RESULTS

OF THE

MAGNETICAL AND METEOROLOGICAL

OBSERVATIONS

MADE AT

THE ROYAL OBSERVATORY, GREENWICH,

IN THE YEAR

1890:

UNDER THE DIRECTION OF

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

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INDEX.

PAGE

INTRODUCTION—*continued.*

PAGE

PAGE

RESULTS OF MAGNETICAL AND METEOROLOGICAL OBSERVATIONS—*continued.*

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 1890 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 by five Computers. The Computers employed at different times during the year were, Ernest E. McClellan, Edward Finch, Francis H. W. Hope, Richard R. Tweed, George A. Allworth, and Thomas F. Claxton.

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. In January of the year 1889 two additional gas stoves were provided with the object of maintaining a higher temperature during the winter and so rendering the Basement temperature more uniform throughout the year. One of these stoves is placed in the northern corner of the eastern arm, and the other in the middle of the western wall of the western arm. 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. In January 1886 a line of 9-inch pipes was laid underground from the Basement southward to a distance of about 155 feet, at which point there is an inlet from the atmosphere, for the purpose of ventilating the Basement 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 5 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 there are 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 old photographic dry-bulb and wet-bulb thermometer apparatus, used only in case of temporary interruption of the new 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 ordinary 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. A little to the east of the thermometer stand is placed a Stevenson screen containing dry bulb, wet bulb, and maximum and minimum thermometers.

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.

In the ground south of the Magnet Offices (known as the South Ground) is the new photographic dry-bulb and wet-bulb thermometer apparatus, mounted in the year 1885; it is generally similar to the old apparatus but with some important modifications, of which an account is given in the proper Section.

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

On 1883 March 3 the iron tube of the Lassell reflecting telescope was brought into the South Ground, and on March 9 the iron 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* 1890.

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 the magnetical and meteorological 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}·3, equivalent to 1″·4.

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

The reading for the line of collimation of the theodolite telescope was found, by ten double observations, 1890 April 11, to be 100^{r}·362, by ten double observations, 1890 August 11, 100^{r}·350, by ten double observations, 1890 September 22, 100^{r}·355, and by ten double observations, 1890 December 24, 100^{r}·358. The value used throughout the year 1890 was 100^{r}·350.

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 1888 December 3, which showed that in the ordinary position of the glass the theodolite readings were diminished by 20″·0. Each of two other sets of observations, made on 1889 December 2 and 1890 August 11, gave 19″·4 and 19″·7 respectively. The mean of these, 19″·7 has been added to all readings throughout the year 1890.

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 1890 was 26′. 3″·2, being the mean of determinations made on 1886 November 10, 1887 December 8, 1888 December 3, 1889 December 4, and 1890 August 12, giving respectively 26′. 3″·5, 26′. 9″·5, 26′. 0″·6, 24′. 54″·2, and 26′ 8″·2. With the collimator in its usual position, above the magnet, the quantity 26′. 3″·2 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 the torsion bar (an oak 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 bar is thus inserted usually about once a month, and whenever the adjustment is found not to have been sufficiently close, the observed positions of the magnet are corrected for displacement of the magnet from the meridian by the torsion of the skein. Such correction is determined experimentally, with the magnet in position, by changing the reading of the torsion-circle by a definite amount, usually 90°, thus giving the skein that amount of azimuthal twist, and observing, with the theodolite, the change in the position of the magnet thereby produced, from which is derived the ratio of the couple due to torsion of the skein to the couple due to the earth's horizontal magnetic force. This ratio was, on 1889 December 4, found to be $\frac{1}{149}$, on 1890 August 12, $\frac{1}{152}$, and on 1891 November 26, $\frac{1}{150}$. During the year 1890 the plane in which the suspension skein was free from torsion so nearly coincided with the magnetic meridian, that no correction of the absolute measures of magnetic declination for deviation of the plane of no torsion was required.

The time of vibration of the upper declination magnet under the influence of terrestrial magnetism was found on 1889 December 2, to be $30^{s}\cdot88$, on 1890 August 13, $31^{s}\cdot08$, and on 1891 November 25, $31^{s}\cdot03$.

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 from January 1 to May 29, was 27°. 4′. 48″·0, and from June 2 to the end of the year, 27°. 5′. 44″·9. Between May 29 and June 2, the instrument was under repair.

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.

The accuracy of the measure of absolute declination by the upper declination-magnet depends on the condition that this magnet should be vertically over the lower magnet. But the arrangements are such that with the gradual decrease of declination, the upper magnet has to be shifted more and more to the west in order that it may be viewed by its theodolite, the position of which on its pier cannot be altered. In order to determine whether the consequent change in the relative position of the two magnets has in late years increased to such an extent that any measurable mutual influence would exist, the upper magnet has on two different occasions (once in the year 1887 and once in the year 1889) been temporarily removed to the ante-room, where its influence would be quite insensible. On both occasions the photographic register of the lower magnet showed no perceptible change of position. Conversely, the removal of the lower magnet would not influence the position of the upper one, which is used for absolute measure.

LOWER DECLINATION MAGNET.—The lower declination magnet is used simply for the purpose of obtaining photographic register of the variations of magnetic declination. It is by Troughton and Simms, and is of the same dimensions as the upper declination magnet, being 2 feet long, 1½ inch broad, and ¼ inch thick. The magnet is suspended, in the Magnet Basement, immediately below the upper declination magnet, in order that the absolute measure of declination by the upper magnet should not be affected by the proximity of the lower magnet.

The manner of suspension of the magnet is in general similar to that of the upper declination magnet, the suspension pulleys being carried by a small pier built on one of the crossed slates resting on the brick piers rising 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 torsion 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 of the magnet and the registering cylinder, and its distance from the mirror is about 25 inches. The distance of the axis of the registering cylinder from the 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) extending from end to end of the cylinder and facing opposite ways towards the mirrors carried by the declination and horizontal force magnets respectively. The front surface of each prism is convex, being a portion of a horizontal cylinder. The light of the declination lamp, after passing through the vertical slit, falls on the concave mirror and is thence reflected as a converging beam to form an image of the slit on the convex surface of the reflecting prism, by the action of which it is reflected downwards to the paper on the cylinder as a small spot of light. The concave mirror can be so adjusted in azimuth on the magnet that the spot shall fall not at the centre of the cylinder but rather towards its western side, in order that the declination trace shall not interfere with that of horizontal force, which is made to fall towards the eastern side of the cylinder. The special advantage of the arrangement here described is that the registers of both magnets are made at the same part of the circumference of the cylinder, a line joining the two spots being parallel to its axis, so that when the traces on the paper are developed, the parts of the two registers which appear in juxtaposition correspond to the same Greenwich time.

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

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

The usual hour of changing the photographic sheet is noon, but on Sundays, and occasionally on other days, this rule is not strictly followed. To obviate any uncertainty that might arise on such occasions from the interference of the two ends of a trace slightly longer than 24 hours, it has been arranged that one revolution of the cylinder should be made in 26 hours. The actual length of 24 hours on the sheet is about 13·3 inches.

The scale for measurement of ordinates of the photographic curve is thus determined. The distance from the concave mirror carried by the magnet 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.

On July 16 the suspension skein of the lower declination magnet gave way: it was replaced by a new one, and registration recommenced on July 19.

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 circle-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 1889 December 31 the following observations were made for determination of the angle of torsion :—

1889, Day.	The Marked End of the Magnet.							
	West.				East.			
	Torsion-Circle Reading.	Scale Reading.	Difference of Scale Readings for change of 1° of Torsion-Circle Reading.	Mean of the Times of Vibration.	Torsion-Circle Reading.	Scale Reading.	Difference of Scale Readings for change of 1° of Torsion-Circle Reading.	Mean of the Times of Vibration.
	°	div.	div.	s	°	div.	div.	s
Dec. 31	146	48·68		21·26	230	45·87		20·74
			9·10				7·62	
	147	57·78		21·04	231	53·49		20·92
			7·72				8·26	
	148	65·50		20·86	232	61·75		21·06

From these observations it appeared that the times of vibration and scale readings were sensibly the same when the torsion circle read 147°. 10′, marked end west, and 231°. 40′, marked end east, the difference being 84°. 30′. Half this difference, or 42°. 15′, is therefore the angle of torsion when the magnet is transverse to the meridian. Another set of observations made 1890, August 6, gave 42°. 9′·5. The value adopted in the reduction of the observations during the year 1890 was 42°. 10′.

The adopted reading of torsion-circle, for transverse position of the magnet, the marked end being west, was 147° throughout the year.

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

The length of $30^{div}·85$ of the fixed scale is exactly 12 inches, and the distance of the centre of the face of the plane mirror from the scale 90·84 inches; consequently the angle at the mirror subtended by one division of the scale is 14′. 43″·2, or for change of one division of scale-reading the magnet is turned through an angle of 7′. 21″·6.

The variation of horizontal force, in terms of the whole horizontal force, producing angular motion of the magnet corresponding to change of one division of scale reading = cotan. angle of torsion × value of one division in terms of radius. Using the numbers above given, the change of horizontal force corresponding to change of one division of scale reading was found to be 0·002364, which value has been used throughout the year 1890 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, 16^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 the Introduction for 1886, shows that the correction for reduction to temperature 32° (expressed in terms of the horizontal force) is $(t-32) \times \cdot 0000936 + (t-32)^2 \times \cdot 000002074$ 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°.

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 52¾° 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 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 60 observations made during the course of the year this was found to be $19^{s}\cdot734$.

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 1889 December 30 gave for the time of vibration of the magnet in the horizontal plane, $16^{s}\cdot934$. This value has been used throughout the year 1890.

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

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 $T' = 16^{s}\cdot934$, $T = 19^{s}\cdot734$, and dip = $67°. 23'$, the change of vertical force corresponding to change of one division of scale reading was found to be 0·0004029, 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}, 16^{h}, and 21^{h}, Greenwich civil time. An index correction of $-0°\cdot3$, 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 of the magnet 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, 6·533 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. Further observations made in the years 1885 and 1886, of which particulars are given at the end of the Introduction for 1886, 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.

DIP INSTRUMENT.—The instrument with which the observations of magnetic dip are made is that which is known as Airy's instrument. It was constructed by Messrs. Troughton and Simms, and 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 the late 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.

The observed dip given by the 9-inch needles is as usual smaller than that given by the 6-inch needles, and that given by the 6-inch needles smaller than that given by the 3-inch needles. In the *Philosophical Magazine* for March 1891, Professor Schuster, referring to a remark of Dr. Joule's, that the flexure of a dip needle tends to diminish the apparent dip, has estimated the effect on the observed dip of the displacement of the centre of gravity by the flexure of the needle, for the Greenwich needles of 3 inches, 6 inches, and 9 inches in length, and finds that a great part of the difference observed at Greenwich could be thus accounted for. It would appear that for absolute determination of dip empirical corrections should be applied to the results found from the longer needles, but there is at present much uncertainty as to the data for computing these corrections.

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 $1^{ft}\cdot0$ east to $1^{ft}\cdot0$ west of the engraved scale, at temperature 62°, is too long by 0·0034 inch, and the distance from $1^{ft}\cdot3$ east to $1^{ft}\cdot3$ 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 $\dfrac{\text{Log. } A_1 - \text{Log. } A_2}{\text{modulus}} \times \dfrac{r_1^2 \times r_2^2}{r_2^2 - r_1^2} = (\text{Log. } A_1 - \text{Log. } A_2) \times 5{\cdot}64.$

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 $0{\cdot}46108 = \frac{1}{2{\cdot}1689}$. The values of X in metric measure thus derived from those in English measure are given in the proper table. Values of X in terms of the centimètre and gramme, known as the C.G.S. unit (centimètre-gramme-second unit), are readily obtained by dividing those referred to the millimètre and milligramme by 10.

EARTH CURRENT APPARATUS.—For observation of the spontaneous galvanic currents which in some measure are almost always discoverable in the earth, and which are occasionally very powerful, two insulated wires having earth connexions at Angerstein Wharf (on the bank of the River Thames near Charlton) and Lady Well for one circuit; and at the Morden College end of the Blackheath Tunnel and the North Kent East Junction of the South-Eastern Railway for the other circuit, have been employed. The connecting wires, which are special and used for no other purpose, pass from the Royal Observatory to the Greenwich Station of the South-Eastern Railway, and thence, by kind permission of the Directors of the South-Eastern Railway Company, along the lines of the 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, 49°; in the Blackheath—North Kent East Junction circuit the direct distance is 2½ miles, and the azimuth, from magnetic north towards west, 47°. The actual lengths of wire in the circuitous courses which the wires necessarily take in order to reach the Observatory registering apparatus are about 7½ miles and 5 miles respectively. The identity of the four branches is tested from time to time as appears necessary.

In each circuit at the Royal Observatory there is placed a horizontal galvanometer, having its magnet suspended by a hair. Each galvanometer coil contains 150 turns of No. 29 copper wire, or the double coil of each instrument consists of 300 turns of wire, the resistance as found by direct measurement being 7·3 ohms. For registration of the larger earth currents, a portion only of the current is allowed to pass through the galvanometer, while the greater part flows through a shunt, consisting of a short coil of fine copper wire, the resistance of which is 1·33 ohms. The amplitude of the movement, having regard to the diminution of resistance in the circuit due to the shunt, is by this reduced in the ratio of 6·3 to 1 nearly in both circuits. On a few days in each month registers on a large scale, for determination of the small diurnal inequality in earth currents, are obtained by removing the shunts, but no discussion of these registers has yet been made, on account of the difficulty of eliminating the effect of certain small dislocations of the Angerstein Wharf—Lady Well register, which occur usually shortly after sunset and before sunrise. It is suspected that these are due to electric lighting in the neighbourhood of the Angerstein Wharf earth-plate. The galvanometers 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, thev 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 is only one day in the year 1890 which has been classed as a day of great disturbance, viz. November 7–8. Other days of lesser disturbance are January 3–4, 20–21, February 3–4, March 15–16, May 5–6, July 19, 20, August 14–15, 15–16, September 6–7, 11–12, 15–16, 19–20, October 5–6, 10–11, 17–18, 18–19, November 9, 14–15. 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 day 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 on account of disturbed days, or from other causes, in the formation of Tables I. and II., for declination, are June 17, July 16 to 19, 22, November 8 ; in Tables III. to VI. for horizontal force, are August 6, November 8, December 30, 31 ; and in Tables VII. to X. for vertical force, are November 8, December 29, 30, 31. 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. By means of the two additional stoves placed in the basement at the beginning of the year 1889, as mentioned on page *v*, the temperature of the basement has also been kept nearly constant throughout the year. In years preceding 1883 the results for horizontal and vertical force were 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 $(t-32) \times \cdot 0000936 + (t-32)^2 \times \cdot 000002074$ (page *xx*) where t is the temperature in degrees Fahrenheit, and to those of vertical force, Tables VII. and IX., the correction $-(t-32) \times \cdot 000212$ (page *xxiv*). 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 were entered into a form having double arguments, as for the magnets, the mean hourly values deduced therefrom giving for each 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, 16^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 nine 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.

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

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

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

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

$$\text{H.F. in metrical measure} \times \sin 1' = 1{\cdot}8234 \times \sin 1' = 0{\cdot}0005304.$$

For variation of horizontal force, the factor is

$$\text{H.F. in metrical measure} = 1{\cdot}8234,$$

and for variation of vertical force

$$\text{V. F. in metrical measure} = \text{H. F. in metrical measure} \times \tan \text{dip},$$
$$= 1{\cdot}8234 \times \tan 67^\circ.23' = 4{\cdot}3768.$$

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 bv 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 gretaest 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 in 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.

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

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

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

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

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

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

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

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

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

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 :—

1890.	a_5.	b_5.
Declination	′ −0·07	′ −0·02
Horizontal Force......	+0·5	−1·5
Vertical Force	+0·6	0·0

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 1890.			Declination.	Horizontal Force.	Vertical Force.
Sums of Squares of Observed Values (Table XII.)			195·34	206354·6	11993·0
Sums of Squares of Residuals after the introduction of m			91·46	31711·4	2224·3
"	"	a_1 and b_1	32·38	8545·9	1236·0
"	"	a_2 and b_2	6·91	2321·1	196·1
"	"	a_3 and b_3	1·01	633·3	28·4
"	"	a_4 and b_4	0·07	45·3	11·4
"	"	a_5 and b_5	0·01	16·1	7·8

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. The observed result in each month has been also given as reduced to the mean value for the month, by application of the difference between the horizontal force ordinate at the time of observation and the mean value for the month, as obtained from the photographic register.

In order to facilitate the comparison of the diurnal inequalities of magnetism at the different British magnetic observatories an arrangement has been made with the Sub-Committee of the Kew Committee of the Royal Society by which five quiet days are to be selected at Greenwich in each month of every year, for adoption at all these observatories for determination of the monthly diurnal inequalities of declination, horizontal force, and vertical force; thus providing for further discussion results which should be strictly comparable. The particular days selected are given on page (xvii), and the results found for Greenwich are contained in Tables XX., XXI., and XXII., which it is interesting to compare with the values found from the records of all days, as given in Tables II., V., IX. and XII.

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 (*xxx*).

The list of these days since the year 1889 has been selected in concert with M. Mascart, so that the two Observatories of the Parc Saint Maur and Greenwich should publish the magnetic registers for the same days of disturbance with a view to the comparison of the results. It is proposed to follow this plan in future years, and if other magnetic observatories should eventually join in the scheme for concerted action, in regard to the publication of their registers the discussion of magnetic perturbations would be much facilitated.

The plates are preceded by a brief description of *all* other 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 1890, 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).

An additional plate (VII.) 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 correction of the magnets, given at page *xxxi*, 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.

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.	mm.	in.	mm.	in.	mm.
On the Photographs	4·691	119·15	2·478	62·94	6·533	165·94
On the Plates	2·580	65·53	1·363	34·62	3·593	91·26

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. At the foot of each plate equivalent scales, in C. G. S. Measure, are given for each of the magnetic registers. (See page *xxxvii*).

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

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

= ·0175 of Horizontal Force

and Vertical Force = Horizontal Force × tan. dip [dip = 67°. 23′]

= Horizontal Force × 2·4004

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.	mm.	in.	mm.	in.	mm.
On the Photographs	2·68	68·1	2·48	62·9	2·72	69·1
On the Plates -	1·47	37·4	1·36	34·6	1·50	38·0

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 1890 = 3·9546
Millimètre-milligramme-second, or Metric unit, " " " = 1·8234
Centimètre-gramme-second, or C. G. S. unit, " " " = 0·18234

Dividing therefore the scale values last given by 3·9546, 1·8234, and 0·18234 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.	mm.	in.	mm.	in.	mm.	in.	mm.	in.	mm.	in.	mm.
British - -	0·68	17·2	0·37	9·5	0·63	15·9	0·34	8·8	0·69	17·5	0·38	9·6
Metric - -	1·47	37·3	0·81	20·5	1·36	34·5	0·75	19·0	1·49	37·9	0·82	20·9
C. G. S. - -	14·7	373·	8·1	205·	13·6	345·	7·5	190·	14·9	379·	8·2	209·

The scale values for the earth-current registers have been determined by measurement of the movement on the photographic sheet produced by the current from a standard Daniell cell, through a known resistance, in combination with determinations of the resistance of each earth-current circuit by means of an electrical balance. The movement on the photographic sheet corresponding to a definite current has been, however, found to vary for both galvanometers in an unexpected way. The whole of the measures that have been made are given in the following table :—

Angerstein Wharf—Lady Well Galvanometer.				
Date.	Resistance employed in ohms.	Displacement of spot of light on photographic sheet, in inches.	Current in ampères.	Current in ampères corresponding to 1 inch displacement.
1886.				
Oct. 21	900	2·00	·00117	·00059
1887.				
Sept. 29	600	2·72	·00173	·00064
29	600	2·76	·00173	·00063
29	800	2·07	·00131	·00063
1889.				
Sept. 27	400	3·58	·00257	·00072
30	800	1·69	·00131	·00078
30	800	1·69	·00131	·00078
Oct. 2	600	2·32	·00173	·00075
4	600	2·35	·00173	·00074
4	600	2·37	·00173	·00073
9	600	2·43	·00173	·00071
1890.				
Apr. 11	800	1·77	·00131	·00074
24	400	3·86	·00257	·00067
24	800	1·87	·00131	·00070
Oct. 3	600	1·03	·00173	·00168
3	600	1·02	·00173	·00170
4	600	1·00	·00173	·00173
4	800	0·79	·00131	·00166
Nov. 5	400	1·51	·00257	·00170
5	200	2·91	·00493	·00169
6	300	2·00	·00338	·00169
6	800	0·81	·00131	·00162
1891.				
Jan. 14	400	1·54	·00257	·00167
14	1200	0·59	·00088	·00149
June 22	400	2·75	·00257	·00093
22	800	1·40	·00131	·00094
23	400	2·90	·00257	·00089
1892.				
Feb. 2	400	2·33	·00257	·00110
2	800	1·21	·00131	·00108

Blackheath—North Kent East Junction Galvanometer.				
Date.	Resistance employed in ohms.	Displacement of spot of light on photographic sheet, in inches.	Current in ampères.	Current in ampères corresponding to 1 inch displacement.
1886.				
Oct. 21	900	1·88	·00117	·00062
1887.				
Sept. 28	600	2·32	·00173	·00075
28	800	1·68	·00131	·00078
29	800	1·72	·00131	·00076
29	800	1·80	·00131	·00073
1889.				
Sept. 27	300	1·91	·00338	·00177
30	800	0·79	·00131	·00166
30	800	0·73	·00131	·00179
Oct. 2	600	1·00	·00173	·00173
4	600	1·03	·00173	·00168
9	600	0·98	·00173	·00177
1890.				
Apr. 11	1000	1·37	·00105	·00077
11	1000	1·39	·00105	·00076
24	800	1·61	·00131	·00081
24	800	1·68	·00131	·00078
Oct. 3	600	1·58	·00173	·00109
3	600	1·52	·00173	·00114
4	600	1·50	·00173	·00115
4	600	1·51	·00173	·00115
Nov. 6	800	1·18	·00131	·00111
6	800	1·19	·00131	·00110
1891.				
Jan. 14	600	1·63	·00173	·00106
14	600	1·61	·00173	·00107
June 22	1000	1·14	·00105	·00092
22	400	2·83	·00257	·00091
23	400	3·02	·00257	·00085
1892.				
Feb. 2	400	2·48	·00257	·00104
2	800	1·28	·00131	·00102

From the numbers in the above table the following mean values are formed :—

Angerstein Wharf—Lady Well Galvanometer.

Period.	Current in ampères for 1 inch of displacement.
1886 Oct. 21 to 1890 Apr. 24 ...	·00070
1890 Oct. 3 to 1891 Jan. 14 ...	·00166
1891 June 22 to 1892 Feb. 2 ...	·00099

Blackheath—North Kent East Junction Galvanometer.

Period.	Current in ampères for 1 inch of displacement.
1886 Oct. 21 to 1887 Sept. 29...	·00073
1889 Sept. 27 to 1889 Oct. 9...	·00173
1890 Apr. 11 to 1890 Apr. 24...	·00078
1890 Oct. 3 to 1892 Feb. 2...	·00105

The measures made of the resistance of the external circuits, excluding in each case the registering galvanometer, are as follows :—

Date.	Angerstein Wharf—Lady Well circuit.	Blackheath—North Kent East Junction circuit.	Date.	Angerstein Wharf—Lady Well circuit.	Blackheath—North Kent East Junction circuit.
	Ohms.	Ohms.		Ohms.	Ohms.
1886 October 21	205	245	1889 November 7	174	179
1887 May 10	285	225	December 27	175	199
June 9	285	...	1890 January 24	181	195
September 28	220	230	April 5	191	196
December 2	225	262	August 7	195	193
1888 May 8	245	258	August 25	194	189
May 9	247	262	October 4	202	198
1889 April 26	231	197	November 6	145	150
April 27	252	...	November 7	146	161
May 1	238	217	1891 February 6	150	161
September 30	208	180	April 17	155	147
October 1	214	179	May 29	155	148
October 2	213	181	August 11	152	146
October 9	214	187	October 31	147	147
October 9	176	173	1892 February 5	159	164
October 10	216	...	March 16	160	152

The diminished resistance shown since 1890 November 6 is due to portions of both circuits having been renewed with copper wire since the previous measure of October 4.

The mean of the 5 measures of resistance of the Angerstein Wharf—Lady Well circuit made during the year 1890, previous to the renewal spoken of in the previous paragraph, is 193 ohms, and of 2 measures made afterwards is 145 ohms : the corresponding means for the Blackheath—North Kent East Junction circuit are 194 ohms and 155 ohms.

We have, therefore, for determination of scale values for the year 1890 ; in the Angerstein Wharf—Lady Well circuit, until April, current in ampères corresponding to displacement of 1 inch of the spot of light on the photographic sheet = ·00070, and approximate resistance of the two branches of the circuit 193 ohms ; and from November, current in ampères = ·00166, and approximate resistance 145 ohms. In the Blackheath

—North Kent East Junction circuit, we have, in April, current in ampères = ·00078, and approximate resistance of the two branches of the circuit 194 ohms; and from November, current in ampères = ·00105, and approximate resistance = 155 ohms.

—	DISPLACEMENT CORRESPONDING TO 1 VOLT.															
	Angerstein Wharf—Lady Well Circuit.								Blackheath—North Kent East Junction Circuit.							
	To April 1890.				From November 1890.				In April 1890.				From November 1890.			
	Without Shunt.		With Shunt.		Without Shunt.		With Shunt.		Without Shunt.		With Shunt.		Without Shunt.		With Shunt.	
	in.	mm.	in.	mm.	in.	mm.	in.	mm.	in.	mm.	in.	mm.	in.	mm.	in.	mm.
On the Photographs	7·13	181·	1·13	28·8	3·96	100·	0·64	16·1	6·37	162·	1·01	25·7	5·87	149·	0·94	23·9
On the Plates -	—	—	0·62	15·8	—	—	0·35	8·9	—	—	0·56	14·1	—	—	0·52	13·1

The earth current registers given on the lithographed plates are in all cases those taken with the shunt in circuit, the effect of this being to reduce the amplitude of the movement in both circuits nearly in the ratio of 6·3 to 1.

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 October 18. 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 $0^{in}\cdot565$ in diameter and the depression of the mercury due to capillary action is $0^{in}\cdot002$, but no correction is applied on this account. The cistern is of glass, and the graduated scale and attached rod are of brass; at its lower end the rod terminates in a point of ivory, which in observation is made just to meet the reflected image of the point as seen in the mercury. The scale is divided to $0^{in}\cdot05$, 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 read at 9^h, 12^h (noon), 15^h, 21^h (civil reckoning) on week days, and at 10^h, noon and 20^h on Sundays. 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 plunger, floating on the mercury in the shorter arm of the siphon 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 *liv*) 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.

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 the late Sir G. B. Airy. A vertical axis fixed in the ground, in a position about 35 feet south of the southern arm 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 board 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. In the summer of 1886 experiments were made on days of extreme heat with the view of determining the effect of the circular board in this respect, an account of which will be found at the end of the Introduction to the volume for the year 1887. The effect of radiation with the circular board removed was found to be insensible.

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°·2 has been applied to dry bulb readings, and $-$ 0°·1 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°·9 has been applied, and to those of No. 38338, for minimum temperature of the air, a correction of + 0°·1 throughout. The readings of No. 44285 for maximum temperature of evaporation, required a correction of $-$ 0°·6 until February 15, when it was accidentally broken. For this thermometer a new one, No. 68726, was substituted on March 5, the readings of which require a correction of + 0°·7. Those of No. 3627 for minimum temperature of evaporation required a correction of + 2°·0 throughout.

The dry and wet bulb thermometers are read at 9^h, 12^h (noon), 15^h, 21^h (civil reckoning) on week days, and at 10^h, noon, and 20^h on Sundays. Readings of the maximum and minimum thermometers are taken at 9^h and 21^h on week days, and at 10^h and 20^h on Sundays. Those of the dry and wet bulb thermometers are employed to correct the indications of the photographic dry and wet bulb thermometers.

In January 1887, three thermometers, a dry-bulb, a maximum, and a minimum, to which a wet-bulb thermometer was added in February, were mounted in a Stevenson screen, with double louvre-boarded sides, of the pattern adopted by the Royal Meteorological Society, which is fully described in the *Quarterly Journal* of the Society, Vol. X, page 92. The screen is planted 11 feet to the eastward of the revolving frame carrying the ordinary dry-bulb and wet-bulb thermometers, and its internal dimensions are, length 18 inches, width 11 inches, and height 15 inches, the bulbs of the thermometers placed in it being at a height of about 4 feet above the

f 2

ground. The dry-bulb thermometer is Hicks No. 262495, to the readings of which a correction of − 0°·1 has been applied. The wet-bulb is Hicks No. 268525, to the readings of which a correction of + 0°·2 has been applied. The maximum thermometer is Hicks No. 233036, to the readings of which a correction of + 0°·1 has been applied. The minimum thermometer is Hicks No. 262739, to the readings of which corrections as follows were applied: below 33° 0°·0, 33° to 36° + 0°·1, 36° to 40° + 0°·2, 40° to 44° + 0°·3, 44° to 51° + 0°·4, and above 51° + 0°·5. The observation of the dry and wet bulb thermometers is omitted on Sundays and a few other days.

Experiments were made in the summer of the year 1887 on days of extreme heat to determine whether, with the door of the screen open, the thermometers were in any way influenced by radiation from external objects, an account of which will be found at the end of the Introduction to the Volume for 1887. The effect of radiation with the door of the screen open was found to be insensible.

At the beginning of the year 1886 three thermometers 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, by Negretti and Zambra, is for eye observation of the temperature of the air, and required a correction of − 0°·2. No. 37467, also by Negretti and Zambra, is a self-registering maximum thermometer, and required a correction of − 0°·4. No. 342663, by Hicks, is a self-registering minimum thermometer, and required correction as follows: below 35° 0°·0, between 35° and 45° + 0°·1, between 45° and 55° + 0°·2, and above 55° + 0°·3. The bulbs of all these thermometers are 4 feet above the platform, and about 20 feet above the ground. The observation of the thermometer No. 45356 is omitted on Sundays and a few other days.

The order of reading the thermometers on the revolving stand, in the Stevenson screen and on the roof of the Magnet House is reversed on alternate days, in order that the diurnal change may not produce any systematic difference in the comparison of the results.

PHOTOGRAPHIC DRY-BULB AND WET-BULB THERMOMETERS.—The apparatus now in use was constructed in the year 1884 by Messrs. Negretti & Zambra from designs furnished by me, and was mounted in the year 1885, but from various causes it was not brought into regular use until 1887 January 1. It is placed nearly in the centre of the South Ground under a shed 8 feet square standing upon posts about 8 feet high. This shed is open to the north and is generally similar to that provided for the old apparatus, excepting that the roof inclines somewhat towards the south and that the protecting boards (fixed as far as necessary on the eastern, southern and western sides) are double, with spaces between to ensure a free circulation of air while screening the thermometers from the direct rays of the sun. The thermometers are further protected from sky and ground radiation by boards on the thermometer stand as described below. The photographic register is received on paper placed on a vertical ebonite cylinder $11\frac{1}{2}$ inches high and $14\frac{1}{4}$ inches in circumference, and I have arranged that the dry and wet bulb traces shall fall on the same part of the cylinder, as regards time-scale, a long air bubble in the wet-bulb thermometer column giving the means of registering the indications of the wet bulb (as well as of such degrees and decades of its scale as fall within the bubble), just below the trace of the dry-bulb thermometer, without any interference of the two records, an arrangement which admits of the time-scale being made equal to that of all the other registers. The stems of the thermometers are placed close together, each being covered by a vertical metal plate having a fine vertical slit, so that light passes through only at such parts of the bore of the tube as do not contain mercury. Two gas lamps, each at a distance of 21 inches, are placed at such an angle that the light from each after passing through its corresponding slit and thermometer tube falls on the photographic paper in one and the same vertical line. Degree lines etched upon the thermometer stems, and painted, interrupt the light sufficiently to produce a clear and sharp indication on the photographic sheet, the line at each tenth degree being thicker than the others as well as those at 32°, 52°, 72°, &c. The length of scale is from 0° to 120° for each thermometer, the length of 1° being about 0·1 inch, and the air bubble in the wet-bulb thermometer is about 12° in length so that it will always include one of the ten-degree lines. The bulbs, which are 2 inches long and of about $\frac{1}{2}$ an inch in internal bore, are separated horizontally by 5 inches, the tubes of the thermometers having a double bend above the bulbs, which are placed about 4 feet above the ground. The thermometers are carried by a vertical frame with independent vertical adjustment for each thermometer so that the register in summer or winter can be brought to a convenient part of the photographic sheet. The revolving cylinder is driven by a pendulum clock contained within the brass case covering the whole apparatus, excepting the thermometer bulbs which project below. It makes one revolution in 26 hours, and the time-scale is the same as that for all the other registers. As the cylinder revolves the light passing through the portion of the thermometer tubes not occupied by mercury imprints on the paper a broad band of photographic trace, corresponding to the dry bulb register, whose breadth in the vertical direction varies with the height of the mercury in the tube, and a narrower band below, corresponding to the wet bulb. When these are developed the traces are seen to be crossed by thin white lines, the horizontal lines corresponding to degrees and the vertical lines to hours, the lower boundary of each trace indicating the thermometric record corresponding to the upper surface of the thermometric column.

The driving clock of the new apparatus is made to interrupt the light for a short time at each hour, producing on the sheet the hour lines above mentioned; the observer also occasionally interrupts the register for a short time for proper identification of the hourly breaks.

The bulbs of the thermometers were at first completely protected from radiation by vertical or inclined boards fixed to the thermometer stand, two on the south side, two on the north side, one at the east end, one at the west end, and one below, but with proper spaces for free circulation of air. Experiments made in the summer of the year 1886, an account of which is given at the end of the Introduction for 1887, showed that the north and south boards were unnecessary, and the two south boards and one north board were in consequence removed before commencing regular work with the instrument at the beginning of the year 1887.

For a description of the apparatus formerly employed reference may be made to the Introduction for 1887 and previous years. It was maintained in its old position during the year 1890 for use in case of temporary interruption of register by the new apparatus. A comparison of the results given by the old and new apparatus will be found at the end of the Introduction to the year 1887.

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 the 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.

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.

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 self-registering 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, made by Mr. Browning, 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. It was brought into use in 1866, October. 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 by Negretti and Zambra, which was in use from 1859 until the introduction of the larger instrument by Browning in 1866 October. 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 these experiments were made were each $3\frac{3}{4}$ inches in diameter, the distance between the centres of the opposite cups being 13·45 inches.

From 1889 April 22 to May 8, both of the above instruments were sent to Mr. W. H. Dines, who kindly tested them on his whirling machine then erected at Hersham. The particulars of these experiments are given at the end of the Introduction for 1889. The results appear to show that the instrumental results in the case of high velocities of the wind are too great for both anemometers, but it has been thought better for the sake of continuity not to apply any corrections to the recorded values.

RAIN GAUGES.—During the year 1890 eight rain-gauges were employed, placed at different elevations above the ground, complete information in regard to which will be found at page (xc) 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. This 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.

The electrometer having been in use for ten years, it was removed by Messrs. Elliott on 1888 July 12 for thorough cleaning and repair. After return it was found that its indications were altogether changed. The instrument was not again brought into use during the year 1888, and it was finally sent to the maker, Mr. White of Glasgow, who restored it to its normal state, excepting that the amplitude of motion of the spot of light is considerably increased. The instrument was brought into use again in October 1889.

SUNSHINE RECORDER.—Until the end of the year 1886 the instrument with which the record given in the printed volume was made was that presented to the Royal Observatory by the late Mr. J. F. Campbell, by whom this method of record was devised. This instrument is fully described in the Introductions to previous volumes. Commencing with the year 1887 the record is that of a modification of the Campbell form of instrument, as arranged by Sir G. G. Stokes for use at the observing stations of the Meteorological Office. By employing this instrument, the manipulation of which is more simple, there is the further advantage that the Greenwich results become strictly comparable with those of the Meteorological Office Stations. A very complete account of the Campbell-Stokes instrument is given in the *Quarterly Journal* of the Royal Meteorological Society, Vol. VI., page 83. The recording cards are supported by carriers no larger than is required for keeping them in proper position ; one straight card serves for the equinoctial periods of the year, and another, curved, for the solstitial periods, the only difference between the summer and winter cards being that the summer cards are the longer : grooves are provided so that the cards are placed in position with great readiness. The daily record is 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 is very near the horizon. The instrument is placed on a table upon the platform above the Magnetic Observatory.

A comparison between the two instruments for one complete year, 1886 June 1 to 1887 May 31, will be found at the end of the Introduction to the Volume for the year 1887.

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 value 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 the 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 (xc), is formed from the records of this gauge. In this numeration only those days are counted on which the fall amounted to or exceeded $0^{in}\cdot 005$.

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

No particular explanation of the anemometric results seems necessary. It may be understood generally that the greatest pressures usually occur in gusts of short duration. The "Mean of 24 Hourly Measures" was in former years the mean of 24 measures of pressure taken *at* each hour, but commencing with 1887 January 1 it is the mean of measures each one of which is the average pressure during the hour of which the nominal hour is the middle point.

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 ... *cirrus*
ci-cu ... *cirro-cumulus*
ci-s ... *cirro-stratus*
cu ... *cumulus*
cu-s ... *cumulo-stratus*
d ... *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 denotes *occasional misty rain*
oc-r ... *occasional rain*
sh-r ... *shower of rain*
shs-r ... *showers of rain*
slt-r ... *slight rain*
oc-slt-r ... *occasional slight rain*
th-r ... *thin rain*
fq-th-r ... *frequent thin rain*
oc-th-r ... *occasional thin rain*
hy-sh ... *heavy shower*
slt-sh ... *slight showers*
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*	w	denotes *weak*
P	... *positive*	s	... *strong*
m	... *moderate*	v	... *variable*

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

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

In regard to the comparisons of the extremes and means, &c. of meteorological elements with average values, contained in the foot notes, it may be mentioned that the photographic barometric results are compared with the corresponding barometric results, 1854–1873, and the photographic thermometric results and deductions therefrom with the corresponding thermometric results, 1849–1868 (see "Reduction of Greenwich Meteorological Observations 1847–1873"). Other deductions, from eye observations, are compared with averages for the period 1841–1889.

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, of temperature of air, evaporation, and dew point, and of degree of humidity; sunshine results; observations of thermometers in a Stevenson screen and 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; 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 since 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 since 1886 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 (lxxix), exhibits every change of direction of the wind occurring throughout the year whenever such change amounted to two nautical points or 22½°. It is to be understood that the change from one direction to another during the interval between the times mentioned in each line of the table was generally gradual. All complete turnings of the vane which were evidently of accidental nature, and which in the year 1881 and in previous years had been included, are here omitted. Between any time given in the second column and that next following in the first column no change of direction in general occurred varying from that given by so much as one point or 11¼°. From the numbers given in this table the monthly and yearly excess of motion, page (lxxxiv), is formed. By direct motion it is to be understood that the change of direction occurred in the order N, E, S, W, N, &c., and by retrograde motion that the change occurred in the order N, W, S, E, N, &c.

In regard to Electric Potential of the Atmosphere, in addition to giving the hourly values in each month, including all available days, the days in each month have been (since the year 1882) further divided into two groups, one containing all days on which the rainfall amounted to or exceeded $0^{in}\cdot020$, the other including only days on which no rainfall was recorded, the values of daily rainfall given in column 18 of the "Daily Results of the Meteorological Observations" being adopted in selecting the days. These additional tables are given on pages (lxxxviii) and (lxxxix) 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 1890 were Mr. McClellan and Mr. Finch; their observations are distinguished by the initials M, and F, respectively.

W. H. M. CHRISTIE.

Royal Observatory, Greenwich,
1892 June 21.

ROYAL OBSERVATORY, GREENWICH.

RESULTS

OF

MAGNETICAL OBSERVATIONS

(EXCLUDING THE DAYS OF GREAT MAGNETIC DISTURBANCE).

1890.

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

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

1890.

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	32·2	31·0	31·3	31·3	30·3	28·8	27·8	27·0	28·9	27·5	25·4	25·9
2	31·7	31·2	31·1	30·6	29·4	30·0	27·8	28·5	29·2	27·8	26·0	25·7
3	31·7	31·9	31·4	30·3	29·1	28·8	27·6	27·7	30·0	28·1	26·9	25·5
4	31·0	31·3	31·1	30·0	28·6	28·4	28·3	27·4	28·4	27·3	26·7	26·1
5	31·6	31·1	30·8	30·3	28·7	29·0	28·4	26·8	28·2	27·4	25·8	25·9
6	31·4	31·2	30·1	29·9	28·1	28·4	27·7	27·0	28·0	25·7	26·6	26·0
7	31·2	31·0	30·6	30·0	28·1	29·5	27·0	26·6	27·1	26·7	26·2	26·3
8	31·5	31·5	29·9	30·6	28·8	28·4	27·1	26·8	27·9	28·1	...	26·8
9	31·4	31·3	31·1	30·7	28·9	28·8	27·4	26·2	27·5	28·9	26·5	27·0
10	31·5	31·2	29·9	29·7	29·4	28·5	26·8	27·7	27·7	27·1	26·5	25·9
11	31·5	31·5	30·9	30·0	28·8	28·6	27·5	27·7	28·2	26·3	26·8	26·3
12	31·7	31·9	30·8	29·8	28·7	29·2	26·8	27·8	28·3	27·4	26·8	26·5
13	31·4	31·1	31·0	29·7	29·0	29·1	27·6	28·4	27·4	28·1	26·2	26·1
14	31·9	31·0	31·5	29·8	28·9	29·1	27·7	28·8	28·3	27·8	25·8	26·4
15	32·0	31·3	29·6	29·6	29·3	29·1	27·4	27·4	27·3	27·3	25·8	26·5
16	31·7	31·8	29·8	29·5	29·4	28·7	...	28·5	27·6	27·2	26·3	26·6
17	31·4	31·1	30·2	29·0	29·8	...	...	28·9	27·5	26·1	26·2	26·2
18	31·4	30·7	30·7	29·6	29·3	28·2	...	28·5	27·9	27·2	25·5	26·3
19	30·8	31·0	30·4	29·0	29·5	28·2	...	28·7	27·6	27·5	26·0	26·7
20	31·7	31·2	30·9	29·5	28·7	28·9	27·7	28·5	26·9	26·8	25·8	26·6
21	31·6	30·7	30·6	29·1	29·1	28·5	26·3	28·0	27·2	27·0	26·4	26·5
22	31·2	30·7	31·0	28·5	28·8	28·1	...	27·9	27·8	27·4	26·2	26·3
23	32·6	31·5	29·5	27·9	28·7	27·2	27·9	28·3	27·6	27·0	26·3	25·5
24	32·3	30·8	30·9	28·0	28·5	28·0	27·3	28·3	27·1	27·4	26·5	25·9
25	31·8	30·6	30·4	28·6	29·0	28·1	29·0	28·5	28·1	26·4	26·1	26·1
26	32·3	30·7	30·0	29·1	28·6	27·7	27·5	28·5	26·4	26·4	26·6	25·9
27	31·8	31·0	29·9	29·7	29·3	27·6	27·1	28·3	27·0	27·6	26·8	26·0
28	32·2	30·9	29·4	28·9	28·6	28·9	27·4	28·1	26·6	26·8	26·8	25·6
29	32·1		29·9	28·7	28·3	28·3	27·6	28·0	27·4	27·0	27·1	26·3
30	31·5		29·7	29·7	28·7	28·0	26·5	28·6	27·3	26·6	27·2	26·6
31	31·5		29·9		29·0		26·5	28·3		26·3		26·7

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

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

1890.

Hour, Greenwich Civil Time.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
	′	′	′	′	′	′	′	′	′	′	′	′
Midn.	0·2	0·6	0·9	2·6	2·6	3·2	3·1	2·2	0·2	0·8	0·7	0·4
1h	0·7	0·8	0·8	2·7	2·4	3·0	3·2	2·0	0·1	1·0	1·1	0·9
2	1·2	1·3	1·1	2·7	2·4	2·7	3·1	1·8	0·4	1·2	1·5	1·2
3	1·5	1·5	1·3	2·6	2·1	2·5	2·6	1·5	0·3	1·2	1·9	1·5
4	1·6	1·8	1·3	2·2	1·6	2·0	2·1	1·2	0·4	1·6	1·8	1·5
5	1·6	1·6	1·3	1·9	0·8	0·8	1·1	0·8	0·3	2·1	1·7	1·6
6	1·5	1·5	1·3	1·2	0·3	0·1	0·2	0·2	0·1	2·0	1·7	1·4
7	1·6	1·6	0·6	0·6	0·0	0·0	0·0	0·0	0·0	1·9	1·8	1·3
8	1·3	1·1	0·0	0·0	0·3	0·2	0·4	0·6	0·0	1·2	1·6	1·2
9	1·4	0·6	0·3	0·8	1·4	1·2	1·4	2·1	0·9	1·1	1·6	1·0
10	2·2	1·3	1·9	3·2	3·6	3·1	3·1	4·2	2·9	2·7	2·5	1·7
11	3·3	2·7	4·4	6·0	6·1	5·6	5·4	6·4	5·5	4·9	4·2	2·9
Noon.	4·4	4·3	6·5	8·4	7·8	7·4	7·6	8·7	7·5	6·7	5·3	3·7
13h	4·8	5·4	7·5	9·2	8·1	8·4	8·9	9·2	7·9	6·9	5·7	4·2
14	4·3	5·3	7·1	8·5	7·5	8·6	8·9	8·2	6·8	6·1	4·7	3·6
15	3·3	4·4	5·9	6·9	6·3	8·0	7·9	6·6	5·1	4·8	3·5	2·8
16	2·8	3·4	4·0	5·6	5·1	6·7	6·5	4·9	3·8	3·6	2·9	2·3
17	2·5	2·8	2·8	4·5	4·2	5·5	5·2	3·6	2·8	2·9	2·2	2·1
18	2·5	2·3	2·4	3·8	3·5	4·8	4·7	3·0	2·3	2·0	1·7	1·7
19	1·9	2·2	2·1	3·3	3·2	4·3	4·4	2·9	1·8	1·3	1·5	1·3
20	1·4	1·7	1·9	3·0	3·0	3·9	4·1	2·7	0·8	0·8	0·9	0·7
21	0·9	0·7	1·4	2·9	2·8	3·6	4·0	2·5	0·6	0·2	0·4	0·0
22	0·2	0·2	1·2	2·7	2·7	3·4	3·6	2·3	0·6	0·0	0·3	0·0
23	0·0	0·0	0·9	2·7	2·6	3·4	3·2	2·3	0·2	0·1	0·0	0·1
Means	1·96	2·05	2·45	3·67	3·35	3·85	3·95	3·33	2·14	2·38	2·13	1·63

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.*)

1890.

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	425	405	415	514	460	412	346	411	370	474	444	536	567	609	534	662	475	576	582	664	360	456	408	420
2	436	418	380	488	470	414	355	418	365	461	430	522	578	638	493	599	506	610	485	567	334	445	435	445
3	425	410	351	428	507	391	338	420	384	473	376	468	546	628	503	592	557	658	470	569	377	454	432	453
4	411	407	374	430	549	393	355	432	385	467	443	549	527	611	500	601	547	653	504	603	392	503	464	466
5	444	472	375	438	530	422	362	437	329	428	481	597	553	616	514	632	563	669	560	644	384	468	457	473
6	397	474	377	419	476	424	349	421	355	454	450	546	597	641	—	—	564	677	503	583	415	495	478	480
7	365	473	372	402	471	449	374	439	377	469	395	496	545	613	510	635	508	616	551	652	396	473	494	487
8	395	482	391	393	437	451	334	406	414	501	425	519	565	630	506	598	539	640	511	583	...	...	487	467
9	433	489	385	399	386	405	312	389	434	528	459	582	552	648	513	605	527	631	466	534	294	369	471	496
10	418	483	421	410	370	418	322	399	432	524	430	580	535	607	528	632	581	685	403	495	304	374	515	515
11	382	469	448	428	378	470	330	410	419	518	473	593	566	638	526	644	507	608	420	521	330	417	553	518
12	378	467	408	350	400	492	337	412	439	535	482	574	507	575	530	650	436	540	423	519	330	417	595	541
13	400	494	429	360	374	439	362	406	452	551	504	600	495	594	546	642	489	569	437	509	377	466	592	504
14	363	450	390	368	398	475	333	425	414	532	486	575	522	626	545	637	509	598	448	528	335	427	602	500
15	363	462	386	362	403	487	381	475	402	498	480	572	541	642	486	575	479	597	444	540	395	494	635	523
16	395	465	407	378	339	447	389	485	374	475	463	581	539	635	474	558	490	601	458	521	401	490	621	505
17	348	428	433	429	313	405	378	467	432	526	503	614	590	701	458	545	507	620	477	535	399	493	642	506
18	335	439	341	411	320	385	404	479	460	488	520	602	581	685	452	546	519	635	368	460	418	505	640	506
19	329	430	326	377	306	390	382	476	536	541	515	607	565	659	495	596	549	653	350	430	450	546	625	515
20	312	401	345	380	337	405	346	435	446	528	529	621	538	596	481	565	545	646	412	504	461	562	659	539
21	331	413	375	396	302	396	389	469	444	524	525	619	525	614	490	572	500	589	423	529	446	540	599	538
22	342	417	392	408	322	418	383	479	414	503	498	585	523	624	501	583	509	605	410	497	411	493	577	469
23	365	416	403	410	327	419	363	445	433	556	518	605	497	603	505	592	544	624	363	467	454	550	641	499
24	402	458	480	449	369	439	367	463	467	580	552	644	486	590	497	562	550	632	356	457	428	517	603	479
25	401	497	444	444	346	457	395	475	483	606	542	641	466	560	476	560	488	577	401	495	376	448	585	481
26	388	482	469	490	367	466	384	466	375	498	541	640	489	588	478	560	529	611	344	438	350	408	591	497
27	404	512	390	423	365	476	455	525	407	506	551	619	497	593	474	554	575	676	338	396	403	417	606	514
28	383	477	402	389	385	481	423	517	426	510	530	593	500	601	474	549	571	675	295	346	393	423	594	502
29	388	480			410	485	398	490	477	533	575	623	493	589	494	576	540	632	338	444	458	434	627	523
30	369	456			386	451	381	465	465	542	572	640	510	602	461	538	546	628	390	494	415	413	...	...
31	426	532			379	456			423	503			545	658	452	515			390	508			...	...

On August 6 experiments were made for determination of the angle of torsion, and at the end of the year the position of the spot of light on the photographic sheet was changed; thus, in each case, breaking the continuity of the values.

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

1890.

Day of Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d 1	62°.6	67°.7	61°.3	66°.3	67°.9	67°.4	65°.3	68°.9	67°.8	67°.0	67°.6	64°.0
2	62.7	68.1	60.9	66.2	67.6	67.4	66.1	68.0	67.9	67.0	68.2	63.9
3	62.8	66.8	58.0	67.0	67.3	67.4	67.0	67.3	67.8	67.7	66.8	64.4
4	63.3	65.9	56.0	66.8	67.0	68.0	67.1	67.8	68.0	67.7	68.2	63.6
5	64.7	66.2	58.4	66.7	67.7	68.4	66.2	68.5	68.0	67.1	67.1	64.2
6	66.8	65.3	61.1	66.6	67.7	67.6	65.4	...	68.3	66.9	66.9	63.6
7	68.1	64.8	62.5	66.3	67.4	67.8	66.4	68.8	68.1	67.8	66.8	63.2
8	67.2	63.6	64.1	66.6	67.2	67.5	66.3	67.4	67.8	66.6	...	62.6
9	65.9	64.1	64.3	66.8	67.5	68.7	67.6	67.4	67.9	66.4	66.7	64.6
10	66.3	63.0	65.6	66.8	67.4	69.8	66.6	67.9	67.9	67.4	66.5	63.5
11	67.2	62.6	67.4	66.9	67.7	68.6	66.6	68.5	67.8	67.8	67.2	61.9
12	67.3	60.8	67.4	66.7	67.6	67.4	66.4	68.6	67.9	67.6	67.2	61.0
13	67.5	60.3	66.3	65.4	67.7	67.6	67.7	67.6	66.9	66.6	67.3	59.4
14	67.2	62.5	66.8	67.4	68.5	67.3	67.9	67.4	67.3	66.9	67.4	58.7
15	67.7	62.4	67.1	67.5	67.6	67.4	67.8	67.3	68.5	67.6	67.7	58.2
16	66.5	62.2	68.1	67.6	67.8	68.5	67.6	67.1	68.2	66.2	67.3	58.0
17	66.9	63.3	67.4	67.3	67.5	68.2	68.2	67.2	68.3	66.0	67.5	57.0
18	67.9	66.5	66.3	66.7	64.7	67.0	67.9	67.5	68.4	67.4	67.2	57.1
19	67.8	65.7	67.1	67.5	63.7	67.4	67.5	67.8	67.9	66.9	67.6	58.3
20	67.3	65.0	66.4	67.3	67.0	67.4	66.0	67.1	67.8	67.4	67.8	57.8
21	67.0	64.4	67.5	66.9	66.9	67.5	67.3	67.0	67.3	68.0	67.5	60.7
22	66.7	64.2	67.6	67.6	67.3	67.2	67.8	67.0	67.6	67.2	67.0	58.4
23	65.7	63.8	67.4	67.0	68.7	67.2	68.0	67.2	66.9	67.9	67.6	56.7
24	65.9	62.1	66.5	67.6	68.3	67.4	67.9	66.3	67.0	67.8	67.3	57.6
25	67.6	63.5	68.2	66.9	68.7	67.7	67.5	67.1	67.3	67.5	66.6	58.6
26	67.5	64.4	67.7	67.0	68.7	67.7	67.7	67.0	67.0	67.5	66.0	59.1
27	68.1	64.9	68.2	66.5	67.7	66.4	67.6	66.9	67.8	66.0	64.1	59.2
28	67.5	62.9	67.6	67.5	67.1	66.3	67.8	66.7	67.9	65.7	64.8	59.2
29	67.4		66.7	67.4	65.9	65.6	67.6	67.0	67.4	68.0	62.4	58.6
30	67.2		66.3	67.1	66.8	66.4	67.4	66.8	67.0	67.9	63.4	...
31	68.0		66.8		66.9		68.3	66.2		68.5		...
Means	66°.53	64°.18	65°.26	66°.93	67°.34	67°.54	67°.18	67°.44	67°.72	67°.23	66°.75	60°.45

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.*)

1890.

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.	45	40	51	65	91	111	138	162	95	114	137	149	141	157	154	174	159	178	115	134	58	70	12	21
1^h	45	40	47	59	82	100	133	155	92	109	131	141	136	150	151	168	148	165	118	137	54	66	18	25
2	47	42	47	56	80	93	125	142	82	94	122	129	131	143	143	158	141	155	120	134	53	63	22	25
3	54	47	45	52	83	89	122	134	75	85	115	120	125	134	135	147	143	153	118	130	59	67	32	32
4	58	51	56	59	86	88	121	128	75	77	120	123	118	122	126	134	147	152	129	136	71	76	47	45
5	77	70	72	72	93	93	126	131	66	68	105	108	107	109	112	117	150	152	138	142	85	88	64	58
6	83	71	74	72	97	94	122	124	47	47	82	82	83	85	92	95	129	131	132	136	86	89	79	71
7	81	71	77	72	96	93	105	110	26	26	54	54	48	50	57	60	101	103	112	114	77	77	79	69
8	65	58	77	75	64	61	76	81	9	9	19	19	17	19	16	16	57	57	85	87	59	59	76	64
9	40	37	44	42	27	24	29	31	0	0	0	0	0	0	0	0	14	10	37	39	28	28	49	37
10	7	4	18	18	2	2	0	0	3	3	1	1	6	6	4	4	0	0	3	5	0	0	22	10
11	0	0	0	0	0	0	8	8	23	23	19	19	29	29	40	40	20	18	0	0	2	2	17	3
Noon.	17	17	10	13	28	28	45	47	44	46	59	59	73	70	80	80	77	75	39	36	18	16	24	8
13^h	46	46	34	41	65	65	78	83	71	76	97	100	107	107	114	117	122	120	71	68	42	38	46	30
14	64	64	40	52	89	93	111	118	86	93	127	130	134	140	132	135	137	137	84	86	47	45	46	34
15	65	67	43	59	95	104	128	138	91	98	142	147	158	160	142	147	146	148	90	94	58	61	41	35
16	59	61	48	69	96	107	136	148	105	115	141	148	158	162	152	160	152	154	87	94	69	72	48	44
17	57	57	41	64	96	109	151	163	123	135	155	165	169	176	155	165	157	159	97	104	73	76	41	39
18	60	55	39	62	100	115	150	162	142	154	173	183	187	194	169	179	169	174	110	119	77	80	22	18
19	57	50	45	68	98	113	154	166	144	158	187	197	192	201	177	189	172	179	120	132	77	82	11	9
20	57	47	51	72	102	120	149	163	130	144	181	191	187	196	171	186	170	182	115	127	68	76	0	0
21	52	42	45	61	95	113	149	166	122	136	167	177	172	184	169	186	165	177	117	129	67	75	4	7
22	54	44	36	50	90	110	137	156	106	123	156	166	166	180	158	178	159	173	120	134	50	58	8	11
23	47	42	32	44	91	114	135	159	100	119	145	157	154	170	155	177	165	182	116	135	48	58	18	23
Means corrected for Temperature.	46·8		54·0		85·0		119·8		85·5		115·2		122·7		125·5		130·6		102·2		59·3		29·9	

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

1890.

Hour, Greenwich Civil Time.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December	For the Year.
Midnight.	66°·5	64°·4	65°·8	67°·5	67°·8	67°·8	67°·6	67°·9	68°·3	67°·7	67°·1	61°·1	66°·62
1^h	66·5	64·3	65·7	67·4	67·7	67·7	67·5	67·8	68·2	67·7	67·1	61·0	66·55
2	66·5	64·2	65·5	67·2	67·5	67·6	67·4	67·7	68·1	67·5	67·0	60·8	66·42
3	66·4	64·1	65·2	67·0	67·4	67·5	67·3	67·6	67·9	67·4	66·9	60·7	66·28
4	66·4	63·9	65·0	66·8	67·1	67·4	67·1	67·4	67·7	67·2	66·8	60·6	66·12
5	66·4	63·8	64·9	66·7	67·1	67·4	67·0	67·3	67·6	67·1	66·7	60·4	66·03
6	66·2	63·7	64·8	66·6	67·0	67·3	67·0	67·2	67·6	67·1	66·7	60·3	65·96
7	66·3	63·6	64·8	66·7	67·0	67·3	67·0	67·2	67·6	67·0	66·6	60·2	65·94
8	66·4	63·7	64·8	66·7	67·0	67·3	67·0	67·1	67·5	67·0	66·6	60·1	65·93
9	66·6	63·7	64·8	66·6	67·0	67·3	66·9	67·1	67·5	67·0	66·6	60·1	65·93
10	66·6	63·8	64·9	66·5	67·0	67·3	66·9	67·1	67·5	67·0	66·6	60·1	65·94
11	66·7	63·8	64·9	66·5	67·0	67·3	66·9	67·1	67·4	66·9	66·6	60·0	65·93
Noon.	66·7	63·9	64·9	66·6	67·1	67·3	66·8	67·1	67·4	66·8	66·5	59·9	65·92
13^h	66·7	64·1	64·9	66·7	67·2	67·4	66·9	67·2	67·4	66·8	66·4	59·9	65·97
14	66·7	64·3	65·1	66·8	67·3	67·4	66·9	67·2	67·5	67·0	66·5	60·1	66·07
15	66·8	64·5	65·3	66·9	67·3	67·5	67·0	67·3	67·6	67·1	66·7	60·4	66·20
16	66·8	64·7	65·4	67·0	67·4	67·6	67·1	67·4	67·6	67·2	66·7	60·5	66·28
17	66·7	64·8	65·5	67·0	67·5	67·7	67·2	67·5	67·6	67·2	66·7	60·6	66·33
18	66·5	64·8	65·6	67·0	67·5	67·7	67·2	67·5	67·7	67·3	66·7	60·5	66·33
19	66·4	64·8	65·6	67·0	67·6	67·7	67·3	67·6	67·8	67·4	66·8	60·6	66·38
20	66·3	64·7	65·7	67·1	67·6	67·7	67·3	67·7	68·0	67·4	66·9	60·7	66·42
21	66·3	64·5	65·7	67·2	67·6	67·7	67·4	67·8	68·0	67·4	66·9	60·8	66·44
22	66·3	64·4	65·8	67·3	67·7	67·7	67·5	67·9	68·1	67·5	66·9	60·8	66·49
23	66·5	64·3	65·9	67·5	67·8	67·8	67·6	68·0	68·2	67·7	67·0	60·9	66·60

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.*)

1890.

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	655	521	744	491	510	410	635	397	600	341	591	343	592	381	681	414	530	271	572	324	445	197	239	59
2	649	515	745	482	493	406	608	379	617	364	585	343	589	355	692	450	545	276	569	321	451	192	237	69
3	656	520	723	487	430	404	607	365	616	378	593	343	625	385	682	444	563	313	547	290	430	192	235	59
4	666	517	678	470	377	385	604	362	600	350	614	355	615	371	671	425	580	323	532	277	434	169	242	72
5	707	525	663	461	407	360	597	368	623	373	623	366	604	372	680	421	589	332	539	299	430	184	260	84
6	777	545	644	455	469	375	592	363	606	349	617	373	586	369	695	430	618	359	527	289	418	172	259	94
7	835	574	630	445	515	396	587	366	620	367	616	357	577	339	700	441	625	360	548	293	407	169	246	87
8	817	571	597	434	549	384	597	363	620	374	609	367	580	332	673	446	626	365	556	324	...	...	227	83
9	776	559	593	430	585	411	600	371	619	369	616	349	610	360	655	415	622	361	538	302	422	193	248	63
10	770	545	563	423	598	387	580	340	624	376	641	359	607	371	653	400	620	361	546	277	403	167	243	86
11	777	537	552	420	648	395	575	333	624	369	629	370	591	359	685	426	633	387	535	274	389	141	203	80
12	788	542	532	430	667	417	567	340	635	385	608	372	583	354	695	436	613	354	537	287	397	151	175	68
13	774	528	514	422	639	416	539	326	639	382	610	370	603	344	685	439	605	367	513	279	402	152	134	60
14	774	524	548	425	635	397	560	310	640	375	597	349	613	356	681	441	590	337	496	258	410	155	103	33
15	784	534	548	425	645	399	584	338	619	373	601	355	626	382	670	428	601	340	518	268	421	168	77	30
16	767	533	538	427	668	401	592	348	617	362	620	355	623	377	672	430	608	347	485	266	435	182	75	34
17	775	529	570	432	675	427	593	355	615	371	629	376	630	375	654	408	608	351	462	239	443	193	70	40
18	782	532	637	448	631	402	587	353	550	382	608	370	638	392	657	404	613	352	462	207	433	189	65	33
19	774	517	640	460	634	386	588	338	516	359	614	372	639	399	650	391	614	357	477	241	438	185	78	25
20	765	523	623	455	611	384	597	344	598	364	622	372	613	394	654	410	605	357	460	210	446	187	71	28
21	733	508	608	459	622	376	595	361	628	388	622	374	626	388	652	410	610	364	471	212	448	191	111	9
22	720	505	597	444	635	380	608	355	627	387	626	382	642	392	646	404	595	338	465	231	436	192	101	58
23	708	497	590	443	628	378	613	369	641	370	630	390	663	404	645	399	586	346	449	194	430	180	35	22
24	706	493	536	425	615	373	620	365	642	387	638	383	674	434	618	391	575	335	460	201	432	192	45	7
25	740	487	560	424	638	371	615	365	656	393	669	421	663	423	598	352	592	346	457	211	411	169	66	15
26	743	495	577	424	633	378	602	364	655	386	675	425	657	411	592	348	571	327	450	197	385	164	80	21
27	741	482	598	433	658	408	590	354	643	397	661	436	666	422	582	338	573	316	402	181	301	121	87	19
28	746	489	567	441	656	397	601	344	628	388	652	420	667	417	577	333	584	331	374	147	279	94	79	5
29	735	489			653	424	615	358	587	381	629	404	660	410	567	321	582	336	413	158	223	74	...	...
30	718	482			633	401	601	359	591	357	613	381	653	411	553	315	580	338	420	155	223	45	...	...
31	731	470			632	392			595	355			659	400	530	296			435	157			...	...

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.

1890.

Day of Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
1	61.9	67.5	60.3	66.8	67.8	67.3	65.5	68.2	67.8	67.3	67.3	64.1
2	61.9	68.0	59.7	66.4	67.5	67.0	66.6	67.0	68.3	67.3	67.8	63.5
3	62.0	66.7	56.8	67.0	66.8	67.4	66.9	66.8	67.4	67.7	66.8	63.9
4	62.6	65.4	55.2	67.0	67.4	67.8	67.1	67.2	67.7	67.6	68.1	63.6
5	64.2	65.1	57.8	66.4	67.4	67.7	66.5	67.8	67.7	66.9	67.2	63.9
6	66.5	64.5	60.0	66.4	67.7	67.1	65.8	68.1	67.8	66.8	67.2	63.4
7	67.9	64.3	61.2	66.0	67.5	67.8	66.8	67.8	68.1	67.6	66.8	63.1
8	67.2	63.3	63.4	66.6	67.2	67.0	67.3	66.3	67.9	66.5	...	62.4
9	65.8	63.3	63.8	66.4	67.4	68.2	67.4	66.9	67.9	66.7	66.4	64.3
10	66.2	62.2	65.5	66.9	67.3	68.9	66.7	67.5	67.8	68.3	66.7	63.0
11	66.9	61.8	67.5	67.0	67.6	67.8	66.5	67.8	67.2	67.9	67.3	61.4
12	67.2	60.4	67.4	66.3	67.4	66.7	66.4	67.8	67.8	67.4	67.2	60.6
13	67.2	59.9	66.1	65.6	67.7	66.9	67.8	67.2	66.8	66.6	67.4	59.1
14	67.4	61.4	66.8	67.4	68.1	67.3	67.7	66.9	67.5	66.8	67.6	58.9
15	67.4	61.4	67.2	67.2	67.2	67.2	67.1	67.0	67.9	67.4	67.5	57.8
16	66.6	60.8	68.2	67.1	67.6	68.1	67.2	67.0	67.9	65.9	67.5	57.5
17	67.2	62.1	67.3	66.8	67.1	67.5	67.6	67.2	67.7	66.1	67.4	57.0
18	67.4	64.5	66.4	66.6	63.5	66.8	67.2	67.5	67.9	67.6	67.1	57.1
19	67.7	64.1	67.3	67.4	63.0	67.0	66.9	67.8	67.7	66.7	67.5	58.1
20	67.0	63.5	66.3	67.5	66.6	67.4	65.9	67.1	67.3	67.4	67.8	57.6
21	66.2	62.6	67.2	66.6	66.9	67.3	66.8	67.0	67.2	67.8	67.7	60.4
22	65.7	62.8	67.6	67.5	66.9	67.1	67.4	67.0	67.7	66.6	67.1	57.6
23	65.5	62.5	67.4	67.1	68.4	66.9	67.8	67.2	66.9	67.6	67.4	56.2
24	65.6	60.8	67.0	67.6	67.6	67.6	66.9	66.3	66.9	67.8	66.9	57.4
25	67.5	62.0	68.2	67.4	68.0	67.3	66.9	67.2	67.2	67.2	67.0	58.0
26	67.3	62.8	67.6	66.8	68.3	67.4	67.2	67.1	67.1	67.5	66.0	58.4
27	67.8	63.4	67.4	66.7	67.2	66.2	67.1	67.1	67.7	66.0	64.1	58.8
28	67.7	61.5	67.8	67.7	66.9	66.5	67.4	67.1	67.5	66.3	64.3	59.1
29	67.2		66.4	67.7	65.3	66.2	67.4	67.2	67.2	67.6	62.6	...
30	66.7		66.5	67.0	66.6	66.5	67.0	66.8	67.0	68.1	64.0	...
31	67.9		66.9		66.9		67.8	66.6		68.7		...
Means	66.24	63.16	64.97	66.90	67.06	67.26	66.99	67.21	67.55	67.22	66.75	60.22

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.)*

1890.

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.	9	9	35	33	44	22	56	37	58	45	49	38	40	26	36	19	36	17	24	7	21	13	26	4
1ʰ	9	9	30	30	41	22	52	36	55	45	47	39	36	24	32	17	29	12	19	2	16	8	21	1
2	6	4	26	28	36	21	47	35	51	45	44	38	33	23	29	17	24	9	13	0	12	6	16	0
3	4	4	24	28	35	26	45	39	49	45	43	37	29	21	29	19	23	10	13	3	12	8	14	0
4	2	4	22	28	32	28	44	42	48	50	46	42	31	25	29	21	23	16	12	6	8	6	13	4
5	2	4	20	28	31	29	42	42	48	50	47	43	36	32	32	26	24	20	12	8	7	7	12	7
6	0	4	16	26	27	27	43	45	47	51	44	42	34	30	33	29	25	21	13	9	7	7	7	4
7	1	3	14	24	27	27	45	47	42	46	42	40	33	29	33	31	29	25	15	15	7	7	7	6
8	2	2	14	22	27	27	36	38	32	36	33	31	28	24	30	30	24	22	16	16	6	6	6	7
9	4	0	13	21	17	17	24	29	19	23	22	20	18	16	18	18	14	12	11	11	4	4	3	4
10	7	3	4	10	8	8	13	18	9	13	11	11	9	9	9	9	6	4	4	4	0	0	0	1
11	9	7	0	4	2	2	2	7	1	3	0	0	0	0	0	0	0	0	0	2	1	3	0	4
Noon.	11	7	0	0	0	0	0	0	0	0	4	2	2	2	1	1	1	1	5	7	4	11	2	8
13ʰ	15	11	6	2	10	6	14	12	14	12	17	13	8	8	11	9	14	12	13	15	13	17	8	7
14	22	18	15	6	27	20	33	29	33	29	31	27	24	22	27	23	29	27	24	22	24	28	16	11
15	26	19	30	17	42	31	46	40	45	41	39	33	38	34	40	34	41	37	39	35	31	31	22	11
16	27	23	38	21	53	38	54	48	56	50	51	45	47	41	47	39	48	41	45	39	29	29	25	11
17	25	23	41	24	54	37	63	57	65	57	58	50	54	46	49	39	50	43	41	35	24	24	23	9
18	22	22	45	30	50	31	62	54	69	61	60	52	55	47	46	36	49	42	38	28	22	22	21	10
19	19	23	44	31	53	36	60	52	69	61	58	50	53	45	44	32	50	39	38	28	20	20	24	10
20	20	24	40	31	53	34	59	47	64	56	57	49	49	41	42	27	51	38	32	19	19	17	26	10
21	17	21	36	34	52	33	59	45	63	55	53	45	46	36	40	23	49	36	30	17	16	14	26	10
22	13	17	32	32	50	28	56	40	59	49	51	43	46	34	39	20	45	30	23	8	14	12	22	6
23	12	12	33	35	49	25	57	36	59	46	52	41	44	30	37	16	42	25	21	2	15	11	22	4
Means corrected for Temperature.	11·4		22·7		24·0		36·5		40·4		34·6		26·9		22·3		22·5		14·1		13·0		6·2	

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

1890.

Hour, Greenwich Civil Time.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	For the Year.
	°	°	°	°	°	°	°	°	°	°	°	°	°
Midnight.	66·2	63·2	65·5	67·5	67·5	67·5	67·4	67·6	68·1	67·7	67·1	60·9	66·35
1ʰ	66·2	63·1	65·4	67·4	67·4	67·4	67·3	67·5	68·0	67·7	67·1	60·8	66·27
2	66·3	63·0	65·2	67·2	67·2	67·3	67·2	67·4	67·9	67·5	67·0	60·6	66·15
3	66·2	62·9	64·9	66·9	67·1	67·3	67·1	67·3	67·8	67·4	66·9	60·5	66·03
4	66·1	62·8	64·7	66·7	66·8	67·2	67·0	67·2	67·5	67·2	66·8	60·3	65·86
5	66·1	62·7	64·6	66·6	66·8	67·2	66·9	67·1	67·4	67·1	66·7	60·1	65·77
6	66·0	62·6	64·5	66·5	66·7	67·1	66·9	67·0	67·4	67·1	66·7	60·0	65·71
7	66·1	62·6	64·5	66·5	66·7	67·1	66·9	66·9	67·4	66·9	66·7	59·9	65·68
8	66·2	62·7	64·5	66·5	66·7	67·1	66·9	66·8	67·3	66·9	66·7	59·8	65·67
9	66·4	62·7	64·5	66·4	66·7	67·1	66·8	66·8	67·3	66·9	66·7	59·8	65·67
10	66·4	62·8	64·5	66·4	66·7	67·0	66·7	66·8	67·3	66·9	66·7	59·8	65·67
11	66·3	62·9	64·5	66·4	66·8	67·0	66·7	66·8	67·2	66·8	66·6	59·7	65·64
Noon.	66·4	63·1	64·5	66·6	66·9	67·1	66·7	66·8	67·2	66·8	66·4	59·6	65·67
13ʰ	66·4	63·3	64·7	66·7	67·0	67·2	66·7	66·9	67·3	66·8	66·5	59·9	65·78
14	66·4	63·5	64·8	66·8	67·1	67·2	66·8	67·0	67·3	67·0	66·5	60·1	65·88
15	66·5	63·7	65·0	66·9	67·1	67·3	66·9	67·1	67·4	67·1	66·7	60·4	66·01
16	66·4	63·9	65·2	66·9	67·2	67·3	67·0	67·2	67·5	67·2	66·7	60·5	66·08
17	66·3	63·9	65·3	66·9	67·3	67·4	67·1	67·3	67·5	67·2	66·7	60·5	66·12
18	66·2	63·8	65·4	67·0	67·3	67·4	67·1	67·3	67·5	67·4	66·7	60·4	66·12
19	66·0	63·7	65·3	67·0	67·3	67·4	67·1	67·4	67·7	67·4	66·7	60·5	66·13
20	66·0	63·5	65·4	67·2	67·3	67·4	67·1	67·5	67·8	67·5	66·8	60·6	66·17
21	66·0	63·2	65·4	67·3	67·3	67·4	67·2	67·6	67·8	67·5	66·8	60·6	66·18
22	66·0	63·1	65·5	67·4	67·4	67·4	67·3	67·7	67·9	67·6	66·8	60·6	66·22
23	66·2	63·0	65·6	67·6	67·5	67·5	67·4	67·8	68·0	67·8	66·9	60·7	66·33

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, 1890.	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. (in terms of GAUSS'S METRICAL UNIT.)	HORIZONTAL FORCE (diminished by a Constant). (in terms of GAUSS'S METRICAL UNIT.)	VERTICAL FORCE (diminished by a Constant). (in terms of GAUSS'S METRICAL UNIT.)
January	17° 31'·7	457	519	1681	833	2272
February	17. 31·1	413	443	1650	753	1939
March	17. 30·5	436	394	1618	795	1724
April	17. 29·6	448	355	1570	817	1554
May	17. 28·9	511	373	1533	932	1633
June	17. 28·6	585	374	1517	1067	1637
July	17. 27·4	620	383	1453	1131	1676
August	17. 27·9	Aug. 1–5 617 Aug. 7–31 584	400	1480	Aug. 1–5 1125 Aug. 7–31 1065	1751
September	17. 27·7	624	342	1469	1138	1497
October	17. 27·2	517	244	1443	943	1068
November	17. 26·3	465	164	1395	848	718
December	17. 26·2	495	48	1390	903	210
Means	17° 28'·6	......	......	1517	......	......
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 1·8234 and 0·18234 respectively for the year, and of whole Vertical Force (applicable to column 6) are 4·3768 and 0·43768 respectively for the year.

HORIZONTAL FORCE.—On August 6 experiments were made for determination of the angle of torsion, and at the end of the year the position of the spot of light on the photographic sheet was changed; thus, in each case, 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 1890.

(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.	′ 0·80	110·2	19·8	42·4	200·9	86·7
1h	0·90	105·2	17·7	47·7	191·8	77·5
2	1·06	98·4	16·1	56·2	179·4	70·5
3	1·05	94·8	17·3	55·7	172·9	75·7
4	0·93	94·9	20·0	49·3	173·0	87·5
5	0·64	96·3	22·0	33·9	175·6	96·3
6	0·30	87·0	21·9	15·9	158·6	95·9
7	0·12	70·5	22·3	6·4	128·5	97·6
8	0·00	46·0	19·1	0·0	83·9	83·6
9	0·49	16·3	11·9	26·0	29·7	52·1
10	2·04	0·0	4·8	108·2	0·0	21·0
11	4·12	7·5	0·0	218·5	13·7	0·0
Noon.	5·86	36·8	0·6	310·8	67·1	2·6
13h	6·52	69·9	7·6	345·8	127·5	33·3
14	5·97	89·5	19·1	316·6	163·2	83·6
15	4·80	100·4	27·6	254·6	183·1	120·8
16	3·64	106·8	32·7	193·1	194·7	143·1
17	2·77	113·3	34·3	146·9	206·6	150·1
18	2·23	120·2	33·5	118·3	219·2	146·6
19	1·86	124·3	32·9	98·7	226·6	144·0
20	1·42	120·9	30·1	75·3	220·4	131·7
21	1·01	116·7	28·1	53·6	212·8	123·0
22	0·77	110·8	23·9	40·8	202·0	104·6
23	0·63	110·6	20·9	33·4	201·7	91·5
Means . . .	′ 2·08	85·3	20·2	110·3	155·5	88·3
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 1·8234 and 0·18234 respectively, and of whole Vertical Force (applicable to column 6) are 4·3768 and 0·43768 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.)

1890.

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	2·8	142	5·6	147	6·8	139	13·4	245	9·1	145	8·9	225
2	4·7	92	5·3	88	4·1	82	9·0	135	5·8	189	8·9	193
3	12·8	215	9·4	192	5·7	62	10·9	219	8·6	163	8·6	230
4	9·5	155	6·0	68	3·9	80	10·3	200	13·4	227	7·1	307
5	5·4	94	8·0	177	11·0	100	8·5	181	15·5	248	10·7	155
6	6·4	133	4·4	79	9·7	154	10·9	308	9·6	210	12·2	407
7	5·3	52	4·7	65	10·4	218	10·0	205	10·7	224	11·5	274
8	4·9	105	6·6	140	12·5	178	9·3	227	6·9	139	8·4	272
9	4·0	50	2·6	112	7·0	146	11·0	190	8·5	140	8·5	221
10	5·0	138	4·4	116	7·4	239	8·3	250	9·1	143	7·2	223
11	4·5	156	6·0	172	7·4	228	8·6	174	6·1	157	11·6	257
12	5·6	147	8·2	217	9·5	118	8·2	165	5·6	194	9·5	170
13	4·4	159	7·5	126	9·1	108	8·4	205	8·3	242	9·1	226
14	6·7	169	10·5	154	7·7	81	11·1	177	8·1	175	11·3	261
15	6·7	144	8·9	102	9·4	143	10·8	211	9·8	127	12·1	224
16	5·9	92	5·5	135	16·9	160	8·8	165	8·6	222	8·8	232
17	11·2	195	6·5	140	10·2	207	10·1	242	9·5	179	...	222
18	10·5	205	9·2	208	12·7	228	8·9	184	10·4	203	10·4	227
19	8·1	105	6·2	222	7·7	131	8·1	145	8·2	268	10·0	287
20	12·0	188	7·3	152	8·3	150	10·7	286	11·5	231	11·0	289
21	11·3	214	5·5	76	6·5	119	9·7	235	9·1	159	11·1	302
22	5·7	95	9·2	172	8·8	140	10·4	225	11·0	252	8·1	307
23	6·3	185	6·4	145	11·9	245	8·7	194	10·8	219	10·1	205
24	5·3	159	6·8	106	8·9	202	8·2	191	11·1	229	7·9	212
25	4·3	99	5·6	123	10·3	168	8·9	147	8·5	200	7·8	204
26	5·0	100	4·2	62	9·0	190	6·7	258	6·8	170	12·3	203
27	5·0	90	6·5	165	9·7	168	9·8	192	7·9	182	6·2	102
28	5·8	143	7·0	148	9·9	212	7·0	210	5·5	179	10·4	200
29	4·5	133			7·7	174	8·0	196	6·8	180	6·6	166
30	4·4	130			10·2	164	10·4	199	10·4	112	7·2	250
31	4·0	103			10·7	201			7·0	184		
Means.....	6·4	135	6·6	136	9·1	159	9·4	205	9·0	190	9·4	235

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	10·4	174	12·9	270	12·9	261	9·0	222	10·3	172	8·2	137
2	10·8	198	10·9	280	11·9	300	11·0	210	8·6	133	5·6	105
3	11·4	245	13·2	266	8·7	223	9·6	245	3·8	92	5·8	115
4	12·7	252	9·5	281	10·0	300	8·8	259	6·4	161	5·8	107
5	10·1	268	11·6	272	8·5	179	13·2	274	6·4	112	7·0	322
6	10·2	281	11·4	...	9·5	177	13·6	270	4·3	125	6·8	152
7	9·4	191	10·1	348	8·5	269	6·8	155	15·8	221	3·8	148
8	6·9	215	8·4	233	8·0	214	8·8	265	...	...	6·1	201
9	8·6	177	9·4	274	8·4	262	5·8	229	10·5	214	7·0	123
10	9·9	212	8·5	259	11·4	331	16·3	225	5·0	152	5·8	76
11	11·3	130	7·2	250	17·2	332	12·0	211	6·5	145	4·5	114
12	10·1	213	10·0	222	18·9	335	9·4	215	6·0	147	3·1	62
13	7·9	295	7·7	205	8·6	266	8·5	288	12·2	251	4·6	204
14	10·6	255	9·4	220	8·6	179	9·2	164	10·2	249	4·3	112
15	9·2	260	14·5	319	12·9	278	8·4	300	7·0	210	4·0	176
16	...	284	12·2	297	10·5	422	5·8	209	5·2	187	4·0	106
17	...	182	9·2	221	9·6	267	13·7	178	9·2	128	3·7	78
18	...	270	8·6	347	10·7	228	14·8	417	8·5	159	4·0	128
19	...	324	9·5	157	10·8	215	11·1	309	5·2	148	4·5	120
20	8·9	302	8·7	272	11·6	205	8·8	264	4·0	100	4·6	82
21	9·9	272	10·0	262	7·8	221	5·5	143	5·5	125	8·0	121
22	...	163	8·6	182	8·1	215	4·0	126	5·3	165	6·0	252
23	8·7	232	10·8	174	6·6	160	5·2	141	4·9	131	7·6	112
24	10·8	285	7·4	166	7·2	152	11·6	242	5·1	124	3·8	72
25	6·7	220	10·3	275	15·8	285	5·9	110	5·1	93	5·8	150
26	8·5	212	8·9	159	7·8	192	13·0	205	8·5	139	3·5	74
27	9·1	170	9·0	190	4·1	128	12·2	259	5·6	137	3·6	92
28	9·4	288	7·6	152	7·3	142	5·4	162	6·1	105	6·5	191
29	9·0	180	10·5	127	9·5	299	6·7	195	4·8	99	3·5	80
30	7·6	237	13·8	232	10·1	235	6·7	140	7·5	115	6·3	...
31	9·5	242	10·4	252			7·9	163			7·0	...
Means.....	9·5	233	10·0	239	10·0	242	9·3	219	7·0	150	5·3	131

The mean of the twelve monthly values is, for Declination 8′·42, and for Horizontal Force 189·5.

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, 1890.	Difference between the Greatest and Least of the 24 Hourly Values.			Sums of the 24 Hourly Deviations from the Mean Value.		
	Declination.	Horizontal Force.	Vertical Force.	Declination.	Horizontal Force.	Vertical Force.
	′			′		
January	4·8	71	24	25·1	321	175
February	5·4	75	35	28·5	349	201
March	7·5	120	38	42·5	659	195
April	9·2	166	57	47·4	959	255
May	8·1	158	61	43·8	902	337
June	8·6	197	52	49·6	1191	277
July	8·9	201	47	48·3	1258	245
August	9·2	189	39	50·1	1198	203
September	7·9	182	43	50·5	1058	271
October	6·9	142	39	39·3	822	228
November	5·7	89	31	27·6	460	171
December	4·2	71	11	20·5	398	73
Means	7′·20	138·4	39·7	39′·43	802·9	219·3

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, 1890.	m	a_1	b_1	a_2	b_2	a_3	b_3	a_4	b_4
				DECLINATION WEST.					
	′	′	′	′	′	′	′	′	′
January	1·96	− 1·51	− 0·41	+ 0·17	+ 0·67	− 0·52	− 0·06	+ 0·18	+ 0·22
February	2·05	− 1·48	− 0·71	+ 0·15	+ 1·10	− 0·45	− 0·36	+ 0·17	+ 0·40
March	2·45	− 2·01	− 1·29	+ 0·97	+ 1·26	− 0·79	− 0·70	+ 0·26	+ 0·24
April	3·67	− 1·87	− 1·77	+ 1·51	+ 1·45	− 0·90	− 0·48	+ 0·36	+ 0·09
May	3·35	− 1·81	− 1·80	+ 1·60	+ 1·01	− 0·73	− 0·15	+ 0·18	+ 0·01
June	3·85	− 1·60	− 2·51	+ 1·39	+ 1·34	− 0·51	− 0·25	+ 0·03	+ 0·04
July	3·95	− 1·57	− 2·45	+ 1·44	+ 1·33	− 0·64	− 0·32	− 0·04	+ 0·20
August	3·33	− 2·39	− 1·69	+ 1·85	+ 0·91	− 0·80	− 0·31	+ 0·17	+ 0·12
September	2·14	− 2·71	− 1·32	+ 1·31	+ 0·99	− 0·82	− 0·32	+ 0·39	+ 0·09
October	2·38	− 2·30	− 0·41	+ 0·75	+ 1·15	− 0·57	− 0·40	+ 0·51	+ 0·18
November	2·13	− 1·74	− 0·12	+ 0·57	+ 0·82	− 0·54	− 0·12	+ 0·25	+ 0·23
December	1·63	− 1·26	− 0·14	+ 0·25	+ 0·77	− 0·36	− 0·05	+ 0·25	+ 0·16
For the Year	2·08	− 1·85	− 1·22	+ 0·99	+ 1·07	− 0·64	− 0·29	+ 0·23	+ 0·17
				HORIZONTAL FORCE.					
January	46·8	+ 4·2	− 0·9	− 17·0	+ 9·7	+ 7·1	− 12·8	− 0·6	+ 6·4
February	54·0	+ 12·2	− 2·0	− 18·3	+ 4·4	+ 8·1	− 6·9	− 1·5	+ 8·6
March	85·0	+ 32·8	− 22·6	− 18·4	+ 13·0	+ 7·8	− 15·9	+ 2·0	+ 8·3
April	119·8	+ 51·3	− 33·0	− 22·7	+ 19·8	+ 8·4	− 15·5	+ 3·8	+ 9·0
May	85·5	+ 37·5	− 52·5	− 9·1	+ 13·7	− 5·9	− 1·8	+ 5·8	+ 3·3
June	115·2	+ 50·6	− 59·8	− 14·8	+ 22·2	− 8·1	− 11·4	+ 3·8	+ 5·3
July	122·7	+ 51·7	− 63·9	− 11·4	+ 25·0	− 7·6	− 10·5	+ 3·3	+ 3·8
August	125·5	+ 55·9	− 54·5	− 4·6	+ 27·9	− 8·8	− 11·2	+ 6·6	+ 3·9
September	130·6	+ 55·9	− 38·0	− 15·5	+ 27·7	− 3·5	− 21·0	+ 8·7	+ 7·8
October	102·2	+ 49·4	− 4·8	− 21·6	+ 14·6	+ 2·6	− 16·4	+ 4·0	+ 9·7
November	59·3	+ 21·1	− 4·3	− 23·3	+ 8·7	+ 3·6	− 8·6	+ 3·6	+ 5·5
December	29·9	− 3·7	+ 16·1	− 14·8	+ 8·5	+ 11·6	− 9·8	+ 1·5	+ 1·7
For the Year	85·3	+ 34·9	− 26·7	− 16·0	+ 16·2	+ 1·3	− 11·8	+ 3·4	+ 6·1
				VERTICAL FORCE.					
January	11·4	+ 0·9	− 11·0	− 2·3	+ 0·5	− 0·3	− 1·1	− 0·3	+ 0·1
February	22·7	+ 13·0	− 0·9	− 5·6	− 2·1	+ 2·8	+ 0·2	− 0·9	− 0·6
March	24·0	+ 7·0	− 5·1	− 10·4	+ 1·5	+ 3·7	− 1·9	− 3·1	− 0·1
April	36·5	+ 10·2	− 5·2	− 15·1	+ 1·4	+ 5·7	− 0·7	− 1·8	+ 0·4
May	40·4	+ 16·8	− 6·7	− 15·7	+ 2·4	+ 4·0	− 1·8	− 0·9	+ 0·9
June	34·6	+ 13·9	− 6·1	− 13·0	+ 2·3	+ 3·8	− 2·0	− 0·5	+ 0·9
July	26·9	+ 8·1	− 9·5	− 12·4	+ 0·7	+ 4·1	− 1·6	− 0·4	− 0·1
August	22·3	+ 2·1	− 4·8	− 12·0	+ 2·5	+ 6·0	− 1·7	− 1·4	+ 1·2
September	22·5	+ 3·2	− 13·1	− 11·3	− 0·2	+ 4·3	− 4·2	− 1·6	+ 0·4
October	14·1	− 5·4	− 11·0	− 8·5	+ 2·8	+ 4·1	− 1·2	− 1·5	+ 0·9
November	13·0	− 2·0	− 9·8	− 2·3	+ 4·8	+ 2·1	− 2·8	− 0·6	+ 1·2
December	6·2	− 1·7	− 3·5	− 1·9	− 0·1	− 0·2	− 1·8	0·0	+ 0·4
For the Year	20·2	+ 5·5	− 7·2	− 9·2	+ 1·4	+ 3·3	− 1·7	− 1·1	+ 0·5

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

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

(in which t and t' are the times from 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, 1890.	m	c_1	α	α'	c_2	β	β'	c_3	γ	γ'	c_4	δ	δ'
	DECLINATION WEST.												
	′	′	° ′	° ′	′	° ′	° ′	′	° ′	° ′	′	° ′	° ′
January	1·96	1·56	254. 39	257. 3	0·69	14. 12	19. 0	0·53	263. 17	270. 29	0·28	40. 14	49. 50
February	2·05	1·64	244. 28	247. 58	1·11	7. 37	14. 37	0·58	231. 51	242. 21	0·44	22. 25	36. 25
March	2·45	2·39	237. 17	239. 26	1·59	37. 42	42. 0	1·06	228. 44	235. 11	0·35	47. 46	56. 22
April	3·67	2·58	226. 34	226. 35	2·09	46. 5	46. 7	1·02	242. 6	242. 9	0·37	76. 24	76. 28
May	3·35	2·55	225. 11	224. 19	1·89	57. 54	56. 10	0·75	258. 6	255. 30	0·18	85. 35	82. 7
June	3·85	2·98	212. 26	212. 31	1·93	46. 8	46. 18	0·57	243. 58	244. 13	0·05	37. 34	37. 54
July	3·95	2·91	212. 46	214. 8	1·96	47. 17	50. 1	0·72	243. 24	247. 30	0·21	348. 20	353. 48
August	3·33	2·93	234. 46	235. 42	2·06	63. 41	65. 33	0·86	248. 45	251. 33	0·21	54. 21	58. 5
September	2·14	3·02	244. 1	242. 45	1·64	53. 5	50. 33	0·88	248. 52	245. 4	0·40	76. 20	71. 16
October	2·38	2·33	259. 59	256. 29	1·37	33. 1	26. 1	0·70	235. 25	224. 55	0·54	70. 34	56. 34
November	2·13	1·74	266. 6	262. 26	1·00	34. 35	27. 15	0·55	257. 38	246. 38	0·34	47. 17	32. 37
December	1·63	1·27	263. 29	262. 29	0·81	17. 47	15. 47	0·36	261. 59	258. 59	0·30	57. 31	53. 31
For the Year	2·08	2·22	236. 39	236. 39	1·46	43. 2	43. 2	0·70	245. 25	245. 25	0·28	53. 34	53. 34
	HORIZONTAL FORCE.												
			° ′	° ′		° ′	° ′		° ′	° ′		° ′	° ′
January	46·8	4·3	102. 48	105. 12	19·6	299. 38	304. 26	14·7	150. 50	158. 2	6·5	354. 27	4. 3
February	54·0	12·3	99. 11	102. 41	18·8	283. 22	290. 22	10·7	130. 29	140. 59	8·7	350. 22	4. 22
March	85·0	39·8	124. 34	126. 43	22·5	305. 12	309. 30	17·7	153. 59	160. 26	8·5	13. 49	22. 25
April	119·8	61·0	122. 44	122. 45	30·1	311. 7	311. 9	17·6	151. 28	151. 31	9·8	22. 47	22. 51
May	85·5	64·5	144. 29	143. 37	16·5	326. 29	324. 45	6·2	253. 18	250. 42	6·7	60. 23	56. 55
June	115·2	78·3	139. 46	139. 51	26·6	326. 20	326. 30	14·0	215. 30	215. 45	6·6	35. 40	36. 0
July	122·7	82·2	141. 3	142. 25	27·4	335. 33	338. 17	12·9	215. 55	220. 1	5·0	41. 38	47. 6
August	125·5	78·1	134. 17	135. 13	28·2	350. 33	352. 25	14·2	218. 17	221. 5	7·7	59. 21	63. 5
September	130·6	67·6	124. 11	122. 55	31·7	330. 49	328. 17	21·3	189. 36	185. 48	11·7	48. 3	42. 59
October	102·2	49·6	95. 34	92. 4	26·1	304. 2	297. 2	16·6	170. 53	160. 23	10·5	22. 7	8. 7
November	59·3	21·5	101. 33	97. 53	24·8	290. 27	283. 7	9·3	157. 20	146. 20	6·6	33. 10	18. 30
December	29·9	16·5	346. 57	345. 57	17·1	299. 44	297. 44	15·2	130. 12	127. 12	2·3	42. 55	38. 55
For the Year	85·3	43·9	127. 25	127. 25	22·8	315. 31	315. 31	11·9	173. 52	173. 52	7·0	29. 22	29. 22
	VERTICAL FORCE.												
			° ′	° ′		° ′	° ′		° ′	° ′		° ′	° ′
January	11·4	11·1	175. 18	177. 42	2·3	281. 28	286. 16	1·1	196. 32	203. 44	0·3	284. 25	294. 1
February	22·7	13·0	93. 58	97. 28	6·0	249. 18	256. 18	2·8	85. 38	96. 8	1·1	237. 54	251. 54
March	24·0	8·7	125. 55	128. 4	10·5	278. 3	282. 21	4·1	117. 20	123. 47	3·1	267. 22	275. 58
April	36·5	11·4	117. 11	117. 12	15·2	275. 22	275. 24	5·7	97. 3	97. 6	1·8	283. 54	283. 58
May	40·4	18·1	111. 57	111. 5	15·9	278. 50	277. 6	4·3	114. 6	111. 30	1·3	313. 24	309. 56
June	34·6	15·2	113. 53	113. 58	13·2	280. 2	280. 12	4·3	118. 6	118. 21	1·0	330. 1	330. 21
July	26·9	12·4	139. 32	140. 54	12·4	273. 19	276. 3	4·4	111. 7	115. 13	0·4	258. 41	264. 9
August	22·3	5·3	156. 55	157. 51	12·2	281. 51	283. 43	6·2	105. 33	108. 21	1·8	309. 16	313. 0
September	22·5	13·4	166. 19	165. 3	11·3	268. 47	266. 15	6·0	134. 40	130. 52	1·7	282. 26	277. 22
October	14·1	12·3	206. 16	202. 46	9·0	288. 17	281. 17	4·3	106. 46	96. 16	1·8	301. 25	287. 25
November	13·0	10·0	191. 26	187. 46	5·3	334. 36	327. 16	3·5	142. 36	131. 36	1·4	332. 58	318. 18
December	6·2	3·9	205. 25	204. 25	1·9	266. 45	264. 45	1·8	185. 27	182. 27	0·4	0. 0	356. 0
For the Year	20·2	9·1	142. 46	142. 46	9·3	278. 27	278. 27	3·7	117. 29	117. 29	1·2	292. 37	292. 37

TABLE XVII.—SEPARATE RESULTS of OBSERVATIONS of MAGNETIC DIP made in the Year 1890.

Greenwich Civil Time, 1890.	Needle.	Magnetic Dip.	Observer.	Greenwich Civil Time, 1890.	Needle.	Magnetic Dip.	Observer.	Greenwich Civil Time, 1890.	Needle.	Magnetic Dip.	Observer.
d h		° ′ ″		d h		° ′ ″		d h		° ′ ″	
Jan. 4. 12	D 1	67. 25. 17	N	May 3. 13	C 2	67. 22. 52	N	Sept. 1. 14	B 1	67. 19. 48	N
6. 14	D 2	67. 26. 10	N	5. 15	B 2	67. 20. 43	N	2. 15	B 2	67. 20. 1	N
7. 14	C 1	67. 24. 0	N	9. 12	B 1	67. 20. 50	N	4. 14	C 2	67. 22. 17	N
7. 15	C 2	67. 23. 35	N	9. 14	C 1	67. 22. 34	N	8. 12	D 1	67. 23. 49	N
11. 13	B 1	67. 23. 35	N	13. 14	D 2	67. 24. 29	N	8. 14	D 2	67. 23. 28	N
13. 13	B 2	67. 22. 43	N	14. 13	D 1	67. 25. 0	N	13. 13	C 1	67. 22. 41	N
18. 13	B 2	67. 21. 12	N	17. 13	D 1	67. 24. 59	N	17. 14	C 1	67. 22. 13	N
21. 14	B 1	67. 21. 40	N	20. 16	D 2	67. 24. 21	N	22. 13	D 2	67. 23. 51	N
24. 14	C 2	67. 22. 51	N	22. 13	C 1	67. 21. 57	N	22. 15	D 1	67. 24. 19	N
25. 13	C 1	67. 23. 20	N	22. 14	B 1	67. 20. 13	N	26. 15	C 2	67. 23. 3	N
27. 15	D 2	67. 25. 9	N	26. 13	B 2	67. 22. 20	N	29. 12	B 2	67. 20. 16	N
29. 13	D 1	67. 24. 12	N	28. 15	C 2	67. 22. 4	N	29. 14	B 1	67. 21. 1	N
Feb. 3. 14	C 2	67. 23. 9	N	June 2. 13	B 1	67. 19. 9	N	Oct. 3. 12	C 1	67. 21. 52	N
4. 15	B 2	67. 22. 52	N	6. 13	C 2	67. 23. 6	N	3. 14	D 2	67. 22. 54	N
7. 12	B 1	67. 23. 24	N	10. 13	B 2	67. 21. 18	N	9. 12	D 1	67. 23. 6	N
7. 15	C 1	67. 23. 16	N	10. 14	C 1	67. 22. 52	N	9. 13	C 2	67. 23. 9	N
11. 14	D 2	67. 25. 19	N	13. 14	D 1	67. 24. 15	N	13. 15	B 1	67. 21. 19	N
12. 15	D 1	67. 25. 35	N	14. 13	D 2	67. 24. 24	N	14. 14	B 2	67. 20. 26	N
17. 15	D 1	67. 24. 40	N	17. 16	D 2	67. 24. 59	N	17. 15	B 2	67. 21. 33	N
18. 13	D 2	67. 24. 31	N	19. 13	D 1	67. 24. 3	N	18. 13	B 1	67. 21. 47	N
22. 12	C 1	67. 24. 1	N	19. 14	C 1	67. 21. 22	N	22. 13	C 2	67. 23. 5	N
22. 13	B 1	67. 22. 40	N	20. 12	B 2	67. 20. 3	N	22. 15	D 1	67. 24. 29	N
24. 15	B 2	67. 22. 41	N	24. 14	C 2	67. 21. 59	N	28. 13	D 2	67. 25. 2	N
25. 13	C 2	67. 23. 54	N	28. 13	B 1	67. 21. 29	N	28. 15	C 1	67. 22. 11	N
Mar. 1. 13	B 1	67. 23. 0	N	July 2. 15	C 1	67. 21. 26	N	Nov. 1. 13	C 2	67. 22. 6	N
4. 14	B 2	67. 22. 29	N	7. 14	D 1	67. 23. 4	N	4. 13	B 2	67. 20. 58	N
6. 15	C 2	67. 23. 50	N	9. 14	D 2	67. 22. 49	N	6. 14	B 1	67. 20. 16	N
10. 15	D 1	67. 25. 1	N	10. 13	C 2	67. 22. 48	N	8. 13	C 1	67. 23. 41	N
14. 14	D 2	67. 25. 52	N	10. 15	B 1	67. 21. 0	N	12. 13	D 2	67. 24. 55	N
14. 15	C 1	67. 23. 47	N	12. 13	B 2	67. 21. 2	N	12. 15	D 1	67. 24. 48	N
17. 13	C 1	67. 24. 5	N	21. 13	B 2	67. 20. 30	N	18. 13	D 1	67. 24. 13	N
18. 15	D 2	67. 24. 5	N	22. 14	B 1	67. 21. 46	N	18. 15	D 2	67. 24. 17	N
21. 15	D 1	67. 24. 56	N	22. 15	C 2	67. 22. 20	N	21. 15	C 1	67. 22. 23	N
24. 14	C 2	67. 23. 29	N	23. 13	D 2	67. 23. 32	N	24. 15	B 1	67. 20. 26	N
27. 15	B 2	67. 22. 2	N	23. 14	D 1	67. 23. 29	N	26. 13	B 2	67. 20. 46	N
29. 13	B 1	67. 22. 47	N	28. 12	C 1	67. 22. 33	N	29. 13	C 2	67. 22. 30	N
Apr. 2. 14	D 1	67. 25. 39	N	Aug. 4. 13	C 2	67. 22. 49	N	Dec. 1. 14	B 1	67. 22. 24	N
5. 13	D 2	67. 24. 8	N	5. 13	B 2	67. 21. 25	N	3. 13	B 2	67. 21. 49	N
8. 12	C 1	67. 24. 12	N	8. 13	B 1	67. 21. 0	N	5. 13	C 2	67. 22. 48	N
9. 13	C 2	67. 24. 15	N	8. 14	C 1	67. 22. 30	N	9. 13	D 1	67. 24. 37	N
11. 13	B 1	67. 21. 58	N	13. 13	D 2	67. 24. 17	N	11. 14	D 2	67. 23. 20	N
12. 12	B 2	67. 20. 43	N	13. 14	D 1	67. 22. 59	N	13. 13	C 1	67. 22. 31	N
19. 13	B 2	67. 22. 1	N	18. 13	D 1	67. 23. 36	N	18. 14	C 1	67. 23. 16	N
21. 13	B 1	67. 19. 17	N	18. 15	D 2	67. 23. 43	N	19. 14	D 2	67. 25. 11	N
22. 13	C 2	67. 23. 27	N	23. 13	C 1	67. 22. 12	N	22. 13	D 1	67. 24. 16	N
22. 15	C 1	67. 22. 42	N	25. 14	B 1	67. 19. 46	N	24. 13	C 2	67. 23. 14	N
26. 13	D 2	67. 25. 5	N	25. 15	B 2	67. 20. 15	N	27. 13	B 2	67. 21. 17	N
28. 13	D 1	67. 24. 52	N	27. 14	C 2	67. 22. 0	N	30. 13	B 1	67. 20. 55	N

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

TABLE XVIII.—MONTHLY and YEARLY MEANS of MAGNETIC DIP in the YEAR 1890.

Monthly Means of Magnetic Dip.

Month, 1890.	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. 22. 38	2	67. 21. 57	2	67. 23. 40	2
February	67. 23. 2	2	67. 22. 46	2	67. 23. 38	2
March	67. 22. 53	2	67. 22. 16	2	67. 23. 56	2
April	67. 20. 38	2	67. 21. 22	2	67. 23. 27	2
May	67. 20. 32	2	67. 21. 32	2	67. 22. 15	2
June	67. 20. 19	2	67. 20. 40	2	67. 22. 7	2
July	67. 21. 23	2	67. 20. 46	2	67. 22. 0	2
August	67. 20. 23	2	67. 20. 50	2	67. 22. 21	2
September	67. 20. 24	2	67. 20. 9	2	67. 22. 27	2
October	67. 21. 33	2	67. 21. 0	2	67. 22. 2	2
November	67. 20. 21	2	67. 20. 52	2	67. 23. 2	2
December	67. 21. 39	2	67. 21. 33	2	67. 22. 54	2
Means	67. 21. 19	Sum 24	67. 21. 19	Sum 24	67. 22. 49	Sum 24

Month, 1890.	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. 23. 13	2	67. 24. 44	2	67. 25. 39	2
February	67. 23. 31	2	67. 25. 7	2	67. 24. 55	2
March	67. 23. 39	2	67. 24. 59	2	67. 24. 59	2
April	67. 23. 51	2	67. 25. 15	2	67. 24. 37	2
May	67. 22. 28	2	67. 25. 0	2	67. 24. 25	2
June	67. 22. 33	2	67. 24. 9	2	67. 24. 42	2
July	67. 22. 34	2	67. 23. 16	2	67. 23. 11	2
August	67. 22. 24	2	67. 23. 18	2	67. 24. 0	2
September	67. 22. 40	2	67. 24. 4	2	67. 23. 40	2
October	67. 23. 7	2	67. 23. 47	2	67. 23. 58	2
November	67. 22. 18	2	67. 24. 31	2	67. 24. 36	2
December	67. 23. 1	2	67. 24. 26	2	67. 24. 16	2
Means	67. 22. 57	Sum 24	67. 24. 23	Sum 24	67. 24. 25	Sum 24

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 1890.

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	24	67. 21. 19	67. 21. 19	
	B 2	24	67. 21. 19		
6-inch Needles	C 1	24	67. 22. 49	67. 22. 53	67. 22. 52
	C 2	24	67. 22. 57		
3-inch Needles	D 1	24	67. 24. 23	67. 24. 24	
	D 2	24	67. 24. 25		

TABLE XIX.—DETERMINATIONS OF THE ABSOLUTE VALUE OF HORIZONTAL MAGNETIC FORCE IN THE YEAR 1890.

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

Greenwich Civil Time, 1890.		Distances of Centres of Magnets.	Temperature.	Observed Deflexion.	Mean of the Times of Vibration of Deflecting Magnet.	Number of Vibrations.	Temperature.	Observer.
	d h	ft.	°	° ′ ″	s		°	
January	17 14	1·0	46·8	10. 17. 13	5·708	100	46·6	N
		1·3		4. 40. 5	5·706	100	47·1	
February	17 13	1·0	41·1	10. 18. 25	5·707	100	41·4	N
		1·3		4. 40. 34	5·704	100	42·3	
March	15 13	1·0	47·4	10. 16. 34	5·710	100	47·3	N
		1·3		4. 39. 58	5·704	100	48·4	
April	15 15	1·0	57·0	10. 15. 49	5·711	100	56·5	N
		1·3		4. 39. 33	5·714	100	57·1	
May	15 15	1·0	58·8	10. 15. 28	5·711	100	58·5	N
		1·3		4. 39. 21	5·710	100	60·0	
June	16 14	1·0	62·1	10. 14. 52	5·715	100	62·3	N
		1·3		4. 39. 10	5·713	100	63·8	
July	15 14	1·0	63·9	10. 14. 25	5·719	100	64·1	N
		1·3		4. 38. 51	5·716	100	66·1	
August	15 15	1·0	64·4	10. 14. 38	5·712	100	64·4	N
		1·3		4. 38. 56	5·720	100	65·5	
September	15 14	1·0	64·0	10. 14. 15	5·719	100	63·5	N
		1·3		4. 38. 47	5·719	100	66·7	
October	21 14	1·0	55·0	10. 15. 42	5·711	100	53·7	N
		1·3		4. 39. 24	5·714	100	54·7	
November	14 15	1·0	55·6	10. 14. 50	5·713	100	54·4	N
		1·3		4. 39. 2	5·708	100	54·4	
December	17 14	1·0	37·9	10. 16. 10	5·706	100	36·3	N
		1·3		4. 39. 25	5·710	100	38·1	

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.

Greenwich Civil Time, 1890.		In English Measure.									In Metric Measure.	
											Value of Horizontal Force.	
		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 Horizontal Force X.	As observed.	Reduced to Mean of Month.
	d h						s					
Jan.	17 14	0·08945	0·08956	−0·00282		8·95290	5·7070	0·14690	0·3547	3·9537	1·8230	1·8223
Feb.	17 13	0·08954	0·08963	−0·00231		8·95328	5·7055	0·14685	0·3549	3·9517	1·8220	1·8218
Mar.	15 13	0·08937	0·08953	−0·00434		8·95263	5·7070	0·14699	0·3547	3·9553	1·8237	1·8221
Apr.	15 15	0·08941	0·08954	−0·00372		8·95275	5·7125	0·14675	0·3546	3·9537	1·8230	1·8221
May	15 15	0·08939	0·08951	−0·00327		8·95261	5·7105	0·14722	0·3547	3·9565	1·8243	1·8249
June	16 14	0·08935	0·08950	−0·00406		8·95250	5·7140	0·14676	0·3545	3·9548	1·8235	1·8230
July	15 14	0·08931	0·08943	−0·00305	−0·00304	8·95224	5·7175	0·14638	0·3543	3·9543	1·8233	1·8224
Aug.	15 15	0·08935	0·08946	−0·00288		8·95242	5·7160	0·14659	0·3544	3·9545	1·8234	1·8243
Sept.	15 14	0·08929	0·08941	−0·00316		8·95214	5·7190	0·14614	0·3541	3·9537	1·8230	1·8231
Oct.	21 14	0·08936	0·08946	−0·00276		8·95244	5·7125	0·14638	0·3543	3·9534	1·8228	1·8233
Nov.	14 15	0·08925	0·08936	−0·00299		8·95191	5·7105	0·14672	0·3543	3·9573	1·8247	1·8248
Dec.	17 14	0·08917	0·08921	−0·00113		8·95138	5·7080	0·14596	0·3537	3·9563	1·8242	1·8240
Means	...	...	...	...	...	...	...	...	...	3·9546	1·8234	1·8232

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.

MONTHLY MEAN DIURNAL INEQUALITIES OF MAGNETIC ELEMENTS FROM HOURLY ORDINATES, ON FIVE SELECTED DAYS, IN EACH MONTH.

Each result is the mean of the corresponding hourly ordinates from the photographic register, on five quiet days in each month, selected for comparison with results at other British Observatories. The days included are January 5, 7, 12, 30, 31, February 2, 7, 10, 23, 25, March 2, 3, 9, 29, 30, April 3, 9, 18, 25, 28, May 1, 13, 16, 22, 29, June 6, 10, 15, 24, 30, July 3, 9, 14, 28, 29, August 4, 12, 13, 28, 30, September 8, 9, 23, 27, 28, October 4, 7, 21, 28, 29, November 3, 6, 11, 24, 29, December 3, 7, 12, 14, 26.

The results for Declination are given in minutes of arc : those for Horizontal Force and Vertical Force are given both in terms of the whole Horizontal or Vertical Force and in terms of the Millimètre-Milligramme-Second (Metric) Unit. The letter *f* indicates values in terms of the whole Horizontal or Vertical Force, and the letter *m* values in terms of the Metric Unit, the unit for the former values being ·00001 of the whole Horizontal or Vertical Force, and for the latter ·00001 of the Metric Unit, or ·000001 of the Centimètre-Gramme-Second (C.G.S.) Unit. The values of the whole Horizontal and Vertical Forces expressed in terms of the Metric Unit are 1·8234 and 4·3768 respectively for the year.

Table XX.—Monthly Mean Diurnal Inequality of Magnetic Declination West.

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

1890.													
Hour Greenwich Civil Time.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	For the year.
Midnight	0′·2	0′·9	1′·5	2′·7	3′·3	3′·6	3′·5	2′·8	1′·8	1′·8	0′·4	1′·1	1′·67
1h	0·6	1·3	1·5	3·2	3·1	3·4	3·1	2·6	1·7	2·0	0·3	1·4	1·72
2	0·9	1·5	1·9	3·3	2·7	3·3	3·1	2·5	1·3	2·1	0·6	1·9	1·79
3	1·1	1·7	1·5	3·0	2·3	2·8	2·8	2·1	0·8	1·9	1·0	2·1	1·62
4	1·0	2·0	1·3	2·8	1·5	2·3	2·2	2·0	0·9	2·1	1·0	1·7	1·43
5	0·9	2·0	1·7	2·2	0·8	1·2	1·2	1·1	0·8	1·9	0·7	1·7	1·05
6	0·8	1·8	1·1	1·7	0·2	0·3	0·1	0·6	0·5	1·6	0·4	1·4	0·58
7	0·8	1·5	0·7	0·7	0·0	0·1	0·0	0·0	0·0	0·9	0·3	1·3	0·23
8	0·5	0·8	0·0	0·0	0·3	0·0	0·3	0·2	0·1	0·3	0·0	1·1	0·00
9	0·3	0·0	0·0	0·6	1·4	1·2	1·5	1·7	0·9	0·0	0·2	1·0	0·43
10	0·7	0·4	1·6	2·9	3·8	3·3	3·1	4·2	2·8	1·2	1·4	1·9	1·97
11	1·9	2·1	4·1	5·9	6·5	5·6	5·4	7·1	4·7	3·7	3·1	2·8	4·11
Noon	3·2	3·7	6·2	8·6	8·3	7·4	7·8	9·3	6·6	5·6	4·3	3·5	5·91
13h	3·9	4·7	6·7	9·3	7·9	8·5	9·2	9·5	6·5	5·9	4·4	3·9	6·40
14	3·2	5·0	6·2	8·2	7·5	8·5	9·4	8·0	5·4	5·5	3·1	3·5	5·83
15	2·5	4·3	4·7	6·6	5·9	8·0	7·7	6·1	3·4	4·3	2·0	2·7	4·55
16	2·1	3·1	2·6	5·2	4·6	6·8	5·9	4·4	2·7	2·8	1·3	2·0	3·32
17	1·6	2·5	1·9	4·0	3·6	5·8	4·4	3·2	2·5	2·7	0·9	1·7	2·60
18	1·5	2·2	1·8	3·7	3·3	5·2	3·7	3·1	2·1	2·4	0·7	1·4	2·29
19	1·0	2·0	1·6	3·4	3·0	4·5	4·1	3·0	2·2	2·1	0·6	1·5	2·12
20	0·3	1·7	1·9	3·2	3·1	4·3	4·3	3·1	2·1	1·7	0·4	1·0	1·96
21	0·3	1·1	1·9	3·6	3·2	4·3	4·1	3·0	2·0	0·7	0·3	0·0	1·74
22	0·0	1·0	1·8	3·3	3·4	3·9	4·0	3·1	1·8	0·4	0·1	0·4	1·63
23	0·2	0·5	1·7	3·2	3·4	3·8	3·7	2·7	1·6	0·6	0·0	0·5	1·53
24	0·3	0·3	1·5	2·9	3·0	3·7	3·3	2·2	1·4	1·1	0·4	0·7	1·43
Means 0h—23h	1′·23	1′·99	2′·33	3′·80	3′·46	4′·09	3′·94	3′·56	2′·30	2′·26	1′·15	1′·73	2′·35
Means 1h—24h	1′·23	1′·97	2′·33	3′·81	3′·45	4′·09	3′·93	3′·53	2′·28	2′·23	1′·15	1′·71	2′·34

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

(The results are corrected for temperature and in each case diminished by the smallest hourly value.)

Hour Greenwich Civil Time.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		For the Year.	
	f	*m*	*f*	*m*	*f*	*m*	*f*	*m*	*f*	*m*	*f*	*m*	*f*	*m*	*f*	*m*	*f*	*m*	*f*	*m*	*f*	*m*	*f*	*m*	*f*	*m*
Midn.	36	66	59	108	111	202	150	274	124	226	144	263	143	261	160	292	148	270	99	181	55	100	22	40	96·3	175·6
1h	24	44	61	111	105	191	154	281	120	219	140	255	137	250	145	264	144	263	107	195	54	98	24	44	93·2	169·9
2	28	51	61	111	108	197	137	250	108	197	127	232	131	239	149	272	131	239	106	193	52	95	22	40	88·7	161·6
3	34	62	68	124	97	177	132	241	90	164	126	230	129	235	144	263	127	232	108	197	53	97	34	62	87·2	159·0
4	40	73	74	135	88	160	141	257	80	146	117	213	125	228	140	255	123	224	108	197	57	104	50	91	87·3	158·9
5	62	113	78	142	94	171	137	250	70	128	101	184	115	210	119	217	112	204	114	208	64	117	54	98	85·3	155·5
6	63	115	77	140	101	184	126	230	54	98	64	117	101	184	95	173	94	171	107	195	66	120	60	109	76·0	138·3
7	66	120	83	151	87	159	112	204	32	58	36	66	64	117	60	109	74	135	94	171	65	119	58	106	61·2	111·5
8	56	102	71	129	73	133	69	126	8	15	10	18	26	47	18	33	40	73	70	128	49	89	52	95	37·2	67·6
9	35	64	50	91	41	75	22	40	0	0	0	0	0	0	0	0	0	0	28	51	16	29	30	55	10·5	19·1
10	4	7	24	44	8	15	0	0	12	22	14	26	8	15	0	0	14	26	4	7	2	4	6	11	0·0	0·0
11	0	0	0	0	0	0	20	36	50	91	12	22	38	69	39	71	42	77	0	0	0	0	0	0	8·8	15·8
Noon	3	5	6	11	28	51	64	117	84	153	68	124	86	157	93	170	93	170	16	29	14	26	20	36	39·9	72·7
13h	23	42	22	40	57	104	104	190	113	206	106	193	122	222	135	246	122	222	60	109	32	58	44	80	70·3	128·0
14	41	75	57	104	73	133	131	239	129	235	136	248	164	299	163	297	142	259	89	162	56	102	54	98	94·9	172·9
15	47	86	66	120	99	181	150	274	113	206	169	308	184	336	163	297	122	222	119	217	64	117	56	102	104·7	190·8
16	51	93	78	142	90	164	152	277	130	237	166	303	188	343	166	303	136	248	124	226	59	108	56	102	108·3	197·5
17	50	91	88	160	83	151	164	299	144	263	174	317	186	339	150	274	142	259	150	274	71	129	50	91	113·0	205·9
18	54	98	90	164	97	177	164	299	184	336	209	381	188	343	172	314	156	284	164	299	74	135	24	44	123·3	224·8
19	51	93	102	186	90	164	182	332	186	339	219	399	196	357	203	370	158	288	166	303	76	139	30	55	130·2	237·4
20	51	93	94	171	90	164	171	312	184	336	203	370	196	357	191	348	157	286	146	266	65	119	10	18	121·8	222·0
21	46	84	93	170	94	171	177	323	173	315	189	345	188	343	193	352	157	286	144	263	54	98	10	18	118·5	216·0
22	42	77	82	150	92	168	172	314	161	294	159	290	170	310	184	336	147	268	152	277	44	80	16	29	110·4	201·4
23	40	73	88	160	82	150	175	319	158	288	137	250	153	279	174	317	152	277	153	279	50	91	24	44	107·5	195·9
24	47	86	94	171	80	146	177	323	162	295	139	253	137	250	163	297	150	274	145	264	52	95	30	55	106·7	194·4
Means 0^h—23^h	39·5	72·0	65·5	119·3	78·7	143·4	125·3	228·5	104·5	190·5	117·7	214·8	126·6	230·8	127·3	232·2	113·9	207·6	101·2	184·5	49·7	90·6	33·6	61·2	82·3	149·9
1^h—24^h	39·9	72·8	67·0	122·0	77·4	141·1	126·4	230·5	106·0	193·4	117·5	214·3	126·3	230·4	127·5	232·4	114·0	207·8	103·1	187·9	49·5	90·4	33·9	61·8	82·7	150·7

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

(The results are corrected for temperature and in each case diminished by the smallest hourly value.)

Hour Greenwich Civil Time.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		For the Year.	
	f	*m*	*f*	*m*	*f*	*m*	*f*	*m*	*f*	*m*	*f*	*m*	*f*	*m*	*f*		*f*	*m*	*f*	*m*	*f*	*m*	*f*	*m*	*f*	*m*
Midn.	6	26	34	149	32	140	37	162	45	197	45	197	37	162	17	74	29	127	8	35	22	96	18	79	23·6	103·1
1^h	6	26	36	158	30	131	39	171	50	219	47	206	35	153	19	83	21	92	12	53	20	88	14	61	23·5	102·9
2	10	44	32	140	35	153	38	166	42	184	49	214	33	144	21	92	19	83	8	35	19	83	14	61	22·8	99·4
3	8	35	34	149	39	171	46	201	44	193	45	197	36	158	20	88	21	92	12	53	21	92	16	70	24·6	107·7
4	6	26	36	158	41	179	46	201	46	201	47	206	34	149	22	96	19	83	8	35	19	83	8	35	23·8	103·8
5	2	9	37	162	43	188	48	210	50	219	55	241	42	184	30	131	21	92	8	35	23	101	14	61	27·2	118·9
6	2	9	35	153	42	184	50	219	48	210	50	219	38	166	32	140	19	83	13	57	23	101	6	26	25·9	113·4
7	0	0	27	118	40	175	56	245	44	193	44	193	42	184	34	149	23	101	10	44	21	92	6	26	25·0	109·5
8	0	0	29	127	36	158	50	219	32	140	34	149	38	166	34	149	21	92	12	53	17	74	6	26	21·9	95·6
9	8	35	22	96	26	114	39	171	18	79	18	79	34	149	18	79	12	53	12	53	15	66	0	0	14·6	64·0
10	14	61	12	53	16	70	22	96	10	44	10	44	12	53	10	44	8	35	0	0	9	39	0	0	6·3	27·7
11	16	70	0	0	10	44	6	26	4	18	0	0	2	9	0	0	2	9	5	22	5	22	4	18	0·6	2·6
Noon	16	70	2	9	0	0	0	0	0	0	2	9	0	0	6	26	0	0	7	31	12	53	2	9	0·0	0·0
13^h	24	105	2	9	2	9	12	53	10	44	14	61	14	61	12	53	14	61	13	57	20	88	6	26	8·0	35·1
14	32	140	8	35	14	61	28	123	28	123	26	114	32	140	30	131	22	96	23	101	25	109	6	26	18·9	82·7
15	30	131	23	101	29	127	40	175	28	123	37	162	42	184	26	114	28	123	33	144	23	101	8	35	25·0	109·5
16	30	131	27	118	35	153	46	201	40	175	49	214	54	236	26	114	30	131	33	144	15	66	12	53	29·2	127·5
17	30	131	29	127	33	144	50	219	42	184	57	249	58	254	26	114	32	140	29	127	12	53	10	44	30·1	131·6
18	30	131	31	136	31	136	52	228	42	184	59	258	54	236	26	114	33	144	24	105	8	35	10	44	29·4	128·7
19	26	114	32	140	29	127	48	210	40	175	59	258	50	219	19	83	35	153	24	105	6	26	10	44	27·6	120·6
20	27	118	32	140	29	127	42	184	35	153	59	258	46	201	19	83	37	162	20	88	4	18	14	61	26·4	115·5
21	18	79	36	158	25	109	41	179	37	162	53	232	46	201	19	83	33	144	20	88	2	9	14	61	24·8	108·2
22	20	88	35	153	27	118	35	153	35	153	51	223	44	193	13	57	33	144	18	79	0	0	8	35	22·7	99·1
23	20	88	35	153	23	101	29	127	35	153	51	223	43	188	17	74	31	136	20	88	4	18	10	44	22·6	98·9
24	18	79	27	118	25	109	29	127	33	144	49	214	43	188	17	74	31	135	16	70	2	9	8	35	20·9	91·4
Means 0^h-23^h	15·9	69·5	26·1	114·3	27·8	121·6	37·5	164·1	33·5	146·9	40·0	175·2	36·1	157·9	20·7	90·5	22·6	99·0	15·5	68·0	14·4	63·0	9·0	39·4	21·0	91·9
1^h-24^h	16·4	71·7	25·8	113·0	27·5	120·3	37·2	162·7	33·0	144·7	40·2	176·0	36·3	159·0	20·7	90·5	22·7	99·4	15·8	69·5	13·5	59·4	8·6	37·5	20·9	91·4

ROYAL OBSERVATORY GREENWICH.

MAGNETIC DISTURBANCES

AND

EARTH CURRENTS.

1890.

MAGNETIC DISTURBANCES in DECLINATION, HORIZONTAL FORCE, and VERTICAL FORCE, and EARTH CURRENTS, recorded at the ROYAL OBSERVATORY, GREENWICH, in the Year 1890.

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).

1890.

January
3. 18^h to 4. 5^h. See Plate I.
4. $19\frac{1}{4}^h$ to $20\frac{1}{2}^h$ Wave in Dec. (−4′). 16^h to 21^h Fluctuations in H.F. (± ·001): in V.F. small.
5. 18^h to 21^h Fluctuations in Dec. (± 3′): in H.F. (± ·0006).
6. 14^h to 7. 1^h Fluctuations in Dec. (± 3′): in H.F. (± ·0005), with wave. 6. $18\frac{3}{4}^h$ to 20^h (+ ·003). 6. 18^h to 7. 0^h Fluctuations in V.F. (± ·0002).
11. 2^h to 9^h Fluctuations in Dec. (± 3′). 10. 23^h to 11. 9^h Fluctuations in H.F. (± ·0003). 11. $20\frac{3}{4}^h$ to $21\frac{3}{4}^h$ Wave in Dec. (− 4′).
15. 16^h to 16. 2^h Small fluctuations in Dec. (± 2′): in H.F. (± ·0008).
17. 20^h to 18. 4^h Fluctuations in Dec. (± 4′): in H.F. (± ·0015): in V.F. (± ·0002).
19. 0^h to 5^h Fluctuations in Dec. (± 3′): in H.F. (± ·0012): in V.F. small.
20. 18^h to 21. 4^h. See Plate I.
22. 0^h to 4^h Small fluctuations in Dec. (± $1\frac{1}{2}$′): in H.F. (± ·0008): in V.F. small. 17^h to 22^h Fluctuations in Dec. (± 2′).
23. 2^h to 7^h Fluctuations in Dec. (± 2′)

February
1. 19^h to $20\frac{1}{2}^h$ Wave in Dec. (− 5′).
2. $23\frac{1}{4}^h$ to 3. 0^h Wave in Dec. (+ 5′). 2. $23\frac{1}{4}^h$ to 3. $0\frac{1}{4}^h$ Wave in H.F. (+ ·0015): in V.F. (+ ·0002).
3. 18^h to 4. 4^h. See Plate I.
5. 20^h to 6. 1^h Fluctuations in Dec. (± 5′): in V.F. (± ·0002): waves in H.F. 5. $21\frac{1}{4}^h$ to 22^h (+ ·003), and 6. 0^h to 1^h (+ ·002).
11. 20^h to 12. 4^h Fluctuations in Dec. (± 3′). 12. $0\frac{3}{4}^h$ to 2^h Wave in H.F. (+ ·002). 12. 1^h to 2^h Decrease of V.F. (− ·0004).
14. 21^h to 15. 5^h Fluctuations in Dec. (± 7′): in H.F. (± ·0015). 15. 0^h to 1^h Decrease of V.F. (− ·0005).

1890.

February 15. 17^h to 16. 2^h Fluctuations in Dec. (± 5′) : in H.F. (± ·0012) : in V.F. small.
17. 20^h to 18. 0^h Fluctuations in Dec. (± 3′) : in H.F. (± ·001).
18. 15^h to 19. 7^h Fluctuations in Dec. (± 4′) : in H.F. (± ·001) : in V.F. small.
19. 17^h to 18^h Wave in Dec. (− 7′). 15^h to 22^h Fluctuations in H.F. (± ·001) : in V.F. small.
20. $17\frac{3}{4}^h$ to 19^h Wave in Dec. (− 7′). 20. 13^h to 19^h Fluctuations in H.F. (± ·001). 20. $23\frac{1}{2}^h$ to 21. $0\frac{1}{2}^h$ Wave in Dec. (+ 4′). 20. $22\frac{3}{4}^h$ to $23\frac{3}{4}^h$ Wave in H.F. (+ ·001).
22. $20\frac{1}{2}^h$ to 23. 0^h Wave in Dec. (− 5′) : fluctuations in H.F. (± ·0008).
24. 20^h to 25. 0^h Fluctuations in Dec. (± 2′).

March 5. $21\frac{5}{6}^h$ to 6. 1^h Wave in Dec., steep at commencement (− 7′). 5. $21\frac{5}{6}^h$ to $23\frac{1}{4}^h$ Wave in H.F. (+ ·0018).
7. 22^h to 8. 5^h Fluctuations in Dec. (± 6′). 7. $22\frac{1}{2}^h$ to 8. 0^h Wave in H.F. (+ ·0015). 7. $22\frac{1}{2}^h$ to $23\frac{1}{4}^h$ Decrease of V.F. (− ·0005).
10. 20^h to 11. 0^h Fluctuations in Dec. (± 4′) : in H.F. (± ·001) : in V.F. small.
13. $16\frac{3}{4}^h$ to $18\frac{1}{4}^h$ Wave in Dec. (− 7′).
14. $23\frac{1}{3}^h$ to 15. 1^h Wave in H.F. (+ ·0015).
15. 19^h to 16. 6^h. See Plate I.
16. 16^h to $17\frac{1}{2}^h$ Wave in Dec. (− 10′). $20\frac{3}{4}^h$ to 22^h Wave in Dec. (− 8′). $15\frac{1}{2}^h$ to 20^h Fluctuations in H.F. (± ·0015) : in V.F. (± ·0002).
17. 17^h to 20^h Wave in Dec. (− 11′). 17^h to $18\frac{1}{2}^h$ Wave in H.F. (− ·0012).
18. 0^h to 6^h Fluctuations in Dec. (± 4′) : in H.F. (± ·001) : in V.F. (± ·0002). 19^h to 24^h Fluctuations in Dec. (± 5′) : in H.F. (± ·001) : in V.F. small.
22. 23^h to 23. 4^h Fluctuations in Dec. (± 2′) : in H.F. (± ·0006) : in V.F. small.

April 1. 23^h to 2. 5^h Fluctuations in Dec. (± 2′). 1. 16^h to 2. 2^h Fluctuations in H.F. (± ·0015).
6. 0^h to 5^h Fluctuations in Dec. (± 4′) : in H.F. (± ·002). 6. 1^h to 2^h Decrease of V.F. (− ·0005). 6. 23^h to 7. 6^h Fluctuations in Dec. (± 2′) : in H.F. (± ·0008) : in V.F. small.
9. $23\frac{1}{3}^h$ to 10. 0^h Wave in H.F. (+ ·0015).
16. 21^h to 17. 3^h Fluctuations in Dec. (± 3′) : in H.F. (± ·001) : in V.F. small.
20. $22\frac{1}{4}^h$ to $23\frac{1}{4}^h$ Wave in Dec. (+ 3′) : in H.F. (+ ·0013). $22\frac{1}{3}^h$ to 23^h Decrease of V.F. (− ·0003).
22. 19^h to 23. 6^h Fluctuations in Dec. (± 2′). 22. 12^h to 23. 6^h Fluctuations in H.F. (± ·0006) : in V.F. small.
23. 18^h to 24. 5^h Fluctuations in Dec. (± 3′). 23. 14^h to 24. 2^h Fluctuations in H.F. (± ·0008) : in V.F. small.

May 3. 22^h to 4. 6^h Fluctuations in Dec. (± 4′) : in H.F. (± ·0006).
4. 16^h to 18^h Fluctuations in H.F. (± ·0008).
5. 0^h to $2\frac{1}{2}^h$ Fluctuations in Dec. (± 3′).
5. 12^h to 6. 12^h. See Plate I.
10. 12^h to 23^h Fluctuations in H.F. (± ·0006).
17. 3^h to 8^h Fluctuations in Dec. (± 2′) : in H.F. (± ·0012) : in V.F. small. 13^h to 23^h Fluctuations in H.F. (± ·0006).
18. 14^h to 18^h Fluctuations in H.F. (± ·0007).
23. 14^h to 19^h Fluctuations in H.F. (± ·0012).
24. 0^h to $0\frac{1}{2}^h$ Wave in Dec. (+ 2′). 0^h to 2^h Wave in H.F. (+ ·0015).
25. 21^h to 22^h Wave in Dec. (− 3′). 13^h to 22^h Fluctuations in H.F. (± ·001).

June 1. $12\frac{1}{3}^h$ to 22^h Fluctuations in H.F. (± ·0013)
2. $23\frac{1}{3}^h$ to 3. $0\frac{1}{2}^h$ Wave in Dec. (+ 4′). 2. 13^h to 3. 1^h Fluctuations in H.F. (± ·0006).
4. $20\frac{1}{2}^h$ to 5. 2^h Fluctuations in Dec. (± 3′) : in H.F. (± ·0012) : in V.F. (± ·0001).
10. 23^h to 11. 7^h Fluctuations in Dec. (± 2′). 10. 19^h to 11. 7^h Fluctuations in H.F. (± ·0007). 11. 6^h to 7^h Small fluctuations in V.F.
20. 16^h to 20^h Fluctuations in H.F. (± ·001).

1890.

June 21. 4^h to 10^h Fluctuations in Dec. (± 3′). 21. 4^h to 20^h Fluctuations in H.F. (± ·0006): in V.F. (± ·0001).

22. 1^h to $1\frac{2}{3}^h$ Wave in Dec. (+ 7′), followed till 9^h by small fluctuations (± 3′): fluctuations in H.F. (± ·0005). 22. 1^h to $1\frac{2}{3}^h$ Decrease of V.F. (− ·0004). 13^h to 18^h Fluctuations in H.F. (± ·0008): in Dec. and V.F. small.

28. 12^h to 21^h Fluctuations in H.F. (± ·0008).

July 5. $21\frac{1}{2}^h$ to 6. 2^h Fluctuations in H.F. (± ·0008).

6. 18^h to 7. 3^h Fluctuations in H.F. (± ·0007).

7. 21^h to 8. 3^h Fluctuations in Dec. (± 4′). 7. 18^h to 8. 3^h. Fluctuations in H.F. (± ·001): in V.F. small.

11. 2^h to 9^h Fluctuations in Dec. (± 4′). 12^h to 19^h Fluctuations in H.F. (± ·001).

17. 2^h to 19. 0^h Fluctuations in H.F. (± ·0012): in V.F. (± ·0001). No register of Dec.

19. 0^h to 21. 0^h. See Plate II.

21. 3^h to 19^h Fluctuations in H.F. (± ·001).

22. $2\frac{1}{2}^h$ to 4^h Wave in Dec. (+ 8′). 20^h to $21\frac{1}{4}^h$ Wave in Dec. (− 5′).

23. $21\frac{1}{2}^h$ to 24^h Fluctuations in Dec. (± 2′). 22^h to 24^h Wave in H.F. (+ ·0012).

August 1. 13^h to 17^h Fluctuations in H.F. (± ·0008).

6. 17^h to 7. 5^h Fluctuations in Dec. (± 3′): in H.F. (± ·0006).

7. 21^h to 8. 1^h Fluctuations in Dec. (± 2′). 7. 22^h to 8. 0^h Wave in H.F. (+ ·002).

8. 13^h to 18^h Fluctuations in H.F. (± ·0008).

9. 19^h to 10. 2^h Fluctuations in Dec. (± 3′): in H.F. (± ·0008).

14. 12^h to 16. 12^h. See Plates II. and III.

16. 13^h to 17. 0^h Fluctuations in Dec. (± 3′): in H.F. (± ·0015): in V.F. (± ·0001).

17. 4^h to 8^h Fluctuations in Dec. (± 2′): in H.F. (± ·001). 17. 20^h to 18. 10^h Fluctuations in Dec. (± 3′): in H.F. (± ·0006).

18. $13\frac{1}{4}^h$ to 14^h Wave in H.F. (− ·0015). 17^h to 20^h Fluctuations in Dec. (± 3′): in H.F. (± ·0008): in V.F. small.

19. $1\frac{1}{2}^h$ to 3^h Wave in Dec. (+ 6′): in H.F. (+ ·002). $1\frac{1}{2}^h$ to 2^h Wave in V.F. (+ ·0002). 19. 15^h to 20. 10^h Fluctuations in Dec. (± 3′): in H.F. (± ·0007): in V.F. small.

22. $20\frac{2}{3}^h$ to $21\frac{1}{3}^h$ Wave in Dec. (− 4′): in H.F. (+ ·001).

23. 1^h to 4^h Fluctuations in Dec. (± 2′): in H.F. (± ·0006): in V.F. small.

September 2. 12^h to 23^h Fluctuations in Dec. (± 2′); in H.F. (± ·0012): in V.F. (± ·0001).

3. 8^h to 18^h Fluctuations in H.F. (± ·0012).

4. 6^h to 11^h Small rapid fluctuations in Dec. and H.F. 4. 22^h to 5. 1^h Fluctuations in Dec. (± 2′): in H.F. (± ·0007).

5. $19\frac{1}{2}^h$ to $20\frac{3}{4}^h$ Wave in Dec. (− 6′). 13^h to 21^h Fluctuations in H.F. (± ·0006).

6. 12^h to 7. 12^h. See Plate III.

10. 21^h to 11. 10^h Fluctuations in Dec. (± 3′): in H.F. (± ·0015). 10. $23\frac{1}{2}^h$ to 11. 0^h Decrease of V.F. (− ·0004).

11. 12^h to 12. 12^h. See Plate III.

12. 13^h to 16^h Fluctuations in H.F. (± ·001).

13. 0^h to 2^h Fluctuations in Dec. (± 2′): in H.F. (± ·0006): in V.F. (± ·0001). 13. $19\frac{1}{2}^h$ to 21^h Wave in Dec. (− 8′), followed till 14. 2^h by small fluctuations: fluctuations in H.F. (± ·0007): in V.F. small.

14. 20^h to 15. 6^h Fluctuations in Dec. (± 4′): in H.F. (± ·0006): in V.F. small.

15. 12^h to 16. 12^h. See Plate IV.

17. 2^h to 6^h Fluctuations in Dec. (± 4′): in H.F. (± ·001). 3^h to 4^h Decrease of V.F. (− ·0004). 19^h to 24^h Fluctuations in Dec. (± 3′): in H.F. (± ·0006).

18. 17^h to 18^h Wave in Dec. (− 5′).

19. 12^h to 20. 12^h. See Plate IV.

1890.

September 20. 19^h to 21. 0^h Fluctuations in Dec. (± 4′) : in H.F. (± ·0012) : in V.F. small.
21. 3^h to $4\frac{1}{2}^h$ Wave in Dec. (+ 5′). 21. 13^h to 22. 3^h Fluctuations in Dec. (± 2′) : in H.F. small.
24. 20^h to 25. 1^h Fluctuations in Dec. (± 3′) : in H.F. and V.F. small.
25. 14^h to 23^h Fluctuations in Dec. (± 2′) : in H.F. (± ·0008) : in V.F. small.
29. $22\frac{1}{3}^h$ to 23^h Wave in H.F. (+ ·001)
30. 1^h to $2\frac{1}{2}^h$ Wave in Dec. (+ 4′).

October 1. 22^h to 2. 1^h Fluctuations in Dec. (± 2′) : in H.F. and V.F. small.
3. $13\frac{3}{4}^h$ to 17^h Fluctuations in Dec. (± 2′) : in H.F. (± ·0015) : in V.F. (± ·0001).
5. 12^h to 6. 12^h. See Plate IV.
8. 14^h to 9. 6^h Fluctuations in Dec. (± 3′) : in H.F. (± ·0015).
10. 8^h to 12^h Fluctuations in H.F. (± ·0015).
10. 12^h to 11. 12^h. See Plate V.
11. 12^h to 18^h Fluctuations in Dec. (± 2′) : in H.F. (± ·001) : in V.F. small. $22\frac{1}{3}^h$ to $23\frac{1}{2}^h$ Wave in Dec. (+ 3′) : in H.F. (+ ·0014).
12. $16\frac{1}{2}^h$ to 18^h Wave in Dec. (− 12′), followed till 13. 6^h by fluctuations (± 3′) : fluctuations in H.F. (± ·0012) : in V.F. (± ·0001).
13. 20^h to 23^h Small fluctuations in Dec. : fluctuations in H.F. (± ·0008) : in V.F. small.
14. $17\frac{1}{2}^h$ to $18\frac{1}{4}^h$ Wave in Dec. (− 2′) : in H.F. (− ·0008). $21\frac{1}{2}^h$ to 24^h Fluctuations in Dec. (± 2′). $22\frac{1}{2}^h$ to $23\frac{1}{2}^h$ Wave in H.F. (+ ·003).
15. 13^h to 20^h Fluctuations in Dec. (± 4′) : in H.F. (± ·0013) : in V.F. small. 15. 23^h to 16. $1\frac{1}{2}^h$ Wave in H.F. (+ ·002).
17. 12^h to 19. 12^h. See Plate V.
19. 14^h to 16^h Wave in Dec. (− 7′). $18\frac{1}{2}^h$ to 20^h Wave in Dec. (− 11′). 13^h to 20^h Fluctuations in H.F. (± ·0013) : in V.F. small.
20. 0^h to 4^h Fluctuations in Dec. (± 4′) : in H.F. (± ·001) : in V.F. (± ·0001). $18\frac{1}{2}^h$ to $19\frac{1}{2}^h$ Wave in Dec. (− 5′) : in H.F. (+ ·0015).
24. $15\frac{1}{2}^h$ to 22^h Fluctuations in Dec. (± 3′) : in H.F. (± ·0008)
26. 19^h to 27. 4^h Fluctuations in Dec. (± 5′) : in H.F. (± ·001) : in V.F. (± ·0001).
27. 12^h to 22^h Fluctuations in Dec. (± 3′) : in H.F. (± ·001).
31. 17^h to 23^h Fluctuations in Dec. (± 2′) : in H.F. (± ·0007).

November 1. 17^h to 2. 4^h Fluctuations in Dec. (± 4′) : in H.F. (± ·0015) : in V.F. (± ·0002).
4. 22^h to 5. 2^h Fluctuations in Dec. (± 3′) : in H.F. (± ·001).
7. 20^h to 8. 20^h. See Plate VI.
8. 22^h to 9. 2^h Fluctuations in Dec. (± 3′) : in H.F. (± ·001).
9. 12^h to 22^h. See Plate VI.
13. 1^h to 8^h Fluctuations in Dec. (± 3′) : in H.F. (± ·001). 13. 20^h to 14. 4^h Fluctuations in Dec. (± 4′). 13. 14^h to 14. 4^h Fluctuations in H.F. (± ·001) : in V.F. (± ·0001).
14. 15^h to 15. 2^h. See Plate VI.
15. 13^h to 16. 0^h Fluctuations in Dec. (± 3′) : in H.F. (± ·001) : in V.F. small.
17. 17^h to $18\frac{1}{4}^h$ Wave in Dec. (− 6′). 22^h to $23\frac{3}{4}^h$ Wave in Dec. (− 7′).
18. 16^h to 19. 3^h Fluctuations in Dec. (± 3′) : in H.F. small.
25. $18\frac{1}{2}^h$ to 20^h Wave in Dec. (− 5′).
26. 14^h to 27. 0^h Fluctuations in Dec. (± 2′) : in H.F. (± ·001) : in V.F. small.

December 5. 18^h to 6. 3^h Fluctuations in Dec. (± 3′) : in H.F. (± ·001) : in V.F. small.
12. 22^h to $23\frac{1}{3}^h$ Wave in Dec. (+ 4′).
22. 17^h to 19^h Fluctuations in Dec. (± 3′). $16\frac{1}{2}^h$ to 20^h Irregular wave in H.F. (− ·0025).
23. 0^h to 5^h Fluctuations in Dec. (± 3′) : in H.F. (± ·0015).
25. $17\frac{1}{2}^h$ to 19^h Wave in Dec. (− 5′). 17^h to 19^h Fluctuations in H.F. (± ·0006).
28. 19^h to 22^h Fluctuations in Dec. (± 3′). $19\frac{3}{4}^h$ to $20\frac{3}{4}^h$ Wave in H.F. (+ ·0015).

EXPLANATION OF THE PLATES.

The magnetic motions figured on the Plates are—

(1.) Those for days of great disturbance—November 7–8.

(2.) Those for days of lesser disturbance—January 3–4, 20–21, February 3–4, March 15–16, May 5–6, July 19, 20, August 14–15, 15–16, September 6–7, 11–12, 15–16, 19–20, October 5–6, 10–11, 17–18, 18–19, November 9, 14–15.

(3.) Those for four quiet days, January 31, April 3, August 30, November 6, 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, 0·001 of a C. G. S. unit being represented by $0^{in}\cdot 81 = 20\overset{mm.}{\cdot}5$ in the declination curve, by $0^{in}\cdot 75 = 19\overset{mm.}{\cdot}0$ in the horizontal force curve, and by $0^{in}\cdot 82 = 20\overset{mm.}{\cdot}9$ in the vertical force curve.

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 49° 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 47° with the magnetic meridian, reckoning from north to west. Zero E_1 and Zero E_2 indicate the respective instrumental zeros. On January 3–4, 20–21, March 15–16, July 19, 20, August 15–16, September 15–16, 19–20, October 17–18, 18–19, November 14–15, 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.

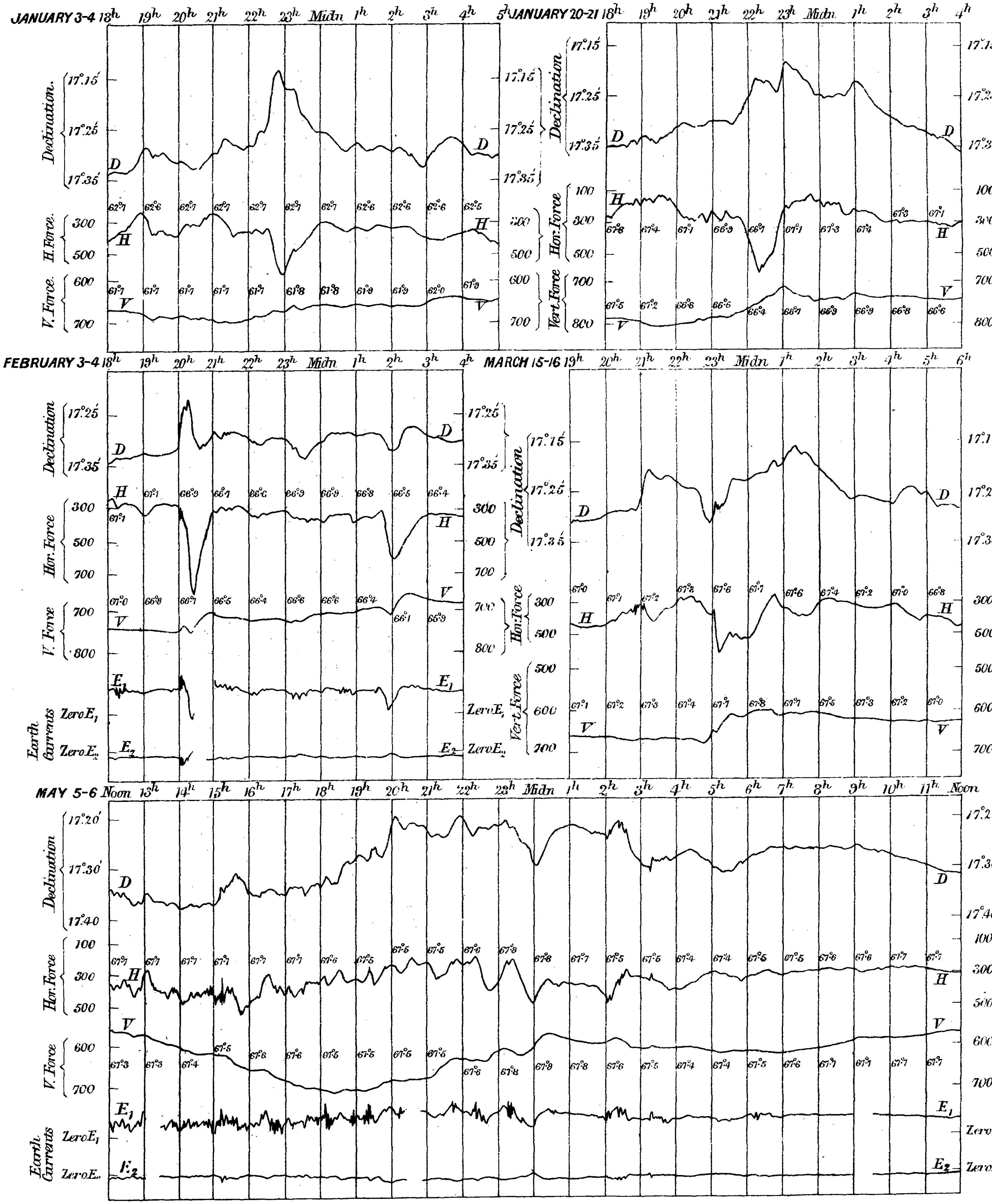
Downward motion of earth current register indicates in the E_1 circuit the passage of a current, corresponding to that from the copper pole of a battery, in the direction Angerstein Wharf to Lady Well (N.E. to S.W. magnetic), and in the E_2 circuit to the passage of a similar current in the direction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

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

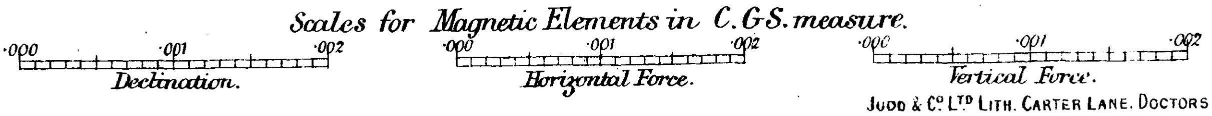
The temperatures (Fahrenheit) of the horizontal and vertical force magnets at each hour are given in small figures on the Diagrams.

From July 19. 0^h to $14\frac{1}{2}^h$ the declination register was lost through the breaking of the suspension skein, and from October 5. 16^h to 20^h the vertical force register was also accidentally lost.

Magnetic Disturbances and Earth Currents recorded at the Royal Observatory, Greenwich. 1890.



Scales for Magnetic Elements in C.G.S. measure.



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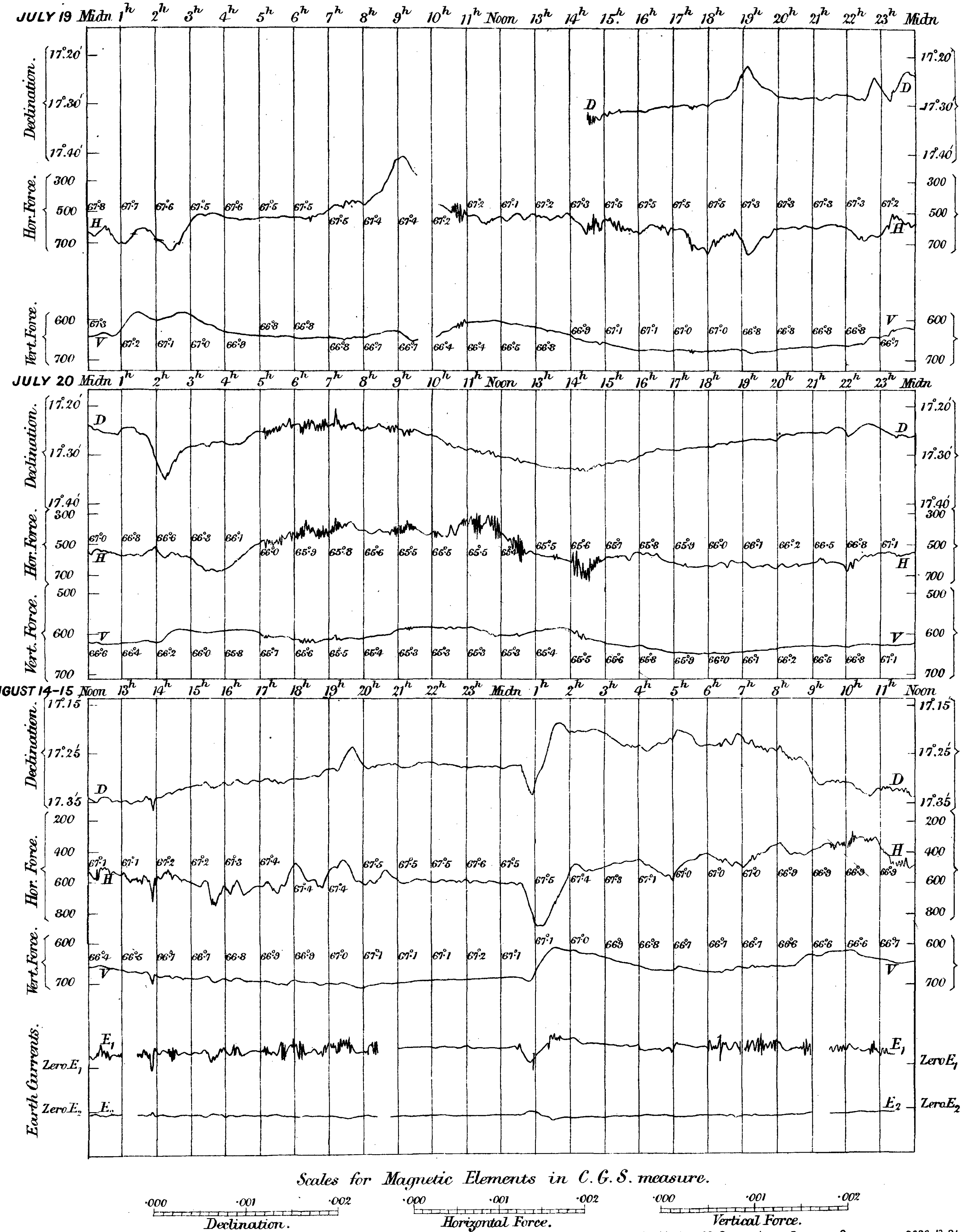
Magnetic Disturbances and Earth Currents recorded at the Royal Observatory, Greenwich. 1890.



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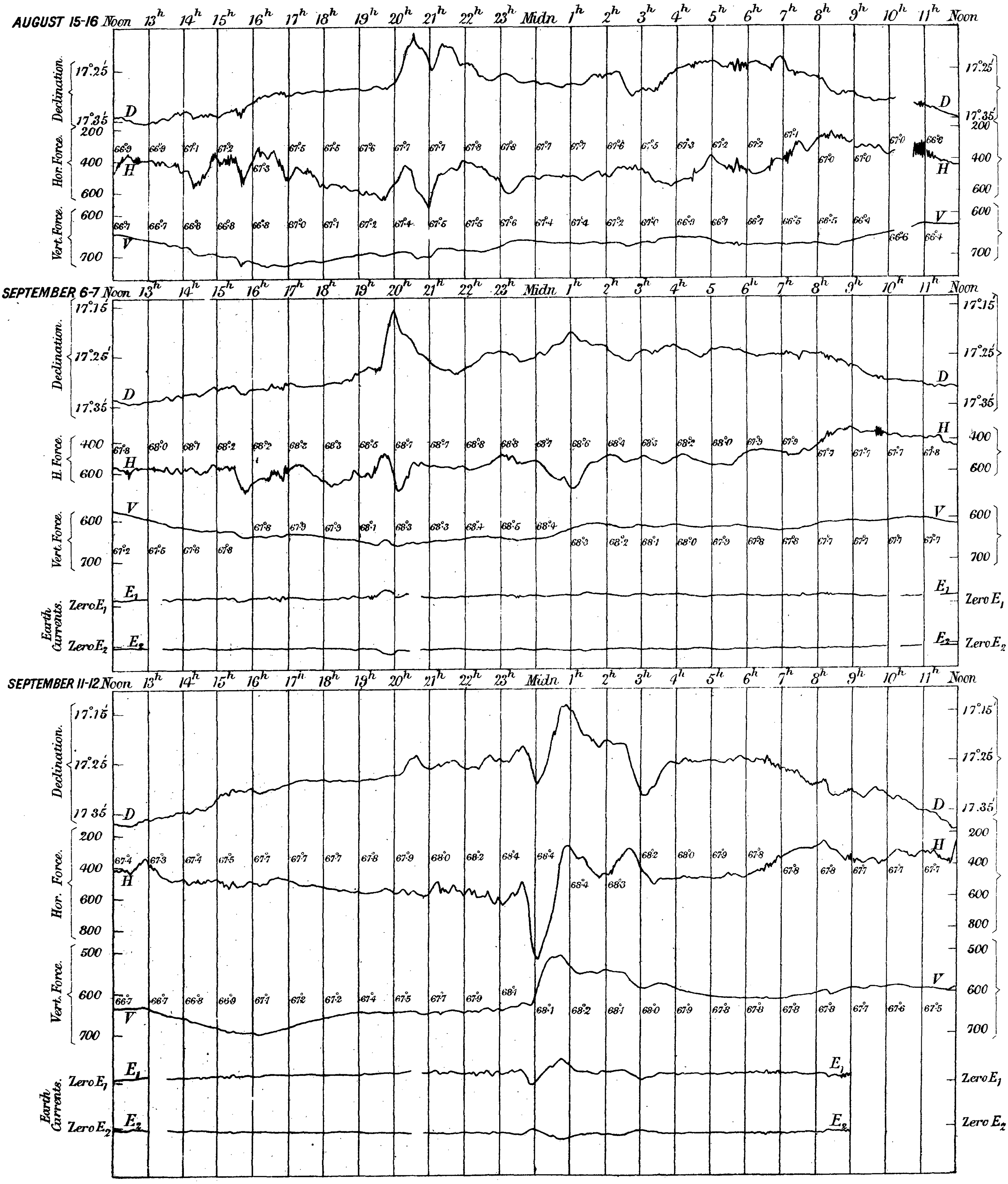
Magnetic Disturbances and Earth Currents recorded at the Royal Observatory, Greenwich, 1890



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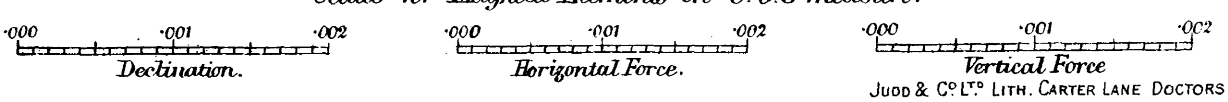

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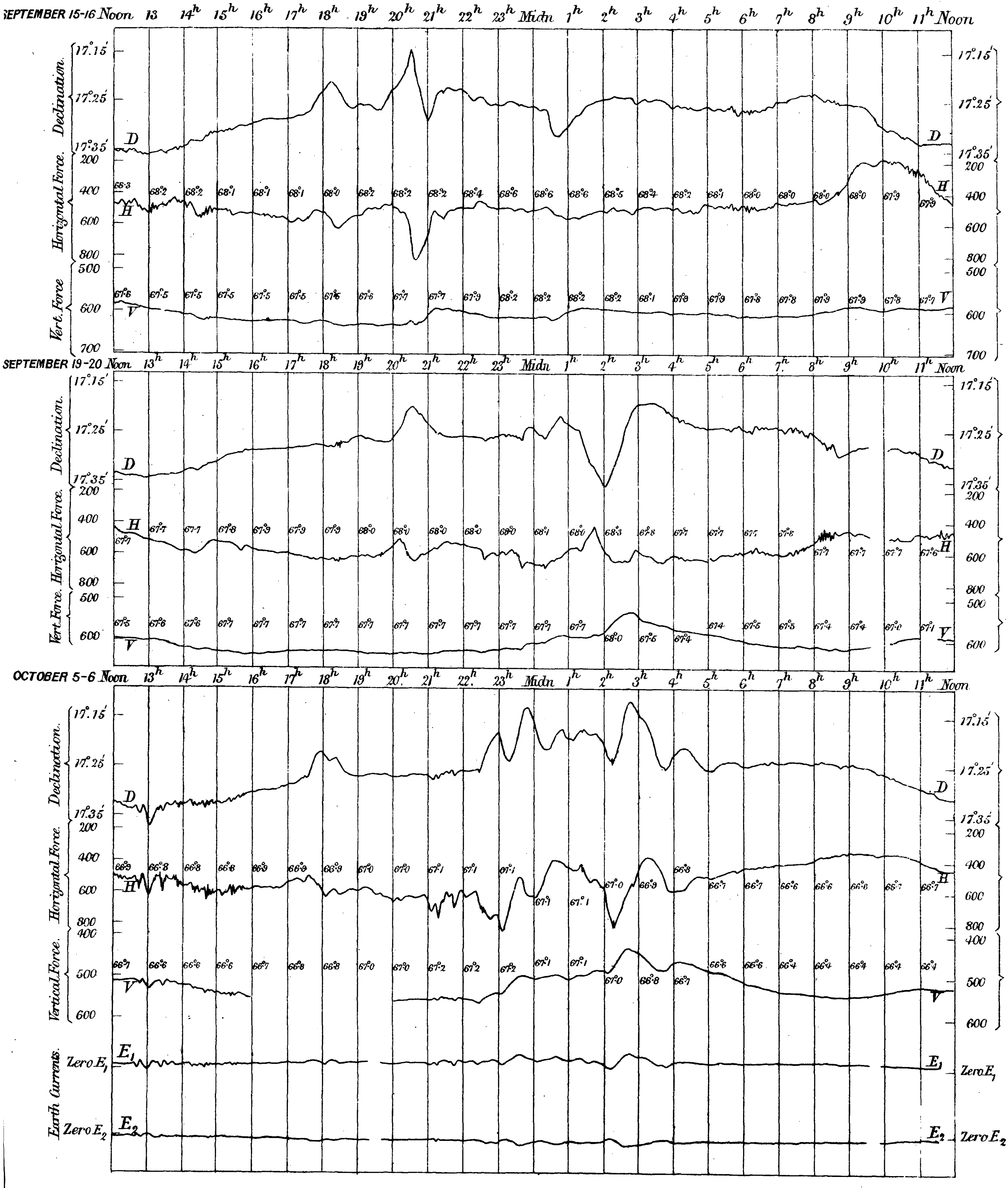
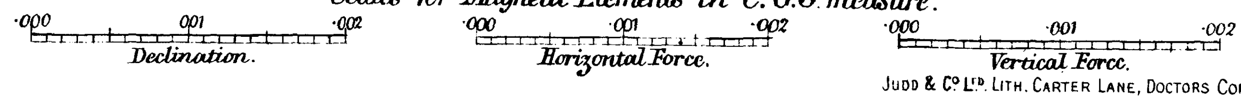
Magnetic Disturbances and Earth Currents recorded at the Royal Observatory, Greenwich. 1890.



Scales for Magnetic Elements in C. G. S. measure.



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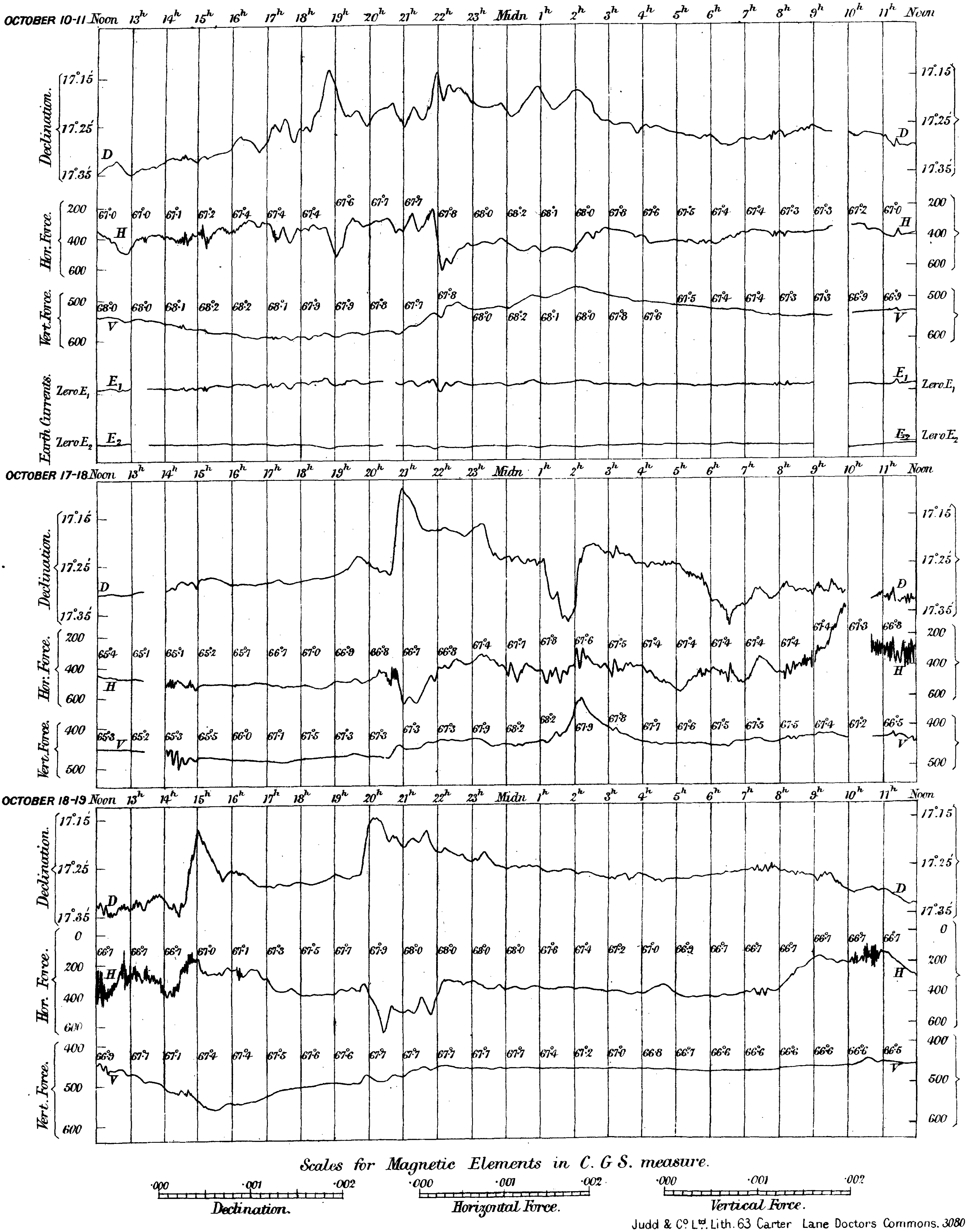
Magnetic Disturbances and Earth Currents recorded at the Royal Observatory, Greenwich. 1890.



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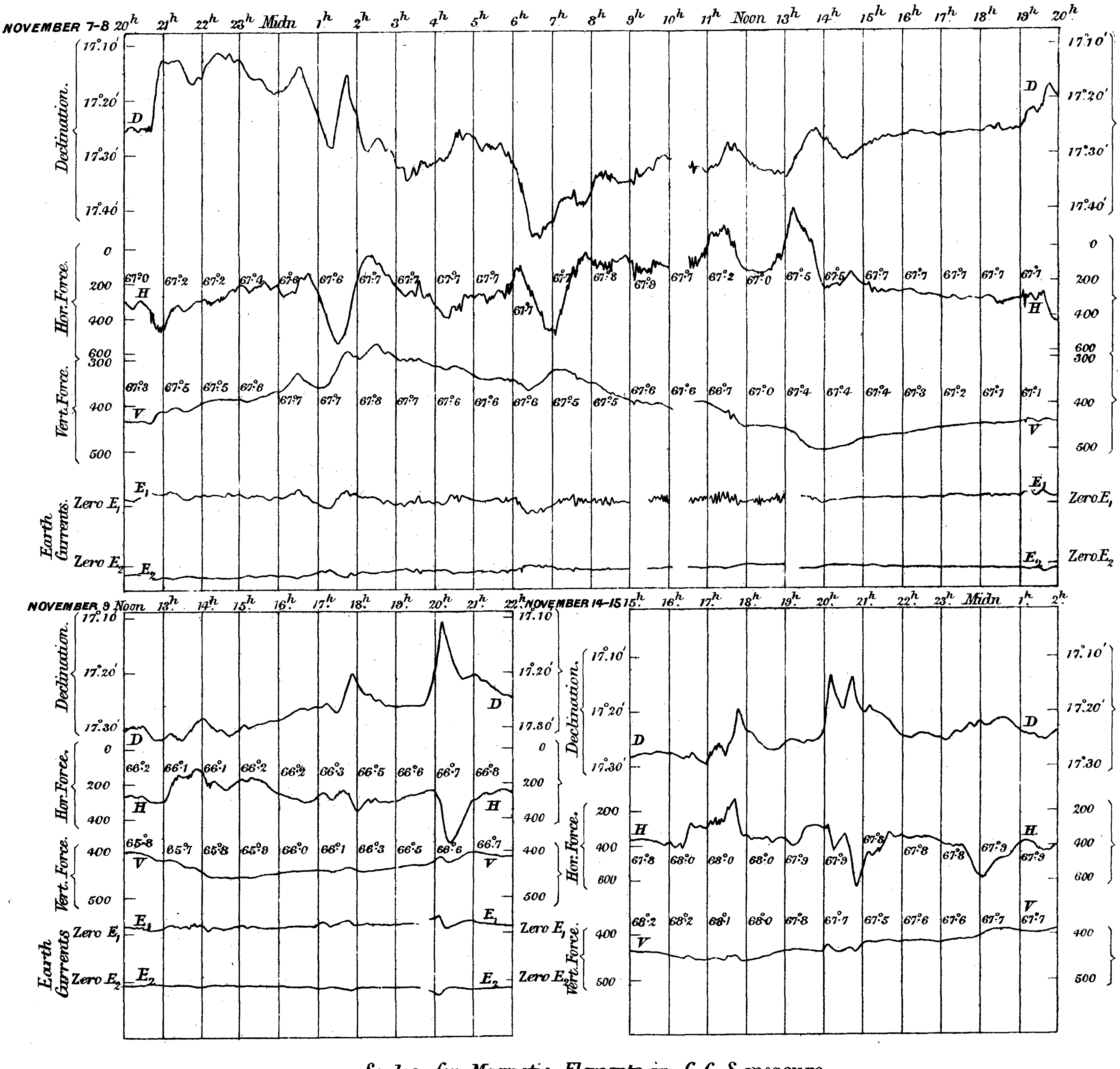
Magnetic Disturbances and Earth Currents recorded at the Royal Observatory Greenwich. 1890



Scales for Magnetic Elements in C. G. S. measure.

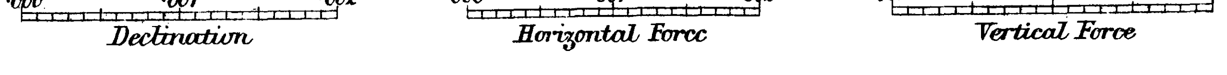


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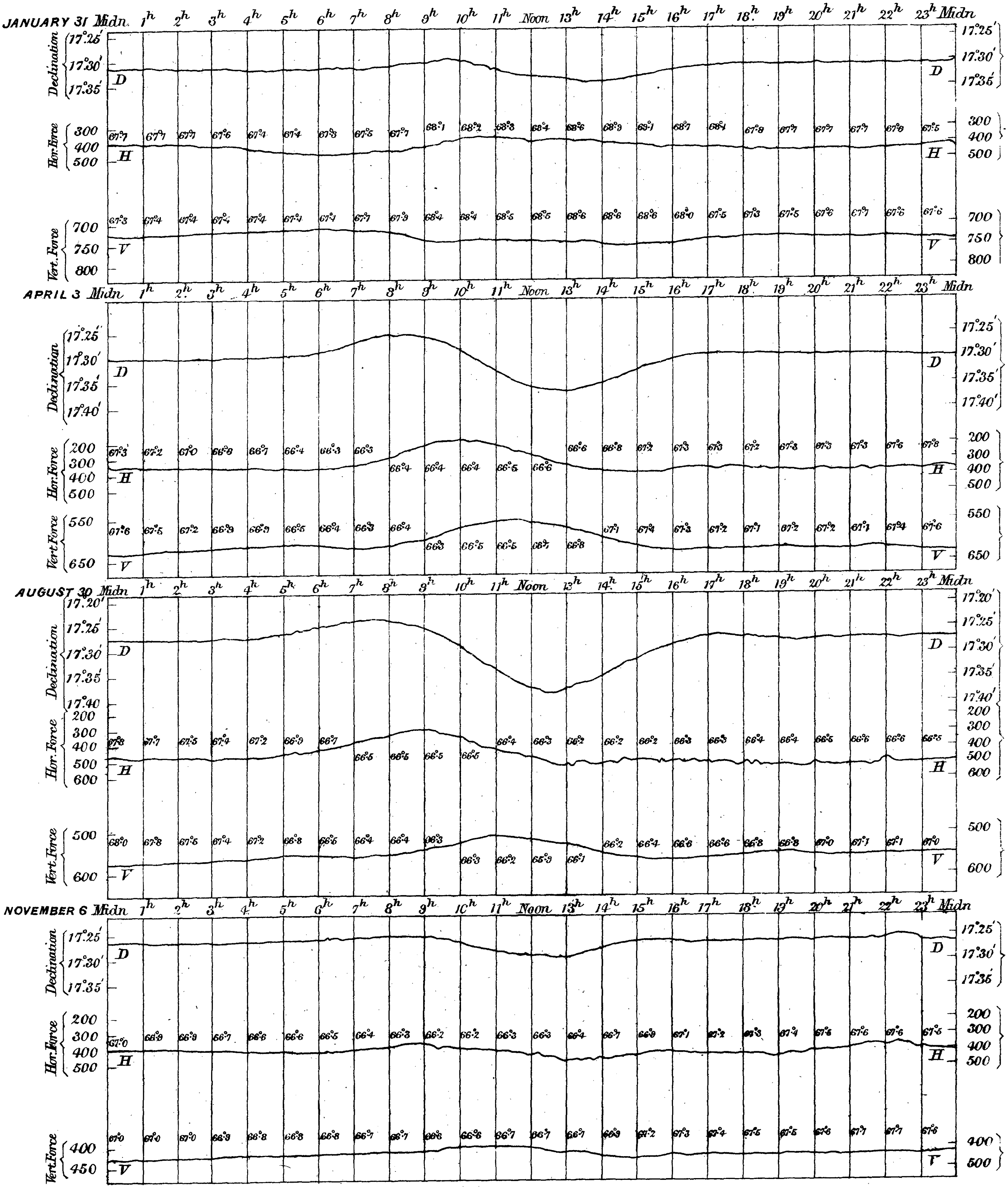
Plate VII.

Types of Magnetic Diurnal Variations at four seasons of the year, recorded at the Royal Observatory, Greenwich. 1890.



Scales for Magnetic Elements in C. G. S. measure.

Declination. ·000 ·001 ·002

Horizontal Force. ·000 ·001 ·002

Vertical Force. ·000 ·001 ·002

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ROYAL OBSERVATORY, GREENWICH.

RESULTS

OF

METEOROLOGICAL OBSERVATIONS.

1890.

MONTH and DAY, 1890.	Phases of the Moon.	BAROMETER. Mean of 24 Hourly Values (corrected and reduced to 32° Fahrenheit).	TEMPERATURE. Of the Air. Highest.	TEMPERATURE. Of the Air. Lowest.	TEMPERATURE. Of the Air. Daily Range.	TEMPERATURE. Of the Air. Mean of 24 Hourly Values.	TEMPERATURE. Of the Air. Excess above Average of 20 Years.	TEMPERATURE. Of Evaporation. Mean of 24 Hourly Values.	TEMPERATURE. Of the Dew Point. Deduced Mean Daily Value.	Difference between the Air Temperature and Dew Point Temperature. Mean.	Difference between the Air Temperature and Dew Point Temperature. Greatest.	Difference between the Air Temperature and Dew Point Temperature. Least.	Degree of Humidity (Saturation = 100).	TEMPERATURE. Of Radiation. Highest in Sun's Rays.	TEMPERATURE. Of Radiation. Lowest on the Grass.	TEMPERATURE. Of the Water of the Thames at Deptford. Highest.	TEMPERATURE. Of the Water of the Thames at Deptford. Lowest.	Rain collected in Gauge No. 6, whose receiving surface is 5 inches above the Ground.	Daily Amount of Ozone.	Electricity.
		in.	°	°	°	°	°	°	°	°	°	°		°	°	°	°	in.		
Jan. 1	...	30·192	34·8	26·5	8·3	30·7	− 7·4	30·2	28·9	1·8	5·9	0·0	93	58·2	18·4	40·1	38·1	0·000	0·0	wP : sP : mP
2	...	29·953	35·1	31·3	3·8	32·5	− 5·4	32·4	32·3	0·2	1·9	0·0	98	41·8	29·9	39·1	38·4	0·000	0·0	wP : sP
3	...	29·546	34·9	30·6	4·3	32·8	− 5·0	32·8	32·8	0·0	1·1	0·0	100	38·0	30·5	38·5	37·0	0·058	0·2	vP : mP, sN
4	...	29·545	47·9	34·9	13·0	42·2	+ 4·5	41·7	41·1	1·1	3·8	0·0	96	56·1	34·2	37·7	36·3	0·006	2·3	sN, wP : mP
5	Greatest Declination N.	29·637	51·7	43·0	8·7	47·9	+10·3	46·7	45·4	2·5	5·0	0·8	92	51·8	36·0	39·4	38·5	0·193	6·0	wP, wN : wP
6	Full: Apogee.	30·054	54·4	49·2	5·2	51·7	+14·1	50·5	49·3	2·4	4·4	0·8	92	57·5	43·3	39·7	38·5	0·044	5·8	wP
7	...	30·194	55·0	47·5	7·5	50·8	+13·2	48·8	46·7	4·1	7·8	1·9	86	83·6	42·6	42·1	40·7	0·000	13·0	wP : mP
8	...	30·075	50·3	43·8	6·5	48·3	+10·6	47·3	46·2	2·1	5·0	0·4	93	58·6	37·5	44·2	42·1	0·024	3·8	wP : mP, vN
9	...	29·979	52·3	36·7	15·6	44·4	+ 6·7	42·9	41·1	3·3	6·1	1·1	88	66·7	30·3	44·6	43·4	0·141	9·5	mP : sP : wP
10	...	29·855	52·9	42·2	10·7	47·2	+ 9·4	43·9	40·2	7·0	12·2	1·6	77	72·4	36·7	45·6	44·2	0·000	3·5	wP : sP : sP
11	...	30·008	50·5	38·9	11·6	44·7	+ 6·8	43·4	41·9	2·8	5·5	0·2	90	55·0	34·2	45·4	43·9	0·012	0·0	mP : sP
12	...	30·029	51·5	34·8	16·7	46·9	+ 8·8	44·5	41·8	5·1	13·4	1·0	83	64·7	24·5	45·4	44·0	0·000	1·2	wP : mP : ssP
13	In Equator	29·978	52·5	33·9	18·6	45·9	+ 7·7	44·9	43·8	2·1	4·8	0·2	93	60·9	22·5	45·4	43·9	0·000	5·8	mP
14	Last Qr.	29·978	49·9	34·4	15·5	43·7	+ 5·4	42·9	41·9	1·8	5·7	0·0	94	54·3	30·3	45·5	44·0	0·003	0·8	sP : mP
15	...	29·939	49·8	46·5	3·3	48·1	+ 9·7	46·4	44·5	3·6	6·7	2·3	88	54·1	41·0	45·6	44·4	0·000	2·2	wP : mP
16	...	29·963	52·9	45·0	7·9	47·6	+ 9·1	46·2	44·7	2·9	5·8	1·5	90	63·1	39·3	46·1	44·6	0·002	1·0	wP : mP : sP
17	...	29·888	47·5	40·4	7·1	43·9	+ 5·3	42·2	40·2	3·7	5·3	0·7	86	54·6	38·6	46·1	44·7	0·000	6·8	wP : vP
18	...	29·534	50·2	40·8	9·4	45·2	+ 6·4	42·8	40·0	5·2	11·1	0·4	82	87·2	36·2	46·0	44·7	0·133	9·2	wP, ssN : mP : sP
19	Greatest Declination S.	29·314	50·4	38·1	12·3	45·9	+ 7·0	43·3	40·3	5·6	10·5	1·0	82	82·0	33·4	46·0	44·9	0·317	8·8	vN, vP : sP, vN
20	Perigee: New.	29·311	44·9	34·0	10·9	39·2	+ 0·1	37·1	34·4	4·8	8·4	1·1	83	75·8	28·5	45·6	44·9	0·000	2·2	mP : sP : ssP
21	...	29·386	44·5	32·5	12·0	39·4	+ 0·1	37·4	34·8	4·6	9·5	1·0	84	52·3	27·0	44·2	43·7	0·118	2·0	sP : sP, sN : vN, mP
22	...	29·015	44·2	37·9	6·3	40·3	+ 0·8	37·7	34·4	5·9	11·2	1·6	80	66·0	31·4	43·9	42·2	0·092	4·8	wP, vN : mP : ssP
23	...	28·800	49·8	35·7	14·1	42·2	+ 2·6	40·4	38·2	4·0	7·1	0·0	86	79·0	29·0	43·4	41·9	0·176	14·2	vN, vP
24	...	29·532	51·0	34·0	17·0	41·2	+ 1·5	39·9	38·2	3·0	7·3	0·4	90	67·2	27·2	42·6	41·5	0·052	1·2	sP : vP, sN
25	In Equator	29·425	54·3	46·4	7·9	51·7	+11·9	49·5	47·3	4·4	7·8	1·8	85	56·0	40·0	43·1	41·9	0·013	4·8	wP : vP
26	...	29·628	50·6	39·2	11·4	45·6	+ 5·7	42·3	38·5	7·1	11·1	3·4	76	76·0	32·1	43·8	42·9	0·012	3·0	mP, mN : mP : wP
27	First Qr.	29·710	51·7	40·0	11·7	45·9	+ 5·9	42·6	38·8	7·1	12·3	2·0	77	73·0	33·4	44·6	43·2	0·050	1·5	wP, mN : vP
28	...	29·634	50·7	36·0	14·7	40·4	+ 0·3	39·9	39·3	1·1	7·4	0·0	96	60·9	34·8	44·5	43·2	0·522	3·5	vN, vP : wP, wN
29	...	30·074	42·0	33·4	8·6	37·6	− 2·6	35·7	33·1	4·5	11·0	1·8	84	74·3	28·7	44·4	42·9	0·000	0·0	wP : sP : mP
30	...	30·198	46·5	33·0	13·5	40·6	+ 0·3	39·0	37·0	3·6	7·3	0·2	87	54·6	26·9	43·6	42·4	0·076	0·0	mP, wN : mP : wP
31	...	30·169	48·9	43·3	5·6	46·8	+ 6·4	46·7	46·6	0·2	1·3	0·0	99	51·9	41·2	43·3	41·9	0·041	0·0	... : vP, vN
Means	...	29·759	48·5	38·2	10·3	43·6	+ 4·8	42·0	40·1	3·5	7·2	0·9	88·1	62·8	32·9	43·5	42·2	Sum 2·085	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 results on January 21 for Air and Evaporation Temperatures are deduced from eye-observations on account of failure of the photographic registers.

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

The mean reading of the *Barometer* for the month was 29in·759, being 0in·030 *higher* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 55°·0 on January 7; the lowest in the month was 26°·5 on January 1; and the range was 28°·5.
The mean of all the highest daily readings in the month was 48°·5, being 5°·5 *higher* than the average for the 49 years, 1841–1889.
The mean of all the lowest daily readings in the month was 38°·2, being 4°·7 *higher* than the average for the 49 years, 1841–1889.
The mean of the daily ranges was 10°·3, being 0°·8 *greater* than the average for the 49 years, 1841–1889.
The mean for the month was 43°·6, being 4°·8 *higher* than the average for the 20 years, 1849–1868.

MONTH and DAY, 1890.	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	2·8	7·9	SW : SE	SE : ENE	0·0	0·0	0·00	111	v : 0, ho.-fr	0 : 10, slt.-f
2	0·0	7·9	E	E	0·4	0·0	0·01	210	10 : 10	10 : 10
3	0·0	7·9	ESE : SE	ESE	0·0	0·0	0·00	91	10 : 10 : 10, slt.-r	10, fq.-r : 10, fq.-r, f
4	0·0	7·9	SSW	SSW : S	1·9	0·0	0·17	276	10, shs.-r : 10 : 10, li.-cl	v, cu.-s, li.-cl : v : 1, li.-sc
5	0·0	7·9	S : SSW	SSW : SW	8·3	0·0	2·73	639	v, w : 10, st.-w, r	10, fq.-th.-r, st.-w : 9, cu.-s, li.-cl, w
6	0·0	8·0	SW : SSW	SSW	5·2	0·0	1·21	458	10, li.-shs : 10, fq.-shs	10, sc, oc.-slt.-r, w : 10, oc.-slt.-r
7	4·9	8·0	SSW	SSW	4·0	0·0	0·88	429	p.-cl : 2, li.-cl	4, li.-cl : v : 10
8	0·0	8·0	SSW	SSW : SW	3·1	0·0	0·35	354	10, li.-shs : 10	v : p.-cl, shs.-r, w : v, w
9	0·8	8·1	SW : SSW	SSW : SW	6·5	0·0	1·07	460	0, d : 0 : 3, cu.-s, li.-cl, so.-ha	v, cu.-s, li.-cl, r : 10, fq.-r, w : 10, shs.-r, w
10	4·4	8·1	WSW	W : WSW	7·4	0·0	1·93	590	10, slt.-r, w : 0, w : 0, w	1, li.-cl, w : p.-cl : 10
11	0·0	8·1	SW : SSW	SSW : SW	0·7	0·0	0·02	229	10 : 10 : 10, slt.-r	10, slt.-r : 10 : 10
12	0·8	8·2	SW : W : NW	NW : W : SW	1·6	0·0	0·09	308	10 : v, sc, th.-cl	0, slt.-h : 0, ho.-fr
13	0·0	8·2	SSW : SW	WSW : W	3·2	0·0	0·34	365	0, ho.-fr : v, li.-cl : 10	10, slt.-r : v : 0, h
14	0·0	8·2	SW : SSW	SSW : SW	9·5	0·0	0·96	374	0 : v, li.-cl, slt.-f	10, slt.-r : 9, w
15	0·0	8·3	WSW : SW	WSW : SW	3·0	0·0	0·38	386	10 : 10	10, slt.-r : 10 : 10
16	1·2	8·3	SW : SSW	SW : SSW	1·7	0·0	0·01	283	10 : 10	7, ci.-cu, cu.-s : p.-cl : v
17	0·4	8·3	SSW	S : SSW	2·6	0·0	0·24	348	10 : 10	9, cu.-s : 10, slt.-r : 10, slt.-r
18	4·9	8·4	S : SW	WSW : SSW	8·3	0·0	1·96	615	10 : 10, hy.-r, w : v	4, cu, ci.-cu : 10, st.-w : 10, slt.-r, st.-w
19	2·5	8·4	SW : WSW	SW	9·9	0·0	1·67	577	v, hy.-r, w : vv, sh.-r : v, cu.-s, r, hl, st.-w	v, ci.-cu, shs.-r, w : v, hy.-sh, w : v, li.-cl
20	4·5	8·5	SW : WSW	WSW : SW	2·8	0·0	0·32	374	v, ho.-fr : v, li.-cl, m	4, ci.-cu, cu, li.-cl : v : v, th.-cl
21	1·7	8·5	SW	SSW	8·8	0·0	1·11	472	v, th.-cl, ho.-fr : v, li.-cl, so.-ha	10, fq.-r, hy.-sqs : v, li.-cl, w
22	5·0	8·6	S : WSW	WSW : SSW : SSE	8·8	0·0	1·47	509	10, : 10, hy.-sh : p.-cl, st.-w	v, cu, cu.-s, li.-cl, st.-w : v : 10, r
23	1·2	8·6	ESE : SSW	WSW : W : WNW	9·5	0·0	1·88	588	10, c.-r : 10, fq.-r, w	v, shs.-r, w : 10, st.-w : v, th.-cl
24	0·0	8·7	SW	SW : SSE	3·2	0·0	0·05	281	0, ho.-fr : p.-cl : p.-cl, so.-ha	so.-ha, prh, slt.-r : 10, fq.-r : 10, slt.-r
25	0·0	8·7	SW : SSW	SW	13·6	0·0	3·22	754	10, slt.-r, w : 10, sc, slt.-r, st.-w	10, slt.-r, st.-w : vv, st.-w : v, w
26	2·2	8·8	SW : WSW	WSW : SW	14·5	0·0	3·81	837	v, slt.-sh, w : v, w	v, st.-w : 10, g : 10, slt.-r, g
27	1·4	8·8	WSW : WNW	WNW : SW	12·0	0·0	1·60	520	10, st.-w : 10, w : p.-cl, cu.-s, li.-cl	6, ci.-cu, li.-cl : p.-cl : 10
28	0·0	8·9	ESE : SSW	N : NNE	3·7	0·0	0·41	303	10, fq.-r : 10, c.-r : 10, c.-r	10, fq.-r : 10, fq.-r : 10
29	5·3	8·9	N	NNW : WSW	4·2	0·0	0·86	323	10 : v : 0	0 : 0, slt.-f
30	0·0	9·0	SW : WSW	WNW : W	1·5	0·0	0·09	238	v : v, shs.-r : p.-cl	10 : 10, oc.-slt.-r
31	0·0	9·0	NW : NNW	N : Calm	0·2	0·0	0·00	66	10, oc.-slt.-r : 10, glm, f, fq.-m.-r	10, fq.-m.-r : 10, m
Means	1·4	8·4	...	...	...	...	0·93	399		
Number of Column for Reference.	21	22	23	24	25	26	27	28	29	30

The mean *Temperature of Evaporation* for the month was 42°·0, being 4°·6 *higher* than the average for the 20 years, 1849–1868.
The mean *Temperature of the Dew Point* for the month was 40°·1, being 4°·7 *higher* than the average for the 20 years, 1849–1868.
The mean *Degree of Humidity* for the month was 88·1, being 0·8 *greater* than the average for the 20 years, 1849–1868.
The mean *Elastic Force of Vapour* for the month was 0in·248, being 0in·041 *greater* than the average for the 20 years, 1849–1868.
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was 2grs·8, being 0gr·4 *greater* than the average for the 20 years, 1849–1868.
The mean *Weight of a Cubic Foot of Air* for the month was 548 grains, being 4 grains *less* than the average for the 20 years, 1849–1868.

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

The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·170. The maximum daily amount of *Sunshine* was 5·3 hours on January 29.

The highest reading of the *Solar Radiation Thermometer* was 87°·2 on January 18; and the lowest reading of the *Terrestrial Radiation Thermometer* was 18°·4 on January 1.

The mean daily distribution of *Ozone* for the 12 hours ending 9h. was 2·4; for the 6 hours ending 15h. was 0·7; and for the 6 hours ending 21h. was 0·7.

The *Proportions of Wind* referred to the cardinal points were N. 2, E. 2, S. 15, and W. 12.

The *Greatest Pressure of the Wind* in the month was 14·5 lbs. on the square foot on January 26. The mean daily *Horizontal Movement of the Air* for the month was 399 miles; the greatest daily value was 837 miles on January 26; and the least daily value was 66 miles on January 31.

Rain fell on 19 days in the month, amounting to 2in·085, as measured by gauge No. 6 partly sunk below the ground; being 0in·098 *greater* than the average fall for the 49 years, 1841–1889.

MONTH and DAY, 1890.	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.		
Feb. 1	...	30·095	47·7	42·3	5·4	45·8	+ 5·3	45·5	45·2	0·6	2·9	0·0	98	54·5	40·2	42·6	41·4	0·032	1·0	vP : mP : wP
2	Greatest Dec N. Apogee	30·048	46·9	34·0	12·9	43·1	+ 2·5	41·2	38·9	4·2	7·7	0·2	85	52·2	30·0	42·2	41·0	0·010	0·0	vP : mP
3	...	30·247	41·1	27·7	13·4	34·2	− 6·5	33·3	31·8	2·4	7·0	0·0	90	44·0	23·3	42·4	41·0	0·000	0·0	sP
4	...	29·995	42·4	29·4	13·0	35·0	− 5·7	34·3	33·1	1·9	4·6	0·0	93	44·3	23·9	42·6	41·4	0·000	0·0	vP : ssP : mP
5	Full	29·928	43·5	36·1	7·4	39·2	− 1·4	38·0	36·4	2·8	6·4	0·7	90	47·0	30·9	42·5	41·2	0·021	0·0	wP : mP
6	...	30·066	42·3	34·1	8·2	37·3	− 3·1	35·9	34·0	3·3	6·4	1·5	88	67·0	30·0	41·9	40·6	0·023	0·0	wP : sP
7	...	30·219	41·4	33·0	8·4	37·8	− 2·4	35·9	33·3	4·5	6·9	1·2	84	50·7	28·6	41·6	40·4	0·000	0·0	mP : sP
8	...	30·208	41·3	29·6	11·7	34·8	− 5·1	33·1	30·3	4·5	10·3	0·0	83	87·1	25·2	40·5	40·0	0·000	0·0	sP
9	In Equator	30·046	40·1	32·2	7·9	35·7	− 3·9	34·1	31·7	4·0	7·4	1·5	85	87·0	27·0	39·6	38·6	0·000	0·0	sP : mP : mP
10	...	30·102	44·5	29·6	14·9	35·4	− 3·9	34·0	31·8	3·6	8·1	0·0	87	88·6	24·1	39·6	38·5	0·000	0·0	mP : sP
11	...	30·072	43·4	27·7	15·7	34·8	− 4·3	33·8	32·2	2·6	9·7	0·0	90	86·0	24·0	39·4	39·0	0·000	0·0	sP
12	Last Qr.	29·764	41·0	28·5	12·5	33·1	− 5·8	31·3	27·8	5·3	10·3	1·8	80	90·0	21·0	39·0	38·6	0·000	0·0	sP
13	...	29·557	41·1	28·2	12·9	34·1	− 4·7	32·1	28·6	5·5	10·6	1·5	79	87·8	23·0	38·6	38·3	0·000	2·0	sP : vP
14	...	29·673	39·8	35·7	4·1	37·8	− 0·9	37·4	36·8	1·0	1·6	0·0	96	44·1	34·1	38·6	38·4	0·055	1·0	sN, vP : vP, wN
15	...	29·361	41·8	33·7	8·1	37·4	− 1·3	37·1	36·7	0·7	2·5	0·0	97	45·2	32·0	38·9	38·5	0·815	3·5	sP, ssN : ssN, wP
16	Greatest Declination S.	29·556	49·1	33·8	15·3	40·7	+ 1·9	38·5	35·7	5·0	10·7	1·8	83	92·8	28·7	38·4	38·0	0·000	5·0	mP, wN : mP
17	...	29·693	50·5	37·3	13·2	42·3	+ 3·4	40·2	37·6	4·7	7·8	2·1	84	91·5	32·0	38·4	37·9	0·000	5·5	mP : sP
18	Perigee	29·942	47·1	37·3	9·8	41·1	+ 2·1	39·5	37·5	3·6	6·9	0·9	87	90·0	32·3	39·0	38·7	0·000	6·8	sP
19	New	30·051	43·3	36·3	7·0	38·7	− 0·5	37·5	35·9	2·8	6·2	1·2	90	73·8	30·2	39·4	39·0	0·000	2·7	mP : sP
20	...	29·929	38·2	35·7	2·5	37·2	− 2·1	36·5	35·5	1·7	3·4	0·7	94	44·5	30·8	39·2	38·7	0·036	1·5	sP : vP, wN
21	...	30·015	37·3	34·5	2·8	36·1	− 3·4	36·0	35·9	0·2	1·7	0·0	99	39·5	34·5	39·9	38·6	0·000	0·0	vP, wN
22	In Equator	30·298	42·0	36·4	5·6	38·5	− 1·1	37·3	35·7	2·8	6·0	0·2	90	55·8	30·9	40·2	38·9	0·000	0·5	vP
23	...	30·480	43·8	31·2	12·6	35·4	− 4·3	33·4	30·2	5·2	9·2	2·2	81	74·5	26·7	39·1	38·1	0·000	1·5	mP
24	...	30·383	47·2	29·7	17·5	37·7	− 2·1	36·8	35·5	2·2	6·4	0·0	92	88·0	23·8	38·6	37·5	0·000	0·0	vP
25	...	30·254	42·8	33·6	9·2	38·3	− 1·6	36·8	34·8	3·5	5·3	1·8	87	77·0	30·8	40·6	39·3	0·000	0·0	mP : vP, wN
26	First Qr.	30·120	42·9	36·0	6·9	38·7	− 1·3	37·0	34·7	4·0	9·4	1·7	86	48·8	34·8	41·0	39·4	0·029	2·0	vP : vP, ssN
27	...	30·208	41·1	30·4	10·7	34·9	− 5·2	32·7	29·1	5·8	9·1	0·0	79	74·0	25·1	40·6	39·4	0·015	0·5	mP : sP : vP, ssN
28	...	30·170	39·1	26·6	12·5	32·3	− 7·9	30·2	25·6	6·7	11·0	2·9	75	92·7	23·0	40·4	39·2	0·000	1·5	sP : vP
Means	...	30·017	43·0	32·9	10·1	37·4	− 2·3	36·1	34·0	3·4	7·0	0·9	87·6	68·5	28·6	40·2	39·3	Sum 1·036	1·3	...
Number of Column for Reference.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

The results apply to the civil day.

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

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

The mean reading of the *Barometer* for the month was $30^{in}\cdot017$, being $0^{in}\cdot185$ *higher* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was $50^{\circ}\cdot5$ on February 17; the lowest in the month was $26^{\circ}\cdot6$ on February 28; and the range was $23^{\circ}\cdot9$.
The mean of all the highest daily readings in the month was $43^{\circ}\cdot0$, being $2^{\circ}\cdot3$ *lower* than the average for the 49 years, 1841–1889.
The mean of all the lowest daily readings in the month was $32^{\circ}\cdot9$, being $1^{\circ}\cdot4$ *lower* than the average for the 49 years, 1841–1889.
The mean of the daily ranges was $10^{\circ}\cdot1$, being $0^{\circ}\cdot9$ *less* than the average for the 49 years, 1841–1889.
The mean for the month was $37^{\circ}\cdot4$, being $2^{\circ}\cdot3$ *lower* than the average for the 20 years, 1849–1868.

MONTH and DAY, 1890.	Daily Duration of Sunshine.	Sun above Horizon.	Wind as deduced from Self-registering Anemometers. Osler's. General Direction. A.M.	P.M.	Pressure on the Square Foot. Greatest.	Least.	Mean of 24 Hourly Measures.	Robinson's. Horizontal Movement of the Air.	Clouds and Weather. A.M.	P.M.
	hours.	hours.			lbs.	lbs.	lbs.	miles.		
Feb. 1	0·0	9·1	Calm : SSW	SSW	1·3	0·0	0·03	154	10, f, shs.-r : 10, f, oc.-slt.-r	10, slt.-r : 10 : 10
2	0·0	9·2	SSW : SW	N	1·0	0·0	0·02	195	10, shs.-r : 10, glm	10 : p.-cl,lu.-ha: v,th.-cl
3	0·0	9·2	N : WSW	Calm	0·0	0·0	0·00	102	0, ho.-fr : 0, ho.-fr, m	2, h, m, li.-cl : 2,th.-cl,h,slt.-f,ho.-fr
4	0·8	9·3	Calm	NE : N	0·1	0·0	0·00	61	0, f, ho.-fr : tk.-f	3, li.-cl, slt.-f : p.-cl : v
5	0·0	9·3	NNW : NNE	NNE : N	2·4	0·0	0·22	266	v : 10, fq.-th.-r	10, slt.-r : p.-cl : li.-cl
6	1·9	9·4	NNE : NE	ENE	1·7	0·0	0·10	281	v : p.-cl, r, sn	9,ci.-cu,cu.-s,slt.-r : 2, slt.-r : p.-cl,slt.-r
7	0·0	9·4	ENE	ENE	2·7	0·0	0·40	310	10 : 10	v : v, th.-cl
8	6·8	9·5	ENE : E	ENE : E	3·2	0·0	0·24	235	0, ho.-fr : 0, ho.-fr	1, th.-cl : 1, th.-cl : 9
9	2·5	9·6	NE : E	E	2·4	0·0	0·39	307	p.-cl : 7, li.-cl, cu.-s	7, cu.-s : 10 : 0
10	7·7	9·6	E : ESE	ESE : E	0·7	0·0	0·01	174	0, ho.-fr : 0	0 : 0 : 0, slt.-f
11	6·0	9·7	Calm : E	E : ESE	2·1	0·0	0·10	202	0, slt.-f, ho.-fr : 1, tk.-f	0 : 0
12	7·8	9·8	ESE	ESE	2·1	0·0	0·16	235	0, ho.-fr : 0	0 : 0, ho.-fr
13	7·2	9·8	ESE	SE : ESE	1·2	0·0	0·02	219	0, ho.-fr : 0	2, li.-cl, ci.-cu : 10 : 10
14	0·0	9·9	E : ENE : N	N : SSW : E	0·0	0·0	0·00	167	10, sh.-r : 10 : 10	10, fq.-m.-r, glm, f : 10, th.-r
15	0·0	9·9	ENE	ENE : W : WSW	4·5	0·0	0·55	375	10, fq.-r : 10, c.-r, sn : 10, c.-r	10, c.-r, f, glm : 10, fq.-r
16	4·4	10·0	WSW : SSW	SSW : SE	1·9	0·0	0·15	357	10 : p.-cl :9,cu.-s,ci.-cu	p.-cl,cu.-s,ci.-cu: p.-cl, prh : 10
17	1·6	10·1	SE : E	SSE : ESE	1·2	0·0	0·02	248	p.-cl : 9	8, cu.-s, ci.-cu, li.-cl: p.-cl
18	5·2	10·1	E	E : ENE	2·0	0·0	0·05	313	v, d : 3, ci.-cu, li.-cl	5, li.-cl : 0
19	1·2	10·2	ENE : E	E	2·5	0·0	0·17	350	v : v, cu, li.-cl	6, th.-cl ; 3, th.-cl : 1,li.-cl,h
20	0·0	10·3	E	E : NE : N	0·0	0·0	0·00	154	p.-cl : 10, fq.-th.-r	10, fq.-th.-r : 10
21	0·0	10·3	N : NE	SSE : E	0·0	0·0	0·00	70	10 : 10, f	10, slt.-f : 10, slt.-f, oc. slt.-r
22	0·0	10·4	NNE	NE	0·0	0·0	0·00	188	10, f : 10	10 ; p.-cl : 10
23	2·5	10·5	NNE : NE	NE : ENE	0·6	0·0	0·00	284	10 : p.-cl : 10	v : 0
24	0·5	10·5	NE : NNE	NE	1·3	0·0	0·02	189	p.-cl, ho.-fr : 10	10, cu.-s,fq.-th.-r : 10
25	2·4	10·6	NE : NNE : N	NNE : NE	2·0	0·0	0·41	375	10 : v, li.-cl	10 : 10
26	0·0	10·7	NE	NE	5·8	0·0	0·61	414	10 : 10 : 10, slt.-r	10 : 10, slt.-r, w : 10, w
27	1·3	10·7	NNE : N	N	5·0	0·0	0·65	360	v : p.-cl, ci.-cu, slt.-sn	v,ci.-cu,cu.-s,oc.-sn,glm: v, oc.-sn
28	3·0	10·8	N	N : NW	1·8	0·0	0·22	270	v : v, th.-cl	8,cu.-s,ci.-cu,slt.-sn: v,th.-cl,cu.-s,slt.-sn
Means	2·2	9·9	...	...	...	...	0·16	245		
Number of Column for Reference.	21	22	23	24	25	26	27	28	29	30

The mean *Temperature of Evaporation* for the month was 36°·1, being 1°·8 *lower* than
The mean *Temperature of the Dew Point* for the month was 34°·0, being 1°·4 *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 $0^{\text{in}}\cdot196$, being $0^{\text{in}}\cdot011$ *less* than
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was $2^{\text{grs}}\cdot3$, being $0^{\text{gr}}\cdot1$ *less* than
The mean *Weight of a Cubic Foot of Air* for the month was 560 grains, being 6 grains *greater* than
} the average for the 20 years, 1849–1868.

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

The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·226. The maximum daily amount of *Sunshine* was 7·8 hours on February 12.

The highest reading of the *Solar Radiation Thermometer* was 92°·8 on February 16; and the lowest reading of the *Terrestrial Radiation Thermometer* was 21°·0 on February 12.

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

The *Proportions of Wind* referred to the cardinal points were N. 9, E. 13, S. 3, and W. 2. One day was calm.

The *Greatest Pressure of the Wind* in the month was 5·8 lbs. on the square foot on February 26. The mean daily *Horizontal Movement of the Air* for the month was 245 miles; the greatest daily value was 414 miles on February 26; and the least daily value was 61 miles on February 4.

Rain fell on 9 days in the month amounting to $1^{\text{in}}\cdot036$, as measured by gauge No. 6 partly sunk below the ground; being $0^{\text{in}}\cdot457$ *less* than the average fall for the 49 years, 1841–1889.

MONTH and DAY, 1890.	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.		
Mar. 1	Greatest Declination N.	29·849	37·3	25·3	12·0	31·2	− 9·1	30·7	29·5	1·7	8·6	0·0	92	59·2	18·1	40·1	39·0	0·176	0·8	sP : vP, ssN
2	Apogee	30·014	32·6	22·1	10·5	27·6	−12·8	26·3	20·8	6·8	12·9	0·0	75	76·7	19·5	38·1	37·0	0·020	3·8	vP, sN
3	...	30·259	33·3	20·1	13·2	25·8	−14·7	24·2	16·0	9·8	15·5	2·3	65	77·1	17·3	38·2	37·0	0·017	1·5	sP
4	...	30·130	35·0	13·1	21·9	25·4	−15·1	23·7	14·7	10·7	12·8	0·0	62	68·6	8·6	37·4	36·5	0·032	3·0	sP
5	...	29·701	44·0	32·4	11·6	39·2	− 1·3	36·1	32·0	7·2	13·9	0·7	76	78·2	28·7	36·6	35·5	0·010	0·0	vN, vP
6	Full	29·622	54·1	36·8	17·3	46·1	+ 5·6	42·7	38·8	7·3	12·4	3·7	77	77·0	31·2	36·4	35·1	0·004	0·0	mP : vP, wN
7	...	29·584	53·2	39·3	13·9	46·1	+ 5·5	42·6	38·6	7·5	13·2	1·4	76	74·0	32·0	37·4	36·2	0·000	1·2	sP
8	In Equator	29·337	53·1	39·5	13·6	46·3	+ 5·7	44·1	41·6	4·7	8·8	2·0	85	75·5	33·5	39·1	37·9	0·245	3·8	wP : mP : sN, sP
9	...	29·702	44·7	30·5	14·2	38·2	− 2·5	34·1	28·6	9·6	13·6	6·0	68	90·9	22·5	39·1	38·5	0·000	1·0	mP : vP, sN
10	...	30·019	50·6	29·6	21·0	43·1	+ 2·4	41·4	39·4	3·7	10·7	1·5	87	59·3	21·3	39·9	38·7	0·238	3·5	vP, ssN : wP
11	...	30·092	58·0	44·3	13·7	50·7	+ 9·9	47·9	45·0	5·7	10·6	1·9	81	98·0	36·0	41·3	39·9	0·000	1·5	mP : sP
12	...	30·126	60·1	39·6	20·5	48·4	+ 7·6	45·6	42·6	5·8	13·5	0·4	81	107·8	30·3	42·5	41·2	0·000	5·0	sP : vP
13	...	29·841	47·8	39·8	8·0	44·3	+ 3·4	41·8	38·8	5·5	7·1	2·8	81	62·8	30·5	42·8	41·7	0·000	0·0	mP : vP
14	Last Quarter:	29·646	61·1	38·8	22·3	47·1	+ 6·1	43·4	39·2	7·9	17·3	2·1	75	126·0	33·0	43·2	42·2	0·000	2·0	vP : wP : sP
15	Greatest Declination S.	29·435	55·9	40·7	15·2	46·8	+ 5·7	44·5	41·9	4·9	9·4	0·7	84	100·6	33·6	43·9	42·8	0·000	6·2	mP : sP
16	...	29·086	59·1	40·6	18·5	49·6	+ 8·4	46·5	43·2	6·4	12·2	2·0	79	114·8	31·3	44·1	43·4	0·003	3·8	mP : mP, sN
17	...	29·214	55·8	36·0	19·8	43·9	+ 2·6	40·3	36·1	7·8	19·8	1·2	74	122·0	30·1	45·6	44·4	0·000	0·0	mP : vP
18	Perigee	29·262	52·7	31·9	20·8	41·6	+ 0·2	39·0	35·8	5·8	15·4	0·0	80	116·3	27·4	46·3	45·1	0·124	0·0	vP : vP, sN
19	...	29·265	44·3	39·6	4·7	41·6	+ 0·2	40·6	39·4	2·2	4·8	0·4	92	67·0	38·5	44·8	43·6	0·084	0·0	vP, vN
20	New	29·247	44·2	34·9	9·3	39·7	− 1·8	38·1	36·0	3·7	6·2	0·5	87	61·9	33·8	46·2	45·0	0·568	0·0	ssN, ssP : vN, vP
21	In Equator	29·443	53·4	33·1	20·3	41·7	+ 0·1	38·8	35·2	6·5	12·8	1·0	79	96·0	28·5	43·8	43·2	0·000	2·0	mP : sP : vP, wN
22	...	29·584	54·3	36·1	18·2	44·6	+ 2·9	42·4	39·8	4·8	10·4	0·5	84	90·4	29·0	45·2	43·9	0·040	4·8	vP, vN : mP, mN
23	...	29·488	52·3	42·3	10·0	46·0	+ 4·2	44·3	42·4	3·6	7·4	0·9	88	91·4	37·8	45·1	43·9	0·095	6·0	mP : vN, vP
24	...	29·259	49·2	36·1	13·1	43·4	+ 1·4	42·0	40·3	3·1	8·4	1·0	89	85·2	30·7	45·5	44·2	0·270	8·8	mP : ssN, mP
25	...	29·177	57·1	41·7	15·4	47·2	+ 4·9	44·6	41·7	5·5	14·4	0·7	82	110·9	33·2	45·6	44·4	0·039	4·5	mP : wP : vN, vP
26	...	29·656	60·9	40·3	20·6	50·5	+ 7·9	46·5	42·3	8·2	16·2	1·5	74	110·6	34·0	46·2	44·7	0·000	6·0	vP
27	...	29·884	55·7	48·3	7·4	51·6	+ 8·6	50·1	48·6	3·0	5·2	1·3	89	77·9	44·8	47·1	45·8	0·000	0·0	mP
28	First Quarter. Greatest Dec N.	29·863	68·8	48·0	20·8	55·4	+12·0	52·7	50·1	5·3	12·8	1·2	83	128·8	37·0	48·1	46·4	0·000	0·0	mP : sP
29	Apogee	29·777	57·2	41·7	15·5	50·0	+ 6·2	47·8	45·5	4·5	8·8	0·9	85	96·0	31·5	49·0	47·4	0·000	0·0	mP : vP, wN
30	...	29·922	58·9	34·1	24·8	47·0	+ 2·7	42·8	38·1	8·9	17·5	0·0	72	93·9	24·1	49·2	47·7	0·000	0·0	mP : wP, wN
31	...	30·070	53·1	34·1	19·0	43·7	− 1·1	41·1	38·0	5·7	11·8	1·3	80	113·8	25·1	49·5	48·0	0·000	0·0	wP : mP
Means	...	29·663	51·5	35·8	15·7	43·3	+ 1·8	40·9	37·4	5·9	11·8	1·3	80·1	90·6	29·4	43·1	41·9	Sum 1·965	2·2	...
Number of Column for Reference.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

The results apply to the civil day.

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

The 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·663, being 0in·059 *lower* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 68°·8 on March 28; the lowest in the month was 13°·1 on March 4; and the range was 55°·7.
The mean of all the highest daily readings in the month was 51°·5, being 1°·8 *higher* than the average for the 49 years, 1841–1889.
The mean of all the lowest daily readings in the month was 35°·8, being 0°·8 *higher* than the average for the 49 years, 1841–1889.
The mean of the daily readings was 15°·7, being 1°·0 *greater* than the average for the 49 years, 1841–1889.
The mean for the month was 43°·3, being 1°·8 *higher* than the average for the 20 years, 1849–1868.

MONTH and DAY, 1890.	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	WSW : SW	SSW : ENE	0·1	0·0	0·00	215	0, fr : v : 10, slt.-sn	10, sn : 10, sn, r, sl
2	4·4	10·9	NE : NNE	NE : NNE	3·6	0·0	0·93	529	v, fr, sn : v, slt.-sn	10, oc.-sn : v, li.-cl
3	2·3	11·0	NNE : ENE	N : NNE	1·6	0·0	0·15	319	v, li.-cl, fr, slt.-sn : v, th.-cl, cu.-s, so.-ha	v, li.-cl, so.-ha : v, li.-cl
4	2·2	11·1	Calm : WSW	SW	2·5	0·0	0·20	249	v : v, th.-cl, h	4,li.-cl,ci.-cu,so.-ha : p.-cl : 10, sn, r
5	1·7	11·1	WSW : NNW	N : NW : WSW	2·0	0·0	0·29	346	10, r : p.-cl, li.-cl	8,li.-cl,cu.-s,ci.-cu : p.-cl : v, li.-cl
6	0·5	11·2	WSW : WNW	NW : WNW : W	3·3	0·0	0·47	437	v : p.-cl	9, slt.-r : p.-cl, slt.-r
7	0·4	11·2	WSW	WSW	8·5	0·0	1·18	563	0 : v, li.-cl	10 : v, w : v, li.-cl
8	0·6	11·3	SW	SW : WSW	3·6	0·0	1·22	556	10 : 10, r	p.-cl, ci.-cu : 10, oc.-r : v
9	5·6	11·4	NW : WNW	NNW : NW	5·5	0·0	0·82	433	0 : p.-cl, cu.-s, ci.-cu, slt.-sn	p.-cl, slt.-sn, w : 0, slt.-m
10	0·0	11·4	SW : SSW	WSW	4·6	0·0	1·01	512	0 : 10, r : 10,fq.-r,w	10, fq.-th.-r : 10 : 10
11	4·3	11·5	WSW	W : WSW	6·0	0·0	1·12	525	10 : 10 : p.-cl	8, ci.-cu, li.-cl : v, li.-cl : 1, li.-cl
12	9·0	11·6	SW : WSW	W : SW	0·8	0·0	0·01	266	0 : 0 : 1, li.-cl	1, li.-cl : 0 ; 0
13	0·0	11·6	SW : WSW	SW : SSW	1·0	0·0	0·01	266	v : 10 : 10	10, slt.-r : 10
14	5·9	11·7	Calm : WSW	SW : SSW : SSE	1·0	0·0	0·01	148	10 : v, li.-cl	v, li.-cl, ci.-cu : v, th.-cl
15	3·3	11·8	SSE : S	SSW : S : SSE	1·3	0·0	0·05	206	0 : 10	8, cu, cu.-s : 1, li.-cl
16	4·0	11·8	SSE : S	S : SSW	2·5	0·0	0·12	248	0 : p.-cl	p.-cl, so.-ha : 10, oc.-slt.-r : 10, slt.-r
17	9·1	11·9	WSW	SW : SSW	1·4	0·0	0·08	231	v : 0, h, m : 2, ci.-cu, li.-cl	4, ci.-cu, li.-cl, cu : 0 : 0
18	4·7	12·0	Calm : E	E : NNE	2·3	0·0	0·29	203	0 : p.-cl, m : 6,li.-cl,m,so.-ha	v, li.-cl, so.-ha : 10, r
19	0·0	12·0	N	N : NNW	4·2	0·0	0·60	309	10 : 10, r : 10, r	10, slt.-r : 10, r, w
20	0·0	12·1	NNW : WNW	WNW : SW	4·6	0·0	1·23	496	10, c.-r : 10, c.-r : 10, fq.-r	10, fq.-r : 10,fq.-th.-r : v
21	3·1	12·2	SW : WSW	WSW : SW	0·5	0·0	0·01	254	0 : v, ci.-cu, slt.-r	p.-cl, cu.-s, ci.-cu : v
22	0·6	12·2	WSW : SW	SW : SSW	1·0	0·0	0·03	263	th.-cl : 10, r : p.-cl	9, ci.-cu, glm : p.-cl : 10, slt.-r
23	1·8	12·3	SSW : SW	SSW : WSW	4·3	0·0	0·59	415	10 : v,li.-cl,so.-ha : 10, r	v, shs.-r : 10, shs.-r
24	0·1	12·4	WSW : S	SSE : SSW	2·5	0·0	0·40	319	p.-cl : p.-cl,so.-ha,m,slt.-r	10, fq.-r : 10, fq.-r : v,th.-cl,lu.-ha
25	1·5	12·4	SSW : WSW	WSW	2·4	0·0	0·28	331	v : v, li.-cl : 10	9,ci.-cu,li.-cl,r : 10, fq.-r : 10, slt.-r
26	4·5	12·5	WSW : SSW	WSW	3·5	0·0	0·57	420	p.-cl : 10	7, ci.-cu, cu.-s, li.-cl, w : 10
27	0·0	12·6	SSW	SW	2·4	0·0	0·34	385	10 : 10	10 : 10
28	4·1	12·6	SSW	S : SSW	0·1	0·0	0·00	199	10 : 10 : v,li.-cl,so.-ha	4,li.-cl,so.-ha : li.-cl : 3,li.-cl,lu.-ha
29	2·6	12·7	SSW : WSW	WNW : WSW	1·4	0·0	0·02	240	0, d : 0 : v, cu.-s	10 : p.-cl : 0, slt.-f, d
30	7·4	12·8	SW : NW	NW : N	0·0	0·0	0·00	166	0, d : 0, h, f	0, h : 0
31	7·1	12·8	NNE : NE	ENE : E	0·9	0·0	0·02	214	0 : 0 : p.-cl	8, li.-cl, ci.-cu : p.-cl : v, li.-cl
Means	2·9	11·8	...	...	...	...	0·39	331		
Number of Column for Reference.	21	22	23	24	25	26	27	28	29	30

The mean *Temperature of Evaporation* for the month was 40°·9, being 1°·9 *higher* than
The mean *Temperature of the Dew Point* for the month was 37°·4, being 1°·4 *higher* than
The mean *Degree of Humidity* for the month was 80·1, being 0·8 *less* than
The mean *Elastic Force of Vapour* for the month was $0^{\text{in}}\cdot224$, being $0^{\text{in}}\cdot012$ *greater* than
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was $2^{\text{grs}}\cdot6$, being $0^{\text{gr}}\cdot1$ *greater* than
The mean *Weight of a Cubic Foot of Air* for the month was 546 grains, being 4 grains *less* than
} the average for the 20 years, 1849–1868.

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

The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·247. The maximum daily amount of *Sunshine* was 9·1 hours on March 17.

The highest reading of the *Solar Radiation Thermometer* was 128°·8 on March 28; and the lowest reading of the *Terrestrial Radiation Thermometer* was 8°·6 on March 4.

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

The *Proportions of Wind* referred to the cardinal points were N. 4, E. 3, S. 11, and W. 12. One day was calm.

The *Greatest Pressure of the Wind* in the month was 8·5 lbs. on the square foot on March 7. The mean daily *Horizontal Movement of the Air* for the month was 331 miles; the greatest daily value was 563 miles on March 7; and the least daily value was 148 miles on March 14.

Rain fell on 14 days in the month, amounting to $1^{\text{in}}\cdot965$, as measured by gauge No. 6 partly sunk below the ground; being $0^{\text{in}}\cdot514$ *greater* than the average fall for the 49 years, 1841–1889.

MONTH and DAY, 1890.	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.		
April 1	...	30·145	51·7	33·0	18·7	41·2	− 4·1	38·0	34·0	7·2	14·1	1·6	76	121·3	25·0	49·9	48·6	0·000	2·0	mP : mP : sP
2	...	29·982	48·5	31·3	17·2	40·1	− 5·6	37·5	34·1	6·0	10·9	0·3	79	115·3	23·1	49·6	48·3	0·000	4·0	mP
3	...	29·936	53·1	34·8	18·3	42·6	− 3·5	39·4	35·5	7·1	15·0	0·5	77	128·7	26·3	49·0	47·7	0·000	2·0	mP
4	...	29·938	58·1	32·9	25·2	43·9	− 2·5	39·8	35·0	8·9	19·2	1·6	70	125·0	24·1	48·2	47·9	0·000	0·0	mP : mP : sP
5	In Equator: Full.	29·904	61·0	31·3	29·7	45·2	− 1·4	40·5	35·1	10·1	19·8	2·0	68	123·1	22·6	47·9	46·8	0·000	2·2	vP : vP, sN
6	...	29·705	56·6	40·5	16·1	48·5	+ 1·8	45·1	41·4	7·1	14·6	1·3	77	95·5	35·0	48·2	47·2	0·000	2·2	mP : wP
7	...	29·396	57·0	40·5	16·5	48·7	+ 1·9	45·2	41·4	7·3	18·6	1·9	76	111·5	32·5	48·4	47·4	0·123	7·5	wP, wN : sN, sP
8	...	29·502	53·1	36·3	16·8	42·9	− 3·9	38·6	33·4	9·5	19·3	3·2	70	107·3	28·2	48·4	46·4	0·080	0·0	wP : ssP, ssN
9	...	29·670	47·3	38·3	9·0	42·2	− 4·7	36·1	28·6	13·6	17·2	8·5	60	91·0	31·1	48·6	47·2	0·000	0·0	mP : vP, mN
10	...	29·594	47·8	36·2	11·6	39·6	− 7·3	37·4	34·5	5·1	10·4	1·8	82	90·7	31·1	48·2	46·9	0·089	0·0	vP, sN
11	Greatest Declination S.	29·710	51·3	34·4	16·9	41·3	− 5·7	37·1	31·9	9·4	18·7	3·6	69	115·2	26·0	47·6	46·5	0·004	0·0	vP
12	Last Qr.	29·630	51·0	32·9	18·1	40·3	− 6·8	36·6	31·8	8·5	17·8	2·1	72	114·2	24·4	48·1	47·4	0·000	0·0	sP : wP, wN
13	Perigee	29·466	52·7	31·1	21·6	41·8	− 5·4	38·5	34·4	7·4	17·2	1·6	76	119·0	22·6	48·2	47·4	0·000	1·2	wP : mP
14	...	29·311	57·4	37·9	19·5	47·1	− 0·3	42·5	37·3	9·8	19·4	2·9	69	127·5	30·8	48·4	47·4	0·024	5·8	mP : wN, wP
15	...	29·211	58·6	43·9	14·7	49·4	+ 1·9	46·4	43·2	6·2	13·5	0·8	79	118·3	40·0	48·6	48·2	0·230	4·0	wP : mP : vP, ssN
16	...	29·212	60·0	44·0	16·0	51·1	+ 3·5	48·3	45·4	5·7	12·7	0·6	81	125·6	34·0	49·6	48·9	0·061	0·0	vP, sN : vP
17	...	29·275	56·3	41·4	14·9	46·5	− 1·3	45·1	43·6	2·9	8·4	0·7	90	97·5	29·7	49·9	49·4	0·008	0·0	mP : vP, wN
18	In Equator	29·437	46·0	41·5	4·5	43·4	− 4·5	42·8	42·1	1·3	2·9	0·7	95	50·1	40·4	50·2	49·3	0·087	0·0	wP
19	New	29·719	45·6	39·6	6·0	42·3	− 5·7	40·0	37·2	5·1	7·9	1·4	83	63·5	37·0	49·6	49·1	0·000	0·0	vP : mP
20	...	29·981	53·8	38·2	15·6	44·2	− 3·9	40·5	36·2	8·0	12·2	2·9	73	84·2	35·7	49·6	48·9	0·000	1·0	mP : sP
21	...	29·989	60·0	41·0	19·0	49·6	+ 1·4	47·0	44·2	5·4	12·5	1·5	82	121·2	33·5	49·0	48·5	0·000	11·8	mP
22	...	29·735	63·2	43·6	19·6	52·9	+ 4·7	49·1	45·3	7·6	16·5	1·9	76	107·0	35·0	49·6	49·2	0·112	9·2	wP, wN : vP, vN
23	...	29·803	59·3	40·3	19·0	49·4	+ 1·1	44·6	39·5	9·9	20·0	2·6	69	104·8	32·2	49·9	49·4	0·053	1·0	vP : vP, vN
24	...	29·486	54·0	43·8	10·2	48·8	+ 0·5	46·7	44·5	4·3	7·8	0·9	85	76·0	42·1	50·4	49·8	0·070	3·0	wP, mN : vP, vN
25	Greatest Declination N.	29·204	49·3	40·4	8·9	45·4	− 3·0	43·1	40·5	4·9	10·5	1·8	83	69·2	30·6	50·6	49·8	0·657	0·0	ssP, ssN : vP, mN
26	Apogee	29·466	57·5	33·3	24·2	43·0	− 5·4	40·4	37·3	5·7	16·4	0·5	80	119·3	25·9	50·5	49·6	0·107	0·0	sP : ssN, ssP : vP, wN
27	First Qr.	29·759	54·7	35·9	18·8	45·7	− 2·7	42·3	38·4	7·3	12·8	1·4	76	106·0	25·3	50·6	49·6	0·000	0·0	mP, mN : wP, wN : vP
28	...	29·771	60·2	39·3	20·9	47·7	− 0·8	44·1	40·1	7·6	18·2	1·3	75	121·9	31·3	50·6	49·7	0·069	1·0	vP, vN
29	...	29·748	62·9	39·6	23·3	50·5	+ 2·0	44·9	39·0	11·5	21·3	1·8	65	139·4	29·4	50·8	50·0	0·000	0·0	mP : wP : mP
30	...	29·783	63·4	38·3	25·1	51·8	+ 3·2	46·5	41·1	10·7	20·5	2·3	67	124·7	27·1	51·1	50·6	0·000	3·0	mP : wP
Means	...	29·649	55·0	37·8	17·2	45·6	− 1·9	42·1	38·2	7·4	14·9	1·9	76·0	107·1	30·4	49·3	48·4	Sum 1·774	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·649, being 0in·154 *lower* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 63°·4 on April 30; the lowest in the month was 31°·1 on April 13; and the range was 32°·3.
The mean of all the highest daily readings in the month was 55°·0, being 2°·3 *lower* than the average for the 49 years, 1841–1889.
The mean of all the lowest daily readings in the month was 37°·8, being 1°·2 *lower* than the average for the 49 years, 1841–1889.
The mean of the daily ranges was 17°·2, being 1°·1 *less* than the average for the 49 years, 1841–1889.
The mean for the month was 45°·6, being 1°·9 *lower* than the average for the 20 years, 1849–1868.

MONTH and DAY, 1890.	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	8·0	12·9	ENE : NE	NE : E	0·1	0·0	0·00	172	v : v, li.-cl	3,li.-cl,ci.-cu : 0 : 0
2	8·5	13·0	ENE : NE	E : ENE	1·7	0·0	0·08	295	0 : v, cu.-s	3, ci.-cu : 0 : 0
3	10·1	13·0	NNE : NE : ENE	ENE : NE	2·7	0·0	0·31	334	9 : 3, ci.-cu, li.-cl, w	1, li.-cl : 0 : 0, d
4	9·5	13·1	NNE	ENE : ESE	1·5	0·0	0·03	227	0 : p.-cl : v, li.-cl	3, li.-cl : 0
5	9·2	13·2	N : NNE	NE : WSW : SW	0·0	0·0	0·00	94	0, ho.-fr : 0 : 0, m, h	0 : f, h : v
6	0·1	13·2	SSW : WSW	SW : SSW	1·9	0·0	0·16	318	10 : 10	10, oc.-slt.-r : 10
7	2·8	13·3	SW : WSW	WNW : NNW	5·7	0·0	0·90	465	10 : 10, slt-r, w : 10, sc, oc.-r, w	8,cu.-s,ci.-cu : v, oc.-shs, gt.-glm, sqs : v
8	6·8	13·4	W : WNW : NW	NNW	7·5	0·0	0·73	421	0 : p.-cl : 7, cu, cu.-s, st.-w	5, cu, r, sn : v, r, sl, sq : v, w
9	1·6	13·4	NNW	NNW : S	3·5	0·0	0·65	357	10 : 9, cu, cu.-s	10 : p.-cl : v, m
10	0·0	13·5	WSW : NNE	E : N	1·4	0·0	0·03	180	10, slt.-r : 10, oc.-slt.-r	10, fq.-th.-r : p.-cl, slt.-r, sl : v, m
11	6·3	13·6	NNW : N	N	2·6	0·0	0·05	220	v : 4, li. cl : 5, cu, ci.-cu	p.-cl, cu : p.-cl, oc.-slt.-r, fr.-r : 2, li.-cl
12	4·4	13·6	N	N : ESE : SSW	0·0	0·0	0·00	118	0 : 4, li.-cl, cu, cu.-s	7, cu, cu.-s : v
13	8·0	13·7	SE : ESE	E : ESE	1·6	0·0	0·15	246	v : 0 : 6, cu, cu.-s, so.-ha	p.-cl : 10
14	7·8	13·7	E : ENE	E : ENE	4·6	0·0	0·73	426	v : 3, li.-cl, w	1, li.-cl, w : p.-cl : 10, slt.-r
15	6·6	13·8	ENE	ENE : NE	3·2	0·0	0·46	412	10, slt.-r : p.-cl : v, ci.-cu, li.-cl	3, li.-cl : p.-cl, slt.-r : 10, c.-r
16	4·6	13·9	NE : E	SE : E : ENE	0·6	0·0	0·00	216	10, slt.-r : v : 9, cu.-s, r	5, cu, cu.-s : 2, li.-cl : 0, l, d
17	0·0	13·9	NE : NNE	ENE : NE	1·8	0·0	0·26	347	0, d : 10 : 10	10 : 10 : 10, th.-r
18	0·0	14·0	NNE	NE : NNE	3·2	0·0	0·84	503	10, slt.-r : 10, fq.-th.-r	10, slt.-r, w : 10, slt.-r
19	0·0	14·1	NNE	NNE	2·3	0·0	0·24	349	10 : 10, fq.-m.-r	10, oc.-m.-r : 10, oc.-th.-r : 10, oc.-th.-r
20	0·5	14·1	N : W	WSW : SSW	0·1	0·0	0·00	178	10 : 10, glm	10 : p.-cl : 0
21	2·2	14·2	SSW : SW	SW	4·2	0·0	0·62	423	0, d : p.-cl : v, slt.-r	10, oc.-slt.-r, w : 10
22	2·6	14·2	SW : WSW	WSW : WNW	6·2	0·0	0·67	442	10, r : 10	p.-cl, slt.-r, st.-w : v : 0
23	6·4	14·3	WSW : W	W : WSW : SW	5·0	0·0	0·77	471	0 : 7, ci.-cu, cu.-s, w	v, w : p.-cl, so.-ha : 10, r
24	0·0	14·4	E : Calm	NW : WSW	0·7	0·0	0·00	169	10, slt.-r : 10 : 10, glm	10 : 10, fq.-slt.-r : v
25	0·0	14·4	SW : NE	NE : N : NNW	1·5	0·0	0·05	228	10 : 10, hy.-r	10, oc.-r : p.-cl, so.-ha : v, slt.-f
26	4·2	14·5	SW : W	Variable	0·4	0·0	0·00	141	0 : 0 : p.-cl, glm, m	v, cu.-s, r, gt.-glm : 8, slt.-r : v, h, f, slt.-r
27	2·5	14·5	NNW : N	N : NE	1·4	0·0	0·02	175	v : 9, cu, cu.-s	8, cu.-s : 10
28	4·6	14·6	SW : NW : W	SSW : WSW	1·4	0·0	0·02	204	10, fq.-r : v : p.-cl, glm	7, ci.-cu : 8, ci.-cu, slt.-sh : v
29	12·5	14·7	SW : SSW	SSW : SE	1·4	0·0	0·04	204	3, m : 2, cu, th.-cl	0 : 0
30	11·7	14·7	ENE : E	E	2·4	0·0	0·25	241	0 : 0, ho.-fr : 3, li.-cl	1, li.-cl : 0 : 0
Means	4·7	13·8	...	...	...	...	0·27	286		
Number of Column for Reference.	21	22	23	24	25	26	27	28	29	30

The mean *Temperature of Evaporation* for the month was 42°·1, being 1°·8 *lower* than the average for the 20 years, 1849–1868.
The mean *Temperature of the Dew Point* for the month was 38°·2, being 2°·1 *lower* than the average for the 20 years, 1849–1868.
The mean *Degree of Humidity* for the month was 76·0, being 0·9 *less* than the average for the 20 years, 1849–1868.
The mean *Elastic Force of Vapour* for the month was 0in·231, being 0in·019 *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·7, 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 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 6·5.

The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·341. The maximum daily amount of *Sunshine* was 12·5 hours on April 29.

The highest reading of the *Solar Radiation Thermometer* was 139°·4 on April 29; and the lowest reading of the *Terrestrial Radiation Thermometer* was 22°·6 on April 5 and 13.

The mean daily distribution of *Ozone* for the 12 hours ending 9h. was 1·0; for the 6 hours ending 15h. was 0·7; and for the 6 hours ending 21h. was 0·3.

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

The *Greatest Pressure of the Wind* in the month was 7·5 lbs. on the square foot on April 8. The mean daily *Horizontal Movement of the Air* for the month was 286 miles; the greatest daily value was 503 miles on April 18; and the least daily value was 94 miles on April 5.

Rain fell on 14 days in the month, amounting to 1in·774, as measured by gauge No. 6 partly sunk below the ground; being 0in·116 *greater* than the average fall for the 49 years, 1841–1889.

MONTH and DAY, 1890.	Phases of the Moon.	BAROMETER.	TEMPERATURE. Of the Air.					Of Evaporation.	Of the Dew Point.	Difference between the Air Temperature and Dew Point Temperature.			Degree of Humidity (Saturation = 100).	TEMPERATURE. Of Radiation.		Of the Water of the Thames at Deptford.		Rain collected in Gauge No. 6, whose receiving surface is 5 inches above the Ground.	Daily Amount of Ozone.	Electricity.
		Mean of 24 Hourly Values (corrected and reduced to 32° Fahrenheit).	Highest.	Lowest.	Daily Range.	Mean of 24 Hourly Values.	Excess above Average of 20 Years.	Mean of 24 Hourly Values.	Deduced Mean Daily Value.	Mean.	Greatest.	Least.		Highest in Sun's Rays.	Lowest on the Grass.	Highest.	Lowest.			
		in.	°	°	°	°	°	°	°	°	°	°		°	°	°	°	in.		
May 1	...	29.718	64.4	40.7	23.7	53.3	+ 4.6	48.6	43.9	9.4	18.4	2.0	70	128.2	26.6	51.6	50.8	0.000	7.0	wP
2	In Equator	29.729	61.1	39.7	21.4	51.2	+ 2.3	46.6	41.8	9.4	20.1	1.3	71	129.1	29.7	53.0	52.4	0.000	0.0	wP : mP
3	...	29.676	68.9	38.5	30.4	53.7	+ 4.6	47.9	42.2	11.5	22.1	2.0	65	132.5	27.5	53.9	53.5	0.000	1.5	mP : wP : vP
4	Full	29.488	66.1	40.0	26.1	53.4	+ 4.0	48.4	43.4	10.0	16.0	2.4	69	121.0	28.8	53.6	53.2	0.000	1.5	vP : mP
5	...	29.399	63.0	45.6	17.4	52.9	+ 3.2	48.8	44.7	8.2	16.1	2.3	74	127.1	35.5	53.4	52.4	0.094	8.2	vP, wN : vP
6	...	29.492	64.0	43.1	20.9	53.9	+ 3.9	49.6	45.4	8.5	17.3	1.7	73	132.2	32.1	55.6	55.1	0.020	3.8	vP, wN : mP
7	...	29.451	63.7	44.8	18.9	53.7	+ 3.4	50.3	47.0	6.7	12.4	1.5	78	98.0	34.0	55.6	55.1	0.063	0.0	wP : sP, sN : mP
8	Greatest Dec.S. Perigee	29.445	60.6	45.1	15.5	51.9	+ 1.3	49.6	47.3	4.6	13.3	0.8	84	82.3	32.4	55.4	54.9	0.040	2.0	wP, wN
9	...	29.361	51.2	46.2	5.0	49.5	− 1.3	48.1	46.6	2.9	5.2	0.4	90	60.6	44.9	54.8	54.4	0.332	4.5	wP : sN, vP
10	...	29.294	62.3	47.3	15.0	53.3	+ 2.2	49.9	46.5	6.8	13.1	1.3	78	125.4	44.0	54.6	54.3	0.023	10.0	wP : mP
11	Last Qr.	29.314	67.2	48.5	18.7	53.7	+ 2.3	50.5	47.4	6.3	14.2	1.0	79	125.2	40.5	54.6	54.1	0.385	2.5	wN, wP : sN, sP
12	...	29.383	68.3	46.2	22.1	56.3	+ 4.5	52.2	48.4	7.9	14.9	1.0	75	133.1	37.2	55.3	54.9	0.100	1.0	wN, wP : mP
13	...	29.406	67.5	46.9	20.6	55.7	+ 3.6	50.6	45.8	9.9	18.4	2.5	70	122.7	35.0	55.9	55.5	0.000	1.0	vP : vP, wN
14	...	29.690	64.8	46.0	18.8	54.3	+ 1.8	47.5	40.9	13.4	23.2	3.6	60	124.6	37.3	56.1	55.9	0.007	5.5	vP, wN
15	In Equator	29.903	65.1	42.3	22.8	52.4	− 0.5	47.6	42.7	9.7	18.2	3.1	70	122.9	35.2	56.8	56.5	0.000	1.5	mP : vP
16	...	29.712	71.9	42.4	29.5	57.3	+ 4.0	51.6	46.4	10.9	19.3	1.3	67	138.5	33.9	57.6	57.2	0.038	7.2	vP : mP, mN
17	...	29.534	67.2	46.9	20.3	55.9	+ 2.2	50.2	44.9	11.0	19.4	2.5	67	138.0	41.3	58.8	58.5	0.017	9.8	mP
18	New	29.571	70.1	48.0	22.1	55.8	+ 1.7	51.0	46.5	9.3	18.2	1.9	71	134.7	42.4	58.9	58.5	0.033	5.0	wP : sP, mN
19	...	29.520	70.5	44.3	26.2	58.4	+ 4.0	54.6	51.2	7.2	16.0	0.2	77	134.0	37.9	59.5	59.0	0.112	5.5	vP
20	...	29.587	62.8	48.9	13.9	54.3	− 0.4	50.2	46.2	8.1	13.7	1.3	74	117.9	44.0	59.5	59.2	0.004	13.8	wP
21	...	29.975	71.1	45.1	26.0	56.1	+ 1.1	50.4	45.1	11.0	20.2	2.1	67	140.2	38.9	59.2	58.9	0.000	11.7	mP : vP
22	Greatest Declination N	30.114	73.0	41.2	31.8	56.7	+ 1.4	50.9	45.5	11.2	20.9	1.8	66	131.3	33.1	59.7	59.6	0.000	0.0	vP
23	...	30.019	72.2	44.2	28.0	59.4	+ 3.9	52.8	47.0	12.4	22.7	2.9	63	134.4	37.3	59.8	59.4	0.000	0.0	wP : wN, vP
24	Apogee	29.860	77.1	47.8	29.3	63.1	+ 7.4	56.6	51.1	12.0	22.8	3.8	65	138.8	40.2	60.2	59.7	0.000	0.0	wP
25	...	29.734	76.6	51.0	25.6	62.8	+ 6.9	56.3	50.7	12.1	21.4	3.4	65	138.1	44.0	60.6	59.4	0.000	0.0	wP
26	First Qr.	29.756	64.2	44.0	20.2	54.0	− 2.1	47.7	41.5	12.5	20.3	5.7	62	141.9	37.9	61.1	59.6	0.000	0.0	mP : wN, vP
27	...	29.805	64.6	41.1	23.5	52.7	− 3.6	46.9	41.1	11.6	21.5	2.0	65	142.0	30.6	61.1	60.6	0.000	0.0	mP : wN, vP
28	...	29.917	63.1	43.3	19.8	52.7	− 3.8	47.7	42.7	10.0	15.8	4.6	69	132.0	34.9	60.6	60.1	0.000	0.0	vP
29	In Equator	29.919	67.1	45.0	22.1	56.3	− 0.5	50.3	44.7	11.6	19.2	2.3	65	126.0	37.0	60.5	59.9	0.000	0.0	vP, wN
30	...	29.796	66.0	44.0	22.0	54.9	− 2.1	49.4	44.1	10.8	20.9	2.6	67	119.0	36.0	60.2	59.6	0.070	0.0	vP, wN
31	...	29.964	60.0	39.5	20.5	50.0	− 7.3	43.0	35.6	14.4	19.6	7.8	58	118.1	31.4	59.4	58.9	0.000	0.0	vP : wN, wP
Means	...	29.662	66.3	44.4	21.9	54.8	+ 1.7	49.9	45.1	9.7	17.9	2.4	70.1	125.5	36.2	57.3	56.8	Sum 1.338	3.3	...
Number of Column for Reference.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

The results apply to the civil day.

The mean reading of the Barometer (Column 2) and the mean temperatures of the Air and Evaporation (Columns 6 and 8) are deduced from the photographic records. The average temperature (Column 7) is that determined from the reduction of the photographic records from 1849 to 1868. The temperature of the Dew Point (Column 9) and the Degree of Humidity (Column 13) are deduced from the corresponding temperatures of the Air and Evaporation by means of Glaisher's Hygrometrical Tables. The mean difference between the Air and Dew Point Temperatures (Column 10) is the difference between the numbers in Columns 6 and 9, and the Greatest and Least Differences (Columns 11 and 12) are deduced from the 24 hourly photographic measures of the Dry-bulb and Wet-bulb Thermometers. The results on May 19 for Air and Evaporation Temperatures are deduced from eye-observations on account of failure of the photographic registers.

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

The mean reading of the *Barometer* for the month was 29in·662, being 0in·115 *lower* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 77°·1 on May 24; the lowest in the month was 38°·5 on May 3; and the range was 38°·6.
The mean of all the highest daily readings in the month was 66°·3, being 2°·2 *higher* than the average for the 49 years, 1841–1889.
The mean of all the lowest daily readings in the month was 44°·4, being 0°·7 *higher* than the average for the 49 years, 1841–1889.
The mean of the daily ranges was 21°·9, being 1°·5 *greater* than the average for the 49 years, 1841–1889.
The mean for the month was 54°·8, being 1°·7 *higher* than the average for the 20 years, 1849–1868.

MONTH and DAY, 1890.	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	12·2	14·8	ENE	E : ENE	1·6	0·0	0·21	267	0, ho.-fr : 3, th.-cl	2, li.-cl : 2, li.-cl, lu.-ha
2	10·0	14·8	ENE : E	ESE	0·9	0·0	0·05	174	0, slt.-m : 0	0 : v, li.-cl : 2, li.-cl, d
3	10·4	14·9	E : ESE : SSE	SSW : S	0·5	0·0	0·01	160	0 : 1, li.-cl, ho.-fr : 5, ci.-cu, li.-cl	3, ci.-cu, cu : 2, ci.-cu : 0
4	0·5	14·9	NE : SE	E	1·3	0·0	0·05	161	0 : 8, ci.-cu, ci.-s	p.-cl, slt.-r : 10
5	5·2	15·0	ENE : E : SSW	SSW : S	1·3	0·0	0·05	219	10 : 10, shs.-r : 10, r	v : p.-cl : v
6	6·1	15·1	SSE : SE	SSE : SSW	1·2	0·0	0·02	171	v : v, sh.-r : p.-cl, slt.-r	7, cu, cu.-s, ci.-cu : v
7	0·7	15·1	SSW : ENE	SE : E	0·0	0·0	0·00	113	v : 10	9, cu, ci.-cu, r, t : v, hy.-sh : 1, th.-cl
8	0·1	15·2	N : NNE	E : ENE : NE	1·4	0·0	0·05	222	7 : 10, f, m : 10, fq.-r	10, slt.-r : p.-cl : 10
9	0·0	15·2	NE : NNE	NE : S	1·3	0·0	0·07	240	10 : 10	10, m, r : 10, oc.-slt.-r
10	1·6	15·3	S : SSW	S : SE : E	0·8	0·0	0·00	193	10 : 9, slt.-r	9 : 10, r
11	5·6	15·3	N : WSW	WSW : SSW : S	2·0	0·0	0·10	266	10, c.-r : 9, oc.-r	p.-cl, oc.-slt.-r : li.-cl : v, slt.-r
12	5·5	15·4	ENE	SE : SW	0·0	0·0	0·00	132	v, hy.-r : 4, li.-cl, ci.-s	5, ci.-cu, cu.-s : v
13	6·3	15·4	NNW : NW	NW : WSW	2·1	0·0	0·17	279	p.-cl, d : v, glm : 9, cu	7, cu : p.-cl
14	10·5	15·5	WSW : W	W : WSW	2·9	0·0	0·45	394	p.-cl, slt.-r : v : 4, li.-cl	5, cu, cu.-s, w : 3, slt.-r : 2, li.-cl
15	6·0	15·5	SW : SSW	SSW	2·3	0·0	0·17	318	0, d : v, so.-ha : 8, cu, cu.-s	5, cu, cu.-s, ci.-cu : 1, so.-ha, prh : 0
16	9·8	15·6	SSE : SSW	S : SSE	1·5	0·0	0·05	193	0 : 1, li.-cl	4, ci, ci.-cu, so.-ha : v, so.-ha : 10, r
17	10·3	15·6	SW	SSW : SE	3·0	0·0	0·44	371	10, shs.-r : v, w	3, cu, ci.-cu : v
18	5·8	15·7	SE : S	SW : Calm	0·5	0·0	0·00	143	v : 6, cu, ci.-cu	v, r : v, s
19	5·7	15·7	Calm : ENE	E : ENE	1·2	0·0	0·02	162	p.-cl : v, so.-ha	5, cu, ci.-cu, so.-ha : 9, l, hy.-sh
20	6·2	15·8	S : SSW	SSW	6·0	0·0	0·78	370	10, slt.-r : 10 : 10, w	7, cu, cu.-s, w : p.-cl : v
21	13·0	15·8	S : SSW	SSW	1·0	0·0	0·02	226	v : 4, cu, ci.-cu, cu.-s	4, ci, ci.-cu : 1, li.-cl
22	13·3	15·9	Calm : NE	ESE : E	0·7	0·0	0·01	161	0 : 0, h	0 : 0
23	13·2	15·9	ENE	ENE : E	2·5	0·0	0·38	321	0 : 0	0, w : 0
24	14·0	16·0	NE : ENE	E : ENE	3·5	0·0	0·42	337	0 : 1, li.-cl, w	0 : 0
25	13·7	16·0	ENE	E : NE	2·3	0·0	0·26	330	0 : 1, ci, ci.-cu	0 : 1 : v
26	9·8	16·0	NE	NNE	1·6	0·0	0·11	326	p.-cl : v : 7, cu, cu.-s	7, cu, cu.-s : v
27	8·7	16·1	NNE : NE	NNE : NE	1·4	0·0	0·02	242	0 : 0 : p.-cl	8, ci.-cu, cu.-s : p.-cl
28	4·7	16·1	N	NNE : SW	1·0	0·0	0·04	262	v, slt.-r : 8, cu, cu.-s, ci.-cu	9, cu, cu.-s : v : 9
29	1·8	16·1	WSW : NNW	WNW : WSW	1·2	0·0	0·02	266	p.-cl : 8, cu.-s, th.-cl	p.-cl, so.-ha : v
30	4·8	16·2	WSW : WNW	WNW : NNW	3·0	0·0	0·53	425	10, w : 10, r	9, cu, cu.-s : 5, th.-cl : 1, th.-cl
31	8·4	16·2	W : NNW	NNW	1·4	0·0	0·03	253	0 : 7, cu, cu.-s	8, ci.-cu : 2, th.-cl
Means	7·2	15·6	...	...	...	...	0·15	248		
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°·9, being 1°·0 *higher* than
The mean *Temperature of the Dew Point* for the month was 45°·1, being *the same as*
The mean *Degree of Humidity* for the month was 70·1, being 5·3 *less* than
The mean *Elastic Force of Vapour* for the month was 0^{in}·301, being *the same as*
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was 3^{grs}·4, being *the same as*
The mean *Weight of a Cubic Foot of Air* for the month was 534 grains, being 4 grains *less* than
} the average for the 20 years, 1849-1868

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

The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·464. The maximum daily amount of *Sunshine* was 14·0 hours on May 24.

The highest reading of the *Solar Radiation Thermometer* was 142°·0 on May 27; and the lowest reading of the *Terrestrial Radiation Thermometer* was 26°·6 on May 1.

The mean daily distribution of *Ozone* for the 12 hours ending 9^h was 1·3; for the 6 hours ending 15^h was 1·2; and for the 6 hours ending 21^h was 0·8.

The *Proportions of Wind* referred to the cardinal points were N. 7, E. 10, S. 8, and W. 5. One day was calm.

The *Greatest Pressure of the Wind* in the month was 6·0 lbs. on the square foot on May 20. The mean daily *Horizontal Movement of the Air* for the month was 248 miles; the greatest daily value was 425 miles on May 30; and the least daily value was 113 miles on May 7.

Rain fell on 14 days in the month, amounting to 1^{in}·338, as measured by gauge No. 6 partly sunk below the ground; being 0^{in}·678 *less* than the average fall for the 49 years, 1841-1889.

MONTH and DAY, 1890.	Phases of the Moon.	BAROMETER. Mean of 24 Hourly Values (corrected and reduced to 32° Fahrenheit).	TEMPERATURE. Of the Air. Highest.	Lowest.	Daily Range.	Mean of 24 Hourly Values.	Excess above Average of 20 Years.	Of Evaporation. Mean of 24 Hourly Values.	Of the Dew Point. Deduced Mean Daily Value.	Difference between the Air Temperature and Dew Point Temperature. Mean.	Greatest.	Least.	Degree of Humidity (Saturation = 100).	TEMPERATURE. Of Radiation. Highest in Sun's Rays.	Lowest on the Grass.	Of the Water of the Thames at Deptford. Highest.	Lowest.	Rain collected in Gauge No. 6, whose receiving surface is 5 inches above the Ground.	Daily Amount of Ozone.	Electricity.
		in.	°	°	°	°	°	°	°	°	°	°		°	°	°	°	in.		
June 1	...	29·863	66·7	36·6	30·1	52·8	− 4·7	46·5	40·2	12·6	21·5	1·6	63	127·0	28·5	58·8	58·3	0·000	0·0	mP : wP, wN
2	...	29·762	69·6	49·9	19·7	57·6	− 0·1	52·8	48·4	9·2	16·9	2·6	72	123·6	44·0	59·4	58·5	0·000	0·0	vP, wN
3	Full	29·773	64·7	50·0	14·7	56·4	− 1·5	51·1	46·2	10·2	17·6	4·2	68	119·4	40·1	59·4	58·5	0·000	3·8	mP : vP, wN
4	...	29·691	59·7	52·6	7·1	55·9	− 2·2	55·6	55·4	0·5	2·7	0·0	98	82·2	48·4	59·4	58·3	0·311	7·2	wP
5	Greatest Dec. S. Perigee	29·811	68·8	52·3	16·5	58·9	+ 0·7	56·2	53·8	5·1	12·1	0·2	83	123·0	44·0	59·2	58·3	0·003	1·2	wP
6	...	29·798	70·1	48·2	21·9	58·8	+ 0·5	54·9	51·4	7·4	13·0	2·6	76	118·1	39·0	59·4	58·5	0·003	5·8	wP : vP
7	...	30·100	69·1	46·9	22·2	55·8	− 2·6	49·4	43·4	12·4	21·1	2·6	64	130·0	38·0	59·4	58·7	0·000	0·8	mP : wN, wP
8	...	30·071	67·9	42·6	25·3	53·9	− 4·6	51·1	48·4	5·5	17·1	0·2	81	129·3	34·1	59·4	58·5	0·159	5·5	wP
9	Last Qr.	29·878	74·6	50·2	24·4	60·5	+ 2·0	56·1	52·3	8·2	17·8	0·0	74	138·6	41·0	59·8	59·0	0·006	3·8	wP
10	...	29·637	75·4	46·1	29·3	59·3	+ 0·7	55·9	52·9	6·4	19·8	0·2	80	139·0	36·8	60·4	59·6	0·143	3·2	wP : vN, vP
11	In Equator	29·475	68·1	48·3	19·8	55·4	− 3·3	53·0	50·7	4·7	10·8	1·0	85	137·5	43·1	60·6	59·8	0·326	4·0	wP : sP, sN : mP
12	...	29·484	64·6	49·5	15·1	56·2	− 2·6	54·0	51·9	4·3	9·3	0·4	86	99·0	44·9	60·6	59·6	0·098	0·8	vP : ssP, ssN
13	...	29·893	61·2	51·0	10·2	54·6	− 4·3	53·0	51·4	3·2	6·5	0·8	89	88·2	47·0	60·6	59·9	0·018	0·0	vP, wN
14	...	30·170	63·4	49·3	14·1	55·5	− 3·6	51·6	47·9	7·6	11·4	3·6	77	115·9	44·5	60·6	59·8	0·000	0·0	wP : wN, wP
15	...	30·194	66·8	47·0	19·8	57·6	− 1·7	54·0	50·7	6·9	12·4	1·4	78	118·1	40·3	61·6	60·8	0·000	2·2	wP
16	...	30·035	77·5	52·2	25·3	62·4	+ 2·9	58·5	55·2	7·2	16·0	0·6	77	143·0	45·4	61·6	60·6	0·000	0·8	wP
17	New	29·837	68·0	51·0	17·0	56·7	− 3·0	54·5	52·5	4·2	11·4	0·6	86	115·0	45·0	62·1	61·5	0·171	0·0	vP, sN : vP, wN
18	Greatest Declination N.	29·886	72·8	47·1	25·7	59·0	− 0·9	55·7	52·7	6·3	13·5	0·0	80	139·6	38·3	61·7	61·1	0·006	0·0	vP, wN
19	...	29·939	69·4	53·3	16·1	60·7	+ 0·5	55·4	50·8	9·9	16·7	2·9	70	125·2	43·0	62·3	61·6	0·000	0·0	vP, wN
20	...	29·903	71·3	49·5	21·8	59·9	− 0·6	55·0	50·7	9·2	14·9	2·4	72	133·3	38·9	62·4	61·7	0·000	0·0	vP
21	Apogee	29·927	70·7	48·2	22·5	59·7	− 1·1	55·4	51·6	8·1	17·3	0·0	75	123·3	38·3	62·6	61·9	0·197	0·0	vP : vN, sP
22	...	29·968	69·3	50·2	19·1	58·9	− 2·2	56·2	53·8	5·1	10·3	0·2	83	127·0	41·2	62·8	62·3	0·000	0·0	mP : vP
23	...	29·988	67·7	56·7	11·0	62·4	+ 1·0	60·5	58·9	3·5	6·5	0·8	89	89·7	50·8	62·6	62·0	0·009	2·0	wP, wN
24	...	29·977	76·0	56·6	19·4	65·3	+ 3·6	61·1	57·6	7·7	19·4	0·8	77	130·4	47·6	62·6	62·2	0·037	0·0	vP : wP, wN
25	First Qr.	29·912	80·2	53·1	27·1	64·8	+ 2·9	60·1	56·2	8·6	17·5	1·2	73	142·6	42·1	62·8	62·5	0·000	0·0	mP : wP : mP
26	In Equator	29·755	67·1	53·8	13·3	61·1	− 0·9	58·7	56·6	4·5	8·6	1·9	85	100·2	46·0	63·8	63·1	0·283	0·0	vP
27	...	29·649	70·5	49·2	21·3	58·4	− 3·6	53·0	48·2	10·2	22·3	0·6	69	139·1	41·3	63·5	62·6	0·021	0·2	mP, mN : vP
28	...	29·634	70·0	48·1	21·9	55·5	− 6·4	52·0	48·7	6·8	17·9	0·4	79	136·0	40·3	63·2	62·6	0·433	0·8	mP : vN, vP
29	...	29·677	67·2	48·1	19·1	55·7	− 6·1	52·1	48·7	7·0	16·6	0·0	78	120·9	47·3	63·4	62·6	0·000	1·8	wP
30	...	29·204	66·1	49·6	16·5	55·8	− 5·9	53·3	51·0	4·8	15·8	1·5	85	122·0	45·0	63·6	62·6	0·312	8·2	wP : vP, vN
Means	...	29·830	69·2	49·6	19·6	58·2	− 1·6	54·6	51·3	6·9	14·5	1·2	78·4	122·5	42·1	61·3	60·6	Sum 2·536	1·7	...
Number of Column for Reference.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

The results apply to the civil day.

The mean reading of the Barometer (Column 2) and the mean temperatures of the Air and Evaporation (Columns 6 and 8) are deduced from the photographic records. The average temperature (Column 7) is that determined from the reduction of the photographic records from 1849 to 1868. The temperature of the Dew Point (Column 9) and the Degree of Humidity (Column 13) are deduced from the corresponding temperatures of the Air and Evaporation by means of Glaisher's Hygrometrical Tables. The mean difference between the Air and Dew Point Temperatures (Column 10) is the difference between the numbers in Columns 6 and 9, and the Greatest and Least Differences (Columns 11 and 12) are deduced from the 24 hourly photographic measures of the Dry-bulb and Wet-bulb Thermometers. The results on June 3 and 4 for Air and Evaporation Temperatures are derived from eye-observations on account of failure of the photographic registers.

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

The mean reading of the *Barometer* for the month was $29^{in}\cdot830$, being $0^{in}\cdot002$ *higher* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was $80^{\circ}\cdot2$ on June 25; the lowest in the month was $36^{\circ}\cdot6$ on June 1; and the range was $43^{\circ}\cdot6$.
The mean of all the highest daily readings in the month was $69^{\circ}\cdot2$, being $1^{\circ}\cdot7$ *lower* than the average for the 49 years, 1841–1889.
The mean of all the lowest daily readings in the month was $49^{\circ}\cdot6$, being $0^{\circ}\cdot3$ *lower* than the average for the 49 years, 1841–1889.
The mean of the daily ranges was $19^{\circ}\cdot6$, being $1^{\circ}\cdot4$ *less* than the average for the 49 years, 1841–1889.
The mean for the month was $58^{\circ}\cdot2$, being $1^{\circ}\cdot6$ *lower* than the average for the 20 years, 1849–1868.

MONTH and DAY, 1890.	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	8·1	16·2	WSW : NW	WNW : WSW	2·2	0·0	0·05	265	0 : 4, li.-cl : 6,cu,ci.-cu,slt.-h	p.-cl : 8, cu.-s
2	1·9	16·3	WSW : WNW	WSW	2·0	0·0	0·05	325	10 : 8, cu, cu.-s	8, cu, cu.-s, li.-cl : 1, li.-cl
3	2·5	16·3	SW	SW : SSW	3·6	0·0	0·34	407	9 : v	p.-cl, ci.-cu, w : 10
4	0·0	16·3	SSW	SSW : SW	0·7	0·0	0·01	245	10 : 10, fq.-r	10, fq.-r : 10, c.-r : v
5	2·2	16·4	SW	SW : SSW	2·8	0·0	0·09	311	10 : 8, cu, ci.-cu	p.-cl, slt.-r : 10 : 10
6	1·8	16·4	SSW : SW	WSW : NW	2·5	0·0	0·19	407	10 : 10	9, ci.-cu : 1, li.-cl
7	8·6	16·4	NNW : N	NNW : E	1·0	0·0	0·02	218	0 : v, li.-cl	4, ci.-cu, cu.-s : 0, h
8	5·5	16·4	ESE : SE	SSW : S	0·6	0·0	0·00	151	0 : 0 : 8,ci.-cu,li.-cl	10, fq.-r : 10, c.-r
9	11·2	16·4	SW : WSW	SW : SSW	0·5	0·0	0·00	205	10, r : 5, ci.-cu, cu.-s	6, cu, ci.-cu, cu.-s : 0
10	4·1	16·5	Calm : SE	SSE : SW	1·5	0·0	0·05	168	0 : p.-cl : v, so.-ha	10, fq.-r : 10, slt.-r
11	4·1	16·5	SW : SSW	SSW : SW	5·2	0·0	0·22	308	v : v, hy.-shs, t	v, shs.-r, hl, l, t : v
12	0·8	16·5	SSW : SW : NE	Calm : NNE	0·0	0·0	0·00	102	p.-cl : 10, oc.-r, glm, t	v, oc.-slt.-r, t : 8,oc.-slt.-r,t : 10, hy.-sh
13	0·0	16·5	N : NNW	N	3·0	0·0	0·38	352	10 : 10, sh.-r : 10, oc.-slt.-r	10 : 10
14	2·7	16·5	N	N : ESE : E	0·7	0·0	0·01	176	10 : v : 10	10 : 10, slt.-r
15	3·2	16·5	ENE : N	Calm : SSW	0·0	0·0	0·00	116	p.-cl : 6, li.-ci, h	p.-cl, h : v
16	8·3	16·5	SW : WSW	SW : SSW	1·2	0·0	0·03	246	v : p.-cl	5,cu,ci.-cu,li.-cl,so.-ha : 8, li.-cl
17	0·4	16·6	SW : WSW	WSW : W	2·0	0·0	0·15	313	10, r : 10, r	10, slt.-r : 10
18	6·7	16·6	WSW	SW : WSW	1·8	0·0	0·11	299	v : 2, ci.-cu, li.-cl	7,ci.-cu,cu.-s,slt.-r : v, sh.-r
19	3·0	16·6	W : NNW	NNW : W : WSW	2·5	0·0	0·10	294	0 : v : 10	8, cu.-s, ci.-cu : v
20	5·5	16·6	WSW	WSW	1·7	0·0	0·09	319	0 : 9, cu.-s, ci.-cu	v : 3 : v
21	2·2	16·6	Calm : NE	Variable	2·0	0·0	0·02	108	v : 8, ci.-cu,cu.-s,li.-cl	10, n : 10, r
22	0·3	16·6	SW : WSW	WSW : W	0·9	0·0	0·04	244	v : 10	p.-cl : 7, cu, ci.-cu
23	0·0	16·6	WSW : Calm	SSW : SW : NW	0·0	0·0	0·00	120	v : 10, th.-r, gt.-glm	10, li.-shs : 10
24	5·2	16·6	WSW	W : SW	0·2	0·0	0·00	180	v ; p.-cl, fq.-th.-r	6, cu, ci.-cu, cu.-s : 1, li.-cl
25	11·2	16·6	SSW : WSW	WSW : SW	1·3	0·0	0·02	247	0 : 1, li.-cl	5,ci.-cu,cu.-s,so.-ha : 9
26	2·9	16·5	SW : WSW	SW : WSW	0·7	0·0	0·02	225	10 : 10, r : 10, c.-r	10, oc.-slt.-r : v : 0
27	10·3	16·5	WSW	WSW	3·3	0·0	0·47	400	0 : p.-cl : v, hy.-sh	3,cu.-s,ci.-cu,w : 2 : v
28	6·3	16·5	SW : SSW	WNW : WSW : SW	1·6	0·0	0·03	227	0 : p.-cl : 6, cu, cu.-s, slt.-r	9, ci.-cu, slt.-r : v, shs.-r : 10, hy.-r
29	3·3	16·5	W : NW	SW : SSW	0·9	0·0	0·01	225	10 : 9, ci.-cu, cu.-s	v, slt.-r : 3, th.-cl, s
30	2·9	16·5	S : SSE	SSW : SW : W	2·2	0·0	0·10	306	10, r : 10, c.-r	p.-cl, slt.-r : v, slt.-r
Means	4·2	16·5	...	...	...	...	0·09	250		
Number of Column for Reference.	21	22	23	24	25	26	27	28	29	30

The mean *Temperature of Evaporation* for the month was 54°·6, being 0°·6 *lower* than
The mean *Temperature of the Dew Point* for the month was 51°·3, being 0°·1 *higher* than
The mean *Degree of Humidity* for the month was 78·4, being 5·1 *greater* than
The mean *Elastic Force of Vapour* for the month was 0in·378, being 0in·001 *greater* than
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was 4grs·3, being 0gr·1 *greater* than
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 7·4.

The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·253. The maximum daily amount of *Sunshine* was 11·2 hours on June 9 and 25.

The highest reading of the *Solar Radiation Thermometer* was 143°·0 on June 16; and the lowest reading of the *Terrestrial Radiation Thermometer* was 28°·5 on June 1.

The mean daily distribution of *Ozone* for the 12 hours ending 9h. was 1·0; for the 6 hours ending 15h. was 0·3; and for the 6 hours ending 21h. was 0·4.

The *Proportions of Wind* referred to the cardinal points were N. 4, E. 1, S. 10, and W. 14. One day was calm.

The *Greatest Pressure of the Wind* in the month was 5·2 lbs. on the square foot on June 11. The mean daily *Horizontal Movement of the Air* for the month was 250 miles; the greatest daily value was 407 miles on June 3 and 6; and the least daily value was 102 miles on June 12.

Rain fell on 16 days in the month, amounting to 2in·536, as measured by gauge No. 6 partly sunk below the ground; being 0in·524 *greater* than the average fall for the 49 years, 1841–1889.

MONTH and DAY, 1890.	Phases of the Moon.	BAROMETER. Mean of 24 Hourly Values (corrected and reduced to 32° Fahrenheit).	TEMPERATURE. Of the Air. Highest.	Of the Air. Lowest.	Of the Air. Daily Range.	Of the Air. Mean of 24 Hourly Values.	Of the Air. Excess above Average of 20 Years.	Of Evaporation. Mean of 24 Hourly Values.	Of the Dew Point. Deduced Mean Daily Value.	Difference between the Air Temperature and Dew Point Temperature. Mean.	Greatest.	Least.	Degree of Humidity (Saturation = 100).	TEMPERATURE. Of Radiation. Highest in Sun's Rays.	Of Radiation. Lowest on the Grass.	Of the Water of the Thames at Deptford. Highest.	Of the Water of the Thames at Deptford. Lowest.	Rain collected in Gauge No. 6, whose receiving surface is 5 inches above the Ground.	Daily Amount of Ozone.	Electricity.
		in.	°	°	°	°	°	°	°	°	°	°		°	°	°	°	in.		
July 1	...	29·178	65·1	47·3	17·8	55·4	− 6·2	52·9	50·5	4·9	11·2	1·5	84	120·0	42·4	63·1	62·6	0·103	0·0	mP : sN, sP : vN, vP
2	Greatest Dec. S. : Full.	29·609	71·1	50·9	20·2	58·7	− 2·8	55·0	51·7	7·0	16·2	1·0	78	123·0	42·1	62·9	62·6	0·009	0·0	wP : vN, vP
3	Perigee	29·634	69·3	50·0	19·3	58·3	− 3·1	53·4	49·0	9·3	18·7	1·0	72	136·5	40·0	63·2	62·6	0·020	0·0	wP : vN, wP : vP
4	...	29·619	70·9	45·5	25·4	54·8	− 6·6	51·3	48·0	6·8	17·1	1·4	77	143·3	34·3	62·6	62·3	0·159	0·0	mP : vN, vP
5	...	29·398	56·7	49·1	7·6	52·3	− 9·2	50·8	49·3	3·0	8·6	0·4	90	71·8	48·0	62·2	61·5	1·169	0·0	vN : vN, vP
6	...	29·659	60·3	48·0	12·3	54·2	− 7·5	51·1	48·1	6·1	9·3	3·2	79	92·2	44·3	61·4	60·2	0·006	0·0	vP : wP, wN
7	...	29·737	66·8	47·0	19·8	55·2	− 6·7	51·8	48·5	6·7	15·5	1·6	79	135·9	38·9	60·8	60·0	0·177	1·5	mP : wP, vN : mP, wN
8	In Equator	29·437	72·1	51·8	20·3	59·9	− 2·3	56·6	53·7	6·2	15·1	1·0	80	134·4	50·0	60·8	59·9	0·069	4·5	wP
9	Last Qr.	29·574	64·0	53·5	10·5	57·9	− 4·6	55·8	53·9	4·0	10·6	0·9	86	101·9	44·5	61·2	60·6	0·108	0·0	wP : vP, wN
10	...	29·759	69·1	48·3	20·8	58·2	− 4·5	52·5	47·4	10·8	16·9	5·0	68	129·8	39·3	61·1	60·4	0·000	0·0	mP : vP, wN
11	...	29·751	59·8	48·4	11·4	53·3	− 9·6	50·8	48·3	5·0	10·6	0·8	83	104·1	45·0	61·0	60·3	0·493	0·0	sN, sP : wP, wN : vP
12	...	29·771	64·6	41·9	22·7	53·8	− 9·3	50·2	46·7	7·1	15·4	0·0	76	115·2	...	61·6	60·6	0·000	0·0	vP
13	...	29·697	72·1	53·1	19·0	60·0	− 3·3	57·4	55·1	4·9	9·5	0·4	84	119·8	49·3	61·9	61·1	0·000	2·2	wP
14	...	29·690	70·6	58·3	12·3	62·2	− 1·2	59·6	57·4	4·8	9·2	0·9	85	124·0	56·1	61·8	61·2	0·000	0·8	wP
15	Greatest Declination N.	29·748	76·6	58·0	18·6	65·2	+ 1·8	59·1	54·1	11·1	18·7	1·9	68	143·8	52·0	62·6	62·1	0·000	0·0	wP : vP
16	...	29·900	74·4	49·7	24·7	62·8	− 0·7	57·6	53·2	9·6	16·4	2·8	71	113·9	43·0	63·6	62·8	0·011	0·0	vP : wN
17	New	29·724	74·2	56·2	18·0	63·1	− 0·4	61·3	59·8	3·3	10·8	0·4	89	110·0	49·1	61·2	60·6	1·192	0·0	wP : ssP, ssN
18	Apogee	29·667	71·0	55·5	15·5	59·8	− 3·6	56·8	54·2	5·6	16·9	0·2	82	128·8	55·5	63·6	63·2	0·573	0·0	vN, wP : vP
19	...	29·733	66·1	49·5	16·6	57·9	− 5·4	55·5	53·3	4·6	9·9	0·2	85	123·0	42·5	64·6	63·8	0·311	0·0	vP, vN : vP
20	...	30·042	68·1	47·1	21·0	57·2	− 6·0	52·3	47·8	9·4	15·7	2·0	71	132·0	40·0	62·6	62·1	0·000	0·0	mP : wP
21	...	30·010	73·1	48·6	24·5	60·1	− 2·9	56·9	54·1	6·0	13·0	0·8	81	135·3	41·0	62·8	62·4	0·000	0·0	wP : vP
22	...	29·905	76·2	57·4	18·8	65·5	+ 2·6	59·6	54·8	10·7	20·2	2·1	69	129·5	50·5	62·4	61·6	0·000	0·0	vP
23	In Equator	29·945	78·1	53·0	25·1	64·6	+ 1·8	59·8	55·8	8·8	14·8	2·4	74	130·9	45·9	63·6	63·0	0·003	0·0	vP
24	...	29·794	75·4	55·5	19·9	64·0	+ 1·3	58·7	54·3	9·7	18·0	1·7	70	128·9	50·5	64·0	63·5	0·020	0·0	wP : wN, vP
25	First Qr.	29·898	70·5	51·6	18·9	60·5	− 2·2	54·3	48·9	11·6	18·9	6·0	66	117·0	46·2	63·8	63·4	0·000	0·0	mP : wN, wP
26	...	29·870	75·6	55·2	20·4	62·1	− 0·6	58·8	56·0	6·1	11·0	1·9	80	138·5	51·0	64·2	63·6	0·059	0·2	wP
27	...	29·794	75·5	54·0	21·5	62·3	− 0·3	58·4	55·1	7·2	13·0	1·9	77	129·1	49·1	64·6	63·8	0·000	1·2	wP
28	...	29·708	75·1	52·5	22·6	62·3	− 0·3	57·3	53·0	9·3	19·1	1·5	72	132·1	48·0	64·6	63·9	0·005	3·5	wP : vP, wN
29	...	29·826	77·1	48·1	29·0	60·2	− 2·4	55·3	51·0	9·2	19·4	1·5	72	139·3	43·5	64·8	64·0	0·000	0·3	mP : vP
30	Greatest Declination S.	29·779	70·0	53·7	16·3	61·3	− 1·3	58·5	56·1	5·2	8·6	2·3	83	105·1	49·0	65·0	64·6	0·008	1·3	wP
31	Full : Perigee.	29·801	73·5	60·3	13·2	65·2	+ 2·6	62·7	60·7	4·5	7·6	1·5	85	109·3	54·9	65·5	64·7	0·000	1·5	wP
Means	...	29·731	70·4	51·6	18·8	59·6	− 3·0	55·9	52·6	7·0	14·1	1·6	77·9	122·5	(30 days) 46·2	62·9	62·2	Sum 4·495	0·5	...
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 29in·731, being 0in·078 *lower* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 78°·1 on July 23; the lowest in the month was 41°·9 on July 12; and the range was 36°·2.
The mean of all the highest daily readings in the month was 70°·4, being 3°·7 *lower* than the average for the 49 years, 1841–1889.
The mean of all the lowest daily readings in the month was 51°·6, being 1°·5 *lower* than the average for the 49 years, 1841–1889.
The mean of the daily ranges was 18°·8, being 2°·2 *less* than the average for the 49 years, 1841–1889.
The mean for the month was 59°·6, being 3°·0 *lower* than the average for the 20 years, 1849–1868.

MONTH and DAY, 1890.	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	2·4	16·5	SW : WSW	WSW : N	1·0	0·0	0·00	153	v :10,m,gt.-glm,hy.-sh,t	t.-sm, hy.-r: 9, m, hy.-sh: v, m
2	2·3	16·5	N : NNW	SW	0·2	0·0	0·00	193	o : p.-cl, h	6,cu.-s,ci.-cu,t,h: p.-cl, sh.-r : v
3	6·7	16·4	SW : WSW	WNW : NW	2·0	0·0	0·05	299	p.-cl :7,ci.-cu,cu-s,oc.-r	p.-cl,fq.-r,t : v : o
4	5·9	16·4	WSW	SW : NE	0·0	0·0	0·00	167	o : 3, ci.-cu, cu.-s	9, r : 10, r : 10, r
5	0·0	16·4	NNE : NE	N : NW	4·7	0·0	1·00	458	10, c.-r, w : 10, hy.-r, st.-w	10, sc, r : 9, m, shs.-r
6	0·0	16·4	N : NW	NW : W	0·4	0·0	0·00	245	v :p.-cl,li.-shs: 10,fq.-th.-r	10, fq.-th.-r, glm : 10, slt.-r
7	2·9	16·3	WSW	WSW : SW	3·6	0·0	0·28	326	v : 9, hy.-sh	8,cu,cu.-s,r,w,so.-ha: 10, th.-r : 10, r
8	4·7	16·3	SSW : SW	WSW : W	2·7	0·0	0·45	391	10, fq.-r : : 10, th.-r	v, slt.-r : v, li.-cl
9	0·2	16·3	WSW : SW	SW : NW : N	1·0	0·0	0·02	212	10 : 10, r	10, th.-r, glm : v
10	7·1	16·3	NNW : N	NW : N : NE	1·0	0·0	0·03	218	v : 5, li.-cl, h	8,cu,cu.-s,ci.-cu,so.-ha: 10
11	1·4	16·2	NNE : N	N : NNE	1·5	0·0	0·03	201	10, r : v, glm, r	9, r : p.-cl
12	1·6	16·2	SW : SSW	SW : SSW	2·0	0·0	0·04	211	o : v : 9,cu.-s,th.-cl,so.-ha	10 : 10
13	1·6	16·2	SSW	SSW	1·5	0·0	0·10	324	10 : 10, th.-r	9, ci.-cu : 10, th.-r
14	1·6	16·1	SSW : SW	SSW : S	3·4	0·0	0·48	382	10 : 9	9,ci.-cu,cu.-s,slt.-r: v
15	7·9	16·1	SSW : WSW	W : WNW	1·0	0·0	0·01	249	10 : 10, th.-r : v, cu, li.-cl	3,ci.-cu,cu.-s,li.-cl: p.-cl, slt.-r
16	5·4	16·1	WSW	NE : ESE	0·0	0·0	0·00	119	o : o, h, m	3, cu, li.-cl, h : v, hy.-sh
17	0·3	16·0	E : NE	E : WSW	1·9	0·0	0·01	143	p.-cl : 8, cu.-s, ci.-cu	10, r : 10, hy.-r, t.-sm
18	1·6	16·0	WNW : NW	WSW : SSW	2·2	0·0	0·08	302	10, hy.-r : 10, slt.-r	8, cu.-s, ci.-cu : 10, r
19	3·3	16·0	SW : N	N : NNE	3·0	0·0	0·43	358	10, r : 10, hy.-sh	8, ci.-cu, slt.-r : o
20	10·3	15·9	N	N : Calm	1·2	0·0	0·03	232	o : v : 8, cu, cu.-s	7, li.-cl : v
21	1·4	15·9	WSW : NW	WSW : SW	0·0	0·0	0·00	190	o : p.-cl : 8, li.-cl	7,ci.-cu,li.-cl: 9 : 10
22	10·2	15·8	WSW : NW	NW	1·7	0·0	0·14	357	10 : p.-cl, slt.-r	4, cu, ci.-cu, cu.-s: 2, th.-cl
23	7·2	15·8	WSW : WNW	WNW : W : WSW	2·6	0·0	0·14	340	o : v : 10	8,cu,ci.-cu,cu.-s: p.-cl : 1, li.-cl
24	5·8	15·7	WSW : NW	WNW : NNW	2·5	0·0	0·12	366	v : p.-cl	8, cu, cu.-s, sh.-r : p.-cl
25	7·5	15·7	NW : NNW	NW : SW	1·1	0·0	0·00	223	o : 1 : v, cu, li.-cl	7, ci.-cu, cu.-s : p.-cl
26	2·2	15·7	SSW : SW	SW : SSW	1·4	0·0	0·01	254	10, slt.-r : 10, sh.-r : 10, th.-r	8, slt.-sh : v : o
27	3·9	15·6	SSW : SW	SSW	1·6	0·0	0·09	329	o : p.-cl : 9, ci.-cu, cu.-s	p.-cl : v, cu.-s, li.-cl
28	3·9	15·6	SSW : W	W : WSW	1·3	0·0	0·03	285	o : p.-cl : v, r	5, cu, ci.-cu, cu.-s: 1, li.-cl, lu.-co
29	9·8	15·5	WSW	WSW : SSW	0·9	0·0	0·00	234	o : o : 2, cu, cu.-s	5, cu, ci.-cu, cu.-s: v, th.-cl
30	0·1	15·5	SSW	SW	2·0	0·0	0·20	383	v, sh.-r : 10	10 : p.-cl
31	1·4	15·4	SW	SW	2·0	0·0	0·25	378	10 : 10	10, oc.-slt.-r : 3, li.-cl
Means	3·9	16·0	...	...	...	...	0·13	275		
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°·9, being 1°·8 *lower* than
The mean *Temperature of the Dew Point* for the month was 52°·6, being 1°·1 *lower* than
The mean *Degree of Humidity* for the month was 77·9, being 4·9 *greater* than
The mean *Elastic Force of Vapour* for the month was 0in·397, being 0in·016 *less* than
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was 4grs·4, being 0gr·2 *less* than
The mean *Weight of a Cubic Foot of Air* for the month was 529 grains, being 1 grain *greater* than
} the average for the 20 years, 1849–1868.

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

The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·243. The maximum daily amount of *Sunshine* was 10·3 hours on July 20.

The highest reading of the *Solar Radiation Thermometer* was 143°·8 on July 15; and the lowest reading of the *Terrestrial Radiation Thermometer* was 34°·3 on July 4.

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

The *Proportions of Wind* referred to the cardinal points were N. 8, E. 2, S. 8, and W. 13.

The *Greatest Pressure of the Wind* in the month was 4·7 lbs. on the square foot on July 5. The mean daily *Horizontal Movement of the Air* for the month was 275 miles; the greatest daily value was 458 miles on July 5; and the least daily value was 119 miles on July 16.

Rain fell on 18 days in the month, amounting to 4in·495, as measured by gauge No. 6 partly sunk below the ground; being 2in·066 *greater* than the average fall for the 49 years, 1841–1889.

MONTH and DAY, 1890.	Phases of the Moon.	BAROMETER. Mean of 24 Hourly Values (corrected and reduced to 32° Fahrenheit).	TEMPERATURE. Of the Air. Highest.	Of the Air. Lowest.	Of the Air. Daily Range.	Of the Air. Mean of 24 Hourly Values.	Of the Air. Excess above Average of 20 Years.	Of Evaporation. Mean of 24 Hourly Values.	Of the Dew Point. Deduced Mean Daily Value.	Difference between the Air Temperature and Dew Point Temperature. Mean.	Greatest.	Least.	Degree of Humidity (Saturation = 100).	TEMPERATURE. Of Radiation. Highest in Sun's Rays.	Of Radiation. Lowest on the Grass.	Of the Water of the Thames at Deptford. Highest.	Of the Water of the Thames at Deptford. Lowest.	Rain collected in Gauge No. 6, whose receiving surface is 5 inches above the Ground.	Daily Amount of Ozone.	Electricity.
		in.	°	°	°	°	°	°	°	°	°	°		°	°	°	°	in.		
Aug. 1	...	29·713	81·7	57·5	24·2	67·0	+ 4·4	62·5	58·9	8·1	19·4	1·3	75	142·1	53·5	65·6	65·1	0·000	2·0	wP : vP
2	...	29·784	68·1	51·4	16·7	58·7	− 4·0	56·1	53·8	4·9	13·3	0·6	84	116·7	46·7	65·6	65·1	0·095	0·0	mP : vP, sN
3	...	29·973	72·2	52·3	19·9	61·7	− 1·0	57·6	54·1	7·6	16·7	0·9	76	116·0	45·0	64·6	64·4	0·000	0·0	mP : vP, wN
4	...	30·036	76·1	54·7	21·4	64·0	+ 1·3	59·9	56·5	7·5	14·5	1·5	77	116·2	48·9	65·0	64·7	0·000	0·0	mP : vP, wN
5	In Equator	30·003	82·8	52·8	30·0	66·6	+ 3·9	61·1	56·7	9·9	20·9	0·8	71	135·4	47·7	65·0	64·9	0·000	0·0	mP : vP, wN
6	...	29·932	77·1	54·4	22·7	64·7	+ 2·0	60·4	56·9	7·8	16·3	1·3	76	113·5	48·4	66·2	65·7	0·000	0·0	mP : vN : vP
7	Last Qr.	29·979	72·9	54·0	18·9	61·7	− 1·0	59·0	56·7	5·0	12·6	0·2	84	117·6	47·9	66·5	65·7	0·000	2·0	mP : wP
8	...	29·941	66·4	48·1	18·3	57·8	− 4·9	54·9	52·3	5·5	11·7	1·5	82	95·4	43·3	65·9	65·5	0·000	0·0	mP : vP
9	...	29·825	68·8	56·1	12·7	61·0	− 1·7	58·8	56·9	4·1	7·9	1·1	87	87·0	54·9	65·6	65·3	0·002	0·0	wP
10	...	29·613	75·0	57·4	17·6	64·1	+ 1·4	62·1	60·4	3·7	13·9	0·2	88	133·4	52·7	65·8	65·2	0·481	3·2	vP, sN : wP, wN
11	...	29·560	76·5	58·0	18·5	63·5	+ 0·8	61·3	59·5	4·0	9·4	0·8	87	132·6	55·4	65·6	65·1	0·125	4·0	wN, wP
12	Greatest Declination N.	29·605	70·0	56·6	13·4	62·8	+ 0·2	60·2	58·0	4·8	8·8	1·3	84	107·0	50·0	66·0	65·7	0·000	0·8	wP
13	...	29·577	72·1	52·4	19·7	59·9	− 2·6	54·7	50·1	9·8	21·6	2·0	70	136·7	45·5	65·6	65·0	0·011	0·0	mP : vP, wN
14	Apogee	29·592	72·7	51·8	20·9	59·1	− 3·3	55·5	52·3	6·8	18·0	2·4	78	138·1	44·1	65·2	64·9	0·000	1·0	mP : wP
15	New	29·502	75·1	55·0	20·1	61·6	− 0·7	56·9	52·8	8·8	21·4	3·0	73	138·0	48·0	64·8	64·3	0·012	4·0	wP : vP : wN
16	...	29·631	70·9	51·2	19·7	59·7	− 2·4	55·0	50·8	8·9	19·1	2·3	73	137·0	44·5	64·4	63·6	0·149	3·0	vP, vN
17	...	29·767	75·9	49·1	26·8	60·0	− 1·9	54·9	50·4	9·6	20·0	1·6	70	142·2	42·3	64·6	63·9	0·000	0·0	mP : wP
18	...	29·675	74·6	52·2	22·4	61·1	− 0·7	57·0	53·4	7·7	19·6	1·6	77	128·2	45·0	64·4	63·6	0·000	0·0	vP
19	In Equator	29·652	59·0	52·8	6·2	56·5	− 5·1	55·8	55·2	1·3	2·5	0·4	96	77·3	45·0	64·2	63·6	0·809	0·0	sP, sN : vN, wP
20	...	29·732	69·4	53·5	15·9	60·0	− 1·4	56·5	53·4	6·6	15·7	0·4	79	113·8	46·0	63·6	63·1	0·140	0·0	wP, wN : vP, wN
21	...	29·839	66·1	53·7	12·4	60·1	− 1·2	56·7	53·7	6·4	11·9	2·5	80	104·3	45·9	63·4	62·8	0·011	0·0	wP
22	...	29·867	69·6	51·8	17·8	59·6	− 1·7	54·8	50·5	9·1	18·9	1·3	72	131·5	45·0	63·0	62·6	0·002	0·5	wP
23	First Qr.	29·583	68·6	49·5	19·1	60·3	− 0·9	55·5	51·3	9·0	17·6	3·8	72	123·0	41·0	63·2	62·5	0·040	1·5	wP : vP
24	...	29·527	68·2	44·2	24·0	52·4	− 8·7	49·7	47·0	5·4	16·2	0·8	82	127·3	35·6	62·0	61·5	0·440	0·0	vP : sN, sP
25	...	29·468	68·3	42·2	26·1	54·0	− 7·0	50·5	47·1	6·9	15·5	0·4	77	126·1	33·2	62·2	61·4	0·005	0·5	mP : vP, mN
26	Greatest Declination S.	29·299	64·6	47·8	16·8	54·9	− 6·0	52·0	49·2	5·7	13·1	1·4	81	122·5	42·0	61·8	61·0	0·168	1·5	wP : vP, wN
27	...	29·269	68·4	50·1	18·3	55·5	− 5·3	51·8	48·3	7·2	16·6	2·6	77	129·2	45·0	61·4	60·6	0·027	1·0	wP : vP, sN
28	...	29·571	67·2	48·8	18·4	57·0	− 3·7	52·6	48·5	8·5	17·8	1·4	73	115·7	41·6	60·9	60·3	0·020	0·0	vP : vP, vN
29	Perigee	29·763	65·6	48·0	17·6	55·5	− 5·1	51·6	47·9	7·6	15·8	2·0	76	123·0	40·5	60·8	60·1	0·000	0·0	wP : vP, wN
30	Full	29·866	63·2	41·2	22·0	51·5	− 8·9	48·0	44·5	7·0	14·3	0·9	77	123·6	35·5	60·6	59·6	0·000	0·0	mP : vP
31	...	30·018	63·3	39·1	24·2	50·5	− 9·8	46·8	42·9	7·6	17·3	0·0	76	122·0	34·0	60·1	59·2	0·000	0·0	vP
Means	...	29·715	70·7	51·2	19·4	59·4	− 2·4	55·8	52·6	6·9	15·4	1·4	78·4	121·7	45·0	64·0	63·4	Sum 2·537	0·8	...
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·715, being 0in·084 *lower* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 82°·8 on August 5; the lowest in the month was 39°·1 on August 31; and the range was 43°·7.
The mean of all the highest daily readings in the month was 70°·7, being 2°·2 *lower* than the average for the 49 years, 1841–1889.
The mean of all the lowest daily readings in the month was 51°·2, being 1°·8 *lower* than the average for the 49 years, 1841–1889.
The mean of the daily ranges was 19°·4, being 0°·5 *less* than the average for the 49 years, 1841–1889.
The mean for the month was 59°·4, being 2°·4 *lower* than the average for the 20 years, 1849–1868.

MONTH and DAY, 1890.	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	10·4	15·3	SSW	SW : WSW	1·5	0·0	0·04	270	v : 5, cu, li.-cl	4, ci.-cu, cu.-s : 0
2	2·4	15·3	WSW : W : NW	NNW	1·6	0·0	0·01	223	0 : v : 9,ci.-cu,cu.-s	10, fq.-r : 10, r
3	6·8	15·2	NNW : N	WNW : WSW	0·0	0·0	0·00	154	10 : 4, th.-cl, h, m	p.-cl : v : 0
4	4·2	15·2	SW : WNW	WSW : S	0·0	0·0	0·00	130	0 : p.-cl,m,h,slt.-r	5, ci.-cu, h : 0, h : 0, h, m
5	9·6	15·1	SW	SW : WSW	0·0	0·0	0·00	66	v : 2, th.-cl	3,ci.-cu,cu.-s,li.-cl : 3, li.-cl
6	4·5	15·1	WSW : NNW	WSW : NE : E	0·0	0·0	0·00	32	0 : 0, h : 0, h	2, li.-cl, h : 0
7	3·7	15·0	E : ENE : NE	E : ENE	0·5	0·0	0·01	147	0 : p.-cl, f : 10	7, cu.-s, ci.-cu : 2, li.-cl
8	0·9	15·0	NE : ENE	E : NE	1·4	0·0	0·07	222	0 : p.-cl : 10	10 : 10, th.-r : 10, slt.-r
9	0·8	14·9	NE : ENE	NE : ENE	0·5	0·0	0·03	203	10 : 10 : 10, th.-r	10 : p.-cl, li.-cl, h
10	3·1	14·9	ENE : E	ESE : SW : SSW	2·0	0·0	0·06	216	0 : v, hy.-r, l, t : 10, slt.-r	v : 10, shs.-r
11	4·7	14·8	SSW : SW	SW	2·1	0·0	0·28	322	10, shs.-r : 10, sh.-r : p.-cl,shs.-r	6, cu, ci.-cu, cu.-s, t : 4, t : v
12	0·3	14·7	SW : WSW : WNW	W : WNW : WSW	0·8	0·0	0·03	231	10 : 10	10, slt.-r : p.-cl : v
13	6·2	14·7	W : WNW	WSW	1·3	0·0	0·03	206	p.-cl : 3, li.-cl, h	5, cu, ci.-cu, cu.-s : v, fq.-th.-r
14	4·1	14·6	WSW	SW : SSW	1·6	0·0	0·17	300	vv : p.-cl : 6,cu,ci.-cu	8 : 10
15	6·8	14·6	SSW : SW	SW	5·5	0·0	1·20	523	10, slt.-r, w : v, slt.-sh, st.-w	p.-cl, slt.-r, w : v
16	7·4	14·5	SSW : SW	WSW : SW	5·7	0·0	0·93	441	p.-cl : p.-cl,hy.-sh : v,hy.-r,st.-w	3, cu, ci.-cu, w : 0
17	11·1	14·4	SSW : SW	SW	1·2	0·0	0·06	253	0 : 3,cu,ci.-cu,li.-cl	3, li.-cl : 0
18	5·5	14·4	SW : SE	NE : ESE	0·0	0·0	0·00	124	v : 10, m : 3,ci.-cu,li.-cl	4, li.-cl, so.-ha : v
19	0·0	14·3	NE : NNE	E	0·4	0·0	0·01	210	10, l, t, r : 10, r : 10, c.-r, glm	10, c.-r : 10 : 10
20	1·3	14·3	NE : NNW	NW : W : WSW	1·2	0·0	0·05	222	10, fq.-r : 10, r : p.-cl	8, ci.-cu, li.-cl : 3 : v
21	0·1	14·2	WSW	SW	1·5	0·0	0·10	321	10 : 10	10, slt.-sh : 10, oc.-slt.-r
22	8·1	14·1	W : WSW	W : SW	2·0	0·0	0·27	369	10 : p.-cl : 4,cu,li.-cl	v, cu, cu.-s : v
23	5·8	14·1	SW	W : WNW : WSW	5·3	0·0	0·81	457	10 : 10, shs.-r, w	6, cu, ci.-cu, li.-cl : 0
24	6·8	14·0	SW	SW : SE : WSW	2·7	0·0	0·01	162	0 : 0, slt.-f : p.-cl,ci.-cu	v, t.-sm, hy.-r : v
25	5·7	13·9	SW : WSW	SW : S	2·7	0·0	0·05	246	0 : 1, li.-cl, slt.-h	7,cu,ci.-cu,li.-shs : 10, slt.-r
26	3·1	13·9	WSW : SW	SW	3·8	0·0	0·55	427	p.-cl, sh.-r : v, ci.-cu, li.-cl	10, shs.-r : 10, fq.-r
27	3·0	13·8	SW	WSW	1·4	0·0	0·05	294	10 : 10, th.-cl	7,cu,ci.-cu,cu.-s,r : v, sh.-r, l
28	7·8	13·8	WSW : WNW	NNW : NNE	1·9	0·0	0·03	232	v : 0, m : 4,ci.-cu,cu.-s	4,cu,ci.-cu,li.-cl : 10, sh.-r, l
29	3·5	13·7	N	NNW : N	0·3	0·0	0·00	183	10 : p.-cl : 7,ci.-cu,cu.-s	6, cu, cu.-s, li.-cl : v, slt.-r
30	6·6	13·7	NNW : N	N : NNE	0·6	0·0	0·01	173	0, d : 0, m, h : p.-cl	9, slt.-r : 2, li.-cl, m
31	8·8	13·6	Calm : N	N : NE	0·5	0·0	0·01	176	0, d : 0, m : 4,ci.-cu,li.-cl	5, ci.-cu : 0, d, slt.-m
Means	4·9	14·5	...	...	...	...	0·16	243		
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°·8, being 2°·1 *lower* than
The mean *Temperature of the Dew Point* for the month was 52°·6, being 1°·8 *lower* than
The mean *Degree of Humidity* for the month was 78·4, being 1·9 *greater* than
The mean *Elastic Force of Vapour* for the month was $0^{in}\cdot397$, being $0^{in}\cdot027$ *less* than
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was $4^{grs}\cdot5$, being $0^{gr}\cdot2$ *less* than
The mean *Weight of a Cubic Foot of Air* for the month was 529 grains, being 1 grain *greater* than
} the average for the 20 years, 1849–1868.

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

The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·341. The maximum daily amount of *Sunshine* was 11·1 hours on August 17.

The highest reading of the *Solar Radiation Thermometer* was 142°·2 on August 17; and the lowest reading of the *Terrestrial Radiation Thermometer* was 33°·2 on August 25.

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

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

The *Greatest Pressure of the Wind* in the month was 5·7 lbs. on the square foot on August 16. The mean daily *Horizontal Movement of the Air* for the month was 243 miles; the greatest daily value was 523 miles on August 15; and the least daily value was 32 miles on August 6.

Rain fell on 15 days in the month, amounting to $2^{in}\cdot537$, as measured by gauge No. 6 partly sunk below the ground; being $0^{in}\cdot191$ *greater* than the average fall for the 49 years, 1841–1889.

MONTH and DAY, 1890.	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	In Equator	30·133	69·8	37·1	32·7	52·6	− 7·5	48·1	43·6	9·0	20·0	0·7	72	126·1	31·5	59·4	58·8	0·000	0·0	vP
2	...	30·079	71·1	49·0	22·1	57·9	− 2·1	54·5	51·5	6·4	14·4	1·3	80	139·3	41·7	59·8	59·0	0·004	0·0	mP
3	...	30·054	72·7	52·0	20·7	60·4	+ 0·6	57·9	55·7	4·7	11·7	1·2	85	135·2	44·8	60·4	59·6	0·000	0·0	mP
4	...	30·121	69·1	54·7	14·4	61·3	+ 1·6	58·7	56·5	4·8	11·0	1·7	84	83·9	48·8	61·0	60·0	0·000	0·0	mP : vP
5	...	30·171	77·7	53·3	24·4	63·8	+ 4·3	59·9	56·7	7·1	16·5	1·1	78	122·2	46·6	61·1	59·9	0·000	0·0	wP, wN
6	Last Qr.	30·203	73·1	53·8	19·3	62·3	+ 3·0	60·0	58·1	4·2	10·9	0·2	86	103·6	44·0	61·4	60·6	0·000	0·0	wP
7	...	30·284	72·7	50·5	22·2	59·8	+ 0·8	56·8	54·2	5·6	15·7	0·4	82	137·6	43·4	62·8	61·6	0·000	0·0	wP
8	Greatest Declination N.	30·253	74·9	46·7	28·2	59·5	+ 0·7	56·2	53·3	6·2	16·7	0·2	81	133·2	41·8	62·6	61·6	0·000	0·0	wP
9	...	30·140	73·4	47·9	25·5	59·2	+ 0·7	56·6	54·3	4·9	15·1	0·6	84	116·0	42·5	62·9	61·8	0·000	0·0	wP
10	Apogee	29·995	77·5	48·4	29·1	62·3	+ 4·0	58·0	54·4	7·9	17·5	0·6	75	132·3	43·0	62·6	61·4	0·000	0·0	vP
11	...	30·003	72·5	49·2	23·3	60·7	+ 2·6	55·7	51·4	9·3	19·6	0·9	71	123·0	40·5	62·6	61·6	0·000	0·0	vP
12	...	30·081	69·8	47·5	22·3	58·1	+ 0·1	54·4	51·1	7·0	16·4	2·4	77	118·8	39·2	62·6	62·0	0·000	0·0	mP : wN, wP
13	...	30·064	71·6	46·9	24·7	56·9	− 0·9	53·8	50·9	6·0	15·1	0·8	80	124·2	41·2	62·9	62·1	0·000	0·0	vP
14	New	30·058	70·3	46·3	24·0	57·2	− 0·4	54·3	51·6	5·6	15·3	0·2	82	126·7	39·9	62·6	62·0	0·000	0·0	mP : wP
15	In Equator	29·922	73·1	48·8	24·3	60·7	+ 3·3	56·2	52·3	8·4	23·0	0·0	74	130·8	40·8	62·4	61·5	0·000	0·0	mP
16	...	29·816	75·5	49·4	26·1	61·7	+ 4·4	56·7	52·4	9·3	23·5	0·6	72	132·2	38·5	62·6	61·6	0·000	0·0	mP
17	...	29·736	73·5	51·2	22·3	61·6	+ 4·5	57·7	54·3	7·3	18·2	1·1	77	128·2	45·0	62·8	62·0	0·151	1·2	wP : wP : sN, vP
18	...	29·738	70·5	54·9	15·6	61·1	+ 4·2	58·3	55·9	5·2	13·5	0·6	83	130·4	53·0	62·9	62·1	0·105	4·2	wP : wN : mP, mN
19	...	29·722	71·1	52·0	19·1	58·4	+ 1·6	55·8	53·5	4·9	12·4	1·0	83	132·4	49·7	63·3	62·4	0·019	2·8	wP : mP, mN
20	...	29·519	67·9	54·7	13·2	59·8	+ 3·2	55·8	52·3	7·5	14·8	0·8	77	126·6	47·5	63·0	62·2	0·055	6·8	vN, wP : mP
21	First Qr.	29·529	68·5	50·9	17·6	59·0	+ 2·6	55·1	51·6	7·4	15·3	3·0	77	132·0	43·8	62·8	62·0	0·004	4·0	wP : mP, sN
22	Greatest Declination S.	29·570	67·1	52·8	14·3	57·6	+ 1·4	54·5	51·7	5·9	12·8	1·4	81	124·2	49·3	62·6	61·6	0·064	3·0	wP, wN : mP
23	...	29·760	70·0	50·1	19·9	56·6	+ 0·5	54·4	52·4	4·2	12·7	0·6	86	130·5	44·1	62·6	61·6	0·250	4·0	wP : sP, sN
24	...	30·029	69·0	49·1	19·9	57·1	+ 1·2	53·8	50·7	6·4	16·4	2·0	79	138·0	41·0	62·2	61·4	0·000	0·0	mP
25	...	30·205	66·0	48·6	17·4	58·1	+ 2·3	54·4	51·1	7·0	13·3	2·1	77	105·1	40·4	61·9	61·1	0·000	0·0	mP : vP, wN
26	Perigee	30·261	69·4	49·0	20·4	59·1	+ 3·4	56·6	54·4	4·7	8·1	0·6	85	116·3	42·5	61·6	60·6	0·000	0·0	wP
27	...	30·233	74·1	55·8	18·3	63·0	+ 7·5	61·2	59·7	3·3	10·0	0·2	89	112·3	49·9	61·6	60·8	0·000	0·0	wP
28	Full: In Equator.	30·033	73·0	54·7	18·3	60·9	+ 5·5	58·1	55·7	5·2	15·1	0·4	83	107·0	47·0	61·5	60·8	0·000	0·0	wP : mP
29	...	29·896	63·3	51·7	11·6	57·7	+ 2·5	55·0	52·6	5·1	8·7	1·3	83	116·3	44·7	61·4	60·6	0·000	0·0	wP
30	...	29·774	68·9	54·6	14·3	59·6	+ 4·7	55·1	51·1	8·5	13·9	4·9	74	125·9	48·0	61·0	60·2	0·000	1·2	wP
Means	...	29·979	71·2	50·4	20·9	59·5	+ 2·0	56·1	53·2	6·3	14·9	1·1	79·9	123·7	43·8	62·0	61·2	Sum 0·652	0·9	...
Number of Column for Reference.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

The results apply to the civil day.

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

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

The mean reading of the *Barometer* for the month was 29in·979, being 0in·192 *higher* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 77°·7 on September 5; the lowest in the month was 37°·1 on September 1; and the range was 40°·6.
The mean of all the highest daily readings in the month was 71°·2, being 4°·0 *higher* than the average for the 49 years, 1841–1889.
The mean of all the lowest daily readings in the month was 50°·4, being 1°·3 *higher* than the average for the 49 years, 1841–1889.
The mean of the daily ranges was 20°·9, being 2°·7 *greater* than the average for the 49 years, 1841–1889.
The mean for the month was 59°·5, being 2°·0 *higher* than the average for the 20 years, 1849–1868.

MONTH and DAY, 1890.	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	9·0	13·5	Calm : SW	SW : SSW	0·4	0·0	0·00	157	0, d : 0, m : 1, li.-cl	3, cu, ci.-cu, cu.-s : p.-cl
2	3·4	13·4	SSW : SW	WSW : SW	1·1	0·0	0·03	248	p.-cl : 7, ci.-cu, so.-ha	8, cu.-s, ci.-cu, oc.-slt.-r : 10
3	1·2	13·4	SW	WSW	0·9	0·0	0·01	255	10 : 10	p.-cl : v
4	0·0	13·3	WSW : W	WNW : WSW	0·0	0·0	0·00	180	10 : 10, m, slt.-r	10 : p.-cl : v,th.-cl,m
5	3·2	13·2	WSW	W : NW : N	0·0	0·0	0·00	121	v, d, m : h,li.-cl,m,slt.-f	6, cu.-s, li.-cl : v
6	1·2	13·2	Calm : N	N : NE : ESE	0·0	0·0	0·00	120	0, d : 10, tk.-f : 10, m	p.-cl, ci.-cu, cu.-s : 2, th.-cl
7	7·9	13·1	Calm : ENE	ENE : ESE	0·2	0·0	0·00	135	0, d : p.-cl : 5, cu.-s	3, ci, ci.-cu : 0
8	9·5	13·0	Calm : SE	SE : SSE	0·1	0·0	0·00	92	0, d : 0, tk.-f : 0	0 : 0
9	5·6	13·0	Calm : SW	SW : SSW	0·0	0·0	0·00	114	0, d : p.-cl, slt.-f : 10	3, th.-cl : 0
10	8·6	12·9	Calm : SW	Variable	0·3	0·0	0·00	141	0, d : 0, f, h, m	1, li.-cl : 0
11	7·9	12·9	N : WSW : W	NW : NNW	1·5	0·0	0·05	242	p.-cl : 2, th.-cl	2,li.-cl,slt.-h : p.-cl : 0
12	4·7	12·8	NNW : NE	Variable	0·0	0·0	0·00	117	0, d : 0, m, h	1, th.-cl, h : 0, d
13	4·4	12·7	Calm	SSE : ESE	0·0	0·0	0·00	98	0, d : 0, tk.-f : 4, th.-cl	7, cu.-s, th.-cl : 0, d
14	9·7	12·7	Calm : E	E	0·6	0·0	0·02	162	0, d : 0, tk.-f : 3, li.-cl	0 : 0, m, d
15	10·8	12·6	E : ESE	SE : ESE	0·5	0·0	0·01	167	0, d : 0, tk.-f : 0	0 : 0, slt.-m, d
16	10·7	12·6	ESE	SE : ESE	1·3	0·0	0·01	155	0, d : 0, m	0 : 0, d
17	2·8	12·5	SE	SE	0·8	0·0	0·00	140	0 : v, th.-cl : 7,ci.-cu,cu.-s	8, ci.-cu, cu.-s : 10, l, t, fq.-r
18	3·9	12·4	SSE : S : SSW	SSW : S	1·3	0·0	0·03	217	10 : p.-cl : 8, cu.-s, slt.-r	8, cu, li.-cl : 10, r : p.-cl
19	6·7	12·3	SSE	SSW : SSE : SE	1·0	0·0	0·01	187	10 : p.-cl, cu.-s, ci.-cu	7,cu,cu.-s,ci.-s,sh.-r : v, r
20	6·1	12·3	SE : SSE : SSW	SSW : S	3·6	0·0	0·41	296	10, r : v : 8, w	4, cu, ci.-cu, cu.-s,w : v
21	4·3	12·2	S	SSW : SE	3·0	0·0	0·25	285	p.-cl : 6, cu, li.-cl, li.-shs	6,cu,cu.-s,th.-cl : 10, oc.-slt.-r,l : v, li.-shs, l
22	6·0	12·2	SSW	SSW : S	2·0	0·0	0·15	275	v, shs.-r : 5,cu.ci.-cu,cu.-s,oc.-slt.-r	8,ci.-cu,cu.-s,shs.-r : 10
23	3·4	12·1	SSW : SW	SW	1·4	0·0	0·01	177	p.-cl : 4, li.-cl	8, cu.-s, ci.-s, hy.-sh : 8, t.-sm, hy.-r, m : 10
24	5·0	12·0	SW : WSW	WSW : SW	1·8	0·0	0·06	277	10 : p.-cl : 3	10 : v : 10
25	1·8	11·9	SW : WSW : WNW	NNW : WNW : SW	0·2	0·0	0·00	212	p.-cl, d : p.-cl, m : 5,cu,ci.-cu,li.-cl	7, ci.-cu, cu.-s : v, th.-cl
26	0·4	11·9	WSW	WSW	1·5	0·0	0·17	342	v, d : 10	9, ci.-cu, cu.-s : 5, li.-cl, lu.-co
27	4·0	11·8	WSW	SW : SSW	0·0	0·0	0·00	192	0, d, lu.-ha : 10	1, li.-cl : 0
28	2·3	11·7	WSW : SW	WSW : SW	0·3	0·0	0·00	212	p.-cl, d : 10	p.-cl,ci.-cu,cu.-s : 0 : v
29	2·0	11·7	SW	SW	1·7	0·0	0·07	328	v, d : v, li.-cl : 10	10 : 10
30	6·7	11·6	SW	SW	5·3	0·0	0·81	495	10 : p.-cl : 6,cu.-s,ci.-cu,so.-ha	5, ci.-cu, li.-cl, w : p.-cl,cu.-s,li.-cl,w
Means	5·1	12·6	...	...	...	...	0·07	205		
Number of Column for Reference.	21	22	23	24	25	26	27	28	29	30

The mean *Temperature of Evaporation* for the month was 56°·1, being 1°·8 *higher* than the average for the 20 years, 1849–1868.
The mean *Temperature of the Dew Point* for the month was 53°·2, being 1°·8 *higher* than the average for the 20 years, 1849–1868.
The mean *Degree of Humidity* for the month was 79·9, being 0·2 *less* than the average for the 20 years, 1849–1868.
The mean *Elastic Force of Vapour* for the month was 0in·406, being 0in·027 *greater* than the average for the 20 years, 1849–1868.
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was 4grs·5, being 0gr·3 *greater* than the average for the 20 years, 1849–1868.
The mean *Weight of a Cubic Foot of Air* for the month was 534 grains, being 2 grains *greater* than the average for the 20 years, 1849–1868.

The mean amount of *Cloud* for the month (a clear sky being represented by 0 and an overcast sky by 10) was 5·3.

The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·406. The maximum daily amount of *Sunshine* was 10·8 hours on September 15.

The highest reading of the *Solar Radiation Thermometer* was 139°·3 on September 2; and the lowest reading of the *Terrestrial Radiation Thermometer* was 31°·5 on September 1.

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

The *Proportions of Wind* referred to the cardinal points were N. 2, E. 5, S. 12, and W. 10. One day was calm.

The *Greatest Pressure of the Wind* in the month was 5·3 lbs. on the square foot on September 30. The mean daily *Horizontal Movement of the Air* for the month was 205 miles; the greatest daily value was 495 miles on September 30; and the least daily value was 92 miles on September 8.

Rain fell on 6 days in the month, amounting to 0in·652, as measured by gauge No. 6 partly sunk below the ground; being 1in·631 *less* than the average fall for the 49 years, 1841-1889.

MONTH and DAY, 1890.	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.		
Oct. 1	...	29.625	65.2	48.6	16.6	57.2	+ 2.5	53.1	49.3	7.9	12.2	4.6	75	104.0	38.5	60.6	59.9	0.000	6.8	wP, wN : vP
2	...	30.112	59.1	42.3	16.8	50.1	− 4.3	44.9	39.4	10.7	19.8	3.8	67	92.3	30.9	59.6	58.9	0.000	0.0	mP : vP, wN
3	...	30.122	66.2	44.0	22.2	54.5	+ 0.5	50.0	45.7	8.8	19.4	1.6	72	122.0	35.2	59.2	58.0	0.000	0.0	mP
4	...	30.037	68.2	49.1	19.1	58.4	+ 4.7	55.0	51.9	6.5	13.3	1.6	79	114.5	41.3	59.1	58.0	0.000	0.0	wP : vP
5	Great. Dec. N. Last Quarter	30.003	65.7	50.5	15.2	58.1	+ 4.7	55.4	53.0	5.1	9.0	1.2	83	105.7	42.8	59.2	58.1	0.000	0.0	mP
6	...	29.903	68.6	53.2	15.4	59.3	+ 6.3	56.1	53.3	6.0	11.5	1.9	81	119.3	46.0	59.2	58.0	0.016	0.0	wP : mP
7	...	29.835	62.2	53.3	8.9	58.3	+ 5.6	57.1	56.0	2.3	4.8	0.0	92	82.0	48.5	59.6	58.5	0.305	0.0	wP
8	Apogee	30.164	62.1	45.0	17.1	52.4	− 0.1	49.3	46.2	6.2	14.3	1.3	80	118.6	38.0	59.4	58.4	0.000	0.0	vP
9	...	30.265	61.0	36.6	24.4	47.8	− 4.5	45.4	42.8	5.0	14.4	0.0	84	117.8	31.7	58.6	57.5	0.000	0.0	vP
10	...	30.183	62.5	37.9	24.6	49.7	− 2.4	47.1	44.3	5.4	13.9	0.5	83	104.5	32.1	57.8	56.9	0.000	2.0	mP : sP
11	...	30.184	66.3	42.1	24.2	53.3	+ 1.4	50.6	47.9	5.4	15.5	0.0	82	118.0	32.8	57.6	56.4	0.000	0.0	mP : sP
12	...	30.234	64.9	38.4	26.5	50.5	− 1.2	47.4	44.1	6.4	22.9	0.0	79	103.9	32.8	56.6	54.5	0.000	0.0	sP
13	In Equator. New	30.189	56.6	34.5	22.1	45.2	− 6.4	44.1	42.8	2.4	7.4	0.0	91	91.0	29.8	56.4	54.9	0.000	0.0	vP
14	...	29.972	54.7	33.9	20.8	44.3	− 7.1	43.8	43.2	1.1	3.6	0.0	96	55.0	31.8	54.8	53.4	0.000	0.0	sP
15	...	29.575	56.7	44.4	12.3	50.1	− 1.2	48.1	46.0	4.1	13.2	0.0	86	96.1	35.0	55.2	53.8	0.193	0.0	mP : wN, sP
16	...	29.476	55.1	40.4	14.7	46.7	− 4.5	43.0	38.8	7.9	14.2	4.0	75	91.2	32.0	54.4	53.0	0.007	0.0	mP : sP, sN
17	...	29.673	54.2	42.9	11.3	48.3	− 2.8	44.7	40.8	7.5	12.2	3.3	75	67.7	35.5	53.6	52.3	0.000	0.0	mP
18	...	29.822	53.4	44.2	9.2	49.0	− 2.0	44.7	40.1	8.9	11.4	4.2	71	81.5	38.0	52.9	51.4	0.000	0.0	mP : vP, wN
19	...	29.995	51.0	44.3	6.7	47.2	− 3.6	43.3	38.9	8.3	9.7	6.5	74	64.1	39.1	52.2	50.9	0.000	0.2	mP
20	Greatest Declination S.	30.075	53.5	45.2	8.3	47.7	− 2.9	44.2	40.3	7.4	10.6	4.0	76	71.6	43.4	52.4	51.0	0.000	0.8	mP : vP
21	First Qr.	30.124	54.5	43.2	11.3	47.4	− 3.0	46.2	44.9	2.5	7.6	0.0	92	85.5	35.0	51.1	49.6	0.100	0.0	wP : sP
22	...	30.324	53.6	37.2	16.4	45.3	− 4.8	42.1	38.4	6.9	17.6	0.0	77	102.9	30.5	52.5	51.2	0.000	0.0	mP
23	...	30.275	54.1	40.9	13.2	49.6	− 0.1	47.5	45.2	4.4	6.4	1.0	86	60.2	36.8	52.6	51.2	0.000	0.0	vP
24	Perigee	30.019	58.6	48.5	10.1	52.6	+ 3.2	49.9	47.2	5.4	9.3	3.4	82	73.0	47.0	52.3	50.8	0.000	0.0	mP
25	...	29.533	55.6	42.9	12.7	50.1	+ 1.0	48.9	47.6	2.5	7.2	0.2	92	60.7	39.0	52.1	50.7	0.348	0.0	wP : vP, vN
26	In Equator	29.304	44.4	35.1	9.3	40.4	− 8.4	38.6	36.3	4.1	7.8	1.0	86	70.3	33.3	49.6	48.4	0.127	0.0	mP : sN, sP
27	Full	29.694	42.1	29.5	12.6	37.5	−11.0	33.9	28.9	8.6	14.7	3.6	71	76.8	24.0	49.7	48.4	0.000	0.0	sP : vP, wN
28	...	29.908	39.5	24.7	14.8	32.4	−15.8	30.9	27.7	4.7	9.4	0.0	82	42.0	20.5	47.6	46.4	0.000	0.0	sP
29	...	29.776	57.7	36.1	21.6	49.2	+ 1.3	47.2	45.0	4.2	8.2	0.7	86	99.5	30.5	47.6	46.3	0.038	0.0	wP : mP
30	...	29.758	57.9	43.3	14.6	52.5	+ 4.9	51.3	50.1	2.4	6.3	0.0	92	72.2	38.0	48.5	47.2	0.000	0.0	wP
31	...	29.488	57.2	44.2	13.0	51.6	+ 4.3	51.1	50.6	1.0	3.4	0.0	96	66.2	39.0	50.7	49.4	0.057	2.0	wP
Means	...	29.924	57.5	41.8	15.7	49.6	− 1.5	46.9	44.1	5.5	11.3	1.6	82.0	88.1	35.8	54.6	53.3	Sum 1.191	0.4	...
Number of Column for Reference.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

The results apply to the civil day.

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

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

The mean reading of the *Barometer* for the month was 29in.924, being 0in.204 *higher* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 68°.6 on October 6; the lowest in the month was 24°.7 on October 28; and the range was 43°.9.
The mean of all the highest daily readings in the month was 57°.5, being 0°.2 *lower* than the average for the 49 years, 1841–1889.
The mean of all the lowest daily readings in the month was 41°.8, being 1°.5 *lower* than the average for the 49 years, 1841–1889.
The mean of the daily ranges was 15°.7, being 1°.2 *greater* than the average for the 49 years, 1841–1889.
The mean for the month was 49°.6, being 1°.5 *lower* than the average for the 20 years, 1849–1868.

MONTH and DAY, 1890.	Daily Duration of Sunshine.	Sun above Horizon.	Wind as deduced from Self-registering Anemometers. Osler's. General Direction. A.M.	P.M.	Pressure on the Square Foot. Greatest.	Least.	Mean of 24 Hourly Measures.	Robinson's. Horizontal Movement of the Air.	Clouds and Weather. A.M.	P.M.
	hours.	hours.			lbs.	lbs.	lbs.	miles.		
Oct. 1	1·2	11·6	SW	SW : W	5·6	0·0	1·69	600	10, st.-w : 10, slt.-r, w	10,oc.-th.-r,w: p.-cl : v
2	8·2	11·5	NNW : NW	WSW : SW	1·4	0·0	0·01	227	0 : 0, slt.-h, m	0, slt.-h : p.-cl, li.-cl : 0, lu.-ha
3	9·8	11·4	SW : WSW	SW	3·2	0·0	0·58	434	0 : 0, w	0 : 0
4	6·7	11·4	SW : WSW	WSW	1·6	0·0	0·14	373	0 : 10 : 9	3, ci.-cu, cu.-s, li.-cl: 10
5	0·9	11·3	WSW	WSW : SW	1·2	0·0	0·03	285	p.-cl : 10	10, slt.-r : 10
6	3·7	11·2	SW : WSW	WSW : SW	1·3	0·0	0·03	285	10, slt.-r : v : 5, li.-cl, m	10 : 10
7	0·0	11·2	SW	SW:WSW:NNE	3·4	0·0	0·16	346	10 : 10, shs.-r	10, r : 10, r
8	7·7	11·1	NNE : NE	ENE : E	1·3	0·0	0·03	245	p.-cl : 0 : 0	5, ci.-cu, cu.-s : v
9	7·4	11·0	Calm : SSW	SSW : SW	0·0	0·0	0·00	119	0, d : ho.-fr : 1, li.-cl, slt.-f	0 : 0, d
10	8·2	11·0	SW	WSW : SW	0·0	0·0	0·00	182	0, d : 0, m, ho.-fr: 0, slt.-h	0 : 0, d
11	8·6	10·9	SW : WSW	SW	0·0	0·0	0·00	176	0, d : 0, slt.-f : 0	1, li.-cl : 0, d, slt.-f
12	6·1	10·9	SW : Calm	SW : Calm	0·0	0·0	0·00	102	0, d : 0, tk.-f : 0, f	0 : 0, d
13	1·3	10·8	Calm	Calm	0·0	0·0	0·00	41	0, ho.-fr : 0, tk.-f : 0, f	0, f : 0, f
14	0·0	10·7	Calm	Calm : SW	0·0	0·0	0·00	104	0, tk.-f : 0, tk.-f	0, f : 0, d
15	2·3	10·7	SW : SSW	WSW : W	3·6	0·0	0·43	407	0, hy.-d : v, li.-cl : 10, shs.-r, w	p.-cl, r : 0 : v, hy.-sh, w
16	5·9	10·6	WSW : WNW	W : WNW	5·8	0·0	1·30	567	v, w : 4, li.-cl, w	6, cu.-s, li.-cl, st.-w: v, w, r
17	0·0	10·5	W : WNW	WNW	3·9	0·0	0·77	488	0 : 10, w	10, w : 0
18	0·4	10·5	WNW : NNW	NNW	3·7	0·0	0·83	451	0 : 10, w	10, w : p.-cl, slt.-r: v, w
19	0·0	10·4	NNW	NNW	2·9	0·0	0·23	350	10 : 10	10 : 10
20	0·0	10·3	NNW	NNW	0·0	0·0	0·00	134	10 : 10	10, oc.-slt.-r : 10
21	0·8	10·3	Calm : NE	NE	0·0	0·0	0·00	67	10, hy.-r : 10, r : 9	p.-cl, cu.-s, li.-cl : v, slt.-f, d
22	8·0	10·2	E : SE	SSE : SSW	0·0	0·0	0·00	104	p.-cl, d : 0	0 : 2, li.-cl : 10
23	0·0	10·2	WSW : NW	NNW : NW	0·3	0·0	0·00	180	10 : 10, f	10, glm : 10
24	0·0	10·1	WNW : WSW	WSW : SW	0·9	0·0	0·03	303	10 : 10	10 : p.-cl : 10
25	0·0	10·0	SW : WSW	WSW : NW : NNW	1·6	0·0	0·15	376	10, slt.-r : 10, r	10, c.-r, gt.-glm: v : v, sh.-r
26	2·7	10·0	WSW	NW : NNW	3·0	0·0	0·36	423	0 : v, li.-cl : 10, sl, shs.-r	v, shs.-r, sl : v
27	5·8	9·9	NW : NNW	NW : WNW	3·1	0·0	0·33	363	0, ho.-fr : 0	1, li.-cl : 0 : 0, h, slt.-f, ho.-fr
28	0·0	9·8	SW : WSW	W : SW : SSW	0·0	0·0	0·00	179	0, h, ho.-fr: 0, f : 0, h, f, glm	0, h, f : v
29	0·9	9·8	SW : WSW	WSW : SW	3·4	0·0	0·42	426	p.-cl, lu.-ha : p.-cl, r : 9, slt.-r	7, cu.-s, ci.-cu : 10, oc.-slt.-r: 10
30	0·3	9·7	WSW : NE	SE : SSE	0·0	0·0	0·00	153	10 : 10, f : 10	7, cu.-s, ci.-cu : v, li.-cl, lu.-ha
31	0·0	9·7	SSE : SSW	SW : WSW : WNW	1·0	0·0	0·01	245	v, slt.-r : 10, fq.-r	10, sc, oc.-slt.-r : 10 : p.-cl
Means	3·1	10·6	...	...	...	...	0·24	282		
Number of Column for Reference.	21	22	23	24	25	26	27	28	29	30

The mean *Temperature of Evaporation* for the month was 46°·9, being 2°·0 *lower* than
The mean *Temperature of the Dew Point* for the month was 44°·1, being 2°·7 *lower* than
The mean *Degree of Humidity* for the month was 82·0, being 4·1 *less* than
The mean *Elastic Force of Vapour* for the month was $0^{in}\cdot289$, being $0^{in}\cdot032$ *less* than
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was $3^{grs}\cdot3$, being $0^{gr}\cdot3$ *less* than
The mean *Weight of a Cubic Foot of Air* for the month was 544 grains, being 5 grains *greater* than
} the average for the 20 years, 1849–1868.

The mean amount of *Cloud* for the month (a clear sky being represented by 0 and an overcast sky by 10) was 5·5.
The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·295. The maximum daily amount of *Sunshine* was 9·8 hours on October 3.
The highest reading of the *Solar Radiation Thermometer* was 122°·0 on October 3; and the lowest reading of the *Terrestrial Radiation Thermometer* was 20°·5 on October 28.
The mean daily distribution of *Ozone* for the 12 hours ending 9^h was 0·2; for the 6 hours ending 15^h was 0·0; and for the 6 hours ending 21^h was 0·2.
The *Proportions of Wind* referred to the cardinal points were N. 5, E. 2, S. 8, and W. 14. Two days were calm.
The *Greatest Pressure of the Wind* in the month was 5·8 lbs. on the square foot on October 16. The mean daily *Horizontal Movement of the Air* for the month was 282 miles; the greatest daily value was 600 miles on October 1; and the least daily value was 41 miles on October 13.
Rain fell on 9 days in the month, amounting to $1^{in}\cdot191$, as measured by gauge No. 6 partly sunk below the ground; being $1^{in}\cdot653$ *less* than the average fall for the 49 years, 1841–1889.

MONTH and DAY, 1890.	Phases of the Moon.	BAROMETER. Mean of 24 Hourly Values (corrected and reduced to 32° Fahrenheit).	TEMPERATURE. Of the Air. Highest.	Of the Air. Lowest.	Of the Air. Daily Range.	Of the Air. Mean of 24 Hourly Values.	Of the Air. Excess above Average of 20 Years.	Of Evaporation. Mean of 24 Hourly Values.	Of the Dew Point. Deduced Mean Daily Value.	Difference between the Air Temperature and Dew Point Temperature. Mean.	Greatest.	Least.	Degree of Humidity (Saturation = 100).	TEMPERATURE. Of Radiation. Highest in Sun's Rays.	Of Radiation. Lowest on the Grass.	Of the Water of the Thames at Deptford. Highest.	Of the Water of the Thames at Deptford. Lowest.	Rain collected in Gauge No. 6, whose receiving surface is 5 inches above the Ground.	Daily Amount of Ozone.	Electricity.
		in.	°	°	°	°	°	°	°	°	°	°		°	°	°	°	in.		
Nov. 1	...	29·518	54·1	41·0	13·1	49·3	+ 2·3	46·0	42·5	6·8	14·2	1·5	77	84·7	36·2	49·4	47·9	0·000	0·0	mP : sP
2	Greatest Declination N.	29·195	55·9	40·1	15·8	48·8	+ 2·1	46·9	44·8	4·0	7·8	1·0	87	67·3	35·6	49·2	47·8	0·149	0·0	wP, wN : sN, sP
3	...	29·387	49·7	38·5	11·2	45·1	− 1·3	42·8	40·1	5·0	9·0	0·2	83	58·0	32·0	49·1	47·8	0·060	0·0	mP
4	Last Qr.	29·122	53·3	40·0	13·3	46·7	+ 0·7	44·6	42·2	4·5	11·4	0·7	85	88·0	35·2	49·0	47·6	0·000	0·0	mP : sP
5	Apogee	29·370	49·1	40·5	8·6	44·7	− 0·9	42·7	40·4	4·3	8·2	0·7	85	74·0	34·8	48·8	47·4	0·159	0·0	sN, sP : vP
6	...	29·476	51·5	35·7	15·8	44·4	− 0·8	42·3	39·8	4·6	10·9	1·0	84	81·2	31·1	48·6	47·4	0·288	1·0	mP : vP, vN
7	...	29·040	49·6	41·8	7·8	46·3	+ 1·6	43·3	39·9	6·4	13·4	2·3	79	67·7	41·0	48·4	46·8	0·113	3·0	vP, wN : sN, vP
8	...	29·377	53·0	36·4	16·6	45·8	+ 1·5	43·2	40·2	5·6	10·2	1·3	82	88·4	31·5	48·3	46·8	0·001	0·0	vP, wN : sP
9	In Equator	29·282	50·0	33·5	16·5	42·1	− 1·7	40·1	37·6	4·5	10·3	2·0	85	70·0	29·0	47·6	46·2	0·046	0·0	vP, wN : sP
10	...	29·493	49·0	33·0	16·0	39·8	− 3·6	38·6	37·0	2·8	6·1	0·3	90	93·3	28·7	47·6	46·4	0·019	1·0	sP, wN : sP
11	...	29·380	51·1	36·5	14·6	43·9	+ 0·9	41·7	39·1	4·8	9·7	1·8	83	72·0	30·0	47·4	46·7	0·006	3·0	wP, wN : sP
12	New	29·670	52·8	33·9	18·9	43·3	+ 0·7	41·4	39·1	4·2	10·0	0·8	85	83·3	27·2	47·1	46·2	0·140	0·0	sP : sP, sN
13	...	29·721	51·0	41·0	10·0	47·8	+ 5·5	47·2	46·5	1·3	5·0	0·0	96	54·1	32·0	46·9	45·9	0·010	0·0	mP : vP
14	...	29·845	56·6	36·0	20·6	46·0	+ 4·0	45·3	44·5	1·5	5·4	0·0	95	81·5	32·9	46·8	45·9	0·000	0·0	vP : sP
15	...	29·994	56·2	47·2	9·0	51·4	+ 9·6	49·3	47·2	4·2	8·0	1·5	86	75·0	42·5	46·6	45·4	0·053	0·0	wP : sP
16	Greatest Declination S.	30·090	54·8	45·9	8·9	50·7	+ 9·1	49·2	47·6	3·1	4·6	0·8	90	64·8	42·3	47·8	46·4	0·012	0·0	mP : wP
17	...	30·201	52·7	40·0	12·7	46·4	+ 4·9	45·6	44·7	1·7	6·2	0·0	94	68·2	33·7	47·6	46·2	0·000	2·0	mP : vP
18	Perigee	30·233	55·1	46·2	8·9	52·0	+10·5	50·9	49·8	2·2	4·8	0·2	92	68·2	39·2	49·2	48·4	0·036	0·0	wP
19	First Qr.	30·280	55·1	51·3	3·8	53·7	+12·3	52·7	51·7	2·0	5·0	0·4	93	60·3	49·8	49·6	48·4	0·000	0·0	wP
20	...	30·287	55·7	49·5	6·2	53·2	+11·9	51·9	50·6	2·6	4·0	0·8	91	66·2	45·9	48·5	47·4	0·004	0·2	wP : vP, wN
21	...	30·017	54·1	43·5	10·6	49·9	+ 8·7	48·0	46·0	3·9	6·9	1·6	87	60·9	40·0	48·7	47·6	0·050	0·8	wP : vP, mN
22	In Equator	29·897	50·8	39·5	11·3	46·4	+ 5·3	43·9	41·0	5·4	8·4	1·5	83	59·5	34·5	48·6	47·4	0·086	0·0	mP : vP, wN
23	...	29·383	58·2	49·0	9·2	55·3	+14·3	53·2	51·2	4·1	6·3	0·6	87	59·9	45·5	48·7	47·4	0·000	0·0	wP
24	...	29·216	55·3	35·3	20·0	45·2	+ 4·2	42·6	39·6	5·6	8·0	2·1	81	58·9	30·0	48·6	47·5	0·076	0·0	wP, vN : vN, sP
25	...	29·579	41·3	31·0	10·3	35·9	− 5·0	34·9	33·4	2·5	4·1	0·9	90	52·2	25·1	48·6	47·1	0·000	0·0	sP : vP, vN
26	Full	29·916	33·3	26·0	7·3	29·6	−11·2	28·7	25·8	3·8	6·1	1·2	85	46·8	23·0	47·4	45·4	0·000	0·0	wP : sP
27	...	29·797	30·3	21·8	8·5	26·1	−14·7	25·3	21·3	4·8	13·4	0·6	81	37·5	20·2	44·9	43·4	0·006	0·0	sP
28	...	29·828	26·9	18·3	8·6	21·9	−19·0	21·2	16·6	5·3	13·4	1·5	79	38·3	18·1	41·6	39·9	0·154	0·0	wP, vN : sP
29	Greatest Declination N.	29·990	33·2	20·6	12·6	28·6	−12·4	27·9	25·3	3·3	4·6	2·5	87	33·2	20·6	42·0	40·4	0·012	0·0	vP : sP
30	...	30·185	38·4	22·0	16·4	31·0	−10·2	29·7	26·2	4·8	7·4	0·7	81	46·1	21·8	40·6	38·5	0·000	0·0	sP : ssP
Means	...	29·692	49·3	37·2	12·1	43·7	+ 1·0	42·0	39·7	4·0	8·1	1·0	86·1	65·3	33·0	47·4	46·1	Sum 1·480	0·4	...
Number of Column for Reference.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

The results apply to the civil day.

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

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

The mean reading of the *Barometer* for the month was 29in·692, being 0in·079 *lower* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 58°·2 on November 23; the lowest in the month was 18°·3 on November 28; and the range was 39°·9.
The mean of all the highest daily readings in the month was 49°·3, being 0°·5 *higher* than the average for the 49 years, 1841–1889.
The mean of all the lowest daily readings in the month was 37°·2, being 0°·3 *lower* than the average for the 49 years, 1841–1889.
The mean of the daily ranges was 12°·1, being 0°·8 *greater* than the average for the 49 years, 1841–1889.
The mean for the month was 43°·7, being 1°·0 *higher* than the average for the 20 years, 1849–1868.

MONTH and DAY, 1890.	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	2·9	9·6	NW : NNW	NNW : WNW : SW	2·0	0·0	0·11	326	v, lu.-ha : 10 : p.-cl	5, ci.-cu, cu.-s : 0
2	0·4	9·5	SSW : WSW	W : WSW	3·8	0·0	0·52	429	v : 10,slt.-r,w : 10,fq.-r, gt.-glm	10,hy.-sh,l,t : 0 : vv, sh.-r
3	0·0	9·5	WNW : WSW	SW : SSW : S	3·5	0·0	0·22	336	v, w : p.-cl, m : 5,li.-cl,so.-ha	10, th.-r : 10, r
4	4·3	9·4	SW : WSW	SW : SSW : Calm	1·0	0·0	0·04	280	p.-cl : 7, ci.-cu	3, ci.-cu, li.-cl : v, d, slt.-f
5	2·2	9·4	N	NW : NNW	1·6	0·0	0·10	298	10, r : 4, li.-cl, m	6, cu.-s, li.-cl : 10
6	3·1	9·3	NNW : WSW : SW	SSW : S	7·4	0·0	0·56	321	v, hy.-d : 0, slt.-f : 0	5, li.-cl : 10, hy.-shs, st.-w
7	0·0	9·2	SSW : W	W : NW : NNW	8·8	0·0	3·38	802	10, oc.-r, w : 10, st.-w	10,oc.-slt.-r, st.-w : 10, fq.-r, w
8	6·4	9·2	NW : WNW : WSW	SW : SSE	3·1	0·0	0·17	286	10, r : 0, m : 0	0 : p.-cl, th.-r : v, li.-cl
9	2·4	9·1	SSW : W	WSW : SSW	2·0	0·0	0·07	280	10, sh.-r : 3, li.-cl, m	2, li.-cl : 0, d
10	1·2	9·1	Calm : E	SE : SSE	0·1	0·0	0·00	128	v : p.-cl,f,slt.-r : 7, li.-cl	p.-cl, ci.-cu, cu.-s : 10, slt.-r
11	1·6	9·0	SSE	SW	4·5	0·0	0·41	325	10 : 10,slt.-r,w : 10,th.-r,w	6, li.-cl : 0
12	5·8	9·0	SW : SSW	SSW : S	1·2	0·0	0·00	219	0, ho.-fr : 0	2, li.-cl : 10, slt.-r : 10, hy.-r
13	0·0	8·9	S : NW	Variable	1·7	0·0	0·07	177	10, oc.-shs : 10, f, glm : 10, slt.-f	10, slt.-f, glm : p.-cl, tk.-f
14	3·5	8·9	Calm	S : SSW	2·1	0·0	0·06	189	10, tk.-f : 10, f : p.-cl	7,cu.-s,li.-cl : 10 : 10, slt.-r
15	1·7	8·8	SW : N	NE : E	1·5	0·0	0·04	264	10 : 10, slt.-r : 7, li.-cl	5, li.-cl : 10 : 10
16	0·1	8·8	ESE : SE	S : SW : W	0·0	0·0	0·00	195	10 : 8, li.-cl, cu.-s	10, fq.-th.-r : 10
17	1·6	8·7	SW	SW : SSW	0·0	0·0	0·00	124	0 : p.-cl, tk.-f	6, cu.-s, li.-cl : 10
18	0·0	8·7	SSW : SW	WSW : W	0·9	0·0	0·01	255	v : 10	10, oc.-slt.-r : 10, slt.-r
19	0·0	8·6	WSW : SW	WSW	0·0	0·0	0·00	175	10 : 10	10 : 10
20	0·0	8·6	WSW	WSW	0·6	0·0	0·01	292	p.-cl : 10, slt.-r	10 : 10
21	0·0	8·5	WSW	SW : NW	4·0	0·0	0·56	450	10 : 10, sc	10, sc, r : v, r, sq
22	1·4	8·5	W : WSW	WSW	6·0	0·0	0·92	518	p.-cl : 6, li.-cl	10 : 10, r, st.-w
23	0·0	8·4	WSW : W	WSW	7·4	0·0	2·52	738	10 : 10, w	10, glm, st.-w : 10, sh.-r, st.-w
24	0·0	8·4	WSW : WNW	NNW : WNW	10·0	0·0	1·65	562	10, sq, hy.-sh : v, shs.-r	9, cu.-s, li.-cl : 0
25	0·0	8·3	WSW : N	NNE : NE	2·9	0·0	0·25	322	0, ho.-fr : 3,li.-cl,m : p.-cl,slt-r	10, oc.-slt.-r : v, slt.-sn
26	0·8	8·3	NE	NE : NNE	1·5	0·0	0·27	401	v, li.-cl, ho.-fr : p.-cl, oc.-sn	p.-cl : p.-cl, slt.-sn
27	0·0	8·2	N : NNE	NE : NNE	1·9	0·0	0·33	351	v : 10, sn	10, oc.-sn : v : 10, sn
28	0·0	8·2	NE : SE : ESE	ESE : NE	0·4	0·0	0·00	141	10, sn : 10, sn	9, sn : 10, oc.-sn
29	0·0	8·2	N : NNE	NNE	1·0	0·0	0·04	153	10 : 10	10, slt.-sn : 9
30	1·4	8·1	S : SSW	SSW	0·3	0·0	0·00	113	v : 0 : 4, th.-cl	8, ci.-cu : 1, li.-cl, lu.-co
Means	1·4	8·8	...	...	...	...	0·41	315		
Number of Column for Reference.	21	22	23	24	25	26	27	28	29	30

The mean *Temperature of Evaporation* for the month was $42^{\circ}\cdot0$, being $0^{\circ}\cdot8$ *higher* than
The mean *Temperature of the Dew Point* for the month was $39^{\circ}\cdot7$, being $0^{\circ}\cdot4$ *higher* than
The mean *Degree of Humidity* for the month was 86·1, being 1·2 *less* than
The mean *Elastic Force of Vapour* for the month was $0^{\text{in}}\cdot244$, being $0^{\text{in}}\cdot004$ *greater* than
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was $2^{\text{grs}}\cdot8$, being *the same as*
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 7·1.

The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·154. The maximum daily amount of *Sunshine* was 6·4 hours on November 8.

The highest reading of the *Solar Radiation Thermometer* was $93^{\circ}\cdot3$ on November 10; and the lowest reading of the *Terrestrial Radiation Thermometer* was $18^{\circ}\cdot1$ on November 28.

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

The *Proportions of Wind* referred to the cardinal points were N. 6, E. 3, S. 8, and W. 12. One day was calm.

The *Greatest Pressure of the Wind* in the month was 10·0 lbs. on the square foot on November 24. The mean daily *Horizontal Movement of the Air* for the month was 315 miles; the greatest daily value was 802 miles on November 7; and the least daily value was 113 miles on November 30.

Rain fell on 19 days in the month, amounting to $1^{\text{in}}\cdot480$, as measured by gauge No. 6 partly sunk below the ground; being $0^{\text{in}}\cdot803$ *less* than the average fall for the 49 years, 1841–1889.

MONTH and DAY, 1890.	Phases of the Moon.	BAROMETER. Mean of 24 Hourly Values (corrected and reduced to 32° Fahrenheit)	TEMPERATURE. Of the Air. Highest.	Of the Air. Lowest.	Of the Air. Daily Range.	Of the Air. Mean of 24 Hourly Values.	Of the Air. Excess above Average of 20 Years.	Of Evaporation. Mean of 24 Hourly Values.	Of the Dew Point. Deduced Mean Daily Value.	Difference between the Air Temperature and Dew Point Temperature. Mean.	Greatest.	Least.	Degree of Humidity (Saturation = 100).	TEMPERATURE. Of Radiation. Highest in Sun's Rays.	Of Radiation. Lowest on the Grass.	Of the Water of the Thames at Deptford. Highest.	Of the Water of the Thames at Deptford. Lowest.	Rain collected in Gauge No. 6, whose receiving surface is 5 inches above the Ground.	Daily Amount of Ozone.	Electricity.
		in.	°	°	°	°	°	°	°	°	°	°		°	°	°	°	in.		
Dec. 1	...	29·959	40·1	25·3	14·8	33·0	− 8·5	31·9	29·7	3·3	6·2	0·0	87	52·1	23·8	40·1	38·5	0·000	0·0	sP
2	...	29·632	34·7	28·0	6·7	33·1	− 8·7	32·3	30·7	2·4	4·2	0·0	91	38·0	27·1	40·8	39·3	0·000	0·0	mP : sP
3	Apogee	29·566	38·5	33·1	5·4	35·7	− 6·4	34·9	33·7	2·0	3·8	0·3	93	42·2	33·0	40·9	39·4	0·000	0·0	sP
4	Last Qr.	29·548	43·1	34·7	8·4	39·3	− 3·1	38·5	37·5	1·8	3·6	0·0	94	48·8	34·7	41·5	39·6	0·086	0·5	vP, vN
5	...	29·664	40·0	34·8	5·2	37·5	− 5·1	36·4	34·9	2·6	4·4	2·2	91	41·0	34·6	40·8	39·3	0·000	1·5	mP
6	In Equator	29·825	38·4	34·7	3·7	37·0	− 5·7	34·6	31·2	5·8	7·9	3·4	80	41·1	29·2	41·1	39·4	0·000	0·0	wP : sP
7	...	29·929	39·2	32·1	7·1	34·8	− 8·0	32·5	28·8	6·0	10·6	3·5	78	66·5	27·9	39·6	38·3	0·000	0·0	sP
8	...	29·790	35·1	32·1	3·0	34·0	− 8·8	31·9	28·2	5·8	7·8	4·2	78	42·0	31·0	39·8	38·3	0·002	0·0	... : sP
9	...	29·875	38·2	29·8	8·4	34·7	− 8·1	33·9	32·6	2·1	4·0	0·0	92	42·1	24·5	38·9	37·5	0·000	0·0	... : sP
10	...	30·006	31·5	26·8	4·7	29·3	−13·4	29·3	29·3	0·0	1·1	0·0	100	33·7	23·2	38·6	37·5	0·000	0·0	sP : ssP
11	...	29·988	30·3	25·0	5·3	28·5	−14·0	28·5	28·5	0·0	1·0	0·0	100	34·3	19·0	37·9	37·3	0·000	0·0	ssP
12	New	29·951	31·1	23·1	8·0	27·0	−15·2	26·8	25·9	1·1	2·8	0·0	95	33·0	16·0	37·5	36·7	0·000	0·0	sP
13	Greatest Declination S.	29·911	30·4	21·1	9·3	25·6	−16·2	25·4	24·3	1·3	2·5	0·0	94	54·8	19·0	37·1	36·9	0·000	0·0	sP : ssP
14	Perigee	29·864	29·3	17·1	12·2	23·3	−18·2	23·2	22·6	0·7	2·6	0·0	97	36·2	12·9	36·4	35·9	0·000	0·0	ssP : ...
15	...	29·605	30·3	23·0	7·3	26·4	−14·7	26·3	25·8	0·6	6·0	0·0	98	33·5	20·5	36·2	35·9	0·046	0·0	... : ssP
16	...	29·606	28·8	23·2	5·6	26·5	−14·3	25·5	20·8	5·7	6·6	3·4	79	32·6	20·5	36·0	35·1	0·000	3·0	mP : sP
17	...	29·702	31·8	23·9	7·9	29·6	−10·9	28·6	25·4	4·2	6·3	2·9	84	37·7	22·8	36·0	34·6	0·018	0·0	mP : vP
18	First Qr.	29·608	31·4	27·3	4·1	29·5	−10·7	28·3	24·3	5·2	8·6	3·1	81	35·9	27·0	36·2	34·6	0·000	0·0	mP : sP
19	In Equator	29·184	29·8	23·2	6·6	27·8	−12·2	27·2	24·8	3·0	8·8	0·6	89	34·4	22·0	36·4	34·5	0·263	0·0	vP
20	...	29·650	33·1	16·7	16·4	25·3	−14·5	25·2	24·7	0·6	2·2	0·0	97	34·9	15·0	34·4	34·1	0·304	0·0	sP : ...
21	...	30·088	36·1	23·7	12·4	32·9	− 6·7	31·9	29·9	3·0	5·0	0·3	89	43·2	21·0	33·9	32·6	0·000	0·0	mP : sP
22	...	30·112	23·7	13·4	10·3	19·5	−19·9	19·4	18·7	0·8	3·5	0·0	96	27·8	13·4	34·1	32·7	0·000	0·0	sP : ...
23	...	29·896	31·6	18·7	12·9	26·8	−12·5	26·7	26·2	0·6	1·6	0·0	97	36·2	18·7	33·4	33·0	0·000	0·0	... : sP
24	...	30·147	33·1	21·4	11·7	29·1	−10·2	28·3	25·5	3·6	6·6	0·0	86	39·0	20·0	33·4	32·8	0·000	0·0	sP
25	...	30·132	30·0	20·6	9·4	25·5	−13·7	25·0	22·5	3·0	7·2	0·0	88	35·6	18·3	33·2	32·6	0·000	0·0	sP : ssP
26	Full : Great. Dec. N.	30·146	36·2	28·7	7·5	32·3	− 6·8	31·2	28·8	3·5	5·0	1·6	86	39·0	28·0	33·4	32·7	0·000	0·0	sP : vP, wN
27	...	30·098	33·1	28·7	4·4	31·5	− 7·5	31·0	29·9	1·6	4·2	0·0	94	37·0	26·9	33·4	32·9	0·025	0·0	vP
28	...	30·017	31·8	26·9	4·9	30·5	− 8·3	29·5	26·7	3·8	5·0	1·6	85	34·9	24·5	33·0	32·0	0·000	0·0	mP
29	...	30·033	31·5	25·1	6·4	28·1	−10·6	27·1	23·1	5·0	8·7	2·8	81	31·5	25·0	33·1	31·8	0·008	0·0	wP : vP
30	...	30·033	27·3	19·1	8·2	24·2	−14·3	23·1	16·8	7·4	8·2	4·3	72	30·0	19·0	31·6	31·4	0·012	0·0	mP : ...
31	Apogee	29·968	32·4	19·4	13·0	27·4	−10·9	26·4	22·1	5·3	10·6	2·2	80	38·5	19·0	32·6	31·6	0·007	0·0	...
Means	...	29·856	33·3	25·2	8·1	29·9	−10·9	29·1	26·9	3·0	5·4	1·2	88·8	39·0	23·1	36·5	35·4	Sum 0·771	0·2	...
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 mean reading of the *Barometer* for the month was 29in·856, being 0in·065 *higher* than the average for the 20 years, 1854–1873.

TEMPERATURE OF THE AIR.

The highest in the month was 43°·1 on December 4; the lowest in the month was 13°·4 on December 22; and the range was 29°·7.
The mean of all the highest daily readings in the month was 33°·3, being 10°·9 *lower* than the average for the 49 years, 1841–1889.
The mean of all the lowest daily readings in the month was 25°·2, being 9°·7 *lower* than the average for the 49 years, 1841–1889.
The mean of the daily ranges was 8°·1, being 1°·2 *less* than the average for the 49 years, 1841–1889.
The mean for the month was 29°·9, being 10°·9 *lower* than the average for the 20 years, 1849–1868.

MONTH and DAY, 1890.	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	1·4	8·1	S : SSE	Calm	0·0	0·0	0·00	100	0 : 3, li.-cl	3, li.-cl, slt.-h : tk.-f
2	0·0	8·1	NNW : NE : SE	SE : Calm	0·0	0·0	0·00	99	tk.-f : 10	10 : p.-cl : 10
3	0·0	8·0	ESE	Calm : N	0·3	0·0	0·00	92	10 : 10, m : 10	10 : 10
4	0·0	8·0	N : NNE	NNE : E : ESE	2·0	0·0	0·33	353	10 : 10, oc.-slt.-r	10, fq.-r : 10
5	0·0	8·0	E : ESE	E	4·0	0·0	0·52	385	10 : 10	10 : 10, w
6	0·0	8·0	E	ESE : ENE	2·9	0·0	0·57	368	10, w : 10	10 : 10
7	0·6	7·9	ENE : ESE	E : ESE	1·2	0·0	0·02	229	10 : 10	10 : 10
8	0·0	7·9	ENE : ESE	ESE	0·0	0·0	0·00	135	10, slt.-sn : 10	10 : 10
9	0·0	7·9	ESE : NE	ENE	0·0	0·0	0·00	115	10 : 10	8, th.-cl : 5, th.-cl, slt.-f : 0, ho.-fr, tk.-f
10	0·0	7·9	Calm	Calm	0·0	0·0	0·00	35	tk.-f, ho.-fr : tk.-f	tk.-f : tk.-f, ho.-fr
11	0·0	7·8	Calm	Calm : SE	0·0	0·0	0·00	49	tk.-f, ho.-fr : 10, f	10, f : p.-cl, f, ho.-fr
12	0·0	7·8	Calm	Calm : ENE	0·0	0·0	0·00	97	tk.-f, ho.-fr : tk.-f	10, slt.-f : 10 : 3, li.-cl
13	0·4	7·8	E	ESE	0·0	0·0	0·00	81	0, ho.-fr : tk.-f : 0, f	0, slt.-f : 0, slt.-f, ho.-fr
14	0·0	7·8	E : NE	NE : SW	0·0	0·0	0·00	81	0, ho.-fr : 0, h, f	0 : 0, tk.-f
15	0·0	7·8	SW : WSW	SE : ESE	0·2	0·0	0·00	131	10, tk.-f : 10, slt.-f, oc.-slt.-sn	10, slt.-sn : p.-cl, slt.-sn : 0
16	0·0	7·8	ESE : E	ESE : ENE : NE	1·1	0·0	0·03	189	p.-cl : li.-cl : 10	10 : 10
17	0·0	7·7	NE : NNE	NNE : NE	0·6	0·0	0·02	250	10 : 10, slt.-sn	10, sn : v
18	0·0	7·7	NNE : ENE	S : SE	1·2	0·0	0·04	137	10 : slt.-sn	10 : v
19	0·0	7·7	ESE : ENE	NE : NNW : WSW	1·2	0·0	0·07	228	10, sn : 10, sn	10, slt.-sn : 10
20	0·0	7·7	ENE : NNE	NE : ENE	0·3	0·0	0·00	204	10 : 10, slt.-sn	10, sn : 10, sn
21	0·0	7·7	ENE	ENE : NE	0·2	0·0	0·00	234	10, th.-r : 10	p.-cl : 0, fr
22	0·0	7·7	NE : Calm	Variable	0·0	0·0	0·00	65	0, ho.-fr : 8, f, glm	tk.-f : 10, tk.-f
23	0·0	7·7	E : ENE	ESE	0·0	0·0	0·00	68	tk.-f : 10, slt.-f	10 : 10
24	0·0	7·7	ESE	E : ESE	0·0	0·0	0·00	119	10 : 10	8 : 5, ci.-cu, fr
25	0·0	7·7	Calm : SW	S : SSW	0·0	0·0	0·00	145	v : 10	3, li.-cl : v, li.-cl, lu.-ha
26	0·0	7·8	Calm : SSW	WSW : SSW	0·0	0·0	0·00	79	v : 10	10 : 10
27	0·0	7·8	ENE : NNE	NNE : E	0·3	0·0	0·00	174	10 : 10, slt.-sn	10, oc.-sn : 10, sn
28	0·0	7·8	ESE : ENE	E	0·0	0·0	0·00	132	10 : 10, oc.-sn	10 : 10
29	0·0	7·8	ENE : NE	NNE : NE	1·0	0·0	0·07	338	10 : 10, slt.-sn	10, slt.-sn : 10
30	0·0	7·8	NE : ENE	NE : E	4·0	0·0	1·28	536	10, w : 10, slt.-sn, w	10, slt.-sn, w : 10, slt.-sn : 10, sn
31	0·0	7·8	E : ENE	ENE : E	2·5	0·0	0·42	364	10, w : 10	10, oc.-sn : 10
Means	0·1	7·8	...	...	...	...	0·11	181		
Number of Column for Reference.	21	22	23	24	25	26	27	28	29	30

The mean *Temperature of Evaporation* for the month was 29°·1, being 10°·2 *lower* than
The mean *Temperature of the Dew Point* for the month was 26°·9, being 10°·5 *lower* than
The mean *Degree of Humidity* for the month was 88·8, being 1·0 *greater* than
The mean *Elastic Force of Vapour* for the month was $0^{in}\cdot146$, being $0^{in}\cdot078$ *less* than
The mean *Weight of Vapour in a Cubic Foot of Air* for the month was $1^{grs}\cdot7$, being $0^{gr}\cdot9$ *less* than
The mean *Weight of a Cubic Foot of Air* for the month was 565 grains, being 14 grains *greater* than
} the average for the 20 years, 1849–1868.

The mean amount of *Cloud* for the month (a clear sky being represented by 0 and an overcast sky by 10) was 8·4.

The mean proportion of *Sunshine* for the month (constant sunshine being represented by 1) was 0·010. The maximum daily amount of *Sunshine* was 1·4 hours on December 1.

The highest reading of the *Solar Radiation Thermometer* was 66°·5 on December 7; and the lowest reading of the *Terrestrial Radiation Thermometer* was 12°·9 on December 14.

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

The *Proportions of Wind* referred to the cardinal points were N. 5, E. 16, S. 5, and W. 1. Four days were calm.

The *Greatest Pressure of the Wind* in the month was 4·0 lbs. on the square foot on December 5 and 30. The mean daily *Horizontal Movement of the Air* for the month was 181 miles; the greatest daily value was 536 miles on December 30; and the least daily value was 35 miles on December 10.

Rain fell on 9 days in the month, amounting to $0^{in}\cdot771$, as measured by gauge No. 6 partly sunk below the ground; being $1^{in}\cdot020$ *less* than the average fall for the 49 years, 1841–1889.

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

MAXIMA.

Greenwich Civil Time, 1890.		Reading.
	d h m	in.
January	1. 9.45	30·231
	4.20.30	29·632
	7. 5. 0	30·215
	9. 9.30	30·118
	11. 4.30	30·077
	12.20.55	30·158
	14. 5.50	30·055
	16.10.45	29·991
	18.11.50	29·595
	21.10.45	29·517
	22.17.50	29·155
	24.16.20	29·607
	26.10.45	29·746
	27.22. 0	29·910
	29.23.30	30·280
	31.11. 0	30·205
February	3.10. 0	30·296
	8. 0. 0	30·260
	10.20. 0	30·176
	14.10.25	29·709
	19. 9.50	30·090
	23.11. 5	30·530
	27. 7.10	30·270
	28.11.30	30·235
March	3.11.20	30·320
	5.18.20	29·740
	6.20.40	29·670
	10. 0.30	30·136
	12. 0. 0	30·196
	17.22. 0	29·349

MINIMA.

Greenwich Civil Time, 1890.		Reading.
	d h m	in.
January	4. 1.30	29·438
	5. 7. 5	29·564
	8.18.45	29·956
	9.23.15	29·715
	12. 5.25	29·885
	13.13.45	29·906
	14.21.45	29·850
	18. 6. 0	29·485
	20. 2.20	29·250
	22. 7. 0	28·809
	23.11.55	28·497
	25.14.10	29·374
	27. 4.30	29·505
	28.14.15	29·480
	31. 4.50	30·135
February	2. 4. 0	29·928
	5. 4. 0	29·870
	9.16. 0	30·000
	13. 5. 0	29·512
	15.16. 0	29·210
	20.15.10	29·883
	26. 5. 0	30·075
	27.18. 0	30·147
March	1.16. 0	29·728
	5. 4.20	29·642
	6.14. 5	29·592
	8.19.40	29·216
	10.13. 0	29·946
	16.17. 0	28·994
	18.22.40	29·177

MAXIMA.

Greenwich Civil Time, 1890.		Reading.
	d h m	in.
March	19.18.40	29·309
	22.21.30	29·607
	24. 2. 0	29·480
	28. 0. 0	29·934
April	1. 9.30	30·200
	9.11.40	29·710
	11. 9.10	29·733
	20.23.30	30·058
	23.14. 5	29·835
	27.22.10	29·845
	30. 9. 0	29·809
May	6. 7. 0	29·520
	8.22.45	29·500
	11.21.25	29·441
	15. 9. 0	29·935
	18.20.40	29·592
	22. 8. 0	30·144
	28.20.35	29·975
	31.11. 0	29·991
June	3. 9.55	29·806
	5.21.25	29·880
	7.22.30	30·185
	15. 8.55	30·224
	19.13.25	29·975
	23.11.20	30·006
	29.10.40	29·730
July	3.23.45	29·696
	7. 6.55	29·785
	10.13.25	29·807
	11.23. 0	29·823

MINIMA.

Greenwich Civil Time, 1890.		Reading.
	d h m	in.
March	20. 9. 0	29·209
	23.17. 0	29·403
	24.18.30	29·004
	29. 5. 5	29·665
April	7.11. 0	29·288
	10. 5. 0	29·519
	16. 7.25	29·175
	22.14. 5	29·653
	25. 8.50	29·063
	28.17. 0	29·713
May	5. 2.40	29·321
	7.16.50	29·414
	11. 5. 0	29·190
	13. 1.35	29·335
	17. 3. 0	29·464
	19.22.50	29·435
	25.16. 0	29·683
	30. 5.20	29·708
June	2. 3. 0	29·735
	4.18.55	29·673
	6.12.15	29·723
	12. 4.35	29·392
	17.16.45	29·787
	20.17. 5	29·860
	28.16.30	29·602
	30.18.45	29·013
July	5. 7.30	29·294
	8. 9.25	29·347
	11.11.25	29·705
	14. 5.15	29·647

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

MAXIMA.		MINIMA.		MAXIMA.		MINIMA.	
Greenwich Civil Time, 1890.	Reading.	Greenwich Civil Time, 1890.	Reading.	Greenwich Civil Time, 1890.	Reading.	Greenwich Civil Time, 1890.	Reading.
d h m	in.	d h m	in.	d h m	in.	d h m	in.
July 16. 7. 10	29·927	July 17. 22. 0	29·575	October 9. 0. 15	30·315	October 10. 16. 20	30·151
18. 18. 20	29·718	19. 6. 0	29·554	12. 11. 5	30·256	16. 3. 45	29·410
20. 11. 25	30·071	22. 15. 55	29·870	22. 21. 25	30·364	26. 12. 30	29·202
23. 8. 50	29·998	24. 14. 25	29·765	28. 20. 15	29·954	29. 21. 45	29·670
25. 21. 0	29·927	28. 6. 10	29·670	30. 17. 0	29·806	31. 19. 50	29·304
29. 10. 30	29·851	30. 17. 0	29·755	November 1. 17. 40	29·622	November 2. 11. 55	29·045
31. 21. 45	29·825	August 1. 17. 20	29·630	3. 12. 0	29·515	4. 17. 40	29·047
August 4. 23. 45	30·076	6. 17. 50	29·910	6. 7. 50	29·647	7. 3. 30	28·826
7. 9. 30	30·006	11. 6. 0	29·515	8. 8. 35	29·480	9. 2. 25	29·122
11. 23. 20	29·627	13. 17. 30	29·538	10. 10. 45	29·540	11. 10. 10	29·266
14. 14. 40	29·625	15. 8. 25	29·422	12. 18. 50	29·726	13. 5. 20	29·654
17. 7. 55	29·805	19. 3. 25	29·575	15. 23. 0	30·133	16. 16. 10	30·045
21. 7. 40	29·875	22. 0. 25	29·802	20. 10. 5	30·320	21. 19. 5	29·857
22. 11. 35	29·919	23. 10. 30	29·498	22. 8. 55	30·002	24. 3. 0	28·977
23. 22. 15	29·588	26. 0. 55	29·240	26. 11. 50	29·953	27. 15. 25	29·733
26. 8. 25	29·336	27. 13. 50	29·210	30. 10. 30	30·228	December 4. 13. 20	29·506
September 1. 8. 0	30·174	September 3. 16. 35	30·040	December 7. 10. 0	29·965	8. 14. 10	29·749
7. 10. 20	30·308	10. 17. 50	29·950	10. 22. 50	30·057	15. 14. 10	29·499
12. 9. 40	30·112	18. 1. 30	29·685	17. 20. 0	29·785	19. 7. 35	29·044
18. 22. 0	29·785	20. 6. 25	29·455	21. 22. 0	30·204	23. 14. 10	29·842
21. 7. 45	29·578	21. 22. 40	29·427	24. 21. 40	30·207	25. 14. 0	30·085
25. 23. 5	30·312	October 1. 14. 25	29·543	26. 10. 25	30·170	28. 7. 0	30·000
October 2. 22. 15	30·217	7. 16. 35	29·757	30. 10. 30	30·100	31. 16. 35	29·913

The readings in the above table are accurate, but the times are occasionally liable to uncertainty, as the barometer will sometimes remain at its extreme reading without sensible change for a considerable interval of time. In such cases the time given is the middle of the stationary period.
The time is expressed in civil reckoning, commencing at midnight and counting from 0^{h} to 24^{h}.
The height of the barometer cistern above mean sea level is 159 feet: no correction has been applied to the readings to reduce to sea level.

HIGHEST AND LOWEST READINGS of the BAROMETER in each Month for the YEAR 1890.
[Extracted from the preceding Table.]

MONTH, 1890.	Readings of the Barometer.		Range.
	Highest.	Lowest.	
	in.	in.	in.
January	30·280	28·497	1·783
February	30·530	29·210	1·320
March	30·320	28·994	1·326
April	30·200	29·063	1·137
May	30·144	29·190	0·954
June	30·224	29·013	1·211
July	30·071	29·294	0·777
August	30·076	29·210	0·866
September	30·312	29·427	0·885
October	30·364	29·202	1·162
November	30·320	28·826	1·494
December	30·207	29·044	1·163

The highest reading in the year was $30^{in}\cdot530$ on February 23. The lowest reading in the year was $28^{in}\cdot497$ on January 23.
The range of reading in the year was $2^{in}\cdot033$.

MONTHLY RESULTS of METEOROLOGICAL ELEMENTS for the YEAR 1890.

MONTH, 1890.	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 ...	29·759	55·0	26·5	28·5	48·5	38·2	10·3	43·6	+ 4·8	42·0	40·1	88·1
February...	30·017	50·5	26·6	23·9	43·0	32·9	10·1	37·4	− 2·3	36·1	34·0	87·6
March	29·663	68·8	13·1	55·7	51·5	35·8	15·7	43·3	+ 1·8	40·9	37·4	80·1
April	29·649	63·4	31·1	32·3	55·0	37·8	17·2	45·6	− 1·9	42·1	38·2	76·0
May.........	29·662	77·1	38·5	38·6	66·3	44·4	21·9	54·8	+ 1·7	49·9	45·1	70·1
June	29·830	80·2	36·6	43·6	69·2	49·6	19·6	58·2	− 1·6	54·6	51·3	78·4
July.........	29·731	78·1	41·9	36·2	70·4	51·6	18·8	59·6	− 3·0	55·9	52·6	77·9
August	29·715	82·8	39·1	43·7	70·7	51·2	19·4	59·4	− 2·4	55·8	52·6	78·4
September.	29·979	77·7	37·1	40·6	71·2	50·4	20·9	59·5	+ 2·0	56·1	53·2	79·9
October ...	29·924	68·6	24·7	43·9	57·5	41·8	15·7	49·6	− 1·5	46·9	44·1	82·0
November.	29·692	58·2	18·3	39·9	49·3	37·2	12·1	43·7	+ 1·0	42·0	39·7	86·1
December..	29·856	43·1	13·4	29·7	33·3	25·2	8·1	29·9	−10·9	29·1	26·9	88·8
Means......	29·790	Highest. 82·8	Lowest. 13·1	Annual Range. 69·7	57·2	41·3	15·8	48·7	− 1·0	45·9	42·9	81·1

MONTH, 1890.	Mean Elastic Force of Vapour.	Mean Weight of Vapour in a Cubic Foot of Air.	Mean Weight of a Cubic Foot of Air.	Mean Amount of Ozone.	Mean Amount of Cloud. (0–10.)	Rain. Number of Rainy Days.	Amount collected in Gauge No. 6 whose receiving Surface is 5 inches above the Ground.	Wind. From Osler's Anemometer. Number of Hours of Prevalence of each Wind referred to different Points of Azimuth. N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Number of Calm or nearly Calm Hours.	Mean Daily Pressure on the Square Foot.	From Robinson's Anemometer. Mean Daily Horizontal Movement of the Air.
	in.	grs.	grs.				in.	h	h	h	h	h	h	h	h	h	lbs.	miles.
January ...	0·248	2·8	548	3·8	7·2	19	2·085	32	8	39	35	138	378	67	39	8	0·93	399
February...	0·196	2·3	560	1·3	6·7	9	1·036	115	187	195	59	26	38	12	15	25	0·16	245
March	0·224	2·6	546	2·2	7·2	14	1·965	59	54	22	25	100	301	118	51	14	0·39	331
April	0·231	2·7	544	2·0	6·5	14	1·774	129	146	133	28	28	132	50	52	22	0·27	286
May.........	0·301	3·4	534	3·3	5·5	14	1·338	64	142	148	56	115	104	49	40	26	0·15	248
June	0·378	4·3	533	1·7	7·4	16	2·536	63	23	12	24	72	315	147	47	17	0·09	250
July.........	0·397	4·4	529	0·5	7·5	18	4·495	117	36	12	4	56	275	148	90	6	0·13	275
August ...	0·397	4·5	529	0·8	6·0	15	2·537	87	83	60	5	36	306	118	39	10	0·16	243
September.	0·406	4·5	534	0·9	5·3	6	0·652	31	23	61	104	94	277	80	20	30	0·07	205
October ...	0·289	3·3	544	0·4	5·5	9	1·191	54	37	15	12	34	313	131	97	51	0·24	282
November.	0·244	2·8	546	0·4	7·1	19	1·480	71	70	24	36	84	210	141	66	18	0·41	315
December..	0·146	1·7	565	0·2	8·4	9	0·771	33	186	244	109	35	40	9	3	85	0·11	181
Sums......	...	...	...	...	...	162	21·860	855	995	965	497	818	2689	1070	559	312	...	...
Means......	0·288	3·3	543	1·5	6·7	...	...	...	...	...	...	...	...	...	...	...	0·26	272

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The greatest recorded daily horizontal movement of the air „ „ 837 miles on January 26.
The least recorded daily horizontal movement of the air „ „ 32 miles on August 6.

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Sums	...	...	...	...	...	162	21·860	855	995	965	497	818	2689	1070	559	312	...	...
Means	0·288	3·3	543	1·5	6·7	...	...	...	...	...	...	...	...	...	...	...	0·26	272

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November.	29·692	58·2	18·3	39·9	49·3	37·2	12·1	43·7	+ 1·0	42·0	39·7	86·1
December..	29·856	43·1	13·4	29·7	33·3	25·2	8·1	29·9	−10·9	29·1	26·9	88·8
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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.	1890. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Yearly Means.
Midnight	90	91	88	87	85	89	87	91	93	89	90	91	89
1h.	91	92	89	88	85	90	89	92	93	90	90	91	90
2	90	92	90	89	86	92	90	92	94	90	91	90	90
3	90	92	90	88	87	93	91	92	93	90	91	88	90
4	90	92	90	88	88	94	92	93	94	90	91	89	91
5	90	93	92	89	88	94	90	92	94	90	91	88	91
6	92	93	93	88	86	89	89	90	93	91	91	87	90
7	91	93	91	85	81	86	86	88	92	90	91	91	89
8	92	92	90	80	73	79	81	82	86	89	90	88	85
9	90	91	84	75	67	73	76	77	80	84	89	88	81
10	87	87	80	69	64	72	72	72	72	79	86	85	77
11	85	85	75	66	59	68	70	67	67	75	84	86	74
Noon	83	83	72	63	56	67	67	64	63	71	80	85	71
13h.	82	81	70	61	56	67	66	63	62	70	80	84	70
14	81	81	69	62	55	65	66	63	62	69	79	86	70
15	83	81	69	62	54	65	66	63	63	70	81	86	70
16	84	83	71	63	55	65	67	65	65	70	83	87	72
17	85	86	74	64	57	66	69	67	70	75	86	87	74
18	86	89	76	72	59	70	70	70	77	80	87	87	77
19	87	90	79	77	65	73	73	75	83	83	89	87	80
20	88	89	83	79	71	78	78	82	86	85	90	86	83
21	89	89	84	82	76	83	82	86	89	86	90	87	85
22	90	90	86	83	79	86	84	89	90	88	90	87	87
23	90	89	88	86	81	87	86	90	91	90	90	87	88
24	92	91	88	87	84	89	88	91	93	90	90	89	89
Means { 0h.–23h.	88	88	82	77	71	79	79	79	81	83	87	87	82
Means { 1h.–24h.	88	88	82	77	71	79	79	79	81	83	87	87	82

TOTAL AMOUNT of SUNSHINE registered in each HOUR of the DAY in each MONTH, as derived from the RECORDS of the CAMPBELL-STOKES SELF-REGISTERING INSTRUMENT, for the YEAR 1890.

Month, 1890.	Registered Duration of Sunshine in the Hour ending 5h.	6h.	7h.	8h.	9h.	10h.	11h.	Noon.	13h.	14h.	15h.	16h.	17h.	18h.	19h.	20h.	Total registered Duration of Sunshine in each Month.	Corresponding aggregate Period during which the Sun was above Horizon.	Proportion of Sunshine.	Mean Altitude of the Sun at Noon.
	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h		°
January	...	...	...	...	0·8	7·2	9·6	8·9	7·7	6·2	3·0	0·6	...	...	...	...	44·0	259·1	0·170	18
February	...	...	...	0·3	5·4	7·9	8·4	7·8	7·8	8·1	10·8	5·9	0·4	...	...	...	62·8	277·9	0·226	26
March	...	...	0·8	6·7	9·2	8·0	9·3	9·1	9·9	11·0	10·4	9·4	5·9	1·1	...	...	90·8	366·9	0·247	37
April	...	1·5	6·1	9·0	11·2	13·6	14·4	12·5	13·6	13·7	13·3	12·9	12·0	6·3	1·4	...	141·5	414·9	0·341	48
May	0·4	5·5	12·6	14·1	15·5	14·3	15·8	15·7	17·5	17·6	18·1	19·3	19·2	21·3	14·8	2·2	223·9	482·1	0·464	57
June	0·9	6·3	8·7	10·5	10·2	10·0	10·6	10·3	7·4	8·6	8·1	8·7	8·0	9·4	5·9	1·6	125·2	494·5	0·253	62
July	0·4	5·7	8·2	8·2	8·7	9·0	9·6	10·6	10·4	10·9	10·0	7·4	8·4	7·0	5·1	1·0	120·6	496·8	0·243	60
August	...	1·5	8·1	9·9	12·7	15·1	13·2	12·5	14·5	12·7	16·0	12·6	12·1	9·2	3·0	...	153·1	449·1	0·341	52
September	...	...	1·0	8·6	13·0	16·2	18·1	19·1	17·5	15·8	14·9	12·7	11·3	5·0	...	...	153·2	376·9	0·406	41
October	...	...	...	1·6	9·1	11·3	11·8	11·9	11·3	12·5	12·4	10·4	4·5	0·1	...	...	96·9	328·7	0·295	30
November	...	...	...	...	...	3·8	6·3	7·6	7·6	8·1	5·8	1·6	...	...	...	...	40·8	264·4	0·154	20
December	...	...	...	...	...	0·5	0·3	0·1	0·6	0·8	0·1	...	...	...	...	...	2·4	242·7	0·010	16
For the Year	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1255·2	4454·0	0·282	...

The hours are reckoned from *apparent* midnight.

READINGS of DRY-BULB THERMOMETERS placed in a STEVENSON'S SCREEN near the Ordinary Stand, and of those mounted in a louvre-boarded shed on the ROOF of the MAGNET HOUSE at an elevation of 20 feet above the GROUND; and EXCESS of the READINGS above those of the corresponding THERMOMETERS on the ORDINARY STAND, in the YEAR 1890.

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

[Observations of the maximum and minimum thermometers only have been made on Sundays, Good Friday, and Christmas Day.]

JANUARY.

Days of the Month.	Readings of Thermometers in Stevenson's Screen, 4 feet above the ground.						Excess above readings of Thermometers on ordinary stand, 4 feet above the ground.					
	Maximum.	Minimum.	9h	Noon	15h	21h	Maximum.	Minimum.	9h	Noon	15h	21h
d	°	°	°	°	°	°	°	°	°	°	°	°
1	35.5	26.3	26.9	33.4	32.4	29.9	+0.7	−0.2	−0.2	−0.3	+0.2	0.0
2	34.4	29.2	33.3	34.4	33.1	32.3	−0.7	−0.6	−0.1	−0.1	+0.1	0.0
3	34.6	30.2	31.5	32.4	34.0	34.6	−0.3	−0.4	−0.1	−0.1	−0.3	+0.1
4	47.6	33.7	43.4	45.4	46.5	42.6	−0.3	−0.6	+0.1	−0.3	+0.3	+0.6
5	50.6	41.9	...	...	...	...	−0.2	+0.4	...	...	...	...
6	54.2	49.5	50.1	53.2	54.2	52.9	−0.2	+0.3	+0.2	+0.1	+0.4	+0.2
7	54.2	47.9	49.3	54.2	51.9	49.8	−0.8	+0.4	+0.3	+0.4	+0.4	+0.3
8	50.0	47.1	48.0	49.0	49.7	47.1	−0.3	+0.7	0.0	+0.1	+0.5	+0.7
9	50.3	37.4	39.7	46.3	46.7	50.3	0.0	+0.7	+0.7	+0.2	−0.2	+0.1
10	52.7	43.4	44.7	47.7	47.6	43.9	−0.2	+0.3	+0.3	+0.1	+0.7	+0.1
11	50.1	39.0	41.7	43.9	47.3	50.1	−0.2	+0.1	−0.1	−0.1	+0.1	+0.1
12	51.3	39.7	...	...	...	...	−0.2	+0.8	...	...	...	...
13	52.1	34.5	47.6	51.7	51.5	46.2	−0.4	+0.6	+0.1	−0.1	0.0	+0.3
14	49.7	34.4	34.9	45.9	49.0	49.7	0.0	0.0	+0.1	−0.2	0.0	+0.2
15	49.7	46.8	47.9	49.4	49.0	47.9	−0.2	+0.3	+0.1	+0.1	+0.1	+0.1
16	52.6	45.5	47.5	50.0	49.7	47.1	−0.3	+0.5	−0.1	0.0	+0.4	+0.1
17	47.7	40.4	44.4	44.6	43.4	41.5	+0.2	0.0	+0.1	−0.2	+0.1	−0.1
18	47.1	41.0	42.0	45.7	46.4	46.8	−0.6	+0.2	+0.1	−0.1	0.0	+0.3
19	50.2	38.2	...	...	...	...	−0.2	+0.1	...	...	...	...
20	44.0	35.2	36.2	42.7	42.9	36.8	−0.9	+0.1	+0.2	0.0	+0.4	+0.5
21	44.0	32.7	35.6	42.7	41.4	43.8	−0.4	+0.2	+0.1	−0.2	0.0	0.0
22	44.1	37.4	39.1	42.1	42.3	38.5	−0.4	−0.5	0.0	0.0	+0.3	+0.3
23	48.8	36.7	47.7	47.5	45.0	40.9	−1.0	−0.3	+0.3	+0.2	+0.2	+0.2
24	48.0	34.2	38.5	47.0	48.0	44.2	−0.4	+0.2	+0.2	−0.3	+0.3	0.0
25	54.0	43.7	53.0	52.0	52.1	50.0	−0.3	−0.4	+0.2	+0.1	−0.2	+0.2
26	50.1	39.4	...	...	...	...	−0.1	+0.2	...	...	...	...
27	51.3	41.0	43.2	45.9	45.0	41.3	−0.4	+0.3	−0.1	+0.1	+0.1	+0.3
28	50.0	35.6	42.7	49.0	44.9	37.3	−0.7	−0.4	−0.7	0.0	0.0	−0.3
29	42.1	33.6	34.7	40.9	41.0	37.9	+0.1	+0.2	+0.2	+0.6	+0.2	+0.2
30	45.8	33.0	39.1	44.2	45.5	44.2	−0.7	0.0	+0.1	−0.1	0.0	+0.3
31	48.2	43.5	47.0	47.6	48.1	47.8	−0.7	+0.2	+0.1	−0.1	−0.3	−0.2
Means	47.9	38.5	41.8	45.5	45.5	43.5	−0.3	+0.1	+0.1	0.0	+0.1	+0.2

Days of the Month.	Readings of Thermometers on the Roof of the Magnet House, 20 feet above the ground.						Excess above readings of Thermometers on ordinary stand, 4 feet above the ground.					
	Maximum.	Minimum.	9h	Noon	15h	21h	Maximum.	Minimum.	9h	Noon	15h	21h
d	°	°	°	°	°	°	°	°	°	°	°	°
1	34.9	26.6	28.3	34.4	32.3	30.1	+0.1	+0.1	+1.2	+0.7	+0.1	+0.2
2	35.0	29.8	33.6	34.7	33.4	32.8	−0.1	0.0	+0.2	+0.2	+0.4	+0.5
3	35.1	30.7	31.6	32.7	34.1	34.8	+0.2	+0.1	0.0	+0.2	−0.2	+0.3
4	48.5	34.2	45.0	45.5	47.1	43.0	+0.6	−0.1	+1.7	−0.2	+0.9	+1.0
5	51.2	42.1	...	...	...	...	+0.4	+0.6	...	...	...	...
6	54.7	49.8	51.5	54.0	54.5	53.4	+0.3	+0.6	+1.6	+0.9	+0.7	+0.7
7	54.8	48.4	50.1	54.1	52.0	49.7	−0.2	+0.9	+1.1	+0.3	+0.5	+0.2
8	51.2	47.2	48.8	49.8	49.3	47.5	+0.9	+0.8	+0.8	+0.9	+0.1	+1.1
9	50.8	38.3	41.0	46.8	47.0	50.8	+0.5	+1.6	+2.0	+0.7	+0.1	+0.6
10	53.2	43.8	45.3	47.7	47.8	43.9	+0.3	+0.7	+0.9	+0.1	+0.9	+0.1
11	50.7	38.8	42.1	45.3	47.7	50.6	+0.4	−0.1	+0.3	+1.3	+0.5	+0.6
12	51.6	41.2	...	...	...	...	+0.1	+2.3	...	...	...	...
13	52.4	34.9	48.0	51.9	51.6	46.9	−0.1	+1.0	+0.5	+0.1	+0.1	+1.0
14	49.8	34.0	34.8	46.0	49.3	49.8	+0.1	−0.4	0.0	−0.1	+0.3	+0.3
15	49.9	47.0	48.0	49.5	49.1	48.1	0.0	+0.5	+0.2	+0.2	+0.2	+0.3
16	52.9	45.4	48.0	50.5	50.1	47.7	0.0	+0.4	+0.4	+0.5	+0.8	+0.7
17	48.2	40.3	44.9	45.2	43.7	41.6	+0.7	−0.1	+0.6	+0.4	+0.4	0.0
18	47.9	41.1	42.8	45.8	47.1	47.0	+0.2	+0.3	+0.9	0.0	+0.7	+0.5
19	50.6	37.3	...	...	...	...	+0.2	−0.8	...	...	...	...
20	44.4	34.8	36.9	42.4	43.0	37.1	−0.5	−0.3	+0.9	−0.3	+0.5	+0.8
21	44.9	32.5	36.0	43.2	41.8	43.9	+0.5	0.0	+0.5	+0.3	+0.4	+0.1
22	45.0	37.3	39.5	42.0	42.7	39.0	+0.5	−0.6	+0.4	−0.1	+0.7	+0.8
23	49.3	36.9	48.3	47.9	45.1	41.1	−0.5	−0.1	+0.9	+0.6	+0.3	+0.4
24	48.4	34.0	39.0	47.4	48.3	44.6	0.0	0.0	+0.7	+0.1	+0.6	+0.4
25	54.4	44.1	53.3	52.3	52.6	50.4	+0.1	0.0	+0.5	+0.4	+0.3	+0.6
26	50.7	39.3	...	...	...	..	+0.5	+0.1	...	...	...	...
27	51.7	41.0	42.0	45.5	45.4	41.9	0.0	+0.3	−1.3	−0.3	+0.5	+0.9
28	50.4	36.1	43.0	49.6	44.8	36.8	−0.3	+0.1	−0.4	+0.6	−0.1	−0.8
29	41.5	33.2	34.8	39.8	41.3	38.8	−0.5	−0.2	+0.3	−0.5	+0.5	+1.1
30	46.2	32.0	39.8	44.8	45.9	44.5	−0.3	−1.0	+0.8	+0.5	+0.4	+0.6
31	48.7	43.5	47.1	47.9	48.7	48.0	−0.2	+0.2	+0.2	+0.2	+0.3	0.0
Means	48.4	38.6	42.4	45.8	45.8	43.8	+0.1	+0.2	+0.6	+0.3	+0.4	+0.5

READINGS of DRY-BULB THERMOMETERS in a STEVENSON'S SCREEN and on the ROOF of the MAGNET HOUSE—*continued.*

FEBRUARY.

Days of the Month.	Readings of Thermometers in Stevenson's Screen, 4 feet above the ground. Maximum.	Minimum.	9h	Noon.	15h	21h	Excess above readings of Thermometers on ordinary stand, 4 feet above the ground. Maximum.	Minimum.	9h	Noon.	15h	21h
d	°	°	°	°	°	°	°	°	°	°	°	°
1	48.1	42.5	46.2	46.9	45.9	43.2	−0.2	+0.2	+0.2	−0.2	−0.1	−0.1
2	46.3	39.1	...	...	...	...	−0.6	+0.4	...	...	...	...
3	40.4	28.2	30.5	38.9	39.6	33.4	−0.7	+0.5	−0.5	+0.8	+0.6	−0.1
4	42.0	29.4	31.8	31.9	41.8	39.8	−0.4	0.0	−0.2	−0.2	0.0	+0.1
5	43.0	37.0	39.1	40.5	42.5	37.4	−0.5	+0.3	−0.1	−0.3	−0.3	0.0
6	42.0	33.9	35.4	40.1	41.5	37.9	−0.3	−0.2	−0.3	−0.1	+0.3	−0.1
7	40.7	34.1	38.4	40.5	40.3	34.7	−0.7	−0.2	0.0	−0.3	−0.2	+0.1
8	41.1	29.5	32.9	40.4	40.5	33.9	−0.2	−0.1	+0.1	+0.2	+0.1	−0.2
9	39.5	33.0	...	...	...	...	−0.6	0.0	...	...	...	...
10	44.1	30.0	33.9	43.2	43.6	33.5	−0.4	+0.4	+0.8	+0.9	+0.6	+0.2
11	43.1	27.3	30.5	40.9	41.9	35.7	−0.3	−0.4	−0.3	0.0	+0.1	0.0
12	40.1	29.0	32.7	38.4	38.8	31.7	−0.9	+0.5	+0.9	−0.2	0.0	+0.2
13	41.1	28.2	33.0	38.9	38.2	36.1	0.0	0.0	+0.8	0.0	+0.3	+0.1
14	39.5	35.5	37.3	39.4	38.5	37.5	−0.3	−0.2	0.0	+0.1	−0.2	−0.2
15	41.0	33.3	36.7	38.8	41.0	35.2	−0.8	−0.4	−0.2	−0.1	0.0	−0.3
16	49.1	34.1	...	...	...	...	0.0	+0.3	...	...	...	...
17	49.7	37.1	37.8	46.2	48.9	41.9	−0.8	−0.2	0.0	0.0	+0.2	−0.1
18	46.1	37.5	40.7	44.9	45.3	40.9	−1.0	+0.2	+0.5	+0.1	+0.1	+0.3
19	42.8	36.6	39.1	41.4	42.6	37.1	−0.5	−0.1	+0.1	−0.4	−0.1	0.0
20	38.0	35.6	36.8	37.3	37.9	37.1	−0.2	−0.1	−0.1	−0.1	0.0	0.0
21	37.3	33.7	34.4	35.0	36.0	37.1	−0.4	−0.8	−0.1	0.0	−0.2	0.0
22	41.2	36.3	38.1	40.2	41.2	37.8	−0.8	−0.1	−0.2	−0.2	−0.1	0.0
23	41.9	31.1	...	...	...	...	−1.9	−0.1	...	...	...	...
24	45.9	30.1	34.3	41.5	42.7	40.1	−1.3	+0.4	−0.3	−0.5	0.0	−0.1
25	42.5	33.5	35.9	37.3	41.5	38.8	−0.3	−0.1	+0.5	−0.5	−0.2	0.0
26	42.1	35.4	37.1	40.3	42.1	37.7	−0.8	−0.6	−0.1	−0.1	+0.1	+0.1
27	40.2	31.6	36.1	37.4	36.9	33.7	−0.9	0.0	+0.1	−0.1	−0.1	0.0
28	38.1	26.8	31.6	35.0	35.9	33.9	−1.0	+0.2	+0.5	0.0	−0.1	+0.3
Means	42.4	33.2	35.8	39.8	41.0	36.9	−0.6	0.0	+0.1	0.0	0.0	0.0

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 of Thermometers on ordinary stand, 4 feet above the ground. Maximum.	Minimum.	9h	Noon.	15h	21h
	°	°	°	°	°	°	°	°	°	°	°	°
1	48.9	43.1	46.4	48.0	46.0	43.8	+0.6	+0.8	+0.4	+0.9	0.0	+0.5
2	46.3	39.4	...	...	...	...	−0.6	+0.7	...	...	...	...
3	42.3	27.8	31.5	38.9	41.0	35.1	+1.2	+0.1	+0.5	+0.8	+2.0	+1.6
4	43.1	30.0	31.9	32.0	41.7	39.8	+0.7	+0.6	−0.1	−0.1	−0.1	+0.1
5	43.3	37.1	39.3	40.8	42.7	37.8	−0.2	+0.4	+0.1	0.0	−0.1	+0.4
6	42.3	34.0	35.7	40.3	41.5	38.0	0.0	−0.1	0.0	+0.1	+0.3	0.0
7	41.2	34.0	38.6	40.9	40.7	34.5	−0.2	−0.3	+0.2	+0.1	+0.2	−0.1
8	41.6	29.0	33.1	40.1	40.4	33.9	+0.3	−0.6	+0.3	−0.1	0.0	−0.2
9	39.8	32.1	...	...	...	...	−0.3	−0.9	...	...	...	...
10	45.1	29.1	34.0	41.8	43.4	33.5	+0.6	−0.5	+0.9	−0.5	+0.4	+0.2
11	43.9	27.2	30.7	39.1	42.3	35.3	+0.5	−0.5	−0.1	−1.8	+0.5	−0.4
12	40.6	28.0	32.4	37.9	38.8	31.7	−0.4	−0.5	+0.6	−0.7	0.0	+0.2
13	40.2	27.7	32.8	37.8	38.2	36.1	−0.9	−0.5	+0.6	−1.1	+0.3	+0.1
14	39.7	35.7	37.6	39.3	38.6	37.8	−0.1	0.0	+0.3	0.0	−0.1	+0.1
15	40.9	32.7	36.5	38.8	40.8	35.0	−0.9	−1.0	−0.4	−0.1	−0.2	−0.5
16	48.6	34.0	...	...	...	...	−0.5	+0.2	...	...	...	...
17	49.4	37.1	37.8	46.3	48.7	41.7	−1.1	−0.2	0.0	+0.1	0.0	−0.3
18	47.2	37.1	40.5	44.9	45.6	40.4	+0.1	−0.2	+0.3	+0.1	+0.4	−0.2
19	43.4	36.1	38.9	41.7	43.0	37.0	+0.1	−0.6	−0.1	−0.1	+0.3	−0.1
20	38.4	35.3	37.0	37.4	37.8	37.4	+0.2	−0.4	+0.1	0.0	−0.1	+0.3
21	37.9	33.8	34.6	35.1	36.1	36.9	+0.2	−0.7	+0.1	+0.1	−0.1	−0.2
22	41.6	36.2	38.6	40.6	41.3	37.8	−0.4	−0.2	+0.3	+0.2	0.0	0.0
23	43.2	30.6	...	...	...	...	−0.6	−0.6	...	...	...	...
24	46.5	30.0	35.0	41.1	42.6	40.3	−0.7	+0.3	+0.4	−0.9	−0.1	+0.1
25	42.5	33.1	35.0	37.0	41.4	38.8	−0.3	−0.5	−0.4	−0.8	−0.3	0.0
26	42.2	35.6	37.1	40.3	42.1	37.8	−0.7	−0.4	−0.1	−0.1	+0.1	+0.2
27	39.6	32.0	35.6	37.2	37.1	33.6	−1.5	+0.4	−0.4	−0.3	+0.1	−0.1
28	37.6	26.6	30.9	33.7	35.9	33.9	−1.5	0.0	−0.2	−1.3	−0.1	+0.3
Means	42.8	33.0	35.9	39.6	41.2	37.0	−0.2	−0.2	+0.1	−0.2	+0.1	+0.1

READINGS of DRY-BULB THERMOMETERS in a STEVENSON'S SCREEN and on the ROOF of the MAGNET HOUSE—*continued.*

MARCH.

Days of the Month.	Readings of Thermometers in Stevenson's Screen, 4 feet above the ground.						Excess above readings of Thermometers on ordinary stand, 4 feet above the ground.					
	Maximum.	Minimum.	9h	Noon	15h	21h	Maximum.	Minimum.	9h	Noon	15h	21h
d	°	°	°	°	°	°	°	°	°	°	°	°
1	36·3	25·4	30·9	36·3	32·7	32·9	−1·0	+0·1	−0·1	−0·3	−0·3	−0·1
2	33·0	23·0	...	...	...	...	−0·2	−0·3	...	...	...	...
3	32·0	20·0	24·4	31·8	30·8	25·2	−1·3	−0·1	0·0	−0·2	−0·3	−0·2
4	33·5	12·5	18·9	31·6	32·4	30·3	−1·5	−0·6	−1·1	−0·1	−0·2	0·0
5	43·5	29·8	40·3	43·1	43·3	38·6	−0·5	−0·3	−0·1	0·0	+0·5	+0·5
6	53·1	37·0	46·4	50·7	52·3	46·4	−1·0	+0·5	−0·1	+0·2	+0·1	+0·1
7	53·1	39·6	47·0	51·2	51·4	44·1	−0·1	+0·3	0·0	−0·5	0·0	+0·6
8	51·8	43·6	45·3	49·1	51·6	43·9	−1·3	+0·7	0·0	−0·1	−0·2	0·0
9	44·1	33·9	...	...	...	...	−0·6	+0·5	...	...	...	...
10	50·3	30·0	40·2	46·9	49·9	49·5	−0·3	+0·4	0·0	−0·1	+0·1	+0·2
11	56·3	47·7	50·2	54·9	55·2	48·1	−1·7	+0·6	−0·1	0·0	−0·3	+0·3
12	59·0	41·6	48·3	56·9	58·4	44·1	−1·1	+0·5	+0·1	−0·9	+0·5	+0·3
13	46·8	40·2	43·9	46·2	46·2	43·4	−1·0	+0·6	0·0	−0·5	0·0	+0·1
14	58·5	39·5	49·4	56·4	55·7	43·1	−2·6	+0·7	+1·3	−0·7	−0·2	+0·3
15	54·0	41·3	46·9	51·0	51·3	44·9	−1·9	+0·6	0·0	−0·2	−0·3	−0·1
16	58·5	41·3	...	...	...	...	−0·6	+0·7	...	...	...	...
17	54·0	36·3	43·9	47·9	53·7	40·0	−1·8	+0·2	−0·2	+0·2	−0·4	+0·6
18	52·2	32·3	41·9	51·3	48·1	42·0	−0·5	+0·4	−0·3	−0·5	−0·1	0·0
19	43·2	39·7	41·4	42·7	42·4	41·3	−1·1	−0·2	−0·1	0·0	−0·1	−0·1
20	43·1	34·6	37·1	39·4	42·4	41·9	−1·1	−0·3	−0·3	−0·3	+0·1	+0·2
21	51·0	33·3	42·7	45·6	47·0	44·0	−2·4	+0·2	−0·1	−0·3	+0·1	+0·2
22	52·5	36·5	42·9	49·4	51·9	45·7	−1·8	+0·4	−0·1	+0·1	0·0	0·0
23	50·6	42·5	...	...	...	...	−1·7	+0·2	...	...	...	...
24	47·6	36·6	45·1	46·7	45·8	43·4	−1·6	+0·5	−0·1	−0·1	−0·1	+0·3
25	55·4	42·2	45·4	50·4	52·8	46·2	−1·7	+0·5	0·0	−0·3	−0·1	+0·1
26	59·1	40·8	48·9	55·5	57·8	52·0	−1·8	+0·5	+0·1	0·0	+0·4	0·0
27	55·3	48·6	51·1	53·6	54·1	51·8	−0·4	+0·3	−0·2	−0·2	−0·4	0·0
28	67·1	49·8	52·4	62·8	65·9	51·9	−1·7	+0·5	−0·4	−0·2	−0·1	+0·5
29	55·6	45·8	53·9	54·9	50·4	46·0	−1·6	+1·4	0·0	−0·2	−0·3	−0·4
30	58·1	34·9	...	...	...	..	−0·8	+0·8	...	...	...	...
31	53·1	35·1	49·5	48·6	49·9	41·2	0·0	+1·0	+0·6	−0·2	−0·1	+0·2
Means	50·4	36·6	43·4	48·3	49·0	43·1	−1·2	+0·4	0·0	−0·2	−0·1	+0·1

Days of the Month.	Readings of Thermometers on the Roof of the Magnet House, 20 feet above the ground.						Excess above readings of Thermometers on ordinary stand, 4 feet above the ground.					
	Maximum.	Minimum.	9h	Noon	15h	21h	Maximum.	Minimum.	9h	Noon	15h	21h
d	°	°	°	°	°	°	°	°	°	°	°	°
1	36·8	25·1	30·8	36·6	34·6	33·2	−0·5	−0·2	−0·2	0·0	+1·6	+0·2
2	34·1	23·0	...	...	...	...	+0·9	−0·3	...	...	...	...
3	30·9	19·8	24·3	30·0	30·0	25·8	−2·4	−0·3	−0·1	−2·0	−1·1	+0·4
4	34·1	13·0	20·1	31·0	32·7	30·4	−0·9	−0·1	+0·1	−0·7	+0·1	+0·1
5	43·6	30·1	40·1	42·9	43·0	39·3	−0·4	0·0	−0·3	−0·2	+0·2	+1·2
6	53·5	37·0	47·0	51·3	52·8	46·5	−0·6	+0·5	+0·5	+0·8	+0·6	+0·2
7	52·8	39·5	47·4	51·8	51·9	44·6	−0·4	+0·2	+0·4	+0·1	+0·5	+1·1
8	52·3	43·8	45·7	49·7	51·9	44·6	−0·8	+0·9	+0·4	+0·5	+0·1	+0·7
9	44·7	34·0	...	...	...	...	0·0	+0·6	...	...	...	...
10	50·8	30·3	40·6	47·3	50·2	49·8	+0·2	+0·7	+0·4	+0·3	+0·4	+0·5
11	56·6	47·9	50·4	54·6	55·5	48·6	−1·4	+0·8	+0·1	−0·3	0·0	+0·8
12	58·8	41·3	48·5	56·3	58·0	43·8	−1·3	+0·2	+0·3	−1·5	+0·1	0·0
13	47·4	40·4	44·1	46·6	46·5	44·9	−0·4	+0·8	+0·2	−0·1	+0·3	+1·6
14	58·5	39·6	49·3	54·4	56·1	43·5	−2·6	+0·8	+1·2	−2·7	+0·2	+0·7
15	54·3	41·2	47·1	51·7	51·8	44·8	−1·6	+0·5	+0·2	+0·5	+0·2	−0·2
16	57·6	41·1	...	...	...	...	−1·5	+0·5	...	...	...	...
17	54·1	36·1	43·8	47·8	53·6	40·9	−1·7	0·0	−0·3	+0·1	−0·5	+1·5
18	52·3	32·2	42·3	51·2	48·8	41·7	−0·4	+0·3	+0·1	−0·6	+0·6	−0·3
19	42·9	39·3	41·0	42·6	42·3	41·2	−1·4	−0·6	−0·5	−0·1	−0·2	−0·2
20	43·4	34·0	36·6	39·6	41·4	42·3	−0·8	−0·9	−0·8	−0·1	−0·9	+0·6
21	51·6	32·8	42·3	45·6	46·9	44·4	−1·8	−0·3	−0·5	−0·3	0·0	+0·6
22	52·9	36·2	43·4	49·7	51·8	45·8	−1·4	+0·1	+0·4	+0·4	−0·1	+0·1
23	51·4	41·3	...	...	...	...	−0·9	−1·0	...	...	...	...
24	47·6	36·3	45·7	46·8	45·8	44·5	−1·6	+0·2	+0·5	0·0	−0·1	+1·4
25	55·4	42·3	45·7	50·7	52·9	46·6	−1·7	+0·6	+0·3	0·0	0·0	+0·5
26	59·5	40·1	49·5	55·5	57·8	52·4	−1·4	−0·2	+0·7	0·0	+0·4	+0·4
27	55·0	49·2	51·5	53·8	54·3	52·0	−0·7	+0·9	+0·2	0·0	−0·2	+0·2
28	67·6	49·8	53·6	62·9	65·8	54·9	−1·2	+0·5	+0·8	−0·1	−0·2	+3·5
29	56·0	46·3	53·9	55·0	50·6	47·3	−1·2	+1·9	0·0	−0·1	−0·1	+0·9
30	58·1	34·9	...	...	...	...	−0·8	+0·8	...	...	...	...
31	52·6	34·2	47·8	48·5	50·4	41·0	−0·5	+0·1	−1·1	−0·3	+0·4	0·0
Means	50·6	36·5	43·6	48·2	49·1	43·6	−1·0	+0·3	+0·1	−0·2	+0·1	+0·6

READINGS OF DRY-BULB THERMOMETERS in a STEVENSON'S SCREEN and on the ROOF of the MAGNET HOUSE—*continued.*

APRIL.

Days of the Month.	Readings of Thermometers in Stevenson's Screen, 4 feet above the ground.						Excess above readings of Thermometers on ordinary stand, 4 feet above the ground.					
	Maximum.	Minimum.	9^h	Noon.	15^h	21^h	Maximum.	Minimum.	9^h	Noon.	15^h	21^h
d	°	°	°	°	°	°	°	°	°	°	°	°
1	50·0	34·0	41·4	48·6	49·8	37·5	−1·7	+0·6	−0·2	−0·1	+0·6	0·0
2	47·0	32·0	42·6	44·4	45·9	37·4	−1·5	+0·7	−0·4	−0·1	+0·1	−0·2
3	52·3	35·0	44·4	50·4	52·1	38·5	−0·8	+0·2	−0·2	+0·3	+0·3	+0·2
4	57·1	33·3	...	...	...	...	−1·0	+0·4	...	...	...	...
5	59·1	31·5	45·7	55·9	59·1	44·7	−1·9	+0·2	+0·1	−0·8	+0·8	−0·1
6	55·6	41·3	...	...	...	...	−1·0	+0·9	...	...	...	...
7	56·1	43·1	48·0	48·5	53·5	43·9	−0·9	+0·9	−0·2	−0·2	0·0	0·0
8	52·1	36·4	43·2	49·5	50·9	40·6	−1·0	+0·1	−0·1	+0·3	+0·1	+0·3
9	45·9	39·2	42·9	45·6	44·8	39·9	−1·4	+0·5	+0·1	−0·2	0·0	+0·5
10	45·8	36·0	39·2	43·0	39·9	38·1	−2·0	−0·2	−0·4	−0·8	−0·1	−0·1
11	49·1	34·7	44·1	46·3	46·8	39·8	−2·2	+0·3	+0·2	−1·0	−0·2	+0·1
12	48·7	33·3	42·5	47·2	46·7	37·4	−2·3	+0·4	−0·1	+0·7	−0·5	+0·3
13	51·0	31·7	...	...	...	...	−1·7	+0·6	...	...	...	...
14	56·5	38·0	46·2	55·5	54·0	47·1	−0·9	+0·1	−0·2	−0·5	+0·1	−0·2
15	57·3	43·9	49·3	55·6	56·2	46·2	−1·3	0·0	−0·3	+0·1	−0·2	−0·1
16	58·7	45·2	53·9	54·0	58·6	48·0	−1·3	+0·1	+0·1	−0·8	−0·5	−0·1
17	55·1	42·2	48·1	54·2	47·9	43·4	−1·2	+0·8	−0·2	−0·6	−0·2	−0·1
18	45·4	41·5	42·2	43·8	45·4	42·2	−0·6	0·0	−0·1	−0·1	−0·1	−0·1
19	44·9	40·0	41·4	43·0	44·9	41·2	−0·7	−0·2	−0·1	0·0	+0·1	0·0
20	52·4	38·2	...	...	...	...	−1·4	0·0	...	...	...	...
21	58·1	41·5	54·1	56·3	53·1	49·5	−1·9	+0·5	−0·5	−0·6	−0·4	+0·3
22	61·3	49·1	51·9	57·6	59·9	49·2	−1·9	+1·0	+0·1	−1·0	−0·1	+0·4
23	57·5	40·6	51·6	55·1	54·9	49·6	−1·8	+0·3	−0·7	−0·6	−0·4	+0·1
24	52·7	43·7	50·9	52·1	50·0	48·9	−1·3	−0·1	−0·9	−0·2	+0·1	+0·4
25	49·0	40·2	43·4	41·0	45·9	45·4	−0·3	−0·2	−0·2	−0·1	−0·6	+0·3
26	55·7	33·7	46·5	51·9	43·1	41·1	−1·8	+0·4	+0·4	0·0	−0·4	+0·8
27	52·7	36·5	...	...	...	...	−2·0	+0·6	...	...	...	...
28	57·7	39·7	47·9	56·2	50·9	47·8	−2·5	+0·4	−0·1	−0·1	−0·7	0·0
29	60·9	40·2	54·5	60·1	58·9	46·8	−2·0	+0·6	+0·5	−0·7	−0·7	0·0
30	62·2	39·8	60·5	60·6	61·1	48·1	−1·2	+1·5	+0·7	−0·6	+0·1	+0·3
Means	53·6	38·5	47·1	51·1	51·0	43·7	−1·4	+0·4	−0·1	−0·3	−0·1	+0·1

Days of the Month.	Readings of Thermometers on the Roof of the Magnet House, 20 feet above the ground.						Excess above readings of Thermometers on ordinary stand, 4 feet above the ground.					
	Maximum.	Minimum.	9^h	Noon.	15^h	21^h	Maximum.	Minimum.	9^h	Noon.	15^h	21^h
d	°	°	°	°	°	°	°	°	°	°	°	°
1	50·6	33·0	41·8	48·4	49·8	37·2	−1·1	−0·4	+0·2	−0·3	+0·6	−0·3
2	47·6	31·0	42·8	44·0	45·6	37·3	−0·9	−0·3	−0·2	−0·5	−0·2	−0·3
3	53·3	34·2	44·1	50·4	52·1	38·5	+0·2	−0·6	−0·5	+0·3	+0·3	+0·2
4	58·2	32·9	...	...	...	...	+0·1	0·0	...	...	...	...
5	59·8	31·3	44·6	56·0	58·8	45·8	−1·2	0·0	−1·0	−0·7	+0·5	+1·0
6	55·1	41·7	...	...	...	...	−1·5	+1·3	...	...	...	...
7	55·3	41·1	48·8	48·8	53·6	43·8	−1·7	−1·1	+0·6	+0·1	+0·1	−0·1
8	51·6	36·3	43·1	48·2	48·8	40·8	−1·5	0·0	−0·2	−1·0	−2·0	+0·5
9	46·1	39·2	42·3	44·8	44·9	40·5	−1·2	+0·5	−0·5	−1·0	+0·1	+1·1
10	44·6	36·1	39·5	41·9	39·8	38·7	−3·2	−0·1	−0·1	−1·9	−0·2	+0·5
11	48·7	34·2	41·3	45·0	46·7	39·9	−2·6	−0·2	−2·6	−2·3	−0·3	+0·2
12	48·4	33·1	41·0	45·3	46·5	39·7	−2·6	+0·2	−1·6	−1·2	−0·7	+2·6
13	52·1	31·0	...	...	...	...	−0·6	−0·1	...	...	...	...
14	56·0	37·6	47·0	54·8	54·3	47·2	−1·4	−0·3	+0·6	−1·2	+0·4	−0·1
15	58·7	43·9	49·4	55·9	56·8	46·0	+0·1	0·0	−0·2	+0·4	+0·4	−0·3
16	59·4	44·5	54·8	54·8	59·3	47·6	−0·6	−0·6	+1·0	0·0	+0·2	−0·5
17	55·7	41·3	48·3	54·9	48·1	43·3	−0·6	−0·1	0·0	+0·1	0·0	−0·2
18	45·5	40·7	41·8	43·4	44·6	41·5	−0·5	−0·8	−0·5	−0·5	−0·9	−0·8
19	44·7	39·1	40·3	42·7	44·7	40·8	−0·9	−1·1	−1·2	−0·3	−0·1	−0·4
20	53·4	38·1	...	...	...	...	−0·4	−0·1	...	...	...	...
21	58·6	41·8	52·9	56·8	53·3	48·8	−1·4	+0·8	−1·7	−0·1	−0·2	−0·4
22	61·6	48·8	52·1	57·9	59·9	49·8	−1·6	+0·7	+0·3	−0·7	−0·1	+1·0
23	57·3	40·1	51·2	54·9	54·8	49·8	−2·0	−0·2	−1·1	−0·8	−0·5	+0·3
24	53·1	43·5	51·3	52·8	49·8	49·0	−0·9	−0·3	−0·5	+0·5	−0·1	+0·5
25	49·4	39·2	43·0	40·8	46·3	45·8	+0·1	−1·2	−0·6	−0·3	−0·2	+0·7
26	55·6	33·9	46·0	52·0	42·8	42·0	−1·9	+0·6	−0·1	+0·1	−0·7	+1·7
27	53·0	37·3	...	...	...	...	−1·7	+1·4	...	...	...	...
28	57·8	39·6	48·3	55·8	52·4	48·4	−2·4	+0·3	+0·3	−0·5	+0·8	+0·6
29	60·0	41·2	54·8	59·1	57·8	48·1	−2·9	+1·6	+0·8	−1·7	−1·8	+1·3
30	63·1	39·1	59·5	61·4	61·3	47·9	−0·3	+0·8	−0·3	+0·2	+0·3	+0·1
Means	53·8	38·2	46·8	50·8	50·9	43·9	−1·2	0·0	−0·4	−0·5	−0·2	+0·4

READINGS of DRY-BULB THERMOMETERS in a STEVENSON'S SCREEN and on the ROOF of the MAGNET HOUSE—*continued.*

MAY.

Days of the Month.	Readings of Thermometers in Stevenson's Screen, 4 feet above the ground.						Excess above readings of Thermometers on ordinary stand, 4 feet above the ground.						Days of the Month.	Readings of Thermometers on the Roof of the Magnet House, 20 feet above the ground.						Excess above readings of Thermometers on ordinary stand, 4 feet above the ground.					
	Maximum.	Minimum.	9h	Noon	15h	21h	Maximum.	Minimum.	9h	Noon	15h	21h		Maximum.	Minimum.	9h	Noon	15h	21h	Maximum.	Minimum.	9h	Noon	15h	21h
d	°	°	°	°	°	°	°	°	°	°	°	°	d	°	°	°	°	°	°	°	°	°	°	°	°
1	63·5	41·5	57·9	62·2	62·9	49·6	−0·9	+0·8	0·0	−1·2	0·0	0·0	1	64·0	41·2	57·2	61·9	61·6	49·6	−0·4	+0·5	−0·7	−1·5	−1·3	0·0
2	59·8	40·1	53·8	57·6	59·6	47·1	−1·3	+0·4	+0·1	−1·5	+0·1	+0·1	2	61·3	39·3	53·7	57·8	59·8	47·0	+0·2	−0·4	0·0	−1·3	+0·3	0·0
3	67·1	39·4	61·7	64·3	64·8	49·9	−1·8	+0·9	+0·3	−0·7	−0·3	+0·7	3	67·9	39·1	61·4	64·9	64·8	51·4	−1·0	+0·6	0·0	−0·1	−0·3	+2·2
4	64·2	40·7	...	...	...	...	−1·9	+0·7	...	...	...	...	4	66·6	38·2	...	...	...	...	+0·5	−1·8	...	...	...	...
5	62·5	46·9	48·4	55·1	61·5	49·8	−0·5	−0·2	−0·1	−0·2	−0·1	0·0	5	62·5	47·2	48·7	55·4	60·0	50·5	−0·5	+0·1	+0·2	+0·1	−1·6	+0·7
6	62·5	43·4	57·6	59·8	61·1	52·9	−1·5	+0·3	+0·2	−1·9	−0·5	+0·1	6	63·3	44·1	57·7	60·7	60·8	53·8	−0·7	+1·0	+0·3	−1·0	−0·8	+1·0
7	62·5	45·0	56·7	59·3	61·5	50·1	−1·2	+0·2	−0·1	+0·1	+0·1	+0·2	7	63·7	45·5	57·5	59·8	61·6	50·2	0·0	+0·7	+0·7	+0·6	+0·2	+0·3
8	59·6	45·4	49·2	53·3	58·7	49·9	−1·0	+0·3	−0·4	−0·5	−0·1	+0·1	8	60·7	45·2	49·5	54·0	59·3	49·8	+0·1	+0·1	−0·1	+0·2	+0·5	0·0
9	51·6	46·2	48·4	50·1	50·8	49·7	+0·4	0·0	0·0	−0·2	−0·2	0·0	9	50·8	46·0	48·1	50·2	50·8	49·8	−0·4	−0·2	−0·3	−0·1	−0·2	+0·1
10	60·2	47·4	51·7	57·9	58·9	51·6	−2·1	+0·1	−0·1	−0·9	−0·9	+0·1	10	61·7	47·7	53·0	58·8	59·8	51·2	−0·6	+0·4	+1·2	0·0	0·0	−0·3
11	64·0	48·5	...	...	...	...	−3·2	0·0	...	...	...	...	11	65·1	48·2	...	...	...	...	−2·1	−0·3	...	...	...	...
12	66·4	47·3	62·0	63·1	65·9	51·2	−1·9	+1·1	+0·7	−0·6	−0·3	+0·1	12	68·1	47·2	62·9	64·7	66·4	52·3	−0·2	+1·0	+1·6	+1·0	+0·2	+1·2
13	65·7	48·2	53·2	60·5	65·3	54·8	−1·8	+1·3	−0·3	+0·4	−0·1	+1·7	13	65·5	48·5	53·3	60·6	65·0	54·1	−2·0	+1·6	−0·2	+0·5	−0·4	+1·0
14	62·1	47·0	56·2	57·4	60·8	52·0	−2·7	+0·4	−1·3	+0·2	−0·9	+0·2	14	62·7	46·7	55·2	57·3	61·4	52·1	−2·1	+0·1	−2·3	+0·1	−0·3	+0·3
15	62·1	42·8	54·6	62·0	61·7	49·4	−3·0	+0·5	+0·1	−1·1	−0·3	+0·5	15	61·6	43·1	54·7	60·1	60·8	50·1	−3·5	+0·8	+0·2	−3·0	−1·2	+1·2
16	68·7	42·9	62·9	66·9	67·4	57·2	−3·2	+0·5	−0·1	−0·8	−0·4	−0·2	16	68·7	43·1	61·8	65·3	66·9	57·7	−3·2	+0·7	−1·2	−2·4	−0·9	+0·3
17	64·5	47·7	56·3	63·9	61·0	48·2	−2·7	+0·5	−2·4	−0·3	−0·8	+0·1	17	63·7	47·4	56·4	61·8	61·8	48·8	−3·5	+0·2	−2·3	−2·4	0·0	+0·7
18	66·5	47·2	...	...	...	...	−3·6	+0·3	...	...	...	...	18	67·0	46·7	...	...	...	...	−3·1	−0·2	...	...	...	...
19	68·5	44·8	64·5	65·3	67·9	57·7	−2·0	+0·5	+0·3	−0·3	+0·4	+0·1	19	68·6	44·3	63·9	66·8	68·0	57·7	−1·9	0·0	−0·3	+1·2	+0·5	+0·1
20	60·5	49·4	53·2	57·6	58·0	51·5	−2·3	+0·5	−0·4	−1·2	−0·4	+0·1	20	61·1	48·7	53·8	56·7	58·9	51·7	−1·7	−0·2	+0·2	−2·1	+0·5	+0·3
21	68·0	45·5	57·5	64·5	65·5	52·3	−3·1	+0·4	+0·2	−0·4	−1·9	+0·5	21	67·6	45·2	59·5	63·4	67·0	52·1	−3·5	+0·1	+2·2	−1·5	−0·4	+0·3
22	71·0	42·4	63·6	69·7	69·2	52·8	−2·0	+1·2	+0·7	−0·1	−0·4	0·0	22	70·5	42·1	62·9	67·4	67·8	53·0	−2·5	+0·9	0·0	−2·4	−1·8	+0·2
23	70·8	45·4	63·7	68·9	70·8	57·9	−1·4	+1·2	0·0	−0·4	+1·0	+0·2	23	70·6	44·4	63·3	68·3	69·5	57·8	−1·6	+0·2	−0·4	−1·0	−0·3	+0·1
24	76·0	48·4	69·4	75·0	75·4	60·2	−1·1	+0·6	+0·8	−0·7	+0·2	+0·5	24	74·9	47·4	68·8	73·7	73·9	60·4	−2·2	−0·4	+0·2	−2·0	−1·3	+0·7
25	75·0	52·2	...	...	...	...	−1·6	+1·0	...	...	...	...	25	74·5	51·6	...	...	...	...	−2·1	+0·4	...	...	...	...
26	61·7	44·3	53·3	59·5	58·9	51·5	−2·5	+0·3	0·0	−0·5	+0·1	0·0	26	60·8	43·6	52·7	59·8	58·8	51·4	−3·4	−0·4	−0·6	−0·2	0·0	−0·1
27	61·6	41·6	53·2	58·5	60·2	49·6	−3·0	+0·5	−1·8	−0·2	−0·6	0·0	27	61·6	41·3	53·4	58·5	59·4	49·7	−3·0	+0·2	−1·6	−0·2	−1·4	+0·1
28	59·9	43·8	54·0	56·4	58·1	52·0	−3·2	+0·5	+0·7	−0·2	−0·3	+0·2	28	59·4	43·1	54·1	56·3	58·3	52·9	−3·7	−0·2	+0·8	−0·3	−0·1	+1·1
29	63·9	46·2	55·0	60·8	61·3	54·6	−3·2	+1·2	−0·7	+0·1	−0·1	+0·1	29	64·2	45·6	55·4	61·3	61·4	55·0	−2·9	+0·6	−0·3	+0·6	0·0	+0·5
30	63·2	49·3	51·5	60·0	61·4	49·3	−2·8	+0·7	−0·3	−1·1	−0·3	+0·4	30	63·6	49·0	51·7	60·8	61·5	49·0	−2·4	+0·4	−0·1	−0·3	−0·2	+0·1
31	57·3	39·8	52·2	52·9	55·0	49·9	−2·7	+0·3	−1·4	−0·2	−0·2	+0·4	31	57·8	39·4	51·1	52·7	55·2	50·7	−2·2	−0·1	−2·5	−0·4	0·0	+1·2
Means	64·2	45·2	56·4	60·8	62·4	52·0	−2·1	+0·5	−0·2	−0·5	−0·3	+0·2	Means	64·5	44·8	56·4	60·7	62·2	52·2	−1·8	+0·2	−0·2	−0·7	−0·4	+0·5

READINGS of DRY-BULB THERMOMETERS in a STEVENSON'S SCREEN and on the ROOF of the MAGNET HOUSE—*continued.*

JUNE.

Days of the Month.	Readings of Thermometers in Stevenson's Screen, 4 feet above the ground. Maximum.	Minimum.	9h	Noon.	15h	21h	Excess above readings of Thermometers on ordinary stand, 4 feet above the ground. Maximum.	Minimum.	9h	Noon.	15h	21h
d	°	°	°	°	°	°	°	°	°	°	°	°
1	64.2	37.2	...	...	...	...	−2.5	+0.6	...	...	...	...
2	66.4	50.5	60.1	61.1	64.7	53.7	−3.2	+0.6	−0.3	+0.3	−0.4	+0.3
3	63.0	50.5	58.1	59.2	62.8	54.1	−1.7	+0.5	−0.2	+0.3	−1.0	−0.2
4	58.7	53.5	55.6	57.4	57.4	57.5	−1.0	+0.9	−0.2	−0.9	−0.4	+0.2
5	66.9	53.1	57.9	64.6	66.7	57.9	−1.9	+0.8	0.0	−1.4	−0.8	+0.1
6	67.9	53.5	57.8	63.8	67.5	54.1	−2.2	+0.3	−0.1	+0.1	−0.5	+0.3
7	66.3	47.9	59.7	60.0	63.5	55.5	−2.8	+0.3	+0.1	+0.5	+0.4	+0.7
8	65.6	43.3	...	...	...	...	−2.3	+0.7	...	...	...	...
9	71.7	51.1	63.9	69.0	70.2	56.6	−2.9	−0.1	+0.1	−0.1	−0.6	+0.2
10	73.1	47.3	69.6	71.1	63.9	54.8	−2.3	+1.2	+0.2	−0.5	+0.2	0.0
11	64.8	49.1	60.9	60.9	54.8	52.4	−3.3	+0.8	−0.4	+0.8	−0.1	+0.1
12	61.5	49.9	59.9	59.4	61.1	56.0	−3.1	+0.4	+1.1	+0.6	+0.6	+0.2
13	60.1	51.6	53.9	53.2	58.6	52.7	−1.1	+0.4	0.0	−0.2	−0.2	0.0
14	61.5	49.5	55.1	58.4	61.3	56.3	−1.9	+0.2	+0.2	+0.1	+0.2	−0.3
15	64.9	47.4	...	...	...	...	−1.9	+0.4	...	...	...	...
16	74.4	52.5	67.5	71.2	72.2	58.6	−3.1	+0.3	+0.8	+0.3	+0.1	−0.1
17	64.6	53.5	56.2	56.6	63.1	53.6	−3.4	+0.4	−0.1	0.0	+0.1	+0.1
18	69.1	48.1	60.4	68.0	67.7	61.9	−3.7	+1.0	−0.5	+0.9	−0.1	−0.7
19	67.0	54.8	59.9	62.4	66.9	58.6	−2.4	+0.4	−0.1	0.0	+0.5	+0.5
20	68.2	49.9	58.9	66.7	64.1	58.9	−3.1	+0.4	−0.7	−1.1	−0.2	+0.1
21	68.3	49.4	66.6	67.8	65.5	55.8	−2.4	+1.2	+0.1	−0.4	−0.3	−0.2
22	65.8	50.6	...	...	...	...	−3.5	+0.4	...	...	...	...
23	66.4	57.1	64.2	62.0	66.0	62.4	−1.3	+0.4	+0.3	0.0	−0.3	0.0
24	73.9	57.4	61.9	70.1	71.4	64.0	−2.1	+0.8	+0.5	+0.1	+0.1	+0.2
25	77.1	53.9	64.1	73.7	76.1	63.5	−3.1	+0.8	−0.5	−0.9	+0.8	+0.1
26	66.4	58.0	59.9	61.8	61.1	59.8	−0.7	+0.2	+0.4	0.0	+0.2	+0.1
27	68.0	49.4	62.2	62.2	67.4	55.9	−2.5	+0.2	−1.2	+0.3	−0.7	+0.1
28	67.1	48.5	63.7	64.9	60.9	51.9	−2.9	+0.4	0.0	−0.2	−1.0	−0.5
29	65.6	48.2	...	...	...	...	−1.6	+0.1	...	...	...	...
30	63.7	50.2	53.3	56.0	63.6	53.9	−2.4	+0.6	−0.3	−0.1	−1.1	−0.5
Means	66.7	50.6	60.5	63.3	64.7	56.8	−2.4	+0.5	0.0	−0.1	−0.2	0.0

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 of Thermometers on ordinary stand, 4 feet above the ground. Maximum.	Minimum.	9h	Noon.	15h	21h
d	°	°	°	°	°	°	°	°	°	°	°	°
1	64.6	36.8	...	...	...	...	−2.1	+0.2	...	...	...	...
2	67.6	50.2	60.3	60.7	64.5	54.2	−2.0	+0.3	−0.1	−0.1	−0.6	+0.8
3	62.7	50.3	58.3	59.3	62.0	54.4	−2.0	+0.3	0.0	+0.4	−1.8	+0.1
4	59.3	52.5	56.3	58.1	57.8	57.8	−0.4	−0.1	+0.5	−0.2	0.0	+0.5
5	67.8	52.5	58.4	64.4	66.0	58.0	−1.0	+0.2	+0.5	−1.6	−1.5	+0.2
6	68.1	53.2	58.5	64.2	67.7	53.7	−2.0	0.0	+0.6	+0.5	−0.3	−0.1
7	68.1	47.7	58.1	60.3	63.5	56.3	−1.0	+0.1	−1.5	+0.8	+0.4	+1.5
8	65.5	42.6	...	...	...	...	−2.4	0.0	...	...	...	...
9	71.7	51.6	62.8	69.1	70.7	57.8	−2.9	+0.4	−1.0	0.0	−0.1	+1.4
10	73.1	46.1	68.7	71.7	63.7	54.5	−2.3	0.0	−0.7	+0.1	0.0	−0.3
11	64.3	49.0	60.5	61.0	54.7	52.8	−3.8	+0.7	−0.8	+0.9	−0.2	+0.5
12	64.4	49.9	60.7	59.1	61.8	55.9	−0.2	+0.4	+1.9	+0.3	+1.3	+0.1
13	59.8	51.2	53.8	53.1	58.8	52.7	−1.4	0.0	−0.1	−0.3	0.0	0.0
14	63.4	49.2	56.6	58.8	61.4	56.3	0.0	−0.1	+1.7	+0.5	+0.3	−0.3
15	65.6	47.2	...	...	...	...	−1.2	+0.2	...	...	...	...
16	75.3	52.6	66.3	70.8	72.3	58.4	−2.2	+0.4	−0.4	−0.1	+0.2	−0.3
17	65.6	53.2	56.1	56.8	63.8	53.5	−2.4	+0.1	−0.2	+0.2	+0.8	0.0
18	69.9	47.2	59.8	66.8	68.1	62.1	−2.9	+0.1	−1.1	−0.3	+0.3	−0.5
19	67.9	54.2	60.2	62.3	66.5	59.5	−1.5	−0.2	+0.2	−0.1	+0.1	+1.4
20	69.6	49.3	58.6	67.8	64.3	59.6	−1.7	−0.2	−1.0	0.0	0.0	+0.8
21	68.5	49.2	66.8	67.4	66.3	55.7	−2.2	+1.0	+0.3	−0.8	+0.5	−0.3
22	66.6	50.2	...	...	...	...	−2.7	0.0	...	...	...	...
23	67.6	56.8	64.6	62.8	66.8	62.7	−0.1	+0.1	+0.7	+0.8	+0.5	+0.3
24	75.6	57.3	61.8	70.0	72.2	65.3	−0.4	+0.7	+0.4	0.0	+0.9	+1.5
25	79.1	53.6	64.2	73.2	77.1	63.8	−1.1	+0.5	−0.4	−1.4	+1.8	+0.4
26	67.8	57.8	60.5	61.7	61.1	60.0	+0.7	0.0	+1.0	−0.1	+0.2	+0.3
27	67.7	48.6	60.7	62.6	66.7	56.8	−2.8	−0.6	−2.7	+0.7	−1.4	+1.0
28	67.3	48.2	61.0	64.9	61.5	52.0	−2.7	+0.1	−2.7	−0.2	−0.4	−0.4
29	67.9	47.3	...	...	...	...	+0.7	−0.8	...	...	...	...
30	64.6	49.1	53.6	56.3	63.8	54.4	−1.5	−0.5	0.0	+0.2	−0.9	0.0
Means	67.6	50.2	60.3	63.3	64.9	57.1	−1.6	+0.1	−0.2	0.0	0.0	+0.3

READINGS of DRY-BULB THERMOMETERS in a STEVENSON'S SCREEN and on the ROOF of the MAGNET HOUSE—*continued.*

JULY.

Days of the Month.	Readings of Thermometers in Stevenson's Screen, 4 feet above the ground.						Excess above readings of Thermometers on ordinary stand, 4 feet above the ground.					
	Maximum.	Minimum.	9h	Noon	15h	21h	Maximum.	Minimum.	9h	Noon	15h	21h
d	°	°	°	°	°	°	°	°	°	°	°	°
1	63·1	47·9	55·7	62·0	60·4	54·6	−2·0	+0·6	+0·2	−0·3	+0·1	+0·3
2	68·8	51·7	58·9	65·8	68·0	56·3	−2·3	+0·8	+0·2	0·0	−0·1	+0·3
3	66·0	52·8	62·8	58·4	63·0	55·5	−3·3	+0·1	0·0	−0·8	−0·1	+0·5
4	66·4	45·8	63·3	64·5	60·7	51·8	−4·5	+0·3	+0·3	−1·3	−0·4	0·0
5	55·4	49·1	49·9	51·0	53·6	51·5	−1·3	0·0	−0·1	−0·4	−0·2	+0·1
6	58·1	48·2	...	...	...	...	−2·2	+0·2	...	...	...	...
7	65·0	47·3	59·9	58·9	62·0	52·8	−1·8	+0·3	0·0	+0·7	+0·2	0·0
8	69·8	52·0	58·9	66·4	66·9	58·7	−2·3	+0·2	−0·1	+0·2	−0·4	+0·6
9	62·2	54·3	59·6	58·9	60·4	55·9	−1·8	+0·7	+0·1	+0·4	−0·3	0·0
10	66·7	48·7	60·3	63·9	65·9	57·1	−2·4	+0·4	−0·4	−0·6	+0·6	0·0
11	58·5	48·5	58·0	53·6	54·9	51·8	−1·3	+0·1	+0·2	+0·2	−0·3	0·0
12	62·1	41·9	59·4	56·6	60·0	54·4	−2·5	0·0	−0·3	+0·4	+0·3	−0·1
13	69·0	53·5	...	...	...	...	−3·1	+0·4	...	...	...	...
14	68·0	58·5	62·4	66·6	67·7	60·3	−2·6	+0·2	+0·5	+0·2	−1·0	+0·2
15	74·0	58·6	64·9	72·2	73·6	63·9	−2·6	+0·5	+0·1	−0·9	0·0	+0·2
16	72·9	50·3	63·9	70·3	72·9	62·9	−1·5	+0·6	−0·2	+0·4	+0·3	0·0
17	72·4	56·7	64·1	71·8	65·9	59·7	−1·8	+0·5	−0·4	+0·5	+0·1	−0·4
18	69·1	55·4	57·5	62·6	66·5	55·6	−1·9	−0·1	−0·1	+0·1	+0·4	−0·1
19	64·5	53·4	56·6	63·9	59·8	53·4	−1·6	+1·0	−0·1	−0·3	+0·1	+0·3
20	66·2	47·7	...	...	...	...	−1·9	+0·6	...	...	...	...
21	71·0	49·2	61·5	65·9	67·3	61·3	−2·1	+0·6	−0·2	+0·1	+0·4	0·0
22	73·9	59·6	66·3	72·2	70·1	62·6	−2·3	+0·2	+0·3	−0·5	+0·1	+0·6
23	75·1	53·5	61·0	72·3	71·4	65·8	−3·0	+0·5	0·0	−0·2	−0·4	+0·8
24	73·2	58·0	64·4	71·0	70·9	60·5	−2·2	+0·4	+0·1	−0·6	0·0	+0·2
25	68·4	52·5	62·9	63·2	66·7	59·7	−2·1	+0·9	−0·7	+0·3	−0·4	−0·1
26	72·8	56·4	60·9	68·5	66·9	60·0	−2·8	+0·2	−0·2	−0·2	+0·1	+0·1
27	71·7	54·5	...	...	...	...	−3·8	+0·5	...	...	...	...
28	72·0	56·6	65·7	68·9	71·1	57·4	−3·1	+0·7	+0·5	−0·8	−0·1	+0·5
29	73·5	48·4	66·0	71·6	69·7	57·7	−3·6	+0·3	−0·3	−0·3	+0·2	−0·4
30	67·4	54·1	62·4	65·5	66·8	61·8	−2·6	+0·4	0·0	−0·2	0·0	+0·1
31	70·2	60·7	67·5	68·4	68·6	61·6	−3·3	+0·4	+0·3	−0·2	+0·2	+0·2
Means	68·0	52·4	61·3	65·0	65·6	57·9	−2·4	+0·4	0·0	−0·2	0·0	+0·1

Days of the Month.	Readings of Thermometers on the Roof of the Magnet House, 20 feet above the ground.						Excess above readings of Thermometers on ordinary stand, 4 feet above the ground.					
	Maximum.	Minimum.	9h	Noon	15h	21h	Maximum.	Minimum.	9h	Noon	15h	21h
d	°	°	°	°	°	°	°	°	°	°	°	°
1	64·5	46·4	56·0	62·5	60·4	55·2	−0·6	−0·9	+0·5	+0·2	+0·1	+0·9
2	70·4	50·9	59·0	65·9	69·1	56·8	−0·7	0·0	+0·3	+0·1	+1·0	+0·8
3	66·1	52·6	61·9	59·6	62·7	56·0	−3·2	−0·1	−0·9	+0·4	−0·4	+1·0
4	67·7	45·0	63·0	65·6	60·8	51·9	−3·2	−0·5	0·0	−0·2	−0·3	+0·1
5	55·9	47·8	48·8	50·7	51·8	52·4	−0·8	−1·3	−1·2	−0·7	−2·0	+1·0
6	58·6	47·3	...	...	...	...	−1·7	−0·7	...	...	...	...
7	64·7	46·7	59·8	58·6	61·6	53·0	−2·1	−0·3	−0·1	+0·4	−0·2	+0·2
8	70·6	52·1	59·9	66·0	67·2	59·6	−1·5	+0·3	+0·9	−0·2	−0·1	+1·5
9	62·9	53·7	59·5	58·4	60·9	55·8	−1·1	+0·1	0·0	−0·1	+0·2	−0·1
10	67·6	48·5	59·4	64·6	65·8	57·8	−1·5	+0·2	−1·3	+0·1	+0·5	+0·7
11	58·2	48·1	56·6	52·0	54·1	51·8	−1·6	−0·3	−1·2	−1·4	−1·1	0·0
12	63·3	41·3	59·1	56·7	60·1	54·8	−1·3	−0·6	−0·6	+0·5	+0·4	+0·3
13	70·2	53·2	...	...	..	...	−1·9	+0·1	...	...	...	...
14	68·6	58·3	62·8	66·5	68·4	60·7	−2·0	0·0	+0·9	+0·1	−0·3	+0·6
15	75·0	58·3	65·5	71·7	73·8	64·7	−1·6	+0·2	+0·7	−1·4	+0·2	+1·0
16	72·6	49·5	64·2	69·6	71·6	64·0	−1·8	−0·2	+0·1	−0·3	−1·0	+1·1
17	73·6	56·4	64·8	71·8	65·8	59·6	−0·6	+0·2	+0·3	+0·5	0·0	−0·5
18	70·7	55·1	57·9	63·1	67·0	55·6	−0·3	−0·4	+0·3	+0·6	+0·9	−0·1
19	64·0	52·5	56·7	63·8	59·7	53·3	−2·1	+0·1	0·0	−0·4	0·0	+0·2
20	66·4	47·1	...	...	..	...	−1·7	0·0	...	...	...	...
21	71·6	48·5	62·4	65·5	68·4	61·7	−1·5	−0·1	+0·7	−0·3	+1·5	+0·4
22	73·6	59·4	66·7	71·0	70·5	63·0	−2·6	0·0	+0·7	−1·7	+0·5	+1·0
23	75·9	52·9	61·1	71·2	71·7	66·5	−2·2	−0·1	+0·1	−1·3	−0·1	+1·5
24	74·0	57·5	64·7	71·9	71·1	60·5	−1·4	−0·1	+0·4	+0·3	+0·2	+0·2
25	69·6	52·1	62·3	63·8	67·6	59·8	−0·9	+0·5	−1·3	+0·9	+0·5	0·0
26	72·6	56·4	61·5	67·9	66·3	60·3	−3·0	+0·2	+0·4	−0·8	−0·5	+0·4
27	72·6	54·1	...	...	...	...	−2·9	+0·1	...	...	...	.
28	73·4	56·1	64·6	69·3	70·8	57·5	−1·7	+0·2	−0·6	−0·4	−0·4	+0·6
29	73·3	47·7	64·5	70·4	69·9	57·9	−3·8	−0·4	−1·8	−1·5	+0·4	−0·2
30	68·3	53·9	62·7	65·5	67·1	61·8	−1·7	+0·2	+0·3	−0·2	+0·3	+0·1
31	71·3	60·5	67·9	68·8	68·8	61·8	−2·2	+0·2	+0·7	+0·2	+0·4	+0·4
Means	68·6	51·9	61·2	64·9	65·7	58·3	−1·8	−0·1	−0·1	−0·2	0·0	+0·5

READINGS OF DRY-BULB THERMOMETERS in a STEVENSON'S SCREEN and on the ROOF of the MAGNET HOUSE—*continued.*

AUGUST.

Days of the Month.	Readings of Thermometers in Stevenson's Screen, 4 feet above the ground. Maximum.	Minimum.	9h	Noon.	15h	21h	Excess above readings of Thermometers on ordinary stand, 4 feet above the ground. Maximum.	Minimum.	9h	Noon.	15h	21h
d	°	°	°	°	°	°	°	°	°	°	°	°
1	78.3	61.0	71.4	76.3	76.3	62.1	−3.4	+0.6	−0.9	0.0	−0.1	−0.3
2	66.2	51.8	63.5	63.6	64.5	57.1	−1.9	+0.4	−0.2	+0.4	−0.2	+0.1
3	70.3	53.2	...	...	...	...	−1.9	+0.9	...	...	...	...
4	75.0	55.0	66.1	68.3	74.6	62.7	−1.1	+0.3	−0.2	+0.4	+0.8	+0.7
5	81.0	53.5	71.5	78.2	79.9	65.3	−1.8	+0.7	+0.6	−1.3	−0.2	0.0
6	75.7	55.2	67.9	69.4	74.6	62.9	−1.4	+0.8	+1.5	+0.1	+0.4	+0.1
7	71.2	56.8	61.3	65.4	70.9	57.8	−1.7	+1.0	+0.1	−0.3	+0.6	+0.1
8	64.6	48.7	60.1	62.9	64.5	58.1	−1.8	+0.6	+0.2	−0.5	0.0	−0.1
9	67.5	56.4	58.8	63.5	65.8	60.9	−1.3	+0.3	+0.3	+0.1	0.0	−0.3
10	73.2	58.2	...	...	...	...	−1.8	+0.8	...	...	...	...
11	72.7	58.2	63.7	66.2	72.6	61.5	−3.8	+0.2	+0.5	−0.1	+1.4	0.0
12	68.1	59.2	63.6	65.0	66.2	59.2	−1.9	+1.1	+0.1	+0.1	+0.4	+0.4
13	69.5	52.9	60.9	64.5	69.2	57.3	−2.6	+0.5	−0.3	−0.9	−0.6	+0.4
14	70.0	52.5	60.6	64.9	64.6	58.5	−2.7	+0.7	+0.1	−0.6	0.0	−0.1
15	73.3	56.2	62.8	70.9	65.1	57.6	−1.8	+0.3	−0.5	+0.9	+0.1	+0.1
16	68.1	55.3	55.8	67.0	66.5	56.8	−2.8	+0.7	+0.3	−0.7	+0.1	+0.5
17	72.9	49.7	...	...	...	...	−3.0	+0.6	...	...	...	...
18	73.1	49.4	62.5	70.8	71.2	56.4	−1.5	−2.7	+0.5	0.0	+1.0	+0.1
19	57.4	53.9	56.2	57.4	55.9	55.8	−1.6	+1.1	0.0	0.0	−0.3	+0.1
20	67.6	55.5	59.6	64.2	66.1	56.0	−1.8	+0.6	−0.6	−0.5	−0.1	+1.0
21	64.6	54.0	62.9	63.5	63.4	59.7	−1.5	+0.5	+0.4	−0.1	+0.5	−0.1
22	67.2	52.5	60.9	63.9	63.4	56.5	−2.4	+0.7	−0.4	−0.5	+0.2	+0.2
23	67.2	55.4	62.5	60.6	64.9	55.4	−1.4	+0.6	−0.1	+0.5	−0.6	+0.6
24	66.3	44.6	...	...	...	...	−1.9	+0.4	...	...	...	...
25	65.8	42.3	56.6	61.4	65.1	54.5	−2.5	+0.1	−0.2	+0.6	+1.5	+0.2
26	63.1	48.1	58.1	60.9	57.2	52.7	−1.5	+0.3	−0.1	0.0	+0.9	+0.1
27	66.5	50.4	57.7	61.4	66.3	51.2	−1.9	+0.3	+0.6	+0.5	+0.9	0.0
28	66.0	49.1	57.9	63.3	65.1	55.5	−1.2	+0.3	−0.3	+0.4	+0.2	−0.2
29	63.7	50.9	57.5	60.8	60.7	51.1	−1.9	+0.6	+0.7	−0.4	+1.0	+0.3
30	61.0	41.8	55.3	57.1	57.9	48.6	−2.2	+0.6	+0.5	0.0	+0.1	+0.1
31	62.1	39.3	...	...	...	...	−1.2	+0.2	...	...	...	...
Means	68.7	52.3	61.4	65.1	66.6	57.4	−2.0	+0.5	+0.1	−0.1	+0.3	+0.2

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 of Thermometers on ordinary stand, 4 feet above the ground. Maximum.	Minimum.	9h	Noon.	15h	21h
d	°	°	°	°	°	°	°	°	°	°	°	°
1	78.9	60.6	68.8	75.5	75.5	62.2	−2.8	+0.2	−3.5	−0.8	−0.9	−0.2
2	67.1	49.9	64.2	63.3	64.5	57.0	−1.0	−1.5	+0.5	+0.1	−0.2	0.0
3	72.5	52.2	...	...	...	...	+0.3	−0.1	...	...	...	...
4	75.6	54.7	66.8	68.7	74.4	63.8	−0.5	0.0	+0.5	+0.8	+0.6	+1.8
5	82.2	53.1	71.2	77.8	80.5	65.6	−0.6	+0.3	+0.3	−1.7	+0.4	+0.3
6	75.6	54.7	67.0	69.3	73.8	63.0	−1.5	+0.3	+0.6	0.0	−0.4	+0.2
7	70.8	56.2	60.8	65.6	69.8	57.4	−2.1	+0.4	−0.4	−0.1	−0.5	−0.3
8	64.5	48.5	59.8	62.9	63.8	58.1	−1.9	+0.4	−0.1	−0.5	−0.7	−0.1
9	67.6	56.3	58.2	63.2	65.8	61.5	−1.2	+0.2	−0.3	−0.2	0.0	+0.3
10	74.5	57.9	...	...	...	...	−0.5	+0.5	...	...	...	...
11	73.9	58.3	63.9	66.5	72.4	61.5	−2.6	+0.3	+0.7	+0.2	+1.2	0.0
12	69.2	59.7	64.0	65.4	66.6	59.7	−0.8	+1.6	+0.5	+0.5	+0.8	+0.9
13	70.5	51.2	60.5	64.3	69.8	57.0	−1.6	−1.2	−0.7	−1.1	0.0	+0.1
14	69.6	51.7	60.5	65.3	64.8	58.7	−3.1	−0.1	0.0	−0.2	+0.2	+0.1
15	72.1	56.1	62.4	69.8	65.5	57.6	−3.0	+0.2	−0.9	−0.2	+0.5	+0.1
16	67.6	54.4	56.0	66.5	66.3	56.8	−3.3	−0.2	+0.5	−1.2	−0.1	+0.5
17	72.8	49.7	...	...	...	...	−3.1	+0.6	...	...	...	...
18	71.7	52.2	63.2	68.4	71.0	57.1	−2.9	+0.1	+1.2	−2.4	+0.8	+0.8
19	57.7	53.9	55.5	57.3	55.6	55.8	−1.3	+1.1	−0.7	−0.1	−0.6	+0.1
20	67.9	55.3	60.2	64.1	66.7	56.3	−1.5	+0.4	0.0	−0.6	+0.5	+1.3
21	65.6	53.9	63.0	64.3	63.5	59.8	−0.5	+0.4	+0.5	+0.7	+0.6	0.0
22	68.1	51.5	60.9	63.4	64.0	56.5	−1.5	−0.3	−0.4	−1.0	+0.8	+0.2
23	67.5	55.5	62.8	59.6	65.1	56.0	−1.1	+0.7	+0.2	−0.5	−0.4	+1.2
24	64.9	43.4	...	...	...	...	−3.3	−0.8	...	...	...	...
25	66.7	41.2	55.8	61.8	64.8	54.7	−1.6	−1.0	−1.0	+1.0	+1.2	+0.4
26	63.1	47.4	58.5	60.8	57.0	52.8	−1.5	−0.4	+0.3	−0.1	+0.7	+0.2
27	66.7	50.0	57.6	61.0	65.9	51.1	−1.7	−0.1	+0.5	+0.1	+0.5	−0.1
28	65.8	48.4	57.6	62.8	64.3	55.7	−1.4	−0.4	−0.6	−0.1	−0.6	0.0
29	62.8	50.4	56.9	59.8	60.4	51.3	−2.8	+0.1	+0.1	−1.4	+0.7	+0.5
30	61.6	41.1	53.5	56.8	58.8	49.8	−1.6	−0.1	−1.3	−0.3	+1.0	+1.3
31	61.8	38.9	...	...	...	...	−1.5	−0.2	...	...	...	...
Means	68.9	51.9	61.1	64.8	66.6	57.6	−1.7	0.0	−0.1	−0.3	+0.2	+0.4

READINGS of DRY-BULB THERMOMETERS in a STEVENSON'S SCREEN and on the ROOF of the MAGNET HOUSE—*continued.*

SEPTEMBER.

Days of the Month.	Readings of Thermometers in Stevenson's Screen, 4 feet above the ground.						Excess above readings of Thermometers on ordinary stand, 4 feet above the ground.					
	Maximum.	Minimum.	9h	Noon	15h	21h	Maximum.	Minimum.	9h	Noon	15h	21h
d	°	°	°	°	°	°	°	°	°	°	°	°
1	67.5	37.2	58.0	63.5	66.9	54.8	−2.3	+0.1	+0.4	+0.8	+1.0	+0.1
2	68.0	49.7	60.6	64.6	63.9	57.2	−3.1	+0.7	+0.1	−0.4	+0.2	+0.1
3	69.4	52.6	58.9	67.2	65.3	61.8	−3.3	+0.6	0.0	+0.4	−0.5	+0.2
4	68.0	55.1	58.9	63.1	65.9	62.3	−1.1	+0.4	0.0	0.0	+0.3	−1.4
5	75.8	54.0	62.5	72.6	73.2	63.4	−1.9	+0.7	+0.3	+1.5	+0.8	+0.3
6	72.5	54.6	59.6	69.4	70.6	59.4	−0.6	+0.8	−0.6	+0.1	−0.1	−0.3
7	71.5	52.9	...	...	...	...	−1.2	+1.5	...	...	...	...
8	74.3	50.6	61.5	72.3	73.9	56.8	−0.6	+3.9	−0.5	+1.0	+0.9	−0.6
9	73.0	48.6	55.1	66.5	72.9	59.1	−0.4	+0.7	−0.1	+0.8	+0.9	+1.0
10	76.1	49.1	59.2	75.6	75.9	61.7	−1.4	+0.7	+0.2	+0.8	+1.1	+0.2
11	71.6	49.9	61.8	68.9	71.3	59.9	−0.9	+0.7	+0.3	−0.2	+0.5	+0.6
12	68.5	48.6	60.2	68.5	65.9	55.7	−1.3	+1.1	+1.4	+1.7	+0.1	+0.8
13	69.4	47.5	57.4	67.9	65.7	53.8	−2.2	+0.6	−0.6	+0.2	−0.1	−0.1
14	70.3	46.7	...	...	...	...	0.0	+0.4	...	...	...	...
15	72.8	49.3	64.1	71.9	72.0	57.8	−0.3	+0.5	+0.8	+0.7	+0.6	+0.1
16	74.9	50.2	69.4	73.3	72.3	57.2	−0.6	+0.8	+2.1	+0.1	−0.1	+0.3
17	72.0	52.2	62.6	71.4	68.6	58.7	−1.5	+1.0	+0.3	+0.1	−0.2	−0.2
18	69.0	55.9	64.6	68.1	66.4	56.2	−1.5	+0.2	+0.9	+0.4	−0.6	−0.2
19	68.7	52.4	62.5	66.0	63.5	54.8	−2.4	+0.4	+0.3	+0.5	−0.1	+0.1
20	67.1	54.8	61.4	64.7	64.0	55.9	−0.8	+0.1	+0.1	+0.5	−0.2	+0.2
21	67.1	51.6	...	...	...	...	−1.4	+0.7	...	...	...	...
22	65.3	53.1	62.5	62.4	62.4	54.2	−1.8	+0.3	+0.8	+0.6	−0.3	+0.3
23	67.9	50.8	63.9	62.7	61.5	52.1	−2.1	+0.7	+1.5	−0.1	−0.3	+0.2
24	67.1	49.4	60.2	66.2	61.9	54.5	−1.9	+0.3	−0.1	+0.6	−0.1	−0.7
25	64.4	51.9	61.6	63.1	62.5	52.2	−1.6	+1.2	−0.4	+0.2	−0.5	−0.2
26	67.4	49.6	58.9	65.4	66.4	59.9	−2.0	+1.0	+0.1	+0.2	0.0	+0.3
27	73.1	59.2	61.6	68.6	72.0	59.9	−1.0	+3.4	−0.2	+0.2	−0.8	+0.1
28	69.8	55.8	...	...	...	...	−3.2	+0.4	...	...	...	...
29	61.9	52.3	61.8	59.9	60.9	58.0	−1.4	+0.6	+1.0	+0.1	+0.1	0.0
30	67.2	55.0	58.7	66.5	64.6	56.5	−1.7	+0.4	+0.2	+0.2	+0.1	−0.1
Means	69.7	51.4	61.1	67.3	67.3	57.5	−1.5	+0.8	+0.3	+0.4	+0.1	0.0

Days of the Month.	Readings of Thermometers on the Roof of the Magnet House, 20 feet above the ground.						Excess above readings of Thermometers on ordinary stand, 4 feet above the ground.					
	Maximum.	Minimum.	9h	Noon	15h	21h	Maximum.	Minimum.	9h	Noon	15h	21h
d	°	°	°	°	°	°	°	°	°	°	°	°
1	67.5	36.9	57.6	62.3	65.9	55.0	−2.3	−0.2	0.0	−0.4	0.0	+0.3
2	67.9	49.4	60.0	64.8	64.2	57.3	−3.2	+0.4	−0.5	−0.2	+0.5	+0.2
3	70.5	52.2	59.9	65.8	66.1	62.0	−2.2	+0.2	+1.0	−1.0	+0.3	+0.4
4	69.3	54.4	59.3	62.8	66.6	62.6	+0.2	−0.3	+0.4	−0.3	+1.0	−1.1
5	76.9	53.3	62.1	72.8	72.8	64.7	−0.8	0.0	−0.1	+1.7	+0.4	+1.6
6	72.2	54.2	61.5	69.6	70.9	59.8	−0.9	+0.4	+1.3	+0.3	+0.2	+0.1
7	70.5	52.5	...	...	...	...	−2.2	+1.1	...	...	...	...
8	73.8	46.1	61.4	71.8	72.8	57.4	−1.1	−0.6	−0.6	+0.5	−0.2	0.0
9	74.3	48.5	55.1	65.3	72.8	59.5	+0.9	+0.6	−0.1	−0.4	+0.8	+1.4
10	76.7	49.2	60.5	74.6	75.9	62.0	−0.8	+0.8	+1.5	−0.2	+1.1	+0.5
11	71.6	49.6	61.0	69.4	70.8	59.8	−0.9	+0.4	−0.5	+0.3	0.0	+0.5
12	68.3	48.3	59.8	66.7	65.9	56.0	−1.5	+0.8	+1.0	−0.1	+0.1	+1.1
13	69.6	47.2	56.6	68.5	66.1	53.9	−2.0	+0.3	−1.4	+0.8	+0.3	0.0
14	68.8	46.4	...	...	...	...	−1.5	+0.1	...	...	...	...
15	71.6	49.2	60.3	70.4	71.5	57.8	−1.5	+0.4	−3.0	−0.8	+0.1	+0.1
16	74.1	50.7	67.9	71.8	71.9	57.6	−1.4	+1.3	+0.6	−1.4	−0.5	+0.7
17	72.2	51.7	63.0	70.8	69.3	59.2	−1.3	+0.5	+0.7	−0.5	+0.5	+0.3
18	68.1	56.2	64.5	65.8	66.2	56.2	−2.4	+0.5	+0.8	−1.9	−0.8	−0.2
19	67.9	51.2	62.3	65.5	63.6	54.7	−3.2	−0.8	+0.1	0.0	0.0	0.0
20	66.6	54.5	61.8	63.0	64.2	56.4	−1.3	−0.2	+0.5	−1.2	0.0	+0.7
21	67.3	51.4	...	...	...	...	−1.2	+0.5	...	...	...	...
22	64.8	53.2	61.9	62.4	62.4	54.5	−2.3	+0.4	+0.2	+0.6	−0.3	+0.6
23	67.6	50.2	62.0	62.4	61.8	51.8	−2.4	+0.1	−0.4	−0.4	0.0	−0.1
24	66.2	49.2	59.0	66.0	62.1	55.0	−2.8	+0.1	−1.3	+0.4	+0.1	−0.2
25	64.7	51.7	61.2	63.2	62.5	52.8	−1.3	+1.0	−0.8	+0.3	−0.5	+0.4
26	68.8	49.1	59.1	65.7	67.0	60.1	−0.6	+0.5	+0.3	+0.5	+0.6	+0.5
27	74.4	56.0	62.0	69.0	73.8	60.5	+0.3	+0.2	+0.2	+0.6	+1.0	+0.7
28	71.8	55.2	...	...	...	...	−1.2	−0.2	...	...	...	...
29	62.4	52.1	60.6	60.0	61.1	58.3	−0.9	+0.4	−0.2	+0.2	+0.3	+0.3
30	67.4	54.6	59.1	64.8	64.4	56.8	−1.5	0.0	+0.6	−1.5	−0.1	+0.2
Means	69.8	50.8	60.7	66.7	67.4	57.8	−1.4	+0.3	0.0	−0.2	+0.2	+0.3

READINGS of DRY-BULB THERMOMETERS in a STEVENSON'S SCREEN and on the ROOF of the MAGNET HOUSE—*continued.*

OCTOBER.

Days of the Month.	Readings of Thermometers in Stevenson's Screen, 4 feet above the ground.						Excess above readings of Thermometers on ordinary stand, 4 feet above the ground.					
	Maximum.	Minimum.	9ʰ	Noon.	15ʰ	21ʰ	Maximum.	Minimum.	9ʰ	Noon.	15ʰ	21ʰ
d	°	°	°	°	°	°	°	°	°	°	°	°
1	63.1	49.4	59.8	59.7	62.2	50.0	−2.1	+0.3	0.0	+0.1	−0.2	+0.1
2	58.7	42.8	50.5	58.1	58.1	46.6	−0.4	+0.5	+0.3	+1.5	+0.3	+0.2
3	66.0	44.4	55.9	63.9	64.7	52.8	−0.2	+0.4	0.0	+0.1	−0.2	−0.1
4	67.5	49.4	58.1	65.0	66.3	59.3	−0.7	+0.3	0.0	0.0	+0.1	−0.2
5	63.0	51.0	...	...	...	...	−2.7	+0.5	...	...	...	...
6	67.1	53.6	62.6	64.1	63.8	57.7	−1.5	+0.4	+1.7	+0.1	+0.1	0.0
7	61.1	56.1	58.0	58.9	58.7	59.1	−1.1	+0.4	+0.2	+0.1	−0.1	+0.1
8	62.0	45.5	54.9	62.0	59.4	48.4	−0.1	+0.5	+1.1	+1.0	+0.2	−0.8
9	62.0	36.6	46.8	60.2	58.4	44.9	+1.0	0.0	−0.4	+0.8	−0.1	+0.5
10	62.2	37.8	49.9	61.3	61.4	48.9	−0.3	−0.1	+1.1	+1.5	+0.2	+0.6
11	66.9	42.9	52.9	65.9	64.7	50.9	+0.6	+0.8	+0.1	+2.1	−0.3	+0.2
12	67.1	39.2	...	...	...	...	+2.2	+0.8	...	...	...	...
13	56.5	34.6	41.4	51.0	56.5	45.1	−0.1	+0.1	−0.5	+0.4	+0.2	−0.4
14	55.0	33.8	39.4	46.8	53.4	47.8	+0.3	−0.1	−0.1	−0.3	0.0	−0.3
15	55.7	45.9	55.0	53.9	52.9	47.9	−1.0	+0.9	+0.3	+1.0	−0.6	+0.1
16	53.9	40.5	48.1	52.2	52.5	46.4	−1.2	+0.1	+0.3	+0.1	−0.3	−0.2
17	54.0	43.4	47.8	51.9	52.8	47.0	−0.2	+0.5	0.0	0.0	+0.2	+0.4
18	52.4	45.1	51.1	51.7	51.3	46.1	−1.0	+0.9	−0.2	+0.1	0.0	−0.1
19	49.3	44.9	...	...	...	...	−1.7	+0.6	...	...	...	...
20	52.1	45.3	47.4	49.9	50.3	46.8	−1.4	+0.1	0.0	−0.1	0.0	−0.8
21	54.0	43.4	45.9	51.9	52.9	45.8	−0.5	+0.2	−0.4	+1.1	+0.3	+0.5
22	54.8	37.7	47.2	54.8	51.8	41.4	+1.2	+0.5	+2.2	+2.2	+0.3	+0.2
23	53.8	41.3	48.7	52.6	53.8	51.9	−0.3	+0.4	−0.1	0.0	+0.1	+0.1
24	57.1	48.8	51.2	57.0	55.2	52.1	−1.5	+0.3	0.0	−0.4	−0.2	−0.2
25	55.3	43.5	54.9	50.6	48.4	43.6	−0.3	+0.6	+0.1	−0.2	0.0	−0.3
26	44.3	34.8	...	...	...	...	−0.1	−0.3	...	...	...	...
27	42.0	34.0	36.8	41.0	41.3	34.5	−0.1	+1.3	+0.3	+0.7	+0.4	+0.7
28	39.0	24.3	27.8	34.8	38.9	33.0	−0.5	−0.4	−0.2	+0.9	+0.1	+0.9
29	56.3	32.5	49.4	53.9	55.6	53.0	−1.4	+0.6	−0.2	−0.3	+0.2	+0.2
30	56.8	46.6	53.0	55.9	56.0	46.8	−1.1	+0.5	−0.1	+0.1	+0.3	0.0
31	56.1	43.7	52.9	52.9	55.9	52.9	−1.1	+0.4	−0.2	−0.1	−0.1	+0.1
Means	56.9	42.3	49.9	54.9	55.5	48.2	−0.6	+0.4	+0.2	+0.5	0.0	+0.1

Days of the Month.	Readings of Thermometers on the Roof of the Magnet House, 20 feet above the ground.						Excess above readings of Thermometers on ordinary stand, 4 feet above the ground.					
	Maximum.	Minimum.	9ʰ	Noon.	15ʰ	21ʰ	Maximum.	Minimum.	9ʰ	Noon.	15ʰ	21ʰ
d	°	°	°	°	°	°	°	°	°	°	°	°
1	64.6	49.2	60.0	59.8	62.5	50.2	−0.6	+0.1	+0.2	+0.2	+0.1	+0.3
2	59.7	42.1	49.4	56.1	59.5	47.8	+0.6	−0.2	−0.8	−0.5	+1.7	+1.4
3	66.3	44.0	54.6	62.5	65.8	53.1	+0.1	0.0	−1.3	−1.3	+0.9	+0.2
4	68.2	49.2	58.6	64.6	67.4	59.6	0.0	+0.1	+0.5	−0.4	+1.2	+0.1
5	64.9	50.5	...	...	...	...	−0.8	0.0	...	...	...	...
6	66.7	53.2	61.3	64.3	63.9	57.6	−1.9	0.0	+0.4	+0.3	+0.2	−0.1
7	61.6	56.2	57.8	58.6	58.4	59.1	−0.6	+0.5	0.0	−0.2	−0.4	+0.1
8	61.4	45.3	52.8	59.8	58.7	49.4	−0.7	+0.3	−1.0	−1.2	−0.5	+0.2
9	61.2	36.5	44.2	57.8	59.8	45.1	+0.2	−0.1	−3.0	−1.6	+1.3	+0.7
10	63.6	39.1	49.8	60.2	61.3	49.8	+1.1	+1.2	+1.0	+0.4	+0.1	+1.5
11	67.3	43.2	52.8	63.5	67.3	51.4	+1.0	+1.1	0.0	−0.3	+2.3	+0.7
12	67.8	39.1	...	...	...	...	+2.9	+0.7	...	...	...	...
13	58.6	34.9	41.4	51.2	58.5	45.4	+2.0	+0.4	−0.5	+0.6	+2.2	−0.1
14	58.4	33.3	39.6	46.8	53.3	50.1	+3.7	−0.6	+0.1	−0.3	−0.1	+2.0
15	55.8	46.3	55.3	54.5	54.2	48.0	−0.9	+1.3	+0.6	+1.6	+0.7	+0.2
16	54.6	40.3	47.6	52.2	53.0	46.8	−0.5	−0.1	−0.2	+0.1	+0.2	+0.2
17	53.6	43.1	48.0	51.9	52.9	47.5	−0.6	+0.2	+0.2	0.0	+0.3	+0.9
18	52.7	44.8	51.3	51.8	51.5	46.0	−0.7	+0.6	0.0	+0.2	+0.2	−0.2
19	49.8	44.1	...	...	...	...	−1.2	−0.2	...	...	...	...
20	52.5	45.2	47.4	49.8	50.5	46.9	−1.0	0.0	0.0	−0.2	+0.2	−0.7
21	53.3	43.1	46.1	50.6	52.4	46.7	−1.2	−0.1	−0.2	−0.2	−0.2	+1.4
22	53.6	37.5	46.2	51.9	53.1	42.4	0.0	+0.3	+1.2	−0.7	+1.6	+1.2
23	53.7	42.1	48.9	52.8	53.6	52.3	−0.4	+1.2	+0.1	+0.2	−0.1	+0.5
24	57.5	49.2	51.5	56.9	55.8	52.8	−1.1	+0.7	+0.3	−0.5	+0.4	+0.5
25	55.3	43.0	55.2	50.6	48.4	43.8	−0.3	+0.1	+0.4	−0.2	0.0	−0.1
26	44.8	33.8	...	...	...	...	+0.4	−1.3	...	...	...	...
27	42.2	34.1	36.8	40.1	40.9	35.8	+0.1	+1.4	+0.3	−0.2	0.0	+2.0
28	39.6	24.9	28.4	34.2	39.6	35.3	+0.1	+0.2	+0.4	+0.3	+0.8	+3.2
29	57.2	34.1	49.8	54.1	55.9	53.4	−0.5	+2.2	+0.2	−0.1	+0.5	+0.6
30	57.2	47.3	53.7	55.9	56.1	47.3	−0.7	+1.2	+0.6	+0.1	+0.4	+0.5
31	56.6	44.2	53.8	52.8	55.9	53.3	−0.6	+0.9	+0.7	−0.2	−0.1	+0.5
Means	57.4	42.4	49.7	54.3	55.9	48.8	−0.1	+0.4	0.0	−0.2	+0.5	+0.7

READINGS of DRY-BULB THERMOMETERS in a STEVENSON'S SCREEN and on the ROOF of the MAGNET HOUSE—*continued.*

NOVEMBER.

Days of the Month.	Readings of Thermometers in Stevenson's Screen, 4 feet above the ground. Maximum.	Minimum.	9^{h}	Noon	15^{h}	21^{h}	Excess above readings of Thermometers on ordinary stand, 4 feet above the ground. Maximum.	Minimum.	9^{h}	Noon	15^{h}	21^{h}
d	°	°	°	°	°	°	°	°	°	°	°	°
1	53·5	43·1	49·8	52·4	53·5	44·9	−0·6	+1·2	+0·2	+0·1	+0·5	−0·1
2	55·4	40·8	...	...	...	...	−0·5	+0·7	...	...	...	...
3	50·1	38·8	41·5	46·4	46·5	48·4	+1·6	+0·3	+0·1	−0·3	0·0	0·0
4	52·8	41·3	46·4	50·2	51·4	42·3	−0·5	+0·2	+0·2	−0·1	+0·8	−0·2
5	48·7	40·3	41·4	47·9	48·4	44·4	−0·4	+0·3	−0·2	+0·8	+0·3	+0·2
6	51·1	35·9	38·3	49·9	49·2	45·8	−0·4	+0·2	0·0	+0·2	+0·7	−0·1
7	49·2	41·8	47·6	48·7	43·8	44·3	−0·4	0·0	−0·1	−0·1	0·0	0·0
8	53·1	36·8	38·9	51·0	52·4	46·8	+0·1	+0·4	+0·1	+0·3	+0·8	+0·1
9	49·7	37·7	...	...	...	...	−0·3	+1·7	...	...	...	...
10	47·8	33·5	36·8	46·9	47·1	42·2	−1·2	+0·5	−0·2	+0·6	+0·8	+0·1
11	50·6	39·5	42·7	47·7	47·9	39·8	−0·5	+0·5	−0·1	−0·1	+0·2	+0·5
12	53·1	34·8	39·7	52·1	50·3	47·2	+0·3	+0·9	0·0	+0·5	+0·8	+0·3
13	50·5	43·0	49·0	50·2	48·4	43·2	−0·5	+0·9	0·0	−0·2	−0·2	+0·2
14	55·2	35·6	39·7	51·9	51·3	55·2	+0·1	−0·4	−0·3	+0·1	+0·2	+0·1
15	56·1	47·4	49·5	51·7	49·9	47·8	−0·5	+0·2	−0·3	+0·4	+0·2	+0·1
16	54·6	46·3	...	...	...	...	−0·2	+0·4	...	...	...	...
17	54·1	40·3	42·1	47·9	53·4	45·7	+0·1	+0·3	−0·6	−0·3	+0·9	−0·1
18	54·2	45·4	51·9	53·6	54·1	52·9	−0·9	+0·2	+0·1	+0·1	0·0	+0·1
19	54·8	51·7	52·3	54·8	54·7	54·6	−0·3	+0·4	−0·3	0·0	+0·1	+0·2
20	55·0	51·7	52·2	54·5	55·0	52·0	−0·7	+0·7	0·0	+0·1	0·0	+0·2
21	53·1	47·4	49·9	51·6	52·4	47·9	−1·0	+0·4	0·0	0·0	+0·2	+0·1
22	50·0	39·8	45·0	49·7	49·9	47·5	−0·8	+0·3	+0·1	+0·1	+0·1	0·0
23	58·1	47·4	...	...	...	...	−0·1	+0·2	...	...	...	...
24	57·3	38·0	45·2	43·9	43·9	38·3	−0·6	+0·9	+0·1	+0·2	+0·1	+0·5
25	40·8	31·3	34·1	39·4	39·9	34·9	−0·5	+0·3	−0·4	−0·1	+0·1	−0·1
26	36·2	26·2	30·2	32·8	30·7	27·0	+0·9	−0·3	−0·3	0·0	−0·5	−0·1
27	29·8	22·0	29·0	29·8	27·4	23·2	−0·5	−1·0	+0·5	−0·3	−0·4	−0·2
28	25·2	18·0	21·4	23·6	20·1	21·4	−1·7	−0·3	−0·4	−0·9	−0·7	−0·4
29	32·7	20·1	28·1	30·1	31·6	32·3	−0·3	−0·5	−0·4	−0·5	−0·2	−0·1
30	38·1	21·6	...	...	...	...	−0·3	−0·4	...	...	...	...
Means	49·0	37·9	41·7	46·3	46·1	42·8	−0·4	+0·3	−0·1	0·0	+0·2	+0·1

Days of the Month.	Readings of Thermometers on the Roof of the Magnet House, 20 feet above the ground. Maximum.	Minimum.	9^{h}	Noon	15^{h}	21^{h}	Excess above readings of Thermometers on ordinary stand, 4 feet above the ground. Maximum.	Minimum.	9^{h}	Noon	15^{h}	21^{h}
d	°	°	°	°	°	°	°	°	°	°	°	°
1	53·5	43·3	49·7	52·3	53·3	45·5	−0·6	+1·4	+0·1	0·0	+0·3	+0·5
2	55·6	41·2	...	...	...	...	−0·3	+1·1	...	...	...	...
3	49·8	39·0	41·2	46·8	47·6	49·8	+1·3	+0·5	−0·2	+0·1	+1·1	+1·4
4	53·5	42·1	46·7	50·4	50·5	43·9	+0·2	+1·0	+0·5	+0·1	−0·1	+1·4
5	48·9	39·3	41·3	47·0	48·6	44·4	−0·2	−0·7	−0·3	−0·1	+0·5	+0·2
6	50·8	35·9	38·1	49·5	50·0	45·8	−0·7	+0·2	−0·2	−0·2	+1·5	−0·1
7	49·9	40·5	47·8	48·9	44·0	43·5	+0·3	−1·3	+0·1	+0·1	+0·2	−0·8
8	53·4	36·1	39·4	50·0	51·8	46·8	+0·4	−0·3	+0·6	−0·7	+0·2	+0·1
9	50·0	37·1	...	...	...	...	0·0	+1·1	...	...	...	...
10	47·8	33·8	37·9	46·3	47·0	43·1	−1·2	+0·8	+0·9	0·0	+0·7	+1·0
11	50·9	40·0	42·6	47·9	48·5	40·7	−0·2	+1·0	−0·2	+0·1	+0·8	+1·4
12	53·5	36·1	43·6	51·7	51·1	48·1	+0·7	+2·2	+3·9	+0·1	+1·6	+1·2
13	51·7	42·1	49·6	50·3	48·8	42·5	+0·7	0·0	+0·6	−0·1	+0·2	−0·5
14	55·8	35·6	39·8	52·1	51·8	55·8	+0·7	−0·4	−0·2	+0·3	+0·7	+0·7
15	56·8	47·3	48·4	50·2	49·8	47·8	+0·2	+0·1	−1·4	−1·1	+0·1	+0·1
16	55·8	45·5	...	...	...	...	+1·0	−0·4	...	...	...	...
17	54·5	40·1	42·0	47·8	53·8	46·0	+0·5	+0·1	−0·7	−0·4	+1·3	+0·2
18	54·6	45·7	52·3	53·7	54·5	53·3	−0·5	+0·5	+0·5	+0·2	+0·4	+0·5
19	55·1	52·0	52·5	55·1	54·8	54·8	0·0	+0·7	−0·1	+0·3	+0·2	+0·4
20	55·1	51·5	52·1	54·4	55·1	52·0	−0·6	+0·5	−0·1	0·0	+0·1	+0·2
21	53·6	46·1	49·8	51·7	52·3	46·1	−0·5	−0·9	−0·1	+0·1	+0·1	−1·7
22	50·5	39·4	45·3	49·8	50·1	47·6	−0·3	−0·1	+0·4	+0·2	+0·3	+0·1
23	58·5	47·6	...	...	...	...	+0·3	+0·4	...	...	...	...
24	58·0	38·0	45·5	43·6	43·8	38·8	+0·1	+0·9	+0·4	−0·1	0·0	+1·0
25	40·9	31·3	34·7	38·9	39·8	34·8	−0·4	+0·3	+0·2	−0·6	0·0	−0·2
26	35·1	26·0	30·3	32·8	30·7	27·3	−0·2	−0·5	−0·2	0·0	−0·5	+0·2
27	29·8	22·5	28·2	29·6	27·5	23·3	−0·5	−0·5	−0·3	−0·5	−0·3	−0·1
28	25·6	17·7	21·7	23·8	20·7	21·8	−1·3	−0·6	−0·1	−0·7	−0·1	0·0
29	32·8	20·5	28·1	30·3	31·6	32·5	−0·2	−0·1	−0·4	−0·3	−0·2	+0·1
30	39·6	23·0	...	...	...	...	+1·2	+1·0	...	...	...	...
Means	49·4	37·9	41·9	46·2	46·3	43·0	0·0	+0·3	+0·1	−0·1	+0·4	+0·3

READINGS of DRY-BULB THERMOMETERS in a STEVENSON'S SCREEN and on the ROOF of the MAGNET HOUSE—*concluded.*

DECEMBER.

Days of the Month.	Readings of Thermometers in Stevenson's Screen, 4 feet above the ground. Maximum.	Minimum.	9h	Noon.	15h	21h	Excess above readings of Thermometers on ordinary stand, 4 feet above the ground. Maximum.	Minimum.	9h	Noon.	15h	21h
d	°	°	°	°	°	°	°	°	°	°	°	°
1	40·7	26·3	35·3	40·1	36·8	26·7	+0·6	0·0	−0·2	+1·1	0·0	−0·2
2	34·2	24·8	32·9	33·9	34·2	32·8	−0·5	−0·5	−0·5	−0·4	−0·2	−0·1
3	38·0	32·5	34·7	36·7	36·5	37·8	−0·5	−0·6	−0·1	−0·1	−0·3	−0·7
4	42·7	34·4	42·0	42·7	40·9	35·6	−0·4	−0·3	−0·1	−0·1	+0·1	0·0
5	39·8	34·4	36·7	38·6	39·7	39·0	−0·2	−0·4	−0·1	−0·1	0·0	−0·2
6	39·1	34·6	36·9	37·7	36·7	35·9	−0·5	−0·1	0·0	−0·1	−0·1	−0·1
7	38·7	32·1	...	...	...	...	−0·5	0·0	...	...	...	...
8	35·5	31·8	32·3	34·5	34·1	33·6	−0·3	−0·3	−0·1	−0·1	−0·1	−0·1
9	38·1	32·1	34·8	35·9	37·0	32·3	−0·1	0·0	0·0	−0·1	+0·2	−0·2
10	32·4	27·0	29·1	31·0	29·7	27·4	+0·3	−0·6	−0·6	+0·1	−0·1	−0·3
11	30·3	25·1	27·1	28·3	29·8	28·9	0·0	−0·4	−0·5	−0·3	−0·1	+0·1
12	31·1	22·5	22·9	24·9	29·9	29·9	0·0	−0·6	−0·2	−0·3	−0·4	−0·5
13	30·3	20·8	23·0	29·5	30·1	24·2	−0·1	−0·3	−0·8	0·0	−0·3	+0·1
14	30·1	17·2	...	...	...	...	+0·8	+0·1	...	...	...	...
15	30·0	19·4	25·2	27·4	29·5	28·3	−0·3	−0·5	−0·5	−0·5	−0·5	−0·4
16	29·0	23·0	27·6	25·8	27·3	26·0	+0·2	−0·2	−0·2	−0·2	−0·3	−0·6
17	32·1	23·9	29·7	31·1	30·9	23·9	+0·3	0·0	−0·1	0·0	−0·1	−0·5
18	31·0	23·7	29·7	30·5	29·9	28·9	−0·4	−0·4	−0·1	−0·2	−0·2	−0·1
19	29·1	25·5	26·0	28·0	27·9	27·3	−0·7	−0·6	−0·6	−0·6	−0·2	−0·3
20	31·9	16·0	21·3	26·4	29·2	31·9	−0·2	−0·7	−0·5	−0·6	0·0	+0·1
21	35·1	29·5	...	...	...	...	−1·0	+0·2	...	...	...	...
22	30·1	13·0	17·0	19·5	20·1	19·5	+0·8	−0·4	−0·7	−0·3	−0·2	−0·4
23	31·0	18·3	27·3	29·9	30·6	29·9	−0·6	−0·4	−0·4	−0·4	−0·5	−0·1
24	32·6	25·1	28·7	32·6	31·9	26·0	−0·5	−0·8	−0·4	−0·1	0·0	−0·2
25	29·6	20·6	...	...	...	...	+0·3	0·0	...	...	...	...
26	35·7	25·8	30·3	35·5	34·7	33·6	−0·5	−0·2	−0·4	+0·1	+0·1	+0·2
27	33·6	28·7	30·6	32·5	32·2	30·1	−0·1	0·0	−0·4	0·0	−0·2	−0·2
28	31·7	26·3	...	...	...	...	−0·1	−0·6	...	...	...	...
29	31·6	24·6	27·3	26·7	27·0	25·8	+0·1	−0·5	−0·4	−0·1	−0·2	−0·4
30	27·3	19·8	24·0	23·9	22·9	20·1	0·0	+0·2	−0·4	−0·3	−0·5	−0·7
31	31·6	18·5	26·7	30·4	30·9	31·3	+0·1	−0·6	−0·1	−0·3	−0·1	−0·1
Means	33·4	25·1	29·2	31·2	31·6	29·5	−0·1	−0·3	−0·3	−0·2	−0·2	−0·2

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 of Thermometers on ordinary stand, 4 feet above the ground. Maximum.	Minimum.	9h	Noon.	15h	21h
d	°	°	°	°	°	°	°	°	°	°	°	°
1	40·9	26·0	37·1	40·8	37·6	26·8	+0·8	−0·3	+1·6	+1·8	+0·8	−0·1
2	36·1	25·0	33·6	34·8	34·3	33·0	+1·4	−0·3	+0·2	+0·5	−0·1	+0·1
3	39·5	32·9	35·0	37·1	36·8	39·5	+1·0	−0·2	+0·2	+0·3	0·0	+1·0
4	42·8	34·2	41·6	42·8	40·6	35·4	−0·3	−0·5	−0·5	0·0	−0·2	−0·2
5	39·8	34·1	36·7	38·7	39·8	39·1	−0·2	−0·7	−0·1	0·0	+0·1	−0·1
6	39·6	34·5	37·0	37·7	36·8	36·0	0·0	−0·2	+0·1	−0·1	0·0	0·0
7	40·1	31·3	...	...	...	...	+0·9	−0·8	...	...	...	...
8	35·6	31·9	32·3	34·6	34·4	34·4	−0·2	−0·2	−0·1	0·0	+0·2	+0·7
9	38·6	31·8	34·8	36·0	37·0	32·5	+0·4	−0·3	0·0	0·0	+0·2	0·0
10	33·2	27·1	29·7	30·9	29·7	27·5	+1·1	−0·5	0·0	0·0	−0·1	−0·2
11	30·6	25·3	27·5	28·4	29·9	28·8	+0·3	−0·2	−0·1	−0·2	0·0	0·0
12	30·9	22·8	23·1	25·0	30·0	29·9	−0·2	−0·3	0·0	−0·2	−0·3	−0·5
13	30·8	20·1	23·8	29·4	30·1	24·8	+0·4	−1·0	0·0	−0·1	−0·3	+0·7
14	31·4	18·0	...	...	...	...	+2·1	+0·9	...	...	...	...
15	30·3	20·0	25·8	28·2	29·8	28·6	0·0	+0·1	+0·1	+0·3	−0·2	−0·1
16	28·8	22·5	27·7	25·9	27·4	26·2	0·0	−0·7	−0·1	−0·1	−0·2	−0·4
17	31·1	24·2	29·8	30·9	30·9	24·8	−0·7	+0·3	0·0	−0·2	−0·1	+0·4
18	31·1	24·2	29·8	30·6	30·0	28·9	−0·3	+0·1	0·0	−0·1	−0·1	−0·1
19	28·9	25·9	26·7	27·8	27·9	27·6	−0·9	−0·2	+0·1	−0·8	−0·2	0·0
20	31·7	16·6	21·8	26·8	28·9	31·7	−0·4	−0·1	0·0	−0·2	−0·3	−0·1
21	35·8	29·0	...	...	...	...	−0·3	−0·3	...	...	...	...
22	30·4	13·5	17·8	19·8	20·1	20·1	+1·1	+0·1	+0·1	0·0	−0·2	+0·2
23	31·1	18·6	27·8	30·0	30·7	29·8	−0·5	−0·1	+0·1	−0·3	−0·4	−0·2
24	32·7	25·5	28·8	32·7	31·9	26·4	−0·4	−0·4	−0·3	0·0	0·0	+0·2
25	31·4	21·2	...	...	...	...	+2·1	+0·6	...	...	...	...
26	36·6	26·0	32·4	35·7	35·0	33·8	+0·4	0·0	+1·7	+0·3	+0·4	+0·4
27	34·6	28·4	31·1	32·4	32·2	30·3	+0·9	−0·3	+0·1	−0·1	−0·2	0·0
28	32·2	26·8	...	...	...	...	+0·4	−0·1	...	...	...	...
29	31·8	24·7	27·5	26·6	26·9	26·1	+0·3	−0·4	−0·2	−0·2	−0·3	−0·1
30	27·5	20·2	24·4	24·1	23·1	20·5	+0·2	+0·6	0·0	−0·1	−0·3	−0·3
31	31·6	19·0	26·8	30·7	30·9	31·4	+0·1	−0·1	0·0	0·0	−0·1	0·0
Means	33·8	25·2	29·6	31·5	31·6	29·8	+0·3	−0·2	+0·1	0·0	−0·1	+0·1

READINGS of the WET-BULB THERMOMETER placed in a STEVENSON'S SCREEN near the Ordinary Stand; and EXCESS of the READINGS above those of the corresponding THERMOMETER on the ORDINARY STAND, in the YEAR 1890.

[No observations have been made on Sundays, Good Friday, and Christmas Day.]

JANUARY.

Days of the Month.	Readings of the Wet-bulb Thermometer in Stevenson's Screen, 4 feet above the ground.				Excess above readings of the Thermometer on ordinary stand, 4 feet above the ground.			
	9h	Noon	15h	21h	9h	Noon	15h	21h
d	°	°	°	°	°	°	°	°
1	26.9	32.1	31.2	29.9	−0.2	−0.1	+0.2	0.0
2	33.3	34.1	32.8	32.2	−0.1	−0.1	−0.1	0.0
3	31.5	32.4	33.9	34.6	−0.1	0.0	0.0	+0.1
4	42.9	44.4	45.0	41.3	−0.1	−0.4	0.0	+0.2
6	49.5	52.4	52.2	52.1	+0.1	−0.2	0.0	0.0
7	46.6	50.1	48.9	48.8	0.0	+0.1	+0.2	+0.1
8	47.9	48.2	48.0	45.5	−0.1	0.0	+0.1	+0.2
9	38.6	44.1	44.4	49.3	+0.2	+0.1	−0.1	0.0
10	41.1	42.4	41.5	40.4	+0.2	0.0	+0.3	+0.1
11	39.6	43.2	46.6	49.2	−0.3	−0.2	−0.1	0.0
13	46.3	49.4	50.2	45.2	0.0	−0.3	+0.2	+0.3
14	34.9	45.1	48.2	46.9	+0.1	−0.1	0.0	+0.1
15	46.5	47.5	46.9	46.2	+0.1	+0.1	0.0	+0.3
16	46.3	48.2	47.2	45.8	−0.2	+0.2	+0.1	0.0
17	42.3	42.2	41.1	41.2	0.0	0.0	0.0	+0.1
18	39.3	41.5	41.9	45.3	0.0	−0.1	+0.2	+0.2
20	35.2	39.2	39.1	35.2	+0.3	0.0	+0.2	+0.3
21	34.5	38.6	39.9	40.9	−0.1	0.0	0.0	0.0
22	37.3	37.9	38.5	36.8	+0.1	0.0	+0.4	+0.5
23	45.9	45.9	42.1	38.2	+0.1	+0.4	+0.3	+0.2
24	37.2	44.2	45.1	43.8	+0.2	0.0	+0.2	+0.1
25	50.4	51.1	51.2	47.2	0.0	+0.2	+0.2	+0.3
27	40.3	41.0	40.0	38.5	−0.1	+0.1	+0.5	+0.6
28	42.4	48.6	44.5	36.9	−0.7	0.0	+0.1	0.0
29	33.5	36.8	37.3	36.5	+0.3	+0.5	+0.4	+0.4
30	38.2	41.6	42.5	42.8	+0.1	−0.1	+0.2	+0.1
31	46.9	47.5	47.7	47.2	0.0	0.0	−0.1	+0.1
Means	40.6	43.3	43.3	42.1	0.0	0.0	+0.1	+0.2

FEBRUARY.

Days of the Month.	9h	Noon	15h	21h	9h	Noon	15h	21h
d	°	°	°	°	°	°	°	°
1	46.2	46.7	45.6	42.1	+0.2	−0.2	−0.2	+0.1
3	29.9	36.8	38.1	33.2	−0.3	+0.7	+0.6	+0.1
4	31.8	31.9	39.0	37.9	−0.2	−0.2	+0.1	+0.1
5	39.1	39.7	41.2	36.7	+0.2	+0.2	0.0	+0.4
6	34.8	38.2	38.9	36.5	−0.2	0.0	+0.4	+0.2
7	36.2	38.2	37.7	34.2	+0.1	+0.2	+0.1	+0.5
8	32.2	36.7	36.1	33.4	+0.1	+0.2	+0.2	0.0
10	32.4	39.2	40.4	33.3	+0.4	+0.2	+0.2	+0.1
11	30.5	37.2	37.5	34.9	−0.2	−0.1	−0.3	0.0
12	31.2	34.7	34.9	30.1	+0.6	−0.4	0.0	0.0
13	31.1	34.5	34.4	35.2	+0.4	−0.4	+0.1	+0.1
14	36.7	38.7	38.5	37.5	0.0	0.0	0.0	−0.1
15	35.5	38.7	41.0	35.1	0.0	−0.1	0.0	−0.1
17	37.0	43.2	45.2	40.7	−0.2	−0.4	−0.2	−0.2
18	39.1	41.7	42.1	39.4	+0.2	−0.4	+0.1	+0.1
19	37.5	39.0	39.5	36.2	0.0	0.0	−0.4	+0.1
20	35.6	36.7	37.4	37.0	−0.2	−0.1	0.0	+0.1
21	34.4	35.0	35.9	37.0	−0.1	0.0	−0.1	0.0
22	37.5	38.5	38.4	35.6	−0.2	−0.2	−0.1	+0.1
24	33.8	39.0	41.7	39.8	0.0	−0.4	0.0	0.0
25	34.4	35.9	39.3	37.3	+0.1	−0.2	−0.1	−0.1
26	36.3	38.9	39.6	33.6	−0.2	−0.1	+0.1	+0.1
27	33.4	34.0	34.3	31.9	0.0	+0.1	−0.1	+0.1
28	30.1	31.9	32.2	31.7	+0.3	0.0	+0.1	+0.2
Means	34.9	37.7	38.7	35.8	0.0	−0.1	0.0	+0.1

MARCH.

Days of the Month.	Readings of the Wet-bulb Thermometer in Stevenson's Screen, 4 feet above the ground.				Excess above readings of the Thermometer on ordinary stand, 4 feet above the ground.			
	9h	Noon	15h	21h	9h	Noon	15h	21h
d	°	°	°	°	°	°	°	°
1	30.4	34.0	32.6	32.8	−0.1	−0.3	−0.3	0.0
3	22.5	27.7	26.5	24.0	+0.1	−0.3	−0.3	−0.1
4	18.1	28.0	28.3	27.4	−0.9	+0.1	−0.1	0.0
5	37.4	36.8	37.1	36.0	+0.1	−0.1	+0.4	+0.4
6	43.5	45.5	46.2	43.1	+0.1	0.0	+0.1	+0.2
7	44.4	46.8	45.9	40.3	−0.1	−0.3	0.0	+0.3
8	44.5	46.4	47.4	41.4	0.0	−0.2	−0.2	0.0
10	40.1	46.3	49.2	48.5	0.0	−0.1	0.0	+0.1
11	47.6	50.4	50.6	46.6	+0.1	+0.3	−0.3	+0.3
12	46.2	51.2	51.7	42.3	0.0	−0.4	+0.6	+0.3
13	41.5	43.2	43.4	41.6	−0.1	−0.4	0.0	+0.2
14	44.7	49.0	47.5	41.4	+0.8	−0.4	−0.1	+0.4
15	46.0	47.8	47.5	43.7	+0.1	+0.1	−0.1	0.0
17	41.3	42.4	44.2	38.5	−0.2	+0.5	+0.3	+0.6
18	39.6	44.4	42.0	41.3	+0.3	−0.6	+0.1	+0.2
19	41.2	40.7	41.2	40.4	0.0	0.0	0.0	+0.2
20	36.9	38.6	40.5	40.1	0.0	−0.1	+0.1	+0.2
21	40.2	42.7	41.4	40.5	−0.2	−0.2	+0.1	+0.2
22	42.7	47.0	47.5	43.2	−0.1	+0.1	+0.1	+0.2
24	43.1	43.7	44.3	43.1	+0.2	+0.3	−0.1	+0.3
25	43.7	46.0	46.2	44.8	0.0	−0.1	0.0	+0.1
26	47.4	49.0	49.7	47.1	−0.1	−0.1	+0.5	+0.2
27	50.2	51.6	51.8	50.3	−0.1	−0.3	−0.4	0.0
28	50.9	56.9	58.9	50.9	−0.2	−0.6	0.0	+0.5
29	50.6	52.2	48.7	45.1	+0.2	+0.1	+0.3	+0.6
31	44.0	44.8	44.4	40.0	+0.1	−0.1	0.0	+0.4
Means	41.5	44.3	44.4	41.3	0.0	−0.1	0.0	+0.2

APRIL.

Days of the Month.	9h	Noon	15h	21h	9h	Noon	15h	21h
d	°	°	°	°	°	°	°	°
1	38.0	42.0	43.1	36.0	+0.1	−0.2	+0.8	+0.2
2	38.5	40.0	40.5	36.0	−0.6	−0.3	+0.1	+0.1
3	40.2	43.2	44.5	36.2	−0.4	−0.3	+0.1	+0.2
5	41.6	46.7	48.2	40.4	−0.3	−0.7	+0.9	0.0
7	46.0	45.8	45.3	41.2	+0.1	−0.1	+0.2	+0.2
8	39.4	42.0	41.8	37.4	0.0	+0.4	−0.3	+0.2
9	37.3	38.4	37.5	35.4	0.0	0.0	−0.1	+0.2
10	37.5	39.1	38.7	35.8	−0.3	−0.8	0.0	+0.1
11	38.6	39.4	39.2	37.5	−0.4	−0.5	−0.6	+0.1
12	38.2	39.6	39.2	35.7	−0.2	+0.2	−0.5	+0.5
14	42.4	46.2	45.7	43.4	−0.4	−0.6	+0.1	0.0
15	45.3	49.6	50.1	45.2	−0.5	−0.1	−0.1	+0.1
16	50.4	51.8	52.4	46.6	+0.2	−0.1	−0.2	0.0
17	47.1	50.3	47.1	43.0	0.0	−0.2	+0.2	+0.2
18	42.0	43.2	44.3	42.0	+0.1	−0.3	+0.1	+0.1
19	40.2	40.9	41.5	39.1	+0.1	+0.1	+0.1	+0.2
21	50.2	51.2	48.7	49.0	−0.1	0.0	−0.2	+0.4
22	51.1	54.1	51.2	45.6	+0.2	+0.2	+0.3	+0.3
23	45.8	46.1	48.4	46.2	−0.6	−0.3	−0.5	−0.1
24	49.2	49.2	47.9	47.5	−0.4	−0.2	0.0	+0.1
25	42.7	40.2	42.5	42.2	−0.2	+0.2	−0.4	+0.3
26	42.8	45.9	42.1	40.2	0.0	−0.2	0.0	+1.3
28	45.0	49.0	46.2	45.8	−0.1	+0.6	−0.4	+0.2
29	47.7	50.2	47.4	42.9	+0.2	+0.5	−0.7	+0.2
30	51.3	51.3	50.0	44.8	+0.3	+0.1	+0.6	+0.3
Means	43.6	45.4	44.9	41.4	−0.1	−0.1	0.0	+0.2

READINGS of the WET-BULB THERMOMETER in a STEVENSON'S SCREEN—*continued.*

MAY.

Days of the Month.	Readings of the Wet-bulb Thermometer in Stevenson's Screen, 4 feet above the ground. 9h	Noon	15h	21h	Excess above readings of the Thermometer on ordinary stand, 4 feet above the ground. 9h	Noon	15h	21h
d	°	°	°	°	°	°	°	°
1	52·8	53·7	53·4	47·3	+ 0·2	− 0·4	+ 0·3	+ 0·3
2	49·2	50·2	50·3	44·9	− 0·4	− 1·2	+ 0·1	+ 0·1
3	51·2	53·2	55·2	46·6	− 0·2	− 0·3	0·0	+ 0·6
5	48·1	52·4	54·4	48·3	+ 0·2	0·0	+ 0·5	+ 0·5
6	52·5	53·7	53·2	48·5	− 0·1	− 0·5	− 0·4	+ 0·1
7	51·4	53·6	55·0	48·8	− 0·5	+ 0·2	+ 0·1	+ 0·1
8	48·7	52·7	54·5	48·1	− 0·2	− 0·1	− 0·1	+ 0·1
9	46·7	48·5	50·3	49·4	0·0	0·0	− 0·2	− 0·1
10	49·2	52·2	53·2	49·2	− 0·2	− 0·5	− 0·5	+ 0·1
12	56·0	54·9	57·2	48·8	+ 0·7	− 0·6	− 0·3	+ 0·1
13	51·1	53·3	55·3	49·2	+ 0·1	+ 0·3	− 0·3	+ 0·4
14	48·1	48·3	50·6	47·8	− 1·0	+ 0·2	− 0·5	+ 0·4
15	49·8	53·3	52·4	46·7	+ 0·1	+ 0·5	− 0·3	+ 0·2
16	55·2	56·2	57·0	54·5	+ 0·5	+ 0·1	+ 0·4	+ 0·7
17	51·4	53·2	52·2	44·6	− 1·3	− 0·1	− 0·4	+ 0·2
19	57·4	58·4	60·4	56·3	− 0·3	− 0·5	+ 0·5	− 0·1
20	49·1	51·2	51·5	49·1	0·0	− 0·8	− 0·3	+ 0·3
21	51·5	54·0	54·2	47·7	− 0·2	− 0·5	− 1·2	+ 0·3
22	54·2	57·9	58·9	48·7	+ 0·3	+ 0·3	− 0·2	+ 0·2
23	55·1	57·3	58·1	52·4	0·0	0·0	+ 1·1	+ 0·2
24	61·3	62·1	63·7	54·5	+ 0·5	+ 0·2	+ 0·4	+ 0·2
26	46·4	49·9	50·2	47·2	0·0	− 0·1	+ 0·2	+ 0·1
27	47·2	49·5	49·9	43·9	− 1·4	0·0	− 0·5	+ 0·3
28	47·2	48·9	50·5	48·2	+ 0·4	− 0·1	− 0·4	0·0
29	50·2	52·5	52·4	50·1	− 0·4	+ 0·1	0·0	+ 0·2
30	50·5	53·5	52·7	42·8	− 0·3	− 0·8	− 0·3	0·0
31	44·5	45·2	45·9	44·1	− 1·1	− 0·1	− 0·2	+ 0·8
Means	51·0	53·0	53·8	48·4	− 0·2	− 0·2	− 0·1	+ 0·2

JUNE.

Days of the Month.	Readings of the Wet-bulb Thermometer in Stevenson's Screen, 4 feet above the ground. 9h	Noon	15h	21h	Excess above readings of the Thermometer on ordinary stand, 4 feet above the ground. 9h	Noon	15h	21h
d	°	°	°	°	°	°	°	°
2	54·2	54·3	55·7	49·6	− 0·5	− 0·3	− 0·4	+ 0·3
3	52·2	52·2	54·2	50·2	− 0·2	+ 0·1	− 0·7	+ 0·1
4	54·2	55·9	57·0	57·4	− 0·6	− 1·0	− 0·1	+ 0·2
5	55·9	60·0	60·7	56·1	− 0·1	− 0·9	− 0·7	+ 0·2
6	56·0	60·2	60·8	49·2	− 0·1	0·0	+ 0·2	+ 0·3
7	53·2	51·7	52·2	48·5	− 0·2	0·0	+ 0·3	+ 0·1
9	56·8	60·2	60·5	54·2	− 0·4	− 0·3	− 0·5	− 0·2
10	60·4	60·0	60·8	54·2	+ 0·2	− 0·2	+ 0·1	+ 0·2
11	56·0	56·2	53·3	50·8	− 0·4	+ 0·4	− 0·5	+ 0·1
12	54·2	54·2	58·2	54·1	+ 0·5	+ 0·2	+ 0·3	+ 0·2
13	52·7	52·2	55·2	50·3	− 0·1	0·0	0·0	+ 0·1
14	50·3	52·5	55·1	53·8	+ 0·3	− 0·3	0·0	− 0·1
16	61·8	63·8	62·5	56·2	+ 0·7	+ 0·3	+ 0·2	0·0
17	55·2	53·2	55·3	52·2	− 0·3	0·0	+ 0·1	+ 0·2
18	55·9	59·9	60·2	60·2	− 0·3	+ 0·2	+ 0·1	− 0·5
19	53·2	55·3	58·0	54·9	− 0·2	− 0·1	+ 0·6	+ 0·4
20	53·2	59·2	57·8	56·4	− 0·7	− 0·7	− 0·1	+ 0·1
21	56·3	57·5	57·9	55·0	− 0·6	+ 0·1	+ 0·4	− 0·1
23	61·2	60·3	63·1	61·1	+ 0·3	− 0·1	− 0·2	+ 0·2
24	60·2	64·2	62·0	59·9	+ 0·3	− 0·2	− 0·1	0·0
25	59·4	64·3	65·4	59·2	− 0·8	− 0·9	− 0·1	− 0·3
26	58·7	60·3	60·0	58·4	+ 0·2	− 0·3	+ 0·1	0·0
27	56·0	54·2	57·2	51·1	− 0·3	− 0·1	− 0·7	+ 0·2
28	56·8	56·1	55·2	50·9	− 0·1	− 0·4	− 0·8	− 0·6
30	52·5	55·6	60·2	52·9	− 0·3	− 0·1	− 1·0	+ 0·7
Means	55·9	57·3	58·3	54·3	− 0·1	− 0·2	− 0·1	+ 0·1

JULY.

Days of the Month.	Readings of the Wet-bulb Thermometer in Stevenson's Screen, 4 feet above the ground. 9h	Noon	15h	21h	Excess above readings of the Thermometer on ordinary stand, 4 feet above the ground. 9h	Noon	15h	21h
d	°	°	°	°	°	°	°	°
1	52·9	56·2	56·6	54·0	+ 0·2	− 0·2	− 0·1	+ 0·2
2	54·2	58·4	59·4	55·2	0·0	− 0·1	− 0·5	+ 0·3
3	56·2	55·4	56·1	50·1	− 0·3	− 0·6	0·0	+ 0·4
4	56·1	55·2	55·2	50·4	+ 0·2	− 1·7	− 0·5	− 0·3
5	49·2	50·2	50·5	50·3	0·0	− 0·3	0·0	+ 0·2
7	55·8	54·3	54·7	51·5	− 0·1	0·0	+ 0·1	− 0·1
8	57·2	61·9	60·4	54·9	− 0·2	+ 0·4	− 0·1	+ 0·2
9	56·2	56·5	59·2	55·1	+ 0·2	+ 0·3	− 0·4	+ 0·2
10	54·3	55·5	57·7	53·1	− 0·5	− 0·3	+ 0·7	+ 0·3
11	53·3	51·0	53·4	47·8	− 0·1	+ 0·5	+ 0·7	+ 0·3
12	54·4	52·7	53·2	51·2	− 0·4	+ 0·4	+ 0·2	+ 0·3
14	59·3	62·2	63·4	59·1	+ 0·4	+ 0·3	− 0·5	+ 0·2
15	61·0	63·2	62·5	55·9	− 0·1	− 0·8	− 0·3	− 0·4
16	58·0	61·0	62·2	59·2	− 0·6	+ 0·4	+ 0·3	0·0
17	60·9	65·2	63·4	59·5	− 0·2	+ 0·3	− 0·1	− 0·3
18	55·6	57·3	58·0	54·3	− 0·3	− 0·4	+ 0·1	− 0·4
19	55·2	58·0	54·6	50·5	− 0·2	− 0·6	− 0·1	+ 0·2
21	56·4	60·0	61·2	60·0	− 0·5	+ 0·1	0·0	+ 0·2
22	60·2	62·7	60·1	56·4	+ 0·1	− 0·1	0·0	+ 0·4
23	57·9	65·1	64·7	62·5	0·0	+ 0·2	− 0·1	+ 0·3
24	59·4	60·7	62·0	53·2	− 0·2	− 0·2	+ 0·1	+ 0·1
25	55·1	56·3	56·2	55·3	+ 0·4	0·0	− 0·5	− 0·1
26	60·2	63·2	62·2	56·2	− 0·3	− 0·2	+ 0·1	+ 0·1
28	60·4	61·7	60·8	52·8	+ 0·2	− 0·8	0·0	+ 0·5
29	59·4	60·0	60·2	54·2	− 0·5	− 0·4	− 0·3	− 0·4
30	59·0	61·3	63·0	59·5	+ 0·1	− 0·1	+ 0·3	0·0
31	64·4	64·4	64·7	60·4	+ 0·5	− 0·2	+ 0·2	+ 0·3
Means	57·1	58·9	59·1	54·9	− 0·1	− 0·2	0·0	+ 0·1

AUGUST.

Days of the Month.	Readings of the Wet-bulb Thermometer in Stevenson's Screen, 4 feet above the ground. 9h	Noon	15h	21h	Excess above readings of the Thermometer on ordinary stand, 4 feet above the ground. 9h	Noon	15h	21h
d	°	°	°	°	°	°	°	°
1	65·2	65·0	65·2	59·8	− 0·8	− 0·4	− 0·1	− 0·1
2	58·2	57·7	58·1	56·4	− 0·3	− 0·1	− 0·2	+ 0·1
4	61·2	62·1	65·2	59·6	− 0·3	+ 0·3	+ 0·9	+ 0·5
5	64·0	66·2	67·0	61·6	0·0	− 1·1	+ 0·1	+ 0·1
6	60·8	63·2	64·9	61·2	+ 1·4	+ 0·1	+ 0·1	0·0
7	58·2	60·7	62·7	55·2	− 0·3	− 0·1	+ 0·5	+ 0·3
8	55·3	56·7	57·2	57·0	+ 0·4	− 0·1	+ 0·3	+ 0·1
9	57·8	59·7	61·6	59·9	+ 0·1	+ 0·4	+ 0·1	0·0
11	61·4	63·0	66·8	60·2	+ 0·2	− 0·2	+ 0·7	− 0·1
12	61·4	60·6	61·7	57·9	− 0·1	0·0	+ 0·1	+ 0·1
13	54·7	56·0	57·8	55·5	+ 0·1	− 0·3	+ 0·3	+ 0·1
14	56·2	57·5	56·2	56·0	− 0·1	0·0	− 0·1	+ 0·1
15	60·8	58·8	59·0	54·5	+ 0·4	+ 0·8	+ 0·2	− 0·2
16	54·9	57·5	57·4	53·6	+ 0·2	− 0·4	+ 0·1	+ 0·3
18	57·3	59·7	60·7	54·7	+ 0·6	− 0·5	+ 1·2	+ 0·1
19	55·8	56·7	55·4	55·2	− 0·2	+ 0·1	− 0·2	+ 0·1
20	58·9	59·3	59·6	52·7	− 0·5	− 0·6	− 0·5	+ 0·3
21	58·8	58·4	59·4	58·4	+ 0·2	+ 0·1	− 0·2	0·0
22	54·7	55·6	56·6	54·7	− 0·6	− 0·7	+ 0·2	+ 0·1
23	59·7	58·2	57·3	50·9	− 0·2	− 0·2	− 0·3	+ 0·9
25	53·0	54·4	57·2	51·9	− 0·2	− 0·2	+ 1·3	+ 0·2
26	54·4	55·2	54·5	51·2	+ 0·2	+ 0·3	+ 0·1	− 0·3
27	53·9	54·7	56·8	49·3	+ 0·2	+ 0·2	+ 0·8	− 0·2
28	53·3	55·1	55·3	52·2	+ 0·2	+ 0·1	+ 0·3	− 0·3
29	53·1	53·9	52·8	48·7	+ 0·7	− 0·6	+ 0·5	+ 0·2
30	50·5	51·2	50·2	46·2	− 0·1	− 0·2	− 0·5	− 0·1
Means	57·4	58·3	59·1	55·2	0·0	− 0·1	+ 0·2	+ 0·1

READINGS of the WET-BULB THERMOMETER in a STEVENSON'S SCREEN—*concluded.*

SEPTEMBER.

Days of the Month.	Readings of the Wet-bulb Thermometer in Stevenson's Screen, 4 feet above the ground.				Excess above readings of the Thermometer on ordinary stand, 4 feet above the ground.			
	9h	Noon	15h	21h	9h	Noon	15h	21h
d	°	°	°	°	°	°	°	°
1	50·6	53·7	56·2	51·5	+ 0·3	+ 0·1	+ 0·8	0·0
2	55·1	57·4	58·3	56·1	+ 0·2	− 0·2	+ 0·2	+ 0·2
3	57·2	62·5	61·6	59·3	+ 0·1	+ 0·6	+ 0·2	+ 0·1
4	57·6	60·2	62·3	60·3	+ 0·1	− 0·2	+ 0·1	− 0·2
5	60·0	64·8	64·2	61·2	+ 0·2	+ 0·8	+ 0·7	+ 0·1
6	58·5	65·0	65·2	57·9	− 0·8	0·0	− 0·5	− 0·4
8	58·3	61·5	64·0	56·1	− 0·5	+ 0·3	+ 0·9	− 0·2
9	54·9	60·6	64·0	57·4	+ 0·4	+ 0·2	+ 0·6	+ 0·4
10	56·9	63·5	65·2	58·9	0·0	+ 0·2	+ 0·3	+ 0·1
11	56·1	59·0	61·2	55·2	+ 0·4	− 0·4	+ 0·3	+ 0·4
12	55·3	58·7	59·0	54·2	+ 0·6	+ 1·1	+ 0·1	+ 0·3
13	55·3	59·4	58·6	52·0	− 0·3	− 0·1	− 0·5	0·0
15	57·4	59·8	59·2	56·6	− 0·1	+ 0·5	+ 0·8	+ 0·1
16	61·2	60·8	61·2	56·2	+ 1·0	0·0	0·0	0·0
17	58·6	62·2	60·2	58·1	− 0·1	+ 0·2	− 0·1	− 0·2
18	59·6	60·3	59·3	56·0	+ 0·1	− 0·3	− 0·3	0·0
19	58·0	58·8	57·9	53·7	0·0	0·0	0·0	+ 0·1
20	56·5	58·4	55·8	53·1	− 0·2	+ 0·6	− 0·1	+ 0·2
22	57·1	57·0	56·5	52·8	− 0·2	+ 0·4	− 0·4	+ 0·1
23	58·9	55·8	58·1	51·6	+ 0·8	− 0·3	+ 0·1	+ 0·2
24	56·2	57·2	56·8	52·9	− 0·6	+ 0·3	+ 0·2	− 0·4
25	58·0	57·2	56·0	50·0	− 0·5	+ 0·1	− 0·5	− 0·2
26	56·7	61·2	62·2	59·2	+ 0·1	+ 0·2	0·0	+ 0·3
27	60·7	65·1	66·3	59·2	+ 0·1	+ 0·4	− 0·6	− 0·1
29	57·8	56·8	56·9	55·3	+ 1·0	+ 0·4	+ 0·5	+ 0·3
30	54·9	58·7	58·6	53·6	+ 0·4	+ 0·3	+ 0·3	+ 0·2
Means	57·2	59·8	60·2	55·7	+ 0·1	+ 0·2	+ 0·1	+ 0·1

OCTOBER.

Days of the Month.	9h	Noon	15h	21h	9h	Noon	15h	21h
d	°	°	°	°	°	°	°	°
1	55·9	56·5	58·0	45·1	0·0	− 0·2	0·0	+ 0·3
2	43·8	48·2	48·2	43·3	− 0·3	+ 1·0	+ 0·4	+ 0·2
3	50·2	54·5	54·2	51·0	− 0·1	+ 0·2	+ 0·1	+ 0·1
4	55·0	59·2	59·4	56·8	− 0·1	+ 0·3	− 0·1	+ 0·1
6	58·0	57·7	58·2	55·6	+ 0·9	− 0·1	+ 0·3	+ 0·2
7	57·3	58·0	57·5	58·9	− 0·1	+ 0·1	− 0·2	0·0
8	50·4	53·8	52·1	46·7	+ 0·2	+ 0·8	− 0·1	− 0·3
9	45·6	52·5	51·6	43·3	− 0·2	+ 0·6	− 0·3	+ 0·2
10	47·2	54·5	54·2	48·0	+ 0·5	+ 1·1	+ 0·3	+ 0·6
11	51·3	57·9	57·4	50·3	+ 0·4	+ 1·5	+ 0·3	+ 0·1
13	41·3	48·4	51·7	44·2	− 0·6	+ 0·5	+ 0·3	+ 0·1
14	39·4	46·3	51·2	46·9	− 0·1	+ 0·4	+ 0·1	0·0
15	51·4	53·2	50·8	45·4	+ 0·3	+ 1·1	− 0·1	− 0·1
16	44·4	46·2	46·2	43·0	− 0·1	+ 0·1	+ 0·1	+ 0·4
17	44·8	47·3	47·2	43·8	+ 0·3	+ 0·4	+ 0·4	+ 0·6
18	47·1	46·3	46·0	42·3	+ 0·4	+ 0·2	+ 0·1	− 0·1
20	43·7	45·2	45·7	44·2	+ 0·1	− 0·1	0·0	− 0·4
21	45·8	48·9	49·8	45·4	0·0	+ 0·7	+ 0·4	+ 0·4
22	42·2	46·2	44·4	39·2	+ 1·4	+ 1·3	0·0	+ 0·1
23	48·1	50·7	50·7	50·1	+ 0·2	+ 0·3	+ 0·3	+ 0·3
24	49·9	52·9	52·6	50·3	+ 0·4	+ 0·2	− 0·2	− 0·3
25	54·1	48·2	48·2	43·3	+ 0·2	+ 0·2	− 0·1	− 0·1
27	34·1	36·2	35·3	31·5	+ 0·5	+ 0·8	+ 0·4	+ 0·3
28	27·3	33·5	35·5	31·3	− 0·2	+ 0·6	0·0	+ 0·9
29	48·2	50·9	51·3	51·9	+ 0·6	− 0·1	− 0·1	+ 0·2
30	52·4	53·0	52·8	46·2	− 0·3	+ 0·1	+ 0·3	+ 0·1
31	52·3	52·4	54·2	51·2	− 0·3	0·0	+ 0·1	+ 0·1
Means	47·5	50·3	50·5	46·3	+ 0·1	+ 0·4	+ 0·1	+ 0·1

NOVEMBER.

Days of the Month.	9h	Noon	15h	21h	9h	Noon	15h	21h
d	°	°	°	°	°	°	°	°
1	45·2	45·9	47·8	44·2	+ 0·1	+ 0·2	+ 0·3	− 0·1
3	39·1	42·2	42·2	48·0	− 0·1	− 0·1	+ 0·3	+ 0·1
4	44·2	46·1	46·9	41·4	− 0·2	+ 0·1	+ 0·7	0·0
5	40·3	44·3	44·6	41·8	− 0·1	+ 0·5	+ 0·2	+ 0·2
6	38·1	46·1	44·4	44·4	+ 0·2	+ 0·2	+ 0·2	− 0·2
7	43·5	42·5	41·9	41·5	0·0	− 0·3	+ 0·2	+ 0·1
8	37·7	45·8	48·2	45·5	+ 0·2	+ 0·4	+ 0·6	− 0·3
10	36·5	43·7	44·9	41·2	− 0·3	+ 0·2	+ 0·7	+ 0·1
11	41·7	44·0	44·3	38·7	− 0·1	− 0·1	+ 0·2	+ 0·2
12	38·9	47·7	46·1	45·9	+ 0·4	+ 0·5	+ 0·7	+ 0·2
13	48·3	48·8	47·5	43·2	− 0·1	0·0	− 0·1	+ 0·2
14	39·5	48·7	48·3	54·7	− 0·4	− 0·3	− 0·3	+ 0·1
15	47·7	47·5	46·6	45·5	− 0·2	+ 0·2	+ 0·1	+ 0·2
17	42·1	47·5	50·2	45·4	− 0·6	− 0·3	+ 0·7	+ 0·1
18	50·3	51·8	52·5	52·5	0·0	+ 0·3	− 0·2	+ 0·1
19	52·1	52·2	53·3	53·2	+ 0·3	0·0	+ 0·1	+ 0·1
20	52·2	53·2	53·4	50·8	+ 0·3	0·0	+ 0·1	+ 0·3
21	48·2	49·1	50·4	45·1	+ 0·1	+ 0·2	+ 0·2	+ 0·3
22	42·9	46·2	46·4	46·6	+ 0·3	+ 0·3	+ 0·4	+ 0·1
24	42·5	42·2	41·4	36·3	+ 0·3	+ 0·1	+ 0·2	+ 0·5
25	33·5	38·2	38·4	34·3	0·0	+ 0·3	+ 0·2	+ 0·2
26	29·1	31·3	29·3	26·5	− 0·1	+ 0·4	− 0·1	+ 0·1
27	28·0	28·3	25·2	21·9	+ 0·5	0·0	− 0·2	− 0·2
28	21·2	23·1	18·5	20·5	− 0·4	− 0·8	− 0·5	− 0·3
29	27·8	29·6	30·4	31·3	− 0·2	− 0·1	+ 0·1	0·0
Means	40·4	43·4	43·3	41·6	0·0	+ 0·1	+ 0·2	+ 0·1

DECEMBER.

Days of the Month.	9h	Noon	15h	21h	9h	Noon	15h	21h
d	°	°	°	°	°	°	°	°
1	34·2	37·2	35·3	26·7	0·0	+ 0·5	+ 0·2	− 0·2
2	32·9	32·9	33·2	32·5	0·0	0·0	+ 0·2	+ 0·2
3	34·3	36·2	36·2	36·3	− 0·1	+ 0·1	+ 0·1	− 0·2
4	41·5	42·0	40·2	34·7	− 0·1	+ 0·1	+ 0·1	+ 0·1
5	35·6	37·7	38·2	37·2	0·0	0·0	+ 0·1	0·0
6	34·8	35·1	34·2	33·5	+ 0·1	+ 0·1	0·0	0·0
8	31·2	32·0	32·2	32·1	+ 0·3	+ 0·2	− 0·1	+ 0·2
9	34·2	35·3	36·2	32·2	+ 0·1	+ 0·1	+ 0·3	0·0
10	29·1	31·0	29·7	27·4	− 0·6	+ 0·1	− 0·1	− 0·3
11	27·1	28·3	29·8	28·9	− 0·5	− 0·3	− 0·1	+ 0·1
12	22·9	24·9	29·9	29·2	− 0·2	− 0·3	− 0·4	− 0·3
13	23·0	29·4	29·5	23·9	− 0·8	0·0	− 0·2	+ 0·1
15	25·2	27·4	29·5	27·5	− 0·5	− 0·5	− 0·3	− 0·2
16	26·6	25·2	26·3	25·5	0·0	− 0·1	− 0·3	− 0·3
17	28·5	30·0	30·7	23·4	− 0·2	0·0	− 0·1	− 0·4
18	28·7	29·1	28·4	28·0	+ 0·1	0·0	− 0·1	+ 0·2
19	26·0	27·9	27·8	27·1	− 0·4	− 0·2	0·0	0·0
20	21·1	26·2	28·8	31·4	− 0·4	− 0·5	0·0	− 0·2
22	17·0	19·5	20·1	19·5	− 0·7	− 0·3	− 0·2	− 0·4
23	27·3	29·8	30·5	29·7	− 0·4	− 0·3	− 0·4	− 0·1
24	28·4	31·1	30·6	25·5	− 0·2	0·0	+ 0·4	0·0
26	29·9	33·7	33·7	33·2	− 0·3	+ 0·1	+ 0·2	+ 0·3
27	29·7	31·5	32·0	29·7	− 0·1	0·0	+ 0·1	− 0·1
29	26·7	26·2	26·4	25·1	− 0·4	0·0	0·0	0·0
30	22·9	22·9	22·4	19·6	− 0·2	− 0·1	− 0·5	− 0·6
31	26·2	29·6	30·2	30·1	+ 0·1	0·0	0·0	− 0·1
Means	28·7	30·5	30·8	28·8	− 0·2	− 0·1	0·0	− 0·1

(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.

1890.												
Days of the Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
1	52·10	51·42	50·70	49·96	49·36	49·10	49·36	50·09	50·88	51·70	52·33	52·49
2	52·09	51·40	50·66	49·94	49·35	49·12	49·39	50·09	50·91	51·71	52·34	52·48
3	52·06	51·35	50·64	49·91	49·34	49·10	49·40	50·11	50·94	51·75	52·33	52·48
4	52·08	51·31	50·61	49·88	49·31	49·11	49·43	50·14	50·98	51·77	52·35	52·50
5	52·07	51·30	50·61	49·86	49·30	49·13	49·44	50·17	51·01	51·80	52·36	52·47
6	52·07	51·27	50·60	49·84	49·29	49·11	49·45	50·20	51·05	51·84	52·39	52·47
7	52·04	51·26	50·58	49·80	49·28	49·13	49·47	50·22	51·07	51·86	52·39	52·46
8	52·02	51·24	50·54	49·78	49·26	49·13	49·49	50·24	51·09	51·87	52·40	52·44
9	51·98	51·20	50·51	49·75	49·25	49·14	49·51	50·26	51·11	51·88	52·42	52·45
10	51·96	51·18	50·49	49·73	49·24	49·14	49·53	50·30	51·16	51·91	52·43	52·44
11	51·94	51·15	50·48	49·70	49·22	49·15	49·54	50·32	51·18	51·94	52·44	52·41
12	51·92	51·12	50·46	49·68	49·23	49·15	49·57	50·35	51·20	51·93	52·45	52·40
13	51·90	51·09	50·42	49·66	49·20	49·15	49·59	50·36	51·23	51·95	52·46	52·38
14	51·87	51·07	50·41	49·65	49·20	49·15	49·61	50·40	51·26	51·95	52·46	52·39
15	51·86	51·05	50·39	49·64	49·21	49·17	49·64	50·42	51·30	52·00	52·50	52·37
16	51·85	51·04	50·36	49·61	49·20	49·17	49·66	50·43	51·34	52·02	52·50	52·35
17	51·80	51·02	50·33	49·61	49·17	49·18	49·68	50·46	51·35	52·02	52·50	52·36
18	51·77	50·99	50·31	49·57	49·17	49·20	49·70	50·51	51·36	52·06	52·52	52·35
19	51·75	50·96	50·27	49·54	49·16	49·21	49·74	50·52	51·40	52·08	52·53	52·32
20	51·71	50·93	50·25	49·51	49·16	49·24	49·75	50·55	51·42	52·10	52·53	52·32
21	51·70	50·90	50·23	49·51	49·16	49·24	49·77	50·58	51·44	52·11	52·53	52·34
22	51·67	50·90	50·20	49·49	49·16	49·24	49·82	50·61	51·48	52·13	52·52	52·32
23	51·65	50·86	50·19	49·47	49·15	49·25	49·84	50·62	51·50	52·16	52·53	52·29
24	51·63	50·84	50·16	49·45	49·16	49·28	49·86	50·65	51·53	52·18	52·50	52·27
25	51·61	50·80	50·13	49·43	49·15	49·28	49·86	50·66	51·56	52·20	52·49	52·26
26	51·58	50·78	50·12	49·45	49·13	49·29	49·91	50·70	51·58	52·18	52·47	52·26
27	51·55	50·76	50·09	49·41	49·14	49·30	49·94	50·73	51·62	52·19	52·48	52·24
28	51·52	50·73	50·08	49·39	49·14	49·33	49·96	50·77	51·63	52·20	52·48	52·21
29	51·49		50·05	49·39	49·13	49·34	49·99	50·80	51·65	52·28	52·48	52·20
30	51·46		50·01	49·37	49·12	49·35	50·01	50·82	51·69	52·29	52·48	52·16
31	51·46		49·98		49·10		50·03	50·84		52·31		52·16
Means	51·81	51·07	50·35	49·63	49·21	49·20	49·68	50·45	51·30	52·01	52·45	52·36

The mean of the twelve monthly values is 50°·79.

(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.

1890.												
Days of the Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
1	50·31	48·78	47·57	46·62	47·33	49·15	51·66	53·69	55·49	56·00	55·30	53·12
2	50·28	48·74	47·50	46·63	47·36	49·28	51·77	53·74	55·54	55·98	55·21	53·02
3	50·20	48·70	47·46	46·66	47·38	49·38	51·85	53·81	55·58	56·02	55·11	52·99
4	50·18	48·66	47·41	46·67	47·40	49·47	51·94	53·89	55·60	56·02	55·09	52·96
5	50·12	48·65	47·38	46·68	47·41	49·60	51·97	53·99	55·64	56·05	55·00	52·86
6	50·07	48·60	47·36	46·72	47·46	49·68	52·10	54·01	55·65	56·08	54·92	52·80
7	49·97	48·60	47·31	46·72	47·50	49·80	52·18	54·09	55·66	56·06	54·82	52·70
8	49·90	48·56	47·25	46·76	47·50	49·90	52·27	54·12	55·70	56·06	54·78	52·58

(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.*

1890.												
Days of the Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
9	49·80	48·53	47·20	46·76	47·56	50·00	52·32	54·19	55·67	56·05	54·69	52·50
10	49·72	48·50	47·15	46·78	47·60	50·07	52·38	54·26	55·72	56·06	54·60	52·40
11	49·64	48·47	47·09	46·81	47·65	50·14	52·44	54·30	55·70	56·08	54·52	52·27
12	49·58	48·42	47·03	46·83	47·70	50·21	52·51	54·40	55·70	56·00	54·48	52·17
13	49·51	48·39	46·97	46·87	47·76	50·28	52·58	54·45	55·72	55·98	54·40	52·05
14	49·43	48·35	46·93	46·91	47·82	50·36	52·67	54·54	55·75	56·02	54·31	51·99
15	49·39	48·30	46·87	46·94	47·90	50·48	52·73	54·62	55·78	56·01	54·27	51·87
16	49·33	48·28	46·84	46·96	47·96	50·59	52·77	54·66	55·81	55·97	54·20	51·72
17	49·27	48·24	46·78	46·97	48·00	50·61	52·83	54·75	55·82	55·95	54·09	51·66
18	49·23	48·17	46·76	46·98	48·09	50·71	52·90	54·81	55·80	55·93	54·03	51·54
19	49·19	48·11	46·71	47·00	48·13	50·79	52·95	54·87	55·83	55·90	53·98	51·41
20	49·11	48·05	46·70	47·00	48·20	50·89	53·03	54·91	55·82	55·90	53·89	51·32
21	49·11	48·00	46·67	47·06	48·28	50·93	53·08	54·98	55·85	55·85	53·79	51·24
22	49·07	47·95	46·65	47·08	48·34	50·98	53·17	55·03	55·86	55·81	53·70	51·08
23	49·06	47·88	46·65	47·09	48·43	51·08	53·20	55·08	55·89	55·80	53·67	51·00
24	49·03	47·83	46·62	47·11	48·50	51·18	53·26	55·13	55·91	55·76	53·52	50·87
25	49·00	47·78	46·63	47·11	48·60	51·22	53·28	55·17	55·92	55·70	53·41	50·74
26	48·96	47·71	46·63	47·18	48·63	51·30	53·37	55·21	55·94	55·58	53·33	50·65
27	48·92	47·67	46·62	47·20	48·71	51·36	53·41	55·28	56·00	55·50	53·30	50·51
28	48·92	47·60	46·64	47·23	48·80	51·46	53·47	55·33	55·99	55·51	53·20	50·38
29	48·85		46·63	47·25	48·90	51·51	53·53	55·36	55·97	55·49	53·18	50·22
30	48·82		46·61	47·28	48·99	51·60	53·59	55·40	56·02	55·43	53·15	50·11
31	48·82		46·62		49·05		53·64	55·42		55·38		50·00
Means	49·44	48·27	46·94	46·93	48·03	50·47	52·74	54·63	55·78	55·87	54·20	51·70

The mean of the twelve monthly values is 51°·25.

(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.

1890.												
Days of the Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
1	47·68	47·14	45·30	46·42	48·17	53·54	56·47	58·50	59·27	59·00	54·77	51·57
2	47·50	47·11	45·22	46·57	48·23	53·68	56·59	58·50	59·20	58·95	54·55	51·21
3	47·30	47·09	45·15	46·68	48·36	53·71	56·57	58·62	59·09	59·00	54·40	50·92
4	47·14	47·09	45·05	46·76	48·50	53·75	56·62	58·76	58·99	58·98	54·21	50·70
5	46·98	47·09	44·93	46·81	48·67	53·81	56·68	58·90	58·97	58·89	54·19	50·40
6	46·83	47·00	44·78	46·87	48·88	53·87	56·84	58·94	58·93	58·82	54·10	50·16
7	46·71	46·94	44·62	46·91	49·07	53·96	56·81	59·01	58·91	58·71	53·93	49·98
8	46·70	46·83	44·49	47·00	49·21	54·04	56·76	59·10	58·97	58·64	53·81	49·70
9	46·73	46·72	44·42	47·07	49·41	54·15	56·69	59·20	58·98	58·60	53·67	49·63
10	46·82	46·62	44·42	47·15	49·59	54·22	56·63	59·40	59·08	58·55	53·53	49·45
11	46·93	46·51	44·45	47·20	49·73	54·30	56·70	59·41	59·10	58·52	53·40	49·28
12	47·01	46·39	44·50	47·24	49·87	54·38	56·74	59·43	59·13	58·32	53·25	49·10
13	47·10	46·26	44·53	47·22	49·98	54·44	56·76	59·44	59·19	58·19	53·10	48·90
14	47·15	46·14	44·66	47·22	50·10	54·57	56·76	59·52	59·20	58·00	52·92	48·76
15	47·22	46·02	44·77	47·20	50·27	54·69	56·77	59·60	59·25	57·98	52·81	48·52

(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.*

1890.												
Days of the Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
16	47·27	45·81	44·91	47·20	50·42	54·78	56·77	59·61	59·27	57·73	52·69	48·27
17	47·32	45·72	45·01	47·23	50·56	54·77	56·88	59·68	59·26	57·51	52·58	48·03
18	47·34	45·62	45·16	47·28	50·73	54·90	57·71	59·70	59·20	57·31	52·54	47·80
19	47·42	45·56	45·30	47·41	50·91	54·99	57·89	59·66	59·21	57·09	52·53	47·58
20	47·43	45·53	45·40	47·53	51·10	55·11	57·72	59·77	59·19	56·89	52·50	47·32
21	47·50	45·53	45·50	47·62	51·35	55·25	57·70	59·80	59·21	56·68	52·47	47·14
22	47·48	45·52	45·55	47·67	51·56	55·35	57·72	59·80	59·21	56·50	52·49	46·90
23	47·48	45·49	45·60	47·70	51·76	55·50	57·71	59·77	59·23	56·31	52·51	46·75
24	47·42	45·46	45·61	47·76	51·98	55·67	57·80	59·75	59·23	56·19	52·48	46·60
25	47·31	45·43	45·64	47·81	52·18	55·80	57·80	59·75	59·20	56·02	52·45	46·29
26	47·23	45·40	45·70	47·92	52·32	55·85	57·95	59·72	59·19	55·80	52·42	46·21
27	47·21	45·34	45·75	48·02	52·60	55·97	58·03	59·65	59·17	55·66	52·40	46·07
28	47·20	45·31	45·83	48·07	52·85	56·16	58·10	59·60	59·09	55·52	52·25	45·90
29	47·12		45·95	48·10	53·10	56·27	58·19	59·48	59·03	55·48	52·04	45·73
30	47·16		46·10	48·11	53·30	56·38	58·25	59·40	59·05	55·25	51·82	45·60
31	47·17		46·27		53·40		58·33	59·31		54·99		45·48
Means	47·19	46·17	45·18	47·32	50·59	54·80	57·26	59·38	59·13	57·42	53·09	48·26

The mean of the twelve monthly values is 52°·15.

NOTE.—The indications of the Thermometers III. and IV. on July 18 appear to have been influenced by the heavy rain of July 17.

(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.

1890.												
Days of the Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
1	42·40	44·10	41·35	45·90	47·88	56·07	58·92	61·60	59·44	59·82	51·33	45·93
2	42·06	44·40	41·03	45·82	48·38	55·67	58·71	61·80	59·19	59·71	51·45	45·40
3	41·78	44·46	40·67	45·78	48·91	55·70	58·58	61·99	59·25	59·40	51·41	45·02
4	41·67	44·05	40·26	45·82	49·44	55·80	58·72	61·90	59·44	58·92	51·26	44·89
5	41·83	43·61	39·87	45·84	49·85	55·90	58·65	62·00	59·71	58·78	51·05	44·82
6	42·23	43·30	39·66	45·96	50·23	56·13	58·22	62·12	59·93	58·84	50·88	44·83
7	42·88	43·12	39·86	46·19	50·51	56·24	57·85	62·32	60·20	58·80	50·55	44·79
8	43·61	42·98	40·32	46·41	50·62	56·33	57·75	62·41	60·42	58·84	50·41	44·57
9	44·06	42·65	40·90	46·82	50·72	56·36	57·82	62·31	60·52	58·66	50·21	44·35
10	44·23	42·47	41·14	46·15	50·71	56·50	58·14	62·25	60·73	58·28	50·06	44·15
11	44·45	42·33	41·22	45·93	50·70	56·82	58·16	62·24	60·75	57·88	49·68	43·80
12	44·49	42·02	41·76	45·66	50·96	56·85	58·12	62·22	60·80	57·40	49·41	43·48
13	44·69	41·76	42·26	45·49	51·30	56·72	57·91	62·29	60·75	57·04	49·19	43·03
14	44·62	41·51	42·68	45·39	51·64	56·65	58·05	62·27	60·56	56·51	49·16	42·58
15	44·70	41·46	42·93	45·60	51·87	56·61	58·40	62·27	60·46	55·97	49·22	42·20
16	44·91	41·40	43·30	46·11	52·15	56·77	58·94	62·23	60·42	55·49	49·53	41·75
17	45·12	41·50	43·60	46·50	52·43	57·01	59·45	62·18	60·45	55·01	49·73	41·42
18	45·20	41·64	43·82	46·91	53·07	57·52	60·51	62·12	60·45	54·65	49·85	41·13
19	45·20	41·83	43·88	46·96	53·52	57·65	60·48	62·10	60·60	54·40	49·97	40·91
20	45·18	41·93	43·89	46·80	53·76	58·00	60·21	62·07	60·47	54·13	50·20	40·76

(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.*

Days of the Month.	1890. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
21	44·94	41·92	43·68	46·70	54·12	58·24	59·95	61·83	60·55	53·94	50·50	40·60
22	44·49	41·90	43·50	46·73	54·28	58·32	60·10	61·70	60·40	53·85	50·62	40·45
23	44·28	41·83	43·50	47·05	54·60	58·40	60·35	61·62	60·31	53·63	50·51	40·35
24	44·08	41·82	43·67	47·32	55·08	58·55	60·61	61·60	60·17	53·50	50·45	40·15
25	43·90	41·72	43·83	47·44	55·70	58·80	60·80	61·25	59·93	53·53	50·45	40·04
26	44·15	41·70	44·03	47·93	56·22	59·05	60·83	60·80	59·80	53·50	49·85	39·90
27	44·40	41·80	44·40	47·20	56·66	59·42	60·86	60·50	59·70	53·00	49·05	39·78
28	44·66	41·70	44·92	47·01	56·63	59·52	60·93	60·36	59·80	52·30	48·00	39·69
29	44·53		45·50	47·09	56·59	59·41	61·12	60·16	59·88	51·55	47·20	39·60
30	44·32		46·00	47·38	56·49	59·15	61·18	60·07	59·92	51·02	46·45	39·48
31	44·08		45·98		56·33		61·27	59·80		51·20		39·38
Means	43·97	42·39	42·69	46·46	52·62	57·34	59·41	61·69	60·17	55·79	49·92	42·23

The mean of the twelve monthly values is 51°·22.

(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.

Days of the Month.	1890. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
1	35·1	43·1	36·1	45·0	50·8	54·0	57·8	65·9	54·7	59·7	50·0	36·8
2	35·9	44·0	33·6	44·5	51·2	57·3	59·0	63·7	58·2	55·0	50·0	35·3
3	35·0	38·8	33·0	44·8	52·1	57·0	59·2	62·4	59·2	55·6	45·8	38·8
4	38·5	34·4	31·0	45·0	57·2	58·0	58·6	63·2	60·2	57·0	48·0	40·0
5	42·3	39·8	35·2	44·5	52·6	59·0	56·0	64·4	60·9	58·1	46·8	40·0
6	45·0	37·2	38·8	46·3	53·3	59·2	56·0	64·6	61·6	59·0	45·6	40·0
7	45·2	39·4	41·0	47·2	54·2	58·0	57·0	64·1	61·2	61·0	47·0	39·0
8	45·4	37·6	42·3	45·2	52·3	58·0	59·0	62·6	60·7	56·2	45·0	38·2
9	42·2	37·7	39·9	44·2	52·0	59·1	60·0	62·6	60·2	53·1	46·0	37·8
10	44·5	37·2	40·0	43·9	52·1	61·0	58·7	63·4	61·0	52·9	44·1	37·0
11	43·1	37·1	44·7	42·9	52·8	59·1	57·6	63·6	60·9	54·1	45·1	35·9
12	45·8	36·3	44·2	42·6	54·3	57·9	56·3	64·1	60·1	51·0	45·0	34·3
13	46·0	36·0	44·0	43·1	54·0	56·9	59·0	61·9	60·0	50·0	47·0	33·7
14	42·3	38·3	44·0	45·2	54·6	56·7	61·1	62·0	59·0	48·0	45·0	31·9
15	45·7	38·4	44·7	48·1	54·2	58·1	63·0	62·7	59·6	51·8	49·2	32·8
16	45·9	40·0	46·0	48·8	55·0	60·5	61·7	62·0	60·5	49·6	48·7	30·0
17	45·0	40·3	44·1	48·0	57·0	60·0	63·0	61·1	61·5	50·0	47·7	33·8
18	44·2	40·5	43·0	46·6	57·1	59·0	61·8	62·3	61·3	49·5	49·3	34·0
19	45·8	40·6	42·2	45·2	56·1	60·0	60·8	61·1	61·1	49·2	50·8	33·0
20	43·1	39·2	39·1	44·3	56·3	60·7	59·0	61·1	61·0	50·1	51·3	32·3
21	40·3	38·0	39·2	47·7	56·4	61·2	61·0	61·4	60·0	50·2	50·4	33·3
22	40·8	39·8	42·3	50·0	56·9	60·0	63·1	60·5	59·9	49·0	48·0	31·3
23	42·3	38·3	43·8	48·0	58·3	61·1	62·3	62·1	59·4	50·0	51·0	31·3
24	40·6	37·8	43·2	48·9	60·9	62·0	63·9	59·0	58·8	51·8	49·0	33·8
25	49·2	39·0	44·5	46·0	62·7	62·2	61·0	56·0	59·1	52·8	44·0	32·7

(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.*

1890.												
Days of the Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
26	49·1	40·9	46·0	45·6	59·2	63·0	63·0	58·1	59·0	46·5	40·0	33·6
27	45·1	37·8	48·2	45·3	58·0	60·3	62·9	58·0	60·5	45·0	38·1	33·1
28	45·2	35·0	50·0	46·5	58·0	60·6	63·1	57·9	60·1	40·3	36·0	33·0
29	40·6		49·5	48·0	58·0	58·6	62·0	58·3	59·2	45·6	36·0	33·2
30	41·0		46·0	50·0	58·1	58·2	63·0	56·3	60·0	50·0	35·9	31·0
31	42·6		45·2		54·0		65·0	55·0		50·0		32·0
Means	43·0	38·7	42·1	46·0	55·5	59·2	60·5	61·3	60·0	51·7	45·9	34·6

The mean of the twelve monthly values is 49°·87.

(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.

1890.												
Days of the Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
1	32·0	47·0	35·0	48·0	62·4	59·8	59·0	73·8	61·6	60·0	52·5	38·4
2	34·8	44·3	31·2	47·3	60·3	61·4	64·2	64·5	65·6	55·0	52·1	34·6
3	33·1	35·3	31·5	52·1	63·8	60·1	61·5	66·6	64·2	63·4	45·0	37·2
4	44·6	33·0	28·8	54·0	63·3	59·7	64·4	67·9	63·3	64·0	50·2	43·2
5	48·2	40·3	41·8	54·5	54·9	63·9	53·0	73·3	69·6	61·3	47·1	38·7
6	52·4	40·0	49·2	54·0	60·9	64·1	56·4	68·8	68·0	65·2	48·2	37·6
7	51·8	40·3	50·5	49·9	59·6	63·1	61·5	66·7	68·8	58·2	47·5	36·2
8	49·5	39·7	48·1	48·9	53·6	64·0	65·1	64·0	69·0	59·4	50·1	34·5
9	45·0	39·9	40·8	45·0	51·2	68·0	61·1	63·9	65·6	58·0	46·0	36·3
10	46·0	40·2	46·5	42·9	56·8	71·8	63·5	64·7	71·2	58·6	45·5	32·2
11	44·4	39·0	54·0	46·2	57·0	62·2	55·5	65·0	68·8	62·3	46·4	30·3
12	46·6	37·6	53·0	47·3	61·5	59·5	58·0	65·5	65·8	59·1	50·1	26·2
13	50·5	38·7	46·0	49·8	60·0	54·6	65·5	62·5	67·0	51·5	50·0	27·3
14	44·6	39·4	53·7	55·7	58·8	59·0	62·5	65·0	65·8	44·2	50·2	27·0
15	49·0	38·6	50·1	57·3	61·2	65·1	70·7	67·9	70·0	54·2	51·1	28·0
16	49·0	44·9	56·0	56·2	66·3	71·0	66·1	65·9	71·6	51·2	52·1	27·9
17	45·1	45·3	47·5	54·0	64·2	58·5	71·8	68·0	71·2	50·2	47·2	31·5
18	45·3	44·8	50·5	44·3	65·2	66·2	63·3	69·0	67·5	51·5	53·4	30·8
19	47·2	42·2	43·2	43·3	66·0	62·2	61·3	59·0	66·8	49·6	53·9	29·5
20	42·0	38·2	39·8	45·2	57·3	66·5	62·1	62·3	64·0	50·6	54·4	27·1
21	41·2	36·3	44·5	56·1	65·1	67·0	65·5	63·9	65·0	51·2	51·2	35·6
22	41·4	41·2	48·0	56·5	67·1	63·0	69·6	63·5	63·6	52·8	49·2	21·1
23	47·6	38·7	49·8	53·3	68·8	62·6	67·9	64·0	63·2	52·1	55·9	30·4
24	44·6	41·0	46·5	51·5	73·0	67·6	70·1	62·0	65·7	55·4	44·5	32·1
25	52·0	39·1	48·7	43·2	73·8	73·0	64·5	61·0	62·2	52·2	38·2	28·0
26	46·0	40·0	53·8	51·3	60·5	63·4	68·0	62·1	65·1	40·9	33·3	34·8
27	44·5	38·0	54·0	50·2	60·0	63·6	68·3	60·7	66·8	40·3	30·5	32·5
28	48·5	35·0	60·2	53·1	58·0	65·3	67·3	61·5	63·8	33·3	27·0	31·9
29	39·3		54·2	58·1	61·9	58·7	69·3	59·9	60·0	53·8	30·5	27·5
30	42·8		51·1	60·4	59·5	57·0	67·0	58·3	65·6	55·5	34·8	26·1
31	47·6		50·0		54·0		69·5	57·1		56·0		31·1
Means	45·1	39·9	47·0	51·0	61·5	63·4	64·3	64·5	66·2	53·9	46·3	31·8

The mean of the twelve monthly values is 52°·91.

ABSTRACT of the CHANGES of the DIRECTION of the WIND, as derived from the Records of OSLER'S ANEMOMETER in the Year 1890.

(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				
1. 0	1. 0½	S.S.W.	S.W.	22½	
1. 4½	1. 5	S.W.	S.E.		90
1. 17	1. 20	S.E.	N.E.		90
1. 21¾	2. 1	N.E.	E.	45	
2. 22	2. 23	E.	N.E.		45
2. 23½	3. 3	N.E.	S.E.	90	
3. 13	3. 17	S.E.	E.S.E.		22½
4. 2	4. 4	E.S.E.	S.S.W.	90	
4. 16	4. 17	S.S.W.	S.		22½
5. 2	5. 3	S.	S.S.W.	22½	
8. 7	8. 12	S.S.W.	S.		22½
8. 15¾	8. 20	S.	S.W.	45	
9. 4	9. 6	S.W.	S.S.W.		22½
9. 21	10. 1	S.S.W.	W.S.W.	45	
10. 11½	10. 12	W.S.W.	W.	22½	
11. 0	11. 2	W.	S.W.		45
11. 5	11. 6	S.W.	S.S.W.		22½
11. 14	11. 16	S.S.W.	S.W.	22½	
12. 5¼	12. 10	S.W.	N.W.	90	
12. 14¾	12. 19	N.W.	S.W.		90
12. 22	12. 22½	S.W.	S.		45
13. 0	13. 0½	S.	S.W.	45	
13. 16¾	13. 18½	S.W.	W.	45	
13. 19¼	14. 0	W.	S.W.		45
16. 13½	16. 18	S.W.	S.S.W.		22½
17. 10	17. 14	S.S.W.	S.		22½
18. 4	18. 7	S.	S.W.	45	
21. 12	21. 14	S.W.	S.S.W.		22½
21. 23	22. 2	S.S.W.	S.S.E.		45
22. 5	22. 9	S.S.E.	W.S.W.	90	
22. 14	22. 22	W.S.W.	S.S.E.		90
23. 1	23. 2	S.S.E.	S.E.		22½
23. 4	23. 17	S.E.	W.N.W.	157½	
23. 22	24. 1	W.N.W.	S.W.		67½
24. 16	24. 17½	S.W.	S.S.E.		67½
24. 20	25. 0	S.S.E.	S.W.	67½	
27. 5	27. 9	S.W.	W.N.W.	67½	
27. 17½	27. 22	W.N.W.	S.W.		67½
28. 2	28. 2½	S.W.	E.		135
28. 4¼	28. 7	E.	S.E.	45	
28. 8¾	28. 9	S.E.	S.W.	90	
28. 12	28. 17½	S.W.	N.N.E.	157½	
29. 0	29. 3	N.N.E.	N.		22½
29. 7	29. 11	N.	N.N.W.		22½
29. 17	29. 23½	N.N.W.	S.W.		112½
30. 5	30. 12½	S.W.	W.N.W.	67½	
31. 0	31. 4	W.N.W.	N.N.W.	45	
31. 18¾	31. 22¼	N.N.W.	S.S.W.		135
			Sums	1417½	1417½

Greenwich Civil Time. From	Greenwich Civil Time. To	Change of Direction. From	Change of Direction. To	Amount of Motion. Direct.	Amount of Motion. Retrograde.
				°	°
February.					
d h	d h				
1. 1½	1. 2	S.S.W.	S.W.	22½	
1. 4½	1. 5	S.W.	S.S.W.		22½
2. 4	2. 5	S.S.W.	S.W.	22½	
2. 7	2. 14	S.W.	N.	135	
3. 1½	3. 5½	N.	S.W.		135
3. 14	3. 14¼	S.W.	S.		45
3. 17½	3. 21	S.	S.W.	45	
4. 2½	4. 3¼	S.W.	S.S.E.	292½	
4. 4½	4. 5¼	S.S.E.	E.S.E.		45
4. 10½	4. 10¾	E.S.E.	S.W.		247½
4. 12½	4. 14½	S.W.	N.E.	180	
4. 17	4. 17½	N.E.	N.		45
4. 18½	4. 21½	N.	N.E.	45	
4. 22½	5. 0¼	N.E.	N.N.W.		67½
5. 7	5. 10	N.N.W.	N.N.E.	45	
6. 5	6. 6	N.N.E.	N.E.	22½	
6. 13½	6. 14	N.E.	E.N.E.	22½	
6. 18	6. 21	E.N.E.	N.E.		22½
7. 2	7. 4	N.E.	E.N.E.	22½	
8. 9½	8. 12½	E.N.E.	E.	22½	
8. 16	8. 17	E.	E.N.E.		22½
9. 0¾	9. 1	E.N.E.	N.E.		22½
9. 5	9. 9½	N.E.	E.	45	
10. 2½	10. 4½	E.	E.S.E.	22½	
10. 12	10. 16	E.S.E.	E.		22½
11. 23	12. 0	E.	E.S.E.	22½	
13. 11¼	13. 12	E.S.E.	S.E.	22½	
13. 17½	13. 21¼	S.E.	E.		45
14. 1	14. 8	E.	N.		90
14. 17½	14. 18	N.	S.S.W.	202½	
14. 19½	14. 23½	S.S.W.	E.N.E.		135
15. 14½	15. 16½	E.N.E.	W.		157½
15. 20	16. 0	W.	W.S.W.		22½
16. 5½	16. 9½	W.S.W.	S.S.W.		45
16. 14½	16. 18	S.S.W.	S.E.		67½
17. 6	17. 8½	S.E.	E.N.E.		67½
17. 8¾	17. 12	E.N.E.	S.S.E.	90	
17. 13	17. 19½	S.S.E.	E.		67½
18. 6	18. 11	E.	E.N.E.		22½
19. 9½	19. 10	E.N.E.	E.	22½	
20. 18¾	20. 19	E.	N.E.		45
20. 22	20. 23	N.E.	N.		45
21. 7½	21. 8½	N.	E.N.E.	67½	
21. 12¼	21. 12½	E.N.E.	S.S.E.	90	
21. 20½	21. 21½	S.S.E.	E.		67½
21. 22¾	21. 23	E.	S.E.	45	
22. 0½	22. 2	S.E.	N.E.		90
23. 11	23. 14	N.E.	E.N.E.	22½	
23. 18½	23. 22	E.N.E.	N.E.		22½
24. 6	24. 7	N.E.	N.N.E.		22½
24. 10¾	24. 11	N.N.E.	N.E.	22½	

Greenwich Civil Time. From	Greenwich Civil Time. To	Change of Direction. From	Change of Direction. To	Amount of Motion. Direct.	Amount of Motion. Retrograde.
				°	°
Feb.—*cont.*					
d h	d h				
25. 5	25. 9	N.E.	N.		45
25. 11	25. 14	N.	N.N.E.	22½	
25. 18	25. 21½	N.N.E.	N.E.	22½	
26. 23	27. 1	N.E.	N.N.E.		22½
27. 4¾	27. 10	N.N.E.	N.		22½
28. 12½	28. 16½	N.	N.N.W.		22½
28. 21	28. 24	N.N.W.	W.		67½
			Sums	1597½	1890
March.					
1. 1½	1. 2	W.	W.S.W.		22½
1. 10	1. 11	W.S.W.	S.W.		22½
1. 13	1. 14	S.W.	S.S.W.		22½
1. 16	1. 19½	S.S.W.	N.E.		157½
2. 16½	2. 20	N.E.	N.N.E.		22½
3. 4	3. 6	N.N.E.	N.E.	22½	
3. 10½	3. 11	N.E.	N.N.E.		22½
3. 23¾	4. 0¼	N.N.E.	N.E.	22½	
4. 2¼	4. 8	N.E.	S.W.	180	
5. 1	5. 12	S.W.	N.	135	
5. 13	5. 19½	N.	W.S.W.		112½
6. 6	6. 11	W.S.W.	W.N.W.	45	
6. 16¾	6. 17	W.N.W.	N.W.	22½	
6. 20	6. 22	N.W.	W.S.W.		67½
7. 18	7. 22	W.S.W.	S.W.		22½
8. 19¾	8. 21	S.W.	W.S.W.	22½	
9. 0	9. 5	W.S.W.	N.W.	67½	
9. 22	9. 23¾	N.W.	S.S.W.		112½
10. 6	10. 16	S.S.W.	W.S.W.	45	
11. 9½	11. 12	W.S.W.	W.	22½	
11. 17	12. 0	W.	S.W.		45
12. 7	12. 11	S.W.	W.	45	
12. 17¾	12. 20½	W.	S.W.		45
13. 18	13. 21	S.W.	S.S.W.		22½
14. 2½	14. 3	S.S.W.	W.S.W.	45	
14. 4	14. 4½	W.S.W.	S.E.		112½
14. 8¼	14. 10½	S.E.	S.W.	90	
14. 15	14. 15½	S.W.	S.S.W.		22½
14. 18	14. 20	S.S.W.	S.S.E.		45
15. 8½	15. 12	S.S.E.	S.S.W.	45	
15. 17	15. 19¼	S.S.W.	S.E.		67½
16. 1½	16. 3	S.E.	S.S.E.	22½	

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.
				°	°
March—cont.					
d h	d h				
16.6	16.12	S.S.E.	S.S.W.	45	
16.14	16.16	S.S.W.	S.S.E.		45
16.17	16.21	S.S.E.	S.W.	67½	
16.23½	17.0	S.W.	W.S.W.	22½	
17.12	17.12½	W.S.W.	S.W.		22½
17.18¼	17.20	S.W.	S.S.W.		22½
17.23½	18.4¾	S.S.W.	E.N.E.		135
18.17¼	19.1	E.N.E.	N.		67½
19.12	19.13	N.	N.N.W.		22½
19.16¼	19.17	N.N.W.	N.	22½	
19.21	19.23	N.	N.N.W.		22½
20.3	20.10½	N.N.W.	W.N.W.		45
20.20½	20.21½	W.N.W.	S.W.		67½
21.7	21.10	S.W.	W.S.W.	22½	
21.17¼	21.18¾	W.S.W.	S.S.W.		45
21.20	21.21	S.S.W.	S.W.	22½	
22.21	22.22	S.W.	S.S.W.		22½
23.13	23.13½	S.S.W.	S.W.	22½	
24.4½	24.11	S.W.	S.S.E.		67½
24.18¼	24.18½	S.S.E.	S.S.W.	45	
25.4	25.9	S.S.W.	W.S.W.	45	
26.0	26.4	W.S.W.	S.W.		22½
26.9	26.11	S.W.	W.S.W.	22½	
26.21	26.23½	W.S.W.	S.S.W.		45
27.12	27.12½	S.S.W.	S.W.	22½	
27.22½	28.3	S.W.	S.S.W.		22½
28.10½	28.12	S.S.W.	S.		22½
28.22	29.2¼	S.	S.S.W.		337½
29.6½	29.9	S.S.W.	W.S.W.	45	
29.13	29.13½	W.S.W.	N.W.	67½	
29.15	29.15½	N.W.	W.N.W.		22½
29.19½	29.19¾	W.N.W.	S.W.		67½
30.9¾	30.10	S.W.	N.W.	90	
30.15¾	30.16½	N.W.	N.	45	
30.22	31.1	N.	N.E.	45	
31.12½	31.12¾	N.E.	E.N.E.	22½	
			Sums	1507½	2070
April.					
1.15½	1.16	E.N.E.	E.S.E.	45	
1.21½	2.4	E.S.E.	N.E.		67½
2.5	2.8	N.E.	E.N.E.	22½	
2.20½	3.1	E.N.E.	N.E.		22½
3.7	3.9	N.E.	E.N.E.	22½	
3.17	3.17¼	E.N.E.	E.	22½	
3.19½	3.21	E.	N.E.		45
4.5½	4.9	N.E.	N.		45
4.10¾	4.11½	N.	E.N.E.	67½	
4.16¼	4.16¾	E.N.E.	E.S.E.	45	
4.19	5.2	E.S.E.	N.		112½
5.14½	5.16¾	N.	W.S.W.	247½	

Greenwich Civil Time.		Change of Direction.		Amount of Motion.	
From	To	From	To	Direct.	Retrograde.
				°	°
April—cont.					
d h	d h				
5.20	5.22½	W.S.W.	S.W.		22½
7.11	7.12	S.W.	N.W.	90	
7.17¾	7.18	N.W.	N.N.W.	22½	
7.19	7.20	N.N.W.	W.N.W.		45
7.23	7.23½	W.N.W.	N.N.W.	45	
8.0½	8.1	N.N.W.	W.N.W.		45
8.4	8.6	W.N.W.	W.S.W.		45
8.7	8.11	W.S.W.	N.N.W.	90	
9.19½	9.20	N.N.W.	S.		157½
10.0¼	10.1	S.	W.S.W.	67½	
10.5¾	10.6	W.S.W.	N.E.	157½	
10.12¾	10.14	N.E.	E.	45	
10.19½	10.23	E.	N.N.W.		112½
11.4	11.8	N.N.W.	N.	22½	
12.14½	12.15¼	N.	E.S.E.		247½
12.17	12.17½	E.S.E.	S.S.W.	90	
12.20	13.3	S.S.W.	E.S.E.		90
13.17	13.19½	E.S.E.	E.		22½
14.15	14.19	E.	E.N.E.		22½
15.21½	15.23	E.N.E.	N.E.		22½
16.2½	16.3½	N.E.	E.N.E.	22½	
16.7¼	16.13	E.N.E.	E.S.E.	45	
16.17	17.1	E.S.E.	N.E.		67½
18.1½	18.5	N.E.	N.N.E.		22½
19.21	19.23	N.N.E.	N.		22½
20.7½	20.10¼	N.	W.	270	
20.13	20.20	W.	S.W.		45
22.12	22.15½	S.W.	W.N.W.	67½	
22.20	22.21	W.N.W.	W.S.W.		45
23.5	23.10½	W.S.W.	W.N.W.	45	
23.14	23.15	W.N.W.	W.S.W.		45
23.18	23.20	W.S.W.	S.W.		22½
24.1	24.2½	S.W.	E.N.E.		157½
24.7	24.7½	E.N.E.	N.		67½
24.9	24.9½	N.	W.		90
24.12	24.13	W.	N.W.	45	
24.15	24.19	N.W.	S.W.		90
25.4½	25.6	S.W.	N.E.		180
25.13	25.14	N.E.	N.		45
25.18	25.20¼	N.	W.S.W.		112½
25.20¾	25.22	W.S.W.	N.N.W.	90	
25.23½	26.4	N.N.W.	S.W.		112½
26.6¼	26.11	S.W.	N.E.	180	
26.12¼	26.14	N.E.	W.N.W.		112½
26.15	26.18	W.N.W.	E.S.E.	180	
26.19	26.23	E.S.E.	N.N.W.		135
27.7½	27.9	N.N.W.	N.	22½	
27.18	27.19	N.	N.E.	45	
27.21½	28.2	N.E.	S.W.	180	
28.2¾	28.3	S.W.	N.W.	90	
28.10	28.12	N.W.	S.W.		90
29.8½	29.9	S.W.	S.S.W.		22½
29.18	30.1	S.S.W.	N.E.		157½
30.8	30.8½	N.E.	E.	45	
30.22	30.24	E.	E.N.E.		22½
			Sums	2430	2790

Greenwich Civil Time.		Change of Direction.		Amount of Motion.	
From	To	From	To	Direct.	Retrograde.
				°	°
May.					
d h	d h				
2.7	2.8	E.N.E.	E.S.E.	45	
3.10	3.11	E.S.E.	S.	67½	
3.14¾	3.15	S.	S.S.W.	22½	
3.22	4.5	S.S.W.	N.E.		157½
4.9½	4.11	N.E.	S.	135	
4.12	4.13	S.	E.		90
4.23½	5.0	E.	E.N.E.		22½
5.7	5.10½	E.N.E.	S.S.W.	135	
5.19	5.21	S.S.W.	S.S.E.		45
6.4½	6.6	S.S.E.	S.E.		22½
6.12	6.16½	S.E.	S.S.W.	67½	
6.21¾	6.22¼	S.S.W.	S.S.E.		45
6.23	7.1¼	S.S.E.	S.S.W.	45	
7.3¾	7.4	S.S.W.	N.E.		157½
7.10	7.12	N.E.	S.E.	90	
7.15	7.17	S.E.	E.N.E.		67½
7.23	8.0	E.N.E.	N.		67½
8.7	8.8	N.	N.N.E.	22½	
8.12½	8.15	N.N.E.	E.	67½	
8.20	8.20½	E.	N.E.		45
9.20	9.20¼	N.E.	S.S.W.	157½	
10.13	11.10	S.S.W.	S.W.		337½
11.13¼	11.15	S.W.	W.	45	
11.16¼	11.17	W.	S.S.W.		67½
11.19½	11.20	S.S.W.	S.		22½
12.1	12.2	S.	E.N.E.	247½	
12.12	13.6	E.N.E.	N.N.W.	270	
13.13	14.0½	N.N.W.	S.W.		112½
14.5	14.7	S.W.	W.N.W.	67½	
14.9¾	14.10	W.N.W.	W.		22½
14.19½	15.2	W.	S.W.		45
15.19	16.1	S.W.	S.S.E.		67½
16.3½	16.4	S.S.E.	E.		67½
16.7	16.10	E.	S.S.W.	112½	
16.12	16.14	S.S.W.	S.		22½
16.17	16.19	S.	S.E.		45
16.21¾	17.4	S.E.	S.W.	90	
17.16¾	17.21	S.W.	S.E.		90
18.6	18.7¼	S.E.	S.	45	
18.12	18.15	S.	S.W.	45	
19.3½	19.5½	S.W.	S.S.W.	337½	
19.6¼	19.7	S.S.W.	E.N.E.	225	
19.22½	20.1¼	E.N.E.	S.	112½	
20.9¼	20.10	S.	S.S.W.	22½	
21.0½	21.2½	S.S.W.	S.		22½
21.6	21.7	S.	S.S.W.	22½	
22.3	22.5	S.S.W.	N.E.		157½
22.12¾	22.14	N.E.	E.S.E.	67½	
22.19½	23.0	E.S.E.	E.N.E.		45
25.12	25.17	E.N.E.	E.S.E.	45	
25.18	25.21	E.S.E.	N.E.		67½
26.12	26.13	N.E.	N.N.E.		22½
26.20½	26.21	N.N.E.	N.E.	22½	
27.12	27.13	N.E.	N.N.E.		22½
27.17½	27.19	N.N.E.	E.N.E.	45	
27.19¾	27.20½	E.N.E.	N.N E.		45
27.23	28.0½	N.N.E.	N.		22½
28.12	28.14	N.	N.E.	45	
28.20¼	28.22	N.E.	S.		225

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.
d h	d h			°	°
May—*cont.*					
28. 22½	29. 5	S.	N.N.W.	157½	
29. 8¾	29. 9	N.N.W.	W.N.W.		45
29. 15	29. 18	W.N.W.	W.S.W.		45
30. 7	30. 7½	W.S.W.	N.W.	67½	
30. 9	30. 9½	N.W.	W.N.W.		22½
30. 14	30. 17	W.N.W.	N.N.W.	45	
30. 22	31. 2	N.N.W.	W.		67½
31. 6	31. 7	W.	N.N.W.	67½	
			Sums	3060	2430
June.					
1. 1	1. 2½	N.N.W.	W.S.W.		90
1. 5½	1. 6½	W.S.W.	W.N.W.	45	
1. 12	1. 16½	W.N.W.	W.S.W.		45
2. 6	2. 8	W.S.W.	W.N.W.	45	
2. 12½	2. 15	W.N.W.	W.S.W.		45
2. 20	3. 1	W.S.W.	S.W.		22½
3. 18	3. 21	S.W.	S.S.W.		22½
4. 17	4. 20	S.S.W.	S.W.	22½	
5. 19	5. 23	S.W.	S.S.W.		22½
6. 9	6. 14	S.S.W.	W.	67½	
6. 18	6. 18½	W.	N.W.	45	
7. 2	7. 4	N.W.	N.N.W.	22½	
7. 21	8. 1	N.N.W.	E.S.E.	135	
8. 5¾	8. 6	E.S.E.	S.E.	22½	
8. 10½	8. 12	S.E.	S.S.W.	67½	
8. 15	8. 18	S.S.W.	S.		22½
8. 21	9. 6	S.	W.	90	
9. 7¼	9. 10	W.	S.W.		45
9. 15	9. 18	S.W.	S.S.W.		22½
9. 21	10. 5	S.S.W.	E.N.E.		135
10. 6½	10. 8½	E.N.E.	S.E.	67½	
10. 13	10. 19	S.E.	S.W.	90	
11. 12	11. 12½	S.W.	S.		45
11. 16	11. 16¼	S.	S.W.	45	
11. 19	12. 2½	S.W.	S.		45
12. 4	12. 6	S.	S.W.	45	
12. 8	12. 9	S.W.	N.E.	180	
12. 11	12. 12	N.E.	S.E.	90	
12. 13¾	12. 14½	S.E.	S.W.		270
12. 15½	12. 16¾	S.W.	N.		225
12. 21½	12. 22	N.	N.E.	45	
12. 23	13. 2½	N.E.	N.		45
14. 14½	14. 15	N.	N.W.		45
14. 17½	14. 18	N.W.	S.E.	180	
14. 20	14. 21	S.E.	E.		45
15. 1	15. 3½	E.	N.E.		45
15. 8	15. 8¼	N.E.	N.		45
15. 10	15. 11	N.	E.	90	
15. 12	15. 13	E.	S.		270
15. 22	16. 0	S.	S.W.	45	
16. 6	16. 7	S.W.	W.S.W.	22½	

Greenwich Civil Time. From	Greenwich Civil Time. To	Change of Direction. From	Change of Direction. To	Amount of Motion. Direct.	Amount of Motion. Retrograde.
d h	d h			°	°
June—*cont.*					
16. 12	16. 15	W.S.W.	S.W.		22½
17. 5	17. 8	S.W.	W.S.W.	22½	
17. 14½	17. 15	W.S.W.	W.	22½	
17. 19½	17. 21	W.	W.S.W.		22½
18. 11	18. 12	W.S.W.	S.W.		22½
18. 20	18. 21½	S.W.	W.S.W.	22½	
19. 3	19. 7	W.S.W.	N.N.W.	90	
19. 13	19. 19	N.N.W.	W.S.W.		90
20. 22	20. 23	W.S.W.	N.N.W.	90	
21. 0	21. 0¼	N.N.W.	S.S.W.		135
21. 2¼	21. 8	S.S.W.	N.E.	202½	
21. 10½	21. 10¾	N.E.	N.		45
21. 14	21. 20½	N.	N.W.	315	
21. 22	21. 23	N.W.	S.W.		90
22. 7	22. 8½	S.W.	W.S.W.	22½	
23. 9¼	23. 12	W.S.W.	S.	292½	
23. 15	23. 18½	S.	N.	180	
23. 19	23. 19¾	N.	S.S.E.		202½
23. 21	23. 22	S.S.E.	S.S.W.	45	
24. 0	24. 2	S.S.W.	S.W.	22½	
24. 3	24. 9½	S.W.	W.	45	
24. 18	24. 21½	W.	S.W.		45
25. 7	25. 9	S.W.	W.S.W.	22½	
25. 14	25. 15¼	W.S.W.	S.W.		22½
26. 21	26. 22	S.W.	W.S.W.	22½	
27. 21¾	28. 0	W.S.W.	S.W.		22½
28. 16	28. 16½	S.W.	W.N.W.	67½	
28. 18¾	28. 19¾	W.N.W.	S.S.W.		90
28. 21¾	28. 22	S.S.W.	W.	67½	
29. 7	29. 8	W.	N.W.	45	
29. 13½	29. 14¼	N.W.	S.W.		90
29. 17¼	29. 17½	S.W.	S.S.W.		22½
29. 22	30. 6	S.S.W.	S.S.E.		45
30. 11	30. 13¼	S.S.E.	S.W.	67½	
30. 15	30. 15½	S.W.	W.	45	
30. 18	30. 19	W.	S.W.		45
			Sums	3172½	2565
July.					
1. 1	1. 5	S.W.	W.S.W.	22½	
1. 17	1. 17½	W.S.W.	N.	112½	
2. 2¼	2. 5	N.	N.N.W.		22½
2. 10½	2. 12	N.N.W.	S.W.		112½
3. 2	3. 13½	S.W.	N.W.	90	
3. 20½	3. 23½	N.W.	W.S.W.		67½
4. 8¼	4. 10	W.S.W.	S.W.		22½
4. 17	4. 22	S.W.	N.E.		180
5. 1	5. 6	N.E.	N.N.E.		22½
5. 10½	5. 11¼	N.N.E.	N.		22½
5. 18	6. 2½	N.	W.		90
6. 5	6. 8	W.	N.W.	45	
6. 18	6. 18¼	N.W.	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.
d h	d h			°	°
July—*cont.*					
7. 0	7. 0¾	W.	W.S.W.		22½
7. 18	7. 22	W.S.W.	S.S.W.		45
8. 4	8. 11	S.S.W.	W.S.W.	45	
8. 14¼	8. 15	W.S.W.	W.N.W.	45	
8. 18¾	9. 0	W.N.W.	W.S.W.		45
9. 8½	9. 9½	W.S.W.	S.W.		22½
9. 16¼	9. 20	S.W.	N.	135	
10. 0	10. 1	N.	N.N.W.		22½
10. 13	10. 15	N.N.W.	W.N.W.		45
10. 15½	10. 15¾	W.N.W.	N.N.W.	45	
10. 19	10. 20¼	N.N.W.	N.E.	67½	
10. 22	10. 23	N.E.	N.		45
12. 1	12. 2	N.	S.W.		135
12. 19	12. 20	S.W.	S.S.W.		22½
14. 20¾	14. 21¼	S.S.W.	S.		22½
15. 0½	15. 1	S.	S.S.W.	22½	
15. 4	15. 7	S.S.W.	W.S.W.	45	
15. 12	15. 12½	W.S.W.	W.	22½	
15. 20½	15. 21	W.	W.N.W.	22½	
16. 0	16. 2	W.N.W.	W.S.W.		45
16. 11	16. 12	W.S.W.	E.	202½	
16. 13½	16. 15	E.	N.E.		45
16. 17¼	16. 17½	N.E.	E.S.E.	67½	
16. 19½	16. 20½	E.S.E.	S.S.E.	45	
16. 22	17. 1¾	S.S.E.	E.N.E.		90
17. 2¾	17. 3¾	E.N.E.	E.	22½	
17. 5¾	17. 6	E.	N.E.		45
17. 13¼	17. 14½	N.E.	E.S.E.	67½	
17. 15¼	17. 16	E.S.E.	E.		22½
17. 18	17. 18¾	E.	S.W.		225
17. 22	18. 2	S.W.	N.W.	90	
18. 11	18. 21	N.W.	S.S.W.		112½
18. 22	19. 3	S.S.W.	W.S.W.	45	
19. 6	19. 6½	W.S.W.	N.	112½	
19. 9	19. 10	N.	N.N.E.	22½	
19. 20½	19. 22	N.N.E.	N.		22½
20. 18	20. 22	N.	S.	180	
20. 23½	21. 2¼	S.	W.S.W.		292½
21. 7½	21. 8¼	W.S.W.	N.W.	67½	
21. 10¾	21. 11	N.W.	W.S.W.		67½
22. 5	22. 9	W.S.W.	N.W.	67½	
22. 19¾	23. 2	N.W.	W.S.W.		67½
23. 5½	23. 7	W.S.W.	W.	22½	
23. 15	23. 16	W.	W.N.W.	22½	
23. 19½	23. 21	W.N.W.	W.S.W.		45
24. 6	24. 9¼	W.S.W.	N.W.	67½	
24. 12	24. 14	N.W.	W.		45
24. 15½	24. 17½	W.	N.N.W.	67½	
25. 0	25. 2	N.N.W.	N.W.		22½
25. 14	25. 19	N.W.	S.W.		90
27. 12	27. 16	S.W.	S.S.W.		22½
28. 8	28. 11	S.S.W.	W.	67½	
28. 18	28. 19	W.	W.S.W.		22½
29. 13	29. 14	W.S.W.	S.W.		22½
			Sums	1957½	2317½

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

Greenwich Civil Time. From	Greenwich Civil Time. To	Change of Direction. From	Change of Direction. To	Amount of Motion. Direct.	Amount of Motion. Retrograde.
				°	°
August.					
d h	d h				
1. 2½	1. 4½	S.W.	S.S.W.		22½
1. 11	1. 12	S.S.W.	S.W.	22½	
1. 15¾	1. 21	S.W.	W.	45	
2. 9½	2. 12	W.	N.N.W.	67½	
3. 11½	3. 14	N.N.W.	S.W.		112½
3. 15¼	3. 15¾	S.W.	W.N.W.	67½	
3. 20	3. 23	W.N.W.	S.W.		67½
4. 7¼	4. 7½	S.W.	N.W.	90	
4. 10	4. 15	N.W.	W.S.W.		67½
4. 21	4. 21¾	W.S.W.	S.		67½
4. 23½	4. 23¾	S.	S.W.	45	
5. 19½	5. 22	S.W.	W.S.W.	22½	
6. 2½	6. 6½	W.S.W.	N.	112½	
6. 9	6. 11	N.	W.S.W.		112½
6. 14½	6. 16	W.S.W.	N.E.	157½	
6. 19	6. 19¼	N.E.	E.	45	
7. 3	7. 9	E.	N.E.		45
7. 10	7. 11½	N.E.	E.N.E.	22½	
8. 0	8. 0¾	E.N.E.	N.E.		22½
8. 9	8. 12	N.E.	E.	45	
8. 16	8. 21	E.	N.E.		45
9. 14	9. 15½	N.E.	E.N.E.	22½	
10. 8	10. 10	E.N.E.	E.S.E.	45	
10. 13	10. 15	E.S.E.	S.W.	112½	
10. 18½	10. 20	S.W.	S.S.W.		22½
11. 2½	11. 8	S.S.W.	S.W.	22½	
12. 2	12. 11	S.W.	W.	45	
12. 15	12. 16	W.	N.W.	45	
12. 17	12. 20	N.W.	W.S.W.		67½
13. 4	13. 5	W.S.W.	W.N.W.	45	
13. 8½	13. 10	W.N.W.	W.S.W.		45
14. 11½	14. 16	W.S.W.	S.S.W.		45
15. 8	15. 10	S.S.W.	S.W.	22½	
15. 17	16. 0	S.W.	S.S.W.		22½
16. 8	16. 13	S.S.W.	W.S.W.	45	
16. 18	16. 19	W.S.W.	S.W.		22½
16. 23½	17. 0	S.W.	S.S.W.		22½
17. 5	17. 8	S.S.W.	S.W.	22½	
18. 6	18. 7	S.W.	N.E.		180
18. 9	18. 9¼	N.E.	S.E.		270
18. 11	18. 11¼	S.E.	N.E.		90
18. 14¼	18. 16¼	N.E.	E.S.E.	67½	
18. 18½	18. 22	E.S.E.	N.E.		67½
19. 4	19. 6½	N.E.	N.N.E.		22½
19. 10½	19. 12	N.N.E.	E.N.E.	45	
20. 2½	20. 3	E.N.E.	N.E.		22½
20. 7¾	20. 8	N.E.	N.N.W.		67½
20. 11¼	20. 16	N.N.W.	W		67½
20. 20¼	20. 21½	W.	S.W.		45
21. 23	22. 2½	S.W.	W.	45	
22. 14	22. 17	W.	S.W.		45
23. 11½	23. 14¼	S.W.	W.N.W.	67½	
23. 20	24. 1	W.N.W.	S.W.		67½
24. 13½	24. 14¼	S.W.	S.E.	270	
24. 15	24. 16	S.E.	S.W.	90	
25. 17	25. 22	S.W.	S.		45
26. 0	26. 1	S.	S.W.	45	
28. 0	28. 2	S.W.	W.S.W.	22½	
28. 7	28. 11	W.S.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.
				°	°
Aug.—*cont.*					
d h	d h				
28. 18½	28. 20	N.W.	N.N.E.	67½	
29. 0½	29. 0¾	N.N.E.	N.		22½
29. 15½	29. 16	N.	N.W.		45
29. 18½	29. 19	N.W.	N.	45	
29. 23	30. 1	N.	N.N.W.		22½
30. 5½	30. 8	N.N.W.	N.	22½	
30. 18¼	30. 18½	N.	N.N.E.	22½	
30. 23¾	31. 2½	N.N.E.	S.W.		157½
31. 3¾	31. 8½	S.W.	N.	135	
31. 17	31. 21	N.	N.E.	45	
			Sums	2227½	2047½
September.					
1. 1¾	1. 4	N.E.	S.W.	180	
3. 12	3. 13	S.W.	W.S.W.	22½	
4. 6½	4. 6¾	W.S.W.	W.	22½	
4. 12	4. 13¼	W.	N.W.	45	
4. 19	4. 19½	N.W.	W.S.W.		67½
5. 14½	5. 19	W.S.W.	N.	112½	
5. 23	5. 23½	N.	S.W.		135
6. 5½	6. 6	S.W.	S.		45
6. 7	6. 9½	S.	N.	180	
6. 15	6. 18½	N.	E.S.E.	112½	
6. 21¾	7. 2¼	E.S.E.	N.E.		67½
7. 4	7. 7	N.E.	E.	45	
7. 8	7. 8¼	E.	N.E.		45
7. 13½	7. 16	N.E.	E.S.E.	67½	
8. 8¼	8. 8½	E.S.E.	N.N.E.		90
8. 9¼	8. 9½	N.N.E.	S.E.	112½	
8. 15	8. 16	S.E.	E.S.E.		22½
8. 17	8. 21	E.S.E.	S.S.E.	45	
9. 3	9. 6¼	S.S.E.	S.W.	427½	
10. 7½	10. 9	S.W.	S.W.	360	
10. 12	10. 12¼	S.W.	W.S.W.	22½	
10. 15½	10. 22¾	W.S.W.	S.E.	247½	
11. 0	11. 1½	S.E.	N.		135
11. 4¼	11. 5¼	N.	S.W.		135
11. 8½	11. 18	S.W.	N.N.W.	112½	
12. 7	12. 8¾	N.N.W.	N.E.	67½	
12. 10¾	12. 12	N.E.	N.	315	
12. 12½	12. 13½	N.	W.		450
12. 14	12. 16¼	W.	S.E.	225	
12. 18	13. 1	S.E.	S.W.	90	
13. 8½	13. 9¼	S.W.	N.N.W.		247½
13. 9¾	13. 10	N.N.W.	S.W.	247½	
13. 12	13. 16	S.W.	S.E.		90
14. 0½	14. 1	S.E.	N.E.		90
14. 3¼	14. 3½	N.E.	E.	45	
14. 6	14. 6½	E.	N.E.		45
14. 9	14. 9½	N.E.	E.	45	
15. 8	15. 10	E.	S.E.	45	
15. 16¼	15. 17	S.E.	E.S.E.		22½

Greenwich Civil Time. From	Greenwich Civil Time. To	Change of Direction. From	Change of Direction. To	Amount of Motion. Direct.	Amount of Motion. Retrograde.
				°	°
Sept.—*cont.*					
d h	d h				
15. 22½	16. 0	E.S.E.	S.E.	22½	
17. 6½	17. 7½	S.E.	N.E.		90
17. 8½	17. 9	N.E.	S.E.	90	
18. 0½	18. 8	S.E.	S.S.W.	67½	
18. 20	19. 3	S.S.W.	S.S.E.		45
19. 10	19. 12	S.S.E.	S.S.W.	45	
19. 17	19. 23	S.S.W.	E.S.E.		90
20. 1	20. 10	E.S.E.	S.S.W.	90	
20. 15	20. 17	S.S.W.	S.		22½
21. 16	21. 18	S.	S.E.		45
21. 20	21. 23	S.E.	S.S.W.	67½	
22. 18	22. 19	S.S.W.	S.		22½
23. 0½	23. 1	S.	S.W.	45	
25. 3	25. 13¼	S.W.	N.N.W.	112½	
25. 16¾	25. 20	N.N.W.	S.W.		112½
26. 8	26. 11	S.W.	W.S.W.	22½	
27. 9½	27. 11	W.S.W.	S.W.		22½
			Sums	3757½	2137½
October.					
1. 14	1. 16½	S.W.	W.	45	
1. 23	2. 1	W.	N.	90	
2. 2	2. 6	N.	W.N.W.		67½
2. 8	2. 8½	W.N.W.	N.N.W.	45	
2. 10	2. 11	N.N.W.	N.W.		22½
2. 13	2. 19	N.W.	S.W.		90
4. 6	4. 10	S.W.	W.S.W.	22½	
5. 13	5. 18	W.S.W.	S.W.		22½
6. 8	6. 12	S.W.	W.S.W.	22½	
6. 17	6. 18	W.S.W.	S.W.		22½
7. 18	8. 0	S.W.	N.N.E.	157½	
8. 7¾	8. 8	N.N.E.	N.E.	22½	
8. 14½	8. 17	N.E.	E.	45	
8. 18½	8. 19	E.	E.N.E.		22½
8. 22½	8. 23	E.N.E.	E.	22½	
9. 3	9. 6	E.	N.N.E.		427½
9. 7½	9. 9½	N.N.E.	S.S.W.	180	
9. 22	9. 22½	S.S.W.	S.W.	22½	
13. 9	13. 9¼	S.W.	N.E.		180
13. 13½	13. 13½	N.E.	N.		45
13. 15	13. 17¼	N.	E.S.E.	112½	
13. 19¼	13. 19½	E.S.E.	N.E.		67½
14. 2	14. 2¼	N.E.	S.E.	90	
14. 3¼	14. 3½	S.E.	N.N.W.		157½
14. 7¾	14. 8	N.N.W.	N.E.	67½	
14. 9¼	14. 11	N.E.	W.		135
14. 15¼	14. 17	W.	S.W.		45
15. 13	15. 13½	S.W.	W.	45	
15. 16½	15. 17	W.	W.S.W.		22½
16. 8	16. 9	W.S.W.	W.	22½	
16. 17¼	16. 18	W.	W.S.W.		22½
16. 20	16. 21½	W.S.W.	W.N.W.	45	

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

Greenwich Civil Time. From	Greenwich Civil Time. To	Change of Direction. From	Change of Direction. To	Amount of Motion. Direct.	Amount of Motion. Retrograde.
				°	°
Oct.—*cont.*					
d h	d h				
17. 0	17. 5	W.N.W.	W.S.W.		45
17. 9	17. 11	W.S.W.	W.N.W.	45	
17. 22	18. 0	W.N.W.	N.W.	22½	
18. 5	18. 10	N.W.	N.N.W.	22½	
20. 23	21. 0	N.N.W.	S.		157½
21. 3	21. 3½	S.	E.S.E.		67½
21. 9	21. 9¼	E.S.E.	N.E.		67½
21. 23	22. 10	N.E.	S.E.	90	
22. 13	23. 0	S.E.	W.S.W.	112½	
23. 8	23. 10	W.S.W.	N.W.	67½	
23. 22	23. 22½	N.W.	W.N.W.		22½
24. 1½	24. 2	W.N.W.	W.S.W.		45
24. 18	24. 19	W.S.W.	S.W.		22½
25. 13	25. 15½	S.W.	N.N.W.	112½	
25. 17	25. 21	N.N.W.	W.S.W.		90
26. 11½	26. 11¾	W.S.W.	N.W.	67½	
27. 22	27. 23	N.W.	S.W.		90
28. 9	28. 11	S.W.	W.	45	
28. 14¾	28. 18	W.	S.W.		45
29. 23	30. 2	S.W.	W.S.W.	22½	
30. 9	30. 10½	W.S.W.	N.E.	157½	
30. 13	30. 14¼	N.E.	S.E.	90	
30. 15½	30. 15¾	S.E.	N.E.		90
30. 16¼	30. 19	N.E.	S.S.E.	112½	
31. 4½	31. 9	S.S.E.	S.S.W.	45	
31. 12	31. 23½	S.S.W.	N.W.	112½	
			Sums	2182½	2092½
November.					
1. 5	1. 10	N.W.	N.N.W.	22½	
1. 13	1. 23	N.N.W.	S.S.W.		135
2. 9	2. 11	S.S.W.	W.	67½	
2. 17½	2. 19	W.	W.S.W.		22½
2. 22	3. 2	W.S.W.	N.W.	67½	
3. 4	3. 8	N.W.	W.S.W.		67½
3. 12	3. 18	W.S.W.	S.S.E.		90
3. 19	3. 22½	S.S.E.	W.	112½	
3. 22¾	4. 1	W.	W.S.W.		22½
4. 13	4. 17	W.S.W.	S.S.W.		45
4. 21¼	4. 21½	S.S.W.	N.N.E.		180
5. 0	5. 0¼	N.N.E.	N.		22½
5. 6½	5. 8	N.	N.N.W.		22½
5. 13¾	5. 16	N.N.W.	N.W.		22½
5. 21	5. 23	N.W.	N.N.W.	22½	
6. 3¼	6. 8	N.N.W.	S.W.		112½
6. 13	6. 16½	S.W.	S.		45
6. 23	7. 0	S.	S.S.W.	22½	
7. 2½	7. 10	S.S.W.	W.	67½	
7. 14¾	7. 21	W.	N.W.	45	
8. 1½	8. 9	N.W.	S.W.		90
8. 14	8. 23	S.W.	S.E.		90
8. 23½	9. 5	S.E.	W.N.W.	157½	
9. 7½	9. 8	W.N.W.	W.		22½
9. 12	9. 18	W.	S.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.
				°	°
Nov.—*cont.*					
d h	d h				
9. 23	9. 23¾	S.S.W.	S.	337½	
10. 1¼	10. 3	S.	E.		90
10. 10	10. 10¼	E.	E.S.E.	22½	
10. 12½	10. 13	E.S.E.	N.E.		67½
10. 14	10. 17	N.E.	S.S.E.	112½	
11. 9½	11. 12	S.S.E.	S.W.	67½	
12. 13	12. 18½	S.W.	S.		45
13. 6	13. 8½	S.	N.W.	135	
13. 11½	13. 12	N.W.	S.W.		90
13. 15¼	13. 19¾	S.W.	N.		225
14. 0¾	14. 1½	N.	E.	90	
14. 3½	14. 4½	E.	E.N.E.	337½	
14. 5¼	14. 7¾	E.N.E.	E.S.E.		315
14. 11	14. 11½	E.S.E.	S.	67½	
14. 17	14. 18½	S.	S.S.W.	22½	
15. 1	15. 4	S.S.W.	S.W.	22½	
15. 7	15. 7¼	S.W.	N.	135	
15. 13	15. 16	N.	N.E.	45	
15. 19	16. 7	N.E.	S.E.	90	
16. 12	16. 22	S.E.	W.	135	
17. 1	17. 2	W.	S.W.		45
18. 10	18. 12	S.W.	W.S.W.	22½	
19. 4	19. 9	W.S.W.	S.W.		22½
19. 15	19. 16	S.W.	W.S.W.	22½	
21. 19	21. 19¼	W.S.W.	N.N.W.	90	
21. 20¼	22. 3	N.N.W.	W.S.W.		90
24. 2½	24. 3	W.S.W.	W.N.W.	45	
24. 7	24. 9	W.N.W.	W.		22½
24. 10	24. 11	W.	N.	90	
24. 12	25. 2½	N.	W.		90
25. 5	25. 9½	W.	N.	90	
25. 12	25. 15	N.	N.E.	45	
26. 22½	27. 1½	N.E.	N.		45
27. 8	27. 9	N.	N.N.E.	22½	
27. 19	28. 0	N.N.E.	E.S.E.	90	
28. 1	28. 2	E.S.E.	N.E.		67½
28. 3¾	28. 4	N.E.	S.S.E.		247½
28. 9	28. 10	S.S.E.	E.S.E.		45
28. 17½	28. 17¾	E.S.E.	N.E.		67½
28. 22¾	29. 0	N.E.	W.		135
29. 0½	29. 1	W.	N.	90	
29. 4	29. 4½	N.	N.N.E.	22½	
29. 22¾	29. 23	N.N.E.	N.N.W.		45
30. 1½	30. 1¾	N.N.W.	S.W.	247½	
30. 9½	30. 11	S.W.	S.S.W.		22½
			Sums	3082½	2835
December.					
1. 1½	1. 2	S.S.W.	S.		22½
1. 12	1. 15¾	S.	E.		90
1. 20	2. 1	E.	N.N.W.		112½
2. 3¼	2. 8½	N.N.W.	S.S.E.	180	
2. 12½	2. 13	S.S.E.	S.S.W.	45	
2. 14¼	2. 16	S.S.W.	S.E.		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.
				°	°
Dec.—*cont.*					
d h	d h				
3. 1½	3. 4	S.E.	E.S.E.		22½
3. 18¼	3. 18½	E.S.E.	N.		112½
4. 3	4. 15	N.	E.S.E.	112½	
4. 20	4 20½	E.S.E.	E.		22½
5. 9½	5. 10	E.	E.N.E.		22½
6. 0	6. 2	E.N.E.	E.	22½	
6. 17	6. 18½	E.	E.N.E.		22½
7. 5	7. 8	E.N.E.	E.S.E.	45	
7. 13½	7. 14	E.S.E.	E.		22½
7. 20	7. 23	E.	E.S.E.	22½	
8. 0	8. 1½	E.S.E.	E.N.E.		45
8. 6	8. 7	E.N.E.	E.S.E.	45	
8. 13½	8. 14½	E.S.E.	N.E.		67½
8. 15	8. 20	N.E.	S.E.	90	
9. 6½	9. 8½	S.E.	N.E.		90
10. 11½	10. 12	N.E.	S.E.	90	
12. 15¾	12. 16	S.E.	E.N.E.		67½
13. 3½	13. 4¼	E.N.E.	S.E.	67½	
13. 6	13. 8	S.E.	E.		45
13. 10¼	13. 10½	E.	E.S.E.	22½	
14. 3½	14. 11	E.S.E.	N.E.		67½
14. 16¼	14. 19	N.E.	N.N.W.		67½
14. 20¼	14. 22	N.N.W.	S.W.		112½
15. 12	15. 17¼	S.W.	E.S.E.		112½
16. 12	16. 14	E.S.E.	E.N.E.		45
16. 15¼	16. 17	E.N.E.	E.S.E.	45	
16. 20½	16. 23	E.S.E.	N.E.		67½
18. 6	18. 10	N.E.	S.S.W.	157½	
18. 14	18. 15	S.S.W.	S.E.		67½
19. 1	19. 3	S.E.	E.S.E.		22½
19. 5½	19. 12	E.S.E.	N.E.		67½
19. 14	19. 20½	N.E.	S.W.		180
20. 0¼	20. 2½	S.W.	N.E.		180
22. 6½	22. 7¾	N.E.	W.N.W.	247½	
22. 8¾	22. 12½	W.N.W.	N.E.		247½
22. 14	22. 20	N.E.	N.E.		360
23. 6	23. 7½	N.E.	E.S.E.	67½	
25. 1½	25. 6	E.S.E.	S.W.	112½	
25. 10	25. 11	S.W.	S.		45
25. 21	26. 0	S.	S.W.	45	
26. 17¾	26. 18	S.W.	W.	45	
26. 19¼	26. 22¼	W.	S.		90
27. 0¾	27. 2½	S.	E.N.E.		112½
27. 5½	27. 6	E.N.E.	E.S.E.	45	
27. 7	27. 7¾	E.S.E.	N.E.		67½
27. 15½	27. 17	N.E.	E.	45	
27. 23½	28. 1½	E.	S.E.	45	
28. 2½	28. 3	S.E.	N.E.		90
28. 8	28. 10	N.E.	E.	45	
28. 21½	29. 2	E.	N.E.		45
29. 11	29. 11½	N.E.	N.N.E.		22½
29. 13	29. 16	N.N.E.	N.E.	22½	
30. 17	30. 22	N.E.	E.S.E.	67½	
31. 0	31. 3	E.S.E.	E.N.E.		45
31. 15½	31. 17¼	E.N.E.	E.	22½	
			Sums	1755	2947½

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

EXCESS of MOTION in each MONTH.

1890.	Direct. °	Retrograde. °	1890.	Direct. °	Retrograde. °
January	0		July		360
February		292½	August	180	
March		562½	September	1620	
April		360	October	90	
May	630		November	247½	
June	607½		December		1192½

The whole excess of direct motion for the year was 607½°.

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	1890.												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	15·1	9·1	13·3	9·6	8·4	9·2	10·1	8·5	7·2	10·8	13·5	6·6	10·1
2	15·2	9·1	12·5	9·7	8·3	9·2	9·7	8·4	6·2	10·9	12·4	6·5	9·8
3	15·1	9·0	12·9	9·3	8·2	8·7	9·7	8·3	6·7	10·6	13·1	6·7	9·9
4	15·0	9·4	12·5	8·9	7·8	8·4	10·0	8·7	7·1	10·2	13·1	7·1	9·8
5	15·3	9·7	11·7	9·0	7·6	8·3	9·7	8·5	6·7	10·5	12·8	7·4	9·8
6	15·4	9·6	11·8	9·1	7·9	8·5	10·5	8·8	6·7	10·0	12·8	7·4	9·9
7	15·2	9·3	11·6	9·5	9·0	9·1	11·0	8·6	6·3	10·5	13·2	7·9	10·1
8	15·4	8·8	11·1	10·0	10·2	10·0	11·7	9·4	6·6	10·9	13·1	7·5	10·4
9	15·0	9·4	12·3	11·9	10·7	10·1	12·4	10·6	7·4	11·2	12·5	7·4	10·9
10	16·4	9·3	14·0	13·1	11·3	10·8	12·2	11·1	8·8	12·2	12·7	7·5	11·6
11	17·1	10·2	14·5	14·1	12·0	10·4	12·1	11·2	9·8	12·7	12·2	7·6	12·0
Noon.	17·3	10·2	15·2	13·5	12·9	11·2	12·0	11·1	10·0	13·3	12·8	6·6	12·2
h 13	19·0	10·8	17·3	14·5	13·2	11·4	12·4	11·6	10·6	13·5	13·6	7·6	13·0
14	19·6	11·4	17·2	15·5	13·7	12·4	13·4	12·1	11·3	13·4	14·3	8·2	13·5
15	18·9	12·4	16·7	16·2	13·3	12·2	13·5	12·6	11·5	13·4	13·2	8·4	13·5
16	18·0	12·0	16·9	15·1	12·8	12·3	13·1	12·3	11·1	13·0	13·1	8·0	13·1
17	17·2	11·4	16·3	14·5	12·4	12·2	13·7	12·9	10·7	12·6	12·7	8·0	12·9
18	17·6	11·0	15·6	14·7	12·5	11·8	12·8	11·7	9·5	12·3	12·6	8·0	12·5
19	18·5	10·5	13·8	12·9	11·5	12·1	12·2	10·6	8·7	12·4	13·0	7·8	12·0
20	18·1	10·6	12·8	11·0	9·6	11·6	11·2	9·7	8·6	12·3	13·7	8·3	11·5
21	17·3	10·7	12·7	11·5	9·1	10·4	10·9	10·0	8·7	12·0	13·1	8·3	11·2
22	16·7	10·5	12·4	11·6	8·8	10·1	10·3	9·0	8·7	11·1	13·8	7·8	10·9
23	15·5	10·5	13·1	10·8	9·3	9·9	10·3	8·8	7·8	11·1	14·3	7·4	10·7
Midnight.	15·1	9·7	12·8	9·9	7·9	9·7	9·8	8·2	7·9	10·9	13·4	7·0	10·2
Means	16·6	10·2	13·8	11·9	10·3	10·4	11·4	10·1	8·5	11·7	13·1	7·5	11·3
Greatest Hourly Measures	48	29	36	30	26	24	29	32	26	34	43	29	...
Least Hourly Measures	0	0	0	0	0	0	1	0	0	0	0	0	...

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

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

1890.

Days of the Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d												
1	+ 969	+ 659	+ 493	+ 844	+ 428	+ 499	+ 197	+ 425	+ 562	+ 308	+ 668	+1450
2	+ 980	+ 794	...	+ 669	+ 640	+ 383	+ 422	+ 347	+ 626	+ 650	+ 582	+1123
3	+ 743	+1450	...	+ 604	+ 715	+ 446	+ 370	+ 470	+ 536	+ 536	+ 762	+1237
4	+ 607	+1272	+1281	+ 740	+ 700	+ 229	+ 474	+ 368	+ 502	+ 462	+ 838	+ 296
5	+ 322	+ 423	+ 943	+ 560	+ 355	+ 308	− 425	+ 310	+ 238	+ 588	+ 415	+ 501
6	+ 352	+ 835	+ 920	+ 459	+ 532	+ 322	+ 420	+ 377	+ 246	+ 485	+ 606	+ 874
7	+ 691	+1023	+1070	+ 105	+ 388	+ 398	+ 568	+ 449	+ 304	+ 368	+ 10	+1246
8	+ 435	+1319	+ 533	+ 445	+ 283	+ 278	+ 383	+ 692	+ 255	+ 785	+1045	...
9	+ 889	+ 955	+1067	+ 419	− 33	+ 389	+ 498	+ 303	...	+ 932	+ 949	...
10	+ 905	+1169	+ 412	+ 579	+ 395	+ 137	+ 562	+ 225	+ 488	+ 923	+ 866	+2018
11	+ 973	+1562	+1023	+ 995	+ 50	+ 275	+ 67	+ 165	+ 455	+ 943	+ 786	+2328
12	+1017	+1346	+1134	+ 865	+ 366	+ 112	+ 608	+ 279	+ 428	+1096	+1015	+1842
13	+ 909	+1001	+ 978	+ 543	+ 451	+ 369	+ 322	+ 408	+ 395	+ 983	+ 598	+2214
14	+1030	+ 813	+1062	+ 493	+ 367	+ 209	+ 357	+ 496	+ 430	+1077	+ 576	..
15	+ 591	−1102	+ 829	+ 549	+ 611	+ 200	+ 420	+ 390	+ 461	+ 705	+ 624	...
16	+ 888	+ 784	+ 726	+ 580	+ 435	+ 260	+ 362	+ 480	+ 573	+ 942	+ 362	+1052
17	+ 608	+ 960	+1015	+ 555	+ 640	+ 249	+ 158	+ 694	+ 476	+ 513	+ 910	+ 938
18	+ 615	+1362	+1092	+ 330	+ 665	+ 430	+ 31	+ 520	+ 293	+ 620	+ 419	+1066
19	+ 819	+1281	+ 166	+ 695	+ 539	+ 529	+ 375	+ 143	+ 450	+ 865	+ 360	...
20	+1555	+ 831	− 726	+ 765	+ 268	+ 381	+ 605	+ 348	+ 340	+ 685	+ 285	...
21	+1211	+ 785	+ 963	+ 734	+ 508	− 163	+ 335	+ 370	+ 303	+ 543	+ 307	+1111
22	+ 963	+ 915	+ 766	+ 474	+ 763	+ 557	+ 447	+ 359	+ 508	+ 673	+ 496	...
23	+ 212	+ 926	+ 387	+ 620	+ 376	+ 260	+ 552	+ 272	+ 261	+ 599	+ 138	...
24	+1267	+ 915	− 146	+ 259	+ 423	+ 375	+ 401	+ 584	+ 548	+ 641	+ 421	+1218
25	+ 588	+ 940	+ 617	+ 378	+ 254	+ 565	+ 489	+ 501	+ 642	+ 512	+ 954	+1609
26	+ 715	+ 718	+ 860	+ 408	+ 362	+ 444	+ 405	+ 228	+ 382	+ 709	+ 859	+1411
27	+ 798	+1019	+ 720	+ 534	+ 525	+ 592	+ 477	+ 340	+ 138	+ 893	+1149	+1005
28	+ 112	+1233	+ 850	+ 297	+ 547	− 23	+ 462	+ 240	+ 315	+1082	...	+ 869
29	+ 707		+ 610	+ 573	+ 300	+ 332	+ 628	+ 377	+ 274	+ 525	+1227	+ 788
30	+ 459		+ 820	+ 507	+ 389	+ 159	+ 405	+ 734	+ 270	+ 393	+1818	...
31	...		+ 714		+ 510		+ 229	+ 684		+ 333		...
Means ...	+ 764	+ 935	+ 730	+ 553	+ 444	+ 317	+ 374	+ 406	+ 403	+ 689	+ 691	+1247

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.	1890. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Yearly Means.
Midnight.	+ 646	+ 894	+ 921	+ 669	+ 589	+ 406	+ 417	+ 543	+ 445	+ 662	+ 631	+1310	+ 678
1h.	+ 516	+ 919	+ 950	+ 634	+ 551	+ 518	+ 428	+ 408	+ 423	+ 671	+ 642	+1241	+ 658
2	+ 576	+ 805	+ 922	+ 682	+ 501	+ 507	+ 437	+ 473	+ 394	+ 650	+ 609	+1150	+ 642
3	+ 629	+ 738	+ 876	+ 687	+ 472	+ 468	+ 475	+ 428	+ 369	+ 648	+ 509	+1135	+ 619
4	+ 613	+ 755	+ 840	+ 508	+ 434	+ 418	+ 440	+ 438	+ 325	+ 623	+ 604	+1116	+ 593
5	+ 526	+ 747	+ 706	+ 522	+ 355	+ 410	+ 472	+ 455	+ 343	+ 621	+ 485	+1048	+ 558
6	+ 501	+ 809	+ 707	+ 566	+ 352	+ 421	+ 464	+ 482	+ 343	+ 603	+ 542	+1009	+ 567
7	+ 659	+ 925	+ 721	+ 697	+ 443	+ 470	+ 520	+ 555	+ 367	+ 690	+ 586	+1030	+ 639
8	+ 809	+ 984	+ 754	+ 614	+ 487	+ 472	+ 415	+ 563	+ 372	+ 708	+ 581	+1082	+ 653
9	+ 811	+1101	+ 587	+ 463	+ 398	+ 358	+ 257	+ 384	+ 329	+ 663	+ 553	+1065	+ 581
10	+ 788	+1039	+ 544	+ 389	+ 316	+ 234	+ 233	+ 477	+ 383	+ 649	+ 659	+1182	+ 574
11	+ 905	+ 986	+ 616	+ 393	+ 299	+ 262	+ 162	+ 365	+ 373	+ 501	+ 683	+1252	+ 566
Noon.	+ 838	+ 958	+ 619	+ 403	+ 198	+ 191	+ 191	+ 258	+ 315	+ 596	+ 764	+1246	+ 548
13h.	+ 900	+ 997	+ 389	+ 488	+ 306	+ 289	+ 150	+ 194	+ 437	+ 665	+ 782	+1269	+ 572
14	+ 908	+ 887	+ 690	+ 435	+ 209	+ 120	+ 296	+ 304	+ 404	+ 700	+ 679	+1214	+ 570
15	+ 810	+ 856	+ 446	+ 532	+ 362	− 51	+ 306	+ 69	+ 380	+ 696	+ 788	+1304	+ 542
16	+ 762	+ 938	+ 494	+ 296	+ 298	+ 8	+ 192	+ 172	+ 379	+ 704	+ 761	+1334	+ 528
17	+ 789	+ 949	+ 532	+ 485	+ 415	− 67	+ 233	+ 279	+ 383	+ 746	+ 825	+1435	+ 584
18	+ 855	+1089	+ 540	+ 621	+ 480	+ 177	+ 325	+ 307	+ 290	+ 812	+ 898	+1517	+ 659
19	+ 878	+ 943	+ 770	+ 510	+ 547	+ 249	+ 332	+ 424	+ 530	+ 824	+ 899	+1475	+ 698
20	+ 896	+1002	+ 888	+ 541	+ 607	+ 370	+ 471	+ 463	+ 579	+ 839	+ 808	+1414	+ 740
21	+ 926	+1058	+ 877	+ 682	+ 712	+ 392	+ 557	+ 517	+ 543	+ 790	+ 834	+1397	+ 774
22	+ 959	+1075	+1046	+ 693	+ 677	+ 401	+ 595	+ 624	+ 534	+ 774	+ 767	+1385	+ 794
23	+ 843	+ 992	+1093	+ 752	+ 639	+ 578	+ 616	+ 558	+ 439	+ 708	+ 701	+1327	+ 770
24	+ 626	+ 919	+ 870	+ 648	+ 615	+ 405	+ 404	+ 565	+ 390	+ 665	+ 650	+1293	+ 671
Means 0h.–23h.	+ 764	+ 935	+ 730	+ 553	+ 444	+ 317	+ 374	+ 406	+ 403	+ 689	+ 691	+1247	+ 629
Means 1h.–24h.	+ 763	+ 936	+ 728	+ 552	+ 445	+ 317	+ 374	+ 407	+ 401	+ 689	+ 692	+1247	+ 629
Number of Days employed.	30	28	29	30	31	30	31	31	29	31	29	21	...

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

Hour, Greenwich Civil Time.	1890. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Yearly Means.
Midnight.	+ 678	+ 644	+ 939	+ 491	+ 467	+ 514	+ 176	+ 444	+ 360	+ 507	+ 491	+1125	+ 570
1^h.	+ 499	+ 680	+1025	+ 444	+ 342	+ 482	+ 162	+ 200	+ 228	+ 483	+ 545	+1035	+ 510
2	+ 511	+ 150	+1035	+ 558	+ 277	+ 450	+ 175	+ 447	+ 192	+ 456	+ 535	+1060	+ 487
3	+ 625	+ 83	+1048	+ 616	+ 231	+ 445	+ 337	+ 328	+ 206	+ 431	+ 307	+1035	+ 474
4	+ 628	+ 156	+ 995	+ 277	+ 212	+ 373	+ 260	+ 357	+ 50	+ 373	+ 592	+ 850	+ 427
5	+ 476	+ 113	+ 565	+ 287	+ 130	+ 404	+ 338	+ 359	+ 216	+ 341	+ 377	+ 695	+ 358
6	+ 357	+ 259	+ 482	+ 428	+ 122	+ 411	+ 303	+ 335	+ 254	+ 344	+ 519	+ 755	+ 381
7	+ 556	+ 341	+ 321	+ 633	+ 197	+ 479	+ 445	+ 445	+ 308	+ 386	+ 551	+ 895	+ 463
8	+ 757	+ 96	+ 322	+ 448	+ 260	+ 490	+ 290	+ 434	+ 336	+ 404	+ 562	+ 925	+ 444
9	+ 726	+ 499	+ 52	+ 239	+ 296	+ 379	+ 100	+ 41	+ 354	+ 401	+ 539	+ 315	+ 328
10	+ 725	+ 494	− 33	+ 195	+ 341	+ 258	+ 157	+ 420	+ 426	+ 467	+ 588	+ 560	+ 383
11	+ 917	+ 489	+ 370	+ 195	+ 361	+ 327	+ 16	+ 436	+ 356	+ 49	+ 512	+ 720	+ 396
Noon.	+ 742	+ 389	+ 337	+ 208	+ 142	+ 123	+ 86	+ 195	+ 102	+ 374	+ 688	− 110	+ 273
13^h.	+ 840	+ 579	− 230	+ 423	+ 407	+ 314	− 19	− 2	+ 652	+ 559	+ 704	− 185	+ 337
14	+ 824	+ 317	+ 539	+ 340	+ 57	− 91	+ 358	+ 377	+ 558	+ 669	+ 487	− 260	+ 348
15	+ 614	+ 406	− 77	+ 598	+ 462	− 497	+ 364	− 200	+ 482	+ 733	+ 777	+ 445	+ 342
16	+ 488	+ 654	+ 95	+ 66	+ 301	− 318	+ 165	+ 70	+ 480	+ 741	+ 667	+ 450	+ 322
17	+ 486	+ 451	+ 141	+ 453	+ 531	− 500	+ 171	+ 285	+ 362	+ 761	+ 597	+ 470	+ 351
18	+ 550	+ 841	+ 53	+ 722	+ 581	+ 62	+ 342	+ 218	− 330	+ 749	+ 624	+ 705	+ 426
19	+ 627	+ 249	+ 379	+ 417	+ 620	+ 77	+ 250	+ 360	+ 714	+ 530	+ 622	+1005	+ 487
20	+ 711	+ 511	+ 567	+ 463	+ 661	+ 244	+ 380	+ 395	+1030	+ 750	+ 458	+ 975	+ 595
21	+ 788	+ 820	+ 335	+ 535	+ 727	+ 225	+ 446	+ 468	+ 608	+ 794	+ 618	+ 895	+ 605
22	+ 906	+ 860	+ 601	+ 484	+ 565	+ 102	+ 486	+ 573	+ 580	+ 724	+ 372	+ 690	+ 579
23	+ 734	+ 813	+ 778	+ 662	+ 440	+ 573	+ 675	+ 371	+ 488	+ 636	+ 482	+ 560	+ 601
24	+ 343	+ 783	+ 435	+ 530	+ 413	+ 255	+ 360	+ 454	+ 360	+ 614	+ 623	+ 575	+ 479
Means 0^h.–23^h.	+ 657	+ 454	+ 443	+ 424	+ 364	+ 222	+ 269	+ 307	+ 375	+ 528	+ 551	+ 650	+ 437
Means 1^h.–24^h.	+ 643	+ 460	+ 422	+ 426	+ 361	+ 211	+ 277	+ 307	+ 375	+ 532	+ 556	+ 628	+ 433
Number of Days employed.	14	7	11	13	12	12	13	11	5	7	12	2	...

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.	1890. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Yearly Means.
Midnight.	+ 722	+1018	+ 988	+ 817	+ 731	+ 599	+ 584	+ 651	+ 464	+ 716	+ 676	+ 1394	+ 780
1h.	+ 603	+1040	+ 903	+ 773	+ 716	+ 594	+ 628	+ 569	+ 462	+ 738	+ 644	+ 1323	+ 749
2	+ 573	+1069	+ 881	+ 765	+ 699	+ 585	+ 631	+ 530	+ 435	+ 726	+ 609	+ 1206	+ 726
3	+ 551	+ 998	+ 813	+ 729	+ 670	+ 529	+ 572	+ 519	+ 403	+ 729	+ 556	+ 1195	+ 689
4	+ 524	+ 996	+ 756	+ 665	+ 622	+ 517	+ 558	+ 520	+ 379	+ 718	+ 573	+ 1208	+ 670
5	+ 527	+ 987	+ 760	+ 651	+ 559	+ 475	+ 557	+ 544	+ 365	+ 711	+ 526	+ 1151	+ 651
6	+ 577	+1003	+ 815	+ 584	+ 522	+ 493	+ 562	+ 611	+ 351	+ 682	+ 504	+ 1091	+ 650
7	+ 645	+1124	+ 948	+ 665	+ 608	+ 556	+ 538	+ 665	+ 365	+ 785	+ 599	+ 1100	+ 716
8	+ 734	+1285	+1015	+ 683	+ 649	+ 547	+ 544	+ 663	+ 363	+ 792	+ 622	+ 1156	+ 754
9	+ 796	+1301	+ 930	+ 601	+ 491	+ 386	+ 454	+ 591	+ 311	+ 739	+ 664	+ 1204	+ 706
10	+ 861	+1238	+ 924	+ 525	+ 310	+ 205	+ 320	+ 526	+ 369	+ 720	+ 878	+ 1292	+ 681
11	+ 906	+1194	+ 747	+ 546	+ 255	+ 209	+ 333	+ 314	+ 364	+ 649	+ 806	+ 1359	+ 640
Noon.	+ 935	+1168	+ 766	+ 555	+ 230	+ 236	+ 303	+ 311	+ 347	+ 661	+ 838	+ 1441	+ 649
13h.	+ 995	+1138	+ 754	+ 538	+ 251	+ 250	+ 309	+ 321	+ 386	+ 677	+ 936	+ 1470	+ 669
14	+1058	+1071	+ 787	+ 529	+ 326	+ 208	+ 270	+ 254	+ 361	+ 686	+ 890	+ 1430	+ 656
15	+1098	+1022	+ 745	+ 505	+ 296	+ 161	+ 295	+ 203	+ 340	+ 697	+ 747	+ 1443	+ 629
16	+1130	+1058	+ 745	+ 504	+ 295	+ 147	+ 212	+ 246	+ 334	+ 668	+ 833	+ 1476	+ 637
17	+1148	+1136	+ 775	+ 523	+ 316	+ 179	+ 278	+ 319	+ 361	+ 722	+ 1001	+ 1618	+ 698
18	+1214	+1195	+ 920	+ 535	+ 392	+ 207	+ 283	+ 389	+ 392	+ 812	+ 1063	+ 1686	+ 757
19	+1209	+1194	+1071	+ 541	+ 498	+ 312	+ 379	+ 483	+ 474	+ 898	+ 1091	+ 1569	+ 810
20	+1192	+1176	+1179	+ 564	+ 577	+ 436	+ 531	+ 568	+ 516	+ 849	+ 1021	+ 1480	+ 841
21	+1212	+1182	+1213	+ 792	+ 689	+ 503	+ 620	+ 585	+ 529	+ 795	+ 957	+ 1455	+ 878
22	+1158	+1148	+1272	+ 843	+ 721	+ 586	+ 657	+ 696	+ 523	+ 816	+ 1086	+ 1489	+ 916
23	+1069	+1034	+1239	+ 787	+ 746	+ 603	+ 543	+ 713	+ 452	+ 738	+ 868	+ 1473	+ 855
24	+1034	+ 942	+1117	+ 699	+ 739	+ 507	+ 319	+ 639	+ 399	+ 685	+ 627	+ 1434	+ 762
Means 0h.–23h.	+ 893	+1116	+ 914	+ 634	+ 507	+ 397	+ 457	+ 491	+ 402	+ 739	+ 791	+ 1363	+ 725
Means 1h.–24h.	+ 906	+1112	+ 920	+ 629	+ 507	+ 393	+ 446	+ 491	+ 399	+ 737	+ 789	+ 1365	+ 725
Number of Days employed.	10	19	15	15	16	12	12	14	21	22	9	17	...

AMOUNT of RAIN COLLECTED in EACH MONTH of the YEAR 1890.

MONTH, 1890.		Number of Rainy Days.	Monthly Amount of Rain collected in each Gauge.							
			Self-registering Gauge of Osler's Anemometer.	Second Gauge at Osler's Anemometer.	On the roof of the Octagon Room.	On the roof of the Magnetic Observatory.	On the roof of the Photographic Thermometer Shed.	Gauges partly sunk in the ground.		
			No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.	No. 7.	No. 8.
			in.	in.	in.	in.	in.	in.	in.	in.
January		19	1·121	1·094	1·525	1·716	2·033	2·085	2·152	2·151
February		9	0·672	0·670	0·811	1·024	1·079	1·036	1·063	1·096
March		14	0·875	0·832	1·345	1·628	1·908	1·965	1·980	1·992
April		14	1·109	1·179	1·391	1·679	1·777	1·774	1·772	1·803
May		14	0·997	1·007	1·200	1·322	1·377	1·338	1·336	1·356
June		16	1·747	1·670	2·196	2·396	2·484	2·536	2·518	2·539
July		18	2·967	2·944	3·712	4·316	4·434	4·495	4·423	4·487
August		15	1·835	1·971	2·367	2·492	2·533	2·537	2·499	2·527
September		6	0·485	0·511	0·604	0·622	0·623	0·652	0·648	0·652
October		9	0·601	0·572	0·924	1·102	1·148	1·191	1·168	1·203
November		19	0·672	0·687	0·946	1·161	1·432	1·480	1·520	1·497
December		9	0·220	0·241	0·517	0·579	0·727	0·771	0·886	0·710
Sums		162	13·301	13·378	17·538	20·037	21·555	21·860	21·965	22·013
			ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.
Height of receiving Surface	above the ground	...	50. 8	50. 8	38. 4	21. 6	10. 0	0. 5	0. 5	0. 5
			ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.
	above mean sea level	...	205. 6	205. 6	193. 2	176. 4	164. 10	155. 3	155. 3	155. 3

ROYAL OBSERVATORY, GREENWICH.

OBSERVATIONS

OF

LUMINOUS METEORS.

1890.

Month and Day, 1890.	Greenwich Civil Time.	Observer.	Apparent Size of Meteor in Star-Magnitudes.	Colour of Meteor.	Duration of Meteor in Seconds of Time.	Appearance and Duration of Train.	Length of Meteor's Path in Degrees.	No. for Reference.
	h m s				s		°	
August 9	22. 30. 18	M.	3	Bluish-white	0·5	None	8	1
"	23. 15. 5	M.	3	Bluish-white	0·4	None	5	2
"	23. 22. 3	M.	2	Bluish-white	0·5	None	10	3
11	21. 41. 21	F.	3	Bluish-white	0·3	None	7	4
"	21. 46. 37	F.	3	Bluish-white	0·4	None	5	5
"	21. 48. 47	F.	2	Bluish-white	0·4	None	5	6
"	22. 13. 0	F.	> 1	Bluish-white	0·5	None	10	7
"	22. 25. 12	F.	> 1	Bluish-white	1·0	None	10	8
12	21. 22. 39	F.	1	Bluish-white	1·0	Train	12	9
"	21. 22. 57	F.	2	Bluish-white	0·5	Slight	8	10
"	22. 5. 11	F.	2	Bluish-white	0·3	None	8	11
13	22. 28. 30	F.	1	Bluish-white	1·0	Train	10	12
"	23. 47. 36	F.	3	Bluish-white	0·4	None	8	13
"	23. 55. 33	F.	1	Bluish-white	1·2	Train	12	14
14	0. 3. 32	F.	2	Bluish-white	0·5	None	5	15
"	0. 4. 51	F.	2	Bluish-white	0·4	None	5	16
"	0. 9. 19	F.	2	Bluish-white	0·4	None	7	17
"	0. 13. 46	F.	2	Bluish-white	0·3	None	6	18
"	0. 29. 0	F.	3	Bluish-white	0·7	None	7	19
"	0. 42. 30	F.	2	Bluish-white	0·5	None	6	20
"	0. 46. 7	F.	> 1	White	1·5	Fine	12	21
"	0. 55. 33	F.	2	Bluish-white	0·8	None	7	22
"	1. 2. 32	F.	2	Bluish-white	0·7	None	8	23
"	1. 3. 50	F.	3	Bluish-white	0·6	None	8	24
"	1. 8. 7	F.	2	Bluish-white	0·3	None	7	25
"	1. 23. 38	F.	3	Bluish-white	0·3	None	6	26
"	1. 24. 21	F.	3	Bluish-white	0·7	None	7	27
"	1. 36. 45	F.	1	Bluish-white	0·5	None	10	28
"	1. 41. 43	F.	1	Bluish-white	0·8	None	10	29
"	1. 45. 21	F.	> 1	Bluish-white	1·0	Train	15	30
"	2. 4. 39	F.	> 1	White	1·2	Train	15	31
"	2. 14. 2	F.	2	Bluish-white	1·0	Slight	10	32
"	2. 20. 1	F.	3	Bluish-white	0·8	None	8	33
"	2. 24. 0	F.	> 1	Blue	1·3	Fine	7	34
"	2. 29. 26	F.	2	Bluish-white	0·6	None	10	35
"	2. 35. 3	F.	2	Bluish-white	0·5	None	8	36
"	2. 53. 47	F.	1	Bluish-white	1·0	None	8	37

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 a little above β Cassiopeiæ passed across α Cassiopeiæ.
2	From near ε Cassiopeiæ towards η Persei.
3	From direction of α Pegasi to μ Pegasi.
4	From a few degrees to west of γ Cephei to β Cephei.
5	From near α Cephei to β Cephei.
6	From γ Persei towards γ Andromedæ.
7	From between π and B Sagittarii passed midway between σ and λ Sagittarii.
8	From near β Aquarii towards a point a few degrees south of β Capricorni.
9	From ζ Aquilæ disappeared near η Serpentis.
10	From a few degrees to west of ζ Aquilæ towards α Ophiuchi.
11	From λ Draconis towards ζ Ursæ Majoris.
12	From α Pegasi towards α Aquarii.
13	From 70 Pegasi passed across and disappeared a little beyond θ Piscium.
14	Appeared near ζ Draconis and travelled across η Draconis towards β Boötis.
15	From near ζ Cephei towards α Cygni.
16	From α Cassiopeiæ to σ Cassiopeiæ.
17	From π Pegasi towards μ Pegasi.
18	From γ Cephei towards 33 Cygni.
19	Appeared about midway between η and ι Pegasi and passed across ι Pegasi.
20	From near 31 Camelopardali to β Camelopardali.
21	From ε Cassiopeiæ moving directly towards β Cephei.
22	From 4 Persei to η Persei.
23	From β Pegasi towards a point about 3° to the east of α Pegasi.
24	From a point about 5° to the north of β Pegasi travelled towards γ Pegasi.
25	From γ Trianguli passed across α Trianguli.
26	From σ Cassiopeiæ to 1 Cassiopeiæ.
27	From β Cephei towards δ Draconis.
28	From θ Andromedæ towards π Pegasi.
29	From β Aquarii towards Jupiter (R.A. = $20^{h.}$ $32^{m.}$: N.P.D. = 109° 42′).
30	From δ Piscium to ι Ceti.
31	From direction of α Pegasi moved towards and disappeared a few degrees before reaching β Delphini.
32	From η to δ Piscium.
33	From direction of δ Piscium to ι Ceti.
34	From near δ Cassiopeiæ disappeared near ν Cassiopeiæ.
35	From direction of β Persei disappeared a few degrees to north of the Pleiades.
36	From 54 Andromedæ to ο Cassiopeiæ.
37	From direction of γ Camelopardali to Polaris.