW | SSW: S | 0·1 | 0·0 | 0·00 | 125 | 10 : v, cu.-s | 1, li.-cl : 0, slt.-f |
| 16 | 3·4 | 7·8 | S: SW | SW | 3·5 | 0·0 | 0·34 | 310 | 0, ho.-fr : 2, li.-cl | 5, li.-cl : 10, f |
| 17 | 0·0 | 7·7 | WSW | NW: N | 2·8 | 0·0 | 0·11 | 192 | 10, slt.-f : 10, slt.-f | 10, glm, f : 10, oc.-m.-r |
| 18 | 0·0 | 7·7 | NE: E | E: ESE | 2·0 | 0·0 | 0·14 | 149 | 10, slt.-r : 10, slt.-f | 10, oc.-slt.-r : 10, oc.-slt.-r |
| 19 | 0·0 | 7·7 | ESE | SE: SSE | 2·0 | 0·0 | 0·20 | 219 | 10 : 10 | 10 : 10 |
| 20 | 0·0 | 7·7 | S | SSW: S | 0·7 | 0·0 | 0·01 | 142 | 10 : 10 | 10, oc.-slt.-r : 10, oc.-slt.-r |
| 21 | 0·0 | 7·7 | SSE: S | WSW: S: NNE | 0·3 | 0·0 | 0·02 | 136 | p.-cl : 8,cu.-s,li.-cl,oc.-slt.-r | 10, oc.-slt.-r : 10, f, oc.-m.-r |
| 22 | 0·0 | 7·7 | NNE: N | NNE: N | 4·1 | 0·0 | 0·13 | 158 | 10, slt.-r : 10 | 10, slt.-f : 10, m, slt.-r |
| 23 | 0·0 | 7·7 | NNE | N | 3·0 | 0·0 | 0·51 | 226 | 10 :v,li.-cl,ho.-fr: v | 10 : 10 : v, ho.-fr |
| 24 | 1·2 | 7·7 | N: NE | ENE: SE: SW | 0·0 | 0·0 | 0·00 | 83 | 0, ho.-fr : 0, ho.-fr, f: 1, li.-cl | 1, li.-cl : 0, ho.-fr, f |
| 25 | 0·0 | 7·7 | SW: WSW | WSW | 0·4 | 0·0 | 0·03 | 178 | 0, f, ho.-fr: p.-cl :10,slt.-f,fq.-m.-r | 10, slt.-f, fq.-m.-r : 10, f, fq.-m.-r |
| 26 | 0·0 | 7·8 | WSW: NNE | NNE: N: Calm | 0·2 | 0·0 | 0·00 | 71 | 10, slt.-f : 10, slt.-f | 10 : 10 |
| 27 | 0·0 | 7·8 | SW: W | WSW: SW | 1·4 | 0·0 | 0·18 | 171 | 10, f : 10, tk.-f, ho.-fr | p.-cl, f : 1, th.-cl, d |
| 28 | 0·0 | 7·8 | SW | SW:WNW:WSW | 15·7 | 0·1 | 3·52 | 575 | p.-cl : 10, r, w | 9,cu,li.-cl,st.-w: 10,st.-w,fq.-r : v, li.-cl, w |
| 29 | 1·2 | 7·8 | WSW | WSW: NNW | 7·2 | 0·3 | 2·21 | 530 | v, li.-cl : 8, li.-cl | 2,th.-cl,ci.-cu,w: v, r, sn, w : 0, w, fr |
| 30 | 0·0 | 7·8 | WNW: WSW | WSW: SW | 5·2 | 0·0 | 0·73 | 366 | 0, ho.-fr : 0,h,m,ho.-fr: 1, li.-cl, m | v, so.-ha : 10, r, sl : 10, c.-r |
| 31 | 0·0 | 7·8 | WSW: WNW | WNW: W: SW | 3·3 | 0·0 | 0·46 | 335 | 10, slt.-r : 10, glm | 10 : 10 |
| Means | 0·7 | 7·8 | ... | ... | .. | .. | 0·53 | 268 | | |
| Number of Column for Reference. | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |

The mean *Temperature of Evaporation* for the month was 37°·7, being 1°·6 *lower* than
The mean *Temperature of the Dew Point* for the month was 35°·7, being 1°·7 *lower* than
The mean *Degree of Humidity* for the month was 88·3, being 0·5 *greater* than
The mean *Elastic Force of Vapour* for the month was 0in·209, being 0in·015 *less* than
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was 2grs·4, being 0gr·2 *less* than
The mean *Weight of a Cubic Foot of Air* for the month was 558 grains, being 7 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 7·0.
The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·09. The maximum daily amount of *Sunshine* was 4·1 hours on December 10.
The highest reading of the *Solar Radiation Thermometer* was 80°·8 on December 15; and the lowest reading of the *Terrestrial Radiation Thermometer* was 18°·8 on December 11.
The mean daily distribution of *Ozone* for the 12 hours ending 9h was 0·7; for the 6 hours ending 15h was 0·1; and for the 6 hours ending 21h was 0·2.
The *Proportions of Wind* referred to the cardinal points were N. 7, E. 4, S. 9, and W. 11.
The *Greatest Pressure of the Wind* in the month was 15lbs·7 on the square foot on December 28. The mean daily *Horizontal Movement of the Air* for the month was 268 miles; the greatest daily value was 684 miles on December 4; and the least daily value was 71 miles on December 26.
*Rain* fell on 13 days in the month, amounting to 1in·127, as measured by gauge No. 6 partly sunk below the ground; being 0in·673 *less* than the average fall for the 44 years, 1841–1884.

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

**MAXIMA.**

| Greenwich Civil Time, 1885. | d h m | Reading. in. |
|---|---|---|
| January | 1. 11. 0 | 30·223 |
| | 4. 10. 0 | 29·982 |
| | 7. 11. 0 | 30·239 |
| | 12. 21. 0 | 29·538 |
| | 16. 9. 0 | 29·862 |
| | 19. 9. 0 | 30·060 |
| | 24. 22. 20 | 30·001 |
| | 28. 0. 15 | 29·794 |
| February | 2. 1. 5 | 29·215 |
| | 4. 1. 50 | 29·245 |
| | 6. 6. 5 | 29·653 |
| | 8. 0. 15 | 29·765 |
| | 10. 17. 40 | 29·872 |
| | 12. 11. 20 | 29·992 |
| | 19. 10. 25 | 29·645 |
| | 21. 11. 0 | 30·044 |
| | 23. 8. 5 | 29·860 |
| | 26. 1. 40 | 29·996 |
| March | 1. 10. 0 | 30·006 |
| | 5. 1. 35 | 29·395 |
| | 7. 11. 40 | 29·839 |
| | 11. 12. 50 | 30·350 |
| | 14. 11. 35 | 30·426 |
| | 19. 12. 15 | 29·934 |
| | 21. 11. 10 | 29·715 |
| | 23. 9. 10 | 30·155 |
| | 28. 9. 25 | 30·180 |
| | 31. 0. 45 | 30·165 |
| April | 3. 9. 0 | 30·045 |
| | 13. 23. 25 | 29·764 |
| | 19. 9. 25 | 30·150 |

**MINIMA.**

| Greenwich Civil Time, 1885. | d h m | Reading. in. |
|---|---|---|
| January | 3. 15. 0 | 29·806 |
| | 5. 13. 30 | 29·848 |
| | 11. 10. 0 | 28·767 |
| | 13. 13. 30 | 29·438 |
| | 16. 15. 0 | 29·805 |
| | 21. 14. 0 | 29·783 |
| | 27. 13. 30 | 29·644 |
| | 31. 13. 35 | 28·866 |
| February | 2. 15. 30 | 28·960 |
| | 4. 18. 10 | 29·103 |
| | 6. 23. 45 | 29·385 |
| | 8. 22. 0 | 29·185 |
| | 11. 6. 15 | 29·796 |
| | 16. 20. 55 | 28·905 |
| | 20. 5. 55 | 29·490 |
| | 22. 16. 40 | 29·614 |
| | 24. 16. 10 | 29·560 |
| | 27. 15. 50 | 29·632 |
| March | 3. 23. 40 | 29·144 |
| | 6. 16. 15 | 29·056 |
| | 8. 16. 40 | 29·658 |
| | 12. 14. 45 | 30·274 |
| | 18. 12. 0 | 29·410 |
| | 20. 15. 40 | 29·527 |
| | 22. 5. 30 | 29·595 |
| | 27. 1. 25 | 29·606 |
| | 29. 17. 15 | 29·816 |
| April | 1. 16. 10 | 29·559 |
| | 6. 6. 0 | 29·040 |
| | 16. 3. 50 | 29·505 |
| | 25. 1. 45 | 29·090 |

**MAXIMA.**

| Greenwich Civil Time, 1885. | d h m | Reading. in. |
|---|---|---|
| April | 28. 0. 30 | 29·606 |
| | 30. 7. 35 | 29·687 |
| May | 3. 0. 30 | 29·514 |
| | 5. 9. 30 | 29·377 |
| | 9. 0. 0 | 29·800 |
| | 12. 0. 0 | 30·037 |
| | 15. 7. 30 | 29·799 |
| | 18. 23. 25 | 29·843 |
| | 21. 22. 0 | 29·278 |
| | 25. 0. 15 | 29·904 |
| | 27. 8. 45 | 29·826 |
| | 30. 7. 0 | 29·905 |
| June | 1. 22. 45 | 30·147 |
| | 6. 21. 20 | 29·839 |
| | 11. 11. 40 | 30·217 |
| | 15. 22. 55 | 29·937 |
| | 18. 8. 0 | 29·806 |
| | 22. 7. 15 | 29·985 |
| | 26. 23. 10 | 30·125 |
| July | 5. 8. 0 | 30·083 |
| | 6. 9. 0 | 30·076 |
| | 9. 8. 5 | 30·025 |
| | 15. 1. 0 | 30·060 |
| | 22. 5. 25 | 30·260 |
| | 26. 8. 5 | 30·153 |
| | 28. 9. 40 | 30·175 |
| August | 5. 23. 15 | 29·802 |
| | 9. 0. 0 | 29·817 |
| | 12. 0. 0 | 29·697 |
| | 15. 7. 50 | 30·163 |
| | 18. 23. 0 | 29·958 |

**MINIMA.**

| Greenwich Civil Time, 1885. | d h m | Reading. in. |
|---|---|---|
| April | 29. 2. 35 | 29·421 |
| May | 1. 15. 15 | 29·371 |
| | 4. 14. 5 | 29·312 |
| | 6. 12. 45 | 29·145 |
| | 10. 2. 50 | 29·710 |
| | 13. 17. 0 | 29·624 |
| | 17. 15. 45 | 29·545 |
| | 21. 3. 30 | 29·194 |
| | 22. 9. 50 | 28·970 |
| | 25. 19. 35 | 29·684 |
| | 28. 4. 30 | 29·677 |
| | 31. 2. 15 | 29·824 |
| June | 5. 5. 50 | 29·630 |
| | 8. 17. 0 | 29·536 |
| | 14. 16. 50 | 29·863 |
| | 17. 7. 0 | 29·651 |
| | 20. 7. 0 | 29·341 |
| | 24. 17. 30 | 29·660 |
| | 29. 17. 5 | 29·750 |
| July | 5. 17. 45 | 30·010 |
| | 8. 6. 10 | 29·894 |
| | 11. 17. 35 | 29·816 |
| | 19. 4. 5 | 29·665 |
| | 24. 16. 50 | 30·075 |
| | 27. 14. 0 | 30·083 |
| August | 4. 13. 45 | 29·728 |
| | 7. 15. 35 | 29·570 |
| | 10. 19. 0 | 29·470 |
| | 12. 17. 50 | 29·526 |
| | 17. 18. 20 | 29·862 |
| | 22. 16. 50 | 29·641 |

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

**MAXIMA.**

| Greenwich Civil Time, 1885. | | Reading. |
|---|---|---|
| | d h m | in. |
| August | 25. 8. 0 | 29·866 |
| | 30. 22. 0 | 29·927 |
| September | 1. 21. 5 | 29·957 |
| | 3. 20. 45 | 29·505 |
| | 6. 20. 0 | 29·546 |
| | 8. 18. 25 | 29·625 |
| | 10. 5. 30 | 29·715 |
| | 12. 0. 30 | 29·800 |
| | 13. 20. 50 | 29·926 |
| | 16. 10. 2 | 29·937 |
| | 18. 21. 30 | 29·930 |
| | 20. 10. 5 | 29·950 |
| | 22. 9. 15 | 30·175 |
| | 28. 11. 0 | 29·834 |
| | 29. 19. 15 | 29·668 |
| October | 2. 8. 55 | 29·848 |
| | 3. 21. 50 | 29·822 |
| | 6. 9. 35 | 29·625 |
| | 7. 21. 45 | 29·806 |
| | 9. 16. 50 | 29·245 |
| | 13. 9. 45 | 29·670 |
| | 15. 11. 5 | 29·986 |

**MINIMA.**

| Greenwich Civil Time, 1885. | | Reading. |
|---|---|---|
| | d h m | in. |
| August | 29. 16. 15 | 29·632 |
| | 31. 15. 35 | 29·841 |
| September | 3. 13. 35 | 29·432 |
| | 5. 4. 10 | 29·366 |
| | 7. 15. 45 | 29·395 |
| | 9. 1. 35 | 29·432 |
| | 11. 4. 0 | 29·014 |
| | 12. 18. 40 | 29·661 |
| | 15. 16. 10 | 29·630 |
| | 17. 7. 10 | 29·758 |
| | 19. 16. 20 | 29·743 |
| | 21. 4. 20 | 29·815 |
| | 25. 15. 40 | 29·676 |
| | 29. 7. 0 | 29·545 |
| | 30. 16. 15 | 29·295 |
| October | 3. 3. 30 | 29·523 |
| | 5. 3. 30 | 29·444 |
| | 7. 0. 30 | 29·200 |
| | 9. 3. 20 | 29·105 |
| | 10. 7. 40 | 28·783 |
| | 14. 4. 0 | 29·575 |
| | 16. 5. 2 | 29·719 |

**MAXIMA.**

| Greenwich Civil Time, 1885. | | Reading. |
|---|---|---|
| | d h m | in. |
| October | 17. 8. 45 | 30·014 |
| | 25. 9. 30 | 29·497 |
| | 26. 21. 25 | 29·143 |
| | 30. 2. 40 | 29·864 |
| November | 2. 10. 30 | 29·975 |
| | 7. 11. 0 | 30·185 |
| | 16. 21. 15 | 30·226 |
| | 19. 21. 50 | 29·807 |
| | 23. 21. 0 | 29·345 |
| | 26. 8. 40 | 29·284 |
| | 27. 20. 30 | 29·480 |
| | 29. 3. 20 | 29·631 |
| December | 1. 23. 15 | 30·194 |
| | 5. 2. 5 | 29·644 |
| | 9. 10. 15 | 30·206 |
| | 11. 9. 50 | 30·330 |
| | 17. 22. 30 | 30·344 |
| | 23. 11. 20 | 30·405 |
| | 27. 9. 45 | 30·371 |
| | 29. 10. 50 | 29·762 |
| | 30. 10. 15 | 30·007 |

**MINIMA.**

| Greenwich Civil Time, 1885. | | Reading. |
|---|---|---|
| | d h m | in. |
| October | 24. 7. 35 | 29·016 |
| | 26. 12. 0 | 28·905 |
| | 27. 5. 10 | 29·027 |
| | 31. 14. 45 | 29·138 |
| November | 5. 12. 20 | 29·398 |
| | 14. 14. 30 | 29·491 |
| | 19. 5. 10 | 29·704 |
| | 22. 15. 30 | 29·267 |
| | 25. 15. 0 | 29·140 |
| | 27. 1. 30 | 29·070 |
| | 28. 10. 55 | 29·091 |
| | 29. 14. 50 | 29·425 |
| December | 4. 8. 5 | 29·448 |
| | 6. 1. 45 | 29·067 |
| | 9. 22. 25 | 29·926 |
| | 13. 14. 0 | 30·072 |
| | 20. 5. 45 | 29·939 |
| | 25. 23. 35 | 30·124 |
| | 28. 18. 45 | 29·498 |
| | 29. 18. 15 | 29·637 |
| | 31. 3. 40 | 29·662 |

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. From January 1 to January 19 the readings are derived from eye-observations, on account of temporary interruption of photographic registration.

The time is expressed in civil reckoning, commencing at midnight and counting from $0^h$ to $24^h$.

HIGHEST AND LOWEST READINGS OF THE BAROMETER in each Month for the YEAR 1885.
[Extracted from the preceding Table.]

| MONTH, 1885. | Readings of the Barometer. | | Range. |
|---|---|---|---|
| | Highest. | Lowest. | |
| | in. | in. | in. |
| January | 30·239 | 28·767 | 1·472 |
| February | 30·044 | 28·905 | 1·139 |
| March | 30·426 | 29·056 | 1·370 |
| April | 30·150 | 29·040 | 1·110 |
| May | 30·037 | 28·970 | 1·067 |
| June | 30·217 | 29·341 | 0·876 |
| July | 30·260 | 29·665 | 0·595 |
| August | 30·163 | 29·470 | 0·693 |
| September | 30·175 | 29·014 | 1·161 |
| October | 30·014 | 28·783 | 1·231 |
| November | 30·226 | 29·070 | 1·156 |
| December | 30·405 | 29·067 | 1·338 |

The highest reading in the year was $30^{in}\cdot426$ on March 14. The lowest reading in the year was $28^{in}\cdot767$ on January 11.
The range of reading in the year was $1^{in}\cdot659$.

## MONTHLY RESULTS of METEOROLOGICAL ELEMENTS for the YEAR 1885.

| MONTH, 1885. | Mean Reading of the Barometer. | TEMPERATURE OF THE AIR. Highest. | Lowest. | Range in the Month. | Mean of all the Highest. | Mean of all the Lowest. | Mean of the Daily Ranges. | Monthly Mean. | Excess of Mean above Average of 20 Years. | Mean Temperature of Evaporation. | Mean Temperature of the Dew Point. | Mean Degree of Humidity. (Saturation = 100.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | in. | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | |
| January .. | 29·719 | 52·8 | 22·3 | 30·5 | 40·2 | 32·3 | 7·9 | 36·6 | − 2·1 | 35·4 | 33·3 | 87·9 |
| February.. | 29·544 | 58·3 | 26·9 | 31·4 | 49·4 | 38·6 | 10·8 | 43·9 | + 4·3 | 42·3 | 40·3 | 87·4 |
| March .... | 29·899 | 60·2 | 25·2 | 35·0 | 49·0 | 32·5 | 16·5 | 40·3 | − 1·2 | 37·7 | 34·3 | 79·9 |
| April ..... | 29·616 | 73·6 | 28·1 | 45·5 | 57·7 | 38·9 | 18·8 | 47·6 | + 0·2 | 44·2 | 40·6 | 77·6 |
| May ...... | 29·625 | 74·8 | 31·8 | 43·0 | 60·3 | 41·3 | 19·0 | 49·8 | − 3·3 | 46·3 | 42·7 | 77·1 |
| June ..... | 29·857 | 84·7 | 39·4 | 45·3 | 70·9 | 49·2 | 21·7 | 59·6 | − 0·2 | 54·9 | 50·7 | 73·1 |
| July...... | 29·996 | 90·2 | 44·7 | 45·5 | 77·0 | 52·5 | 24·5 | 63·6 | + 1·0 | 57·9 | 53·2 | 69·2 |
| August ... | 29·798 | 80·2 | 40·2 | 40·0 | 69·8 | 49·8 | 20·0 | 58·6 | − 3·3 | 54·3 | 50·4 | 74·6 |
| September. | 29·712 | 76·4 | 30·6 | 45·8 | 64·7 | 47·2 | 17·5 | 55·4 | − 2·1 | 52·8 | 50·3 | 83·3 |
| October ... | 29·527 | 59·9 | 31·5 | 28·4 | 52·4 | 40·1 | 12·3 | 46·5 | − 4·5 | 44·4 | 42·0 | 84·8 |
| November . | 29·722 | 58·2 | 28·1 | 30·1 | 48·1 | 37·8 | 10·3 | 43·5 | + 0·8 | 42·3 | 40·8 | 90·3 |
| December . | 30·026 | 50·2 | 23·3 | 26·9 | 42·9 | 34·0 | 8·9 | 39·0 | − 1·8 | 37·7 | 35·7 | 88·3 |
| Means .... | 29·753 | Highest. 90·2 | Lowest. 22·3 | Annual Range. 67·9 | 56·9 | 41·2 | 15·7 | 48·7 | − 1·0 | 45·8 | 42·9 | 81·1 |

| MONTH, 1885. | 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. Number of Rainy Days. | Amount collected in Gauge No. 6 whose receiving Surface is 5 Inches above the Ground. | WIND. From Osler's Anemometer. Number of Hours of Prevalence of each Wind, referred to different Points of Azimuth. N. | N.E. | E. | S.E. | S. | S.W. | W. | N.W. | Number of Calm or nearly Calm Hours. | Mean Daily Pressure on the Square Foot. | From Robinson's Anemometer. Mean Daily Horizontal Movement of the Air. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | in. | grs. | grs. | | | | in. | h | h | h | h | h | h | h | h | h | lbs. | miles. |
| January... | 0·190 | 2·3 | 555 | 2·0 | 7·9 | 15 | 1·424 | 62 | 95 | 149 | 108 | 128 | 135 | 29 | 32 | 6 | 1·19 | 324 |
| February.. | 0·250 | 2·9 | 543 | 4·9 | 7·3 | 19 | 2·335 | 25 | 41 | 6 | 22 | 200 | 324 | 40 | 14 | 0 | 0·77 | 361 |
| March .... | 0·198 | 2·3 | 554 | 1·8 | 6·3 | 8 | 1·496 | 109 | 172 | 78 | 90 | 56 | 132 | 33 | 51 | 23 | 0·81 | 274 |
| April..... | 0·253 | 2·9 | 541 | 4·7 | 5·9 | 9 | 2·049 | 121 | 163 | 86 | 53 | 99 | 143 | 23 | 31 | 1 | 0·70 | 293 |
| May.. ... | 0·274 | 3·1 | 538 | 6·8 | 6·8 | 19 | 2·111 | 71 | 60 | 23 | 41 | 96 | 315 | 95 | 41 | 2 | 0·81 | 282 |
| June...... | 0·370 | 4·1 | 532 | 2·7 | 5·5 | 7 | 1·666 | 97 | 182 | 69 | 53 | 75 | 183 | 27 | 23 | 11 | 0·78* | 271 |
| July ...... | 0·406 | 4·5 | 530 | 2·4 | 5·4 | 5 | 0·503 | 66 | 149 | 99 | 49 | 36 | 232 | 74 | 22 | 17 | 0·30* | 222 |
| August ... | 0·366 | 4·1 | 532 | 3·5 | 6·9 | 10 | 1·322 | 163 | 155 | 63 | 59 | 36 | 168 | 36 | 42 | 22 | 0·66 | 259 |
| September. | 0·365 | 4·1 | 533 | 3·3 | 6·8 | 21 | 3·732 | 80 | 47 | 18 | 41 | 84 | 316 | 81 | 47 | 6 | 0·66 | 276 |
| October ... | 0·267 | 3·1 | 540 | 1·3 | 7·7 | 23 | 3·410 | 108 | 53 | 52 | 70 | 27 | 185 | 127 | 105 | 17 | 0·69* | 328 |
| November . | 0·255 | 2·9 | 547 | 0·9 | 7·7 | 17 | 2·827 | 31 | 137 | 163 | 101 | 27 | 181 | 45 | 29 | 6 | 0·60* | 281 |
| December . | 0·209 | 2·4 | 558 | 1·0 | 7·0 | 13 | 1·127 | 113 | 64 | 39 | 30 | 64 | 264 | 122 | 36 | 12 | 0·53 | 268 |
| Sums ..... | .. | .. | .. | .. | .. | 166 | 24·002 | 1046 | 1318 | 845 | 717 | 928 | 2578 | 732 | 473 | 123 | .. | .. |
| Means .... | 0·284 | 3·2 | 542 | 2·9 | 6·8 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 0·71 | 287 |

The greatest recorded pressure of the wind on the square foot in the year was 22·5 lbs. on January 10.
The greatest recorded daily horizontal movement of the air „ „ 704 miles on January 11.
The least recorded daily horizontal movement of the air „ „ 71 miles on November 12 and December 26.

* The mean daily pressures of the wind for June, July, October, and November are derived from the results for 24, 30, 22, and 27 days respectively.

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

| Hour, Greenwich Civil Time. | 1885. January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. | Yearly Means. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. |
| Midnight | 29·713 | 29·534 | 29·919 | 29·629 | 29·629 | 29·866 | 30·000 | 29·805 | 29·723 | 29·532 | 29·728 | 30·022 | 29·758 |
| 1h. | 29·704 | 29·536 | 29·917 | 29·623 | 29·623 | 29·860 | 29·997 | 29·800 | 29·717 | 29·527 | 29·723 | 30·018 | 29·754 |
| 2 | 29·699 | 29·540 | 29·912 | 29·618 | 29·617 | 29·856 | 29·995 | 29·798 | 29·708 | 29·520 | 29·722 | 30·017 | 29·750 |
| 3 | 29·695 | 29·535 | 29·906 | 29·614 | 29·613 | 29·850 | 29·992 | 29·796 | 29·703 | 29·511 | 29·715 | 30·018 | 29·746 |
| 4 | 29·691 | 29·535 | 29·901 | 29·609 | 29·611 | 29·850 | 29·993 | 29·794 | 29·699 | 29·507 | 29·712 | 30·015 | 29·743 |
| 5 | 29·684 | 29·537 | 29·902 | 29·611 | 29·613 | 29·853 | 29·997 | 29·795 | 29·698 | 29·507 | 29·713 | 30·014 | 29·744 |
| 6 | 29·677 | 29·537 | 29·904 | 29·617 | 29·619 | 29·856 | 30·001 | 29·800 | 29·703 | 29·510 | 29·713 | 30·016 | 29·746 |
| 7 | 29·678 | 29·539 | 29·910 | 29·621 | 29·623 | 29·861 | 30·007 | 29·803 | 29·709 | 29·518 | 29·715 | 30·020 | 29·750 |
| 8 | 29·679 | 29·545 | 29·914 | 29·625 | 29·625 | 29·867 | 30·010 | 29·807 | 29·716 | 29·528 | 29·721 | 30·031 | 29·756 |
| 9 | 29·678 | 29·548 | 29·921 | 29·627 | 29·626 | 29·866 | 30·009 | 29·806 | 29·720 | 29·533 | 29·724 | 30·041 | 29·758 |
| 10 | 29·677 | 29·553 | 29·923 | 29·628 | 29·628 | 29·868 | 30·007 | 29·806 | 29·722 | 29·535 | 29·726 | 30·051 | 29·760 |
| 11 | 29·674 | 29·557 | 29·924 | 29·626 | 29·627 | 29·866 | 30·006 | 29·804 | 29·720 | 29·535 | 29·724 | 30·050 | 29·759 |
| Noon | 29·659 | 29·551 | 29·920 | 29·621 | 29·627 | 29·863 | 30·001 | 29·800 | 29·718 | 29·530 | 29·716 | 30·042 | 29·754 |
| 13h. | 29·646 | 29·542 | 29·910 | 29·616 | 29·626 | 29·857 | 29·995 | 29·799 | 29·713 | 29·524 | 29·710 | 30·032 | 29·748 |
| 14 | 29·634 | 29·537 | 29·898 | 29·610 | 29·623 | 29·854 | 29·990 | 29·795 | 29·708 | 29·522 | 29·706 | 30·024 | 29·742 |
| 15 | 29·633 | 29·535 | 29·890 | 29·603 | 29·619 | 29·848 | 29·986 | 29·791 | 29·704 | 29·522 | 29·707 | 30·024 | 29·739 |
| 16 | 29·633 | 29·534 | 29·886 | 29·599 | 29·618 | 29·844 | 29·981 | 29·787 | 29·703 | 29·525 | 29·713 | 30·024 | 29·737 |
| 17 | 29·635 | 29·540 | 29·888 | 29·598 | 29·618 | 29·840 | 29·977 | 29·783 | 29·704 | 29·530 | 29·718 | 30·023 | 29·738 |
| 18 | 29·638 | 29·545 | 29·897 | 29·602 | 29·621 | 29·841 | 29·978 | 29·784 | 29·707 | 29·537 | 29·727 | 30·025 | 29·742 |
| 19 | 29·639 | 29·548 | 29·906 | 29·610 | 29·625 | 29·845 | 29·982 | 29·789 | 29·715 | 29·540 | 29·732 | 30·026 | 29·746 |
| 20 | 29·637 | 29·550 | 29·909 | 29·619 | 29·635 | 29·852 | 29·989 | 29·797 | 29·722 | 29·540 | 29·736 | 30·027 | 29·751 |
| 21 | 29·636 | 29·553 | 29·913 | 29·622 | 29·643 | 29·863 | 29·999 | 29·802 | 29·723 | 29·541 | 29·742 | 30·026 | 29·755 |
| 22 | 29·636 | 29·555 | 29·917 | 29·622 | 29·645 | 29·867 | 30·003 | 29·805 | 29·720 | 29·539 | 29·744 | 30·024 | 29·756 |
| 23 | 29·633 | 29·562 | 29·918 | 29·621 | 29·646 | 29·868 | 30·005 | 29·806 | 29·714 | 29·535 | 29·744 | 30·025 | 29·756 |
| Means | 29·663 | 29·544 | 29·909 | 29·616 | 29·625 | 29·857 | 29·996 | 29·798 | 29·712 | 29·527 | 29·722 | 30·026 | 29·750 |
| Number of Days employed. | 12 | 28 | 29 | 30 | 31 | 30 | 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 Civil Time. | 1885. January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. | Yearly Means. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° |
| Midnight | 35·5 | 42·3 | 37·3 | 42·8 | 45·1 | 53·9 | 57·1 | 54·1 | 51·9 | 45·3 | 42·1 | 38·3 | 45·5 |
| 1h. | 35·3 | 42·0 | 36·8 | 42·3 | 44·7 | 53·3 | 56·5 | 53·7 | 51·4 | 44·8 | 41·9 | 38·0 | 45·1 |
| 2 | 35·2 | 41·7 | 36·5 | 41·8 | 44·5 | 52·9 | 55·8 | 53·1 | 51·4 | 44·3 | 41·9 | 37·9 | 44·7 |
| 3 | 35·0 | 41·7 | 36·2 | 41·6 | 44·3 | 52·5 | 55·4 | 52·7 | 51·1 | 43·8 | 41·8 | 37·7 | 44·5 |
| 4 | 35·0 | 41·5 | 35·7 | 41·3 | 44·0 | 52·0 | 55·2 | 52·7 | 51·1 | 43·7 | 41·9 | 37·4 | 44·3 |
| 5 | 35·0 | 41·7 | 35·6 | 41·3 | 44·2 | 52·4 | 55·5 | 52·7 | 51·1 | 43·6 | 41·7 | 37·4 | 44·4 |
| 6 | 35·0 | 41·5 | 35·1 | 41·9 | 45·6 | 54·2 | 56·7 | 53·2 | 51·1 | 43·4 | 41·7 | 37·5 | 44·7 |
| 7 | 34·8 | 41·7 | 35·6 | 43·6 | 47·7 | 56·8 | 59·1 | 55·0 | 52·0 | 43·5 | 41·9 | 37·3 | 45·7 |
| 8 | 34·9 | 42·2 | 37·2 | 46·0 | 49·9 | 59·3 | 62·2 | 57·6 | 54·0 | 44·3 | 42·3 | 37·4 | 47·3 |
| 9 | 35·6 | 43·5 | 39·9 | 48·9 | 52·0 | 62·0 | 65·7 | 60·3 | 56·3 | 46·0 | 43·1 | 37·7 | 49·3 |
| 10 | 36·5 | 44·9 | 42·3 | 51·2 | 53·5 | 63·9 | 67·9 | 62·7 | 58·4 | 47·8 | 44·3 | 38·6 | 51·0 |
| 11 | 37·5 | 46·0 | 44·1 | 53·2 | 54·3 | 65·1 | 70·2 | 64·2 | 60·0 | 48·9 | 45·6 | 39·7 | 52·4 |
| Noon | 38·4 | 47·0 | 45·5 | 54·4 | 55·8 | 66·3 | 71·8 | 65·7 | 61·3 | 50·2 | 46·3 | 40·8 | 53·6 |
| 13h. | 39·0 | 47·6 | 46·2 | 55·1 | 56·2 | 67·0 | 72·7 | 65·7 | 61·7 | 50·7 | 46·5 | 41·3 | 54·1 |
| 14 | 39·3 | 47·8 | 46·9 | 55·2 | 56·1 | 67·7 | 73·2 | 66·0 | 61·9 | 50·4 | 46·7 | 41·5 | 54·4 |
| 15 | 38·8 | 47·7 | 46·7 | 54·9 | 56·1 | 67·7 | 73·2 | 65·5 | 61·4 | 50·3 | 46·1 | 41·3 | 54·1 |
| 16 | 38·3 | 47·1 | 45·8 | 54·1 | 55·1 | 67·0 | 71·9 | 64·8 | 60·1 | 49·5 | 45·3 | 40·6 | 53·3 |
| 17 | 37·9 | 45·9 | 44·4 | 52·9 | 54·1 | 65·6 | 70·9 | 63·6 | 58·5 | 48·4 | 44·4 | 40·1 | 52·2 |
| 18 | 37·5 | 44·7 | 42·6 | 50·9 | 52·4 | 63·7 | 68·4 | 61·7 | 57·0 | 47·4 | 44·0 | 39·8 | 50·8 |
| 19 | 37·2 | 44·1 | 41·2 | 48·7 | 50·8 | 61·6 | 66·0 | 59·3 | 55·4 | 46·8 | 43·5 | 39·5 | 49·5 |
| 20 | 37·1 | 43·5 | 40·1 | 46·8 | 48·8 | 59·0 | 62·9 | 57·3 | 54·2 | 46·3 | 43·2 | 39·0 | 48·2 |
| 21 | 36·9 | 43·2 | 39·4 | 45·5 | 47·6 | 56·8 | 60·8 | 55·8 | 53·4 | 46·0 | 43·0 | 38·8 | 47·3 |
| 22 | 36·6 | 42·8 | 38·4 | 44·4 | 46·7 | 55·4 | 59·3 | 54·7 | 52·8 | 45·7 | 42·7 | 38·9 | 46·5 |
| 23 | 36·3 | 42·4 | 37·8 | 43·6 | 45·8 | 54·5 | 58·2 | 54·2 | 52·2 | 45·4 | 42·4 | 38·8 | 46·0 |
| Means | 36·6 | 43·9 | 40·3 | 47·6 | 49·8 | 59·6 | 63·6 | 58·6 | 55·4 | 46·5 | 43·5 | 39·0 | 48·7 |
| Number of Days employed. | 31 | 28 | 31 | 30 | 31 | 30 | 31 | 31 | 30 | 31 | 30 | 31 | .. |

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

| Hour, Greenwich Civil Time. | 1885. January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. | Yearly Means. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Midnight | 34°·6 | 41°·2 | 36°·0 | 41°·3 | 43°·8 | 51°·9 | 54°·7 | 52°·0 | 50°·9 | 44°·0 | 41°·2 | 37°·2 | 44°·1 |
| 1h. | 34·4 | 40·9 | 35·7 | 40·9 | 43·5 | 51·6 | 54·3 | 51·8 | 50·7 | 43·5 | 41·0 | 37·0 | 43·8 |
| 2 | 34·3 | 40·6 | 35·6 | 40·7 | 43·3 | 51·2 | 53·9 | 51·4 | 50·6 | 43·1 | 41·0 | 36·9 | 43·6 |
| 3 | 34·2 | 40·6 | 35·3 | 40·7 | 43·3 | 50·9 | 53·7 | 51·3 | 50·6 | 42·8 | 41·0 | 36·7 | 43·4 |
| 4 | 34·1 | 40·6 | 35·0 | 40·4 | 43·1 | 50·6 | 53·5 | 51·4 | 50·5 | 42·8 | 41·0 | 36·5 | 43·3 |
| 5 | 34·1 | 40·6 | 34·8 | 40·4 | 43·1 | 50·8 | 53·6 | 51·2 | 50·4 | 42·5 | 40·9 | 36·5 | 43·2 |
| 6 | 34·2 | 40·6 | 34·4 | 40·8 | 44·0 | 52·1 | 54·5 | 51·6 | 50·4 | 42·3 | 40·9 | 36·5 | 43·5 |
| 7 | 34·1 | 40·7 | 34·7 | 42·0 | 45·4 | 53·6 | 56·1 | 53·0 | 51·1 | 42·3 | 41·2 | 36·3 | 44·2 |
| 8 | 34·2 | 41·1 | 35·9 | 43·5 | 46·6 | 54·8 | 57·8 | 54·3 | 52·3 | 42·9 | 41·4 | 36·5 | 45·1 |
| 9 | 34·6 | 42·0 | 37·5 | 45·3 | 47·7 | 56·1 | 59·5 | 55·7 | 53·6 | 44·0 | 42·1 | 36·7 | 46·2 |
| 10 | 35·3 | 43·0 | 39·1 | 46·6 | 48·4 | 57·0 | 60·5 | 56·6 | 54·6 | 45·0 | 43·0 | 37·3 | 47·2 |
| 11 | 35·9 | 43·7 | 40·2 | 47·6 | 48·8 | 57·6 | 61·4 | 57·3 | 55·3 | 45·7 | 43·9 | 38·3 | 48·0 |
| Noon | 36·7 | 44·3 | 40·7 | 48·3 | 49·4 | 58·3 | 61·8 | 57·8 | 55·9 | 46·5 | 44·4 | 38·9 | 48·6 |
| 13h. | 37·1 | 44·7 | 41·2 | 48·4 | 49·8 | 58·7 | 62·1 | 57·6 | 55·8 | 46·7 | 44·4 | 39·4 | 48·8 |
| 14 | 37·2 | 44·8 | 41·6 | 48·5 | 49·7 | 59·0 | 62·3 | 57·7 | 56·0 | 46·5 | 44·6 | 39·4 | 48·9 |
| 15 | 37·0 | 44·7 | 41·3 | 48·3 | 49·7 | 59·1 | 62·2 | 57·4 | 55·9 | 46·5 | 44·1 | 39·4 | 48·8 |
| 16 | 36·9 | 44·4 | 40·9 | 47·7 | 49·2 | 58·6 | 61·5 | 57·1 | 55·2 | 46·2 | 43·5 | 38·9 | 48·3 |
| 17 | 36·5 | 43·6 | 40·1 | 46·9 | 48·7 | 58·0 | 61·2 | 56·6 | 54·3 | 45·7 | 42·9 | 38·6 | 47·8 |
| 18 | 36·2 | 43·0 | 39·2 | 45·8 | 47·7 | 57·2 | 60·2 | 55·7 | 53·4 | 45·1 | 42·6 | 38·5 | 47·1 |
| 19 | 35·8 | 42·5 | 38·2 | 44·9 | 46·9 | 56·0 | 59·1 | 54·5 | 52·7 | 44·8 | 42·4 | 38·3 | 46·3 |
| 20 | 35·7 | 42·1 | 37·7 | 44·0 | 45·8 | 54·8 | 57·8 | 53·6 | 52·1 | 44·4 | 42·2 | 37·9 | 45·7 |
| 21 | 35·7 | 41·9 | 37·2 | 43·2 | 45·3 | 53·6 | 56·9 | 52·8 | 51·7 | 44·2 | 41·9 | 37·7 | 45·2 |
| 22 | 35·5 | 41·6 | 36·4 | 42·6 | 44·8 | 52·7 | 56·0 | 52·3 | 51·4 | 44·1 | 41·6 | 37·7 | 44·7 |
| 23 | 35·2 | 41·3 | 36·1 | 42·1 | 44·1 | 52·3 | 55·4 | 51·9 | 51·0 | 44·0 | 41·5 | 37·6 | 44·4 |
| Means | 35·4 | 42·3 | 37·7 | 44·2 | 46·3 | 54·9 | 57·9 | 54·3 | 52·8 | 44·4 | 42·3 | 37·7 | 45·8 |
| Number of Days employed. | 31 | 28 | 31 | 30 | 31 | 30 | 31 | 31 | 30 | 31 | 30 | 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 Civil Time. | 1885. January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. | Yearly Means. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Midnight | 33°·3 | 39°·9 | 34°·2 | 39°·5 | 42°·3 | 50°·0 | 52°·5 | 49°·9 | 49°·9 | 42°·5 | 40°·1 | 35°·7 | 42°·5 |
| 1h. | 33·0 | 39·6 | 34·2 | 39·2 | 42·1 | 49·9 | 52·3 | 50·0 | 50·0 | 42·0 | 39·9 | 35·6 | 42·3 |
| 2 | 33·0 | 39·2 | 34·3 | 39·3 | 41·9 | 49·5 | 52·1 | 49·7 | 49·8 | 41·7 | 39·9 | 35·6 | 42·2 |
| 3 | 32·9 | 39·2 | 34·0 | 39·6 | 42·1 | 49·3 | 52·1 | 49·9 | 50·1 | 41·6 | 40·0 | 35·3 | 42·2 |
| 4 | 32·7 | 39·5 | 33·9 | 39·3 | 42·0 | 49·2 | 51·9 | 50·1 | 49·9 | 41·7 | 39·9 | 35·3 | 42·1 |
| 5 | 32·7 | 39·2 | 33·6 | 39·3 | 41·8 | 49·2 | 51·8 | 49·7 | 49·7 | 41·2 | 39·9 | 35·3 | 42·0 |
| 6 | 32·9 | 39·5 | 33·3 | 39·5 | 42·1 | 50·0 | 52·5 | 50·0 | 49·7 | 41·0 | 39·9 | 35·2 | 42·1 |
| 7 | 33·0 | 39·5 | 33·3 | 40·1 | 42·9 | 50·6 | 53·4 | 51·1 | 50·2 | 40·9 | 40·4 | 34·9 | 42·5 |
| 8 | 33·1 | 39·8 | 34·1 | 40·7 | 43·1 | 50·8 | 54·1 | 51·3 | 50·6 | 41·2 | 40·3 | 35·3 | 42·9 |
| 9 | 33·1 | 40·2 | 34·4 | 41·4 | 43·3 | 51·0 | 54·4 | 51·7 | 51·1 | 41·7 | 40·9 | 35·3 | 43·2 |
| 10 | 33·6 | 40·8 | 35·2 | 41·8 | 43·4 | 51·3 | 54·7 | 51·4 | 51·2 | 41·9 | 41·5 | 35·5 | 43·5 |
| 11 | 33·7 | 41·1 | 35·6 | 42·0 | 43·5 | 51·5 | 54·6 | 51·6 | 51·2 | 42·3 | 42·0 | 36·5 | 43·8 |
| Noon | 34·4 | 41·3 | 35·2 | 42·4 | 43·4 | 51·8 | 54·3 | 51·4 | 51·3 | 42·6 | 42·2 | 36·5 | 43·9 |
| 13h. | 34·6 | 41·5 | 35·5 | 42·0 | 43·8 | 52·1 | 54·3 | 51·0 | 50·8 | 42·5 | 42·0 | 37·0 | 43·9 |
| 14 | 34·5 | 41·6 | 35·7 | 42·1 | 43·7 | 52·1 | 54·3 | 51·0 | 51·0 | 42·4 | 42·2 | 36·8 | 43·9 |
| 15 | 34·6 | 41·4 | 35·2 | 42·0 | 43·7 | 52·3 | 54·1 | 50·8 | 51·2 | 42·5 | 41·8 | 37·0 | 43·9 |
| 16 | 35·0 | 41·4 | 35·4 | 41·4 | 43·5 | 51·9 | 53·7 | 50·7 | 50·9 | 42·7 | 41·4 | 36·8 | 43·7 |
| 17 | 34·6 | 41·0 | 35·1 | 40·9 | 43·4 | 51·8 | 53·7 | 50·8 | 50·5 | 42·8 | 41·1 | 36·7 | 43·5 |
| 18 | 34·4 | 41·0 | 35·1 | 40·6 | 42·9 | 51·8 | 53·8 | 50·6 | 50·1 | 42·6 | 40·9 | 36·8 | 43·4 |
| 19 | 33·9 | 40·6 | 34·4 | 40·8 | 42·8 | 51·2 | 53·5 | 50·2 | 50·1 | 42·6 | 41·1 | 36·7 | 43·2 |
| 20 | 33·8 | 40·4 | 34·6 | 40·8 | 42·6 | 51·0 | 53·5 | 50·2 | 50·0 | 42·3 | 41·0 | 36·5 | 43·1 |
| 21 | 34·1 | 40·4 | 34·3 | 40·6 | 42·8 | 50·6 | 53·6 | 50·0 | 50·0 | 42·1 | 40·6 | 36·2 | 42·9 |
| 22 | 34·0 | 40·2 | 33·7 | 40·5 | 42·7 | 50·1 | 53·1 | 50·0 | 50·0 | 42·3 | 40·3 | 36·1 | 42·8 |
| 23 | 33·6 | 40·0 | 33·8 | 40·3 | 42·1 | 50·1 | 52·9 | 49·6 | 49·8 | 42·4 | 40·4 | 36·0 | 42·6 |
| Means | 33·7 | 40·3 | 34·5 | 40·7 | 42·8 | 50·8 | 53·4 | 50·5 | 50·4 | 42·1 | 40·8 | 36·0 | 43·0 |

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 Civil Time. | 1885. January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. | Yearly Means. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Midnight | 91 | 91 | 89 | 88 | 90 | 86 | 85 | 85 | 93 | 90 | 93 | 91 | 89 |
| 1h. | 91 | 91 | 91 | 89 | 91 | 88 | 86 | 87 | 95 | 90 | 93 | 91 | 90 |
| 2 | 91 | 92 | 92 | 92 | 91 | 89 | 88 | 88 | 94 | 91 | 93 | 91 | 91 |
| 3 | 92 | 92 | 92 | 93 | 92 | 89 | 89 | 91 | 96 | 92 | 94 | 91 | 92 |
| 4 | 91 | 93 | 93 | 93 | 93 | 90 | 89 | 92 | 96 | 93 | 93 | 92 | 92 |
| 5 | 91 | 92 | 93 | 93 | 91 | 89 | 88 | 90 | 95 | 91 | 94 | 92 | 92 |
| 6 | 92 | 93 | 93 | 92 | 88 | 85 | 86 | 89 | 95 | 91 | 94 | 91 | 91 |
| 7 | 93 | 93 | 92 | 87 | 85 | 80 | 82 | 87 | 94 | 90 | 94 | 91 | 89 |
| 8 | 93 | 91 | 89 | 82 | 78 | 74 | 75 | 80 | 88 | 89 | 93 | 92 | 85 |
| 9 | 91 | 88 | 81 | 76 | 73 | 68 | 68 | 73 | 83 | 86 | 92 | 91 | 81 |
| 10 | 90 | 86 | 77 | 71 | 69 | 63 | 62 | 67 | 77 | 81 | 90 | 90 | 77 |
| 11 | 87 | 84 | 72 | 66 | 67 | 61 | 58 | 64 | 73 | 78 | 88 | 89 | 74 |
| Noon | 86 | 81 | 68 | 64 | 64 | 60 | 54 | 59 | 70 | 76 | 87 | 86 | 71 |
| 13h. | 85 | 80 | 67 | 62 | 63 | 59 | 52 | 59 | 68 | 74 | 85 | 85 | 70 |
| 14 | 83 | 80 | 66 | 62 | 63 | 57 | 51 | 59 | 68 | 75 | 85 | 84 | 69 |
| 15 | 85 | 80 | 65 | 62 | 63 | 58 | 51 | 59 | 70 | 76 | 86 | 85 | 70 |
| 16 | 88 | 81 | 67 | 62 | 66 | 58 | 52 | 60 | 72 | 77 | 87 | 86 | 71 |
| 17 | 88 | 84 | 70 | 64 | 67 | 61 | 55 | 63 | 75 | 81 | 89 | 88 | 74 |
| 18 | 89 | 87 | 75 | 68 | 70 | 65 | 59 | 67 | 77 | 84 | 89 | 90 | 77 |
| 19 | 88 | 87 | 77 | 74 | 75 | 69 | 64 | 72 | 83 | 86 | 91 | 90 | 80 |
| 20 | 88 | 89 | 81 | 80 | 79 | 75 | 71 | 77 | 85 | 87 | 92 | 91 | 83 |
| 21 | 90 | 90 | 82 | 83 | 84 | 80 | 77 | 82 | 88 | 87 | 91 | 92 | 86 |
| 22 | 91 | 90 | 84 | 86 | 87 | 83 | 80 | 84 | 91 | 88 | 91 | 91 | 87 |
| 23 | 90 | 91 | 86 | 88 | 87 | 85 | 82 | 84 | 92 | 89 | 93 | 91 | 88 |
| Means .... | 89 | 88 | 81 | 78 | 78 | 74 | 71 | 76 | 84 | 85 | 91 | 90 | 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 1885.

| Month, 1885. | Registered Duration of Sunshine in the Hour ending 5h. | 6h. | 7h. | 8h. | 9h. | 10h. | 11h. | Noon. | 13h. | 14h. | 15h. | 16h. | 17h. | 18h. | 19h. | 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. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | h | h | h | h | h | h | h | h | h | h | h | h | h | h | h | h | h | ° |
| January ....... | .. | .. | .. | .. | .. | .. | 1·9 | 3·7 | 4·8 | 4·5 | 1·8 | 0·2 | .. | .. | .. | 16·9 | 259·1 | 18 |
| February ...... | .. | .. | .. | .. | 1·5 | 3·5 | 5·5 | 6·9 | 7·0 | 7·1 | 4·7 | 1·6 | .. | .. | .. | 37·8 | 277·9 | 26 |
| March ........ | .. | .. | .. | 2·5 | 9·5 | 14·1 | 14·9 | 14·4 | 12·6 | 13·0 | 12·7 | 8·5 | 3·2 | 0·3 | .. | 105·7 | 366·9 | 37 |
| April ......... | .. | 0·4 | 5·0 | 10·0 | 13·2 | 16·0 | 16·1 | 16·7 | 16·0 | 16·7 | 15·2 | 14·3 | 13·2 | 7·0 | 0·3 | 160·1 | 414·9 | 48 |
| May .......... | .. | 2·9 | 11·2 | 13·5 | 13·6 | 14·5 | 14·1 | 16·3 | 16·2 | 16·1 | 15·0 | 11·6 | 12·9 | 12·2 | 1·8 | 171·9 | 482·1 | 57 |
| June ......... | 0·4 | 8·7 | 14·0 | 15·8 | 17·3 | 17·1 | 17·5 | 18·9 | 18·2 | 18·8 | 18·1 | 14·8 | 14·1 | 13·2 | 5·3 | 212·2 | 494·5 | 62 |
| July .......... | .. | 2·9 | 12·0 | 14·6 | 16·4 | 17·6 | 18·8 | 20·0 | 20·4 | 18·8 | 19·8 | 16·7 | 18·7 | 14·4 | 6·6 | 217·7 | 496·8 | 60 |
| August ....... | .. | 0·8 | 7·9 | 7·7 | 11·5 | 13·5 | 12·7 | 13·4 | 12·4 | 12·1 | 9·3 | 10·5 | 10·9 | 5·4 | 0·7 | 128·8 | 449·1 | 52 |
| September ..... | .. | .. | 0·2 | 4·1 | 5·8 | 9·2 | 11·0 | 12·3 | 11·8 | 12·0 | 10·8 | 10·3 | 6·5 | 2·5 | .. | 96·5 | 376·9 | 41 |
| October ....... | .. | .. | .. | 0·4 | 3·3 | 8·2 | 9·5 | 8·8 | 9·2 | 7·7 | 8·1 | 4·3 | 0·5 | .. | .. | 60·0 | 328·7 | 30 |
| November ..... | .. | .. | .. | .. | 0·4 | 4·0 | 6·1 | 7·2 | 6·0 | 3·6 | 3·4 | 0·6 | .. | .. | .. | 31·3 | 264·4 | 20 |
| December ..... | .. | .. | .. | .. | .. | 0·2 | 2·6 | 6·3 | 5·5 | 6·3 | 1·1 | .. | .. | .. | .. | 22·0 | 242·7 | 16 |

The hours are reckoned from *apparent* midnight.

The total registered duration of sunshine during the year was 1260·9 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 0·283.

(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.

| 1885. | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Days of the Month. | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. |
| d | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° |
| 1 | 52·74 | 52·04 | 51·11 | 50·24 | 49·62 | 49·32 | 49·49 | 50·17 | 51·12 | 51·96 | 52·50 | 52·54 |
| 2 | 52·73 | 52·03 | 51·07 | 50·21 | 49·60 | 49·33 | 49·51 | 50·19 | 51·15 | 52·00 | 52·53 | 52·52 |
| 3 | 52·71 | 51·98 | 51·04 | 50·20 | 49·59 | 49·33 | 49·53 | 50·22 | 51·17 | 52·02 | 52·53 | 52·52 |
| 4 | 52·71 | 51·95 | 51·02 | 50·16 | 49·57 | 49·34 | 49·54 | 50·25 | 51·21 | 52·04 | 52·54 | 52·53 |
| 5 | 52·71 | 51·92 | 50·98 | 50·14 | 49·55 | 49·34 | 49·56 | 50·27 | 51·25 | 52·10 | 52·53 | 52·47 |
| 6 | 52·70 | 51·89 | 50·93 | 50·11 | 49·53 | 49·32 | 49·58 | 50·31 | 51·28 | 52·08 | 52·53 | 52·46 |
| 7 | 52·64 | 51·87 | 50·90 | 50·10 | 49·51 | 49·33 | 49·60 | 50·34 | 51·30 | 52·10 | 52·56 | 52·47 |
| 8 | 52·63 | 51·84 | 50·86 | 50·06 | 49·50 | 49·31 | 49·61 | 50·37 | 51·34 | 52·11 | 52·55 | 52·43 |
| 9 | 52·64 | 51·78 | 50·84 | 50·04 | 49·49 | 49·32 | 49·62 | 50·39 | 51·36 | 52·17 | 52·56 | 52·41 |
| 10 | 52·61 | 51·76 | 50·82 | 50·02 | 49·47 | 49·33 | 49·65 | 50·42 | 51·39 | 52·15 | 52·57 | 52·40 |
| 11 | 52·57 | 51·75 | 50·78 | 50·01 | 49·46 | 49·32 | 49·67 | 50·46 | 51·40 | 52·17 | 52·56 | 52·37 |
| 12 | 52·52 | 51·72 | 50·76 | 50·00 | 49·46 | 49·33 | 49·67 | 50·49 | 51·44 | 52·18 | 52·57 | 52·37 |
| 13 | 52·50 | 51·67 | 50·74 | 49·96 | 49·44 | 49·35 | 49·70 | 50·52 | 51·49 | 52·21 | 52·58 | 52·38 |
| 14 | 52·49 | 51·64 | 50·70 | 49·95 | 49·42 | 49·35 | 49·72 | 50·54 | 51·53 | 52·22 | 52·57 | 52·37 |
| 15 | 52·47 | 51·60 | 50·67 | 49·93 | 49·41 | 49·34 | 49·75 | 50·58 | 51·57 | 52·26 | 52·58 | 52·38 |
| 16 | 52·44 | 51·56 | 50·64 | 49·90 | 49·41 | 49·35 | 49·76 | 50·62 | 51·58 | 52·30 | 52·58 | 52·35 |
| 17 | 52·43 | 51·52 | 50·62 | 49·90 | 49·39 | 49·35 | 49·78 | 50·61 | 51·60 | 52·30 | 52·57 | 52·34 |
| 18 | 52·40 | 51·47 | 50·58 | 49·88 | 49·38 | 49·35 | 49·81 | 50·67 | 51·66 | 52·30 | 52·58 | 52·32 |
| 19 | 52·37 | 51·43 | 50·56 | 49·86 | 49·37 | 49·36 | 49·84 | 50·69 | 51·65 | 52·32 | 52·57 | 52·27 |
| 20 | 52·34 | 51·40 | 50·55 | 49·85 | 49·35 | 49·37 | 49·82 | 50·74 | 51·69 | 52·34 | 52·59 | 52·28 |
| 21 | 52·30 | 51·37 | 50·50 | 49·83 | 49·35 | 49·37 | 49·89 | 50·75 | 51·72 | 52·35 | 52·57 | 52·27 |
| 22 | 52·28 | 51·35 | 50·46 | 49·81 | 49·34 | 49·39 | 49·92 | 50·76 | 51·77 | 52·38 | 52·58 | 52·24 |
| 23 | 52·26 | 51·32 | 50·45 | 49·77 | 49·35 | 49·39 | 49·94 | 50·82 | 51·79 | 52·38 | 52·57 | 52·21 |
| 24 | 52·24 | 51·30 | 50·43 | 49·75 | 49·35 | 49·41 | 49·97 | 50·86 | 51·79 | 52·39 | 52·61 | 52·18 |
| 25 | 52·21 | 51·25 | 50·40 | 49·74 | 49·34 | 49·41 | 49·99 | 50·90 | 51·81 | 52·41 | 52·57 | 52·15 |
| 26 | 52·20 | 51·22 | 50·38 | 49·72 | 49·38 | 49·42 | 50·02 | 50·94 | 51·88 | 52·44 | 52·57 | 52·15 |
| 27 | 52·19 | 51·18 | 50·35 | 49·70 | 49·34 | 49·44 | 50·05 | 50·94 | 51·85 | 52·44 | 52·57 | 52·12 |
| 28 | 52·16 | 51·15 | 50·33 | 49·69 | 49·34 | 49·45 | 50·06 | 50·97 | 51·88 | 52·45 | 52·58 | 52·12 |
| 29 | 52·14 | | 50·30 | 49·66 | 49·33 | 49·45 | 50·10 | 51·02 | 51·92 | 52·47 | 52·56 | 52·07 |
| 30 | 52·10 | | 50·29 | 49·65 | 49·33 | 49·47 | 50·12 | 51·05 | 51·94 | 52·48 | 52·57 | 52·06 |
| 31 | 52·06 | | 50·27 | | 49·32 | | 50·14 | 51·07 | | 52·48 | | 52·07 |
| Means. | 52·44 | 51·61 | 50·66 | 49·93 | 49·43 | 49·36 | 49·79 | 50·61 | 51·55 | 52·26 | 52·56 | 52·32 |

The mean of the twelve monthly values is 51°·04.

(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.

| 1885. | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Days of the Month. | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. |
| d | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° |
| 1 | 51·13 | 48·42 | 47·48 | 46·93 | 47·21 | 48·90 | 51·72 | 54·43 | 56·11 | 56·08 | 54·35 | 51·97 |
| 2 | 51·07 | 48·37 | 47·47 | 46·89 | 47·29 | 48·98 | 51·83 | 54·51 | 56·12 | 56·06 | 54·31 | 51·88 |
| 3 | 50·98 | 48·28 | 47·43 | 46·88 | 47·35 | 49·02 | 51·95 | 54·59 | 56·14 | 56·01 | 54·23 | 51·81 |
| 4 | 50·91 | 48·20 | 47·42 | 46·86 | 47·41 | 49·09 | 52·03 | 54·70 | 56·13 | 55·99 | 54·16 | 51·75 |
| 5 | 50·84 | 48·11 | 47·41 | 46·83 | 47·46 | 49·15 | 52·12 | 54·76 | 56·15 | 55·92 | 54·07 | 51·61 |
| 6 | 50·71 | 48·06 | 47·37 | 46·82 | 47·54 | 49·18 | 52·22 | 54·89 | 56·17 | 55·91 | 53·94 | 51·55 |
| 7 | 50·63 | 48·00 | 47·34 | 46·81 | 47·60 | 49·30 | 52·31 | 54·95 | 56·12 | 55·87 | 53·91 | 51·50 |
| 8 | 50·55 | 47·98 | 47·32 | 46·80 | 47·68 | 49·31 | 52·39 | 55·05 | 56·13 | 55·82 | 53·81 | 51·42 |

(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.*

| 1885. | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Days of the Month. | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. |
| d | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° |
| 9 | 50·44 | 47·90 | 47·33 | 46·80 | 47·76 | 49·38 | 52·46 | 55·10 | 56·14 | 55·79 | 53·72 | 51·34 |
| 10 | 50· | 47·86 | 47·32 | 46·80 | 47·81 | 49·50 | 52·58 | 55·20 | 56·15 | 55·71 | 53·69 | 51·30 |
| 11 | 50·30 | 47·82 | 47·32 | 46·82 | 47·88 | 49·59 | 52·68 | 55·29 | 56·09 | 55·69 | 53·58 | 51·23 |
| 12 | 50·16 | 47·80 | 47·31 | 46·81 | 47·96 | 49·70 | 52·70 | 55·32 | 56·13 | 55·61 | 53·51 | 51·20 |
| 13 | 50·08 | 47·76 | 47·30 | 46·81 | 48·02 | 49·83 | 52·80 | 55·37 | 56·17 | 55·59 | 53·47 | 51·17 |
| 14 | 49·99 | 47·72 | 47·29 | 46·83 | 48·08 | 49·96 | 52·90 | 55·41 | 56·18 | 55·51 | 53·36 | 51·11 |
| 15 | 49·90 | 47·69 | 47·28 | 46·84 | 48·12 | 50·03 | 53·01 | 55·53 | 56·23 | 55·51 | 53·26 | 51·08 |
| 16 | 49·80 | 47·67 | 47·27 | 46·85 | 48·19 | 50·16 | 53·09 | 55·61 | 56·19 | 55·51 | 53·21 | 50·94 |
| 17 | 49·71 | 47·61 | 47·23 | 46·86 | 48·22 | 50·23 | 53·16 | 55·66 | 56·13 | 55·40 | 53·12 | 50·90 |
| 18 | 49·62 | 47·57 | 47·21 | 46·88 | 48·28 | 50·40 | 53·29 | 55·68 | 56·14 | 55·31 | 53·07 | 50·81 |
| 19 | 49·54 | 47·54 | 47·19 | 46·90 | 48·31 | 50·49 | 53·38 | 55·69 | 56·11 | 55·26 | 52·99 | 50·70 |
| 20 | 49·44 | 47·53 | 47·20 | 46·91 | 48·35 | 50·57 | 53·47 | 55·71 | 56·16 | 55·20 | 52·93 | 50·61 |
| 21 | 49·33 | 47·52 | 47·14 | 46·91 | 48·40 | 50·66 | 53·55 | 55·76 | 56·17 | 55·13 | 52·81 | 50·53 |
| 22 | 49·27 | 47·52 | 47·10 | 46·91 | 48·43 | 50·81 | 53·67 | 55·81 | 56·19 | 55·08 | 52·79 | 50·41 |
| 23 | 49·17 | 47·55 | 47·10 | 46·90 | 48·50 | 50·91 | 53·72 | 55·83 | 56·20 | 54·98 | 52·69 | 50·31 |
| 24 | 49·09 | 47·57 | 47·09 | 46·92 | 48·55 | 51·07 | 53·81 | 55·91 | 56·11 | 54·90 | 52·60 | 50·21 |
| 25 | 49·00 | 47·52 | 47·05 | 46·96 | 48·59 | 51·10 | 53·90 | 55·96 | 56·09 | 54·82 | 52·55 | 50·11 |
| 26 | 48·93 | 47·53 | 47·05 | 46·99 | 48·64 | 51·21 | 54·01 | 56·03 | 56·10 | 54·80 | 52·48 | 50·04 |
| 27 | 48·88 | 47·52 | 47·01 | 47·00 | 48·70 | 51·36 | 54·11 | 55·95 | 56·02 | 54·71 | 52·38 | 49·96 |
| 28 | 48·80 | 47·50 | 46·98 | 47·08 | 48·75 | 51·47 | 54·12 | 56·01 | 56·05 | 54·61 | 52·31 | 49·92 |
| 29 | 48·72 | | 46·99 | 47·10 | 48·80 | 51·52 | 54·20 | 56·06 | 56·10 | 54·58 | 52·20 | 49·80 |
| 30 | 48·61 | | 46·98 | 47·17 | 48·81 | 51·64 | 54·28 | 56·03 | 56·10 | 54·50 | 52·14 | 49·70 |
| 31 | 48·52 | | 46·96 | | 48·85 | | 54·36 | 56·04 | | 54·41 | | 49·71 |
| Means . | 49·82 | 47·79 | 47·22 | 46·90 | 48·11 | 50·15 | 53·09 | 55·45 | 56·13 | 55·36 | 53·25 | 50·86 |
| The mean of the twelve monthly values is 51°·18. | | | | | | | | | | | | |

(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.

| 1885. | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Days of the Month. | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. |
| d | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° |
| 1 | 47·90 | 44·75 | 45·91 | 45·60 | 49·20 | 51·63 | 56·88 | 60·54 | 59·81 | 57·71 | 53·01 | 49·52 |
| 2 | 47·79 | 44·82 | 46·01 | 45·66 | 49·40 | 51·92 | 57·03 | 60·65 | 59·73 | 57·57 | 52·89 | 49·60 |
| 3 | 47·61 | 44·96 | 46·09 | 45·74 | 49·56 | 52·15 | 57·19 | 60·74 | 59·70 | 57·39 | 52·78 | 49·71 |
| 4 | 47·44 | 45·09 | 46·11 | 45·85 | 49·67 | 52·41 | 57·26 | 60·88 | 59·60 | 57·21 | 52·61 | 49·77 |
| 5 | 47·30 | 45·17 | 46·11 | 45·95 | 49·74 | 52·66 | 57·37 | 60·89 | 59·56 | 57·07 | 52·44 | 49·69 |
| 6 | 47·11 | 45·26 | 46·12 | 46·02 | 49·85 | 52·85 | 57·51 | 60·94 | 59·52 | 56·99 | 52·33 | 49·61 |
| 7 | 46·99 | 45·31 | 46·13 | 46·10 | 49·92 | 53·22 | 57·62 | 60·91 | 59·43 | 56·83 | 52·33 | 49·53 |
| 8 | 46·85 | 45·32 | 46·14 | 46·16 | 50·01 | 53·50 | 57·74 | 60·90 | 59·42 | 56·70 | 52·22 | 49·45 |
| 9 | 46·79 | 45·36 | 46·17 | 46·22 | 50·07 | 53·83 | 57·90 | 60·81 | 59·41 | 56·54 | 52·11 | 49·32 |
| 10 | 46·68 | 45·38 | 46·13 | 46·30 | 50·05 | 54·20 | 58·10 | 60·81 | 59·38 | 56·33 | 52·00 | 49·19 |
| 11 | 46·50 | 45·43 | 46·07 | 46·35 | 50·04 | 54·40 | 58·28 | 60·79 | 59·41 | 56·15 | 51·89 | 49·00 |
| 12 | 46·36 | 45·48 | 46·00 | 46·39 | 50·05 | 54·59 | 58·28 | 60·75 | 59·28 | 55·97 | 51·78 | 48·80 |
| 13 | 46·29 | 45·54 | 45·91 | 46·38 | 50·05 | 54·76 | 58·41 | 60·70 | 59·25 | 55·81 | 51·70 | 48·51 |
| 14 | 46·21 | 45·61 | 45·81 | 46·41 | 50·08 | 54·88 | 58·59 | 60·68 | 59·17 | 55·60 | 51·60 | 48·26 |
| 15 | 46·13 | 45·73 | 45·76 | 46·46 | 50·10 | 54·95 | 58·72 | 60·73 | 59·14 | 55·44 | 51·49 | 48·01 |

(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.*

| 1885. | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Days of the Month. | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. |
| d | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° |
| 16 | 46·00 | 45·86 | 45·71 | 46·51 | 50·16 | 55·12 | 58·80 | 60·70 | 59·01 | 55·28 | 51·41 | 47·78 |
| 17 | 45·88 | 45·92 | 45·71 | 46·58 | 50·20 | 55·30 | 58·84 | 60·62 | 58·91 | 55·00 | 51·31 | 47·60 |
| 18 | 45·74 | 46·04 | 45·69 | 46·67 | 50·28 | 55·56 | 58·94 | 60·50 | 58·92 | 54·83 | 51·20 | 47·52 |
| 19 | 45·67 | 46·19 | 45·68 | 46·78 | 50·34 | 55·76 | 59·05 | 60·42 | 58·91 | 54·71 | 51·01 | 47·43 |
| 20 | 45·57 | 46·28 | 45·70 | 46·91 | 50·39 | 55·86 | 59·12 | 60·41 | 58·95 | 54.64 | 50·81 | 47·40 |
| 21 | 45·48 | 46·28 | 45·69 | 47·06 | 50·43 | 55·97 | 59·21 | 60·41 | 58·93 | 54·55 | 50·57 | 47·40 |
| 22 | 45·42 | 46·23 | 45·68 | 47·25 | 50·46 | 56·14 | 59·33 | 60·38 | 58·89 | 54·44 | 50·40 | 47·36 |
| 23 | 45·36 | 46·15 | 45·64 | 47·49 | 50·51 | 56·21 | 59·41 | 60·30 | 58·82 | 54·31 | 50·21 | 47·38 |
| 24 | 45·23 | 46·03 | 45·63 | 47·71 | 50·56 | 56·26 | 59·52 | 60·28 | 58·68 | 54·16 | 50·07 | 47·38 |
| 25 | 45·10 | 45·90 | 45·60 | 48·01 | 50·57 | 56·29 | 59·63 | 60·22 | 58·61 | 53·98 | 49·98 | 47·36 |
| 26 | 44·88 | 45·85 | 45·57 | 48·24 | 50·64 | 56·36 | 59·82 | 60·19 | 58·59 | 53·91 | 49·86 | 47·31 |
| 27 | 44·86 | 45·85 | 45·52 | 48·43 | 50·72 | 56·55 | 59·95 | 59·98 | 58·43 | 53·75 | 49·58 | 47·23 |
| 28 | 44·73 | 45·87 | 45·48 | 48·65 | 50·82 | 56·64 | 59·97 | 59·94 | 58·32 | 53·62 | 49·52 | 47·15 |
| 29 | 44·65 | | 45·50 | 48·81 | 50·93 | 56·65 | 60·09 | 59·94 | 58·21 | 53·54 | 49·51 | 46·99 |
| 30 | 44·61 | | 45·51 | 49·02 | 51·12 | 56·79 | 60·26 | 59·87 | 57·99 | 53·41 | 49·53 | 46·86 |
| 31 | 44·66 | | 45·53 | | 51·37 | | 60·41 | 59·80 | | 53·28 | | 46·79 |
| Means . | 46·06 | 45·63 | 45·82 | 46·86 | 50·24 | 54·78 | 58·68 | 60·51 | 59·07 | 55·38 | 51·27 | 48·22 |

The mean of the twelve monthly values is 51°·88.

(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.

| 1885. | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Days of the Month. | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. |
| d | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° |
| 1 | 42·68 | 42·14 | 44·15 | 43·76 | 50·90 | 54·64 | 60·46 | 65·20 | 60·60 | 55·72 | 49·21 | 47·65 |
| 2 | 42·33 | 42·36 | 44·12 | 44·11 | 50·91 | 54·97 | 60·57 | 65·02 | 60·33 | 55·63 | 49·11 | 47·51 |
| 3 | 42·02 | 42·68 | 43·91 | 44·50 | 50·83 | 55·39 | 60·69 | 64·92 | 60·22 | 55·50 | 49·11 | 47·01 |
| 4 | 41·84 | 42·71 | 43·73 | 44·59 | 50·72 | 56·08 | 60·91 | 64·73 | 60·29 | 55·51 | 49·27 | 46·81 |
| 5 | 41·80 | 42·62 | 43·87 | 44·58 | 50·81 | 56·92 | 61·07 | 64·25 | 60·42 | 55·31 | 49·45 | 46·72 |
| 6 | 41·90 | 42·42 | 44·02 | 44·60 | 50·73 | 57·68 | 61·39 | 64·05 | 60·43 | 55·13 | 49·18 | 46·23 |
| 7 | 41·96 | 42·30 | 44·02 | 44·80 | 50·55 | 58·30 | 61·79 | 63·72 | 60·31 | 54·69 | 48·75 | 45·85 |
| 8 | 41·69 | 42·50 | 43·80 | 44·83 | 50·38 | 58·33 | 62·13 | 63·31 | 60·31 | 54·42 | 48·52 | 45·49 |
| 9 | 41·50 | 42·70 | 43·31 | 44·87 | 49·97 | 58·60 | 62·27 | 63·29 | 60·16 | 54·01 | 48·31 | 44·79 |
| 10 | 41·36 | 42·79 | 43·01 | 44·79 | 49·79 | 58·37 | 62·20 | 63·39 | 60·04 | 53·60 | 48·25 | 44·11 |
| 11 | 41·49 | 42·80 | 42·73 | 44·60 | 49·87 | 58·00 | 62·26 | 63·41 | 59·67 | 53·32 | 48·21 | 43·45 |
| 12 | 41·64 | 43·07 | 42·59 | 44·58 | 49·93 | 57·99 | 62·45 | 63·36 | 59·41 | 53·06 | 48·22 | 42·85 |
| 13 | 41·49 | 43·48 | 42·45 | 44·72 | 50·00 | 58·20 | 62·70 | 63·21 | 59·12 | 52·58 | 48·19 | 42·39 |
| 14 | 41·12 | 43·91 | 42·58 | 45·00 | 50·16 | 58·61 | 62·64 | 62·90 | 59·11 | 52·10 | 48·10 | 42·12 |
| 15 | 40·83 | 44·19 | 42·80 | 45·11 | 50·36 | 59·09 | 62·56 | 62·60 | 59·31 | 51·79 | 48·09 | 42·39 |
| 16 | 40·71 | 44·45 | 42·85 | 45·31 | 50·53 | 59·58 | 62·40 | 62·40 | 59·52 | 51·79 | 47·83 | 42·70 |
| 17 | 40·69 | 44·89 | 42·83 | 45·62 | 50·70 | 59·72 | 62·51 | 62·50 | 59·80 | 51·95 | 47·20 | 42·70 |
| 18 | 40·64 | 44·91 | 42·91 | 45·94 | 50·70 | 59·89 | 62·67 | 62·51 | 59·72 | 52·01 | 46·60 | 43·01 |
| 19 | 40·67 | 44·50 | 43·11 | 46·50 | 50·61 | 59·70 | 62·72 | 62·50 | 59·43 | 52·00 | 45·92 | 43·40 |
| 20 | 40·72 | 43·87 | 43·11 | 47·13 | 50·50 | 59·62 | 62·88 | 62·24 | 59·20 | 51·85 | 45·61 | 43·57 |

(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.*

| 1885. | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Days of the Month. | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. |
| d | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° |
| 21 | 40·61 | 43·25 | 43·11 | 47·83 | 50·49 | 59·60 | 63·06 | 61·99 | 58·91 | 51·69 | 45·60 | 43·62 |
| 22 | 40·34 | 42·70 | 43·30 | 48·52 | 50·42 | 59·41 | 63·31 | 61·71 | 59·01 | 51·53 | 45·60 | 43·63 |
| 23 | 40·02 | 42·49 | 43·04 | 49·13 | 50·59 | 59·19 | 63·49 | 61·44 | 58·94 | 51·40 | 45·62 | 44·03 |
| 24 | 39·76 | 42·56 | 42·61 | 49·59 | 50·59 | 59·42 | 63·66 | 61·29 | 58·96 | 51·07 | 45·61 | 43·89 |
| 25 | 39·60 | 42·89 | 42·40 | 49·63 | 50·80 | 59·55 | 63·82 | 61·15 | 58·75 | 50·91 | 45·69 | 43·41 |
| 26 | 39·37 | 43·31 | 42·42 | 49·80 | 51·09 | 59·84 | 64·17 | 61·12 | 58·14 | 50·69 | 45·75 | 42·90 |
| 27 | 39·33 | 43·53 | 42·60 | 50·00 | 51·37 | 59·80 | 64·51 | 61·01 | 57·26 | 50·50 | 45·97 | 42·68 |
| 28 | 39·71 | 43·88 | 42·90 | 50·34 | 52·06 | 59·59 | 64·72 | 61·09 | 56·53 | 50·40 | 46·50 | 42·60 |
| 29 | 40·33 | | 43·00 | 50·61 | 53·02 | 59·80 | 65·04 | 60·97 | 55·96 | 50·12 | 46·89 | 42·41 |
| 30 | 41·11 | | 43·14 | 50·98 | 53·92 | 60·30 | 65·20 | 60·82 | 55·73 | 49·85 | 47·11 | 42·20 |
| 31 | 41·72 | | 43·46 | | 54·39 | | 65·12 | 60·71 | | 49·50 | | 41·85 |
| Means. | 41·00 | 43·21 | 43·16 | 46·55 | 50·89 | 58·57 | 62·75 | 62·67 | 59·19 | 52·57 | 47·45 | 44·00 |
| The mean of the twelve monthly values is 51°·00. | | | | | | | | | | | | |

(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.

| 1885. | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Days of the Month. | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. |
| d | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° |
| 1 | 34·7 | 42·3 | 42·7 | 46·7 | 52·5 | 58·5 | 62·1 | 66·2 | 59·3 | 52·4 | 46·0 | 45·0 |
| 2 | 34·8 | 45·5 | 41·0 | 44·2 | 52·1 | 60·3 | 64·1 | 64·5 | 60·3 | 53·2 | 46·1 | 42·0 |
| 3 | 35·9 | 43·9 | 42·0 | 44·6 | 51·4 | 62·6 | 66·0 | 64·2 | 62·4 | 53·8 | 49·0 | 45·9 |
| 4 | 37·2 | 41·8 | 45·3 | 43·2 | 52·2 | 66·3 | 66·0 | 64·1 | 61·8 | 52·1 | 50·0 | 46·1 |
| 5 | 40·9 | 40·4 | 44·3 | 44·0 | 50·8 | 67·8 | 66·2 | 63·6 | 61·6 | 51·6 | 46·1 | 41·0 |
| 6 | 36·3 | 41·3 | 41·9 | 45·8 | 50·0 | 64·0 | 67·2 | 64·0 | 61·3 | 50·4 | 42·0 | 40·4 |
| 7 | 36·0 | 43·0 | 39·5 | 45·8 | 48·5 | 65·6 | 67·5 | 63·3 | 60·5 | 50·1 | 45·7 | 39·9 |
| 8 | 37·5 | 44·0 | 37·8 | 43·6 | 47·1 | 62·7 | 66·5 | 63·8 | 59·0 | 49·4 | 43·2 | 35·9 |
| 9 | 35·0 | 41·4 | 40·2 | 43·0 | 48·5 | 58·0 | 63·0 | 63·9 | 58·8 | 49·0 | 45·0 | 34·0 |
| 10 | 36·1 | 41·0 | 38·9 | 43·0 | 49·3 | 58·0 | 65·4 | 65·7 | 58·8 | 49·0 | 45·3 | 34·3 |
| 11 | 39·9 | 45·8 | 40·0 | 44·4 | 48·7 | 57·6 | 68·5 | 65·0 | 55·2 | 48·6 | 45·0 | 31·9 |
| 12 | 36·0 | 46·4 | 39·8 | 45·9 | 49·6 | 60·1 | 65·1 | 64·5 | 56·3 | 45·1 | 44·3 | 36·0 |
| 13 | 35·3 | 46·1 | 41·9 | 44·4 | 51·0 | 63·1 | 64·2 | 60·6 | 59·0 | 46·1 | 45·0 | 39·1 |
| 14 | 34·9 | 46·4 | 41·6 | 45·3 | 50·9 | 65·0 | 63·7 | 59·0 | 60·0 | 45·3 | 46·1 | 41·0 |
| 15 | 36·8 | 46·8 | 40·0 | 47·1 | 51·0 | 64·4 | 65·2 | 61·1 | 63·0 | 48·8 | 42·1 | 42·0 |
| 16 | 36·2 | 47·2 | 40·8 | 46·2 | 51·8 | 63·0 | 65·1 | 64·0 | 61·4 | 52·1 | 40·3 | 39·0 |
| 17 | 36·7 | 41·5 | 42·4 | 48·0 | 51·1 | 61·0 | 64·0 | 64·5 | 58·5 | 49·0 | 39·3 | 46·2 |
| 18 | 36·9 | 40·8 | 42·4 | 49·4 | 49·9 | 61·8 | 66·1 | 63·8 | 57·9 | 48·9 | 38·7 | 44·1 |
| 19 | 36·9 | 37·8 | 40·4 | 51·5 | 50·6 | 63·3 | 67·2 | 60·2 | 56·4 | 48·1 | 41·3 | 40·9 |
| 20 | 36·1 | 38·5 | 44·0 | 53·6 | 50·0 | 61·2 | 67·3 | 59·9 | 56·0 | 47·1 | 42·7 | 42·1 |
| 21 | 33·9 | 36·9 | 43·0 | 54·0 | 49·8 | 57·8 | 67·1 | 59·7 | 58·9 | 48·0 | 41·1 | 43·7 |
| 22 | 35·7 | 39·5 | 40·0 | 58·1 | 51·0 | 61·0 | 67·9 | 60·1 | 58·5 | 48·0 | 43·1 | 43·0 |
| 23 | 36·0 | 42·0 | 39·0 | 54·0 | 51·7 | 61·5 | 65·8 | 59·4 | 61·0 | 48·0 | 42·1 | 38·9 |
| 24 | 35·6 | 44·4 | 39·3 | 53·2 | 52·0 | 66·2 | 66·1 | 60·4 | 56·0 | 46·2 | 42·0 | 36·1 |
| 25 | 33·0 | 45·0 | 40·3 | 54·2 | 52·6 | 61·5 | 67·3 | 61·4 | 52·9 | 45·2 | 44·0 | 36·1 |

(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.*

| 1885. | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Days of the Month. | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. |
| d | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° |
| 26 | 35 ·9 | 44 ·6 | 42 ·7 | 54 ·0 | 54 ·6 | 58 ·5 | 71 ·5 | 63 ·9 | 50 ·2 | 50 ·0 | 45 ·9 | 39 ·0 |
| 27 | 40 ·7 | 46 ·3 | 43 ·2 | 54 ·1 | 56 ·8 | 60 ·0 | 73 ·0 | 59 ·4 | 48 ·0 | 47 ·2 | 46 ·2 | 37 ·2 |
| 28 | 43 ·4 | 46 ·3 | 41 ·6 | 58 ·2 | 60 ·8 | 61 ·9 | 68 ·0 | 60 ·2 | 48 ·8 | 45 ·0 | 50 ·0 | 40 ·2 |
| 29 | 45 ·5 | | 43 ·1 | 55 ·0 | 60 ·0 | 61 ·4 | 67 ·4 | 60 ·4 | 54 ·1 | 46 ·3 | 47 ·2 | 38 ·0 |
| 30 | 45 ·0 | | 44 ·7 | 51 ·7 | 59 ·1 | 63 ·0 | 65 ·9 | 59 ·3 | 55 ·1 | 43 ·9 | 52 ·9 | 34 ·2 |
| 31 | 41 ·7 | | 44 ·3 | | 58 ·6 | | 65 ·9 | 59 ·2 | | 46 ·0 | | 40 ·6 |
| Means. | 37 ·3 | 43 ·1 | 41 ·6 | 48 ·9 | 52 ·1 | 61 ·9 | 66 ·3 | 62 ·2 | 57 ·7 | 48 ·5 | 44 ·6 | 39 ·8 |
| The mean of the twelve monthly values is 50°·33. | | | | | | | | | | | | |

(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.

| 1885. | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Days of the Month. | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. |
| d | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° |
| 1 | 31 ·3 | 44 ·2 | 44 ·6 | 56 ·8 | 55 ·9 | 64 ·0 | 65 ·6 | 68 ·1 | 66 ·5 | 55 ·9 | 48 ·9 | 44 ·9 |
| 2 | 32 ·1 | 51 ·2 | 42 ·6 | 50 ·1 | 56 ·5 | 72 ·0 | 73 ·0 | 65 ·4 | 65 ·4 | 58 ·1 | 53 ·8 | 43 ·8 |
| 3 | 34 ·0 | 46 ·2 | 43 ·0 | 50 ·2 | 59 ·8 | 73 ·2 | 75 ·0 | 65 ·0 | 69 ·3 | 56 ·4 | 52 ·1 | 48 ·6 |
| 4 | 39 ·8 | 46 ·2 | 50 ·1 | 49 ·2 | 54 ·9 | 80 ·6 | 73 ·4 | 69 ·8 | 66 ·9 | 55 ·9 | 50 ·3 | 47 ·1 |
| 5 | 45 ·8 | 44 ·3 | 48 ·9 | 49 ·8 | 51 ·7 | 80 ·2 | 72 ·2 | 64 ·4 | 68 ·0 | 48 ·9 | 46 ·9 | 40 ·3 |
| 6 | 34 ·3 | 46 ·6 | 39 ·8 | 50 ·0 | 52 ·4 | 64 ·2 | 75 ·4 | 70 ·1 | 68 ·8 | 53 ·6 | 42 ·8 | 38 ·8 |
| 7 | 36 ·2 | 48 ·1 | 39 ·0 | 52 ·5 | 48 ·5 | 73 ·8 | 73 ·2 | 67 ·4 | 61 ·6 | 52 ·3 | 48 ·3 | 38 ·5 |
| 8 | 40 ·7 | 49 ·4 | 36 ·9 | 42 ·2 | 52 ·4 | 62 ·7 | 70 ·4 | 69 ·8 | 62 ·5 | 51 ·0 | 43 ·5 | 32 ·7 |
| 9 | 31 ·3 | 43 ·2 | 42 ·2 | 43 ·2 | 55 ·7 | 56 ·0 | 67 ·6 | 65 ·2 | 62 ·4 | 50 ·9 | 45 ·2 | 31 ·4 |
| 10 | 48 ·5 | 44 ·5 | 40 ·5 | 43 ·2 | 53 ·8 | 61 ·0 | 74 ·3 | 69 ·9 | 62 ·7 | 48 ·1 | 46 ·3 | 31 ·9 |
| 11 | 42 ·1 | 51 ·8 | 42 ·5 | 50 ·3 | 51 ·3 | 63 ·1 | 78 ·9 | 70 ·0 | 53 ·3 | 48 ·8 | 43 ·5 | 27 ·5 |
| 12 | 34 ·3 | 52 ·1 | 46 ·7 | 47 ·5 | 56 ·7 | 67 ·2 | 66 ·1 | 67 ·0 | 58 ·1 | 45 ·7 | 43 ·2 | 36 ·2 |
| 13 | 33 ·5 | 48 ·1 | 44 ·9 | 45 ·5 | 55 ·9 | 73 ·4 | 66 ·8 | 63 ·0 | 63 ·9 | 46 ·3 | 46 ·2 | 41 ·7 |
| 14 | 32 ·9 | 48 ·6 | 42 ·4 | 49 ·8 | 54 ·9 | 75 ·2 | 69 ·9 | 61 ·0 | 64 ·9 | 44 ·2 | 46 ·9 | 45 ·8 |
| 15 | 37 ·2 | 49 ·8 | 45 ·1 | 53 ·2 | 53 ·6 | 67 ·9 | 74 ·2 | 69 ·8 | 73 ·2 | 52 ·3 | 42 ·0 | 46 ·3 |
| 16 | 35 ·6 | 50 ·5 | 46 ·6 | 48 ·4 | 56 ·2 | 66 ·6 | 69 ·3 | 73 ·1 | 65 ·3 | 58 ·9 | 42 ·8 | 43 ·0 |
| 17 | 37 ·0 | 42 ·5 | 50 ·0 | 57 ·6 | 54 ·2 | 61 ·5 | 66 ·0 | 73 ·4 | 58 ·2 | 51 ·0 | 42 ·0 | 47 ·8 |
| 18 | 37 ·8 | 40 ·2 | 47 ·1 | 62 ·1 | 52 ·6 | 68 ·6 | 70 ·4 | 66 ·1 | 59 ·4 | 48 ·6 | 41 ·9 | 46 ·3 |
| 19 | 35 ·6 | 36 ·0 | 42 ·6 | 64 ·6 | 53 ·9 | 68 ·2 | 71 ·9 | 61 ·4 | 55 ·8 | 49 ·6 | 43 ·8 | 38 ·7 |
| 20 | 33 ·7 | 38 ·1 | 52 ·6 | 67 ·7 | 48 ·9 | 61 ·4 | 71 ·6 | 60 ·4 | 62 ·9 | 48 ·3 | 44 ·7 | 43 ·5 |
| 21 | 29 ·9 | 39 ·5 | 44 ·0 | 68 ·0 | 53 ·2 | 59 ·0 | 71 ·0 | 60 ·9 | 63 ·0 | 50 ·6 | 43 ·0 | 46 ·8 |
| 22 | 33 ·1 | 42 ·0 | 40 ·0 | 66 ·2 | 50 ·8 | 67 ·1 | 74 ·6 | 63 ·0 | 67 ·7 | 50 ·2 | 45 ·6 | 44 ·4 |
| 23 | 32 ·3 | 49 ·0 | 42 ·2 | 56 ·5 | 60 ·5 | 63 ·6 | 72 ·9 | 60 ·6 | 65 ·9 | 48 ·2 | 41 ·9 | 36 ·0 |
| 24 | 33 ·9 | 55 ·2 | 44 ·8 | 55 ·2 | 58 ·2 | 77 ·3 | 73 ·4 | 66 ·3 | 55 ·7 | 45 ·1 | 42 ·1 | 33 ·1 |
| 25 | 34 ·4 | 47 ·4 | 45 ·8 | 60 ·4 | 54 ·3 | 58 ·5 | 73 ·5 | 69 ·9 | 53 ·1 | 45 ·4 | 47 ·3 | 36 ·0 |
| 26 | 41 ·0 | 48 ·9 | 50 ·2 | 59 ·9 | 61 ·4 | 57 ·4 | 84 ·0 | 73 ·5 | 53 ·6 | 54 ·5 | 48 ·4 | 40 ·5 |
| 27 | 48 ·5 | 49 ·6 | 46 ·8 | 59 ·0 | 65 ·3 | 67 ·6 | 84 ·5 | 58 ·1 | 46 ·2 | 48 ·8 | 49 ·0 | 34 ·6 |
| 28 | 48 ·2 | 50 ·0 | 47 ·3 | 64 ·2 | 69 ·9 | 68 ·0 | 71 ·0 | 63 ·1 | 50 ·6 | 46 ·0 | 55 ·0 | 43 ·3 |
| 29 | 51 ·4 | | 48 ·0 | 56 ·7 | 65 ·3 | 60 ·4 | 68 ·2 | 66 ·2 | 58 ·3 | 49 ·3 | 50 ·1 | 38 ·3 |
| 30 | 48 ·9 | | 55 ·2 | 59 ·9 | 63 ·8 | 68 ·6 | 69 ·2 | 63 ·3 | 58 ·4 | 46 ·1 | 57 ·4 | 32 ·8 |
| 31 | 44 ·7 | | 53 ·5 | | 63 ·9 | | 68 ·4 | 60 ·5 | | 46 ·9 | | 46 ·4 |
| Means. | 38 ·1 | 46 ·5 | 45 ·4 | 54 ·7 | 56 ·3 | 66 ·9 | 72 ·1 | 66 ·0 | 61 ·4 | 50 ·2 | 46 ·5 | 40 ·2 |
| The mean of the twelve monthly values is 53°·69. | | | | | | | | | | | | |

**ABSTRACT of the CHANGES of the DIRECTION of the WIND, as derived from the Records of OSLER'S ANEMOMETER in the Year 1885.**

(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.)

*Note.*—The time is expressed in civil reckoning commencing at midnight and counting from $0^h$. to $24^h$.

| Greenwich Civil Time. | | Change of Direction. | | Amount of Motion. | |
|---|---|---|---|---|---|
| From | To | From | To | Direct. | Retrograde. |
| | | | | ° | ° |
| **January.** | | | | | |
| d h | d h | | | | |
| 1. 5 | 1. 7 | E.S.E. | S.E. | 22½ | |
| 1. 9 | 1. 15 | S.E. | E. | | 45 |
| 2. 1 | 2. 5 | E. | S.E. | 45 | |
| 3. 16 | 3. 18 | S.E. | E. | | 45 |
| 4. 3 | 4. 6 | E. | S.E. | 45 | |
| 4. 9 | 4. 12 | S.E. | S.W. | 90 | |
| 4. 15 | 4. 17 | S.W. | S.S.E. | | 67½ |
| 4. 22 | 4. 23 | S.S.E. | S.S.W. | 45 | |
| 5. 17 | 5. 18 | S.S.W. | N. | 157½ | |
| 6. 4 | 6. 7 | N. | W.S.W. | | 112½ |
| 7. 4 | 7. 6 | W.S.W. | S.W. | | 22½ |
| 7. 16 | 7. 17 | S.W. | S.S.W. | | 22½ |
| 8. 0 | 8. 3 | S.S.W. | S. | | 22½ |
| 8. 8 | 8. 11 | S. | S.S.W. | 22½ | |
| 8. 20 | 8. 21½ | S.S.W. | W. | 67½ | |
| 8. 22 | 8. 23 | W. | S.W. | | 45 |
| 9. 7½ | 9. 8 | S.W. | E.N.E. | 202½ | |
| 9. 8¾ | 9. 9 | E.N.E. | S.S.E. | 90 | |
| 9. 11 | 9. 12 | S.S.E. | S.S.W. | 45 | |
| 9. 17 | 9. 22 | S.S.W. | W. | 67½ | |
| 9. 22 | 9. 23 | W. | W.S.W. | | 22½ |
| 10. 2 | 10. 5 | W.S.W. | S.S.W. | | 45 |
| 10. 7 | 10. 11 | S.S.W. | W.S.W. | 45 | |
| 10. 13 | 10. 14 | W.S.W. | S.W. | | 22½ |
| 10. 17½ | 10. 17¾ | S.W. | W.N.W. | 67½ | |
| 10. 18 | 10. 18½ | W.N.W. | W.S.W. | | 45 |
| 11. 15 | 11. 22 | W.S.W. | N.N.W. | 90 | |
| 12. 20 | 13. 0 | N.N.W. | N.W. | | 22½ |
| 13. 3 | 13. 6 | N.W. | N.N.W. | 22½ | |
| 14. 6 | 14. 9 | N.N.W. | N.N.E. | 45 | |
| 14. 14 | 14. 15 | N.N.E. | N. | | 22½ |
| 14. 22 | 15. 0 | N. | N.N.E. | 22½ | |
| 15. 21 | 16. 1 | N.N.E. | N.E. | 22½ | |
| 16. 20 | 17. 6 | N.E. | E.S.E. | 67½ | |
| 17. 12 | 17. 21 | E.S.E. | N.E. | | 67½ |
| 18. 1 | 18. 7 | N.E. | E. | 45 | |
| 18. 22 | 18. 23 | E. | E.N.E. | | 22½ |
| 19. 9 | 19. 10 | E.N.E. | N.E. | | 22½ |
| 19. 14 | 19. 15¼ | N.E. | E.S.E. | 67½ | |
| 19. 16 | 19. 17 | E.S.E. | N.E. | | 67½ |
| 19. 20 | 19. 22 | N.E. | S.E. | 90 | |
| 20. 1 | 20. 6 | S.E. | N.E. | | 90 |
| 20. 14 | 20. 15 | N.E. | E. | 45 | |
| 21. 3 | 21. 5 | E. | E.S.E. | 22½ | |
| 21. 12 | 21. 13 | E.S.E. | E. | | 22½ |
| 21. 14 | 21. 15 | E. | S.E. | 45 | |
| 21. 20 | 21. 22 | S.E. | E. | | 45 |
| 22. 6 | 22. 8 | E. | S.E. | 45 | |
| 22. 20 | 22. 21¼ | S.E. | E.N.E. | | 67½ |
| 23. 7 | 23. 9 | E.N.E. | E. | 22½ | |
| 24. 10 | 24. 11 | E. | E.S.E. | 22½ | |
| 24. 22 | 25. 0 | E.S.E. | E.N.E. | 315 | |
| 25. 11 | 25. 12 | E.N.E. | S.E. | 67½ | |
| 25. 17 | 25. 19 | S.E. | S.S.E. | 22½ | |
| 26. 8 | 26. 9 | S.S.E. | S. | 22½ | |

| Greenwich Civil Time. | | Change of Direction. | | Amount of Motion. | |
|---|---|---|---|---|---|
| From | To | From | To | Direct. | Retrograde. |
| | | | | ° | ° |
| **Jan.—*cont.*** | | | | | |
| d h | d h | | | | |
| 27. 1 | 27. 5 | S. | S.S.W. | 22½ | |
| 27. 11 | 27. 12 | S.S.W. | S.W. | 22½ | |
| 27. 21 | 27. 23 | S.W. | S.S.W. | | 22½ |
| 29. 18 | 29. 20 | S.S.W. | S. | | 22½ |
| 31. 1 | 31. 3 | S. | S.W. | 45 | |
| 31. 4 | 31. 8 | S.W. | S. | | 45 |
| 31. 12 | 31. 14 | S. | S.S.W. | 22½ | |
| | | | Sums | 2227½ | 1057½ |
| **February.** | | | | | |
| 1. 9½ | 1. 9¾ | S.S.W. | W. | 67½ | |
| 1. 10 | 1. 11 | W. | S.S.W. | | 67½ |
| 3. 12 | 3. 17 | S.S.W. | S.W. | 22½ | |
| 3. 18 | 3. 21 | S.W. | S. | | 45 |
| 4. 3½ | 4. 4 | S. | S.S.E. | | 22½ |
| 4. 10 | 4. 11 | S.S.E. | S. | 22½ | |
| 4. 18 | 4. 19 | S. | S.W. | 45 | |
| 5. 3 | 5. 5 | S.W. | S. | | 45 |
| 5. 6 | 5. 6½ | S. | S.S.W. | 22½ | |
| 5. 12 | 5. 16 | S.S.W. | W. | 67½ | |
| 5. 17 | 5. 19 | W. | W.S.W. | | 22½ |
| 6. 2 | 6. 6 | W.S.W. | S.S.W. | | 45 |
| 6. 21 | 7. 0 | S.S.W. | S.W. | 22½ | |
| 7. 20 | 7. 22 | S.W. | S.S.W. | | 22½ |
| 8. 21 | 8. 23 | S.S.W. | W.S.W. | 45 | |
| 9. 14 | 9. 18 | W.S.W. | S.W. | | 22½ |
| 10. 15 | 10. 18 | S.W. | S. | | 45 |
| 10. 20 | 10. 21 | S. | S.S.W. | 22½ | |
| 11. 3 | 11. 11 | S.S.W. | W.S.W. | 45 | |
| 11. 21 | 12. 3 | W.S.W. | S.S.W. | | 45 |
| 12. 8 | 12. 9 | S.S.W. | S.W. | 22½ | |
| 12. 17 | 12. 18 | S.W. | S.S.W. | | 22½ |
| 12. 20¾ | 12. 21 | S.S.W. | S.W. | 22½ | |
| 13. 12 | 13. 14 | S.W. | S.S.W. | | 22½ |
| 13. 20 | 13. 21 | S.S.W. | S.W. | 22½ | |
| 14. 10 | 14. 11 | S.W. | S.S.W. | | 22½ |
| 15. 2 | 15. 3½ | S.S.W. | S.S.E. | | 45 |
| 15. 4 | 15. 8 | S.S.E. | S.S.W. | 45 | |
| 15. 23 | 16. 1 | S.S.W. | S.W. | 22½ | |
| 16. 4 | 16. 8 | S.W. | S.S.W. | | 22½ |
| 16. 17 | 16. 19 | S.S.W. | S.S.E. | | 45 |
| 16. 20 | 16. 22 | S.S.E. | S.W. | 67½ | |
| 17. 1 | 17. 1¼ | S.W. | W.N.W. | 67½ | |
| 17. 4½ | 17. 5½ | W.N.W. | S.W. | | 67½ |
| 17. 7 | 17. 7¼ | S.W. | N.E. | | 180 |
| 17. 12 | 17. 12½ | N.E. | W. | 225 | |
| 17. 15 | 17. 19 | W. | N. | 90 | |
| 18. 0 | 18. 4 | N. | N.W. | | 45 |
| 18. 6 | 18. 7 | N.W. | N.N.W. | 22½ | |
| 18. 9 | 18. 9½ | N.N.W. | N.W. | | 22½ |

| Greenwich Civil Time. | | Change of Direction. | | Amount of Motion. | |
|---|---|---|---|---|---|
| From | To | From | To | Direct. | Retrograde. |
| | | | | ° | ° |
| **Feb.—*cont.*** | | | | | |
| d h | d h | | | | |
| 18. 12 | 18. 18 | N.W. | S.W. | | 90 |
| 19. 10 | 19. 10¼ | S.W. | N.N.E. | 157½ | |
| 19. 14 | 19. 15 | N.N.E. | E.N.E. | 45 | |
| 19. 22 | 20. 0 | E.N.E. | N.E. | | 22½ |
| 20. 15 | 20. 19 | N.E. | N.N.E. | | 22½ |
| 21. 1 | 21. 3 | N.N.E. | N.E. | 22½ | |
| 21. 7 | 21. 9 | N.E. | E.S.E. | 67½ | |
| 21. 15 | 21. 16 | E.S.E. | S.E. | 22½ | |
| 21. 19 | 22. 3 | S.E. | S. | 45 | |
| 22. 12 | 22. 13 | S. | S.S.W. | 22½ | |
| 22. 21 | 22. 23 | S.S.W. | S.W. | 22½ | |
| 23. 4 | 23. 6 | S.W. | S.S.W. | | 22½ |
| 23. 18 | 23. 22 | S.S.W. | S.S.E. | | 45 |
| 24. 4 | 24. 8 | S.S.E. | S.S.W. | 45 | |
| 25. 5 | 25. 6 | S.S.W. | S.E. | | 67½ |
| 25. 7½ | 25. 11 | S.E. | W.N.W. | 157½ | |
| 25. 12 | 25. 14 | W.N.W. | S.S.W. | | 90 |
| 26. 4 | 26. 6 | S.S.W. | S.S.E. | | 45 |
| 26. 7 | 26. 10 | S.S.E. | S.S.W. | 45 | |
| 26. 16 | 26. 20 | S.S.W. | S. | | 22½ |
| 27. 11¾ | 27. 13 | S. | S.S.W. | 22½ | |
| 28. 12 | 28. 13 | S.S.W. | S.W. | 22½ | |
| 28. 15 | 28. 19 | S.W. | N.N.E. | 157½ | |
| | | | Sums | 1845 | 1305 |
| **March.** | | | | | |
| 1. 10 | 1. 15½ | N.N.E. | E.S.E. | 90 | |
| 1. 20 | 1. 23 | E.S.E. | E.N.E. | | 45 |
| 2. 4 | 2. 6 | E.N.E. | E.S.E. | 45 | |
| 2. 10 | 2. 11 | E.S.E. | S.E. | 22½ | |
| 2. 16 | 2. 18 | S.E. | E.S.E. | | 22½ |
| 3. 8 | 3. 10 | E.S.E. | S.E. | 22½ | |
| 3. 14 | 3. 18 | S.E. | S.S.E. | 22½ | |
| 3. 22 | 4. 2 | S.S.E. | W.S.W. | 90 | |
| 4. 15 | 4. 19 | W.S.W. | S.S.W. | | 45 |
| 4. 21 | 4. 22 | S.S.W. | S.W. | 22½ | |
| 5. 20 | 5. 20¼ | S.W. | N.N.W. | 112½ | |
| 5. 21½ | 6. 2 | N.N.W. | N.N.E. | 45 | |
| 6. 7 | 6. 12 | N.N.E. | N.N.W. | | 45 |
| 6. 14 | 6. 22 | N.N.W. | N.E. | 67½ | |
| 7. 14 | 7. 17 | N.E. | S.S.E. | 112½ | |
| 7. 19 | 7. 23¼ | S.S.E. | S.W. | 67½ | |
| 8. 4¾ | 8. 6½ | S.W. | S. | 315 | |
| 8. 10 | 8. 12 | S. | N. | | 180 |
| 8. 12 | 8. 15½ | N. | S.E. | 135 | |
| 8. 19 | 8. 23 | S.E. | N.E. | | 90 |
| 9. 22 | 10. 3 | N.E. | N. | | 45 |
| 10. 5½ | 10. 11 | N. | N.E. | 45 | |
| 11. 14 | 11. 15 | N.E. | E.N.E. | 22½ | |
| 12. 0 | 12. 3 | E.N.E. | N.N.E. | | 45 |
| 12. 6 | 12. 7 | N.N.E. | N.E. | 22½ | |

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

| Greenwich Civil Time. From | Greenwich Civil Time. To | Change of Direction. From | Change of Direction. To | Amount of Motion. Direct. | Amount of Motion. Retrograde. |
|---|---|---|---|---|---|
| Mar.—*cont.* | | | | ° | ° |
| d h | d h | | | | |
| 14. 9 | 14. 19 | N.E. | E.S.E. | 67½ | |
| 14. 21 | 14. 22 | E.S.E. | N.N.E. | | 90 |
| 14. 23 | 15. 3 | N.N.E. | W.S.W. | 225 | |
| 15. 4 | 15. 5 | W.S.W. | N.N.W. | 90 | |
| 15. 6½ | 15. 6¾ | N.N.W. | S.S.W. | | 135 |
| 15. 8 | 15. 12 | S.S.W. | E.N.E. | 225 | |
| 15. 16 | 16. 1 | E.N.E. | W.S.W. | 180 | |
| 16. 1½ | 16. 2 | W.S.W. | S.S.W. | | 45 |
| 16. 7 | 16. 13 | S.S.W. | N.N.W. | 135 | |
| 16. 21 | 16. 22½ | N.N.W. | S.W. | | 112½ |
| 18. 5 | 18. 14 | S.W. | N. | 135 | |
| 19. 16 | 19. 20 | N. | S.W. | | 135 |
| 20. 11 | 20. 16 | S.W. | W.N.W. | 67½ | |
| 20. 19 | 20. 21 | W.N.W. | N.N.W. | 45 | |
| 20. 22 | 21. 1 | N.N.W. | W. | | 67½ |
| 21. 4 | 21. 9 | W. | N.N.W. | 67½ | |
| 21. 12 | 21. 14½ | N.N.W. | W.N.W. | | 45 |
| 21. 14½ | 21. 21 | W.N.W. | N.N.W. | 45 | |
| 21. 22 | 22. 1 | N.N.W. | S.S.E. | 180 | |
| 22. 1¼ | 22. 6 | S.S.E. | E. | | 67½ |
| 22. 9 | 22. 12 | E. | N.E. | | 45 |
| 22. 12 | 22. 18 | N.E. | E. | 45 | |
| 22. 19 | 23. 3 | E. | N. | | 90 |
| 23. 20 | 23. 22 | N. | E.N.E. | 67½ | |
| 24. 5 | 24. 8 | E.N.E. | S. | 112½ | |
| 24. 15 | 24. 17 | S. | E. | | 90 |
| 24. 17½ | 24. 20¼ | E. | S. | 90 | |
| 24. 20½ | 25. 2 | S. | S.E. | | 45 |
| 25. 18 | 26. 1 | S.E. | S.S.W. | 67½ | |
| 27. 0 | 27. 2 | S.S.W. | W.S.W. | 45 | |
| 27. 7 | 27. 14 | W.S.W. | N.N.W. | 90 | |
| 28. 7 | 28. 10 | N.N.W. | N. | 22½ | |
| 28. 15 | 28. 17 | N. | S. | 180 | |
| 29. 7 | 29. 9 | S. | S.S.W. | 22½ | |
| 29. 17 | 29. 19 | S.S.W. | S.S.E. | | 45 |
| 30. 1 | 30. 4 | S.S.E. | E. | | 67½ |
| 30. 10 | 30. 11 | E. | E.N.E. | | 22½ |
| 30. 11½ | 30. 15 | E.N.E. | E.S.E. | 45 | |
| 30. 18 | 30. 22 | E.S.E. | N.E. | | 67½ |
| 31. 1 | 31. 3 | N.E. | N. | | 45 |
| 31. 9 | 31. 12 | N. | E.N.E. | 67½ | |
| 31. 14½ | 31. 16 | E.N.E. | S.E. | 67½ | |
| 31. 16½ | 31. 17 | S.E. | W. | 135 | |
| 31. 18 | 31. 18½ | W. | S.E. | | 135 |
| 31. 19 | 31. 22 | S.E. | S. | 45 | |
| | | | Sums | 3825 | 1867½ |
| April. | | | | | |
| 1. 3 | 1. 10 | S. | S.W. | 45 | |
| 1. 17 | 1. 20 | S.W. | N. | 135 | |
| 2. 9 | 2. 13 | N. | N.N.E. | 22½ | |
| 3. 7 | 3. 9 | N.N.E. | N.E. | 22½ | |
| 3. 12 | 3. 13 | N.E. | E.N.E. | 22½ | |
| 3. 20 | 3. 22 | E.N.E. | N.E. | | 22½ |

| Greenwich Civil Time. From | Greenwich Civil Time. To | Change of Direction. From | Change of Direction. To | Amount of Motion. Direct. | Amount of Motion. Retrograde. |
|---|---|---|---|---|---|
| April—*cont.* | | | | ° | ° |
| d h | d h | | | | |
| 4. 8 | 4. 15 | N.E. | E. | 45 | |
| 4. 20 | 5. 4 | E. | N.N.E. | | 67½ |
| 5. 8 | 5. 10 | N.N.E. | S.E. | 112½ | |
| 5. 11 | 5. 12 | S.E. | S. | 45 | |
| 5. 14 | 5. 15 | S. | S.S.W. | 22½ | |
| 5. 16 | 5. 21 | S.S.W. | S.E. | | 67½ |
| 6. 2 | 6. 3 | S.E. | S.S.W. | 67½ | |
| 6. 14 | 7. 7 | S.S.W. | N.E. | | 157½ |
| 7. 9 | 7. 10 | N.E. | E.N.E. | 22½ | |
| 7. 14 | 7. 15 | E.N.E. | N.E. | | 22½ |
| 7. 20 | 8. 2 | N.E. | N. | | 45 |
| 8. 16 | 8. 21 | N. | N.N.W. | | 22½ |
| 9. 19 | 10. 2 | N.N.W. | W.S.W. | | 90 |
| 10. 5 | 10. 10 | W.S.W. | W.N.W. | 45 | |
| 10. 15 | 10. 16 | W.N.W. | W.S.W. | | 45 |
| 11. 0 | 11. 2 | W.S.W. | S.S.W. | | 45 |
| 11. 4 | 11. 7 | S.S.W. | N.E. | 202½ | |
| 11. 15 | 11. 16 | N.E. | E. | 45 | |
| 11. 17 | 11. 19 | E. | E.N.E. | | 22½ |
| 12. 1 | 12. 3 | E.N.E. | N.N.E. | | 45 |
| 12. 7 | 12. 12 | N.N.E. | E.N.E. | 45 | |
| 12. 14½ | 12. 17 | E.N.E. | E.S.E. | 45 | |
| 12. 19 | 13. 1 | E.S.E. | E.N.E. | | 45 |
| 13. 16 | 13. 18 | E.N.E. | E. | 22½ | |
| 13. 22 | 14. 3 | E. | N.E. | | 45 |
| 14. 7 | 14. 8 | N.E. | E.N.E. | 22½ | |
| 14. 12 | 14. 15 | E.N.E. | E. | 22½ | |
| 15. 0 | 15. 1 | E. | E.N.E. | | 22½ |
| 15. 8 | 15. 10 | E.N.E. | E. | 22½ | |
| 15. 23 | 16. 1 | E. | N.E. | | 45 |
| 16. 10 | 16. 12 | N.E. | N. | | 45 |
| 16. 14½ | 16. 15 | N. | N.N.E. | 22½ | |
| 16. 17 | 16. 18 | N.N.E. | N. | | 22½ |
| 17. 9 | 17. 12 | N. | E. | 90 | |
| 17. 13 | 17. 20 | E. | N.N.E. | | 67½ |
| 18. 1 | 18. 2 | N.N.E. | N. | | 22½ |
| 18. 17 | 18. 20 | N. | E.S.E. | 112½ | |
| 18. 20 | 18. 20¼ | E.S.E. | N.E. | | 67½ |
| 19. 7 | 19. 8 | N.E. | N. | | 45 |
| 19. 9 | 19. 12 | N. | E. | 90 | |
| 19. 20 | 19. 22 | E. | S.S.W. | 112½ | |
| 19. 22½ | 20. 0½ | S.S.W. | S.W. | | 337½ |
| 21. 17 | 21. 18 | S.W. | S.S.W. | | 22½ |
| 21. 22 | 22. 3 | S.S.W. | S.S.E. | | 45 |
| 22. 4 | 22. 12 | S.S.E. | S.W. | 67½ | |
| 23. 13 | 23. 15 | S.W. | W.N.W. | 67½ | |
| 23. 16 | 23. 20 | W.N.W. | S.W. | | 67½ |
| 24. 0 | 24. 6 | S.W. | S. | | 45 |
| 24. 15 | 24. 17 | S. | S.S.E. | | 22½ |
| 25. 4 | 25. 7 | S.S.E. | S.S.W. | 45 | |
| 25. 18 | 25. 20 | S.S.W. | S. | | 22½ |
| 25. 23 | 26. 1 | S. | S.S.W. | 22½ | |
| 26. 21 | 27. 3 | S.S.W. | N. | | 202½ |
| 27. 21 | 28. 0 | N. | S.W. | 225 | |
| 28. 2 | 28. 3 | S.W. | S. | | 45 |
| 28. 18 | 28. 19 | S. | S.S.E. | | 22½ |
| 28. 23 | 29. 0½ | S.S.E. | S.S.W. | 45 | |
| 29. 1 | 29. 2 | S.S.W. | S.S.E. | | 45 |
| 29. 6 | 29. 8 | S.S.E. | S. | 22½ | |

| Greenwich Civil Time. From | Greenwich Civil Time. To | Change of Direction. From | Change of Direction. To | Amount of Motion. Direct. | Amount of Motion. Retrograde. |
|---|---|---|---|---|---|
| April—*cont.* | | | | ° | ° |
| d h | d h | | | | |
| 29. 10 | 29. 11 | S. | S.S.E. | | 22½ |
| 29. 11½ | 29. 12 | S.S.E. | W.S.W. | 90 | |
| 30. 8 | 30. 9 | W.S.W. | N.N.W. | 90 | |
| 30. 11 | 30. 14 | N.N.W. | E.N.E. | 90 | |
| 30. 16 | 30. 19 | E.N.E. | S.E. | 67½ | |
| 30. 21 | 30. 23 | S.E. | S.W. | 90 | |
| | | | Sums | 2385 | 1980 |
| May. | | | | | |
| 1. 4 | 1. 10 | S.W. | S. | | 45 |
| 1. 14 | 1. 16¼ | S. | S.W. | 45 | |
| 1. 18 | 2. 1 | S.W. | S. | | 45 |
| 2. 7 | 2. 13 | S. | S.W. | 45 | |
| 3. 4 | 3. 7 | S.W. | N. | | 225 |
| 3. 9 | 3. 10 | N. | E.S.E. | 112½ | |
| 3. 15 | 3. 18 | E.S.E. | S. | 67½ | |
| 3. 19 | 3. 22 | S. | N.N.E. | | 157½ |
| 4. 12 | 4. 15 | N.N.E. | E. | 67½ | |
| 4. 15 | 4. 16 | E. | N.N.E. | | 67½ |
| 4. 18 | 4. 22 | N.N.E. | N.E. | 22½ | |
| 5. 14 | 5. 16 | N.E. | S. | 135 | |
| 5. 17 | 5. 17¼ | S. | S.E. | | 45 |
| 5. 20 | 6. 2 | S.E. | S. | 45 | |
| 6. 13 | 6. 16 | S. | N.N.E. | 202½ | |
| 7. 0 | 7. 1 | N.N.E. | N. | | 22½ |
| 7. 10 | 7. 13 | N. | W.S.W. | | 112½ |
| 7. 16 | 7. 17¼ | W.S.W. | N.N.W. | | 270 |
| 7. 18 | 7. 20 | N.N.W. | S.W. | | 112½ |
| 7. 21 | 8. 0 | S.W | S.W. | 360 | |
| 8. 5 | 8. 7 | S.W. | W.S.W. | 22½ | |
| 8. 13 | 8. 14 | W.S.W. | S.W. | | 22½ |
| 8. 17¾ | 8. 18 | S.W. | N.N.W. | 112½ | |
| 8. 18¾ | 8. 19¼ | N.N.W. | S. | | 157½ |
| 8. 21 | 8. 22 | S. | S.W. | 45 | |
| 10. 1 | 10. 6 | S.W. | W.S.W. | 22½ | |
| 11. 2 | 11. 10 | W.S.W. | N. | 112½ | |
| 11. 16 | 11. 17 | N. | E.N.E. | 67½ | |
| 11. 18 | 12. 0 | E.N.E. | W.S.W. | 180 | |
| 12. 5 | 12. 7 | W.S.W. | N.N.E. | 135 | |
| 12. 13 | 12. 19 | N.N.E. | E.S.E. | 90 | |
| 13. 10 | 13. 11 | E.S.E. | E. | | 22½ |
| 13. 18 | 13. 21 | E. | N.E. | | 45 |
| 14. 3 | 14. 8 | N.E. | N. | | 45 |
| 15. 0 | 15. 2 | N. | S.W. | | 135 |
| 15. 3 | 15. 4 | S.W. | N. | 135 | |
| 15. 5 | 15. 6 | N. | S. | | 180 |
| 15. 6¼ | 15. 11 | S. | W. | 90 | |
| 15. 16 | 16. 0 | W. | S.W. | | 45 |
| 16. 4 | 16. 8 | S.W. | W. | 45 | |
| 16. 14 | 16. 19 | W. | S.W. | | 45 |
| 17. 3 | 17. 7 | S.W. | W. | 45 | |
| 17. 16 | 17. 17 | W. | N.N.W. | 67½ | |
| 18. 10 | 18. 11 | N.N.W. | W.N.W. | | 45 |
| 18. 14 | 18. 16 | W.N.W. | N. | 67½ | |

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

| Greenwich Civil Time. From | Greenwich Civil Time. To | Change of Direction. From | Change of Direction. To | Amount of Motion. Direct. | Amount of Motion. Retrograde. |
|---|---|---|---|---|---|
| | | | | ° | ° |
| May—*cont.* | | | | | |
| d h | d h | | | | |
| 19. 1 | 19. 2 | N. | S.W. | 225 | |
| 19. 10 | 19. 11 | S.W. | S.S.W. | | 22½ |
| 19. 19 | 19. 23 | S.S.W. | S.S.E. | | 45 |
| 20. 1 | 20. 3 | S.S.E. | S.S.W. | 45 | |
| 20. 8 | 20. 10 | S.S.W. | S.S.E. | | 45 |
| 20. 12 | 20. 14 | S.S.E. | S.S.W. | 45 | |
| 20. 23 | 21. 2 | S.S.W. | S. | | 22½ |
| 21. 6 | 21. 7½ | S. | S.W. | 45 | |
| 21. 18 | 22. 8 | S.W. | E. | | 135 |
| 22. 9 | 22. 14 | E. | W. | | 180 |
| 22. 16 | 22. 18 | W. | S.W. | | 45 |
| 24. 2 | 24. 11 | S.W. | W. | 45 | |
| 24. 19 | 25. 5 | W. | S.S.W. | | 67½ |
| 25. 14 | 25. 16 | S.S.W. | S.S.E. | | 45 |
| 25. 17 | 26. 2 | S.S.E. | S.W. | 67½ | |
| 27. 13 | 27. 20 | S.W. | S. | | 45 |
| 27. 20½ | 28. 0 | S. | E.S.E. | | 67½ |
| 28. 1 | 28. 5 | E.S.E. | S.S.W. | 90 | |
| 29. 2 | 29. 4 | S.S.W. | S.W. | 22½ | |
| 30. 17 | 30. 19 | S.W. | S.S.W. | | 22½ |
| 31. 0 | 31. 4 | S.S.W. | W. | 67½ | |
| 31. 20 | 31. 21 | W. | N.W. | 45 | |
| | | | Sums | 3037½ | 2587½ |
| June. | | | | | |
| 1. 1 | 1. 2 | N.W. | S.W. | | 90 |
| 1. 6 | 1. 13 | S.W. | N. | 135 | |
| 1. 18 | 1. 20 | N. | S.E. | 135 | |
| 1. 22 | 2. 8 | S.E. | S.W. | 90 | |
| 2. 15 | 3. 6 | S.W. | S.E. | | 90 |
| 3. 6¾ | 3. 7 | S.E. | S. | 45 | |
| 4. 6 | 4. 8 | S. | S.W. | 45 | |
| 4. 19 | 4. 21 | S.W. | S. | | 45 |
| 5. 6 | 5. 9 | S. | S.W. | 45 | |
| 6. 13 | 6. 15 | S.W. | N.E. | 180 | |
| 6. 19 | 6. 20 | N.E. | E.S.E. | 67½ | |
| 7. 6½ | 7. 7½ | E.S.E. | S.W. | 112½ | |
| 8. 1½ | 8. 4½ | S.W. | E. | 225 | |
| 8. 5 | 8. 8 | E. | N.N.E. | | 67½ |
| 8. 10 | 8. 11 | N.N.E. | E.S.E. | 90 | |
| 8. 18 | 8. 19 | E.S.E. | N. | | 112½ |
| 9. 9 | 9. 10 | N. | N.N.E. | 22½ | |
| 9. 17 | 9. 23 | N.N.E. | S.E. | 112½ | |
| 9. 23¾ | 10. 0 | S.E. | N.W. | | 180 |
| 10. 0½ | 10. 2¾ | N.W. | N.E. | 90 | |
| 10. 16½ | 10. 18 | N.E. | E.S.E. | 67½ | |
| 10. 22 | 10. 23 | E.S.E. | E.N.E. | | 45 |
| 11. 14 | 11. 19 | E.N.E. | S.S.E. | 90 | |
| 11. 22 | 12. 2 | S.S.E. | W.S.W. | 90 | |
| 12. 4 | 12. 10 | W.S.W. | S.S.W. | | 45 |
| 12. 14 | 12. 16 | S.S.W. | E.S.E. | | 90 |
| 12. 20 | 12. 23¼ | E.S.E. | S. | 67½ | |
| 13. 1 | 13. 2 | S. | E.S.E. | | 67½ |
| 13. 6½ | 13. 7 | E.S.E. | N.N.E. | | 90 |

| Greenwich Civil Time. From | Greenwich Civil Time. To | Change of Direction. From | Change of Direction. To | Amount of Motion. Direct. | Amount of Motion. Retrograde. |
|---|---|---|---|---|---|
| | | | | ° | ° |
| June—*cont.* | | | | | |
| d h | d h | | | | |
| 13. 9 | 13. 11 | N.N.E. | E. | 67½ | |
| 13. 17 | 13. 18 | E. | E.S.E. | 22½ | |
| 13. 22½ | 14. 2 | E.S.E. | E.N.E. | | 45 |
| 14. 12¾ | 14. 13 | E.N.E. | S.S.W. | 135 | |
| 14. 13 | 14. 14 | S.S.W. | E.S.E. | | 90 |
| 14. 22 | 15. 2 | E.S.E. | N. | | 112½ |
| 15. 9 | 15. 12 | N. | N.N.E. | 22½ | |
| 15. 16 | 15. 19 | N.N.E. | E.S.E. | 90 | |
| 15. 20 | 16. 0 | E.S.E. | E.N.E. | | 45 |
| 16. 5 | 16. 8 | E.N.E. | E. | 22½ | |
| 16. 17 | 17. 2 | E. | N.E. | | 45 |
| 17. 21 | 18. 0 | N.E. | N. | | 45 |
| 18. 2 | 18. 4¼ | N. | S.W. | | 135 |
| 20. 5 | 20. 12 | S.W. | W. | 45 | |
| 20. 20¾ | 20. 21 | W. | N.W. | 45 | |
| 20. 22 | 21. 0 | N.W. | W. | | 45 |
| 21. 6 | 21. 8 | W. | N.W. | 45 | |
| 21. 16 | 22. 9 | N.W. | S.W. | | 90 |
| 23. 10 | 23. 12 | S.W. | S.S.W. | | 22½ |
| 23. 20 | 24. 0 | S.S.W. | S.E. | | 67½ |
| 24. 4 | 24. 10 | S.E. | S. | 45 | |
| 24. 15½ | 24. 16 | S. | N. | 180 | |
| 25. 12 | 25. 16 | N. | N.N.E. | 22½ | |
| 26. 11 | 26. 12 | N.N.E. | N.E. | 22½ | |
| 27. 10 | 27. 14 | N.E. | E. | 45 | |
| 27. 22 | 28. 3 | E. | N.E. | | 45 |
| 28. 8 | 28. 15 | N.E. | E. | 45 | |
| 28. 21 | 28. 21½ | E. | N.N.E. | | 67½ |
| 30. 13 | 30. 19 | N.N.E. | N.E. | 22½ | |
| | | | Sums | 2587½ | 1777½ |
| July. | | | | | |
| 1. 6 | 1. 7 | N.E. | S.S.W. | 157½ | |
| 1. 7½ | 1. 8 | S.S.W. | E. | 247½ | |
| 1. 9 | 1. 10 | E. | N.E. | 315 | |
| 1. 14 | 1. 17 | N.E. | E.S.E. | 427½ | |
| 1. 18 | 1. 19¼ | E.S.E. | S. | 67½ | |
| 1. 22 | 2. 0 | S. | S.S.E. | | 22½ |
| 2. 7 | 2. 9 | S.S.E. | S.E. | | 22½ |
| 2. 18½ | 2. 19 | S.E. | S.W. | 90 | |
| 2. 21¾ | 2. 22 | S.W. | W. | 45 | |
| 2. 23 | 3. 3 | W. | S.S.W. | | 67½ |
| 3. 6 | 3. 10 | S.S.W. | W.S.W. | 45 | |
| 3. 11 | 3. 12¼ | W.S.W. | N.E. | | 202½ |
| 3. 13 | 3. 14½ | N.E. | E.N.E. | 22½ | |
| 3. 17 | 3. 18 | E.N.E. | W.S.W. | 180 | |
| 3. 19 | 3. 19½ | W.S.W. | S.S.W. | | 45 |
| 3. 21 | 3. 23 | S.S.W. | W.S.W. | 45 | |
| 4. 5 | 4. 10 | W.S.W. | N.E. | 157½ | |
| 4. 14 | 4. 15 | N.E. | N. | | 45 |
| 4. 20 | 4. 22 | N. | N.E. | 45 | |
| 4. 23½ | 5. 2 | N.E. | N. | | 45 |
| 5. 10½ | 5. 11 | N. | S. | | 180 |
| 5. 11½ | 5. 12 | S. | N. | 180 | |

| Greenwich Civil Time. From | Greenwich Civil Time. To | Change of Direction. From | Change of Direction. To | Amount of Motion. Direct. | Amount of Motion. Retrograde. |
|---|---|---|---|---|---|
| July—*cont.* | | | | ° | ° |
| d h | d h | | | | |
| 5. 17 | 5. 23 | N. | W.S.W. | 247½ | |
| 6. 2 | 6. 2¼ | W.S.W. | N.N.W. | 90 | |
| 6. 4½ | 6. 5 | N.N.W. | W. | | 67½ |
| 6. 6 | 6. 6½ | W. | N. | 90 | |
| 6. 10¼ | 6. 10½ | N. | W.S.W. | | 112½ |
| 6. 23 | 7. 3 | W.S.W. | S.S.W. | | 45 |
| 7. 4 | 7. 5 | S.S.W. | S.W. | 22½ | |
| 8. 15 | 8. 18 | S.W. | S.S.W. | | 22½ |
| 8. 20 | 8. 23 | S.S.W. | W.S.W. | 45 | |
| 9. 8 | 9. 9 | W.S.W. | N.N.W. | 90 | |
| 9. 17¾ | 9. 19¼ | N.N.W. | S.W. | 247½ | |
| 9. 20 | 9. 20¼ | S.W. | E.N.E. | | 157½ |
| 10. 6 | 10. 10 | E.N.E. | S.S.E. | 90 | |
| 10. 23 | 11. 2 | S.S.E. | S.W. | 67½ | |
| 11. 7 | 11. 8¼ | S.W. | S.S.W. | | 22½ |
| 11. 12 | 12. 5 | S.S.W. | W. | 67½ | |
| 12. 7 | 12. 8 | W. | W.S.W. | | 22½ |
| 12. 13 | 12. 13¾ | W.S.W. | N. | 112½ | |
| 12. 16 | 12. 21 | N. | E.S.E. | 112½ | |
| 13. 0½ | 13. 2 | E.S.E. | S.W. | 112½ | |
| 13. 2¾ | 13. 3 | SW. | E. | | 135 |
| 13. 4¼ | 13. 5 | E. | W.S.W. | 157½ | |
| 13. 10¾ | 13. 13 | W.S.W. | N.N.W. | 90 | |
| 13. 14½ | 13. 14¾ | N.N.W. | W.S.W. | | 90 |
| 13. 15 | 13. 18 | W.S.W. | E.N.E. | 180 | |
| 13. 19 | 13. 22½ | E.N.E. | E.N.E. | 360 | |
| 13. 22½ | 14. 2½ | E.N.E. | S.W. | | 202½ |
| 14. 2½ | 14. 2¾ | S.W. | N. | 135 | |
| 14. 19 | 14. 20 | N. | S.S.E. | 157½ | |
| 14. 21 | 14. 21¼ | S.S.E. | E. | | 67½ |
| 14. 22 | 15. 1 | E. | W.S.W. | 157½ | |
| 16. 2 | 16. 2½ | W.S.W. | S.W. | | 22½ |
| 16. 6 | 16. 14 | S.W. | W. | 45 | |
| 16. 23 | 17. 2 | W. | W.S.W. | | 22½ |
| 17. 5 | 17. 8 | W.S.W. | W. | 22½ | |
| 17. 19 | 17. 20 | W. | S.W. | | 45 |
| 20. 7 | 20. 11 | S.W. | W.S.W. | 22½ | |
| 21. 7 | 21. 7¼ | W.S.W. | E. | 202½ | |
| 23. 0 | 23. 4 | E. | N.N.E. | | 67½ |
| 23. 5 | 23. 16 | N.N.E. | E.S.E. | 90 | |
| 23. 23 | 24. 1 | E.S.E. | N.E. | | 67½ |
| 24. 10 | 24. 12 | N.E. | E. | 45 | |
| 24. 16 | 24. 18 | E. | E.S.E. | 22½ | |
| 25. 0 | 25. 1 | E.S.E. | E. | | 22½ |
| 25. 4 | 25. 5 | E. | S. | 90 | |
| 25. 9 | 25. 9½ | S. | W.N.W. | 112½ | |
| 25. 13 | 25. 14 | W.N.W. | N.N.E. | 90 | |
| 25. 17½ | 25. 19 | N.N.E. | S.S.W. | 180 | |
| 25. 21 | 26. 2 | S.S.W. | W.S.W. | 45 | |
| 26. 7½ | 26. 9 | W.S.W. | N. | 112½ | |
| 26. 15½ | 26. 18 | N. | E.S.E. | 112½ | |
| 26. 22 | 27. 5 | E.S.E. | N.E. | | 67½ |
| 27. 11 | 27. 15 | N.E. | E.S.E. | 67½ | |
| 27. 18 | 27. 22 | E.S.E. | E.N.E. | | 45 |
| 28. 13 | 28. 16 | E.N.E. | E. | 22½ | |
| 28. 18 | 29. 6 | E. | N.E. | | 45 |
| 31. 20 | 31. 22 | N.E. | N.N.E. | | 22½ |
| | | | Sums | 5940 | 2002½ |

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

| Greenwich Civil Time. From | Greenwich Civil Time. To | Change of Direction. From | Change of Direction. To | Amount of Motion. Direct. | Amount of Motion. Retrograde. |
|---|---|---|---|---|---|
| August. | | | | ° | ° |
| d h | d h | | | | |
| 3.21 | 4.3 | N.N.E. | W.S.W. | 225 | |
| 4.3½ | 4.4¼ | W.S.W. | N.E. | | 202½ |
| 4.5 | 4.7 | N.E. | N.E. | | 360 |
| 4.10 | 4.14 | N.E. | E. | 45 | |
| 4.16 | 4.20 | E. | N.N.E. | | 67½ |
| 5.0 | 5.1 | N.N.E. | S.S.W. | 180 | |
| 5.1¼ | 5.2 | S.S.W. | S.S.E. | | 45 |
| 5.6 | 5.8 | S.S.E. | N.E. | | 112½ |
| 5.10 | 5.11 | N.E. | S.W. | 180 | |
| 5.12 | 5.15 | S.W. | N.N.E. | 157½ | |
| 5.23 | 6.5 | N.N.E. | S.S.E. | | 225 |
| 6.7¼ | 6.9 | S.S.E. | N.E. | | 112½ |
| 6.10 | 6.14 | N.E. | E.S.E. | 67½ | |
| 6.17 | 6.23 | E.S.E. | S.W. | 112½ | |
| 7.14 | 7.15 | S.W. | W.S.W. | 22½ | |
| 8.10 | 8.12 | W.S.W. | W. | 22½ | |
| 8.19 | 9.3 | W. | S.S.W. | | 67½ |
| 9.18 | 9.20 | S.S.W. | S.S.E. | | 45 |
| 9.21 | 10.0 | S.S.E. | S.S.W. | 45 | |
| 10.10 | 10.12 | S.S.W. | S.W. | 22½ | |
| 12.22 | 13.9 | S.W. | W.N.W. | 67½ | |
| 13.18 | 13.21 | W.N.W. | N. | 67½ | |
| 14.2 | 14.4 | N. | S.W. | | 135 |
| 14.9 | 14.17 | S.W. | N.N.E. | 157½ | |
| 14.19 | 14.23 | N.N.E. | S.S.W. | 180 | |
| 15.2¾ | 15.5 | S.S.W. | S. | 337½ | |
| 15.8 | 15.8¼ | S. | S.W. | 45 | |
| 15.23½ | 16.0 | S.W. | S.E. | | 90 |
| 16.3 | 16.4¼ | S.E. | W.S.W. | 112½ | |
| 17.7 | 17.10 | W.S.W. | N.W. | 67½ | |
| 17.13 | 17.14 | N.W. | N. | 45 | |
| 17.20 | 17.23 | N. | N.N.W. | | 22½ |
| 18.2 | 18.10 | N.N.W. | N.N.E. | 45 | |
| 18.23 | 19.1 | N.N.E. | N. | | 22½ |
| 20.1 | 20.2 | N. | N.N.W. | | 22½ |
| 20.5 | 20.12 | N.N.W. | N. | 22½ | |
| 21.11 | 21.12 | N. | N.W. | | 45 |
| 21.15 | 21.19 | N.W. | N.N.E. | 67½ | |
| 21.21 | 21.23 | N.N.E. | N. | | 22½ |
| 22.3 | 22.4¼ | N. | S.W. | | 135 |
| 22.5 | 22.17 | S.W. | N. | 135 | |
| 23.1 | 23.2 | N. | W.S.W. | | 112½ |
| 23.2½ | 23.4 | W.S.W. | N. | 112½ | |
| 23.14 | 23.16 | N. | N.N.E. | 22½ | |
| 23.21 | 23.22 | N.N.E. | S.S.W. | 180 | |
| 24.0½ | 24.0¾ | S.S.W. | N.E. | | 157½ |
| 24.8 | 24.12 | N.E. | S.W. | 180 | |
| 24.12 | 24.13 | S.W. | S.E. | | 90 |
| 25.7 | 25.8½ | S.E. | E.N.E. | | 67½ |
| 25.9 | 25.10 | E.N.E. | S.E. | 67½ | |
| 25.12 | 26.5 | S.E. | N.E. | | 90 |
| 26.6 | 26.11 | N.E. | E. | 45 | |
| 26.15 | 26.20 | E. | E.N.E. | | 22½ |
| 27.3 | 27.8 | E.N.E. | E. | 22½ | |
| 27.17 | 27.19 | E. | E.N.E. | | 22½ |
| 28.20 | 29.3 | E.N.E. | N.E. | | 22½ |
| 29.19 | 29.21 | N.E. | N.N.E. | | 22½ |
| 30.19 | 31.1 | N.N.E. | S.E. | 112½ | |
| 31.11½ | 31.15 | S.E. | E. | | 45 |
| Aug.—*cont.* | | | | ° | ° |
| d h | d h | | | | |
| 31.16 | 31.19 | E. | S.S.E. | 67½ | |
| 31.19½ | 31.22 | S.S.E. | E.N.E. | | 90 |
| | | | Sums | 3240 | 2475 |
| September. | | | | | |
| 1.9 | 1.21 | E.N.E. | S.E. | 67½ | |
| 1.23 | 2.0 | S.E. | E. | | 45 |
| 2.3 | 2.7 | E. | S.E. | 45 | |
| 2.19 | 3.2 | S.E. | S.S.W. | 67½ | |
| 3.9 | 3.10 | S.S.W. | S.W. | 22½ | |
| 3.21 | 4.7 | S.W. | S.S.E. | | 67½ |
| 4.8 | 4.12 | S.S.E. | S.W. | 67½ | |
| 6.6 | 6.9 | S.W. | W.S.W. | 22½ | |
| 6.16 | 7.2 | W.S.W. | E.S.E. | | 135 |
| 7.2½ | 7.9½ | E.S.E. | W. | 157½ | |
| 7.10 | 7.15 | W. | S.S.E. | | 112½ |
| 7.18 | 8.1 | S.S.E. | W.S.W. | 90 | |
| 8.6 | 8.8 | W.S.W. | W.N.W. | 45 | |
| 8.12 | 8.21 | W.N.W. | S.S.W. | | 90 |
| 8.23 | 9.10 | S.S.W. | W. | 67½ | |
| 9.16 | 9.20 | W. | W.S.W. | | 22½ |
| 10.11 | 10.20 | W.S.W. | E.S.E. | | 135 |
| 11.1 | 11.7 | E.S.E. | N.N.W. | | 135 |
| 11.11 | 12.7 | N.N.W. | S.S.W. | | 135 |
| 12.11 | 12.13 | S.S.W. | S.W. | 22½ | |
| 13.0 | 13.5 | S.W. | W.S.W. | 22½ | |
| 13.17 | 14.4 | W.S.W. | S.S.E. | | 90 |
| 14.5 | 14.11 | S.S.E. | S.W. | 67½ | |
| 16.13 | 16.15 | S.W. | S.S.W. | | 22½ |
| 16.20 | 17.3 | S.S.W. | N.E. | | 157½ |
| 18.2 | 18.13 | N.E. | N. | | 45 |
| 18.15 | 18.21 | N. | S. | 180 | |
| 19.2 | 19.5 | S. | S.W. | 45 | |
| 19.18 | 19.21 | S.W. | W.S.W. | 22½ | |
| 20.12 | 20.16 | W.S.W. | S.W. | | 22½ |
| 21.4 | 21.7 | S.W. | W.S.W. | 22½ | |
| 21.7¾ | 21.8 | W.S.W. | N.N.W. | 90 | |
| 21.11 | 21.18 | N.N.W. | N.N.E. | 45 | |
| 21.19 | 21.21 | N.N.E. | S.S.W. | 180 | |
| 22.1 | 22.2 | S.S.W. | W.S.W. | 45 | |
| 22.2¾ | 22.3 | W.S.W. | S. | | 67½ |
| 22.8 | 22.13 | S. | S.W. | 45 | |
| 23.5 | 23.10 | S.W. | W.S.W. | 22½ | |
| 23.22 | 23.23 | W.S.W. | N. | 112½ | |
| 24.2 | 24.3 | N. | N.W. | | 45 |
| 24.7 | 24.8 | N.W. | N.N.W. | 22½ | |
| 24.14 | 24.15 | N.N.W. | N.W. | | 22½ |
| 24.20 | 25.1 | N.W. | W.S.W. | | 67½ |
| 25.3 | 25.11 | W.S.W. | N. | 112½ | |
| 25.23 | 26.0 | N. | N.N.W. | | 22½ |
| 26.6½ | 26.7½ | N.N.W. | W.S.W. | | 90 |
| 26.8 | 26.8½ | W.S.W. | N. | 112½ | |
| 26.10 | 26.12 | N. | N.N.E. | 22½ | |
| 26.20 | 26.23 | N.N.E. | N. | | 22½ |
| 27.2 | 27.4 | N. | S.S.W. | | 157½ |
| 27.5 | 27.10 | S.S.W. | N.N.E. | 180 | |
| Sept.—*cont.* | | | | ° | ° |
| d h | d h | | | | |
| 27.14 | 27.16 | N.N.E. | N. | | 22½ |
| 27.23 | 28.0 | N. | N.N.W. | | 22½ |
| 28.7 | 28.7¼ | N.N.W. | W. | | 67½ |
| 28.10 | 28.10¼ | W. | N. | 90 | |
| 28.12 | 28.20 | N. | S.S.W. | | 157½ |
| 29.7 | 29.11 | S.S.W. | N.N.W. | 135 | |
| 29.15 | 29.16 | N.N.W. | S.S.W. | | 135 |
| 29.17 | 29.17¼ | S.S.W. | N. | | 202½ |
| 29.18 | 29.20 | N. | S.W. | | 135 |
| | | | Sums | 2250 | 2452½ |
| October. | | | | | |
| 1.7 | 1.8 | S.W. | W.S.W. | 22½ | |
| 2.5 | 2.10 | W.S.W. | S.W. | | 22½ |
| 3.3 | 3.5 | S.W. | W.N.W. | 67½ | |
| 3.12 | 3.17 | W.N.W. | W.S.W. | | 45 |
| 4.15 | 4.16 | W.S.W. | S.W. | | 22½ |
| 5.1 | 5.5 | S.W. | W.S.W. | 22½ | |
| 6.11 | 6.14 | W.S.W. | S. | | 67½ |
| 6.15 | 6.18 | S. | W.S.W. | 67½ | |
| 7.0¾ | 7.1 | W.S.W. | N.N.W. | 90 | |
| 7.5 | 7.7 | N.N.W. | N.W. | | 22½ |
| 7.16 | 8.0 | N.W. | S.W. | | 90 |
| 8.13 | 8.14 | S.W. | W.S.W. | 22½ | |
| 9.3 | 9.12 | W.S.W. | N.W. | 67½ | |
| 9.12 | 9.18 | N.W. | W.S.W. | | 67½ |
| 9.22 | 10.12 | W.S.W. | N.N.E. | | 225 |
| 10.15 | 10.17 | N.N.E. | N. | | 22½ |
| 11.16 | 11.19 | N. | N.N.W. | | 22½ |
| 11.22 | 12.3 | N.N.W. | W. | | 67½ |
| 12.5 | 12.11 | W. | N. | 90 | |
| 12.19 | 12.21 | N. | N.N.W. | | 22½ |
| 13.15 | 13.20 | N.N.W. | W.N.W. | | 45 |
| 13.23 | 14.0 | W.N.W. | N.W. | 22½ | |
| 14.9 | 14.12 | N.W. | W.S.W. | | 67½ |
| 14.18 | 14.21 | W.S.W. | S.S.W. | | 45 |
| 15.1¾ | 15.18 | S.S.W. | N.N.E. | | 180 |
| 15.21 | 16.10 | N.N.E. | S.E. | 112½ | |
| 16.15 | 16.17 | S.E. | E.S.E. | | 22½ |
| 16.22 | 17.3 | E.S.E. | N.E. | | 67½ |
| 17.4 | 17.4¼ | N.E. | S.E. | 90 | |
| 17.5 | 17.6 | S.E. | W.S.W. | | 247½ |
| 17.7 | 17.8 | W.S.W. | N.E. | 157½ | |
| 17.9 | 17.13 | N.E. | W.S.W. | 202½ | |
| 17.18 | 17.21 | W.S.W. | N.N.W. | 90 | |
| 17.23 | 18.0 | N.N.W. | W.S.W. | | 90 |
| 18.7 | 18.12 | W.S.W. | N.N.E. | 135 | |
| 18.17 | 18.18 | N.N.E. | N.E. | 22½ | |
| 19.14 | 20.1 | N.E. | N. | | 45 |
| 20.14 | 20.16 | N. | N.N.E. | 22½ | |
| 20.23 | 21.0 | N.N.E. | S.W. | | 157½ |
| 21.4 | 21.5 | S.W. | S. | | 45 |
| 21.15 | 21.19 | S. | E.S.E. | | 67½ |
| 21.22 | 22.7 | E.S.E. | E.N.E. | | 45 |
| 22.13 | 22.19 | E.N.E. | E.S.E. | 45 | |
| 23.18 | 24.0 | E.S.E. | S.E. | 22½ | |

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

| Greenwich Civil Time. From | Greenwich Civil Time. To | Change of Direction. From | Change of Direction. To | Amount of Motion. Direct. | Amount of Motion. Retrograde. |
|---|---|---|---|---|---|
| | | | | ° | ° |
| **Oct.—*cont.*** | | | | | |
| d h | d h | | | | |
| 24. 0 | 24. 9 | S.E. | W.N.W. | 157½ | |
| 24. 11 | 24. 12 | W.N.W. | W. | | 22½ |
| 24. 14 | 24. 21 | W. | N.W. | 45 | |
| 25. 2 | 25. 20 | N.W. | S. | | 135 |
| 25. 22 | 26. 3 | S. | S.W. | 45 | |
| 26. 9 | 26. 14 | S.W. | W.N.W. | 67½ | |
| 26. 19 | 26. 21 | W.N.W. | N.W. | 22½ | |
| 26. 23 | 27. 4 | N.W. | W. | | 45 |
| 27. 7 | 27. 9 | W. | W.N.W. | 22½ | |
| 27. 14 | 27. 19 | W.N.W. | W.S.W. | | 45 |
| 28. 9 | 28. 10 | W.S.W. | N.W. | 67½ | |
| 28. 11 | 28. 12 | N.W. | W.N.W. | | 22½ |
| 29. 2 | 29. 10 | W.N.W. | N. | 67½ | |
| 29. 21 | 29. 23 | N. | N.W. | | 45 |
| 30. 1 | 30. 3 | N.W. | S.S.E. | | 157½ |
| 30. 9 | 30. 12 | S.S.E. | S.E. | | 22½ |
| 30. 22 | 31. 10 | S.E. | E. | | 45 |
| 31. 13 | 31. 14 | E. | N. | 270 | |
| 31. 17 | 31. 20 | N. | N.N.E. | 22½ | |
| | | | Sums | 2160 | 2362½ |
| **November.** | | | | | |
| 1. 13 | 1. 14 | N.N.E. | N. | | 22½ |
| 1. 16 | 1. 20 | N. | W.S.W. | | 112½ |
| 2. 18 | 3. 4 | W.S.W. | S.W. | | 22½ |
| 4. 11 | 4. 11¼ | S.W. | N. | 135 | |
| 4. 16 | 4. 17 | N. | W.S.W. | | 112½ |
| 5. 5 | 5. 8 | W.S.W. | S.S.W. | | 45 |
| 5. 10 | 5. 16 | S.S.W. | N.N.W. | 135 | |
| 6. 0 | 6. 8 | N.N.W. | W.S.W. | | 90 |
| 6. 15 | 6. 18 | W.S.W. | S.S.W. | | 45 |
| 7. 1 | 7. 4 | S.S.W. | S.S.E. | | 45 |
| 7. 8½ | 7. 9 | S.S.E. | W.S.W. | 90 | |
| 7. 10 | 7. 11 | W.S.W. | S. | | 67½ |
| 7. 14 | 7. 17 | S. | E.S.E. | | 67½ |
| 7. 22 | 7. 23 | E.S.E. | N.E. | 292½ | |
| 8. 6½ | 8. 7 | N.E. | E.N.E. | 22½ | |
| 8. 22 | 8. 23 | E.N.E. | N.E. | | 22½ |
| 9. 9 | 9. 11 | N.E. | E.N.E. | 22½ | |
| 9. 18 | 9. 22 | E.N.E. | N.E. | | 22½ |
| 10. 8 | 10. 9 | N.E. | E.N.E. | 22½ | |
| 10. 16 | 10. 18 | E.N.E. | E. | 22½ | |
| 11. 3 | 11. 5 | E. | N.E. | | 45 |
| 11. 18 | 11. 20 | N.E. | E. | 45 | |
| 12. 0 | 12. 2 | E. | E.S.E. | 22½ | |
| 12. 6 | 12. 7 | E.S.E. | S.S.E. | 45 | |
| 12. 13 | 12. 15 | S.S.E. | S.S.W. | 45 | |
| 12. 17¾ | 12. 18 | S.S.W. | S.E. | | 67½ |
| 12. 20 | 12. 21 | S.E. | N.N.E. | 247½ | |
| 12. 22 | 13. 0 | N.N.E. | W.S.W. | 225 | |
| 13. 5 | 13. 6 | W.S.W. | S.S.W. | | 45 |
| 13. 11 | 13. 12 | S.S.W. | S.W. | 22½ | |
| 14. 9 | 14. 11 | S.W. | W.S.W. | 22½ | |
| 14. 15 | 14. 15½ | W.S.W. | N.N.E. | 135 | |
| **Nov.—*cont.*** | | | | | |
| d h | d h | | | | |
| 14. 17 | 14. 19 | N.N.E. | N.W. | | 67½ |
| 14. 20 | 14. 23 | N.W. | N.N.E. | 67½ | |
| 15. 16 | 15. 20 | N.N.E. | E.N.E. | 45 | |
| 16. 3 | 16. 11 | E.N.E. | E.S.E. | 45 | |
| 17. 3 | 17. 5 | E.S.E. | E. | | 22½ |
| 17. 19 | 17. 19½ | E. | E.S.E. | 22½ | |
| 18. 6 | 18. 9½ | E.S.E. | E.N.E. | | 45 |
| 19. 18 | 19. 20 | E.N.E. | E. | 22½ | |
| 20. 3 | 20. 5 | E. | E.S.E. | 22½ | |
| 21. 15 | 21. 19 | E.S.E. | E. | | 22½ |
| 22. 2½ | 22. 4 | E. | E.N.E. | | 22½ |
| 22. 16 | 22. 17 | E.N.E. | N.E. | | 22½ |
| 23. 14 | 23. 15 | N.E. | N.N.E. | | 22½ |
| 23. 16½ | 23. 18 | N.N.E. | E.N.E. | 45 | |
| 24. 0 | 24. 1 | E.N.E. | S.E. | 67½ | |
| 24. 4 | 24. 5 | S.E. | E.S.E. | | 22½ |
| 25. 7 | 25. 8 | E.S.E. | E. | | 22½ |
| 25. 14 | 25. 16 | E. | E.S.E. | 22½ | |
| 26. 7 | 26. 10 | E.S.E. | S.E. | 22½ | |
| 26. 14 | 26. 18 | S.E. | S.W. | 90 | |
| 27. 2 | 27. 7 | S.W. | W.S.W. | 22½ | |
| 27. 13 | 27. 15 | W.S.W. | S.W. | | 22½ |
| 28. 12 | 28. 16 | S.W. | W. | 45 | |
| 28. 21 | 29. 8 | W. | S.E. | | 135 |
| 29. 10 | 29. 13 | S.E. | W.S.W. | 112½ | |
| 30. 12¼ | 30. 12½ | W.S.W. | N.N.E. | 135 | |
| 30. 15 | 30. 18 | N.N.E. | W.N.W. | | 90 |
| 30. 22½ | 30. 23 | W.N.W. | W W. | | 45 |
| | | | Sums | 2340 | 1395 |
| **December.** | | | | | |
| 1. 10 | 1. 12 | W.S.W. | W.N.W. | 45 | |
| 1. 16 | 1. 17 | W.N.W. | W.S.W. | | 45 |
| 1. 21 | 1. 22 | W.S.W. | S.W. | | 22½ |
| 4. 8 | 4. 9 | S.W. | W.S.W. | 22½ | |
| 5. 13 | 5. 21 | W.S.W. | E.N.E. | | 180 |
| 5. 23½ | 6. 6 | E.N.E. | N.N.E. | | 45 |
| 6. 11 | 6. 12 | N.N.E. | N.E. | 22½ | |
| 6. 20 | 6. 22 | N.E. | E.N.E. | 22½ | |
| 7. 12¾ | 7. 13 | E.N.E. | E.S.E. | 45 | |
| 7. 15 | 7. 16 | E.S.E. | E.N.E. | | 45 |
| 7. 22 | 8. 3 | E.N.E. | N.N.E. | | 45 |
| 8. 22 | 9. 5 | N.N.E. | N.N.W. | | 45 |
| 9. 13 | 9. 20 | N.N.W. | W S.W. | | 90 |
| 9. 21 | 10. 0 | W.S.W. | N. | 112½ | |
| 10. 12 | 10. 17 | N. | N.W. | | 45 |
| 11. 0½ | 11. 1 | N.W. | W.S.W. | | 67½ |
| 11. 10 | 11. 13 | W.S.W. | N. | 112½ | |
| 11. 16 | 11. 17 | N. | N.N.W. | | 22½ |
| 11. 19 | 11. 19½ | N.N.W. | W.S.W. | | 90 |
| 12. 2 | 12. 6 | W.S.W. | S.S.W. | | 45 |
| 12. 7 | 12. 9 | S.S.W. | W.S.W. | 45 | |
| 14. 13 | 14. 16 | W.S.W. | S.W. | | 22½ |
| 15. 3 | 15. 4 | S.W. | S.S.W. | | 22½ |
| **Dec.—*cont.*** | | | | | |
| d h | d h | | | | |
| 15. 13 | 15. 16 | S.S.W. | S. | | 22½ |
| 16. 6 | 16. 10 | S. | S.W. | 45 | |
| 16. 22 | 16. 23 | S.W. | W.S.W. | 22½ | |
| 17. 12½ | 17. 18 | W.S.W. | N. | 112½ | |
| 18. 1 | 18. 3 | N. | S.E. | 135 | |
| 18. 4½ | 18. 5 | S.E. | N.N.E. | | 112½ |
| 18. 5¼ | 18. 8 | N.N.E. | E. | 67½ | |
| 18. 16 | 18. 19 | E. | E.S.E. | 22½ | |
| 19. 10 | 19. 13 | E.S.E. | S.E. | 22½ | |
| 19. 18 | 20. 0 | S.E. | S. | 45 | |
| 21. 12 | 21. 13 | S. | W.S.W. | 67½ | |
| 21. 15 | 21. 17 | W.S.W. | S. | | 67½ |
| 21. 21 | 21. 22½ | S. | N.N.E. | 202½ | |
| 23. 11 | 23. 12 | N.N.E. | N. | | 22½ |
| 24. 9 | 24. 14 | N. | S.S.E. | 157½ | |
| 24. 15 | 24. 15¼ | S.S.E. | N.N.E. | | 135 |
| 24. 15¾ | 24. 23 | N.N.E. | W.S.W. | 225 | |
| 26. 9 | 26. 10 | W.S.W. | N. | 112½ | |
| 26. 20 | 26. 22 | N. | N.W. | | 45 |
| 27. 2 | 27. 3 | N.W. | S.S.W. | | 112½ |
| 27. 5 | 27. 6 | S.S.W. | S.W. | 22½ | |
| 27. 9 | 27. 11 | S.W. | W. | 45 | |
| 27. 13 | 27. 17 | W. | S.W. | | 45 |
| 28. 19 | 28. 19½ | S.W. | N.W. | 90 | |
| 28. 19½ | 28. 23 | N.W. | W.S.W. | | 67½ |
| 29. 18 | 29. 19 | W.S.W. | N.N.W. | 90 | |
| 29. 23 | 30. 3 | N.N.W. | W.N.W. | | 45 |
| 30. 6 | 30. 8 | W.N.W. | W.S.W. | | 45 |
| 30. 14 | 30. 16 | W.S.W. | S.W. | | 22½ |
| 30. 23 | 31. 0 | S.W. | W.S.W. | 22½ | |
| 31. 6 | 31. 9 | W.S.W. | W.N.W. | 45 | |
| 31. 14 | 31. 17½ | W.N.W. | S.W. | | 67½ |
| 31. 22 | 31. 23 | S.W. | W.S.W. | 22½ | |
| | | | Sums | 2002½ | 1642½ |

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

EXCESS of MOTION in each MONTH.

| | Direct. | Retrograde. |
|---|---|---|
| | ° | ° |
| January | 1170 | |
| February | 540 | |
| March | 1957½ | |
| April | 405 | |
| May | 450 | |
| June | 810 | |
| July | 3937½ | |
| August | 765 | |
| September | | 202½ |
| October | | 202½ |
| November | 945 | |
| December | 360 | |

The whole excess of direct motion for the year was 10935°.

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 | 1885. | | | | | | | | | | | | 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 | 11·7 | 14·7 | 9·9 | 10·0 | 9·4 | 8·9 | 7·5 | 8·8 | 10·0 | 12·6 | 11·6 | 11·4 | 10·5 |
| 2 | 11·9 | 14·4 | 9·9 | 9·8 | 9·8 | 9·5 | 7·8 | 8·8 | 9·8 | 12·4 | 11·5 | 11·7 | 10·6 |
| 3 | 11·9 | 13·3 | 9·6 | 10·3 | 8·8 | 9·3 | 7·1 | 8·6 | 9·1 | 11·9 | 11·8 | 11·5 | 10·3 |
| 4 | 12·3 | 13·6 | 10·4 | 10·3 | 9·7 | 9·0 | 7·5 | 8·7 | 9·3 | 12·7 | 11·7 | 11·7 | 10·6 |
| 5 | 12·2 | 13·6 | 10·0 | 9·8 | 9·4 | 9·0 | 7·4 | 9·1 | 9·1 | 12·0 | 11·5 | 11·6 | 10·4 |
| 6 | 11·7 | 14·2 | 9·7 | 10·2 | 9·6 | 9·7 | 7·3 | 9·2 | 9·4 | 12·1 | 11·5 | 11·2 | 10·5 |
| 7 | 12·2 | 14·7 | 9·9 | 11·0 | 10·2 | 10·1 | 7·8 | 9·5 | 10·0 | 12·0 | 11·5 | 11·9 | 10·9 |
| 8 | 12·5 | 14·1 | 10·5 | 12·1 | 11·0 | 11·3 | 7·8 | 10·0 | 10·3 | 11·7 | 12·1 | 10·9 | 11·2 |
| 9 | 12·8 | 15·1 | 11·9 | 13·7 | 12·2 | 12·5 | 8·8 | 11·4 | 11·6 | 12·7 | 11·4 | 10·1 | 12·0 |
| 10 | 13·1 | 14·9 | 12·0 | 14·2 | 12·3 | 12·4 | 9·4 | 11·3 | 12·4 | 13·5 | 11·6 | 9·7 | 12·2 |
| 11 | 13·7 | 15·4 | 12·8 | 14·9 | 12·5 | 12·8 | 9·9 | 12·0 | 13·3 | 14·8 | 12·2 | 10·3 | 12·9 |
| Noon. | 14·0 | 15·6 | 13·4 | 14·9 | 13·8 | 13·0 | 10·6 | 12·3 | 13·6 | 15·0 | 12·7 | 9·8 | 13·2 |
| h 13 | 14·6 | 16·2 | 13·7 | 14·9 | 14·6 | 13·3 | 10·8 | 12·7 | 13·6 | 15·3 | 13·2 | 10·0 | 13·6 |
| 14 | 15·7 | 17·7 | 13·9 | 15·3 | 15·0 | 13·8 | 11·5 | 13·5 | 14·6 | 16·3 | 12·8 | 11·9 | 14·3 |
| 15 | 15·7 | 17·9 | 13·7 | 15·7 | 15·4 | 14·1 | 11·8 | 13·3 | 15·0 | 16·3 | 12·6 | 11·5 | 14·4 |
| 16 | 14·6 | 17·2 | 13·1 | 15·8 | 15·4 | 13·6 | 11·6 | 13·1 | 14·8 | 15·5 | 12·0 | 10·9 | 14·0 |
| 17 | 14·7 | 16·7 | 13·1 | 15·1 | 15·7 | 13·5 | 11·3 | 14·0 | 14·0 | 14·8 | 12·0 | 11·6 | 13·9 |
| 18 | 14·7 | 15·0 | 11·7 | 13·5 | 14·9 | 12·7 | 10·7 | 12·9 | 12·2 | 14·5 | 11·5 | 11·8 | 13·0 |
| 19 | 13·7 | 14·4 | 11·2 | 10·8 | 12·1 | 11·3 | 9·8 | 11·3 | 11·1 | 13·7 | 11·0 | 11·0 | 11·8 |
| 20 | 15·4 | 15·1 | 12·0 | 11·2 | 11·5 | 11·7 | 10·8 | 11·1 | 12·2 | 14·8 | 11·8 | 12·1 | 12·5 |
| 21 | 14·5 | 14·3 | 11·3 | 10·4 | 10·6 | 10·4 | 9·8 | 10·1 | 10·6 | 13·8 | 10·7 | 10·7 | 11·4 |
| 22 | 14·2 | 14·0 | 10·7 | 10·2 | 10·4 | 10·1 | 9·2 | 9·6 | 10·0 | 13·6 | 11·3 | 11·5 | 11·2 |
| 23 | 13·1 | 14·6 | 10·2 | 9·5 | 9·4 | 9·8 | 8·4 | 9·2 | 9·7 | 13·1 | 10·8 | 11·5 | 10·8 |
| Midnight. | 12·9 | 14·2 | 9·8 | 9·6 | 8·8 | 9·3 | 7·7 | 8·8 | 10·2 | 13·0 | 10·0 | 11·5 | 10·5 |
| Means ....... | 13·5 | 15·0 | 11·4 | 12·2 | 11·8 | 11·3 | 9·3 | 10·8 | 11·5 | 13·7 | 11·7 | 11·2 | 11·9 |
| Greatest Hourly Measures - | 40 | 40 | 32 | 38 | 27 | 32 | 25 | 31 | 34 | 36 | 42 | 42 | .. |
| Least Hourly Measures - | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 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.)

1885.

| Days of the Month. | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d | | | | | | | | | | | | |
| 1 | + 557 | + 80 | + 452 | + 259 | + 207 | + 166 | + 76 | + 248 | + 231 | .. | + 453 | + 457 |
| 2 | + 344 | + 117 | + 434 | + 229 | − 143 | + 175 | + 108 | + 226 | + 105 | .. | + 492 | + 585 |
| 3 | + 407 | + 246 | − 65 | + 405 | + 267 | + 277 | + 51 | + 50 | + 85 | .. | + 167 | + 222 |
| 4 | + 614 | + 100 | + 302 | .. | − 58 | + 192 | + 130 | + 200 | + 109 | .. | + 27 | + 171 |
| 5 | + 267 | + 198 | + 444 | + 475 | + 21 | + 202 | + 143 | + 21 | − 8 | .. | + 456 | + 136 |
| 6 | + 712 | + 168 | + 105 | + 74 | + 23 | + 53 | + 221 | + 69 | + 107 | .. | + 620 | + 463 |
| 7 | + 651 | + 323 | + 472 | + 455 | − 203 | + 210 | + 245 | − 142 | − 56 | .. | + 583 | + 364 |
| 8 | + 174 | + 98 | + 430 | + 110 | + 80 | + 70 | + 132 | + 239 | + 71 | .. | + 571 | + 610 |
| 9 | + 576 | + 374 | + 383 | + 160 | + 248 | + 122 | + 18 | + 214 | + 38 | .. | + 340 | + 612 |
| 10 | + 148 | + 425 | + 496 | + 153 | + 353 | + 201 | + 169 | + 74 | − 51 | .. | + 231 | + 469 |
| 11 | + 275 | + 297 | + 389 | + 350 | + 302 | + 338 | + 199 | + 54 | + 17 | .. | + 414 | + 652 |
| 12 | + 302 | + 295 | + 433 | + 376 | + 358 | + 201 | − 117 | .. | + 82 | .. | + 381 | + 747 |
| 13 | + 443 | + 295 | + 354 | + 297 | + 288 | + 239 | + 1 | .. | + 139 | .. | + 366 | + 370 |
| 14 | + 398 | + 275 | + 363 | + 402 | + 264 | + 248 | + 91 | + 125 | + 47 | .. | + 212 | + 400 |
| 15 | + 58 | + 29 | + 438 | + 155 | + 278 | + 97 | + 150 | + 130 | + 85 | .. | + 621 | + 644 |
| 16 | + 214 | − 16 | + 443 | − 417 | − 222 | + 65 | + 162 | + 195 | + 40 | + 224 | + 665 | + 531 |
| 17 | + 238 | + 148 | + 375 | + 418 | + 15 | + 112 | + 126 | .. | + 69 | + 426 | + 635 | + 257 |
| 18 | + 314 | + 399 | + 251 | + 433 | + 90 | + 215 | + 155 | + 248 | + 50 | + 338 | + 609 | + 326 |
| 19 | + 210 | + 533 | + 364 | + 464 | + 264 | + 86 | + 59 | + 241 | + 50 | + 373 | + 454 | + 359 |
| 20 | + 363 | + 453 | + 259 | + 363 | + 4 | − 87 | + 39 | − 45 | + 110 | + 456 | + 560 | + 252 |
| 21 | + 370 | + 499 | + 290 | + 310 | + 60 | + 139 | + 67 | + 123 | + 94 | + 388 | + 700 | + 363 |
| 22 | + 409 | + 138 | − 145 | + 238 | − 90 | + 133 | + 168 | + 277 | + 176 | + 414 | + 164 | + 286 |
| 23 | + 543 | + 312 | + 387 | − 179 | + 51 | + 108 | + 308 | + 206 | + 84 | − 87 | + 292 | + 467 |
| 24 | + 507 | + 382 | + 298 | + 125 | + 170 | + 116 | + 305 | + 123 | + 92 | − 391 | − 50 | + 745 |
| 25 | + 532 | + 169 | + 215 | − 20 | + 39 | + 30 | + 204 | + 198 | .. | + 599 | + 235 | + 632 |
| 26 | + 304 | + 255 | + 327 | + 169 | + 107 | + 74 | + 151 | + 76 | .. | + 362 | + 72 | + 438 |
| 27 | + 201 | + 150 | + 311 | + 201 | + 147 | + 185 | + 139 | − 12 | .. | + 467 | + 280 | + 546 |
| 28 | + 166 | + 153 | + 310 | + 115 | + 140 | + 250 | + 172 | + 98 | .. | + 382 | + 170 | + 2 |
| 29 | + 138 | | + 376 | + 84 | + 75 | + 190 | + 231 | + 166 | .. | + 387 | + 148 | + 379 |
| 30 | + 41 | | + 335 | + 239 | + 160 | + 181 | + 230 | + 262 | .. | + 492 | + 82 | + 119 |
| 31 | − 2 | | + 331 | | + 249 | | + 243 | + 73 | | − 251 | | + 56 |
| Means - | + 338 | + 246 | + 328 | + 222 | + 114 | + 153 | + 141 | + 133 | + 74 | + 286 | + 365 | + 408 |

The mean of the twelve monthly values is + 234.

**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 Civil Time. | 1885. | | | | | | | | | | | | Yearly Means. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. | |
| Midnight | + 353 | + 310 | + 369 | + 226 | + 175 | + 204 | + 215 | + 241 | + 30 | + 277 | + 345 | + 375 | + 260 |
| 1h. | + 350 | + 267 | + 329 | + 216 | + 206 | + 197 | + 202 | + 195 | + 45 | + 298 | + 313 | + 349 | + 247 |
| 2 | + 328 | + 228 | + 341 | + 209 | + 209 | + 178 | + 196 | + 137 | + 53 | + 341 | + 338 | + 368 | + 244 |
| 3 | + 314 | + 202 | + 320 | + 204 | + 196 | + 158 | + 200 | + 152 | + 57 | + 339 | + 339 | + 374 | + 238 |
| 4 | + 298 | + 195 | + 307 | + 209 | + 168 | + 143 | + 185 | + 125 | + 50 | + 313 | + 329 | + 354 | + 223 |
| 5 | + 285 | + 192 | + 328 | + 209 | + 149 | + 151 | + 181 | + 125 | + 52 | + 97 | + 326 | + 350 | + 204 |
| 6 | + 277 | + 190 | + 369 | + 191 | + 163 | + 156 | + 154 | + 149 | + 58 | + 161 | + 329 | + 348 | + 212 |
| 7 | + 270 | + 199 | + 377 | + 239 | + 155 | + 147 | + 104 | + 151 | + 58 | + 276 | + 356 | + 359 | + 224 |
| 8 | + 270 | + 237 | + 387 | + 262 | + 194 | + 131 | + 80 | + 159 | + 49 | + 231 | + 347 | + 366 | + 226 |
| 9 | + 287 | + 233 | + 405 | + 270 | + 177 | + 71 | + 55 | + 139 | + 48 | + 174 | + 346 | + 373 | + 215 |
| 10 | + 318 | + 181 | + 375 | + 210 | + 52 | + 74 | + 37 | + 82 | + 40 | + 263 | + 317 | + 398 | + 196 |
| 11 | + 358 | + 140 | + 305 | + 189 | + 16 | + 59 | + 63 | + 32 | + 63 | + 279 | + 360 | + 443 | + 192 |
| Noon | + 352 | + 219 | + 273 | + 150 | + 45 | + 65 | + 75 | + 88 | + 61 | + 327 | + 351 | + 478 | + 207 |
| 13h. | + 397 | + 231 | + 308 | + 163 | − 3 | + 93 | + 93 | + 114 | + 92 | + 231 | + 374 | + 455 | + 212 |
| 14 | + 383 | + 266 | + 252 | + 144 | − 52 | + 130 | + 92 | + 69 | + 87 | + 292 | + 290 | + 494 | + 204 |
| 15 | + 319 | + 286 | + 263 | + 171 | − 161 | + 125 | + 80 | − 48 | + 23 | + 354 | + 286 | + 500 | + 183 |
| 16 | + 412 | + 242 | + 199 | + 197 | + 7 | + 147 | + 95 | − 66 | + 38 | + 236 | + 389 | + 505 | + 200 |
| 17 | + 359 | + 246 | + 233 | + 169 | − 74 | + 147 | + 104 | + 62 | + 65 | + 241 | + 429 | + 479 | + 205 |
| 18 | + 373 | + 252 | + 247 | + 227 | + 83 | + 179 | + 104 | + 97 | + 151 | + 224 | + 460 | + 500 | + 241 |
| 19 | + 339 | + 305 | + 308 | + 274 | + 2 | + 208 | + 148 | + 122 | + 151 | + 406 | + 448 | + 460 | + 264 |
| 20 | + 381 | + 334 | + 352 | + 345 | + 217 | + 216 | + 206 | + 189 | + 142 | + 423 | + 426 | + 407 | + 303 |
| 21 | + 346 | + 301 | + 365 | + 290 | + 257 | + 214 | + 235 | + 288 | + 115 | + 499 | + 431 | + 368 | + 309 |
| 22 | + 374 | + 324 | + 415 | + 316 | + 260 | + 248 | + 243 | + 315 | + 131 | + 414 | + 449 | + 354 | + 320 |
| 23 | + 366 | + 333 | + 436 | + 252 | + 299 | + 229 | + 243 | + 286 | + 107 | + 170 | + 381 | + 345 | + 287 |
| Means - | + 338 | + 246 | + 328 | + 222 | + 114 | + 153 | + 141 | + 133 | + 74 | + 286 | + 365 | + 408 | + 234 |
| Number of Days employed - | 31 | 28 | 31 | 29 | 31 | 30 | 31 | 28 | 24 | 16 | 30 | 31 | .. |

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 $0^{in}.020$. The scale employed is arbitrary: the sign + indicates positive potential.)

| Hour, Greenwich Civil Time. | 1885. January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. | Yearly Means. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Midnight | + 264 | + 252 | + 143 | − 34 | + 102 | + 146 | + 275 | + 245 | + 2 | + 170 | + 229 | + 300 | + 174 |
| 1h. | + 283 | + 198 | + 80 | − 119 | + 182 | + 113 | + 150 | + 186 | + 25 | + 48 | + 140 | + 141 | + 119 |
| 2 | + 290 | + 136 | + 90 | − 141 | + 180 | + 114 | + 120 | + 51 | + 39 | + 128 | + 174 | + 230 | + 118 |
| 3 | + 275 | + 111 | + 82 | − 122 | + 182 | + 86 | + 135 | + 129 | + 45 | + 180 | + 218 | + 257 | + 131 |
| 4 | + 236 | + 113 | + 77 | − 147 | + 134 | + 51 | + 120 | + 62 | + 33 | + 190 | + 217 | + 220 | + 109 |
| 5 | + 233 | + 119 | + 187 | − 177 | + 99 | + 57 | + 70 | + 56 | + 36 | − 612 | + 217 | + 211 | + 41 |
| 6 | + 245 | + 100 | + 195 | − 159 | + 105 | + 70 | − 185 | + 131 | + 43 | − 374 | + 212 | + 214 | + 50 |
| 7 | + 191 | + 84 | + 85 | − 68 | + 64 | + 64 | − 780 | + 135 | + 45 | + 2 | + 221 | + 239 | + 24 |
| 8 | + 141 | + 131 | + 85 | + 46 | + 141 | + 71 | − 865 | + 125 | + 29 | − 306 | + 166 | + 229 | − 1 |
| 9 | + 155 | + 103 | + 243 | + 118 | + 138 | − 143 | − 600 | + 115 | + 31 | − 596 | + 141 | + 221 | − 6 |
| 10 | + 196 | + 19 | + 265 | + 81 | − 58 | + 7 | − 5 | + 15 | + 21 | − 228 | + 107 | + 236 | + 55 |
| 11 | + 241 | + 21 | + 90 | + 103 | − 112 | + 11 | − 20 | − 88 | + 45 | − 72 | + 182 | + 236 | + 53 |
| Noon | + 205 | + 80 | + 47 | − 8 | − 46 | − 29 | + 15 | + 100 | + 40 | + 114 | + 157 | + 301 | + 81 |
| 13h. | + 263 | + 82 | + 165 | + 31 | − 162 | − 10 | + 50 | + 141 | + 74 | − 206 | + 194 | + 233 | + 71 |
| 14 | + 232 | + 187 | − 77 | − 99 | − 248 | + 47 | + 5 | − 47 | + 67 | − 134 | + 4 | + 395 | + 28 |
| 15 | + 305 | + 201 | + 115 | + 51 | − 435 | + 30 | + 95 | − 350 | − 37 | + 130 | − 7 | + 451 | + 46 |
| 16 | + 335 | + 161 | − 42 | + 132 | − 164 | + 47 | − 55 | − 303 | − 25 | − 128 | + 206 | + 392 | + 46 |
| 17 | + 260 | + 33 | + 237 | − 4 | − 275 | + 49 | − 100 | + 18 | + 2 | + 48 | + 257 | + 266 | + 66 |
| 18 | + 175 | + 32 | + 210 | + 76 | − 40 | + 133 | − 5 | − 34 | + 128 | + 18 | + 290 | + 318 | + 108 |
| 19 | + 67 | + 129 | + 185 | + 122 | − 219 | + 144 | + 80 | − 116 | + 129 | + 224 | + 301 | + 164 | + 101 |
| 20 | + 230 | + 193 | + 267 | + 191 | + 140 | + 69 | + 180 | − 40 | + 109 | + 188 | + 300 | + 60 | + 157 |
| 21 | + 223 | + 144 | + 230 | + 57 | + 194 | − 54 | + 120 | + 219 | + 79 | + 386 | + 281 | − 16 | + 155 |
| 22 | + 237 | + 193 | + 337 | + 180 | + 189 | + 106 | − 215 | + 277 | + 112 | + 162 | + 314 | − 82 | + 151 |
| 23 | + 209 | + 257 | + 300 | + 134 | + 264 | + 141 | + 20 | + 298 | + 90 | − 22 | + 251 | − 60 | + 157 |
| Means | + 229 | + 128 | + 150 | + 10 | + 15 | + 55 | − 58 | + 55 | + 48 | − 29 | + 199 | + 215 | + 85 |
| Number of Days employed | 11 | 12 | 6 | 9 | 17 | 7 | 2 | 8 | 15 | 5 | 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 Civil Time. | 1885. | | | | | | | | | | | | Yearly Means. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. | |
| Midnight | + 480 | + 406 | + 430 | + 348 | + 294 | + 222 | + 217 | + 235 | + 92 | + 310 | + 502 | + 475 | + 334 |
| 1h. | + 444 | + 366 | + 398 | + 382 | + 285 | + 223 | + 213 | + 192 | + 87 | + 407 | + 510 | + 454 | + 330 |
| 2 | + 412 | + 341 | + 411 | + 396 | + 291 | + 197 | + 212 | + 168 | + 92 | + 440 | + 515 | + 455 | + 327 |
| 3 | + 389 | + 321 | + 402 | + 366 | + 267 | + 180 | + 219 | + 161 | + 98 | + 418 | + 475 | + 456 | + 313 |
| 4 | + 387 | + 316 | + 399 | + 371 | + 261 | + 170 | + 203 | + 149 | + 98 | + 362 | + 440 | + 434 | + 299 |
| 5 | + 361 | + 306 | + 397 | + 382 | + 235 | + 180 | + 204 | + 155 | + 103 | + 375 | + 435 | + 433 | + 297 |
| 6 | + 336 | + 305 | + 424 | + 347 | + 250 | + 182 | + 193 | + 160 | + 108 | + 373 | + 449 | + 435 | + 297 |
| 7 | + 347 | + 341 | + 452 | + 378 | + 306 | + 172 | + 175 | + 163 | + 105 | + 355 | + 485 | + 447 | + 311 |
| 8 | + 380 | + 401 | + 460 | + 367 | + 320 | + 150 | + 148 | + 176 | + 100 | + 413 | + 509 | + 460 | + 324 |
| 9 | + 407 | + 427 | + 449 | + 346 | + 268 | + 136 | + 102 | + 151 | + 88 | + 472 | + 515 | + 475 | + 320 |
| 10 | + 431 | + 394 | + 409 | + 271 | + 204 | + 94 | + 37 | + 116 | + 73 | + 460 | + 482 | + 511 | + 290 |
| 11 | + 466 | + 376 | + 364 | + 232 | + 164 | + 73 | + 64 | + 81 | + 95 | + 405 | + 503 | + 584 | + 284 |
| Noon | + 476 | + 444 | + 331 | + 227 | + 151 | + 93 | + 77 | + 87 | + 115 | + 397 | + 513 | + 591 | + 292 |
| 13h. | + 490 | + 440 | + 335 | + 227 | + 200 | + 124 | + 97 | + 121 | + 120 | + 407 | + 529 | + 572 | + 305 |
| 14 | + 492 | + 419 | + 324 | + 257 | + 186 | + 156 | + 98 | + 120 | + 118 | + 495 | + 525 | + 569 | + 313 |
| 15 | + 481 | + 417 | + 294 | + 224 | + 151 | + 153 | + 82 | + 78 | + 127 | + 500 | + 518 | + 551 | + 298 |
| 16 | + 498 | + 438 | + 269 | + 228 | + 220 | + 177 | + 107 | + 55 | + 147 | + 497 | + 525 | + 568 | + 311 |
| 17 | + 499 | + 464 | + 217 | + 252 | + 210 | + 177 | + 117 | + 71 | + 178 | + 522 | + 555 | + 571 | + 319 |
| 18 | + 520 | + 492 | + 257 | + 298 | + 247 | + 193 | + 108 | + 156 | + 190 | + 517 | + 601 | + 595 | + 348 |
| 19 | + 521 | + 509 | + 332 | + 354 | + 251 | + 227 | + 148 | + 232 | + 178 | + 535 | + 570 | + 601 | + 371 |
| 20 | + 504 | + 513 | + 366 | + 425 | + 309 | + 261 | + 205 | + 286 | + 200 | + 555 | + 508 | + 583 | + 393 |
| 21 | + 464 | + 485 | + 397 | + 405 | + 324 | + 295 | + 246 | + 325 | + 192 | + 557 | + 538 | + 567 | + 400 |
| 22 | + 510 | + 490 | + 428 | + 381 | + 359 | + 291 | + 281 | + 328 | + 178 | + 545 | + 554 | + 583 | + 411 |
| 23 | + 491 | + 439 | + 455 | + 308 | + 334 | + 256 | + 265 | + 272 | + 152 | + 483 | + 514 | + 580 | + 379 |
| Means - | + 449 | + 410 | + 375 | + 324 | + 254 | + 183 | + 159 | + 168 | + 126 | + 450 | + 511 | + 523 | + 328 |
| Number of Days employed - | 14 | 8 | 23 | 19 | 8 | 23 | 26 | 17 | 6 | 6 | 11 | 14 | .. |

AMOUNT OF RAIN COLLECTED IN EACH MONTH OF THE YEAR 1885.

| MONTH, 1885. | 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 | 15 | 0·591 | 0·599 | 0·916 | 1·107 | 1·317 | 1·424 | 1·396 | 1·422 |
| February | 19 | 1·575 | 1·504 | 1·891 | 2·008 | 2·213 | 2·335 | 2·301 | 2·333 |
| March | 8 | 0·925 | 0·993 | 1·281 | 1·456 | 1·551 | 1·496 | 1·541 | 1·548 |
| April | 9 | 1·656 | 1·655 | 1·829 | 1·940 | 2·041 | 2·049 | 2·028 | 2·051 |
| May | 19 | 1·465 | 1·434 | 1·684 | 1·873 | 2·049 | 2·111 | 2·000 | 2·081 |
| June | 7 | 1·147 | 1·163 | 1·440 | 1·572 | 1·641 | 1·666 | 1·600 | 1·639 |
| July | 5 | 0·383 | 0·350 | 0·413 | 0·469 | 0·491 | 0·503 | 0·475 | 0·494 |
| August | 10 | 1·013 | 1·025 | 1·117 | 1·183 | 1·236 | 1·322 | 1·196 | 1·254 |
| September | 21 | 2·899 | 2·867 | 3·296 | 3·576 | 3·742 | 3·732 | 3·702 | 3·739 |
| October | 23 | 2·390 | 2·426 | 2·798 | 3·189 | 3·391 | 3·410 | 3·399 | 3·455 |
| November | 17 | 1·902 | 2·080 | 2·394 | 2·605 | 2·822 | 2·827 | 2·831 | 2·820 |
| December | 13 | 0·556 | 0·538 | 0·732 | 0·969 | 1·053 | 1·127 | 1·128 | 1·097 |
| Sums | 166 | 16·502 | 16·634 | 19·791 | 21·947 | 23·547 | 24·002 | 23·597 | 23·933 |
| 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.

1885.

| Month and Day, 1885. | | Greenwich Civil 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 | 8 | 22. 11. 18 | F. | 2 | Bluish-white | 0·5 | None | 10 | 1 |
| | ” | 22. 19. 56 | F. | 2 | Bluish-white | 0·3 | None | 10 | 2 |
| | ” | 22. 43. 17 | F. | 2 increasing to > 1 | Bluish-white | 1 | Slight | 2 | 3 |
| | ” | 22. 58. 15 | F. | 2 | Bluish-white | 1 | None | 15 (visible path). | 4 |
| August | 9 | 21. 25. 44 | F. | 2 | Bluish-white | 0·3 | None | 10 | 5 |
| | ” | 21. 27. 36 | F. | 1 | Bluish-white | 0·5 | Slight | 12 | 6 |
| | ” | 21. 39. 28 | M. | 2 | Bluish-white | 0·5 | Train | 10 | 7 |
| | ” | 21. 41. 34 | M. | 2 | Bluish-white | 0·5 | None | 8 | 8 |
| | ” | 21. 44. 31 | F. | 2 | Bluish-white | 0·5 | None | 8 | 9 |
| | ” | 21. 50. 46 | F. | 2 | Bluish-white | 0·3 | None | 10 | 10 |
| | ” | 21. 54. 0 | M. | 2 | Bluish-white | 0·5 | Slight | 8 | 11 |
| | ” | 21. 57. 2 | F. | 2 | Bluish-white | 0·4 | None | 8 | 12 |
| | ” | 21. 59. 23 | M. | 1 | Bluish-white | 0·7 | Train | 15 | 13 |
| | ” | 22. 3. 44 | F. | 2 | Bluish-white | 0·3 | None | 7 | 14 |
| | ” | 22. 5. ± | M. | 2 | Bluish-white | 0·3 | None | 7 | 15 |
| | ” | 22. 8. 36 | M. | 2 | Bluish-white | 0·4 | None | 6 | 16 |
| | ” | 22. 11. 5 | F. | 2 | Bluish-white | 0·5 | None | 15 | 17 |
| | ” | 22. 13. 26 | M. | 1 | Yellow | 0·8 | Fine | 20 | 18 |
| | ” | 22. 18. 18 | F. | 2 | Bluish-white | 0·5 | None | 10 | 19 |
| | ” | 22. 23. 10 | M. | 2 | Bluish-white | 0·6 | Train | 12 | 20 |
| | ” | 22. 32. 27 | M. | 1 | Bluish-white | 0·6 | Fine | 20 | 21 |
| | ” | 22. 34. 6 | F. | 1 | Bluish-white | 1 | Train | 10 | 22 |
| | ” | 22. 43. 11 | F. | 2 | Bluish-white | 0·8 | None | 12 | 23 |
| | ” | 22. 46. 47 | M. | 1 | Bluish-white | 0·7 | Fine | 15 | 24 |
| | ” | 22. 52. 49 | F. | 2 | Bluish-white | 1 | None | 8 | 25 |
| | ” | 22. 55. 29 | M. | 3 | Bluish-white | 0·3 | None | 5 | 26 |
| | ” | 22. 58. 14 | F. | 1 | Bluish-white | 1 | None | 10 | 27 |
| | ” | 23. 3. 48 | M. | 2 | Bluish-white | 0·5 | None | 8 | 28 |
| | ” | 23. 5. 54 | F. | 1 | Bluish-white | 1 | Train | 7 | 29 |
| | ” | 23. 8. 23 | M. | 2 | Bluish-white | 0·5 | Slight | 10 | 30 |
| | ” | 23. 11. 52 | M. | 2 | Bluish-white | 0·5 | Train | 12 | 31 |
| | ” | 23. 13. 18 | M. | 1 | Bluish-white | 0·8 | Fine | 15 | 32 |
| | ” | 23. 20. 13 | M. | 1 | Bluish-white | 0·5 | Fine | 15 | 33 |
| | ” | 23. 23. ± | N. | > 1 | Bluish-white | 2 | Fine | Long | 34 |
| | ” | 23. 24. 16 | F. | 3 | Bluish-white | 0·5 | None | 7 | 35 |
| | ” | 23. 25. 21 | F. | 1 | Bluish-white | 1 | Train | 15 | 36 |
| | ” | 23. 26. 19 | F. | 1 | Bluish-white | 0·8 | Train | 12 | 37 |
| | ” | 23. 26. 50 | M. | 3 | Bluish-white | 0·3 | None | 7 | 38 |
| | ” | 23. 28. 59 | M. | 3 | Bluish-white | 0·3 | None | 5 | 39 |
| | ” | 23. 40. 20 | M. | 2 | Bluish-white | 0·4 | Train | 10 | 40 |
| | ” | 23. 43. 28 | M. | 1 | Bluish-white | 0·5 | Train | 15 | 41 |
| | ” | 23. 50. 50 | M. | 3 | Bluish-white | 0·3 | None | 4 | 42 |
| | ” | 23. 57. 9 | M. | 3 | Bluish-white | 0·4 | None | 7 | 43 |
| August | 10 | 0. 3. 5 | M. | 2 | Bluish-white | 0·5 | Slight | 10 | 44 |
| | ” | 0. 10. 34 | M. | 1 | Bluish-white | 0·7 | Fine | 12 | 45 |
| | ” | 0. 15. 52 | M. | 1 | Yellow | 0·5 | Fine | 20 | 46 |
| | ” | 0. 20. 3 | M. | 3 | Bluish-white | 0·3 | . . | 4 | 47 |
| | ” | 0. 27. 5 | M. | 2 | Bluish-white | 0·5 | Slight | 8 | 48 |
| | ” | 0. 30. 3 | M. | 3 | Bluish-white | 0·3 | . . | 5 | 49 |
| | ” | 0. 30. 46 | M. | 2 | Bluish-white | 0·5 | . . | 8 | 50 |
| | ” | 0. 40. 17 | M. | 1 | Bluish-white | 0·8 | Fine | 20 | 51 |
| | ” | 0. 44. 44 | M. | 2 | Bluish-white | 0·5 | Slight | 10 | 52 |
| | ” | 0. 49. 14 | M. | > 1 | Yellow | 0·8 | Fine | 25 | 53 |
| | ” | 0. 59. 20 | M. | 1 | Bluish-white | 0·5 | Slight | 15 | 54 |
| | ” | 1. 6. 39 | M. | 1 | White | 0·8 | Slight | 15 | 55 |
| | ” | 1. 15. 8 | M. | 1 | Bluish-white | 0·5 | . . | 12 | 56 |
| | ” | 1. 18. 17 | M. | 2 | Bluish-white | 0·4 | . . | 7 | 57 |
| | ” | 1. 27. 24 | M. | 3 | Bluish-white | 0·3 | None | 4 | 58 |
| | ” | 1. 33. 33 | M. | 2 | Bluish-white | 0·5 | Slight | 10 | 59 |

The time is expressed in civil reckoning commencing at midnight and counting from $0^h$ to $24^h$.

| No. for Reference. | Path of Meteor through the Stars. |
|---|---|
| 1 | From α Pegasi disappeared a little beyond ζ Pegasi. |
| 2 | From direction of 51 Andromedæ disappeared a little beyond μ Andromedæ. |
| 3 | Appeared and disappeared above η Cassiopeiæ moving towards α Cassiopeiæ. |
| 4 | From δ Persei across 48 and 53 Persei towards horizon disappearing behind cloud. |
| 5 | From a little below η Cygni to ε Cygni. |
| 6 | From direction of point between α and β Cassiopeiæ disappeared a little beyond ο Andromedæ. |
| 7 | From direction of ι Andromedæ towards β Pegasi. |
| 8 | Shot from near γ Cassiopeiæ disappeared beyond α Cassiopeiæ. |
| 9 | From κ Persei towards ξ Persei. |
| 10 | From near β Camelopardali towards α Persei. |
| 11 | From direction of α Pegasi disappeared near ζ Pegasi. |
| 12 | From direction of γ Pegasi towards γ Piscium. |
| 13 | Appeared near γ Persei disappeared near ε Persei. |
| 14 | Appeared near $\pi^2$ Cygni disappeared near ξ Cygni. |
| 15 | From near η Ursæ Majoris towards ζ Ursæ Majoris. |
| 16 | Shot from near δ Cygni disappeared near ο Cygni. |
| 17 | From near α Draconis passed above and disappeared a little beyond η Ursæ Majoris. |
| 18 | From near κ Andromedæ disappeared near ψ Pegasi. |
| 19 | Appeared near λ Persei disappeared near κ Persei. |
| 20 | From a little above ε Boötis disappeared near Arcturus. |
| 21 | From a point a little below κ Andromedæ disappeared beyond β Pegasi. |
| 22 | From β Camelopardali to 43 Camelopardali. |
| 23 | From direction of 77 Pegasi disappeared near α Aquarii. [disappeared. |
| 24 | From a point a few degrees below κ Andromedæ disappeared near β Pegasi. Train remained visible for about $2^s$ after meteor had |
| 25 | From δ Equulei towards 31 Pegasi. |
| 26 | From near λ Andromedæ disappeared a little beyond ι Andromedæ. |
| 27 | From near σ Aquarii towards η Aquarii. |
| 28 | From direction of α Pegasi disappeared near ζ Pegasi. |
| 29 | From near τ Piscium towards η Piscium. |
| 30 | From near ε Ursæ Majoris disappeared a little beyond δ Ursæ Majoris. |
| 31 | From a little below β Pegasi disappeared beyond ζ Pegasi. |
| 32 | From direction of a point a few degrees below γ Andromedæ towards δ Andromedæ. |
| 33 | From near φ Draconis towards η Draconis. [Borealis. |
| 34 | Appeared midway between α Lyræ and α Aquilæ and moved perpendicularly downwards disappearing about 25° to left of Corona |
| 35 | Appeared near β Piscium disappeared near F Aquarii. |
| 36 | Appeared near δ Cygni passed across and disappeared near α Lyræ. |
| 37 | From τ Herculis disappeared near ν Coronæ. |
| 38 | From a little below α Ursæ Majoris towards γ Ursæ Majoris. |
| 39 | Shot from γ Cassiopeiæ to α Cassiopeiæ. |
| 40 | From α Andromedæ towards γ Pegasi. |
| 41 | From direction of δ Persei to Capella. |
| 42 | From near ν Persei to ε Persei. |
| 43 | From direction of α Trianguli towards α Arietis. |
| 44 | From near δ Cygni towards α Lyræ. |
| 45 | From a point about midway between β and γ Ursæ Minoris passed across and disappeared beyond α Draconis. |
| 46 | From direction of α Pegasi disappeared near γ Pegasi. |
| 47 | From α Aquarii to γ Aquarii. |
| 48 | From direction of Polaris towards β Ursæ Minoris. |
| 49 | From near ε Cassiopeiæ towards 72 Cassiopeiæ. |
| 50 | From near ι Cephei towards β Cassiopeiæ. |
| 51 | From near β Andromedæ passed between α and β Arietis. |
| 52 | Shot from α Andromedæ disappeared near χ Pegasi. |
| 53 | From a few degrees to right of Capella passed across and disappeared below β Tauri. |
| 54 | Appeared near ε Herculis disappeared a few degrees to right of β Herculis. |
| 55 | Appeared near ζ Pegasi disappeared a few degrees below θ Pegasi. |
| 56 | From β Aurigæ dropped perpendicularly downwards. |
| 57 | From α Persei towards μ Persei. |
| 58 | From α Persei to δ Persei. |
| 59 | Appeared near Capella and disappeared a little below β Aurigæ. |

| Month and Day, 1885. | | Greenwich Civil 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 | 10 | 1.39. 8 | M. | 2 | Bluish-white | 0·5 | Slight | 10 | 1 |
| | „ | 1.46. 2 | M. | 2 | Bluish-white | 0·5 | None | 6 | 2 |
| | „ | 1.50. 7 | M. | 1 | Bluish-white | 0·7 | Fine | 18 | 3 |
| | „ | 1.56.54 | M. | 2 | Bluish-white | 0·5 | None | 8 | 4 |
| | „ | 2. 2.58 | M. | 2 | Bluish-white | 0·5 | Slight | 7 | 5 |
| | „ | 2. 8.57 | M. | 2 | Bluish-white | 0·5 | None | 10 | 6 |
| | „ | 2.13. 2 | M. | 3 | Bluish-white | 0·4 | None | 3 | 7 |
| | „ | 2.19.55 | M. | 2 | Bluish-white | 0·5 | Slight | 10 | 8 |
| | „ | 2.30. 1 | M. | 1 increasing to Jupiter × 2 | Bright bluish | 1·5 | Splendid | 25 | 9 |
| | „ | 2.38.59 | M. | 2 | Bluish-white | 0·6 | Slight | 12 | 10 |
| | „ | 2.41.55 | M. | 3 | Bluish-white | 0·4 | None | 6 | 11 |
| | „ | 2.45. 9 | M. | 2 | Blue | 0·5 | Slight | 8 | 12 |
| | „ | 21. 5.10 | N. | 2 | White | 0·8 | Train | .. | 13 |
| | „ | 22. 0.16 | N. | 1 | White | 1·5 | Bright | 7 | 14 |
| | „ | 22.17.49 | N. | 1 | Bluish-white | 0·8 | Fine | .. | 15 |
| | „ | 22.23.36 | N. | 2 | Bluish-white | 0·5 | Slight | 7 | 16 |
| | „ | 22.24.38 | N. | 2 | Bluish-white | 0·4 | Train | 5 | 17 |
| | „ | 22.28.23 | N. | > 1 | White | 0·7 | Fine | .. | 18 |
| | „ | 22.30.18 | N. | Jupiter | Bluish-white | 0·5 | Very fine | .. | 19 |
| | „ | 22.33.45 | N. | 2 | Bluish-white | 0·5 | Fine | 8 | 20 |
| | „ | 22.37. 5 | N. | 3 | White | 0·4 | .. | 6 | 21 |
| | „ | 22.37.43 | N. | .. | Bluish-white | 0·3 | None | 4 | 22 |
| | „ | 22.46.17 | N. | 2 | Bluish-white | 0·5 | Train | 10 | 23 |
| | „ | 22.47.11 | N. | 3 | Bluish-white | 0·3 | Train | 5 | 24 |
| | „ | 22.50.17 | N. | 2 | Bluish-white | 1 | Train | .. | 25 |
| | „ | 22.50.51 | N. | > 1 | White | 1·5 | Fine | 15 | 26 |
| | „ | 22.54. 4 | N. | 3 | Bluish-white | .. | None | 3 or 4 | 27 |
| | „ | 22.55.25 | N. | > 1 | Bluish-white | 0·8 | Fine | .. | 28 |
| | „ | 22.59.18 | N. | 2 | White | 0·6 | Train | .. | 29 |
| | „ | 23. 8.45 | N. | 3 | Bluish-white | 0·4 | Slight | 6 | 30 |
| | „ | 23.14. 1 | N. | 2 | Bluish-white | 0·5 | Train | 12 | 31 |
| | „ | 23.14.50 | N. | .. | Bluish-white | 0·5 | Train | 8 | 32 |
| | „ | 23.18.46 | N. | Jupiter | White | .. | .. | .. | 33 |
| | „ | 23.18.54 | N. | 3 | White | 0·3 | None | 5 | 34 |
| | „ | 23.25.39 | N. | 1 | White | 0·6 | Fine | .. | 35 |
| | „ | 23.32. 2 | N. | 1 | White | 0·8 | Bright | 15 | 36 |
| | „ | 23.34.54 | N. | > 1 | .. | .. | .. | 7 | 37 |
| | „ | 23.37.48 | N. | 2 | Bluish-white | 0·7 | Train | 10 | 38 |
| | „ | 23.44.30 | N. | 3 | Bluish-white | Very rapid | None | 5 | 39 |
| | „ | 23.46.32 | N. | 2 | Bluish-white | 0·5 | Slight | 5 | 40 |
| | „ | 23.47.16 | N. | 3 | Bluish-white | 0·5 | None | 6 | 41 |
| | „ | 23.48.50 | N. | 2 | Bluish-white | 0·6 | Train | 8 | 42 |
| | „ | 23.53. 9 | N. | 2 | Bluish-white | 0·6 | Train | 8 | 43 |
| | „ | 23.53.59 | N. | > 1 | .. | 0·7 | Fine | 12 | 44 |
| October | 1 | 19.49.42 | N. | 1 | White | 0·5 | Train, | .. | 45 |
| | „ | 22. 7.56 | N. | 2 | White | .. | Train | 6 | 46 |
| | „ | 22.25.51 | N. | 2 | White | 0·3 | None | 3 | 47 |
| | „ | 22.30.28 | N. | 1 | White | 0·5 | Train | 7 | 48 |
| | „ | 22.36.19 | N. | 1 | White | 0·7 | Train | .. | 49 |
| | „ | 22.40.19 | N. | 2 | White | 0·6 | Train | 10 | 50 |
| | „ | 23.11.33 | N. | 3 | White | 0·3 | .. | 7 | 51 |
| October | 3 | 21.29. 5 | F. | 1 | White | 1·5 | None | 10 | 52 |
| | „ | 21.33.48 | F. | 2 | White | 0·8 | None | 6 | 53 |
| | „ | 21.42.28 | F. | 3 | Bluish-white | 0·5 | None | 6 | 54 |
| | „ | 22.41.44 | F. | 1 | White | 1·5 | Slight | .. | 55 |
| | „ | 22.53.52 | F. | 1 | White | 1 | Train | 12 | 56 |
| | „ | 23. 5.46 | F. | 1 | White | 1 | Train | 20 | 57 |
| | „ | 23. 6.35 | F. | 1 | White | 0·8 | Train | 8 | 58 |

The time is expressed in civil reckoning commencing at midnight and counting from $0^h$ to $24^h$.

| No. for Reference. | Path of Meteor through the Stars. |
|---|---|
| 1 | From ε Cassiopeiæ towards γ Persei. |
| 2 | From α Camelopardali to β Camelopardali. |
| 3 | From a point a few degrees to left of the Pleiades disappeared below Aldebaran. |
| 4 | Appeared near α Ursæ Majoris passed a little to left of and disappeared below β Ursæ Majoris. |
| 5 | From near α Lyræ towards θ Herculis. |
| 6 | From α Cygni to γ Cygni. |
| 7 | From τ Persei to γ Persei. |
| 8 | Appeared near η Aquarii disappeared a little beyond α Aquarii. |
| 9 | Appeared a little above and to left of ι Herculis passed between and disappeared below ε and ζ Herculis. The meteor left a sharply defined train which remained visible for 7 seconds. |
| 10 | From the Pleiades towards Aldebaran. |
| 11 | From β Trianguli to γ Trianguli. |
| 12 | From direction of a point about midway between β and γ Ursæ Minoris towards α Draconis. |
| 13 | Passed midway between α and γ Pegasi moving towards γ Aquarii. |
| 14 | From near γ Persei passed slowly towards a point 4° below γ Andromedæ. |
| 15 | Passed across δ Andromedæ and a few degrees above γ Pegasi to γ Piscium. |
| 16 | Vertically down from direction of Delphinus towards β Capricorni. |
| 17 | From γ to β Aquarii. |
| 18 | Passed one or two degrees above γ Aquilæ and across λ Aquilæ. |
| 19 | In S. horizon in space devoid of stars, moving from direction of β Capricorni towards right at an angle of 45°. |
| 20 | Across β and μ Pegasi and a few degrees beyond. |
| 21 | Above γ Aquarii and between θ Pegasi and α Aquarii. |
| 22 | Passing over α Andromedæ from direction of μ Andromedæ. |
| 23 | From ζ Andromedæ across γ Pegasi. |
| 24 | Moved between ζ and η Andromedæ towards γ Pegasi. |
| 25 | From μ Cygni to ε Pegasi. |
| 26 | Across δ Cygni and between β Cygni and γ Lyræ. |
| 27 | Between μ and ζ Cygni towards 29 Vulpeculæ. |
| 28 | Passed two or three degrees above γ Pegasi towards γ Piscium. |
| 29 | From θ Aquilæ to α Capricorni. |
| 30 | From ζ Persei towards the Pleiades. |
| 31 | Across ε Pegasi and α Equulei and some degrees beyond. |
| 32 | Across α and ζ Pegasi. |
| 33 | Disappeared near γ Capricorni moving from direction of γ Aquarii. |
| 34 | Passed between γ and α Aquarii from direction of a point nearly midway between α and γ Pegasi. |
| 35 | From near μ Andromedæ passed between δ and α Andromedæ. |
| 36 | Across ζ Andromedæ and γ Pegasi and several degrees beyond. |
| 37 | Brilliant flash in Aquarius seen through cloud, directed towards right at angle of 45°. |
| 38 | Passed between β Arietis and ζ Andromedæ moving from near α Trianguli. |
| 39 | Across Lacerta moving from Perseus radiant. |
| 40 | From near μ Andromedæ passed just above δ Andromedæ. |
| 41 | Passed about 7° below γ Pegasi moving from direction of χ Piscium. |
| 42 | Midway between β Andromedæ and β Arietis passing across ψ Piscium. |
| 43 | Passed between ζ and θ Pegasi towards α Aquarii. |
| 44 | Passed just above α and γ Cygni and several degrees beyond. |
| | |
| 45 | Passed between α Coronæ and ε Boötis (somewhat nearer to latter) to a point about 5° to left of Arcturus. |
| 46 | Passed across γ Pegasi moving from direction of β Pegasi (γ Pegasi at centre of path). |
| 47 | From ζ Cassiopeiæ towards θ Cassiopeiæ. |
| 48 | From 50 Cassiopeiæ towards γ Cassiopeiæ. |
| 49 | From near κ Tauri almost to ξ Tauri. |
| 50 | From direction of ε Arietis to α Ceti. |
| 51 | Passed across υ and χ Piscium moving from direction of τ Andromedæ. |
| | |
| 52 | From near ζ Persei disappeared a little above β Tauri. |
| 53 | From a point between 58 Andromedæ and β Trianguli towards ζ Persei. |
| 54 | From near 48 Persei towards 9 Aurigæ. |
| 55 | From near α Arietis disappeared near δ Piscium. |
| 56 | From near β Persei passed over and disappeared beyond γ Andromedæ. |
| 57 | From near β Persei disappeared near η Piscium. |
| 58 | From near ι Aurigæ to about 5° north of Aldebaran. |

| Month and Day, 1885. | | Greenwich Civil 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 | 5 | 21. 31. 15 | N. | 4 | White | 0·4 | Train | 4 | 1 |
| | " | 21. 41. 1 | N. | > 1 | White | 1 | Fine | .. | 2 |
| | " | 22. 10. 4 | N. | 1 | White | 1 | Train | Long | 3 |
| October | 16 | 22. 9. 18 | M. | 1 | Blue | 0·5 | Fine | 20 | 4 |
| | " | 22. 34. 44 | H. | 2 | White | 0·5 | None | 15 | 5 |
| November | 27 | 18. 11. 32 | N. | > 1 | White | .. | Train | 12 | 6 |
| | " | 18. 23. 49 | N. | 1 | .. | .. | ... | 5 | 7 |
| | " | 20. 22. 40 | F. | > Venus | White | 1 | Brilliant | 15 | 8 |
| | " | 20. 22. 40 | F. | > Venus | White | 1 | Brilliant | 10 | 9 |
| | " | 21. 56. 57 | N. | > 1 | White | .. | Train | .. | 10 |
| | " | 22. 47. 49 | N. | 1 | White | .. | Train | 5 | 11 |
| November | 28 | 21. 50. 32 | H. | 2 | Bluish | 0·4 | None | 8 | 12 |
| | " | 22. 30. 12 | H. | 1 | Light bluish | 0·5 | None | 16 | 13 |
| | " | 22. 37. 53 | H. | 2 | Light bluish | 0·3 | None | 12 | 14 |
| | " | 22. 42. 42 | H. | 4 | Light bluish | 0·2 | None | 12 | 15 |
| | " | 22. 50. 12 | H. | 3 | Whitish | 0·2 | None | 10 | 16 |
| | " | 23. 4. 7 | H. | 2 | Bluish-white | 0·4 | Slight | 15 | 17 |
| December | 8 | 22. 0. 47 | H. | 2 | Bluish-white | 0·2 | None | 8 | 18 |
| | " | 22. 34. 20 | H. | 3 | Bluish-white | 0·4 | None | 15 | 19 |
| December | 9 | 0. 51. 30 | N. | 2 | White | .. | .. | .. | 20 |
| | " | 0. 53. 40 | N. | 2 | White | .. | .. | .. | 21 |
| December | 10 | 21. 22. 9 | F. | 1 | Bluish-white | 0·5 | None. | 10 | 22 |
| | " | 21. 24. 27 | F. | 1 | Bluish-white | 0·3 | None | 8 | 23 |
| | " | 21. 42. 50 | F. | 2 | White | 0·8 | None | 6 | 24 |

The time is expressed in civil reckoning commencing at midnight and counting from $0^h$ to $24^h$.

November 27. Biela comet meteors. From observations of about 40 meteor tracks Mr. Nash considered that the radiant point was situated near R.A. 20° and N.P.D. 41°. The meteors in this shower were generally white in colour, with short paths and slow motions, and the number of small meteors was unusually large.

| No. for Reference. | Path of Meteor through the Stars. |
|---|---|
| 1 | From a point a little below η Pegasi to a point between β and μ Pegasi. |
| 2 | Moved across lower part of Pisces and disappeared a few degrees below η Aquarii. (Commencement of path not seen.) |
| 3 | Across β Pegasi to a point between ζ Cygni and κ Pegasi. |
| 4 | From direction of ξ Ceti towards ι Ceti. Stars very indistinct. |
| 5 | From direction of α Persei towards α Arietis. |
| 6 | From a point nearly midway between γ and δ Cygni to a point about 5° to right of β Cygni. |
| 7 | Passed slightly to left of α Lyræ. |
| 8 | Moving towards α Ursæ Majoris. |
| 9 | Moving in a southerly direction. |
| 10 | Passed midway between ζ and 2 Aurigæ and midway between θ Aurigæ and β Tauri. |
| 11 | From near ξ Cygni passed midway between α and γ Cygni. |
| 12 | From a little to the east of θ Herculis towards a point about 4° east of α Lyræ. |
| 13 | From direction of Lynx towards θ Ursæ Majoris. |
| 14 | From between α Ursæ Majoris and λ Draconis disappeared about 3° west of δ Ursæ Majoris. |
| 15 | From direction of ο Ursæ Majoris towards a point midway between υ and θ Ursæ Majoris. |
| 16 | From a few degrees north of 15 Lyncis towards ο Ursæ Majoris. |
| 17 | From direction of 31 Lyncis to α Lyncis. |
| 18 | From between β and ζ Tauri towards a point about 8° north of γ Orionis. |
| 19 | From a few degrees west of β Cassiopeiæ disappeared near θ Andromedæ. |
| 20 | Fell nearly perpendicularly across α Draconis passing midway between ζ Ursæ Majoris and β Ursæ Minoris. |
| 21 | Across δ and β Leonis. |
| 22 | From near 23 Ursæ Majoris towards λ Draconis. |
| 23 | From near 19 Lyncis towards 55 Camelopardali. |
| 24 | From between β and γ Andromedæ towards β Persei. |

## NUMERATION of the BIELA COMET METEORS, 1885, November 27.

| Greenwich Civil Time. | Number of Meteors seen by F. | Number of Meteors seen by L. | Number per Minute seen by F. | Number per Minute seen by L. | State of the Sky. |
|---|---|---|---|---|---|
| h m · h m | | | | | |
| 17½ .. | .. | .. | .. | .. | Cloudy; no meteors seen. |
| 18 .. | .. | .. | .. | .. | Sky nearly cloudless; meteors seen in considerable numbers, and continued to be seen until the commencement of counting at 18h. 18m. |
| 18. 18 to 18. 37 | 626 | .. | 32·9 | .. | |
| 18. 37 „ 18. 47 | .. | 200 | .. | 20·0 | |
| 18. 37 „ 18. 49 | 449 | .. | 37·4 | .. | |
| 18. 49 „ 18. 58 | .. | 100 | .. | 11·1 | |
| 18. 51 „ 18. 59 | 109 | .. | 13·6 | .. | |
| 18. 58 „ 19. 4 | .. | 10 | .. | 1·7 | |
| 19. 5 „ 19. 15 | .. | 13 | .. | 1·3 | Clouds appeared shortly before 19h.; sky nearly covered at 19h. |
| 19. 30 .. | .. | .. | .. | .. | Several bright meteors seen through thin clouds. |
| 19. 52 „ 19. 55 | 42 | 27 | 14·0 | 9·0 | Partially cloudy; clouds variable in amount. |
| 19. 55 „ 20. 2 | 91 | 101 | 13·0 | 14·4 | „ „ |
| 20. 2 „ 20. 7 | 66 | 37 | 13·2 | 7·4 | „ „ |
| 20. 12 .. | .. | .. | .. | .. | Sky nearly covered; meteors still seen through small breaks and thin clouds. |
| 20. 12 „ 20. 22 | .. | .. | .. | .. | Meteors frequently seen through small breaks in the clouds. |
| 20. 27 „ 20. 32 | 62 | .. | 12·4 | .. | Seen chiefly in east and east-south-east. |
| 20. 32 „ 20. 37 | 38 | .. | 7·6 | .. | Seen chiefly in east and east-south-east; light clouds prevalent. |
| 20. 37 „ 20. 52 | .. | .. | .. | .. | Sky generally covered. |
| 20. 57 „ 21. 2 | 29 | .. | 5·8 | .. | Partially cloudy. |
| 21. 2 „ 21. 7 | 19 | .. | 3·8 | .. | „ |
| 21. 7 „ 21. 12 | 30 | .. | 6·0 | .. | „ |
| 21. 12 „ 21. 17 | 32 | 43 | 6·4 | 8·6 | Less cloud now. |
| 21. 17 „ 21. 22 | 53 | 42 | 10·6 | 8·4 | Few light clouds. |
| 21. 22 „ 21. 27 | 55 | 54 | 11·0 | 10·8 | „ |
| 21. 27 „ 21. 32 | 36 | 43 | 7·2 | 8·6 | Cloudy in north and north-west. |
| 21. 32 „ 21. 37 | 40 | 47 | 8·0 | 9·4 | Cloudy in north and north-west; nearly clear in south. |
| 21. 37 „ 21. 42 | 28 | .. | 5·6 | .. | „ „ |
| 21. 42 „ 21. 47 | 13 | 28 | 2·6 | 5·6 | Partially cloudy. |
| 21. 52 „ 21. 57 | 4 | 24 | 0·8 | 4·8 | Cloudy in north. |
| 21. 57 „ 22. 2 | 3 | 5 | 0·6 | 1·0 | Cloudy. |
| 22. 2 „ 22. 7 | 1 | 1 | 0·2 | 0·2 | Nearly covered. |
| 22. 7 „ 22. 12 | 1 | 0 | 0·2 | 0·0 | Cloudy in south; clouds broken in north. |
| 22. 12 „ 22. 17 | 8 | 3 | 1·6 | 0·6 | Cloudy in north and south. |
| 22. 17 „ 22. 22 | 11 | 26 | 2·2 | 5·2 | Cloudy in north; clearer in south. |
| 22. 22 „ 22. 27 | 13 | 16 | 2·6 | 3·2 | Light cloud in north. |
| 22. 27 „ 22. 32 | 10 | 12 | 2·0 | 2·4 | Cloudy in north and east. |
| 22. 32 „ 22. 37 | 6 | 7 | 1·2 | 1·4 | Cloudy. |
| 22. 37 „ 22. 42 | 1 | 1 | 0·2 | 0·2 | „ |
| 22. 42 „ 22. 47 | 9 | 8 | 1·8 | 1·6 | „ |
| 22. 47 „ 22. 52 | 11 | 6 | 2·2 | 1·2 | „ |
| 22. 52 „ 22. 57 | 5 | 1 | 1·0 | 0·2 | „ |
| 22. 57 „ 23. 2 | 3 | 4 | 0·6 | 0·8 | „ |

The time is expressed in civil reckoning commencing at midnight and counting from 0h. to 24h.

In the above counting the observers were usually placed back to back, Mr. Finch (F.) facing the northern portion of the sky, and Mr. Letchford (L.) the southern portion. When observing together they were careful that any meteors seen by both of them should be included in the count of one observer only.