RESULTS

OF THE

MAGNETICAL AND METEOROLOGICAL OBSERVATIONS

MADE AT

THE ROYAL OBSERVATORY, GREENWICH,

IN THE YEAR

1886:

UNDER THE DIRECTION OF

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ASTRONOMER ROYAL.

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ROYAL OBSERVATORY, GREENWICH.

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GREENWICH MAGNETICAL AND METEOROLOGICAL OBSERVATIONS,

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Introduction.

§ 1. *Personal Establishment and Arrangements.*

During the year 1886 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, Ernest E. McClellan, Edward Finch, Francis H. W. Hope, and Francis 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 direction 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 its reading for 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. For better ascertaining the variations of temperature of the Basement a Richard metallic thermograph was added in February, 1886. It is placed on the pier carrying the horizontal force magnet, and gives a continuous register of temperature on a scale of 5° to 1 inch, the scale for time being 24 hours to $5\frac{1}{3}$ inches. 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. From January 5 to 14 the magnetic observations and photographic registration in the Basement were suspended in consequence of workmen being employed during this period in laying a drain to carry away the waste water from the sink. At the same time a line of 9-inch pipes, about 155 feet in length, was laid underground from the Basement for the purpose of ventilating it by air which has acquired the temperature of the soil at a depth of several feet below the surface, and of thus obtaining greater uniformity of temperature. The depth of the line of pipes below the surface varies from five feet at the inlet in the south ground to 11 feet 6 inches at the entrance to the Basement.

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, and also thermometers (placed in a louvre-boarded shed or screen, with free circulation of air) for observation of the temperature of the air in an exposed situation at a height of 20 feet above the ground.

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 revolving stand carrying the thermometers used for eye observations, and adjacent to the thermometer stand on the north side are three 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 deflexion 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* 1886.

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, and of thermometers placed on the roof of the Magnet House ; 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.

From the beginning of the year 1885, Greenwich civil time, reckoning from midnight to midnight and counting from 0 to 24 hours, has been employed throughout both sections. 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.

§ 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 a pinching screw 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, passing through holes cut in the floor, rest on slates covering brick piers, built from the ground and rising through the Magnet Basement nearly to its ceiling. 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 10½ inches long, supported on Y's carried by the central vertical axis of the theodolite. The eye-piece has one fixed horizontal wire and one vertical wire moved by a micrometer-screw, the field of view in the observation of stars being illuminated through the pivot of the transit-axis on that side of the telescope which carries the micrometer-head. The value of one division of the striding level is considered to be equal to 1″·05. The opening in the roof of the Magnet House permits of observation of circumpolar stars as high as δ Ursæ Minoris above the pole and as low as β Cephei below the pole. A fixed mark, consisting of a small hole in a plate of metal, placed on one of the buildings of the Astronomical Observatory, at a distance of about 270 feet from the theodolite, affords an additional check on 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 $1^{div}\cdot3$, equivalent to 1″·4.

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

The reading for the line of collimation of the theodolite telescope was found, by ten double observations, 1885 December 8, to be $100^{r}\cdot254$, by ten double observations, 1886 May 1, $100^{r}\cdot281$, by ten double observations, 1886 June 29, $100^{r}\cdot248$, and by ten double observations, 1886 November 3, $100^{r}\cdot231$. The value used throughout the year 1886 was $100^{r}\cdot250$.

The effect of the plane glass in front of the outer box of the declination-magnet at that end of the box towards the theodolite was determined by ten double observations made on 1884 December 11, which showed that in the ordinary position of the glass the theodolite readings were diminished by 19″·5. Other sets of observations, made on 1885 December 8 and 1886 November 3, gave 18″·4 and 20″·3 respectively. The mean of these, 19″·4 has been added to all readings throughout the year 1886.

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 1886 was 26′. 3″·8, being the mean of determinations made on 1882 September 12, 1883 December 13, 1884 December 12, 1885 December 18, and 1886 November 10, giving respectively 26′. 15″·0, 25′. 53″·5, 26′. 2″·9, 26′. 4″·3, and

26′. 3″·5. With the collimator in its usual position, above the magnet, the quantity 26′. 3″·8 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. With the skein at present in use this ratio was, on 1882 September 13, found to be $\frac{1}{126}$, on 1883 December 12, $\frac{1}{137}$, on 1884 December 12, $\frac{1}{132}$, on 1885 December 10, $\frac{1}{137}$, and on 1886 November 10, $\frac{1}{146}$. During the year 1886 the plane in which the suspension skein was free from torsion generally coincided with the magnetic meridian, small corrections of the absolute measures of magnetic declination for deviation from the plane of no torsion being required only in the months of April, May, part of the month of June, and during September and October.

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, on 1885 December 18, 31ˢ·15, and on 1886 November 10, 31ˢ·01.

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 1886 for reduction of the observations of the declination magnet was until May 17, 27°. 6′. 40″·0 ; from May 18 to July 22, 27°. 6′. 19″·9, and for the remainder of the year 27°. 6′. 17″·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, $1\frac{1}{2}$ inch broad, and $\frac{1}{4}$ inch thick. The magnet is suspended, in the Magnet Basement, immediately below the upper declination magnet, in order that the absolute measure of declination by the upper magnet should not be affected by the proximity of the lower magnet.

The manner of suspension of the magnet is in general similar to that of the upper declination magnet, the suspension pulleys being carried by a small pier built on one of the crossed slates resting on the brick piers rising 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 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 ligh 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 *xxx*) are measured.

From January 5 to 14, during the progress of the drainage work mentioned at page *v*, photographic registration was interrupted.

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 $1^{in}\cdot 14$: at the lower pulleys the distance between the branches is $0^{in}\cdot 80$. The two branches are not intended to hang in one plane, but are to be so twisted that their torsion 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 distance, or 42°. 9′, is therefore the angle of torsion when the magnet is transverse to the meridian. The values similarly found from other sets of observations made on 1886 January 1, and 1886 December 31 were 42°. 11′·5 and 42°. 4′ respectively. The value adopted in the reduction of the observations during the year 1886 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 $30^{\text{div}}\cdot85$ of the fixed scale is exactly 12 inches, and the distance of the centre of the face of the plane mirror from the scale 90·84 inches ; consequently the angle at the mirror subtended by one division of the scale is 14′. 43″·2, or for change of one division of scale-reading the magnet is turned through an angle of 7′. 21″·6.

The variation of horizontal force, in terms of the whole horizontal force, producing angular motion of the magnet corresponding to change of one division of scale reading = cotan. angle of torsion × value of one division in terms of radius. Using the numbers above given, the change of horizontal force corresponding to change of one division of scale reading was found to be 0·002364, which value has been used throughout the year 1886 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 pre-arranged time, the manner of making the observation is generally similar to that already described for the upper declination magnet.

A thermometer, the bulb of which reaches considerably below the attached scale, is so planted in a nearly upright position on the outer magnet box that the bulb projects into the interior of the inner box containing the magnet. Readings of this thermometer are usually taken at 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 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 *xiii* and *xiv*), 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 *xxx*) 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 enclosed 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 was concluded that an increase of 1° of temperature produces an apparent decrease of ·00018 of horizontal force. In the years 1885 and 1886 further observations on the same general plan were made, with the result that the decrease of horizontal force for increase of 1° of temperature was found to be somewhat greater at the higher than at the lower temperatures. A discussion of all the observations taken in 1885 and 1886, details of which are given at the end of this Introduction, shows that the decrease of horizontal force for increase of 1° of temperature through the range of temperature to which the magnet is usually exposed $= (t - 32) \times \cdot 0000936 + (t^2 - 32) \times \cdot 000002074$ in which t is the temperature in degrees Fahrenheit. The decrease of horizontal force for an increase of 1° of temperature (Fahrenheit) would thus be ·00021 at 60°, ·00023 at 65°, and ·00025 at 70°.

From January 5 to 14, during the progress of the drainage work mentioned at page *v*, photographic registration was interrupted.

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 in. 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. From 37 observations made during the course of the year this was found to be $18^{s}\cdot812$.

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 1886.

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

But the angular movement of the normal to the mirror is 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 $52\frac{3}{4}^{\circ}$, therefore dividing the result just obtained, $3'.\ 35''\cdot6$, by Sin. $52\frac{3}{4}^{\circ}$, the angular motion of the magnet corresponding to a change of one division of scale reading is found to be $4'.\ 30''\cdot9$.

The variation of vertical force, in terms of the whole vertical force, producing angular motion of the magnet corresponding to a 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 $T' = 17^{s}\cdot027$, $T = 18^{s}\cdot812$, and dip $= 67^{\circ}.\ 27'$, the change of vertical force corresponding to change of one division of scale reading was found to be 0·0004468, 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 $-0^{\circ}\cdot4$, 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 *xxii*), the movement of the spot of light on the cylinder for a change of 0·01 of vertical force is thus found to be, 5·891 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 *xxx*) were measured, exactly in the same way as was described for declination.

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 *xx*), 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 maintained as far as possible. Further observations made in the years 1885 and 1886, of which particulars are given at the end of this Introduction, showed that through the range of temperature to which the magnet is usually exposed the increase of vertical force for increase of 1° of temperature is uniformly 0·000212, no term depending on the square of the temperature being here necessary, as in the case of horizontal force. The new value, 0·000212, for 1° of temperature (Fahrenheit), which is in satisfactory agreement with that previously found, has been employed in the reduction of the results for the year 1886.

From January 5 to 14 during the progress of the drainage work, mentioned at page *v*, photographic registration was interrupted.

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, 9¾ 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 re-magnetised 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. On June 17 the axis of the needle B_1 was accidentally broken : until June 29 it was in the hands of Mr. Dover for repair.

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 the late 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 = μ = 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.

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

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

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

we have, using for reduction of the observations a mean value of P :—

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

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

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

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. The expression for P is not convenient for logarithmic computation, and, in practice, its value for each observation has, since the year 1877, been calculated from the expression

$$\frac{\text{Log. } A_1 - \text{Log. } A_2}{\text{modulus}} \times \frac{r_1^2 \times r_2^2}{r_2^2 - r_1^2} = (\text{Log. } A_1 - \text{Log. } A_2) \times 5{\cdot}64.$$

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,

$\dfrac{H}{F}$ = 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 $\dfrac{H}{F} = \dfrac{\theta}{90° - \theta}$, where θ = 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 a times the millimètre, and the grain equal to β times the milligramme, then for reduction to metric measure $\frac{m}{X}$ and mX must be multiplied by a^3 and $a^2\beta$ respectively, or X must be multiplied by $\sqrt{\frac{\beta}{a}}$. 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 $0·46108 = \frac{1}{2·1689}$. 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 Junction 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.

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 1886 which have been classed as days of great disturbance. These are March 30–31, March 31–April 1, May 8–9, and July 27–28. Other days of lesser disturbance are March 18–19, 19–20, April 11–12, 12–13, 13–14, 14–15, June 22–23, 29–30, August 23–24, September 9–10, 10–11, 11–12, 12–13, 13–14, October 6–7, 7–8, 8–9, 9–10, 10–11, November 2–3, 3–4, 4–5, 5–6, 6–7, and November 30–December 1. When two days are mentioned it is to be understood that the reference is usually to one set of photographic sheets extending from noon to noon and including the last half and the first half respectively 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 (0^h to 23^h), 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 whole days commencing March 30. 0^h, March 31. 0^h, May 8. 12^h, and July 27. 12^h ; the omissions in Tables I., III., and VII. for the same reason are March 30, 31, May 8, 9, and July 27, 28. On account of adjustments or accidental interruption it was necessary also to omit April 28 in declination ; January 1, April 28, and December 31, in horizontal force ; and January 1, 2, and December 31 in vertical force ; and from January 5 to 14 in all elements. 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 years preceding 1883 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 from the beginning of 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 $(t-32) \times \cdot 0000924$* + $(t^2-32) \times \cdot 000002074$, where t is the temperature in degrees Fahrenheit, and to those of vertical force, Tables VII. and IX., the correction $-(t-32) \times \cdot 000212$. The corrections applied are founded on the daily and hourly values of temperature given in Tables IV., VI., VIII., and X.

In regard to the formation of the tables of temperature, the hourly readings of the Richard thermograph, brought into use in the month of February, were entered into a form having double arguments, as for the magnets, the mean hourly values deduced therefrom giving for the month the variation through the day, and the mean daily values the variation through the month. To adapt these to represent the temperature within the horizontal and vertical force magnet boxes respectively, the monthly means of the thermograph readings at 9^h, 10^h, 11^h, 12^h, 13^h, 14^h, 15^h, and 21^h, were compared with the corresponding means of the eye readings of the thermometers whose bulbs are within the respective magnet boxes, giving corrections to the thermograph readings at these hours, which were very accordant, and from which by interpolation corrections were obtained for the remaining hours. The eight daily observations gave also the means of reducing the daily thermograph values to the temperature of the interior of the respective magnet boxes. The results are given in Tables IV., VI., VIII., and X. The values in Tables IV. and VIII., for January, before the thermograph was brought into use, are simply the means of the eight daily eye observations taken at 9^h, 10^h, 11^h, 12^h, 13^h, 14^h, 15^h, and 21^h, as in former years, and the values in Tables VI. and X., for other hours than those mentioned, are filled in by interpolation from the knowledge of the character of the diurnal change obtained from the thermograph readings during other months of the year.

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.

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* By inadvertence the value ·0000924 was used in the reductions of the year 1886 instead of the true value ·0000936 (pages *xx* and *lxii*). But this slight error has differentially no sensible influence on the various results for horizontal force given in the tables of the magnetic section, pages (iii) to (xiii).

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

$$\text{H.F. in metrical measure} \times \sin 1' = 1{\cdot}8157 \times \sin 1' = 0{\cdot}0005282.$$

For variation of horizontal force, the factor is

$$\text{H.F. in metrical measure} = 1{\cdot}8157.$$

and for variation of vertical force

$$\begin{aligned}\text{V. F. in metrical measure} &= \text{H. F. in metrical measure} \times \tan \text{dip},\\ &= 1{\cdot}8157 \times \tan 67^\circ.27' = 4{\cdot}3727.\end{aligned}$$

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 *xxx*), 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.

$$m \quad = \frac{1}{24}\ (0+1+2 \ldots\ldots 22+23).$$

$$\begin{aligned}12\, a_1 = 0-12 &+ (\overline{1+23} - \overline{11+13}) \cos 15^\circ + (\overline{2+22} - \overline{10+14}) \cos 30^\circ\\ &+ (\overline{3+21} - \overline{9+15}) \cos 45^\circ + (\overline{4+20} - \overline{8+16}) \cos 60^\circ\\ &+ (\overline{5+19} - \overline{7+17}) \cos 75^\circ.\end{aligned}$$

$$12\,b_1 = 6-18 + (\overline{5+7} - \overline{17+19})\sin 75^\circ + (\overline{4+8} - \overline{16+20})\sin 60^\circ$$
$$+ (\overline{3+9} - \overline{15+21})\sin 45^\circ + (\overline{2+10} - \overline{14+22})\sin 30^\circ$$
$$+ (\overline{1+11} - \overline{13+23})\sin 15^\circ.$$

$$12\,a_2 = \overline{0+12} - \overline{6+18} + (\overline{1+11+13+23} - \overline{5+7+17+19})\cos 30^\circ$$
$$+ (\overline{2+10+14+22} - \overline{4+8+16+20})\cos 60^\circ$$

$$12\,b_2 = \overline{3+15} - \overline{9+21} + (\overline{2+4+14+16} - \overline{8+10+20+22})\sin 60^\circ$$
$$+ (\overline{1+5+13+17}) - \overline{7+11+19+23})\sin 30^\circ$$

$$12\,a_3 = \overline{0+8+16} - \overline{4+12+20} + (\overline{1+7+9+15+17+23} - \overline{3+5+11+13+19+21})\cos 45^\circ.$$

$$12\,b_3 = \overline{2+10+18} - \overline{6+14+22} + (\overline{1+3+9+11+17+19} - \overline{5+7+13+15+21+23})\sin 45^\circ.$$

$$12\,a_4 = \overline{0+6+12+18} - \overline{3+9+15+21}$$
$$+ (\overline{1+5+7+11+13+17+19+23} - \overline{2+4+8+10+14+16+20+22})\cos 60^\circ.$$

$$12\,b_4 = (\overline{1+2+7+8+13+14+19+20} - \overline{4+5+10+11+16+17+22+23})\sin 60^\circ.$$

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

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

Similarly for c_2, β, &c.

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

$$\alpha' = \alpha + h$$
$$\beta' = \beta + 2h$$
$$\&c. = \&c.,$$

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 :—

1886.	a_5.	b_5.
Declination	−0′·06	−0′·01
Horizontal Force......	+0·7	−1·2
Vertical Force	+0·5	−0·1

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

SUMS OF SQUARES OF RESIDUALS OF DIURNAL INEQUALITIES.

For the Year 1886.	Declination.	Horizontal Force.	Vertical Force.
Sums of Squares of Observed Values (Table XII.)	238·64	275292·1	15448·9
Sums of Squares of Residuals after the introduction of m	136·09	46244·2	3802·1
" " a_1 and b_1	41·43	11315·2	1922·6
" " a_2 and b_2	6·38	2437·8	229·1
" " a_3 and b_3	0·80	502·3	32·3
" " a_4 and b_4	0·05	29·0	14·2
" " a_5 and b_5	0·00	6·3	11·6

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

As regards Magnetic Dip, the result of each 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 (*xxix*).

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 1886, 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 (xxvi). 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 (XVI.) 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 recorded hourly 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 about $4\frac{1}{2}°$ of temperature throws the horizontal force curve upward by 0·001 of the whole horizontal force; an increase of about 5° of temperature throws the vertical force curve downward by 0·001 of the whole vertical force. For the January curves on Plate XVI. only the eight eye observations were available.

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	5·891
On the Plates	2·580	1·363	3·240

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

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

$$\text{and Vertical Force} = \text{Horizontal Force} \times \tan. \text{ dip } [\text{dip} = 67°. 27']$$

$$= \text{Horizontal Force} \times 2\cdot 4083$$

whence we have the following equivalent scale values for the different elements :—

—	LENGTH OF UNIT, EQUIVALENT TO 0·01 OF HORIZONTAL FORCE.		
	For Declination Curve.	For Horizontal Force Curve.	For Vertical Force Curve.
	in.	in.	in.
On the Photographs	2·68	2·48	2·45
On the Plates -	1·47	1·36	1·35

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 1886	= 3·9379
Millimètre-milligramme-second, or	Metric unit, ,, ,, ,,	= 1·8157
Centimètre-gramme-second, or	C. G. S. unit, ,, ,, ,,	= 0·18157

Dividing therefore the scale values last given by 3·9379, 1·8157, and 0·18157 respectively, the following comparative scale values for each of the elements on the photographs and 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.	
	On the Photographs.	On the Plates.	On the Photographs.	On the Plates.	On the Photographs.	On the Plates.
	in.	in.	in.	in.	in.	in.
British - -	0·68	0·37	0·63	0·35	0·62	0·34
Metric - -	1·48	0·81	1·36	0·75	1·35	0·74
C. G. S. - -	14·8	8·1	13·6	7·5	13·5	7·4

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 March 20. 10^h. Explanation in regard to other accidental interruptions will be found on page (xxvi).

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 $0^{in}·565$ in diameter, and the depression of the mercury due to capillary action is $0^{in}·002$, 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 $0^{in}\cdot05$, sub-divided 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 = $4^{in}\cdot 39$ on the paper. Ordinates measured for the times of observation of the standard barometer, combined with the corrected readings of the standard barometer, give apparent values of the base line, from which mean values for each day are formed; these are written on the sheets and new base lines drawn, from which the hourly ordinates (see page *xlix*) 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 5 to 14, during the progress of the drainage work mentioned at page *v*, photographic registration was interrupted.

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 $-0^{\circ}\cdot2$ until February 28, and a correction of $-0^{\circ}\cdot3$ 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 February 28, corrections of $-0^{\circ}\cdot4$ and $+1^{\circ}\cdot9$ respectively, and after that date corrections of $-0^{\circ}\cdot5$ and $+1^{\circ}\cdot7$ 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.

At the beginning of the year 1886 three thermometers, also by Negretti and Zambra, were mounted on the platform above the Magnet House, in a louvre boarded shed or screen, so constructed as to give free circulation of air with protection from radiation. No. 45356 is for eye observation of the temperature of the air, and required a correction of $-0^{\circ}\cdot2$. No. 37467 is a self-registering maximum thermometer, which required a correction of $-0^{\circ}\cdot4$, and No. 38338 is a self-registering minimum thermometer, for which a correction of $+0^{\circ}\cdot8$ was used to September 30, and afterwards of $+0^{\circ}\cdot1$. The bulbs of all these thermometers are 4 feet above the platform, and about 20 feet above the ground. The observation of these thermometers is omitted on Sundays, Good Friday, and Christmas Day.

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, and the record includes 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 (xxviii), 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. Owing to accidental causes the observations were interrupted from April 11 to May 16, and again from July 4 to September 25.

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, in the year 1882, 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 May 24 the snake chain broke ; it was renewed on June 3.

Whilst the action of the pressure apparatus has been satisfactory for moderate winds, it is believed that the record of occasional very large pressures in years preceding 1882 was due principally to irregular action, in excessive gusts, of the connecting copper wire, but the brass chain being always in tension, the movements of the recording pencil have since been in complete sympathy with those of the pressure plate, and in this condition of the apparatus, that is since the year 1882, no pressure greater than about 30 lbs. has been 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, and 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. The hemispherical cups of the instrument with which the experiments were made were each $3\frac{1}{2}$ inches in diameter, the centre of each cup being 7 inches distant from the vertical axis of rotation.

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 (lxxviii) 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 Greenwich civil time.

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 Greenwich civil time, 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 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 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.

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 (0^h to 23^h) 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 *xxx*), 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. The scale has not been determined in terms of any electrical unit.

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 barometer results are *not* reduced to sea level.

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 (lvii) and (lviii)) have been calculated from the corresponding mean hourly values of air and evaporation temperatures (pages (lvi) and (lvii)).

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 Greenwich civil time. 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 (lv) and (lxxviii), is formed from the records of this gauge. In this numeration only those days are counted on which the fall amounted to or exceeded $0^{in}\cdot005$.

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

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

The mean amount of cloud given in a foot note on the right-hand page, and in the abstract table, page (lv), 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*	ci-s	denotes *cirro-stratus*
ci	... *cirrus*	cu	... *cumulus*
ci-cu	... *cirro-cumulus*	cu-s	... *cumulo-stratus*

d	denotes	*dew*
hy-d	...	*heavy dew*
f	...	*fog*
slt-f	...	*slight fog*
tk-f	...	*thick fog*
fr	...	*frost*
ho-fr	...	*hoar frost*
g	...	*gale*
hy-g	...	*heavy gale*
glm	...	*gloom*
gt-glm	...	*great gloom*
h	...	*haze*
slt-h	...	*slight haze*
hl	...	*hail*
l	...	*lightning*
li-cl	...	*light clouds*
lu-co	...	*lunar corona*
lu-ha	...	*lunar halo*
m	...	*mist*
slt-m	...	*slight mist*
n	...	*nimbus*
p-cl	...	*partially cloudy*
prh	...	*parhelion*
prs	...	*paraselene*
r	...	*rain*
c-r	...	*continued rain*
fr-r	...	*frozen rain*
fq-r	...	*frequent rain*
hy-r	...	*heavy rain*
c-hy-r	...	*continued heavy rain*
m-r	...	*misty rain*
fq-m-r	...	*frequent misty rain*
oc-m-r	...	*occasional misty rain*
oc-r	...	*occasional rain*
sh-r	...	*shower of rain*
shs-r	denotes	*showers of rain*
slt-r	...	*slight rain*
oc-slt-r	...	*occasional slight rain*
th-r	...	*thin rain*
fq-th-r	...	*frequent thin rain*
oc-th-r	...	*occasional thin rain*
hy-sh	...	*heavy shower*
slt-sh	...	*slight shower*
fq-shs	...	*frequent showers*
hy-shs	...	*heavy showers*
fq-hy-shs	...	*frequent heavy showers*
oc-hy-shs	...	*occasional heavy showers*
li-shs	...	*light showers*
oc-shs	...	*occasional showers*
s	...	*stratus*
sc	...	*scud*
li-sc	...	*light scud*
sl	...	*sleet*
sn	...	*snow*
oc-sn	...	*occasional snow*
slt-sn	...	*slight snow*
so-ha	...	*solar halo*
sq	...	*squall*
sqs	...	*squalls*
fq-sqs	...	*frequent squalls*
hy-sqs	...	*heavy squalls*
fq-hy-sqs	...	*frequent heavy squalls*
oc-sqs	...	*occasional squalls*
t	...	*thunder*
t-sm	...	*thunder storm*
th-cl	...	*thin clouds*
v	...	*variable*
vv	...	*very variable*
w	...	*wind*
st-w	...	*strong wind*

The following is the notation employed for Electricity :—

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

The duplication of the letter denotes intensity of the modification described, thus, 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 1841–1885.

The tables following the "Daily Results" require no lengthened explanation. They consist of tables giving the highest and lowest readings of the barometer through the year; monthly abstracts of the principal meteorological elements; hourly values in each month of barometer reading, temperature of air and of evaporation, dew point, and degree of humidity; sunshine results; observations of thermometers on the roof of the Magnet House, and of the earth thermometers; changes of direction of the wind; hourly values in each month of the horizontal movement of the air derived from Robinson's Anemometer; results derived from the Thomson Electrometer; rain results; observations of parhelia and paraselenæ; and observations of meteors.

In the tables of mean values of meteorological elements at each hour for the different months of the year, the mean values have, in previous years, been given for the hours 0^h to 23^h only. But in the present year (1886) the mean for the 24th hour (the following midnight) has been added, thus indicating the amount of non-periodic variation. The monthly means have also been given for the 24 hours, 1^h to 24^h, as well as for the hours, 0^h (midnight) to 23^h, which were given in former years.

It may be pointed out that the monthly means, 0^h to 23^h, for barometer and temperature of the air and of evaporation contained in these tables, pages (lvi) and (lvii), do not in some cases agree with the monthly means given in the daily results, pages (xxviii) to (l), and in the table on page (lv), 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 (lxvii), 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 (lxxii), 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 $0^{in.}020$, 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 (lxxvi) and (lxxvii) 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 1886 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.

W. H. M. CHRISTIE.

Royal Observatory, Greenwich,
1888, May 2.

INVESTIGATION OF THE TEMPERATURE CORRECTIONS OF THE HORIZONTAL AND VERTICAL FORCE MAGNETS.

It being considered desirable to re-investigate the temperature corrections of the horizontal and vertical force magnets, experiments for this purpose were undertaken in the years 1885 and 1886, the principle previously employed in 1868 of alternately warming and cooling the magnet basement being used. The observations on this occasion were made both in the summer and winter, in order to obtain results through as large a range of temperature as possible. To eliminate the effect of the diurnal inequality of the two elements the basement was kept at the high or low temperatures through a complete day or for several days, the mean of the eight daily eye observations of the thermometers in the magnet boxes being compared with the uncorrected mean value of the element for the day (the mean of 24 hourly values), as given in Tables III. and VII. of the Magnetic Section, in which the unit is ·00001 of each of the forces respectively. In the year 1885 and in January of the year 1886 the temperatures are those of Tables IV. and VIII. of the Magnetic Section, but from February 1886 they differ slightly from those values which from that date have been deduced from the records of the Richard thermograph. In consequence of the greater changes of temperature to which the basement was subject during these experiments, as compared with the ordinary condition, the means of the eye readings of the thermometers are, for the purposes of this investigation, to be preferred to the values deduced from the Richard thermograph, but the differences are usually insignificant.

The results of the experiments with the horizontal force magnet are given in the following table. The numbers in the last column of the table are added simply to show the degree of accuracy of the separate measures.

TEMPERATURE EXPERIMENTS ON THE HORIZONTAL FORCE MAGNET.

Day, Civil.	Mean Daily Temperature.	Corresponding uncorrected Mean Value of Horizontal Force.	Means of Groups. Temperature.	Means of Groups. Horizontal Force.	Mean of Temperatures.	Increase of Temperature.	Corresponding Decrease of Horizontal Force in terms of the whole Horizontal Force.	Decrease of Horizontal Force for Increase of 1° of Temperature in terms of the whole Horizontal Force.
1885.	°		°		°	°		
Feb. 10	58·42	573	57·47	628				
11	56·51	682			60·92	6·90	·00168	·00024
Feb. 13	64·42	449	64·37	460				
14	64·31	470						
Feb. 16	63·14	588	62·54	585				
17	61·93	582						
					58·03	9·03	·00145	·00016

TEMPERATURE EXPERIMENTS ON THE HORIZONTAL FORCE MAGNET—*continued.*

Day, Civil.	Mean Daily Temperature.	Corresponding uncorrected Mean Value of Horizontal Force.	Means of Groups. Temperature.	Means of Groups. Horizontal Force.	Mean of Temperatures.	Increase of Temperature.	Corresponding Decrease of Horizontal Force in terms of the whole Horizontal Force.	Decrease of Horizontal Force for Increase of 1° of Temperature in terms of the whole Horizontal Force.
1885.	°		°		°	°		
Feb. 20	53·51	730	53·51	730				
					56·45	5·88	·00109	·00019
Feb. 23 24	58·70 60·08	613 629	59·39	621				
Mar. 8 9	56·61 57·16	672 681	56·89	677				
					54·01	5·75	·00124	·00022
Mar. 11	51·14	801	51·14	801				
					55·69	9·09	·00229	·00025
Mar. 13 14	59·41 61·05	588 556	60·23	572				
Mar. 18	57·38	589	57·38	589				
					54·86	5·03	·00069	·00014
Mar. 21	52·35	658	52·35	658				
					54·44	4·18	·00012	·00003
Mar. 23	56·53	646	56·53	646				
					53·77	5·53	·00075	·00014
Mar. 25	51·00	721	51·00	721				
					53·81	5·62	·00050	·00009
Mar. 27 28	56·35 56·89	677 664	56·62	671				
...	...	...	...	...	Mean 55·78	Sum 57·01	Sum ·00981	...
1886.								
Jan. 19 20	54·79 55·23	665 642	55·01	654				
					52·20	5·62	·00118	·00021
Jan. 22	49·39	772	49·39	772				
					53·93	9·08	·00100	·00011
Jan. 26 27	57·79 59·14	699 645	58·47	672				
					53·41	10·12	·00187	·00018
Jan. 29 30	48·39 48·31	865 852	48·35	859				
					51·81	6·92	·00124	·00018
Feb. 1 2	54·45 56·09	752 718	55·27	735				
					52·05	6·45	·00154	·00024
Feb. 4 5	49·45 48·19	891 886	48·82	889				
					52·22	6·80	·00203	·00030

TEMPERATURE EXPERIMENTS ON THE HORIZONTAL FORCE MAGNET—*continued.*

Day, Civil.	Mean Daily Temperature.	Corresponding uncorrected Mean Value of Horizontal Force.	Means of Groups.		Mean of Temperatures.	Increase of Temperature.	Corresponding Decrease of Horizontal Force in terms of the whole Horizontal Force.	Decrease of Horizontal Force for Increase of 1° of Temperature in terms of the whole Horizontal Force.
			Temperature.	Horizontal Force.				
1886.	°		°		°	°		
Feb. 8	55·05	670	55·62	686				
9	56·19	702			52·29	6·66	·00182	·00027
Feb. 11	48·56	836	48·96	868				
12	49·36	900			54·07	10·22	·00161	·00016
Feb. 14	58·33	712	59·18	707				
15	60·03	702						
...	...	...	...	...	Mean 52·75	Sum 61·87	Sum ·01229	...
July 6	73·21	457	73·36	445				
7	73·51	433			70·26	6·20	·00123	·00020
July 9	67·76	569	67·16	568				
10	66·56	567						
July 11	67·73	565	68·53	575				
12	69·33	585			72·16	7·25	·00226	·00031
July 14	75·19	382	75·78	349				
15	76·36	315			72·40	6·76	·00235	·00035
July 17	68·71	565	69·02	584				
18	69·33	602			73·07	8·11	·00236	·00029
July 20	76·64	344	77·13	348				
21	77·61	352			72·66	8·95	·00206	·00023
July 23	68·56	533	68·18	554				
24	67·79	574						
July 29	67·89	476	68·41	502				
30	68·93	527			72·25	7·69	·00150	·00020
Aug. 2	76·44	362	76·10	352				
3	75·76	341			72·11	7·99	·00290	·00036
Aug. 5	67·71	593	68·11	642				
6	68·51	691			72·52	8·82	·00209	·00024
Aug. 8	76·80	428	76·93	433				
9	75·56	458						
10	78·44	413			72·12	9·62	·00202	·00021

TEMPERATURE EXPERIMENTS ON THE HORIZONTAL FORCE MAGNET—*concluded.*

Day, Civil.	Mean Daily Temperature.	Corresponding uncorrected Mean Value of Horizontal Force.	Means of Groups.		Mean of Temperatures.	Increase of Temperature.	Corresponding Decrease of Horizontal Force in terms of the whole Horizontal Force.	Decrease of Horizontal Force for Increase of 1° of Temperature in terms of the whole Horizontal Force.
			Temperature.	Horizontal Force.				
1886.	°		°		°	°		
Aug. 12	67·24	601	67·31	635				
13	67·38	669			72·92	11·23	·00261	·00023
Aug. 16	78·63	396	78·54	374				
17	78·45	351			73·40	10·29	·00283	·00028
Aug. 19	68·66	642	68·25	657				
20	67·84	672						
...	...	...	...	...	Mean 72·35	Sum 92·91	Sum ·02421	...

The following table contains the results of the experiments with the vertical force magnet, the numbers in the last column being added as before, simply to show the degree of accuracy of the separate measures.

TEMPERATURE EXPERIMENTS ON THE VERTICAL FORCE MAGNET.

Day, Civil.	Mean Daily Temperature.	Corresponding uncorrected Mean Value of Vertical Force.	Means of Groups.		Mean of Temperatures.	Increase of Temperature.	Corresponding Increase of Vertical Force in terms of the whole Vertical Force.	Increase of Vertical Force for Increase of 1° of Temperature in terms of the whole Vertical Force.
			Temperature.	Vertical Force.				
1885.	°		°		°	°		
Feb. 10	57·87	565	57·23	544				
11	56·59	523			60·83	7·19	·00157	·00022
Feb. 13	64·49	704	64·42	701				
14	64·34	697						
Mar. 8	55·74	520	55·99	512				
9	56·24	503			53·52	4·95	·00136	·00027
Mar. 11	51·04	376	51·04	376	55·14	8·21	·00182	·00022

TEMPERATURE EXPERIMENTS ON THE VERTICAL FORCE MAGNET—*continued.*

Day, Civil.	Mean Daily Temperature.	Corresponding uncorrected Mean Value of Vertical Force.	Means of Groups.		Mean of Temperatures.	Increase of Temperature.	Corresponding Increase of Vertical Force in terms of the whole Vertical Force.	Increase of Vertical Force for Increase of 1° of Temperature in terms of the whole Vertical Force.
			Temperature.	Vertical Force.				
	°		°		°	°		
1885. Mar. 13 14	58·51 59·99	542 573	59·25	558				
Mar. 18	56·96	503	56·96	503	54·34	5·25	·00096	·00018
Mar. 21	51·71	407	51·71	407	53·57	3·72	·00053	·00014
Mar. 23	55·43	460	55·43	460	53·35	4·16	·00095	·00023
Mar. 25	51·27	365	51·27	365	53·78	5·03	·00085	·00017
Mar. 27 28	56·06 56·54	438 462	56·30	450				
...	...	...	...	...	Mean 54·93	Sum 38·51	Sum ·00804	...
1886. Jan. 19 20	53·31 53·39	622 612	53·35	617				
Jan. 22	48·61	511	48·61	511	50·98	4·74	·00106	·00022
Jan. 26 27	56·49 57·95	647 675	57·22	661	52·92	8·61	·00150	·00017
Jan. 29 30	48·36 48·11	463 444	48·24	454	52·73	8·98	·00207	·00023
Feb. 1 2	53·16 54·51	570 606	53·84	588	51·04	5·60	·00134	·00024
Feb. 4 5	49·19 47·94	502 472	48·57	487	51·20	5·27	·00101	·00019
Feb. 8 9	53·85 54·93	586 595	54·39	591	51·48	5·82	·00104	·00018
Feb. 11 12	48·28 48·99	450 449	48·64	450	51·52	5·75	·00141	·00025
Feb. 14 15	57·39 58·93	637 674	58·16	656	53·40	9·52	·00206	·00022
...	...	...	...	...	Mean 51·91	Sum 54·29	Sum ·01149	...

TEMPERATURE EXPERIMENTS ON THE VERTICAL FORCE MAGNET—*concluded.*

Day, Civil.	Mean Daily Temperature.	Corresponding uncorrected Mean Value of Vertical Force.	Means of Groups.		Mean of Temperatures.	Increase of Temperature.	Corresponding Increase of Vertical Force in terms of the whole Vertical Force.	Increase of Vertical Force for Increase of 1° of Temperature in terms of the whole Vertical Force.
			Temperature.	Vertical Force.				
1886.	°		°		°	°		
July 6 7	72·38 72·79	825 847	72·59	836				
					70·05	5·07	·00121	·00024
July 9 10	68·15 66·88	734 695	67·52	715				
July 11 12	67·56 69·19	698 726	68·38	712				
					71·47	6·18	·00142	·00023
July 14 15	74·06 75·06	848 859	74·56	854				
					71·29	6·55	·00174	·00027
July 17 18	67·56 68·46	678 682	68·01	680				
					71·92	7·82	·00180	·00023
July 20 21	75·16 76·50	855 865	75·83	860				
					71·54	8·58	·00141	·00016
July 23 24	67·75 66·74	732 706	67·25	719				
July 29 30	67·56 68·54	699 709	68·05	704				
					71·57	7·05	·00112	·00016
Aug. 2 3	75·44 74·75	827 805	75·10	816				
					71·45	7·31	·00187	·00026
Aug. 5 6	67·44 68·13	629 628	67·79	629				
					71·91	8·25	·00199	·00024
Aug. 8 9 10	75·70 74·78 77·63	811 822 852	76·04	828				
					71·43	9·22	·00207	·00022
Aug. 12 13	66·74 66·90	637 604	66·82	621				
					71·98	10·33	·00187	·00018
Aug. 16 17	77·25 77·05	815 800	77·15	808				
					72·36	9·58	·00188	·00020
Aug. 19 20	67·91 67·23	629 610	67·57	620				
...	...	...	...	...	Mean 71·54	Sum 85·94	Sum ·01838	...

The results for horizontal force are as follows :—

Mean Temperature.	Aggregate Increase of Temperature.	Corresponding Decrease of Horizontal Force.	Decrease for Increase of 1° of Temperature.	Number of Comparisons
55°·78	57°·01	·00981	·000172	9
52·75	61·87	·01229	·000199	8
72·35	92·91	·02421	·000261	11

Taking the mean of the first two determinations we have—

Temperature.	Decrease of Horizontal Force for Increase of 1° of Temperature.
54°·27	·000186
72·35	·000261

and assuming the correction to have the form $a\ t + b\ t^2$ in which t is the excess of the temperature above 32°, the decrease of horizontal force for increase of 1° of temperature would be $a + 2\ b\ t$, whence we have—

$$a + 44{\cdot}54\ b = {\cdot}000186$$
$$a + 80{\cdot}70\ b = {\cdot}000261$$

from which

$$a = +\ {\cdot}0000936, \text{ and } b = +\ {\cdot}000002074$$

and the correction for reduction to temperature 32° Fahrenheit is—

$$+\ {\cdot}0000936\ (t-32) + {\cdot}000002074\ (t-32)^2$$

The values of the decrease of horizontal force for increase of 1° of temperature (Fahrenheit) are :—

at 55°	Fahrenheit	·000189
60°		·000210
65°		·000230
70°		·000251
75°		·000272

The results for vertical force are as follows :—

Mean Temperature.	Aggregate Increase of Temperature.	Corresponding Increase of Vertical Force.	Increase for Increase of 1° of Temperature.	Number of Comparisons.
°	°			
54·93	38·51	·00804	·000209	7
51·91	54·29	·01149	·000212	8
71·54	85·94	·01838	·000214	11

Taking the mean of the first two determinations we have—

Temperature.	Increase of Vertical Force for Increase of 1° of Temperature.
°	
53·42	·000211
71·54	·000214

It is assumed that, through the range of temperature to which the magnet is usually exposed, the increase of vertical force for increase of 1° of temperature is ·000212.

ROYAL OBSERVATORY, GREENWICH.

RESULTS

OF

MAGNETICAL OBSERVATIONS

(EXCLUDING THE DAYS OF GREAT MAGNETIC DISTURBANCE).

1886.

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

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

1886.

Day of Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
	17°	17°	17°	17°	17°	17°	17°	17°	17°	17°	17°	17°
d	′	′	′	′	′	′	′	′	′	′	′	′
1	55.5	56.3	55.9	56.3	55.1	54.1	55.4	54.2	54.7	54.3	52.6	53.3
2	56.4	56.5	55.8	55.4	55.5	55.1	55.7	54.7	54.5	54.4	52.6	52.0
3	56.0	55.9	56.8	55.1	55.3	56.5	55.9	55.1	54.0	54.7	51.9	52.2
4	56.0	54.5	57.0	55.8	55.3	56.0	55.7	54.1	54.4	54.5	53.9	52.3
5	...	55.0	56.5	55.7	55.8	55.2	56.1	54.3	53.4	53.4	52.3	52.1
6	...	55.3	56.0	55.9	55.6	55.2	56.4	55.3	53.7	52.9	51.8	51.8
7	...	56.1	57.3	56.3	55.8	55.4	55.7	54.2	54.2	51.9	52.8	51.6
8	...	55.8	57.2	55.4	...	55.5	55.6	53.5	54.0	54.8	53.2	52.5
9	...	56.0	57.1	55.6	...	55.9	56.2	54.7	53.5	52.7	52.6	53.1
10	...	56.3	57.4	55.7	55.4	55.2	56.4	54.2	54.7	53.2	53.1	53.0
11	...	53.8	56.8	55.5	55.3	54.6	54.8	55.0	55.3	53.1	53.2	53.1
12	...	55.0	56.7	54.4	54.3	55.8	55.2	55.1	55.6	53.1	53.7	53.2
13	...	54.4	56.1	54.8	54.4	55.0	55.5	53.8	55.0	52.7	53.8	53.1
14	...	55.0	56.0	55.6	54.8	55.8	56.5	54.2	55.2	52.7	53.5	52.5
15	57.7	56.0	56.0	56.0	55.3	54.8	55.9	54.1	53.3	53.2	52.0	52.0
16	57.4	55.6	55.8	54.5	54.5	55.0	55.1	54.9	53.9	53.0	53.1	52.4
17	57.0	54.4	55.7	55.3	54.6	55.1	55.1	54.1	54.5	54.2	53.0	52.3
18	56.8	55.4	54.6	55.5	54.6	55.7	55.3	54.6	53.5	53.0	52.9	53.3
19	57.6	54.4	53.8	54.7	54.7	54.6	54.8	53.8	53.9	52.3	52.6	53.4
20	56.2	55.1	55.9	55.2	54.9	54.7	55.2	53.4	54.1	52.6	52.2	52.8
21	55.9	55.6	54.6	54.4	55.6	55.1	55.8	54.2	53.1	52.3	52.4	52.5
22	55.2	56.0	53.6	55.3	54.5	55.9	55.8	54.1	53.5	52.3	52.5	52.3
23	55.9	55.2	55.4	55.5	54.1	54.9	55.5	54.1	53.3	52.2	52.9	51.3
24	56.3	55.1	55.3	54.6	54.2	55.5	54.5	53.4	53.2	52.5	52.4	52.1
25	56.4	55.7	54.7	54.8	54.7	55.7	54.3	53.5	53.1	52.7	53.1	52.2
26	56.6	56.5	54.2	54.1	54.7	54.9	54.7	53.1	53.3	52.3	52.9	52.9
27	56.7	55.9	53.1	54.7	55.3	55.6	...	54.1	53.1	53.3	52.8	52.2
28	55.2	55.6	54.3	...	54.3	55.0	...	53.5	53.5	51.5	52.8	51.8
29	55.8		54.0	54.7	55.1	55.1	54.7	54.2	54.0	52.9	52.4	52.4
30	55.0		...	53.5	54.8	54.5	54.6	54.3	53.7	52.5	52.3	52.8
31	55.6		...		54.1		54.1	54.2		52.2		52.0

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

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

1886.

Hour, Greenwich Civil Time.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
	′	′	′	′	′	′	′	′	′	′	′	′
Midn.	0.4	0.1	0.4	1.6	3.0	2.9	2.4	1.9	0.5	0.8	0.9	0.7
1h	1.1	0.6	0.7	1.7	3.0	2.9	2.0	1.8	0.3	1.3	1.7	1.5
2	1.8	1.3	0.8	1.2	2.9	2.6	1.8	1.5	0.7	1.5	2.4	1.9
3	2.1	1.2	1.1	1.2	2.5	2.0	1.7	1.5	0.5	1.9	2.8	2.4
4	2.4	1.2	1.4	1.5	2.0	1.4	1.3	1.3	0.5	2.3	3.2	2.9
5	2.8	1.4	1.2	1.6	1.1	0.6	0.5	0.6	0.6	2.5	3.4	2.8
6	2.8	1.4	1.2	1.0	0.3	0.0	0.3	0.2	0.5	2.6	3.3	2.8
7	2.8	1.5	0.7	0.3	0.0	0.1	0.0	0.0	0.1	2.1	3.1	3.0
8	2.3	1.1	0.2	0.0	0.6	0.6	0.2	0.4	0.0	1.2	3.2	3.3
9	2.1	0.6	0.3	0.8	2.3	1.9	1.3	2.0	0.6	1.4	3.2	3.2
10	2.7	0.9	2.1	3.2	4.7	3.9	3.3	4.2	2.4	2.7	3.9	3.5
11	4.1	2.3	5.2	6.4	7.6	6.3	5.9	6.7	4.9	5.1	5.3	4.2
Noon.	6.0	4.7	8.0	9.1	10.1	8.5	8.4	8.8	7.2	7.1	6.4	4.7
13h	7.2	6.3	9.4	10.4	10.6	9.5	9.7	9.9	8.0	7.7	6.6	5.2
14	7.4	6.5	9.1	9.9	9.9	9.9	9.7	9.5	7.5	7.3	5.8	4.5
15	6.4	5.9	7.6	8.1	8.8	9.4	8.9	8.1	6.1	5.8	4.7	3.6
16	5.1	4.7	5.5	6.4	7.2	8.3	7.7	6.3	4.4	4.0	4.0	3.0
17	4.4	3.4	4.1	4.7	5.6	6.9	6.4	4.8	3.0	2.8	3.0	2.5
18	3.4	2.7	3.2	3.2	4.4	5.7	5.1	3.8	1.9	2.1	2.3	1.5
19	2.7	1.5	2.8	2.3	3.6	5.0	4.2	3.2	1.4	1.4	1.4	0.8
20	1.9	0.8	2.0	1.8	3.0	4.4	3.6	3.0	1.1	0.9	0.6	0.6
21	1.0	1.0	1.1	1.6	2.7	4.1	3.1	2.6	0.8	0.5	0.0	0.2
22	0.4	0.2	0.2	1.4	2.8	3.9	3.0	2.3	0.6	0.0	0.0	0.0
23	0.0	0.0	0.0	1.5	2.8	3.4	3.0	1.9	0.7	0.3	0.3	0.2
Means	3.05	2.14	2.85	3.37	4.23	4.34	3.90	3.60	2.26	2.72	2.98	2.46

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.)*

1886.

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	...	...	752	565	646	567	505	436	614	571	773	779	460	611	415	663	696	931	776	851	798	850	541	536
2	748	677	718	565	657	578	558	513	570	516	759	776	506	642	362	678	682	886	745	820	770	801	509	497
3	717	632	775	583	625	563	609	569	582	550	683	691	535	698	341	652	754	910	757	809	649	664	542	499
4	728	651	891	621	607	547	647	618	582	548	697	679	524	735	422	679	804	992	785	867	644	641	596	547
5	...	...	886	592	632	581	638	617	604	568	593	575	483	718	593	682	755	943	782	898	652	620	556	531
6	...	...	837	571	606	555	647	589	662	639	572	580	457	694	691	799	740	891	690	798	706	646	600	635
7	...	...	739	536	577	508	669	586	662	657	584	605	433	679	642	830	741	889	640	710	728	666	655	645
8	...	...	670	496	582	522	704	635	...	...	598	638	455	653	428	758	687	825	628	684	774	703	620	626
9	...	...	702	549	588	537	641	574	...	...	555	616	569	665	458	780	698	859	658	707	766	699	634	631
10	...	...	712	525	591	540	675	594	498	524	585	641	567	630	413	791	589	742	621	659	768	706	614	613
11	...	...	836	547	595	528	669	615	562	550	633	675	565	664	540	746	590	711	685	706	793	735	637	656
12	...	...	900	620	608	550	529	493	598	553	622	680	585	721	601	690	649	772	694	741	731	675	641	645
13	...	...	861	629	599	543	500	466	659	619	585	623	502	655	669	756	675	826	699	734	692	645	653	665
14	...	...	712	598	608	557	537	492	666	608	575	596	382	668	576	707	645	803	745	749	756	707	672	660
15	627	462	702	623	615	568	521	461	628	555	566	604	315	637	452	743	652	785	774	793	693	719	689	688
16	679	532	679	586	568	523	562	495	655	588	616	635	380	589	396	777	655	739	770	787	736	735	666	659
17	750	554	595	526	557	497	610	548	695	650	637	654	565	688	351	729	635	714	742	763	715	699	574	573
18	739	570	616	549	565	518	625	569	649	626	646	641	602	735	491	726	708	783	790	791	698	673	617	590
19	665	483	597	535	595	555	618	567	643	633	649	644	502	732	642	760	695	774	789	790	739	714	615	561
20	642	468	605	547	600	571	618	595	680	679	654	666	344	672	672	773	731	810	860	877	719	731	652	575
21	707	507	593	533	683	634	595	555	682	683	665	682	352	696	658	749	760	835	834	842	699	714	660	579
22	772	495	546	492	667	605	654	583	663	698	668	692	348	594	685	826	698	765	807	815	710	687	721	636
23	822	547	557	514	696	627	685	625	693	719	633	662	533	659	710	868	711	751	819	825	662	639	700	621
24	756	538	609	558	697	637	672	640	693	699	630	659	574	675	575	748	726	747	847	848	535	545	701	639
25	734	567	630	581	704	653	640	615	744	732	582	640	614	703	632	785	750	765	850	849	623	647	652	614
26	699	575	658	604	745	683	629	589	742	728	590	669	581	712	602	780	779	798	822	828	694	704	639	616
27	645	548	628	577	731	664	626	601	767	742	557	673	...	...	670	856	808	852	840	822	700	706	600	555
28	733	586	635	577	781	716	...	...	766	732	587	715	...	...	696	884	824	866	803	789	675	668	610	587
29	865	572			755	680	659	614	740	724	604	750	476	572	672	855	831	903	796	802	652	634	585	571
30	852	558			...	...	650	583	738	711	456	612	527	655	702	900	815	897	772	798	554	536	622	606
31	815	557			...	...			768	745			525	673	689	900			776	823			...	...

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.—MEAN TEMPERATURE for each CIVIL DAY within the box inclosing the HORIZONTAL FORCE MAGNET.

1886.

Day of Month.	January.	February.	March.	April.	May	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
1	...	54·5	60·0	60·5	61·7	63·9	70·0	73·8	73·3	66·9	65·9	63·4
2	60·4	56·3	60·0	61·6	61·2	64·4	69·4	76·3	72·1	66·9	65·0	63·1
3	59·7	54·2	60·8	61·8	62·2	64·0	70·5	76·1	70·2	65·9	64·3	61·7
4	60·1	49·8	60·9	62·3	62·1	62·8	72·4	74·1	71·5	67·2	63·5	61·4
5	...	48·3	61·3	62·7	62·0	62·8	73·3	67·5	71·5	68·6	62·2	62·5
6	...	50·0	61·3	61·0	62·6	64·0	73·4	68·3	70·0	68·3	60·9	65·2
7	...	53·6	60·5	59·8	63·4	64·6	73·7	71·5	69·9	66·7	60·8	63·2
8	...	55·2	60·9	60·5	...	65·4	71·9	76·8	69·5	66·1	60·4	63·9
9	...	56·3	61·3	60·6	...	66·3	67·8	76·5	70·4	65·8	60·6	63·5
10	...	54·5	61·3	59·9	64·8	66·1	66·4	78·5	70·1	65·3	60·8	63·6
11	...	48·6	60·6	61·2	63·1	65·5	67·9	72·2	68·8	64·6	61·0	64·5
12	...	49·2	61·0	62·0	61·6	66·2	69·4	67·5	68·9	65·7	61·1	63·8
13	...	52·0	61·1	62·1	61·8	65·3	70·1	67·4	70·0	65·2	61·5	64·2
14	...	58·3	61·3	61·6	61·0	64·6	75·2	69·2	70·3	63·8	61·4	63·1
15	55·7	60·0	61·5	60·9	60·3	65·3	76·5	75·4	69·3	64·5	64·8	63·6
16	56·6	59·3	61·6	60·6	60·6	64·5	72·3	78·6	67·3	64·4	63·6	63·3
17	54·0	60·5	60·9	60·8	61·6	64·4	68·9	78·5	67·1	64·6	62·9	63·6
18	55·5	60·6	61·5	61·1	62·6	63·4	69·3	73·3	66·9	63·7	62·5	62·4
19	54·8	60·8	61·8	61·3	63·2	63·4	73·1	68·7	67·1	63·7	62·5	61·2
20	55·2	61·0	62·3	62·6	63·6	64·2	76·7	68·0	67·1	64·4	64·2	60·1
21	53·8	60·9	61·4	61·8	63·7	64·4	77·3	67·6	66·9	64·0	64·3	59·9
22	49·4	61·2	60·8	60·4	65·2	64·7	73·7	69·6	66·6	64·0	62·6	59·7
23	49·5	61·7	60·5	60·9	64·8	64·9	69·0	70·3	65·4	63·9	62·6	60·0
24	52·8	61·3	60·9	62·2	63·9	64·9	68·0	70·9	64·6	63·7	64·1	60·8
25	55·6	61·4	61·3	62·5	63·1	66·2	67·5	70·1	64·3	63·6	64·7	61·9
26	57·8	61·2	60·8	61·8	63·0	67·1	69·2	71·1	64·5	63·9	64·1	62·6
27	59·1	61·3	60·6	62·5	62·5	68·6	...	71·4	65·6	62·8	63·9	61·6
28	56·6	61·0	60·7	...	62·1	69·1	...	71·5	65·5	63·0	63·3	62·6
29	48·4		60·2	61·6	62·9	69·8	67·8	71·3	66·8	63·9	62·8	63·0
30	48·3		...	60·6	62·4	70·2	69·1	71·9	67·2	64·8	62·8	62·9
31	50·5		...		62·6		69·9	72·4		65·7		...
Means	54°·69	56°·89	61°·00	61°·35	62°·61	65°·37	71°·02	72°·14	68°·29	65°·02	62°·84	62°·54

Between January 21 and February 14, and between July 8 and August 19, the magnet 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.*)

1886.

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*
Midnight.	48	59	48	62	129	142	191	197	153	172	164	182	158	182	163	192	176	195	139	153	24	35	26	32
1h	61	70	51	61	121	127	178	182	156	173	165	180	149	171	156	179	159	176	143	157	22	33	30	36
2	79	85	62	68	112	116	161	163	147	160	159	172	138	155	143	161	153	167	143	154	25	36	33	39
3	86	90	78	82	117	117	146	146	137	145	155	166	138	150	140	153	154	166	139	148	35	42	41	45
4	91	93	84	84	124	121	146	146	127	133	148	154	134	141	134	142	157	166	146	153	47	52	50	54
5	104	104	92	92	127	122	164	161	107	111	139	143	117	119	127	132	153	157	153	158	61	66	62	64
6	110	108	101	99	130	125	157	152	80	84	107	109	87	86	109	109	138	140	149	154	74	76	68	70
7	115	112	107	105	131	126	121	116	40	42	65	67	53	52	77	75	104	106	132	134	80	82	65	67
8	106	103	95	93	99	94	70	65	15	15	27	27	29	28	37	35	65	65	91	93	52	52	53	55
9	85	83	51	51	53	50	24	21	0	0	1	1	8	7	11	9	24	24	35	37	26	26	30	32
10	31	29	22	22	12	9	0	0	4	4	0	0	1	0	0	0	0	0	0	0	11	11	13	15
11	0	0	0	0	0	0	9	9	34	36	26	26	0	2	23	23	16	16	11	11	0	0	0	0
Noon.	10	10	2	4	21	21	65	65	56	58	66	68	25	29	81	86	67	69	45	45	1	1	2	2
13h	27	31	2	10	69	73	105	105	89	95	99	103	57	66	130	140	117	121	88	90	26	28	30	30
14	44	49	19	27	95	99	134	136	128	134	147	153	91	103	152	168	160	167	111	116	31	33	38	40
15	44	51	38	48	113	119	154	156	161	169	173	182	138	152	170	191	170	179	114	121	24	29	33	35
16	59	67	51	61	125	133	172	174	175	186	189	200	165	182	175	198	169	181	109	116	17	24	26	28
17	72	81	47	59	136	144	192	194	189	202	217	230	185	204	166	192	157	169	109	118	12	19	26	30
18	63	73	49	63	138	146	216	220	214	229	238	253	203	225	164	193	155	167	120	129	23	32	25	29
19	64	75	36	51	146	159	216	220	226	243	242	262	209	233	176	205	164	178	133	144	29	38	31	35
20	67	79	24	41	141	154	204	208	207	226	229	249	198	225	184	215	174	188	140	151	30	39	28	32
21	64	77	27	44	139	152	197	201	183	202	212	235	184	211	184	215	186	200	142	153	22	29	32	34
22	43	56	35	54	141	156	196	202	172	194	191	214	173	200	182	213	180	194	141	152	26	33	26	28
23	32	44	43	64	133	148	189	195	164	186	166	189	161	188	181	212	174	188	137	151	24	33	20	24
Means corrected for Temperature.	67·9		56·0		110·5		143·1		133·3		148·5		129·6		143·2		140·8		118·3		35·4		35·7	

TABLE VI.—MONTHLY MEAN TEMPERATURE at each HOUR of the DAY within the box inclosing the HORIZONTAL FORCE MAGNET.

1886.

Hour, Greenwich Civil Time.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	For the Year.
	°	°	°	°	°	°	°	°	°	°	°	°	°
Midnight.	55·1	57·2	61·4	61·6	63·2	65·7	71·3	72·6	68·7	65·3	63·1	62·7	63·99
1h	55·0	57·0	61·1	61·5	63·1	65·6	71·2	72·4	68·6	65·3	63·1	62·7	63·88
2	54·9	56·8	61·0	61·4	62·9	65·5	71·0	72·2	68·5	65·2	63·1	62·7	63·77
3	54·7	56·7	60·8	61·3	62·7	65·4	70·8	72·0	68·4	65·1	62·9	62·6	63·62
4	54·6	56·5	60·7	61·3	62·6	65·2	70·6	71·8	68·3	65·0	62·8	62·6	63·50
5	54·5	56·5	60·6	61·2	62·5	65·1	70·4	71·7	68·1	64·9	62·8	62·5	63·40
6	54·4	56·4	60·6	61·1	62·5	65·0	70·3	71·5	68·0	64·9	62·7	62·5	63·33
7	54·4	56·4	60·6	61·1	62·4	65·0	70·3	71·4	68·0	64·8	62·7	62·5	63·30
8	54·4	56·4	60·6	61·1	62·3	64·9	70·3	71·4	67·9	64·8	62·6	62·5	63·27
9	54·4	56·5	60·7	61·2	62·3	64·9	70·3	71·4	67·9	64·8	62·6	62·5	63·29
10	54·4	56·5	60·7	61·3	62·3	64·9	70·3	71·5	67·9	64·7	62·6	62·5	63·30
11	54·5	56·5	60·8	61·3	62·4	64·9	70·4	71·5	67·9	64·7	62·6	62·4	63·32
Noon.	54·5	56·6	60·8	61·3	62·4	65·0	70·5	71·7	68·0	64·7	62·6	62·4	63·38
13h	54·7	56·9	61·0	61·3	62·6	65·1	70·7	71·9	68·1	64·8	62·7	62·4	63·52
14	54·8	56·9	61·0	61·4	62·6	65·2	70·8	72·1	68·2	64·9	62·7	62·5	63·59
15	54·9	57·0	61·1	61·4	62·7	65·3	70·9	72·3	68·3	65·0	62·8	62·5	63·68
16	55·0	57·0	61·2	61·4	62·8	65·4	71·0	72·4	68·4	65·0	62·9	62·5	63·75
17	55·0	57·1	61·2	61·4	62·9	65·5	71·1	72·5	68·4	65·1	62·9	62·6	63·81
18	55·1	57·2	61·2	61·5	63·0	65·6	71·2	72·6	68·4	65·1	63·0	62·6	63·87
19	55·1	57·3	61·4	61·5	63·1	65·8	71·3	72·6	68·5	65·2	63·0	62·6	63·95
20	55·2	57·4	61·4	61·5	63·2	65·8	71·4	72·7	68·5	65·2	63·0	62·6	63·99
21	55·2	57·4	61·4	61·5	63·2	65·9	71·4	72·7	68·5	65·2	62·9	62·5	63·98
22	55·2	57·5	61·5	61·6	63·3	65·9	71·4	72·7	68·5	65·2	62·9	62·5	64·02
23	55·2	57·6	61·5	61·6	63·3	65·9	71·4	72·7	68·5	65·3	63·0	62·6	64·05

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.)*

1886.

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	...	...	570	621	592	528	676	597	631	522	698	528	749	458	788	415	731	356	533	299	470	268	313	175
2	...	...	606	625	590	518	708	595	633	543	706	528	744	451	827	409	722	376	539	316	477	284	310	176
3	917	847	597	654	600	513	709	594	636	504	715	550	740	432	805	393	663	353	517	311	460	292	268	166
4	898	817	502	631	609	519	690	575	644	529	668	521	786	444	768	399	665	332	519	287	453	298	247	145
5	...	...	472	631	607	511	696	566	641	528	660	516	811	450	629	383	688	363	551	296	420	286	256	130
6	...	...	485	612	607	513	684	579	637	509	667	510	825	464	628	367	655	360	572	326	385	287	309	137
7	...	...	557	618	593	529	664	585	653	513	683	511	847	478	697	370	654	361	542	323	366	270	284	158
8	...	...	586	620	580	506	656	569	...	...	695	508	820	482	811	386	625	349	562	354	348	252	268	126
9	...	...	595	607	583	504	646	556	...	...	725	523	734	469	822	395	635	338	524	318	323	227	276	144
10	...	...	592	645	577	498	634	547	703	527	743	547	695	459	852	385	647	350	528	328	324	217	265	127
11	...	...	450	605	565	499	641	536	695	553	720	533	698	441	750	394	620	359	506	310	327	218	273	112
12	...	...	449	593	556	484	666	551	674	557	730	528	726	438	637	397	617	350	500	287	340	225	275	128
13	...	...	501	581	553	472	648	533	663	544	722	524	755	460	604	364	640	347	508	308	345	228	276	125
14	...	...	637	601	556	466	629	522	652	550	702	513	848	458	634	365	650	348	475	305	337	216	267	127
15	679	683	674	606	548	456	601	509	624	537	710	517	859	445	753	356	641	365	458	267	370	192	271	124
16	683	687	667	618	560	462	643	558	632	532	696	511	760	437	815	357	598	362	452	270	355	190	277	137
17	617	678	671	599	551	464	638	548	643	520	662	486	678	421	800	344	566	341	453	275	341	197	286	144
18	615	640	678	599	553	459	636	538	668	524	645	484	682	411	728	374	543	322	451	288	331	199	252	137
19	622	671	665	580	564	453	633	522	686	533	632	471	769	423	629	366	533	314	433	263	310	176	217	125
20	612	659	654	567	586	467	671	539	700	537	639	457	855	439	610	362	524	305	434	249	343	173	180	112
21	589	663	663	587	607	515	644	529	714	549	646	466	865	428	606	360	520	303	435	261	356	191	165	103
22	511	659	662	566	610	525	633	537	724	535	667	480	832	465	628	342	513	313	440	262	324	194	158	94
23	491	622	657	555	627	544	634	538	732	547	656	458	732	465	661	364	494	316	435	265	311	192	170	91
24	559	637	641	547	645	555	645	528	727	559	664	464	706	466	658	346	467	302	420	257	334	181	192	100
25	602	621	622	526	654	560	665	544	685	534	662	439	696	454	683	381	448	283	410	253	328	165	212	101
26	647	627	619	523	665	580	656	543	682	533	692	448	719	443	673	367	443	254	413	254	317	162	223	97
27	675	624	625	533	667	591	664	536	700	558	728	463	...	...	687	370	463	259	416	267	311	162	215	119
28	638	648	614	535	669	588	672	540	694	575	745	469	...	...	697	372	477	262	411	256	302	160	217	102
29	463	616			655	598	662	564	670	528	757	471	699	449	698	377	508	266	421	247	296	166	236	115
30	444	603			...	...	627	533	662	524	734	437	709	433	703	363	533	289	440	253	308	182	220	97
31	486	606			...	...			665	521			727	432	712	358			453	249			...	...

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

TABLE VIII.—MEAN TEMPERATURE for each CIVIL DAY within the box inclosing the VERTICAL FORCE MAGNET.

1886.

Day of Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
1	...	53·2	58·6	59·3	60·7	63·6	69·3	73·2	73·3	66·6	65·1	62·1
2	...	54·7	59·0	60·9	59·8	64·0	69·4	75·3	71·9	66·1	64·7	61·9
3	58·9	52·9	59·7	61·0	61·8	63·4	70·1	75·0	70·2	65·3	63·5	60·4
4	59·4	49·5	59·8	61·0	61·0	62·5	71·7	73·0	71·3	66·5	62·9	60·4
5	...	48·1	60·1	61·7	60·9	62·4	72·6	67·2	70·9	67·6	61·9	61·5
6	...	49·6	60·0	60·5	61·6	63·0	72·6	67·9	69·5	67·2	60·2	63·7
7	...	52·7	58·6	59·3	62·2	63·7	73·0	71·0	69·4	65·9	60·1	61·5
8	...	54·0	59·1	59·7	...	64·4	71·5	75·6	68·6	65·4	60·1	62·3
9	...	55·0	59·3	59·8	...	65·1	68·1	75·7	69·6	65·3	60·1	61·8
10	...	53·1	59·3	59·7	63·9	64·8	66·7	77·6	69·6	65·0	60·6	62·1
11	...	48·3	58·7	60·5	62·3	64·4	67·7	72·4	67·9	64·8	60·7	63·2
12	...	48·8	59·0	61·0	61·1	65·1	69·2	66·9	68·2	65·6	61·0	62·5
13	...	51·8	59·4	61·0	61·2	64·9	69·5	66·9	69·4	65·0	61·1	62·7
14	...	57·3	59·8	60·6	60·4	64·5	74·0	68·3	69·8	63·6	61·3	62·2
15	55·4	58·8	59·9	59·9	59·7	64·7	75·1	74·3	68·6	64·6	64·0	62·5
16	55·4	57·9	60·2	59·6	60·3	64·3	70·8	77·2	66·7	64·2	63·4	62·2
17	52·7	59·0	59·7	59·8	61·4	63·9	67·7	77·1	66·2	64·0	62·4	62·3
18	54·4	59·3	60·0	60·2	62·4	63·2	68·4	72·3	66·0	63·3	61·8	61·0
19	53·3	59·6	60·8	60·8	62·8	63·2	71·9	68·0	65·9	63·6	61·9	59·9
20	53·4	59·7	61·2	61·8	63·3	64·2	75·2	67·3	65·9	64·3	63·6	58·8
21	52·1	59·2	59·9	61·0	63·4	64·1	76·2	67·2	65·8	63·8	63·4	58·5
22	48·6	60·1	59·6	60·1	64·5	64·4	72·9	69·1	65·0	64·0	61·7	58·6
23	49·4	60·4	59·5	60·1	64·3	64·9	68·2	69·6	64·0	63·6	61·2	59·3
24	51·9	60·0	59·8	61·1	63·5	65·0	66·9	70·3	63·4	63·3	62·8	59·9
25	54·7	60·1	60·0	61·3	62·7	66·1	67·0	69·8	63·4	63·0	63·3	60·8
26	56·5	60·1	59·6	60·9	62·6	67·1	68·6	70·0	64·5	63·1	62·9	61·5
27	58·0	59·9	59·2	61·6	62·3	68·1	...	70·5	65·2	62·6	62·6	60·1
28	55·1	59·3	59·4	61·8	61·2	68·6	...	70·9	65·7	62·9	62·3	61·0
29	48·4		58·3	60·2	62·3	69·1	67·4	70·7	67·0	63·8	61·7	61·3
30	48·1		...	60·0	62·1	69·6	68·6	71·6	67·1	64·4	61·5	61·4
31	49·9		...		62·4		69·5	72·3		65·2		...
Means	53·45	55·80	59·57	60·54	62·00	64·88	70·34	71·43	67·67	64·63	62·13	61·25

Between January 21 and February 14, and between July 8 and August 19, the magnet 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.)

1886.

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
Midnight.	31	24	30	18	25	11	37	30	57	42	42	27	45	30	42	19	25	12	17	8	12	2	17	12
1h	26	21	28	20	20	13	33	28	53	41	35	24	38	25	35	18	19	8	9	0	13	3	12	7
2	13	10	22	18	19	14	27	22	45	35	30	21	34	26	29	16	19	10	9	2	10	0	5	0
3	8	7	15	15	20	19	26	23	43	39	26	19	32	28	24	16	17	10	8	4	9	3	3	0
4	8	9	13	16	21	25	28	28	43	41	27	23	30	30	23	19	16	13	9	9	7	3	2	1
5	7	10	14	17	19	25	29	29	46	46	28	26	31	36	24	22	15	17	7	9	5	1	0	1
6	7	12	13	18	21	27	28	30	48	48	29	31	28	35	26	30	17	21	10	12	6	4	1	2
7	7	14	13	18	21	27	34	36	48	48	28	30	27	34	27	31	21	25	12	16	5	3	2	3
8	8	16	12	17	23	29	32	34	42	44	23	27	22	29	24	28	19	25	15	19	4	4	1	2
9	5	13	11	14	17	21	22	24	28	30	14	18	15	22	15	19	11	17	13	17	3	3	0	1
10	2	8	5	8	7	8	10	10	11	13	6	8	7	12	8	10	4	8	6	10	0	0	0	1
11	2	6	0	3	0	1	3	3	0	0	0	2	0	5	0	2	0	4	0	4	0	0	0	3
Noon.	0	0	2	0	1	0	0	0	6	4	0	0	0	0	4	0	1	0	2	4	4	4	5	6
13h	10	5	11	3	11	6	13	10	23	19	15	11	9	5	17	9	12	9	13	13	14	12	14	13
14	27	22	24	16	22	17	33	28	38	30	32	25	24	18	34	21	24	19	25	23	26	22	24	21
15	36	27	37	29	39	32	50	45	56	48	45	34	40	32	49	34	33	26	37	33	33	27	31	26
16	45	35	43	35	47	37	61	56	72	62	55	42	58	48	60	43	42	33	49	45	38	30	34	29
17	43	32	45	35	50	40	67	62	84	74	68	53	70	57	68	49	49	40	50	43	42	34	32	27
18	39	28	45	33	47	37	70	65	91	79	75	60	74	59	67	46	51	44	47	43	39	31	34	29
19	39	28	45	31	47	33	67	60	90	75	75	58	77	62	65	44	45	36	46	39	34	26	31	26
20	36	25	46	30	47	33	62	55	84	69	72	55	72	55	59	36	42	33	40	33	27	19	29	26
21	31	20	46	30	44	30	57	50	75	60	67	48	63	46	54	31	35	26	32	25	21	15	25	24
22	30	20	42	24	37	21	50	43	67	50	57	38	57	40	51	28	29	20	24	17	17	11	17	16
23	28	19	36	15	33	17	44	35	63	46	48	29	52	35	45	22	24	15	21	12	10	2	16	13
Means corrected for Temperature.	17·1		19·3		21·8		33·6		43·5		29·5		32·0		24·7		19·6		18·3		10·8		12·0	

TABLE X.—MONTHLY MEAN TEMPERATURE at each HOUR of the DAY within the box inclosing the VERTICAL FORCE MAGNET.

1886.

Hour, Greenwich Civil Time.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	For the Year.
	°	°	°	°	°	°	°	°	°	°	°	°	°
Midnight.	53·7	56·1	60·0	60·7	62·5	65·2	70·6	72·0	68·1	64·9	62·4	61·4	63·13
1h	53·6	55·9	59·7	60·6	62·4	65·0	70·5	71·7	68·0	64·9	62·4	61·4	63·01
2	53·5	55·7	59·6	60·6	62·3	64·9	70·3	71·5	67·9	64·8	62·4	61·4	62·91
3	53·4	55·5	59·4	60·5	62·0	64·8	70·1	71·3	67·8	64·7	62·2	61·3	62·75
4	53·3	55·4	59·2	60·4	61·9	64·7	69·9	71·1	67·6	64·5	62·1	61·2	62·61
5	53·3	55·4	59·1	60·4	61·8	64·6	69·7	71·0	67·4	64·4	62·1	61·1	62·52
6	53·2	55·3	59·1	60·3	61·8	64·4	69·6	70·7	67·3	64·4	62·0	61·1	62·43
7	53·1	55·3	59·1	60·3	61·8	64·4	69·6	70·7	67·3	64·3	62·0	61·1	62·42
8	53·0	55·3	59·1	60·3	61·7	64·3	69·6	70·7	67·2	64·3	61·9	61·1	62·38
9	53·0	55·4	59·2	60·3	61·7	64·3	69·6	70·7	67·2	64·3	61·9	61·1	62·39
10	53·1	55·4	59·3	60·4	61·7	64·4	69·7	70·8	67·3	64·3	61·9	61·1	62·45
11	53·2	55·4	59·3	60·4	61·8	64·4	69·7	70·8	67·3	64·3	61·9	61·0	62·46
Noon.	53·4	55·6	59·4	60·4	61·9	64·5	69·9	71·1	67·5	64·4	61·9	61·1	62·59
13h	53·6	55·9	59·6	60·5	62·0	64·7	70·1	71·3	67·6	64·5	62·0	61·2	62·75
14	53·6	55·9	59·6	60·6	62·2	64·8	70·2	71·5	67·7	64·6	62·1	61·3	62·84
15	53·8	55·9	59·7	60·6	62·2	65·0	70·3	71·6	67·8	64·7	62·2	61·4	62·93
16	53·8	55·9	59·8	60·6	62·3	65·1	70·4	71·7	67·9	64·7	62·3	61·4	62·99
17	53·9	56·0	59·8	60·6	62·3	65·2	70·5	71·8	67·9	64·8	62·3	61·4	63·04
18	53·9	56·1	59·8	60·6	62·4	65·2	70·6	71·9	67·8	64·7	62·3	61·4	63·06
19	53·9	56·2	60·0	60·7	62·5	65·3	70·6	71·9	67·9	64·8	62·3	61·4	63·12
20	53·9	56·3	60·0	60·7	62·5	65·3	70·7	72·0	67·9	64·8	62·3	61·3	63·14
21	53·9	56·3	60·0	60·7	62·5	65·4	70·7	72·0	67·9	64·8	62·2	61·2	63·13
22	53·8	56·4	60·1	60·7	62·6	65·4	70·7	72·0	67·9	64·8	62·2	61·2	63·15
23	53·8	56·5	60·1	60·8	62·6	65·4	70·7	72·0	67·9	64·9	62·3	61·3	63·19

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, 1886.	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	17. 56·3	554	664	2974	1006	2903
February	17. 55·4	564	592	2926	1024	2589
March	17. 55·6	580	513	2937	1053	2243
April	17. 55·2	567	550	2916	1030	2405
May	17. 54·9	640	535	2900	1162	2339
June	17. 55·2	658	495	2916	1195	2164
July	17. 55·4	670	448	2926	1217	1959
August	17. 54·2	770	374	2863	1398	1635
September	17. 54·0	825	327	2852	1498	1430
October	17. 53·0	793	284	2799	1440	1242
November	17. 52·8	684	215	2789	1242	940
December	17. 52·5	602	126	2773	1093	551
	° ′					
Means	17. 54·5	......	......	2881	......	......
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 1·8157 and 0·18157 respectively for the year, and of whole Vertical Force (applicable to column 6) 4·3727 and 0·43727 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 1886.

(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.	′ 0·21	126·1	18·1	11·1	229·0	79·1
1h	0·46	121·2	15·8	24·3	220·1	69·1
2	0·61	115·5	13·0	32·2	209·7	56·8
3	0·65	113·3	13·7	34·3	205·7	59·9
4	0·69	112·4	16·6	36·4	204·1	72·6
5	0·50	111·6	18·4	26·4	202·6	80·5
6	0·28	101·8	21·0	14·8	184·8	91·8
7	0·05	82·8	22·3	2·6	150·3	97·5
8	0·00	52·9	21·3	0·0	96·1	93·1
9	0·55	20·9	15·1	29·1	37·9	66·0
10	2·04	0·0	6·5	107·8	0·0	28·4
11	4·24	2·8	1·2	224·0	5·1	5·2
Noon.	6·33	30·7	0·0	334·4	55·7	0·0
13h	7·28	66·8	8·1	384·5	121·3	35·4
14	6·99	94·6	20·3	369·2	171·8	88·8
15	5·86	111·8	31·3	309·5	203·0	136·9
16	4·46	121·7	39·7	235·6	221·0	173·6
17	3·21	129·3	44·0	169·6	234·8	192·4
18	2·19	139·1	44·7	115·7	252·6	195·5
19	1·43	146·1	41·7	75·5	265·3	182·3
20	0·89	143·1	37·6	47·0	259·8	164·4
21	0·47	138·6	32·3	24·8	251·7	141·2
22	0·14	133·8	25·8	7·4	242·9	112·8
23	0·08	127·7	20·2	4·2	231·9	88·3
Means . . .	′ 2·07	97·7	22·0	109·2	177·4	96·3
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 1·8157 and 0·18157 respectively, and of whole Vertical Force (applicable to column 6) are 4·3727 and 0·43727 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.)

1886.

Day of Month.	January.		February.		March.		April.		May.		June.	
	Dec.	H.F.	Dec.	H.F.	Dec.	H.F.	Dec.	H.F.	Dec.	H.F.	Dec.	H.F.
d	′		′		′		′		′		′	
1	5.9	...	6.6	130	9.9	220	11.6	410	14.3	250	11.6	300
2	12.5	280	8.8	140	10.9	290	8.9	250	9.8	350	7.5	210
3	6.8	170	7.3	150	12.0	370	10.6	180	11.5	230	13.2	270
4	8.2	240	7.2	170	7.8	170	12.0	210	9.8	190	14.4	350
5	...	...	10.7	260	7.6	130	12.9	290	11.1	260	13.7	360
6	...	...	7.9	150	8.1	150	12.2	280	14.2	310	14.6	380
7	...	...	6.6	210	13.4	260	9.8	200	10.4	240	11.7	330
8	...	...	7.8	300	11.6	180	10.1	190	...	...	15.6	320
9	...	...	4.3	130	12.1	220	12.1	250	...	...	9.5	300
10	...	...	14.1	280	11.9	320	12.0	260	12.3	410	10.0	280
11	...	...	14.2	300	11.0	240	15.0	290	11.9	310	10.5	230
12	...	...	7.1	160	9.4	190	19.3	170	9.3	290	14.4	190
13	...	...	5.8	120	9.3	220	16.1	430	13.4	240	9.8	300
14	...	...	5.4	130	8.3	150	18.1	550	9.1	300	9.3	330
15	11.0	280	8.6	100	5.2	170	15.0	500	12.6	330	8.2	250
16	6.8	180	15.3	340	17.0	160	12.5	330	9.1	390	9.2	380
17	4.2	130	13.6	230	16.1	200	15.2	340	15.3	450	11.3	320
18	5.2	140	9.1	190	14.5	160	16.1	240	11.2	430	10.0	240
19	14.7	300	13.2	280	17.4	280	15.8	270	12.1	280	9.4	310
20	11.3	110	10.6	130	15.3	410	11.9	180	10.6	380	9.8	240
21	15.5	160	8.5	260	15.5	200	12.6	310	12.3	270	11.9	270
22	12.9	150	14.4	210	15.6	230	11.1	250	10.9	290	16.6	350
23	6.8	80	8.1	120	17.8	340	11.0	280	8.7	290	10.3	320
24	8.3	190	9.3	130	14.2	250	10.3	270	12.6	240	10.0	230
25	6.2	180	7.9	140	10.9	290	9.9	350	12.6	290	8.6	370
26	7.3	110	8.2	80	13.6	150	8.8	190	11.5	280	8.5	380
27	9.2	150	5.9	200	15.9	180	11.9	220	13.3	310	8.9	330
28	8.2	160	7.9	130	11.7	190	...	...	11.6	260	8.9	210
29	9.9	290			11.4	360	10.9	200	7.8	130	12.2	420
30	16.8	250			...	...	8.9	150	10.5	210	19.7	360
31	8.2	150			...	...			8.4	270		
Means.....	9.3	185	9.1	185	12.3	230	12.5	277	11.3	292	11.3	304

Day of Month.	July.		August.		September.		October.		November.		December.	
	Dec.	H.F.	Dec.	H.F.	Dec.	H.F.	Dec.	H.F.	Dec.	H.F.	Dec.	H.F.
d	′		′		′		′		′		′	
1	13.9	370	9.6	270	10.7	310	7.8	180	5.3	180	11.3	180
2	10.8	360	12.6	210	12.2	270	8.2	200	13.7	340	10.2	200
3	11.4	390	14.3	330	11.4	330	9.4	190	10.8	310	8.1	180
4	11.8	310	10.4	160	8.5	270	6.3	180	13.0	290	7.5	120
5	13.4	370	11.5	220	9.2	240	8.8	160	11.0	230	7.7	200
6	12.7	230	13.3	260	9.5	200	18.2	370	15.6	270	5.9	250
7	11.0	380	12.4	200	10.3	230	16.0	240	8.7	180	11.5	220
8	12.7	190	9.6	270	11.1	210	13.0	510	8.6	200	5.6	130
9	10.8	250	10.0	170	16.8	240	13.9	310	6.9	150	4.5	70
10	11.1	270	10.9	210	14.4	490	16.4	330	7.1	170	2.9	90
11	13.1	290	12.5	110	10.7	450	10.8	330	5.7	160	7.0	80
12	10.3	270	17.3	380	11.8	360	10.7	400	12.5	230	7.3	80
13	7.6	190	11.7	230	13.4	310	10.1	230	10.3	240	7.4	170
14	15.9	180	10.8	370	8.6	270	7.4	260	8.3	120	6.8	80
15	8.6	250	11.2	310	8.0	240	9.4	220	12.0	140	6.6	110
16	7.9	210	11.6	220	10.0	220	8.3	260	7.6	130	7.3	160
17	11.9	300	10.1	360	11.8	270	10.5	270	8.4	270	6.3	180
18	13.1	390	10.7	400	8.6	230	11.9	220	5.6	130	4.8	80
19	15.1	410	8.4	280	10.5	260	8.0	290	3.7	170	7.2	120
20	9.6	320	10.5	180	7.3	230	6.1	220	6.3	190	4.6	100
21	9.7	360	10.5	220	15.0	280	9.0	230	5.1	80	6.6	110
22	9.3	420	10.9	220	8.2	160	6.8	190	2.8	90	9.7	160
23	7.6	320	9.7	290	5.5	130	7.0	130	8.9	230	10.7	140
24	9.0	250	16.1	520	7.3	180	7.1	120	9.2	130	4.5	150
25	7.7	200	8.9	230	8.1	200	7.6	110	6.3	140	4.1	60
26	11.4	240	11.2	330	8.3	250	9.2	140	3.4	110	10.7	160
27	...	...	9.1	280	9.0	210	13.5	200	5.2	60	8.2	210
28	...	...	10.6	160	10.1	220	11.5	230	4.0	60	9.2	210
29	9.4	280	12.3	230	8.3	240	8.3	230	8.3	330	9.3	320
30	11.1	300	9.7	310	13.0	220	5.4	140	15.6	300	6.8	130
31	12.7	210	9.9	300			4.2	160			6.4	...
Means.....	11.1	293	11.2	265	10.3	257	9.7	234	8.3	188	7.3	148

The mean of the twelve monthly values is, for Declination 10′.3, and for Horizontal Force 238.

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, 1886.	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	7.4	112	35	39.5	565	191
February	6.5	105	35	38.5	529	185
March	9.4	159	40	58.3	851	227
April	10.4	220	65	63.1	1256	344
May	10.6	243	79	61.5	1511	369
June	9.9	262	60	60.8	1583	309
July	9.7	233	62	61.9	1607	309
August	9.9	215	49	59.5	1364	257
September	8.0	200	44	51.1	1169	227
October	7.7	158	45	41.3	878	274
November	6.6	82	34	34.7	327	239
December	5.2	70	29	29.4	300	235
Means	8′.4	172	48	50′.0	995	264

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, as given in Tables II., V., IX., and XII., the values for Horizontal Force and Vertical Force being corrected for temperature).

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

Month, 1886.	m	a_1	b_1	a_2	b_2	a_3	b_3	a_4	b_4
	DECLINATION WEST.								
	′	′	′	′	′	′	′	′	′
January	3·05	− 2·34	− 0·71	+ 0·02	+ 1·37	− 0·39	− 0·44	+ 0·13	+ 0·38
February	2·14	− 1·91	− 1·06	+ 0·20	+ 1·50	− 0·17	− 0·65	+ 0·03	+ 0·40
March	2·85	− 2·94	− 1·77	+ 0·93	+ 1·78	− 0·88	− 0·71	+ 0·34	+ 0·43
April	3·37	− 2·99	− 1·90	+ 1·59	+ 1·81	− 0·74	− 0·77	+ 0·41	+ 0·07
May	4·23	− 2·72	− 2·21	+ 2·00	+ 1·57	− 0·69	− 0·17	+ 0·18	− 0·01
June	4·34	− 2·22	− 3·10	+ 1·39	+ 1·34	− 0·38	− 0·26	− 0·04	+ 0·02
July	3·90	− 2·43	− 2·87	+ 1·34	+ 1·50	− 0·46	− 0·45	+ 0·15	+ 0·01
August	3·60	− 2·80	− 2·19	+ 1·67	+ 1·27	− 0·72	− 0·39	+ 0·06	+ 0·09
September	2·26	− 2·60	− 1·40	+ 1·29	+ 1·28	− 0·64	− 0·63	+ 0·25	+ 0·14
October	2·72	− 2·43	− 0·37	+ 0·80	+ 1·45	− 0·68	− 0·59	+ 0·39	+ 0·27
November	2·98	− 2·25	+ 0·48	+ 0·40	+ 1·11	− 0·38	− 0·08	+ 0·25	+ 0·12
December	2·46	− 1·80	+ 0·65	+ 0·24	+ 0·73	− 0·19	− 0·06	+ 0·05	+ 0·12
For the Year	2·07	− 2·45	− 1·37	+ 0·99	+ 1·39	− 0·53	− 0·43	+ 0·18	+ 0·17
	HORIZONTAL FORCE.								
January	67·9	+ 17·0	+ 14·3	− 30·8	+ 2·7	+ 7·7	− 3·3	− 6·1	+ 9·4
February	56·0	+ 19·3	+ 17·9	− 24·9	+ 5·2	+ 13·7	− 5·7	− 0·1	+ 1·4
March	110·5	+ 46·3	− 24·9	− 28·7	+ 8·3	+ 11·4	− 17·5	+ 0·4	+ 8·3
April	143·1	+ 65·0	− 49·9	− 27·4	+ 21·3	+ 2·7	− 18·5	+ 12·8	+ 8·2
May	133·3	+ 62·9	− 76·3	− 17·5	+ 25·0	− 7·2	− 1·9	+ 3·7	+ 2·6
June	148·5	+ 68·1	− 78·8	− 27·9	+ 27·6	− 10·2	− 7·4	+ 3·6	+ 4·1
July	129·6	+ 74·8	− 70·2	− 26·3	+ 19·8	− 0·7	− 2·0	+ 0·2	− 0·2
August	143·2	+ 58·6	− 66·1	− 7·6	+ 30·2	− 2·1	− 23·3	+ 2·1	+ 4·8
September	140·8	+ 58·2	− 40·7	− 14·4	+ 32·6	+ 1·7	− 27·0	− 0·5	+ 7·0
October	118·3	+ 52·8	− 8·6	− 21·3	+ 20·4	+ 1·9	− 22·9	+ 3·0	+ 13·0
November	35·4	+ 9·3	+ 13·1	− 16·3	+ 1·8	+ 2·7	− 11·7	+ 2·3	+ 7·4
December	35·7	+ 6·7	+ 11·8	− 15·0	+ 4·8	+ 3·2	− 9·1	− 1·3	+ 6·6
For the Year	97·7	+ 44·9	− 29·9	− 21·5	+ 16·6	+ 2·1	− 12·5	+ 1·7	+ 6·0
	VERTICAL FORCE.								
January	17·1	+ 2·7	− 9·3	− 4·8	+ 0·6	+ 6·4	0·0	− 0·7	+ 0·1
February	19·3	+ 4·9	− 8·3	− 8·4	+ 0·8	+ 3·9	+ 0·4	− 2·5	0·0
March	21·8	+ 2·7	− 5·8	− 13·4	+ 0·4	+ 3·7	− 1·1	− 3·2	− 0·1
April	33·6	+ 8·2	− 15·8	− 16·3	− 1·3	+ 6·3	− 0·6	− 2·0	+ 0·5
May	43·5	+ 13·0	− 14·5	− 20·3	− 0·4	+ 5·7	− 0·6	− 0·1	+ 2·1
June	29·5	+ 8·6	− 14·6	− 14·9	− 2·5	+ 2·9	− 0·7	− 0·3	+ 2·2
July	32·0	+ 10·8	− 11·8	− 16·7	− 2·2	+ 3·2	+ 1·0	− 0·3	− 0·6
August	24·7	+ 3·5	− 9·8	− 13·7	− 0·3	+ 5·8	− 0·6	− 0·6	+ 0·6
September	19·6	+ 0·9	− 9·3	− 12·3	− 1·6	+ 3·7	0·0	− 0·5	+ 1·1
October	18·3	− 3·5	− 14·6	− 11·5	− 0·7	+ 3·8	+ 0·2	− 1·9	− 0·3
November	10·8	− 3·0	− 13·5	− 6·8	+ 3·3	+ 1·7	0·0	− 0·9	+ 0·6
December	12·0	0·0	− 14·7	− 3·4	+ 0·6	+ 1·4	− 1·7	− 0·3	+ 0·5
For the Year	22·0	+ 4·1	− 11·8	− 11·9	− 0·3	+ 4·0	− 0·3	− 1·1	+ 0·6

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, as given in Tables II., V., IX., and XII., the values for Horizontal Force and Vertical Force being corrected for temperature).

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

Month, 1886.	m	c_1	α	α'	c_2	β	β'	c_3	γ	γ'	c_4	δ	δ'
						DECLINATION WEST.							
	′	′	° ′	° ′	′	° ′	° ′	′	° ′	° ′	′	° ′	° ′
January	3·05	2·45	253. 14	255. 38	1·37	0. 50	5. 38	0·59	221. 24	228. 36	0·40	18. 40	28. 16
February	2·14	2·18	240. 55	244. 25	1·51	7. 48	14. 48	0·67	194. 23	204. 53	0·40	4. 12	18. 12
March	2·85	3·43	238. 58	241. 7	2·00	27. 42	32. 0	1·13	231. 5	237. 32	0·55	38. 15	46. 51
April	3·37	3·54	237. 34	237. 35	2·41	41. 17	41. 19	1·07	224. 3	224. 6	0·42	81. 3	81. 7
May	4·23	3·50	230. 52	230. 0	2·55	51. 48	50. 4	0·71	256. 27	253. 51	0·18	94. 38	91. 10
June	4·34	3·81	215. 40	215. 45	1·93	46. 7	46. 17	0·46	235. 54	236. 9	0·04	300. 1	300. 21
July	3·90	3·76	220. 11	221. 33	2·01	41. 56	44. 40	0·64	225. 16	229. 22	0·15	87. 3	92. 31
August	3·60	3·56	231. 57	232. 53	2·10	52. 55	54. 47	0·82	241. 35	244. 23	0·10	33. 57	37. 41
September	2·26	2·95	241. 39	240. 23	1·82	45. 14	42. 42	0·90	225. 36	221. 48	0·29	60. 2	54. 58
October	2·72	2·46	261. 25	257. 55	1·66	28. 51	21. 51	0·90	228. 40	218. 10	0·47	55. 28	41. 28
November	2·98	2·30	282. 5	278. 26	1·18	20. 5	12. 47	0·39	257. 47	246. 50	0·28	64. 16	49. 40
December	2·46	1·91	289. 47	288. 47	0·77	18. 14	16. 14	0·20	253. 44	250. 44	0·13	20. 31	16. 31
For the Year	2·07	2·81	240. 46	240. 46	1·71	35. 28	35. 28	0·68	230. 36	230. 36	0·25	47. 2	47. 2
						HORIZONTAL FORCE.							
			° ′	° ′		° ′	° ′		° ′	° ′		° ′	° ′
January	67·9	22·2	50. 3	52. 27	31·0	274. 56	279. 44	8·4	113. 30	120. 42	11·2	327. 3	336. 39
February	56·0	26·3	47. 7	50. 37	25·4	281. 43	288. 43	14·8	112. 43	123. 13	1·4	356. 42	10. 42
March	110·5	52·6	118. 19	120. 28	29·9	286. 1	290. 19	20·9	146. 50	153. 17	8·3	2. 35	11. 11
April	143·1	82·0	127. 29	127. 30	34·7	307. 50	307. 52	18·7	171. 38	171. 41	15·2	57. 21	57. 25
May	133·3	98·9	140. 31	139. 39	30·5	324. 55	323. 11	7·5	254. 58	252. 22	4·6	55. 16	51. 48
June	148·5	104·1	139. 8	139. 13	39·2	314. 47	314. 57	12·6	234. 0	234. 15	5·5	41. 22	41. 42
July	129·6	102·6	133. 11	134. 33	32·9	306. 56	309. 40	2·1	198. 22	202. 28	0·3	136. 7	141. 35
August	143·2	88·4	138. 26	139. 22	31·1	345. 52	347. 44	23·4	185. 7	187. 55	5·2	23. 36	27. 20
September	140·8	71·0	124. 59	123. 43	35·7	336. 5	333. 33	27·1	176. 20	172. 32	7·0	355. 35	350. 31
October	118·3	53·5	99. 14	95. 44	29·5	313. 39	306. 39	23·0	175. 14	164. 44	13·3	13. 0	359. 0
November	35·4	16·1	35. 23	31. 44	16·4	276. 12	268. 54	12·0	166. 59	156. 2	7·8	17. 8	2. 32
December	35·7	13·5	29. 30	28. 30	15·8	287. 46	285. 46	9·6	160. 35	157. 35	6·7	348. 52	344. 52
For the Year	97·7	54·0	123. 38	123. 38	27·2	307. 41	307. 41	12·7	170. 38	170. 38	6·3	15. 34	15. 34
						VERTICAL FORCE.							
			° ′	° ′		° ′	° ′		° ′	° ′		° ′	° ′
January	17·1	9·7	163. 53	166. 17	4·8	277. 35	282. 23	6·4	89. 38	96. 50	0·7	282. 0	291. 36
February	19·3	9·6	149. 28	152. 58	8·5	275. 12	282. 12	3·9	83. 38	94. 8	2·5	270. 0	284. 0
March	21·8	6·4	154. 56	157. 5	13·4	271. 40	275. 58	3·9	106. 24	112. 51	3·2	267. 26	276. 2
April	33·6	17·8	152. 29	152. 30	16·4	265. 31	265. 33	6·4	95. 39	95. 42	2·0	284. 33	284. 37
May	43·5	19·5	137. 58	137. 6	20·3	268. 58	267. 14	5·7	95. 38	93. 2	2·1	356. 35	353. 7
June	29·5	17·0	149. 26	149. 31	15·1	260. 25	260. 35	3·0	102. 34	102. 49	2·2	351. 15	351. 35
July	32·0	16·0	137. 37	138. 59	16·8	262. 26	265. 10	3·3	72. 53	76. 59	0·7	204. 10	209. 38
August	24·7	10·4	160. 10	161. 6	13·7	268. 55	270. 47	5·8	96. 19	99. 7	0·8	314. 35	318. 19
September	19·6	9·3	174. 43	173. 27	12·4	262. 28	259. 56	3·7	90. 8	86. 20	1·2	337. 4	332. 0
October	18·3	15·0	193. 20	189. 50	11·5	266. 40	259. 40	3·8	87. 5	76. 35	1·9	261. 21	247. 21
November	10·8	13·8	192. 18	188. 39	7·5	296. 3	288. 45	1·7	88. 53	77. 56	1·1	302. 6	287. 30
December	12·0	14·7	180. 4	179. 4	3·5	280. 35	278. 35	2·2	139. 53	136. 53	0·6	330. 9	326. 9
For the Year	22·0	12·5	160. 58	160. 58	11·9	268. 38	268. 38	4·0	94. 22	94. 22	1·2	297. 5	297. 5

TABLE XVII.—SEPARATE RESULTS of OBSERVATIONS of MAGNETIC DIP made in the Year 1886.

Day and Hour, (Civil Reckoning) 1886.	Needle.	Magnetic Dip.	Observer.	Day and Hour, (Civil Reckoning) 1886.	Needle.	Magnetic Dip.	Observer.	Day and Hour, (Civil Reckoning) 1886.	Needle.	Magnetic Dip.	Observer.
d h		° ′ ″		d h		° ′ ″		d h		° ′ ″	
Jan. 5. 14	C 1	67. 28. 30	N	May 13. 14	C 2	67. 27. 20	N	Sept. 1. 14	C 1	67. 25. 2	N
14. 14	B 1	67. 26. 31	N	15. 13	C 1	67. 27. 12	N	8. 14	D 1	67. 27. 55	N
15. 14	C 2	67. 28. 39	N	20. 12	D 1	67. 29. 13	N	14. 13	C 2	67. 27. 14	N
19. 13	B 2	67. 28. 1	N	20. 13	D 2	67. 27. 56	N	15. 14	B 2	67. 26. 55	N
19. 14	D 1	67. 29. 17	N	21. 13	B 1	67. 28. 3	N	16. 14	B 1	67. 26. 52	N
20. 14	D 2	67. 28. 15	N	26. 13	C 1	67. 28. 9	N	21. 14	D 2	67. 27. 30	N
27. 13	B 1	67. 26. 52	N	26. 14	B 2	67. 26. 46	N	22. 14	C 1	67. 26. 40	N
27. 14	C 1	67. 27. 4	N	28. 12	D 1	67. 27. 49	N	24. 14	D 1	67. 27. 6	N
28. 13	C 2	67. 27. 12	N	28. 13	D 2	67. 26. 46	N	24. 15	C 2	67. 26. 4	N
29. 12	B 2	67. 28. 21	N	28. 14	B 1	67. 26. 39	N	29. 13	B 1	67. 25. 3	N
29. 14	D 2	67. 28. 12	N	29. 13	C 2	67. 27. 39	N	29. 14	B 2	67. 25. 35	N
Feb. 5. 13	C 1	67. 28. 27	N	June 9. 14	B 2	67. 27. 23	N	Oct. 1. 13	D 2	67. 27. 34	N
5. 14	C 2	67. 29. 14	N	11. 14	D 2	67. 25. 59	N	1. 14	C 2	67. 25. 58	N
13. 13	D 1	67. 28. 59	N	16. 14	C 2	67. 24. 35	N	14. 14	C 1	67. 28. 51	N
19. 12	B 1	67. 28. 0	N	17. 13	C 1	67. 27. 25	N	20. 14	D 1	67. 27. 31	N
19. 13	B 2	67. 28. 4	N	23. 13	D 1	67. 27. 53	N	22. 13	B 1	67. 24. 8	N
19. 14	D 2	67. 27. 3	N	24. 12	C 2	67. 26. 3	N	22. 14	C 1	67. 26. 11	N
24. 13	C 1	67. 26. 28	N	24. 13	C 1	67. 26. 10	N	25. 14	B 2	67. 25. 28	N
24. 14	C 2	67. 24. 46	N	30. 13	D 1	67. 28. 31	N	26. 14	C 2	67. 26. 45	N
25. 13	D 1	67. 27. 44	N	30. 14	D 2	67. 27. 50	N	28. 13	B 1	67. 26. 19	N
26. 13	B 1	67. 26. 44	N					29. 13	B 2	67. 26. 23	N
26. 14	B 2	67. 26. 20	N					29. 14	D 2	67. 28. 2	N
Mar. 5. 13	C 2	67. 24. 29	N	July 6. 14	C 1	67. 25. 39	N	Nov. 4. 14	B 2	67. 27. 27	N
5. 14	C 1	67. 26. 10	N	7. 14	B 1	67. 28. 39	N	12. 13	D 1	67. 27. 51	N
10. 13	D 2	67. 25. 47	N	14. 13	D 1	67. 27. 13	N	12. 14	D 2	67. 27. 24	N
10. 14	D 1	67. 26. 3	N	14. 14	D 2	67. 26. 4	N	19. 13	B 1	67. 25. 36	N
11. 14	B 2	67. 26. 36	N	15. 13	C 2	67. 26. 37	N	19. 14	C 1	67. 26. 25	N
15. 14	B 1	67. 26. 13	N	15. 14	B 2	67. 26. 16	N	22. 14	C 2	67. 26. 15	N
18. 14	C 2	67. 25. 58	N	23. 12	C 1	67. 28. 21	N	25. 13	B 2	67. 25. 54	N
19. 14	D 2	67. 26. 53	N	23. 13	C 2	67. 27. 25	N	25. 14	D 1	67. 27. 51	N
24. 14	C 1	67. 27. 11	N	28. 14	B 1	67. 29. 18	N	29. 14	D 2	67. 26. 40	N
				30. 10	B 2	67. 27. 45	N	30. 12	B 1	67. 26. 45	N
				30. 12	B 1	67. 27. 18	N	30. 13	D 1	67. 27. 58	N
Apr. 7. 14	D 1	67. 25. 52	N	Aug. 6. 14	D 1	67. 30. 14	N	Dec. 1. 14	C 2	67. 28. 0	N
9. 14	B 1	67. 27. 36	N	11. 13	C 2	67. 25. 55	N	9. 12	C 1	67. 25. 56	N
13. 13	C 1	67. 25. 43	N	11. 14	C 1	67. 25. 53	N	9. 14	D 1	67. 28. 32	N
16. 14	C 2	67. 27. 4	N	12. 13	D 2	67. 28. 27	N	10. 12	B 2	67. 25. 22	N
22. 11	B 2	67. 27. 16	N	20. 13	B 1	67. 26. 14	N	10. 13	B 1	67. 26. 7	N
22. 12	D 1	67. 29. 19	N	20. 14	B 2	67. 24. 41	N	10. 14	D 2	67. 28. 0	N
22. 13	D 2	67. 27. 8	N	21. 13	D 1	67. 27. 23	N	16. 12	B 2	67. 25. 35	N
26. 13	C 1	67. 26. 41	N	24. 14	C 2	67. 27. 6	N	16. 14	C 2	67. 25. 58	N
27. 14	D 2	67. 25. 19	N	26. 14	B 2	67. 26. 52	N	18. 13	D 2	67. 27. 47	N
30. 12	B 1	67. 26. 28	N	27. 14	D 1	67. 27. 46	N	20. 14	C 1	67. 26. 46	N
30. 13	B 2	67. 26. 20	N	27. 15	D 2	67. 27. 52	N	21. 13	B 1	67. 25. 50	N
				31. 14	B 1	67. 25. 21	N	21. 14	D 1	67. 28. 1	N
								29. 13	D 2	67. 28. 32	N
								29. 14	B 2	67. 25. 47	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.
On June 17 the axis of the needle B 1 was accidentally broken : until June 29 it was in the hands of Mr. Dover for repair.

TABLE XVIII.—MONTHLY and YEARLY MEANS of MAGNETIC DIP in the YEAR 1886.

Monthly Means of Magnetic Dip.

Month, 1886.	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. 26. 41	2	67. 28. 11	2	67. 27. 47	2
February	67. 27. 22	2	67. 27. 12	2	67. 27. 27	2
March	67. 26. 13	1	67. 26. 36	1	67. 26. 40	2
April	67. 27. 2	2	67. 26. 48	2	67. 26. 12	2
May	67. 27. 21	2	67. 26. 46	1	67. 27. 40	2
June	...	...	67. 27. 23	1	67. 26. 48	2
July	67. 28. 25	3	67. 27. 0	2	67. 27. 0	2
August	67. 25. 48	2	67. 25. 46	2	67. 25. 53	1
September	67. 25. 57	2	67. 26. 15	2	67. 25. 51	2
October	67. 25. 14	2	67. 25. 55	2	67. 27. 31	2
November	67. 26. 11	2	67. 26. 40	2	67. 26. 25	1
December	67. 25. 58	2	67. 25. 35	3	67. 26. 21	2
Means	67. 26. 40	Sum 22	67. 26. 36	Sum 22	67. 26. 52	Sum 22

Month, 1886.	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. 27. 55	2	67. 29. 17	1	67. 28. 14	2
February	67. 27. 0	2	67. 28. 22	2	67. 27. 3	1
March	67. 25. 14	2	67. 26. 3	1	67. 26. 20	2
April	67. 27. 4	1	67. 27. 36	2	67. 26. 13	2
May	67. 27. 30	2	67. 28. 31	2	67. 27. 21	2
June	67. 25. 19	2	67. 28. 12	2	67. 26. 54	2
July	67. 27. 1	2	67. 27. 13	1	67. 26. 4	1
August	67. 26. 30	2	67. 28. 28	3	67. 28. 10	2
September	67. 26. 39	2	67. 27. 31	2	67. 27. 30	1
October	67. 26. 22	2	67. 27. 31	1	67. 27. 48	2
November	67. 26. 15	1	67. 27. 53	3	67. 27. 2	2
December	67. 26. 59	2	67. 28. 17	2	67. 28. 6	3
Means	67. 26. 39	Sum 22	67. 28. 0	Sum 22	67. 27. 19	Sum 22

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 1886.

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	22	67. 26. 40	67. 26. 38	
	B 2	22	67. 26. 36		
6-inch Needles	C 1	22	67. 26. 52	67. 26. 45	67. 27. 1
	C 2	22	67. 26. 39		
3-inch Needles	D 1	22	67. 28. 0	67. 27. 40	
	D 2	22	67. 27. 19		

TABLE XIX.—DETERMINATIONS OF THE ABSOLUTE VALUE OF HORIZONTAL MAGNETIC FORCE IN THE YEAR 1886.

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

Month and Day (Civil Reckoning), 1886.		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	20	1·0	49·7	10. 30. 14	5·670	100	47·3	N
		1·3		4. 45. 56	5·672	100	47·3	
February	23	1·0	48·1	10. 29. 54	5·674	100	48·0	N
		1·3		4. 46. 0	5·668	100	48·1	
March	23	1·0	61·9	10. 28. 44	5·675	100	60·3	N
		1·3		4. 45. 12	5·682	100	61·2	
April	20	1·0	56·1	10. 27. 42	5·678	100	55·3	N
		1·3		4. 45. 4	5·672	100	58·8	
May	25	1·0	57·0	10. 27. 48	5·672	100	57·3	N
		1·3		4. 45. 1	5·676	100	58·7	
June	25	1·0	64·2	10. 26. 59	5·679	100	64·9	N
		1·3		4. 44. 24	5·683	100	65·8	
July	16	1·0	63·0	10. 26. 39	5·681	100	63·8	N
		1·3		4. 44. 9	5·680	100	64·1	
August	25	1·0	67·2	10. 25. 39	5·685	100	68·6	N
		1·3		4. 44. 1	5·682	100	68·6	
September	17	1·0	59·5	10. 26. 47	5·683	100	59·9	N
		1·3		4. 44. 12	5·680	100	61·7	
October	27	1·0	56·9	10. 25. 37	5·679	100	54·9	N
		1·3		4. 43. 46	5·681	100	55·3	
November	26	1·0	50·9	10. 26. 30	5·673	100	49·1	N
		1·3		4. 44. 26	5·677	100	50·1	
December	15	1·0	50·9	10. 26. 34	5·677	100	49·2	N
		1·3		4. 44. 37	5·685	100	49·9	

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° Fahrenheit.

Computation of the Values of Horizontal Force in Absolute Measure.

Month and Day (Civil Reckoning), 1886.		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.
January	20	0·09137	0·09147	—0·00271	—0·00333	8·96217	5·6710	0·15191	0·3606	3·9343	1·8141
February	23	0·09129	0·09146	—0·00468		8·96198	5·6710	0·15197	0·3606	3·9354	1·8146
March	23	0·09134	0·09143	—0·00231		8·96201	5·6785	0·15171	0·3605	3·9341	1·8140
April	20	0·09110	0·09129	—0·00508		8·96110	5·6750	0·15182	0·3601	3·9388	1·8161
May	25	0·09113	0·09129	—0·00434		8·96118	5·6740	0·15191	0·3602	3·9389	1·8161
June	25	0·09112	0·09121	—0·00220		8·96097	5·6810	0·15135	0·3599	3·9372	1·8154
July	16	0·09106	0·09111	—0·00135		8·96059	5·6805	0·15131	0·3597	3·9388	1·8161
August	25	0·09098	0·09113	—0·00406		8·96045	5·6835	0·15121	0·3596	3·9389	1·8162
September	17	0·09102	0·09107	—0·00130		8·96040	5·6815	0·15097	0·3595	3·9380	1·8158
October	27	0·09081	0·09089	—0·00197		8·95947	5·6800	0·15085	0·3591	3·9418	1·8175
November	26	0·09085	0·09101	—0·00434		8·95984	5·6750	0·15124	0·3594	3·9418	1·8175
December	15	0·09086	0·09107	—0·00564		8·96001	5·6810	0·15034	0·3591	3·9370	1·8153
Means ...	...	...	...	...	...	...	...	...	...	3·9379	1·8157

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

ROYAL OBSERVATORY, GREENWICH

MAGNETIC DISTURBANCES

AND

EARTH CURRENTS.

1886.

MAGNETIC DISTURBANCES in DECLINATION, HORIZONTAL FORCE, and VERTICAL FORCE, and EARTH CURRENTS, recorded at the ROYAL OBSERVATORY, GREENWICH, in the Year 1886.

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 Forces 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 marked 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).

1886.

January 1. $22\frac{3}{4}^h$ to 2. 1^h Wave in Dec. (− 12′). 1. 22^h to 2. 2^h Fluctuations in H.F. (± ·001): in V.F. small.

2. 21^h to 3. 2^h Fluctuations in Dec. (± 2′): in H.F. (± ·0005): in V.F. small.

3. 15^h to 4. 8^h Fluctuations in Dec. (± 3′): in H.F. (± ·0015): in V.F. small.

4. 17^h to 5. 0^h Fluctuations in Dec. (± 3′): in H.F. (± ·0008).

5. 9^h to 14. 13^h No Register of Dec. H.F. or V.F.

15. 0^h to 6^h Fluctuations in Dec. (± 3′). 15^h to 17^h Fluctuations in Dec. (± 3′): in H.F. (± ·001): in V.F. small.

19. $15\frac{1}{4}^h$ to $16\frac{1}{4}^h$ Double crested wave in Dec. (− 11′ and − 8′): in H.F. fluctuations (± ·0013). $15\frac{1}{4}^h$ to 17^h Wave in V.F. (+ ·0005). 19. 21^h to 20. 2^h Fluctuations in Dec. (± 3′): in H.F. (± ·001): in V.F. small.

20. $22\frac{1}{2}^h$ to 21. 0^h Wave in Dec. (− 6′). 20. $22\frac{1}{3}^h$ to 23^h Wave in H.F. (+ ·003). 20. $22\frac{1}{2}^h$ to 21. 0^h Wave in V.F. (− ·0003).

21. 20^h to 22. 6^h Fluctuations in Dec. (± 7′): in H.F. (± ·0015): in V.F. small.

22. 14^h to 21^h Fluctuations in Dec. (± 2′): in H.F. (± ·001): in V.F. small.

24. 17^h to 25. 1^h Fluctuations in Dec. (± 5′): in H.F. (± ·0008): in V.F. small.

29. 4^h to 14^h Fluctuations in Dec. (± 4′): in H.F. (± ·0015): in V.F. small.

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January 30. $1\frac{1}{3}^h$ to $3\frac{1}{2}^h$ Double wave in Dec. (+ 9′ to − 7′). $1\frac{1}{2}^h$ to $2\frac{1}{2}^h$ Wave in H.F. (+ ·003) : decrease of V.F. (− ·001). $20\frac{1}{2}^h$ to 23^h Two successive waves in Dec. (− 10′ and − 13′). 30. 20^h to 31. 0^h Fluctuations in H.F. (± ·0015) : in V.F. (± ·0002).

February 2. 21^h to 3. 0^h Fluctuations in Dec. (± 2′) : in H.F. (± ·0008) : in V.F. small.

4. 18^h to 23^h Fluctuations in Dec. (± 2′) : in H.F. (± ·001).

5. $11\frac{1}{2}^h$ to 6. 1^h Fluctuations in Dec. (± 5′) : in H.F. (± ·001) : in V.F. small.

11. 2^h to 6^h Double wave in Dec. (+ 12′ to − 10′). $2\frac{1}{2}^h$ to 6^h Wave in H.F. (+ ·003) : in V.F. (− ·001). $19\frac{1}{3}^h$ to $20\frac{3}{4}^h$ Wave in Dec. (− 16′), followed till 23^h by fluctuations (± 3′). 19^h to 23^h Fluctuations in H.F. (± ·0015) : in V.F. (± ·0002).

16. 18^h to 17. 2^h Fluctuations in Dec. (± 5′) : in H.F. (± ·003) : in V.F. (± ·0004).

17. 5^h to 8^h Fluctuations in Dec. (± 5′) : in H.F. (± ·0005). 17. 18^h to 18. 4^h Occasional fluctuations in Dec. (± 3′) : in H.F. small.

18. $16\frac{1}{4}^h$ to $17\frac{3}{4}^h$ Wave in Dec. (− 8′), followed till $20\frac{1}{2}^h$ by fluctuations (± 3′) : in H.F. fluctuations (± ·001) : in V.F. (± ·0002). 18. 23^h to 19. 5^h Two successive waves in Dec. (− 7′ and − 8′) : fluctuations in H.F. (± ·0005) : in V.F. (± ·0002).

19. $13\frac{1}{2}^h$ to 16^h Double wave in Dec. (+ 4′ to − 3′). 14^h to 16^h Wave in H.F. (− ·002) : in V.F. (+ ·0002). 19. $19\frac{1}{4}^h$ to $20\frac{1}{2}^h$ Wave in Dec. (− 8′), followed till 20. 4^h by fluctuations (± 3′) : fluctuations in H.F. (± ·0008) : in V.F. small.

20. 20^h to $21\frac{1}{2}^h$ Wave in Dec. (− 6′).

21. 15^h to 22^h Fluctuations in Dec. (± 5′) : in H.F. (± ·0012) : in V.F. small.

22. 15^h to 23. 3^h Fluctuations in Dec. (± 10′) : in H.F. (± ·002) : in V.F. (± ·0004).

March 1. 18^h to 23^h Fluctuations in Dec. (± 2′).

3. 12^h to 16^h Fluctuations in Dec. (± 3′). 12^h to $14\frac{1}{2}^h$ Wave in H.F. (− ·0025). 17^h to $18\frac{1}{4}^h$ Wave in H.F. (− ·0015). 14^h to 18^h Fluctuations in V.F. small.

6. 20^h to 7. 5^h Small fluctuations in Dec. (± 2′). 6. 22^h to 7. 2^h Wave in H.F. (+ ·0015).

7. $16\frac{3}{4}^h$ to $17\frac{3}{4}^h$ Wave in Dec. (− 4′). 21^h to 23^h two successive waves in Dec. (− 5′ and − 4′). 12^h to 21^h Fluctuations in H.F. (± ·001), followed by wave 21^h to $23\frac{1}{4}^h$ (+ ·002). 13^h to 23^h Fluctuations in V.F. small.

10. $3\frac{3}{4}^h$ to $4\frac{1}{4}^h$ Wave in Dec. (+ 4′). $3\frac{3}{4}^h$ to $5\frac{1}{2}^h$ Wave in H.F. (+ ·0018).

15. 21^h to 16. 16^h Occasional fluctuations in Dec. (± 2′) : in H.F. (± ·0007).

16. 19^h to 20^h Wave in Dec. (− 7′), followed until 17. 8^h by fluctuations (± $1\frac{1}{2}$′). 16. 21^h to 17. 0^h Wave in H.F. (+ ·003).

17. $9\frac{3}{4}^h$ to $10\frac{3}{4}^h$ Wave in H.F. (− ·0012). 12^h to 15^h Fluctuations in Dec. (± 2′) : in H.F. (± ·0005) : in V.F. small. 20^h to $20\frac{3}{4}^h$ Wave in Dec. (− 10′). $20\frac{1}{4}^h$ to 21^h Double wave in H.F. (− ·0013 to + ·002) : in V.F. (− ·0001 to + ·0001).

18. 1^h to 6^h Fluctuations in Dec. (± 5′) : in H.F. (± ·001).

18. 12^h to 20. 12^h See Plate I.

20. 12^h to 16^h Small fluctuations in Dec. (± $1\frac{1}{2}$′) : in H.F. (± ·001).

21. 19^h to 22. 4^h Fluctuations in Dec. (± 3′), with sharp movement at 22. 0^h (+ 9′) : in H.F. (± ·0006) with sharp movement at 22. 0^h (+ ·005). 22. 0^h to 2^h Wave in V.F. (− ·0005).

22. $20\frac{1}{2}^h$ to $22\frac{3}{4}^h$ Wave in Dec. (− 10′), followed till 23. 0^h by fluctuations (± 3′). 23. $2\frac{1}{4}^h$ to 3^h Wave in Dec. (+ 7′). 22. $20\frac{1}{2}^h$ to 23. 3^h Fluctuations in H.F. (± ·0012) : in V.F. (± ·0002).

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March 23. 12^h to 16^h Small fluctuations in Dec. (± 2′), with sharp wave at $14\frac{3}{4}^h$ (− 7′). 23. 12^h to 23^h Fluctuations in H.F. (± ·001), with sharp wave at $14\frac{3}{4}^h$ (− ·0045) : fluctuations in V.F. small, with sharp wave at $14\frac{3}{4}^h$ (− ·0005).

24. 12^h to 23^h Fluctuations in Dec. (± 3′) : in H.F. (± ·0005) : in V.F. small.

25. 20^h to 22^h Fluctuations in Dec. (± 4′) : in H.F. (± ·0005).

26. $21\frac{2}{3}^h$ to 22^h Wave in Dec. (− 6′), followed till 27. 6^h by slow fluctuations (± 4′). 26. $21\frac{2}{3}^h$ to 23^h Wave in H.F. (+ ·004), followed till 27. 6^h by slow fluctuations (± ·0008).

27. 20^h to 28. 5^h Fluctuations in Dec. (± 3′). 27. $23\frac{1}{2}^h$ to 28. $0\frac{3}{4}^h$ Wave in H.F. (+ ·002).

28. 16^h to 20^h Fluctuations in H.F. (± ·0015). 28. $22\frac{3}{4}^h$ to 29. 3^h Fluctuations in H.F. (± ·0005). 29. $0\frac{3}{4}^h$ to $3\frac{1}{2}^h$ Double wave in Dec. (+ 8′ to − 8′) : wave in V.F. (− ·0006).

30. 6^h to April 1. 6^h. See Plates II. and III.

April 1. 6^h to 11^h Sharp fluctuations in Dec. (± 4′) : in H.F. (± ·0013) : in V.F. (± ·0002). $18\frac{1}{2}^h$ to 19^h Wave in Dec. (− 10′). 14^h to $18\frac{1}{2}^h$ Fluctuations in H.F. (± ·001), with wave $18\frac{1}{2}^h$ to $19\frac{1}{4}^h$ (+ ·0035). $18\frac{3}{4}^h$ to $19\frac{1}{4}^h$ Wave in V.F. (+ ·0004).

5. 0^h to 3^h Fluctuations in Dec. (± 2′) : in H.F. (± ·0006) : in V.F. small.

11. 12^h to 15. 12^h. See Plates III. and IV.

15. 21^h to 16. 4^h Fluctuations in Dec. (± 3′). 15. 12^h to 16. 4^h Fluctuations in H.F. (± ·001) : in V.F. small.

16. 17^h to 22^h Fluctuations in Dec. (± 5′). 12^h to 22^h Fluctuations in H.F. (± ·001) : in V.F. small.

17. $20\frac{1}{2}^h$ to 18. 0^h Irregular wave in Dec. (− 13′). 17. $17\frac{3}{4}^h$ to 18. 0^h Fluctuations in H.F. (± ·0015) : in V.F. small.

18. 11^h to 19. 0^h Fluctuations in Dec. (± 6′) : in H.F. (± ·0015) : in V.F. (± ·0002).

19. 19^h to 23^h Wave in Dec. (− 12′). 12^h to 23^h Fluctuations in H.F. (± ·001) : in V.F. small.

20. 12^h to 21. 7^h Fluctuations in Dec. (± 3′) : in H.F. (± ·0015) : in V.F. (± ·0002).

21. 19^h to 22. 4^h Fluctuations in Dec. (± 3′) : in H.F. small.

25. 0^h to 1^h Wave in H.F. (− ·0014). $4\frac{3}{4}^h$ to $6\frac{1}{2}^h$ Wave in Dec. (+ 11′). $5\frac{3}{4}^h$ to 8^h Wave in H.F. (+ ·0027). 25. 12^h to 26. 2^h Fluctuations in Dec. (± 3′) : in H.F. (± ·0007).

28. $21\frac{3}{4}^h$ to $22\frac{3}{4}^h$ Wave in Dec. (− 7′). 28. 19^h to 29. 0^h Fluctuations in H.F. (± ·0008).

29. $22\frac{1}{2}^h$ to 30. 4^h Fluctuations in Dec. (± 8′). 29. 13^h to 30. 4^h Fluctuations in H.F. (± ·001). 30. $1\frac{1}{2}^h$ to 2^h Decrease of V.F. (− ·0008).

May 1. 3^h to $4\frac{1}{4}^h$ Wave in Dec. (+ 12′).

2. 1^h to 9^h Rapid fluctuations in Dec. (± 3′): in H.F. (± ·0005). 11^h to 20^h Fluctuations in H.F. (± ·0018).

3. 11^h to 18^h Fluctuations in H.F. (± ·0012). 3. 21^h to 4. 2^h Fluctuations in Dec. (± 2′) : in H.F. (± ·0006).

6. 16^h to 17^h Sharp fluctuations in Dec. (± $1\frac{1}{2}$′) : in H.F. (± ·0018) : in V.F. small.

8. 12^h to 9. 12^h. See Plate V.

9. 12^h to 10. 4^h Fluctuations in Dec. (± 7′) : in H.F. (± ·0012) : in V.F. small.

10. 17^h to 12. 7^h Fluctuations in Dec. (± 6′) : in H.F. (± ·0015). 11. 2^h to 3^h Decrease of V.F. (− ·0008). 11. $21\frac{1}{4}^h$ to $21\frac{3}{4}^h$ Decrease of V.F. (− ·0008).

12. 14^h to 20^h Fluctuations in Dec. (± 6′) : in H.F. (± ·0014) : in V.F. small.

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13. 1^{h} to 7^{h} Fluctuations in Dec. (± 3′) : in H.F. (± ·001). 13. 13^{h} to 14. 0^{h} Fluctuations in Dec. (± 5′) : in H.F. (± ·0015) : in V.F. small.

14. 5^{h} to 16. 4^{h} Fluctuations, at times rapid, in Dec. (± 4′) : in H.F. (± ·0015) : in V.F. small.

16. 19^{h} to 21^{h} Fluctuations in Dec. (± 2′) : in H.F. (± ·001).

17. 14^{h} to 18. 9^{h} Fluctuations in Dec. (± 5′) : in H.F. (± ·0017) : in V.F. (± ·0003).

18. 14^{h} to 22^{h} Fluctuations in Dec. (± 6′) : in H.F. (± ·002) : in V.F. (± ·0002).

19. $23\frac{1}{2}^{h}$ to 20. $0\frac{1}{2}^{h}$ Wave in Dec. (+ 4′) : in H.F. (+ ·001) : in V.F. (+ ·0001).

21. 5^{h} to 22. 2^{h} Fluctuations in Dec. (± 4′) : in H.F. (± ·002) : in V.F. small.

22. $15\frac{3}{4}^{h}$ to 19^{h} Fluctuations in H.F. (± ·001).

23. 19^{h} to 24. 1^{h} Fluctuations in Dec. (± 4′). 23. 14^{h} to 24. 1^{h} Fluctuations in H.F. (± ·001) : in V.F. small.

24. 13^{h} to 20^{h} Fluctuations in H.F. (± ·0007).

26. 16^{h} to $17\frac{1}{2}^{h}$ Wave in H.F. (+ ·005).

27. 15^{h} to 19^{h} Fluctuations in Dec. (± 2′) : in H.F. (± ·002) : in V.F. (± ·0002).

28. 10^{h} to 20^{h} Fluctuations in Dec. (± 3′) : in H.F. (± ·001) : in V.F. small.

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3. 18^{h} to 4. 2^{h} Fluctuations in H.F. (± ·0008). 4. $0\frac{3}{4}^{h}$ to $1\frac{1}{2}^{h}$ Wave in Dec. (+ 3′).

4. 5^{h} to 9^{h} Small sharp fluctuations in Dec. (± 2′). 4. 23^{h} to 5. 10^{h} Fluctuations in Dec. (± 4′). 4. 12^{h} to 5. 4^{h} Small fluctuations in H.F. (± ·0006).

5. $23\frac{1}{2}^{h}$ to 6. 3^{h} Double wave in Dec. (+ 6′ to − 6′) : 5. 18^{h} to 6. 3^{h} Fluctuations in H.F. (± ·0008). 6. 0^{h} to 2^{h} Wave in V.F. (− ·0006).

6. 19^{h} to 7. 5^{h} Fluctuations in Dec. (± 2′). 6. 12^{h} to 7. 4^{h} Fluctuations in H.F. (± ·0012).

7. 20^{h} to 8. 9^{h} Fluctuations in Dec. (± 4′). 7. 14^{h} to 8. 4^{h} Fluctuations in H.F. (± ·0013).

8. 20^{h} to 9. 4^{h} Fluctuations in Dec. (± 3′). 8. 10^{h} to 9. 3^{h} Fluctuations in H.F. (± ·0008).

9. 13^{h} to 19^{h} Fluctuations in H.F. (± ·001).

10. 15^{h} to 19^{h} Very small sharp fluctuations in Dec. (± 1½′) : in H.F. (± ·0012) : in V.F. (± ·0001).

12. 14^{h} to 13. 4^{h} Fluctuations in Dec. (± 4′). 12. $14\frac{1}{2}^{h}$ to $15\frac{1}{2}^{h}$ Double pointed wave in H.F. (+ ·005 and + ·006), followed till 23^{h} by fluctuations (± ·0015) : in V.F. fluctuations (± ·0003).

13. 13^{h} to 23^{h} Fluctuations in H.F. (± ·0012).

16. $19\frac{1}{2}^{h}$ to $20\frac{1}{2}^{h}$ Double wave in H.F. (− ·001 to + ·001).

17. $7\frac{1}{2}^{h}$ to $10\frac{1}{2}^{h}$ Fluctuations in Dec. (± 3′) : in H.F. (± ·001) : in V.F. (± ·0002).

18. 6^{h} to $7\frac{1}{2}^{h}$ Wave in Dec. (+ 8′). 18. 22^{h} to 19. 1^{h} Fluctuations in Dec. (± 3′). 18. 13^{h} to 19. 1^{h} Fluctuations in H.F. (± ·0008).

19. 13^{h} to 17^{h} Small rapid fluctuations in Dec. (± 1½′) : in H.F. (± ·0006) : in V.F. small.

21. 12^{h} to $13\frac{1}{2}^{h}$ Wave in H.F. (− ·002). 21. 22^{h} to 22. 10^{h} Fluctuations in Dec. (± 3′). 21. 18^{h} to 22. 10^{h} Fluctuations in H.F. (± ·001).

22. 12^{h} to 23. 12^{h}. See Plate V.

23. $19\frac{1}{2}^{h}$ to 21^{h} Wave in Dec. (− 5′). 23. 23^{h} to 24. 3^{h} Fluctuations in Dec. (± 2′). 23. 15^{h} to 24. 3^{h} Fluctuations in H.F. (± ·0012).

24. 20^{h} to 25. 4^{h} Fluctuations in Dec. (± 6′). 24. 10^{h} to 25. 7^{h} Fluctuations in H.F. (± ·0015). 24. 22^{h} to 25. 4^{h} Fluctuations in V.F. (± ·0003).

26. 1^{h} to 2^{h} Wave in Dec. (+ 7′) : in H.F. (+ ·0027). $1\frac{1}{4}^{h}$ to $1\frac{3}{4}^{h}$ Decrease of V.F. (− ·0008). 13^{h} to 17^{h} Fluctuations in H.F. (± ·001).

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June 27. 15^h to 16^h Wave in H.F. (+ ·002).

29. 12^h to 30. 12^h. See Plate VI.

30. $14\frac{1}{2}^h$ to 16^h Wave in H.F. (+ ·0035). 30. 22^h to July 1. 10^h Fluctuations in Dec. (± 8′): in H.F. (± ·002). 30. $22\frac{1}{4}^h$ to $22\frac{3}{4}^h$ Decrease of V.F. (− ·001), followed till July 1. 9^h by fluctuations (± ·0002).

July 1. 22^h to 2. 3^h Fluctuations in Dec. (± 3′). 1. $12\frac{1}{2}^h$ to 2. 3^h Fluctuations in H.F. (± ·0012): in V.F. small.

2. 13^h to $16\frac{1}{2}^h$ Fluctuations in H.F. (± ·001). $19\frac{1}{2}^h$ to 22^h Fluctuations in Dec. (± 2′): in H.F. (± ·001).

3. 1^h to 8^h Fluctuations in Dec. (± 2′). 13^h to 23^h Fluctuations in H.F. (± ·001).

4. $15\frac{3}{4}^h$ to 17^h Wave in Dec. (− 3′). $15\frac{3}{4}^h$ to 19^h Wave in H.F. (+ ·0025).

9. $19\frac{3}{4}^h$ to $21\frac{1}{2}^h$ Wave in Dec. (− 5′). $15\frac{1}{2}^h$ to $16\frac{1}{2}^h$ Wave in H.F. (+ ·003).

11. 18^h to 12. 1^h Fluctuations in Dec. (± 2′). 11. 12^h to 12. 1^h Fluctuations in H.F. (± ·001).

14. $15\frac{1}{2}^h$ to 19^h Fluctuations in Dec. (± 4′). 12^h to $21\frac{1}{2}^h$ Fluctuations in H.F. (±·002): in V.F. small.

15. 20^h to 16. 5^h Fluctuations in Dec. (± 4′). 15. 15^h to 16. 2^h Fluctuations in H.F. (± ·001).

16. 16^h to 22^h Fluctuations in H.F. (± ·0007).

18. $12\frac{1}{2}^h$ to 20^h Fluctuations in H.F. (± ·0006).

19. 0^h to 3^h Long wave in Dec. (− 8′). 0^h to 1^h Wave in H.F. (+ ·003): decrease of V.F. (− ·0005). 7^h to 9^h Fluctuations in Dec. (± 4′). 19. 17^h to 20. 9^h Fluctuations in Dec. (± 7′). 19. 13^h to 20. 2^h Fluctuations in H.F. (± ·002): in V.F. (± ·0003).

20. 15^h to 21. 6^h Fluctuations in Dec. (± 6′): in H.F. (± ·0015): in V.F. small.

21. 14^h to 22^h Fluctuations in Dec. (± 3′): in H.F. (± ·0013): in V.F. small.

23. $3\frac{1}{2}^h$ to 7^h Fluctuations in Dec. (± 2′): in H.F. (± ·001). 23. 21^h to 24. 1^h Fluctuations in Dec. (± 3′): in H.F. (± ·0006).

27. 12^h to 28. 12^h. See Plate VI.

28. 21^h to 29. 1^h Fluctuations in Dec. (± 4′). 28. 15^h to 29. 1^h Fluctuations in H.F. (± ·0018): in V.F. (± ·0002).

29. 17^h to 30. 3^h Fluctuations in H.F. (± ·0008).

31. $20\frac{1}{2}^h$ to 22^h Wave in Dec. (− 5′). 16^h to 22^h Fluctuations in H.F. (± ·0012).

August 1. 15^h to 23^h Fluctuations in Dec. (± 2′): in H.F. (± ·001): in V.F. small.

6. 11^h to 18^h Fluctuations in H.F. (± ·001).

7. 21^h to 23^h Double wave in Dec. (+ 4′ to − 10′). 15^h to 23^h Fluctuations in H.F. (± ·0013): in V.F. small.

8. 21^h to $22\frac{1}{2}^h$ Wave in H.F. (+ ·0015).

11. 0^h to 5^h Fluctuations in Dec. (± 2′): in H.F. (± ·0005). 11. 22^h to 12. 20^h Fluctuations in Dec. (± 6′). 11. 21^h to 12. 23^h Fluctuations in H.F. (± ·0016): in V.F. (± ·0002).

13. $1\frac{1}{2}^h$ to 3^h Wave in Dec. (+ 12′). $2\frac{1}{4}^h$ to 3^h Decrease of V.F. (− ·0006). 13. 19^h to 14. 9^h Fluctuations in Dec. (± 3′): in H.F. (± ·001): in V.F. small.

14. 16^h to $20\frac{1}{2}^h$ Fluctuations in Dec. (± 5′): in H.F. (± ·001): in V.F. small.

15. $1\frac{1}{2}^h$ to $4\frac{1}{2}^h$ Wave in Dec. (+ 13′). 2^h to 5^h Wave in V.F. (− ·0008). 14^h to 19^h Fluctuations in H.F. (± ·0013).

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August 16. 3^h to 5^h Wave in Dec. (+ 10′). 16. 14^h to 17. 5^h Fluctuations in Dec. (± 7′) : in H.F. (± ·0015) : in V.F. small.

17. 19^h to 18. 6^h Fluctuations in Dec. (± 4′) : in H.F. (± ·0016) : in V.F. small.

18. 19^h to 21^h Double crested wave in Dec. (+ 9′ and + 4′) : fluctuations in H.F. (± ·0012) : in V.F. small.

19. 18^h to 20. 3^h Fluctuations in Dec. (± 3′). 19. 15^h to 20. 3^h Fluctuations in H.F. (± ·001).

20. $19\frac{3}{4}^h$ to 21^h Wave in Dec. (− 8′) : in H.F. (+ ·0025).

23. 12^h to 24. 12^h. See Plate VII.

24. $19\frac{1}{2}^h$ to $20\frac{3}{4}^h$ Wave in Dec. (− 6′). 16^h to 23^h Fluctuations in H.F. (± ·0018).

25. $2\frac{1}{2}^h$ to 4^h Wave in Dec. (+ 6′). 25. 22^h to 26. 3^h Fluctuations in Dec. (± 4′) : in H.F. (± ·001) : in V.F. small.

26. $23\frac{1}{2}^h$ to 27. 1^h Wave in Dec. (+ 4′). 26. 13^h to 27. 1^h Fluctuations in H.F. (± ·0006).

September 3. 20^h to 4. 3^h Fluctuations in Dec. (± 4′) : in H.F. and V.F. small.

7. 15^h to 8. 5^h Fluctuations in Dec. (± 3′) : in H.F. (± ·002) : in V.F. small.

8. $23\frac{3}{4}^h$ to 9. $0\frac{1}{2}^h$ Wave in Dec. (− 8′), followed till 9^h by fluctuations (± 2′). 8. 16^h to 9. 9^h Fluctuations in H.F. (± ·0006). 9. 0^h to 1^h Fluctuations in V.F. (± ·0002).

9. 12^h to 14. 12^h. See Plates VII. VIII. and IX.

14. 20^h to 15. 6^h Fluctuations in Dec. (± 3′) : in H.F. (± ·001).

16. $18\frac{1}{2}^h$ to $19\frac{3}{4}^h$ Wave in Dec. (−5′).

17. 15^h to 18. 4^h Fluctuations in Dec. (± 2′). 17. 15^h to 17^h Fluctuations in H.F. (± ·001).

20. 23^h to 21. 4^h Fluctuations in Dec. (± 5′) : in H.F. (± ·0015) : in V.F. (± ·0002).

21. 13^h to 22. 1^h Fluctuations in Dec. (± 7′) : in H.F. (± ·0015) : in V.F. (± ·0002).

22. 17^h to 23. 1^h Fluctuations in Dec. (± 3′) : in H.F. (± ·001).

24. 2^h to 4^h Fluctuations in Dec. (± 3′) : in H.F. (± ·0005) : in V.F. small. 21^h to $21\frac{3}{4}^h$ Wave in H.F. (+ ·0012).

25. 21^h to 22^h Wave in H.F. (+ ·0013).

29. 20^h to 23^h Fluctuations in H.F. (± ·0008).

30. $19\frac{1}{2}^h$ to $23\frac{1}{2}^h$ Fluctuations in Dec. (± 5′) : in H.F. (± ·0015) : in V.F. (± ·0003).

October 1. $23\frac{1}{2}^h$ to 2. 2^h Fluctuations in Dec. (± 4′) : in H.F. (± ·001) : in V.F. small.

2. 17^h to 3. 0^h Fluctuations in Dec. (± 3′) : in H.F. (± ·001) : in V.F. small.

3. $15\frac{1}{2}^h$ to $16\frac{3}{4}^h$ Wave in Dec. (− 5′) : in H.F. (− ·0015).

5. 21^h to 6. 6^h Fluctuations in Dec. (± 3′).

6. 12^h to 11. 12^h. See Plates X., XI. and XII.

11. 21^h to 12. 2^h Fluctuations in Dec. (± 4′) : in H.F. (± ·001).

12. 13^h to 23^h Fluctuations in Dec. (± 4′) : in H.F. (± ·0013) : in V.F. small.

13. 19^h to $20\frac{1}{2}^h$ Wave in Dec. (− 14′). $19\frac{1}{3}^h$ to $19\frac{3}{4}^h$ Wave in H.F. (+ ·002).

14. 0^h to 4^h Fluctuations in Dec. (± 3′). 15^h to 22^h Fluctuations in Dec. (± 2′).

15. 1^h to 2^h Wave in Dec. (+ 6′).

17. 14^h to $20\frac{1}{2}^h$ Fluctuations in Dec. (± 2′) : in H.F. (± ·0008) : in V.F. small.

1886.

October 18. 16^h to 19. 22^h Fluctuations in Dec. (± 4′) : in H.F. (± ·002) : in V.F. small. 19. $3\frac{1}{3}^h$ Sharp increase of Dec. (+ 6′) : of H.F. (+ ·002) : of V.F. (+ ·0002).

20. 14^h to 20^h Short sharp fluctuations in Dec. (± 1′) : in H.F. (± ·0008) : in V.F. (± ·0001).

21. 8^h to 15^h Short sharp fluctuations in Dec. (± 3′) : in H.F. (± ·0008) : in V.F. (± ·0001). 21. 16^h to 22. 23^h Fluctuations in Dec. sometimes sharp (± 4′). in H.F. (± ·001) : in V.F. small.

26. $19\frac{1}{2}^h$ to 21^h Wave in Dec. (− 10′) : fluctuations in H.F. (± ·0006) : in V.F. small.

27. 14^h to 28. 2^h Fluctuations in Dec. (± 7′) : in H.F. (± ·0015) : in V.F. small.

28. 18^h to 29. 5^h Fluctuations in Dec. (± 6′) : in H.F. (± ·001) : in V.F. small.

29. 14^h to 17^h Fluctuations in Dec. (± 7′) : in H.F. (± ·001) : in V.F. (± ·0002). 29. 23^h to 30. 2^h Fluctuations in Dec. (± 3′) : in H.F. (± ·0006).

30. $23\frac{1}{3}^h$ to 31. $0\frac{1}{4}^h$ Wave in Dec. (+ 3′) : in H.F. (+ ·001).

November 2. 12^h to 7. 12^h. See Plates XII., XIII. and XIV.

7. 14^h to 8. 4^h Fluctuations in Dec. (± 5′) : in H.F. (± ·001) : in V.F. small.

8. $19\frac{1}{2}^h$ to 9. 1^h Fluctuations in Dec. (± 3′) : in V.F. small. 8. $20\frac{1}{2}^h$ to $21\frac{1}{2}^h$ Wave in H.F. (+ ·002).

9. 16^h to 23^h Fluctuations in Dec. (± 3′) : in H.F. (± ·0007).

10. 21^h to 11. 2^h Fluctuations in Dec. (± 4′) : in H.F. (± ·0006).

11. $15\frac{1}{2}^h$ to $17\frac{1}{2}^h$ Wave in Dec. (− 8′) : fluctuations in H.F. (± ·0008).

12. 16^h to 13. 5^h Fluctuations in Dec. (± 5′) : in H.F. (± ·0007) : in V.F. small.

13. $14\frac{3}{4}^h$ to $16\frac{1}{2}^h$ Wave in Dec. (− 6′). 13^h to 16^h Fluctuations in H.F. (± ·0006).

14. 22^h to 15. 0^h Double crested wave in Dec. (− 5′ and − 8′).

15. 19^h to 23^h Fluctuations in Dec. (± 4′). 15. 19^h to 16. 2^h Fluctuations in H.F. (± ·001).

17. 19^h to 21^h Wave in Dec. (− 10′). 17. 19^h to 18. 1^h Fluctuations in H.F. (± ·0012) : in V.F. small.

18. $21\frac{3}{4}$ to 23^h Wave in Dec. (− 5′) : in H.F. (+ ·001).

20. 7^h to 9^h Wave in H.F. (− ·002). $15\frac{1}{2}^h$ to 21^h Fluctuations in Dec. (± 5′) : in V.F. small. 19^h to 20^h Wave in H.F. (+ ·003).

21. $16\frac{1}{2}^h$ to 18^h Wave in Dec. (− 4′).

23. 6^h to 24. 5^h Fluctuations in Dec. (± 7′) : in H.F. (± ·0015) : in V.F. (± ·0002).

24. 13^h to 25. 0^h Fluctuations in Dec. (± 6′) : in H.F. (± ·001) : in V.F. small.

25. 16^h to 26. 7^h Fluctuations in Dec. (± 5′) : in H.F. (± ·001).

27. 21^h to 28. 0^h Fluctuations in Dec. (± 3′). 27. $21\frac{3}{4}^h$ to $22\frac{1}{2}^h$ Wave in H.F. (+ ·0016).

29. 14^h to 30. 2^h Fluctuations in Dec. (± 5′) : in H.F. (± ·0015) : in V.F. small.

30. 12^h to December 1. 12^h. See Plate XV.

December 1. 14^h to 3. 3^h Fluctuations in Dec. (± 6′) : in H.F. (± ·0018) : in V.F. small.

3. 18^h to 4. 0^h Fluctuations in Dec. (± 3′) : in H.F. (± ·001) : in V.F. small.

4. $16\frac{2}{3}^h$ to $17\frac{3}{4}^h$ Wave in Dec. (− 14′), followed till 23^h by fluctuations (± 2′) : fluctuations in H.F. (± ·0014) : in V.F. small.

5. $16\frac{1}{2}^h$ to 6. 3^h Fluctuations in Dec. (± 5′) : in H.F. (± ·0015) : in V.F. (± ·0002).

6. 13^h to 23^h Fluctuations in Dec. (± 3′) : in H.F. (± ·001) : in V.F. small.

7. 18^h to 8. 5^h Fluctuations in Dec. (± 7′) : in H.F. (± ·0015) : in V.F. (± ·0003).

11. 20^h to 12. 0^h Fluctuations in Dec. (± 3′) : in H.F. (± ·001) : in V.F. small.

1886.

December 12. 22^h to 13. 1^h Fluctuations in Dec. (± 3′).

13. 16^h to 22^h Fluctuations in Dec. (± 4′).

14. 18^h to 20^h Wave in Dec. (− 10′). $17\frac{1}{2}^h$ to 19^h Wave in H.F. (− ·003).

15. 17^h to 16. 0^h Fluctuations in Dec. (± 6′) : in H.F. (± ·001) : in V.F. small.

16. 19^h to 17. 2^h Fluctuations in Dec. (± 6′) : in H.F. (± ·001) : in V.F. small.

17. $14\frac{1}{2}^h$ to $15\frac{2}{3}^h$ Wave in Dec. (− 6′). $17\frac{1}{2}^h$ to $19\frac{1}{2}^h$ Wave in Dec. (− 15′). 17. 23^h to 18. 8^h Fluctuations in Dec. (± 3′). 17. 14^h to 18. 0^h Fluctuations in H.F. (± ·002) : in V.F. small.

18. 23^h to 19. 3^h Fluctuations in Dec. (± 6′) : in H.F. (± ·0008) : in V.F. small.

19. 18^h to 22^h Fluctuations in Dec. (± 4′) : in H.F. (± ·001) : in V.F. small.

21. 15^h to 23^h Fluctuations in Dec. (± 3′) : in H.F. (± ·001) : in V.F. small.

22. 20^h to 23. 6^h Fluctuations in Dec. (± 8′) : in H.F. (± ·0012) : in V.F. small.

23. 14^h to 24. 0^h Fluctuations in Dec. (± 4′) : in H.F. (± ·001) : in V.F. small.

24. 20^h to 25. 2^h Fluctuations in Dec. (± 3′). Waves in H.F. 24. 21^h to 22^h (+ ·0024), and 25. $0\frac{1}{2}^h$ to 2^h (+ ·002).

26. 3^h to 6^h Fluctuations in Dec. (± 3′). $17\frac{1}{2}^h$ to $18\frac{1}{2}^h$ Wave in Dec. (− 9′). 26. $21\frac{3}{4}^h$ to 27. 0^h Wave in Dec. (− 11′). 26. 15^h to 27. 0^h Fluctuations in H.F. (± ·001) : in V.F. small.

27. $14\frac{1}{2}^h$ to 23^h Fluctuations in Dec. (± 7′) : in H.F. (± ·0012) : in V.F. small.

28. $14\frac{1}{2}^h$ to $17\frac{1}{2}^h$ Two successive irregular waves in Dec. (− 8′ and − 7′). $18\frac{2}{3}^h$ to $22\frac{1}{2}^h$ Irregular wave in Dec. (− 16′). 14^h to 22^h Fluctuations in H.F. (± ·002).

29. 2^h to 8^h Fluctuations in Dec. (± 3′) : in H.F. (± ·0005). 29. 12^h to 30. 4^h Fluctuations in Dec. (± 6′) : in H.F. (± ·0013) : in V.F. small.

30. $16\frac{3}{4}^h$ to 18^h Wave in Dec. (− 6′). 30. $22\frac{1}{3}^h$ to 31. $0\frac{1}{2}^h$ Wave in Dec. (− 4′). 30. 16^h to 18^h Fluctuations in H.F. (± ·0008).

EXPLANATION OF THE PLATES.

The magnetic motions figured on the Plates are—

(1.) Those for days of great disturbance—March 30–31, March 31–April 1, May 8–9, July 27–28.

(2.) Those for days of lesser disturbance—March 18–19, 19–20, April 11–12, 12–13, 13–14, 14–15, June 22–23, 29–30, August 23–24, September 9–10, 10–11, 11–12, 12–13, 13–14, October 6–7, 7–8, 8–9, 9–10, 10–11, November 2–3, 3–4, 4–5, 5–6, 6–7, November 30–December 1.

(3.) Those for four quiet days, January 17, April 9, August 29, November 19, 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 time is Greenwich Civil Time (commencing at 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 Junction, 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 March 18–19, 19–20, April 12–13, 13–14, 14–15, September 13–14, 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.

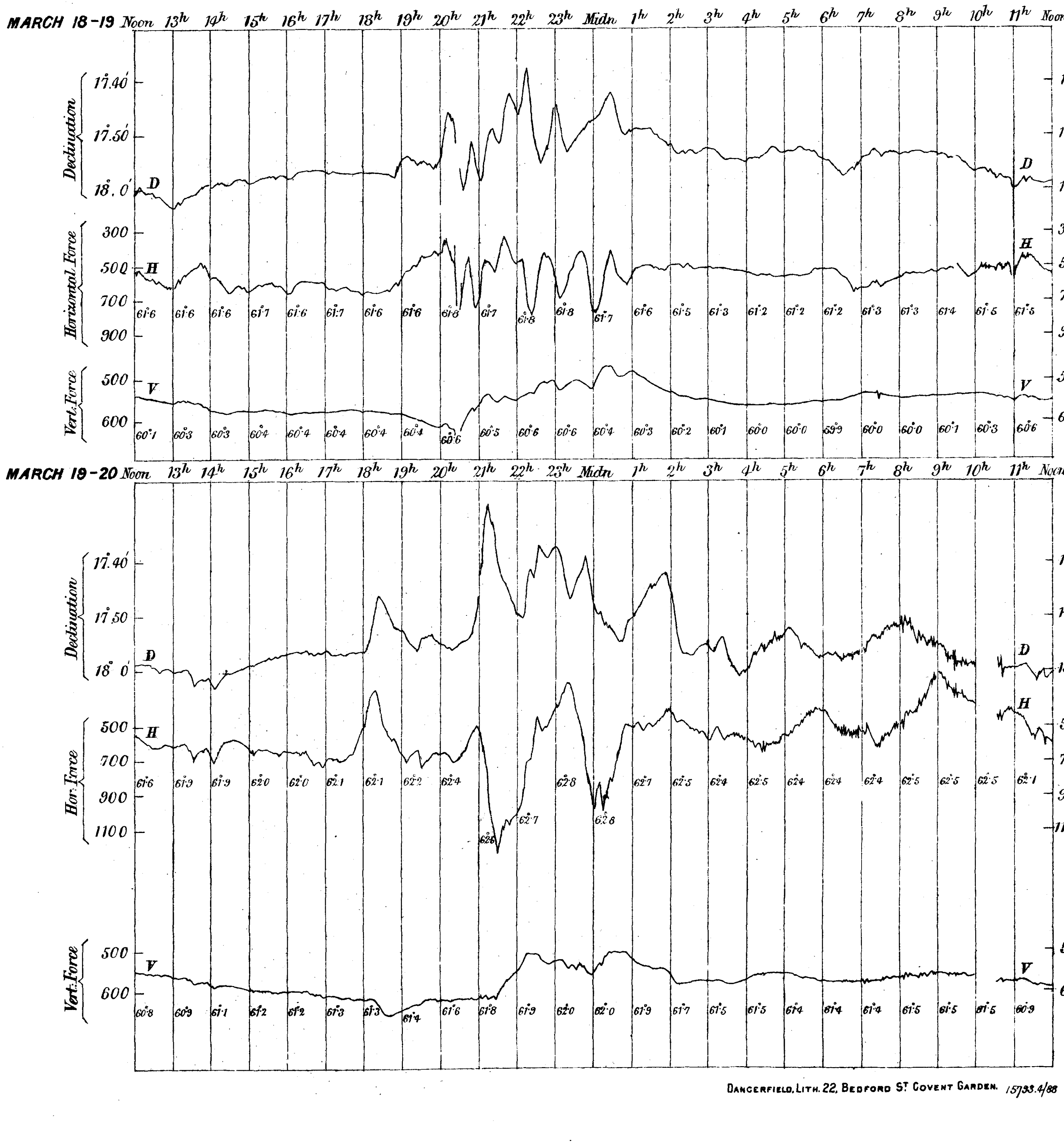
Downward motion of earth current register indicates in the E_1 circuit the passage of a current, corresponding to that from the copper pole of a battery, in the direction Angerstein Wharf to Lady Well (N.E. to S.W.), and in the E_2 circuit to the passage of a similar current in the direction Blackheath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

An arrow (↑) indicates that the register was out of range of registration in the direction of the arrow head.

The temperatures (Fahrenheit) of the horizontal and vertical force magnets at each hour are given in small figures on the Diagrams.

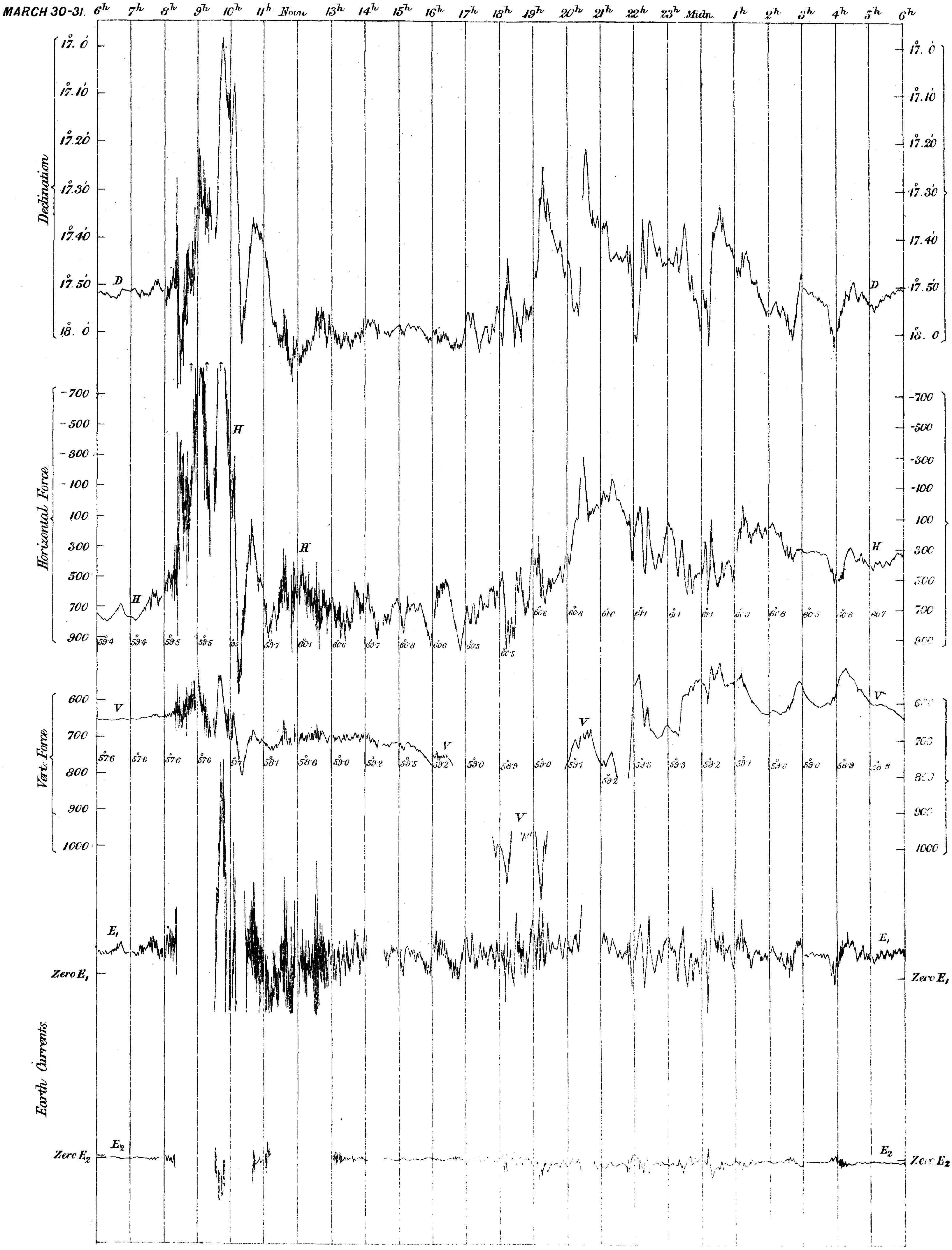
On March 30 between $16\frac{1}{2}^h$ and 20^h portions of the vertical force register were lost, and on May 8 and June 22 a little of the horizontal force register. There are other small interruptions not calling for special notice.

Magnetic Disturbances and Earth Currents recorded at the Royal Observatory, Greenwich, 1886.



Dangerfield, Lith. 22, Bedford St. Covent Garden. 15733.4/88

Magnetic Disturbances and Earth Currents recorded at the Royal Observatory, Greenwich, 1886.



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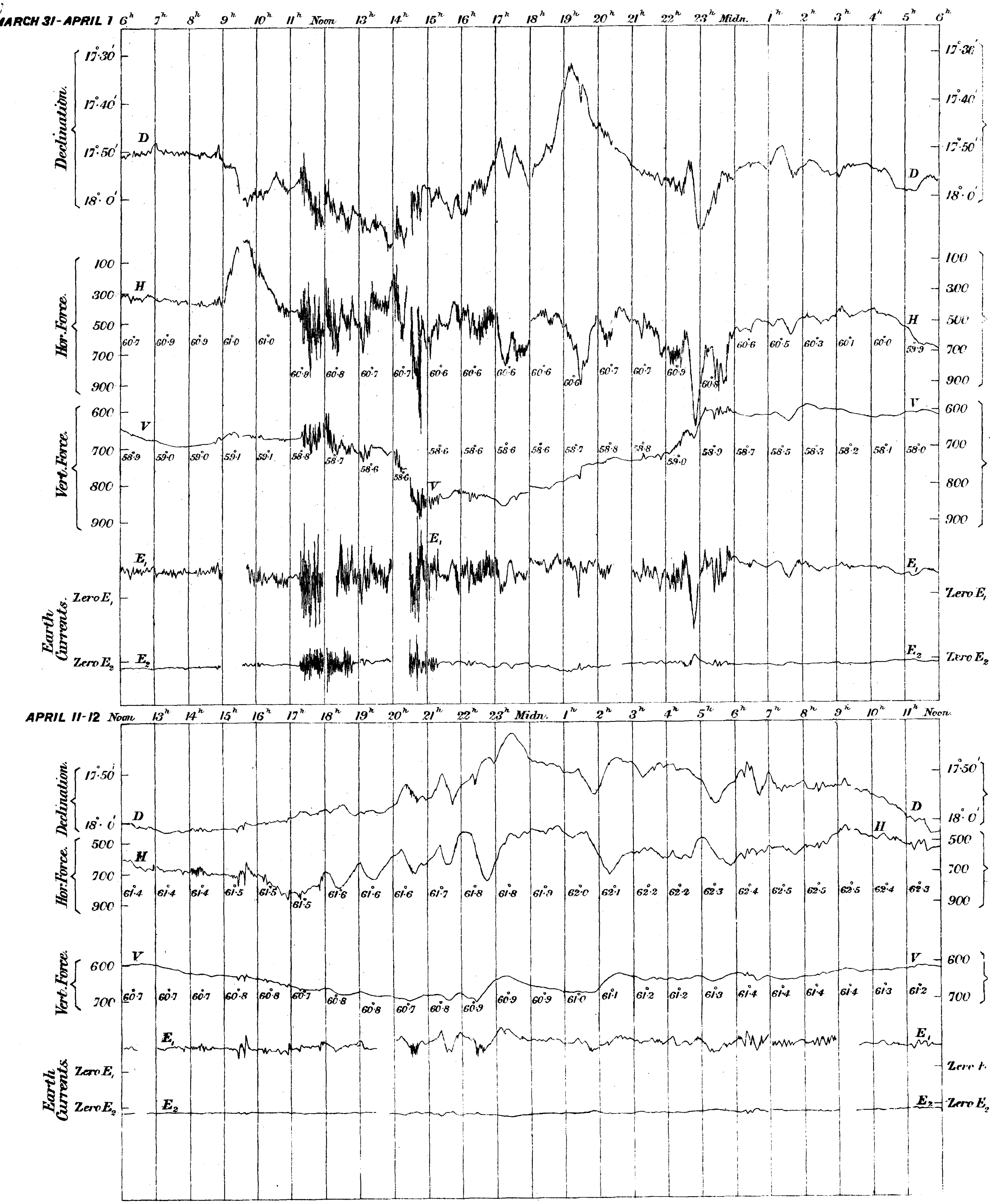
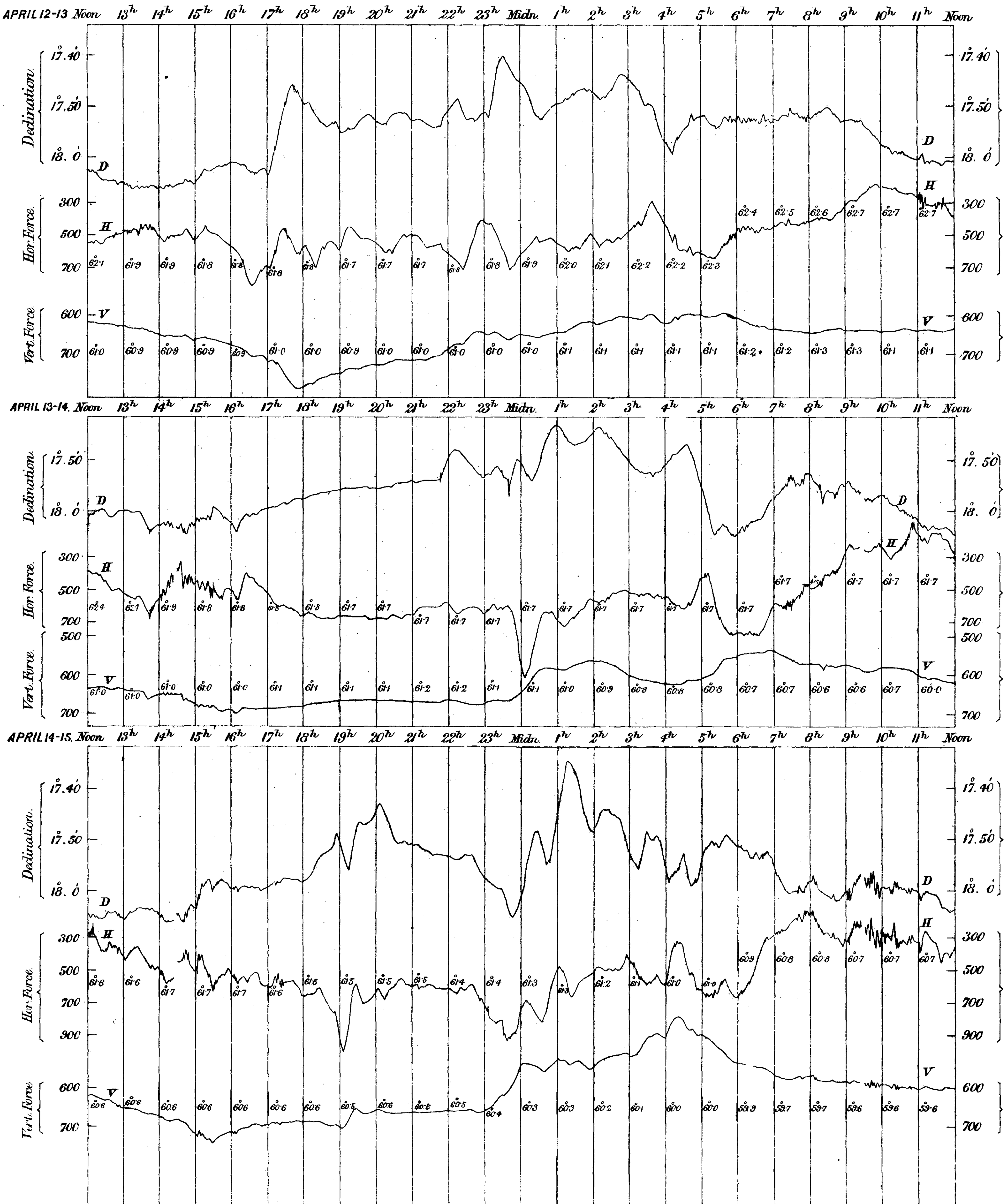
Magnetic Disturbances and Earth Currents recorded at the Royal Observatory, Greenwich, 1886.



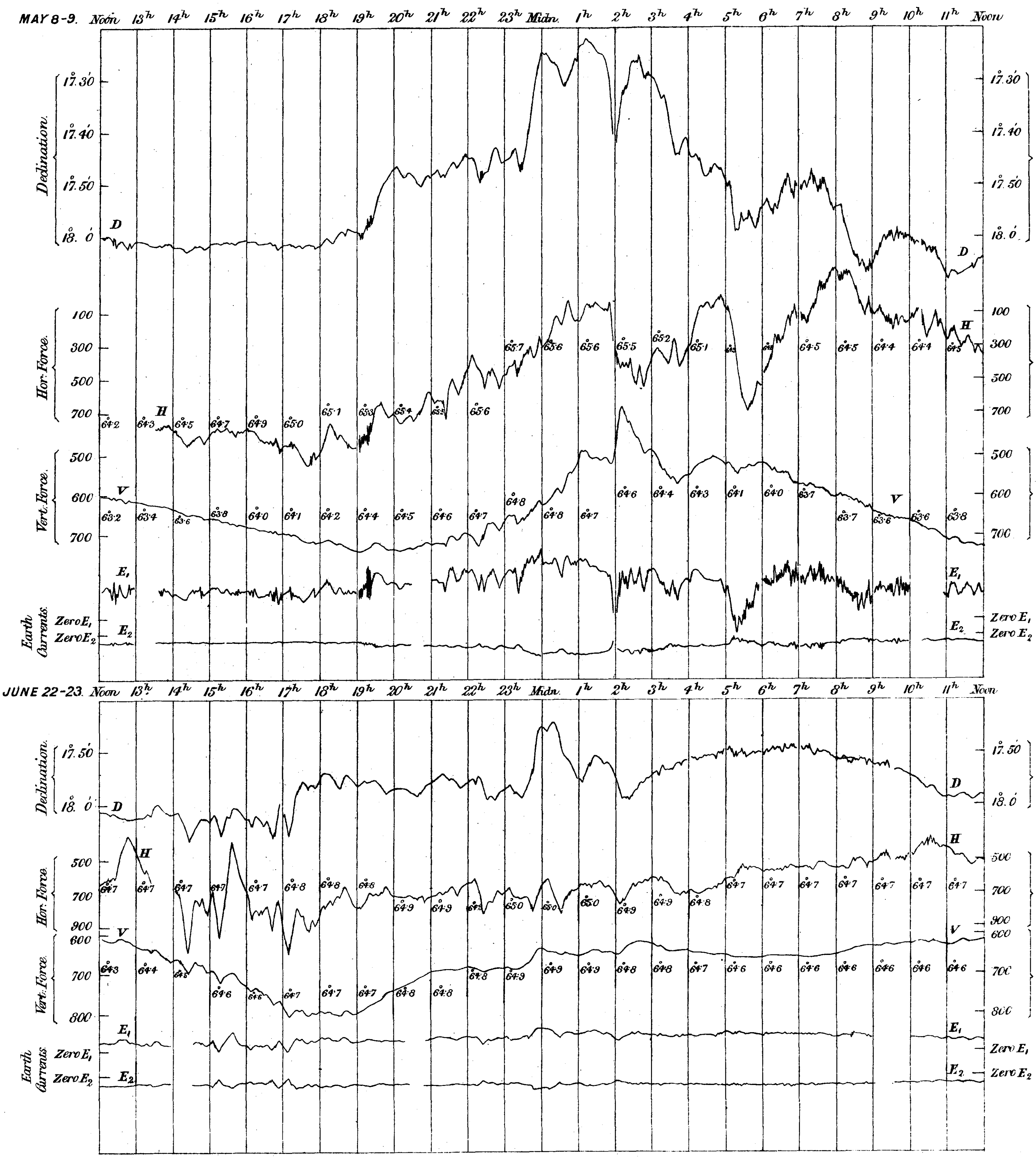
DANGERFIELD LITH. 22, BEDFORD ST. COVENT GARDEN. 15190. 4.88

Magnetic Disturbances and Earth Currents recorded at the Royal Observatory, Greenwich, 1886.



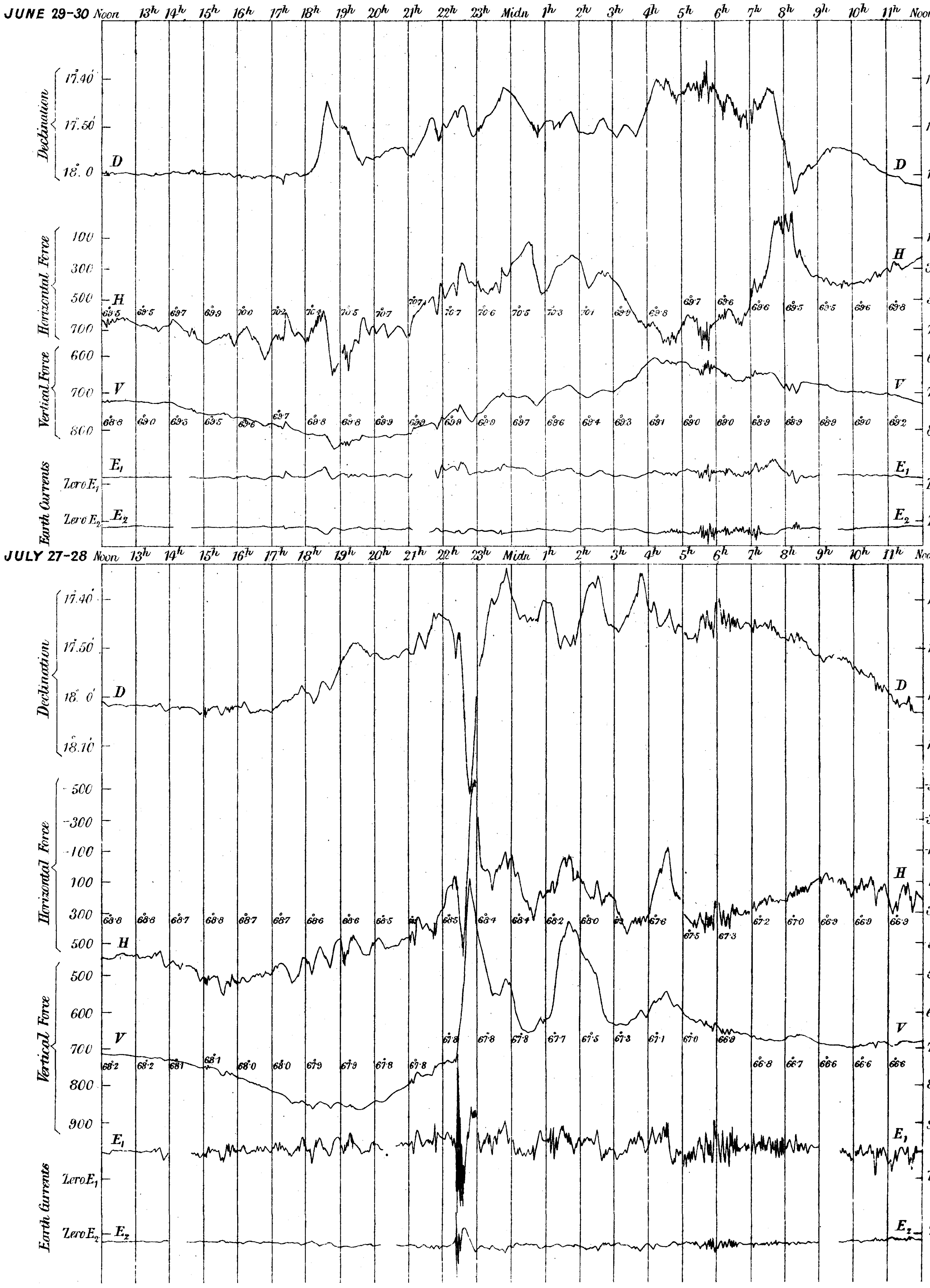
DANGERFIELD, LITH. 22, BEDFORD ST COVENT GARDEN. 4/88.15731

Magnetic Disturbances and Earth Currents recorded at the Royal Observatory, Greenwich, 1886.

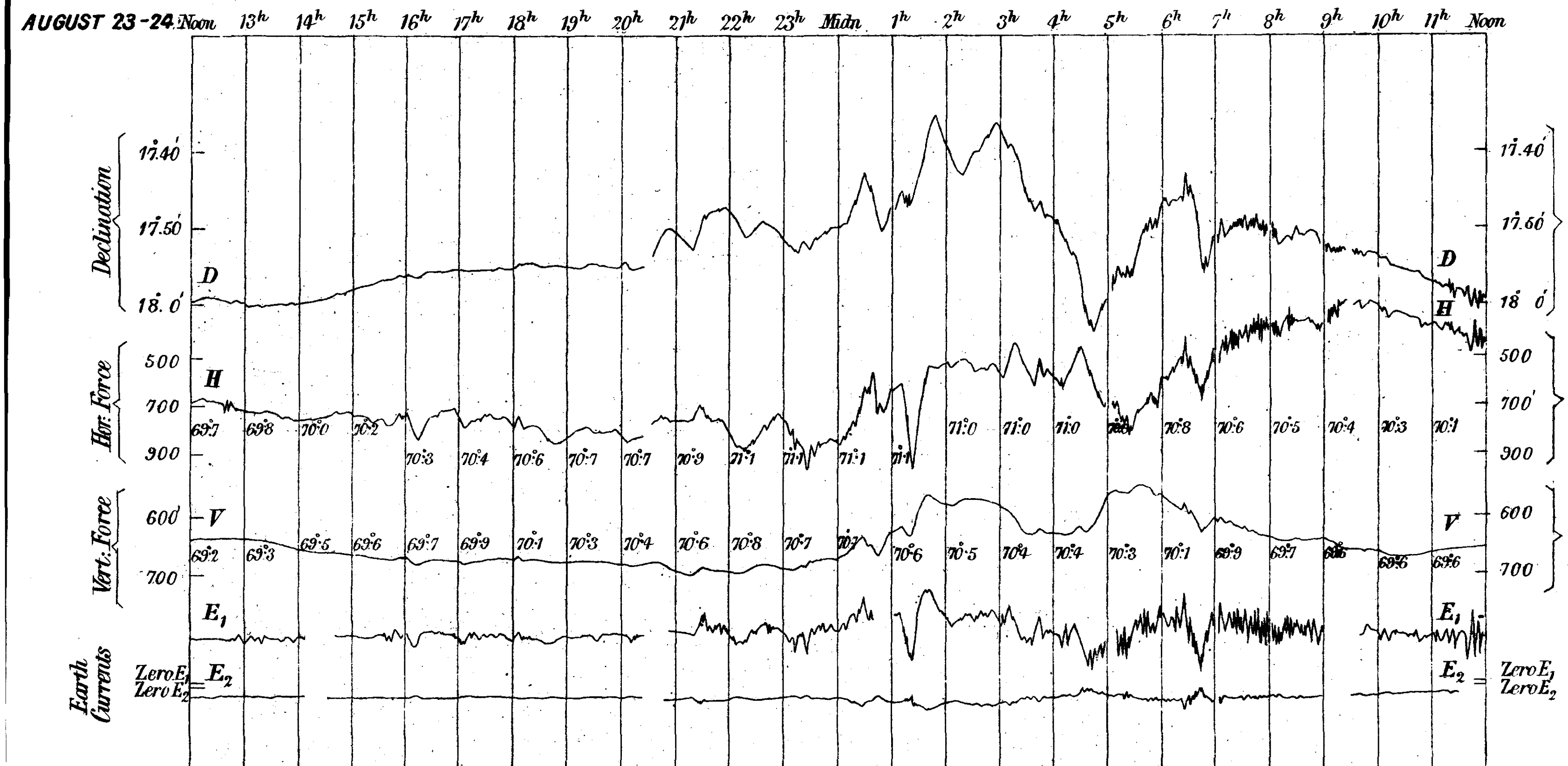


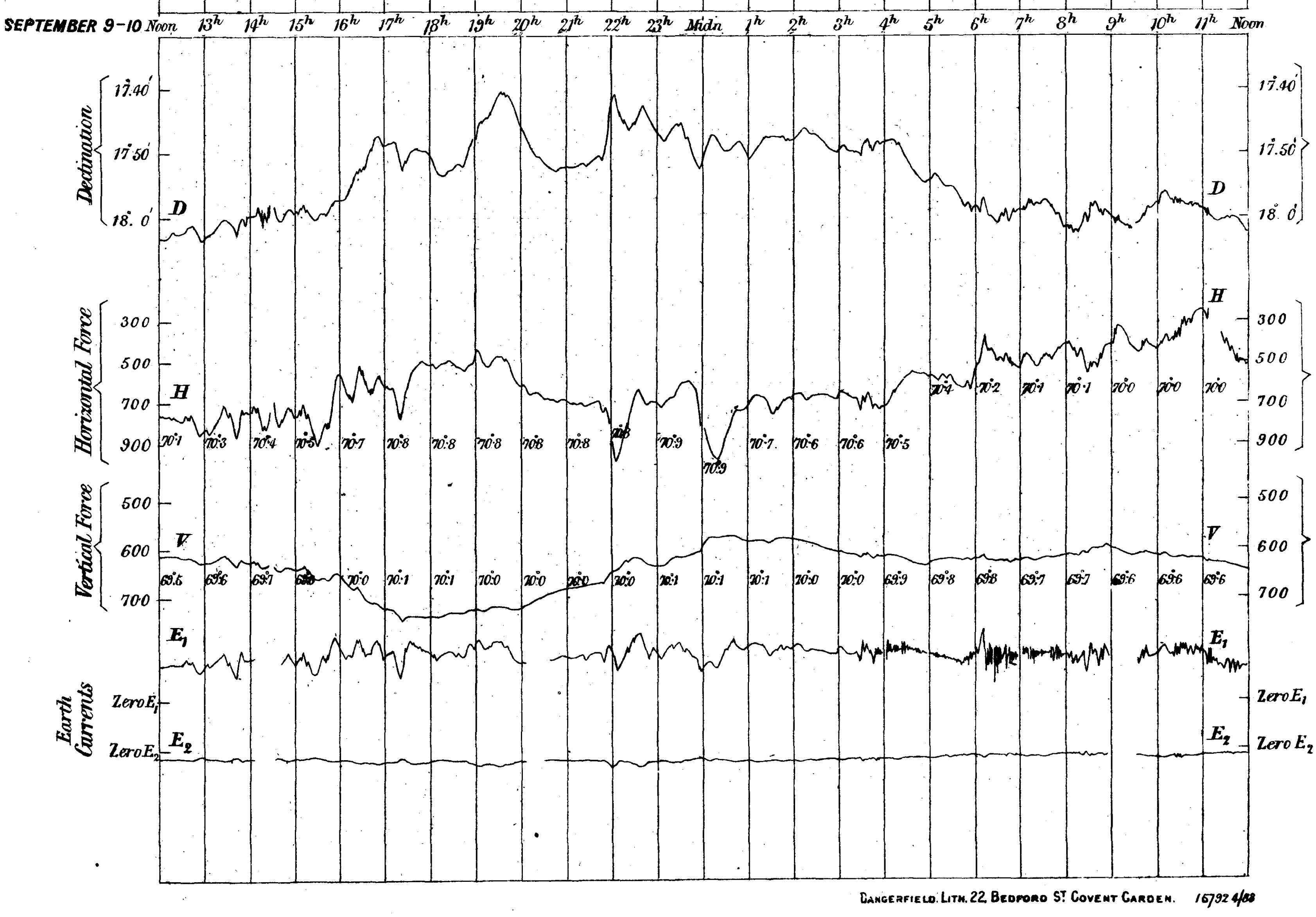
Dangerfield, Lith. 22, Bedford St. Covent Garden

Magnetic Disturbances and Earth Currents recorded at the Royal Observatory, Greenwich, 1886.



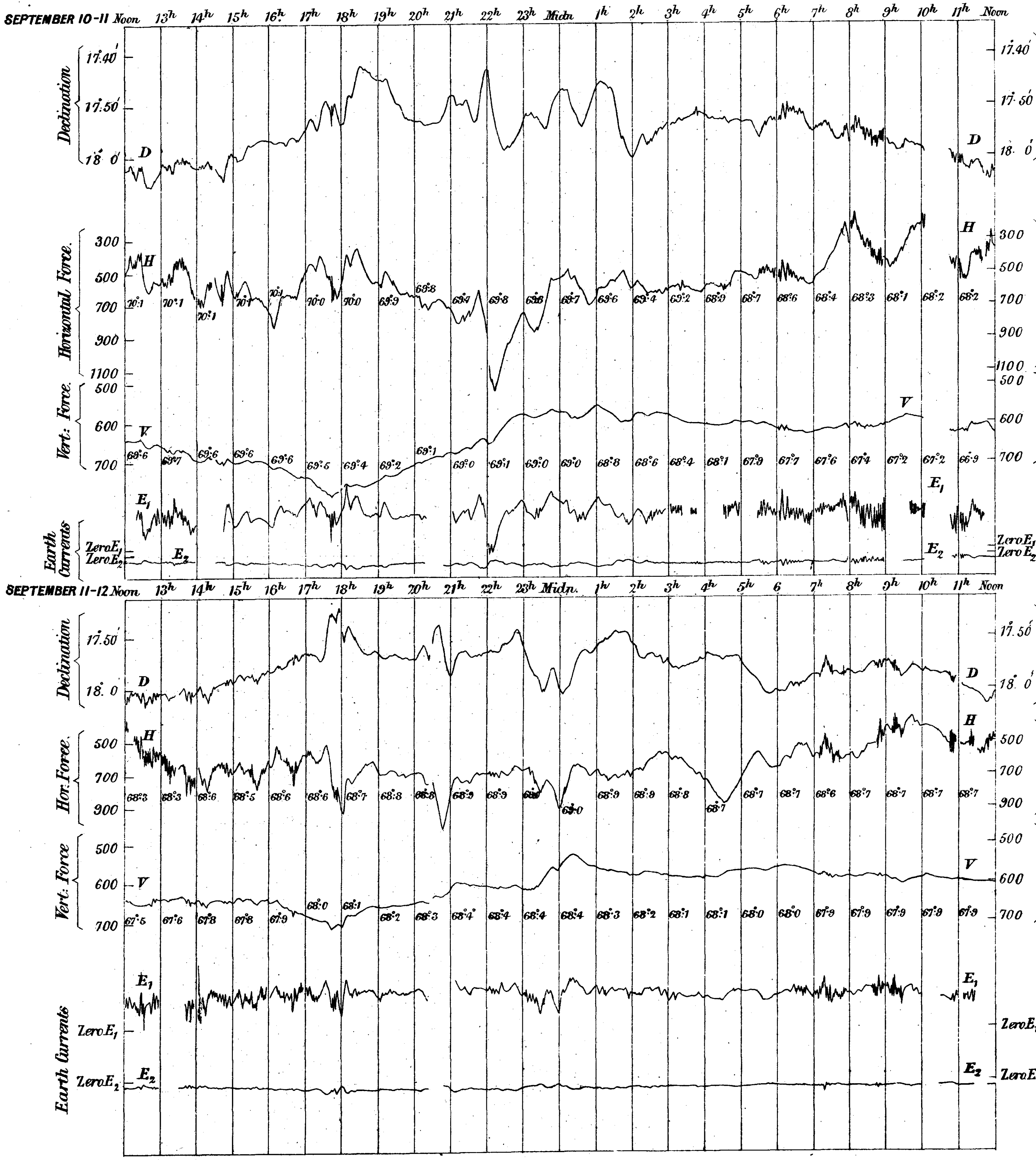
Magnetic Disturbances and Earth Currents recorded at the Royal Observatory, Greenwich, 1886.





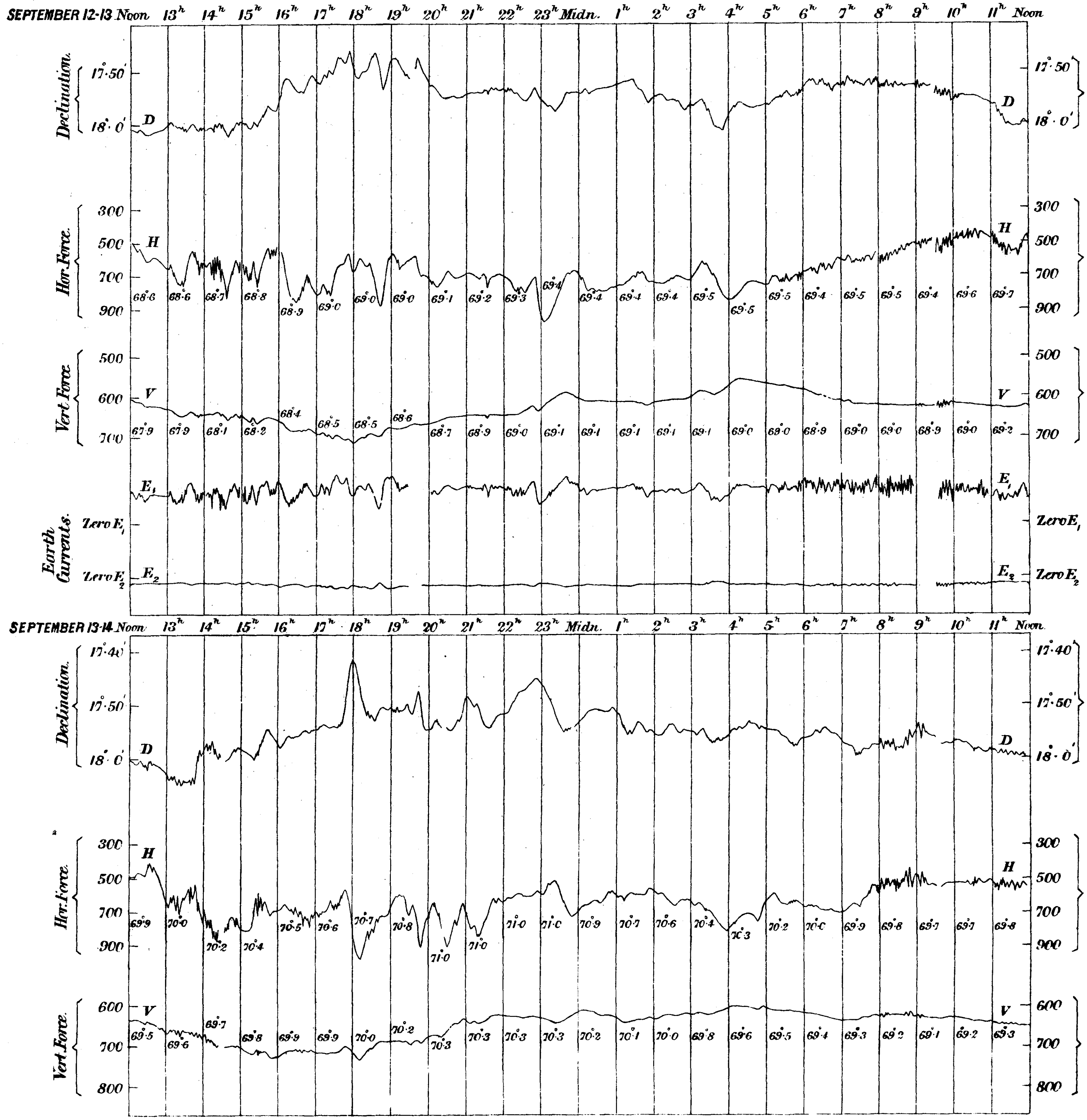
DANGERFIELD. LITH. 22, BEDFORD ST. COVENT GARDEN. 16792 4/88

Magnetic Disturbances and Earth Currents recorded at the Royal Observatory, Greenwich, 1886.



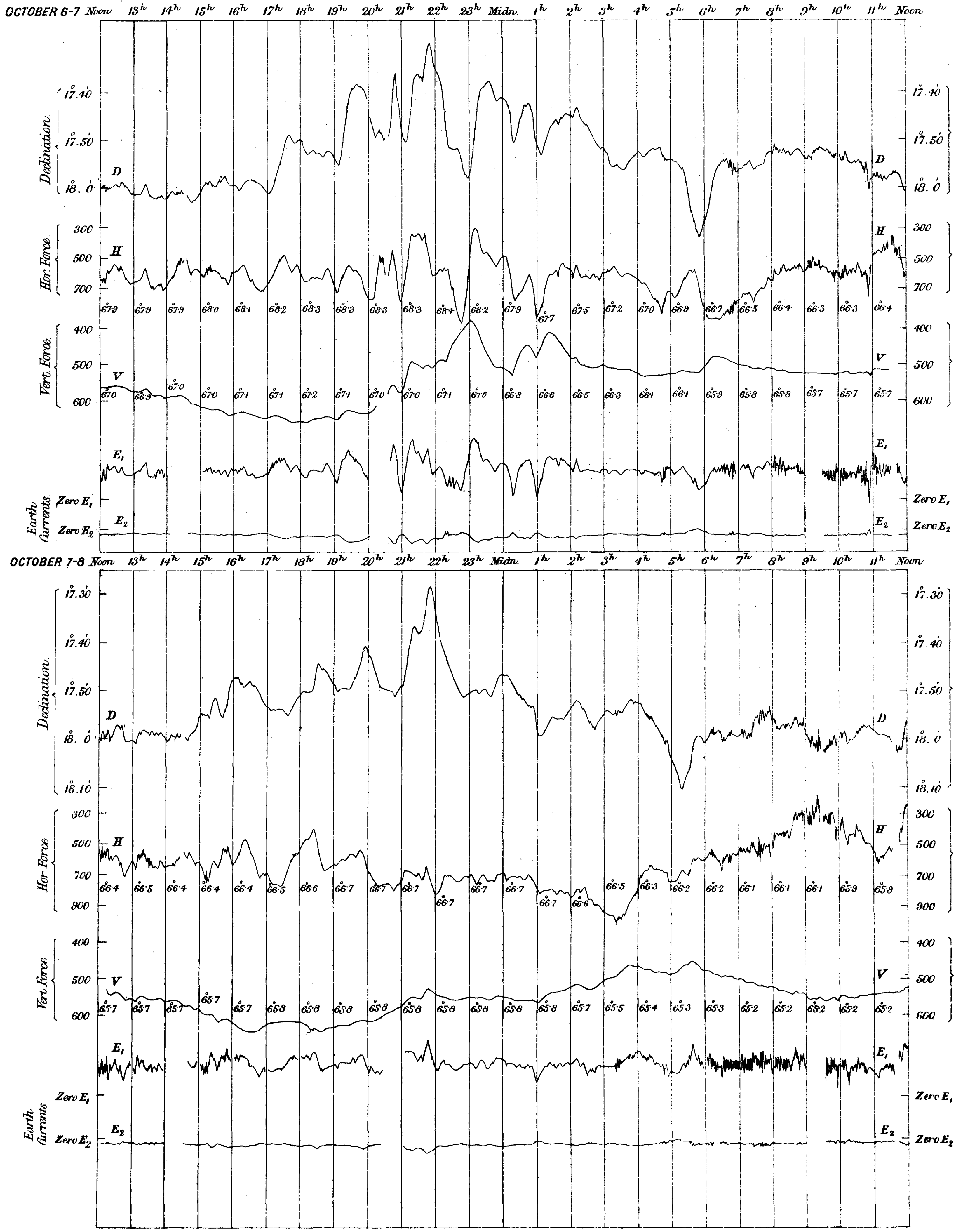
Dangerfield, Lith. 22, Bedford St. Covent Garden. 15792.4/88

Magnetic Disturbances and Earth Currents recorded at the Royal Observatory, Greenwich, 1886.



Dangerfield, Lith. 22, Bedford St. Covent Garden. 15790/4.88

Magnetic Disturbances and Earth Currents recorded at the Royal Observatory, Greenwich, 1886.



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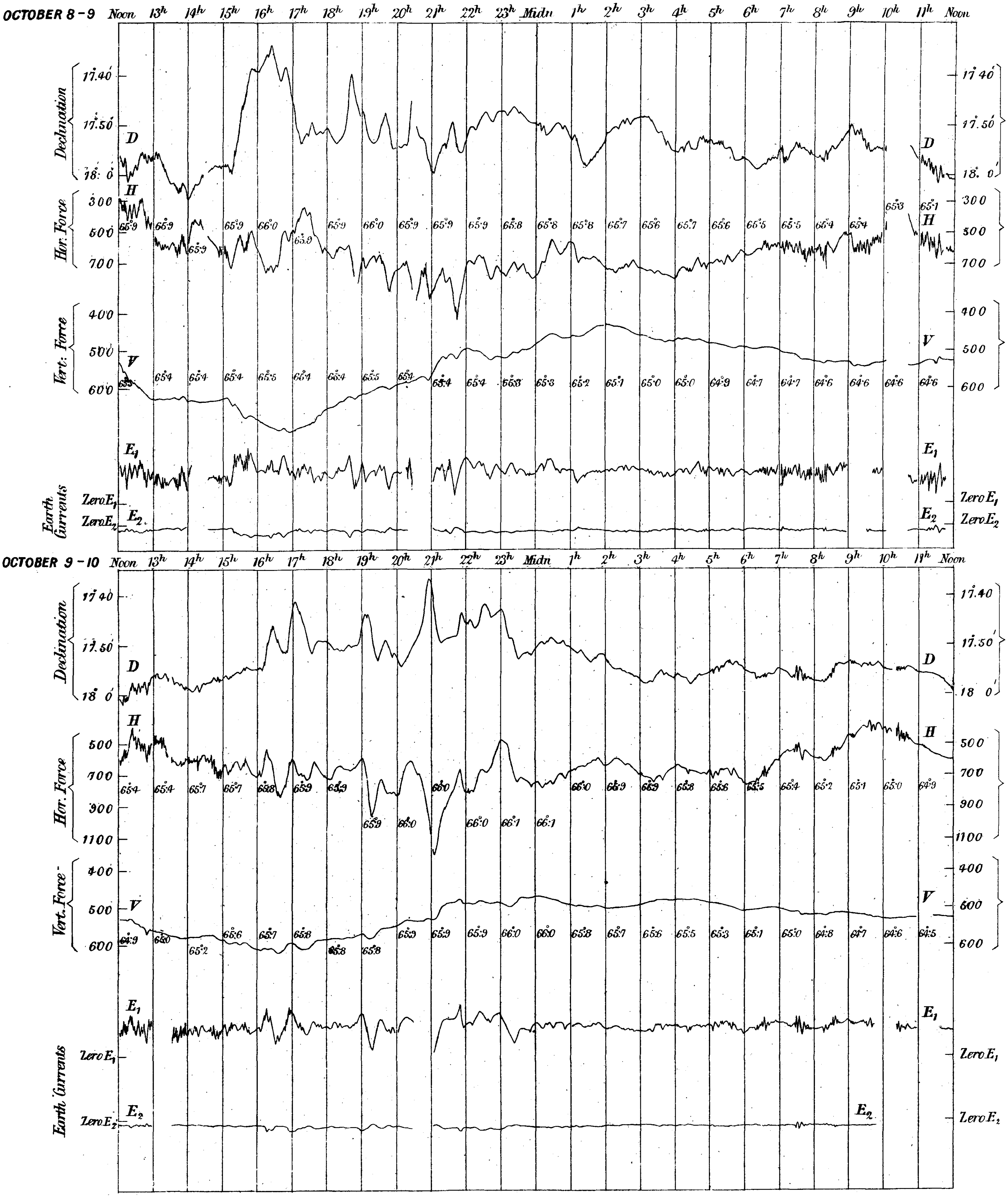
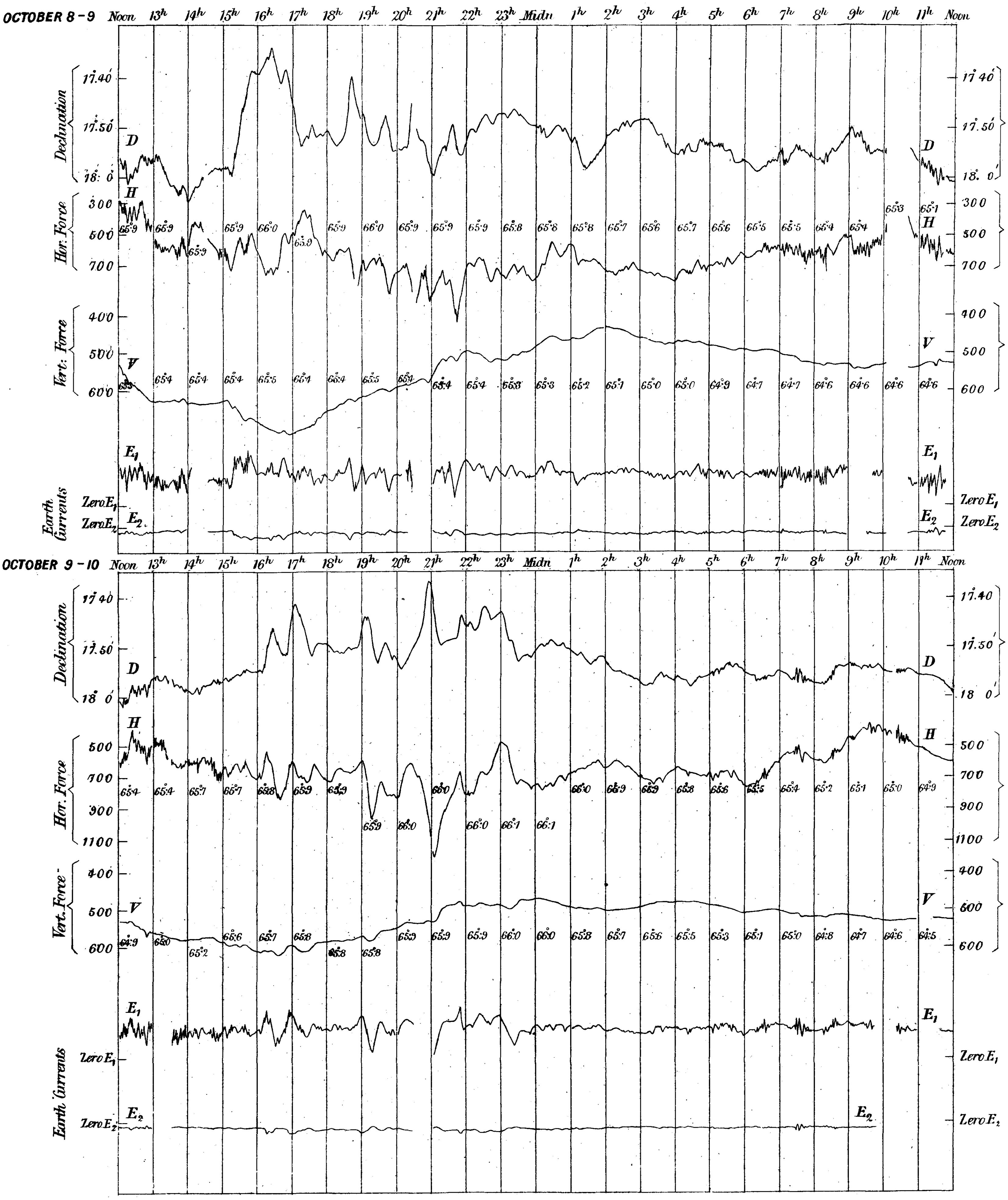
Magnetic Disturbances and Earth Currents recorded at the Royal Observatory, Greenwich, 1886.



DANGERFIELD, LITH. 22, BEDFORD ST. COVENT GARDEN. 15792 4/88

Magnetic Disturbances and Earth Currents recorded at the Royal Observatory, Greenwich, 1886.



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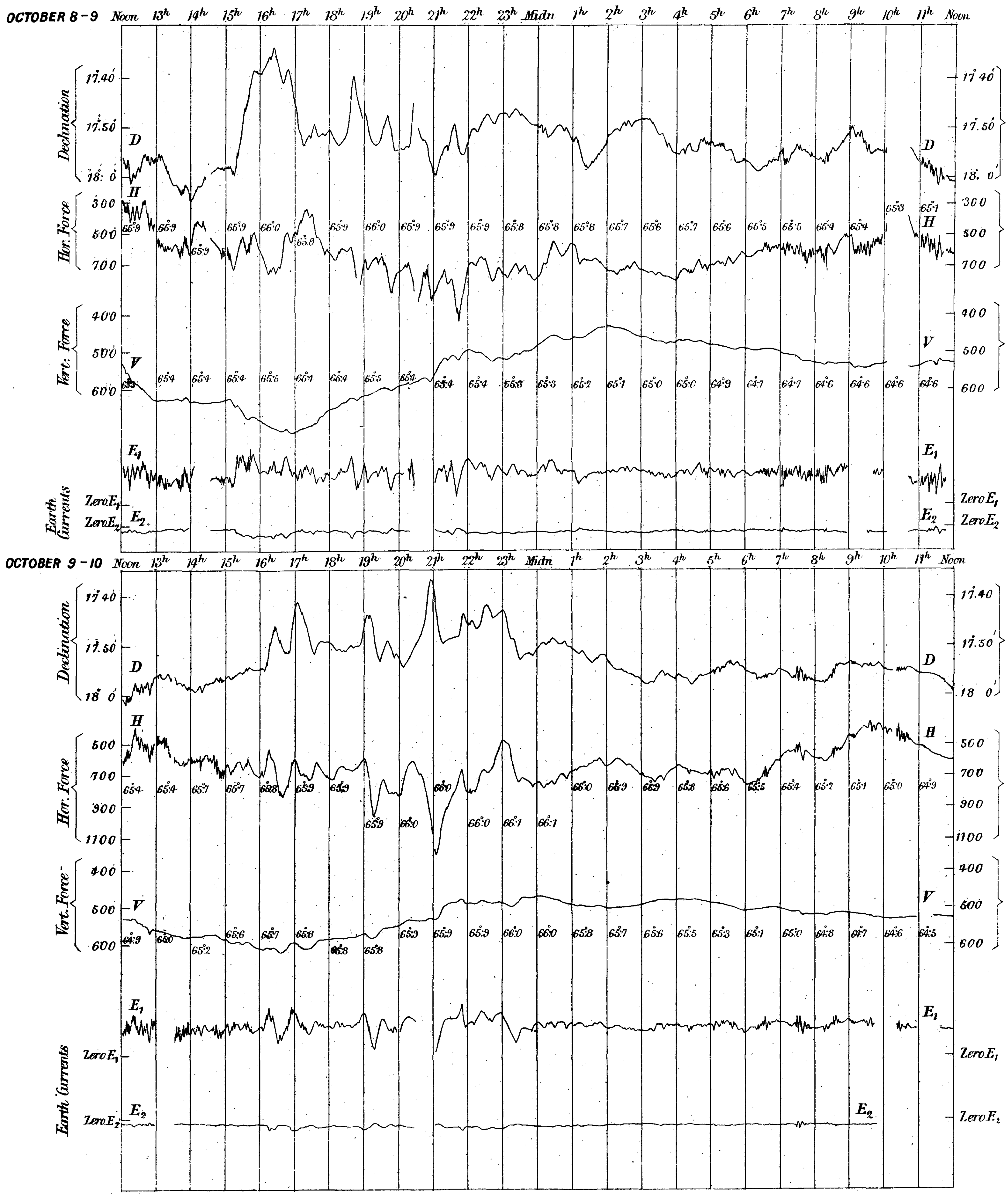
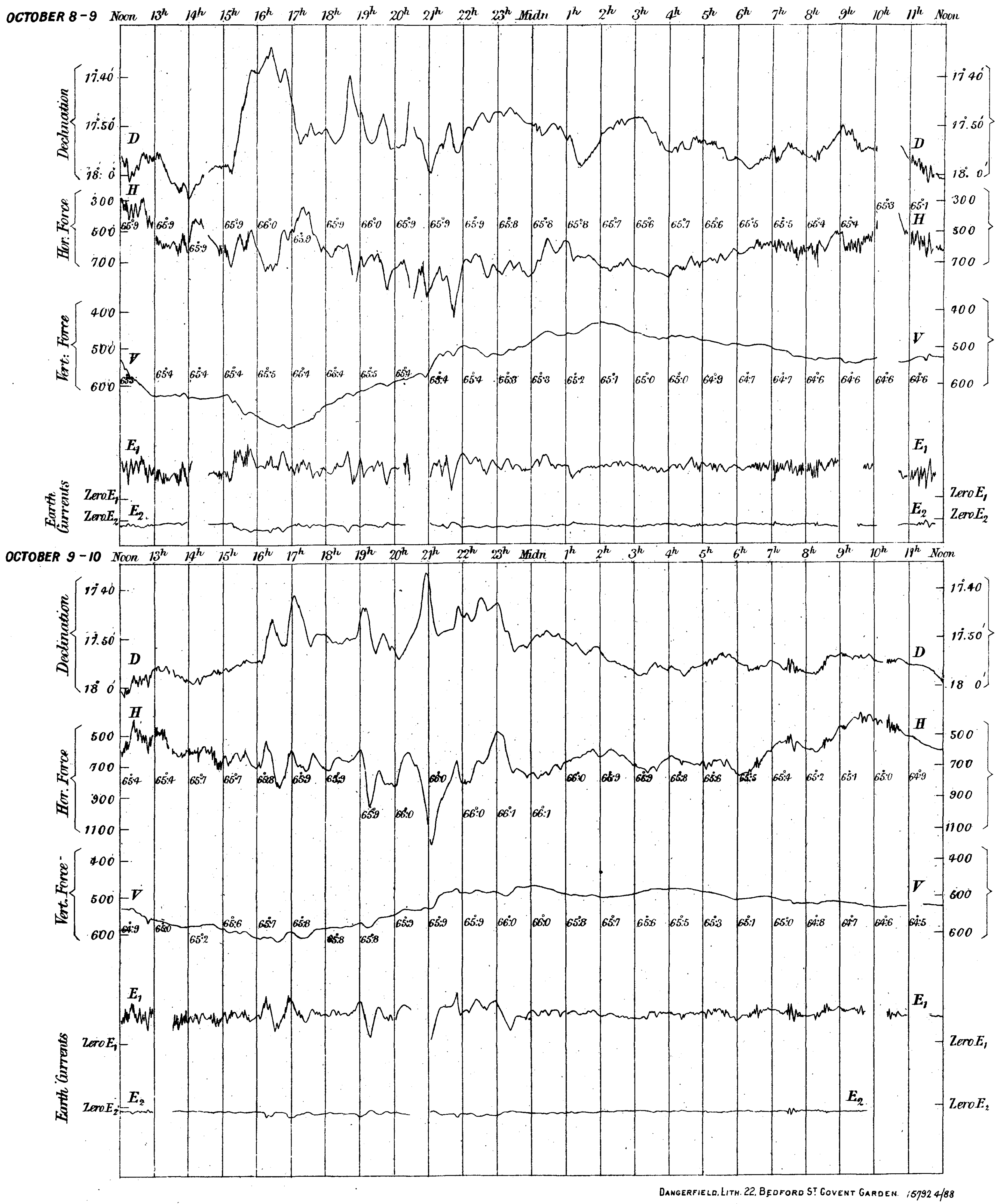


Dangerfield, Lith. 22, Bedford St. Covent Garden. 15792 4/88

Magnetic Disturbances and Earth Currents recorded at the Royal Observatory, Greenwich, 1886.



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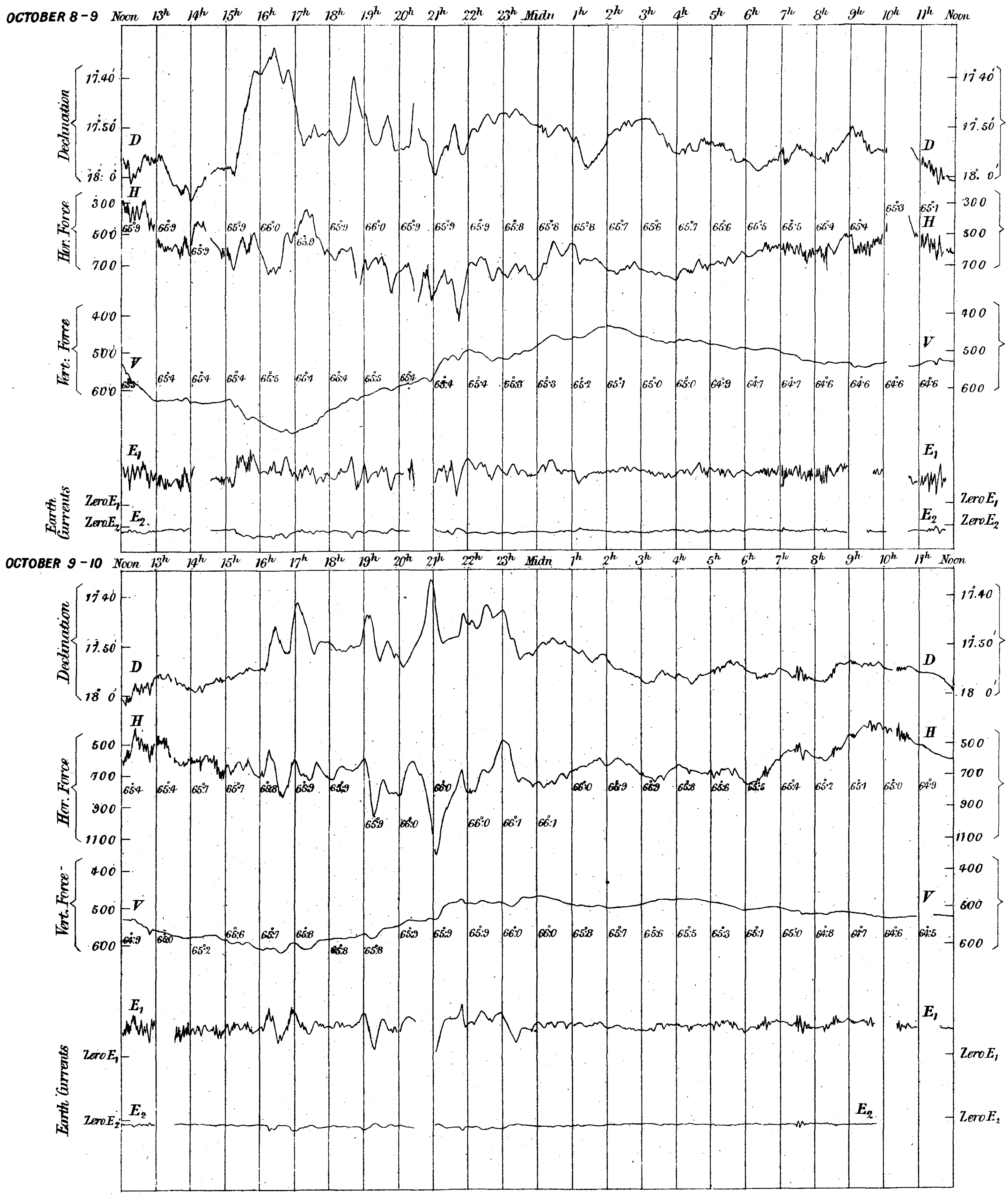
Magnetic Disturbances and Earth Currents recorded at the Royal Observatory, Greenwich, 1886.



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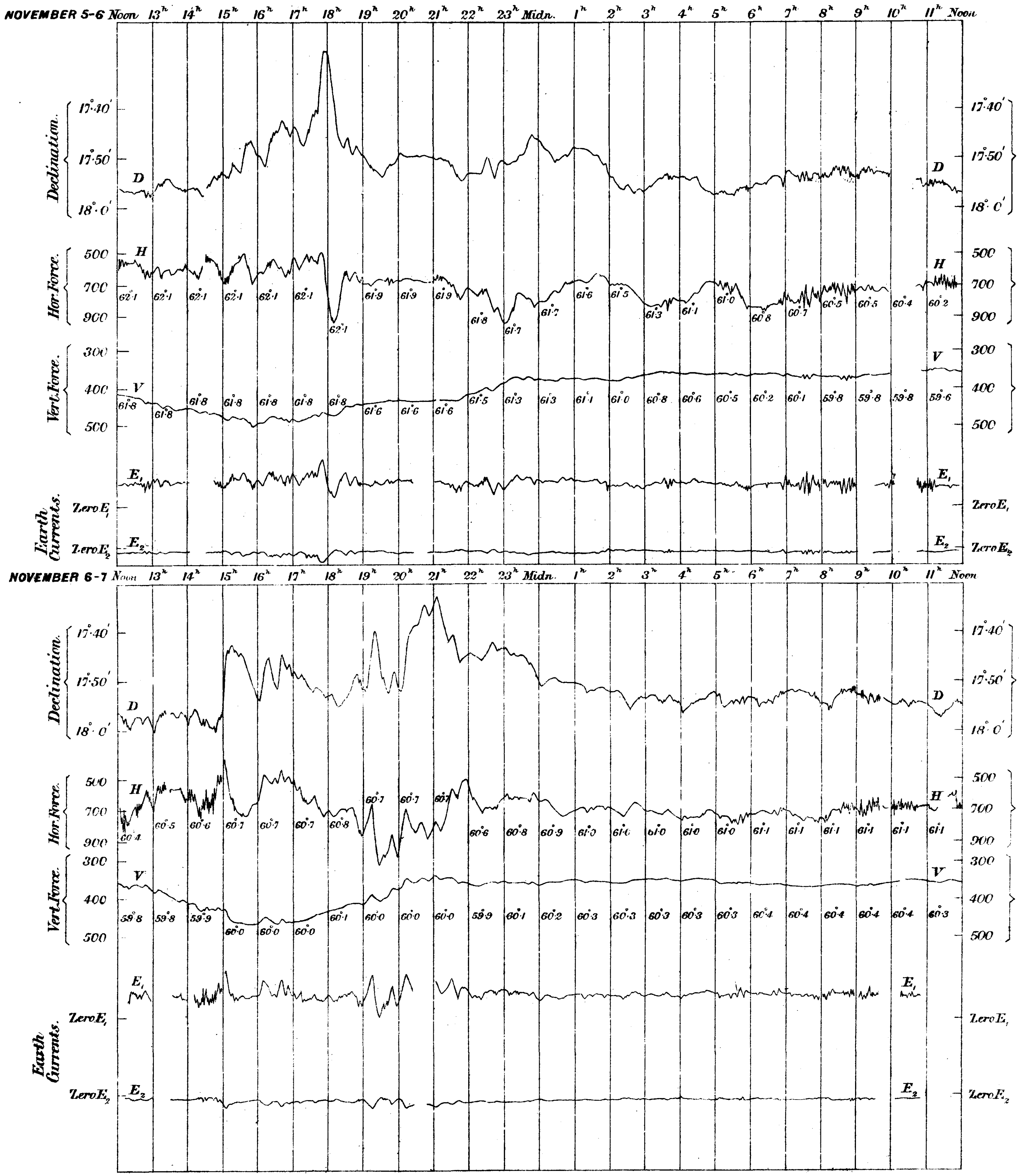
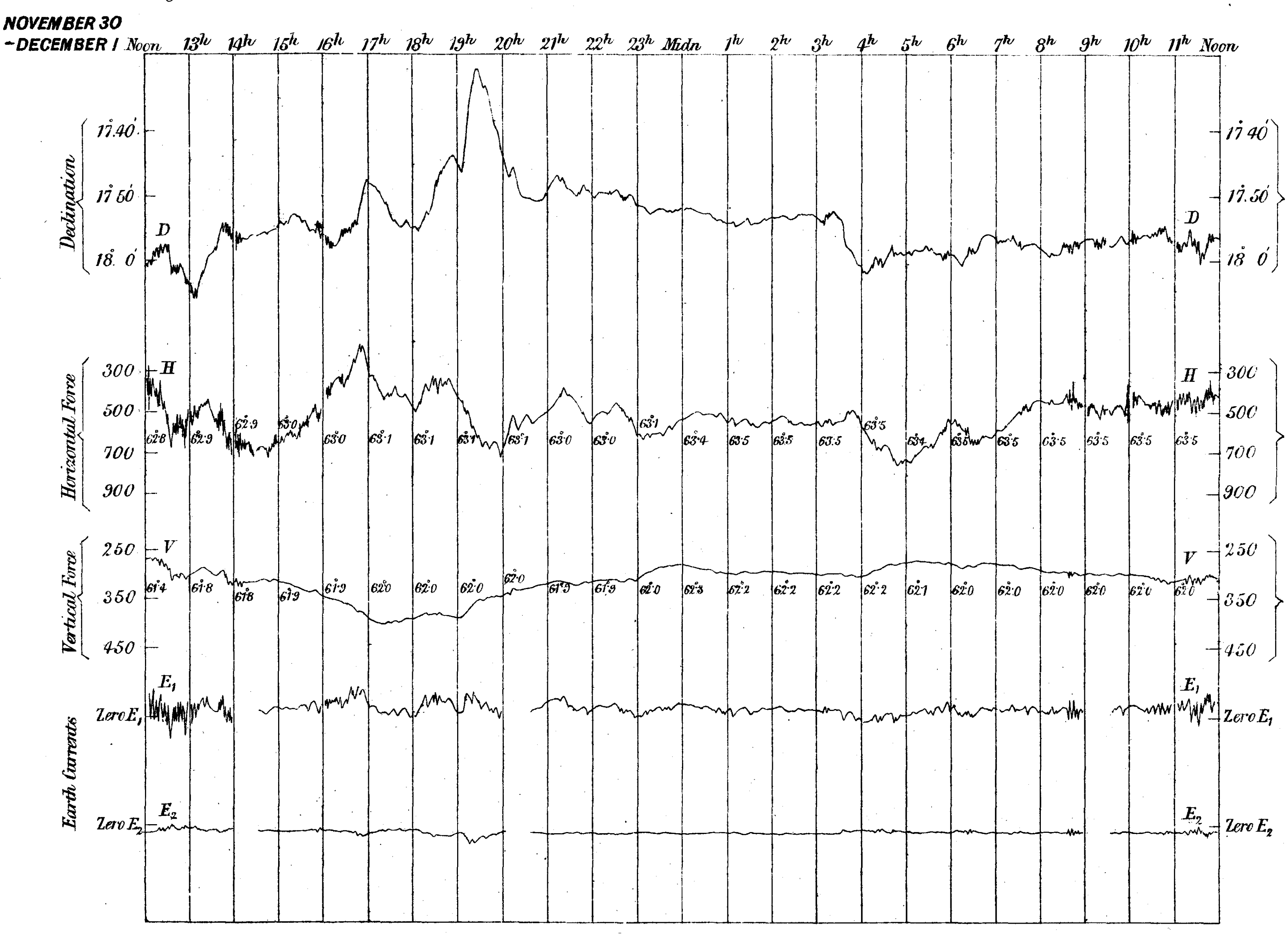
Magnetic Disturbances and Earth Currents recorded at the Royal Observatory, Greenwich, 1886.



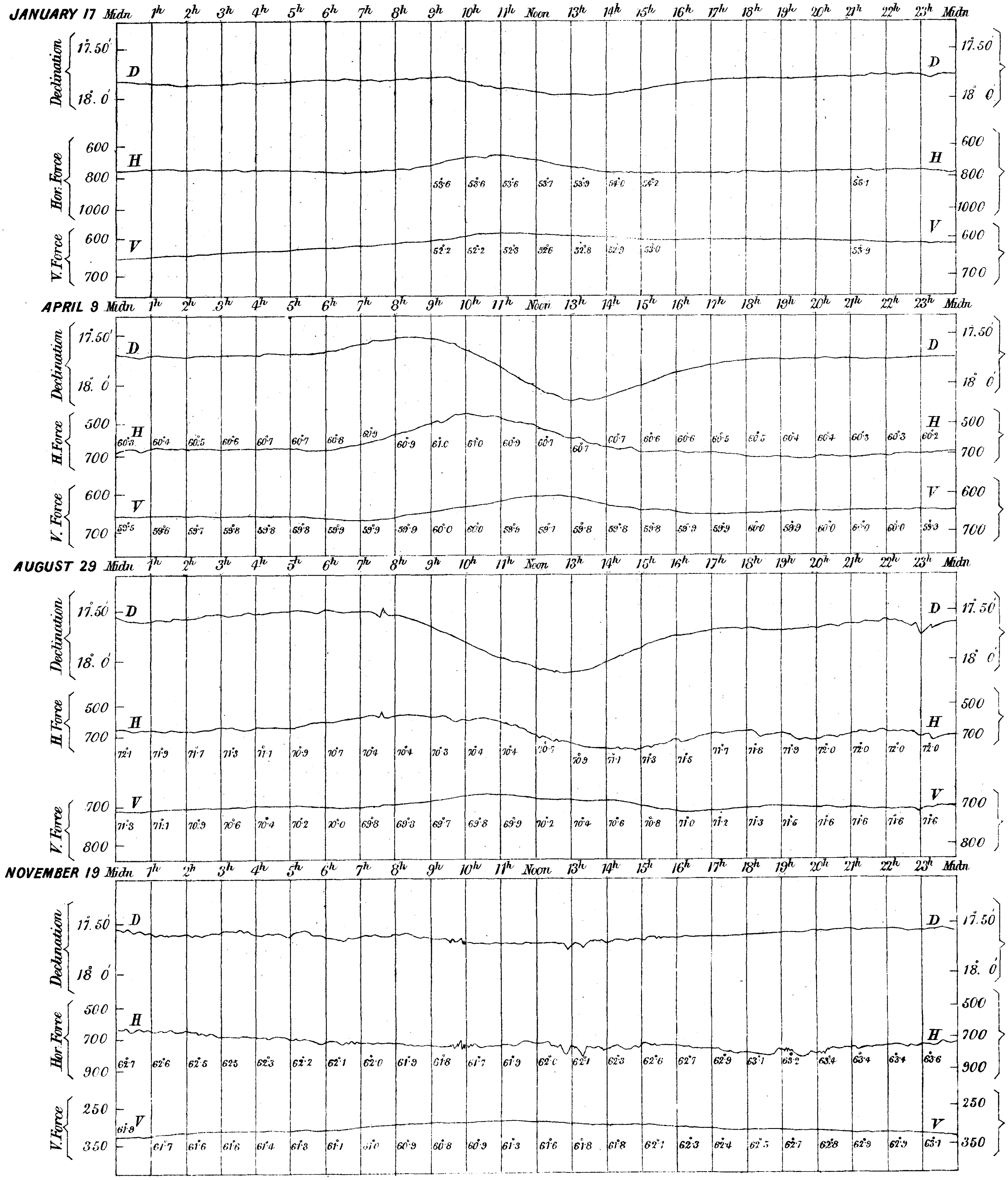
DANGERFIELD, LITH. 22, BEDFORD ST. COVENT GARDEN. 15190 (4.88)

Magnetic Disturbances and Earth Currents recorded at the Royal Observatory, Greenwich, 1886.



DANGERFIELD, LITH. 22, BEDFORD ST COVENT GARDEN. 15793 4/88

Types of Magnetic Diurnal Variations at four seasons of the year; recorded at the Royal Observatory, Greenwich, 1886.



DANGERFIELD, LITH. 22, BEDFORD ST. COVENT GARDEN. 15736 4/88

ROYAL OBSERVATORY, GREENWICH.

RESULTS

OF

METEOROLOGICAL OBSERVATIONS

1886.

MONTH and DAY, 1886.	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.		
Jan. 1	...	29·883	49·0	44·8	4·2	46·9	+ 8·8	46·2	45·4	1·5	2·5	0·4	95	52·8	41·9	39·4	38·9	0·042	0·0	wP, mN : wP
2	...	29·793	51·5	40·0	11·5	46·8	+ 8·9	45·3	43·6	3·2	6·5	1·7	89	62·3	35·5	39·4	38·9	0·000	3·0	wP : wP : vP
3	...	29·798	50·0	34·1	15·9	43·5	+ 5·7	42·5	41·3	2·2	4·0	0·2	92	56·0	31·1	41·0	40·9	0·000	1·7	sP : mP : wP
4	Greatest Declination S.	29·510	49·8	40·4	9·4	46·9	+ 9·2	46·2	45·4	1·5	3·6	0·4	95	55·7	38·0	41·9	40·4	0·315	6·0	wP, wN : wN, vP
5	New	29·471	41·2	33·9	7·3	38·0	+ 0·4	35·6	32·3	5·7	7·4	3·0	80	66·4	31·2	42·9	41·4	0·000	2·2	mP : mP, sN : mP
6	...	29·475	38·6	27·7	10·9	32·7	− 4·9	31·6	29·4	3·3	7·8	0·0	87	42·1	25·0	43·8	41·9	0·859	0·0	vP, ssN : sP
7	Apogee	29·900	29·0	16·5	12·5	24·6	−13·0	24·5	23·9	0·7	3·1	0·0	97	36·8	16·5	42·4	38·9	0·000	0·0	sP : vP
8	...	29·419	34·8	20·5	14·3	30·8	− 6·9	29·6	26·3	4·5	5·7	2·4	82	34·9	20·0	39·9	37·9	0·169	0·0	... : vP
9	...	29·687	34·9	25·0	9·9	30·8	− 6·9	28·8	23·2	7·6	10·6	4·0	72	48·8	21·3	37·1	36·5	0·000	0·0	wP
10	...	29·837	34·0	31·1	2·9	32·4	− 5·4	31·4	29·3	3·1	5·0	1·3	88	39·3	29·0	37·2	35·5	0·084	1·5	wP
11	In Equator	29·660	38·5	33·0	5·5	35·9	− 2·0	34·8	33·2	2·7	7·8	0·2	90	42·3	30·5	35·9	35·0	0·172	4·5	wN : vN, mP
12	...	29·875	36·0	29·8	6·2	33·4	− 4·7	31·5	27·9	5·5	8·9	1·2	80	55·2	27·3	35·9	35·5	0·115	0·0	wP : vP, mN
13	First Qr.	29·120	45·1	35·0	10·1	38·8	+ 0·6	37·5	35·8	3·0	7·8	0·0	89	46·9	31·1	35·4	35·0	0·195	0·0	wP, vN : vP
14	...	29·722	41·2	30·1	11·1	37·2	− 1·1	34·9	31·7	5·5	7·4	4·8	81	63·0	28·0	35·8	35·0	0·002	0·0	wP
15	...	29·572	46·4	32·0	14·4	40·9	+ 2·5	39·3	37·3	3·6	7·3	1·5	87	54·0	30·0	35·0	34·8	0·175	0·0	wP : wP, mN
16	...	29·462	42·5	32·3	10·2	37·9	− 0·6	35·6	32·5	5·4	9·9	2·1	81	69·8	30·2	35·9	35·5	0·397	1·7	wP : wP, sN
17	...	29·225	42·3	32·8	9·5	37·9	− 0·7	36·0	33·4	4·5	9·2	1·6	84	70·8	30·5	36·0	36·0	0·010	6·2	... : wP
18	Greatest Declination N.	28·915	41·2	29·0	12·2	34·9	− 3·9	33·5	31·3	3·6	7·5	1·1	86	44·0	25·0	36·4	35·0	0·168	3·0	sN, wP : vP
19	...	29·156	35·9	24·7	11·2	30·7	− 8·2	29·4	25·8	4·9	7·5	1·2	81	41·7	23·0	36·4	36·0	0·009	0·0	vP
20	Perigee: Full	29·318	34·3	26·4	7·9	30·7	− 8·4	29·7	27·0	3·7	6·4	0·5	85	53·3	22·9	35·9	35·2	0·000	0·0	wP
21	...	29·196	34·3	30·5	3·8	32·8	− 6·5	32·2	31·1	1·7	3·6	1·0	94	41·9	28·2	35·0	34·4	0·136	0·0	wP : vP
22	...	29·342	33·1	28·4	4·7	31·7	− 7·8	30·4	27·3	4·4	6·9	2·4	82	44·0	26·3	35·0	34·0	0·019	0·0	wP : vP
23	...	29·271	35·3	31·3	4·0	33·2	− 6·4	32·6	31·5	1·7	3·5	0·6	93	39·5	29·6	35·9	35·6	0·205	0·0	wP : wP, wN
24	In Equator	29·289	38·7	28·3	10·4	32·5	− 7·2	32·0	31·0	1·5	5·3	0·0	95	65·3	27·0	34·8	34·5	0·130	0·2	wP
25	...	29·155	40·1	30·3	9·8	36·1	− 3·7	35·8	35·4	0·7	1·9	0·0	97	50·5	30·0	35·0	34·2	0·144	2·2	wP
26	...	29·336	44·5	34·2	10·3	38·8	− 1·1	37·0	34·6	4·2	8·1	0·7	85	78·4	31·6	35·4	34·2	0·010	5·8	wN, wP : wP
27	Last Qr.	29·650	43·7	32·0	11·7	38·1	− 1·9	36·8	35·0	3·1	7·0	0·6	89	82·0	28·0	...	...	0·000	3·8	wP
28	...	29·722	44·2	25·2	19·0	34·0	− 6·1	33·2	31·8	2·2	6·2	0·0	91	91·0	24·2	36·3	35·0	0·000	1·8	vP : wP
29	...	29·482	42·1	32·8	9·3	37·7	− 2·5	36·2	34·2	3·5	7·4	1·1	87	49·8	29·1	35·5	34·6	0·041	5·2	wP : wN, wP
30	...	29·474	44·4	33·2	11·2	38·3	− 2·0	36·6	34·3	4·0	6·6	1·6	86	63·3	29·0	37·9	37·0	0·098	5·5	wP : wN, wP
31	Greatest Declination S.	29·143	47·0	34·1	12·9	39·6	− 0·8	37·6	35·0	4·6	9·7	1·3	84	69·2	31·2	36·9	36·6	0·184	3·5	wP : sN, wP
Means	...	29·479	40·8	30·9	9·8	36·3	− 2·5	35·0	32·8	3·5	6·5	1·2	87·2	55·2	28·5	(30 days) 37·4	(30 days) 36·5	Sum. 3·679	1·9	...
Number of Column for Reference.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

The results apply to the civil day.

The mean reading of the Barometer (Column 2) and the mean temperatures of the Air and Evaporation (Columns 6 and 8) are deduced from the photographic records. The average temperature (Column 7) is that determined from the reduction of the photographic records from 1849 to 1868. The temperature of the Dew Point (Column 9) and the Degree of Humidity (Column 13) are deduced from the corresponding temperatures of the Air and Evaporation by means of Glaisher's Hygrometrical Tables. The mean difference between the Air and Dew Point Temperatures (Column 10) is the difference between the numbers in Columns 6 and 9, and the Greatest and Least Differences (Columns 11 and 12) are deduced from the 24 hourly photographic measures of the Dry-bulb and Wet-bulb Thermometers. The results for January 5 to 14 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 $29^{\text{in}}{\cdot}479$, being $0^{\text{in}}{\cdot}250$ *lower* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 51°·5 on January 2; the lowest in the month was 16°·5 on January 7; and the range was 35°·0.
The mean of all the highest daily readings in the month was 40°·8, being 2°·4 *lower* than the average for the 45 years, 1841–1885.
The mean of all the lowest daily readings in the month was 30°·9, being 2°·7 *lower* than the average for the 45 years, 1841–1885.
The mean of the daily ranges was 9°·8, being 0°·3 *greater* than the average for the 45 years, 1841–1885.
The mean for the month was 36°·3, being 2°·5 *lower* than the average for the 20 years, 1849–1868.

MONTH and DAY, 1886.	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.		
Jan. 1	0·0	7·9	WSW	WSW	3·5	0·0	0·69	351	10 : 10, oc.-r	10 : 10 : v
2	0·2	7·9	W : WSW	W : WNW : WSW	4·7	0·0	1·05	367	p.-cl : 10	6,cu.-s,th.-cl : 0, slt.-h : v
3	0·0	7·9	WSW : SW	SW	11·5	0·0	1·90	450	v : p.-cl : 10	10 : 10, st.-w
4	0·0	7·9	SW : WSW	WSW : WNW	10·7	0·0	1·95	457	10, st.-w : 10,hy.-r,st.-w : 10, slt.-r	10, c.-r : 10, fq.-r : vv
5	4·2	7·9	WSW	WSW	10·1	0·3	3·33	626	v : 0, ho.-fr, w	v, ci.-cu, cu.-s, slt.-sn, st.-w : v, w
6	0·0	8·0	WSW : ESE : ENE	NE : NNE	3·5	0·0	0·29	314	10 : 10, sn	9, slt.-sn : 1 : 0
7	0·0	8·0	N : NNE	NNE : SW	0·2	0·0	0·01	141	0, fr : p.-cl, m : 10, glm, slt.-sn	v, li.-cl, f : p.-cl, f : p.-cl, f
8	0·0	8·0	SW : NW	WNW : WSW : W	5·1	0·0	1·01	430	10 : 10, r, sn : v, r, sn	1, li.-cl : 0, m, fr
9	0·6	8·1	NW : NNW	NNW	9·0	0·0	1·69	431	v : v, li.-cl, w	8,ci.-cu,cu.-s,slt.-sn : v : 10
10	0·0	8·1	NE : N	SW : S	0·6	0·0	0·03	141	10 : 10	10, f, slt.-sn : 10, sn
11	0·0	8·1	S : SSW	NNE : N	6·7	0·0	0·96	331	10, r : 10, r	10, fq.-th.-r : v
12	0·6	8·2	N : NNW	WNW : WSW	3·0	0·0	0·57	331	0 : 0 : 2, li.-cl	10, slt.-sn : 10, r : 10, r
13	0·0	8·2	SW : NNW	NNW	10·5	0·0	2·03	482	10 : 10, gt.-glm, hy.-r, sq	9,cu.-s,oc.-r,w : 0, w : p.-cl
14	2·3	8·2	N	N : NW : SW	9·0	0·0	2·76	413	10, w : 10, w : p.-cl, w	5,ci.-cu, li.-cl : v, li.-cl, h : 1,li.-cl,h,lu.-co,f
15	0·0	8·3	SW	SW : NW : WSW	8·0	0·0	1·70	494	p.-cl : 10, w	10, slt.-r, w : 10, fq.-r : p.-cl, li.-sc
16	5·2	8·3	WSW	SW : SSW	10·0	0·0	1·63	491	p.-cl : 0, ho.-fr	4, li-cl : 8, cu.-s : 10,hy.-r,sn,st.-w
17	4·0	8·3	SW	SW	4·2	0·3	0·86	474	v, r, sn : 0	v, li.-cl : v, slt.-r
18	0·0	8·4	SW : WSW : NW	N : NW : WSW	4·5	0·0	0·19	244	10, r, sn : 10, cu.-s	9,cu.-s,li.-cl : 8, th.-cl : 2,th.-cl,h,ho.-fr
19	0·5	8·4	WSW : SW : SSW	SW : S : SE	0·1	0·0	0·00	149	0, ho.-fr : 6, li.-cl, cu.-s	10, sn : p.-cl : v, cu.-s, li.-cl, ho.-fr
20	4·7	8·5	SE	NE : N	1·3	0·0	0·02	143	v, ho.-fr : 1, li.-cl, ho.-fr	3, cu, h : p.-cl : 10,slt.-sn,lu.-ha
21	0·0	8·5	NNW : NNE	NE	0·8	0·0	0·10	251	10, sn : 10, sn, sl	10, slt.-sn : 10, fr
22	0·0	8·6	E : NE	NE : N	2·8	0·0	0·21	288	10 : 10, slt.-sn	10 : 10, slt.-sn
23	0·0	8·6	NW : N	N : SW	0·8	0·0	0·09	192	10, sn : 10, slt.-sn	10, slt.-r : 10, slt.-sn, f
24	2·2	8·7	SSW : S	SE : ENE	1·1	0·0	0·02	171	10 : 10, sn	p.-cl, cu.-s : v : 10, sn
25	0·0	8·7	E : ESE	ESE : E	1·9	0·0	0·08	202	10, r : 10, slt.-r, tk.-f	10 : v : v, sh.-r
26	3·6	8·8	SE : SW	S : SE	7·4	0·0	0·50	278	10, oc.-r : p.-cl, w : 0	4, ci.-cu, cu.-s : v, li.-cl
27	5·2	8·8	SSE : SE	SE	0·6	0·0	0·01	155	p.-cl : 3, th.-cl, slt.-f	1, li.-cl : 0, slt.-f
28	2·9	8·9	Calm : S	SSW : SSE	1·3	0·0	0·04	159	0,f, ho.-fr : 0,tk.-f,ho.-fr : 3,ci.-cu,li.-cl,f	7, ci.-cu, cu.-s : v, fr
29	0·0	8·9	SSE	SSE : WSW : WNW	5·3	0·0	0·57	352	ho.-fr : 10	10, fq.-th.-r : 10, fq.-th.-r : v
30	0·0	9·0	WSW : SW	SW	17·5	0·0	2·22	527	0 : v, slt.-r, w	10, sc, fq.-r, st.-w : 2 : v, r, fr.-r
31	0·1	9·0	SW	WSW : W	8·3	0·2	1·31	568	v : 10, fq.-r, w	10, sh.-r, hl, w : v, w : 0
Means	1·2	8·4	......	......	...	...	0·90	336		
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°·0, being 2°·4 *lower* than the average for the 20 years, 1849–1868.
The mean *Temperature of the Dew Point* for the month was 32°·8, being 2°·6 *lower* than the average for the 20 years, 1849–1868.
The mean *Degree of Humidity* for the month was 87·2, being 0·1 *less* than the average for the 20 years, 1849–1868.
The mean *Elastic Force of Vapour* for the month was 0in·186, being 0in·021 *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·2, 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 551 grains, being 1 grain *less* than the average for the 20 years, 1849–1868.
The mean amount of *Cloud* for the month (a clear sky being represented by 0 and an overcast sky by 10) was 7·2.
The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·14. The maximum daily amount of *Sunshine* was 5·2 hours on January 16 and 27.
The highest reading of the *Solar Radiation Thermometer* was 91°·0 on January 28; and the lowest reading of the *Terrestrial Radiation Thermometer* was 16·5 on January 7.
The mean daily distribution of *Ozone* for the 12 hours ending 9h. was 1·6; for the 6 hours ending 15h. was 0·2; and for the 6 hours ending 21h. was 0·1.
The *Proportions of Wind* referred to the cardinal points were N. 7, E. 4, S. 8, and W. 11. One day was calm.
The *Greatest Pressure of the Wind* in the month was 17·5 lbs. on the square foot on January 30. The mean daily *Horizontal Movement of the Air* for the month was 336 miles; the greatest daily value was 626 miles on January 5; and the least daily value was 141 miles on January 7 and 10.
Rain fell on 22 days in the month, amounting to 3in·679, as measured by gauge No. 6 partly sunk below the ground; being 1in·662 *greater* than the average fall for the 45 years, 1841–1885.

MONTH and DAY, 1886.	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.		
Feb. 1	...	29·141	41·9	35·3	6·6	38·3	− 2·2	35·3	31·3	7·0	12·6	1·7	76	68·9	32·0	37·4	37·0	0·030	0·0	wP, mN : vP
2	...	29·406	43·3	33·8	9·5	37·2	− 3·4	35·1	32·2	5·0	10·6	3·2	82	62·3	30·5	37·9	37·5	0·000	0·0	vP
3	Apogee	29·428	37·1	32·8	4·3	35·5	− 5·2	34·8	33·8	1·7	5·3	0·5	94	41·0	29·9	36·9	36·5	0·375	0·0	wP, sN : sN, mP
4	New	29·937	40·5	33·0	7·5	35·9	− 4·8	34·9	33·4	2·5	5·1	0·3	91	64·1	30·7	36·4	36·0	0·006	0·0	wP
5	...	29·981	36·2	30·7	5·5	33·2	− 7·4	32·3	30·6	2·6	3·9	1·5	90	46·9	28·0	35·9	35·8	0·000	0·0	wP : vP, wN
6	...	29·966	37·9	27·0	10·9	32·0	− 8·4	30·6	27·4	4·6	9·5	1·1	82	73·5	24·2	36·3	36·0	0·003	1·0	wP : vP
7	...	30·284	36·8	25·3	11·5	31·2	− 9·0	29·7	25·8	5·4	10·5	1·3	79	76·6	23·2	36·7	36·5	0·001	0·0	wP : mP
8	In Equator	30·520	35·4	24·9	10·5	29·8	−10·1	28·6	24·8	5·0	8·9	0·5	81	78·9	22·2	36·4	36·2	0·000	0·0	mP
9	...	30·495	35·2	20·9	14·3	27·8	−11·8	27·1	24·3	3·5	5·3	0·0	86	67·0	18·9	35·9	35·5	0·000	0·0	mP : vP, wN
10	...	30·272	31·2	20·6	10·6	27·0	−12·3	26·9	26·4	0·6	4·4	0·0	97	35·1	19·0	35·9	35·0	0·000	0·0	wP, wN : wP
11	...	29·995	36·1	30·2	5·9	33·5	− 5·6	33·1	32·4	1·1	3·2	0·0	96	36·1	30·0	35·9	35·0	0·006	0·0	wP
12	First Qr.	29·825	43·0	34·7	8·3	38·8	− 0·1	38·6	38·4	0·4	1·3	0·0	99	57·0	33·9	35·7	35·0	0·045	0·0	wP
13	...	29·761	47·8	36·2	11·6	41·0	+ 2·2	40·2	39·2	1·8	4·6	0·0	94	63·5	33·8	35·9	35·0	0·007	1·8	wP
14	...	29·674	42·9	37·8	5·1	40·4	+ 1·7	39·2	37·7	2·7	5·1	0·5	90	53·5	34·9	37·1	37·0	0·034	5·2	... : wP, wN
15	Greatest Declination N.	29·821	40·7	34·3	6·4	37·4	− 1·3	36·9	36·2	1·2	3·0	0·0	96	44·1	32·0	38·7	37·0	0·037	1·0	wP
16	...	29·774	36·6	32·9	3·7	33·9	− 4·9	33·3	32·3	1·6	2·0	1·3	94	38·3	32·9	39·1	37·0	0·000	3·0	wP
17	...	29·809	35·8	32·3	3·5	33·7	− 5·2	33·2	32·3	1·4	2·8	0·0	95	37·8	32·3	38·9	37·9	0·002	0·0	wP
18	Perigee : Full.	29·943	37·6	32·2	5·4	34·0	− 5·0	33·5	32·6	1·4	3·3	0·5	95	43·2	32·1	38·9	37·9	0·002	1·5	wP
19	...	29·933	34·4	31·7	2·7	32·8	− 6·4	31·8	29·8	3·0	4·3	1·3	88	39·6	31·7	38·9	37·9	0·000	4·5	wP
20	...	29·989	36·5	31·3	5·2	33·4	− 5·9	32·3	30·3	3·1	5·3	1·8	88	43·9	29·0	38·9	37·5	0·000	0·0	vP
21	In Equator	30·064	39·5	29·8	9·7	33·7	− 5·8	32·2	29·5	4·2	7·2	1·8	85	76·9	27·0	37·9	37·0	0·000	0·0	wP : mP
22	...	30·199	39·9	27·2	12·7	33·1	− 6·5	31·7	29·0	4·1	8·2	0·4	84	74·8	23·4	37·5	37·0	0·000	0·0	vP
23	...	30·117	33·6	27·0	6·6	31·7	− 8·0	30·6	28·0	3·7	6·6	1·0	85	41·9	25·0	37·9	37·6	0·009	0·0	wP, wN : vP
24	...	29·981	38·2	24·1	14·1	30·6	− 9·2	29·1	24·9	5·7	11·3	1·2	78	80·3	20·8	37·4	37·0	0·000	1·0	vP
25	Last Qr.	29·948	35·1	28·8	6·3	32·6	− 7·3	31·1	28·0	4·6	9·7	3·3	83	44·9	26·0	37·0	37·0	0·000	0·0	mP : sP
26	...	30·034	39·1	26·6	12·5	32·6	− 7·4	30·8	27·0	5·6	9·8	0·0	79	81·9	24·0	37·0	37·0	0·000	0·0	vP
27	Greatest Declination S.	30·083	38·5	25·1	13·4	32·1	− 8·0	30·5	26·9	5·2	10·3	0·0	80	65·1	21·0	37·0	37·0	0·000	0·0	vP
28	...	30·034	31·9	29·2	2·7	30·7	− 9·5	29·8	27·4	3·3	7·8	1·4	86	40·8	26·1	37·0	36·8	0·005	1·5	mP
Means	...	29·943	38·0	29·8	8·1	33·7	− 6·0	32·6	30·4	3·3	6·5	0·9	87·6	56·4	27·7	37·2	36·6	Sum 0·562	0·7	...
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·943, being 0in·111 *higher* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 47°·8 on February 13; the lowest in the month was 20°·6 on February 10; and the range was 27°·2.

The mean of all the highest daily readings in the month was 38°·0, being 7°·7 *lower* than the average for the 45 years, 1841–1885.

The mean of all the lowest daily readings in the month was 29°·8, being 4°·8 *lower* than the average for the 45 years, 1841–1885.

The mean of the daily ranges was 8°·1, being 3°·0 *less* than the average for the 45 years, 1841–1885.

The mean for the month was 33°·7, being 6°·0 *lower* than the average for the 20 years, 1849–1868.

MONTH and DAY, 1886.	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	4·8	9·1	WSW : W	WNW : W : WSW	11·5	0·0	1·41	575	p.-cl, w : p.-cl,slt.-m,sh.-r	3,ci.-cu,cu.-s,w: v, w : v, st.-w
2	0·7	9·2	WSW	W : SW	2·2	0·0	0·22	315	p.-cl : 5, cu.-s, li.-cl	7,ci.-cu,cu,cu.-s,li.-cl: 2, slt.-f : 0, f
3	0·0	9·2	SSW : SE : E	E : NE	0·2	0·0	0·00	165	p.-cl : 10, hy.-r, sn : 10, r, sn	10, fq.-th.-r : 10, th.-r
4	0·3	9·3	NE : NNE	N	2·0	0·0	0·14	245	10 : 10	10, slt.-r : 10, sh.-r :v,li.-cl,slt.-r
5	0·0	9·3	N	Variable	0·2	0·0	0·01	128	p.-cl, fr : 10, glm, fr	v, glm : 10, m : v, m
6	3·4	9·4	NNE	NNE : NE	1·7	0·0	0·10	196	0, ho.-fr : 2, li.-cl, ho.-fr	7, cu, cu.-s, slt.-sn : 7 : 0, fr
7	1·1	9·4	NE : E : SE	ESE : SE	0·1	0·0	0·00	120	p.-cl : 9, ho.-fr	10 : v, fr
8	7·6	9·5	SSE : SE	SE	0·0	0·0	0·00	127	0, ho.-fr : 0, ho.-fr	1, li.-cl : 0 :p.-cl,ho.-fr
9	1·8	9·6	Calm	Variable	0·0	0·0	0·00	63	0,m,ho.-fr: 0, f, ho.-fr : 0, slt.-f	1, li.-cl, h, f : ho.-fr, tk.-f
10	0·0	9·6	WSW : N	Variable	0·0	0·0	0·00	60	10,tk.-f,ho.-fr: tk.-f,ho.-fr : v, f	0, slt.-f : tk.-f : tk.-f
11	0·0	9·7	SW	SW : S	0·0	0·0	0·00	115	10, tk.-f : 10, f, glm, m.-r	10,slt.-f,glm,m.-r : 10, slt.-f
12	0·0	9·8	SSW	S : SW	0·5	0·0	0·02	166	10, r : 10, r	10, m.-r : 10, tk.-f
13	0·2	9·8	S : SSW	SSW : S	3·0	0·0	0·22	225	10 : 10, th.-r	9, cu.-s, th.-r :v,li.-sc,lu.-co,lu.-ha: 10, slt.-r
14	0·0	9·9	S	SSW : NNE	3·1	0·0	0·53	279	10 : 10, oc.-th.-r	10, fq.-th.-r : 10
15	0·0	9·9	NE : ENE	ENE	2·8	0·0	0·38	273	10 : 10, fq.-th.-r	10, oc.-th.-r :v,li.-cl,li.-sc,lu.-co,lu.-ha: v, slt.-h
16	0·0	10·0	ENE	ENE	5·4	0·0	1·13	387	10 : 10	10 : 10, oc.-th.-r
17	0·0	10·1	ENE : NE	NE : ENE	1·3	0·0	0·44	291	10 : 10, th.-r, slt.-f	10, th.-r : 10
18	0·0	10·1	NE	ENE	1·3	0·0	0·51	299	10 : 10	10 : 10
19	0·0	10·2	ENE	E : NE	1·5	0·0	0·11	207	10 : 10	10 : 10
20	0·0	10·3	ENE : NNE	NNE : NE	0·1	0·0	0·00	124	10 : 10, slt.-sn, m	10 : 10 : v
21	1·1	10·3	NE : ENE	NE	1·1	0·0	0·07	187	p.-cl : 9, ci.-cu, ci.-s	10 : 10, slt.-sn : p.-cl
22	1·1	10·4	NNE	ENE : SE	0·4	0·0	0·00	101	p.-cl : 10	8, ci.-cu, cu.-s: 10 : p.-cl
23	0·0	10·5	NE	NE	1·0	0·0	0·07	190	10, slt.-sn : 10, slt.-sn	10, slt.-sn : 10 : v, fr
24	2·2	10·5	NE	NE	0·6	0·0	0·00	161	0, ho.-fr : 0, ho.-fr : p.-cl, cu	9 : 10 : v,th.-cl
25	0·0	10·6	NE : ENE	NE	2·1	0·0	0·30	248	10 : 10	10 : 10 : v, th.-cl
26	2·8	10·7	NE : N	N : NNW	1·7	0·0	0·26	215	p.-cl, ho.-fr : 6,ci.-cu,cu.-s,ho.-fr	7, cu, cu.-s : v : 0
27	0·0	10·7	NNW : Calm : NNE	NE : E	0·8	0·0	0·01	109	0, ho.-fr : 10,th.-cl,slt.-f,ho.-fr	9,ci.-cu,cu.-s,li-cl : 9 : v
28	0·0	10·8	ENE	NE : ESE	1·6	0·0	0·20	209	10 : 10, slt.-sn	10, slt.-sn : 10 : 10
Means	1·0	9·9	...	...	...	...	0·22	206		
Number of Column for Reference.	21	22	23	24	25	26	27	28	29	30

The mean *Temperature of Evaporation* for the month was 32°·6, being 5°·3 *lower* than
The mean *Temperature of the Dew Point* for the month was 30°·4, being 5°·0 *lower* than
The mean *Degree of Humidity* for the month was 87·6, being 2·8 *greater* than
The mean *Elastic Force of Vapour* for the month was 0in·170, being 0in·037 *less* than
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was 2grs·0, being 0gr·4 *less* than
The mean *Weight of a Cubic Foot of Air* for the month was 563 grains, being 9 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 7·8.

The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·10. The maximum daily amount of *Sunshine* was 7·6 hours on February 8.

The highest reading of the *Solar Radiation Thermometer* was 81°·9 on February 26; and the lowest reading of the *Terrestrial Radiation Thermometer* was 18°·9 on February 9.

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

The *Proportions of Wind* referred to the cardinal points were N. 8, E. 10, S. 5, and W. 3. Two days were calm.

The *Greatest Pressure of the Wind* in the month was 11·5 lbs. on the square foot on February 1. The mean daily *Horizontal Movement of the Air* for the month was 206 miles; the greatest daily value was 575 miles on February 1; and the least daily value was 60 miles on February 10.

Rain fell on 10 days in the month amounting to 0in·562, as measured by gauge No. 6 partly sunk below the ground; being 0in·971 *less* than the average fall for the 45 years, 1841–1885.

MONTH and DAY, 1886.	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.	Difference. Greatest.	Difference. 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.		
Mar. 1	...	29·533	39·6	29·6	10·0	32·4	− 7·9	31·3	29·0	3·4	7·2	1·9	87	45·0	29·3	36·5	36·0	0·247	6·5	vP, mN : sN, vP
2	Apogee	29·123	41·9	31·4	10·5	36·5	− 3·9	33·3	28·6	7·9	12·0	1·6	73	86·2	29·3	36·0	36·0	0·010	7·0	mP : vP
3	...	29·356	34·6	29·4	5·2	32·0	− 8·5	30·9	28·3	3·7	8·4	1·3	85	80·2	26·8	36·2	36·0	0·016	0·0	vP : sP
4	...	29·640	42·3	25·1	17·2	32·6	− 7·9	30·1	24·9	7·7	14·0	0·5	72	79·6	23·9	36·0	36·0	0·000	0·0	sP : vP, wN
5	New	29·198	38·7	28·8	9·9	34·1	− 6·4	31·7	27·5	6·6	10·3	3·2	76	72·2	25·3	35·5	35·0	0·000	0·0	sP : mP
6	...	29·567	39·1	27·6	11·5	32·8	− 7·7	30·7	26·4	6·4	9·8	2·2	77	58·0	24·0	35·2	35·0	0·011	0·0	vP, mN : vP, ssN
7	In Equator	30·039	40·0	21·6	18·4	30·8	− 9·8	27·5	18·3	12·5	15·9	9·0	59	77·7	17·2	35·5	35·0	0·000	0·0	ssP : mP
8	...	30·148	41·4	24·5	16·9	32·7	− 7·9	30·0	24·5	8·2	11·3	4·4	71	99·5	21·2	35·5	35·0	0·000	8·0	ssP : mP : sP
9	...	30·209	42·2	25·1	17·1	32·9	− 7·8	28·1	18·3	14·6	22·7	4·3	52	99·6	21·6	36·0	35·5	0·000	7·8	mP : vP
10	...	30·205	37·9	28·3	9·6	32·4	− 8·3	29·8	24·2	8·2	13·7	4·1	71	93·1	25·0	35·5	35·0	0·000	10·2	vP : mP
11	...	30·203	40·1	25·3	14·8	32·0	− 8·8	29·0	22·1	9·9	19·3	1·9	65	92·5	22·8	35·5	35·0	0·000	0·3	mP : vP
12	...	30·140	35·4	26·4	9·0	31·9	− 8·9	29·5	23·9	8·0	10·7	2·9	71	49·8	24·5	35·5	35·0	0·000	0·7	vP
13	First Qr.	30·163	36·3	26·0	10·3	31·5	− 9·4	28·8	22·2	9·3	11·7	6·0	67	75·1	22·6	35·0	35·0	0·000	2·0	vP
14	Greatest Declination N.	30·053	35·1	28·8	6·3	32·2	− 8·8	29·6	23·8	8·4	10·5	5·6	70	50·9	27·6	36·0	36·0	0·000	0·2	vP
15	...	29·831	37·5	28·6	8·9	32·7	− 8·4	30·4	25·7	7·0	11·8	2·3	74	64·0	26·0	35·5	35·0	0·001	0·8	vP
16	...	29·673	37·1	24·7	12·4	31·1	−10·1	29·4	24·9	6·2	8·8	2·3	76	55·3	20·7	35·0	35·0	0·000	0·0	sP : vP, wN
17	...	29·731	44·0	20·3	23·7	32·1	− 9·2	29·8	24·6	7·5	15·8	0·0	72	94·7	18·0	35·0	35·0	0·000	3·0	sP : mP
18	Perigee	29·826	47·6	31·6	16·0	38·2	− 3·2	36·2	33·5	4·7	10·9	1·6	83	79·8	26·2	35·0	35·0	0·000	0·0	mP : sP
19	...	29·807	64·1	39·0	25·1	48·9	+ 7·5	47·2	45·3	3·6	10·6	0·0	88	110·5	35·0	36·0	35·5	0·078	1·5	vP, mN : mP, sN
20	Full: In Equator	29·818	58·3	43·0	15·3	49·6	+ 8·1	48·8	48·0	1·6	5·5	0·0	94	80·8	39·5	37·0	36·0	0·084	3·5	vP : mP
21	...	29·817	58·6	44·7	13·9	51·9	+10·3	51·3	50·7	1·2	3·6	0·0	96	83·4	42·5	42·7	38·9	0·100	6·0	wN, wP : wP
22	...	29·934	55·1	42·4	12·7	48·3	+ 6·6	48·1	47·9	0·4	3·8	0·0	99	71·9	40·1	42·9	39·9	0·064	7·5	wP
23	...	29·959	62·1	45·0	17·1	52·5	+10·7	51·3	50·1	2·4	8·6	0·0	92	84·2	44·2	46·8	41·4	0·031	1·5	wP
24	...	29·812	62·3	40·9	21·4	49·5	+ 7·5	48·2	46·8	2·7	10·5	0·0	91	105·4	40·9	48·8	46·9	0·005*	1·2	wP
25	...	29·757	59·6	46·8	12·8	51·6	+ 9·3	50·4	49·2	2·4	6·1	0·2	92	89·6	42·9	46·3	43·9	0·000	2·2	wP
26	...	29·743	57·1	46·9	10·2	51·0	+ 8·4	48·9	46·7	4·3	7·8	0·6	85	103·3	43·1	48·2	45·7	0·008	11·8	wP
27	Last Quarter: Great. Dec. S.	29·658	57·0	47·8	9·2	51·4	+ 8·4	50·5	49·6	1·8	5·0	0·4	94	89·1	47·1	49·8	47·9	0·109	13·2	wP
28	...	29·704	60·7	43·0	17·7	50·6	+ 7·2	49·5	48·3	2·3	7·2	0·2	92	100·1	40·0	50·7	47·8	0·078	10·5	wP
29	...	29·555	54·6	39·0	15·6	45·0	+ 1·2	43·1	40·9	4·1	8·4	0·7	86	96·8	36·0	50·7	48·8	0·203	14·5	wP, wN : sN, vP
30	Apogee	29·796	50·1	37·0	13·1	44·5	+ 0·2	42·5	40·2	4·3	9·9	1·7	85	89·4	34·2	50·7	49·3	0·043	14·8	mP : wP, sN : ssN, ssP
31	...	29·590	55·2	40·5	14·7	46·7	+ 1·9	43·4	39·7	7·0	20·0	1·5	78	106·9	37·0	50·7	49·3	0·050	9·2	wP, mN : sN, vP
Means	...	29·793	47·3	33·5	13·8	39·8	− 1·8	37·7	34·0	5·8	10·7	1·9	79·8	82·7	30·8	40·1	38·9	Sum 1·138	4·6	...
Number of Column for Reference.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

The results apply to the civil day.

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

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

* Rainfall (Column 18). The amount entered on March 24 was derived from moisture deposited during a dense wetting fog.

The mean reading of the *Barometer* for the month was 29in·793, being 0in·071 *higher* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 64°·1 on March 19; the lowest in the month was 20°·3 on March 17; and the range was 43°·8.
The mean of all the highest daily readings in the month was 47°·3, being 2°·6 *lower* than the average for the 45 years, 1841–1885.
The mean of all the lowest daily readings in the month was 33°·5, being 1°·7 *lower* than the average for the 45 years, 1841–1885.
The mean of the daily ranges was 13°·8, being 1°·0 *less* than the average for the 45 years, 1841–1885.
The mean for the month was 39°·8, being 1°·8 *lower* than the average for the 20 years, 1849–1868.

MONTH and DAY, 1886.	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.		
Mar. 1	0·0	10·8	ESE : SE	SE : SSE	5·3	0·0	1·25	352	10 : 10 : 10, sn	10, sn, sl : 10, fq.-r
2	4·7	10·9	WSW	WSW : W	12·5	0·1	3·46	638	10, w : p.-cl, cu.-s, st.-w	7, cu, cu.-s, st.-w : v, sn
3	1·3	11·0	WNW : N	N : NW	8·0	0·0	1·31	422	10, sn : 10, slt.-sn, w	9, oc.-sn : v, fr
4	2·7	11·1	NW : WSW	WSW : WNW : SSW	0·8	0·0	0·07	210	0, fr : 0, ho.-fr : v, f	9, cu.-s, li.-cl : v, f : 0, m
5	0·0	11·1	ESE : E	E : NE	7·3	0·0	1·06	367	fr : 9, li.-cl, so.-ha	10 : 10
6	0·2	11·2	NNE : N : NW	N	4·8	0·0	0·86	290	10 : p.-cl,glm,f,ho.-fr,slt.-sn	10, sn : p.-cl : 0
7	6·1	11·2	N : NE	SE	0·3	0·0	0·01	124	0 : p.-cl, slt.-f	8, th.-cl : p.-cl : 0
8	7·9	11·3	ESE : SE	E : ESE	3·1	0·0	0·29	232	p.-cl : 5, cu	3, ci.-cu, cu.-s : 0 : 0
9	9·5	11·4	ESE : SE	SE : E	9·3	0·0	0·93	326	0, ho.-fr : 0, ho.-fr, w	0, w : 0
10	5·7	11·4	E	E : ENE	5·9	0·0	1·10	388	0 : p.-cl : 9, cu.-s	6,ci.-cu,cu.-s,li.-cl : v : v
11	9·5	11·5	ENE	ENE	7·0	0·0	1·16	367	0, ho.-fr : 0, ho.-fr : 2,li.-cl,w	0, w : 0
12	0·0	11·6	ENE : NE	NE : E	2·2	0·0	0·44	318	v : 10 : 10, slt.-sn	10 : v
13	0·5	11·6	NE	NE : ENE	1·4	0·0	0·16	237	10 : 10	10, slt.-sn : 10
14	0·0	11·7	NE : ENE	ENE	1·3	0·0	0·15	253	10 : 10, slt.-sn	10, slt.-sn : 10 : 10
15	0·7	11·8	NE : ENE	NE	2·0	0·0	0·23	258	10 : 10	10 : p.-cl, sn : v,li.-cl,slt.-sn
16	0·0	11·8	NNE : N	NW : SSW : ESE	0·1	0·0	0·00	118	0 : v : 10, slt.-sn	10, glm, f : glm,li.-cl,slt.-sn : 0, f
17	5·4	11·9	Calm : E	E : ESE	2·8	0·0	0·18	171	0, f, ho.-fr : 3, li.-cl, tk.-f, ho.-fr	4, ci.-cu, cu.-s : v, li.-cl, h, lu.-ha
18	0·0	12·0	ESE	ESE	1·3	0·0	0·13	223	th.-cl : 9, th.-cl	10, slt.-r : 10, slt.-r : 10
19	2·7	12·0	SE : S	SSW : SSE	2·3	0·0	0·12	209	10, r : v, r, m	9,ci.-cu,cu.-s,li.-cl : 10 : 10, r
20	0·0	12·1	SW	SW	2·9	0·0	0·49	351	v : p.-cl : 10	10 : 10 : 10, fq.-r
21	0·9	12·2	SW : WSW	WSW	4·1	0·0	0·45	333	10, oc.-shs : 7, li.-cl	v, li.-cl : v, li.-cl : 0
22	0·0	12·2	WSW : SW	SSW	0·6	0·0	0·05	222	v : 10	10 : 10 : 10,fq.-shs
23	0·3	12·3	SSW : S	S : SE : E	0·4	0·0	0·00	158	10, oc.-r : 10, th.-r	p.-cl : v, tk.-f
24	4·2	12·4	E	ESE	1·2	0·0	0·05	148	10, tk.-f : 9, li.-cl, f	7, li.-cl, so.-ha : v, m : v
25	0·6	12·4	SW	SSW : SW : SSE	2·1	0·0	0·19	289	10 : 10	10, oc.-slt.-r : v : v, li.-cl
26	1·5	12·5	SSW : SW	SW	10·8	0·0	2·49	534	10 : 10 : 9,ci.-cu,cu.-s,w	9, cu.-s, w : 10,oc.-slt.-r,st.-w : 10,oc.-r,st.-w
27	0·1	12·6	SW	SW	10·2	0·2	3·42	661	10, oc.-shs, w : 10, oc.-slt.-r, w	10, st.-w : 10, st.-w : v
28	0·3	12·6	SW : SSW	SW	2·7	0·0	0·32	277	10 : 10, r	10, oc.-r : 10
29	1·7	12·7	SW	SW : WSW	10·2	0·0	2·69	593	10 : 10, oc.-shs, w	10, fq.-r, st.-w : v, li.-cl
30	2·2	12·8	WSW : SW	SW	14·7	0·4	5·24	751	0 : 7,ci.-cu,cu.-s,w,shs.-r	10, sc, oc.-slt.-r, g : 10, sc, fq.-slt.-r, g
31	4·5	12·8	SW : WSW	WSW	27·6	0·0	4·94	784	10, g : 10, g : p.-cl,g,sh.-r	7,ci.-cu,cu.-s,oc.-r,hy.-sqs : 0
Means	2·4	11·8	...	...	...	...	1·07	342		
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 mean *Temperature of the Dew Point* for the month was 34°·0, being 2°·0 *lower* than
The mean *Degree of Humidity* for the month was 79·8, being 1·1 *less* than
The mean *Elastic Force of Vapour* for the month was 0in·196, being 0in·016 *less* than
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was 2grs·4, being 0gr·1 *less* than
The mean *Weight of a Cubic Foot of Air* for the month was 553 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 7·5.

The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·20. The maximum daily amount of *Sunshine* was 9·5 hours on March 9 and 11.

The highest reading of the *Solar Radiation Thermometer* was 110°·5 on March 19; and the lowest reading of the *Terrestrial Radiation Thermometer* was 17°·2 on March 7.

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

The *Proportions of Wind* referred to the cardinal points were N. 5, E. 11, S. 8, and W. 7.

The *Greatest Pressure of the Wind* in the month was 27·6 lbs. on the square foot on March 31. The mean daily *Horizontal Movement of the Air* for the month was 342 miles; the greatest daily value was 784 miles on March 31; and the least daily value was 118 miles on March 16.

Rain fell on 15 days in the month, amounting to 1·138, as measured by gauge No. 6 partly sunk below the ground; being 0in·295 *less* than the average fall for the 45 years, 1841–1885.

MONTH and DAY, 1886.	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.		
April 1	...	29.907	56.4	38.0	18.4	46.5	+ 1.2	41.9	36.7	9.8	17.6	3.7	70	108.8	34.5	50.7	47.8	0.000	11.5	mP : vP
2	...	29.650	60.7	43.0	17.7	53.6	+ 7.9	49.4	45.3	8.3	12.0	6.2	73	107.5	35.9	50.7	47.8	0.018	7.5	wP, sN : vP, ssN
3	In Equator	29.696	57.1	40.5	16.6	49.5	+ 3.4	46.1	42.5	7.0	16.6	0.8	77	102.8	36.2	49.8	47.8	0.183	12.5	vP, vN : vP
4	New	29.729	51.4	40.7	10.7	47.5	+ 1.1	45.6	43.5	4.0	5.7	1.5	87	67.2	36.2	48.8	46.9	0.000	8.5	wP : mP
5	...	29.715	60.5	43.3	17.2	49.8	+ 3.2	46.9	43.8	6.0	15.6	0.9	80	106.9	40.0	48.8	47.9	0.000	10.0	mP
6	...	29.604	56.6	38.6	18.0	48.6	+ 1.9	44.1	39.2	9.4	20.0	1.5	70	110.9	34.0	48.8	47.9	0.004	4.5	wP, sN : wN, vP
7	...	29.693	51.3	35.7	15.6	43.4	− 3.4	41.6	39.5	3.9	10.7	0.2	86	77.3	31.1	48.8	48.8	0.053	5.0	mP : vN, vP
8	...	29.120	57.1	39.7	17.4	47.5	+ 0.7	44.9	42.0	5.5	14.8	0.4	82	107.7	36.7	49.3	47.9	0.294	8.5	mN, wP : vP, ssN
9	...	29.363	50.0	35.5	14.5	41.3	− 5.6	38.8	35.7	5.6	11.7	2.1	81	104.9	32.0	49.3	48.4	0.012	7.0	mP, ssN : vP, ssN
10	Greatest Declination N.	29.401	48.7	32.5	16.2	39.1	− 7.8	37.9	36.3	2.8	9.0	0.0	90	108.2	28.0	49.3	48.4	0.138	10.5	sP : ssN, vP : sP
11	First Qr.	29.481	53.0	32.6	20.4	41.3	− 5.7	39.4	37.0	4.3	13.4	0.0	85	109.0	25.9	...	...	0.021	0.0	vP, vN : mP
12	...	29.871	55.6	32.7	22.9	44.1	− 3.0	40.4	36.1	8.0	15.8	0.0	73	93.0	29.9	...	...	0.000	0.0	vP, wN : vP, wN
13	...	30.097	55.2	34.9	20.3	46.3	− 0.9	43.2	39.7	6.6	12.2	1.8	79	96.5	29.4	...	...	0.000	0.0	vP, wN
14	...	30.080	51.9	43.6	8.3	47.5	+ 0.1	44.9	42.0	5.5	10.9	2.3	82	69.8	40.9	...	...	0.033	0.0	vP, vN : vN, wP
15	Perigee	30.063	53.3	39.9	13.4	45.7	− 1.8	43.4	40.8	4.9	12.0	1.3	84	100.8	36.0	...	...	0.004	1.2	mP : vP, vN
16	In Equator	29.995	51.4	38.5	12.9	42.8	− 4.8	40.7	38.2	4.6	12.2	1.1	84	113.0	37.3	...	...	0.051	3.8	vP, sN : vP, ssN
17	...	29.853	49.0	37.6	11.4	42.4	− 5.4	40.8	38.9	3.5	6.9	0.9	88	78.8	35.8	...	...	0.003	0.0	wP, ssN : vN, vP
18	Full	29.680	49.0	40.5	8.5	44.7	− 3.2	44.0	43.2	1.5	4.6	0.0	94	67.8	40.1	...	...	0.092	0.0	wP : vP, ssN
19	...	29.619	65.1	39.2	25.9	50.3	+ 2.3	47.1	43.7	6.6	17.8	0.0	79	116.2	38.8	...	...	0.000	6.0	vP
20	...	29.665	53.7	41.7	12.0	47.5	− 0.6	45.2	42.7	4.8	11.6	0.2	84	104.2	39.9	...	...	0.000	0.2	wP, sN : mP
21	...	29.786	48.9	40.7	8.2	44.0	− 4.2	40.9	37.3	6.7	10.7	2.9	76	77.7	39.9	...	...	0.000	0.8	vP
22	...	29.812	53.2	39.8	13.4	45.2	− 3.0	41.9	38.1	7.1	12.6	1.1	76	77.4	33.0	...	...	0.000	0.0	vP: vP, wN
23	Greatest Declination S.	29.828	62.4	38.7	23.7	50.6	+ 2.3	46.4	42.0	8.6	19.6	0.5	73	115.6	30.3	...	...	0.000	1.7	mP : vP
24	...	29.857	67.4	45.1	22.3	52.5	+ 4.2	49.5	46.5	6.0	15.1	2.5	80	123.5	39.9	...	...	0.004	10.0	mP, ssN : mP
25	...	29.961	60.2	42.1	18.1	50.4	+ 2.0	46.3	42.0	8.4	16.5	0.9	74	114.2	38.5	...	...	0.000	12.5	wP : mP
26	Last Qr.	29.910	58.4	39.2	19.2	48.4	0.0	44.7	40.7	7.7	16.5	0.0	75	117.7	36.8	...	...	0.000	18.8	mP : vP
27	Apogee	29.686	65.7	41.6	24.1	51.7	+ 3.3	47.3	42.8	8.9	21.2	0.0	72	121.0	38.3	...	...	0.000	13.0	mP : vP
28	...	29.486	68.3	40.6	27.7	51.0	+ 2.5	48.2	45.3	5.7	18.0	0.2	81	114.8	39.1	...	...	0.017	0.2	vP : vP, vN
29	...	29.716	49.8	35.7	14.1	41.8	− 6.7	38.7	34.9	6.9	14.5	1.0	78	96.7	34.0	...	...	0.336	1.5	vP, ssN : vP
30	...	29.953	53.8	34.0	19.8	42.8	− 5.8	37.6	31.3	11.5	17.6	5.3	65	115.3	24.0	...	...	0.000	7.3	vP
Means	...	29.743	55.8	38.9	17.0	46.6	− 0.9	43.6	40.3	6.3	13.8	1.3	79.3	100.8	35.1	...	...	Sum 1.263	5.4	...
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 Thames thermometers were out of order from April 11 till May 16.

The mean reading of the *Barometer* for the month was 29^{in}.743, being 0^{in}.060 *lower* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 68°.3 on April 28; the lowest in the month was 32°.5 on April 10; and the range was 35°.8.
The mean of all the highest daily readings in the month was 55°.8, being 1°.7 *lower* than the average for the 45 years, 1841–1885.
The mean of all the lowest daily readings in the month was 38°.9, being 0°.2 *lower* than the average for the 45 years, 1841–1885.
The mean of the daily ranges was 17°.0, being 1°.4 *less* than the average for the 45 years, 1841–1885.
The mean for the month was 46°.6, being 0°.9 *lower* than the average for the 20 years, 1849–1868.

MONTH and DAY, 1886.	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	8·6	12·9	WSW	SSW : SE : SSE	6·7	0·0	1·13	446	0 : 6, cu, li.-cl, w	6, li.-cl, so.-ha, prh : 0
2	2·6	13·0	S : SSW	SSW : SSE	5·5	0·0	0·83	381	2, li.-cl : v, li.-cl, prh, slt.-r	10 : v, oc.-slt.-r : 9, sh.-r
3	4·0	13·0	SW : WSW	SW : SSW	4·6	0·0	0·72	411	10, r : 10, hy.-r : 9, li.-cl, so.-ha	8, cu, th.-cl, so.-ha : 0
4	0·0	13·1	SW	SW	8·7	0·0	2·87	602	0 : v : 10, slt.-r, w	10, w : 10, slt.-r, w : v, w
5	3·6	13·2	WSW : SW	WSW : SW	6·6	0·0	0·90	440	v : 10, cu.-s, w, so.-ha	7, cu.-s, li.-cl : v, ci.-cu
6	7·1	13·2	SW : WNW	WNW : WSW	8·6	0·0	1·53	557	p.-cl : p.-cl, cu, cu.-s, slt.-sh, w	6, cu, cu.-s, w : v, w : 0
7	0·0	13·3	WSW : SW	SSW	12·6	0·0	2·17	547	0, ho.-fr : p.-cl, so.-ha, slt.-r	10, shs.-r, st.-w : 10, oc.-r, st.-w
8	1·8	13·4	SSW : SW	SW : WSW	9·5	0·0	2·55	617	10, fq.-hy.-r, st.-w : 10, st.-w	9, cu, sc, r, w : 0
9	5·6	13·4	SW : WSW	WSW : SW	7·2	0·0	0·98	451	v : v, cu, cu.-s, oc.-shs, sn, t	7, ci.-cu, cu, cu.-s, slt.-r, w : v, li.-cl
10	3·7	13·5	SSW	SSW : WSW : S	6·4	0·0	0·40	273	0, ho.-fr : p.-cl : 8, ci.-cu, cu, cu.-s, fq.-r	10, fq.-shs, hl, t : v, slt.-r : v, th.-cl, m
11	3·2	13·6	N	ENE : NNE	8·2	0·0	0·60	266	p.-cl : 10, slt.-r : 10, r	9, ci.-cu, cu.-s, w : p.-cl : v
12	4·8	13·6	N : NNW	W : WSW	0·5	0·0	0·00	187	p.-cl : 4, th.-cl, slt.-f, so.-ha	9, th.-cl : v, m
13	3·5	13·7	SW : W	W : NNW : WSW	0·4	0·0	0·00	217	0 : 0, h : v, th.-cl, h	10 : 10
14	0·1	13·7	NNW	NNW : N : NNE	0·0	0·0	0·00	144	10 : 10, slt.-r	10, oc.-slt.-r : 10
15	2·3	13·8	NNE : NE	NE : NNE	2·8	0·0	0·16	261	10 : p.-cl : 10, slt.-r	8, ci.-cu, cu.-s, slt.-r, hl : v, li.-cl, slt.-r, hl
16	2·7	13·9	NNE	NNE	10·7	0·0	0·88	410	p.-cl : p.-cl, cu, cu.-s	8, cu.-s, oc.-slt.-r, hl, sqs : 10, li.-sh
17	0·0	13·9	NNE : NE	NE	1·2	0·0	0·07	286	10, li.-shs : 10, fq.-th.-r	10, fq.-th.-r : 10
18	0·0	14·0	ENE : NE	NE : ENE : ESE	0·4	0·0	0·00	179	10 : 10, fq.-th.-r	10, hy.-r : 10, m.-r, f
19	8·5	14·1	E : NE	ENE : NE	5·1	0·0	0·45	356	p.-cl : li.-cl, so.-ha	7, cu, s, li.-cl, so.-ha : p.-cl : 10
20	2·9	14·1	NE : ENE	ENE : NE	5·7	0·0	0·96	448	10 : 10	8, cu, cu.-s : p.-cl : 10
21	0·4	14·2	NE : NNE	NNE : N	2·2	0·0	0·23	276	10 : 9	10 : 10
22	0·4	14·2	N : W	WSW : E : ESE	0·1	0·0	0·00	130	10 : 9, li.-cl, cu.-s	10 : 10 : v
23	11·4	14·3	ENE : E	E	4·5	0·0	0·57	278	3, li.-cl : 3, li.-cl	2, li.-cl : p.-cl, cu.-s : 0, m, h
24	3·2	14·4	ESE : E	ESE : E	1·9	0·0	0·14	234	v : 10, r	5, cu, li.-cl : p.-cl, cu.-s : v, th.-cl
25	10·6	14·4	E	E	6·1	0·0	0·77	358	v : 1, li.-cl	1, li.-cl : 1, li.-cl : v, th.-cl
26	10·5	14·5	E	ESE : E	5·5	0·0	0·89	360	p.-cl : 1, li.-cl	0 : 0 : v
27	8·4	14·5	E : ENE	ESE : E	1·9	0·0	0·15	250	10 : 10 : v, ci.-cu	3, ci, ci.-cu, cu.-s, slt.-r : 2 : 9, m, l
28	0·7	14·6	E : ENE	NE : NNE	6·0	0·0	0·74	282	p.-cl : 10, sh.-r, m	10, ci.-cu, cu.-s : 10, slt.-r
29	1·4	14·7	NE	NE	5·7	0·1	1·66	513	10, r : 10, c.-hy.-r, sn : 10, r	10 : p.-cl : 5, li.-cl
30	9·6	14·7	NE	ENE : E	6·4	0·0	1·05	405	p.-cl : 6, cu, cu.-s	1, ci.-cu, li.-cl : 0
Means	4·1	13·8	......	......	...	...	0·78	352		
Number of Column for Reference.	21	22	23	24	25	26	27	28	29	30

The mean *Temperature of Evaporation* for the month was 43°·6, being 0°·3 *lower* than
The mean *Temperature of the Dew Point* for the month was 40°·3, being *the same as*
The mean *Degree of Humidity* for the month was 79·3, being 2·4 *greater* than
The mean *Elastic Force of Vapour* for the month was 0in·250, being *the same as*
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was 2grs·9, being *the same as*
The mean *Weight of a Cubic Foot of Air* for the month was 544 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 6·9.
The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·30. The maximum daily amount of *Sunshine* was 11·4 hours on April 23.
The highest reading of the *Solar Radiation Thermometer* was 123°·5 on April 24; and the lowest reading of the *Terrestrial Radiation Thermometer* was 24°·0 on April 30.
The mean daily distribution of *Ozone* for the 12 hours ending 9h. was 3·2; for the 6 hours ending 15h. was 1·4; and for the 6 hours ending 21h. was 0·8.
The *Proportions of Wind* referred to the cardinal points were N. 8, E. 10, S. 6, and W. 6.
The *Greatest Pressure of the Wind* in the month was 12·6 lbs. on the square foot on April 7. The mean daily *Horizontal Movement of the Air* for the month was 352 miles; the greatest daily value was 617 miles on April 8; and the least daily value was 130 miles on April 22.
Rain fell on 12 days in the month, amounting to 1in·263, as measured by gauge No. 6 partly sunk below the ground, being 0in·401 *less* than the average fall for the 45 years, 1841–1885.

MONTH and DAY, 1886.	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	8·6	12·9	WSW	SSW : SE : SSE	6·7	0·0	1·13	446	0 : 6, cu, li.-cl, w	6, li.-cl, so.-ha, prh : 0
2	2·6	13·0	S : SSW	SSW : SSE	5·5	0·0	0·83	381	2, li.-cl : v, li.-cl, prh, slt.-r	10 : v, oc.-slt.-r : 9, sh.-r
3	4·0	13·0	SW : WSW	SW : SSW	4·6	0·0	0·72	411	10, r : 10, hy.-r : 9, li.-cl, so.-ha	8, cu, th.-cl, so.-ha : 0
4	0·0	13·1	SW	SW	8·7	0·0	2·87	602	0 : v : 10, slt.-r, w	10, w : 10, slt.-r, w : v, w
5	3·6	13·2	WSW : SW	WSW : SW	6·6	0·0	0·90	440	v : 10, cu.-s, w, so.-ha	7, cu.-s, li.-cl : v, ci.-cu
6	7·1	13·2	SW : WNW	WNW : WSW	8·6	0·0	1·53	557	p.-cl : p.-cl, cu, cu.-s, slt.-sh, w	6, cu, cu.-s, w : v, w : 0
7	0·0	13·3	WSW : SW	SSW	12·6	0·0	2·17	547	0, ho.-fr : p.-cl, so.-ha, slt.-r	10, shs.-r, st.-w : 10, oc.-r, st.-w
8	1·8	13·4	SSW : SW	SW : WSW	9·5	0·0	2·55	617	10, fq.-hy.-r, st.-w : 10, st.-w	9, cu, sc, r, w : 0
9	5·6	13·4	SW : WSW	WSW : SW	7·2	0·0	0·98	451	v : v, cu, cu.-s, oc.-shs, sn, t	7, ci.-cu, cu, cu.-s, slt.-r, w : v, li.-cl
10	3·7	13·5	SSW	SSW : WSW : S	6·4	0·0	0·40	273	0, ho.-fr : p.-cl : 8, ci.-cu, cu, cu.-s, fq.-r	10, fq.-shs, hl, t : v, slt.-r : v, th.-cl, m
11	3·2	13·6	N	ENE : NNE	8·2	0·0	0·60	266	p.-cl : 10, slt.-r : 10, r	9, ci.-cu, cu.-s, w : p.-cl : v
12	4·8	13·6	N : NNW	W : WSW	0·5	0·0	0·00	187	p.-cl : 4, th.-cl, slt.-f, so.-ha	9, th.-cl : v, m
13	3·5	13·7	SW : W	W : NNW : WSW	0·4	0·0	0·00	217	0 : 0, h : v, th.-cl, h	10 : 10
14	0·1	13·7	NNW	NNW : N : NNE	0·0	0·0	0·00	144	10 : 10, slt.-r	10, oc.-slt.-r : 10
15	2·3	13·8	NNE : NE	NE : NNE	2·8	0·0	0·16	261	10 : p.-cl : 10, slt.-r	8, ci.-cu, cu.-s, slt.-r, hl : v, li.-cl, slt.-r, hl
16	2·7	13·9	NNE	NNE	10·7	0·0	0·88	410	p.-cl : p.-cl, cu, cu.-s	8, cu.-s, oc.-slt.-r, hl, sqs : 10, li.-sh
17	0·0	13·9	NNE : NE	NE	1·2	0·0	0·07	286	10, li.-shs : 10, fq.-th.-r	10, fq.-th.-r : 10
18	0·0	14·0	ENE : NE	NE : ENE : ESE	0·4	0·0	0·00	179	10 : 10, fq.-th.-r	10, hy.-r : 10, m.-r, f
19	8·5	14·1	E : NE	ENE : NE	5·1	0·0	0·45	356	p.-cl : li.-cl, so.-ha	7, cu, s, li.-cl, so.-ha : p.-cl : 10
20	2·9	14·1	NE : ENE	ENE : NE	5·7	0·0	0·96	448	10 : 10	8, cu, cu.-s : p.-cl : 10
21	0·4	14·2	NE : NNE	NNE : N	2·2	0·0	0·23	276	10 : 9	10 : 10
22	0·4	14·2	N : W	WSW : E : ESE	0·1	0·0	0·00	130	10 : 9, li.-cl, cu.-s	10 : 10 : v
23	11·4	14·3	ENE : E	E	4·5	0·0	0·57	278	3, li.-cl : 3, li.-cl	2, li.-cl : p.-cl, cu.-s : 0, m, h
24	3·2	14·4	ESE : E	ESE : E	1·9	0·0	0·14	234	v : 10, r	5, cu, li.-cl : p.-cl, cu.-s : v, th.-cl
25	10·6	14·4	E	E	6·1	0·0	0·77	358	v : 1, li.-cl	1, li.-cl : 1, li.-cl : v, th.-cl
26	10·5	14·5	E	ESE : E	5·5	0·0	0·89	360	p.-cl : 1, li.-cl	0 : 0 : v
27	8·4	14·5	E : ENE	ESE : E	1·9	0·0	0·15	250	10 : 10 : v, ci.-cu	3, ci, ci.-cu, cu.-s, slt.-r : 2 : 9, m, l
28	0·7	14·6	E : ENE	NE : NNE	6·0	0·0	0·74	282	p.-cl : 10, sh.-r, m	10, ci.-cu, cu.-s : 10, slt.-r
29	1·4	14·7	NE	NE	5·7	0·1	1·66	513	10, r : 10, c.-hy.-r, sn : 10, r	10 : p.-cl : 5, li.-cl
30	9·6	14·7	NE	ENE : E	6·4	0·0	1·05	405	p.-cl : 6, cu, cu.-s	1, ci.-cu, li.-cl : 0
Means	4·1	13·8	......	......	...	...	0·78	352		
Number of Column for Reference.	21	22	23	24	25	26	27	28	29	30

The mean *Temperature of Evaporation* for the month was 43°·6, being 0°·3 *lower* than the average for the 20 years, 1849–1868.
The mean *Temperature of the Dew Point* for the month was 40°·3, being *the same as* the average for the 20 years, 1849–1868.
The mean *Degree of Humidity* for the month was 79·3, being 2·4 *greater* than the average for the 20 years, 1849–1868.
The mean *Elastic Force of Vapour* for the month was $0^{in}\cdot250$, being *the same as* the average for the 20 years, 1849–1868.
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was $2^{grs}\cdot9$, 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 544 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 6·9.
The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·30. The maximum daily amount of *Sunshine* was 11·4 hours on April 23.
The highest reading of the *Solar Radiation Thermometer* was 123°·5 on April 24; and the lowest reading of the *Terrestrial Radiation Thermometer* was 24°·0 on April 30.
The mean daily distribution of *Ozone* for the 12 hours ending 9^{h}. was 3·2; 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. 8, E. 10, S. 6, and W. 6.
The *Greatest Pressure of the Wind* in the month was 12·6 lbs. on the square foot on April 7. The mean daily *Horizontal Movement of the Air* for the month was 352 miles; the greatest daily value was 617 miles on April 8; and the least daily value was 130 miles on April 22.
Rain fell on 12 days in the month, amounting to $1^{in}\cdot263$, as measured by gauge No. 6 partly sunk below the ground, being $0^{in}\cdot401$ *less* than the average fall for the 45 years, 1841–1885.

MONTH and DAY, 1886.	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	9·3	14·8	NE : ENE	E : ESE	1·3	0·0	0·08	179	0, ho.-fr : 0, so.-ha, slt.-h	4,ci.-cu,li.-cl,so.-ha: 0
2	11·1	14·8	ENE : E	ESE	3·8	0·0	0·19	229	0 : 4, ci.-cu, cu	1,ci-cu,th.-cl : 1, th.-cl : 0
3	11·0	14·9	SE : S	S : SSW : SSE	0·6	0·0	0·04	145	0 : 3,ci,ci.-cu,th.-cl,so.-ha	1, th.-cl : 0
4	11·0	14·9	NE : SSE	SSW : SSE	0·7	0·0	0·03	127	0, ho.-fr : 1, li.-cl, h	5, li.-cl : li.-cl : 0
5	11·7	15·0	SSE : ENE	S	0·4	0·0	0·00	104	0 : 3, th.-cl, h, m, so.-ha	2, ci : 2, m : 10, m
6	8·9	15·1	SSW : WSW	WSW : SSW	0·9	0·0	0·02	166	p.-cl : v, ci.-s, li.-cl	3, th.-cl, slt.-h: 1, th.-cl, h: 0
7	9·6	15·1	SW	SW : SSW	0·7	0·0	0·01	137	0 : p.-cl :9,ci.-cu,li.-cl,so.-ha	7,ci.-cu,li.-cl,so.-ha: 9
8	0·0	15·2	WSW : Calm	Variable	0·3	0·0	0·00	101	10 : 10 :10,m,f,glm	10, slt.-r : 10, slt.-f
9	8·0	15·2	NNE : ENE	ESE : E	2·0	0·0	0·20	199	p.-cl : 8, ci.-cu, li.-cl	p.-cl, ci.-cu, slt.-r : 2, li.-cl, s
10	2·1	15·3	E : ENE	ENE : ESE	3·0	0·0	0·45	253	p.-cl : 9, th.-cl	9, ci, ci.-cu, th.-cl : 10, slt.-r : 10, slt.-r
11	0·0	15·3	ENE : E : ESE	ESE : E	1·6	0·0	0·10	191	10, hy.-sh : 10, th.-r	10, c.-r : 10, fq.-r
12	0·0	15·4	E : ESE	SE : ESE : E	3·5	0·0	0·36	267	10, r : 10, oc.-th.-r	10, fq.-r : 10, fq.-r
13	1·2	15·4	E : NE	SW	2·9	0·0	0·45	272	10, hy.-r : 10,c.-hy.-r: 10, hy.-r	10,glm, slt.-r: p.-cl : v
14	0·2	15·5	WSW: W: WNW	N : NNE : NW	2·8	0·0	0·18	221	10 : 10	10, oc.-slt.-r : 10,oc.-slt.-r: v, m, h
15	9·6	15·5	WSW : WNW	WNW: W: WSW	8·5	0·0	1·98	487	0 : 7, li.-cl, cu, cu.-s, w	8, cu, cu.-s, r, w : v, th.-cl, lu.-ha
16	0·0	15·6	WSW : SW	SW	13·2	0·0	2·02	460	10 : 10, r, w	10, oc.-th.-r, w :10,cu.-s,th.-cl,lu.-ha
17	0·2	15·6	SW	SW	11·0	0·0	2·50	481	10, r : 10, fq.-r, w	10, oc.-slt.-r, w : 10, sc, oc.-slt.-r, w
18	8·2	15·7	SSW	SW : WSW	12·8	0·0	2·22	492	p.-cl, w : 9, ci.-cu, cu.-s, li.-cl	6, ci, ci.-cu, cu, cu.-s, so.-ha, st.-w: 1, li.-cl, prs
19	0·9	15·7	SSW : SE	ENE : E	0·5	0·0	0·01	154	p.-cl,m,lu.-ha: p.-cl : 10, r	10, slt.-r : 10 :v,th.-cl,lu.-co
20	2·5	15·8	ENE : SSW	SSW	4·0	0·0	0·44	259	v : 10 : 9, th.-cl, so.-ha	10, fq.-r : v : 0
21	9·1	15·8	S : SW	SW : S : NNE	1·6	0·0	0·10	201	0, hy.-d : v, li.-cl	1,li.-cl,so.-ha: 10 : 10
22	0·1	15·9	NE : ENE	ESE : E : NE	2·0	0·0	0·19	212	10, fq.-r, l, t :p.-cl,so.-ha: 10	10 : 10
23	2·5	15·9	N : Calm	SW : N	0·9	0·0	0·03	118	10, hy.-r, l, t : t.-sm : 10	10 : p.-cl : 5,li.-cl,slt.-f
24	0·0	16·0	NNE	N : NW : WSW	*	...	...	217	v : 10 : 10, hy.-r	10, c.-hy.-r, f : 10, c.-hy.-r
25	1·6	16·0	SW	SW	...	...	...	361	10, r : p.-cl, slt.-r	9, ci.-cu, li.-cl : p.-cl, slt.-r
26	5·7	16·0	SW	SW: SSW: SSE	...	...	...	306	p.-cl, li.-shs : 9, cu, cu.-s	8, cu, cu.-s : p.-cl, slt.-sh
27	6·6	16·1	ENE : WSW	SW : SSW	...	...	...	388	10 :10, hy.-r: 10	7, cu, cu.-s, sh.-r : v, hy.-r, hl, st.-w
28	10·2	16·1	SW	SW : SSW	...	...	...	465	v : p.-cl, cu	6, ci.-cu, cu.-s, li.-cl, hy.-shs: v, cu.-s, li.-cl
29	9·1	16·1	SSW : SW	SSW	...	...	...	248	p.-cl : 9, cu.-s, li.-cl	5, ci.-cu, cu, li.-cl : 1, s, li.-cl
30	7·0	16·2	Variable	SE : ENE : E	...	...	...	127	v, li.-cl : 2, ci.-cu, th.-cl	6,ci.-cu,th.-cl: th.-cl : 0
31	2·4	16·2	NE : ENE	E : ENE	...	...	...	337	0 :th.-cl,so.-ha: p.-cl,ci.-cu	9,ci.-cu,cu.-s,th.-cl: p.-cl,slt.-r : 9,ci.-cu,slt.-r
Means	5·2	15·6	...	...	...	...	(23 days) 0·50	255		
Number of Column for Reference.	21	22	23	24	25	26	27	28	29	30

The mean *Temperature of Evaporation* for the month was $49^{\circ}\cdot2$, being $0^{\circ}\cdot3$ *higher* than
The mean *Temperature of the Dew Point* for the month was $45^{\circ}\cdot3$, being $0^{\circ}\cdot2$ *higher* than
The mean *Degree of Humidity* for the month was 75·3, being 0·1 *less* than
The mean *Elastic Force of Vapour* for the month was $0^{in}\cdot303$, being $0^{in}\cdot002$ *greater* than
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was $3^{grs}\cdot4$, being *the same as*
The mean *Weight of a Cubic Foot of Air* for the month was 537 grains, being 1 grain *less* than
} the average for the 20 years, 1849 1868.

The mean amount of *Cloud* for the month (a clear sky being represented by 0 and an overcast sky by 10) was 6·8.

The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·33. The maximum daily amount of *Sunshine* was 11·7 hours on May 5.

The highest reading of the *Solar Radiation Thermometer* was $138^{\circ}\cdot0$ on May 31; and the lowest reading of the *Terrestrial Radiation Thermometer* was $18^{\circ}\cdot8$ on May 1.

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

The *Proportions of Wind* referred to the cardinal points were N. 4, E. 9, S. 10, and W. 7. One day was calm.

The *Greatest Pressure of the Wind* in the month was 13·2 lbs. on the square foot on May 16. The mean daily *Horizontal Movement of the Air* for the month was 255 miles; the greatest daily value was 492 miles on May 18; and the least daily value was 101 miles on May 8.

Rain fell on 15 days in the month, amounting to $4^{in}\cdot230$, as measured by gauge No. 6 partly sunk below the ground; being $2^{in}\cdot254$ *greater* than the average fall for the 45 years, 1841–1885.

* The chain of the pressure apparatus of Osler's Anemometer gave way on May 24. It was restored on June 3.

MONTH and DAY, 1886.	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.		
June 1	...	29·667	74·9	52·0	22·9	60·3	+ 2·8	57·3	54·7	5·6	17·6	1·2	82	133·3	46·0	56·9	56·8	0·071	3·8	vP, mN : wP
2	New	29·743	76·8	49·1	27·7	59·5	+ 1·8	55·1	51·2	8·3	20·1	0·8	74	137·0	43·8	57·7	57·6	0·061	0·8	wP : vP, wN
3	...	29·922	56·1	47·7	8·4	51·9	− 6·0	49·4	46·9	5·0	7·6	3·1	83	77·6	46·5	58·1	58·0	0·000	0·0	vP
4	Greatest Declination N.	29·988	63·8	40·1	23·7	52·0	− 6·1	48·0	43·9	8·1	15·2	2·2	74	135·3	34·2	58·2	57·3	0·000	4·0	vP
5	Perigee	29·918	66·0	38·4	27·6	52·4	− 5·8	48·0	43·5	8·9	18·2	1·6	72	136·0	28·6	58·2	57·3	0·000	3·0	vP : wP
6	...	29·768	72·3	41·5	30·8	57·3	− 1·0	51·0	45·3	12·0	24·3	0·9	64	134·7	32·3	59·0	58·8	0·000	3·0	wP : vP
7	...	29·726	73·3	42·9	30·4	58·4	0·0	52·8	47·8	10·6	20·3	2·4	68	133·0	35·0	59·3	58·8	0·000	0·0	vP
8	...	29·714	71·0	44·5	26·5	58·2	− 0·3	53·2	48·7	9·5	17·6	2·8	71	141·0	34·7	59·8	59·7	0·000	5·8	wP
9	First Qr.	29·644	71·0	51·5	19·5	59·0	+ 0·5	55·1	51·6	7·4	16·6	1·6	77	131·8	45·0	60·6	60·2	0·000	5·5	wP
10	In Equator	29·620	61·6	50·4	11·2	55·4	− 3·2	54·2	53·0	2·4	6·1	0·0	92	93·2	44·1	61·3	60·9	0·079	0·8	wP.: vP, mN
11	...	29·726	71·6	49·7	21·9	58·3	− 0·4	54·5	51·1	7·2	19·4	0·0	77	142·7	40·0	60·8	60·7	0·014	3·8	vP
12	...	29·574	71·8	51·2	20·6	58·7	− 0·1	54·7	51·1	7·6	16·0	1·1	76	139·7	45·8	61·8	58·7	0·015	8·8	wP : vP, vN
13	...	29·650	64·4	48·8	15·6	55·6	− 3·3	51·4	47·4	8·2	19·0	2·6	74	122·2	41·0	62·4	62·2	0·085	1·5	wP, mN : vP, ssN : mP
14	...	29·813	68·3	44·8	23·5	56·1	− 3·0	52·6	49·3	6·8	14·9	0·8	78	122·2	35·4	62·3	62·2	0·001	4·0	mP : wP
15	...	29·842	65·1	48·5	16·6	57·7	− 1·6	52·1	47·0	10·7	19·0	1·1	68	116·7	41·0	62·6	62·2	0·009	1·0	vP, wN : wN, vP
16	Full	29·902	63·4	45·4	18·0	54·3	− 5·2	49·1	44·0	10·3	17·1	2·5	68	122·0	37·6	61·6	61·2	0·000	0·0	mP : wP, wN : wN, mP
17	Greatest Declination S.	29·873	62·8	46·2	16·6	52·4	− 7·3	48·4	44·3	8·1	12·2	4·6	74	115·5	37·9	60·8	60·5	0·000	1·0	wP, wN : wN, mP
18	...	29·818	53·9	48·1	5·8	50·5	− 9·4	48·0	45·4	5·1	8·6	2·6	83	73·2	45·2	59·8	59·5	0·000	0·0	wP, wN : wN, mP
19	...	29·655	72·1	48·3	23·8	55·4	− 4·8	52·3	49·3	6·1	16·4	1·5	81	129·8	47·8	58·8	58·7	0·069	0·5	vP, wN : vN, vP
20	...	29·787	66·9	48·5	18·4	56·1	− 4·4	52·1	48·3	7·8	14·6	2·9	75	132·3	46·2	58·8	58·8	0·000	2·5	wP : vP
21	Apogee	29·870	59·2	45·5	13·7	52·5	− 8·3	49·2	45·9	6·6	9·5	3·4	79	80·8	42·4	59·2	58·2	0·000	0·0	wP, wN : wN, wP
22	...	29·741	67·6	52·5	15·1	57·2	− 3·9	53·1	49·3	7·9	14·4	1·0	75	113·4	47·4	58·8	58·3	0·036	0·0	wP, wN
23	...	29·613	70·7	52·5	18·2	59·8	− 1·6	53·2	47·4	12·4	21·2	1·0	64	130·5	45·0	58·8	58·8	0·000	2·2	wP, wN : wN, mP
24	In Equator: Last Quarter.	29·788	74·9	46·4	28·5	59·8	− 1·9	52·0	45·2	14·6	26·5	4·0	58	136·4	37·7	58·8	58·4	0·000	2·0	vP
25	...	29·824	75·9	50·4	25·5	61·5	− 0·4	55·0	49·4	12·1	22·0	3·6	65	137·7	42·7	59·4	58·4	0·000	2·8	vP, wN : vP
26	...	29·864	80·2	49·9	30·3	64·4	+ 2·4	57·5	51·8	12·6	22·4	3·4	63	140·0	40·0	59·4	58·6	0·000	1·0	vP : wP, wN
27	...	29·963	76·1	52·5	23·6	63·4	+ 1·4	56·5	50·7	12·7	23·0	3·2	63	133·9	44·6	61·0	60·7	0·000	0·0	wP
28	...	30·012	79·2	51·8	27·4	63·8	+ 1·9	57·0	51·3	12·5	24·0	1·0	64	144·5	43·0	61·6	60·7	0·000	0·0	wP
29	...	30·043	81·4	48·4	33·0	65·0	+ 3·2	57·5	51·3	13·7	26·7	1·2	61	140·9	40·2	63·0	62·7	0·000	0·0	wP
30	...	30·083	76·8	49·5	27·3	62·8	+ 1·1	56·3	50·7	12·1	22·6	3·2	65	145·0	41·2	65·3	64·5	0·000	2·0	wP : vP, wN
Means	...	29·805	69·6	47·9	21·7	57·7	− 2·1	52·9	48·6	9·1	17·8	2·0	72·3	125·7	41·1	60·1	59·6	Sum 0·440	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 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·805, being 0in·023 *lower* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 81°·4 on June 29; the lowest in the month was 38°·4 on June 5; and the range was 43°·0.

The mean of all the highest daily readings in the month was 69°·6, being 1°·2 *lower* than the average for the 45 years, 1841–1885.

The mean of all the lowest daily readings in the month was 47°·9, being 2°·0 *lower* than the average for the 45 years, 1841–1885.

The mean of the daily ranges was 21°·7, being 0°·7 *greater* than the average for the 45 years, 1841–1885.

The mean for the month was 57°·7, being 2°·1 *lower* than the average for the 20 years, 1849–1868.

MONTH and DAY, 1886.	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	5·1	16·2	ENE : E : ESE	SE : SSW	...	...	...	229	10 : 10, l, t, hy.-sh	8,ci,ci.-cu,cu,cu.-s: 1
2	5·9	16·3	WSW : SW	SW : NE	...	...	...	199	v : 1, li.-cl, so.-ha	8,th.-cl,so.-ha: 10, r, t : 10
3	0·0	16·3	NE	E : NE	...	...	...	226	10 : 10	10 : 10
4	13·8	16·3	NE	NE : E	2·1	0·0	0·40	226	v : p.-cl,ci.-cu,cu.-s	7, cu : p.-cl : 0, d
5	11·2	16·4	NE : ENE	NE : ESE : E	1·9	0·0	0·26	194	0, d : p.-cl : 8, cu	5, li.-cl : so.-ha : 2, ci.-cu, s
6	13·5	16·4	NE	NE : ESE : Calm	3·2	0·0	0·22	154	1, li.-cl : 1, li.-cl, so.-ha	1, li.-cl : 1, li.-cl : 0, d
7	12·0	16·4	Calm : NNE	NNE : E	3·0	0·0	0·20	144	th.-cl, h, m : 3, th.-cl	6,ci.-cu,cu,cu.-s,so.-ha: 2, th.-cl
8	12·4	16·4	NE	E : ESE	2·6	0·0	0·42	202	3, li.-cl : 7, ci.-cu, cu, li.-cl, so.-ha	3,cu,li.-cl,so.-ha: p.-cl : 8, cu.-s
9	7·8	16·4	ENE : ESE	ESE : E	1·0	0·0	0·15	146	10 : 10	7,ci.-cu,cu.-s,li.-cl: v, ci.-cu
10	0·0	16·5	E : ESE : NE	N : SW	0·4	0·0	0·01	83	10 : 10 : 10,slt.-r,glm	10, r, glm : v : 2, li.-cl, h,m
11	7·1	16·5	SW	SW : SSW	4·7	0·0	0·77	297	p.-cl, m : p.-cl, cu.-s	6, ci.-cu, cu, th.-cl: 10, slt.-r
12	7·1	16·5	SW	SW	5·7	0·0	0·93	324	p.-cl,shs.-r:v, li.-cl, ci.-cu, cu: 6, cu, cu.-s	9,ci.-cu,cu,cu.-s: p.-cl, slt.-r : 6, li.-cl
13	5·7	16·5	WSW : NW	NW : WSW	4·5	0·0	0·41	253	10 : 9, shs.-r	p.-cl, cu.-s, sh.-r : 2, li.-cl
14	4·6	16·5	SW	SW : SSW	5·2	0·0	1·02	312	li.-cl : 8,cu,th.-cl,so.-ha	10, cu.-s, slt.-r : 10, sc, slt.-r
15	4·9	16·5	WSW : NW	WNW : WSW	5·5	0·0	1·14	386	10, slt.-r : 9, cu.-s	9, cu.-s : 1
16	4·1	16·5	SW : NW	NNW : NW	6·4	0·0	1·58	418	2, s, li.-cl : 9, cu.-s	8, ci.-cu, cu.-s : v, cu.-s
17	2·3	16·6	WNW : NNW	N : NNW	4·7	0·0	0·85	329	10 : 9, ci.-cu, cu.-s	10 : 10
18	0·0	16·6	N	N : NNW	4·9	0·0	0·75	304	10 : 10	10, oc.-slt.-r : 10, oc-slt.-r
19	3·9	16·6	NW : NNW	N	10·0	0·0	1·68	407	10, slt.-r : 10, hy.-sh: v	v,ci.-cu,cu.-s,li.-cl,w: 10, oc.-slt.-r, w: v, sc, w
20	8·6	16·6	N	N	7·7	0·0	1·64	456	p.-cl : 4,ci.-cu,cu.-s,li.-cl,w	p.-cl, w : p.-cl,slt.-sh: 10
21	0·0	16·6	N : NNW	NNW : WNW	2·0	0·0	0·30	275	10 : 10	10 : 10 : p.-cl
22	0·6	16·6	WNW : NW	WNW : WSW	2·7	0·0	0·49	320	10 : 10, slt.-r	9, ci.-cu, cu.-s, th.-cl: 10, slt.-r : 10, r
23	10·1	16·6	WSW	W : WNW	9·2	0·0	1·87	479	p.-cl : 6,ci.-cu,cu.-s,li.-cl,w	6,ci.-cu,ci.-s,cu,cu.-s,w: 2
24	11·0	16·6	W : WSW	WSW : SW	4·0	0·0	0·87	358	0 : li.-cl : p.-cl, cu.-s	4,ci.-cu,ci.-s,th.-cl: v,ci.-cu,ci.-s,cu.-s,li.-cl
25	10·3	16·6	WSW : W	WSW : SW	1·8	0·0	0·12	267	s, th.-cl : 7, cu.-s	7, cu, cu.-s, li.-cl : v, li.-cl, cu.-s
26	5·3	16·5	SW	SW : NW : N	1·3	0·0	0·03	146	1, s : p.-cl, m : 8, th.-cl, m	7, ci, ci.-cu,cu.-s, li.-cl : v, ci.-cu, li.-cl
27	9·9	16·5	NNE	NNE : ESE	1·2	0·0	0·04	202	0 : 0	p.-cl : v, ci.-s, th.-cl
28	12·0	16·5	NE	N : NNE : ESE	1·3	0·0	0·03	140	0 : 0 : li.-cl	6, cu, cu.-s : 0
29	10·8	16·5	Calm : NE	NE : E	0·5	0·0	0·00	110	2, li.-cl : 6, th.-cl	4, cu, cu.-s, th.-cl : 3, ci
30	13·0	16·5	NE : NNE	NNE : E : ESE	3·0	0·0	0·18	201	0 : 2, li.-cl : 4, li.-cl	5,ci.-cu,cu,cu.-s: 0 : 0
Means	7·1	16·5	......	......	...	...	(27 days) 0·61	260		
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°·9, being 2°·3 *lower* than the average for the 20 years, 1849–1868.
The mean *Temperature of the Dew Point* for the month was 48°·6, being 2°·6 *lower* than the average for the 20 years, 1849–1868.
The mean *Degree of Humidity* for the month was 72·3, being 1·0 *less* than the average for the 20 years, 1849–1868.
The mean *Elastic Force of Vapour* for the month was 0^{in}·343, being 0^{in}·034 *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 3^{grs}·8, being 0^{gr}·4 *less* than the average for the 20 years, 1849–1868.
The mean *Weight of a Cubic Foot of Air* for the month was 533 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 6·5.
The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·43. The maximum daily amount of *Sunshine* was 13·8 hours on June 4.
The highest reading of the *Solar Radiation Thermometer* was 145°·0 on June 30; and the lowest reading of the *Terrestrial Radiation Thermometer* was 28°·6 on June 5.
The mean daily distribution of *Ozone* for the 12 hours ending 9^{h}. was 0·7; for the 6 hours ending 15^{h}. was 0·7; and for the 6 hours ending 21^{h}. was 0·6.
The *Proportions of Wind* referred to the cardinal points were N. 10, E. 8, S. 3, and W. 8. One day was calm.
The *Greatest Pressure of the Wind* in the month was 10·0 lbs. on the square foot on June 19. The mean daily *Horizontal Movement of the Air* for the month was 260 miles; the greatest daily value was 479 miles on June 23; and the least daily value was 83 miles on June 10.
Rain fell on 9 days in the month, amounting to 0^{in}·440, as measured by gauge No. 6 partly sunk below the ground; being 1^{in}·593 *less* than the average fall for the 45 years, 1841–1885.

MONTH and DAY, 1886.	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	Greatest Dec. N New	30·090	73·8	46·5	27·3	60·7	− 0·9	55·3	50·6	10·1	18·5	1·5	69	143·0	37·9	64·8	64·5	0·000	0·2	vP
2	...	30·107	80·2	49·8	30·4	64·2	+ 2·7	57·6	52·1	12·1	25·3	1·6	65	145·6	42·1	65·8	65·5	0·000	0·8	vP : mP
3	Perigee	30·118	85·6	50·9	34·7	69·0	+ 7·6	61·3	55·3	13·7	27·5	2·2	61	131·7	43·9	66·4	65·5	0·000	1·0	... : wP, wN : wP
4	...	30·099	88·2	59·3	28·9	73·6	+12·2	63·8	56·6	17·0	31·5	3·2	55	138·3	52·2	...	...	0·000	1·0	wP
5	...	30·048	85·1	59·0	26·1	71·1	+ 9·6	61·0	53·3	17·8	28·7	5·3	53	143·0	48·8	...	...	0·000	0·0	vP, wN : wN, vP
6	...	29·923	89·8	52·7	37·1	71·3	+ 9·6	61·0	53·2	18·1	30·9	4·8	52	151·5	45·0	...	...	0·000	1·0	wP : ...
7	In Equator	29·732	89·5	56·0	33·5	69·6	+ 7·7	61·5	55·2	14·4	27·5	5·7	60	155·2	46·7	...	...	0·000	1·0	... : wP, wN
8	First Qr.	29·628	70·7	56·5	14·2	62·3	+ 0·1	56·8	52·1	10·2	18·9	4·6	70	124·0	48·5	...	...	0·000	0·0	wP, wN : wN, vP
9	...	29·823	71·5	49·7	21·8	58·2	− 4·3	53·0	48·3	9·9	21·4	3·2	70	135·0	41·4	...	...	0·020	2·0	wP, wN : wN, vP
10	...	29·967	67·9	46·9	21·0	58·7	− 4·0	52·9	47·8	10·9	19·8	1·9	68	110·1	38·0	...	...	0·000	0·0	wP, wN : wN, vP
11	...	29·961	78·1	47·7	30·4	62·2	− 0·7	56·9	52·4	9·8	18·5	2·3	71	141·0	38·8	...	...	0·000	3·0	vP : wP
12	...	29·813	67·7	52·3	15·4	61·0	− 2·1	59·7	58·6	2·4	4·9	0·6	92	89·2	45·5	...	...	0·374	0·0	wP : vP, vN
13	...	29·731	74·1	49·6	24·5	60·4	− 2·9	56·2	52·6	7·8	16·4	0·8	75	141·1	42·9	...	...	0·008	1·8	mP : vP
14	Greatest Declination S.	29·374	70·9	52·7	18·2	60·5	− 2·9	55·3	50·8	9·7	21·4	1·4	70	130·9	46·5	...	...	0·310	5·2	vN, vP : vN, vP
15	...	29·604	71·6	50·8	20·8	58·4	− 5·0	52·5	47·2	11·2	23·2	3·8	67	128·0	44·2	...	...	0·000	2·2	mP : ...
16	Full	29·645	74·1	49·7	24·4	61·1	− 2·4	55·3	50·3	10·8	21·1	1·2	68	140·6	45·2	...	...	0·010	0·8	... : vP, wN
17	...	29·826	68·2	52·9	15·3	61·1	− 2·4	58·2	55·7	5·4	12·8	2·1	83	105·3	45·8	...	...	0·259	1·0	mP : wN, mP
18	...	29·675	79·5	54·0	25·5	68·1	+ 4·7	62·0	57·2	10·9	21·3	0·8	68	144·1	47·4	...	...	0·013	5·5	sN, vP : wP
19	Apogee	29·587	72·5	55·8	16·7	64·6	+ 1·3	61·4	58·7	5·9	11·5	0·8	81	117·2	50·9	...	...	0·244	3·5	wP : vP, vN
20	...	29·832	77·1	53·0	24·1	63·6	+ 0·4	58·4	54·0	9·6	18·0	1·2	72	140·7	49·0	...	...	0·000	4·8	mP
21	...	29·713	86·6	57·0	29·6	70·6	+ 7·6	64·5	59·8	10·8	21·9	2·3	69	146·2	50·5	...	...	0·000	5·7	mP : vP, sN
22	In Equator	29·667	76·0	57·9	18·1	65·2	+ 2·3	59·1	54·1	11·1	18·5	3·4	68	142·2	53·3	...	...	0·000	10·0	wP, wN : vP, wN
23	...	29·508	65·8	57·6	8·2	60·5	− 2·3	58·0	55·8	4·7	8·6	0·2	85	93·0	52·9	...	...	0·334	10·5	vP : vP, vN
24	Last Qr.	29·434	71·9	55·5	16·4	62·7	0·0	58·4	54·8	7·9	18·0	0·4	76	131·3	51·0	...	...	0·004	1·5	vP
25	...	29·424	72·1	52·0	20·1	61·1	− 1·6	59·4	57·9	3·2	6·1	0·6	90	119·1	47·9	...	...	0·531	8·5	vP : vP, sN
26	...	29·293	71·0	53·8	17·2	61·7	− 1·0	57·7	54·3	7·4	15·5	0·8	77	132·4	53·8	...	...	0·312	7·0	mN, vP : vP
27	...	29·599	62·1	52·0	10·1	56·5	− 6·1	52·3	48·4	8·1	14·3	2·7	74	109·9	48·0	...	...	0·000	0·0	vP : wP, wN
28	...	29·915	67·1	45·4	21·7	56·3	− 6·3	51·1	46·2	10·1	18·5	3·0	69	127·0	38·0	...	...	0·000	0·5	mP : vP, wN
29	Greatest Declination N.	29·869	69·0	51·5	17·5	59·5	− 3·1	55·0	51·0	8·5	16·2	2·4	74	123·9	46·6	...	...	0·000	8·0	mP
30	...	29·582	75·2	55·4	19·8	62·5	− 0·1	58·4	54·9	7·6	16·4	2·5	77	141·6	50·4	...	...	0·005	8·5	vP
31	Perigee : New	29·539	71·7	52·6	19·1	60·1	− 2·5	56·5	53·4	6·7	15·7	1·5	79	127·7	46·5	...	...	0·085	3·0	wP, wN : vP, vN
Means	...	29·746	75·0	52·8	22·2	63·1	+ 0·5	57·8	53·3	9·8	19·0	2·2	71·2	130·6	46·4	...	...	Sum 2·509	3·2	...
Number of Column for Reference.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

The results apply to the civil day.

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

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

The observations of the temperature of the water of the Thames were suspended from July 4 till September 25.

The mean reading of the *Barometer* for the month was 29in·746, being 0in·063 *lower* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 89°·8 on July 6; the lowest in the month was 45°·4 on July 28; and the range was 44°·4.
The mean of all the highest daily readings in the month was 75°·0, being 0°·8 *higher* than the average for the 45 years, 1841–1885.
The mean of all the lowest daily readings in the month was 52°·8, being 0°·3 *lower* than the average for the 45 years, 1841–1885.
The mean of the daily ranges was 22°·2, being 1°·1 *greater* than the average for the 45 years, 1841–1885.
The mean for the month was 63°·1, being 0°·5 *higher* than the average for the 20 years, 1849–1868.

MONTH and DAY, 1886.	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	13·9	16·5	ENE	E : ESE	1·0	0·0	0·03	173	0, d : 0 : 1, cu	2, ci.-cu, cu : 0
2	10·3	16·5	E : NE	ENE : ESE	0·2	0·0	0·00	136	0 : 1, th.-cl, m	0 : 0
3	10·4	16·4	Calm : SW : N	N : NNE	0·0	0·0	0·00	83	0 : 0, m, h : 1, m, h	5, th.-cl, cu.-s, h, m : li.-cl, m : 2, li.-cl, ci.-s, h, m
4	12·7	16·4	Calm : Variable	NW : WNW	1·5	0·0	0·07	166	0, m : 0, h, m	0, h : 1, li.-cl : 0
5	14·0	16·4	NNW : NW : W	NNW : N	1·3	0·0	0·06	185	0 : 0 : 1, li.-cl, h	0 : 0
6	13·9	16·4	S : SW	SW : W	1·8	0·0	0·08	181	1, li.-cl : 0 : 1, li.-cl, h	2, li.-cl, h : 0 : 0
7	10·8	16·3	SW : W	SW : NE : E	1·2	0·0	0·03	166	0, h : p.-cl, h, m : 4, th.-cl, h, m	5, ci, cu, cu.-s, li.-cl : v, ci.-cu, cu, cu.-s, li.-cl, slt.-r
8	1·0	16·3	NE : N	N : NE	3·0	0·0	0·13	232	p.-cl : 10	10, slt.-r : 10, slt.-r
9	4·2	16·3	N : NNW	NE : E : SE	1·4	0·0	0·05	177	p.-cl : 5, cu.-s, m	8, cu, cu.-s, li.-shs : 10
10	2·5	16·3	SW : N	NNW : N	0·1	0·0	0·00	119	10 : p.-cl, m	9, cu.-s : 10 : 2, ci.-cu, ci.-s, li.-cl
11	3·2	16·2	WSW	SW	3·3	0·0	0·59	315	v : 10	10 : li.-cl : 9, sh.-r
12	0·0	16·2	SW	SW : NW : WSW	2·0	0·0	0·25	295	10 : 10, fq.-r	10, fq.-r : 10, c.-r : v, li.-cl
13	4·7	16·2	SW : WSW	SW : SSW	2·4	0·0	0·27	278	v : 9, cu.-s, th.-cl, so.-ha	8, cu, cu.-s : p.-cl, r
14	8·6	16·1	SSW : SW : WNW	WNW : WSW	7·5	0·0	2·06	528	10, c.-r : p.-cl : 8, cu.-s, hy.-sh, w	4, ci.-cu, cu, cu-s, w : v, ci.-cu, cu.-s, li.-cl
15	5·9	16·1	WSW : W	WSW : SW : SSW	4·0	0·0	0·71	373	p.-cl : 10, cu.-s	9, cu, cu.-s : p.-cl : 0
16	4·6	16·1	SSW : WSW : WNW	W : WNW : NNW	4·3	0·0	0·45	340	v : 7, slt.-sh	7, ci.-cu, cu.-s, slt.-r : v, li.-cl
17	1·3	16·0	SW : SSW	SW	3·0	0·0	0·10	213	p.-cl : 10 : 10, r	10, fq.-r : 10, sh.-r
18	10·6	16·0	SSW	SSE	3·5	0·0	0·22	192	10, oc.-r : 6, ci.-cu, cu, cu.-s, li.-cl	3, li.-cl, cu.-s : p.-cl, ci.-cu, cu.-s
19	2·1	16·0	WSW : SW	SSW : WSW	5·4	0·0	0·14	240	10 : 10, slt.-r	10, fq.-r : 10, fq.-r
20	8·3	15·9	SW	SSW : E	2·1	0·0	0·11	243	p.-cl : 7, cu, cu.-s	3, li.-cl : v, li.-cl
21	9·0	15·9	SE : SSE	S : SW	5·7	0·0	0·70	260	v, lu.-ha : p.-cl, ci.-s	7, ci, ci.-cu, cu, cu.-s : 9, shs.-r : p.-cl, l
22	13·2	15·8	SSW : SW	SW	9·6	0·0	3·16	505	p.-cl : 5, li.-cl, cu, w	8, cu, cu.-s, w : v, ci.-cu, ci.-s, cu.-s, th.-cl
23	0·0	15·8	SW	SSW : SE	5·5	0·0	0·75	293	v : 10, th.-r	10, r : 10, hy.-r
24	5·0	15·7	WNW : WSW : W	W : SW	5·6	0·0	1·01	369	10, slt.-r : 9, cu.-s	9, ci.-cu, cu.-s : v, th.-cl
25	0·2	15·7	SSW : SSE	SSW : S	2·4	0·0	0·22	222	10 : 10, r	10, th.-r, t : 10, fq.-hy.-r, t
26	7·5	15·7	SSE : WSW	WSW : SW	7·0	0·0	1·15	359	10, fq.-hy.-r : p.-cl : 7, cu, cu.-s	8, ci.-cu, cu, cu.-s, slt.-r : v, li.-cl
27	0·8	15·6	N	NNW : NW	3·3	0·0	0·58	276	10 : 10	10 : 10 : p.-cl
28	8·0	15·6	W : WNW	WNW : SW : SSW	2·0	0·0	0·27	233	v : 4, li.-cl	8, ci.-cu, cu, cu.-s : p.-cl
29	1·3	15·5	SSW	SSW : S	4·0	0·0	0·45	267	p.-cl : p.-cl, cu.-s, li.-cl	10 : 5, li.-cl, m
30	2·2	15·5	SSE : SSW	SSW : SW	2·4	0·0	0·27	246	10 : 10, sh.-r	8, cu, cu.-s, li.-cl : 10 : v, th.-cl, cu.-s
31	2·3	15·4	WSW : NW	W : WSW	4·7	0·0	0·29	267	v, r : 10, r, m	7, ci.-cu, cu, cu.-s, t : v, shs.-r : 2
Means	6·2	16·0	...	...	...	...	0·46	256		
Number of Column for Reference.	21	22	23	24	25	26	27	28	29	30

The mean *Temperature of Evaporation* for the month was $57^{\circ}\cdot8$, being $0^{\circ}\cdot1$ *higher* than
The mean *Temperature of the Dew Point* for the month was $53^{\circ}\cdot3$, being $0^{\circ}\cdot4$ *lower* than
The mean *Degree of Humidity* for the month was 71·2, being 1·8 *less* than
The mean *Elastic Force of Vapour* for the month was $0^{in}\cdot407$, being $0^{in}\cdot006$ *less* than
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was $4^{grs}\cdot5$, being $0^{gr}\cdot1$ *less* than
The mean *Weight of a Cubic Foot of Air* for the month was 526 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 6·5.

The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·39. The maximum daily amount of *Sunshine* was 13·9 hours on July 1.

The highest reading of the *Solar Radiation Thermometer* was $155^{\circ}\cdot2$ on July 7; and the lowest reading of the *Terrestrial Radiation Thermometer* was 37·9 on July 1.

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

The *Proportions of Wind* referred to the cardinal points were N. 5, E. 4, S. 10, and W. 11. One day was calm.

The *Greatest Pressure of the Wind* in the month was 9·6 lbs. on the square foot on July 22. The mean daily *Horizontal Movement of the Air* for the month was 256 miles; the greatest daily value was 528 miles on July 14; and the least daily value was 83 miles on July 3.

Rain fell on 13 days in the month, amounting to $2^{in}\cdot509$, as measured by gauge No. 6 partly sunk below the ground; being $0^{in}\cdot145$ *greater* than the average fall for the 45 years, 1841–1885.

MONTH and DAY, 1886.	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.		
Aug. 1	...	29·613	72·7	50·7	22·0	59·7	− 2·9	55·5	51·8	7·9	18·2	0·8	76	147·2	44·4	...	...	0·133	4·0	mP : mP, mN
2	...	29·567	64·1	51·0	13·1	57·9	− 4·8	54·6	51·7	6·2	17·5	0·4	80	121·0	42·0	...	...	0·020	5·2	vP
3	...	29·892	66·8	44·6	22·2	57·0	− 5·7	51·0	45·5	11·5	18·0	3·8	65	121·3	34·7	...	...	0·000	3·8	sP : wP, wN : wN, vP
4	In Equator	29·946	65·0	49·3	15·7	56·8	− 5·9	53·6	50·6	6·2	13·9	2·0	80	110·0	43·1	...	...	0·000	4·0	vP, mN : vP
5	...	29·898	72·3	48·6	23·7	59·6	− 3·1	55·0	50·9	8·7	18·2	1·3	73	130·3	42·2	...	...	0·000	5·0	wP
6	First Qr.	29·764	77·8	57·6	20·2	65·9	+ 3·2	61·6	58·1	7·8	13·3	3·4	77	133·0	54·6	...	...	0·000	5·0	vP
7	...	29·795	78·2	58·7	19·5	67·5	+ 4·8	63·2	59·8	7·7	13·9	1·3	77	138·8	52·1	...	...	0·000	0·0	mP : vP
8	...	29·870	77·4	62·5	14·9	67·0	+ 4·3	63·1	60·0	7·0	15·3	0·9	78	141·6	57·0	...	...	0·060	2·0	vP
9	...	29·821	74·5	60·1	14·4	64·2	+ 1·5	62·0	60·1	4·1	9·7	0·5	87	136·3	58·2	...	...	0·029	0·0	mP : vP, wN
10	Greatest Declination S.	29·565	66·1	53·5	12·6	61·0	− 1·7	59·3	57·8	3·2	7·6	0·9	90	105·6	47·0	...	...	0·439	2·0	vP, ssN : mP
11	...	29·731	68·6	50·6	18·0	58·3	− 4·4	52·8	47·9	10·4	19·4	2·6	69	136·3	42·5	...	...	0·000	5·7	mP : vP, wN
12	...	29·754	70·1	46·6	23·5	58·0	− 4·6	53·5	49·4	8·6	17·5	2·1	73	134·0	37·9	...	...	0·015	4·5	mP
13	...	29·417	70·1	55·9	14·2	61·1	− 1·4	58·2	55·7	5·4	12·2	1·1	83	126·0	54·1	...	...	0·122	8·8	vP
14	Full	29·668	68·1	52·7	15·4	59·0	− 3·4	56·4	54·1	4·9	12·4	0·6	84	123·0	47·7	...	...	0·000	4·2	mP
15	Apogee	29·921	71·8	54·0	17·8	61·4	− 0·9	57·4	53·9	7·5	14·8	2·3	77	128·4	46·2	...	...	0·000	11·5	wP : mP
16	...	29·714	73·9	53·9	20·0	62·4	+ 0·3	57·3	52·9	9·5	19·3	2·3	71	145·3	47·0	...	...	0·084	5·2	vP
17	...	29·794	67·4	52·0	15·4	58·5	− 3·4	54·8	51·5	7·0	13·1	2·0	77	118·5	44·0	...	...	0·008	0·0	mP : wP, wN : wP, wN
18	In Equator	30·012	68·1	53·8	14·3	59·7	− 2·1	55·5	51·8	7·9	15·3	3·0	76	127·1	46·0	...	...	0·000	0·0	mP : wP : mN, vP
19	...	30·017	63·1	53·4	9·7	58·2	− 3·4	57·2	56·3	1·9	3·4	0·2	93	71·2	45·0	...	...	0·206	2·0	vP, wN
20	...	30·055	71·6	48·4	23·2	59·8	− 1·6	56·5	53·6	6·2	15·7	0·6	81	135·9	37·7	...	...	0·000	0·0	mP : vP
21	...	29·908	75·4	47·6	27·8	61·0	− 0·3	57·8	55·0	6·0	14·5	0·8	81	137·2	40·3	...	...	0·000	0·0	vP : mP
22	Last Qr.	29·845	79·6	56·0	23·6	64·9	+ 3·6	61·2	58·1	6·8	18·7	0·9	79	138·0	48·5	...	...	0·000	0·2	wP
23	...	29·784	75·8	55·3	20·5	63·2	+ 2·0	60·0	57·3	5·9	14·1	1·5	81	132·7	55·0	...	...	0·000	2·8	vP
24	...	29·728	78·4	56·9	21·5	65·5	+ 4·4	61·3	57·8	7·7	18·9	1·7	77	125·6	48·9	...	...	0·000	0·0	wP : vP
25	Greatest Declination N.	29·806	76·3	54·6	21·7	63·5	+ 2·5	58·9	55·0	8·5	19·0	0·9	75	126·4	45·8	...	...	0·000	1·0	wP, wN : mP
26	...	29·884	78·1	53·7	24·4	63·9	+ 3·0	59·1	55·1	8·8	18·2	1·5	74	142·0	44·4	...	...	0·000	4·2	wP : wP : mP
27	...	29·962	81·2	56·1	25·1	65·9	+ 5·1	62·8	60·3	5·6	14·6	0·8	83	148·0	46·2	...	...	0·000	3·8	mP
28	...	29·922	76·5	56·5	20·0	65·7	+ 5·0	61·9	58·8	6·9	14·8	0·2	79	141·6	49·3	...	...	0·000	1·0	mP
29	Perigee : New	29·857	82·0	50·8	31·2	64·8	+ 4·2	60·1	56·2	8·6	23·5	0·6	74	121·2	40·3	...	...	0·000	0·0	sP : mP : vP
30	...	29·832	87·7	53·2	34·5	68·7	+ 8·3	62·7	58·0	10·7	24·7	1·1	68	143·8	46·4	...	...	0·000	2·0	vP
31	In Equator	29·901	89·1	53·9	35·2	70·0	+ 9·7	63·8	59·0	11·0	26·7	0·9	68	145·0	43·5	...	...	0·000	0·0	mP : vP
Means	...	29·814	73·8	53·3	20·5	62·3	+ 0·4	58·3	55·0	7·3	16·0	1·4	77·6	130·1	46·2	...	...	Sum 1·116	2·8	...
Number of Column for Reference.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

The results apply to the civil day.

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

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

No observations of the temperature of the water of the Thames were made throughout the month.

The mean reading of the *Barometer* for the month was 29in·814, being 0in·015 *higher* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 89°·1 on August 31; the lowest in the month was 44°·6 on August 3; and the range was 44°·5.
The mean of all the highest daily readings in the month was 73°·8, being 0°·9 *higher* than the average for the 45 years, 1841–1885.
The mean of all the lowest daily readings in the month was 53°·3, being 0°·2 *higher* than the average for the 45 years, 1841–1885.
The mean of the daily ranges was 20°·5, being 0°·7 *greater* than the average for the 45 years, 1841–1885.
The mean for the month was 62°·3, being 0°·4 *higher* than the average for the 20 years, 1849–1868.

MONTH and DAY, 1886.	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	5·1	15·3	WSW	SSW : E	2·7	0·0	0·62	269	p.-cl : 7, cu, li.-cl	p.-cl, slt.-sh : 10, fq.-r
2	3·7	15·3	E : NNE : NNW	N : NNW	7·3	0·0	0·54	259	10 : 10, fq.-th.-r	9, ci.-cu, cu.-s, slt.-r : v : 0
3	9·5	15·2	WNW : N : NNW	N	0·7	0·0	0·07	161	p.-cl : 3, th.-cl	3, ci.-cu, li.-cl, m : 8, cu.-s, li.-cl
4	0·3	15·2	Calm : Variable	E : SE : SSE	1·0	0·0	0·03	96	p.-cl : 8, slt.-m, glm, slt.-r	8, cu, cu.-s, ci.-cu, slt.-r : v, th.-cl, h, m
5	4·4	15·1	SSE : SW	SW : SSW	1·5	0·0	0·24	223	0 : p.-cl : v, li.-cl	8, ci.-cu, cu, cu.-s : 10
6	2·9	15·1	SW : WSW	WSW : SW	1·2	0·0	0·09	237	10 : 10	9, ci.-cu, cu.-s : 4, th.-cl
7	5·1	15·0	WSW	WSW : W	7·0	0·0	1·13	389	v : p.-cl	9, cu.-s : v, li.-cl
8	3·7	15·0	WSW : SW	WSW : SW	1·7	0·0	0·20	258	10 : 8, ci.-cu, cu, cu.-s	9, cu, cu.-s : 10, shs.-r
9	0·3	14·9	WSW	WSW : SSE	0·5	0·0	0·00	138	10 : 10, oc.-th.-r	10, oc.-slt.-r : 10
10	0·2	14·9	SE : SW	WSW : W	4·3	0·0	0·23	229	10, r : 10, fq.-hy.-r	10, li.-shs : v : 0
11	10·7	14·8	WSW : W	WSW	4·5	0·0	0·39	346	1, th.-cl, d : 2, ci.-cu	4, ci.-cu, cu, cu.-s : p.-cl : 0, d
12	5·3	14·7	SW	SW : S	2·3	0·0	0·20	282	0, d : 6, cu, ci.-s, li.-cl	8, ci.-cu, cu, cu.-s : 10, shs.-r
13	5·0	14·7	S : SSW	SSW : S	6·0	0·0	0·43	320	10, shs.-r : 10, shs.-r : v, li.-cl, ci.-cu, shs.-r	v, ci.-cu, cu, li.-cl, sh.-r : v, li.-cl
14	2·1	14·6	S : W : N	N : NE : SE	1·8	0·0	0·07	179	p.-cl : 10	9, cu, cu.-s : 7, li.-cl
15	9·8	14·6	SSE : SSW	SSW	3·4	0·0	0·51	310	p.-cl : 7, li.-cl, ci.-cu	p.-cl, ci.-cu, cu.-s : v, li.-cl
16	7·8	14·5	SSW : WSW	WSW	6·6	0·0	1·17	400	10, fq.-r : p.-cl, cu	5, cu, cu.-s : v, cu.-s, th.-cl
17	1·1	14·4	WSW : NW	NNW	6·0	0·0	0·83	339	p.-cl : 10, ci.-cu, cu.-s, th.-r	9, ci.-cu, cu.-s, slt.-sh : 10
18	2·0	14·4	N	NNE : WSW	0·5	0·0	0·06	156	10 : 10, slt.-m	10, ci.-cu, cu.-s : v, li.-cl, cu.-s, h, m
19	0·0	14·3	SW : WSW : NW	N : NE	0·6	0·0	0·03	155	10, slt.-r : 10, fq.-r, m	10, oc.-th.-r : 10, oc.-th.-r : v, m
20	8·2	14·3	NE	NE : SE : Calm	0·7	0·0	0·00	141	v, d : 8, cu.-s	6, ci.-cu, cu.-s : 0, d, m
21	9·0	14·2	Calm : ENE	ESE	0·4	0·0	0·00	107	0, m : 0, m : 3, ci.-cu, li.-cl, m	3, ci.-cu, li.-cl : 0 : v
22	6·3	14·1	NE	NE : NNE	2·5	0·0	0·13	224	10 : 10 : v, m	p.-cl, cu : v, th.-cl, cu.-s
23	2·3	14·1	NNE : N	NNE	0·5	0·0	0·03	197	10 : 10	8, ci.-cu, ci.-s, li.-cl : p.-cl : 10, l
24	4·6	14·0	NNE	NNE	0·3	0·0	0·01	138	10 : 10 : v, li.-cl, h	3, ci.-cu, cu.-s, li.-cl : 2 : 0
25	6·4	13·9	WSW : NW	W : SW	1·7	0·0	0·13	224	0, m, d : 0, h, m	0 : 0 : 0, d
26	6·5	13·9	SW : WSW	WSW : SW	3·6	0·0	0·32	323	p.-cl : p.-cl	7, ci, ci.-cu, li.-cl : 1, li.-cl, d
27	4·0	13·8	SW : WSW	SW : SSW	1·0	0·0	0·02	203	v : 10, slt.-m	7, ci.-cu, cu.-s, li.-cl : 1, th.-cl, d
28	7·1	13·8	S : SSE	S : SSW	0·2	0·0	0·00	130	0, d : p.-cl : 9	5, ci.-cu, cu.-s, li.-cl : 0 : 0, d
29	9·2	13·7	SW : NE	Variable	0·0	0·0	0·00	126	0 : 0, h, m	0, h, m : 0 : 0
30	11·8	13·7	Calm : NE : SE	S : SSW	1·8	0·0	0·15	163	0 : 1, ci.-cu, cu.-s, li.-cl, m, h	0 : 0, d
31	11·5	13·6	SSW	SSW : SW	1·7	0·0	0·16	181	0, hy.-d : 0, h, m	0 : 0, d
Means	5·4	14·5	...	...	...	...	0·25	223		
Number of Column for Reference.	21	22	23	24	25	26	27	28	29	30

The mean *Temperature of Evaporation* for the month was 58°·3, being 0°·4 *higher* than }
The mean *Temperature of the Dew Point* for the month was 55°·0, being 0°·6 *higher* than }
The mean *Degree of Humidity* for the month was 77·6, being 1·1 *greater* than } the average for the 20 years, 1849–1868.
The mean *Elastic Force of Vapour* for the month was 0in·433, being 0in·009 *greater* than }
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was 4grs·8, being 0gr·1 *greater* than }
The mean *Weight of a Cubic Foot of Air* for the month was 528 grains, being *the same as* }

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

The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·37. The maximum daily amount of *Sunshine* was 11·8 hours on August 30.

The highest reading of the *Solar Radiation Thermometer* was 148°·0 on August 27; and the lowest reading of the *Terrestrial Radiation Thermometer* was 34°·7 on August 3.

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

The *Proportions of Wind* referred to the cardinal points were N. 6, E. 3, S. 10, and W. 10. Two days were calm.

The *Greatest Pressure of the Wind* in the month was 7·3 lbs. on the square foot on August 2. The mean daily *Horizontal Movement of the Air* for the month was 223 miles; the greatest daily value was 400 miles on August 16; and the least daily value was 96 miles on August 4.

Rain fell on 10 days in the month, amounting to 1in·116, as measured by gauge No. 6 partly sunk below the ground, being 1in·238 *less* than the average fall for the 45 years, 1841–1885.

MONTH and DAY, 1886.	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.		
Sept. 1	...	29·927	87·7	57·9	29·8	70·8	+10·7	65·6	61·6	9·2	20·2	1·3	73	141·7	48·2	...	...	0·000	0·0	wP : mP : wN, mP
2	...	29·901	67·1	55·1	12·0	59·8	− 0·2	57·7	55·9	3·9	10·1	0·8	87	97·4	48·0	...	...	0·042	0·0	wP : wP, wN
3	...	29·904	70·6	55·2	15·4	62·9	+ 3·1	61·5	60·3	2·6	7·4	0·4	92	96·2	55·0	...	...	0·020	4·2	vP
4	...	29·845	80·2	59·7	20·5	67·9	+ 8·2	65·8	64·1	3·8	13·6	0·7	87	133·9	52·5	...	...	0·192	5·0	vP, sN : mP
5	First Qr.	29·748	74·1	54·0	20·1	63·4	+ 3·9	60·2	57·5	5·9	15·7	0·8	81	135·8	49·3	...	...	0·040	10·2	vP
6	...	29·800	73·8	54·2	19·6	61·7	+ 2·4	57·5	53·9	7·8	19·4	1·9	76	137·6	49·3	...	...	0·000	11·8	wP : mP
7	Greatest Declination S.	29·820	73·1	50·2	22·9	62·0	+ 3·0	57·2	53·1	8·9	21·6	0·9	73	127·9	40·0	...	...	0·029	0·7	vP, wN : vP
8	...	29·744	71·6	48·5	23·1	59·7	+ 0·9	56·2	53·1	6·6	15·8	1·6	80	127·3	37·8	...	...	0·000	10·5	vP : mP
9	...	29·730	72·2	60·0	12·2	64·1	+ 5·6	61·5	59·3	4·8	10·1	1·5	84	120·2	56·1	...	...	0·030	13·5	wP
10	...	29·612	68·8	46·0	22·8	59·1	+ 0·8	57·4	55·9	3·2	8·5	0·0	90	104·6	37·0	...	...	0·449	6·0	wP : wN, vP
11	Apogee	29·815	70·1	45·2	24·9	56·3	− 1·8	52·9	49·8	6·5	15·5	0·0	79	131·7	35·7	...	...	0·000	6·0	vP : mP
12	...	29·865	68·2	53·1	15·1	61·3	+ 3·3	59·2	57·4	3·9	7·9	1·6	87	118·3	47·7	...	...	0·000	10·2	wP
13	Full	29·899	77·4	58·3	19·1	66·0	+ 8·2	61·0	57·0	9·0	18·5	2·5	73	140·1	48·3	...	...	0·000	3·8	wP : mP
14	In Equator	29·908	77·5	54·7	22·8	65·2	+ 7·6	61·1	57·7	7·5	16·3	0·2	78	109·8	46·7	...	...	0·000	0·0	vP : wP, wN
15	...	30·187	66·5	47·5	19·0	57·9	+ 0·5	53·0	48·6	9·3	18·2	3·6	70	115·2	40·0	...	...	0·000	3·0	wP : vP
16	...	30·255	63·2	45·2	18·0	53·4	− 3·9	48·4	43·4	10·0	17·3	3·8	69	110·7	36·0	...	...	0·000	0·0	wP : mP
17	...	30·084	68·8	40·3	28·5	54·7	− 2·4	49·4	44·3	10·4	23·9	1·9	68	128·6	31·0	...	...	0·000	0·0	wP : mP
18	...	29·961	68·8	40·7	28·1	55·2	− 1·7	50·3	45·6	9·6	25·7	1·3	70	127·4	31·3	...	...	0·000	1·0	wP : mP
19	...	29·862	69·3	42·0	27·3	56·6	− 0·2	52·4	48·5	8·1	20·3	1·0	74	124·0	34·0	...	...	0·000	0·0	vP
20	...	29·704	66·0	51·1	14·9	56·5	− 0·1	53·1	49·9	6·6	14·0	1·4	79	117·7	42·3	...	...	0·000	0·0	wP : vP
21	Last Quarter : Greatest Dec. N	29·497	67·9	50·5	17·4	56·9	+ 0·5	53·5	50·3	6·6	14·0	2·0	79	122·7	44·0	...	...	0·000	2·2	wP : wP, wN
22	...	29·585	64·7	45·6	19·1	54·2	− 2·0	48·6	43·1	11·1	19·0	4·4	66	116·9	38·0	...	...	0·000	4·8	wP : vP
23	...	29·850	60·4	42·9	17·5	50·3	− 5·8	47·0	43·5	6·8	15·2	1·5	78	115·0	34·6	...	...	0·000	0·0	mP : vP
24	...	29·954	58·4	45·9	12·5	51·8	− 4·1	47·4	42·9	8·9	13·9	4·6	72	82·7	38·1	...	...	0·000	0·0	wP : vP, wN
25	...	29·953	61·4	47·3	14·1	52·4	− 3·4	48·5	44·5	7·9	15·4	2·6	75	91·1	45·3	...	...	0·003	2·0	vP : vP, mN
26	Perigee	29·927	63·3	50·3	13·0	55·0	− 0·7	53·2	51·5	3·5	5·7	0·2	88	92·3	45·9	58·0	56·8	0·068	3·5	wP : vP, wN
27	In Equator : New	29·815	63·8	51·0	12·8	57·5	+ 2·0	55·7	54·1	3·4	9·1	0·4	88	88·0	46·9	58·3	57·3	0·365	5·0	vP, mN : vP, wN
28	...	29·903	64·8	49·3	15·5	57·3	+ 1·9	54·0	51·0	6·3	14·0	0·8	79	122·0	43·6	58·1	57·0	0·005	5·3	vP : mP
29	...	29·856	71·0	57·3	13·7	62·8	+ 7·6	59·5	56·7	6·1	16·7	2·8	81	121·7	52·4	59·1	57·8	0·000	3·2	wP : mP
30	...	29·776	66·1	51·1	15·0	59·0	+ 4·1	55·9	53·1	5·9	11·7	1·0	81	101·9	43·0	59·1	57·8	0·000	3·2	wP : vP
Means	...	29·856	69·2	50·3	18·9	59·1	+ 1·6	55·5	52·3	6·8	15·2	1·6	78·6	116·7	43·3	...	...	Sum 1·243	3·8	...
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 observations of the temperature of the water of the Thames were resumed on September 26.

The mean reading of the *Barometer* for the month was 29in·856, being 0in·069 *higher* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 87°·7 on September 1; the lowest in the month was 40°·3 on September 17; and the range was 47°·4.
The mean of all the highest daily readings in the month was 69°·2, being 1°·8 *higher* than the average for the 45 years, 1841–1885.
The mean of all the lowest daily readings in the month was 50°·3, being 1°·2 *higher* than the average for the 45 years, 1841–1885.
The mean of the daily ranges was 18°·9, being 0°·7 *greater* than the average for the 45 years, 1841–1885.
The mean for the month was 59°·1, being 1°·6 *higher* than the average for the 20 years, 1849–1868.

MONTH and DAY, 1886.	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	10.4	13.5	SW : WSW	WSW : N	0.2	0.0	0.00	138	o, d : o, h, m	o : o, l
2	0.0	13.4	NNE	NNE : NE	2.4	0.0	0.15	241	v : 10 : 10	10, slt.-r : 10, oc.-r
3	2.7	13.4	NE : ENE	E : ENE	5.0	0.0	0.39	308	10, oc.-shs : 10	v : o : 10
4	4.0	13.3	ENE : NE	ESE : S	3.0	0.0	0.12	207	10, hy.-sh : v, hy.-r, t	6, ci.-cu, li.-cl : v, ci.-cu, li.-cl, slt.-r, m, l
5	4.7	13.2	SE : S : SSW	SW : SSW	5.3	0.0	0.56	248	v : p.-cl	3, ci.-cu, li.-cl : v, li.-cl, hy.-sh
6	10.0	13.2	SSW : SW	SSW : SSE	3.0	0.0	0.35	263	p.-cl : p.-cl, cu.-s, li.-cl	v, cu.-s : v, th.-cl, th.-r
7	6.5	13.1	SSW : WNW : SSE	SW	2.7	0.0	0.04	167	10, slt.-sh : 2, li.-cl, h, m	1, li.-cl : o, d
8	6.4	13.0	SW	SW	6.4	0.0	1.20	388	o, d : v, li.-cl, ci.-cu	9, cu.-s : 10, th.-r
9	2.5	13.0	SW	SW : SSW	7.2	0.0	1.43	418	10 : 10, oc.-slt.-r	9, cu.-s, slt.-r, w : v, w : 10, oc.-th.-r
10	0.8	12.9	SSW	SSW : N : SW	8.2	0.0	1.17	322	10 : 10, fq.-r	10, c.-hy.-r, glm : v : o, h, m, f
11	8.7	12.9	SW	SW : SSW	2.5	0.0	0.47	260	o, f : 2, li.-cl	4, ci.-cu, li.-cl : o, d
12	2.5	12.8	SSW	SSW	5.1	0.0	0.64	292	2 : p.-cl	10 : 10
13	8.8	12.7	SSW : S	S : SE : E	1.2	0.0	0.10	179	10 : 8, cu.-s	4, ci.-cu, cu.-s : 2 : v, li.-cl, m, d
14	9.2	12.7	E : WSW	W : N : NE	2.7	0.0	0.16	157	10, f : o, h, m	o, m, h : v, th.-cl
15	3.7	12.6	NE	ENE	8.4	0.0	1.67	432	p.-cl : p.-cl, w	8, cu, cu.-s : v
16	2.2	12.6	ENE	E : NE	5.6	0.0	0.91	312	p.-cl : 10	9, ci.-cu, cu.-s : 2, li.-cl, d
17	9.3	12.5	NE : E	ESE : E : NE	4.5	0.0	0.42	223	o : o, slt.-m	1, li.-cl : o : o, m, d
18	8.4	12.4	NE : E	E : NE	3.6	0.0	0.26	211	o, hy.-d : o, slt.-m	o : 1, li.-cl, m, h, d
19	7.6	12.3	N : NE	NNE : N	0.3	0.0	0.00	155	m, h, d : 3, th.-cl, m	1, li.-cl : v, li.-cl
20	2.7	12.3	N	N : NNE	1.5	0.0	0.05	194	p.-cl : p.-cl, cu.-s	7, ci.-cu, cu.-s, li.-cl : v, li.-cl
21	1.8	12.2	NNE : NE	NE	6.0	0.0	0.97	337	10 : 10, slt.-m	9, ci.-cu, cu, cu.-s : 10
22	2.5	12.2	NE	ENE : NNE	7.8	0.0	1.51	404	10 : 7, ci, ci.-s, w, so.-ha	8, ci, ci.-cu, cu.-s : o, d
23	4.5	12.1	NNE : N	NNE : N	3.8	0.0	0.63	281	o : 9, cu.-s	8, ci.-cu, cu.-s : v, d
24	0.1	12.0	N	N	1.0	0.0	0.11	196	p.-cl : 10	10 : 10, m
25	0.0	11.9	SW	SW	0.5	0.0	0.00	157	10 : 10, m	10 : 10, slt.-r
26	0.5	11.9	S : SW	SW : SSW	1.8	0.0	0.04	210	10, oc.-slt.-r : 10, fq.-r	9, oc.-r : 2 : o, m
27	0.0	11.8	SSW : SW	SW : WSW	12.0	0.0	1.21	513	v : 10, slt.-r, w	10, slt.-r, st.-w : 10, c.-r, st.-w : v, shs.-r, w
28	4.2	11.7	WSW	WSW : SW	5.0	0.0	0.50	383	p.-cl : 5, li.-cl	8, li.-cl, cu.-s : 10 : v, oc.-r
29	4.6	11.7	SW	SW	6.7	0.0	0.98	464	p.-cl : 9, cu.-s	6, ci, cu, cu.-s, th.-cl : v
30	2.3	11.6	SW	SW : SE	3.4	0.0	0.32	292	p.-cl : 10	v, ci.-cu : o, d
Means	4.4	12.6	...	...	...	...	0.55	278		
Number of Column for Reference.	21	22	23	24	25	26	27	28	29	30

The mean *Temperature of Evaporation* for the month was 55°.5, being 1°.2 *higher* than
The mean *Temperature of the Dew Point* for the month was 52°.3, being 0°.9 *higher* than
The mean *Degree of Humidity* for the month was 78.6, being 1.5 *less* than
The mean *Elastic Force of Vapour* for the month was $0^{in}.393$, being $0^{in}.014$ *greater* than
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was $4^{grs}.4$, being $0^{gr}.2$ *greater* than
The mean *Weight of a Cubic Foot of Air* for the month was 532 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 6.1.

The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0.35. The maximum daily amount of *Sunshine* was 10.4 hours on September 1.

The highest reading of the *Solar Radiation Thermometer* was 141°.7 on September 1; and the lowest reading of the *Terrestrial Radiation Thermometer* was 31°.0 on September 17.

The mean daily distribution of *Ozone* for the 12 hours ending 9^h. was 2.3; for the 6 hours ending 15^h. was 0.9; and for the 6 hours ending 21^h. was 0.6.

The *Proportions of Wind* referred to the cardinal points were N. 8, E. 7, S. 9, and W. 6.

The *Greatest Pressure of the Wind* was 12.0 lbs. on the square foot on September 27. The mean daily *Horizontal Movement of the Air* for the month was 278 miles; the greatest daily value was 513 miles on September 27; and the least daily value was 138 miles on September 1.

Rain fell on 10 days in the month, amounting to $1^{in}.243$, as measured by gauge No. 6 partly sunk below the ground; being $1^{in}.113$ *less* than the average fall for the 45 years, 1841-1885.

MONTH and DAY, 1886.	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.		
Oct. 1	...	29·482	77·7	51·0	26·7	63·3	+ 8·6	58·7	54·8	8·5	24·3	0·0	74	123·9	42·7	59·4	58·1	0·005	3·8	mP
2	...	29·702	67·9	47·9	20·0	56·7	+ 2·3	52·4	48·4	8·3	15·8	1·7	74	123·3	36·8	59·1	58·3	0·000	4·0	vP
3	...	29·851	68·6	45·3	23·3	56·3	+ 2·3	54·4	52·6	3·7	11·0	0·2	88	117·6	34·3	59·6	57·8	0·000	0·0	wP
4	Greatest Dec. S. First Quarter.	29·768	79·2	55·0	24·2	64·5	+10·8	61·3	58·6	5·9	18·9	0·0	81	128·4	46·4	59·1	58·3	0·000	3·0	wP
5	...	29·640	77·0	54·9	22·1	64·1	+10·7	61·1	58·6	5·5	15·8	0·0	82	125·3	46·8	60·3	59·6	0·000	7·0	mP : wP
6	...	29·640	65·0	52·5	12·5	57·5	+ 4·5	55·7	54·1	3·4	10·6	0·4	88	111·3	47·0	60·5	59·8	0·238	0·0	wP, wN : mP
7	...	29·648	62·3	52·1	10·2	56·3	+ 3·6	55·6	55·0	1·3	5·9	0·0	95	97·9	45·9	60·3	59·2	0·204	3·2	mP, mN : vP, mN
8	...	29·748	58·7	50·9	7·8	54·5	+ 2·0	54·3	54·1	0·4	2·3	0·0	99	71·0	45·1	60·1	59·2	0·000	8·8	mP : vP, wN
9	Apogee	29·616	63·2	51·5	11·7	55·7	+ 3·4	54·2	52·8	2·9	8·6	0·0	90	102·0	45·9	60·1	59·6	0·080	6·5	mP : wP, wN
10	...	29·540	62·7	45·8	16·9	52·4	+ 0·3	49·1	45·7	6·7	18·8	1·2	79	118·3	39·9	60·0	59·3	0·012	6·8	wP : mP, wN
11	In Equator	29·698	61·4	47·1	14·3	53·6	+ 1·7	50·0	46·5	7·1	16·2	2·7	76	105·9	41·9	59·1	58·3	0·003	5·5	wP : mP
12	...	29·371	60·4	51·0	9·4	56·6	+ 4·9	54·8	53·2	3·4	8·7	0·6	88	74·1	48·1	58·1	57·3	0·314	20·2	wP : wP, vN
13	Full	29·186	58·0	43·5	14·5	49·9	− 1·7	47·7	45·4	4·5	10·4	1·4	85	108·5	38·4	58·1	56·8	0·002	3·0	vP
14	...	29·489	58·9	40·3	18·6	49·1	− 2·3	46·6	43·9	5·2	11·2	0·4	83	107·0	33·3	57·7	56·2	0·000	1·8	mP
15	...	28·953	58·1	49·3	8·8	53·1	+ 1·8	51·3	49·5	3·6	7·2	0·6	87	74·3	43·5	57·9	56·8	0·338	22·5	wP, wN : wP, vN
16	...	28·618	55·6	47·9	7·7	50·9	− 0·3	48·6	46·2	4·7	8·0	1·3	85	76·4	43·9	56·3	54·8	0·021	7·8	wP : vN, mP
17	...	28·910	54·0	40·8	13·2	48·6	− 2·5	46·4	44·0	4·6	8·4	1·1	85	77·0	33·5	55·5	54·6	0·000	2·0	wP : vP
18	...	29·230	55·6	38·7	16·9	48·1	− 2·9	47·4	46·6	1·5	4·2	0·2	95	69·8	31·0	55·1	54·6	0·006	0·0	vP, wN : mP
19	Greatest Declination N.	29·406	58·3	45·7	12·6	51·8	+ 1·0	50·6	49·4	2·4	6·7	0·2	92	89·8	37·8	55·0	53·3	0·002	0·0	wP : mP
20	Last Qr.	29·497	59·8	47·8	12·0	52·4	+ 1·8	51·2	50·0	2·4	8·9	0·0	92	79·2	41·2	54·6	53·0	0·004	0·0	vP, mN : vP
21	...	29·707	52·9	44·4	8·5	49·0	− 1·4	48·2	47·3	1·7	5·0	0·0	94	64·0	36·4	54·5	53·3	0·000	5·0	wP : wN, wP
22	...	29·814	58·9	38·0	20·9	48·3	− 1·8	45·8	43·1	5·2	13·9	0·0	83	108·9	28·9	53·9	52·3	0·000	2·0	wP : vP
23	...	29·863	53·6	43·7	9·9	49·9	+ 0·2	49·0	48·0	1·9	4·6	0·6	94	65·5	33·0	57·1	55·8	0·058	0·2	wP, wN : wP
24	Perigee	30·017	55·4	45·0	10·4	50·5	+ 1·1	48·3	46·0	4·5	7·8	1·0	85	83·8	38·5	53·2	51·0	0·006	1·3	wP
25	In Equator	30·018	51·8	48·3	3·5	49·9	+ 0·8	47·9	45·8	4·1	6·2	1·8	86	73·2	45·8	53·5	52·0	0·049	1·5	wP
26	...	29·914	48·9	45·6	3·3	47·8	− 1·0	45·6	43·2	4·6	7·1	1·9	85	56·0	44·7	52·7	51·0	0·000	0·0	wP
27	New	29·724	48·1	45·6	2·5	47·3	− 1·2	46·1	44·8	2·5	4·0	1·0	92	52·5	44·3	52·1	50·0	0·060	0·0	wP : mP
28	...	29·882	57·4	44·9	12·5	50·7	+ 2·5	49·5	48·2	2·5	7·8	0·2	92	93·6	37·6	51·1	49·8	0·000	0·0	wP : mP
29	...	30·097	63·0	47·6	15·4	54·6	+ 6·7	52·8	51·1	3·5	11·6	0·0	88	115·7	40·0	52·1	50·8	0·010	0·0	wP : mP
30	...	30·150	58·6	47·6	11·0	53·4	+ 5·8	52·6	51·8	1·6	5·1	0·0	94	71·7	39·9	51·1	49·8	0·000	0·0	mP
31	Greatest Declination S.	29·915	63·3	51·7	11·6	56·4	+ 9·1	55·1	53·9	2·5	6·3	0·2	91	97·3	46·0	51·1	49·8	0·000	0·5	wP
Means	...	29·616	60·5	47·1	13·3	53·3	+ 2·3	51·4	49·4	3·9	9·7	0·6	87·2	92·4	40·6	56·4	55·2	Sum 1·412	3·8	...
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·616, being 0in·104 *lower* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 79°·2 on October 4; the lowest in the month was 38°·0 on October 22; and the range was 41°·2.
The mean of all the highest daily readings in the month was 60°·5, being 2°·6 *higher* than the average for the 45 years, 1841–1885.
The mean of all the lowest daily readings in the month was 47°·1, being 3°·7 *higher* than the average for the 45 years, 1841–1885.
The mean of the daily ranges was 13°·3, being 1°·1 *less* than the average for the 45 years, 1841–1885.
The mean for the month was 53°·3, being 2°·3 *higher* than the average for the 20 years, 1849–1868.

MONTH and DAY, 1886.	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.		
Oct. 1	4·6	11·6	SE : S	S	4·8	0·0	0·25	255	0, m : th.-cl, m	1, th.-cl : p.-cl, so.-ha, l : v, slt.-r, l
2	7·9	11·5	SSW : WSW	SW : SSE	11·6	0·0	0·74	348	v, w : v	v, cu, cu.-s : 1, d
3	1·2	11·4	SE : E	SE : E	0·7	0·0	0·01	156	v : p.-cl, th.-cl, m, so.-ha	p.-cl, ci.-cu, li.-cl : v, h, m, d
4	5·8	11·4	ESE : SE	SE : ESE	0·7	0·0	0·02	130	f : 3, li.-cl, m	5, ci.-s, li.-cl : 3, li.-cl, slt.-f, d
5	6·8	11·3	E	SSE : SW	1·3	0·0	0·05	178	0, f : 1, th.-cl, tk.-f	0 : th.-cl : v, th.-cl
6	1·7	11·2	W : WSW	SW : S : SSE	2·0	0·0	0·10	222	10, fq.-r : 10, fq.-r, glm	9, cu, cu.-s, li.-cl : 2 : v, li.-cl, lu.-ha
7	0·0	11·2	SSE : E	ESE	2·0	0·0	0·03	134	p.-cl : 10, hy.-r	10, fq.-r : 10, hy.-r
8	0·0	11·1	Calm : ESE	S : SW	0·0	0·0	0·00	56	10 : 10, m	10, slt.-f, glm : 10, f
9	1·8	11·0	SW : S	SSW : WSW	7·7	0·0	0·34	228	10 : 10, f	8, ci.-cu, cu.-s, li.-cl : 10, fq.-r, w
10	6·8	11·0	WSW	WSW : SW	5·3	0·0	0·73	398	p.-cl : 4, cu, cu.-s, w	p.-cl, slt.-sh : 6, th.-cl
11	4·7	10·9	SW : NW	WSW : SW	2·5	0·0	0·29	309	p.-cl : 1, li.-cl, h	4, cu, cu.-s, th.-cl, so.-ha : 9, slt.-r : v, li.-cl
12	0·0	10·9	SSW	SSW : W	9·6	0·0	1·17	467	v, li.-cl : p.-cl : 10, fq.-slt.-r, w	10, fq.-r, w : 10, c.-r, w : 10, sc, fq.-r, w
13	2·7	10·8	WSW	WSW	5·6	0·0	0·63	398	10, slt.-r : p.-cl : 6, ci.-cu, li.-cl	9, ci.-cu, cu, cu.-s : v : v, slt.-r
14	4·2	10·7	WSW	W : SW : S	2·3	0·0	0·15	267	v, d : v, h	9, cu.-s, slt.-r : 10, th.-cl
15	0·0	10·7	SSE : SSW	SW	16·5	0·0	2·08	660	10, fq.-r, w : 10, fq.-r, w	10, fq.-r, st.-w : 10, oc.-r, g
16	0·0	10·6	SW : S : SE	NE : N : NNW	10·2	0·0	0·58	367	p.-cl, st.-w : 10, oc.-slt.-r	10, th.-r : 10
17	0·1	10·5	NNW : WNW	W : SW	4·4	0·0	0·38	328	10 : 10 : 10, slt.-r	p.-cl : v, li.-cl, d
18	0·0	10·5	SW : Variable	N : NE	0·4	0·0	0·01	130	p.-cl, lu.-ha : 10, f, glm	10, oc.-slt.-r : v : v, m
19	0·0	10·4	NE : SE	E	0·0	0·0	0·00	88	10 : p.-cl, m	9, ci.-cu, ci.-s, cu.-s : 10, f, l
20	0·4	10·3	E	SE : SW	0·0	0·0	0·00	131	10, l : 10, slt.-r	9, ci.-cu, li.-cl : p.-cl, m, l
21	0·0	10·3	WSW	WSW	0·0	0·0	0·00	188	10 : 10, f	8, cu.-s, th.-cl, slt.-f : v, th.-cl, slt.-f, hy.-d
22	6·1	10·2	SW	S : ESE	0·0	0·0	0·00	142	0, hy.-d : 0, h, slt.-f	4, li.-cl : v : 0
23	0·0	10·2	E : ESE	E : ENE	2·4	0·0	0·24	280	v : 10, oc.-r	10, oc.-slt.-r : v : v, li.-cl
24	2·3	10·1	NE : ENE	ENE	15·0	0·0	2·00	476	p.-cl : 8, cu.-s, cu, st.-w	p.-cl, w : 10, w : v, oc.-r, w
25	0·0	10·0	ENE	ENE	7·7	0·0	1·68	451	10, w : 10, slt.-r, w	10 : 10 : 10, r
26	0·0	10·0	NE : ENE	NE	5·0	0·0	1·09	463	10 : 10	10 : 10
27	0·0	9·9	NE : ENE	ENE : E : ESE	4·1	0·0	0·49	308	10 : 10, oc.-slt.-r	10, fq.-r : 10
28	0·8	9·8	ESE	E	1·2	0·0	0·04	203	p.-cl : v, li.-cl, h	9, cu.-s : 10, m, slt.-r
29	4·9	9·8	S : SW	WSW : SSW	2·0	0·0	0·06	227	p.-cl, slt.-r : p.-cl	6, ci.-cu, cu, cu.-s : v : v
30	0·0	9·7	S : SE	SE : ESE	0·0	0·0	0·00	101	v : 10	10 : 10 : v
31	0·3	9·7	S : SW	SW : S	0·0	0·0	0·00	194	p.-cl : 9, ci.-cu, cu.-s	10 : 10, m.-r
Means	2·0	10·6	...	...	...	...	0·42	267		
Number of Column for Reference.	21	22	23	24	25	26	27	28	29	30

The mean *Temperature of Evaporation* for the month was 51°·4, being 2°·5 *higher* than
The mean *Temperature of the Dew Point* for the month was 49°·4, being 2°·6 *higher* than
The mean *Degree of Humidity* for the month was 87·2, being 1·1 *greater* than
The mean *Elastic Force of Vapour* for the month was 0in·353, being 0in·032 *greater* than
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was 4grs·0, being 0gr·4 *greater* than
The mean *Weight of a Cubic Foot of Air* for the month was 534 grains, being 5 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 7·4.

The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·19. The maximum daily amount of *Sunshine* was 7·9 hours on October 2.

The highest reading of the *Solar Radiation Thermometer* was 128°·4 on October 4; and the lowest reading of the *Terrestrial Radiation Thermometer* was 28·9 on October 22.

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

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

The *Greatest Pressure of the Wind* in the month was 16·5 lbs. on the square foot on October 15. The mean daily *Horizontal Movement of the Air* for the month was 267 miles; the greatest daily value was 660 miles on October 15; and the least daily value was 56 miles on October 8.

Rain fell on 14 days in the month, amounting to 1in·412, as measured by gauge No. 6 partly sunk below the ground; being 1in·515 *less* than the average fall for the 45 years, 1841–1885.

MONTH and DAY, 1886.	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.		
Nov. 1	...	29.877	58.3	45.8	12.5	53.5	+ 6.5	52.3	51.1	2.4	7.6	0.4	92	74.8	41.0	52.1	51.6	0.309	2.5	wP : mP
2	...	29.989	59.1	43.5	15.6	51.4	+ 4.7	49.6	47.8	3.6	9.7	0.8	88	97.2	35.0	52.7	52.0	0.113	3.0	wP : vP, wN
3	First Qr.	29.870	53.6	37.8	15.8	47.9	+ 1.5	46.2	44.3	3.6	10.8	0.4	88	89.8	30.7	52.7	52.2	0.163	7.0	mP : vP
4	...	29.678	55.0	39.5	15.5	47.5	+ 1.5	44.7	41.6	5.9	12.0	1.6	81	93.4	32.8	52.3	51.8	0.000	0.0	mP : sP
5	Apogee	29.262	52.3	40.3	12.0	46.4	+ 0.8	45.1	43.7	2.7	4.8	1.5	91	69.5	36.5	51.9	51.0	0.411	6.0	mP : sN, vP : ssN, mP
6	...	28.891	46.4	38.0	8.4	42.4	− 2.8	40.6	38.4	4.0	7.4	1.1	86	50.6	33.7	51.5	50.8	0.201	11.0	mP : vP, vN : sN, mP
7	...	29.380	46.7	37.5	9.2	43.3	− 1.4	40.8	37.8	5.5	7.6	3.2	81	66.0	30.8	50.9	48.8	0.000	0.0	mP
8	In Equator	29.527	48.1	30.6	17.5	40.3	− 4.0	38.0	35.0	5.3	13.2	0.3	82	86.9	23.9	50.1	48.8	0.000	1.2	mP : vP
9	...	29.154	45.3	37.6	7.7	42.6	− 1.2	41.5	40.2	2.4	6.2	0.0	91	52.3	31.4	48.9	46.9	0.128	7.8	wP, wN : vN, vP
10	...	29.200	46.1	38.5	7.6	43.3	− 0.1	43.2	43.1	0.2	1.8	0.0	99	51.3	31.5	47.9	45.9	0.268	0.0	vP, wN : vN, mP
11	Full	29.330	46.2	39.0	7.2	44.1	+ 1.1	43.9	43.7	0.4	1.5	0.0	99	48.3	29.1	47.9	45.4	0.793	0.0	mP, vN : vN, wP
12	...	29.320	47.6	39.7	7.9	44.1	+ 1.5	43.3	42.3	1.8	4.2	0.2	94	63.5	37.0	47.1	44.9	0.170	0.2	wP : vP, vN
13	...	29.303	49.3	39.0	10.3	44.1	+ 1.8	42.7	41.0	3.1	6.7	1.1	89	74.6	32.0	46.1	44.7	0.012	0.8	wP : vP, vN
14	...	29.379	51.9	42.6	9.3	46.7	+ 4.7	44.6	42.3	4.4	9.2	1.9	85	72.0	36.0	46.1	44.9	0.000	2.0	wP, wN : mP
15	Greatest Declination N.	29.379	55.2	43.8	11.4	50.2	+ 8.4	49.0	47.7	2.5	3.6	1.0	92	75.6	38.0	44.9	43.9	0.030	2.0	wP : vP
16	...	29.429	50.5	35.7	14.8	45.7	+ 4.1	43.6	41.2	4.5	10.3	1.0	85	62.1	29.4	46.7	45.9	0.040	1.2	wP : vP
17	...	29.398	54.3	38.0	16.3	45.2	+ 3.7	43.6	41.7	3.5	5.0	0.8	88	87.3	32.0	46.7	46.1	0.338	3.8	mP, mN : vP
18	Last Qr.	29.814	48.1	35.0	13.1	41.9	+ 0.4	39.8	37.2	4.7	10.3	1.8	84	65.1	28.3	46.6	45.9	0.000	0.0	mP : vP
19	...	30.055	50.9	30.7	20.2	42.6	+ 1.2	41.8	40.8	1.8	5.0	0.3	94	63.3	24.1	46.4	45.4	0.004	0.0	sP : mP
20	...	30.158	54.0	46.0	8.0	50.2	+ 8.9	49.2	48.1	2.1	4.6	0.2	93	61.0	39.8	46.1	44.9	0.004	0.0	mP
21	Perigee: In Equator	30.187	49.9	39.0	10.9	47.0	+ 5.8	46.0	44.9	2.1	3.6	0.4	93	51.8	32.5	46.1	45.4	0.012	0.0	mP
22	...	30.292	47.1	31.5	15.6	39.5	− 1.6	38.5	37.2	2.3	7.8	0.0	92	72.0	25.0	46.3	45.4	0.000	0.0	mP : sP
23	...	30.398	42.7	27.9	14.8	35.7	− 5.3	35.2	34.5	1.2	6.7	0.0	95	45.2	23.4	45.9	44.9	0.000	0.0	mP : vP
24	...	30.508	43.5	26.9	16.6	35.9	− 5.1	35.0	33.7	2.2	6.0	0.0	91	63.4	23.4	45.3	44.1	0.000	0.0	sP
25	New	30.410	49.2	38.1	11.1	42.0	+ 1.1	41.2	40.2	1.8	4.2	0.0	94	60.3	30.1	45.1	43.4	0.002	0.5	vP, wN : mP
26	...	30.317	47.4	41.9	5.5	44.7	+ 3.9	43.7	42.5	2.2	3.8	0.7	92	52.8	35.7	45.1	42.9	0.000	1.5	mP
27	...	30.281	46.3	41.7	4.6	43.8	+ 3.0	42.5	40.9	2.9	4.0	1.8	90	51.5	40.7	44.6	42.9	0.000	0.0	mP : sP
28	Greatest Declination S.	30.153	47.2	40.7	6.5	43.8	+ 2.9	42.3	40.5	3.3	7.9	1.1	88	53.0	38.1	44.5	43.1	0.000	1.2	...
29	...	29.646	50.3	38.5	11.8	45.9	+ 4.9	43.4	40.6	5.3	9.2	2.9	82	60.4	34.5	44.9	43.4	0.021	3.8	... : sP
30	...	29.499	43.8	34.8	9.0	39.7	− 1.5	37.5	34.6	5.1	7.9	2.6	82	61.7	29.0	44.7	43.7	0.000	0.0	mP : sP
Means	...	29.736	49.5	38.0	11.6	44.4	+ 1.6	43.0	41.3	3.1	6.8	0.9	89.1	65.9	32.2	47.6	46.4	Sum 3.019	1.9	...
Number of Column for Reference.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

The results apply to the civil day.

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

The 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.736, being 0in.035 *lower* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 59°.1 on November 2; the lowest in the month was 26°.9 on November 24; and the range was 32°.2.

The mean of all the highest daily readings in the month was 49°.5, being 0°.7 *higher* than the average for the 45 years, 1841–1885.

The mean of all the lowest daily readings in the month was 38°.0, being 0°.6 *higher* than the average for the 45 years, 1841–1885.

The mean of the daily ranges was 11°.6, being 0°.2 *greater* than the average for the 45 years, 1841–1885.

The mean for the month was 44°.4, being 1°.6 *higher* than the average for the 20 years, 1849–1868.

MONTH and DAY, 1886.	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.		
Nov. 1	1·2	9·6	SSW : SW	WSW : SW	1·5	0·0	0·03	195	10, fq.-r : 10, fq.-r	7, ci.-cu, cu, cu.-s : v, cu.-s, th.-r
2	2·3	9·5	SSW	SW : WSW	0·6	0·0	0·00	181	v, hy.-sh : p.-cl : 8, ci.-cu, ci.-s, so.-ha	v, ci.-cu, cu.-s, r : 8, m : v, f
3	1·3	9·5	SW : SSW	SSW	8·0	0·0	1·27	427	0 : v, li.-cl	10, slt.-r, w : 10, fq.-r, w
4	5·2	9·4	WNW : WSW	SW : SSW	2·0	0·0	0·10	303	p.-cl : 1, li.-cl	4, ci, ci.-cu, cu.-s : p.-cl
5	0·0	9·4	SSW : SSE : S	S : SSE : SW	2·9	0·0	0·22	299	p.-cl : 10, fq.-r	10, fq.-hy.-r : 10, fq.-r : 3, ci.-cu
6	0·1	9·3	SW	WSW : WNW	15·2	0·0	2·03	556	0 : p.-cl, w : 10, sc, r, fq.-sqs	10, fq.-r, w : p.-cl
7	0·2	9·2	WNW : WSW	N : NNW	1·6	0·0	0·17	201	p.-cl : v, slt.-f	10 : 10
8	5·7	9·2	SW : SSW	SW : SSE	1·0	0·0	0·02	204	p.-cl : 0, ho.-fr	3, ci.-cu, li.-cl : 1, li.-cl, m, lu.-ha : v, li.-cl, cu.-s, lu.-ha
9	0·0	9·1	SE : ESE	ESE : E	3·6	0·0	0·36	290	1, li.-cl : 1 : 10, m.-r	10, fq.-r : v, ci.-cu, li.-cl, tk.-f
10	0·0	9·1	E : ENE	ESE : NE : NNE	0·7	0·0	0·00	199	p.-cl : 10, fq.-r : 10, fq.-r	10, fq.-r : 10 : v, slt.-f
11	0·0	9·0	NNE : N : NNW	NW : W	1·2	0·0	0·04	240	p.-cl : 10, fq.-hy.-r, glm	10, fq.-hy.-r, glm, f : 10, fq.-r, glm
12	0·0	9·0	WSW : SW	SSW : S : WNW	1·1	0·0	0·06	231	10 : 10, oc.-slt.-r	10, fq.-r : 10, fq.-r
13	0·9	8·9	WNW : WSW	WSW : W	1·3	0·0	0·16	298	p.-cl : 10	p.-cl : 10, oc.-r : v, ci.-cu
14	1·7	8·9	WSW : WNW	W : WSW	3·0	0·0	0·27	336	v : 6, th.-cl	8, cu.-s : 9, m
15	0·1	8·8	SW : SSW	SSW	3·7	0·0	0·25	316	v : 10	10, oc.-r : 10, slt.-r
16	1·0	8·8	SSW : W	WSW : SSW	0·8	0·0	0·05	282	10 : 10, sh.-r : 8, cu.-s, m	5, ci.-cu, cu.-s, li.-cl : 0, slt.-f
17	0·4	8·7	SSW : SSE	WSW : NW	8·9	0·0	0·59	398	v : 10, fq.-hy.-r	9, cu.-s, oc.-slt.-r : 1, ci.-s
18	1·9	8·7	WSW : NW	NW : W : WSW	3·0	0·0	0·25	347	v : 5, li.-cl	4, ci.-cu, cu.-s, th.-cl : 0, slt.-f : 0, slt.-f, ho.-fr
19	0·2	8·6	SW	SSW	0·0	0·0	0·00	170	0, slt.-f, ho.-fr : 9, slt.-f, ho.-fr	9, cu.-s, th.-cl : 10 : 10, slt.-r
20	0·0	8·6	WSW	SW	0·3	0·0	0·01	221	10 : 10	8, li.-cl, so.-ha : v, li.-cl
21	0·0	8·5	WSW : W : NW	NNE : NE	1·0	0·0	0·02	216	v : 10, slt.-f, fq.-th.-r	10 : 9, ci.-cu : 2, th.-cl
22	2·3	8·5	N : NW : NE	ENE : Calm	0·0	0·0	0·00	92	10 : 10, tk.-f, ho.-fr : 3, th.-cl, tk.-f	4, ci, ci.-s : 1, th.-cl, ho.-fr, slt.-f
23	0·0	8·4	Calm : NW	NE : N	0·0	0·0	0·00	57	ho.-fr, f : tk.-f, ho.-fr	2, li.-cl, f : 10, f
24	1·6	8·4	NE	NE : WSW	0·0	0·0	0·00	101	f, ho.-fr : tk.-f, ho.-fr	2, th.-cl, f : 10, f
25	0·0	8·3	WSW	NNE : NNW : N	0·1	0·0	0·00	149	p.-cl, slt.-f : tk.-f	1, li.-cl, slt.-f : v, slt.-f : 10, m.-r, slt.-f
26	0·0	8·3	NE	NE	0·0	0·0	0·00	152	10 : 10, m	10 : 10
27	0·0	8·2	NE : NNE	NE	0·0	0·0	0·00	89	10 : 10, glm, slt.-f	10 : 10
28	0·0	8·2	SW	SSW	2·0	0·0	0·07	183	10 : 10, slt.-f	10 : 10
29	0·8	8·2	SSW : WSW	WSW	5·5	0·0	0·86	486	10 : 10, slt.-shs : p.-cl, slt.-r, so.-ha	6, ci.-cu, ci.-s, cu.-s : 0, d
30	2·4	8·1	WSW	WNW : NNW	3·2	0·0	0·37	367	0, d : 0, ho.-fr : 1, ci.-cu, li.-cl	p.-cl, ci.-cu, cu.-s, slt.-r : v : 0
Means	1·0	8·8	...	...	...	...	0·24	253		
Number of Column for Reference.	21	22	23	24	25	26	27	28	29	30

The mean *Temperature of Evaporation* for the month was 43°·0, being 1°·8 *higher* than
The mean *Temperature of the Dew Point* for the month was 41°·3, being 2°·0 *higher* than
The mean *Degree of Humidity* for the month was 89·1, being 1·8 *greater* than
The mean *Elastic Force of Vapour* for the month was 0^{in}·260, being 0^{in}·020 *greater* than
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was 3^{grs}·0, being 0^{gr}·2 *greater* than
The mean *Weight of a Cubic Foot of Air* for the month was 546 grains, being 3 grains *less* than
} the average for the 20 years, 1849–1868.

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

The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·10. The maximum daily amount of *Sunshine* was 5·7 hours on November 8.

The highest reading of the *Solar Radiation Thermometer* was 97°·2 on November 2; and the lowest reading of the *Terrestrial Radiation Thermometer* was 23°·4 on November 23 and 24.

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

The *Proportions of Wind* referred to the cardinal points were N. 5, E. 3, S. 9, and W. 12. One day was calm.

The *Greatest Pressure of the Wind* in the month was 15·2 lbs. on the square foot on November 6. The mean daily *Horizontal Movement of the Air* for the month was 253 miles; the greatest daily value was 556 miles on November 6; and the least daily value was 57 miles on November 23.

Rain fell on 15 days in the month, amounting to 3^{in}·019, as measured by gauge No. 6 partly sunk below the ground; being 0^{in}·791 *greater* than the average fall for the 45 years, 1841–1885.

MONTH and DAY, 1886.	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.		
Dec. 1	...	29.695	41.9	28.7	13.2	36.0	− 5.5	33.9	30.8	5.2	9.0	0.0	81	56.0	21.5	45.6	42.9	0.000	0.0	sP : ssP, sN
2	...	29.706	38.2	27.5	10.7	33.2	− 8.6	29.7	22.9	10.3	13.7	3.8	66	53.0	20.2	44.1	42.9	0.000	0.0	mN, sP : sP
3	First Quarter: Apogee	29.879	34.7	20.9	13.8	28.3	−13.8	26.4	18.9	9.4	12.4	0.0	67	38.7	15.0	43.1	41.4	0.000	0.3	vP : ssP
4	...	29.659	41.3	30.0	11.3	37.4	− 5.0	35.5	32.9	4.5	7.7	0.7	84	42.1	24.0	42.1	40.1	0.277	0.7	mP, vN : ssN, sP
5	In Equator	29.830	48.8	28.6	20.2	37.6	− 5.0	36.3	34.5	3.1	9.4	0.0	89	48.8	20.6	41.1	39.9	0.000	0.0	sP : vP
6	...	29.557	54.1	48.8	5.3	50.6	+ 7.9	49.2	47.7	2.9	6.0	0.6	90	62.4	44.0	41.1	38.9	0.048	1.0	wP : vP, wN
7	...	29.289	52.0	37.3	14.7	43.0	+ 0.2	40.5	37.5	5.5	8.1	2.0	81	55.1	31.8	40.8	38.2	0.018	4.5	vP, mN : sP
8	...	28.546	48.1	38.4	9.7	42.1	− 0.7	39.3	35.8	6.3	10.1	0.8	79	65.0	32.3	41.6	39.2	0.615	6.0	vP, vN : sP
9	...	28.437	44.8	36.7	8.1	41.1	− 1.7	37.9	33.9	7.2	11.3	2.1	76	55.0	30.0	41.8	40.7	0.057	4.5	vP, vN : sP
10	...	29.119	42.5	32.9	9.6	37.6	− 5.1	35.9	33.6	4.0	7.3	0.0	86	51.3	28.1	40.8	39.7	0.032	0.8	vP, wN : sP
11	Full	29.240	50.9	36.5	14.4	45.4	+ 2.9	44.3	43.0	2.4	6.9	0.0	92	57.3	30.3	40.6	38.9	0.074	2.2	vP : vP, wN
12	Greatest Declination N.	29.182	50.8	40.1	10.7	43.7	+ 1.5	41.6	39.2	4.5	7.8	1.5	84	69.0	36.2	40.6	39.2	0.025	4.0	vP, wN : sP, wN
13	...	29.449	45.3	39.4	5.9	42.2	+ 0.4	41.4	40.4	1.8	3.5	0.0	94	48.0	36.9	40.4	39.5	0.067	0.2	vP : vP, vN
14	...	29.301	48.1	39.5	8.6	41.8	+ 0.3	40.9	39.8	2.0	5.7	0.0	94	60.5	33.7	40.3	39.7	0.134	2.8	mP, wN : mN, sP
15	Perigee	29.031	47.7	40.0	7.7	44.2	+ 3.1	43.1	41.8	2.4	4.8	0.2	91	59.0	36.0	41.0	39.7	0.215	6.0	vP, vN
16	...	29.229	40.3	31.9	8.4	37.3	− 3.5	36.6	35.6	1.7	3.7	0.0	94	45.0	23.6	41.8	40.7	0.000	0.0	sP
17	...	29.441	33.3	30.5	2.8	32.1	− 8.4	32.1	32.1	0.0	2.4	0.0	100	37.4	21.4	41.6	40.7	0.231	0.0	sP : vP, mN
18	Last Qr.	29.518	31.8	22.9	8.9	28.8	−11.4	27.2	21.3	7.5	9.5	1.0	73	36.0	20.9	41.6	40.2	0.000	0.0	sP : ssP
19	In Equator	29.624	30.6	18.5	12.1	25.6	−14.4	25.1	22.6	3.0	6.8	0.0	89	37.1	15.9	40.8	37.7	0.000	0.0	ssP : sP
20	...	29.848	32.8	22.0	10.8	27.1	−12.7	26.7	25.0	2.1	4.2	0.0	91	49.1	19.5	40.6	36.7	0.000	0.0	... : ssP
21	...	30.176	28.8	19.0	9.8	26.0	−13.6	25.7	24.2	1.8	4.1	0.0	92	34.7	19.0	34.8	32.2	0.000	0.0	ssP
22	...	29.683	42.6	17.3	25.3	34.5	− 4.9	33.7	32.4	2.1	4.1	0.0	92	49.1	17.0	32.8	32.2	0.105	3.0	vP, wN : vN, sP
23	...	29.549	40.8	33.1	7.7	37.2	− 2.1	35.2	32.4	4.8	6.9	2.2	83	50.4	29.0	34.8	33.5	0.000	0.0	vP
24	...	29.464	45.2	33.7	11.5	38.9	− 0.4	37.8	36.4	2.5	5.0	0.7	92	63.8	30.3	34.8	34.5	0.232	0.0	mP : vP, ssN
25	New: Greatest Declination S.	29.724	39.1	31.5	7.6	34.9	− 4.3	33.8	32.1	2.8	5.5	1.6	89	49.0	26.7	35.3	33.7	0.000	0.0	sP : ssP
26	...	29.528	39.1	31.8	7.3	35.2	− 3.9	34.7	34.0	1.2	2.7	0.0	95	40.7	28.9	35.3	34.5	1.057	7.0	sP, mN : vP, ssN
27	...	29.466	36.5	30.3	6.2	33.8	− 5.2	32.9	31.3	2.5	5.5	0.0	90	40.1	27.1	35.3	34.0	0.343	3.0	vP, vN : sP
28	...	29.653	40.3	33.2	7.1	37.8	− 1.0	36.9	35.6	2.2	4.8	0.0	92	49.8	30.0	34.8	34.2	0.062	0.0	vP, wN : ssP
29	...	29.708	40.4	33.2	7.2	37.3	− 1.4	35.8	33.7	3.6	4.6	1.7	87	46.2	29.9	35.8	34.5	0.009	1.0	sP : vP, wN
30	...	30.134	35.6	29.7	5.9	32.5	− 6.0	32.2	31.7	0.8	4.5	0.0	97	41.3	25.0	35.8	34.5	0.000	0.0	ssP
31	Apogee	30.362	36.0	22.0	14.0	30.6	− 7.7	30.0	28.4	2.2	6.0	0.0	91	48.4	20.3	34.8	33.7	0.000	0.0	ssP
Means	...	29.517	41.4	31.2	10.2	36.6	− 4.2	35.2	33.0	3.6	6.6	0.6	87.1	49.7	26.6	39.2	37.7	Sum 3.601	1.5	...
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 $29^{in}.517$, being $0^{in}.274$ *lower* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was $54^{\circ}.1$ on December 6; the lowest in the month was $17^{\circ}.3$ on December 22; and the range was $36^{\circ}.8$.
The mean of all the highest daily readings in the month was $41^{\circ}.4$, being $3^{\circ}.0$ *lower* than the average for the 45 years, 1841–1885.
The mean of all the lowest daily readings in the month was $31^{\circ}.2$, being $3^{\circ}.9$ *lower* than the average for the 45 years, 1841–1885.
The mean of the daily ranges was $10^{\circ}.2$, being $0^{\circ}.9$ *greater* than the average for the 45 years, 1841–1885.
The mean for the month was $36^{\circ}.6$, being $4^{\circ}.2$ *lower* than the average for the 20 years, 1849–1868.

MONTH and DAY, 1886.	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	2·3	8·1	WNW : WSW	W : WSW	3·2	0·0	0·18	338	0, ho.-fr : 0, ho.-fr	3,ci.-cu,th.-cl,slt.-r: v, th.-cl
2	0·7	8·1	NNW	NNW	4·8	0·0	0·48	337	p.-cl : v, th.-cl	v,th.-cl,oc.-sn: 0 : 0, h
3	1·4	8·0	NW : SW	SW : S	0·0	0·0	0·00	152	0 : 0,ho.-fr,m : 3, li.-cl,fr	8, th.-cl : v, li.-cl, m, lu.-co
4	0·0	8·0	S : SSW	SW : NNW	4·3	0·0	0·71	346	10 : 10, glm, r	p.-cl, r : 0, ho.-fr
5	0·4	8·0	NW : WSW : SW	SW	4·7	0·0	0·44	311	0, ho.-fr : 0, ho.-fr : v, th.-cl	10 : 10
6	0·0	8·0	SW : WSW	WSW : SW	9·6	0·0	2·98	605	p.-cl, w : 10, w : 10,glm,fq.-th.-r	9, w : 10, fq.-slt.-r, st.-w
7	1·2	7·9	WSW	WNW : SW	10·0	0·0	2·61	579	10, slt.-r, st.-w : v, w : v, slt.-r, w	v, cu.-s, li.-cl, w : v, lu.-co : v, li.-cl, lu.-co, lu.-ha
8	1·7	7·9	SSW : SW	SW	19·8	0·0	5·48	857	v, w, r, t : v, sc, hy.-r, hl, hy.-g	v,cu.-s,li.-cl,hy.-g : v, hy.-g, l
9	0·2	7·9	SW : WSW	WNW : WSW	23·5	0·0	5·75	814	p.-cl,hy.-g: 10, oc.-r, g: 10, w	10, st.-w : v,ci.-cu,cu.-s,li.-cl,lu.-co,lu.-ha
10	0·6	7·9	WSW : WNW	WNW : WSW	3·7	0·0	0·56	434	v, li.-cl : v, cu.-s, slt.-sn	1, li.-cl : 0, ho.-fr : v, li.-cl, lu.-ha, lu.-co
11	0·0	7·8	SW : S	SW : SSW	4·0	0·0	0·21	373	p.-cl, ci.-s : 10, oc.-r	10, sc : 10, oc.-r
12	2·1	7·8	WSW	WSW	12·5	0·0	3·19	689	p.-cl, st.-w : 3, li.-cl, w	li.-cl, w : v,li.-cl,sh.-r: 0
13	0·0	7·8	WSW	ENE	3·0	0·0	0·24	336	v, li.-cl : 10, cu.-s	10, slt.-r : 10, fq.-r
14	0·0	7·8	ENE : ESE	SW : SSE	9·7	0·0	0·42	335	10 : 10, fq.-r, glm	p.-cl,fq.-r,sq: 0 :v,li.-cl,slt.-sh
15	0·0	7·8	SSE : SSW : SW	SW : WSW	9·1	0·0	1·18	488	10, hy.-r : p.-cl,cu.-s,li.-cl,slt.-r,w	9, cu.-s, li.-cl, oc.-th.-r : v, lu.-ha
16	0·0	7·8	SW	NE : NNE	2·9	0·0	0·02	197	10 : 10, slt.-f, glm	7,ci.-cu,th.-cl,slt.-f : v, ho.-fr, slt.-f
17	0·0	7·7	N : NE	NE : NNE	0·0	0·0	0·00	120	10, f : 10, tk.-f	10, f, fq.-r, sn, glm : 10, sn, glm
18	0·0	7·7	N : NW : W	WSW	0·1	0·0	0·00	265	10, slt.-sn : v, li.-cl : p.-cl	0, h : 0, fr
19	0·0	7·7	SW	Variable	0·0	0·0	0·00	128	0, fr : 0, fr : 1,th.-cl,slt.-f	tk.-f : tk.-f, fr
20	0·0	7·7	NW : N	N : NNE	3·0	0·0	0·07	191	tk.-f : 10, fr	8, li.-cl : 0, m
21	0·0	7·7	NNW : NW : WSW	SW	0·0	0·0	0·00	111	v : 10, f, gt.-glm	10, f, glm : 10, f, glm
22	0·0	7·7	Variable : S	SSW : WSW	8·6	0·0	0·63	411	v : 1 : 10, th.-cl	10,sc,fq.-r,w: 10, fq.-r, w : v
23	0·0	7·7	W : WNW	WNW : SW	5·8	0·0	0·52	428	0, ho.-fr : 1, li.-cl	3, th.-cl : 2, th.-cl, m
24	0·0	7·7	SW : SSW	WSW : NW	4·9	0·0	0·35	359	p.-cl :9,cu.-s,li.-cl,slt.-r	10, sc, r : 10, fq.-r : 0
25	2·7	7·7	W : WSW	WSW : SW : SSW	1·6	0·0	0·05	306	0, ho.-fr : 0, ho.-fr	0 : 0, ho.-fr
26	0·0	7·8	S	SE : ENE	7·1	0·0	0·66	361	p.-cl, ho.-fr : 10, fq.-th.-r	10, fq.-r : 10, sn, w
27	0·0	7·8	N : NW	NW : WNW : SW	11·3	0·0	2·38	518	10, sn, w : 10, w : 10, slt.-sn	5,cu.-s,li.-cl: 0 : 10, th.-r
28	0·0	7·8	SW : WSW	WSW	3·6	0·0	0·48	410	10, shs.-r : 10	v, so.-ha : 0, l
29	0·6	7·8	WSW : W	WNW : WSW : N	3·0	0·0	0·16	358	0 : p.-cl : 6,ci.-cu,li.-cl	10, slt.-r : 10, oc.-slt.-r: 0
30	0·0	7·8	NNW : N	N : NNE	0·0	0·0	0·00	128	0 : p.-cl,m,ho.-fr: p.-cl, m	1,li.-cl,m,h : 0, m : 10, f, ho.-fr
31	1·9	7·8	W : N	NE	0·0	0·0	0·00	104	10, f : 10, f : v, cu.-s, f	5,ci.-cu,cu.-s,li.-cl: 0, tk.-f, ho.-fr
Means	0·5	7·8	...	...	...	...	0·96	367		
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°·2, being 4°·1 *lower* than
The mean *Temperature of the Dew Point* for the month was 33°·0, being 4°·4 *lower* than
The mean *Degree of Humidity* for the month was 87·1, being 0·7 *less* than
The mean *Elastic Force of Vapour* for the month was 0in·188, being 0in·036 *less* than
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was 2grs·2, being 0gr·4 *less* than
The mean *Weight of a Cubic Foot of Air* for the month was 551 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 6·0.

The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·06. The maximum daily amount of *Sunshine* was 2·7 hours on December 25.

The highest reading of the *Solar Radiation Thermometer* was 69°·0 on December 12; and the lowest reading of the *Terrestrial Radiation Thermometer* was 15°·0 on December 3.

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

The *Proportions of Wind* referred to the cardinal points were N. 6, E. 2, S. 9, and W. 13. One day was calm.

The *Greatest Pressure of the Wind* in the month was 23·5 lbs. on the square foot on December 9. The mean daily *Horizontal Movement of the Air* for the month was 367 miles; the greatest daily value was 857 miles on December 8; and the least daily value was 104 miles on December 31.

Rain fell on 18 days in the month, amounting to 3in·601, as measured by gauge No. 6 partly sunk below the ground; being 1in·816 *greater* than the average fall for the 45 years, 1841–1885.

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

MAXIMA.			MINIMA.			MAXIMA.			MINIMA.		
Greenwich Civil Time, 1886.		Reading.	Greenwich Civil Time, 1886.		Reading.	Greenwich Civil Time, 1886.		Reading.	Greenwich Civil Time, 1886.		Reading.
	d h m	in.		d h m	in.		d h m	in.		d h m	in.
January	1. 9. 20	29·929	January	2. 5. 35	29·730	April	3. 20. 20	29·829	April	4. 18. 30	29·656
	3. 2. 10	29·906		6. 9. 0	29·344		5. 7. 45	29·772		6. 7. 0	29·488
	7. 11. 0	29·949		8. 9. 0	29·381		7. 7. 0	29·850		8. 15. 30	29·034
	10. 10. 0	29·889		11. 9. 0	29·578		9. 23. 35	29·496		10. 14. 15	29·328
	12. 10. 0	29·962		13. 13. 0	29·035		13. 22. 0	30·154		19. 16. 0	29·581
	14. 21. 35	29·840		15. 23. 15	29·384		25. 23. 20	29·980		28. 15. 0	29·428
	16. 11. 20	29·565		17. 0. 45	29·257	May	5. 8. 0	30·319	May	13. 9. 10	28·917
	17. 10. 20	29·325		18. 4. 45	28·810		16. 1. 30	29·797		18. 4. 5	29·571
	20. 13. 0	29·364		21. 7. 0	29·151		19. 9. 5	29·837		20. 4. 45	29·672
	22. 19. 20	29·408		23. 14. 0	29·230		21. 23. 40	30·026		27. 8. 10	29·180
	24. 17. 45	29·326		26. 3. 0	29·071		30. 22. 20	29·850	June	1. 15. 50	29·606
	28. 11. 40	29·756		29. 15. 55	29·329	June	4. 11. 40	30·005		10. 4. 30	29·585
	30. 5. 15	29·636		31. 13. 5	28·906		11. 11. 0	29·778		12. 15. 0	29·531
	31. 22. 40	29·200	February	1. 6. 40	29·067		14. 8. 50	29·870		14. 23. 50	29·730
February	2. 22. 5	29·468		3. 6. 45	29·335		15. 21. 45	29·920		19. 14. 20	29·575
	4. 23. 30	30·097		5. 22. 50	29·834		21. 10. 10	29·906		23. 14. 40	29·552
	8. 21. 10	30·568		14. 7. 30	29·623	July	3. 8. 20	30·144	July	8. 3. 55	29·552
	15. 11. 45	29·850		16. 16. 0	29·750		10. 23. 45	30·012		14. 8. 40	29·246
	22. 10. 35	30·230		25. 7. 0	29·930		15. 11. 35	29·648		16. 6. 55	29·560
	27. 8. 45	30·109	March	2. 20. 40	29·056		17. 12. 5	29·863		19. 0. 15	29·516
March	4. 8. 0	29·701		5. 15. 5	29·078		20. 20. 10	29·898		23. 23. 15	29·254
	11. 1. 0	30·236		12. 15. 55	30·112		24. 22. 50	29·544		26. 3. 10	29·180
	13. 9. 30	30·187		16. 14. 20	29·623		28. 13. 20	29·955		31. 3. 55	29·451
	18. 19. 50	29·858		19. 19. 10	29·774		31. 23. 30	29·661	August	2. 4. 10	29·412
	20. 20. 40	29·852		21. 5. 40	29·779	August	4. 22. 0	29·974		6. 18. 5	29·732
	23. 10. 0	29·989		24. 22. 0	29·691		8. 21. 20	29·889		10. 13. 15	29·478
	26. 10. 5	29·800		27. 17. 0	29·628		12. 9. 0	29·817		13. 15. 35	29·350
	28. 9. 0	29·738		29. 15. 0	29·385		15. 9. 10	29·969		16. 15. 0	29·671
	30. 8. 15	29·914		31. 7. 0	29·469		18. 23. 0	30·059		19. 11. 25	29·973
April	1. 12. 50	29·982	April	3. 3. 50	29·527		20. 8. 0	30·101		24. 16. 30	29·707

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

MAXIMA.		MINIMA.		MAXIMA.		MINIMA.	
Greenwich Civil Time, 1886.	Reading.	Greenwich Civil Time, 1886.	Reading.	Greenwich Civil Time, 1886.	Reading.	Greenwich Civil Time, 1886.	Reading.
d h m	in.	d h m	in.	d h m	in.	d h m	in.
August 27. 9. 0	29·996	August 30. 16. 30	29·795	November 11. 23. 45	29·383	November 12. 20. 15	29·250
September 1. 7. 40	29·958	September 5. 7. 45	29·722	15. 0. 0	29·443	15. 17. 50	29·312
7. 10. 30	29·863	10. 9. 30	29·538	16. 21. 25	29·552	17. 10. 58	29·193
13. 9. 10	29·933	14. 4. 0	29·851	24. 10. 0	30·543	30. 6. 15	29·458
15. 22. 20	30·303	21. 13. 35	29·440	December 1. 16. 0	29·738	December 2. 1. 50	29·590
24. 21. 0	29·981	27. 17. 0	29·712	3. 10. 40	29·915	4. 13. 30	29·512
28. 11. 0	29·973	October 1. 20. 0	29·352	5. 10. 0	29·911	7. 6. 40	29·186
October 2. 23. 40	29·908	5. 16. 5	29·580	7. 19. 0	29·422	9. 6. 0	28·144
8. 21. 0	29·801	9. 22. 20	29·362	11. 0. 0	29·379	12. 0. 15	28·932
11. 17. 40	29·761	12. 23. 20	28·950	13. 10. 50	29·562	14. 13. 30	29·206
14. 18. 10	29·569	16. 9. 5	28·481	14. 20. 10	29·297	15. 9. 0	28·922
24. 21. 45	30·079	27. 15. 5	29·661	17. 10. 20	29·503	18. 0. 45	29·371
29. 21. 10	30·248	November 1. 4. 20	29·812	21. 10. 0	30·238	22. 17. 35	29·332
November 3. 0. 10	30·068	3. 22. 45	29·607	23. 18. 30	29·675	24. 15. 30	29·323
4. 11. 0	29·727	6. 10. 57	28·783	25. 20. 20	29·805	27. 0. 25	28·948
8. 8. 0	29·616	9. 16. 15	29·064	27. 20. 10	29·802	29. 0. 35	29·549
				31. 10. 30	30·399		

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 6d. 9h. to January 13d. 13h. 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 0h. to 24h.

HIGHEST AND LOWEST READINGS of the BAROMETER in each Month for the YEAR 1886.

[Extracted from the preceding Table.]

MONTH, 1886.	Readings of the Barometer.		Range.
	Highest.	Lowest.	
	in.	in.	in.
January	29·962	28·810	1·152
February	30·568	29·067	1·501
March	30·236	29·056	1·180
April	30·154	29·034	1·120
May	30·319	28·917	1·402
June	30·005	29·531	0·474
July	30·144	29·180	0·964
August	30·101	29·350	0·751
September	30·303	29·440	0·863
October	30·248	28·481	1·767
November	30·543	28·783	1·760
December	30·399	28·144	2·255

The highest reading in the year was 30in·568 on February 8. The lowest reading in the year was 28in·144 on December 9.
The range of reading in the year was 2in·424.

MONTHLY RESULTS of METEOROLOGICAL ELEMENTS for the YEAR 1886.

MONTH, 1886.	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 ...	29·479	51·5	16·5	35·0	40·8	30·9	9·8	36·3	− 2·5	35·0	32·8	87·2
February...	29·943	47·8	20·6	27·2	38·0	29·8	8·1	33·7	− 6·0	32·6	30·4	87·6
March	29·793	64·1	20·3	43·8	47·3	33·5	13·8	39·8	− 1·8	37·7	34·0	79·8
April	29·743	68·3	32·5	35·8	55·8	38·9	17·0	46·6	− 0·9	43·6	40·3	79·3
May	29·759	78·9	29·1	49·8	64·0	43·6	20·4	53·3	+ 0·2	49·2	45·3	75·3
June	29·805	81·4	38·4	43·0	69·6	47·9	21·7	57·7	− 2·1	52·9	48·6	72·3
July.........	29·746	89·8	45·4	44·4	75·0	52·8	22·2	63·1	+ 0·5	57·8	53·3	71·2
August	29·814	89·1	44·6	44·5	73·8	53·3	20·5	62·3	+ 0·4	58·3	55·0	77·6
September.	29·856	87·7	40·3	47·4	69·2	50·3	18·9	59·1	+ 1·6	55·5	52·3	78·6
October ...	29·616	79·2	38·0	41·2	60·5	47·1	13·3	53·3	+ 2·3	51·4	49·4	87·2
November.	29·736	59·1	26·9	32·2	49·5	38·0	11·6	44·4	+ 1·6	43·0	41·3	89·1
December..	29·517	54·1	17·3	36·8	41·4	31·2	10·2	36·6	− 4·2	35·2	33·0	87·1
Means	29·734	Highest. 89·8	Lowest. 16·5	Annual Range. 73·3	57·1	41·4	15·6	48·8	− 0·9	46·0	43·0	81·0

MONTH, 1886.	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.	Rain. 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 ...	0·186	2·2	551	1·9	7·2	22	3·679	113	47	39	59	70	212	129	56	19	0·90	336
February...	0·170	2·0	563	0·7	7·8	10	0·562	84	235	106	52	65	46	38	5	41	0·22	206
March	0·196	2·4	553	4·6	7·5	15	1·138	56	96	162	77	62	193	69	17	12	1·07	342
April........	0·250	2·9	544	5·4	6·9	12	1·263	87	159	153	19	51	147	67	27	10	0·78	352
May.........	0·303	3·4	537	5·6	6·8	15	4·230	41	79	147	52	98	232	53	17	25	0·50*	255
June.........	0·343	3·8	533	2·0	6·5	9	0·440	141	108	110	24	18	121	95	75	28	0·61*	260
July.........	0·407	4·5	526	3·2	6·5	13	2·509	77	37	45	31	104	256	121	44	29	0·46	256
August......	0·433	4·8	528	2·8	6·0	10	1·116	99	63	25	28	110	220	120	31	48	0·25	223
September.	0·393	4·4	532	3·8	6·1	10	1·243	123	146	65	19	90	232	31	7	7	0·55	278
October.....	0·353	4·0	534	3·8	7·4	14	1·412	15	81	154	84	116	179	71	15	29	0·42	267
November.	0·260	3·0	546	1·9	7·0	15	3·019	64	79	27	17	95	228	138	43	29	0·24	253
December..	0·188	2·2	551	1·5	6·0	18	3·601	98	44	20	13	80	265	150	55	19	0·96	367
Sums	...	...	...	...	...	163	24·212	998	1174	1053	475	959	2331	1082	392	296	...	...
Means	0·290	3·3	541	3·1	6·8	...	...	...	...	...	...	...	...	...	...	...	0·58	283

The greatest recorded pressure of the wind on the square foot in the year was 27·6 lbs. on March 31.
The greatest recorded daily horizontal movement of the air „ „ 857 miles on December 8.
The least recorded daily horizontal movement of the air „ „ 56 miles on October 8.

* The mean daily pressures of the wind for May and June are derived from the results for 23 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.	1886. 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	29·440	29·938	29·805	29·749	29·774	29·810	29·755	29·819	29·866	29·618	29·758	29·505	29·736
1h.	29·434	29·936	29·803	29·742	29·770	29·805	29·751	29·814	29·863	29·614	29·752	29·500	29·732
2	29·431	29·936	29·798	29·736	29·765	29·801	29·746	29·811	29·858	29·609	29·748	29·501	29·728
3	29·427	29·930	29·790	29·731	29·761	29·798	29·743	29·804	29·854	29·605	29·742	29·502	29·724
4	29·423	29·928	29·788	29·729	29·756	29·798	29·743	29·801	29·850	29·604	29·736	29·498	29·721
5	29·422	29·930	29·787	29·732	29·758	29·803	29·745	29·803	29·849	29·606	29·735	29·499	29·722
6	29·421	29·930	29·788	29·739	29·762	29·807	29·750	29·809	29·853	29·607	29·731	29·503	29·725
7	29·423	29·936	29·793	29·747	29·763	29·811	29·754	29·812	29·860	29·613	29·735	29·508	29·730
8	29·429	29·945	29·799	29·751	29·764	29·815	29·756	29·819	29·864	29·621	29·739	29·511	29·734
9	29·433	29·950	29·802	29·753	29·762	29·815	29·756	29·821	29·868	29·625	29·738	29·519	29·737
10	29·434	29·953	29·804	29·754	29·763	29·815	29·756	29·823	29·869	29·627	29·738	29·529	29·739
11	29·431	29·957	29·801	29·753	29·763	29·814	29·755	29·820	29·867	29·627	29·735	29·528	29·738
Noon	29·420	29·952	29·799	29·748	29·761	29·809	29·754	29·819	29·863	29·623	29·728	29·526	29·733
13h.	29·406	29·943	29·791	29·742	29·758	29·803	29·749	29·815	29·856	29·615	29·720	29·518	29·726
14	29·397	29·937	29·781	29·736	29·751	29·798	29·743	29·811	29·850	29·611	29·716	29·516	29·721
15	29·393	29·933	29·779	29·729	29·746	29·793	29·741	29·807	29·844	29·608	29·715	29·519	29·717
16	29·393	29·934	29·777	29·728	29·742	29·790	29·738	29·804	29·841	29·608	29·719	29·522	29·716
17	29·392	29·938	29·778	29·727	29·741	29·789	29·734	29·803	29·842	29·612	29·725	29·525	29·717
18	29·396	29·947	29·786	29·732	29·743	29·791	29·733	29·805	29·845	29·618	29·733	29·525	29·721
19	29·398	29·952	29·793	29·741	29·749	29·796	29·735	29·812	29·852	29·619	29·738	29·530	29·726
20	29·398	29·953	29·795	29·750	29·757	29·803	29·737	29·822	29·858	29·620	29·741	29·532	29·731
21	29·397	29·958	29·798	29·755	29·764	29·815	29·743	29·828	29·860	29·625	29·748	29·532	29·735
22	29·397	29·962	29·801	29·758	29·765	29·820	29·744	29·829	29·860	29·625	29·749	29·531	29·737
23	29·393	29·964	29·802	29·759	29·769	29·822	29·744	29·830	29·859	29·625	29·750	29·531	29·737
24	29·389	29·964	29·802	29·756	29·766	29·822	29·740	29·828	29·857	29·623	29·751	29·528	29·735
Means 0h.–23h.	29·414	29·943	29·793	29·743	29·759	29·805	29·746	29·814	29·856	29·616	29·736	29·517	29·728
Means 1h.–24h.	29·412	29·944	29·793	29·743	29·758	29·806	29·745	29·815	29·856	29·616	29·736	29·518	29·728
Number of Days employed.	21	28	31	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.	1886. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Yearly Means.
	°	°	°	°	°	°	°	°	°	°	°	°	°
Midnight	35·5	32·6	37·5	43·0	47·9	52·2	57·7	57·3	55·2	50·9	43·2	35·8	45·7
1h.	35·4	32·3	37·1	42·6	47·5	51·4	57·0	56·8	55·0	50·8	43·1	35·7	45·4
2	35·3	32·3	36·8	42·4	47·2	50·9	56·5	56·5	54·8	50·7	43·0	35·8	45·2
3	35·2	32·0	36·5	42·4	46·8	50·6	56·0	56·1	54·9	50·3	42·9	35·7	45·0
4	34·9	32·0	36·4	42·3	46·5	50·2	55·6	56·0	54·7	50·1	42·7	35·6	44·8
5	34·6	31·8	36·4	42·1	46·6	50·6	55·9	56·0	54·5	49·9	42·5	35·4	44·7
6	34·5	31·8	36·4	42·2	47·9	52·2	57·3	56·6	54·4	50·0	42·2	35·4	45·1
7	34·6	32·0	36·6	43·2	50·3	54·4	59·7	58·3	55·3	50·2	41·9	35·4	46·0
8	34·8	32·2	37·9	45·2	53·0	57·1	62·6	60·4	57·6	51·4	42·1	35·3	47·5
9	35·4	32·9	39·4	47·5	55·5	59·5	65·5	63·2	60·4	53·3	43·2	35·8	49·3
10	36·5	34·0	41·0	49·4	57·4	61·6	67·1	65·0	62·9	55·0	45·1	36·5	51·0
11	37·7	35·0	43·0	50·7	58·9	63·0	68·5	66·8	64·7	57·1	46·2	37·8	52·4
Noon	38·3	35·7	44·3	51·9	59·8	64·6	69·8	68·3	65·5	58·1	47·4	38·5	53·5
13h.	38·9	36·3	44·8	53·1	60·2	65·7	70·3	69·5	66·2	58·9	47·9	39·2	54·3
14	39·1	36·5	45·1	53·3	60·4	66·3	71·0	70·5	66·3	58·7	48·1	39·5	54·6
15	38·6	36·4	44·0	52·8	60·7	66·0	70·7	70·3	65·8	57·9	47·7	39·1	54·2
16	38·1	35·9	43·2	51·9	59·9	64·7	70·3	69·9	64·5	56·6	46·7	38·3	53·3
17	37·3	35·3	42·2	50·4	58·4	63·3	69·0	68·1	62·3	55·2	45·7	37·6	52·1
18	36·8	34·6	41·1	48·6	56·7	61·7	67·2	66·2	60·3	54·0	44·9	36·8	50·7
19	36·4	34·2	40·0	46·8	54·8	59·5	65·1	63·8	58·3	53·0	44·6	36·4	49·4
20	36·0	33·9	39·4	45·3	52·7	56·7	62·8	61·6	57·2	52·5	44·0	36·0	48·2
21	35·6	33·5	38·8	44·2	51·1	55·0	60·7	59·9	56·1	52·1	43·6	35·5	47·2
22	35·6	33·2	38·3	43·5	50·2	53·7	59·5	58·8	55·6	51·7	43·4	35·4	46·6
23	35·4	32·8	38·0	43·1	49·2	52·8	58·6	58·1	55·0	51·3	43·0	35·1	46·0
24	35·1	32·5	37·8	42·9	48·5	52·1	57·8	57·7	54·8	51·0	42·6	35·4	45·7
Means 0h.–23h.	36·3	33·7	39·8	46·6	53·3	57·7	63·1	62·3	59·1	53·3	44·4	36·6	48·8
Means 1h.–24h.	36·3	33·7	39·8	46·6	53·3	57·7	63·1	62·3	59·1	53·3	44·4	36·6	48·8
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.	1886. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Yearly Means.
	°	°	°	°	°	°	°	°	°	°	°	°	°
Midnight	34·3	31·8	36·1	41·7	46·1	50·3	55·5	55·8	53·6	50·0	42·3	34·5	44·3
1h.	34·3	31·6	36·0	41·4	45·8	49·8	54·9	55·5	53·5	49·9	42·2	34·5	44·1
2	34·2	31·6	35·7	41·3	45·5	49·4	54·7	55·3	53·5	49·7	42·0	34·5	43·9
3	34·1	31·3	35·5	41·2	45·3	49·2	54·3	54·9	53·5	49·5	41·8	34·5	43·8
4	33·9	31·3	35·5	41·1	45·3	48·8	53·8	54·8	53·3	49·3	41·7	34·5	43·6
5	33·7	31·1	35·4	41·0	45·2	49·0	54·0	54·8	53·1	49·1	41·5	34·5	43·5
6	33·7	31·2	35·5	41·1	46·2	50·1	54·9	55·2	52·9	49·2	41·3	34·4	43·8
7	33·6	31·4	35·8	41·7	47·9	51·2	56·4	56·5	53·5	49·5	41·0	34·6	44·4
8	33·9	31·6	36·8	43·2	49·3	52·7	57·8	57·8	55·1	50·3	41·1	34·5	45·3
9	34·4	32·1	37·7	44·5	50·6	53·8	59·2	59·3	56·6	51·6	42·2	34·9	46·4
10	35·3	32·9	38·7	45·4	51·6	54·7	59·6	60·2	57·9	52·7	43·5	35·5	47·3
11	36·0	33·6	39·9	46·1	52·3	55·4	60·3	60·9	58·5	53·6	44·3	36·2	48·1
Noon	36·7	34·0	40·5	46·6	53·0	56·4	60·7	61·6	58·8	53·9	45·1	36·7	48·7
13h.	37·2	34·4	40·8	47·1	53·2	56·8	61·0	62·2	58·9	54·2	45·3	37·0	49·0
14	37·2	34·5	40·8	47·0	53·3	57·1	61·5	62·5	58·7	54·0	45·5	37·3	49·1
15	36·8	34·5	40·2	46·8	53·5	57·0	61·2	62·0	58·5	53·7	45·3	37·0	48·9
16	36·3	34·2	39·8	46·3	52·9	56·4	60·9	61·8	58·0	53·3	44·7	36·5	48·4
17	35·8	33·7	39·3	45·6	52·1	55·8	60·4	60·9	57·0	52·6	44·1	36·0	47·8
18	35·5	33·4	38·7	44·6	51·0	55·0	59·6	60·1	56·0	52·0	43·6	35·5	47·1
19	35·0	33·1	38·1	43·7	50·0	54·0	58·6	59·3	55·1	51·5	43·1	35·1	46·4
20	34·7	32·8	37·7	42·8	48·8	52·7	57·6	58·3	54·6	51·1	42·8	34·8	45·7
21	34·3	32·5	37·2	42·4	48·0	51·9	56·9	57·3	54·1	51·0	42·5	34·3	45·2
22	34·3	32·2	36·8	41·9	47·7	51·1	56·4	56·7	53·7	50·7	42·3	34·2	44·8
23	34·1	31·9	36·5	41·8	47·1	50·7	55·9	56·3	53·5	50·3	41·9	34·0	44·5
24	33·9	31·6	36·4	41·5	46·7	50·1	55·5	56·2	53·2	50·1	41·5	34·2	44·2
Means 0h.–23h.	35·0	32·6	37·7	43·6	49·2	52·9	57·8	58·3	55·5	51·4	43·0	35·2	46·0
Means 1h.–24h.	35·0	32·6	37·7	43·6	49·3	52·9	57·8	58·3	55·5	51·4	42·9	35·2	46·0
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.	1886. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Yearly Means.
	°	°	°	°	°	°	°	°	°	°	°	°	°
Midnight	32·4	30·2	34·2	40·1	44·1	48·4	53·5	54·5	52·1	49·1	41·2	32·5	42·7
1h.	32·6	30·1	34·5	40·0	43·9	48·2	53·0	54·3	52·1	49·0	41·1	32·7	42·6
2	32·5	30·1	34·2	40·0	43·6	47·8	53·0	54·2	52·2	48·7	40·8	32·5	42·5
3	32·4	29·6	34·1	39·8	43·7	47·7	52·7	53·8	52·1	48·6	40·5	32·7	42·3
4	32·3	29·6	34·2	39·7	44·0	47·3	52·1	53·7	51·9	48·4	40·5	32·8	42·2
5	32·3	29·5	34·0	39·7	43·7	47·3	52·2	53·7	51·7	48·2	40·3	33·1	42·1
6	32·4	29·9	34·2	39·8	44·3	48·0	52·8	53·9	51·4	48·3	40·2	32·8	42·3
7	32·0	30·0	34·7	39·9	45·4	48·1	53·5	54·9	51·8	48·7	39·9	33·4	42·7
8	32·5	30·3	35·3	40·9	45·6	48·7	53·7	55·5	52·8	49·2	39·9	33·3	43·1
9	32·8	30·5	35·5	41·2	46·0	48·7	54·1	56·0	53·3	49·9	41·0	33·5	43·5
10	33·6	31·0	35·8	41·1	46·3	48·8	53·6	56·3	53·7	50·5	41·6	34·1	43·9
11	33·7	31·4	36·2	41·3	46·5	49·0	53·9	56·3	53·3	50·4	42·1	34·0	44·0
Noon	34·5	31·4	36·1	41·2	47·1	49·6	53·7	56·4	53·3	50·1	42·6	34·3	44·2
13h.	34·9	31·6	36·2	41·1	47·0	49·6	53·8	56·5	53·0	50·0	42·4	34·1	44·2
14	34·7	31·6	35·9	40·7	47·0	49·7	54·3	56·3	52·6	49·8	42·6	34·4	44·1
15	34·4	31·7	35·7	40·8	47·2	49·7	53·9	55·6	52·6	49·9	42·7	34·3	44·0
16	33·9	31·6	35·7	40·6	46·8	49·6	53·6	55·5	52·6	50·2	42·5	34·1	43·9
17	33·7	31·2	35·7	40·6	46·5	49·5	53·7	55·3	52·5	50·1	42·3	33·8	43·7
18	33·7	31·4	35·7	40·3	45·7	49·2	53·5	55·1	52·3	50·0	42·1	33·7	43·6
19	33·0	31·2	35·6	40·2	45·4	49·1	53·3	55·5	52·2	50·0	41·4	33·2	43·3
20	32·7	30·9	35·5	39·9	44·9	49·0	53·2	55·5	52·2	49·7	41·4	33·0	43·2
21	32·3	30·7	35·0	40·3	44·8	48·9	53·6	55·0	52·2	49·9	41·2	32·4	43·0
22	32·3	30·3	34·7	40·0	45·1	48·6	53·7	54·8	51·9	49·7	41·0	32·3	42·9
23	32·1	30·1	34·5	40·2	44·8	48·6	53·5	54·7	52·0	49·3	40·6	32·3	42·7
24	32·0	29·7	34·5	39·8	44·7	48·1	53·4	54·8	51·6	49·2	40·2	32·3	42·5
Means 0h.–23h.	33·1	30·7	35·1	40·4	45·4	48·7	53·4	55·1	52·4	49·5	41·3	33·3	43·2
Means 1h.–24h.	33·1	30·6	35·1	40·4	45·4	48·7	53·4	55·1	52·4	49·5	41·3	33·3	43·2

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.	1886.												Yearly Means.
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
Midnight	89	90	88	90	87	87	86	90	89	94	93	88	89
1h.	90	91	90	90	88	89	86	92	90	94	93	89	90
2	90	91	91	91	88	89	88	92	91	93	92	88	90
3	89	90	91	90	90	90	89	92	90	94	91	89	90
4	90	90	92	90	92	90	89	92	90	94	92	90	91
5	91	92	91	91	90	89	88	92	90	94	92	91	91
6	92	94	92	91	88	86	85	91	90	94	93	90	90
7	90	92	93	88	84	79	81	88	89	95	93	92	89
8	91	92	90	85	76	73	73	85	84	92	92	92	85
9	90	92	86	79	71	68	67	78	78	88	92	92	82
10	90	88	82	73	66	63	62	74	72	85	88	91	78
11	85	86	77	71	64	61	59	69	67	78	87	86	74
Noon	87	84	72	67	63	58	56	65	65	75	84	86	72
13h.	86	83	71	64	62	55	56	63	63	73	83	82	70
14	85	83	70	63	62	55	55	61	62	73	82	82	69
15	85	84	72	64	61	56	56	60	62	75	84	83	70
16	85	85	75	65	62	58	56	60	65	79	86	85	72
17	87	85	79	70	65	61	58	63	70	84	88	86	75
18	89	88	81	73	67	64	62	68	75	86	90	89	78
19	88	88	85	79	70	69	66	75	80	89	89	89	81
20	88	87	86	82	75	75	71	81	84	91	90	89	83
21	88	89	87	86	79	80	78	84	87	92	91	89	86
22	88	89	87	87	83	83	82	86	88	93	91	89	87
23	88	90	87	90	85	85	83	88	90	93	91	89	88
24	88	89	88	89	87	86	85	90	89	94	91	89	89
Means 0h.–23h.	88	88	84	80	76	73	72	79	80	87	89	88	82
Means 1h.–24h.	88	88	84	80	76	73	72	79	80	87	89	88	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 1886.

Month, 1886.	Registered Duration of Sunshine in the Hour ending																Total registered Duration of Sunshine in each Month.	Corresponding aggregate Period during which the Sun was above Horizon.	Mean Altitude of the Sun at Noon
	5h.	6h.	7h.	8h.	9h.	10h.	11h.	Noon.	13h.	14h.	15h.	16h.	17h.	18h.	19h.	20h.			
	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	°
January ...	...	...	...	...	0·1	4·4	7·1	7·5	6·9	6·7	3·6	...	...	...	...	...	36·3	259·1	18
February ...	...	...	...	...	0·8	2·6	4·5	6·5	6·2	3·5	2·2	0·8	...	...	...	...	27·1	277·9	26
March	...	...	0·3	3·2	4·7	5·2	10·7	11·4	10·6	10·5	7·1	6·2	3·1	0·2	...	...	73·2	366·9	37
April.........	...	0·2	4·2	6·4	9·2	10·3	11·5	11·0	12·6	13·3	12·9	11·9	10·0	6·4	1·7	...	121·6	414·9	48
May	...	2·8	13·0	12·5	12·0	13·2	12·4	12·9	14·0	14·6	14·8	14·1	9·6	8·6	5·3	...	159·8	482·1	57
June	0·2	7·5	12·1	16·2	16·3	18·4	17·4	18·7	21·3	18·8	17·1	14·7	13·5	11·6	9·0	0·2	213·0	494·5	62
July	0·5	7·1	12·4	14·1	16·3	16·1	16·3	17·4	14·9	16·1	15·1	15·2	13·7	9·4	7·7	0·2	192·5	496·8	60
August	...	1·0	6·1	7·2	10·5	13·2	15·4	14·5	14·8	16·4	17·5	19·1	16·6	11·7	1·9	...	165·9	449·1	52
September ..	...	...	1·3	5·8	9·2	12·9	15·0	14·5	14·4	15·3	14·6	14·6	11·3	2·7	...	...	131·6	376·9	41
October......	...	...	...	1·4	4·2	7·7	9·5	9·4	10·2	8·7	7·6	3·1	1·3	...	...	...	63·1	328·7	30
November...	...	...	...	...	0·5	4·3	5·7	6·5	5·1	3·7	2·6	0·9	...	...	...	...	29·3	264·4	20
December...	...	...	...	...	...	0·6	4·8	3·4	4·3	1·9	0·8	...	...	...	...	...	15·8	242·7	16

The hours are reckoned from *apparent* midnight.

The total registered duration of sunshine during the year was 1229·2 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 0·276.

READINGS of THERMOMETERS placed in a louvre-boarded shed on the ROOF of the MAGNET HOUSE at an elevation of 20 feet above the GROUND; and EXCESS of READINGS above those of the THERMOMETERS on the ORDINARY STAND, in the YEAR 1886.

(The readings of the maximum and minimum thermometers apply to the twenty-four hours ending at 21h).

JANUARY.

Days of the Month.	Readings of Thermometers on the Roof of the Magnet House, 20 feet above the ground.						Excess above readings on ordinary stand, 4 feet above the ground.					
	Maximum.	Minimum.	9h	Noon	15h	21h	Maximum.	Minimum.	9h	Noon	15h	21h
d	°	°	°	°	°	°	°	°	°	°	°	°
1	49·2	44·8	...	...	...	...	+0·2	0·0	...	...	...	...
2	51·5	43·8	...	...	...	...	0·0	+1·0	...	...	...	...
4	49·9	41·7	...	...	...	...	+0·1	−0·7	...	...	...	...
5	42·6	33·8	...	...	...	...	−0·5	−0·1	...	...	...	...
6	38·8	28·8	...	...	...	...	−0·2	−0·1	...	...	...	...
7	30·7	16·9	...	...	...	...	+0·4	+0·2	...	...	...	...
8	34·8	16·7	...	...	...	...	0·0	+0·2	...	...	...	...
9	34·8	25·2	...	...	...	...	−0·1	+0·2	...	...	...	...
11	40·5	31·8	...	...	...	...	+2·0	+0·7	...	...	...	...
12	36·9	29·8	...	...	...	...	+1·6	0·0	...	...	...	...
13	46·1	34·7	...	...	...	...	+1·0	−0·3	...	...	...	...
14	40·6	33·9	38·1	39·8	40·0	34·5	−0·6	+1·3	+0·2	−0·1	+0·2	+0·5
15	46·6	30·0	41·6	45·8	45·7	41·3	+0·2	−0·1	+0·7	+0·5	+0·1	−0·7
16	41·6	31·8	33·1	38·7	40·6	41·0	−0·4	−0·5	−0·6	0·0	+0·4	+1·0
18	41·7	31·2	33·8	34·1	34·8	31·8	+0·5	+0·7	−0·1	−0·7	−1·0	+0·1
19	36·8	24·3	28·1	34·7	34·5	31·4	+0·9	−0·4	+0·5	+0·4	−0·4	+0·1
20	34·0	25·4	28·1	31·8	32·8	31·0	−0·3	−1·0	+0·4	−0·1	−0·3	+0·1
21	33·4	30·5	32·9	33·3	33·3	32·1	−0·9	0·0	0·0	−0·5	−0·5	−0·1
22	33·5	28·0	30·9	31·8	32·8	31·9	+0·4	−0·4	+0·2	−0·3	0·0	−0·1
23	35·1	31·1	33·5	34·9	34·8	32·8	−0·2	−0·2	−0·1	+0·1	+0·1	+0·2
25	40·1	30·4	37·1	38·8	39·0	36·6	0·0	+0·1	+0·3	+0·4	+0·2	+0·1
26	45·0	33·8	35·4	42·4	43·8	38·2	+0·5	−0·4	0·0	+0·5	+0·7	+0·4
27	43·0	32·7	37·0	41·8	43·0	33·7	−0·7	+0·1	+0·2	−0·4	−0·7	0·0
28	44·0	24·7	28·1	41·3	42·5	34·8	−0·2	−0·5	+0·1	−0·2	+0·8	−0·2
29	42·6	33·1	35·0	38·4	37·8	41·4	+0·5	+0·3	−0·7	+0·2	0·0	+0·5
30	44·4	31·8	37·0	43·6	41·8	38·0	0·0	−1·4	+0·4	+0·5	+0·1	+0·5
Means	40·7	30·8	34·0	38·1	38·5	35·4	+0·2	−0·1	+0·1	0·0	0·0	+0·2

FEBRUARY.

Days of the Month.	Readings of Thermometers on the Roof of the Magnet House, 20 feet above the ground.						Excess above readings on ordinary stand, 4 feet above the ground.					
	Maximum.	Minimum.	9h	Noon	15h	21h	Maximum.	Minimum.	9h	Noon	15h	21h
d	°	°	°	°	°	°	°	°	°	°	°	°
1	41·5	34·1	36·7	38·9	41·2	38·9	−0·4	0·0	−0·7	−1·6	+0·1	+0·9
2	43·4	33·5	36·6	39·8	41·8	34·7	+0·1	−0·1	+0·1	+0·3	+0·2	0·0
3	37·1	32·8	33·0	34·9	36·1	37·0	0·0	0·0	0·0	+0·1	+0·2	0·0
4	39·9	32·7	34·5	36·8	39·2	35·5	−0·6	−0·3	+0·2	−0·2	−0·6	+0·2
5	36·0	31·2	33·6	33·4	35·0	32·0	−0·2	0·0	+0·3	+0·1	−0·6	−0·6
6	36·8	26·8	29·9	35·1	35·8	31·2	−1·1	−0·2	+0·3	−1·6	−0·1	−0·1
8	35·0	25·0	29·5	33·7	33·8	27·8	−0·4	+0·1	+1·3	+0·1	0·0	−0·9
9	34·7	21·4	24·8	33·6	30·6	27·8	−0·5	+0·5	+0·7	−0·7	−0·2	+0·7
10	30·5	20·3	25·9	25·8	29·1	30·5	0·0	−0·3	−0·7	−0·3	−0·1	0·0
11	36·6	30·0	32·9	34·2	35·4	35·7	+0·5	−0·2	+0·1	+0·3	+0·5	+0·7
12	43·2	35·1	39·6	41·3	41·8	41·3	+0·2	+0·4	+0·8	+0·3	+0·3	+0·7
13	48·0	36·8	41·3	44·5	47·4	41·6	+0·2	+0·6	+0·5	+0·5	+0·8	+1·4
15	41·1	34·6	38·8	39·2	39·4	36·1	+0·4	+0·3	+0·5	−0·3	−0·1	−0·1
16	36·5	32·8	33·2	33·8	34·1	33·7	−0·1	−0·1	+0·1	0·0	+0·1	−0·1
17	35·7	31·7	32·5	33·8	35·7	34·0	−0·1	−0·6	−0·1	−0·1	+0·1	+0·1
18	37·4	31·7	33·6	36·1	37·0	32·8	−0·2	−0·5	0·0	+0·1	0·0	−0·1
19	34·2	31·5	32·2	33·1	33·9	32·8	−0·2	−0·2	0·0	+0·2	+0·1	0·0
20	36·5	31·2	32·9	34·6	35·7	33·3	0·0	−0·3	0·0	0·0	−0·3	+0·2
22	39·3	28·7	33·1	35·9	38·2	32·0	−0·6	+1·5	+0·3	+0·3	+0·4	−0·5
23	33·5	29·6	31·6	32·7	33·4	31·3	−0·1	+0·1	+0·4	0·0	+0·3	−0·1
24	36·8	23·8	28·9	33·8	34·5	31·7	−1·4	−0·3	−0·4	−2·0	+0·2	−0·1
25	35·4	28·0	33·5	34·7	34·7	32·2	+0·3	−0·8	+0·4	+0·4	+0·1	+0·2
26	38·2	26·1	30·5	33·6	37·5	33·3	−0·9	−0·5	−0·5	−2·2	+0·4	+0·5
27	38·7	24·4	31·0	36·1	38·7	30·0	+0·2	−0·7	+0·2	−0·5	+0·8	0·0
Means	37·7	29·7	32·9	35·4	36·7	33·6	−0·2	−0·1	+0·2	−0·3	+0·1	+0·1

MARCH.

Days of the Month.	Readings of Thermometers on the Roof of the Magnet House, 20 feet above the ground.						Excess above readings on ordinary stand, 4 feet above the ground.					
	Maximum.	Minimum.	9h	Noon	15h	21h	Maximum.	Minimum.	9h	Noon	15h	21h
d	°	°	°	°	°	°	°	°	°	°	°	°
1	36·3	29·1	31·1	31·9	32·7	36·3	+0·3	−0·5	−0·4	−0·9	−0·1	+0·3
2	41·4	32·7	35·8	39·8	39·8	33·5	−0·5	+0·3	+0·5	−0·3	−0·5	+0·3
3	33·8	29·0	32·6	31·8	33·0	31·1	−1·3	−0·4	−0·2	−0·4	−0·2	−0·3
4	41·7	23·9	29·6	39·2	39·2	32·0	−0·6	−1·2	−0·3	+0·1	+0·7	+0·5
5	39·1	29·7	34·2	36·5	36·7	33·9	+0·4	+0·9	+0·1	−0·3	+0·4	0·0
6	38·7	28·2	31·8	38·3	33·2	29·9	−0·4	+0·3	0·0	+0·7	−0·2	−0·1
8	40·2	24·8	35·9	37·1	38·0	30·0	−1·2	+0·3	+0·4	−0·5	−0·1	−0·7
9	41·4	24·8	33·4	39·8	40·8	30·1	−0·8	−0·3	−0·2	−1·8	−0·3	−0·3
10	37·6	28·0	33·0	37·0	34·2	31·6	−0·3	−0·3	+0·4	+0·3	+0·5	0·0
11	40·0	24·9	33·0	38·1	37·9	28·5	−0·1	−0·4	+0·1	−0·7	+0·2	−0·4
12	35·6	26·0	30·1	32·8	35·2	31·8	+0·2	−0·4	0·0	−0·3	+0·4	0·0
13	35·0	26·3	31·8	33·9	33·1	31·5	−1·3	+0·3	+0·3	+0·6	−0·4	+0·3
15	37·2	29·1	33·8	34·3	35·9	31·1	−0·3	−0·1	+0·3	−0·3	−0·2	0·0
16	36·7	24·8	31·2	35·3	35·2	30·0	−0·4	+0·1	+0·2	−0·5	+0·4	−0·1
17	44·4	19·9	28·6	38·8	42·6	30·0	+0·4	−0·4	−0·4	−1·4	+1·4	−0·1
18	48·6	28·0	36·6	43·6	45·7	38·9	+1·0	0·0	+0·6	0·0	+0·9	+0·1
19	64·0	36·1	48·7	57·2	57·6	52·0	−0·1	−0·8	+0·7	−1·2	+0·4	+1·2
20	57·8	44·0	50·2	54·2	54·8	49·8	−0·5	+1·0	+0·6	+0·4	+0·3	0·0
22	54·6	42·5	47·6	50·5	54·3	50·5	−0·5	+0·1	−0·1	−0·1	+0·4	+0·6
23	61·9	48·3	53·2	57·7	61·2	48·8	−0·2	0·0	+0·4	+0·1	−0·1	0·0
24	62·8	40·9	45·8	59·4	60·2	47·4	+0·5	0·0	+0·5	+0·7	+0·4	−0·6
25	58·9	47·1	52·1	55·7	55·1	51·1	−0·7	+0·3	+0·3	+0·5	−0·1	+0·8
26	55·6	47·5	50·7	55·6	54·3	52·2	−1·5	+0·6	+0·7	−0·2	+0·3	+0·3
27	56·5	48·5	51·0	53·1	53·8	51·8	−0·5	+0·7	+0·4	−0·1	−0·2	+0·2
29	53·6	40·8	47·1	53·0	48·1	41·7	−1·0	+0·4	+0·1	+0·2	−0·1	−0·1
30	49·9	37·3	46·4	47·6	47·4	47·9	−0·2	+0·3	−0·4	−0·2	+0·1	+0·1
31	54·4	41·5	49·6	52·0	43·6	42·0	−0·8	+0·7	−0·2	−1·5	−0·3	+0·3
Means	46·6	33·5	39·4	43·9	43·8	38·7	−0·4	+0·1	+0·2	−0·3	+0·1	+0·1

APRIL.

Days of the Month.	Readings of Thermometers on the Roof of the Magnet House, 20 feet above the ground.						Excess above readings on ordinary stand, 4 feet above the ground.					
	Maximum.	Minimum.	9h	Noon	15h	21h	Maximum.	Minimum.	9h	Noon	15h	21h
d	°	°	°	°	°	°	°	°	°	°	°	°
1	55·0	38·5	47·9	52·0	54·4	43·8	−1·4	+0·5	+0·2	−1·0	−0·2	−0·6
2	59·8	43·6	56·3	57·8	57·7	55·2	−0·9	+0·6	−0·4	+0·1	+0·4	+0·3
3	57·1	41·8	48·0	52·1	53·8	42·6	0·0	+0·9	+0·2	−0·2	−0·6	+0·8
5	59·6	43·7	48·0	55·4	57·7	47·5	−0·9	+0·4	+0·7	+0·3	+0·5	−0·2
6	54·5	40·5	51·8	51·0	52·5	40·7	−2·1	+0·6	−0·9	−2·1	−1·3	−0·1
7	51·0	35·8	46·1	49·2	43·9	45·9	−0·3	+0·1	+0·6	+0·3	0·0	+0·1
8	55·5	40·8	51·0	52·6	49·8	41·6	−1·6	0·0	−0·1	−0·2	0·0	+0·1
9	48·4	37·8	43·0	41·7	43·4	38·0	−1·6	+0·8	+0·7	0·0	−1·6	0·0
10	47·8	34·7	47·1	45·0	41·4	35·9	−0·9	+2·2	+0·2	−0·3	−0·1	+0·1
12	54·1	33·9	40·1	50·6	51·6	46·2	−1·5	+1·2	−0·1	−1·0	−0·4	+1·1
13	53·9	35·9	46·6	52·0	51·5	50·1	−1·3	+1·0	+0·1	0·0	0·0	+1·1
14	51·3	43·9	45·5	50·4	50·4	47·3	−0·6	+0·3	+0·4	+0·2	0·0	+0·5
15	51·6	40·7	45·8	47·8	49·8	43·8	−1·7	+0·8	+0·5	−0·5	−2·7	0·0
16	48·8	38·0	41·4	46·0	43·0	38·0	−2·6	−1·0	−2·5	−1·3	−3·1	−1·6
17	47·9	37·8	41·4	46·1	45·7	42·8	−1·1	+0·2	−0·2	−0·4	−0·1	−0·2
19	64·8	39·4	52·2	61·2	62·5	47·4	−0·3	+0·2	+0·3	+1·2	−0·5	−0·4
20	53·8	41·6	51·0	46·9	52·8	42·4	+0·1	−0·1	+0·2	+0·1	+0·5	−0·3
21	47·7	41·1	44·2	45·2	47·0	42·3	−1·2	+0·4	−0·5	−0·6	−0·6	−0·2
22	52·4	40·5	44·2	47·6	52·0	43·5	−0·8	+0·7	−0·8	0·0	+0·1	−0·4
24	67·4	45·8	52·7	61·3	65·1	48·7	0·0	+0·7	+0·2	+0·7	+0·8	−0·1
26	57·3	39·8	51·4	55·3	57·2	43·0	−1·1	+0·6	−1·4	−1·4	+0·4	−0·3
27	64·8	41·7	51·5	62·6	61·6	48·8	−0·9	+0·1	−2·1	−0·4	−0·2	0·0
28	66·9	43·5	54·4	62·8	62·6	43·6	−1·4	+0·4	−1·2	+0·7	−0·2	−0·3
29	48·9	35·4	36·9	41·7	47·0	40·6	−0·9	−0·3	−1·4	−2·8	−0·2	−0·3
30	52·6	35·5	42·7	47·8	51·0	38·9	−1·2	+0·8	−1·7	−2·7	−0·4	−0·9
Means	54·9	39·7	47·2	51·3	52·2	43·9	−1·0	+0·5	−0·4	−0·5	−0·4	−0·1

READINGS of THERMOMETERS on the ROOF of the MAGNET HOUSE—*continued.*

MAY.

Days of the Month.	Readings of Thermometers on the Roof of the Magnet House, 20 feet above the ground.						Excess above readings on ordinary stand, 4 feet above the ground.					
	Maximum.	Minimum.	9h	Noon	15h	21h	Maximum.	Minimum.	9h	Noon	15h	21h
d	°	°	°	°	°	°	°	°	°	°	°	°
1	61·1	31·7	48·0	56·6	59·0	41·4	+0·4	+2·6	−0·4	+0·2	+0·3	−0·5
3	63·8	37·2	52·4	57·6	61·7	48·1	−1·7	+1·0	+0·5	−3·5	−1·2	+1·3
4	67·5	36·6	57·8	62·9	66·1	50·8	−2·3	+1·0	−0·1	−3·4	+0·8	+1·0
5	71·6	39·9	58·2	65·1	69·2	55·5	−1·9	+2·0	−0·5	−3·4	−0·2	+0·3
6	74·4	45·1	64·2	68·8	72·7	57·3	−0·7	+2·2	−1·4	−4·1	+0·1	+1·5
7	77·1	46·7	66·0	75·0	74·8	61·1	−1·8	+2·5	+0·2	0·0	−1·0	+0·9
8	73·5	51·9	61·4	65·1	71·8	59·0	+0·3	+0·2	+0·3	+1·1	+1·3	+1·4
10	66·6	46·4	56·6	64·7	61·0	49·8	−0·5	+0·5	−1·4	+0·4	+0·2	−0·1
11	49·8	44·0	49·4	48·5	47·3	44·0	−0·5	+0·1	+0·3	−0·1	−0·2	−0·2
12	55·8	44·0	47·9	52·5	55·2	49·8	−0·5	+0·1	−0·3	−0·1	−0·4	−0·6
13	53·2	46·4	49·1	49·1	49·2	46·6	−0·1	+1·2	−0·7	−1·0	−0·4	+0·6
14	51·6	42·5	48·2	49·8	46·9	43·9	−2·0	+0·9	−0·3	−0·6	−0·3	−0·5
15	53·9	38·5	47·1	52·0	49·6	47·2	−1·7	+0·7	−1·6	−1·8	−3·3	+0·5
17	61·8	50·8	53·6	57·1	59·2	53·8	−0·7	+0·9	+0·1	+0·2	+0·4	+0·1
18	68·7	50·8	61·5	64·7	66·8	51·8	−0·9	+0·1	+0·7	−2·1	−0·5	0·0
19	59·9	45·9	53·3	52·8	57·3	52·4	+1·0	+1·1	+0·7	+0·2	+1·0	−0·3
20	67·4	48·7	62·7	64·8	62·6	52·0	−0·5	+0·5	−0·1	+0·7	+0·4	0·0
21	71·1	46·7	62·6	64·2	69·8	60·0	−0·5	+1·3	+1·0	−2·3	+1·0	+0·6
22	68·5	52·8	58·6	65·4	66·2	57·8	+0·5	−0·2	−0·3	+1·6	+0·3	+0·6
24	57·9	52·8	54·1	54·1	53·7	53·0	+0·2	+0·5	−0·4	−0·6	−0·9	−0·6
25	61·9	46·1	54·2	57·3	59·7	52·0	−1·8	0·0	−0·7	+0·5	−0·6	0·0
26	62·2	49·2	58·3	58·5	60·2	51·8	−0·9	+1·0	−1·0	−0·3	−1·3	−0·5
27	59·3	46·6	51·2	54·7	57·3	48·6	−1·9	−0·5	−0·9	+0·1	−1·4	+0·1
28	60·1	45·0	54·1	58·5	58·8	48·6	−1·9	+0·6	+0·1	−1·2	−1·6	+0·6
29	63·4	44·7	57·4	58·6	62·3	50·1	−2·5	+1·0	+0·6	−0·3	−1·0	+0·5
31	66·8	45·7	60·6	64·4	64·5	54·8	−1·8	+1·6	+0·6	+0·5	−0·6	−0·1
Means	63·4	45·3	55·7	59·3	60·9	51·6	−1·0	+0·9	−0·2	−0·7	−0·3	+0·3

JUNE.

Days of the Month.	Maximum.	Minimum.	9h	Noon	15h	21h	Maximum.	Minimum.	9h	Noon	15h	21h
d	°	°	°	°	°	°	°	°	°	°	°	°
1	73·4	54·8	58·7	63·8	72·1	57·6	−1·5	+0·6	+0·6	+0·3	−1·1	+0·4
2	75·8	49·9	64·2	72·6	69·2	56·6	−1·0	+0·8	+0·4	−0·2	−0·2	−0·2
3	56·6	48·8	50·8	55·0	54·7	50·8	−0·6	+0·2	−0·1	+0·3	−0·6	−0·2
4	63·5	41·4	53·6	59·6	61·6	47·4	−0·3	+1·3	−2·3	−0·2	+0·2	−0·2
5	65·5	40·2	53·0	57·8	64·3	48·7	−0·5	+1·8	0·0	−1·7	+0·5	−0·5
7	71·1	43·9	62·0	69·1	70·2	54·8	−2·2	+1·0	−0·5	−0·9	−0·6	−0·1
8	69·6	46·5	62·3	66·2	67·8	54·5	−1·4	+2·0	0·0	−1·8	−0·3	−0·2
9	70·9	52·1	57·2	66·0	67·2	54·1	−0·1	+0·3	+0·3	+0·5	−0·3	−0·7
10	61·9	50·7	56·6	55·2	57·3	55·5	+0·3	+0·3	+1·0	−0·1	+0·1	+1·0
11	68·9	50·9	58·6	65·4	65·4	54·7	−2·7	+1·2	−2·8	−3·1	−1·0	−0·1
12	69·9	54·4	59·8	66·3	65·8	54·4	−1·9	+0·7	+0·3	−0·4	−0·8	−0·2
14	66·9	45·7	63·2	65·7	63·3	56·0	−1·4	+0·9	+1·2	+0·5	−0·5	+0·1
15	64·0	53·9	56·0	58·9	62·2	55·7	−1·1	+1·1	0·0	−0·3	+0·2	+0·8
16	61·4	46·5	54·2	60·8	60·1	54·1	−2·0	+1·1	−0·4	−1·1	−0·4	0·0
17	60·3	47·7	53·6	58·7	55·6	50·8	−2·5	+1·5	0·0	−1·3	+0·5	+0·2
18	53·0	48·7	51·2	51·8	50·9	49·7	−0·9	+0·6	+0·1	−0·2	−0·3	−0·1
19	71·1	48·6	53·6	66·9	65·0	51·8	−1·0	+0·3	−0·4	−0·2	−0·6	−0·1
21	58·4	46·1	50·0	52·8	57·9	55·8	−0·8	+0·6	0·0	−0·2	+0·7	+0·4
22	65·2	53·1	56·2	56·6	63·8	56·8	−2·4	+0·6	−0·1	+0·2	−0·4	+0·4
23	68·5	53·8	61·7	65·1	66·2	57·8	−2·2	+1·1	−2·0	−2·7	−2·0	+1·0
24	72·6	47·7	59·8	64·4	70·4	58·1	−2·3	+1·3	−1·0	−4·0	−1·5	−0·4
25	73·8	51·2	63·1	68·5	71·9	59·8	−2·1	+0·8	+0·1	+0·4	−1·4	+0·6
26	78·4	51·5	64·0	73·5	76·9	65·6	−1·8	+1·6	+0·4	+0·1	−0·9	+0·5
28	76·3	52·9	66·1	72·5	74·1	58·0	−2·9	+1·1	−3·0	−4·0	−1·8	−0·2
29	79·8	49·5	68·0	75·9	77·8	61·8	−1·6	+1·1	−2·0	−1·5	−0·3	+0·5
30	73·1	52·8	66·8	69·6	70·6	53·9	−3·7	+1·9	−1·3	−1·9	−2·2	−0·4
Means	68·1	49·4	58·6	63·8	65·5	55·2	−1·6	+1·0	−0·4	−0·9	−0·6	+0·1

JULY.

Days of the Month.	Readings of Thermometers on the Roof of the Magnet House, 20 feet above the ground.						Excess above readings on ordinary stand, 4 feet above the ground.					
	Maximum.	Minimum.	9h	Noon	15h	21h	Maximum.	Minimum.	9h	Noon	15h	21h
d	°	°	°	°	°	°	°	°	°	°	°	°
1	71·1	48·2	63·5	67·6	69·8	56·0	−2·7	+1·7	−1·8	−3·8	−1·5	0·0
2	78·1	50·9	60·2	68·7	76·0	61·6	−2·1	+1·1	−2·1	−5·5	−2·8	+0·5
3	83·4	52·3	73·5	78·8	82·2	70·1	−2·2	+1·4	−0·3	−2·2	−1·7	+1·0
5	82·5	61·5	71·7	77·6	79·9	68·6	−2·6	+2·5	−2·4	−2·8	−2·4	+1·1
6	86·3	54·2	76·0	80·9	84·0	70·7	−3·5	+1·5	−0·2	+0·6	−1·8	+1·4
7	85·9	58·1	73·6	77·8	82·0	62·8	−3·6	+2·1	+0·1	−4·5	−0·6	−0·6
8	68·9	58·8	60·1	63·8	67·3	60·0	−1·8	+1·3	+0·1	−0·5	−0·5	−0·1
9	67·7	50·8	60·9	65·9	60·5	54·8	−3·8	+1·1	−1·9	−1·4	−0·5	0·0
10	67·0	48·9	62·1	64·1	66·6	59·8	−0·9	+2·0	0·0	−0·8	+0·5	+1·7
12	66·6	54·6	63·5	65·7	62·8	54·6	−1·1	+0·6	+0·2	+0·2	−0·1	+0·3
13	72·5	50·6	63·8	66·9	70·8	57·8	−1·6	+1·0	+0·2	0·0	−0·4	−0·1
14	69·1	54·5	62·2	65·5	66·6	56·7	−1·8	+0·9	+0·3	−1·2	−1·2	−0·2
15	69·6	51·7	59·0	61·5	64·7	57·1	−2·0	+0·9	−0·2	−0·1	−0·1	+1·1
16	71·2	50·7	64·0	67·8	68·7	61·0	−2·9	+1·0	−0·8	0·0	+0·4	+0·2
17	68·6	54·0	66·0	59·2	64·2	63·6	+0·4	+1·1	+0·4	−0·4	+0·4	+0·4
19	71·9	58·8	66·4	66·9	67·0	63·0	−0·6	+0·9	+0·9	+0·4	+1·0	+0·9
20	76·4	53·5	66·3	72·3	74·1	60·9	−0·7	+0·5	+1·3	+0·4	−1·2	+1·3
21	85·1	57·9	75·1	81·0	83·7	68·7	−1·5	+0·9	−0·9	−0·4	−0·4	+0·2
22	72·2	58·9	68·6	70·1	69·7	59·8	−3·8	+1·0	−1·9	−2·0	−0·7	−0·2
23	64·9	58·2	61·1	62·6	63·1	58·7	−0·9	+0·6	+0·1	−0·2	−0·2	−0·1
24	70·5	58·1	62·9	65·7	68·5	59·6	−1·4	+0·4	+0·5	+0·8	−0·7	−0·2
26	68·3	54·2	61·8	67·4	65·7	57·9	−2·7	+0·4	−2·6	−1·5	−0·1	+0·6
27	61·1	54·1	55·0	58·5	58·7	54·8	−1·0	+0·4	+0·2	−0·3	0·0	0·0
28	64·7	45·9	57·6	63·7	62·0	56·7	−2·4	+0·5	−0·7	−2·2	+0·2	+0·8
29	68·2	52·5	63·7	64·0	63·4	59·4	−0·8	+1·0	+0·4	+0·2	+0·2	+0·5
30	72·8	56·3	65·9	70·6	69·1	59·1	−2·4	+0·9	+1·1	−1·4	−0·2	+0·3
31	70·6	55·8	59·3	63·8	67·4	56·5	−1·1	+1·3	+0·3	+0·4	+0·1	+0·9
Means	72·4	54·2	64·6	68·1	69·6	60·4	−1·9	+1·1	−0·4	−1·0	−0·5	+0·4

AUGUST.

Days of the Month.	Maximum.	Minimum.	9h	Noon	15h	21h	Maximum.	Minimum.	9h	Noon	15h	21h
d	°	°	°	°	°	°	°	°	°	°	°	°
2	63·6	53·8	58·8	55·6	60·2	55·6	−0·5	−0·3	−0·5	−0·1	+0·2	−0·1
3	65·5	45·7	60·1	63·8	63·2	57·3	−1·3	+1·1	+0·3	−0·1	−1·6	+0·5
4	64·4	50·1	62·5	62·8	60·2	54·8	−0·6	+0·8	+0·6	+0·1	+0·2	+0·3
5	70·2	49·9	63·7	69·3	68·4	59·8	−2·1	+1·3	+0·1	−1·0	+0·5	+0·3
6	76·6	58·0	64·6	67·4	74·7	67·8	−1·2	+0·4	+0·1	+0·6	−0·1	+0·3
7	76·7	59·4	67·1	72·9	73·2	66·8	−1·5	+0·7	+0·5	+0·2	+0·2	+0·7
9	73·1	60·8	65·1	65·0	69·8	62·9	−1·4	+0·7	+0·4	+0·2	+0·3	+0·1
10	64·6	58·6	61·9	63·3	62·8	58·6	−1·5	+1·1	+0·2	+0·5	−0·2	+0·6
11	67·9	51·2	58·8	64·1	67·4	55·2	−0·7	+0·6	−1·0	−2·0	+0·5	+0·4
12	67·6	47·8	62·8	66·4	66·2	57·8	−2·5	+1·2	−1·0	+0·6	+0·5	0·0
13	69·1	56·3	62·8	63·8	66·3	59·8	−1·0	+0·4	−0·1	−0·1	0·0	0·0
14	66·4	54·8	58·8	59·6	66·4	54·8	−1·7	+1·0	+0·2	+0·3	−0·4	0·0
16	71·2	56·9	65·8	70·0	69·0	57·9	−2·7	+1·3	−0·9	−2·3	−0·9	+1·6
17	64·9	52·7	59·6	61·8	62·8	57·5	−2·5	+0·7	+0·4	+0·2	−0·1	0·0
18	66·8	54·8	59·2	64·0	66·6	58·2	−1·3	+0·3	+0·6	−0·9	+1·3	+0·4
19	63·1	54·5	58·6	62·4	58·8	58·7	0·0	+0·9	0·0	+0·3	+0·2	+0·7
20	70·8	49·8	62·0	65·9	69·1	57·1	−0·8	+1·4	−1·8	+0·1	+1·0	+1·3
21	74·1	48·8	63·6	69·9	72·8	59·2	−1·3	+1·2	−0·2	−1·2	+0·1	0·0
23	73·6	55·5	57·6	67·0	71·0	65·8	−2·2	+0·2	−0·5	−1·9	−0·9	+0·2
24	77·2	57·7	61·1	69·8	75·8	64·8	−1·2	+0·8	0·0	−1·0	−0·4	+0·9
25	75·6	55·8	63·6	71·0	73·8	59·9	−0·7	+1·2	+0·1	0·0	−0·3	+0·6
26	75·9	55·0	65·5	71·8	73·7	61·1	−2·2	+1·3	+0·2	−2·0	−0·2	+0·6
27	79·6	57·0	64·6	69·8	76·0	64·9	−1·6	+0·9	+0·3	−0·2	−1·9	+0·6
28	75·5	59·5	68·7	69·8	73·2	60·8	−1·0	+1·3	−0·5	−0·4	−0·6	+0·5
30	86·3	55·6	69·1	82·0	84·3	66·1	−1·4	+2·4	−2·1	−2·4	−1·5	+2·0
31	87·6	55·8	71·8	82·9	85·7	67·3	−1·5	+1·9	+0·7	−1·2	−0·4	+1·2
Means	71·8	54·5	63·0	67·4	69·7	60·4	−1·4	+1·0	−0·2	−0·5	−0·2	+0·5

READINGS of THERMOMETERS on the ROOF of the MAGNET HOUSE—*concluded.*

SEPTEMBER.

Days of the Month.	Readings of Thermometers on the Roof of the Magnet House, 20 feet above the ground. Maximum.	Minimum.	9h	Noon	15h	21h	Excess above readings on ordinary stand, 4 feet above the ground. Maximum.	Minimum.	9h	Noon	15h	21h
d	°	°	°	°	°	°	°	°	°	°	°	°
1	86·9	59·8	71·9	80·8	85·9	68·6	−0·8	+1·9	−0·4	−1·0	+0·6	+2·0
2	68·8	54·7	63·5	62·2	57·1	54·7	+1·7	−0·6	−0·8	+0·2	−0·1	−0·9
3	70·4	54·7	61·3	67·8	68·7	65·5	−0·2	−0·4	−1·0	0·0	+0·1	+0·9
4	79·8	63·8	64·8	72·9	79·1	65·0	−0·4	+0·4	−0·1	−0·9	+0·4	+0·1
6	71·6	55·3	65·9	67·0	70·0	58·0	−2·2	+1·3	−0·6	+0·1	−0·5	+0·4
7	72·5	56·0	60·1	66·0	71·4	56·5	−0·6	+1·2	0·0	−0·9	0·0	+0·6
8	69·6	49·9	62·4	66·5	65·0	62·3	−2·0	+1·4	+0·8	−0·5	−0·2	+0·4
9	70·9	61·1	63·0	66·4	68·7	63·5	−1·3	+1·1	+0·1	0·0	−0·4	+0·3
10	67·5	50·7	65·7	62·5	56·7	50·7	−1·3	+1·0	+0·2	0·0	0·0	+0·1
11	68·5	46·5	55·9	65·4	66·5	55·6	−1·6	+1·3	−3·4	−1·4	−0·3	+0·5
13	76·2	60·9	68·8	72·4	74·6	60·9	−1·2	+2·0	−0·1	−0·2	+0·8	+0·8
14	76·9	55·6	67·7	74·2	76·8	64·8	−0·6	+0·9	+0·4	−0·6	+0·3	+0·9
15	64·8	51·3	58·7	62·1	61·0	51·3	−1·7	+0·6	−1·3	−0·5	−0·1	+0·5
16	62·2	46·8	55·8	60·7	60·9	49·8	−1·0	+1·6	+0·2	−0·2	−1·0	+1·0
17	67·2	41·8	58·1	64·6	65·1	51·6	−1·6	+1·5	−1·7	−1·5	−0·5	+0·9
18	67·4	42·8	58·5	66·4	65·9	52·0	−1·4	+2·1	−0·2	−1·5	−1·2	+0·9
20	64·0	51·7	54·8	60·3	61·7	55·8	−2·0	+0·6	−1·0	−1·9	−0·7	+0·4
21	65·8	52·9	58·0	65·5	61·0	52·9	−2·1	+0·9	−0·7	−1·4	0·0	−0·1
22	62·8	48·8	55·9	60·4	59·8	49·9	−1·9	+0·9	−1·6	−1·6	−0·2	+0·1
23	57·8	43·9	48·9	57·0	57·0	48·0	−2·6	+1·0	−1·0	−1·8	−0·2	+0·2
24	56·8	47·4	52·0	54·9	56·4	51·4	−1·6	+1·5	0·0	−0·4	−0·7	+0·6
25	59·7	47·8	50·0	58·3	58·1	52·1	−1·7	+0·5	0·0	−0·2	0·0	+0·7
27	63·3	51·8	58·2	62·9	60·6	57·8	−0·5	+1·5	+0·1	−0·1	−0·2	0·0
28	63·4	49·9	56·1	61·4	62·7	57·9	−1·4	+0·6	−0·4	−0·5	+0·3	+0·3
29	70·9	57·9	62·6	68·7	69·4	58·7	−0·1	+0·6	+0·3	+0·2	+0·1	+0·4
30	66·5	53·9	60·9	61·8	65·8	53·9	+0·4	+1·9	+0·1	0·0	+1·0	+1·1
Means	68·2	52·2	60·0	65·0	65·6	56·5	−1·1	+1·1	−0·5	−0·6	−0·1	+0·5

OCTOBER.

Days of the Month.	Readings of Thermometers on the Roof of the Magnet House, 20 feet above the ground. Maximum.	Minimum.	9h	Noon	15h	21h	Excess above readings on ordinary stand, 4 feet above the ground. Maximum.	Minimum.	9h	Noon	15h	21h
d	°	°	°	°	°	°	°	°	°	°	°	°
1	77·5	52·6	63·6	74·9	73·8	62·8	−0·2	+1·6	+0·6	−0·7	−0·9	0·0
2	65·8	48·0	57·6	64·1	63·5	50·0	−2·1	+0·1	−0·1	−1·6	0·0	+0·3
4	78·7	56·0	65·2	76·2	77·3	62·8	−0·5	+1·0	0·0	−0·8	−0·4	0·0
5	76·5	55·7	60·1	74·1	74·6	61·9	−0·5	+0·8	−1·1	−2·0	0·0	+0·5
6	64·7	54·0	55·9	56·8	63·1	54·8	−0·3	+0·9	+0·1	+0·4	+0·8	+0·7
7	62·2	52·9	57·8	60·1	58·2	56·0	−0·1	+0·8	0·0	0·0	−0·2	−0·2
8	58·5	52·4	54·8	56·5	57·4	53·5	−0·2	+1·2	0·0	−0·2	−0·4	+0·7
9	62·4	51·0	53·2	60·0	60·2	57·5	−0·8	+0·1	0·0	−0·5	+0·1	−0·1
11	61·6	47·2	51·9	57·3	59·8	54·9	+0·2	+0·1	−0·8	−0·6	+1·1	+0·1
12	60·4	53·4	58·0	59·8	58·4	59·6	0·0	+0·6	+0·3	+0·2	+0·1	+0·3
13	59·7	44·3	51·5	55·6	50·8	45·9	+0·3	+0·3	−0·4	+0·4	−0·5	+0·1
14	58·3	40·5	49·5	55·4	56·0	49·8	−0·6	+0·2	−0·1	+0·3	+0·3	+0·9
15	57·9	48·2	57·4	54·7	54·2	50·9	−0·2	+0·6	−0·3	+0·3	+0·2	0·0
16	55·2	48·3	51·1	54·0	51·7	49·1	−0·4	+0·4	+0·1	0·0	+0·2	0·0
18	55·2	39·5	48·3	52·1	53·5	49·3	−0·4	+0·8	+0·5	+0·2	−0·3	+0·3
19	57·8	46·9	51·7	56·8	56·9	50·7	−0·5	+1·2	−0·1	+0·5	0·0	−0·5
20	61·6	48·1	52·0	56·3	59·0	51·5	+1·8	+0·3	−0·7	−0·4	+0·6	+0·5
21	52·7	45·6	46·3	49·2	52·5	48·4	−0·2	−0·3	−0·5	0·0	−0·2	0·0
22	58·2	39·4	45·2	57·2	55·7	46·1	−0·7	+1·4	−1·0	−0·6	+0·5	+0·1
23	53·6	44·9	50·4	52·5	52·8	48·8	0·0	+1·2	−0·2	−0·2	+0·1	0·0
25	51·5	47·9	48·6	51·1	49·8	48·9	−0·3	−0·6	−0·1	+0·2	0·0	−0·4
26	49·2	45·4	48·4	48·5	47·1	46·0	−0·6	−0·2	+0·1	+0·1	0·0	0·0
27	48·2	45·3	46·8	47·2	47·1	47·8	+0·1	−0·3	−0·1	+0·1	−0·3	0·0
28	57·4	45·8	48·6	55·9	55·0	50·4	0·0	+0·9	−0·2	0·0	0·0	+0·2
29	63·4	48·7	55·9	60·8	59·8	53·8	+0·4	+1·1	+0·1	+0·8	−0·6	+0·3
30	58·9	49·2	53·1	57·4	58·7	53·2	+0·3	+1·6	+0·3	+0·4	+0·6	+0·1
Means	60·3	48·1	53·2	57·9	58·0	52·5	−0·2	+0·6	−0·1	−0·1	0·0	+0·2

NOVEMBER.

Days of the Month.	Readings of Thermometers on the Roof of the Magnet House, 20 feet above the ground. Maximum.	Minimum.	9h	Noon	15h	21h	Excess above readings on ordinary stand, 4 feet above the ground. Maximum.	Minimum.	9h	Noon	15h	21h
d	°	°	°	°	°	°	°	°	°	°	°	°
1	58·5	47·7	54·6	54·4	58·1	48·9	+0·2	+1·9	+0·6	+0·1	+0·9	+0·6
2	58·6	48·4	51·2	58·3	54·8	49·7	−0·5	+1·7	+0·2	−0·5	−0·2	+1·9
3	53·6	39·9	46·7	53·5	51·9	51·7	0·0	+2·1	+0·2	+0·4	+0·3	+0·5
4	54·5	40·1	45·8	51·8	52·3	47·2	−0·5	+0·6	+0·7	−0·7	+0·1	+1·0
5	51·8	42·3	48·0	51·2	49·1	42·8	−0·5	+0·6	+0·3	+0·1	0·0	0·0
6	46·6	38·8	43·8	43·6	43·8	42·3	+0·2	+0·8	+0·3	+0·1	0·0	+0·5
8	48·2	32·5	37·2	46·6	46·4	40·9	+0·1	+1·9	+1·4	−0·3	+0·6	+0·1
9	45·2	38·3	45·0	43·6	44·0	42·1	−0·1	+0·7	+0·1	−0·1	−0·4	−0·6
10	45·8	38·9	45·1	45·3	44·2	43·0	−0·3	+0·4	−0·1	−0·5	0·0	−0·1
11	46·3	40·9	44·2	45·0	45·4	44·5	+0·1	+1·9	−0·4	−0·2	+0·3	−0·3
12	47·9	40·9	43·4	47·6	46·2	47·8	+0·3	+1·2	+0·7	+0·8	+0·5	+0·3
13	48·7	39·6	42·7	47·0	47·5	46·3	−0·6	+0·6	0·0	0·0	+0·4	+0·5
15	54·9	45·6	50·0	52·9	53·6	51·8	−0·3	+1·8	+1·5	+0·5	+0·5	+0·6
16	51·9	38·8	47·1	47·0	48·1	39·1	+0·7	+2·5	+0·4	+0·1	+0·4	+1·2
17	53·8	37·1	48·9	52·5	51·4	42·1	−0·5	+1·4	+0·7	+0·7	−0·2	+0·5
18	48·5	37·1	41·4	47·0	46·8	37·8	+0·4	+1·2	+0·1	+0·1	+0·1	+0·1
19	51·8	33·5	38·0	49·5	50·7	51·8	+1·1	+2·8	+2·3	+0·9	+0·8	+1·9
20	53·9	48·0	50·6	53·5	53·7	48·5	−0·1	+2·0	+0·7	0·0	+0·9	+1·5
22	47·6	31·6	32·9	46·0	45·8	36·6	+0·5	+0·1	+0·9	+0·2	+0·6	+0·2
23	45·0	27·9	30·4	33·6	42·4	39·8	+2·3	0·0	0·0	+1·7	+0·5	0·0
24	44·8	26·9	33·2	40·4	39·7	35·2	+1·3	0·0	+2·1	+2·3	+1·0	+1·0
25	49·9	34·6	39·8	44·2	49·1	42·4	+0·7	+0·9	+1·1	+0·1	+0·9	−0·4
26	47·2	42·0	45·5	45·8	46·8	43·5	−0·2	+0·1	−0·2	−0·5	+0·1	0·0
27	46·0	41·9	42·6	44·6	45·8	43·2	−0·3	+0·2	0·0	−0·2	+0·2	+0·2
29	49·8	41·0	49·0	49·8	48·4	41·3	−0·5	+1·2	+0·3	+0·3	+0·6	+0·5
30	43·8	35·7	37·1	42·5	43·4	39·3	0·0	+0·9	+0·5	+0·2	+0·4	+1·2
Means	49·8	38·8	43·6	47·6	48·1	43·8	+0·1	+1·1	+0·6	+0·2	+0·4	+0·5

DECEMBER.

Days of the Month.	Readings of Thermometers on the Roof of the Magnet House, 20 feet above the ground. Maximum.	Minimum.	9h	Noon	15h	21h	Excess above readings on ordinary stand, 4 feet above the ground. Maximum.	Minimum.	9h	Noon	15h	21h
d	°	°	°	°	°	°	°	°	°	°	°	°
1	41·6	30·0	33·1	40·3	39·2	35·8	−0·3	+1·3	+0·3	+0·4	+0·2	0·0
2	38·6	29·2	30·6	33·1	34·1	31·2	+0·4	+0·7	+0·6	−0·1	+0·5	+0·4
3	35·6	21·5	24·1	31·9	34·9	31·2	+0·9	+0·6	−0·1	+0·7	+1·0	+3·3
4	41·9	27·8	39·1	39·8	41·6	35·9	+0·6	+3·2	+1·0	+0·7	+0·5	+0·2
6	53·8	45·5	50·6	51·7	52·9	53·0	−0·3	+0·6	+0·5	+0·1	+0·6	+0·2
7	53·3	37·4	42·8	42·2	41·4	37·4	+0·2	+1·2	+0·8	+0·2	+0·5	+0·1
8	48·3	37·1	46·0	44·1	42·7	40·8	+0·2	+1·8	+0·3	+0·1	+0·4	+0·4
9	44·8	36·9	41·6	43·4	43·9	37·2	0·0	+0·2	+0·2	+0·2	+0·5	+0·2
10	43·2	33·1	35·7	41·6	42·8	36·7	+0·7	+0·2	+0·3	+0·6	+1·0	+0·8
11	51·2	36·3	44·7	49·0	51·0	50·0	+0·3	+1·3	+0·7	+0·1	+0·9	+0·5
13	45·6	39·6	44·2	45·3	43·7	40·4	+0·3	+0·1	+0·3	+1·1	+0·4	0·0
14	48·8	39·2	40·6	41·0	47·1	42·8	+0·7	−0·2	0·0	0·0	+0·9	+0·8
15	48·4	42·0	46·5	43·4	44·8	42·6	+0·7	+2·1	+0·9	−0·1	+0·8	0·0
16	43·0	33·6	38·8	39·0	39·3	34·4	+0·1	+1·7	+0·9	+0·2	+0·2	+0·6
17	34·7	30·4	30·7	31·7	31·7	32·1	+1·3	−0·1	0·0	0·0	0·0	−0·9
18	33·2	23·3	23·8	29·0	30·3	26·8	−0·1	+0·4	−0·1	−0·8	−0·5	0·0
20	32·6	18·9	26·0	29·8	32·6	28·8	−0·2	+0·4	+0·1	−0·5	−0·2	0·0
21	29·2	21·8	26·9	27·3	26·8	22·9	+0·4	0·0	−0·5	−0·3	−0·3	+1·1
22	43·6	17·0	36·3	41·3	42·6	40·4	+1·0	−0·3	+0·3	+1·2	+0·7	+0·5
23	41·6	34·8	37·9	40·8	40·8	35·1	+0·8	+1·7	+0·7	+0·8	+1·2	+0·6
24	45·1	34·9	40·7	42·2	43·6	38·3	−0·1	+1·2	+1·6	+0·4	+0·7	+0·9
27	36·8	31·9	33·1	33·9	36·6	33·6	+0·6	+1·6	−1·7	−0·9	+1·2	0·0
28	40·9	33·5	38·1	40·8	39·8	35·8	+0·6	+0·8	+1·0	+1·0	+0·3	+0·9
29	41·8	34·1	37·6	40·1	41·8	37·7	+1·4	+0·9	+0·5	+1·0	+2·5	+0·2
30	38·2	30·2	32·0	32·2	35·0	30·7	+0·2	+0·5	+0·1	−0·7	+0·2	+0·1
31	36·4	21·9	31·0	34·0	34·1	22·1	+0·4	−0·1	0·0	0·0	0·0	−1·6
Means	42·0	31·6	36·6	38·8	39·8	35·9	+0·4	+0·8	+0·3	+0·2	+0·5	+0·4

(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.

1886.

Days of the Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
1	52·05	51·09	50·06	49·02	48·25	48·01	48·41	49·24	50·34	51·33	52·1	52·44
2	52·04	51·07	50·03	48·99	48·22	48·02	48·43	49·25	50·36	51·34	52·15	52·43
3	52·00	51·02	49·98	48·94	48·22	48·03	48·44	49·30	50·40	51·38	52·15	52·41
4	51·98	50·98	49·95	48·93	48·20	48·03	48·47	49·32	50·43	51·43	52·17	52·45
5	51·94	50·94	49·90	48·87	48·18	48·04	48·48	49·36	50·46	51·46	52·18	52·44
6	51·89	50·92	49·88	48·85	48·18	48·05	48·52	49·39	50·50	51·46	52·18	52·44
7	51·86	50·88	49·84	48·81	48·17	48·05	48·53	49·44	50·53	51·50	52·21	52·45
8	51·85	50·84	49·80	48·78	48·14	48·06	48·55	49·46	50·56	51·51	52·22	52·45
9	51·82	50·80	49·78	48·75	48·15	48·07	48·57	49·50	50·60	51·55	52·23	52·45
10	51·79	50·76	49·74	48·72	48·13	48·08	48·58	49·53	50·63	51·58	52·25	52·44
11	51·78	50·72	49·72	48·68	48·12	48·09	48·62	49·56	50·66	51·61	52·26	52·46
12	51·74	50·70	49·66	48·66	48·11	48·10	48·65	49·60	50·70	51·63	52·29	52·45
13	51·71	50·67	49·62	48·63	48·10	48·11	48·67	49·64	50·74	51·65	52·30	52·45
14	51·69	50·63	49·59	48·60	48·08	48·12	48·70	49·66	50·77	51·69	52·31	52·44
15	51·67	50·59	49·57	48·57	48·08	48·12	48·73	49·72	50·80	51·71	52·35	52·44
16	51·63	50·54	49·52	48·54	48·07	48·14	48·75	49·75	50·82	51·73	52·34	52·41
17	51·60	50·51	49·48	48·50	48·07	48·15	48·78	49·77	50·87	51·75	52·36	52·40
18	51·56	50·46	49·46	48·49	48·06	48·16	48·81	49·81	50·90	51·78	52·36	52·37
19	51·53	50·43	49·45	48·47	48·06	48·17	48·84	49·84	50·93	51·82	52·37	52·36
20	51·49	50·39	49·40	48·44	48·06	48·19	48·87	49·89	50·95	51·83	52·40	52·35
21	51·46	50·35	49·39	48·43	48·06	48·20	48·91	49·94	51·00	51·85	52·41	52·36
22	51·42	50·32	49·35	48·40	48·05	48·21	48·92	49·97	51·02	51·88	52·39	52·36
23	51·39	50·27	49·32	48·37	48·04	48·24	48·96	50·00	51·05	51·92	52·37	52·35
24	51·36	50·25	49·28	48·37	48·04	48·26	48·99	50·04	51·07	51·93	52·39	52·36
25	51·34	50·20	49·25	48·35	48·04	48·28	49·00	50·07	51·10	51·96	52·41	52·33
26	51·31	50·17	49·21	48·33	48·03	48·30	49·05	50·12	51·14	51·97	52·43	52·33
27	51·28	50·13	49·17	48·30	48·02	48·31	49·06	50·14	51·19	51·97	52·44	52·30
28	51·25	50·10	49·15	48·29	48·02	48·34	49·10	50·18	51·22	52·03	52·45	52·30
29	51·20		49·11	48·26	48·02	48·36	49·14	50·21	51·26	52·07	52·46	52·29
30	51·17		49·07	48·25	48·01	48·38	49·17	50·27	51·29	52·09	52·44	52·25
31	51·14		49·04		48·02		49·20	50·30		52·11		52·24
Means	51·61	50·60	49·54	48·59	48·10	48·16	48·77	49·75	50·81	51·73	52·31	52·39

The mean of the twelve monthly values is 50°·20.

(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.

1886.

Days of the Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
1	49·64	46·98	45·11	43·93	45·43	47·90	50·68	53·77	55·48	56·44	55·71	53·53
2	49·58	46·88	45·07	44·00	45·48	48·00	50·77	53·78	55·48	56·43	55·69	53·42
3	49·47	46·78	45·02	44·00	45·56	48·06	50·82	53·90	55·50	56·43	55·60	53·30
4	49·40	46·69	44·96	44·07	45·60	48·16	50·96	53·95	55·59	56·44	55·54	53·29
5	49·29	46·60	44·90	44·10	45·69	48·24	51·04	54·05	55·61	56·38	55·48	53·18
6	49·19	46·52	44·87	44·18	45·76	48·32	51·15	54·11	55·67	56·37	55·38	53·08
7	49·10	46·45	44·80	44·20	45·85	48·41	51·21	54·22	55·68	56·37	55·32	53·02
8	49·05	46·39	44·72	44·27	45·90	48·51	51·30	54·27	55·75	56·32	55·29	52·93

(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.*

1886.												
Days of the Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
9	48·96	46·32	44·72	44·31	45·98	48·60	51·40	54·30	55·80	56·33	55·22	52·83
10	48·89	46·25	44·63	44·40	46·02	48·66	51·50	54·34	55·83	56·32	55·19	52·70
11	48·81	46·18	44·61	44·44	46·10	48·78	51·65	54·40	55·90	56·31	55·11	52·64
12	48·75	46·11	44·58	44·52	46·18	48·87	51·76	54·47	55·95	56·31	55·09	52·51
13	48·68	46·08	44·50	44·55	46·23	48·93	51·89	54·50	56·05	56·28	55·01	52·43
14	48·52	45·99	44·45	44·61	46·31	49·06	51·99	54·53	56·10	56·28	54·97	52·30
15	48·50	45·92	44·43	44·69	46·42	49·13	52·11	54·63	56·10	56·28	54·92	52·21
16	48·39	45·83	44·36	44·75	46·50	49·23	52·25	54·70	56·11	56·23	54·81	52·07
17	48·30	45·78	44·30	44·80	46·61	49·33	52·35	54·70	56·20	56·20	54·78	51·97
18	48·18	45·70	44·28	44·84	46·71	49·41	52·50	54·78	56·23	56·20	54·66	51·82
19	48·09	45·65	44·20	44·90	46·80	49·54	52·60	54·80	56·25	56·21	54·59	51·71
20	48·00	45·60	44·18	44·93	46·91	49·67	52·70	54·89	56·27	56·17	54·53	51·61
21	47·93	45·51	44·14	44·98	47·00	49·72	52·86	54·96	56·33	56·12	54·43	51·56
22	47·83	45·48	44·11	45·01	47·08	49·82	52·90	55·02	56·32	56·11	54·31	51·50
23	47·78	45·40	44·03	45·09	47·15	49·99	52·97	55·02	56·32	56·10	54·20	51·40
24	47·69	45·37	44·00	45·11	47·20	50·08	53·08	55·09	56·32	56·08	54·11	51·33
25	47·61	45·30	43·98	45·15	47·30	50·19	53·13	55·12	56·37	56·01	54·08	51·20
26	47·50	45·25	43·90	45·20	47·40	50·28	53·24	55·19	56·39	55·97	54·00	51·12
27	47·45	45·19	43·90	45·21	47·47	50·33	53·30	55·20	56·40	55·90	53·92	51·00
28	47·35	45·16	43·89	45·29	47·57	50·43	53·39	55·24	56·41	55·91	53·83	50·91
29	47·25		43·90	45·32	47·63	50·53	53·50	55·29	56·43	55·90	53·70	50·79
30	47·18		43·89	45·38	47·71	50·59	53·61	55·40	56·42	55·83	53·63	50·61
31	47·05		43·90		47·82		53·66	55·44		55·80		50·50
Means.	48·37	45·98	44·40	44·67	46·56	49·23	52·20	54·65	56·04	56·19	54·77	52·08

The mean of the twelve monthly values is 50°·43.

(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.

1886.												
Days of the Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
1	46·65	...	...	43·97	47·42	51·94	55·89	59·50	60·50	59·41	56·07	51·41
2	46·50	...	...	44·14	47·55	52·09	56·11	59·40	60·57	59·30	56·01	51·30
3	46·40	...	...	44·29	47·68	52·17	56·38	59·46	60·60	59·27	55·93	51·12
4	46·38	...	...	44·43	47·78	52·33	56·61	59·44	60·77	59·32	55·91	51·00
5	46·35	...	...	44·56	47·88	52·52	56·82	59·49	60·81	59·30	55·81	50·75
6	46·35	...	...	44·74	48·01	52·66	57·11	59·47	60·88	59·21	55·69	50·53
7	46·39	...	...	44·89	48·20	52·80	57·36	59·48	60·88	59·13	55·56	50·20
8	46·37	...	...	45·05	48·33	52·93	57·51	59·44	60·93	59·10	55·40	49·80
9	46·28	...	...	45·20	48·60	53·10	57·80	59·41	60·93	59·13	55·20	49·62
10	46·11	...	...	45·31	48·85	53·22	58·04	59·48	60·94	59·11	54·97	49·50
11	45·97	...	...	45·40	49·10	53·50	58·29	59·57	60·96	59·06	54·70	49·43
12	45·60	...	...	45·48	49·38	53·73	58·39	59·70	60·95	59·00	54·25	49·30
13	45·21	...	...	45·50	49·83	53·88	58·49	59·72	60·98	58·88	54·03	49·21
14	44·80	...	...	45·48	49·93	54·10	58·52	59·70	60·90	58·78	53·86	49·05
15	44·80	...	...	45·50	50·02	54·25	58·59	59·79	60·79	58·67	53·77	48·99

(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.*

1886.												
Days of the Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
16	44·69	...	...	45·52	50·02	54·39	58·64	59·80	60·72	58·50	53·61	48·85
17	44·24	...	...	45·56	50·07	54·50	58·65	59·71	60·78	58·30	53·50	48·81
18	44·27	...	...	45·62	50·08	54·59	58·75	59·76	60·72	58·17	53·30	48·75
19	44·26	...	...	45·69	50·06	54·70	58·71	59·72	60·62	58·03	53·21	48·63
20	44·30	...	...	45·71	50·14	54·71	58·77	59·78	60·50	57·83	53·13	48·50
21	44·29	...	...	45·79	50·22	54·69	58·91	59·80	60·43	57·61	52·98	48·37
22	44·20	...	...	45·91	50·32	54·70	58·93	59·79	60·28	57·48	52·79	48·15
23	44·11	...	...	46·06	50·48	54·81	58·98	59·72	60·18	57·35	52·62	47·90
24	43·99	...	...	46·18	51·12	54·84	59·11	59·77	60·08	57·21	52·53	47·71
25	43·86	...	...	46·28	51·41	54·91	59·23	59·81	59·99	57·01	52·42	47·42
26	43·70*	...	...	46·41	51·41	55·00	59·37	59·91	59·88	56·86	52·24	47·21
27	43·57*	...	...	46·54	51·47	55·09	59·48	59·98	59·79	56·70	52·07	47·00
28	43·48*	...	...	46·80	51·60	55·30	59·51	60·07	59·65	56·60	51·87	46·57
29	43·40*		...	46·98	51·70	55·50	59·57	60·12	59·59	56·50	51·72	46·12
30	43·40*		...	47·20	51·79	55·69	59·60	60·32	59·51	56·30	51·53	45·94
31	43·45*		43·79		51·90		59·50	60·42		56·20		45·88
Means.	44·95	...	...	45·54	49·75	53·95	58·31	59·73	60·50	58·17	53·89	48·81

At temperatures below 43°·60 the fluid of this thermometer passes beyond range of the scale and descends into the capillary tube. The readings were out of range from January 27 to March 30 inclusive. Estimated readings are indicated by the symbol *.

(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.

1886.												
Days of the Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
1	41·80	38·87	37·48	44·10	48·47	54·27	60·57	62·15	64·01	59·58	54·38	47·39
2	42·22	38·95	37·33	44·11	48·39	54·84	60·90	61·90	64·12	59·71	54·61	46·83
3	42·70	38·85	37·36	44·31	48·50	55·20	61·40	62·00	64·20	59·80	54·49	46·14
4	42·92	38·70	37·42	44·72	48·80	55·40	61·90	61·70	64·01	59·80	54·19	45·41
5	43·26	38·71	37·31	44·90	49·16	55·30	62·37	61·61	64·00	59·80	53·80	44·78
6	43·19	38·70	37·30	45·06	49·71	55·43	62·90	61·41	64·04	59·83	53·30	44·43
7	42·71	38·53	37·30	45·30	50·41	55·87	63·23	61·70	63·88	60·03	52·65	44·66
8	42·12	38·32	37·17	45·33	50·90	56·32	63·50	62·10	63·80	59·80	52·10	44·83
9	41·52	38·11	37·12	45·30	51·60	56·75	63·71	62·50	63·50	59·60	51·54	44·84
10	41·03	37·90	37·20	45·13	52·09	57·23	63·38	62·74	63·33	59·34	51·10	44·74
11	40·64	37·68	37·17	44·72	52·36	57·63	62·95	62·72	63·22	59·03	50·42	44·54
12	40·17	37·48	37·18	44·53	52·32	57·64	62·62	62·50	62·74	58·67	50·01	44·41
13	39·70	37·41	37·14	44·41	52·10	57·80	62·62	62·20	62·62	58·40	49·93	44·67
14	39·50	37·70	37·11	44·38	51·61	57·97	62·29	62·02	62·70	58·06	49·96	44·71
15	39·71	38·12	37·14	44·50	51·21	57·78	62·15	62·08	62·70	57·59	50·00	44·67
16	39·80	38·40	37·00	44·70	50·81	57·71	62·09	62·05	62·60	57·20	50·10	44·73
17	39·74	38·49	37·00	44·81	50·64	57·51	61·87	62·00	62·29	56·80	50·21	44·62
18	39·71	38·40	37·01	44·81	50·79	57·19	61·96	62·00	61·80	56·49	49·90	44·21
19	39·68	38·40	37·12	44·90	51·19	56·96	62·03	61·83	61·40	56·11	49·56	43·60
20	39·42	38·35	37·80	45·13	51·70	56·72	62·47	61·75	61·10	55·94	49·20	43·02

(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.*

1886.												
Days of the Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
21	39·17	38·30	38·83	45·77	51·92	56·86	62·77	61·60	61·09	55·74	49·20	42·52
22	38·91	38·28	39·85	45·94	52·20	56·90	63·02	61·70	60·94	55·53	49·30	42·02
23	38·79	38·19	40·60	46·00	52·89	57·02	63·28	62·00	60·72	55·33	49·00	41·66
24	38·61	38·12	41·35	46·20	53·22	57·15	63·33	62·40	60·32	55·00	48·40	41·52
25	38·51	37·95	42·07	46·80	53·97	57·56	63·20	62·70	59·98	54·71	47·90	41·33
26	38·37	37·81	42·71	47·31	53·70	58·13	63·17	62·89	59·69	54·61	47·52	41·25
27	38·41	37·62	43·22	47·80	53·73	58·70	62·88	62·94	59·50	54·36	47·50	41·03
28	38·62	37·59	43·70	48·31	53·93	59·28	62·62	63·13	59·32	54·13	47·53	40·65
29	38·64		44·15	48·72	53·84	59·69	62·21	63·40	59·30	54·06	47·60	40·40
30	38·70		44·30	48·61	53·89	60·10	62·08	63·65	59·43	54·08	47·60	40·28
31	38·73		44·10		54·04		62·07	63·79		54·26		40·21
Means	40·23	38·21	39·02	45·55	51·61	57·10	62·50	62·30	62·08	57·21	50·43	43·55
The mean of the twelve monthly values is 50°·82.												

(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.

1886.												
Days of the Month.	January.	February.	March	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
1	43·2	37·2	33·3	45·8	48·2	59·0	64·7	63·2	69·7	62·0	54·7	39·0
2	44·3	36·7	35·7	49·3	49·8	61·0	65·7	60·8	66·7	60·0	53·7	36·6
3	42·0	36·0	34·7	49·2	50·6	57·0	68·0	60·0	65·0	58·3	50·4	34·8
4	46·1	36·8	33·7	47·3	53·9	56·0	70·2	61·0	67·2	62·7	50·0	38·4
5	40·1	36·0	34·9	48·2	54·0	57·4	70·0	62·0	66·7	63·3	49·6	40·0
6	35·0	34·3	34·2	49·3	59·6	58·7	70·8	65·0	65·2	60·0	46·1	45·0
7	33·6	33·8	33·8	47·0	58·6	61·2	70·4	67·5	63·2	59·6	44·8	44·6
8	34·5	33·5	35·0	48·0	58·8	61·2	66·6	67·4	63·0	58·0	44·5	42·2
9	33·2	33·0	34·3	46·0	59·6	62·2	65·0	66·1	65·0	58·0	45·0	41·5
10	34·6	32·0	34·0	43·0	59·8	60·3	63·0	65·0	64·6	56·1	46·0	38·8
11	37·0	32·3	35·0	41·9	54·0	61·2	65·2	61·0	59·9	55·1	45·7	42·2
12	33·9	35·9	33·7	43·2	52·2	62·3	66·0	62·9	62·7	59·2	45·7	42·0
13	38·0	38·1	33·2	45·1	51·7	59·3	64·0	63·0	65·4	55·0	46·0	43·0
14	38·0	39·1	35·0	47·1	50·2	60·3	63·0	62·0	65·0	52·4	47·2	42·6
15	39·0	38·3	34·4	46·8	49·0	59·0	61·7	63·4	62·6	55·0	49·0	43·3
16	37·1	36·0	34·0	45·6	51·0	58·1	63·2	64·3	59·8	53·8	47·6	41·0
17	38·2	35·7	33·1	44·2	53·1	57·1	63·7	61·0	59·1	50·9	48·0	37·2
18	36·1	37·0	37·0	45·5	56·2	55·0	67·8	62·2	59·0	51·1	44·6	33·6
19	33·3	35·2	44·0	49·2	53·5	58·1	67·2	61·8	59·0	53·4	42·6	30·0
20	32·9	35·3	45·4	47·3	57·4	59·0	65·6	61·5	59·5	55·0	48·3	31·8
21	34·3	35·7	48·0	47·0	56·3	56·2	70·0	63·0	61·6	51·3	48·0	31·7
22	33·2	34·9	46·0	46·5	59·2	57·8	68·2	64·7	59·0	51·7	43·0	36·0
23	34·5	34·1	49·5	50·1	57·5	60·2	65·2	63·9	56·2	52·0	38·8	37·0
24	34·0	33·7	48·1	51·0	58·0	60·3	65·0	65·5	56·2	51·8	38·2	38·2
25	33·0	33·1	49·5	52·0	55·0	62·7	65·0	65·0	56·0	51·6	42·2	35·7

(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.*

1886.												
Days of the Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
26	36·2	34·0	50·1	51·3	56·0	64·6	64·0	65·6	58·0	50·1	45·1	36·5
27	37·8	34·0	50·1	52·0	55·0	65·2	61·7	66·2	58·4	49·7	44·4	34·3
28	35·3	33·6	50·2	56·0	55·2	65·3	60·0	67·0	57·1	51·3	44·4	37·1
29	36·1		47·9	46·7	55·0	66·1	62·5	65·2	62·3	54·2	48·0	36·5
30	37·3		45·2	47·8	57·2	66·8	64·6	68·6	60·9	53·7	43·2	34·0
31	39·8		47·0		58·2		63·0	69·0		55·6		34·2
Means	36·8	35·2	40·0	47·6	55·0	60·3	65·5	64·0	61·8	55·2	46·2	38·0
The mean of the twelve monthly values is 50°·47.												

(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.

1886.												
Days of the Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
1	47·4	39·4	33·6	52·1	57·1	63·3	72·3	68·1	80·7	73·0	55·0	39·0
2	49·4	38·9	39·8	57·1	54·0	70·8	72·7	58·8	67·0	65·2	57·6	32·8
3	45·0	36·2	34·7	52·0	59·5	56·7	77·3	63·7	68·0	65·6	52·3	29·8
4	49·4	36·8	36·6	50·1	64·0	61·7	79·8	62·8	73·8	74·3	52·7	39·8
5	38·5	34·0	38·2	54·1	65·8	59·7	78·4	68·9	71·6	73·2	51·1	36·2
6	34·3	35·9	35·9	53·2	70·1	66·9	82·9	69·9	69·4	58·2	44·0	51·0
7	29·1	33·9	35·0	50·4	73·2	71·0	79·0	70·1	65·3	62·0	43·4	42·7
8	33·7	35·1	39·2	51·5	64·6	69·9	66·0	72·8	68·5	57·0	48·0	43·6
9	31·9	34·0	40·4	44·6	68·4	68·0	68·2	67·2	68·4	60·8	45·0	42·5
10	34·1	27·0	38·0	44·8	67·2	59·0	66·0	65·8	65·0	59·3	46·0	39·6
11	38·2	33·7	40·3	42·8	52·2	67·5	71·2	65·0	65·6	58·0	45·7	48·6
12	33·3	41·9	34·0	48·3	53·5	67·9	68·0	68·9	66·5	60·3	46·1	44·0
13	40·0	44·4	34·0	53·0	51·4	58·3	68·9	65·6	73·4	56·0	46·8	44·8
14	39·0	43·2	35·2	49·4	52·8	67·0	64·8	62·0	73·0	55·0	48·9	41·6
15	44·8	40·2	35·9	48·9	52·2	60·0	62·7	69·0	65·0	55·3	53·0	43·4
16	37·4	35·7	35·2	48·3	53·4	60·9	68·8	70·7	63·0	54·0	46·4	38·9
17	38·9	34·4	40·2	46·0	56·3	58·8	64·2	63·4	67·2	50·0	52·0	31·3
18	34·8	36·2	43·0	48·1	65·1	53·0	75·0	66·1	68·2	51·7	45·3	27·9
19	32·5	33·5	56·8	60·0	55·8	65·1	70·2	63·4	68·0	56·8	46·2	27·8
20	31·9	34·9	53·0	48·8	61·0	63·3	71·2	67·0	62·5	54·6	52·3	30·0
21	34·1	38·8	54·8	47·2	65·0	55·9	81·4	72·4	67·8	49·2	49·6	28·8
22	32·3	35·4	50·6	48·4	66·7	58·0	73·3	72·1	62·0	57·0	44·2	39·3
23	35·0	33·2	56·0	61·8	60·2	66·8	65·3	67·0	59·3	53·7	33·6	38·0
24	36·0	35·8	57·4	58·5	56·0	67·8	67·8	70·6	56·5	54·0	34·8	42·5
25	38·6	34·1	54·6	59·9	57·1	69·7	68·8	70·1	58·0	52·0	42·3	35·6
26	40·0	35·9	55·4	58·2	61·2	73·4	68·8	72·2	58·0	49·1	47·6	38·0
27	42·9	36·2	53·2	63·1	54·7	73·2	61·5	71·0	62·3	48·0	44·7	35·0
28	41·7	32·1	55·0	63·2	60·0	74·9	63·2	71·2	61·6	55·3	45·3	38·3
29	37·2		52·0	44·9	59·0	74·9	65·5	71·0	69·0	61·7	48·8	37·9
30	42·0		48·2	51·4	65·0	73·6	70·2	81·9	62·3	56·4	41·4	32·8
31	43·8		51·8		65·4		64·3	82·0		61·1		32·7
Means	38·3	36·1	44·1	52·0	60·3	65·2	70·2	68·7	66·2	58·0	47·0	37·9
The mean of the twelve monthly values is 53°·67.												

ABSTRACT of the CHANGES of the DIRECTION of the WIND, as derived from the Records of OSLER'S ANEMOMETER in the Year 1886.

(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. From	Greenwich Civil Time. To	Change of Direction. From	Change of Direction. To	Amount of Motion. Direct.	Amount of Motion. Retrograde.
				°	°
January.					
d h	d h				
2. 1	2. 2	W.S.W.	W.	22½	
2. 7	2. 10	W.	W.S.W.		22½
2. 12	2. 18	W.S.W.	W.N.W.	45	
2. 21	2. 21¾	W.N.W.	W.S.W.		45
3. 5	3. 7	W.S.W.	S.W.		22½
4. 6	4. 10	S.W.	W.S.W.	22½	
4. 15	4. 16	W.S.W.	W.N.W.	45	
4. 19	4. 23	W.N.W.	W.S.W.		45
6. 1	6. 2	W.S.W.	S.W.		22½
6. 3	6. 10	S.W.	N.E.		180
6. 15	6. 16	N.E.	N.N.E.		22½
7. 14¾	7. 15	N.N.E.	S.W.	202½	
7. 16½	7. 17	S.W.	S.S.W.		22½
7. 18½	7. 20	S.S.W.	S.W.	22½	
8. 6	8. 10	S.W.	N.W.	90	
8. 13	8. 20	N.W.	W.S.W.		67½
8. 21	9. 0	W.S.W.	W.N.W.	45	
9. 9	9. 12	W.N.W.	N.N.W.	45	
10. 2	10. 3	N.N.W.	N.W.		22½
10. 8	10. 9	N.W.	N.	45	
10. 11¾	10. 12¼	N.	S.W.	225	
10. 16½	10. 22	S.W.	S.		45
11. 3	11. 4	S.	S.S.W.	22½	
11. 12	11. 13½	S.S.W.	N.N.E.	180	
11. 23	12. 1	N.N.E.	N.		22½
12. 11	12. 16	N.	W.S.W.		112½
13. 0	13. 4	W.S.W.	S.W.		22½
13. 8	13. 9	S.W.	W.S.W.	22½	
13. 10½	13. 11	W.S.W.	N.N.W.	90	
13. 11¾	13. 12	N.N.W.	N.W.		22½
13. 13	13. 22	N.W.	N.	45	
14. 19	14. 22	N.	S.W.		135
15. 18	15. 20	S.W.	W.S.W.	22½	
16. 14	16. 18	W.S.W.	S.S.W.		45
16. 23	17. 1	S.S.W.	S.W.	22½	
17. 14	17. 17	S.W.	S.S.W.		22½
18. 2¾	18. 3	S.S.W.	W.	67½	
18. 3½	18. 4¼	W.	S.		90
18. 4¾	18. 5	S.	W.S.W.	67½	
18. 9	18. 12	W.S.W.	N.	112½	
18. 15	18. 22	N.	W.S.W.		112½
19. 4	19. 8	W.S.W.	S.S.W.		45
19. 17	19. 18	S.S.W.	S.E.		67½
19. 19	20. 0	S.E.	S.	45	
20. 3	20. 3½	S.	E.		90
20. 5	20. 5¼	E.	S.E.	45	
20. 9	20. 10½	S.E.	E.N.E.		67½
20. 12	21. 2	E.N.E.	N.W.		112½
21. 4	21. 10	N.W.	N.N.E.	67½	
21. 21½	22. 2½	N.N.E.	E.	67½	
22. 5	22. 9½	E.	N.N.E.		67½
22. 11	22. 12	N.N.E.	N.E.	22½	
22. 16	23. 2	N.E.	W.N.W.		112½
23. 4	23. 7	W.N.W.	N.N.W.	45	
23. 17	23. 21	N.N.W.	S.S.W.		135
24. 9	24. 20	S.S.W.	E.N.E.		135

Greenwich Civil Time. From	Greenwich Civil Time. To	Change of Direction. From	Change of Direction. To	Amount of Motion. Direct.	Amount of Motion. Retrograde.
				°	°
Jan.—*cont.*					
d h	d h				
25. 2	25. 8	E.N.E.	E.S.E.	45	
25. 13	25. 16	E.S.E.	E.		22½
26. 0	26. 5	E.	S.W.	135	
26. 11	26. 18	S.W.	S.E.		90
28. 6	28. 7	S.E.	N.E.		90
28. 9	28. 12	N.E.	S.S.W.	157½	
28. 18¼	28. 21	S.S.W.	S.S.E.		45
29. 15	29. 17	S.S.E.	W.S.W.	90	
29. 21	29. 22½	W.S.W.	N.W.	67½	
29. 23	30. 7	N.W.	S.S.W.		112½
30. 17	30. 18	S.S.W.	S.W.	22½	
31. 9	31. 14	S.W.	W.	45	
31. 20½	31. 21	W.	W.S.W.		22½
			Sums	2317½	2317½
February.					
1. 5	1. 11	W.S.W.	W.N.W.	45	
1. 12½	1. 18	W.N.W.	W.S.W.		45
1. 20	1. 21¼	W.S.W.	W.N.W.	45	
1. 22½	2. 5	W.N.W.	S.W.		67½
2. 7	2. 12	S.W.	W.	45	
2. 15½	2. 21	W.	S.W.		45
3. 2	3. 9½	S.W.	E.		135
3. 18	4. 12	E.	N.		90
5. 15	5. 16	N.	S.		180
5. 17	5. 17¼	S.	S.S.W.	22½	
5. 18	5. 20	S.S.W.	E.S.E.	270	
6. 0	6. 3	E.S.E.	N.N.E.		90
6. 19	6. 20	N.N.E.	N.E.	22½	
7. 8	7. 11	N.E.	E.S.E.	67½	
7. 16	7. 17	E.S.E.	S.E.	22½	
7. 20	7. 21	S.E.	E.S.E.		22½
7. 23	8. 2	E.S.E.	S.S.E.	45	
8. 9	8. 10	S.S.E.	S.E.		22½
9. 0	9. 2	S.E.	E.S.E.		22½
9. 8½	9. 10	E.S.E.	S.S.E.	45	
9. 12	9. 12½	S.S.E.	N.N.E.	225	
9. 14	9. 18	N.N.E.	E.	67½	
9. 19¾	9. 20½	E.	W.S.W.	157½	
9. 23¼	10. 0	W.S.W.	E.N.E.		180
10. 0½	10. 1	E.N.E.	S.	112½	
10. 2	10. 3	S.	W.S.W.	67½	
10. 7	10. 8	W.S.W.	N.	112½	
10. 11	10. 12	N.	W.S.W.		112½
10. 14	10. 15	W.S.W.	N.E.		202½
10. 15½	10. 16	N.E.	S.	135	
10. 17	10. 23	S.	S.W.	405	
11. 18	11. 18¼	S.W.	N.E.	180	
11. 18½	11. 18¾	N.E.	S.	135	
11. 23	12. 0	S.	S.S.W.	22½	
12. 2½	12. 3¼	S.S.W.	S.S.E.		45

Greenwich Civil Time. From	Greenwich Civil Time. To	Change of Direction. From	Change of Direction. To	Amount of Motion. Direct.	Amount of Motion. Retrograde.
				°	°
Feb.—*cont.*					
d h	d h				
12. 4	12. 5	S.S.E.	S.S.W.	45	
12. 8	12. 10	S.S.W.	S.		22½
12. 19	12. 21	S.	W.S.W.	67½	
12. 21½	13. 0	W.S.W.	S.		67½
13. 9	13. 10	S.	S.S.W.	22½	
13. 16	13. 18	S.S.W.	S.		22½
14. 10	14. 12	S.	S.S.W.	22½	
14. 18½	14. 19	S.S.W.	N.N.E.	180	
15. 0	15. 8	N.N.E.	E.N.E.	45	
17. 2	17. 3	E.N.E.	N.E.		22½
17. 18	17. 19	N.E.	E.N.E.	22½	
17. 22	17. 23	E.N.E.	N.E.		22½
18. 12	18. 15	N.E.	E.N.E.	22½	
19. 13	19. 18	E.N.E.	E.S.E.	45	
19. 19½	19. 20	E.S.E.	N.E.		67½
20. 4	20. 5	N.E.	E.N.E.	22½	
20. 7	20. 9	E.N.E.	N.N.E.		45
20. 11	20. 12	N.N.E.	E.	67½	
20. 14	20. 15	E.	N.N.E.		67½
20. 17	20. 18	N.N.E.	N.E.	22½	
21. 10½	21. 11	N.E.	E.	45	
21. 12	21. 14	E.	N.E.		45
22. 0	22. 2	N.E.	N.N.E.		22½
22. 13	22. 18	N.N.E.	S.E.	112½	
22. 20	23. 1	S.E.	N.E.		90
26. 1	26. 8	N.E.	N.		45
26. 16	26. 17	N.	N.N.W.		22½
27. 4½	27. 7	N.N.W.	S.S.W.		135
27. 8	27. 9	S.S.W.	N.	157½	
27. 10	27. 13	N.	N.E.	45	
27. 17	27. 19	N.E.	E.	45	
27. 22	27. 23	E.	E.N.E.		22½
28. 6	28. 7	E.N.E.	N.E.		22½
28. 8	28. 9	N.E.	E.N.E.	22½	
28. 15	28. 16	E.N.E.	E.S.E.	45	
			Sums	3307½	2002½
March.					
1. 1	1. 9	E.S.E.	S.E.	22½	
1. 19	2. 0	S.E.	W.S.W.	112½	
2. 14	2. 17	W.S.W.	W.	22½	
3. 0	3. 0¼	W.	W.N.W.	22½	
3. 5	3. 8	W.N.W.	N.	67½	
3. 19	3. 20	N.	N.W.		45
4. 1	4. 3	N.W.	W.S.W.		67½
4. 15	4. 17	W.S.W.	W.N.W.	45	
4. 18	4. 19½	W.N.W.	S.S.W.		90
4. 22	5. 1	S.S.W.	E.S.E.		90
5. 13	6. 9	E.S.E.	W.N.W.		180
6. 13	6. 14	W.N.W.	N.	67½	
7. 9	7. 13	N.	S.E.	135	
7. 16	7. 17	S.E.	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.
Mar.—cont.				°	°
d h	d h				
7. 18	7. 19	E.S.E.	S.E.	22½	
7. 23	8. 1	S.E.	E.S.E.		22½
9. 3	9. 9	E.S.E.	S.E.	22½	
9. 14	9. 15	S.E.	E.S.E.		22½
9. 17	9. 19	E.S.E.	E.		22½
10. 10	10. 11	E.	E.N.E.		22½
11. 21	11. 23	E.N.E.	N.E.		22½
12. 18	12. 19	N.E.	E.	45	
13. 1	13. 2	E.	N.E.		45
13. 16	13. 17	N.E.	E.N.E.	22½	
13. 18	13. 20	E.N.E.	N.E.		22½
14. 10	14. 10¼	N.E.	E.N.E.	22½	
14. 21	14. 23	E.N.E.	N.E.		22½
15. 22	16. 3	N.E.	N.		45
16. 12¾	16. 13	N.	N.W.		45
16. 14¾	16. 15	N.W.	S.S.W.		112½
16. 16½	16. 17¼	S.S.W.	E.S.E.		90
19. 6	19. 11	E.S.E.	S.S.W.	90	
19. 16	19. 18	S.S.W.	S.S.E.		45
19. 20	20. 0	S.S.E.	S.W.	67½	
21. 10	21. 11	S.W.	W.S.W.	22½	
22. 10	22. 13	W.S.W.	S.S.W.		45
23. 1	23. 6	S.S.W.	S.		22½
23. 15	23. 18	S.	E.		90
24. 11	24. 12	E.	E.S.E.	22½	
24. 21	25. 3	E.S.E.	W.S.W.	135	
25. 4	25. 5	W.S.W.	S.W.		22½
25. 8	25. 9	S.W.	S.S.W.		22½
25. 21	25. 21½	S.S.W.	S.S.E.		45
25. 23	26. 4	S.S.E.	S.W.	67½	
28. 2	28. 6	S.W.	S.S.W.		22½
28. 13	28. 22	S.S.W.	W.S.W.	45	
28. 23	29. 2	W.S.W.	S.S.W.		45
29. 8	29. 10	S.S.W.	S.W.	22½	
29. 15	29. 16½	S.W.	W.N.W.	67½	
29. 17	29. 18	W.N.W.	W.S.W.		45
30. 3	30. 11	W.S.W.	S.W.		22½
31. 8	31. 11	S.W.	W.S.W.	22½	
			Sums	1192½	1417½
April.					
1. 10	1. 11	W.S.W.	S.W.		22½
1. 13	1. 19	S.W.	S.E.		90
1. 21	1. 23	S.E.	S.S.E.	22½	
2. 2	2. 4	S.S.E.	S.S.W.	45	
2. 17	2. 18	S.S.W.	S.S.E.		45
2. 21	3. 2	S.S.E.	S.W.	67½	
3. 6½	3. 7	S.W.	W.	45	
3. 8	3. 14	W.	S.W.		45
3. 18	3. 21	S.W.	S.S.W.		22½
4. 0	4. 9	S.S.W.	S.W.	22½	
4. 20	5. 0	S.W.	W.S.W.	22½	
5. 3	5. 6	W.S.W.	S.W.		22½
5. 9	5. 11	S.W.	W.S.W.	22½	
5. 15	5. 18	W.S.W.	S.W.		22½
6. 7	6. 10	S.W.	W.N.W.	67½	

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				
6. 18	6. 20	W.N.W.	W.S.W.		45
7. 4	7. 7	W.S.W.	S.W.		22½
7. 9	7. 12	S.W.	S.S.W.		22½
8. 3	8. 5	S.S.W.	S.W.	22½	
9. 2	9. 7	S.W.	W.S.W.	22½	
9. 19	10. 2	W.S.W.	S.S.W.		45
10. 14	10. 15	S.S.W.	W.	67½	
10. 15¼	10. 17	W.	S.		90
10. 22	11. 2	S.	N.		180
11. 13	11. 13¼	N.	E.N.E.	67½	
11. 17	12. 8	E.N.E.	N.N.W.		90
12. 13	12. 14	N.N.W.	W.		67½
12. 19	13. 0	W.	SW.		45
13. 6	13. 7½	S.W.	W.	45	
13. 14	13. 15	W.	N.W.	45	
13. 21	13. 21½	N.W.	W.S.W.		67½
14. 1½	14. 2	W.S.W.	N.N.W.	90	
14. 4	14. 5	N.N.W.	W.N.W.		45
14. 6	14. 7	W.N.W.	N.N.W.	45	
14. 15	14. 16	N.N.W.	N.	22½	
14. 20	14. 21	N.	N.N.E.	22½	
15. 6	15. 8	N.N.E.	N.E.	22½	
15. 17½	15. 18	N.E.	E.S.E.	67½	
15. 18¾	15. 22	E.S.E.	N.N.E.		90
17. 4	17. 8	N.N.E.	N.E.	22½	
18. 1	18. 1¼	N.E.	E.N.E.	22½	
18. 4	18. 6	E.N.E.	N.E.		22½
18. 14	18. 15¾	N.E.	S.E.	90	
18. 16¼	18. 18	S.E.	N.N.E.		112½
18. 19	18. 20	N.N.E.	E.S.E.	90	
18. 21	18. 22	E.S.E.	E.N.E.		45
19. 3	19. 4	E.N.E.	N.E.		22½
19. 8	19. 9	N.E.	E.N.E.	22½	
19. 18	19. 22	E.N.E.	N.N.E.		45
20. 1	20. 7	N.N.E.	E.N.E.	45	
20. 18	20. 20	E.N.E.	N.E.		22½
21. 6	21. 9	N.E.	N.N.E.		22½
21. 16	21. 17	N.N.E.	N.		22½
22. 7	22. 8	N.	W.S.W.		112½
22. 10	22. 11	W.S.W.	N.N.W.	90	
22. 12	22. 14	N.N.W.	S.W.		112½
22. 14½	22. 16	S.W.	E.N.E.	202½	
22. 18	22. 19	E.N.E.	E.S.E.	45	
22. 22	22. 23	E.S.E.	E.N.E.		45
23. 2	23. 3	E.N.E.	E.	22½	
23. 4½	23. 5½	E.	N.E.		45
23. 6	23. 7	N.E.	E.	45	
26. 9	26. 10	E.	E.S.E.	22½	
26. 16	26. 17	E.S.E.	E.		22½
27. 12	27. 13	E.	E.S.E.	22½	
27. 20	27. 23	E.S.E.	E.N.E.		45
28. 0	28. 1	E.N.E.	E.S.E.	45	
28. 2	28. 3	E.S.E.	E.		22½
28. 8	28. 9	E.	E.N.E.		22½
28. 13	28. 15	E.N.E.	N.N.E.		45
28. 17	28. 18	N.N.E.	N.E.	22½	
30. 11	30. 13	N.E.	E.N.E.	22½	
30. 17	30. 18	E.N.E.	E.	22½	
			Sums	1710	1867½

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.				°	°
d h	d h				
1. 0	1. 4	E.	N.N.E.		67½
1. 5	1. 9	N.N.E.	E.N.E.	45	
1. 11	1. 16	E.N.E.	E.S.E.	45	
1. 18	2. 2	E.S.E.	E.N.E.		45
2. 7	2. 8	E.N.E.	E.	22½	
2. 14	2. 14½	E.	E.S.E.	22½	
2. 21	3. 0	E.S.E.	S.E.	22½	
3. 7	3. 9	S.E.	S.S.W.	67½	
3. 21¾	3. 22	S.S.W.	S.S.E.		45
4. 1½	4. 2	S.S.E.	N.E.		112½
4. 7	4. 8	N.E.	N.N.E.		22½
4. 8½	4. 12	N.N.E.	S.S.W.	180	
4. 17	4. 19	S.S.W.	S.S.E.		45
5. 0	5. 2¼	S.S.E.	E.S.E.		45
5. 3¼	5. 4	E.S.E.	N.E.		67½
5. 9	5. 10	N.E.	S.		225
5. 23	6. 0	S.	S.W.	45	
6. 9	6. 14	S.W.	W.S.W.	22½	
6. 16	6. 17	W.S.W.	S.S.W.	315	
7. 0	7. 2	S.S.W.	S.W.	22½	
7. 19	7. 20	S.W.	W.S.W.	22½	
7. 21½	7. 22	W.S.W.	S.S.W.		45
8. 2½	8. 3	S.S.W.	S.W.	22½	
8. 10	8. 10¼	S.W.	E.N.E.	202½	
8. 13	8. 15	E.N.E.	S.S.W.	135	
8. 16	8. 16¼	S.S.W.	N.N.E.		180
8. 17	8. 20	N.N.E.	S.S.E.	135	
8. 20¼	8. 23	S.S.E.	N.N.E.		135
9. 2	9. 6	N.N.E.	E.N.E.	45	
9. 11	9. 12	E.N.E.	E.S.E.	45	
10. 1	10. 9	E.S.E.	E.N.E.		45
10. 11	10. 15	E.N.E.	E.	22½	
10. 22	11. 0	E.	E.N.E.		22½
11. 2	11. 10	E.N.E.	E.S.E.	45	
11. 19	11. 20	E.S.E.	E.		22½
12. 3	12. 6	E.	E.S.E.	22½	
12. 11	12. 12	E.S.E.	S.E.	22½	
12. 14	12. 15	S.E.	E.S.E.		22½
13. 1	13. 13	E.S.E.	N.N.W.		135
13. 14	13. 14¼	N.N.W.	S.W.		112½
14. 3	14. 6	S.W.	W.	45	
14. 11	14. 17	W.	N.N.E.	112½	
14. 20	14. 23	N.N.E.	W.S.W.		135
15. 1	15. 4	W.S.W.	W.N.W.	45	
15. 19	16. 8	W.N.W.	S.W.		67½
19. 0	19. 2	S.W.	S.		45
19. 9	19. 12	S.	E.N.E.		112½
19. 19	19. 19¼	E.N.E.	E.	22½	
19. 22	20. 0	E.	N.E.		45
20. 1	20. 2	N.E.	S.S.W.	157½	
20. 18	20. 20	S.S.W.	S.W.	22½	
21. 1	21. 2	S.W.	S.S.E.		67½
21. 5	21. 14¼	S.S.E.	W.S.W.	90	
21. 16	21. 17	W.S.W.	S.		67½
21. 19¾	21. 21½	S.	N.N.E.	202½	
21. 23	22. 1	N.N.E.	N.E.	22½	
22. 10	22. 15	N.E.	E.S.E.	67½	
22. 19	23. 2	E.S.E.	N.		112½
23. 11	23. 12	N.	S.S.W.	202½	
23. 18	23. 21	S.S.W.	N.N.E.	180	
24. 15	24. 20	N.N.E.	W.S.W.		135

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				
25. 1	25. 5	W.S.W.	S.S.W.		45
25. 6	25. 8	S.S.W.	S.W.	22½	
26. 14	26. 16	S.W.	S.S.W.		22½
26. 20	27. 1	S.S.W.	E.N.E.		135
27. 7	27. 7¼	E.N.E.	W.S.W.	180	
27. 12	27. 19	W.S.W.	S.S.W.		45
28. 2	28. 5	S.S.W.	S.W.	22½	
29. 8	29. 11	S.W.	S.S.W.		22½
30. 3	30. 8	S.S.W.	N.E.		157½
30. 10	30. 11	N.E.	E.S.E.	67½	
30. 16	30. 18	E.S.E.	E.N.E.		45
30. 19	30. 20	E.N.E.	E.	22½	
30. 23	31. 3	E.	N.N.E.		67½
31. 8	31. 13	N.N.E.	E.	67½	
31. 19	31. 20	E.	E.N.E.		22½
			Sums	3082½	2745
June.					
1. 10	1. 14	E.N.E.	S.S.W.	135	
1. 23	2. 3	S.S.W.	W.S.W.	45	
2. 6	2. 7	W.S.W.	S.W.		22½
2. 13	2. 15	S.W.	N.E.	180	
3. 15	3. 16	N.E.	E.	45	
3. 20	3. 23	E.	N.E.		45
4. 13	4. 15	N.E.	E.	45	
4. 23	5. 1	E.	N.E.		45
5. 15	5. 17	N.E.	E.S.E.	67½	
5. 21	6. 1	E.S.E.	N.E.		67½
6. 15	6. 16	N.E.	E.S.E.	67½	
7. 1	7. 3	E.S.E.	N.E.		67½
7. 3¾	7. 4	N.E.	S.	135	
7. 5½	7. 6	S.	N.	180	
7. 15	7. 17	N.	E.	90	
8. 0	8. 1	E.	N.E.		45
8. 11	8. 16	N.E.	E.S.E.	67½	
8. 20	9. 2	E.S.E.	E.N.E.		45
9. 10	9. 11	E.N.E.	E.S.E.	45	
9. 18	9. 19	E.S.E.	E.		22½
10. 4	10. 6	E.	E.S.E.	22½	
10. 13	10. 15	E.S.E.	N.		112½
10. 20	10. 22	N.	S.W.		135
11. 18	11. 20	S.W.	S.		45
11. 21	12. 4	S.	S.W.	45	
12. 23	13. 2	S.W.	W.S.W.	22½	
13. 7	13. 10	W.S.W.	N.W.	67½	
13. 20	13. 21	N.W.	W.S.W.		67½
14. 1	14. 2	W.S.W.	S.W.		22½
14. 13	14. 14	S.W.	S.S.W.		22½
14. 21	15. 6	S.S.W.	W.N.W.	90	
15. 21	16. 0	W.N.W.	S.W.		67½
16. 4	16. 10	S.W.	N.W.	90	
17. 7	17. 8	N.W.	N.N.W.	22½	
17. 13	17. 15	N.N.W.	N.	22½	
18. 21	19. 3	N.	N.W.		45
19. 6	19. 8	N.W.	N.N.W.	22½	
19. 12	19. 15	N.N.W.	N.	22½	
June—*cont.*				°	°
d h	d h				
21. 5	21. 6	N.	N.N.W.		22½
21. 15	21. 18	N.N.W.	W.N.W.		45
22. 20	23. 0	W.N.W.	W.S.W.		45
23. 6	23. 7	W.S.W.	W.	22½	
23. 16	23. 17	W.	W.N.W.	22½	
23. 21	23. 23	W.N.W.	W.		22½
24. 11	24. 12	W.	W.S.W.		22½
24. 17	24. 18	W.S.W.	S.W.		22½
25. 1	25. 8	S.W.	W.	45	
25. 11	25. 15	W.	W.S.W.		22½
25. 18	25. 19	W.S.W.	S.S.W.		45
25. 20½	25. 21	S.S.W.	S.W.	22½	
26. 15	26. 19	S.W.	N.	135	
26. 22½	26. 23	N.	N.N.E.	22½	
27. 17	27. 20	N.N.E.	E.S.E.	90	
28. 3	28. 4	E.S.E.	N.E.		67½
28. 11½	28. 12	N.E.	N.		45
28. 15	28. 19	N.	E.S.E.	112½	
29. 7	29. 8	E.S.E.	N.E.		67½
29. 9	29. 15	N.E.	E.	45	
29. 23	30. 4	E.	N.N.E.		67½
30. 14¾	30. 18	N.N.E.	E.S.E.	90	
			Sums	2137½	1372½
July.					
1. 0	1. 3	E.S.E.	N.E.		67½
1. 4	1. 6	N.E.	E.N.E.	22½	
1. 12	1. 18	E.N.E.	E.S.E.	45	
1. 22	1. 23	E.S.E.	E.		22½
2. 7	2. 9	E.	N.E.		45
2. 15	2. 17	N.E.	E.S.E.	67½	
3. 5	3. 7	E.S.E.	S.W.	112½	
3. 10½	3. 11½	S.W.	N.N.E.	157½	
4. 10	4. 11	N.N.E.	N.W.	292½	
4. 13	4. 14	N.W.	W.N.W.		22½
4. 19	4. 23	W.N.W.	N.N.W.	45	
5. 3	5. 5	N.N.W.	W.		67½
5. 6	5. 7	W.	N.N.W.	67½	
5. 22	6. 3	N.N.W.	S.S.W.	225	
6. 9	6. 10	S.S.W.	W.S.W.	45	
6. 16	6. 18	W.S.W.	W.	22½	
6. 20	6. 20½	W.	S.S.W.		67½
6. 21	7. 6	S.S.W.	W.S.W.	45	
7. 16¾	7. 17	W.S.W.	N.E.		202½
7. 18	7. 19	N.E.	E.S.E.	67½	
7. 23	8. 3	E.S.E.	N.		112½
8. 18	8. 19	N.	N.E.	45	
8. 21	9. 0	N.E.	N.		45
9. 12	9. 14	N.	E.	90	
9. 22	10. 1	E.	S.	90	
10. 2	10. 3	S.	S.W.	45	
10. 8	10. 11	S.W.	N.	135	
10. 22	11. 0	N.	W.S.W.	247½	
11. 11	11. 12	W.S.W.	S.W.		22½
12. 16	12. 16½	S.W.	N.W.	90	
12. 18½	12. 19	N.W.	W.S.W.		67½
July—*cont.*				°	°
d h	d h				
13. 12	13. 18	W.S.W.	S.S.W.		45
14. 6	14. 10	S.S.W.	W.N.W.	90	
14. 17	14. 21	W.N.W.	W.S.W.		45
15. 16	15. 21	W.S.W.	S.S.W.		45
16. 5	16. 10	S.S.W.	W.N.W.	90	
16. 19	16. 21	W.N.W.	N.N.W.	45	
16. 22¾	17. 3	N.N.W.	S.S.W.		135
18. 11	18. 14	S.S.W.	S.S.E.		45
18. 23	19. 3	S.S.E.	W.S.W.	90	
19. 6	19. 8	W.S.W.	S.S.W.		45
19. 20¼	19. 22	S.S.W.	W.	67½	
20. 0	20. 3	W.	S.W.		45
20. 11	20. 12	S.W.	S.S.W.		22½
20. 19	20. 23	S.S.W.	E.		112½
21. 2	21. 3	E.	E.S.E.	22½	
21. 6	21. 17	E.S.E.	S.W.	112½	
23. 15	23. 20	S.W.	E.S.E.		112½
23. 21	24. 1	E.S.E.	W.N.W.	180	
24. 3	24. 4	W.N.W.	W.		22½
24. 16	24. 20	W.	S.W.		45
25. 0	25. 5	S.W.	S.S.E.		67½
25. 8	25. 11	S.S.E.	S.S.W.	45	
25. 18	25. 23	S.S.W.	S.S.E.		45
26. 2	26. 4	S.S.E.	W.S.W.	90	
27. 1	27. 2	W.S.W.	N.	112½	
27. 17	28. 2	N.	W.		90
28. 15	28. 20	W.	S.S.W.		67½
29. 19	30. 0	S.S.W.	S.S.E.		45
30. 8	30. 9	S.S.E.	S.	22½	
30. 11	30. 12	S.	S.S.W.	22½	
30. 19	30. 23	S.S.W.	W.S.W.	45	
31. 3	31. 5	W.S.W.	N.W.	67½	
31. 8	31. 13	N.W.	W.		45
31. 17	31. 18	W.	W.S.W.		22½
			Sums	3060	1845
August.					
1. 11	1. 12	W.S.W.	S.W.		22½
1. 13	1. 15	S.W.	S.S.W.		22½
1. 18	1. 22	S.S.W.	E.		112½
2. 3	2. 8	E.	N.N.W.		112½
3. 0	3. 2	N.N.W.	W.N.W.		45
3. 6	3. 8	W.N.W.	N.	67½	
3. 21	4. 1	N.	W.S.W.	247½	
4. 9	4. 10	W.S.W.	N.	112½	
4. 11	4. 12	N.	S.S.E.	157½	
4. 13¾	4. 14	S.S.E.	E.		67½
4. 16	4. 18	E.	S.E.	45	
4. 22	4. 23	S.E.	S.S.E.	22½	
5. 5	5. 8	S.S.E.	S.S.W.	45	
6. 1	6. 9	S.S.W.	W.S.W.	45	
9. 18	9. 20	W.S.W.	S.S.E.		90
10. 6	10. 9	S.S.E.	S.W.	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.
				°	°
Aug.—*cont.*					
d h	d h				
10. 11	10. 15	S.W.	W.	45	
10. 19	10. 22	W.	W.S.W.		22½
11. 6	11. 8	W.S.W.	W.	22½	
11. 19	12. 4	W.	S.W.		45
12. 14	12. 19	S.W.	S.		45
13. 7	13. 8	S.	S.S.W.	22½	
14. 2	14. 4	S.S.W.	W.	67½	
14. 6	14. 6½	W.	N.N.W.	67½	
14. 8	14. 10	N.N.W.	N.	22½	
14. 15	14. 22	N.	S.S.E.	157½	
15. 5	15. 8	S.S.E.	S.S.W.	45	
16. 7	16. 9	S.S.W.	W.S.W.	45	
17. 6	17. 13	W.S.W.	N.N.W.	90	
17. 22	18. 0	N.N.W.	N.	22½	
18. 16	18. 20	N.	W.S.W.	247½	
18. 23	19. 0	W.S.W.	S.W.		22½
19. 8	19. 14	S.W.	E.N.E.	202½	
19. 17	19. 19	E.N.E.	N.		67½
19. 20	19. 22	N.	N.E.	45	
20. 12	20. 14	N.E.	S.E.	90	
21. 1	21. 4	S.E.	W.	135	
21. 8	21. 15	W.	E.S.E.	202½	
21. 23	22. 6	E.S.E.	N.N.E.		90
24. 23	25. 2	N.N.E.	W.S.W.		135
25. 4	25. 7	W.S.W.	N.W.	67½	
25. 11	25. 12	N.W.	W.		45
25. 20	25. 23	W.	S.W.		45
26. 5	26. 9	S.W.	W.S.W.	22½	
26. 15	26. 18	W.S.W.	S.W.		22½
26. 20	27. 0	S.W.	W.S.W.	22½	
27. 12	27. 14	W.S.W.	S.S.W.		45
28. 2	28. 3	S.S.W.	S.		22½
28. 19	28. 22	S.	S.W.	45	
29. 9½	29. 11½	S.W.	E.S.E.	247½	
29. 12½	29. 13	E.S.E.	S.S.W.	90	
30. 6	30. 8	S.S.W.	N.E.		157½
30. 10	30. 11	N.E.	S.S.E.	112½	
30. 13	30. 17	S.S.E.	S.S.W.	45	
			Sums	2992½	1237½
September.					
1. 2	1. 7	S.S.W.	W.S.W.	45	
1. 16	1. 18	W.S.W.	N.	112½	
2. 0	2. 1	N.	N.N.E.	22½	
2. 18	2. 19	N.N.E.	N.E.	22½	
3. 4	3. 8	N.E.	E.N.E.	22½	
4. 11	4. 14	E.N.E.	E.S.E.	45	
4. 17	4. 19	E.S.E.	S.	67½	
5. 0	5. 1	S.	E.S.E.		67½
5. 5	5. 8	E.S.E.	S.S.W.	90	
6. 18	6. 22	S.S.W.	S.S.E.		45
6. 23	7. 3½	S.S.E.	W.N.W.	135	
7. 7	7. 8	W.N.W.	N.N.W.	45	
7. 10	7. 10½	N.N.W.	S.S.E.	180	
7. 12	7. 16	S.S.E.	S.W.	67½	

Greenwich Civil Time. From	Greenwich Civil Time. To	Change of Direction. From	Change of Direction. To	Amount of Motion. Direct.	Amount of Motion. Retrograde.
				°	°
Sept.—*cont.*					
d h	d h				
9. 17	9. 20	S.W.	S.S.W.		22½
10. 13	10. 13½	S.S.W.	N.	157½	
10. 19	10. 22	N.	S.W.	225	
11. 14	11. 15	S.W.	S.S.W.		22½
13. 4	13. 5	S.S.W.	S.		22½
13. 13	13. 21	S.	E.		90
14. 4	14. 10	E.	W.	180	
14. 13	14. 22	W.	N.E.	135	
15. 9	15. 12	N.E.	E.N.E.	22½	
16. 9	16. 11	E.N.E.	E.	22½	
16. 18	16. 19	E.	N.E.		45
17. 8	17. 10	N.E.	E.	45	
17. 18	17. 19	E.	N.E.		45
18. 8	18. 10	N.E.	E.	45	
18. 16	19. 5	E.	N.N.W.		112½
19. 9	19. 11	N.N.W.	N.N.E.	45	
19. 15	19. 16	N.N.E.	N.		22½
21. 0	21. 9	N.	N.E.	45	
22. 18	22. 20	N.E.	N.N.E.		22½
23. 19	23. 20	N.N.E.	N.		22½
24. 22	25. 5	N.	S.W.		135
25. 16	25. 17	S.W.	S.S.W.		22½
26. 0	26. 1	S.S.W.	S.		22½
26. 6	26. 12	S.	S.W.	45	
26. 15	26. 17	S.W.	S.		45
26. 19	27. 9	S.	S.W.	45	
27. 19	27. 21	S.W.	W.S.W.	22½	
28. 13	28. 17	W.S.W.	S.W.		22½
30. 15	30. 22	S.W.	S.S.E.		67½
			Sums	1890	855
October.					
1. 4	1. 9	S.S.E.	E.		67½
1. 10	1. 11	E.	S.	90	
1. 23	2. 5	S.	W.S.W.	67½	
2. 10	2. 22	W.S.W.	S.E.		112½
3. 2	3. 4	S.E.	E.N.E.		67½
3. 8	3. 12	E.N.E.	S.E.	67½	
3. 13	3. 15	S.E.	E.		45
3. 22	4. 4	E.	S.E.	45	
4. 17	4. 19	S.E.	E.		45
5. 11	5. 13	E.	S.S.E.	67½	
5. 20	6. 0	S.S.E.	W.S.W.	90	
6. 14	6. 22	W.S.W.	S.S.E.		90
7. 3	7. 5	S.S.E.	E.		67½
7. 12	7. 14	E.	E.S.E.	22½	
8. 10	8. 19	E.S.E.	S.W.	112½	
9. 6	9. 10	S.W.	S.S.W.		22½
9. 16	9. 19	S.S.W.	S.		22½
9. 22	10. 0	S.	W.S.W.	67½	
10. 13	10. 16	W.S.W.	S.W.		22½
11. 7	11. 9	S.W.	W.N.W.	67½	
11. 11	11. 18	W.N.W.	S.S.W.		90
12. 20	12. 22	S.S.W.	W.N.W.	90	
12. 23½	13. 0	W.N.W.	W.S.W.		45

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				
14. 16	15. 0	W.S.W.	S.S.E.		90
15. 5	15. 12	S.S.E.	S.W.	67½	
16. 5	16. 17	S.W.	N.		225
16. 21	17. 6	N.	W.N.W.		67½
17. 14	17. 19	W.N.W.	S.W.		67½
18. 12	18. 14	S.W.	N.N.E.	157½	
19. 6	19. 9	N.N.E.	S.S.E.	135	
19. 12	19. 14	S.S.E.	E.		67½
20. 13	20. 16	E.	S.W.	135	
21. 0	21. 2	S.W.	W.S.W.	22½	
21. 23	22. 0	W.S.W.	S.W.		22½
22. 12	22. 20	S.W.	E.S.E.		112½
23. 11	23. 15	E.S.E.	E.N.E.		45
26. 11	26. 13	E.N.E.	N.E.		22½
27. 6	27. 7	N.E.	E.N.E.	22½	
27. 15	27. 22	E.N.E.	E.S.E.	45	
28. 12	28. 14	E.S.E.	E.		22½
28. 23	29. 13	E.	W.S.W.	157½	
29. 15	29. 18	W.S.W.	S.S.W.		45
30. 0	30. 9	S.S.W.	S.S.E.		45
30. 10	30. 15	S.S.E.	E.S.E.		45
30. 21	31. 2	E.S.E.	S.	67½	
31. 9	31. 12	S.	S.W.	45	
31. 13	31. 17	S.W.	S.		45
			Sums	1642½	1620
November.					
1. 0	1. 11	S.	W.S.W.	67½	
1. 15	1. 17	W.S.W.	S.S.W.		45
2. 10	2. 13	S.S.W.	W.S.W.	45	
3. 1	3. 5	W.S.W.	S.S.W.		45
3. 22	4. 2	S.S.W.	W.N.W.	90	
4. 3	4. 5	W.N.W.	W.S.W.		45
4. 14	4. 18	W.S.W.	S.S.W.		45
5. 1	5. 8	S.S.W.	S.S.E.		45
5. 17	5. 19	S.S.E.	S.W.	67½	
6. 12	7. 1	S.W.	W.N.W.	67½	
7. 5	7. 7	W.N.W.	W.S.W.		45
7. 10	7. 11½	W.S.W.	N.	112½	
8. 0	8. 2	N.	S.W.		135
8. 15	9. 8	S.W.	E.S.E.		112½
9. 21½	9. 22	E.S.E.	E.N.E.		45
10. 15	10. 23	E.N.E.	N.N.E.		45
11. 3	11. 4	N.N.E.	N.		22½
11. 9	11. 10	N.	N.N.W.		22½
11. 13	11. 16	N.N.W.	W.S.W.		90
11. 16¾	11. 19	W.S.W.	N.W.	67½	
11. 21	12. 7	N.W.	S.S.W.		112½
12. 16	12. 17	S.S.W.	S.		22½
12. 20	12. 22	S.	W.N.W.	112½	
13. 3	13. 4	W.N.W.	W.S.W.		45
14. 8	14. 11	W.S.W.	W.N.W.	45	
14. 16	14. 19	W.N.W.	S.W.		67½
15. 6	15. 7	S.W.	S.S.W.		22½
16. 5	16. 7	S.S.W.	W.N.W.	90	

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

Greenwich Civil Time.		Change of Direction.		Amount of Motion.	
From	To	From	To	Direct.	Retrograde.
				°	°
Nov.—*cont.*					
d h	d h				
16. 12	16. 21	W.N.W.	S.S.W.		90
17. 5	17. 7	S.S.W.	S.S.E.		45
17. 9	17. 12	S.S.E.	W.S.W.	90	
17. 14½	17. 15	W.S.W.	N.N.W.	90	
17. 17	17. 21	N.N.W.	W.S.W.		90
18. 10	18. 12	W.S.W.	N.W.	67½	
18. 14	19. 1	N.W.	S.W.		90
19. 11	19. 12	S.W.	S.S.W.		22½
19. 22	20. 3	S.S.W.	W.S.W.	45	
20. 12	20. 15	W.S.W.	S.W.		22½
20. 21	21. 12	S.W.	N.	135	
21. 14	21. 22	N.	E.N.E.	67½	
22. 0	22. 2	E.N.E.	N.		67½
22. 5	22. 6	N.	N.W.		45
22. 8	22. 10	N.W.	E.N.E.	112½	
22. 21	22. 22	E.N.E.	N.N.E.		45
23. 3	23. 5	N.N.E.	N.W.		67½
23. 12	23. 13	N.W.	N.E.	90	
23. 15½	23. 16	N.E.	E.S.E.	67½	
23. 18	23. 18¼	E.S.E.	N.		112½
24. 9	24. 10	N.	N.E.	45	
24. 14	24. 19	N.E.	W.S.W.		157½
25. 11	25. 13	W.S.W.	N.	112½	
25. 22	26. 4	N.	N.E.	45	
28. 0	28. 5	N.E.	S.S.W.	157½	
29. 3	29. 11	S.S.W.	W.S.W.	45	
30. 11	30. 17	W.S.W.	N.N.W.	90	
30. 22	30. 23½	N.N.W.	N.W.		22½
			Sums	2025	1890
December.					
d h	d h				
1. 0	1. 3	N.W.	W.S.W.		67½
1. 9	1. 13	W.S.W.	W.N.W.	45	
1. 16	1. 17	W.N.W.	W.S.W.		45
2. 0	2. 4	W.S.W.	N.N.W.	90	
3. 1	3. 5	N.N.W.	S.W.		112½
3. 16	3. 20	S.W.	S.		45
4. 3	4. 7	S.	S.S.W.	22½	
4. 13	4. 16	S.S.W.	N.N.W.	135	
5. 4	5. 9	N.N.W.	S.W.		112½
5. 20	6. 5	S.W.	W.S.W.	22½	
6. 14	6. 17	W.S.W.	S.W.		22½
7. 0	7. 2	S.W.	W.S.W.	22½	
7. 10	7. 12	W.S.W.	N.W.	67½	
7. 12¼	8. 2	N.W.	S.S.W.		112½
8. 8	8. 11	S.S.W.	S.W.	22½	
9. 7	9. 14	S.W.	W.N.W.	67½	
9. 16	9. 20	W.N.W.	W.S.W.		45
10. 6	10. 11	W.S.W.	W.N.W.	45	
10. 13	11. 5	W.N.W.	S.		112½
11. 9	11. 11	S.	S.W.	45	
11. 15	11. 16	S.W.	S.S.W.		22½
11. 23	12. 0½	S.S.W.	W.S.W.	45	
13. 12	13. 15	W.S.W.	E.N.E.		180
14. 6	14. 9	E.N.E.	E.S.E.	45	
14. 13	14. 15	E.S.E.	S.W.	112½	
14. 17	14. 23	S.W.	S.S.E.		67½
15. 2	15. 11	S.S.E.	S.W.	67½	
16. 9	16. 10	S.W.	S.E.	270	
16. 11	16. 12	S.E.	N.N.E.		112½
17. 6	17. 8	N.N.E.	E.N.E.	45	
Dec.—*cont.*					
d h	d h				
17. 14	17. 15	E.N.E.	N.E.		22½
17. 19	18. 9	N.E.	W.S.W.		157½
19. 0	19. 1	W.S.W.	S.W.		22½
19. 13	19. 17	S.W.	S.E.	270	
20. 0	20. 2	S.E.	N.W.		180
20. 3	20. 6	N.W.	N.	45	
20. 15	20. 17	N.	N.N.E.	22½	
20. 23	21. 2	N.N.E	N.N.W.		45
21. 7	21. 11	N.N.W.	S.W.		112½
22. 2	22. 5	S.W.	S.	315	
22. 9	22. 12	S.	S.S.W.	22½	
22. 17	22. 19	S.S.W.	W.	67½	
23. 8	23. 10	W.	W.N.W.	22½	
23. 15	23. 19	W.N.W.	S.W.		67½
24. 1	24. 4	S.W.	S.S.W.		22½
24. 9	24. 12	S.S.W.	W.S.W.	45	
24. 15	24. 17	W.S.W.	N.W.	67½	
24. 21	25. 3	N.W.	W.S.W.		67½
25. 14	26. 3	W.S.W.	S.		67½
26. 13	27. 12	S.	N.W.		225
27. 14	27. 19	N.W.	S.W.		90
28. 1	28. 6	S.W.	W.S.W.	22½	
29. 4	29. 7	W.S.W.	W.	22½	
29. 18	29. 20	W.	N.	90	
31. 1½	31. 2	N.	W.		90
31. 4	31. 5	W.	N.	90	
31. 11	31. 12	N.	N.N.E.	22½	
31. 21	31. 23¼	N.N.E.	S.S.E.		225
			Sums	2295	2452½

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

EXCESS of MOTION in each MONTH.

1886.	Direct.	Retrograde.	1886.	Direct.	Retrograde.
	°	°		°	°
January	0		July	1215	
February	1305		August	1755	
March		225	September	1035	
April		157½	October	22½	
May	337½		November	135	
June	765		December		157½

The whole excess of direct motion for the year was 6030°.

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	1886.												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	13·1	8·1	12·3	12·6	8·5	8·8	8·0	7·5	9·9	10·6	9·5	15·0	10·3
2	13·3	8·3	11·5	11·5	8·9	8·6	8·3	7·4	9·9	10·9	9·6	14·8	10·3
3	13·6	7·8	11·6	12·5	8·6	8·8	7·9	7·3	9·8	10·6	9·8	15·1	10·3
4	13·8	8·1	12·0	12·9	8·7	8·5	8·8	7·6	10·3	10·2	9·7	14·9	10·5
5	13·7	7·9	12·4	13·0	8·9	8·8	8·8	7·8	10·0	10·1	9·8	15·2	10·5
6	13·9	8·0	12·3	12·8	7·9	8·7	8·7	7·5	9·9	10·3	9·6	15·1	10·4
7	13·5	8·1	12·7	13·3	8·4	9·5	9·3	7·4	10·1	9·8	9·6	15·1	10·6
8	13·2	8·2	12·6	14·1	9·2	10·4	9·9	8·3	10·7	10·4	9·8	15·7	11·0
9	13·2	8·4	13·1	15·3	10·3	10·9	10·7	9·0	11·6	10·6	10·3	15·7	11·6
10	13·3	8·8	14·2	16·2	11·0	11·5	12·0	9·4	12·3	10·8	10·7	15·0	12·1
11	15·1	9·7	15·3	16·3	11·4	12·3	13·0	9·8	13·2	11·8	11·4	15·0	12·9
Noon	15·5	9·3	15·7	16·0	11·6	11·8	13·1	10·5	13·5	12·6	11·4	15·6	13·1
h 13	14·8	9·0	17·2	16·8	12·4	11·6	12·8	11·0	13·6	12·8	11·9	16·0	13·3
14	15·6	10·1	18·4	19·0	12·9	13·7	14·2	12·1	14·9	13·8	13·0	16·9	14·5
15	15·1	9·3	17·6	17·9	12·7	13·4	13·7	12·3	14·4	13·3	12·0	15·9	14·0
16	14·3	9·4	18·0	18·1	13·7	13·8	14·5	12·8	14·6	12·3	11·9	15·6	14·1
17	14·1	9·4	16·8	17·3	13·6	12·9	13·2	11·9	13·9	11·3	10·6	14·5	13·3
18	14·9	8·7	15·4	16·5	13·1	12·5	12·8	11·0	12·6	10·7	10·4	14·7	12·8
19	14·0	8·6	15·1	15·2	12·5	12·3	11·2	10·3	11·7	11·2	10·6	15·4	12·3
20	15·2	9·1	14·2	14·2	11·2	11·9	9·9	9·3	10·7	11·3	10·6	15·4	11·9
21	13·0	8·7	13·4	13·1	10·0	10·3	9·1	8·6	10·1	10·9	10·1	14·7	11·0
22	13·4	8·1	13·5	12·9	10·4	9·6	8·9	8·4	10·5	10·8	10·7	15·6	11·1
23	12·8	7·7	13·9	12·7	9·9	9·7	8·5	8·1	10·3	10·3	10·1	15·7	10·8
Midnight	13·2	7·6	12·9	12·2	9·0	9·5	8·5	7·4	9·9	9·9	9·9	14·9	10·4
Means	14·0	8·6	14·3	14·7	10·6	10·8	10·7	9·3	11·6	11·1	10·5	15·3	11·8
Greatest Hourly Measures	43	36	42	39	34	30	33	26	34	40	39	51	...
Least Hourly Measures	1	0	0	1	1	0	0	0	1	0	0	0	...

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

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

1886.

Days of the Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d												
1	+ 101	+ 266	+ 188	+ 310	+ 392	+ 92	+ 259	+ 312	+ 239	+ 217	+ 229	+ 642
2	+ 154	+ 276	+ 433	+ 120	+ 387	+ 189	+ 300	+ 308	+ 119	+ 288	+ 246	+ 531
3	+ 417	− 230	+ 441	+ 172	+ 255	+ 163	+ 70	+ 287	+ 144	+ 162	+ 285	+ 729
4	+ 120	+ 142	+ 549	+ 240	+ 293	+ 245	+ 157	+ 192	+ 124	+ 149	+ 436	− 281
5	+ 390	+ 132	+ 470	+ 275	+ 244	+ 194	+ 145	+ 231	+ 238	+ 259	− 123	+ 632
6	+ 139	+ 272	+ 335	+ 146	+ 140	+ 220	...	+ 256	+ 257	+ 143	+ 9	+ 244
7	+ 513	+ 259	+ 637	− 23	+ 260	+ 205	...	+ 293	+ 238	+ 100	+ 320	+ 441
8	+ 121	+ 298	+ 597	+ 25	+ 130	+ 186	+ 17	+ 295	+ 265	+ 213	+ 358	+ 154
9	+ 168	+ 217	+ 475	+ 304	+ 370	+ 176	+ 157	+ 350	+ 209	+ 164	− 163	+ 166
10	+ 152	+ 125	+ 360	+ 255	+ 188	+ 105	+ 105	+ 193	+ 175	+ 226	− 13	+ 522
11	− 20	+ 135	+ 420	+ 352	+ 96	+ 210	+ 268	+ 203	+ 332	+ 194	− 200	+ 321
12	+ 108	+ 78	+ 362	+ 301	− 158	+ 109	+ 153	+ 279	+ 167	+ 12	+ 41	+ 380
13	+ 82	+ 44	+ 379	+ 275	− 238	− 45	+ 347	+ 279	+ 229	+ 273	+ 173	+ 155
14	+ 150	+ 15	+ 327	− 66	+ 90	+ 212	− 45	+ 309	+ 171	+ 327	+ 243	+ 345
15	+ 62	+ 125	+ 472	+ 248	+ 123	+ 161	...	+ 266	+ 195	− 14	+ 195	+ 13
16	+ 140	+ 93	+ 510	+ 143	+ 115	+ 178	...	+ 282	+ 194	+ 88	+ 262	+ 561
17	+ 72	+ 114	+ 564	+ 57	+ 79	+ 87	+ 358	+ 173	+ 234	+ 265	+ 188	+ 561
18	+ 161	+ 124	+ 546	+ 179	+ 140	+ 131	+ 182	+ 133	+ 227	+ 254	+ 400	+ 690
19	+ 294	+ 146	+ 296	+ 218	+ 194	− 18	− 32	+ 241	+ 231	+ 216	+ 493	+ 652
20	+ 121	+ 181	+ 361	+ 184	+ 261	+ 119	+ 322	+ 336	+ 158	+ 109	+ 306	+ 683
21	+ 175	+ 255	+ 135	+ 330	+ 270	+ 19	+ 42	+ 294	+ 95	+ 35	+ 318	+ 704
22	+ 146	+ 252	+ 183	+ 201	+ 69	+ 72	+ 103	+ 177	+ 233	+ 238	+ 405	− 74
23	+ 43	+ 190	+ 133	+ 284	+ 323	+ 59	+ 229	+ 181	+ 253	+ 178	+ 441	+ 490
24	+ 91	+ 381	+ 178	+ 204	...	+ 252	+ 334	+ 204	+ 129	+ 116	+ 620	+ 234
25	+ 92	+ 433	+ 68	+ 240	...	+ 239	+ 169	+ 177	+ 255	+ 95	+ 366	+ 642
26	+ 94	+ 536	+ 84	+ 275	+ 214	+ 114	+ 263	+ 227	+ 225	+ 141	+ 300	− 525
27	+ 103	+ 586	+ 19	+ 342	+ 98	+ 216	+ 185	+ 296	+ 147	+ 203	+ 451	+ 175
28	+ 100	+ 450	+ 76	+ 184	+ 211	+ 187	+ 272	+ 338	+ 282	+ 313	...	+ 496
29	+ 39		+ 145	− 230	+ 265	+ 180	+ 347	+ 371	+ 198	+ 268	...	+ 466
30	+ 48		− 10	+ 350	+ 283	+ 253	+ 347	+ 308	+ 252	+ 300	+ 486	+ 743
31	+ 90		+ 135		+ 187		+ 86	+ 323		+ 169		+ 763
Means ...	+ 144	+ 211	+ 318	+ 196	+ 182	+ 150	+ 190	+ 262	+ 207	+ 184	+ 253	+ 395

The mean of the twelve monthly values is + 224.

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.	1886.												Yearly Means.
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
Midnight	+ 170	+ 218	+ 338	+ 311	+ 307	+ 283	+ 201	+ 327	+ 259	+ 204	+ 322	+ 473	+ 284
1^h.	+ 152	+ 210	+ 323	+ 276	+ 287	+ 264	+ 202	+ 306	+ 224	+ 188	+ 306	+ 263	+ 258
2	+ 135	+ 209	+ 330	+ 276	+ 230	+ 231	+ 258	+ 307	+ 193	+ 168	+ 283	+ 435	+ 255
3	+ 102	+ 197	+ 333	+ 251	+ 42	+ 204	+ 248	+ 299	+ 165	+ 166	+ 269	+ 447	+ 227
4	+ 97	+ 196	+ 345	+ 225	+ 141	+ 183	+ 244	+ 290	+ 149	+ 160	+ 248	+ 347	+ 219
5	+ 105	+ 189	+ 326	+ 204	+ 214	+ 176	+ 232	+ 271	+ 147	+ 149	+ 259	+ 366	+ 220
6	+ 100	+ 185	+ 308	+ 121	+ 243	+ 186	+ 230	+ 267	+ 144	+ 149	+ 247	+ 369	+ 212
7	+ 92	+ 160	+ 342	+ 152	+ 192	+ 206	+ 251	+ 210	+ 150	+ 144	+ 242	+ 392	+ 211
8	+ 86	+ 142	+ 369	+ 184	+ 198	+ 185	+ 277	+ 280	+ 172	+ 149	+ 228	+ 385	+ 221
9	+ 95	+ 205	+ 359	+ 163	+ 207	+ 143	+ 218	+ 270	+ 175	+ 139	+ 211	+ 197	+ 198
10	+ 103	+ 226	+ 320	+ 4	+ 136	+ 72	+ 157	+ 169	+ 161	+ 130	+ 179	+ 266	+ 160
11	+ 144	+ 221	+ 285	+ 24	+ 96	+ 70	+ 127	+ 154	+ 168	+ 140	+ 126	+ 351	+ 159
Noon	+ 118	+ 214	+ 310	+ 119	+ 124	+ 59	+ 118	+ 194	+ 173	+ 161	+ 191	+ 234	+ 168
13^h.	+ 179	+ 207	+ 312	+ 98	+ 108	+ 56	+ 128	+ 209	+ 186	+ 179	+ 151	+ 335	+ 179
14	+ 162	+ 203	+ 242	+ 24	+ 128	− 22	+ 138	+ 225	+ 173	+ 181	+ 105	+ 430	+ 166
15	+ 131	+ 187	+ 222	+ 76	+ 31	− 28	+ 87	+ 212	+ 138	+ 177	+ 240	+ 434	+ 159
16	+ 155	+ 173	+ 295	+ 112	+ 117	+ 18	+ 65	+ 201	+ 157	+ 223	+ 171	+ 390	+ 173
17	+ 186	+ 215	+ 223	+ 102	+ 141	+ 86	+ 140	+ 182	+ 195	+ 230	+ 141	+ 352	+ 183
18	+ 192	+ 247	+ 325	+ 257	+ 177	+ 80	+ 33	+ 182	+ 254	+ 236	+ 285	+ 521	+ 232
19	+ 176	+ 252	+ 383	+ 286	+ 156	+ 133	+ 50	+ 275	+ 322	+ 245	+ 335	+ 561	+ 264
20	+ 174	+ 254	+ 358	+ 352	+ 210	+ 193	+ 209	+ 335	+ 345	+ 229	+ 366	+ 332	+ 280
21	+ 182	+ 249	+ 283	+ 387	+ 292	+ 241	+ 266	+ 379	+ 337	+ 227	+ 396	+ 417	+ 305
22	+ 221	+ 255	+ 345	+ 371	+ 287	+ 285	+ 401	+ 377	+ 314	+ 240	+ 387	+ 547	+ 336
23	+ 200	+ 240	+ 365	+ 341	+ 304	+ 302	+ 288	+ 361	+ 272	+ 199	+ 370	+ 545	+ 316
24	+ 174	+ 220	+ 339	+ 313	+ 314	+ 293	+ 205	+ 312	+ 263	+ 198	+ 350	+ 474	+ 288
Means $0^h.-23^h$.	+ 144	+ 211	+ 318	+ 196	+ 182	+ 150	+ 190	+ 262	+ 207	+ 184	+ 253	+ 395	+ 224
Means $1^h.-24^h$.	+ 144	+ 211	+ 318	+ 197	+ 182	+ 151	+ 190	+ 261	+ 207	+ 184	+ 254	+ 395	+ 224
Number of Days employed.	31	28	31	30	29	30	27	31	30	31	28	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.	1886.												Yearly Means.
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
Midnight.	+ 149	+ 154	+ 185	+ 339	+ 249	+ 245	+ 278	+ 321	+ 237	+ 172	+ 278	+ 374	+ 248
1^h.	+ 114	+ 126	+ 188	+ 230	+ 210	+ 213	+ 43	+ 289	+ 218	+ 153	+ 245	+ 208	+ 186
2	+ 94	+ 104	+ 198	+ 258	+ 110	+ 123	+ 196	+ 320	+ 196	+ 138	+ 228	+ 303	+ 189
3	+ 61	+ 98	+ 195	+ 209	− 354	+ 177	+ 207	+ 334	+ 163	+ 139	+ 209	+ 341	+ 148
4	+ 59	+ 104	+ 175	+ 166	− 110	+ 155	+ 224	+ 310	+ 164	+ 146	+ 198	+ 147	+ 145
5	+ 68	+ 88	+ 126	+ 70	+ 83	+ 118	+ 229	+ 255	+ 188	+ 152	+ 184	+ 178	+ 145
6	+ 57	+ 62	+ 98	− 159	+ 124	+ 108	+ 237	+ 240	+ 196	+ 126	+ 123	+ 161	+ 114
7	+ 36	− 38	+ 141	− 243	− 41	+ 113	+ 250	− 19	+ 154	+ 109	+ 105	+ 172	+ 62
8	+ 14	− 146	+ 200	− 88	− 7	+ 102	+ 256	+ 274	+ 121	+ 93	+ 43	+ 139	+ 83
9	− 9	+ 36	+ 244	− 103	+ 91	+ 98	+ 96	+ 336	+ 61	− 11	− 42	− 201	+ 50
10	− 19	+ 84	+ 225	− 199	+ 92	− 27	+ 219	+ 259	+ 44	− 4	− 98	− 44	+ 44
11	+ 59	− 18	+ 165	− 98	+ 114	+ 43	+ 221	+ 206	+ 147	+ 39	− 170	+ 101	+ 67
Noon.	+ 33	− 52	+ 202	+ 149	+ 78	− 20	+ 63	+ 200	+ 169	+ 77	− 72	− 146	+ 57
13^h.	+ 124	− 50	+ 208	− 19	+ 15	− 10	+ 79	+ 247	+ 171	+ 89	− 183	+ 73	+ 62
14	+ 110	− 66	+ 76	− 211	+ 97	− 370	+ 129	+ 290	+ 146	+ 132	− 284	+ 222	+ 23
15	+ 122	− 122	+ 132	− 122	+ 145	− 398	+ 54	+ 280	+ 57	+ 78	+ 55	+ 200	+ 40
16	+ 98	− 278	+ 120	− 88	+ 148	− 162	− 28	+ 276	+ 102	+ 99	− 151	+ 109	+ 20
17	+ 154	− 62	− 54	− 154	+ 159	+ 30	+ 139	+ 251	+ 168	+ 137	− 279	+ 82	+ 48
18	+ 171	+ 160	+ 188	+ 278	+ 192	+ 82	− 170	+ 218	+ 181	+ 107	+ 61	+ 383	+ 154
19	+ 139	+ 226	+ 232	+ 267	+ 45	+ 78	− 107	+ 314	+ 230	+ 124	+ 248	+ 437	+ 186
20	+ 143	+ 220	+ 141	+ 449	+ 89	+ 170	+ 191	+ 330	+ 273	+ 94	+ 269	+ 114	+ 207
21	+ 157	+ 180	− 55	+ 480	+ 289	+ 220	+ 151	+ 390	+ 294	+ 142	+ 326	+ 157	+ 228
22	+ 207	+ 204	+ 97	+ 350	+ 245	+ 240	+ 452	+ 442	+ 313	+ 186	+ 317	+ 393	+ 287
23	+ 182	+ 206	+ 197	+ 393	+ 225	+ 248	+ 159	+ 416	+ 323	+ 70	+ 298	+ 426	+ 262
24	+ 157	+ 172	+ 193	+ 319	+ 277	+ 255	+ 59	+ 326	+ 296	+ 154	+ 281	+ 318	+ 234
Means 0^h.–23^h.	+ 97	+ 51	+ 151	+ 90	+ 95	+ 66	+ 149	+ 282	+ 180	+ 108	+ 80	+ 180	+ 127
Means 1^h.–24^h.	+ 97	+ 52	+ 151	+ 89	+ 97	+ 66	+ 140	+ 283	+ 182	+ 107	+ 80	+ 178	+ 127
Number of Days employed.	18	5	11	9	11	6	9	8	9	9	12	16	...

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.	1886. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Yearly Means.
Midnight.	+ 276	+ 262	+ 477	+ 303	+ 362	+ 305	+ 296	+ 323	+ 276	+ 233	+ 356	+ 626	+ 341
1h.	+ 266	+ 254	+ 461	+ 292	+ 337	+ 289	+ 281	+ 310	+ 219	+ 218	+ 350	+ 563	+ 320
2	+ 255	+ 265	+ 470	+ 278	+ 307	+ 262	+ 276	+ 301	+ 179	+ 194	+ 323	+ 618	+ 311
3	+ 219	+ 259	+ 481	+ 267	+ 312	+ 208	+ 249	+ 283	+ 154	+ 182	+ 311	+ 604	+ 294
4	+ 212	+ 266	+ 494	+ 258	+ 335	+ 182	+ 226	+ 279	+ 132	+ 177	+ 278	+ 599	+ 286
5	+ 226	+ 261	+ 482	+ 271	+ 321	+ 178	+ 208	+ 271	+ 121	+ 177	+ 316	+ 602	+ 286
6	+ 234	+ 261	+ 485	+ 224	+ 353	+ 188	+ 204	+ 272	+ 112	+ 173	+ 343	+ 625	+ 290
7	+ 235	+ 244	+ 524	+ 329	+ 384	+ 214	+ 226	+ 289	+ 134	+ 162	+ 343	+ 656	+ 312
8	+ 241	+ 249	+ 534	+ 343	+ 361	+ 186	+ 265	+ 277	+ 185	+ 171	+ 373	+ 662	+ 321
9	+ 293	+ 280	+ 500	+ 298	+ 308	+ 145	+ 254	+ 250	+ 221	+ 222	+ 435	+ 634	+ 320
10	+ 330	+ 296	+ 457	+ 225	+ 187	+ 92	+ 78	+ 138	+ 206	+ 210	+ 438	+ 604	+ 272
11	+ 277	+ 323	+ 429	+ 176	+ 108	+ 77	+ 31	+ 134	+ 171	+ 184	+ 393	+ 618	+ 243
Noon.	+ 240	+ 306	+ 409	+ 174	+ 201	+ 70	+ 109	+ 189	+ 168	+ 212	+ 431	+ 674	+ 265
13h.	+ 255	+ 294	+ 365	+ 210	+ 212	+ 65	+ 119	+ 190	+ 185	+ 216	+ 445	+ 662	+ 268
14	+ 240	+ 281	+ 334	+ 201	+ 224	+ 60	+ 106	+ 205	+ 178	+ 191	+ 424	+ 665	+ 259
15	+ 97	+ 269	+ 339	+ 187	− 18	+ 75	+ 53	+ 206	+ 169	+ 215	+ 394	+ 676	+ 222
16	+ 238	+ 291	+ 373	+ 216	+ 92	+ 69	+ 64	+ 190	+ 175	+ 256	+ 425	+ 677	+ 256
17	+ 247	+ 294	+ 353	+ 248	+ 141	+ 97	+ 99	+ 158	+ 190	+ 255	+ 478	+ 622	+ 265
18	+ 243	+ 283	+ 392	+ 265	+ 184	+ 136	+ 84	+ 168	+ 266	+ 266	+ 472	+ 664	+ 285
19	+ 254	+ 285	+ 467	+ 339	+ 251	+ 165	+ 64	+ 270	+ 347	+ 275	+ 465	+ 717	+ 325
20	+ 249	+ 299	+ 486	+ 384	+ 298	+ 194	+ 160	+ 348	+ 365	+ 274	+ 488	+ 722	+ 356
21	+ 259	+ 299	+ 476	+ 359	+ 325	+ 237	+ 290	+ 388	+ 352	+ 285	+ 499	+ 722	+ 374
22	+ 267	+ 305	+ 485	+ 364	+ 352	+ 293	+ 363	+ 374	+ 334	+ 282	+ 478	+ 723	+ 385
23	+ 248	+ 281	+ 460	+ 346	+ 395	+ 322	+ 337	+ 362	+ 291	+ 249	+ 472	+ 689	+ 371
24	+ 226	+ 269	+ 423	+ 281	+ 377	+ 312	+ 286	+ 310	+ 252	+ 217	+ 449	+ 655	+ 338
Means 0h.–23h.	+ 246	+ 279	+ 447	+ 273	+ 264	+ 171	+ 185	+ 257	+ 214	+ 220	+ 405	+ 651	+ 301
Means 1h.–24h.	+ 244	+ 280	+ 445	+ 272	+ 264	+ 171	+ 185	+ 257	+ 213	+ 219	+ 409	+ 652	+ 301
Number of Days employed.	8	14	14	14	13	20	14	21	19	13	11	13	...

AMOUNT of RAIN COLLECTED in EACH MONTH of the YEAR 1886.

MONTH, 1886.	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	22	1·920	1·815	2·709	3·063	3·637	3·679	3·701	3·731
February	10	0·405	0·450	0·476	0·508	0·560	0·562	0·574	0·586
March	15	0·489	0·533	0·768	0·885	1·081	1·138	1·074	1·080
April	12	0·635	0·638	0·870	1·083	1·200	1·263	1·251	1·259
May	15	2·970	3·075	3·623	4·039	4·234	4·230	4·235	4·240
June	9	0·252	0·269	0·312	0·403	0·432	0·440	0·406	0·454
July	13	1·908	1·903	2·199	2·326	2·461	2·509	2·432	2·459
August	10	0·773	0·782	0·950	1·040	1·104	1·116	1·093	1·130
September	10	0·677	0·693	0·985	1·169	1·242	1·243	1·214	1·263
October	14	0·789	0·774	1·008	1·246	1·389	1·412	1·386	1·435
November	15	2·052	2·096	2·546	2·784	2·984	3·019	3·051	3·132
December	18	1·789	1·764	2·349	2·796	3·083	3·601	3·581	3·682
Sums	163	14·659	14·792	18·793	21·342	23·407	24·212	23·998	24·451
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

PARHELIA AND PARASELENÆ.

1886.

SOLAR HALO AND PARHELIA OF 1886 APRIL 1.

April 1. About $13^h\ 25^m$ my attention was directed by Mr. McClellan to a remarkably brilliant indication of the upper portion of a solar halo which appeared to be in course of formation. The Sun, although shining with a considerable degree of brilliancy, appeared to be covered with a whitish haze, and detached filamentous clouds were scattered here and there in close proximity.

By $13^h\ 30^m$ the definition of the halo had greatly improved, the upper half of the ring being perfect and exhibiting prismatic colours, whilst near its Western limb a mock sun (S_1, Fig. 1) was faintly indicated.

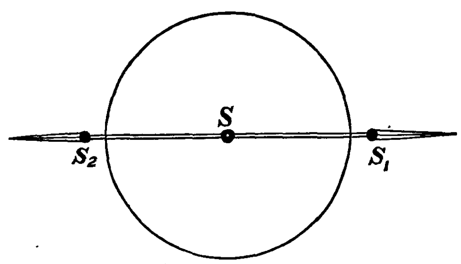


FIG. 1.

The radius of the ring was estimated to be 22°. By $13^h\ 35^m$ the mock sun (S_1) became intense and a second image (S_2) developed itself near the Eastern limb of the circle, which, rapidly intensifying, soon became as bright as the Western indication, both then showing prismatic colours, the orange predominating. Immediately these images had sufficiently brightened it was remarked that they were 5° (or more) outside the circumference of the ring. Shortly afterwards (*i.e.*, before $13^h\ 40^m$), the halo having meanwhile become complete—but the lower portion of the ring being much less intense than the upper—the mock suns were observed to be joined by a faint, white, narrow ligament passing across the Sun, and also to be furnished with lateral tapering spurs of light projecting outwards nearly horizontally for some 10° or 12°. (*See* Fig. 1).

Before $13^h\ 45^m$ these spurs had suddenly prolonged themselves until the sky was completely girdled by a narrow luminous ring, probably $\frac{1}{2}$° in breadth, running parallel to the horizon at an approximate altitude

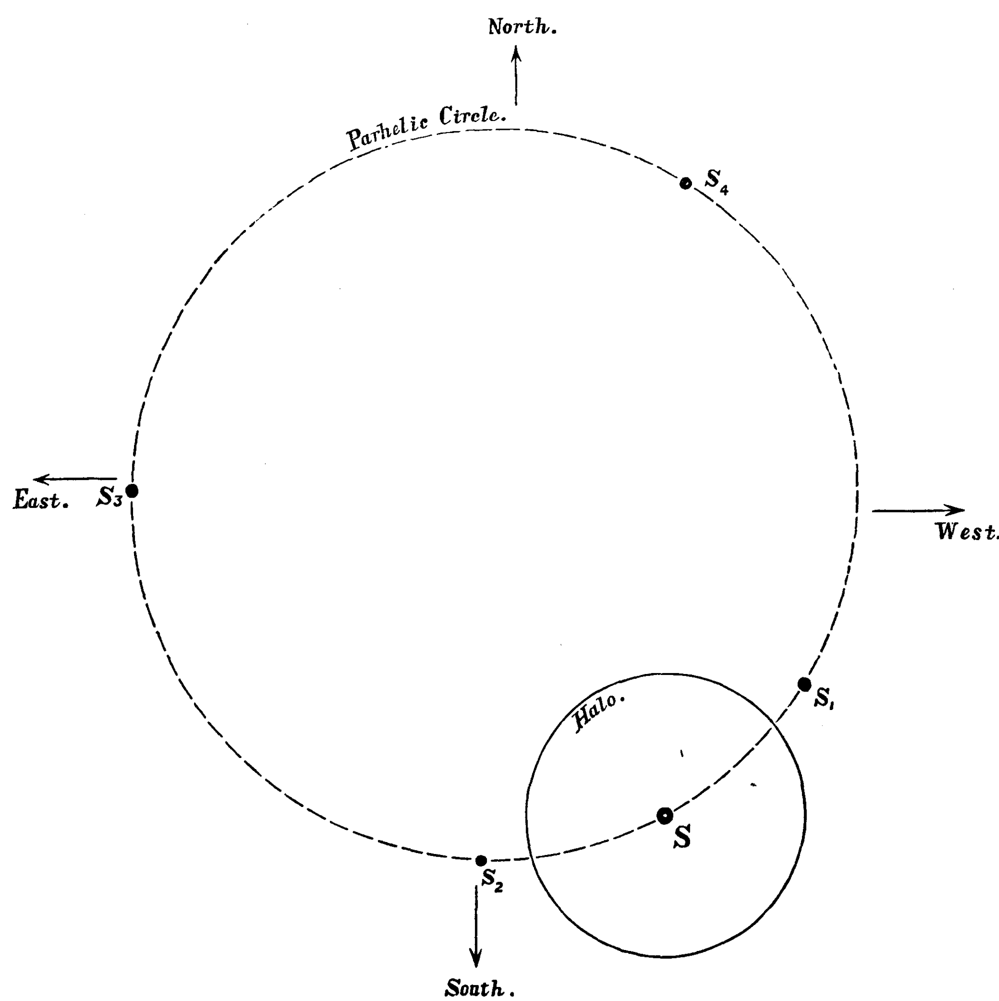


FIG. 2.

of 40°. The parhelic circle thus formed was of pearly whiteness, but of variable intensity, and carried upon its circumference two additional mock suns (those formerly mentioned remaining perfectly bright), one (S_3)

almost due East, and the other (S_4) nearly North-North-West, and therefore almost equidistant from the true Sun. These newly-developed mock suns were perfectly white in colour, and with diameters nearly equal to that of the true Sun, which indeed they resembled so closely that they might readily have been mistaken for it as seen shining through a dense haze (their positions being disregarded).

The condition at $13^h\ 50^m$ is shown in the preceding figure (2).

The mock sun in East (S_3) continued bright until 14^h, that in the Northern sky (S_4) fading earlier but brightening up occasionally, the primary mock suns (S_1 and S_2) appearing meanwhile to retain their pristine brilliancy; but shortly after 14^h the halo and parhelia disappeared completely—portions of the great parhelic circle, however, remained visible until $14^h\ 15^m$, especially in North. At 15^h a small portion of the halo re-appeared with one mock sun near its Western limb; but this appearance continued visible for two or three minutes only. At $15^h\ 15^m$ the upper part of the halo again appeared, by $15^h\ 20^m$ the upper half of the ring was perfect, but without display of colour, and there was a faint indication of a mock sun *on* the Western edge of the ring, with short spur and prismatic colours. $15^h\ 25^m$. Silvery white mock sun now visible *on* Eastern side of ring with tapering spur many degrees long, also of brilliant white colour; nothing visible on Western edge, halo rather faint with indistinct indication of colour. $15^h\ 30^m$. Mock suns of equal brilliancy East and West (on ring), with spurs stretching out some 8° or 10° and tapering (*see* Fig. 3), continued thus with little change until 16^h, then faded away gradually. A faint indication of a mock sun was noticed as late as $16^h\ 40^m$, but the halo was not visible then.

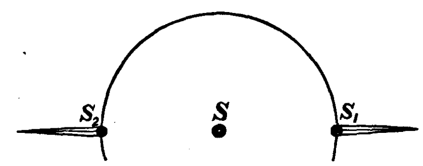


FIG. 3.

W. C. NASH.

April 1d $13^h\ 30^m$. Faint mock sun has just formed on West of Sun.

$13^h\ 33^m$. Mock sun becoming brighter, and second mock sun forming on East of Sun.

$13^h\ 35^m$. Solar halo becoming brighter, and mock suns throwing tapering lines of light towards the Sun.

$13^h\ 40^m$. Complete solar halo, and imperfect parhelic circle; on the circumference of which are four mock suns.

$13^h\ 45^m$. Parhelic circle now complete; upper part of solar halo very bright, lower part wanting; mock suns very bright.

$14^h\ 10^m$. Parhelic circle in East very bright; mock suns faint.

$14^h\ 20^m$. Mock sun in North, and a fragment of parhelic circle still visible; upper part of solar halo forming.

$14^h\ 30^m$. Solar halo has disappeared.

$15^h\ 3^m$. Mock sun on West of Sun.

$15^h\ 30^m$. Mock sun on East of Sun.

$15^h\ 35^m$. Mock suns East and West of Sun, Eastern one throwing out a spur a short distance.

$16^h\ 3^m$. Faint mock suns on West and East of Sun.

$17^h\ 45^m$. Faint upper part of solar halo, and mock sun on East of Sun; the mock sun displayed a delicate orange tint.

$18^h\ 15^m$. Very faint upper part of solar halo still visible; solar halo not seen after $18^h\ 20^m$.

E. McCLELLAN.

April 1. The differences of azimuth between the Sun and the mock suns S_3 and S_4 of Mr. Nash's numeration were independently estimated as follows:—

Observer.	Differences of Azimuth counting Westward. S to S_4.	S_4 to S_3.	S_3 to S.	
	°	°	°	
Mr. Ellis - - - -	115	130	115	By separate numerical estimation.
Mr. Nash - - - -	120	120	120	By estimation.
Mr. Lewis - - - -	123	115	122	Measured from a sketch.
Means - -	119	122	119	

Indicating that the difference of azimuth was in each case really 120°.

At 14^h, Mr. Turner, with the transit-circle, found the altitude of the parhelic circle at the point at which it crossed the North meridian to be 37°, it being well seen; at the point at which it crossed the South meridian the altitude was similarly found to be 40°, but the circle was not distinctly visible at this point.

At $14^h\ 15^m$, Mr. Turner, with the altazimuth, found the altitude of S_3 and S_4 to be each 35°, which, assuming them to partake of the change of the Sun's altitude, would give $36\frac{1}{2}°$ for their altitude at 14^h.

Thus we have for the altitude of the parhelic circle at 14^h:—

	°	
On North meridian, by transit-circle - - - - -	37	
„ South „ „ „ - - - - -	40	Doubtful observation.
Observation of S_3, by altazimuth - - - - - -	$36\frac{1}{2}$	
„ S_4, „ - - - - - -	$36\frac{1}{2}$	

The calculated altitude of the Sun at 14^h was 37°, which was therefore the altitude of the parhelic circle at this point. Thus the altitude of the parhelic circle was evidently everywhere the same.

PARASELENÆ OF 1886 MAY 18-19.

May $18^d\ 23^h\ 20^m$. Mock moons on West and East of Moon, the one on West being very bright, and displaying prismatic colours.

$23^h\ 21^m$. Mock moon on West throwing out a spur about 7°.

$23^h\ 23^m$. Mock moon on East has disappeared; one on West fainter, and spur contracted; thin cloud prevalent.

$23^h\ 25^m$. Both mock moons have disappeared.

$23^h\ 28^m$. Cloud clearing off; mock moon on West again visible, but without spur.

$23^h\ 29^m$. Mock moons on West and East of Moon.

$23^h\ 30^m$. Mock moon on East much brighter, the one on West scarcely visible.

$23^h\ 31^m$. Mock moon on East becoming fainter.

$23^h\ 33^m$. Mock moons on West and East becoming brighter.

$23^h\ 34^m$. Mock moons very bright, each throwing out a spur.

$23^h\ 35^m$. Both mock moons fading.

$23^h\ 37^m$. Mock moon on West has disappeared; one on East still faintly visible.

$23^h\ 38^m$. Mock moon on East has disappeared.

$23^h\ 40^m$. Mock moon on West again visible.

$23^h\ 41^m$. Mock moon has disappeared, sky becoming cloudy.

„ $19^d\ 0^h\ 0^m$. Clouds clearing off.

$0^h\ 2^m$. Mock moon on East of Moon again visible, for a few seconds only.

$0^h\ 5^m$. Mock moons on West and East of Moon, the Western one much the brighter.

$0^h\ 6^m$. Mock moon on East has disappeared, one on West faint.

$0^h\ 7^m$. Part of Lunar halo on West of Moon passing through mock moon.

$0^h\ 8^m$. Mock moon and halo have disappeared.

E. McCLELLAN.

ROYAL OBSERVATORY, GREENWICH.

OBSERVATIONS

OF

LUMINOUS METEORS.

1886.

Month and Day, 1886.		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		°	
April	30	21. 20. 11	L.	3	White	0·5	None	...	1
August	10	23. 51. 20	M.	2	Bluish-white	0·5	None	15	2
August	11	0. 6. 39	M.	2	Bluish-white	0·5	Slight	10	3
	„	0. 9. 55	M.	3	Bluish-white	0·3	None	5	4
	„	0. 12. 50	M.	2	Bluish-white	0·5	None	12	5
	„	0. 15. 54	M.	2	Blue	0·5	Faint	10	6
	„	0. 20. 4	M.	3	Bluish-white	0·3	None	5	7
	„	0. 22. 8	M.	3	Bluish-white	0·3	None	8	8
	„	0. 26. 37	M.	1	Blue	0·5	Train	15	9
	„	0. 37. 9	M.	1	Bluish-white	0·5	None	12	10
	„	0. 43. 20	M.	2	Bluish-white	0·3	None	8	11
	„	0. 57. 40	M.	3	Bluish-white	0·3	None	5	12
	„	0. 59. 7	M.	2	Bluish-white	0·5	Slight	8	13
	„	1. 1. 13	M.	3	Blue	0·3	None	5	14
	„	1. 5. 2	M.	2	Bluish-white	0·7	Train	12	15
	„	1. 8. 27	M.	1	Blue	0·7	Fine	20	16
	„	1. 14. 39	M.	3	Blue	0·3	Slight	8	17
	„	1. 22. 48	M.	2	Bluish-white	0·5	Train	10	18
	„	1. 23. 53	M.	2	Bluish-white	0·5	Train	10	19
	„	1. 29. 10	M.	3	Bluish-white	0·5	Slight	8	20
	„	1. 30. 17	M.	1	Bluish-white	0·8	Train	15	21
	„	1. 35. 22	M.	2	Bluish-white	0·5	None	12	22
	„	1. 40. 23	M.	2	Bluish-white	0·5	Train	10	23
	„	1. 42. 5	M.	2	Bluish-white	0·5	Train	10	24
	„	1. 48. 58	M.	2	Bluish-white	0·5	None	12	25
	„	1. 53. 27	M.	3	Bluish-white	0·3	None	7	26
	„	1. 55. 50	M.	3	Bluish-white	0·3	None	8	27
	„	2. 1. 15	M.	2	Blue	0·5	Train	15	28
	„	2. 12. 45	M.	1	Blue	1·0	Fine (visible for about 3 seconds)	25	29
	„	22. 15. 52	F.	2	White	0·5	None	7	30
	„	22. 26. 12	F.	2	Bluish-white	0·5	None	10	31
	„	22. 58. 13	F.	1	Bluish-white	0·8	Train	7	32
	„	23. 50. 23	F.	1	White	0·8	Train	5	33
August	12	0. 23. 33	F.	1	White	0·5	None	5	34
October	2	19. 59. ±	N.	1 (brilliant)	White	...	Train	20	35
	„	20. 5. 6	N.	4	White	2·0	None	2 to 3	36
	„	21. 57. 12	H.	2	Bluish-white	0·3	None	8	37
	„	22. 10. ±	N.	2	White	0·8 (rapid)	Train	...	38
	„	22. 15. 4	H.	2	Bluish-white	0·3	None	10	39
	„	22. 16. 17	N.	3	White	0·5	None	5	40
	„	22. 23. 21	N.	2	White	1 (rapid)	Faint	15	41
	„	22. 24. 45	H.	3	Bluish-white	0·2	None	10	42
	„	22. 32. 3	H.	1	White	0·3	None	8	43
	„	22. 43. 34	H.	4	Bluish-white	0·2	None	8	44
October	6	21. 22. 6	H.	2	Bluish	0·5	Slight	10	45
	„	21. 42. 19	H.	2	Reddish	0·6	None	20	46
	„	21. 58. 21	H.	3	Bluish-white	0·2	None	8	47

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 near β Ursæ Majoris to near θ Ursæ Majoris.
2	From direction of Capella disappeared a little beyond ι Aurigæ.
3	From near δ Persei towards Capella.
4	From α Persei towards β Persei.
5	From midway between α and β Trianguli fell perpendicularly downwards.
6	From a point a few degrees to left of α Persei towards ε Aurigæ.
7	From direction of α Persei to β Persei.
8	Shot from γ Andromedæ towards β Persei.
9	From a point a few degrees below β Ursæ Minoris across ε Ursæ Majoris.
10	From direction of Polaris passed across and disappeared beyond β Ursæ Minoris.
11	From direction of β Persei towards ζ Persei.
12	From α Persei to δ Persei.
13	From near ε Cassiopeiæ to η Persei.
14	From direction of Capella across β Aurigæ.
15	Appeared near β Persei and disappeared near the Pleiades.
16	Shot from a point a few degrees below Polaris and disappeared beyond γ Ursæ Minoris.
17	From direction of α Andromedæ towards β Andromedæ.
18	From near α Draconis passed between ζ and ε Ursæ Majoris.
19	From near κ Draconis towards ζ Ursæ Majoris.
20	From near ο Ursæ Majoris towards ι Ursæ Majoris.
21	From near κ Draconis disappeared near ζ Ursæ Majoris.
22	From direction of η Pegasi towards α Pegasi.
23	From a little to left of η Pegasi to α Andromedæ.
24	From δ Cygni to α Lyræ.
25	From a point about midway between α and 13 Lyræ towards ι Herculis.
26	From a little below δ Cygni to η Cygni.
27	From direction of β Sagittæ disappeared near γ Aquilæ.
28	From direction of α Pegasi towards γ Pegasi.
29	From a point about 5° above α Lyræ towards ε Herculis.
30	From near μ Persei dropped vertically downwards.
31	Appeared a few degrees above ζ Pegasi disappeared a little above and beyond θ Pegasi.
32	From near ο Cephei to κ Cassiopeiæ.
33	Appeared near 40 Cassiopeiæ moving towards γ Camelopardali.
34	Appeared near 41 Arietis dropped vertically downwards.
35	From a point 2° or 3° to left of ζ Cygni to a point between ε Pegasi and δ Equulei.
36	Appeared between θ and ζ Pegasi moving towards α Pegasi.
37	From between the Pleiades and ε Arietis moved towards ζ Persei.
38	From direction of β Andromedæ passed 7° or 8° to left of γ Pegasi on path parallel to a line joining γ Pegasi and ω Piscium.
39	From a point near β Camelopardali to Capella.
40	Moving from direction of γ Pegasi disappeared near η Piscium.
41	From direction of β Arietis passed 2° or 3° above η Ceti.
42	From direction of ζ Persei disappeared a few degrees South of the Pleiades.
43	From direction of β Piscium towards φ Aquarii.
44	From between α Andromedæ and α Pegasi disappeared near μ Pegasi.
45	From between β Andromedæ and α Trianguli passed between γ Andromedæ and β Trianguli.
46	From direction of ζ Aquilæ to α Ophiuchi. Path slightly curved.
47	From direction of γ Arietis disappeared near ξ Arietis.

Month and Day, 1886.		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	6	22. 17. 13	H.	1 (brilliant)	Bluish-white	0·5	Slight	25	1
	„	22. 41. 8	H.	1	Bluish-white	0·2	Slight	10	2
October	18	21. 23. 10	F.	1	Bluish-white	1·0	Slight	10	3
	„	22. 16. 35	F.	> 1	Blue	1·2	Fine	15	4
	„	22. 29. 50	F.	1	Blue	0·3	None	3	5
October	22	19. 31. 9	H.	2	Bluish-white	0·5	None	12	6
	„	19. 33. 23	H.	4	Bluish-white	0·3	None	5	7
	„	19. 44. 43	H.	1	Yellowish	0·6	Slight	10	8
	„	20. 56. 20	H.	2	Bluish-white	...	...	...	9
	„	21. 28. 40	H.	4	Bluish-white	0·3	None	8	10
	„	21. 37. 6	H.	2	Bluish-white	0·6	None	20	11
	„	21. 55. 37	H.	4	Bluish-white	0·2	None	6	12
	„	22. 9. 10	H.	2	Bluish-white	0·2	None	8	13
	„	22. 55. 28	H.	1	Bluish-white	0·3	None	8	14
October	23	19. 11. 58	F.	2	Bluish-white	0·3	None	7	15
November	30	20. 1. 25	H.	2	Bluish-white	0·5	None	10	16
	„	20. 14. 32	H.	3	Bluish-white	0·3	None	4	17
	„	20. 21. 28	H.	1	Bluish-white	0·6	None	10	18
	„	20. 48. +	H.	1	Bluish-white	0·5	None	8	19
	„	22. 26. 47	H.	2	Bluish-white	0·4	None	12	20
December	9	21. 19. 12	H.	1	Bluish-white	0·6	None	10	21
December	12	20. 43. 30	N.	> Venus	White	> 1	None perceived	15	22
	„	20. 46. 0	N.	> 1	White	0·5	None	8	23
December	14	17. 54. 30	N.	> 1	White	3	...	25	24

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 direction of Polaris towards a point between ζ Ursæ Majoris and α Draconis.
2	From near δ Aurigæ travelled in the direction of β Ursæ Minoris.
3	From near η Draconis fell vertically downwards.
4	From near 9 Pegasi passed across and disappeared beyond υ Cygni.
5	From a little below γ Cephei towards 47 Cassiopeiæ.
6	From direction of δ Cassiopeiæ towards β Andromedæ.
7	From direction of α Trianguli to β Andromedæ.
8	From a point near κ Persei passed between δ and ε Persei.
9	From direction of δ Andromedæ disappeared near γ Arietis.
10	From direction of β Cephei towards γ Cephei.
11	From near ι Pegasi travelled towards α Aquilæ.
12	From direction of α Arietis disappeared near ρ Piscium.
13	From near γ Pegasi disappeared near ω Piscium.
14	From direction of 9 Pegasi towards a point between θ and ε Pegasi.
15	From near 72 Ophiuchi to 67 Ophiuchi.
16	From direction of a point near σ Andromedæ disappeared a little above β Pegasi.
17	From near ε Aurigæ to Capella.
18	From near μ Cassiopeiæ passed between β and γ Cassiopeiæ and disappeared a few degrees beyond.
19	From direction of Castor to θ Geminorum.
20	From direction of γ Tauri towards ν Tauri.
21	From near β Cassiopeiæ travelled towards α Lacertæ.
22	Passed nearly midway between α Lyræ and δ Cygni moving from direction of Polaris.
23	Passed close to β Ursæ Majoris moving towards horizon on path nearly parallel to line joining α and γ Ursæ Majoris.
24	Nearly horizontal path through lower part of Taurus and passing some degrees below α Ceti towards Aquarius.