RESULTS

OF THE

MAGNETICAL AND METEOROLOGICAL

OBSERVATIONS

MADE AT

THE ROYAL OBSERVATORY, GREENWICH,

1864.

(EXTRACTED FROM THE GREENWICH OBSERVATIONS, 1864.)

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GREENWICH MAGNETICAL AND METEOROLOGICAL OBSERVATIONS,

1864.

Introduction.

§ 1. *Restriction of Observations during the year* 1864.

In the month of January 1864, the excavation of a subterraneous room, below the former observing room or instrument-room of the Magnetic Observatory, and (like it) in the form of three arms of a cross, was begun. The finishing of the room, and the mounting in it of the Magnetic Instruments, were not completed till the summer. After that time, various experiments were tried and repeated changes were made, which destroyed the efficiency of the remaining months of the year. As none of the observations made in the room were entirely satisfactory, I have thought it best to suppress their printing, preserving them in manuscript for reference if necessary on any special points. The Dip-instrument and Deflexion-instrument, and the Meteorological instruments generally, were not affected by these operations, and observations were made with them as usual.

§ 2. *Dipping Needles, and Method of observing the Magnetic Dip.*

The instrument with which all the dips in the year 1864 have been observed, is that which, for distinction, is called Airy's instrument. The following description will probably suffice to convey an idea of its peculiarities :—

The form of the needles, the form of their axes, the form of the agate bearings, and the general arrangement of the relieving apparatus, are precisely the same as those in Robinson's and other needles. But the form of the observing apparatus is greatly modified, in order to secure the following objects :—

I. To obtain a microscopic view of the points of the needles, as in the instruments introduced by Dr. Lloyd and Major-General Sabine.

II. To possess at the same time the means of observing the needles while in a state of vibration.

III. To have the means of observing needles of different lengths.

IV. To give an illumination to the field of view of each microscope, directed from the side opposite to the observer's eye, so that the light may enter past the point of the needle into the object glass of the microscope, forming a black image of the needle-point in a bright field of view.

V. To give facility for observing by day or night.

With these views, the following form is given to the apparatus :—

The needle, and the bodies of the microscopes, are inclosed in a square box. The base of the box, two vertical sides, and the top, are made of gun-metal (carefully selected to insure its freedom from iron); but the sides parallel to the plane of vibration of the needle are of glass. Of the two glass sides, that which is next the observer is firmly fixed; it is hereafter called "the graduated glass-plate." The other glass side can be withdrawn, to open the box, for inserting the needle, &c.

An axis, whose length is perpendicular to the plane of vibration of the needles, and is as nearly as possible in the line of the axis of the needle, supported on two bearings (of which one is cemented in a hole in the graduated glass-plate, the other being upon a horizontal bar near to the agate support of the needle-axis), carries a transverse arm, about 11 inches long, or rather two arms, projecting about $5\frac{1}{2}$ inches on each side of the axis. Each of these projecting arms has a long opening, or slot, about 1 inch wide, extending from the neighbourhood of the center-work nearly to the end of the arm. Through this opening the tube of a microscope passes, in a direction parallel to the axis of the needle, and is firmly fixed by a shoulder-bearing on one side of the arm, and a circular nut, working in a thread cut upon the microscope-tube, on the other side of the arm. The microscope can thus be fixed at any distance from the central axis, within the limits of the length of the projecting arm. In 1863, between February 24 and May 11, the slot for a single moveable microscope on each side was changed for three fixed microscopes on each side, adapted in position to the lengths of the needles to be mentioned shortly.

The microscope-tube thus carried is not the entire microscope, but so much as contains the object-glass and the field-glass. Upon the plane side of the field-glass (which is turned towards the object-glass), a series of parallel lines is engraved by etching with fluoric acid. The object-glass is so adjusted that the image of the needle-point is formed upon the plane side of the field-glass; and thus the parallel lines can be used for observing the needle in a state of vibration; and, one of them being adopted as standard, the lines can be used for reference to the graduated circle (to be mentioned). All this requires that there be an eye-glass also for the microscope.

The axis of which we have spoken is continued through the graduated glass-plate, and there it carries another transverse arm parallel to the former, and generally similar to it. In each part of this slides a short eye-piece, carrying the eye-glass. In 1863,

at the time mentioned above, the slotted arm and moveable eye-socket were changed for an arm with three sockets and eye-glasses. Thus, reckoning from the observer's eye, there are the following parts :—

(1.) The eye-glass.

(2.) The graduated glass-plate (its graduations, however, not intervening in this part of the glass, the graduated circle being so large as to include all the microscopes).

(3.) The field-glass, on the further surface of which the parallel lines are engraved.

(4.) The object-glass.

(5.) The needle.

(6.) The removeable glass side of the box.

(7.) The illuminating reflector, to be described hereafter.

The optical part of the apparatus being thus described, we may proceed to speak of the graduated circle.

The graduations of the circle (whose diameter is about $9\frac{3}{4}$ inches) are etched on the inner surface of the graduated glass-plate. These divisions (as well as the parallel lines on the field glasses of the microscopes) are beautifully neat and regular, and are, I think, superior to any that I have seen on metal. The same piece of metal which carries the transverse arms supporting the microscope bodies carries also two arms with verniers for reading their graduations. These verniers (being adapted to transmitted light) are thin plates of metal, with notches instead of lines. The reading of the verniers is very easy. The portion of the axis which is external to the graduated glass-plate (towards the observer), and which has there, as already stated, two arms for carrying the microscope eye-glasses, has also two arms for carrying the lenses by which the verniers and glass-plate graduations are viewed. These four arms are the radii of a circle, which can be fixed in position by a clamp, attached to the gun-metal casing of the graduated glass-plate, and furnished with the usual slow-motion screw.

The entire system of the two arms carrying the microscope-bodies, the two arms carrying the microscope eye-glasses, the two arms carrying the verniers, and the two arms carrying the reading-glasses for the verniers, is turned rapidly by means of a button on the external side of the graduated glass-plate, or is moved slowly by means of the slow-motion screw just mentioned.

It now remains only to describe the illuminating apparatus. On the outside of the removeable glass plate, there are supports for the axis of a metallic circle turning in a plane parallel to the plane of needle-vibration. This circle has four slotted radii, and in these slots or openings there slide small frames carrying prismatic glass reflectors, each of which can turn on an axis, in the plane of the circle, but transverse to the radius. Two of these reflectors are for the purpose of sending light through the verniers, and therefore are fixed in radial distance; the other two were intended for sending light past the ends of the needle through the microscopes, and therefore required adjustment on change of needle and corresponding change of position

of microscopes. In 1863 these were changed for fixed reflectors, corresponding to the fixed microscopes. The circle was originally turned by a small winch near the observer's hand; at present, the winch is removed, as its axis was found to be slightly magnetic. At each observation, it is necessary to turn the circle which carries the reflectors; but this is the work of an instant.

The light which illuminates the whole is a gas-burner, in the line of the axis of rotation. Its rays fall upon the glass prisms, and each of these is adjusted, by turning on its axis, to throw the reflected light in the required direction.

The whole of the apparatus, as thus described, is planted upon a horizontal plate admitting of rotation in azimuth: the plate is graduated in azimuth, and verniers are fixed to the gun-metal tripod stand. The gas-pipe is led down the central vertical axis, and there communicates by a rotatory joint with the fixed gas-pipes.

The needles which are used with this instrument are—

B_1, a plain needle	each 9 inches long.
B_2, a plain needle	
B_3, a loaded needle with adjustible load	
B_4, a needle whose plane passes through the axis of the needle	
C_1, a plain needle	each 6 inches long.
C_2, a plain needle	
C_3, a loaded needle with adjustible load	
C_4, a needle whose plane passes through the axis of the needle	
D_1, a plain needle	each 3 inches long.
D_2, a plain needle	
D_3, a loaded needle with adjustible load	
D_4, a needle whose plane passes through the axis of the needle	

In discussing carefully the observations taken with this instrument (as well as with other dip-instruments), great trouble was experienced in determining the zenith-point (or reading of the vertical circle when the points of the needle are in the same vertical). To remedy this, a "zenith-point-needle" was constructed under my instructions by Mr. Simms; and it has been used as need required in 1864. It is a flat bar of brass; with pivots similar to those of the dip-needles; and with three pairs of points corresponding to the three lengths of needles used; loaded at one end so as to take a position perfectly definite with respect to the direction of gravity; observed with the microscopes, and reversed for another observation, exactly as the dip-needles. For each of the different lengths of dip-needles, the zenith-point is determined by observation of that pair of points of the zenith-point-needle whose interval is the same as the length of the dip-needle.

Discordances, of which no satisfactory explanation could be given, had been found in the ordinary use of the instrument for determination of dip, as well as in the change of readings when a needle was raised and lowered, and in the change of readings when, without raising the needle, the instrument was turned completely in azimuth. Between November 10 and November 19, Mr. Simms reground the agate edges on

which the needle-pivots rotate; and the discordances have entirely or in great measure disappeared. The process of regrinding was merely the following. A brass tool was provided which nearly fitted the agates, and which permitted lengthwise-strokes but scarcely permitted cross-strokes; and this tool carried, in succession, the different powders required for shaping and polishing the agate edges. As the edges were pretty well shaped, it was scarcely necessary to use coarse emery; but fine emery was used in the tool to give a final figure, and tin-oxide to give the ultimate polish. The process scarcely differs from that by which the edges had been ground originally; except that a tool had formerly been used which perhaps admitted of too much cross-stroke, and that rotten-stone powder had been used instead of tin-oxide.

The flat needles B_4, C_4, D_4, were used with the object of determining whether any part of the discordances of results arose from the position of the principal plane of the magnetized needle. But with the increased harmony of results, an error showed itself which is peculiar to their form. The small flexure of the needle, produced by the resolved part of gravity in the direction perpendicular to the needle's length, changes the position of its centre of gravity in such a manner that the action of gravity is necessarily opposed to that of the magnetic vertical force; and thus the apparent dip is made too small. This error is perhaps insensible in the 3-inch needle D_4, but it is visible in the 6-inch needle C_4, and conspicuous in the 9-inch needle B_4. In the tables of results, therefore, while I have included all the separate results from these needles, I have omitted them in the formation of means.

§ 3. *Observations for the absolute Measure of the Horizontal Force of Terrestrial Magnetism.*

In the spring of 1861, a Unifilar Instrument, similar in all respects (as is understood) to those used in and issued by the Kew Observatory, was procured by the courteous application of Major-General Sabine, from the makers, Messrs. J. T. Gibson and Son; and after having been subjected to the usual examinations, at the Kew Observatory, for determination of its constants (for which I am indebted to the kindness of Balfour Stewart, Esq.), was mounted at the Royal Observatory. Observations with this instrument commenced on 1861, June 11, and were continued through the year; and, after some slight modifications of its verniers, it is still maintained in use (1865).

The deflected magnet (whose use is merely to ascertain the proportion which the power of the deflecting magnet at a given distance bears to the power of terrestrial magnetism) is 3 inches long, carrying a small plane mirror. The deflecting magnet is 4 inches long; it is a hollow cylinder, carrying in its internal tube a collimator, by means of which its time of vibration is observed in another apparatus. The frame which supports the suspension-piece of the deflected magnet carries also the telescope directed to the magnet-mirror; it rotates round the vertical axis of a horizontal graduated circle whose external diameter is 10 inches. The deflecting magnet is

always placed on the E. or W. side of the deflected magnet, with one end towards the deflected magnet. In the reduction of the observations, the precepts contained in the Skeleton Form prepared by the Kew Observatory have received the strictest attention.

The following is the explanation of the method of reduction.

The distance of the centers of the deflected and deflecting magnet being r_0, it is supposed (from observations made at Kew, of which the details have not reached me) that the magnetism of the deflecting magnet is so altered by induction that the following multipliers ought to be used in computing the Absolute Force:—

At distance 1·0 foot, factor is	1·00031
1·1	1·00023
1·2	1·00018
1·3	1·00014
1·4	1·00011
1·5	1·00009

The correction of the magnetic power for temperature t_0 of Fahrenheit, reducing all to 35° of Fahrenheit, is

$$0{\cdot}00013126\,1\,(t_0-35)+0{\cdot}0000002\,59\,(t_0-35)^2$$

A_1 is $\frac{1}{2}$(distance)^3 × sine deflection, corrected by the two last-mentioned quantities, for distance 1 foot; A_2 is the similar expression for distance 1·3 foot; A'_2 is $\frac{A_2}{(1\cdot3)^2}$: P is $\frac{A_1-A_2}{A_1-A'_2}$. A mean value of P is adopted from various observations; then $\frac{m}{X}=A_1\times\left(1-\frac{P}{1}\right)$ for smaller distance, or $=A_2\times\left(1-\frac{P}{1\cdot69}\right)$ for larger distance. The mean of these is usually adopted for the true value of $\frac{m}{X}$.

For computing the value of mX from observed vibrations, it is necessary to know K, the moment of inertia of the magnet as mounted. The value of log. π^2K furnished by Mr. Stewart is 1·66073 at temperature 30° and 1·66109 at temperature 90°. Then, putting T for the time of the magnet's vibration as corrected for induction, temperature, and torsion-force, the value of mX is $=\frac{\pi^2K}{T^2}$. From the combination of this value of mX with the former value of $\frac{m}{X}$, m and X are immediately found.

It appears, from a comparison of observations given in the Introduction to the *Magnetical and Meteorological Observations*, 1862, that the determinations with the Old Instrument (in use to 1861) ought to be diminished by $\frac{1}{117}$ part, to make them comparable with those of the Kew Unifilar.

The computation of the values of m and X has, to the year 1857, been made in reference to English measure only, using the foot and the grain as the units of length and weight; but, for comparison with foreign observations of the Absolute Intensity of Magnetism, it is desirable that X should be expressed also in reference to French measure, in terms of the millimètre and milligramme. If an English foot be supposed equal to α times the millimètre, and a grain be equal to β times the milligramme, then

it is seen that, for the reduction of $\frac{m}{X}$ and mX to French measure, these must be multiplied by α^3 and $\alpha^2\beta$ respectively. Hence X^2 must be multiplied by $\frac{\beta}{\alpha}$, and X by $\sqrt{\frac{\beta}{\alpha}}$. Assuming that the mètre is equal to 39·37079 inches, and the gramme equal to 15·43249 grains, log. $\sqrt{\frac{\beta}{\alpha}}$ will be found to be = 9·6637805, and the factor for reducing the English values of X to French values will be 0·46108 or $\frac{1}{2\cdot1689}$. The values of X in French measure thus derived from those in English measure are given in the proper table.

§ 4. *Standard Barometer.*

The Barometer is a standard, by Newman, mounted in 1840. It is fixed on the South wall of the West arm of the Magnetic Observatory. The graduated scale which measures the height of the mercury is made of brass, and to it is affixed a brass rod, passing down the inside of one of the upright supports, and terminating in a conical point of ivory; this point in observation is made just to touch the surface of the mercury in the cistern, and the contact is easily seen by the reflected and the actual point appearing *just* to meet each other. The rod and scale are made to slide up and down by means of a slow-motion screw. The scale is divided to $0^{in}\cdot05$.

The vernier subdivides the scale divisions to $0^{in}\cdot002$; it is moved by a slow-motion screw, and in observation is adjusted so that the ray of light passing under the back and front of the semi-cylindrical plate carried by the vernier, is a tangent to the highest part of the convex surface of the mercury in the tube.

The tube is $0^{in}\cdot565$ in diameter; the correction for the effect of capillary attraction is therefore only $+\ 0^{in}\cdot002$. The cistern is of glass.

At the bottom of the instrument are three screws, turning in the fixed part of the support, and acting on the piece in which the lower pivot of the barometer-frame turns, for adjustment to verticality: this adjustment is examined weekly.

The readings of this barometer are considered to be coincident with those of the Royal Society's flint-glass standard barometer.

All observations of this barometer have been corrected for the difference of temperature of the mercury in the tube at the time of observation from 32°, by the application of the corrections contained in the table for barometers whose scales are engraved upon a rod of brass reaching from the level of the mercury to the vernier. (See the report of the Committee of Physics and Meteorology approved by the Royal Society.)

The height of the cistern above the mean level of the sea is 159 feet. This element is founded upon the determination of Mr. Lloyd, in the *Phil. Trans.*, 1831; the elevation of the cistern above the brass piece inserted in a stone in the transit-room (to which Mr. Lloyd refers) being $5^{ft}.2^{in}$.

The barometer has been read at 21^h, 0^h, 3^h, 9^h (astronomical), on every day, excepting on Sundays, and on Good Friday and Christmas Day, on which days fewer observations have been taken. Every reading has been reduced to the reading which would have been obtained at the temperature 32° of the mercury and scale, by application of the correction given in Table II. (pages 82 to 87) of the Report of the Committee of Physics of the Royal Society. The mean of the reduced readings has then been taken for each civil day, and finally converted into mean daily reading, by application of the correction inferred from Mr. Glaisher's paper in the *Philosophical Transactions*, 1848, Part I.

In the printed record of the barometrical and all other meteorological observations, the day is to be understood, generally, as defined in civil reckoning.

§ 5. *Photographic self-registering Apparatus for continuous Record of the readings of the Barometer.*

The Photographic self-registering Apparatus for continuous Record of Magnetic Vertical Force is furnished with a vertical cylinder covered with photographic paper and revolving in 24 hours. North of the surface of this cylinder, at the distance of about 30 inches, is a large syphon barometer, the bore of the upper and lower extremities of its arms being about 1·1 inch. A glass float in the quicksilver of the lower extremity is partially supported by a counterpoise acting on a light lever (which turns on delicate pivots), so that the wire supporting the float is constantly stretched, leaving a definite part of the weight of the float to be supported by the quicksilver. This lever is lengthened to carry a vertical plate of opaque mica with a small aperture, whose distance from the fulcrum is eight times the distance of the point of attachment of the float wire, and whose movement, therefore, is four times the movement of the column of a cistern-barometer. Through this hole the light of a lamp, collected by a cylindrical lens, shines upon the photographic paper.

The scale of time is established by means of occasional interruptions of the light, and the scale of measure is established by comparison with occasional eye-observations.

This barometer was brought into use in 1848, but its indications were not satisfactory till the mercury was boiled in the tube by Messrs. Negretti and Zambra on 1853, August 18, since which time they have appeared unexceptionable. Results of the indications are printed in the *Maxima and Minima of the Barometer*, near the end of the Meteorological Results.

§ 6. *Thermometers for ordinary Observation of the Temperature of the Air and Evaporation.*

The Dry-Bulb Thermometer, the Wet-Bulb Thermometer, the Maximum Self-Registering Thermometers, both dry and wet, and the Minimum Self-Registering Thermometers, dry and wet, all for determination of the temperature of the air and

of evaporation, are mounted on a revolving frame whose fixed vertical axis is planted in the ground. From the year 1846 to 1863 the post forming the vertical axis was about 23 feet south (magnetic) of the S.S.E. angle of the south arm of the Magnetic Observatory; in 1863 it was moved to a position about 35 feet south (astronomical) of the south angle. A frame revolves on this post, consisting of a horizontal board as base, of a vertical board projecting upwards from it connected with one edge of the horizontal board, and of two parallel inclined boards (separated about three inches) connected at the top with the vertical board, and at the bottom with the other edge of the horizontal board. The outer inclined board is covered with zinc. The air passes freely between all these boards.

The dry and wet-bulb thermometers are attached to the outside, and near the center of the vertical board; the maximum and minimum thermometers for air towards one vertical edge, and those for evaporation towards the other vertical edge, with their bulbs at almost the same level, and near to those of the dry and wet-bulb thermometers; their bulbs are about 4 feet above the ground and projecting from 2 inches to 3 inches below the horizontal board. Above the thermometers is a small projecting roof to protect them from rain. The frame is always turned with the inclined side towards the sun. It is presumed that the thermometers are thus sufficiently protected.

The graduations of all the thermometers used in the Royal Observatory rest fundamentally upon those of a Standard Thermometer, the property of Mr. Glaisher, which derives its authority from comparison with original thermometers constructed by the late Rev. R. Sheepshanks about the years 1840–1843, in the course of his preparations for the construction of the National Standard of Length. The whole of the radical determinations of Freezing Point, Boiling Point, and Subdivision of Volume of Tube, were made by Mr. Sheepshanks with the utmost care: it is believed that these were the first original thermometers that had been constructed in England for many years. Mr. Glaisher's thermometer has been used as the standard of reference for all the thermometers used in the Royal Observatory since 1840.

The Dry-Bulb Thermometer is by Newman. The corrections required for its readings, as found by comparison with the standard above-mentioned, are as follows:—

Below	32°	subtract	0°·5
Between 32 and	43°	.....	0·6
44 and	47	.....	0·7
48 and	56	.....	0·9
57 and	61	.....	1·1
62 and	74	.....	1·3
75 and	80	.....	1·5
81 and	86	.....	1·8
87 and	95	.....	2·0
96 and	100	.....	2·2

The Wet-Bulb Thermometer is by Negretti and Zambra. Its bulb is of the same size as that of the Dry-Bulb Thermometer. A piece of muslin is wrapped round the bulb, and a skein of cotton is led from it into a cup of rain-water, by which it is maintained in a state of moisture. In frosty weather the muslin is moistened some time before each observation. The corrections which the readings of this thermometer are found to require are as follows:

Below	32°	subtract 0°4
Between	32° and 36°	0°3
	37° and 40°	0°2
	41° and 55°	0°1
	56° and 75°	0°0
Above	75°	add 0°1

The eye-readings of the dry-bulb and wet-bulb thermometers have usually been taken at the hours (astronomical reckoning) 21^h, 0^h, 3^h, 9^h, and corrected by application of the numbers given above; then their mean has been taken, and a correction applied, in order to obtain the true diurnal mean. This correction is derived from the numbers in Mr. Glaisher's paper in the *Philosophical Transactions* for 1848.

The dew-point has been inferred exclusively from the simultaneous observations of the dry-bulb and wet-bulb thermometers, by multiplying the difference between the readings of these thermometers by a factor peculiar to the temperature of the air, and subtracting the product from the reading of the dry-bulb thermometer. These factors have been found by Mr. Glaisher from the comparison of a great number of dew-point determinations, obtained by use of Daniell's hygrometer, with simultaneous observations of dry-bulb and wet-bulb thermometers. The first part of this investigation was published in full, in the volume of *Magnetical and Meteorological Observations* for 1844, pages 67–72; it was based upon all the observations made up to that time. Subsequently, the comparison was extended to include all the simultaneous observations of these instruments made at the Royal Observatory, Greenwich, from 1841 to 1854, with some observations taken at high temperatures in India, and others at low and medium temperatures at Toronto. The results at the same temperature were found to be the same at these different localities, so far as the climatic circumstances permitted comparison. (See Glaisher's Hygrometrical Tables, 3rd Edition). The following table exhibits the result of the entire comparison; it has been used in forming the dew-points in the present volume.

TABLE OF FACTORS by which the DIFFERENCE of READINGS of the DRY-BULB and WET-BULB THERMOMETERS is to be MULTIPLIED in order to PRODUCE the DIFFERENCE between the READINGS of the DRY-BULB and DEW-POINT THERMOMETERS.

Reading of Dry-bulb Thermometer.	Factor.	Reading of Dry-bulb Thermometer.	Factor.	Reading of Dry-bulb Thermometer.	Factor.	Reading of Dry-bulb Thermometer.	Factor.
°		°		°		°	
10	8·78	33	3·01	56	1·94	79	1·69
11	8·78	34	2·77	57	1·92	80	1·68
12	8·78	35	2·60	58	1·90	81	1·68
13	8·77	36	2·50	59	1·89	82	1·67
14	8·76	37	2·42	60	1·88	83	1·67
15	8·75	38	2·36	61	1·87	84	1·66
16	8·70	39	2·32	62	1·86	85	1·65
17	8·62	40	2·29	63	1·85	86	1·65
18	8·50	41	2·26	64	1·83	87	1·64
19	8·34	42	2·23	65	1·82	88	1·64
20	8·14	43	2·20	66	1·81	89	1·63
21	7·88	44	2·18	67	1·80	90	1·63
22	7·60	45	2·16	68	1·79	91	1·62
23	7·28	46	2·14	69	1·78	92	1·62
24	6·92	47	2·12	70	1·77	93	1·61
25	6·53	48	2·10	71	1·76	94	1·60
26	6·08	49	2·08	72	1·75	95	1·60
27	5·61	50	2·06	73	1·74	96	1·59
28	5·12	51	2·04	74	1·73	97	1·59
29	4·63	52	2·02	75	1·72	98	1·58
30	4·15	53	2·00	76	1·71	99	1·58
31	3·70	54	1·98	77	1·70	100	1·57
32	3·32	55	1·96	78	1·69		

The maximum self-registering thermometer is a mercurial thermometer, of the construction invented by Messrs. Negretti and Zambra. There is a small detached piece of glass in the tube, just above a bent part of the tube (near the bulb), through which the piece of glass cannot pass down. The column of mercury in rising lifts the glass up and passes freely; but in descending it is unable to pass the glass, and the lower mass of mercury descends, leaving a vacant space below the glass, and leaving a portion of the mercury above it. The piece of glass operates as an efficient valve. The graduation of this thermometer is sensibly correct. There is a similar thermometer for the maximum wet-bulb reading; its readings are too high by 0°·4.

The minimum self-registering thermometer is an alcohol thermometer, of the construction known as Rutherford's. A sliding glass index allows the alcohol in rising to pass above it, but is drawn down by the peculiar action of the bounding surface of the fluid when it sinks. The readings of that which gives the minimum temperature of the air require an additive correction 0°·5; those of the minimum wet-bulb temperature require corrections varying from +2°·2 at 24° to −0°·2 at 71°.

The numbers in the printed columns of Mean Daily Value of Dry Thermometer are found by combining two numbers derived from different sources. One is the corrected mean of four observations taken in the day, as is described above. The

other is the mean of the maximum and minimum corrected by a small quantity depending on the month, given in Mr. Glaisher's paper. The adopted mean temperature is the mean of those two numbers, weights being given proportional to the number of observations from which they are derived.

For the Mean Daily value of Dew Point, the dew-point is found from the observations at 21^h, 0^h, 3^h, 9^h, in the manner above described, and by use of the table of factors given above, and the mean of these dew-points is corrected by a number given in the paper in the *Philosophical Transactions*, 1848.

§ 7. *Photographic self-registering Apparatus for continuous Record of the Readings of the Dry-Bulb and Wet-Bulb Thermometers.*

About 28 feet south (magnetic) of the south-east angle of the south arm of the Magnetic Observatory, and about 25 feet east of the thermometers for eye-observations, is a shed 10 feet square, standing upon posts 9 feet high, under which are placed the photographic thermometers, the dry-bulb thermometer towards the east, and the wet-bulb thermometer towards the west. The bulbs of the thermometers are eight inches in length, and 0·4 inch internal bore, and their centers are about 4 feet above the ground. The bulb of one of the thermometers is covered with muslin throughout its whole length, which is kept moist by means of capillary passage of water along cotton wicks leading to a vessel filled with water.

There are small adjustments admitting the raising or dropping of the thermometers, so that the register of their changing readings may be on a convenient part of the paper. The thermometer frames are covered by plates having longitudinal apertures, so narrow, that any light which may pass through them is completely, or almost completely, intercepted by the broad flat column of mercury in the thermometer-tube. Across these plates a fine wire is placed at every degree; and at the decades of the degrees, and also at 32°, 52°, and 72°, a coarser wire is placed. A gas lamp is placed about 9 inches from each thermometer (east of the dry bulb and west of the wet bulb), and its light, condensed by a cylindrical lens, whose axis is vertical, shines through the thermometer-tube above the surface of the mercury, and forms a well-defined line of light upon the photographic paper, which is wrapped around the cylinder. As the cylinder revolves under this light, it receives a broad sheet of photographic trace, whose breadth (in the direction of the axis of the cylinder) varies with the varying height of the mercury in the thermometer-tube. The light in its passage is intercepted by the wires placed across the tube at every degree, and there are, therefore, left upon the paper corresponding lines in which there is no photogenic action.

The cylinder revolves in 48 hours; the daily photographic traces of the two thermometers are thus simultaneously registered on opposite sides of the cylinder without intermixing. The length of the cylinder is $13\frac{1}{2}$ inches, and its circumference is 19 inches.

§ 8. *Thermometers for Solar Radiation and Radiation to the Sky.*

The thermometer for Solar Radiation is placed in an open box about 10 feet south of the south-west angle of the south arm of the Magnetic Observatory. The box is about 13 inches high; the bulb of the thermometer is about 10 inches above the bottom of the box, fully exposed to the sun's rays.

The thermometer is a self-registering maximum mercurial thermometer of Negretti and Zambra's construction; its bulb is blackened, and enclosed in a glass sphere from which the air has been exhausted. Its graduations are correct, and the numbers inserted in the tables are those read from the instrument without alteration. The thermometer is read at 9^h a.m., noon, 3^h p.m., and occasionally at 9^h p.m.; the highest of these readings is adopted as the maximum for the day.

Near to this thermometer, within the same box, and at the same height, is placed a thermometer with blackened bulb, which is not enclosed in an exhausted sphere. An instrument of this form and in this position was exclusively used to the year 1859. Simultaneous readings of both instruments are now taken, with the view of rendering the series of observations which terminated in 1859 (made with exposed bulb) comparable with that which commenced in 1859, and is still continued (made with bulb inclosed in an exhausted sphere).

The thermometer for radiation to the sky is placed about 12 feet west of the Solar Radiation thermometer, with its bulb resting on short grass, and fully exposed to the sky. It is a self-registering minimum spirit thermometer of Rutherford's construction, made by Negretti and Zambra. Its graduation is correct, and the numbers inserted in the table are those read from the scale without alteration. It is read every day at 9^h a.m., and occasionally at 9^h p.m.

This thermometer was out of order on April 19, 26, May 4, July 9, August 1, 7, 9, 10, 11, 14, 30, September 5, October 19, and November 3.

§ 9. *Thermometers sunk below the Surface of the Soil at different Depths.*

These thermometers were made by Messrs. Adie of Edinburgh, under the immediate superintendence of Professor (now Principal) J. D. Forbes. The graduation was made by Professor Forbes himself.

The thermometers are four in number. They are all placed in one hole in the ground, the diameter of which in its upper half is 1 foot, and in its lower half about 6 inches. Each thermometer is attached in its whole length to a slender piece of wood, which is planted in the hole with it. The place of the hole is 20 feet south of the extremity of the south arm of the Magnetic Observatory, and opposite the center of its south front.

The soil consisted of beds of sand; of flint-gravel with a large proportion of sand; and of flints with a small proportion of sand, cemented almost to the consistency of pudding-stone. Every part of the gravel and sand extracted from the hole was perfectly dry.

The bulbs of the thermometers are cylindrical, 10 or 12 inches long and 2 or 3 inches in diameter. The bore of the principal part of the tubes, from the bulb to the graduated scale, is very small. In that part to which the scale is attached, the tube is larger.

The thermometer No. 1 was dropped into the hole to such a depth that the center of its bulb was 24 French feet (25·6 English feet) below the surface: then dry sand was poured in till the hole was filled to nearly half its height. Then No. 2 was dropped in till the center of its bulb was 12 French feet below the surface; No. 3 and No. 4 till the centers of their bulbs were respectively 6 and 3 French feet below the surface; and the hole was then completely filled with dry sand. The upper parts of the tubes, carrying the scales, were left projecting above the surface: No. 1 by 27·5 inches, No. 2 by 28·0 inches, No. 3 by 30·0 inches, and No. 4 by 32·0 inches. Of these lengths, the parts 8·5, 10·0, 11·0, and 14·5 inches, respectively are tube with narrow bore.

The projecting parts of the tubes are protected by a wooden case or box fixed to the ground; the sides of the box are perforated with numerous holes, and it has a double roof. In the North face of this box is a large plate of glass through which the thermometers are read. Within the box are two smaller thermometers one (No. 5) whose bulb is sunk one inch in the ground, and one (No. 6) whose bulb is in the free air nearly in the center of the box.

The fluid of the four long thermometers is alcohol tinged with a red colour.

The values of 1° on the scales of Nos. 1, 2, 3 and 4, are respectively $2^{in.}$, $1^{in.}1$, $0^{in.}9$, and $0^{in.}55$; and the ranges of the scales, as first mounted, were, 43°·0 to 57°·7, 42°·0 to 56°·8, 39°·0 to 57°·5, and 34°·2 to 64°·5.

These ranges for Nos. 2, 3, and 4, were found to be insufficient in some years, particularly those of Nos. 3 and 4, or the thermometers sunk to the depth of 6 feet and 3 feet.

In 1857, June 22, Messrs. Negretti and Zambra removed from Nos. 3 and 4 a quantity of fluid corresponding to the extent of 5° on their scales, and the scales of these two thermometers were lowered by that linear extent, making the readings the same as before.

In subsequent years it was found that the amount of fluid removed was somewhat too great, for now at the lower end of the scale the 6-foot thermometer sometimes falls below the limit of its scale or $43\frac{1}{2}°$; and the 3-foot thermometer below 39°·7; in which cases the alcohol sinks into the capillary tube.

The readings at the early part of the series were at times defective at high tempera-

tures, but always complete at low temperatures; now, they are always complete at high temperatures, and are at times defective at low temperatures. The two combined however, will enable us to complete all readings.

These thermometers are read once a day, at noon, and the readings appear in the printed volumes as read from their scales without correction.

§ 10. *Thermometers immersed in the Water of the Thames.*

The self-registering maximum and minimum thermometers for determining the highest and lowest temperatures of the water of the Thames are by Messrs. Negretti and Zambra, and are observed every day at 9^h a. m.

A strong wooden trunk is firmly fixed to the side of the Dreadnought Hospital Ship, about 5 feet in length, and closed at the bottom; the bottom and the sides, to the height of 3 feet, are perforated with a great number of holes, so that the water can easily flow through; the thermometers are suspended within this trunk so as to be about 2 feet below the surface of the water, and 1 foot from the bottom of the trunk.

The regular observations are made under the superintendence of the Medical Officers of the Ship.

The thermometer for maximum temperature was out of order on February 13 to 23, April 17 to 20, June 30, July 1 to 23, November 1 to 14, 25, 28, 29, 30, December 2, 8, 9. That for minimum temperature was out of order on February 13, 21, 22, 23, April 17 to 21, November 1 to 14, 25, 28, 29, 30, December 2, 8, 9.

§ 11. *Osler's Anemometer.*

This anemometer is self-registering: it was made by Newman, but has received several changes since it was originally constructed. A large vane, which is turned by the wind, and from which a vertical spindle proceeds down nearly to the table in the north-western turret of the ancient part of the Observatory, gives motion by a pinion upon the spindle to a rackwork carrying a pencil. This pencil makes a mark upon a paper affixed to a board which is moved uniformly in a direction transverse to the direction of the rack-motion. The movement of the board is effected by means of a rack connected with the pinion of a clock. The paper has lines printed upon it corresponding to the positions which the pencil must take when the direction of the vane is N., E., S., or W.; and also has transversal lines corresponding to the positions of the pencil at every hour. The first adjustment for azimuth was obtained by observing from a certain point the time of passage of a star behind the vane-shaft, and computing from that observation the azimuth; then on a calm day drawing the vane by a cord to that position, and adjusting the rack, &c., so that the pencil position on the sheet corresponded to that azimuth.

For measuring the pressure of the wind, the shaft of the vane carries a plate one foot square, which is supported by horizontal rods sliding into grooves, and is urged in opposition to the wind by three springs, so arranged that only one comes into play when the wind is light, and the others necessarily act in conjunction with the first as the plate is driven further and further by the force of the wind. A cord from this plate passes over a pulley, and communicates with a copper wire passing through the center of the spindle, which at the bottom communicates with another cord passing under a pulley and held in tension by a slight spring: and by this a pencil is moved transversely to the direction in which the paper fixed to the board is carried by the clock. Lines are printed upon the paper corresponding to different values of the pressure; the intervals of these lines were adjusted by applying weights of 1 lb., 2 lbs., &c., to move the pressure-plate in the same manner as if the wind pressed it.

A fresh sheet of paper is applied to this instrument every day at 22^h mean solar time.

§ 12. *Robinson's Anemometer.*

This anemometer is self-registering, and was made by Messrs. Negretti and Zambra on the principles described by Dr. Robinson in the Transactions of the Royal Irish Academy, vol xxii. It is furnished with four hemispherical cups [each being 3·75 inches in diameter], attached to the extremities of two arms at right angles to each other, and revolving in a horizontal plane by the excess of pressure of the wind on their concave over that on their convex surfaces.

The distance between the centers of opposite cups is 13·45 inches, and their centers describe 42·24 inches in each revolution, indicating, according to the theory, a horizontal movement of the air of 126·72 inches for each revolution, and of one mile for 500 revolutions. The accuracy of this theory was verified by experiments made in 1860 (to be described immediately). The horizontal arms are connected with a vertical spindle, upon which is an endless screw, working in a toothed wheel connected with a train of wheels, furnished with indices capable of registering one mile and decimal multiples of a mile up to 1,000 miles. The instrument is read every day at 22^h.

In the year 1860, on July 3, 4, and 13, experiments were made in Greenwich Park to ascertain the correctness of the theory of Robinson's anemometer; the point to be verified being that the scale of the instrument, founded on the supposition that the horizontal motion of the air is about three times the space described by the centers of the cups, is correct.

A post about 5 feet high with a vertical spindle in the top was erected, and on this spindle turned a horizontal arm, carrying at the extremity of its longer portion Robinson's anemometer, and on its shorter portion a counterpoise. The distance from the vertical spindle of the post to the vertical axis of the anemometer was $17^{ft.}\ 8^{in.}\cdot 7$.

The reading of the dial was taken, and then the arm was made to revolve in the horizontal plane 50 or 100 times, an attendant counting the number of revolutions, and the reading of the dial was again taken. In this manner 1,000 revolutions were made in the direction N.E.S.W.N., and 1,000 revolutions in the direction N.W.S.E.N. In some of the experiments the air was sensibly quiet, and in others there was a little wind; the result was,

For a movement of the instrument through one mile,

Beam revolving N.E.S.W. (opposite to the direction of rotation of the Anemometer-cups)	1·15 was registered
Beam revolving N.W.S.E. (in the same direction as the Anemometer-cups)	0·97 was registered.

The results from rapid revolutions and from slow revolutions were sensibly the same.

This may be considered as confirming in a very high degree the accuracy of the theory.

§ 13. *Rain Gauges.*

The rain-gauge connected with Osler's anemometer is 50 feet 8 inches above the ground, and 205 feet 6 inches above the mean level of the sea. It exposes to the rain an area of 200 square inches (its horizontal dimensions being 10 by 20 inches).

The collected water passes through a tube into a vessel suspended in a frame by spiral springs, which lengthen as the water increases, until 0·24 of an inch is collected in the receiver; it then discharges itself by means of the following modification of the syphon. A copper tube, open at both ends, is fixed in the receiver, in a vertical position, with its end projecting below the bottom. Over the top of this tube a larger tube, closed at the top, is placed loosely. The smaller tube thus forms the longer leg, and the larger tube the shorter leg of a syphon. The water, having risen to the top of the smaller tube, gradually falls through it into the uppermost portion of a tumbling bucket, fixed in a globe under the receiver. When full, the bucket falls over, throwing the water into a small pipe at the lower part of the globe; the water completely fills the bore of the pipe; its descent causes an imperfect vacuum in the globe, sufficient to cause a draught in the longer leg of the syphon, and the whole contents run off. After leaving the globe, the water is received in a pipe attached to the building, which carries it away. The springs then shorten and raise the receiver. The ascent and descent of the water-vessel move a radius-bar which carries a pencil; and this pencil makes a trace upon the paper carried by the sliding-board of the self-registering anemometer.

The scale of the printed paper was adjusted by repeatedly filling the water-vessel until it emptied itself, then weighing the water, and thus ascertaining its bulk, and dividing this bulk by the area of the surface of the rain receiver.

A second gauge, with an area 77 square inches nearly, is placed close to the preceding, the receiving surface of both being on the same horizontal plane.

A third gauge is placed on the roof of the Octagon room, at 38 feet $4\frac{1}{2}$ inches above the ground, and 193 feet $2\frac{1}{2}$ inches above the mean level of the sea. It is a simple cylinder gauge, 8 inches in diameter and about $50\frac{1}{4}$ inches in area. The height of the cylinder is $13\frac{1}{2}$ inches; at the depth of 1 inch from the top within the cylinder is fixed a funnel (an inverted cone) of 6 inches perpendicular height; with the point of this funnel is connected a tube, $\frac{1}{5}$ of an inch in diameter, and $1\frac{1}{2}$ inch in length; $\frac{3}{4}$ of an inch of this tube is slightly curved, and the remaining $\frac{3}{4}$ of an inch is bent upwards, terminating in an aperture of $\frac{1}{8}$ of an inch. By this arrangement, the last few drops of water remain in the bent part of the tube, and the water is some days evaporating. The upper part of the funnel or bore of the cone is connected with a brass ring, which has been turned in a lathe, and this is connected with a circular piece 6 inches in depth, which passes outside the cylinder, and rests in a water joint, attached to the inner cylinder, and extending all round.

A fourth gauge is placed on the top of the Library; it is a funnel, whose diameter is 6 inches; its exposed area is $28\frac{1}{4}$ inches nearly. The water passes into a cylinder, from which it is poured into a circular vessel, the diameter of which is $3\frac{1}{4}$ inches; and therefore 3·4 inches of this corresponds to 1 inch of rain. The receiving surface of the gauge is 22 feet 4 inches above the ground, and 177 feet 2 inches above the mean level of the sea.

A fifth gauge is planted on the roof of the Photographic Thermometer stand, 10 feet above the ground, and 164 feet 10 inches above the mean level of the sea. Its construction is the same as that of the third gauge.

A sixth gauge is a self-registering rain-gauge on Crosley's construction, made by Watkins and Hill. The surface exposed to the rain is 100 square inches. The collected water falls into a vibrating bucket, whose receiving concavity is entirely above the center of motion, and which is divided into two equal parts by a partition whose plane passes through the axis of motion. The pipe from the rain-receiver terminates immediately above the axis. Thus that part of the concavity which is highest is always in the position for receiving water from the pipe. When a certain quantity of water has fallen into it, it preponderates, and, falling, discharges its water into a cistern below; then the other part of the concavity receives the rain, and after a time preponderates. Thus the bucket is kept in a state of vibration. To its axis is attached an anchor with pallets, which acts upon a toothed wheel by a process exactly the reverse of that of a clock-escapement. This wheel communicates motion to a train of wheels, each of which carries a hand upon a dial-plate; and thus inches, tenths, and hundredths are registered. Sometimes, when the escapement has obviously failed, the water which has descended to the lower cistern has again been passed through the gauge, in order to enable an assistant to observe the indication of the dial-plates without fear of an imperfection in the machinery escaping notice. The gauge is placed

on the ground, 21 feet South of the Magnetic Observatory, and 156 feet 6 inches above the mean level of the sea.

The seventh and eighth gauges are placed near together, about 16 feet south of the Magnetic Observatory, 5 inches above the ground, and 155 feet 3 inches above the mean level of the sea. They are similar in construction and area to No. 3. These cylinders are sunk about 8 inches in the ground.

All these gauges, except No. 7, are read at 22^h daily; in addition, Crosley's gauge and No. 8 are read daily at 9^h p.m., and No. 7 at the end of each month only, to check the summation of the daily readings of No. 8.

Gauges Nos. 1, 2, 3, 5, 8 were made by Messrs. Negretti and Zambra; No. 4 by Troughton; No. 6 by Watkins and Hill; and No. 7 is an old gauge.

§ 14. *The Actinometer.*

The actinometer consists of a hollow cylinder of glass 7 inches in length, and 1·22 inch in diameter, united at one end to a tube similar to a thermometer tube, 7 inches in length, which is terminated at its upper end by a ball 1·1 inch in diameter, the upper part of which is drawn out to a point, and broken off, so as to leave the end open, merely stopped by wax, and covered by a brass cap. The other end of the cylinder is closed by a silver plated cap, cemented on it, and furnished with a screw of silver, with 16 threads to an inch, passing through a collar of waxed leather. The axis of this screw is perforated through its entire length, to allow the stem of a thermometer to pass through it, (the bulb of which is nearly central within the cylinder), for the purpose of determining the temperature of the inclosed liquid. This liquid is of a deep blue colour (ammonio-sulphate of copper). When the actinometer is used in observation, the ball at the top is left full of air, and, according to the position of the screw, the liquid mounts into the first-mentioned tube, and its elevation can be read off on an attached scale which is divided into 100 parts. The cylinder is enclosed in a chamber which is blackened on three sides, and is covered on the fourth side or front by plate glass, to defend the chamber from currents of air; this glass is removeable at pleasure. The screw is used to diminish or increase the capacity of the cylindrical cistern, and thus to drive into the ball, which acts as a reservoir, all air out of the tube, and then to draw back from the reservoir such a quantity as shall leave the top of the liquid at the zero of the scale or elsewhere at pleasure, leaving no bubble of air in the cylinder, and no blebs of liquid in the tube.

For using the instrument a wooden table is prepared, with a moveable part, on which the instrument is placed, and on which it can very readily be exposed perpendicularly to the rays of the Sun; and where a screen can momentarily be placed so as to cut off all the rays of the Sun from the chamber of the instrument, and can be quickly withdrawn, so as fully to expose the cylindrical chamber to the Sun's radiation.

The method of observation is as follows:

The liquid being adjusted to zero of the scale by the screw, will mount into the stem, as soon as exposed to the Sun. It is allowed to do so for a minute or two, taking care, by the use of the screw, that it does not mount into the ball. When all is ready for observation, the liquid is drawn down to the zero of the scale, slowly and steadily, the thermometer is read for the temperature of the liquid, at the beginning of a minute the scale is read, and at the end of a minute it is read again: the screen is placed before the instrument: at the following 30^s the scale is read for the first shade-observation, and at one minute afterwards is again read for the second shade-observation; the instrument is then exposed to the Sun at the beginning of the next minute, and read as before: and so on successively.

A delicate blackened bulb thermometer for solar radiation has also been frequently read during each series of experiments, for collection of comparative observation of the two instruments.

It is found by experiment that the fluid is driven up the tube 100 divisions by one-tenth of a turn of the screw. One inch in length of the screw including 16 threads, the distance between two contiguous threads is therefore 0·0625 inch.

A fine piece of silk was carefully passed round the bottom of 18 threads; its length was found to be 25·2 inches. Therefore the circumference of the screw at the bottom of the thread was 1·4 inch and its diameter 0·445 nearly. The depth of the thread is fully 0·05 inch.

These measures will give the means of converting the observed readings of the liquid in the slender tube into actual expressions of the proportion to the general store of liquid in the cylindrical chamber.

§ 15. *Electrical Apparatus.*

The electrical apparatus consists of two parts, namely, the Moveable Apparatus, which is connected with a pole nearly 80 feet high planted 7 feet North and 2 feet East of the north-east angle of the north arm of the Magnetic Observatory (as extended in 1862); and the Fixed Apparatus, which is mounted in a projecting window in the ante-room of the Magnetic Observatory.

On the top of the pole is fixed a projecting cap, to which are fastened the ends of two iron rods, which terminate in a pit sunk in the ground, and are kept in tension by attached weights. These rods are to guide the moveable apparatus in its ascents and descents. Near the bottom of the pole is fixed a windlass; the rope upon which it acts passes over a pulley in the cap, and is used to raise the moveable apparatus, which when raised to the top is suspended on a hook.

The moveable apparatus consists of the following parts:—A plank in a nearly vertical position is attached to perforated iron bars, which slide upon the iron rods.

On the upper part of this plank is a cubical box. The box incloses a stout pillar of glass, having a conical hollow in its lower part. In the bottom of the box there is a large hole through which a cone of copper passes into the conical hollow of the glass pillar. In a space below the box a gas-lamp is placed, by the flame of which the copper cone and the lower part of the glass pillar are kept in a state of warmth. A copper wire is fastened round the glass pillar; its end is carried to a similar glass pillar, warmed in the same manner, near the north-western turret of the Octagon room; by this wire, whose length is about 400 feet, the atmospheric electricity is collected. To this wire, near the box, is attached another copper wire 0·1 inch in diameter, and about 73 feet long, at the end of which is a hook; a loaded brass lever connected with the fixed apparatus presses upon this hook, and thus keeps the wire in a state of tension, and at the same time establishes the electrical communication between the long horizontal wire and the fixed apparatus.

The fixed apparatus consists of these parts:—A glass bar, nearly 3 feet long, and thickest at its middle, is supported in a horizontal position, its ends being fixed in pieces of wood projecting downwards from the roof of the projecting window. Near to each end is placed a small gas-lamp, whose chimney encircles the glass, and whose heat keeps the glass in a state of warmth proper for insulation. A brass collar surrounds the center of the glass bar; it carries one brass rod, projecting vertically upwards through a hole in the roof of the window-recess, to which rod are attached a small umbrella and the loaded lever above-mentioned; and it carries another rod projecting vertically downwards, to which is attached a horizontal brass tube in an East and West direction. On the North and South sides of this tube there project four horizontal rods, through the ends of which there pass vertical rods, which can be fixed by screws at any elevation; these are placed in connexion with the electrometers, which rest on the window seat.

The electrometers during the year 1864 consisted of a Double Gold Leaf Electrometer of the ordinary construction; two Volta's Electrometers, denoted by Nos. 1 and 2; a Henley's Electrometer; a Ronalds' Spark Measurer; a Dry-pile Apparatus; and a Galvanometer.

Volta 1 and Volta 2 are of the same construction; each is furnished with a pair of straws 2 Paris inches in length; those of the latter being much heavier than those of the former: each instrument is furnished with a graduated ivory scale, whose radius is 2 Paris inches, and it is graduated into half Paris lines. In the original construction of these instruments it was intended that each division of No. 2 should correspond to five of No. 1: the actual relation between them has not yet been determined by observations at the Royal Observatory. The straws are suspended by hooks of fine copper wire to the suspension-piece, and they are separated by an interval of half a line.

Henley's Electrometer is supported on the West end of the large horizontal tube by means of a vertical rod fixed in it. On each side of the upper part of this rod is

affixed a semicircular plate of ivory, whose circumference is graduated; at the centers of these ivory plates two pieces of brass are fixed, which are drilled to receive fine steel pivots, carrying a brass axis, into which the index or pendulum is inserted; the pendulum terminates with a pith ball. The relation between the graduations of this instrument and those of the other electrometers has not been determined. This instrument has seldom been affected till Volta 2 has risen to above 100 divisions of its scale.

The spark measurer consists of a vertical sliding rod terminated by a brass ball, which ball can be brought into contact with one of the vertical rods before referred to, also terminating in a ball; and it can be moved from it or towards it by means of a lever, with a wooden handle. During the operation of separating the balls, an index runs along a graduated scale, and exhibits the distance between the balls, and this distance measures the length of the spark.

The electrometers and the spark measurer were originally constructed under the superintendence of Francis Ronalds, Esq., but have since received small alterations.

The dry-pile apparatus was made by Watkins and Hill; it is placed in connexion with the brass bar by a system of wires and brass rods. The indicator, which vibrates between the two poles, is a small piece of gold leaf. This instrument is very delicate, and it indicates at once the quality of the electricity. When the inclination of the gold leaf is such that it is directed towards the top of either pile, it remains there as long as the quantity of electricity continues the same or becomes greater: the position is sometimes expressed in the notes by the words "as far as possible." The angle which the gold leaf makes with the vertical at this time is about 40°.

The galvanometer was made by Gourjon of Paris, and consists of an astatic needle, composed of two large sewing needles, suspended by a split silk fibre, one of the needles of the pair vibrating within a ring formed by 2,400 coils of fine copper wire. The connexions of the two portions of wire forming these 2,400 coils are so arranged that it is possible to use a single system of 1,200 coils of single wire, or a system of 1,200 coils of double wire, or a system of 2,400 coils of single wire: in practice the last has always been used. A small ball communicating by a wire with one end of the coils is placed in contact at pleasure with the electric conductor, and a wire leading from the other end of the coil communicates with the earth. An adjustible circular card, graduated to degrees, is placed immediately below the upper needle; the numeration of its divisions proceeds in both directions from a zero. One of these directions is distinguished by the letter A, and the other by the letter B; and the nature of the indication represented by the deflection of the needle towards A or towards B will be ascertained from the following experiment. A voltaic battery being formed by means of a silver coin and a copper coin, having a piece of blotting paper moistened with saliva between them: when the copper touches the small ball, and the wire which usually communicates with the earth is made to touch the silver, the needle turns

towards A; when the silver touches the small ball, and the wire is made to touch the copper, the needle turns towards B.

§ 16. *Explanation of the Tables of Meteorological Observations.*

The mean daily value of the difference between dew-point temperature and air-temperature is the difference between the two numbers in the sixth and seventh columns. The Greatest and Least are the greatest and least among the differences corresponding to the times of observation in the civil day, or they are found from the absolute maxima and minima, as determined by comparing the observations of the self-registering wet-bulb thermometers with those of the self-registering dry-bulb thermometers.

The difference between the mean temperature for the day and the mean for the same day of the year on an average of forty-three years, is found by comparison with a table of results deduced by Mr. Glaisher from forty-three years' observations, made at the Royal Observatory, ending 1856.

Little explanation of the results deduced from Osler's Anemometer appears to be necessary. It may be understood generally that the greatest pressure occurred in gusts of short duration.

Robinson's Anemometer is read off every day at 22^h (10^h A.M.).

The register of rain is read at 9^h P.M. from the Cylinder Rain-gauge partly sunk in the ground, described above as the "eighth." If, however, there appears to be any doubt as to the correctness of the results, reference is made to a Rain-gauge of similar construction and placed near to it, called above the "seventh."

For understanding the divisions of time under the heads of Electricity and Weather, the following remarks are necessary:—The day is divided by columns into two parts (from midnight to noon, and from noon to midnight), and each of these parts is roughly subdivided into two or three parts by colons (:). Thus, when there is a single colon in the first column, it denotes that the remarks before it apply (roughly) to the interval from midnight to 6 A.M., and those following it to the interval from 6 A.M. to noon. When there are two colons in the first column, it is to be understood that the twelve hours are divided into three nearly equal parts of four hours each. And similarly for the second column.

The following is the explanation of the notation employed for record of electrical observations, it being premised that the quality of the Electricity is always to be supposed positive when no indication of quality is given:—

g cur.	denotes *galvanic currents*	s	denotes *strong*
m	... *moderate*	sp	... *sparks*
N	... *negative*	v	... *variable*
P	... *positive*	w	... *weak*

The duplication of the letter denotes an intensity of the modification described: thus, s s is very strong; v v, very variable.

The Clouds and Weather are described generally by Howard's Nomenclature; the figure denotes the proportion of sky covered by clouds, the whole sky being represented by 10. The notation is as follows:

a denotes *aurora borealis*
ci ... *cirrus*
ci-cu ... *cirro-cumulus*
ci-s ... *cirro-stratus*
cu ... *cumulus*
cu-s ... *cumulo-stratus*
d ... *dew*
h-d ... *heavy dew*
f ... *fog*
sl-f ... *slight fog*
th-f ... *thick fog*
fr ... *frost*
glm ... *gloom*
gt-glm.. *great gloom*
h-fr ... *hoar frost*
h ... *haze*
hl ... *hail*
so-ha ... *solar halo*
l ... *lightning*
li-cl ... *light clouds*
lu-co ... *lunar corona*
lu-ha ... *lunar halo*
m ... *meteor*
ms ... *meteors*
n ... *nimbus*
r ... *rain*
th-r ... *thin rain*
oc-r ... *occasional rain*
fr-r ... *frozen rain*
h-r ... *heavy rain*
shs-r ... *showers of rain*

c-r denotes *continued rain*
c-h-r ... *continued heavy rain*
m-r ... *misty rain*
fr-m-r ... *frequent misty rain*
sl-r ... *slight rain*
h-shs ... *heavy showers*
fr-shs ... *frequent showers*
fr-h-shs ... *frequent heavy showers*
li-shs ... *light showers*
oc-shs ... *occasional showers*
oc-h-shs ... *occasional heavy showers*
sq ... *squall*
sqs ... *squalls*
fr-sqs ... *frequent squalls*
h-sqs ... *heavy squalls*
fr-h-sqs ... *frequent heavy squalls*
sc ... *scud*
li-sc ... *light scud*
sl ... *sleet*
sn ... *snow*
oc-sn ... *occasional snow*
sl-sn ... *slight snow*
s ... *stratus*
t ... *thunder*
t-s ... *thunder storm*
th-cl ... *thin clouds*
v ... *variable*
vv ... *very variable*
w ... *wind*
st-w ... *strong wind*

The foot-notes show the means and extremes of readings, and their departure in each month from average values, as found from the preceding Twenty-three Years' Observations; those relating to Humidity have been calculated from the Third Edition of Glaisher's Hygrometrical Tables.

§ 17. *Details of the Chemical Operations for the Photographic Records.*

Mr. Glaisher has drawn up the following account of the Chemical Processes employed in the Photographic Operations for the self-registration of the Magnetical and Meteorological Indications.

CHEMICAL PREPARATION AND TREATMENT OF THE PHOTOGRAPHIC PAPER FOR PRIMARIES.

The paper used is similar to that made by Whatman; it is made by his successor Hollingsworth; it is strong and of even texture, and is prepared expressly for Photographic purposes.

First Operation.—Preliminary Preparation of the Paper.

The chemical solutions used in this process are the following:—

(1.) Sixteen grains of Iodide of Potassium are dissolved in one ounce of distilled water.

(2.) Twenty-four grains of Bromide of Potassium are dissolved in one ounce of distilled water.

(3.) When the crystals are dissolved, the two solutions are mixed together, forming the iodising solution. The mixture will keep through any length of time. Immediately before use, it is filtered through filtering paper.

A quantity of the paper, sufficient for the consumption of several weeks, is treated in the following manner, sheet after sheet.

The sheet of paper is pinned by its four corners to a horizontal board. Upon the paper, a sufficient quantity (about 50 minims, or $\frac{5}{48}$ of an ounce troy) of the iodising solution is applied, by pouring it upon the paper in front of a glass rod, which is then moved to and fro till the whole surface is uniformly wetted by the solution. Or, the solution may be evenly distributed by means of a camel's hair brush.

The paper thus prepared is allowed to remain in a horizontal position for a few minutes, and is then hung up to dry in the air; when dry, it is placed in a drawer, and may be kept through any length of time.

Second Operation.—Rendering the Paper sensitive to the Action of Light.

A solution of Nitrate of Silver is prepared by dissolving 50 grains of crystallized Nitrate of Silver in one ounce of distilled water. In hot weather a few drops of Acetic Acid are added.

Then the following operation is performed in a room illuminated by yellow light.

The paper is pinned as before upon a board somewhat smaller than itself, and (by means of a glass rod, as before,) its surface is wetted with 50 minims of the nitrate of silver solution. It is allowed to remain a short time in a horizontal position, and, if any part of the paper still shines from the presence of a part of the solution unabsorbed into its texture, the superfluous fluid is taken off by the application of blotting paper.

The paper, still damp, is immediately placed upon the interior glass cylinder, and is covered by the exterior glass cylinder, and the united cylinders are mounted upon the revolving apparatus, to receive the spot of light formed by the mirror, which is carried by the magnet; or to receive the line of light passing through the thermometer tube.

Third Operation.—Development of the Photographic Trace.

When the paper is removed from the cylinder, it is placed as before upon a board, and a saturated solution of Gallic Acid, to which a few drops of Aceto-Nitrate of Silver are added, (in hot weather this solution is used at the temperature of the air, in cold weather it is heated to the temperature of 70° or 80°, or even higher if the weather is very cold,) is spread over the paper by means of a glass rod, and this action is continued until the trace is fully developed. When the trace is well developed, the paper is placed in a vessel with water, and repeatedly washed with several waters; a brush being passed lightly over both sides of the paper to remove any crystalline deposit.

Fourth Operation.—Fixing the Photographic Trace.

The Photograph is placed in a solution of Hyposulphite of Soda, made by dissolving four or five ounces of the Hyposulphite in a pint of water; it is plunged completely in the liquid, and allowed to remain from one to two hours, until the yellow tint of the Iodide of Silver is removed. After this the sheet is washed repeatedly with water, allowed to remain immersed in water for 24 hours, and afterwards placed within folds of cotton cloths till nearly dry. Finally it is placed between sheets of blotting-paper, and is pressed.

CHEMICAL PREPARATION AND TREATMENT OF THE PHOTOGRAPHIC PAPER FOR SECONDARIES.

The paper used is made by Rive; it is a strong wove paper of tolerably even texture, thin, but able to bear a great deal of wear.

First Operation.—Preliminary Preparation of the Paper.

The chemical solution required for this purpose is as follows:—

Two grains of Chloride of Ammonium are dissolved in one ounce of distilled water.

A sufficient quantity of this solution is placed in a flat-bottomed porcelain dish, and sheets of paper, one by one, are plunged within it; care being taken that no air bubbles remain between the paper and the solution; this may be prevented by slight pressure over the sheet by means of a bent glass rod. When a few sheets are thus immersed, they are turned over, and are taken out and hung to dry. Any number of sheets may thus be prepared.

An equally good result is obtained, by spreading over one side by means of a glass rod, as in the preparation of the Primaries, a solution of Chloride of Ammonium made by dissolving five grains in one ounce of distilled water.

Second Operation.—Rendering the Paper sensitive to the Action of Light.

The solution required for this purpose is as follows:—

To a filtered solution of Nitrate of Silver, (made by dissolving 50 grains of Crystallized Nitrate of Silver in one ounce of distilled water,) some strong solution of Ammonia is added; the whole becomes at first of a dark brown colour, but when a sufficient quantity of Ammonia is added the solution becomes perfectly clear; a few crystals of Nitrate of Silver are then added till the solution is a little dull, forming "Ammoniacal Nitrate of Silver;" it is then ready for use.

The following operation is performed in a room illuminated by yellow light:—

By means of a glass rod this solution is spread over the paper, whilst pinned on a board; the paper is dried before a fire, and is then in a fit state to be used for producing a Secondary.

Third Operation.—Formation of the Photographic Copy.

A sheet of the paper so prepared is placed in a printing frame with its prepared side upwards, upon a bed of blotting paper resting upon a sheet of plate-glass; the Primary is then placed on the paper with its own face downwards; and as it is necessary, for obtaining a correct copy of the Primary, that it should be in close contact with the prepared surface, a second sheet of plate-glass is placed over it, and the two are pressed together by clamps and screws. The whole is then exposed to the light (the Primary to be copied being above the paper on which the copy is to be made). The time required to produce a copy depends, in a great measure, upon the thickness of the paper on which the Primary is made, and on the actinic quality of the light; a period of five minutes in a bright sunshine, or one hour in clear daylight, is generally sufficient.

Fourth Operation.—Fixing the Photographic Secondary.

When an impression has been thus obtained, it is necessary that the undecomposed Salts of Silver remaining in the paper be removed.

For this purpose the Secondary is at once plunged into water and well washed on both sides, passing a camel's hair brush over every part of it; it is then plunged into a solution of Hyposulphite of Soda (made by dissolving two or three ounces of the Hyposulphite in a pint of water), and is left through a period varying from half an hour to an hour. It is then removed, and washed in plain water several times; and running water is allowed to pass over it for twenty-four hours.

The sheets are then placed within the folds of drying cloths, till nearly dry, and finally between sheets of blotting paper.

The process of obtaining a Tertiary from a Secondary is in every respect the same as that of obtaining a Secondary from a Primary.

§ 18. *Personal Establishment.*

The personal establishment during the year 1864 has consisted of James Glaisher, Esq., F.R.S., Superintendent of the Magnetical and Meteorological Department, and Mr. William Carpenter Nash, Assistant.

Three or four computers have usually been attached to the Department.

ROYAL OBSERVATORY, GREENWICH.

RESULTS

OF

OBSERVATIONS

OF THE

MAGNETIC DIP.

1864.

MAGNETIC DIP, observed at the ROYAL OBSERVATORY, GREENWICH, chiefly with AIRY'S DIP APPARATUS, in the Year 1864.

Day and Approximate Hour, 1864.	Needle.	Length of Needle.	Magnetic Dip.	Observer.
d h			° ′ ″	
January 22. 0	C 4	6 inches	(68. 0. 12)	N
22. 2	D 4	3 „	(68. 1. 6)	N
27. 2	C 4	6 „	(67. 59. 14)	N
27. 23	B 4	9 „	(67. 49. 3)	N
28. 2	D 4	3 „	(68. 2. 49)	N
February 8. 2	D 1	3 „	68. 0. 34	N
16. 2	D 4	3 „	(68. 2. 42)	N
16. 23	D 2	3 „	68. 4. 28	N
17. 0	D 3	3 „	68. 29. 7	N
17. 2	C 4	6 „	(68. 0. 57)	N
18. 0	C 1	6 „	68. 11. 37	N
March 11. 2	C 4	6 „	(68. 1. 27)	N
16. 0	C 3	6 „	68. 16. 43	N
17. 0	C 2	6 „	68. 5. 37	N
17. 2	C 1	6 „	68. 10. 34	N
30. 0	C 4	6 „	(67. 59. 30)	N
30. 23	C 2	6 „	68. 5. 11	N
31. 0	B 4	9 „	(67. 49. 21)	N
31. 2	D 4	3 „	(68. 6. 14)	N
April 8. 2	C 4	6 „	(68. 2. 26)	N
11. 2	D 4	3 „	(67. 58. 53)	N
23. 1	D 4	3 „	(68. 2. 36)	N
23. 2	C 4	6 „	(67. 59. 33)	N
27. 0	B 4	9 „	(67. 45. 24)	N
30. 1	C 1	6 „	68. 7. 44	N
May 5. 22	B 1	9 „	68. 6. 50	N
6. 0	B 2	9 „	68. 9. 40	N
10. 1	D 2	3 „	67. 51. 2	N
12. 0	D 1	3 „	68. 5. 0	N
12. 2	D 4	3 „	(67. 59. 21)	N
17. 0	C 1	6 „	68. 10. 36	N
17. 2	C 4	6 „	(67. 59. 35)	N
18. 1	C 2	6 „	67. 59. 34	N
19. 0	B 4	9 „	(67. 45. 52)	N
19. 2	D 3	3 „	68. 10. 26	N
June 11. 0	C 4	6 „	(68. 4. 44)	N
14. 2	D 4	3 „	(68. 6. 20)	N
24. 0	D 1	3 „	68. 17. 23	N
27. 22	C 1	6 „	68. 12. 58	N
28. 1	D 2	3 „	68. 4. 16	N
29. 0	C 2	6 „	67. 57. 22	N
July 6. 23	B 1	9 „	68. 4. 20	N
7. 1	D 4	3 „	(68. 0. 59)	N
12. 23	C 4	6 „	(67. 59. 43)	N
13. 1	B 3	9 „	68. 12. 8	N
13. 23	B 4	9 „	(67. 47. 4)	N
14. 22	B 2	9 „	68. 4. 54	N
28. 23	D 2	3 „	68. 2. 15	N

Day and Approximate Hour, 1864.	Needle.	Length of Needle.	Magnetic Dip.	Observer.
d h			° ′ ″	
July 29. 2	C 4	6 inches	(68. 2. 55)	N
30. 2	D 4	3 „	(68. 5. 21)	N
August 10. 2	C 4	6 „	(67. 58. 20)	N
11. 2	D 2	3 „	68. 14. 41	N
26. 1	D 1	3 „	68. 17. 21	N
30. 2	D 4	3 „	(68. 3. 31)	N
September 8. 2	C 4	6 „	(67. 59. 21)	N
13. 0	C 1	6 „	68. 7. 56	N
14. 2	D 4	3 „	(68. 2. 25)	N
20. 23	C 2	6 „	68. 6. 21	N
21. 1	C 4	6 „	(68. 1. 41)	N
22. 23	B 4	9 „	(67. 49. 9)	N
23. 1	D 2	3 „	68. 2. 0	N
29. 2	D 4	3 „	(68. 5. 0)	N
October 7. 0	B 4	9 „	(67. 43. 59)	N
8. 1	C 4	6 „	(67. 59. 28)	N
17. 0	B 2	9 „	68. 5. 4	N
19. 0	B 3	9 „	68. 12. 48	N
20. 23	C 4	6 „	(68. 2. 37)	N
21. 1	B 4	9 „	(67. 47. 13)	N
31. 2	B 1	9 „	68. 0. 26	N
November 8. 0	C 4	6 „	(68. 3. 10)	N
10. 0	D 2	3 „	67. 59. 42	N
10. 1	43, A 1	3½ „	68. 5. 0	G
10. 1	43, A 1	3½ „	68. 4. 41	G
10. 1	44, A 1	3½ „	68. 6. 28	B S
10. 2	44, A 1	3½ „	68. 5. 43	G
10. 2	43, A 1	3½ „	68. 3. 20	B S
10. 2	D 2	3 „	68. 0. 32	W
10. 23	44, A 2	3½ „	68. 5. 47	G
10. 23	43, A 2	3½ „	68. 4. 37	N
11. 0	43, A 2	3½ „	68. 4. 26	G
11. 0	44, A 2	3½ „	68. 6. 58	N
18. 23	C 1	6 „	68. 3. 39	N
21. 0	B 4	9 „	(67. 51. 23)	N
23. 1	D 2	3 „	68. 6. 12	N
24. 23	B 1	9 „	68. 2. 37	N
25. 0	B 2	9 „	68. 3. 2	N
25. 1	C 1	6 „	68. 2. 32	N
25. 2	C 2	6 „	68. 5. 40	N
25. 2	D 2	3 „	68. 2. 40	N
26. 1	D 1	3 „	67. 59. 26	N
26. 2	D 4	3 „	(68. 3. 56)	N
December 6. 1	C 4	6 „	(68. 0. 45)	N
6. 2	B 1	9 „	68. 2. 5	N
8. 2	C 1	6 „	68. 4. 25	N
22. 0	B 1	9 „	67. 58. 57	N
22. 1	B 2	9 „	68. 4. 4	N
30. 1	C 1	6 „	68. 1. 59	N
30. 2	C 2	6 „	68. 3. 44	N
30. 3	D 1	3 „	67. 50. 5	N

The observations of Magnetic Dip with Airy's instrument, distinguished by the initial N, have been made throughout the year by Mr. W. C. Nash. One observation on November 10, with the initial W, was made by Mr. Whipple of the Kew Observatory.

On November 10 and 11, observations were made with two Kew Dip-Circles marked 43 and 44, by Mr. Glaisher, and Mr. Balfour Stewart, Director of the Kew Observatory. These observations are distinguished by the initials G and B S.

The agate edges of Airy's instrument were re-ground by Mr. Simms, between November 11 and November 18.

MONTHLY MEANS of MAGNETIC DIPS, observed at the ROYAL OBSERVATORY, GREENWICH, in the Year 1864.

Month, 1864.	AIRY'S DIP APPARATUS.											
	B 1, 9-inch Needle.	Number of Observations.	B 2, 9-inch Needle.	Number of Observations.	B 3, 9-inch Needle, loaded.	Number of Observations.	B 4, 9-inch Needle, flat.	Number of Observations.	C 1, 6-inch Needle.	Number of Observations.	C 2, 6-inch Needle.	Number of Observations.
	° ′ ″		° ′ ″		° ′ ″		° ′ ″		° ′ ″		° ′ ″	
January...	....	..	....	..	....	..	(67. 49. 3)	1	....	..	....	..
February..	....	..	....	..	....	..	....	..	68. 11. 37	1	....	..
March	....	..	....	..	....	..	(67. 49. 21)	1	68. 10. 34	1	68. 5. 24	2
April	....	..	....	..	....	..	(67. 45. 24)	1	68. 7. 44	1	....	..
May.....	68. 6. 50	1	68. 9. 40	1	....	..	(67. 45. 52)	1	68. 10. 36	1	67. 59. 34	1
June	....	..	....	..	....	..	....	..	68. 12. 58	1	67. 57. 22	1
July.....	68. 4. 20	1	68. 4. 54	1	68. 12. 8	1	(67. 47. 4)	1	....	..	....	..
August ...	....	..	....	..	....	..	....	..	....	..	....	..
September.	....	..	....	..	....	..	(67. 49. 9)	1	68. 7. 56	1	68. 6. 21	1
October ...	68. 0. 26	1	68. 5. 4	1	68. 12. 48	1	(67. 45. 36)	2	....	..	....	..
November.	68. 2. 37	1	68. 3. 2	1	....	..	(67. 51. 23)	1	68. 3. 6	2	68. 5. 40	1
December .	68. 0. 31	2	68. 4. 4	1	....	..	....	..	68. 3. 12	2	68. 3. 44	1
Means.	(68. 2. 13)	Sum 6	(68. 5. 2)	Sum 5	....	..	(67. 47. 41)	Sum 9	(68. 7. 4)	Sum 10	(68. 2. 57)	Sum 7

Month, 1864.	AIRY'S DIP APPARATUS.											
	C 3, 6-inch Needle, loaded.	Number of Observations.	C 4, 6-inch Needle, flat.	Number of Observations.	D 1, 3-inch Needle.	Number of Observations.	D 2, 3-inch Needle.	Number of Observations.	D 3, 3-inch Needle, loaded.	Number of Observations.	D 4, 3-inch Needle, flat.	Number of Observations.
	° ′ ″		° ′ ″		° ′ ″		° ′ ″		° ′ ″		° ′ ″	
January...	....	..	(67. 59. 43)	2	....	..	....	..	....	..	(68. 1. 58)	2
February..	....	..	(68. 0. 57)	1	68. 0. 34	1	68. 4. 28	1	68. 29. 7	1	(68. 2. 42)	1
March	68. 16. 43	1	(68. 0. 28)	2	....	..	....	..	....	..	(68. 6. 14)	1
April	....	..	(68. 1. 0)	2	....	..	....	..	....	..	(68. 0. 44)	2
May.....	....	..	(67. 59. 35)	1	68. 5. 0	1	67. 51. 2	1	68. 10. 26	1	(67. 59. 21)	1
June	....	..	(68. 4. 44)	1	68. 17. 23	1	68. 4. 16	1	....	..	(68. 6. 20)	1
July.....	....	..	(68. 1. 19)	2	....	..	68. 2. 15	1	....	..	(68. 3. 10)	2
August ...	....	..	(67. 58. 20)	1	68. 17. 21	1	68. 14. 41	1	....	..	(68. 3. 31)	1
September.	....	..	(68. 0. 31)	2	....	..	68. 2. 0	1	....	..	(68. 3. 43)	2
October ...	....	..	(68. 1. 3)	2	....	..	....	..	....	..	....	..
November.	....	..	(68. 3. 10)	1	67. 59. 26	1	68. 2. 16	4	....	..	(68. 3. 56)	1
December .	....	..	(68. 0. 45)	1	67. 50. 5	1	....	..	....	..	....	..
Means.	....	..	(68. 0. 52)	Sum 18	(68. 4. 35)	Sum 6	(68. 2. 29)	Sum 10	....	..	(68. 2. 58)	Sum 14

Month, 1864.	KEW DIP CIRCLE, No. 43.				KEW DIP CIRCLE, No. 44.			
	A 1, $3\frac{1}{2}$-inch Needle.	Number of Observations.	A 2, $3\frac{1}{2}$-inch Needle.	Number of Observations.	A 1, $3\frac{1}{2}$-inch Needle.	Number of Observations.	A 2, $3\frac{1}{2}$-inch Needle.	Number of Observations.
	° ′ ″		° ′ ″		° ′ ″		° ′ ″	
January...	....	..	....	..	....	..	....	..
February..	....	..	....	..	....	..	....	..
March	....	..	....	..	....	..	....	..
April	....	..	....	..	....	..	....	..
May.....	....	..	....	..	....	..	....	..
June	....	..	....	..	....	..	....	..
July.....	....	..	....	..	....	..	....	..
August ...	....	..	....	..	....	..	....	..
September.	....	..	....	..	....	..	....	..
October ...	....	..	....	..	....	..	....	..
November.	68. 4. 20	3	68. 4. 32	2	68. 6. 6	2	68. 6. 23	2
December .	....	..	....	..	....	..	....	..
Means.	....	..	....	..	....	..	....	..

For this table the monthly means have been formed without reference to the hour at which the observation was made on each day, as in preceding years no certain difference was found between observations taken at 21^h and at 3^h.

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

The means in brackets have been found by applying to the mean of the observed results a correction deduced by taking the difference between the mean result for the same months and that of the whole year, given by C 4.

YEARLY MEANS of MAGNETIC DIPS for each of the NEEDLES, and GENERAL MEAN for the Year 1864.

Lengths of the several Sets of Needles.	Needles.	Number of Observations with each Needle.	Yearly Means uncorrected.			Yearly Means reduced to the middle of the Year.		
			Mean Yearly Dip from Observations with each Needle.	Mean Yearly Dip from each Set of Needles, excluding the flat Needles.	Mean Yearly Dip from all the Sets of Needles, excluding the flat Needles.	Adopted mean Yearly Dip for each Needle.	Mean Yearly Dip from each Set of Needles, excluding the flat Needles.	Mean Yearly Dip from all the Sets of Needles, excluding the flat Needles.
			° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″
9-inch Needles	B 1	6	68. 2. 32			68. 2. 13		
	B 2	5	68. 5. 21	68. 3. 49		68. 5. 2	68. 3. 38	
	B 4	9	(67. 47. 36)			(67. 47. 41)		
6-inch Needles	C 1	10	68. 7. 24			68. 7. 4		
	C 2	7	68. 3. 21	68. 5. 44	68. 4. 23	68. 2. 57	68. 5. 0	68. 4. 3
	C 4	18	(68. 0. 52)			(68. 0. 52)		
3-inch Needles	D 1	6	68. 4. 58			68. 4. 35		
	D 2	10	68. 2. 47	68. 3. 36		68. 2. 29	68. 3. 32	
	D 4	14	(68. 2. 57)			(68. 2. 58)		

The observations with the loaded needles B 3, C 3, and D 3, have been too few in number for the formation of yearly means for those needles.
The results for the flat needles B_4, C_4, D_4, though perfectly consistent among themselves, are affected by constant errors, different for the different needles, which diminish the apparent dip, as is explained in the Introduction.

ROYAL OBSERVATORY, GREENWICH.

OBSERVATIONS

OF

DEFLEXION OF A MAGNET

FOR

ABSOLUTE MEASURE

OF

HORIZONTAL FORCE.

1864.

ABSTRACT of the OBSERVATIONS of DEFLEXION of a MAGNET for ABSOLUTE MEASURE of HORIZONTAL FORCE, made with the KEW UNIFILAR INSTRUMENT.

Month and Day, 1864.	Distances of Centers of Magnets.	Temperature.	Observed Deflexion.	Mean of the Times of Vibration of Deflecting Magnet.	Number of Vibrations.	Temperature.	Observer.
	ft.	°	° ′ ″	s		°	
January 29	1·0 1·3	48·1	14. 40. 55 6. 37. 53	4·959 4·960	100 100	49·0 54·0	N
February 2	1·0 1·3	46·1	14. 41. 39 6. 38. 32	4·949 4·960	100 100	49·8 49·5	N
February 9	1·0 1·3	31·9	14. 43. 3 6. 39. 3	4·958 4·953	100 100	33·6 35·8	N
March 29	1·0 1·3	48·8	14. 39. 14 6. 37. 8	4·954 4·959	100 100	50·2 53·9	N
April 13	1·0 1·3	58·2	14. 35. 46 6. 35. 28	4·970 4·971	100 100	58·3 61·7	N
April 26	1·0 1·3	58·2	14. 36. 45 6. 36. 10	4·963 4·970	100 100	59·3 61·5	N
May 10	1·0 1·3	59·7	14. 39. 0 6. 37. 5	4·955 4·970	100 100	60·5 62·6	N
June 9	1·0 1·3	69·8	14. 41. 54 6. 36. 43	4·983 4·983	100 100	73·8 72·0	N
June 21	1·0 1·3	67·7	14. 30. 45 6. 33. 14	4·981 4·975	100 100	69·1 69·0	N
July 6	1·0 1·3	64·8	14. 30. 53 6. 31. 0	4·980 4·982	100 100	65·8 65·8	N
July 27	1·0 1·3	72·7	14. 27·10 6. 31. 36	4·991 4·991	100 100	73·2 78·9	N
August 12	1·0 1·3	72·3	14. 22. 39 6. 29. 44	4·995 4·996	100 100	72·6 77·7	N
August 24	1·0 1·3	61·3	14. 26. 48 6. 31. 44	4·996 4·999	100 100	59·2 64·5	N
September 15	1·0 1·3	65·1	14. 21. 23 6. 29. 17	4·998 4·998	100 100	67·1 70·0	N
October 4	1·0 1·3	61·6	14. 20. 2 6. 28. 24	5·010 5·008	100 100	64·9 63·9	N
October 18	1·0 1·3	60·8	14. 20. 2 6. 28. 40	5·006 5·014	100 100	62·7 62·0	N
November 9	1·0 1·3	46·7	14. 19. 24 6. 28. 16	5·006 5·019	100 100	53·5 47·8	N
December 8	1·0 1·3	47·7	14. 18. 48 6. 27. 48	5·012 5·013	100 100	49·7 52·9	N
December 27	1·0 1·3	34·4	14. 17. 21 6. 27. 41	5·008 5·011	100 100	36·8 37·1	N

The position of the Deflecting Magnet with regard to the suspended Magnet is always that which was formerly termed "Lateral." The Deflecting Magnet is placed on the East side of the suspended Magnet, with its marked pole alternately E. and W., and it is placed on the West side with its pole alternately E. and W.; and the deflexion in the table above is the mean of the four deflexions observed in those positions of the magnets.

The lengths of 1 foot and 1·3 foot answer to 304·8 and 396·2 millimètres respectively.

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

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

COMPUTATION of the VALUES of ABSOLUTE MEASURE of HORIZONTAL FORCE, from OBSERVATIONS with the KEW UNIFILAR INSTRUMENT.

Month and Day, 1864.		In English Measure.									Value of X in French Measure.
		Apparent Value of A.	Apparent Value of A^1.	Apparent Value of P.	Mean Value of P.	Log. A corrected by the Application of Log. of Mean Value of P. = Log. $\frac{m}{X}$	Adopted Time of Vibration of Deflecting Magnet.	Log. $m X$.	Value of X.	Value of m.	
							s				
January	29	+0·12699	0·07521	−0·00212		9·10479	4·9595	0·26997	3·825	0·4868	1·763
February	2	+0·12705	0·07531	−0·00425		9·10518	4·9545	0·27072	3·826	0·4875	1·764
	9	+0·12695	0·07523	−0·00387		9·10480	4·9555	0·26954	3·823	0·4866	1·763
March	29	+0·12677	0·07508	−0·00213		9·10404	4·9565	0·27050	3·830	0·4867	1·766
April	13	+0·12648	0·07488	−0·00155		9·10298	4·9705	0·26864	3·827	0·4851	1·764
	26	+0·12662	0·07502	−0·00310		9·10360	4·9665	0·26937	3·827	0·4858	1·765
May	10	+0·12697	0·07521	−0·00270		9·10477	4·9625	0·27014	3·825	0·4869	1·764
June	9	+0·12761	0·07527	+0·00764		9·10603	4·9830	0·26741	3·808	0·4861	1·756
	21	+0·12598	0·07459	−0·00136		9·10126	4·9780	0·26820	3·832	0·4839	1·767
July	6	+0·12593	0·07413	+0·01255	−0·00241	9·09984	4·9810	0·26724	3·834	0·4826	1·768
	27	+0·12558	0·07435	−0·00137		9·09987	4·9910	0·26623	3·830	0·4820	1·766
August	12	+0·12493	0·07399	−0·00216		9·09770	4·9955	0·26536	3·836	0·4803	1·769
	24	+0·12528	0·07422	−0·00313		9·09898	4·9975	0·26410	3·824	0·4803	1·763
September	15	+0·12459	0·07381	−0·00295		9·09658	4·9980	0·26447	3·837	0·4792	1·769
October	4	+0·12433	0·07360	−0·00098		9·09548	5·0090	0·26214	3·831	0·4773	1·766
	18	+0·12431	0·07364	−0·00276		9·09558	5·0100	0·26183	3·829	0·4772	1·766
November	9	+0·12393	0·07338	−0·00178		9·09415	5·0125	0·26060	3·830	0·4758	1·766
December	8	+0·12386	0·07331	−0·00059		9·09381	5·0125	0·26066	3·832	0·4756	1·767
	27	+0·12338	0·07313	−0·00418		9·09245	5·0095	0·26023	3·836	0·4746	1·769

In forming the mean value of P, the values for June 9 and July 6 have not been taken into account.

ROYAL OBSERVATORY, GREENWICH.

RESULTS

OF

METEOROLOGICAL OBSERVATIONS.

1864.

MONTH and DAY, 1864.	Phases of the Moon.	Mean Daily Reading of the Barometer (corrected and reduced to 32° Fahrenheit).	Readings of Thermometers. Dry. Highest.	Dry. Lowest.	Dry. Mean Daily Value.	Dew Point. Mean Daily Value.	Highest in the Sun, as shown by a Self-Registering Thermometer with blackened bulb in vacuo, placed on the Grass.	Lowest on the Grass, as shown by a Self-Registering Minimum Thermometer.	In the Water of the Thames, at Greenwich, by Self-Registering Thermometers, read at 9h A.M. Highest.	In the Water of the Thames, at Greenwich, by Self-Registering Thermometers, read at 9h A.M. Lowest.	Difference between the Dew Point Temperature and Air Temperature. Mean Daily Value.	Difference between the Dew Point Temperature and Air Temperature. Greatest.	Difference between the Dew Point Temperature and Air Temperature. Least.	Difference between the Mean Temperature of the Day and the Mean Temperature of the same Day on an Average of 43 Years.	Wind as deduced from Anemometers. Osler's. General Direction. A.M.	Wind as deduced from Anemometers. Osler's. General Direction. P.M.	Pressure in lbs. on the square foot. Greatest.	Pressure in lbs. on the square foot. Least.	Pressure in lbs. on the square foot. Mean of 24 Obs.	Robinson's Amount of Horizontal Movement of the Air on each Day.	Rain in Inches, collected in a Gauge whose receiving surface is 5 inches above the Ground.
		in.	°	°	°	°	°	°	°	°	°	°	°	°			lbs.	lbs.	lbs.	miles.	in.
Jan. 1	..	29·842	35·5	30·9	32·9	21·0	39·0	30·5	43·2	41·0	11·9	16·0	8·4	− 3·6	NE	NE	7·0	0·0	1·5	275	0·00
2	Last Qr.	30·372	34·5	25·2	29·8	20·6	36·8	18·6	42·6	39·4	9·2	12·9	7·7	− 6·6	NE	NE: E	0·0	0·0	0·0	120	0·00
3	..	30·473	34·5	23·5	28·7	17·9	47·8	17·0	42·4	39·2	10·8	13·2	7·9	− 7·7	N: E	NE	2·7	0·0	0·3	198	0·00
4	..	30·362	32·8	22·0	27·8	20·9	44·0	18·0	41·6	38·4	6·9	11·2	5·6	− 8·5	NE	NE	3·0	0·0	0·4	241	0·00
5	..	30·161	33·5	21·7	26·6	14·7	47·2	17·2	41·6	38·4	11·9	16·3	8·8	− 9·5	ENE	E	2·0	0·0	0·2	126	0·00
6	..	30·095	28·1	15·0	21·1	10·4	35·0	7·0	41·4	38·2	10·7	16·5	6·0	−14·9	Calm	Calm	0·0	0·0	0·0	54	0·00
7	Greatest Declination S.	30·037	29·8	14·3	22·6	17·5	32·0	6·0	41·1	37·9	5·1	8·0	3·4	−13·2	Calm	Calm	0·0	0·0	0·0	63	0·00
8	..	29·862	31·8	23·7	27·3	20·9	42·0	22·0	40·8	39·6	6·4	10·4	2·7	− 8·2	Calm	Calm	0·0	0·0	0·0	83	0·00
9	New.	29·780	38·3	21·6	32·4	31·1	59·0	19·5	40·1	30·9	1·3	2·3	0·0	− 3·0	Calm	SE	0·0	0·0	0·0	157	0·00
10	Perigee.	29·883	45·6	36·6	40·1	35·6	64·0	31·6	40·6	31·4	4·5	6·5	1·0	+ 4·4	SE	SE	0·0	0·0	0·0	126	0·00
11	..	29·975	46·7	34·9	39·5	33·2	73·0	30·2	40·5	31·4	6·3	9·0	2·0	+ 3·9	SE	SE	1·5	0·0	0·1	201	0·00
12	..	29·982	41·4	32·2	37·2	35·0	55·0	25·0	38·8	33·0	2·2	5·3	0·0	+ 1·6	SE	Calm	0·0	0·0	0·0	77	0·02
13	In Equator.	30·170	38·0	35·9	36·9	35·9	39·6	33·7	38·2	33·4	1·0	1·4	0·0	+ 1·3	Calm	Calm	0·0	0·0	0·0	83	0·14
14	..	30·123	38·2	34·0	36·2	34·7	39·3	31·9	37·9	35·4	1·5	2·9	0·0	+ 0·6	Calm	Calm	0·0	0·0	0·0	66	0·01
15	First Qr.	30·151	34·5	29·9	32·5	29·5	39·4	25·7	37·8	35·6	3·0	4·8	1·4	− 3·0	Calm	SE	0·0	0·0	0·0	164	0·00
16	..	30·091	38·2	32·4	35·0	28·0	48·0	29·0	37·5	35·3	7·0	10·8	3·4	− 0·5	SE	SE	2·4	0·0	0·2	263	0·00
17	..	29·828	42·6	32·5	36·8	35·4	42·6	28·2	37·6	35·3	1·4	2·3	0·0	+ 0·9	SE	SE	3·0	0·0	0·3	98	0·22
18	..	29·969	44·8	38·0	41·3	40·7	45·0	38·0	37·8	36·0	0·6	1·3	0·0	+ 5·0	Calm	SE	0·0	0·0	0·0	112	0·00
19	..	30·064	48·2	40·7	44·4	40·8	68·9	38·4	38·0	35·4	3·6	6·3	1·0	+ 7·9	SSW	SW	2·8	0·0	0·3	342	0·01
20	Greatest Declination N.	30·081	47·8	43·6	45·2	42·3	57·5	43·1	39·6	37·5	2·9	4·6	1·7	+ 8·4	SW	SSW	4·0	0·0	0·6	426	0·15
21	..	29·823	48·8	41·3	45·3	42·2	55·2	41·0	41·1	39·7	3·1	6·3	1·4	+ 8·2	SW	WSW: SSW	4·5	0·0	0·7	384	0·06
22	..	29·668	53·0	44·4	49·9	47·2	55·7	41·2	42·3	40·0	2·7	4·6	1·3	+12·6	SW	SW	8·0	0·0	2·5	586	0·00
23	Full.	29·696	53·2	45·9	48·5	43·1	56·9	40·0	44·6	42·4	5·4	7·6	1·7	+11·0	SW	SW	12·0	0·0	1·7	230	0·04
24	Apogee	30·098	45·8	34·2	39·1	34·1	58·0	26·0	44·5	41·4	5·0	10·9	0·0	+ 1·3	NW: SW	SW	1·5	0·0	0·2	263	0·19
25	..	30·280	42·6	34·5	39·1	38·6	45·6	28·5	44·2	42·4	0·5	2·2	0·0	+ 1·1	SW	SW: S	1·0	0·0	0·0	178	0·00
26	..	30·084	45·8	35·1	40·4	34·3	74·6	26·0	44·7	42·4	6·1	9·2	1·0	+ 2·1	S: SSW	SW	1·5	0·0	0·1	319	0·00
27	In Equator	29·851	54·0	37·9	47·0	44·0	77·0	35·7	44·7	42·4	3·0	9·4	1·9	+ 8·7	SW	SW	4·4	0·0	1·5	438	0·03
28	..	29·782	49·5	40·5	44·5	36·6	68·7	31·7	45·6	43·4	7·9	12·0	4.2	+ 6·4	WSW	W: NW	6·0	0·0	1·6	363	0·01
29	..	30·276	42·2	27·8	34·2	26·1	60·5	17·0	44·8	42·6	8·1	12·5	5·0	− 3·7	N: NE	NE: ESE	3·5	0·0	0·3	143	0·00
30	..	30·319	41·0	24·0	32·8	27·5	68·7	15·3	44·6	42·4	5·3	9·4	0·8	− 4·8	SE: SW	SW: S	1·2	0·0	0·1	245	0·00
31	..	30·175	42·9	29·9	35·9	30·5	69·0	22·7	42·6	40·4	5·4	9·7	0·0	− 1·4	S: SW	SSW	1·0	0·0	0·0	225	0·00
Means	..	30·044	41·4	31·7	36·5	31·3	53·1	27·0	41·4	38·1	5·2	8·3	2·5	− 0·1	...	...	..	..	..	Sum 6649	Sum 0·88

BAROMETER READINGS FROM EYE-OBSERVATIONS.

The absolute maximum in the month was 30in·483 on the 3rd; the first minimum in the month was 29in·771 on the 9th.
The second maximum ,, was 30in·184 on the 13th; the second minimum ,, was 30in·112 on the 14th.
The third maximum ,, was 30in·176 on the 15th; the third minimum ,, was 29in·815 on the 17th.
The fourth maximum ,, was 30in·139 on the 20th; the absolute minimum ,, was 29in·636 on the 23rd.
The fifth maximum ,, was 30in·303 on the 25th; the fifth minimum ,, was 29in·744 on the 28th.
The sixth maximum ,, was 30in·354 on the 30th.
The range in the month was 0in·847.
The mean for the month was 30in·044, being 0in·284 *higher* than the average of the preceding 23 years.

TEMPERATURE OF THE AIR.

The highest in the month was 54°·0 on the 27th; the lowest was 14°·3 on the 7th; and the range in the month was 39°·7
The mean ,, of all the highest daily readings was 41°·4, being 1°·9 *lower* than the average of the preceding 23 years.
The mean ,, of all the lowest daily readings was 31°·7, being 1°·9 *lower* than the average of the preceding 23 years.
The mean daily range was 9°·7, being *the same as* the average of the preceding 23 years.
The mean for the month was 36°·5 being 1°·8 *lower* than the average of the preceding 23 years.

MONTH and DAY, 1864.	ELECTRICITY. A.M.	ELECTRICITY. P.M.	CLOUDS AND WEATHER. A.M.	CLOUDS AND WEATHER. P.M.
Jan. 1	w	w	10, cu.-s, ci.-cu	7,ci.-cu,ci.cu.-s : o : 9, ci, s
2	s	s : m : s, sp	10, sl.-sn	10,s,cu.-s,sl.-sn: 8, cu.-s, ci.-s : o
3	s	w : s	10, ci.-cu, sl.-sn	9,ci.-cu,ci,sl-sn : o
4	s	w	2, ci.-cu, cu.-s, ci	o : v : 10
5	m	w	10, ci.-cu, ci.-s	5, ci.-s, ci : o, h : o
6	s	s : s, sp, g.-cur	o, h., h.-fr	o, h : o, sl.-f, h.-fr : o, h.-fr
7	s, sp, g cur : s	s	o, h.-fr : 10, f, h.-fr	10, h, f : 10, ci.-cu, ci : 10, ci.-s
8	s	s, g.-cur: s	h.-fr : 5, ci, h	6, ci, h : 2, ci, h : o, th.-f
9	s	s : m : w	o, h, h.-fr : 10, ci.-cu	10 : 10
10	s	s : s, sp	8, ci, ci.-s	9, li.-cl : 3, li.-cl, sl.-f
11	w	v : o	4, ci, ci.-s	1, ci, ci.-cu : o
12	m	v : w, N	h.-fr : 3, ci, ci.-s	10, ci, ci.-s : 10, ci.-s, th.-r, sl.-f
13	m	o : m : s	10, ci.-s, oc.-r	10, f, th.-r : 10, f, th.-r
14	s : w	w : s	10, f, th.-r	10, f, th.-r : 10
15	o	s : o : w	10, ci.-s	10 : 10, th.-r
16	w	w	10 : 10	10 : 4,ci,ci.-cu,ci.-s: 10, ci.-cu, ci.-s
17	o	w : m	10 : 10, h.-r	10, th.-r : 10, th.-f
18	s	s	10, th.-f	10, f : 9, ci.-cu, ci
19	o	o	10, sl.-r	10, ci.-s : 8, ci, ci.-s : 10, sc, th.-r
20	o	o	10, shs.-r : 10, th.-r	10, ci.-s : 10, ci.-s
21	o	o	10 : 10, r : 7,ci.-cu,ci.-s	8,ci.-cu,ci.-s,cu: o : 10
22	o	o	10, sl.-r	10, ci.-s, cu.-s, w : 10, fr.-m.-r
23	o	o	10, st.-w : 10, ci.-cu, ci.-s	10, ci.-s : 10, r : 10, ci.-s, h.-r
24	o	o	10, h.-r : o	o : o
25	o	o	10, ci.-s, th.-f	10, ci.-s, sl.-f : v : 10, ci.-s
26	o	o	7, ci, ci.-cu, cu.-s	5, ci : o : 10, ci.-s, cu.-s
27	o	o	10 : 10, li.-cl, r	3,ci.-cu,cu,cu.-s,ci: 8, ci.-cu, ci : 10
28	w	o	4, ci	o : 10, ci.-s : 10, sl.-r
29	o	o : w	o, h	5, ci, ci.-cu : o : o
30	w	o : m	h.-fr : 10	9, ci.-cu, ci.-s : 1, ci : o, h, fr
31	w	w	o, h.-fr : 4, ci, h	2, ci : o, f

HUMIDITY OF THE AIR.

Temperature of the Dew Point.

The highest in the month was 48°·6 on the 22nd; and the lowest was 7°·8 on the 5th.

The mean ,, was 31°·3, being 4°·0 *lower* than the average of the preceding 23 years.

Elastic Force of Vapour.—The mean for the month was 0^{in}·176, being 0^{in}·028 *less* than the average of the preceding 23 years.

Weight of Vapour in a Cubic Foot of Air.—The mean for the month was 2^{gr}.0, being 0^{gr}·4 *less* than the average of the preceding 23 years.

Degree of Humidity.—The mean for the month was 82 (that of Saturation being represented by 100), being 7 *less* than the average of the preceding 23 years.

Weight of a Cubic Foot of Air.—The mean for the month was 561 grains, being 7 grains *greater* than the average of the preceding 23 years.

CLOUDS.

The mean amount for the month, a clear sky being represented by 0 and a cloudy sky by 10, was 6·8

OZONE.

The mean amount for the month, on a scale ranging from 0 to 10, was 1·2.

WIND.

The proportions were of N. 4, S. 11, W. 6, E. 10, and Calm 0. The greatest pressure in the month was 12^{lbs}·0 on the square foot, on the 23rd.

RAIN.

Fell on 11 days in the month, amounting to 0^{in}·88 as measured in the simple cylinder gauge partly sunk below the ground; being 0^{in}·86 *less* than the average fall of the preceding 49 years.

MONTH and DAY, 1864.	Phases of the Moon.	Mean Daily Reading of the Barometer (corrected and reduced to 32° Fahrenheit).	Readings of Thermometers. Dry. Highest.	Dry. Lowest.	Dry. Mean Daily Value.	Dew Point. Mean Daily Value.	Highest in the Sun, as shown by a Self-Registering Thermometer with blackened bulb in vacuo, placed on the Grass.	Lowest on the Grass, as shown by a Self-Registering Minimum Thermometer.	In the Water of the Thames, at Greenwich, by Self-Registering Thermometers, read at 9h A.M. Highest.	In the Water of the Thames, at Greenwich, by Self-Registering Thermometers, read at 9h A.M. Lowest.	Difference between the Dew Point Temperature and Air Temperature. Mean Daily Value.	Greatest.	Least.	Difference between the Mean Temperature of the Day and the Mean Temperature of the same Day on an Average of 43 Years.	Wind as deduced from Anemometers. Osler's. General Direction. A.M.	P.M.	Pressure in lbs. on the square foot. Greatest.	Least.	Mean of 24 Obs.	Robinson's Amount of Horizontal Movement of the Air on each Day.	Rain in Inches, collected in a Gauge whose receiving surface is 5 inches above the Ground.
		in.	°	°	°	°	°	°	°	°	°	°	°	°			lbs.	lbs.	lbs.	miles.	in.
Feb. 1	Last Qr.	30·055	46·3	31·0	39·2	36·9	67·4	21·1	42·1	39·9	2·3	7·7	0·0	+ 2·0	SSW	SSW	3·0	0·0	0·5	373	0·00
2	..	29·995	47·7	40·8	44·8	43·0	50·6	31·2	42·4	40·2	1·8	3·8	0·0	+ 7·8	SW	SW	6·0	0·0	1·0	499	0·00
3	Greatest Declination S.	29·872	50·0	39·8	45·4	41·6	63·0	37·0	42·6	40·4	3·8	7·4	0·0	+ 8·1	SW	WSW	8·0	0·0	1·5	321	0·03
4	..	30·036	42·8	31·6	35·5	27·8	53·3	24·1	41·6	39·4	7·7	11·4	1·3	— 2·2	WSW	NW : WSW	2·3	0·0	0·2	310	0·00
5	..	30·073	36·6	27·9	32·7	25·9	57·0	23·0	41·6	38·4	6·8	14·0	2·0	— 5·7	N	N	4·5	0·0	0·5	379	0·03
6	..	29·970	36·2	28·9	31·5	26·9	48·0	25·0	41·4	38·2	4·6	6·2	1·6	— 7·5	N	N	2.6	0·0	0·4	257	0·00
7	Perigee ; New.	29·759	34·6	24·5	28·4	24·0	63·0	17·7	41·2	36·4	4·4	8·1	0·0	—10·8	N	N	0·0	0·0	0·0	181	0·00
8	..	29·569	36·0	26·3	30·5	26·2	49·5	20·5	41·1	35·5	4·3	10·0	0·0	— 8·7	NW : N	N	0·0	0·0	0·0	260	0·01
9	In Equator.	29·439	35·7	22·8	28·3	22·9	44·2	14·2	40·6	35·4	5·4	11·2	1·5	—10·7	W	W : NW	0·0	0·0	0·0	40	0·00
10	..	29·310	40·0	20·1	30·3	23·1	62·0	12·1	39·8	34·5	7·2	15·0	0·0	— 8·4	SW : SE	NE : N	0·0	0·0	0·0	172	0·00
11	..	29·640	35·8	31·1	33·5	28·0	39·0	29·1	38·6	33·9	5·5	7·8	1·7	— 5·0	N	W : S	0·0	0·0	0·0	264	0·00
12	..	29·311	52·7	32·2	42·7	41·4	59·6	19·6	40·1	34·9	1·3	2·4	0·0	+ 4·4	S	SW	6·0	0·0	1·0	460	0·33
13	..	29·647	53·8	43·4	48·5	43·9	56·7	37·0	..	..	4·6	6·6	0·0	+10·3	SW	SW	21·0	0·0	3·8	492	0·00
14	First Qr.	30·119	53·3	37·0	44·0	39·2	72·5	31·1	..	35·4	4·8	12·2	0·0	+ 6·0	SW	SW	3·3	0·0	0·4	346	0·00
15	..	29·734	50·0	40·9	46·0	43·9	56·0	37·3	..	37·9	2·1	5·0	0·0	+ 7·9	SW	SW	4·0	0·0	0·6	417	0·00
16	Greatest Declination N.	29·592	50·6	37·2	43·2	38·7	69·6	34·0	..	38·4	4·5	9·2	1·0	+ 5·1	SW	W	6·0	0·0	0·6	346	0·05
17	..	29·876	44·8	32·3	37·5	29·8	64·0	26·2	..	38·9	7·7	13·0	1·2	— 0·7	W : NW	N	4·8	0·0	0·4	268	0·05
18	..	30·069	39·7	28·9	33·8	26·7	60·8	24·4	..	38·4	7·1	13·1	0·0	— 4·5	N	E : NE	3·0	0·0	0·2	267	0·00
19	..	30·157	34·4	26·4	28·9	18·1	61·0	23·2	..	38·4	10·8	13·9	7·0	— 9·5	NE	NE	4·0	0·0	0·4	269	0·01
20	Apogee	29·803	31·5	23·8	26·9	19·5	56·5	23·0	..	37·4	7·4	11·0	2·3	—11·6	NE	NE	1·5	0·0	0·1	255	0·01
21	..	29·534	33·3	26·0	29·6	18·8	38·0	25·2	..	..	10·8	12·3	9·0	— 8·9	NNE	N	1·0	0·0	0·1	172	0·00
22	Full	29·712	35·3	29·1	31·5	25·5	44·5	27·8	..	..	6·0	9·4	2·1	— 7·1	N	NE	0·0	0·0	0·0	48	0·00
23	..	29·782	37·0	25·0	30·5	27·3	49·5	18·5	..	..	3·2	7·0	0·0	— 8·4	Calm	NE	0·0	0·0	0·0	145	0·05
24	In Equator	29·809	39·3	24·4	32·2	27·3	46·4	16·2	37·6	35·4	4·9	10·1	0·0	— 6·9	NE	NE	2·5	0·0	0·3	253	0·01
25	..	29·819	37·8	31·9	34·7	30·3	46·0	31·1	36·6	34·4	4·4	7·4	1·2	— 4·8	NE	NE	3·0	0·0	0·2	214	0·10
26	..	29·785	37·3	33·7	35·5	33·7	40·5	30·9	37·1	34·9	1·8	2·0	1·2	— 4·2	NE	NNE	0·0	0·0	0·0	160	0·00
27	..	29·585	39·0	34·7	36·8	36·2	43·3	34·2	37·6	35·4	0·6	1·4	0·0	— 3·0	NE : ENE	E	0·0	0·0	0·0	155	0·00
28	..	29·507	50·0	37·1	42·3	41·3	50·0	33·3	38·1	35·9	1·0	5·3	0·0	+ 2·3	E	SE	0·0	0·0	0·0	17	0·00
29	..	29·482	43·3	36·9	40·0	39·4	49·1	30·0	38·6	36·4	0·6	1·2	0·0	0·0	E	SE : SW	0·0	0·0	0·0	94	0·08
Means	..	29·760	41·5	31·2	36·0	31·3	53·8	26·1	39·9	37·0	4·7	8·5	1·1	— 2·6	...	...	..	..	..	Sum 7434	Sum 0·76

BAROMETER READINGS FROM EYE-OBSERVATIONS.

The first maximum in the month was 30in·096 on the 5th; the second maximum ,, was 29in·674 on the 11th; the third maximum ,, was 30in·198 on the 14th; the absolute maximum ,, was 30in·211 on the 19th; the fifth maximum ,, was 29in·830 on the 25th.

The first minimum in the month was 29in·864 on the 3rd. The second minimum ,, was 29in·284 on the 10th. The absolute minimum ,, was 29in·207 on the 12th. The fourth minimum ,, was 29in·582 on the 16th. The fifth minimum ,, was 29in·594 on the 21st. The sixth minimum ,, was 29in·468 on the 29th.

The range in the month was 1in·004.

The mean for the month was 29in·760, being 0in·044 *lower* than the average of the preceding 23 years.

TEMPERATURE OF THE AIR.

The highest in the month was 53°·8 on the 13th; the lowest was 20°·1 on the 10th; and the range in the month was 33°·7.

The mean ,, of all the highest daily readings was 41°·5, being 3°·6 *lower* than the average of the preceding 23 years.

The mean ,, of all the lowest daily readings was 31°·2, being 2°·4 *lower* than the average of the preceding 23 years.

The mean daily range was 10°·3, being 1°·2 *less* than the average of the preceding 23 years.

The mean for the month was 36°·0, being 2°·9 *lower* than the average of the preceding 23 years.

MONTH and DAY, 1864.	ELECTRICITY.		CLOUDS AND WEATHER.	
	A.M.	P.M.	A.M.	P.M.
Feb. 1	w	o	h.-fr : 3, ci	2, ci : 9, ci.-cu, ci, cu : 10
2	o	o	10, sc	10, ci.-s, sl.-r : 10, ci.-s
3	o	o	10, oc.-shs	10, ci.-s, ci.-cu, oc.-r : 10, ci.-s, sl.-r
4	o	o	h.-fr : 1, ci	10 : 6, ci.-cu, cu.-s : o
5	o	o	sl.-sn : o	o : 10, sl.-sn : v v
6	o	o	10, sn	10, ci.-s, sl.-sn : 10, ci.-s : o
7	o	o : w	10, ci.-s	8,ci.-cu,ci.-s,cu.-s,sl.-sn: v v
8	w	o : w	10, sl.-sn	10 : 3,ci.-cu,cu.-s,cu,ci: o, h.-fr
9	m	m : o	h.-fr : 5, ci, h	9,ci.-s,ci.-cu,f: 6, ci.-cu, ci.-s : o, h
10	w	o : w	o, h	o : 10,ci.-cu,ci.-s,sn: 10
11	o	o : w : o	10, ci.-s	10, ci.-s : 10
12	o	o	10 : 10, h.-r	10, th.-r : o
13	o	o	10, ci.-s, sc	10, ci.-s, sc, th.-r, st.-w : o
14	o	o	2, li.-cl	7, cu, ci : 8, li.-cl, h, lu.-ha
15	o	o	10 : 10, ci.-s	10, th.-r : 10
16	o	o	10 : 10, th.-r	10, th.-r : v : 3, ci, ci.-cu
17	o	o : m : o	10, h.-r : 9, ci.-cu, ci	10, cu : 8, ci.-cu, ci, r, sn: o, h.-fr
18	o	o	3, ci	10, ci.-cu, cu.-s, oc.-sn : o
19	o	o	7, ci, ci.-s, oc.-sn	6, ci, ci.-cu, oc.-sn : 9, ci.-s, ci.-cu, oc.-sn
20	o	o	sl.-sn : 7, ci, ci.-s	10, oc.-sn : 7, ci, ci.-s : 10, ci.-s, sn
21	o	o	10, sl.-sn	10, oc.-sn : v : 10, sl.-sn
22	o	o	10, ci.-s, sl.-sn	10, ci.-s, glm : 10
23	o	o	10 : 10, sn	7, ci.-cu, ci : o : o
24	o	o	8, ci, ci.-cu, ci.-s	7, ci, ci.-cu : 10, ci.-cu, ci.-s : 10, sn
25	o	o	10, sn	10, ci.-s : 10, ci.-s
26	o	o	10, ci.-s	10, th.-r : 10, ci.-s
27	o	o	10 : 10, m.-r	10 : 10
28	o	o	10, ci.-s, sl.-r	10, ci.-s, th.-r : o
29	o	o	10	10, oc.-shs : 2, ci.-s, f

HUMIDITY OF THE AIR.

Temperature of the Dew Point.

The highest in the month was 48°·8 on the 12th ; and the lowest was 17°·9 on the 21st.

The mean „ was 31°·3, being 3°·5 *lower* than the average of the preceding 23 years.

Elastic Force of Vapour.—The mean for the month was $0^{in}\cdot176$ being $0^{in}\cdot028$ *less* than the average of the preceding 23 years.

Weight of Vapour in a Cubic Foot of Air.—The mean for the month was $2^{gr}\cdot0$, being $0^{gr}\cdot4$ *less* than the average of the preceding 23 years.

Degree of Humidity.—The mean for the month was 83 (that of Saturation being represented by 100), being 2 *less* than the average of the preceding 23 years.

Weight of a Cubic Foot of Air.—The mean for the month was 557 grains, being 3 grains *greater* than the average of the preceding 23 years.

CLOUDS.

The mean amount for the month, a clear sky being represented by 0 and a cloudy sky by 10, was 7·8.

OZONE.

The mean amount for the month, on a scale ranging from 0 to 10, was 0·9.

WIND.

The proportions were of N. 12, S. 6, W. 5, E. 6. and Calm 0. The greatest pressure in the month was $21^{lbs}\cdot0$ on the square foot on the 13th.

RAIN.

Fell on 12 days in the month, amounting to $0^{in}\cdot76$, as measured in the simple cylinder gauge partly sunk below the ground ; being $0^{in}\cdot77$ *less* than the average fall of the preceding 49 years.

MONTH and DAY, 1864.	Phases of the Moon.	Mean Daily Reading of the Barometer (corrected and reduced to 32° Fahrenheit).	Readings of Thermometers. Dry. Highest.	Dry. Lowest.	Dry. Mean Daily Value.	Dew Point. Mean Daily Value.	Highest in the Sun, as shown by a Self-Registering Thermometer with blackened bulb in vacuo, placed on the Grass	Lowest on the Grass, as shown by a Self-Registering Minimum Thermometer.	In the Water of the Thames, at Greenwich, by Self-Registering Thermometers, read at 9h A.M. Highest.	In the Water of the Thames, at Greenwich, by Self-Registering Thermometers, read at 9h A.M. Lowest.	Difference between the Dew Point Temperature and Air Temperature. Mean Daily Value.	Difference between the Dew Point Temperature and Air Temperature. Greatest.	Difference between the Dew Point Temperature and Air Temperature. Least.	Difference between the Mean Temperature of the Day and the Mean Temperature of the same Day on an Average of 43 Years.	Wind as deduced from Anemometers. Osler's. General Direction. A.M.	Wind as deduced from Anemometers. Osler's. General Direction. P.M.	Pressure in lbs. on the square foot. Greatest.	Pressure in lbs. on the square foot. Least.	Pressure in lbs. on the square foot. Mean of 24 Obs.	Robinson's. Amount of Horizontal Movement of the Air on each Day.	Rain in Inches, collected in a Gauge whose receiving surface is 5 inches above the Ground.
		in.	°	°	°	°	°	°	°	°	°	°	°	°			lbs.	lbs.	lbs.	miles.	in.
Mar. 1	Last Qr.	29·682	50·6	29·4	40·1	39·2	75·4	24·2	38·8	36·6	0·9	5·9	0·0	0·0	SE	SE : S	0·0	0·0	0·0	196	0·03
2	Greatest Declination S.	29·640	48·2	29·8	36·7	35·4	60·0	24·6	39·6	37·4	1·3	6·9	0·0	− 3·3	SE : NE	NE	0·0	0·0	0·0	250	0·00
3	..	29·469	41·8	35·2	38·0	37·8	52·3	35·2	40·6	38·4	0·2	0·9	0·0	− 1·9	E	E	1·5	0·0	0·1	66	0·21
4	..	29·402	58·0	40·6	47·7	44·5	88·0	39·0	41·6	39·4	3·2	11·2	0·0	+ 7·8	SW	SSW : S	0·0	0·0	0·0	150	0·32
5	..	29·227	46·2	38·9	41·5	41·4	51·0	33·6	41·6	39·4	0·1	0·7	0·0	+ 1·5	E	ENE	2·0	0·0	0·2	228	0·01
6	..	28·964	53·6	39·0	45·1	42·5	85·2	38·5	42·6	40·4	2·6	8·2	0·0	+ 5·0	ENE	SW	8·0	0·0	1·6	510	0·42
7	Perigee	28·900	52·0	42·9	46·1	40·0	76·0	41·3	43·6	41·4	6·1	10·1	1·0	+ 6·0	SSW	SW	13·0	0·0	2·2	319	0·09
8	New; In Equator.	28·971	48·5	38·0	41·7	39·8	62·0	37·8	44·6	42·4	1·9	3·2	0·2	+ 1·6	S	N : E	0·0	0·0	0·0	170	0·19
9	..	28·985	38·7	32·2	33·8	31·7	41·4	29·4	44·6	42·4	2·1	3·9	0·0	− 6·4	NNE	N	4·0	0·0	0·5	321	0·62
10	..	29·536	46·3	27·9	37·0	32·7	68·5	26·2	44·1	42·9	4·3	12·1	0·0	− 3·3	NW : SW	SSW	8·0	0·0	0·6	475	0·11
11	..	29·420	52·1	39·5	44·8	38·2	80·0	31·3	43·6	41·4	6·6	11·1	1·5	+ 4·3	SW	WSW	11·0	0·0	2·3	466	0·11
12	..	29·989	50·3	35·3	42·3	32·7	79·4	31·4	42·6	40·4	9·6	16·1	2·5	+ 1·7	WSW	WSW	3·5	0·0	0·3	323	0·00
13	..	30·043	51·3	35·2	44·8	39·0	80·0	29·5	43·6	41·4	5·8	12·8	0·0	+ 3·8	SW	SW	4·4	0·0	1·0	523	0·00
14	Greatest Declination N.	29·865	57·2	44·4	49·5	41·0	83·7	38·7	44·6	42·4	8·5	13·6	2·4	+ 8·2	SW	SW	6·0	0·0	1·6	524	0·00
15	First Qr.	29·697	52·6	39·0	45·4	41·5	55·7	37·0	44·6	42·4	3·9	8·2	2·0	+ 3·9	WSW	WSW : N	7·0	0·0	1·8	176	0·06
16	..	29·987	48·2	33·6	40·2	31·0	82·2	30·4	45·1	42·9	9·2	16·4	0·0	− 1·5	NE	E : SE	0·0	0·0	0·0	200	0·00
17	..	29·940	49·8	31·7	39·7	30·3	82·2	25·5	45·6	43·4	9·4	18·9	0·0	− 2·1	SE	SE : E	1·0	0·0	0·0	199	0·00
18	..	29·634	47·1	29·9	38·4	31·3	82·7	21·1	45·7	43·5	7·1	13·7	0·0	− 3·4	E	E	0·0	0·0	0·0	203	0·00
19	Apogee	29·499	55·1	32·1	43·2	37·4	86·3	27·3	46·1	43·9	5·8	12·2	0·2	+ 1·4	E	E	0·0	0·0	0·0	148	0·00
20	..	29·467	57·6	31·3	44·5	39·9	91·0	21·7	45·1	43·9	4·6	13·3	0·0	+ 2·6	ENE	E	0·0	0·0	0·0	246	0·00
21	..	29·510	49·0	34·4	40·0	36·6	87·0	29·5	46·3	43·1	3·4	9·2	0·0	− 1·9	NE	NE	1·0	0·0	0·1	277	0·00
22	In Equator	29·522	44·5	37·5	40·5	35·0	54·7	35·8	45·8	43·6	5·5	8·4	1·6	− 1·4	NE	NE	1·5	0·0	0·2	305	0·00
23	Full	29·776	49·1	34·1	40·1	32·0	84·6	33·0	45·8	43·6	8·1	13·6	4·0	− 1·9	NE	NE : E	2·0	0·0	0·3	164	0·00
24	..	29·811	52·5	26·9	39·0	32·8	93·4	26·9	45·9	43·9	6·2	15·2	0·0	− 3·1	E	ESE	0·0	0·0	0·0	81	0·00
25	..	29·507	52·3	27·8	39·5	36·4	88·0	19·6	45·6	43·4	3·1	11·8	0·0	− 2·7	Calm	N : SW	0·0	0·0	0·0	146	0·00
26	..	29·391	44·3	35·1	38·9	33·9	54·7	28·3	45·1	42·4	5·0	7·0	2·5	− 3·4	SW : NNW	N by W	3·7	0·0	0·3	311	0·04
27	..	29·414	47·4	28·9	38·1	28·9	80·3	22·0	44·6	42·9	9·2	13·2	0·0	− 4·3	NNW	NNW : SW	2·0	0·0	0·1	293	0·00
28	..	29·126	47·8	34·9	41·1	33·1	58·0	28·7	44·6	42·4	8·0	12·6	3·0	− 1·5	SW	WSW : NW	8·0	0·0	0·9	488	0·10
29	Greatest Declination S.	29·192	49·7	33·2	39·2	31·2	87·0	28·0	44·6	42·3	8·0	13·0	3·6	− 3·6	NW	NNW	5·0	0·0	1·2	270	0·03
30	Last Qr.	29·419	47·4	31·8	38·2	34·9	52·0	22·0	44·5	42·3	3·3	8·8	0·0	− 4·8	SW	NW	2·3	0·0	0·2	246	0·19
31	..	29·597	53·6	32·7	44·3	40·5	83·0	23·1	44·1	41·6	3·8	12·8	0·0	+ 0·9	SW	SW	4·5	0·0	0·8	441	0·00
																				Sum	Sum
Means	..	29·503	49·8	34·3	41·3	36·2	73·7	29·7	44·0	41·9	5·1	10·5	0·8	+ 0·1	...	...	..	..	..	8715	2·53

BAROMETER READINGS FROM EYE-OBSERVATIONS.

The first maximum in the month was 29in·709 on the 1st; the absolute minimum in the month was 28in·813 on the 7th.
The second maximum ,, was 29in·069 on the 7th; the second minimum ,, was 28in·870 on the 8th.
The third maximum ,, was 29in·101 on the 8th; the third minimum ,, was 28in·936 on the 9th.
The fourth maximum ,, was 29in·559 on the 10th; the fourth minimum ,, was 29in·380 on the 11th.
The absolute maximum ,, was 30in·109 on the 13th; the fifth minimum ,, was 29in·666 on the 15th.
The sixth maximum ,, was 30in·045 on the 16th; the sixth minimum ,, was 29in·470 on the 20th.
The seventh maximum ,, was 29in·876 on the 24th; the seventh minimum ,, was 28in·935 on the 28th.
The eighth maximum ,, was 29in·668 on the 31st.
The range in the month was 1in·296.
The mean for the month was 29in·503, being 0in·266 *lower* than the average of the preceding 23 years.

TEMPERATURE OF THE AIR.

The highest in the month was 58°·0 on the 4th; the lowest was 26°·9 on the 24th.
The range ,, was 31°·1.
The mean ,, of all the highest daily readings was 49°·8, being 0°·4 *lower* than the average of the preceding 23 years.
The mean ,, of all the lowest daily readings was 34°·3, being 1°·1 *lower* than the average of the preceding 23 years.
The mean daily range was 15°·5, being 0°·8 *greater* than the average of the preceding 23 years.
The mean for the month was 41°·3, being 0°·7 *lower* than the average of the preceding 23 years.

MONTH and DAY, 1864.	ELECTRICITY. A.M.	ELECTRICITY. P.M.	CLOUDS AND WEATHER. A.M.	CLOUDS AND WEATHER. P.M.
March 1	o	o	10, ci.-s, cu.-s	10, ci.-s, ci.-cu, r : 8, ci, ci.-cu : o
2	o	o	10, f : 10, th.-f	10 : 8, ci.-cu : 10
3	o	o	10 : 10, r	10, r : 10, c.-r : 10, h.-r
4	o	o	10, c.-h.-r : 10	8, ci.-s : 8, ci, ci.-s
5	w : m	o	10, sl.-r, f	10, ci.-s : 10, sl.-r
6	o	o	10, h.-r : 10, c.-h.-r : 10, th.-r	8, ci.-cu, ci, w : v v, th.-r, th-cl
7	o	o	10, sl.-r : 10, h.-shs : 9, cu.-s, ci.-cu	10, cu.-s, ci.-cu : 9, ci.-s, cu.-s, ci : 7, th-cl
8	o	o	10, h.-r : 10, ci.-s	10, glm, sl.-r : 10, oc.-r
9	o	o	10, : 10, h.-r : 10, c.-h.-r, sn	10, sn, sl : 10, th.-r
10	o	o	2, ci, h	5, ci, ci.-cu : 8, ci, ci.-cu, ci.-s, oc.-r : o
11	o	o	10, shs.-r : 1, cu.-s, ci.-s, ci, w	9, sl.-r, hl, w : 1, ci.-cu, ci : 10, oc.-r
12	o	o	o	8, ci, ci.-cu : 4, ci, ci.-cu : o
13	o	o	3, cu.-s, ci	9, ci, ci.-cu, ci.-s : 10
14	o	o	10, ci.-cu, cu.-s, ci.-s	10, cu.-s, ci.-s, ci.-cu : 10, w
15	o	o	10, w	10, ci.-cu, ci.-s : 10, fr.-shs : 10, ci.-s, cu.-s
16	o	o	o	1, ci, ci.-cu : o : o
17	o	o	10, ci.-s	8, ci.-s, ci, ci.-cu, cu.-s : o, h.-fr
18	o	o	o, h.-fr	o : o
19	o	w	o	2, ci : 3, ci : o
20	w	w	o : o	o : o
21	o	o : w	10	10, : 2, ci, ci.-cu : 10
22	w	o : w : o	10	10 : 10, sl.-r
23	o	o : m	10	7, ci, cu, ci.-cu : o : o
24	w	w : m	h.-fr : o, h	o : o
25	m	m : w	10, h, f	7, li.-cl, h : 3, li.-cl, h, f
26	o	o	10, ci.-s	10 : 10, r : 10
27	w	o	7, ci, cu, ci.-cu, cu.-s	6, ci, ci.-cu, cu : 10
28	o	o	10, ci.-cu, cu.-s	10, ci.-s, cu.-s : 10, hl, r
29	o	m : o	10, ci.-s, sl.-r	10, hl : 9, ci, cu, ci.-cu, cu.-s : o
30	o	o	10, sn	10, sl.-r : 10, li.-cl
31	o	o	7, ci, ci.-cu, ci.-s	10, ci.-cu, cu.-s, ci.-s : 10, ci.-cu, ci.-s, sl.-r

HUMIDITY OF THE AIR.

Temperature of the Dew Point.

The highest in the month was 48°·5 on the 4th; and the lowest was 25°·3 on the 27th.

The mean ,, was 36°·2, being 0°·6 *lower* than the average of the preceding 23 years.

Elastic Force of Vapour.—The mean for the month was $0^{in}\cdot215$, being $0^{in}\cdot004$ *less* than the average of the preceding 23 years.

Weight of Vapour in a Cubic Foot of Air.—The mean for the month was $2^{gr}\cdot5$, being *the same as* the average of the preceding 23 years.

Degree of Humidity.—The mean for the month was 83 (that of Saturation being represented by 100), being 1 *greater* than the average of the preceding 23 years.

Weight of a Cubic Foot of Air.—The mean for the month was 546 grains, being 4 grains *less* than the average of the preceding 23 years.

CLOUDS.

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

OZONE.

The mean amount for the month, on a scale ranging from o to 10, was 1·1.

WIND.

The proportions were of N. 7, S. 6, W. 8, E. 8, and Calm 2. The greatest pressure in the month was $13^{lbs}\cdot0$ on the square foot on the 7th.

RAIN.

Fell on 15 days in the month, amounting to $2^{in}\cdot53$, as measured in the simple cylinder gauge partly sunk below the ground; being $0^{in}\cdot95$ *greater* than the average fall of the preceding 49 years.

MONTH and DAY, 1864.	Phases of the Moon.	Mean Daily Reading of the Barometer (corrected and reduced to 32° Fahrenheit).	Readings of Thermometers. Dry. Highest.	Dry. Lowest.	Dry. Mean Daily Value.	Dew Point. Mean Daily Value.	Highest in the Sun, as shown by a Self-Registering Thermometer with blackened bulb in vacuo, placed on the Grass.	Lowest on the Grass, as shown by a Self-Registering Minimum Thermometer.	In the Water of the Thames, at Greenwich, by Self-Registering Thermometers, read at 9h A.M. Highest.	In the Water of the Thames, at Greenwich, by Self-Registering Thermometers, read at 9h A.M. Lowest.	Difference between the Dew Point Temperature and Air Temperature. Mean Daily Value.	Greatest.	Least.	Difference between the Mean Temperature of the Day and the Mean Temperature of the same Day on an Average of 43 Years.	Wind as deduced from Anemometers. Osler's. General Direction. A.M.	General Direction. P.M.	Pressure in lbs. on the square foot. Greatest.	Least.	Mean of 24 Obs.	Robinson's. Amount of Horizontal Movement of the Air on each Day.	Rain in Inches, collected in a Gauge whose receiving surface is 5 inches above the Ground.
		in.	°	°	°	°	°	°	°	°	°	°	°	°			lbs.	lbs.	lbs.	miles.	in.
April 1	..	29·531	53·0	39·1	43·8	33·1	88·0	33·0	44·5	42·3	10·7	16·6	4·0	+ 0·2	WSW	WSW	7·0	0·0	0·8	431	0·13
2	..	29·794	54·4	33·8	42·1	31·7	82·5	22·9	44·6	42·4	10·4	18·3	3·9	— 2·0	WSW: NW	WNW: WSW	3·0	0·0	0·4	272	0·00
3	..	29·768	49·7	36·9	44·1	42·1	55·6	27·2	45·1	43·6	2·0	6·3	0·0	+ 0·4	SW	SW	2·3	0·0	0·2	295	0·00
4	Perigee: In Equator.	29·770	61·4	47·9	53·3	48·4	76·5	45·5	45·6	43·6	4·9	9·5	0·7	+ 8·5	SW: NW	NW: N	1·0	0·0	0·0	219	0·00
5	..	30·096	41·4	35·3	36·8	33·5	46·5	33·2	44·8	43·4	3·3	6·4	0·6	— 8·3	ENE	E	2·0	0·0	0·1	132	0·56
6	New.	30·071	48·5	35·0	41·2	37·6	83·7	34·5	45·6	43·4	3·6	7·1	1·3	— 4·2	E: SE	NNE	0·0	0·0	0·0	103	0·07
7	..	30·151	51·8	39·4	43·6	35·4	82·0	37·3	46·6	43·9	8·2	12·4	3·2	— 1·9	NNE: SE	SE	0·5	0·0	0·0	152	0·00
8	..	30·218	54·7	37·9	44·4	32·1	101·1	33·7	47·1	44·4	12·3	16·4	7·0	— 1·1	SE: S	SE: E	0·0	0·0	0·0	137	0·00
9	..	30·087	57·3	37·4	47·9	42·4	75·0	33·0	47·6	45·4	5·5	11·8	2·0	+ 2·5	SW	WSW: NW	0·0	0·0	0·0	106	0·00
10	..	30·017	58·5	46·3	51·1	45·4	78·7	44·0	49·0	46·4	5·7	9·3	0·6	+ 6·0	NW: N	NNE: SE	0·5	0·0	0·0	131	0·00
11	Greatest Declination N.	29·898	63·3	44·0	53·1	46·3	86·4	35·7	49·6	47·4	6·8	14·3	1·1	+ 8·1	SW	NW	0·0	0·0	0·0	166	0·00
12	..	29·917	60·1	40·9	48·1	38·6	96·6	32·6	50·6	48·4	9·5	17·5	3·0	+ 3·2	N	N: E	0·5	0·0	0·0	156	0·00
13	..	29·916	54·2	33·4	44·3	36·0	93·0	24·9	51·1	48·4	8·3	17·2	0·0	— 0·9	E	E	2·0	0·0	0·4	266	0·00
14	First Qr.	29·735	56·5	36·6	46·2	38·0	95·3	28·0	51·6	48·4	8·2	15·8	0·0	+ 0·7	E	E	2·5	0·0	0·2	205	0·00
15	..	29·555	68·5	36·9	52·8	39·6	104·6	34·2	52·6	48·4	13·2	24·7	1·0	+ 7·1	ESE: SE	SE: SW	0·0	0·0	0·0	155	0·00
16	Apogee.	29·565	51·5	44·8	46·9	45·7	57·2	39·3	53·6	49·4	1·2	2·4	0·8	+ 0·9	SW: WNW	Variable.	0·4	0·0	0·0	162	0·06
17	..	29·799	60·7	41·2	48·9	39·8	95·0	30·6	..	..	9·1	16·5	2·8	+ 2·7	N	NNW	0·8	0·0	0·0	211	0·00
18	In Equator	29·934	65·0	38·2	51·1	40·6	100·0	25·5	..	..	10·5	20·3	2·9	+ 4·7	SW	SW: S	1·0	0·0	0·0	258	0·00
19	..	29·829	68·0	42·1	55·9	38·8	103·6	..	..	..	17·1	26·5	6·2	+ 9·4	S	S	1·5	0·0	0·1	259	0·00
20	..	29·807	73·8	45·8	60·2	41.2	105·0	37·0	..	..	19·0	30·4	5·9	+13·5	S by E	S by E: SE	1·0	0·0	0·0	168	0·00
21	..	29·888	67·2	46·0	54·6	39·6	105·5	33·4	57·6	..	15·0	22·9	9·0	+ 7·6	SE	E	3·2	0·0	0·4	257	0·00
22	Full.	30·028	62·9	39·2	51·1	40·1	110·5	26·5	56·6	54·4	11·0	22·6	0·0	+ 3·8	ENE	ENE: ESE	0·5	0·0	0·0	158	0·00
23	..	30·079	66·4	35·5	51·5	41·8	117·8	23·3	58·5	52·4	9·7	22·9	0·0	+ 3·9	ESE	NE: SE	0·0	0·0	0·0	173	0·00
24	..	30·077	55·0	39·2	44·8	39·2	85·0	32·5	58·8	52·4	5·6	12·8	0·9	— 2·8	ESE: NE	NE: ESE	0·0	0·0	0·0	180	0·00
25	Greatest Declination S.	29·993	59·2	37·7	48·0	41·4	103·6	29·2	58·9	52·4	6·6	15·2	1·2	+ 0·4	Calm: NE	NE: E	0·0	0·0	0·0	104	0·00
26	..	29·997	56·9	40·0	48·0	41·7	69·1	..	58·0	53·4	6·3	12·8	0·0	+ 0·4	Calm: NE	NE: E	0·0	0·0	0·0	167	0·00
27	..	30·018	58·7	43·1	48·8	43·7	77·3	37·5	58·3	55·4	5·1	11·2	1·9	+ 0·8	NE	NE: E	0·5	0·0	0·0	176	0·00
28	..	29·958	50·0	41·9	44·4	40·5	59·0	39·0	58·5	55·8	3·9	7·6	1·6	— 4·1	NE	N by E	0·8	0·0	0·0	230	0·00
29	Last Qr.	29·968	62·4	41·7	49·5	42·4	95·0	39·2	58·6	56·1	7·1	16·3	2·4	+ 0·4	NNE	NNE: W	0·7	0·0	0·0	214	0·00
30	..	29·986	58·8	43·6	49·7	41·9	77·9	41·9	59·1	56·7	7·8	13·2	1·0	+ 0·2	N	NW: SE	1·0	0·0	0·0	110	0·00
Means	..	29·915	58·3	40·0	48·2	40·0	86·9	33·4	52·0	48·7	8·2	15·2	2·2	+ 2·0	...	...	..	..	..	Sum 5753	Sum 0·82

BAROMETER READINGS FROM EYE-OBSERVATIONS.

The first maximum in the month was 29in·846 on the 2nd; the second maximum ,, was 30in·125 on the 5th; the third maximum ,, was 30in·057 on the 6th.
The second maximum ,, was 30in·125 on the 5th; the third minimum ,, was 30in·057 on the 6th.
The absolute maximum ,, was 30in·241 on the 8th; the fourth minimum ,, was 29in·537 on the 15th.
The fourth maximum ,, was 29in·950 on the 18th; the fifth minimum ,, was 29in·787 on the 19th.
The fifth maximum ,, was 30in·104 on the 24th; the sixth minimum ,, was 29in·908 on the 29th.
The absolute minimum in the month was 29in·500 on the 1st.
The range in the month was 0in·741.
The mean for the month was 29in·915, being 0in·165 *higher* than the average of the preceding 23 years.

TEMPERATURE OF THE AIR.

The highest in the month was 73°·8 on the 20th; the lowest was 33°·4 on the 13th; the range in the month was 40°·4.
The mean ,, of all the highest daily readings was 58°·3, being 1°·3 *higher* than the average of the preceding 23 years.
The mean ,, of all the lowest daily readings was 40°·0, being 1°·3 *higher* than the average of the preceding 23 years.
The mean daily range was 18°·3, being 0°·1 *greater* than the average of the preceding 23 years.
The mean for the month was 48°·2, being 1°·7 *higher* than the average of the preceding 23 years.

MONTH and DAY, 1864.	ELECTRICITY. A.M.	ELECTRICITY. P.M.	CLOUDS AND WEATHER. A.M.	CLOUDS AND WEATHER. P.M.
April 1	0	0	10, h.-shs : 4, ci, ci.-cu	5, ci, ci.-cu : v, hl, r : 10, sl.-r
2	0	0 : W	1, ci, ci.-cu	8, ci, ci.-cu, cu.-s : 0
3	0	0	10, li.-cl	10, th.-r : 10
4	0	0 : W : 0	9	10, ci.-cu : 10
5	0	W : 0	10, h.-r : 10, sl, r	10, c.-r : 10, c.-r
6	W	0	10, c.-r	10, ci.-s : 10
7	0	0 : W : 0	10	9, ci.-cu, ci.-s : 7, ci.-cu, ci, ci.-s: 10
8	0	0	10 : 10	4, ci, ci.-cu : 10, li.-cl
9	W	0 : W	10	10 : 10
10	0	W : 0	10 : 10	10 : v : 0, m
11	W	0	10, ci.-s	6, li.-cl, h : 10, ci.-cu, ci.-s : 6,li.-cl,ci.-cu,sl.-r
12	0	0	7, ci.-cu, ci.-s	0 : 3, ci, ci.-cu : 0
13	W	W	0	0, h : 0
14	W	W : 0	0 : 0	0 : 1, ci : 0
15	W	W	2, ci	0 : 4, ci, ci.-cu : 10
16	0	m : 0	10 : 10, r	10, r : 10
17	0	0	5, li.-cl, h	3, ci, ci.-cu : 0
18	W	0	0 : 0	4, ci, ci.-cu : 1, ci, lu.-ha
19	0	0 : W	0	0 : 0
20	0	0	0	0 : ci : 0
21	0	0 : W : 0	2, ci	2, ci : 0
22	0	0	0	0 : 0
23	0	0	0	0 : 0
24	0	0 : W	10, ci.-cu, ci.-s	8, ci, ci.-cu, cu : 0 : 3, ci, ci.-s
25	0	0	6, ci, ci.-cu, cu	4, ci, h : 1, ci, h : 0
26	0	0 : m : 0	10, ci.-s	10, ci.-s, sl.-r : 5, ci.-cu, ci.-s
27	0	0	10, ci.-s	10 : 9, ci, ci.-cu : 10
28	0	0 : W	10, ci-s	10 : 10 : 6, ci.-s
29	0	0	10 : 10	6, li.-cl, h : 5, li.-cl, h
30	0	0	10, ci.-s	10, ci.-s : 10, ci.-s

HUMIDITY OF THE AIR.

Temperature of the Dew Point.

The highest in the month was 51°·2 on the 4th; and the lowest was 30°·4 on the 2nd.

The mean ,, was 40°·0, being 0°·2 *lower* than the average of the preceding 23 years.

Elastic Force of Vapour.—The mean for the month was 0^{in}·248 being 0^{in}·002 *less* than the average of the preceding 23 years.

Weight of Vapour in a Cubic Foot of Air.—The mean for the month was 2^{gr}·9, being *the same as* the average of the preceding 23 years.

Degree of Humidity.—The mean for the month was 74 (that of Saturation being represented by 100), being 5 *less* than the average of the preceding 23 years.

Weight of a Cubic Foot of Air.—The mean for the month was 547 grains, being 4 grains *greater* than the average of the preceding 23 years.

CLOUDS.

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

OZONE.

The mean amount for the month, on a scale ranging from 0 to 10, was 1·1.

WIND.

The proportions were of N. 5, S. 5, W. 4, E. 7, and Calm 9. The greatest pressure in the month was 7^{lbs}·0 on the square foot on the 1st.

RAIN.

Fell on 4 days in the month, amounting to 0^{in}·82, as measured in the simple cylinder gauge partly sunk below the ground; being 0^{in}·94 *less* than the average fall of the preceding 49 years.

MONTH and DAY, 1864.	Phases of the Moon.	Mean Daily Reading of the Barometer (corrected and reduced to 32° Fahrenheit).	Readings of Thermometers. Dry. Highest.	Dry. Lowest.	Dry. Mean Daily Value.	Dew Point. Mean Daily Value.	Highest in the Sun, as shown by a Self-Registering Thermometer with blackened bulb in vacuo, placed on the Grass.	Lowest on the Grass, as shown by a Self-Registering Minimum Thermometer.	In the Water of the Thames, at Greenwich, by Self-Registering Thermometers, read at 9h A.M. Highest.	In the Water of the Thames, at Greenwich, by Self-Registering Thermometers, read at 9h A.M. Lowest.	Difference between the Dew Point Temperature and Air Temperature. Mean Daily Value.	Difference between the Dew Point Temperature and Air Temperature. Greatest.	Difference between the Dew Point Temperature and Air Temperature. Least.	Difference between the Mean Temperature of the Day and the Mean Temperature of the same Day on an Average of 43 Years.	Wind as deduced from Anemometers. Osler's. General Direction. A.M.	Wind as deduced from Anemometers. Osler's. General Direction. P.M.	Pressure in lbs. on the square foot. Greatest.	Pressure in lbs. on the square foot. Least.	Pressure in lbs. on the square foot. Mean of 24 Obs.	Robinson's Amount of Horizontal Movement of the Air on each Day.	Rain in Inches, collected in a Gauge whose receiving surface is 5 inches above the Ground.
		in.	°	°	°	°	°	°	°	°	°	°	°	°			lbs.	lbs.	lbs.	miles.	in.
May 1	Perigee	29·996	67·8	43·0	53·0	43·2	73·5	36·2	58·1	54·9	9·8	22·0	1·8	+ 3·0	SSE : SW	WSW	1·8	0·0	0·0	297	0·00
2	In Equator	29·649	64·5	49·3	55·7	52·0	82·0	46·0	58·3	55·6	3·7	10·5	0·0	+ 5·2	SW	W	3·5	0·0	0·7	300	0·11
3	..	29·662	59·5	47·6	51·6	46·7	77·6	46·4	(56·2)	(56·6)	4·9	9·3	0·0	+ 0·7	W	N : SE	4·1	0·0	0·4	211	0·18
4	..	29·705	50·5	44·0	46·5	44·5	59·0	..	(56·2)	(56·6)	2·0	3·8	0·0	— 4·8	SE	SE	0·8	0·0	0·0	136	0·19
5	..	29·822	57·2	44·9	49·1	44·4	74·2	42·0	57·1	52·9	4·7	10·6	0·4	— 2·5	S by E	SSE	0·0	0·0	0·0	104	0·00
6	New	29·762	69·6	42·8	55·4	47·3	113·8	31·1	57·8	54·7	8·1	18·0	1·1	+ 3·6	S	SSW : S	0·0	0·0	0·0	184	0·00
7	..	29·682	63·6	47·7	53·3	44·1	110·0	46·6	58·7	55·2	9·2	16·5	1·2	+ 1·4	SW : N	NNE : SE	1·0	0·0	0·0	157	0·38
8	Greatest Declination N.	29·572	54·3	38·5	47·0	42·0	83·0	28·8	58·1	55·9	5·0	11·6	0·0	— 4·8	ESE	E	3·2	0·0	0·4	321	0·07
9	..	29·514	48·2	44·9	45·4	42·7	50·0	42·0	56·9	54·7	2·7	3·8	0·8	— 6·2	ENE	E	2·0	0·0	0·1	165	0·28
10	..	29·755	61·5	45·1	51·2	40·5	85·5	40·7	56·8	54·6	10·7	16·9	3·3	— 0·2	E	NNE	2·0	0·0	0·0	317	0·00
11	..	29·721	55·0	46·3	49·6	46·9	70·8	45·5	56·7	54·5	2·7	5·8	0·0	— 1·7	NE	ENE	0·9	0·0	0·0	195	0·04
12	..	29·673	66·0	48·6	56·2	49·4	79·0	45·4	57·2	54·9	6·8	11·6	1·3	+ 4·9	NE	NE	0·8	0·0	0·0	219	0·00
13	First Quarter: Apogee	29·908	69·3	43·9	55·8	46·4	110·0	43·2	57·6	55·4	9·4	19·1	1·1	+ 4·4	N	N	0·0	0·0	0·0	142	0·00
14	..	30·022	70·2	42·6	56·8	46·4	117·5	40·0	58·8	55·8	10·4	21·1	0·0	+ 5·0	Calm	NE : SE	0·0	0·0	0·0	111	0·00
15	In Equator	29·996	74·8	52·6	63·5	54·5	111·0	39·4	59·6	56·4	9·0	17·8	1·8	+11·3	SW	Var.	0·0	0·0	0·0	67	0·00
16	..	30·052	71·8	49·0	60·0	46·8	119·0	39·2	59·7	56·4	13·2	26·1	0·0	+ 7·4	E	E	0·5	0·0	0·0	160	0·00
17	..	30·071	76·0	45·3	60·6	52·3	125·7	37·7	59·9	56·7	8·3	20·9	0·2	+ 7·8	E	E	0·0	0·0	0·0	100	0·00
18	..	30·079	81·0	48·0	65·7	53·9	128·2	45·6	60·1	58·1	11·8	25·8	0·0	+12·6	Calm	NE : SE	0·0	0·0	0·0	55	0·00
19	..	30·079	77·5	50·9	64·8	51·9	126·8	41·7	60·6	58·1	12·9	24·1	0·0	+11·5	Calm	E	0·0	0·0	0·0	117	0·00
20	..	29·938	80·0	48·5	65·2	52·8	126·2	38·7	60·9	58·4	12·4	24·5	0·6	+11·6	Calm : SW	SW : N	3·5	0·0	0·0	286	0·00
21	Full	29·877	61·6	49·6	52·9	48·7	68·2	44·0	61·8	58·4	4·2	11·4	2·0	— 0·9	NW : N	N : SW	2·5	0·0	0·0	208	0·22
22	Greatest Declination S.	29·840	70·2	49·4	58·0	47·3	103·1	41·3	63·6	62·4	10·7	17·3	2·5	+ 3·9	WSW	NNW	2·5	0·0	0·0	286	0·00
23	..	29·909	64·1	40·0	49·9	41·2	76·0	41·7	63·6	62·4	8·7	15·2	1·5	— 4·4	W : N	NNE	2·6	0·0	0·1	188	0·00
24	..	30·097	63·5	35·7	49·3	39·2	113·0	31·4	63·7	63·4	10·1	19·2	0·0	— 5·1	NE	NE	0·0	0·0	0·0	157	0·00
25	..	29·828	66·0	38·9	52·1	44·6	96·0	28·1	63·8	59·9	7·5	17·3	0·9	— 2·5	SW	NW : ESE	1·5	0·0	0·0	239	0·00
26	Perigee	29·868	59·1	45·2	49·4	36·8	76·2	42·0	63·1	59·9	12·6	18·1	6·6	— 5·3	NNE	NNE	1·0	0·0	0·0	250	0·00
27	..	29·859	64·2	44·7	53·4	39·8	106·0	44·6	62·6	59·4	13·6	20·1	6·0	— 1·5	N	NW : N	0·0	0·0	0·0	196	0·00
28	Last Qr.	29·863	61·2	45·8	51·8	42·0	90·0	36·9	62·6	59·4	9·8	19·6	5·7	— 3·4	N	N : SSW	0·0	0·0	0·0	203	0·00
29	In Equator	29·783	56·8	45·7	48·5	41·5	70·2	43·5	62·6	59·4	7·0	13·0	1·0	— 6·9	WSW	N	1·1	0·0	0·0	159	0·03
30	..	29·778	62·0	33·4	47·9	39·8	88·2	26·4	61·6	58·4	8·1	19·8	0·0	— 7·8	S	SSW	0·7	0·0	0·0	187	0·00
31	..	29·584	61·7	41·3	49·2	44·9	75·3	31·7	61·6	59·4	4·3	13·9	0·2	— 6·9	SW : N	N : NE	0·7	0·0	0·0	183	0·50
																				Sum	Sum
Means	..	29·837	64·8	44·9	53·8	45·6	93·1	39·6	60·1	57·4	8·2	16·3	1·3	+ 0·9	...	...	..	..	..	5900	2·00

BAROMETER READINGS FROM EYE-OBSERVATIONS.

The first maximum in the month was 30in·040 on the 1st; the first minimum in the month was 29in·556 on the 3rd.
The second maximum ,, was 29in·776 on the 3rd; the second minimum ,, was 29in·696 on the 4th.
The third maximum ,, was 29in·834 on the 5th; the absolute minimum ,, was 29in·444 on the 9th.
The fourth maximum ,, was 29in·760 on the 10th; the fourth minimum ,, was 29in·638 on the 12th.
The fifth maximum ,, was 30in·106 on the 18th; the fifth minimum ,, was 29in·806 on the 20th.
The sixth maximum ,, was 29in·905 on the 21st; the sixth minimum ,, was 29in·803 on the 23rd.
The absolute maximum ,, was 30in·118 on the 24th; the seventh minimum ,, was 29in·773 on the 25th.
The eighth maximum ,, was 29in·927 on the 27th; the eighth minimum ,, was 29in·725 on the 29th.
The ninth maximum ,, was 29in·868 on the 29th; the ninth minimum ,, was 29in·573 on the 31st.
The range in the month was 0·in674.
The mean for the month was 29in·837, being 0in·066 *higher* than the average of the preceding 23 years.

TEMPERATURE OF THE AIR.

The highest in the month was 81°·0 on the 18th; the lowest was 33°·4 on the 30th.
The range ,, was 47°·6.
The mean ,, of all the highest daily readings was 64°·8, being 0°·3 *higher* than the average of the preceding 23 years.
The mean ,, of all the lowest daily readings was 44°·9, being 0°·7 *higher* than the average of the preceding 23 years.
The mean daily range was 19°·9, being 0°·4 *less* than the average of the preceding 23 years.
The mean for the month was 53°·8, being 0°·9 *higher* than the average of the preceding 23 years.

MONTH and DAY, 1864.	ELECTRICITY.		CLOUDS AND WEATHER.	
	A.M.	P.M.	A.M.	P.M.
May 1	w	o	8, ci.-cu	7, ci.-cu, cu, h : 10, ci.-cu, ci.-s, sl.-r
2	o	o	10, r : 10	10 : 10, r
3	o	o	10, c.-r : 10	10 : 10, ci, ci.-s
4	o	o	10, r : 10, c.-r	10, sl.-r : 10, sl.-r
5	o	o	10	10 : v : o
6	o	o	4, ci, ci.-s	6, li.-cl : 7, ci, ci.-cu, ci.-s : 10
7	o	o : w	10, h-r : 4, cu, cu.-s, ci	2, ci, ci.-cu : 5, ci, ci.-cu : o
8	o	o	10, ci,-cu	10 : 10, r
9	o	o	10, oc.-r : 10, r	10, sl.-r : 10
10	o	o	10, ci.-s	10, ci.-s : v : 10
11	o	o	10, sl.-r	10 : 10
12	o	o	7, ci, ci.-cu, cu.-s	10, ci.-cu, ci.-s : 10, ci, ci.-s
13	o	o	4, ci, li.-cl	o : o, m
14	o	o	o : o	o : 4, ci, h : 2, li.-cl
15	w	o : s : w	9, li.-cl, h	8, ci, h : v, ci.-s, t, sl.-r : o
16	o	w : o : w	o : o	o : o
17	w	w : w	o : o	o : o
18	o	w : w	li.-cl : o, h	o, h : o
19	w	w : o : w	o : o	o : 3, ci
20	o	o : o : ss,P,N,sp,g,cur	li.-cl : 2, ci	o : 5, ci.-s : 10, t.-s, h.-r
21	o	o	10, t.-s, h.-r : 10, ci.-s, sl.-r	10 : 10, th.-r
22	o	o	4, ci, ci.-cu : 10, ci.-s, cu.-s, ci.-cu	6, ci, ci.-cu, cu.-s : 2, ci, ci.-s
23	o	o	8, ci, ci.-cu, ci.-s	10, ci.-s : 3, ci, ci.-s
24	o	o : w	6, ci, ci.-cu, cu	7, ci.-cu, cu : 4, ci, ci.-cu, cu.-s : 2, ci.-s
25	o	o	o : o	9, ci, ci.-cu, cu.-s : 10, ci.-s : 10
26	o	o : w	7, ci, ci.-cu, ci.-s	10, ci, ci.-cu, cu.-s : 7, ci.-cu, cu : 1, s, ci.-s
27	o	o	7, ci, ci.-s, ci.-cu	6, ci, ci.-cu, ci.-s, h : 4, li.-cl
28	o	o	9, li.-cl	7, ci, ci.-cu, cu.-s : 10 : 1, ci.-s, ci
29	o : m N	m : o	10 : 10, oc.-shs	10, oc.-r : 6, cu.-s, ci.-cu
30	o	o : w	10, cu, cu.-s	9, ci, ci.-cu, ci.-s, cu.-s, v : o
31	w	w : m : o	10	10, h.-r : 10, c.-r

HUMIDITY OF THE AIR.

Temperature of the Dew Point.

The highest in the month was 58°·0 on the 15th; and the lowest was 37°·6 on the 26th.

The mean ,, was 45°·6, being *the same as* the average of the preceding 23 years.

Elastic Force of Vapour.—The mean for the month was 0^{in}·306, being 0^{in}·003 *greater* than the average of the preceding 23 years.

Weight of Vapour in a Cubic Foot of Air.—The mean for the month was 3^{gr}·5, being *the same as* the average of the preceding 23 years.

Degree of Humidity.—The mean for the month was 73 (that of Saturation being represented by 100), being 4 *less* than the average of the preceding 23 years.

Weight of a Cubic Foot of Air.—The mean for the month was 538 grains, being 5 grains *less* than the average of the preceding 23 years.

CLOUDS.

The mean amount for the month, a clear sky being represented by o and a cloudy sky by 10, was 6·3.

OZONE.

The mean amount for the month, on a scale ranging from o to 10, was 1·0.

WIND.

The proportions were N. 11, S. 6, W. 5, E. 6 and Calm 3. The greatest pressure in the month was 4^{lbs}·1 on the square foot on the 3rd.

RAIN.

Fell on 10 days in the month, amounting to 2^{in}·00, as measured in the simple cylinder gauge partly sunk below the ground; being 0^{in}·12 *less* than the average fall of the preceding 49 years.

MONTH and DAY, 1864.	Phases of the Moon.	Mean Daily Reading of the Barometer (corrected and reduced to 32° Fahrenheit).	Readings of Thermometers. Dry. Highest.	Dry. Lowest.	Dry. Mean Daily Value.	Dew Point. Mean Daily Value.	Highest in the Sun, as shown by a Self-Registering Thermometer, with blackened bulb in vacuo, placed on the Grass.	Lowest on the Grass, as shown by a Self-Registering Minimum Thermometer.	In the Water of the Thames, at Greenwich, by Self-Registering Thermometers, read at 9h AM. next morning. Highest.	In the Water of the Thames, at Greenwich, by Self-Registering Thermometers, read at 9h AM. next morning. Lowest.	Difference between the Dew Point Temperature and Air Temperature. Mean Daily Value.	Difference between the Dew Point Temperature and Air Temperature. Greatest.	Difference between the Dew Point Temperature and Air Temperature. Least.	Difference between the Mean Temperature of the Day and the Mean Temperature of the same Day on an Average of 43 Years.	Wind as deduced from Anemometers. Osler's. General Direction. A.M.	Wind as deduced from Anemometers. Osler's. General Direction. P.M.	Osler's. Pressure in lbs. on the square foot. Greatest.	Osler's. Pressure in lbs. on the square foot. Least.	Osler's. Pressure in lbs. on the square foot. Mean of 24 Obs.	Robinson's. Amount of Horizontal Movement of the Air on each Day.	Rain in Inches, collected in a Gauge whose receiving surface is 5 inches above the Ground.
		in.	°	°	°	°	°	°	°	°	°	°	°	°			lbs.	lbs.	lbs.	miles.	in.
June 1	..	29·622	60·7	42·8	50·2	43·8	81·2	33·0	61·6	59·4	6·4	12·4	0·0	— 6·2	NNE	ESE	0·0	0·0	0·0	103	0·00
2	..	29·646	60·2	42·3	51·0	39·4	88·4	33·0	61·8	59·5	11·6	20·3	0·4	— 5·6	NNE : NE	ESE : E	0·0	0·0	0·0	167	0·00
3	..	29·691	56·3	48·1	50·3	46·2	62·5	32·1	60·7	58·6	4·1	6·8	2·2	— 6·5	ENE	NE	0·5	0·0	0·0	188	0·24
4	New: Greatest Declination N.	29·781	68·4	44·8	55·5	47·3	82·0	44·2	61·1	58·6	8·2	19·1	0·4	— 1·6	N	NNE : S	0·0	0·0	0·0	150	0·00
5		29·759	69·0	45·5	56·7	47·5	110·7	36·4	59·7	58·4	9·2	18·2	0·9	— 0·4	SW	SW	1·7	0·0	0·1	318	0·00
6	..	29·842	73·1	52·2	59·7	49·7	106·7	49·7	60·1	58·9	10·0	19·3	1·6	+ 2·5	W	WSW	0·0	0·0	0·0	155	0·00
7	..	29·795	78·4	48·2	62·5	52·5	121·0	38·8	61·6	59·4	10·0	21·3	0·0	+ 5·2	SW	SW : SSE	0·0	0·0	0·0	105	0·00
8	..	29·733	75·5	52·3	62·4	54·5	108·0	50·2	62·8	60·5	7·9	18·7	0·0	+ 5·0	WSW : N	WSW	0·0	0·0	0·0	179	0·00
9	..	29·626	72·5	47·5	59·2	51·1	116·0	38·9	64·6	61·5	8·1	18·9	1·1	+ 1·7	SW	SW	0·9	0·0	0·0	212	0·00
10	Apogee	29·759	72·7	48·1	58·6	45·0	112·6	40·1	63·3	61·4	13·6	26·5	1·5	+ 0·9	W	SW	1·4	0·0	0·0	249	0·00
11	..	29·691	71·0	49·6	57·8	45·3	113·0	41·6	62·6	60·4	12·5	22·9	2·1	— 0·2	S : SW	SW	1·5	0·0	0·0	227	0·00
12	In Equator First Qr.	29·649	70·4	45·7	56·4	47·3	97·0	37·5	62·4	60·9	9·1	18·0	0·0	— 1·9	SSW	S	0·0	0·0	0·0	120	0·00
13	..	29·512	65·7	51·2	55·3	49·2	90·2	41·0	62·4	60·9	6·1	11·3	3·2	— 3·2	S	S : SSW	0·8	0·0	0·0	191	0·04
14	..	29·399	69·6	45·1	56·6	48·2	103·0	34·6	62·6	61·3	8·4	20·3	0·2	— 2·2	SSW	SSW	1·5	0·0	0·1	295	0·04
15	..	29·498	68·2	50·8	54·5	46·5	109·0	47·0	62·2	61·4	8·0	20·7	2·2	— 4·5	SSW : WSW	SW	2·7	0·0	0·0	265	0·15
16	..	29·759	74·1	46·0	59·3	50·5	94·5	44·8	62·4	61·4	8·8	20·4	2·7	0·0	WSW	WSW	1·0	0·0	0·0	267	0·00
17	..	29·956	73·6	50·5	60·7	55·1	103·5	43·0	62·0	61·0	5·6	15·3	0·4	+ 1·3	WSW	SW	1·5	0·0	0·0	347	0·00
18	..	29·916	71·6	56·2	61·6	46·3	106·9	56·2	62·5	61·2	15·3	22·0	4·0	+ 2·1	SW	W	2·6	0·0	0·2	323	0·16
19	Greatest Declination S.	30·106	69·7	48·7	58·7	50·0	91·7	41·4	62·5	60·7	8·7	16·7	0·0	— 0·9	WSW : NW	WSW	0·0	0·0	0·0	244	0 00
20	Full. ..	30·058	73·6	50·5	61·1	49·9	118·4	40·7	61·9	60·4	11·2	20·0	3·8	+ 1·3	SW	SW	0·8	0·0	0·0	316	0·00
21	..	29·965	72·2	52·2	60·8	46·7	109·0	46·3	61·6	59·4	14·1	23·0	2·8	+ 0·9	SW	WSW	2·6	0·0	0·3	338	0·00
22	Perigee	29·960	69·5	49·9	57·5	51·3	91·2	39·4	62·1	60·0	6·2	15·8	1·2	— 2·5	WSW	SW	2·2	0·0	0·1	309	0·02
23	..	29·808	66·5	48·8	55·3	52·3	93·0	48·7	62·6	60·4	3·0	8·5	1·7	— 4·9	SW	SW : WSW	3·3	0·0	0·4	361	0·11
24	..	30·028	68·2	47·3	56·0	47·1	106·6	39·0	62·8	60·6	8·9	19·1	2·8	— 4·4	W	WSW	2·3	0·0	0·2	333	0·00
25	In Equator	29·887	70·7	53·3	60·0	54·9	93·4	45·0	63·6	61·4	5·1	12·4	0·0	— 0·6	WSW	WSW	1·0	0·0	0·0	266	0·00
26	Last Qr.	29·772	70·2	53·6	56·6	48·5	98·8	50·0	63·6	61·4	8·1	16·0	0·0	— 4·2	SW : NW	W : NW	3·0	0·0	0·1	340	0·08
27	..	29·979	64·9	46·2	54·0	43·9	93·6	34·6	63·6	61·4	10·1	16·6	3·4	— 7·0	NNW	NNW : NW	1·5	0·0	0·0	224	0·00
28	..	29·964	67·7	47·1	55·3	50·2	83·6	38·3	64·1	61·4	5·1	18·2	0·0	— 6·0	WSW	WSW	0·0	0·0	0·0	208	0·04
29	..	29·829	71·5	53·4	59·9	53·1	91·4	52·6	62·8	60·7	6·8	17·3	0·0	— 1·6	WSW	SW	0·4	0·0	0·0	265	0·04
30	..	29·766	69·1	55·0	59·2	47·0	102·0	54·2	..	60·6	12·2	21·8	2·0	— 2·3	WSW : NNW	NW : W	2·1	0·0	0·2	304	0·00
Means	..	29·792	69·5	49·1	57·4	48·7	99·3	42·4	62·3	60·4	8·7	17·9	1·4	— 1·5	...	...	..	..	..	Sum 7369	Sum 0·92

BAROMETER READINGS FROM EYE-OBSERVATIONS.

The first maximum in the month was 29in·855 on the 6th; the first minimum in the month was 29in·601 on the 9th.
The second maximum ,, was 29in·770 on the 10th; the absolute minimum ,, was 29in·353 on the 14th.
The third maximum ,, was 29in·973 on the 17th; the third minimum ,, was 29in·851 on the 18th.
The absolute maximum ,, was 30in·130 on the 19th; the fourth minimum ,, was 29in·779 on the 23rd.
The fifth maximum ,, was 30in·046 on the 24th; the fifth minimum ,, was 29in·751 on the 26th.
The sixth maximum ,, was 30in·005 on the 27th.
The range in the month was 0in·777.
The mean for the month was 29in·792, being 0in·005 *higher* than the average of the preceding 23 years.

TEMPERATURE OF THE AIR.

The highest in the month was 78°·4 on the 7th; the lowest was 42°·3 on the 2nd; and the range in the month was 36°·1.
The mean ,, of all the highest daily readings was 69°·5, being 1°·4 *lower* than the average of the preceding 23 years.
The mean ,, of all the lowest daily readings was 49°·1, being 1°·1 *lower* than the average of the preceding 23 years.
The mean daily range was 20°·4, being 0°·3 *less* than the average of the preceding 23 years.
The mean for the month was 57°·4, being 1°·7 *lower* than the average of the preceding 23 years.

MONTH and DAY, 1864.	ELECTRICITY.		CLOUDS AND WEATHER.	
	A.M.	P.M.	A.M.	P.M.
June 1	0	0	10 : 9, ci.-cu, ci.-s	8, cu, ci.-cu, ci, ci.-s : 1, ci.-s
2	0	0	10	10 : 8, ci, ci.-cu,ci.-s : 10, ci.-s
3	0	0	10 : 10, r	10, c.-r : 10
4	0	0	4, ci, ci.-cu, h	2, ci, ci.-cu : 2, ci.-s
5	0	0	5, ci, ci.-cu	4, ci, ci.-cu : 10, ci.-s
6	0	0	8, ci, ci.-cu, cu	5, cu, ci.-cu, ci : 0
7	0	0	0 : 0	5, ci, ci.-cu, cu : 5, ci, ci.-s, cu.-s
8	0	0	10	10, ci.-s : 7,ci,ci.-s,ci.-cu, h : 8, ci.-cu,ci.-s
9	0	0 : w	7, ci, ci.-cu, cu	10,ci,ci.-s,ci.-cu,cu,cu.-s : 9, ci.-s
10	0	0	1, ci	5, ci,cu, ci-cu,cu.-s,ci.-s : 0
11	0	0	4, ci, ci.-cu	3, li.-cl : 7, ci, ci.-cu : 1, ci
12	0	0 : w	10, ci.-s, cu.-s	9, ci, ci.-cu, ci.-s : 3, ci, ci.-cu
13	0	sN,sP,sp,g-cur : 0	10, ci.-s	10, oc.-r : 9, ci.-cu,ci.-s,t,oc.-r : 0
14	0	0	8, ci, ci.-cu, cu.-s	9, ci,ci.-cu,cu,cu.-s,ci.-s : 10, r
15	w N	sN,sP,sp,g-cur : 0	10	v, ci, ci.-cu, hl, r, t, l : 7, ci.-cu, ci.-s, cu.-s
16	0	0 : w : 0	4, ci.-cu, cu	7, ci.-cu, cu : 2, ci, ci.-s
17	0	0	10, ci.-s	9, ci.-s, ci.-cu, ci : 10
18	0	0	10, h.-r : 7, ci.-cu, cu, cu.-s, ci	6, ci, ci.-cu, cu : 10
19	0	0 : w : 0	9, ci.-cu, cu	10, cu.-s, ci.-s : 5, ci.-cu, ci.-s
20	w	0 : w	7, ci, ci.-cu, ci.-s, cu.-s	2, ci, ci.-cu : 0 : 10, l
21	0	w N : 0	v : 7, ci, ci.-cu, cu.-s	6, ci, ci.-cu, cu, cu.-s : 0
22	0	0	9, ci, ci.-cu, cu	10, cu.-s,ci.-cu,ci.-s,oc.-shs : 2, th.-cl
23			10, li.-shs	10, oc.-r : 5, ci.-cu,ci.s, oc.-r : v
24			7, ci, ci.-cu, ci.-s	10, ci.-s : 10, sl.-r
25			10, ci.-s	10 : 10, ci.-s, cu.-s
26			10, r : 10, ci.-s	v, sh.-r : 1, ci, ci.-s
27			8, ci, ci.-cu, cu, ci.-s	8, ci.-cu, cu.-s: 10 : 2, ci, ci.-s
28			10	10, sl.-r : 10, r
29			10, sl.-r : 6, ci.cu, ci.-s, h	10, ci.-s, cu.-s, h : 10, ci.-s, oc.-r
30			8, ci.-cu, cu	10, th.-cl : 3, ci, ci.-cu : 6,ci,ci.-cu,ci.-s

HUMIDITY OF THE AIR.

Temperature of the Dew Point.

The highest in the month was 58°·9 on the 8th; and the lowest was 37°·5 on the 2nd.

The mean „ was 48°·7, being 2°·1 *lower* than the average of the preceding 23 years.

Elastic Force of Vapour.—The mean for the month was $0^{in}·344$ being $0^{in}·029$ *less* than the average of the preceding 23 years.

Weight of Vapour in a Cubic Foot of Air.—The mean for the month was $3^{gr}·9$, being $0^{gr}·3$ *less* than the average of the preceding 23 years.

Degree of Humidity.—The mean for the month was 72 (that of Saturation being represented by 100), being 3 *less* than the average of the preceding 23 years.

Weight of a Cubic Foot of Air.—The mean for the month was 533 grains, being 2 grains *greater* than the average of the preceding 23 years.

CLOUDS.

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

OZONE.

The mean amount for the month, on the scale ranging from 0 to 10, was 1·2.

WIND.

The proportions were of N. 4, S. 9, W. 15, E. 1, and Calm 1. The greatest pressure in the month was $3^{lbs}·3$ on the square foot on the 23rd.

RAIN.

Fell on 10 days in the month, amounting to $0^{in}·92$, as measured in the simple cylinder gauge partly sunk below the ground; being $1^{in}·05$ *less* than the average fall of the preceding 49 years.

ELECTRICITY.—From June 23 to 30, the insulating lamp was not burning.

MONTH and DAY, 1864.	Phases of the Moon.	Mean Daily Reading of the Barometer (corrected and reduced to 32° Fahrenheit).	Readings of Thermometers. Dry. Highest.	Dry. Lowest.	Dry. Mean Daily Value.	Dew Point. Mean Daily Value.	Highest in the Sun, as shown by a Self-Registering Thermometer, with blackened bulb in vacuo, placed on the Grass.	Lowest on the Grass, as shown by a Self-Registering Minimum Thermometer.	In the Water of the Thames, at Greenwich, by Self-Registering Thermometers, read at 9h A.M. Highest.	In the Water of the Thames, at Greenwich, by Self-Registering Thermometers, read at 9h A.M. Lowest.	Difference between the Dew Point Temperature and Air Temperature. Mean Daily Value.	Difference between the Dew Point Temperature and Air Temperature. Greatest.	Difference between the Dew Point Temperature and Air Temperature. Least.	Difference between the Mean Temperature of the Day and the Mean Temperature of the same Day on an Average of 43 Years.	Wind as deduced from Anemometers. Osler's. General Direction. A.M.	Wind as deduced from Anemometers. Osler's. General Direction. P.M.	Pressure in lbs. on the square foot. Greatest.	Pressure in lbs. on the square foot. Least.	Pressure in lbs. on the square foot. Mean of 24 Obs.	Robinson's Amount of Horizontal Movement of the Air on each Day.	Rain in Inches, collected in a Gauge whose receiving surface is 5 inches above the Ground.
		in.	°	°	°	°	°	°	°	°	°	°	°	°			lbs.	lbs.	lbs.	miles.	in.
July 1	..	29·799	66·5	49·2	57·5	45·0	94·7	40·3	..	60·7	12·5	20·2	7·6	— 4·0	WSW : WNW	WNW : SW	2·0	0·0	0·1	243	0·00
2	Greatest Declination N.	29·598	70·6	49·0	59·2	51·2	90·0	39·2	..	61·4	8·0	18·7	2·7	— 2·2	SW	SW	2·6	0·0	0·4	375	0·00
3	..	29·540	66·1	49·8	56·4	48·9	101·3	43·2	..	61·2	7·5	13·3	1·3	— 5·0	SW	WSW : WNW	3.1	0·0	0·4	305	0·12
4	New	29·849	71·6	46·3	57·9	47·7	108·7	38·8	..	60·9	10·2	23·8	1·9	— 3·6	WSW	WSW	0·8	0·0	0·0	299	0·00
5	..	29·879	74·1	46·5	59·7	44·8	109·4	35·8	..	60·9	14·9	28·1	0·0	— 1·9	SW : NW	NW	1·6	0·0	0·1	278	0·00
6	..	29·997	68·6	46·4	56·5	47·0	91·4	36·2	..	61·0	9·5	20·2	1·7	— 5·2	NNW	N : NE	0·0	0·0	0·0	106	0·00
7	..	29·978	71·9	50·8	57·3	48·9	85·6	49·6	..	61·4	8·4	19·3	3·2	— 4·5	Variable	N : NNE	0·0	0·0	0·0	173	0·00
8	Apogee	29·998	61·2	45·8	53·5	47·6	78·4	37·0	..	61·0	5·9	13·3	1·1	— 8·2	N	N : NNE	0·0	0·0	0·0	171	0·00
9	In Equator	29·925	64·0	46·3	54·3	47·8	90·9	..	..	60·4	6·5	14·8	1·1	— 7·2	NNE	NE	0·0	0·0	0·0	194	0·00
10	..	29·907	72·8	50·6	59·9	53·8	93·0	50·4	..	60·3	6·1	16·6	0·0	— 1·6	NE	ENE : NE	2·7	0·0	0·2	266	0·02
11	..	29·913	79·0	52·4	66·1	55·9	112·2	50·2	..	60·7	10·2	23·5	2·0	+ 4·5	NNE : NE	E : N	2·2	0·0	0·1	233	0·00
12	First Qr.	29·938	77·5	51·8	60·8	51·8	111·9	47·4	..	62·4	9·0	22·6	0·0	— 0·9	N	NNE : E	0·0	0·0	0·0	211	0·00
13	..	29·882	68·5	50·0	57·3	49·4	93·0	46·0	..	62·1	7·9	17·8	0·0	— 4·5	NNE	NE : E	1·0	0·0	0·0	160	0·00
14	..	29·945	78·1	47·8	59·8	49·1	110·7	42·7	..	62·4	10·7	26·4	0·4	— 1·9	NNE	NNE : SE : SW	0·0	0·0	0·0	72	0·00
15	..	29·948	77·7	45·8	61·7	49·9	111·8	37·2	..	62·3	11·8	25·7	0·0	0·0	Calm : NE	E	0·0	0·0	0·0	169	0·00
16	Greatest Declination S.	29·987	73·7	50·3	59·9	52·5	110·4	43·9	..	62·4	7·4	18·7	0·0	— 1·8	E	NE : E	0·0	0·0	0·0	106	0·00
17	..	29·959	81·1	48·5	64·5	53·8	114·0	46·9	..	63·4	10·7	24·7	0·0	+ 2·8	Calm	NE : SE	0·0	0·0	0·0	84	0·00
18	..	29·930	80·8	52·3	65·4	54·3	116·8	45·1	..	64·4	11·1	24·1	0·0	+ 3·7	NE	NNW : N	0·0	0·0	0·0	144	0·00
19	Full	29·929	83·5	59·5	68·9	57·4	96·9	54·0	..	64·9	11·5	24·1	3·6	+ 7·2	SW	Variable	0·0	0·0	0·0	113	0·00
20	Perigee	29·879	85·6	55·7	69·8	55·0	115·8	48·1	..	65·4	14·8	29·1	0·0	+ 8·2	WSW	WSW : SW	0·0	0·0	0·0	188	0·00
21	..	29·737	80·6	55·0	67·0	53·9	112·7	50·0	..	65·5	13·1	25·7	2·0	+ 5·5	SW	SW	1·8	0·0	0·1	296	0·00
22	In Equator	29·736	74·5	53·5	63·7	53·8	95·0	45·0	..	65·4	9·9	21·1	0·8	+ 2·2	SW	SW	2·0	0·0	0·1	285	0·00
23	..	29·842	78·5	56·7	66·1	51·9	112·1	45·6	..	66·3	14·2	23·5	3·6	+ 4·6	WSW	SW	0·6	0·0	0·0	236	0·00
24	..	29·736	78·8	54·8	64·0	54·4	107·3	54·0	66·6	65·4	9·6	23·6	0·2	+ 2·4	SW	SW	2·0	0·0	0·2	286	0·00
25	Last Qr.	29·597	71·2	51·8	59·3	53·9	94·6	50·8	66·6	64·4	5·4	16·2	0·0	— 2·5	SW	SW	2·0	0·0	0·1	318	0·13
26	..	29·715	76·0	55·2	64·0	49·6	110·0	48·0	65·8	63·4	14·4	24·8	1·0	+ 1·9	WSW : NW	NW : N	1·0	0·0	0·0	130	0·00
27	..	29·790	79·4	47·7	62·9	50·2	117·6	39·8	67·6	65·4	12·7	26·2	0·0	+ 0·6	NE : WSW	SW : SSW	0·0	0·0	0·0	209	0·00
28	..	29·696	76·0	53·1	63·2	52·7	85·7	45·4	67·4	65·2	10·5	21·8	2·8	+ 0·7	SSW	SW	1·6	0·0	0·1	261	0·00
29	Greatest Declination N.	29·922	82·2	53·6	65·7	51·4	122·6	42·9	67·1	64·9	14·3	31·6	0·2	+ 3·2	WSW	W : WSW	0·0	0·0	0·0	203	0·00
30	..	30·020	81·3	53·2	66·2	59·6	109·7	44·3	67·1	65·4	6·6	20·0	0·6	+ 3·7	SW	SW	1·7	0·0	0·1	265	0·00
31	..	29·980	82·4	57·7	66·8	57·4	110·0	57·7	67·6	65·4	9·4	25·5	1·3	+ 4·3	SW	SW	4·2	0·0	0·6	364	0·00
																				Sum	Sum
Means	..	29·856	75·3	51·2	61·8	51·6	103·7	45·2	67·0	63·1	10·2	22·1	1·3	0·0	...	...	..	..	..	6743	0·27

BAROMETER READINGS FROM EYE-OBSERVATIONS.

The absolute minimum in the month was 29in·471 on the 2nd.

The first maximum in the month was 30in.015 on the 6th; the second minimum ,, was 29in·896 on the 9th.
The second maximum ,, was 29in.976 on the 12th; the third minimum ,, was 29in·866 on the 13th.
The third maximum ,, was 30in·005 on the 16th; the fourth minimum ,, was 29in·705 on the 21st.
The fourth maximum ,, was 29in·854 on the 23rd; the fifth minimum ,, was 29in·520 on the 25th.
The fifth maximum ,, was 29in·817 on the 27th; the sixth minimum ,, was 29in·689 on the 28th.
The absolute maximum ,, was 30in·056 on the 31st.
The range in the month was 0in·585.
The mean for the month was 29in·856, being 0in·055 *higher* than the average of the preceding 23 years.

TEMPERATURE OF THE AIR.

The highest in the month was 85°·6 on the 20th; the lowest was 45°·8 on the 8th and 15th.
The range ,, was 39°·8.
The mean ,, of all the highest daily readings was 75°·3, being 1°·7 *ligher* than the average of the preceding 23 years.
The mean ,, of all the lowest daily readings was 51°·2, being 1°·7 *lower* than the average of the preceding 23 years.
The mean daily range was 24°·1, being 3°·4 *greater* than the average of the preceding 23 years.
The mean for the month was 61°·8 being 0°·2 *higher* than the average of the preceding 23 years.

MONTH and DAY, 1864.	ELECTRICITY. A.M.	ELECTRICITY. P.M.	CLOUDS AND WEATHER. A.M.	CLOUDS AND WEATHER. P.M.
July 1	0	0	8, cu, ci.-cu, ci.-s	6, cu, ci.-cu, ci.-s : 4, ci.-cu, ci, ci.-s
2	0	0	6, ci, ci.-cu, ci.-s	7, ci.-cu, ci, cu.-s : 10, ci.-s, r
3	s N, sp, g-cur	0	10, r : 10, ci.-s, cu.-s, shs.-r, t	8, ci.-cu, ci, ci.-s, cu.-s, shs.-r : 10, ci.-s, cu.-s, sc
4			4, cu, ci.-cu	5, ci.-cu, ci, cu : 8, ci, ci.-cu, cu: 10, m
5			2, ci.-cu, h	0 : 2, ci, cu, ci.-cu: 1, ci
6			4, ci, ci.-cu, cu	10, ci.-cu, ci.-s : 5, ci.-cu, cu : 10, ci.-s
7			10, li.-cl, h	10, ci.-s, ci.-cu : 4, ci.-cu, ci
8	0	0 : w	8, ci.-s, ci.-cu	10 : 10, ci.-s, ci.-cu
9	w	0 : w	10, ci.-cu, ci.-s	9, ci.-cu, cu, ci.-s: 10 : 10, ci.-s
10	0	0	10, ci.-s, sl.-r : 10, ci.-s, ci.-cu	5, ci.-cu, cu : 3, ci
11	0	0 : w	4, ci, ci.-cu	3, ci, ci.-cu : 0 : 2, ci, ci.-s
12	0	0 : w	10	5, ci, ci.-cu : 3, ci, ci.-cu : 6, ci, ci.-s
13	w	w : 0	10, ci.-s	10, ci.-s : 7, ci.-cu, ci, cu: 0
14	0	0	10, ci.-s	0 : 0
15			0, h	0 : 3, ci, h : 4, ci, ci.-s, h
16			10, ci.-s	0, h : 0
17			0, h, sl.-f	3, ci : 10, ci.-s, cu.-s
18			6, ci, h	10, ci, ci.-s : 10 : 0
19			10, h	9, ci, ci.-cu, ci.-s: 10, ci.-cu, ci.-s: 0, h
20			4, ci, h	4, ci, h : 4, ci, ci.-cu, h: 0
21			7, ci, ci.-cu, cu	0, h : 1, ci, ci.-cu : 10, ci.-s, li.-shs
22			8, ci, ci.-cu, cu, cu.-s	10, ci.-s : 10, sl.-r
23	0	0	10, ci.-s	10, cu, ci.-s, cu.-s: 4, ci, ci.-cu, h: 2, ci
24	0	0	10, ci.-s, cu.-s	8, ci, ci.-cu, cu.-s, h : 10, ci.-s, ci, ci.-cu
25	0	0	10, h.-r, ci.-s	10, ci.-s, ci : 10, sl.-r
26	0	0 : w	10, ci,-s	8, ci.-cu, ci.-s : 6, ci.-cu, cu : 8, ci.-cu, cu.-s
27	0	0	4, ci, ci.-cu, cu : 10	10, ci, ci.-s : 5, ci, ci.-cu, cu, cu.-s: 10
28	0	0	4, ci, ci.-cu, ci.-s	10, ci.-s, cu.-s : 10
29	0	0	3, li.-cl, h	4, ci, ci.-cu, h : 3, ci, ci.-cu, ci.-s: 0, ms
30	0	0	0 : 7, ci.-cu, ci.-s	10, ci.-s : 9, ci.-cu, ci.-s, ci : 10
31	0	0	10, ci.-s	3, ci, h : 10, ci.-s

HUMIDITY OF THE AIR.

Temperature of the Dew Point.

The highest in the month was 62°·7 on the 30th; and the lowest was 42°·3 on the 1st.

The mean " " " was 51°·6, being 2°·1 *lower* than the average of the preceding 23 years.

Elastic Force of Vapour.—The mean for the month was 0^{in}·382, being 0^{in}·032 *less* than the average of the preceding 23 years.

Weight of Vapour in a Cubic Foot of Air.—The mean for the month was 4^{gr}·2, being 0^{gr}·4 *less* than the average of the preceding 23 years.

Degree of Humidity.—The mean for the month was 70 (that of Saturation being represented by 100), being 6 *less* than the average of the preceding 23 years.

Weight of a Cubic Foot of Air.—The mean for the month was 529 grains, being 1 grain *greater* than the average of the preceding 23 years.

CLOUDS.

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

OZONE.

The mean amount for the month, on a scale ranging from 0 to 10, was 1·4.

WIND.

The proportions were N. 7, S. 6, W. 10, E. 5, and Calm 3. The greatest pressure in the month was 4^{lbs}·2 on the square foot on the 31st.

RAIN.

Fell on 3 days in the month, amounting to 0^{in}·27, as measured in the simple cylinder gauge partly sunk below the ground; being 2^{in}·37 *less* than the average fall of the preceding 49 years.

ELECTRICITY.—The insulating lamp was not burning from July 4 to 7, and July 15 to 22.

MONTH and DAY, 1864.	Phases of the Moon.	Mean Daily Reading of the Barometer (corrected and reduced to 32° Fahrenheit).	Readings of Thermometers. Dry. Highest.	Dry. Lowest.	Dry. Mean Daily Value.	Dew Point. Mean Daily Value.	Highest in the Sun, as shown by a Self-Registering Thermometer, with blackened bulb in vacuo, placed on the Grass.	Lowest on the Grass, as shown by a Self-Registering Minimum Thermometer.	In the Water of the Thames, at Greenwich, by Self-Registering Thermometers, read at 9h A.M. Highest.	In the Water of the Thames, at Greenwich, by Self-Registering Thermometers, read at 9h A.M. Lowest.	Difference between the Dew Point Temperature and Air Temperature. Mean Daily Value.	Difference between the Dew Point Temperature and Air Temperature. Greatest.	Difference between the Dew Point Temperature and Air Temperature. Least.	Difference between the Mean Temperature of the Day and the Mean Temperature of the same Day on an Average of 43 Years.	Wind as deduced from Anemometers. Osler's. General Direction. A.M.	Wind as deduced from Anemometers. Osler's. General Direction. P.M.	Pressure in lbs. on the square foot. Greatest.	Pressure in lbs. on the square foot. Least.	Pressure in lbs. on the square foot. Mean of 24 Obs.	Robinson's Amount of Horizontal Movement of the Air on each Day.	Rain in Inches, collected in a Gauge whose receiving surface is 5 inches above the Ground.
		in.	°	°	°	°	°	°	°	°	°	°	°	°			lbs.	lbs.	lbs.	miles	in.
Aug. 1	..	29·890	75·2	54·5	64·1	48·5	109·8	..	66·6	64·4	15·6	23·8	4·0	+ 1·6	WSW	WSW	3·0	0·0	0·2	254	0·00
2	New	29·964	71·0	48·7	59·7	45·1	103·3	37·0	66·6	65·4	14·6	23·8	0·9	— 2·6	WSW : WNW	NW	0·0	0·0	0·0	147	0·00
3	..	29·948	75·2	43·4	58·7	45·8	110·0	34·9	67·1	64·4	12·9	27·0	2·4	— 3·5	W : WSW	WSW	0·0	0·0	0·0	164	0·00
4	Apogee	29·902	82·3	52·8	67·3	48·6	119·3	48·3	67·1	64·9	18·7	35·2	5·0	+ 5·2	WSW	SW	0·0	0·0	0·0	196	0·00
5	In Equator	29·964	88·6	56·6	71·6	53·8	125·1	40·9	67·6	65·4	17·8	32·0	1·3	+ 9·6	SW	SW	0·0	0·0	0·0	185	0·00
6	..	29·906	82·1	59·6	66·9	52·6	121·0	53·0	68·1	65·9	14·3	26·2	6·6	+ 4·9	WSW	WSW : N	0·0	0·0	0·0	147	0·00
7	..	29·818	81·2	48·7	64·0	48·3	111·0	..	67·5	64·5	15·7	29·6	3·2	+ 2·0	N : SW	WSW	1·0	0·0	0·0	311	0·00
8	..	29·723	82·4	60·7	69·2	57·0	113·2	54·2	66·6	65·4	12·2	24·1	1·4	+ 7·2	WSW	WSW	1·5	0·0	0·2	219	0·00
9	..	29·685	67·7	54·4	58·3	56·0	78·8	..	66·2	64·6	2·3	8·0	0·5	— 3·6	Variable	SW : W	2·5	0·0	0·2	298	0·50
10	First Qr.	29·921	67·0	47·0	55·8	41·3	83·0	..	64·6	62·9	14·5	25·2	4·4	— 6·0	W : WNW	NW : W	2·4	0·0	0·3	309	0·00
11	..	30·176	69·8	46·9	57·6	41·1	110·6	..	64·7	62·9	16·5	27·9	3·4	— 4·1	NW : NNW	NNW : E	0·0	0·0	0·0	144	0·00
12	..	30·181	76·2	42·2	60·1	46·1	98·7	32·6	64·7	62·9	14·0	27·7	0·0	— 1·5	SE : SW	Variable	0·0	0·0	0·0	124	0·00
13	Greatest Declination S.	30·202	79·0	47·5	63·1	49·4	106·5	38·7	64·6	62·4	13·7	27·2	0·0	+ 1·6	SW	NE : ESE	0·0	0·0	0·0	107	0·00
14	..	30·274	78·0	50·0	63·0	54·2	116·6	..	65·6	63·4	8·8	20·9	0·0	+ 1·5	SE : NE	E	0·0	0·0	0·0	140	0·00
15	..	30·239	78·1	49·9	63·7	51·7	114·2	42·1	65·8	63·7	12·0	25·5	0·0	+ 2·3	Calm : N	N	1·5	0·0	0·0	199	0·00
16	..	30·072	75·8	44·7	59·7	56·1	97·0	43·6	65·6	63·4	3·6	15·1	0·0	— 1·7	N	N : SW	0·0	0·0	0·0	166	0·00
17	Full : Perigee.	29·930	72·0	54·1	60·8	45·6	98·0	48·1	65·5	63·4	15·2	22·9	7·2	— 0·5	N : NE	NNE : ESE	0·0	0·0	0·0	139	0·00
18	..	29·787	70·5	42·3	55·9	42·0	118·7	32·4	64·6	62·6	13·9	24·8	0·0	— 5·2	NE	N	0·0	0·0	0·0	102	0·00
19	In Equator	29·547	70·6	43·4	57·4	42·3	94·0	34·5	64·6	62·6	15·1	25·9	0·9	— 3·5	Calm	NE : E	0·0	0·0	0·0	130	0·00
20	..	29·647	67·0	51·7	56·7	45·7	99·4	48·0	64·4	62·4	11·0	20·5	6·6	— 4·1	NNW	NNW : SSW	0·0	0·0	0·0	114	0·00
21	..	29·739	68·4	44·7	53·4	47·8	97·4	31·5	64·6	62·9	5·6	19·4	0·2	— 7·2	S	NW : N	0·0	0·0	0·0	124	0·12
22	..	29·775	65·2	41·4	53·5	45·4	90·3	30·9	65·0	63·4	8·1	16·0	0·0	— 6·9	N : NE	NE	1·0	0·0	0·0	299	0·00
23	..	29·587	56·2	47·7	49·5	45·0	56·2	47·0	64·6	62·4	4·5	10·8	1·3	— 10·8	N	NNW	3·0	0·0	0·2	325	0·53
24	Last Qr.	29·910	62·4	43·7	52·4	40·4	84·6	34·5	62·6	60·2	12·0	21·9	0·7	— 7·9	NW	NW	0·0	0·0	0·0	167	0·00
25	Greatest Declination N.	30·044	61·2	38·4	50·6	42·5	81·8	27·2	62·8	60·4	8·1	16·9	0·0	— 9·6	SW	Variable	0·0	0·0	0·0	99	0·00
26	..	30·146	67·2	42·0	53·0	40·9	85·5	31·2	62·7	60·4	12·1	22·9	0·7	— 6·9	N	N	0·0	0·0	0·0	154	0·00
27	..	30·168	66·2	38·1	53·0	43·5	105·5	29·3	61·6	59·4	9·5	20·9	0·0	— 6·7	Calm	SW	0·0	0·0	0·0	183	0·00
28	..	29·980	70·1	51·0	58·3	48·0	94·4	44·1	61·6	59·4	10·3	20·5	2·5	— 1·3	SSW : SW	SW	1·0	0·0	0·0	272	0·02
29	..	29·899	78·4	56·7	65·2	50·0	104·3	52·3	61·1	58·9	15·2	26·2	6·6	+ 5·8	SW	SW : S	0·0	0·0	0·0	191	0·00
30	..	29·736	81·0	47·9	65·3	52·1	106·0	..	61·6	59·4	13·2	30·3	0·6	+ 6·2	SSE	SSW	2·0	0·0	0·1	365	0·00
31	Apogee	29·693	69·8	53·5	59·3	56·0	69·8	51·0	62·6	61·4	3·3	8·0	1·8	+ 0·3	SSW	WSW : SW	4·0	0·0	0·3	279	0·14
Means	..	29·918	72·8	48·5	59·6	47·8	100·1	40·3	64·8	62·8	11·8	22·8	2·0	— 1·5	...	...	..	..	..	Sum 6053	Sum 1·31

BAROMETER READINGS FROM EYE-OBSERVATIONS.

The first maximum in the month	was 29in·981 on the 3rd;		The first minimum in the month	was 29in·875 on the 1st.	
The second maximum	,,	was 30in·011 on the 5th;	the second minimum	,,	was 29in·894 on the 4th.
The absolute maximum	,,	was 30in·292 on the 14th;	the third minimum	,,	was 29in·625 on the 9th.
The fourth maximum	,,	was 29in·838 on the 22nd;	the absolute minimum	,,	was 29in·506 on the 19th.
The fifth maximum	,,	was 30in·206 on the 27th;	the fifth minimum	,,	was 29in·555 on the 23rd.
			the sixth minimum	,,	was 29in·634 on the 31st.

The range in the month was 0in·786

The mean for the month was 29in·918, being 0in·129 *higher* than the average of the preceding 23 years.

TEMPERATURE OF THE AIR.

The highest in the month was 88°·6 on the 5th; the lowest was 38°·1 on the 27th.

The range ,, was 50°·5.

The mean ,, of all the highest daily readings was 72°·8, being *the same as* the average of the preceding 23 years.

The mean ,, of all the lowest daily readings was 48°·5, being 4°·8 *lower* than the average of the preceding 23 years.

The mean daily range was 24°·3, being 4°·8 *greater* than the average of the preceding 23 years.

The mean for the month was 59°·6, being 1°·8 *lower* than the average of the preceding 23 years.

MONTH and DAY, 1864.	ELECTRICITY. A.M.	ELECTRICITY. P.M.	CLOUDS AND WEATHER. A.M.	CLOUDS AND WEATHER. P.M.
Aug. 1	o	w : o : w	7, ci, ci.-cu, ci.-s, h	8, ci.-cu, cu : 6, ci.-cu, ci : 9, ci.-cu, cu.-s
2	o	o	7, ci, ci.-cu, ci.-s	9, ci, ci.-cu, ci.-s, cu.-s : 8, ci.-s, ci.-cu, ms
3	o	o	4, li.-cl, h	3, ci, h : 9, ci, ci.-s
4	o	w : o : w	1, ci.	4, ci : 3, ci, ms
5	o	o	o : o	o : 3, ci : 10, ci.-s
6	o	o	10, ci.-s, sl.-f	10, ci.-s : 4, ci, ci.-cu : o
7	o	o : w	o, m : 1, ci, h	7, ci.-cu : 3, ci.-cu, ci.-s
8	o	o	10	10, ci.-s : 4, ci, ci.-cu : 4, ci, ci.-s, ms
9	m	w : m N : o	10, h-r	10, sc, h.-r : 5, ci.-s, ms
10	w	o	5, ci.-cu, cu	9, ci.-cu, ci.-s : 1, ci.-s, ms
11	o	o	4, cu, ci, ci.-cu, ci.-s	4, cu, ci, ci.-cu, ci.-s : 1, ci, ci.-cu : o, ms
12	o	o	2, ci	7, ci, ci.-cu, h : 3, ci : o, ms
13	o	o : m	3, ci, h	5, ci, ci.-cu : 1, ci.-s, ci, ms
14			5, ci, ci.-cu	2, li.-cl : 2, li.-cl
15			7, ci	o : o : 10, v
16	o	o	10, sl.-r	10 : 7, ci.-cu, h : o, h
17	o	o	6, ci, ci.-cu	3, ci.-cu, ci, ci.-s, h : 1, ci, h
18	o	o : w	2, ci, ci.-cu	2, ci, ci.-cu : 9, ci.-s, ci, ci.-cu : 2, ci
19	w	w : o : w	1, ci, h	7, ci, ci.-cu, cu.-s : 10
20	o		5, ci, ci.-cu	8, ci.-cu, ci.-s : 10, ci.-s : 6, ci.-cu, ci.-s
21	s	sP,sN,sp,g-cur : o	10 : 10, ci.-s, t, h.-r, hl	9, t, r : v : o
22	w	w : o	4, ci, ci.-cu, ci.-s	10, ci.-s, cu.-s : 10, sl.-r
23	m N	o	10, h-r : 10, c.-h-r	10, c-r : 10, ci.-s : 3, s, ci.-s
24	w	w : o	4, ci, ci.-cu, cu	8, ci, ci.-cu, ci.-s : 2, ci, sl.-f
25	o	o	3, ci, h	7, ci, ci.-s, cu.-s, h : 10, ci.-s : o, l
26	w	o	o	6, cu, ci.-cu : o
27	w	w : o	o : 1, ci, h	1, ci : 5, ci, h : 2, ci, ci.-s
28	o	w	10, ci.-s, cu.-s	10, r : 10, oc.-li.-shs
29	w	o	7, ci.-cu	9, ci.-cu, ci : 5, ci : o
30	o	o	1, ci	o : 10, th-r
31	o	w : o	10, th.-r : 10, h.-r	10, h-r : v : o, ms

HUMIDITY OF THE AIR.

Temperature of the Dew Point.

The highest in the month was 64°·3 on the 9th ; and the lowest was 37°·8 on the 24th.

The mean ,, was 47°·8, being 6°·3 *lower* than the average of the preceding 23 years.

Elastic Force of Vapour.—The mean for the month was $0^{in}·333$, being $0^{in}·089$ *less* than the average of the preceding 23 years.

Weight of Vapour in a Cubic Foot of Air.—The mean for the month was $3^{grs}·7$, being $1^{gr}·0$ *less* than the average of the preceding 23 years.

Degree of Humidity.—The mean for the month was 65 (that of Saturation being represented by 100), being 12 *less* than the average of the preceding 23 years.

Weight of a Cubic Foot of Air.—The mean for the month was 533 grains, being 5 grains *greater* than the average of the preceding 23 years.

CLOUDS.

The mean amount for the month, a clear sky being represented by o and a cloudy sky by 10, was 5·3.

OZONE.

The mean amount for the month, on a scale ranging from o to 10, was 0·9.

WIND.

The proportions were N. 7, S. 4, W. 10, E. 2 and Calm 8. The greatest pressure in the month was $4^{lbs}·0$ on the square foot on the 31st.

RAIN.

Fell on 5 days in the month, amounting to $1^{in}·31$, as measured in the simple cylinder gauge partly sunk below the ground; being $1^{in}·08$ *less* than the average fall of the preceding 49 years.

ELECTRICITY.—The insulating lamp was not burning on August 14 and 15.

MONTH and DAY, 1864.	Phases of the Moon.	Mean Daily Reading of the Barometer (corrected and reduced to 32° Fahrenheit).	Readings of Thermometers. Dry. Highest.	Dry. Lowest.	Dry. Mean Daily Value.	Dew Point. Mean Daily Value.	Highest in the Sun, as shown by a Self-Registering Thermometer with blackened bulb in vacuo, placed on the Grass.	Lowest on the Grass, as shown by a Self-Registering Minimum Thermometer.	In the Water of the Thames, at Greenwich, by Self-Registering Thermometers, read at 9h A.M. Highest.	In the Water of the Thames, at Greenwich, by Self-Registering Thermometers, read at 9h A.M. Lowest.	Difference between the Dew Point Temperature and Air Temperature. Mean Daily Value.	Difference between the Dew Point Temperature and Air Temperature. Greatest.	Difference between the Dew Point Temperature and Air Temperature. Least.	Difference between the Mean Temperature of the Day and the Mean Temperature of the same Day on an Average of 43 Years.	Wind as deduced from Anemometers. Osler's. General Direction. A.M.	Wind as deduced from Anemometers. Osler's. General Direction. P.M.	Pressure in lbs. on the square foot. Greatest.	Pressure in lbs. on the square foot. Least.	Pressure in lbs. on the square foot. Mean of 24 Obs.	Robinson's Amount of Horizontal Movement of the Air on each Day.	Rain in Inches, collected in a Gauge whose receiving surface is 5 inches above the Ground.
		in.	°	°	°	°	°	°	°	°	°	°	°	°			lbs.	lbs.	lbs.	miles	in.
Sept. 1	New	29·892	70·3	47·4	57·2	45·5	105·0	37·2	62·7	61·5	11·7	23·2	0·0	— 1·6	SW	SW	2·0	0·0	0·0	308	0·00
2	In Equator	29·677	67·0	49·3	57·4	54·5	89·2	37·2	62·6	61·4	2·9	10·6	0·0	— 1·2	SW	SW	1·3	0·0	0·1	256	0·05
3	..	29·546	74·6	51·4	59·6	52·6	96·5	43·4	62·8	61·6	7·0	18·9	0·0	+ 1·1	SW	SW	1·0	0·0	0·0	212	0·11
4	..	29·725	68·7	51·7	58·5	47·3	87·2	47·0	62·6	60·4	11·2	17·3	4·2	+ 0·1	WSW : NW	NW : WNW	0·0	0·0	0·0	293	0·02
5	..	29·840	67·2	53·3	57·9	43·9	93·3	..	62·1	59·9	14·0	19·8	6·4	— 0·3	WNW	WSW	2·6	0·0	0·3	281	0·09
6	..	29·804	74·0	48·4	59·8	57·3	102·8	37·1	61·6	59·4	2·5	10·8	0·0	+ 1·8	SW	SW	5·0	0·0	0·6	391	0·25
7	..	29·836	70·6	62·2	65·0	59·6	79·8	62·0	62·6	59·9	5·4	9·0	2·9	+ 7·2	WSW	SW	0·6	0·0	0·0	314	0·00
8	..	29·852	75·5	61·5	66·8	60·5	81·0	60·2	63·1	60·4	6·3	11·7	2·1	+ 9·1	SW	SW	1·6	0·0	0·1	385	0·03
9	First Quarter: Greatest Dec. S.	29·771	70·0	58·9	63·1	56·1	88·0	56·0	63·1	60·9	7·0	10·8	3·2	+ 5·5	SW	SW : WSW	5·0	0·0	0·9	293	0·00
10	..	29·804	62·3	51·5	56·3	48·5	73·4	48·6	63·8	61·6	7·8	12·2	1·8	— 1·2	SW	SW	0·0	0·0	0·0	217	0·00
11	..	29·710	64·0	44·0	52·2	40·9	94·4	42·0	62·9	60·6	11·3	19·4	0·6	— 5·2	SW : W	WNW : WSW	0·6	0·0	0·0	240	0·02
12	..	29·874	67·2	40·9	53·4	42·4	83·3	31·1	61·6	60·4	11·0	23·4	0·5	— 3·9	WSW : W	W	0·0	0·0	0·0	178	0·00
13	..	29·774	63·5	44·4	54·0	49·4	81·3	29·0	61·1	58·9	4·6	11·0	1·6	— 3·2	SW : SSW	SSW : SW	0·6	0·0	0·0	265	0·00
14	..	29·458	62·6	51·7	57·8	53·1	86·0	48·5	61·1	58·9	4·7	8·5	0·6	+ 0·8	SSW	SSW : SW	4·5	0·0	0·7	279	0·21
15	Perigee: In Equator: Full.	29·459	66·0	46·4	56·1	49·1	84·0	40·2	60·6	58·4	7·0	15·0	0·2	— 0·6	SW	SSW : SSE	1·5	0·0	0·0	251	0·18
16	..	29·212	62·2	53·2	56·3	50·5	84·0	47·6	59·8	57·6	5·8	10·0	2·6	— 0·2	S : SSW	SSW	2·7	0·0	0·2	215	0·26
17	..	29·379	65·4	45·9	54·2	47·4	89·5	42·3	60·1	57·9	6·8	15·6	0·0	— 2·1	SSW : SW	SW : S	2·2	0·0	0·2	277	0·57
18	..	29·538	65·4	47·9	54·9	46·4	84·2	43·8	60·1	57·9	8·5	13·7	1·7	— 1·1	SW	SW	1·0	0·0	0·0	234	0·35
19	..	29·611	64·6	45·7	53·2	46·4	95·0	41·0	60·6	58·4	6·8	15·2	0·4	— 2·7	SW : WSW	WSW	0·0	0·0	0·0	178	0·00
20	..	29·734	65·8	42·1	53·2	47·2	92·3	32·8	60·8	58·6	6·0	14·8	0·0	— 2·4	SW	SW : SSW	0·5	0·0	0·0	240	0·00
21	..	29·642	68·2	53·1	58·8	49·2	91·2	52·2	60·6	58·4	9·6	16·6	1·8	+ 3·3	S : WSW	SW : S	1·0	0·0	0·1	203	0·06
22	Greatest Dec. N. Last Quarter.	29·660	68·5	52·9	58·7	51·0	99·0	50·5	60·9	58·9	7·7	15·5	1·4	+ 3·3	SSE : SW	SW	1·7	0·0	0·1	277	0·52
23	..	29·909	66·8	47·6	56·1	48·3	98·0	40·0	61·5	59·3	7·8	16·0	0·4	+ 0·8	WSW	SW	0·5	0·0	0·0	323	0·01
24	..	30·017	68·8	50·2	57·4	49·8	102·0	48·7	61·6	59·4	7·6	16·2	0·4	+ 2·4	SW	WSW : NW	3·0	0·0	0·2	159	0·03
25	..	30·196	68·8	43·6	55·9	52·0	108·7	35·7	61·6	59·4	3·9	12·6	0·0	+ 1·0	SW	SW : S	0·0	0·0	0·0	80	0·00
26	..	30·208	68·3	47·4	55·6	52·1	86·0	46·0	61·8	59·6	3·5	10·6	0·0	+ 0·9	Calm	SSW : SSE	0·0	0·0	0·0	86	0·00
27	..	30·130	66·2	46·3	55·7	48·9	83·4	38·8	61·7	59·5	6·8	16·3	0·0	+ 1·2	SE	E	0·0	0·0	0·0	177	0·00
28	Apogee	30·086	68·7	42·6	54·9	48·3	105·1	35·4	62·6	60·2	6·6	17·8	0·0	+ 0·6	ESE	E : Calm	0·0	0·0	0·0	90	0·00
29	In Equator	29·984	65·7	42·0	53·5	48·1	101·6	35·5	61·6	59·4	5·4	16·3	0·0	— 0·5	W	NNW	0·0	0·0	0·0	157	0·00
30	New	29·990	62·7	50·0	53·7	44·5	75·4	32·9	60·6	58·4	9·2	16·2	2·0	— 0·1	NNW : NNE	NNE	0·0	0·0	0·0	126	0·00
Means	..	29·777	67·3	49·1	56·9	49·7	90·7	42·9	61·7	59·6	7·2	14·8	1·2	+ 0·4	...	...	..	..	..	Sum 6985	Sum 2·76

BAROMETER READINGS FROM EYE-OBSERVATIONS.

The first maximum in the month was 29in·942 on the 1st; the first minimum in the month was 29in·525 on the 3rd.
The second maximum ,, was 29in·919 on the 5th; the second minimum ,, was 29in·758 on the 6th.
The third maximum ,, was 29in·870 on the 8th; the third minimum ,, was 29in·727 on the 9th.
The fourth maximum ,, was 29in·878 on the 10th; the fourth minimum ,, was 29in·668 on the 11th.
The fifth maximum ,, was 29in·891 on the 12th; the fifth minimum ,, was 29in·392 on the 14th.
The sixth maximum ,, was 29in·501 on the 15th; the absolute minimum ,, was 29in·211 on the 16th.
The seventh maximum ,, was 29in·769 on the 20th; the seventh minimum ,, was 29in·627 on the 21st.
The absolute maximum ,, was 30in·242 on the 26th.
The range in the month was 1·in031.
The mean for the month was 29in·777, being 0in·042 *lower* than the average of the preceding 23 years.

TEMPERATURE OF THE AIR.

The highest in the month was 75°·5 on the 8th; the lowest was 40°·9 on the 12th.
The range ,, was 34°·6.
The mean ,, of all the highest daily readings was 67°·3, being *the same as* the average of the preceding 23 years.
The mean ,, of all the lowest daily readings was 49°·1, being 0°·3 *higher* than the average of the preceding 23 years.
The mean daily range was 18°·2, being 0°·3 *less* than the average of the preceding 23 years.
The mean for the month was 56°·9, being *the same as* the average of the preceding 23 years.

MONTH and DAY, 1864.	ELECTRICITY. A.M.	ELECTRICITY. P.M.	CLOUDS AND WEATHER. A.M.	CLOUDS AND WEATHER. P.M.
Sept. 1	o	o : w : o	o : 2, ci, ci.-cu	6, ci, ci.-cu, sl.-r : o
2	o	w : o : w	10, ci.-s, sl-r	10, ci.-s, oc.-shs : o, m
3	w	m N : o : w N	1, ci, ci.-cu : li.-cl, t	10, ci.-s, cu.-s, oc.-r : 10, h.-r
4	o	o	7, ci, ci.-cu	8, ci.-cu, ci.-s : 10, sl.-r
5	o	o	10, r : 9, ci, ci.-cu	6, ci.-cu, cu, ci : o, m
6	o	o : w : o	10, ci.-s, r	10, ci.-s, w : w : 10
7	o	o	10, ci.-s, sc	10, ci.-s : 10 : 10, ci.-s
8	o	o	10 : 10, ci.-s	10, ci.-s, cu.-s, oc.-shs : 10
9	o	o	10, th.-r	10, ci.-s, w : 10 : 10, vv
10	o	w : o : w	10, li.-cl, h	10, ci.-s : 1, ci, lu.-ha
11	o	o : w	10, sl.-r : li.-cl : 10,cu.-s,ci.-s,ci.-cu	8, ci.-cu, ci.-s : li.-cl : o
12	w	o	o : o, h, v	7, ci, ci.-cu, ci.-s, cu.-s ; 8, ci.-cu, ci.-s
13	w	o : w	9, ci.-cu, ci, ci.-s, sl.-r	10,ci.-s : 10,ci.-cu,ci.-s,cu.-s,sl.-r,vv
14	o	w : o	10, ci.-s, w	10, ci.-s, w : 10, r : 10, r
15	o : w N	o	3, ci, ci.-cu, h.-r	7, ci, ci.-cu, cu.-s, r : 10, ci.-s, cu.-s, v, r
16	o	w	10, r : 10, h.-r, ci.-s, cu.-s	10, s, ci.-s : v : 10, ci.-s
17	o	w : o : w	10, h.-r : 3, ci, ci.-cu	5, ci.-s,cu.-s,ci,ci.-cu,cu : 4, ci.-s, s, v, l, oc.-shs
18	o	s, sp : w	10, h.-r : 3, ci, ci.-cu	9, ci,ci.-cu,cu.-s,oc.-shs : o
19	w	m N : o	li.-cl : 6, ci.-s	10, ci.-s : 2, ci, ci.-cu : o
20	m	o : w	5, li.-cl, h	8, ci,ci.-cu, cu.-s: sl.-r : 10
21	w	o : w	o, ci, h	4, ci, ci.-cu : 8,ci.-cu, ci.-s,ci: 6, ci, ci.-s, v
22			h.-r : 4, ci, ci.-cu, cu, ci.-s	9,ci.-s,ci,ci.-cu,r: o : 9, ci.-s, l
23			o, sl.-r, v	10, ci, ci.-cu, ci.-s: v : o
24			10, ci.-s, r	5, ci, ci.-cu, cu, ci.-s, h: o, h, f
25			4, ci	6, ci, ci.-cu : li.-cl : o
26			10, f, h.-d	6,ci.-cu, ci.-s,ci : o : o
27			f, h.-d : o	o : o
28			th.-f, h.-d : o	o : o, sl.-f
29			o, h, sl.-f	4, ci, h : 6, ci.-s
30			10, v	10, ci, ci.-cu, ci.-s, cu.-s : 10

HUMIDITY OF THE AIR.

Temperature of the Dew Point.

The highest in the month was 62°·5 on the 8th; and the lowest was 39°·3 on the 11th.

The mean ,, was 49°·7, being 1°·2 *lower* than the average of the preceding 23 years.

Elastic Force of Vapour.—The mean for the month was $0^{in}\cdot357$, being $0^{in}\cdot022$ *less* than the average of the preceding 23 years.

Weight of Vapour in a Cubic Foot of Air.—The mean for the month was $4^{grs}\cdot0$, being $0^{gr}\cdot2$ *less* than the average of the preceding 23 years.

Degree of Humidity.—The mean for the month was 77 (that of Saturation being represented by 100), being 4 *less* than the average of the preceding 23 years.

Weight of a Cubic Foot of Air.—The mean for the month was 533 grains, being 1 grain *less* than the average of the preceding 23 years.

CLOUDS.

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

OZONE.

The mean amount for the month, on a scale ranging from 0 to 10, was 1·3.

WIND.

The proportions were N. 2, S. 12, W. 13, E. 1, and Calm 2. The greatest pressure in the month was $5^{lbs}\cdot0$ on the square foot on the 6th and 9th.

RAIN.

Fell on 16 days in the month, amounting to $2^{in}\cdot76$, as measured in the simple cylinder gauge partly sunk below the ground; being $0^{in}\cdot33$ *greater* than the average fall of the preceding 49 years.

ELECTRICITY.—The moveable part of the electrical apparatus fell from the top of the pole to the ground in consequence of a breakage in its suspension on September 22.

MONTH and DAY, 1864.	Phases of the Moon.	Mean Daily Reading of the Barometer (corrected and reduced to 32° Fahrenheit).	Readings of Thermometers. Dry. Highest.	Dry. Lowest.	Dry. Mean Daily Value.	Dew Point. Mean Daily Value.	Highest in the Sun, as shown by a Self-Registering Thermometer, with blackened bulb in vacuo, placed on the Grass.	Lowest on the Grass, as shown by a Self-Registering Minimum Thermometer.	In the Water of the Thames, at Greenwich, by Self-Registering Thermometers, read at 9h A.M. Highest.	In the Water of the Thames, at Greenwich, by Self-Registering Thermometers, read at 9h A.M. Lowest.	Difference between the Dew Point Temperature and Air Temperature. Mean Daily Value.	Difference between the Dew Point Temperature and Air Temperature. Greatest.	Difference between the Dew Point Temperature and Air Temperature. Least.	Difference between the Mean Temperature of the Day and the Mean Temperature of the same Day on an Average of 43 Years.	Wind as deduced from Anemometers. Osler's. General Direction. A.M.	Wind as deduced from Anemometers. Osler's. General Direction. P.M.	Pressure in lbs. on the square foot. Greatest.	Pressure in lbs. on the square foot. Least.	Pressure in lbs. on the square foot. Mean of 24 Obs.	Robinson's Amount of Horizontal Movement of the Air on each Day.	Rain in Inches, collected in a Gauge whose receiving surface is 5 inches above the Ground.
		in.	°	°	°	°	°	°	°	°	°	°	°	°			lbs.	lbs.	lbs.	miles.	in.
Oct. 1	..	29·951	61·8	44·7	52·1	45·5	94·2	38·8	60·6	57·9	6·6	13·9	0·2	— 1·4	NE	E : NE	0·0	0·0	0·0	228	0·00
2	..	30·081	59·7	46·2	51·0	40·5	93·2	45·0	58·6	56·4	10·5	13·7	1·9	— 2·4	NE	E : ENE	3·5	0·0	0·6	340	0·01
3	..	30·141	57·2	44·2	49·8	37·2	92·2	37·0	57·6	55·4	12·6	17·2	7·3	— 3·3	ESE	E : ENE	4·8	0·0	0·9	405	0·00
4	..	29·997	54·2	42·0	47·4	35·9	87·0	35·6	57·1	54·9	11·5	15·2	7·3	— 5·6	ESE	E : ENE	8·0	0·0	1·4	367	0·00
5	..	29·917	57·2	39·1	48·4	38·3	90·2	27·7	56·6	54·4	10·1	18·4	2·5	— 4·4	E	ENE	4·5	0·0	0·6	262	0·00
6	Greatest Declination S.	30·015	59·5	37·5	49·9	42·0	96·0	28·1	56·3	54·1	7·9	17·7	0·0	— 2·6	E	E	2·9	0·0	0·1	237	0·00
7	..	30·083	62·4	42·4	51·2	45·0	93·3	34·0	56·1	53·9	6·2	14·8	0·0	— 1·1	NE	NE	0·4	0·0	0·0	198	0·00
8	First Qr.	30·069	60·7	39·2	50·5	44·6	92·0	28·4	55·1	52·9	5·9	15·4	0·0	— 1·6	NE	E : NE	2·5	0·0	0·1	222	0·00
9	..	30·009	57·2	47·8	50·8	42·3	73·0	37·8	54·6	52·4	8·5	12·5	5·5	— 1·1	NNE	N	0·0	0·0	0·0	205	0·00
10	..	30·099	60·8	46·4	50·8	42·8	97·0	41·4	54·2	52·4	8·0	14·6	5·0	— 0·9	N	N	0·4	0·0	0·0	244	0·00
11	..	30·163	58·3	46·9	50·5	42·2	78·2	45·5	54·1	52·4	8·3	12·4	2·3	— 0·9	NNW	NNW	0·5	0·0	0·0	260	0·00
12	..	30·090	59·2	47·7	52·8	43·9	75·0	37·5	53·8	51·7	8·9	14·1	5·0	+ 1·8	NNW	NW	0·0	0·0	0·0	226	0·00
13	In Equator: Perigee.	29·913	56·2	46·0	50·9	41·8	63·2	34·6	53·9	51·4	9·1	13·6	1·9	+ 0·4	W : NW	NW	1·0	0·0	0·1	189	0·00
14	..	29·886	58·2	45·3	50·9	44·5	62·1	34·2	53·9	51·6	6·4	11·6	0·9	+ 0·8	W	N	0·0	0·0	0·0	138	0·00
15	Full	29·961	56·0	37·7	45·6	38·6	84·2	29·7	53·7	50·8	7·0	15·0	0·0	— 4·2	N	SW	0·0	0·0	0·0	166	0·00
16	..	29·666	59·4	44·3	51·7	43·3	79·0	34·2	51·6	49·4	8·4	14·8	0·0	+ 2·1	SW	SW	1·7	0·0	0·2	368	0·00
17	..	29·507	60·8	48·9	53·8	47·8	79·5	40·7	51·1	48·9	6·0	13·1	2·0	+ 4·4	WSW	WSW	3·5	0·0	0·2	294	0·06
18	..	29·513	62·6	48·3	53·7	47·4	87·1	39·1	51·6	49·4	6·3	12·7	2·1	+ 4·5	SW : WSW	SW : SSW	0·0	0·0	0·0	175	0·00
19	Greatest Declination N.	29·059	67·2	45·1	58·1	50·9	86·0	..	52·6	50·4	7·2	14·4	0·0	+ 9·0	SSE	S	4·0	0·0	0·6	447	0·00
20	..	29·227	64·2	46·0	51·7	39·5	87·8	42·6	52·6	49·6	12·2	18·8	5·9	+ 2·6	S : WSW	SW	9·0	0·0	1·9	327	0·02
21	..	29·283	56·2	42·6	50·3	44·0	66·0	37·4	53·6	51·4	6·3	13·0	2·0	+ 1·4	S : SSE	SE	2·3	0·0	0·1	249	0·00
22	Last Qr.	28·948	59·2	47·9	52·4	48·7	79·6	47·3	53·1	50·9	3·7	7·2	1·9	+ 3·8	SSE	SSE : SSW	3·4	0·0	0·3	360	0·50
23	..	28·996	56·2	46·7	49·9	43·7	75·4	42·2	53·1	50·9	6·2	8·2	1·3	+ 1·6	SW	SW	8·0	0·0	1·0	328	0·11
24	..	29·241	60·0	39·4	48·3	42·0	93·3	32·1	52·1	49·9	6·3	16·1	0·0	+ 0·4	SW	SW : S	0·0	0·0	0·0	82	0·00
25	Apogee	29·315	56·4	37·9	48·8	46·5	78·5	31·9	52·6	50·4	2·3	7·2	0·5	+ 1·3	Calm	ENE	0·0	0·0	0·0	200	0·00
26	In Equator	29·139	55·5	48·3	52·4	51·1	58·7	44·4	52·6	50·4	1·3	3·6	0·6	+ 5·0	E	NE	0·0	0·0	0·0	133	0·00
27	.. .	29·160	57·2	51·7	53·3	51·6	62·0	51·3	53·4	51·2	1·7	3·8	0·6	+ 6·1	Calm	WSW : SW	0·0	0·0	0·0	155	0·34
28	..	29·362	60·2	44·0	51·4	46·8	90·4	41·7	53·1	50·9	4·6	11·4	0·0	+ 4·4	S	E : ENE	0·0	0·0	0·0	200	0·00
29	..	29·555	53·7	47·3	50·0	47·2	66·8	45·2	53·0	51·4	2·8	4·8	1·5	+ 3·2	NE	NE	1·5	0·0	0·0	255	0·00
30	New	29·837	48·2	38·9	43·0	40·6	50·0	37·0	51·6	49·4	2·4	4·4	1·8	— 3·6	NNE	NNE	0·0	0·0	0·0	164	0·02
31	..	30·031	49·7	38·7	43·9	37·9	79·9	35·2	50·6	48·4	6·0	10·7	0·7	— 2·6	ENE	E : ESE	2·1	0·0	0·2	250	0·00
																				Sum	Sum
Means	..	29·684	58·2	44·1	50·5	43·7	80·3	37·9	54·0	51·8	6·8	12·4	2·0	— 0·6	..	...	..	..	..	7674	1·06

BAROMETER READINGS FROM EYE-OBSERVATIONS.

The first maximum in the month was 30in.190 on the 3rd; the absolute maximum ,, was 30in.205 on the 11th; the third maximum ,, was 29in.999 on the 15th; the fourth maximum ,, was 29in.398 on the 20th; the fifth maximum ,, was 29in.373 on the 25th; the first minimum in the month was 29in.938 on the 1st; the second minimum ,, was 29in.896 on the 5th; the third minimum ,, was 29in.875 on the 14th; the absolute minimum ,, was 28in.895 on the 19th; the fifth minimum ,, was 28in.905 on the 22nd; the sixth minimum ,, was 29in.087 on the 26th.

The range in the month was 1in.310.

The mean for the month was 29in.684, being 0in.012 *lower* than the average of the preceding 23 years.

TEMPERATURE OF THE AIR.

The highest in the month was 67°.2 on the 19th; the lowest was 37°.5 on the 6th.

The range ,, was 29°.7.

The mean ,, of all the highest daily readings was 58°.2, being 0°.5 *lower* than the average of the preceding 23 years.

The mean ,, of all the lowest daily readings was 44°.1, being *the same as* the average of the preceding 23 years.

The mean daily range was 14°.1, being 0°.5 *less* than the average of the preceding 23 years.

The mean for the month was 50°.5, being *the same as* the average of the preceding 23 years.

MONTH and DAY, 1864.	ELECTRICITY.		CLOUDS AND WEATHER.	
	A.M.	P.M.	A.M.	P.M.
Oct. 1			3, ci, ci.-cu, v	10, ci.-s : 0
2			10, sl.-r : 5, ci.-cu, cu	7, cu, ci.-cu, ci, ci.-s : 7, ci.-cu, ci.-s
3			6, cu, ci.-cu, cu.-s	2, ci, ci.-cu, w : 2, ci.-s, v
4			0, ci,st.-w	3, ci, ci.-cu, w : 9, ci.-cu, ci.-s
5			1, ci, ci.-cu, w	0, w : 0
6			0 : 0	0, w : 10 : 10, ci.-s
7			1, ci	0 : 0
8			2, ci	5, ci, ci.-cu, cu : 10, ci.-s : 10, ci.-s, s
9			10 : 10, ci.-s	10 : 10 : 9, v, lu.-co
10			3, ci, v	10, ci.-s : 10
11			10, v	10 : 10
12			10 : 10	10, ci.-s, ci.-cu : 10, ci.-s
13			10 : 10, ci.-s	10 : 10, v : 10
14			10 : 10, gt.-glm	9, cu.-s, ci.-s, ci, ci.-cu : 10, ci.-s, f
15			0	6, cu, ci.-cu, ci.-s : 10, sl.-f, vv
16			9, ci.-cu, ci.-s	9, ci.-cu, ci.-s : 10, ci.-s, cu.-s, ci, sl.-r
17			10, sl.-r	10 : 10, ci.-s, li.-shs
18			6, ci, ci.-cu, ci.-s	10, ci, ci.-cu, cu.-s : 10
19			2, ci	7, ci, ci.-cu, w : 4, ci, ci.-s, v : 10, w, sl.-r
20			10, r, st.-w : 1, ci, li.-cl, w	4, ci, ci.-cu, cu.-s, st.-w : 0
21			10, ci.-s, ci	10, ci.-s : 10, ci.-s : 10, sl.-r
22			10 : 10 h.-r : 9, r, ci.-s, ci	10, cu.-s, li.-shs : 6, ci, ci.-cu, cu.-s, v : r, ci.-s,s,m
23			10, r : 10, st.-w	10, w : v : 0
24			sl.-f : 2, ci.-s, ci	1, li.-cl, ci : 0, m : 0, f
25			10, ci.-s	10, ci.-s : 10, ci.-s
26			10 : 10	10 : 10, ci.-s : 10, r
27			10, r : 10, m.-r, gt.-glm	10, ci.-s : 10
28			10, f : li.-cl, v	3, ci : 3, ci : 10, ci.-s
29			10 : 10	10 : 10, sl.-r
30			10, ci.-s, th.-r	10, th.-r : 0
31			10 : 10, ci.-s, w	9, ci, ci.-cu, cu.-s: 5, ci, ci.-cu, cu, v : 0

HUMIDITY OF THE AIR.

Temperature of the Dew Point.

The highest in the month was 53°·2 on the 27th; and the lowest was 34°·9 on the 4th.

The mean „ was 43°·7, being 2°·7 *lower* than the average of the preceding 23 years.

Elastic Force of Vapour.—The mean for the month was $0^{in}\cdot285$ being $0^{in}\cdot032$ *less* than the average of the preceding 23 years.

Weight of Vapour in a Cubic Foot of Air.—The mean for the month was $3^{grs}\cdot3$, being $0^{gr}\cdot4$ *less* than the average of the preceding 23 years.

Degree of Humidity.—The mean for the month was 78 (that of Saturation being represented by 100), being 9 *less* than the average of the preceding 23 years.

Weight of a Cubic Foot of Air.—The mean for the month was 539 grains, being *the same as* the average of the preceding 23 years.

CLOUDS.

The mean amount for the month, a clear sky being represented by 0 and a cloudy sky by 10, was 6·8.

OZONE.

The mean amount for the month, on a scale ranging from 0 to 10, was 0·9.

WIND.

The proportions were of N. 7, S. 6, W. 6, E. 9, and Calm 3. The greatest pressure in the month was $9^{lbs}\cdot0$ on the square foot on the 20th.

RAIN.

Fell on 7 days in the month, amounting to $1^{in}\cdot06$, as measured in the simple cylinder gauge partly sunk below the ground; being $1^{in}\cdot73$ *less* than the average fall of the preceding 49 years.

ELECTRICITY.—The Electrical apparatus was not yet restored.

MONTH and DAY, 1864.	Phases of the Moon.	Mean Daily Reading of the Barometer (corrected and reduced to 32° Fahrenheit).	Readings of Thermometers. Dry. Highest.	Dry. Lowest.	Dry. Mean Daily Value.	Dew Point. Mean Daily Value.	Highest in the Sun, as shown by a Self-Registering Thermometer, with blackened bulb in vacuo, placed on the Grass.	Lowest on the Grass, as shown by a Self-Registering Minimum Thermometer.	In the Water of the Thames, at Greenwich, by Self-Registering Thermometers, read at 9h AM. Highest.	In the Water of the Thames, at Greenwich, by Self-Registering Thermometers, read at 9h AM. Lowest.	Difference between the Dew Point Temperature and Air Temperature. Mean Daily Value.	Difference between the Dew Point Temperature and Air Temperature. Greatest.	Difference between the Dew Point Temperature and Air Temperature. Least.	Difference between the Mean Temperature of the Day and the Mean Temperature of the same Day on an Average of 43 Years.	Wind as deduced from Anemometers. Osler's. General Direction. A.M.	Wind as deduced from Anemometers. Osler's. General Direction. P.M.	Pressure in lbs. on the square foot. Greatest.	Pressure in lbs. on the square foot. Least.	Pressure in lbs. on the square foot. Mean of 24 Obs.	Robinson's Amount of Horizontal Movement of the Air on each Day.	Rain in Inches, collected in a Gauge whose receiving surface is 5 inches above the Ground.
		in.	°	°	°	°	°	°	°	°	°	°	°	°			lbs.	lbs.	lbs.	miles.	in.
Nov. 1	..	30·047	49·2	40·9	44·4	36·1	71·0	34·0	..	..	8·3	10·9	5·1	— 2·0	E	E : NE	4·0	0·0	0·5	268	0·00
2	..	29·995	47·6	39·7	43·5	36·1	63·2	38·4	..	..	7·4	10·7	2·5	— 2·7	NNE	NNE : N	1·7	0·0	0·1	197	0·00
3	Greatest Declination S.	30·138	52·8	34·7	42·7	38·1	83·4	..	..	..	4·6	11·8	0·0	— 3·4	N : Calm	NNE : Calm	0·0	0·0	0·0	119	0·00
4	..	30·283	45·5	30·1	37·0	35·1	45·5	23·2	..	..	1·9	4·8	0·0	— 8·9	Calm	SW	0·0	0·0	0·0	170	0·00
5	..	30·199	53·0	33·9	42·5	38·7	77·0	31·5	..	..	3·8	11·8	1·2	— 3·2	WSW	N	1·4	0·0	0·1	239	0·00
6	First Qr.	30·452	49·0	33·5	40·6	32·3	77·6	25·0	..	..	8·3	16·0	0·6	— 4·9	N	NE	2·0	0·0	0·1	160	0·00
7	..	30·243	43·1	30·6	36·3	30·7	70·0	26·2	..	..	5·6	9·5	0·4	— 8·8	NE	Variable	0·0	0·0	0·0	111	0·00
8	..	29·960	44·8	28·9	36·9	34·1	45·0	23·4	..	..	2·8	4·8	0·0	— 7·9	SW	W : N	0·0	0·0	0·0	145	0·00
9	In Equator	29·995	48·4	32·4	39·9	34·1	74·0	30·4	..	..	5·8	11·6	0·6	— 4·6	N	NE : E	0·0	0·0	0·0	129	0·00
10	Perigee	29·878	44·6	25·9	34·9	28·7	75·0	18·0	..	..	6·2	13·2	0·0	— 9·4	Calm	ENE	2·0	0·0	0·1	140	0·00
11	..	29·762	41·2	28·4	35·9	30·9	48·0	19·8	..	..	5·0	7·8	0·0	— 8·1	Calm	Calm	0·0	0·0	0·0	65	0·00
12	..	29·646	42·5	31·6	37·9	34·7	45·6	25·9	..	..	3·2	5·9	0·0	— 6·0	Calm	Calm : SE	0·0	0·0	0·0	125	0·00
13	Full	29·001	50·0	36·2	44·6	43·5	50·0	33·1	..	..	1·1	3·6	0·0	+ 1·1	SSE	SSE	3·0	0·0	0·1	303	0·11
14	..	28·617	53·0	40·7	46·2	40·3	78·8	39·2	..	..	5·9	10·4	0·0	+ 2·9	SW	SW : S	1·6	0·0	0·1	272	0·36
15	Greatest Declination N.	28·673	50·7	35·3	43·7	42·6	69·6	33·7	43·9	41·2	1·1	3·8	0·0	+ 0·7	SE	E : N	0·0	0·0	0·0	175	0·09
16	..	29·210	47·1	40·9	43·7	41·0	49·2	36·2	45·4	43·2	2·7	5·0	0·2	+ 1·1	N : NW	NW : WSW	0·0	0·0	0·0	180	0·00
17	..	29·136	54·3	35·2	45·7	44·4	54·3	31·1	45·5	44·1	1·3	3·8	0·0	+ 3·3	SSE	S : SSW	..	..	..	526	0·28
18	..	29·272	53·7	40·8	47·4	38·7	74·6	31·2	45·1	43·7	8·7	12·2	3·9	+ 5·2	SW	WSW	8·0	0·0	1·7	405	0·03
19	..	29·656	53·9	37·9	46·9	44·0	77·5	29·2	45·1	44·0	2·9	5·6	1·5	+ 4·7	SW	S : SSE	0·0	0·0	0·0	228	0·00
20	..	29·448	52·4	43·0	47·4	44·8	53·3	38·6	45·1	44·7	2·6	5·2	0·0	+ 5·2	SE	SSE	0·0	0·0	0·0	129	0·00
21	Last Qr.	29·693	51·5	35·0	43·5	43·1	68·5	29·2	45·3	44·7	0·4	2·7	0·0	+ 1·5	S	SSW	0·2	0·0	0·0	234	0·05
22	Apogee	29·400	52·5	38·7	44·9	42·1	70·0	29·7	45·7	45·2	2·8	5·7	0·8	+ 3·2	SW	SW	3·7	0·0	0·3	366	0·19
23	In Equator	29·440	46·7	37·3	42·2	39·4	58·7	30·2	45·9	44·7	2·8	5·0	0·6	+ 0·8	SW : S	S : SE : E	0·0	0·0	0·0	268	0·18
24	..	29·097	41·3	35·9	38·3	35·1	56·0	35·9	46·1	44·9	3·2	4·4	0·8	— 2·7	NE : NW	WSW : SSW	1·7	0·0	0·2	238	0·86
25	..	29·106	44·5	31·4	38·5	35·3	68·0	24·6	..	..	3·2	8·1	0·0	— 2·3	SW	SSW : SSE	5·0	0·0	0·4	354	0·04
26	..	28·945	45·5	34·0	39·6	34·7	65·6	31·1	44·9	42·9	4·9	8·6	0·0	— 1·3	WSW	WSW	2·1	0·0	0·1	362	0·11
27	..	29·646	46·6	35·1	42·2	37·3	69·7	29·0	44·8	43·8	4·9	8·1	1·8	+ 1·1	WSW	WSW : SSW	1·8	0·0	0·0	354	0·00
28	..	29·626	54·4	42·7	48·8	46·6	60·3	41·6	..	..	2·2	5·4	1·0	+ 7·3	SSW	SW	7·0	0·0	0·9	409	0·03
29	New Greatest Declination S.	30·204	47·5	35·9	41·3	36·9	72·5	27·7	..	..	4·4	7·8	0·5	— 0·3	SW	SW : SSW	0·0	0·0	0·0	307	0·00
30		30·001	48·4	37·7	43·9	38·5	54·2	34·4	..	..	5·4	8·4	1·3	+ 2·3	SSW	SSW	4·1	0·0	0·9	364	0·24
Means	..	29·626	48·5	35·5	42·0	37·9	64·2	30·4	45·2	43·9	4·1	7·8	0·8	— 1·2	...	...	..	..	..	Sum 7342	Sum 2·37

BAROMETER READINGS FROM EYE-OBSERVATIONS.

The first maximum in the month was 30in·317 on the 4th; the first minimum in the month was 30in·156 on the 5th.
The absolute maximum ,, was 30in·492 on the 6th; the absolute minimum ,, was 28in·610 on the 14th.
The third maximum ,, was 29in·328 on the 16th; the third minimum ,, was 29in·021 on the 17th.
The fourth maximum ,, was 29in·715 on the 19th; the fourth minimum ,, was 29in·429 on the 20th.
The fifth maximum ,, was 29in·715 on the 21st; the fifth minimum ,, was 29in·346 on the 22nd.
The sixth maximum ,, was 29in·530 on the 23rd; the sixth minimum ,, was 29in·069 on the 24th.
The seventh maximum ,, was 29in·267 on the 25th; the seventh minimum ,, was 28in·811 on the 25th.
The eighth maximum ,, was 29in·712 on the 27th; thr eighth minimum ,, was 29in·552 on the 28th.
The ninth maximum ,, was 30in·227 on the 29th; the ninth minimum ,, was 29in·929 on the 30th.
The range in the month was 1in·882.
The mean for the month was 29in·626, being 0in·128 *lower* than the average of the preceding 23 years.

TEMPERATURE OF THE AIR.

The highest in the month was 54°·4 on the 28th; the lowest was 25°·9 on the 10th; and the range in the month was 28°·5.
The mean ,, of all the highest daily readings was 48°·5, being 0°·6 *lower* than the average of the preceding 23 years.
The mean ,, of all the lowest daily readings was 35°·5, being 2°·0 *lower* than the average of the preceding 23 years.
The mean daily range was 13°·0, being 1°·4 *greater* than the average of the preceding 23 years.
The mean for the month was 42°·0, being 2°·1 *lower* than the average of the preceding 23 years.

OSLER'S ANEMOMETER. On the 17th the pressure pencil was out of order; and on the 18th the numbers inserted in the pressure columns refer only to the 15 hours between 9h a.m. and midnight.

MONTH and DAY, 1864.	ELECTRICITY.		CLOUDS AND WEATHER.	
	A.M.	P.M.	A.M.	P.M.
Nov. 1			7, ci.-cu, ci, w	9, ci.-s, cu.-s, w : 10 : 10, ci.-s
2			10, ci.-cu, ci.-s, v	9, ci, ci.-cu, ci.-s : 10
3			f, h.-d : 1, ci	6, ci, ci.-cu, cu, cu.-s, ci.-s, v: o, f
4			o, f, h.-fr, glm	10, h, f : 5, ci, ci.-cu, th.-f : o, f
5			10, sl.-f, m.-r : 10, th.-f	8, ci, ci.-cu, ci.-s, v : o
6			o, h, h.-fr	1, ci, ci.-cu : 1, ci, ci.-s, vv
7			10, ci.-s	9, ci.-s, ci : 10, th.-cl, f
8			10, f, h.-fr.	10, th.-f : sl.-r : o
9			sl.-f, h.-fr. : 3, ci, v, sl.-r	10, ci.-s : 1, ci, m
10			o, th.-f, h.-fr	o, ci : o, h.-fr
11			10, th.-f	10 : 10
12			10, sl.-f	10, ci.-s : 10
13			10, r : 10, ci.-s, sc, th.-r, w	10, sc, m.-r : 10, sc, r
14			10, h.-r : 1, li.-cl	4, ci, ci.-cu : 10, sl.-r : 5, ci.-s, v
15			4, ci, ci.-s, th.-f	10, ci.-s : 10, r : 10, sl.-r, sc
16			10, sc, gt.-glm	10, ci.-s, sl.-r : 10 : 10, ci.-s
17			10, h.-r	10, th.-r : 10, h.-shs : 5, ci.-cu, ci.-s, cu.-s, v
18			10, r, st.-w : 5, ci, ci.-s, st.-w	8, ci, ci.-cu, ci.-s, cu.-s, sl.-r: o
19			o : 2, ci, ci.-s : 6, v	10, ci, ci.-s : 10 : 5, li.-cl, h
20			10, ci-s	10, th.-r : 10
21			5, li.-cl, th.-f	7, ci, ci.-s, sl.-f : 3, ci, v : 10, r
22			10, oc.-h.-shs	9, ci.-s, ci, sl.-r : o, m
23			9, ci.-cu, ci.-s	10, ci, ci.-s : 10, h.-r
24			10, c.-h.-r : 10, ci.-s	10, ci.-s : 10, ci.-s : o, h, l
25			o, h, ci, h.-fr	o : 10, w, r
26			10, r : 3, ci, ci.-s	6, ci, ci.-s, sl.-r : v : 2
27			o, ci	2, ci : 10, s, ci.-s : 10, f
28			10, sc, sl.-r	10, th.-r : v, w : o
29			o : o	4, ci, ci.-s : o : o
30			10, s, ci.-s	9, ci, ci.-cu, ci.-s : 10, h-r

HUMIDITY OF THE AIR.

Temperature of the Dew Point.

The highest in the month was 51°·8 on the 28th; and the lowest was 27°·1 on the 10th.

The mean ,, was 37°·9, being 2°·1 *lower* than the average of the preceding 23 years.

Elastic Force of Vapour.—The mean for the month was $0^{in}\cdot228$ being $0^{in}\cdot025$ *less* than the average of the preceding 23 years.

Weight of Vapour in a Cubic Foot of Air.—The mean for the month was $2^{grs}\cdot6$, being $0^{gr}\cdot2$ *less* than the average of the preceding 23 years.

Degree of Humidity.—The mean for the month was 86 (that of Saturation being represented by 100), being 3 *less* than the average of the preceding 23 years.

Weight of a Cubic Foot of Air.—The mean for the month was 547 grains, being 1 grain *less* than the average of the preceding 23 years.

CLOUDS.

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

OZONE.

The mean amount for the month, on a scale ranging from 0 to 10, was 0·6.

WIND.

The proportions were of N. 5, S. 11, W. 7, E. 4, and Calm 3. The greatest recorded pressure in the month was $8^{lbs}\cdot0$ on the square foot on the 18th.

RAIN.

Fell on 13 days in the month, amounting to $2^{in}\cdot57$, as measured in the simple cylinder gauge partly sunk below the ground; being $0^{in}\cdot14$ *greater* than the average fall of the preceding 49 years.

ELECTRICITY.—The electrical apparatus was not yet restored.

MONTH and DAY, 1864.	Phases of the Moon.	Mean Daily Reading of the Barometer (corrected and reduced to 32° Fahrenheit).	Readings of Thermometers. Dry. Highest.	Dry. Lowest.	Dry. Mean Daily Value.	Dew Point. Mean Daily Value.	Highest in the Sun, as shown by a Self-Registering Thermometer, with blackened bulb in vacuo, placed on the Grass.	Lowest on the Grass, as shown by a Self-Registering Minimum Thermometer.	In the Water of the Thames, at Greenwich, by Self-Registering Thermometers, read at 9h A.M. Highest.	In the Water of the Thames, at Greenwich, by Self-Registering Thermometers, read at 9h A.M. Lowest.	Difference between the Dew Point Temperature and Air Temperature. Mean Daily Value.	Greatest.	Least.	Difference between the Mean Temperature of the Day and the Mean Temperature of the same Day on an Average of 43 Years.	Wind as deduced from Anemometers. Osler's. General Direction. A.M.	P.M.	Pressure in lbs. on the square foot. Greatest.	Least.	Mean of 24 Obs.	Robinson's Amount of Horizontal Movement of the Air on each Day.	Rain in Inches, collected in a Gauge whose receiving surface is 5 inches above the Ground.
		in.	°	°	°	°	°	°	°	°	°	°	°	°			lbs.	lbs.	lbs.	miles.	in.
Dec. 1	..	30·018	47·6	35·9	41·9	38·8	78·8	29·3	44·6	43·4	3·1	5·9	0·0	+ 0·2	SW	SW	0·0	0·0	0·0	163	0·00
2	..	30·232	45·5	30·9	38·6	35·2	63·8	26·2	..	..	3·4	6·1	0·0	— 3·2	SW	SW : S	0·0	0·0	0·0	235	0·00
3	..	30·196	49·7	42·0	46·9	44·4	54·2	30·0	44·9	43·7	2·5	4·4	1·8	+ 5·2	SSW	SW	0·8	0·0	0·0	374	0·01
4	..	30·121	48·4	43·0	46·1	42·4	51·2	43·0	44·6	43·1	3·7	5·0	1·1	+ 4·6	SW	SW	0·8	0·0	0·0	355	0·00
5	..	29·894	53·7	43·2	48·3	38·2	79·7	40·2	44·4	43·9	10·1	13·8	3·1	+ 6·9	SW	SW	1·5	0·0	0·1	309	0·00
6	First Quarter: In Equator: Perigee.	29·845	51·4	40·7	46·5	45·8	59·2	33·9	44·9	43·2	0·7	4·0	0·0	+ 5·4	SSW	SW	0·0	0·0	0·0	177	0·00
7	..	29·714	49·2	39·8	45·8	44·6	50·7	38·6	43·7	43·4	1·2	4·8	0·0	+ 5·1	SW : S	SSW	0·9	0·0	0·0	326	0·00
8	..	29·505	47·7	40·2	43·8	41·8	51·5	36·0	..	..	2·0	3·3	1·1	+ 3·2	S	SW : S	1·5	0·0	0·1	207	0·14
9	..	29·676	49·6	35·9	43·1	41·1	72·0	28·9	..	..	2·0	5·3	0·0	+ 2·6	SSW	SSW : SSE	0·0	0·0	0·0	152	0·00
10	..	29·689	46·3	35·9	40·4	38·4	50·0	30·0	43·8	43·2	2·0	7·1	0·0	0·0	SE	SE	0·0	0·0	0·0	149	0·00
11	..	29·536	50·5	35·2	45·7	43·8	74·0	27·6	44·2	40·0	1·9	6·9	0·0	+ 5·5	S	S	4·0	0·0	0·3	336	0·01
12	..	29·365	49·2	37·0	43·8	41·1	52·5	32·0	43·9	41·7	2·7	6·3	0·0	+ 3·8	SE	SSE : SW	2·8	0·0	0·2	201	0·01
13	Greatest Dec. N. : Full	29·405	46·0	35·8	41·8	41·1	67·0	28·7	42·9	41·2	0·7	1·9	0·0	+ 2·2	SE	E : SE	0·0	0·0	0·0	141	0·00
14	..	29·622	41·3	37·2	39·0	36·2	47·0	30·0	41·9	39·7	2·8	4·1	1·7	— 0·7	ENE	NE	0·0	0·0	0·0	233	0·01
15	..	29·576	36·0	33·2	33·9	27·9	36·0	33·0	40·8	39·7	6·0	6·3	3·3	— 6·1	NE	NE	0·0	0·0	0·0	240	0·00
16	..	29·660	35·6	30·5	32·5	27·6	36·0	25·7	40·4	39·8	4·9	5·9	3·7	— 7·8	NE	ENE	0·9	0·0	0·0	269	0·00
17	..	29·659	30·5	19·2	24·4	18·5	34·4	16·1	40·9	39·7	5·9	10·1	4·1	—15·7	Variable	NE : SE	0·0	0·0	0·0	124	0·01
18	..	29·676	35·8	17·3	29·5	27·7	35·9	14·8	39·2	39·2	1·8	3·2	0·0	—10·4	E : ESE	SE	0·0	0·0	0·0	136	0·12
19	..	29·773	41·6	25·3	34·7	33·0	61·0	22·7	39·9	38·7	1·7	4·8	0·0	— 4·8	SE	S : SSE	0·0	0·0	0·0	202	0·00
20	Apogee : In Equator.	29·708	46·7	35·3	42·0	40·9	61·0	33·8	42·9	38·4	1·1	4·6	0·0	+ 3·0	SE	SE	0·0	0·0	0·0	98	0·06
21	Last Qr.	29·819	41·5	36·5	38·9	33·6	47·0	34·2	42·9	38·4	5·3	7·4	0·0	+ 0·5	Variable	NW : N	1·6	0·0	0·1	356	0·04
22	..	30·054	37·3	32·7	34·3	27·7	38·7	32·0	43·4	38·4	6·6	8·4	3·1	— 3·6	NE	NE : E	3·0	0·0	1·0	352	0·00
23	..	30·276	33·6	30·0	31·3	21·8	33·6	29·2	43·1	37·7	9·5	14·1	4·6	— 6·1	E	ENE	4·2	0·0	1·1	320	0·00
24	..	30·393	32·5	27·1	30·7	22·9	34·8	24·1	43·6	37·0	7·8	9·4	7·3	— 6·3	NE : E	NE	2·0	0·0	0·1	257	0·00
25	..	30·268	34·5	31·7	33·4	26·2	36·2	31·2	44·9	36·9	7·2	7·6	4·8	— 3·1	E	ENE	0·0	0·0	0·0	282	0·00
26	..	30·130	35·1	31·8	33·1	26·5	38·2	30·6	43·4	36·5	6·6	8·1	5·1	— 3·3	E	ENE : NNE	0·0	0·0	0·0	53	0·00
27	Greatest Declination S.	30·144	35·4	27·8	31·7	25·5	39·5	21·6	43·5	35·0	6·2	8·3	4·9	— 4·8	N	N : SW	0·0	0·0	0·0	142	0·00
28	New	30·178	41·4	30·9	37·4	33·8	51·5	29·7	43·8	35·7	3·6	6·0	1·6	+ 0·4	SW	SW	0·0	0·0	0·0	156	0·00
29	..	30·164	43·5	39·8	41·7	36·6	52·3	38·0	43·9	35·9	5·1	6·8	2·8	+ 4·4	SW	SW	0·0	0·0	0·0	156	0·00
30	..	29·780	41·6	34·6	38·0	32·8	55·0	28·1	43·7	35·8	5·2	6·2	2·2	+ 0·6	SW	SW	0·0	0·0	0·0	181	0·00
31	..	29·666	38·0	29·7	33·7	30·5	42·0	19·3	43·6	36·9	3·2	6·0	1·2	— 3·3	N : NE	NE	0·0	0·0	0·0	106	0·09
																				Sum	Sum
Means	..	29·863	42·5	33·7	38·5	34·4	51·1	29·6	43·1	39·5	4·1	6·5	1·9	— 0·8	...	...	..	..	..	6788	0·50

BAROMETER READINGS FROM EYE-OBSERVATIONS.

The first maximum in the month	was 30in·242 on the 2nd;	the first minimum in the month	was 29in·471 on the 8th.
The second maximum	,, was 29in·735 on the 9th;	the absolute minimum	,, was 29in·333 on the 12th.
The third maximum	,, was 29in·674 on the 14th;	the third minimum	,, was 29in·544 on the 15th.
The fourth maximum	,, was 29in·722 on the 16th;	the fourth minimum	,, was 29in·643 on the 17th.
The fifth maximum	,, was 29in·789 on the 19th;	the fifth minimum	,, was 29in·661 on the 20th.
The absolute maximum	,, was 30in·418 on the 24th;	the sixth minimum	,, was 30in·120 on the 26th.
The seventh maximum	,, was 30in·234 on the 29th;	the seventh minimum	,, was 29in·623 on the 31st.

The range in the month was 1in·085.
The mean for the month was 29in·863, being 0in·042 *higher* than the average of the preceding 23 years.

TEMPERATURE OF THE AIR.

The highest in the month was 53°·7 on the 5th; the lowest was 17°·3 on the 18th.
The range ,, was 36°·4.
The mean ,, of all the highest daily readings was 42°·5, being 2°·8 *lower* than the average of the preceding 23 years.
The mean ,, of all the lowest daily readings was 33°·7, being 2°·0 *lower* than the average of the preceding 23 years.
The mean daily range was 8°·8, being 0°·8 *less* than the average of the preceding 23 years.
The mean for the month was 38°·5, being 1°·9 *lower* than the average of the preceding 23 years.

MONTH and DAY, 1864.	ELECTRICITY. A.M.	ELECTRICITY. P.M.	CLOUDS AND WEATHER. A.M.	CLOUDS AND WEATHER. P.M.
Dec. 1			4, ci, ci.-s	2, ci : 0 : 0, sl.-f
2			2, ci, h, h.-fr, th.-f	2, ci : 0 : 10
3			10, sl.-r : 10, ci.-s, s.	10, ci.-s : 8, ci, ci.-s : 10
4			10 : 10	10 : 10, ci.-s, ci
5			3, ci, ci.-s	2, ci : 0 : 0
6			9, ci, ci.-s, sl.-f	10, ci.-s : 5, ci, ci.-s, v : 0, f
7			10	10 : 10, v
8			10, r	9, ci, ci.-s, v : 7, th.-cl, th.-r
9			2, ci, f	0, ci : 5, v, m : 10
10			0	3, ci, ci.-cu : 0 : 0, f
11			10, sl.-r : 7, v v	7, li.-cl, v : 0, ci.-s, w : 10, ci.-s, cu.-s, ci.-cu
12			9, ci, ci.-s	10, sl.-r : 0
13			9, ci, ci.-s, s, f	10, ci.-s : 10, ci.-s
14			10 : 10, sl.-r	10 : 10
15			10 : 10, ci.-s	10, ci.-s : 10
16			10 : 10	10 : 0 : 10
17			10 : 10, sn	9, v, oc.-sn : 0
18			10, sn	10, sn, th.-r : 10
19			10 : 10, v	2, ci, ci.-s, v : 10 : 0, h
20	0	0 : w	10, r : 10, ci.-s	6, ci, ci.-cu, cu, v: 10 : 10, sl.-f
21	0	0	10, glm, r	8, ci, ci.-cu, ci.-s : 10, ci.-s : 10
22	0	0	10 : 10	10, sl : 10, w
23	0	0	10 : 10, w	10, w : 10
24	0	0	10 : 10	10, li.-cl : 10, ci,-s
25	w	w	10 : 10	10, sl : 10
26	w	w : 0	10 : 10, ci.-s	10, ci.-s : 10, ci.-s
27	w	w : 0	7, ci, ci.-s	10, th.-cl, f : 10, sl.-f
28	0	w	8, ci, h.-fr	6, ci, ci.-cu, ci.-s, h, v: 10, sl.-f
29	w	w : 0	10 : 10	10 : 10
30	0	w : 0	10 : 10, ci.-s	10, ci.-s : v : 10
31	w	w : 0	9, li.-cl, h.-fr	10, th.-r : 10, fr.-r : 10, sn

HUMIDITY OF THE AIR.

Temperature of the Dew Point.

The highest in the month was 47°·7 on the 6th; and the lowest was 15°·2 on the 17th.

The mean ,, was 34°·4, being 2°·7 *lower* than the average of the preceding 23 years.

Elastic Force of Vapour.—The mean for the month was $0^{in}\cdot199$, being $0^{in}\cdot024$ *less* than the average of the preceding 23 years.

Weight of Vapour in a Cubic Foot of Air.—The mean for the month was $2^{gr}\cdot3$, being $0^{gr}\cdot3$ *less* than the average of the preceding 23 years.

Degree of Humidity.—The mean for the month was 86 (that of Saturation being represented by 100) being 2 *less* than the average of the preceding 23 years.

Weight of a Cubic Foot of Air.—The mean for the month was 556 grains, being 4 grains *greater* than the average of the preceding 23 years.

CLOUDS.

The mean amount for the month, a clear sky being represented by 0 and a cloudy sky by 10, was 7·9.

OZONE.

The mean amount for the month, on a scale ranging from 0 to 10, was 1·0.

WIND.

The proportions were, N. 5, S. 12, W. 5, E. 9, and Calm 0. The greatest pressure in the month was $4^{lbs}\cdot2$ on the square foot on the 23rd.

RAIN.

Fell on 10 days in the month, amounting to $0^{in}\cdot50$, as measured in the simple cylinder gauge partly sunk below the ground; being $1^{in}\cdot42$ *less* than the average fall of the preceding 49 years.

ELECTRICITY.—The Electrical apparatus was furnished with a new insulating glass and was finally repaired on December 19.

MAXIMA AND MINIMA READINGS OF THE BAROMETER.

The following table contains the highest and lowest readings of the Barometer, reduced to 32° Fahrenheit, extracted from the photographic records, except during the period from May 13 to June 26, when there were no photographic records. The readings are accurate; but the times are liable to great uncertainty, as the surface of the quicksilver frequently remains at its highest or lowest point through several hours. The time given is the middle of the stationary period. Where the symbol : follows the time, it denotes that the quicksilver has been sensibly stationary through a period of more than one hour.

MAXIMA.		MINIMA.		MAXIMA.		MINIMA.	
Approximate Mean Solar Time, 1864.	Reading.	Approximate Mean Solar Time, 1864.	Reading.	Approximate Mean Solar Time, 1864.	Reading.	Approximate Mean Solar Time, 1864.	Reading.
d h m	in.	d h m	in.	d h m	in.	d h m	in.
January 3. 10. 30:	30·483	January 8. 21. 0	29·771	May 17. 21. 0	30·106	May 20. 9. 0	29·806
12. 22. 30:	30·203	14. 18. 15:	30·111	21. 9. 0	29·905	22. 21. 0	29·803
15. 9. 25:	30·176	17. 3. 30:	29·796	24. 0. 0	30·118	25. 9. 0	29·773
19. 22. 40:	30·145	22. 18. 35:	29·553	26. 21. 0	29·927	28. 22. 15	29·725
25. 0. 0	30·303	28. 2. 15	29·738	29. 8. 30	29·868	31. 9. 0	29·573
29. 21. 0	30·354	February 3. 4. 30:	29·849	June 6. 3. 0	29·855	June 9. 3. 0	29·601
February 4. 20. 30:	30·096	10. 2. 0	29·275	10. 9. 0	29·770	14. 9. 0	29·353
11. 7. 30:	29·680	12. 1. 30	29·173	16. 21. 0	29·973	17. 21. 0	29·851
13. 22. 0	30·198	16. 2. 30	29·577	19. 9. 0	30·130	23. 3. 0	29·779
18. 21. 40	30·211	21. 6. 0:	29·500	24. 0. 0	30·046	26. 1. 0	29·751
24. 21. 45	29·836	29. 2. 0	29·460	27. 15. 0:	30·007	July 2. 16. 30:	29·458
March 1. 11. 0:	29·733	March 6. 22. 20	28·786	July 6. 10. 15:	30·020	9. 9. 25	29·885
7. 11. 45:	29·077	7. 21. 35	28·865	11. 21. 20	29·975	12. 22. 35	29·850
8. 11. 0:	29·101	8. 21. 30	28·914	15. 21. 45	30·007	21. 9. 0	29·705
10. 0. 0	29·559	11. 3. 0	29·380	22. 22. 30:	29·863	25. 9. 30	29·520
12. 21. 20:	30·109	15. 3. 30:	29·666	26. 20. 10:	29·824	27. 21. 35	29·672
16. 12. 0:	30·045	19. 23. 45	29·464	30. 22. 20:	30·056	August 0. 13. 10:	29·840
23. 13. 30:	29·878	28. 13. 0:	28·935	August 0. 21. 35	29·926	1. 5. 15:	29·866
30. 18. 45	29·670	April 1. 3. 0	29·500	2. 14. 25	29·993	4. 4. 55:	29·884
April 2. 15. 30:	29·846	3. 18. 50	29·688	4. 21. 20	30·012	7. 16. 20	29·640
5. 11. 15:	30·150	6. 3. 25	30·055	8 13. 30:	29·783	9. 4. 15:	29·625
7. 21. 0	30·241	15. 2. 40	29·525	13. 21. 10	30·307	19. 6. 5:	29·504
17. 21. 45	29·951	19. 5. 20	29·785	21. 20. 25:	29·838	22. 22. 40:	29·555
23. 22. 30	30·105	29. 9. 0	29·908	26. 21. 0	30·206	31. 0. 0	29·634
May 0. 22. 30	30·046	May 2. 20. 15	29·530	September 0. 21. 0	29·942	September 3. 3. 50:	29·523
3. 11. 0:	29·790	4. 0. 30	29·675	4. 8. 10	29·778	4. 15. 20:	29·656
5. 13. 45:	29·856	8. 20. 45	29·428	5. 14. 0:	29·945	6. 6. 0:	29·758
10. 15. 0:	29·766	11. 21. 0	29·638	8. 9. 30:	29·870	9. 4. 15:	29·727

MAXIMA AND MINIMA READINGS OF THE BAROMETER—*concluded.*

MAXIMA.		MINIMA.		MAXIMA.		MINIMA.	
Approximate Mean Solar Time, 1864.	Reading.	Approximate Mean Solar Time, 1864.	Reading.	Approximate Mean Solar Time, 1864.	Reading.	Approximate Mean Solar Time, 1864.	Reading.
d h m	in.	d h m	in.	d h m	in.	d h m	in.
September 9. 19. 50:	29·890	September 10. 17. 20:	29·620	November 18. 21. 0	29·715	November 20. 2. 0:	29·425
12. 10. 15:	29·896	14. 6. 20:	29·389	21. 0. 40	29·718	22. 2. 10	29·335
14. 21. 0:	29·501	16. 6. 0:	29·200	22. 18. 0:	29·534	23. 18. 55:	29·040
19. 22. 20:	29·769	20. 16. 30	29·560	24. 21. 55:	29·267	25. 14. 20:	28·720
25. 21. 20	30·242	October 1. 4. 25:	29·935	27. 8. 30:	29·712	28. 0. 50	29·550
October 2. 22. 45	30·190	5. 3. 55:	29·896	29. 7. 50:	30·227	30. 7. 40:	29·880
10. 21. 25:	30·205	14. 3. 0	29·875	December 2. 9. 40:	30·247	December 7. 23. 30	29·470
14. 23. 0:	29·999	19. 15. 0	28·784	9. 11. 5:	29·735	12. 2. 0	29·324
20. 14. 0:	29·398	22. 19. 0:	28·901	14. 9. 40:	29·674	15. 14. 45:	29·527
24. 21. 55:	29·375	26. 17. 30:	29·050	16. 11. 55:	29·735	17. 3. 6:	29·643
November 3. 22. 40:	30·317	November 4. 19. 0:	30·154	19. 6. 45	29·798	19. 19. 0:	29·644
6. 7. 15	30·496	14. 2. 20	28·606	23. 22. 25:	30·418	26. 4. 40:	30·118
16. 13. 40:	29·340	17. (12. 0)	28·950	28. 21. 50:	30·236	31. 11. 25:	29·616

ABSOLUTE MAXIMA AND MINIMA READINGS OF THE BAROMETER, for each Month in the Year 1864.
[Extracted from the preceding Table.]

1864, MONTH.	Readings of the Barometer.		Range of Reading in each Month.
	Maxima.	Minima.	
	in.	in.	in.
January	30·483	29·553	0·930
February	30·211	29·173	1·038
March	30·109	28·786	1·323
April	30·241	29·500	0·741
May	30·118	29·428	0·690
June	30·130	29·353	0·777
July	30·056	29·458	0·598
August	30·307	29·504	0·803
September	30·242	29·200	1·042
October	30·205	28·784	1·421
November	30·496	28·606	1·890
December	30·418	29·324	1·094

The highest reading in the year was 30in·496 in the month of November.
The lowest reading in the year was 28in·606 in the month of November.
The range of reading in the year was 1in·890.

MONTHLY MEANS of RESULTS for METEOROLOGICAL ELEMENTS at the ROYAL OBSERVATORY, GREENWICH, in the Year 1864.

1864, Month.	Mean Reading of the Barometer.	Temperature of the Air.							Mean Temperature of Dew Point.	Mean Elastic Force of Vapour.	Mean Weight of Vapour in a Cubic Foot of Air.	Mean additional Weight required to saturate a Cubic Foot of Air.
		Highest.	Lowest.	Range in the Month.	Mean of all the Highest.	Mean of all the Lowest.	Mean Daily Range.	Mean Temperature.				
	in.	°	°	°	°	°	°	°	°	in.	gr.	gr.
January ..	30·044	54·0	14·3	39·7	41·4	31·7	9·7	36·5	31·3	0·176	2·0	0·5
February..	29·760	53·8	20·1	33·7	41·5	31·2	10·3	36·0	31·3	0·176	2·0	0·5
March	29·503	58·0	26·9	31·1	49·8	34·3	15·5	41·3	36·2	0·215	2·5	0·6
April	29·915	73·8	33·4	40·4	58·3	40·0	18·3	48·2	40·0	0·248	2·9	1·0
May	29·837	81·0	33·4	47·6	64·8	44·9	19·9	53·8	45·6	0·306	3·5	1·1
June	29·792	78·4	42·3	36·1	69·5	49·1	20·4	57·4	48·7	0·344	3·9	1·4
July	29·856	85·6	45·8	39·8	75·3	51·2	24·1	61·8	51·6	0·382	4·2	1·9
August ...	29·918	88·6	38·1	50·5	72·8	48·5	24·3	59·6	47·8	0·333	3·7	2·0
September.	29·777	75·5	40·9	34·6	67·3	49·1	18·2	56·9	49·7	0·357	4·0	1·2
October ...	29·684	67·2	37·5	29·7	58·2	44·1	14·1	50·5	43·7	0·285	3·3	0·8
November .	29·626	54·4	25·9	28·5	48·5	35·5	13·0	42·0	37·9	0·228	2·6	0·5
December .	29·863	53·7	17·3	36·4	42·5	33·7	8·8	38·5	34·4	0·199	2·3	0·5
Means	29·798	68·7	31·3	37·3	57·5	41·1	16·4	48·5	41·5	0·271	3·1	1·0

1864, Month.	Mean Degree of Humidity. (Sat. = 100.)	Mean Weight of a Cubic Foot of Air.	Mean Amount of Cloud. 0–10	Rain.			Wind.										
				Number of Rainy Days.	Amount collected on the Ground.		From Osler's Anemometer.									From Robinson's Anemometer.	
					Gauge read daily.	Gauge read Monthly.	Number of Days for Mean Direction of the Wind referred to different Points of Azimuth.								Number of Calm Days and Days on which the Pressure of the Wind was less than ¼ lb. on the Sq. Foot.	Mean Daily Pressure in lbs. on Square Foot.	Mean Daily Horizontal Movement of Wind in Miles.
							N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.			
		gr.			in.	in.											
January.....	82	561	6·8	11	0·88	0·93	2	4	4	9	2	9	1	0	0	0·43	214
February.....	83	557	7·8	12	0·76	0·84	8	7	2	1	1	8	1	1	0	0·43	256
March	83	546	6·9	15	2·53	2·72	3	5	5	2	1	8	3	2	2	0·47	281
April.....	74	547	5·6	4	0·82	0·70	3	3	4	2	2	5	1	1	9	0·06	192
May.....	73	538	6·3	10	2·00	1·94	8	3	4	2	3	4	2	2	3	0·05	190
June.....	72	533	7·0	10	0·92	0·88	2	1	1	0	3	13	7	2	1	0·04	246
July.....	70	529	6·4	3	0·27	0·30	4	4	2	1	0	12	3	2	3	0·08	218
August	65	533	5·3	5	1·31	1·40	5	1	1	0	1	7	5	3	8	0·03	195
September.....	77	533	6·2	16	2·76	2·80	1	0	1	1	3	16	5	1	2	0·06	233
October.....	78	539	6·8	7	1·06	1·13	3	6	5	2	2	6	2	2	3	0·23	248
November.....	86	547	6·5	13	2·57	2·65	3	3	1	3	4	12	1	0	3	0·15	245
December	86	556	7·9	10	0·50	0·60	2	6	4	4	6	8	1	0	0	0·06	219
Means	77	543	6·6	Sum 116	Sum 16·38	Sum 16·89	Sum 44	Sum 43	Sum 34	Sum 27	Sum 28	Sum 108	Sum 32	Sum 16	Sum 34	..	..

ROYAL OBSERVATORY, GREENWICH.

OBSERVATIONS

WITH THE

ACTINOMETER.

1864.

OBSERVATIONS WITH THE ACTINOMETER.

Day, 1864.	Greenwich Mean Solar Time of the Initial Reading.	Instrument exposed to the Sun's Rays, or in the Shade.	Readings of the Graduated Scale. Initial A.	Terminal B.	Change in One Minute, B–A.	Apparent effect of the Sun's Radiation in parts of the Scale.	Mean Result of each Group in parts of the Scale.	Greenwich Mean Solar Time corresponding to the Mean of each Group.	Altitude of the Sun.	Thermometer in the fluid of the Actinometer.	Blackened Bulb Thermometer on Grass.	General Remarks.	Observer.
	h m s		div.	div.	div.	div.	div.	h m s	°	°	°		
Jan. 6	1. 44. 0	Sun	17·8	23·1	5·3					..	..	Cloudless.	N
	45. 30	Shade	24·6	25·1	0·5	5·3				..	..	,,	,,
	47. 0	Sun	27·6	33·8	6·2	5·9	5·4	1. 46. 45	12	..	..	,,	,,
	48. 30	Shade	34·2	34·4	0·2	5·1				..	..	,,	,,
	50. 0	Sun	34·6	39·0	4·4	4·2				..	..	,,	,,
	51. 30	Shade	39·7	40·0	0·3	4·0				..	..	,,	,,
	53. 0	Sun	40·0	44·3	4·3	4·1				..	..	,,	,,
	54. 30	Shade	44·7	44·8	0·1	4·7				..	..	,,	,,
	56. 0	Sun	44·8	50·0	5·2	5·4				..	..	,,	,,
	57. 30	Shade	50·2	49·8	−0·4	4·7	4·4	1. 58. 0	11	..	..	,,	,,
	1. 59. 0	Sun	49·5	53·0	3·5	4·0				..	..	,,	,,
	2. 0. 30	Shade	53·1	52·5	−0·6	4·1				..	..	,,	,,
	2. 0	Sun	52·0	55·6	3·6	4·4				..	..	,,	,,
	3. 30	Shade	55·8	54·9	−0·9	4·3				..	..	,,	,,
	5. 0	Sun	54·6	57·9	3·3	4·0				..	..	,,	,,
	6. 30	Shade	58·0	57·5	−0·5	3·6				..	..	,,	,,
	8. 0	Sun	57·0	59·9	2·9	3·6	3·5	2. 8. 30	10	..	..	,,	,,
	9. 30	Shade	60·1	59·3	−0·8	3·2				..	..	,,	,,
	11. 0	Sun	59·0	60·8	1·8	2·5				..	..	,,	,,
	12. 30	Shade	60·6	60·0	−0·6	2·4				..	..	,,	,,
	14. 0	Sun	59·5	61·3	1·8	2·4	2·4	2. 15. 15	10	..	..	,,	,,
	15. 30	Shade	61·3	60·8	−0·5	2·3				..	..	,,	,,
	17. 0	Sun	60·2	62·0	1·8	2·5				..	..	,,	,,
	2. 18. 30	Shade	62·0	61·2	−0·8					..	..	,,	N
Jan. 11	2. 15. 0	Sun	11·6	17·9	6·3					..	..	Clear.	N
	16. 30	Shade	17·8	15·8	−2·0	8·0				..	..	,,	,,
	18. 0	Sun	14·7	20·5	5·8	7·8				..	..	,,	,,
	19. 30	Shade	20·4	18·5	−1·9	7·9				..	..	,,	,,
	21. 0	Sun	17·6	23·8	6·2	8·1				..	..	,,	,,
	22. 30	Shade	23·5	21·5	−2·0	7·8				..	..	,,	,,
	24. 0	Sun	20·5	25·9	5·4	7·4	7·7	2. 23. 45	9	..	..	,,	,,
	25. 30	Shade	25·2	23·2	−2·0	7·6				..	..	,,	,,
	27. 0	Sun	22·0	27·7	5·7	7·8				..	..	,,	,,
	28. 30	Shade	27·7	25·6	−2·1	7·6				..	..	,,	,,
	1. 30. 0	Sun	23·8	29·0	5·2	7·1				..	..	,,	,,
	2. 31. 30	Shade	28·9	27 2	−1·7					..	..	,,	N
Jan. 11	2. 55. 0	Sun	9·2	13·0	3·8					..	..	Clear.	N
	56. 30	Shade	12·6	10·2	−2·4	5·9				..	..	,,	,,
	58. 0	Sun	8·9	12·0	3·1	5·6	5·8	2. 58. 30	7	..	..	,,	,,
	2. 59. 30	Shade	12·4	9·8	−2·6	5·9				..	..	,,	,,
	3, 1. 0	Sun	8·0	11·5	3·5					..	..	,,	N
Jan. 25	23. 55. 0	Sun	40·7	53·6	12·9					..	..	Clear.	N
	56. 30	Shade	56·2	58·5	2·3	11·2				..	..	,,	,,
	58. 0	Sun	59·5	73·5	14·0	11·8	11·7	23. 58. 30	19	..	..	,,	,,
	23. 59. 30	Shade	76·0	78·0	2·0	12·0				..	..	,,	,,
26	0. 1. 0	Sun	79·2	93·3	14 1					..	..	,,	N
Jan. 26	0. 21. 0	Sun	6·0	19·8	13·8					..	..	Clear.	N
	22. 30	Shade	22·0	23·7	1·7	12·6				..	..	,,	,,
	24. 0	Sun	24·1	38·8	14·7	13·0				..	..	,,	,,
	25. 30	Shade	41·0	42·6	1·6	12·2				..	..	,,	,,
	27. 0	Sun	43·2	56·1	12·9	11·6	12·8	0. 27. 30	19	..	..	,,	,,
	28. 30	Shade	58·5	59·5	1·0	12·8				..	..	,,	,,
	30. 0	Sun	59·7	74·3	14·6	13·7				..	..	,,	,,
	31. 30	Shade	76·5	77·3	0·8	14·0				..	..	,,	,,
	0. 33. 0	Sun	77·7	92·8	15·1					..	..	,,	N

In every observation, whether in the Sun's rays or in the shade, the terminal reading was taken exactly one minute after the initial reading.
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	h m s		div.	div.	div.	div.	div.	h m s	°	°	°		
Jan. 26	1. 22. 0	Sun	8·0	18·2	10·2					..	..	Light clouds over the Sun.	N
	23. 30	Shade	19·6	19·5	−0·1	10·6				..	..	,,	,,
	25. 0	Sun	19·3	30·0	10·7	10·7	10·6			..	..	,,	,,
	26. 30	Shade	31·0	31·0	0·0	10·5		1. 25. 30	16	..	..	,,	,,
	1. 28. 0	Sun	30·6	40·9	10·3					..	..	,,	N
Jan. 28	1. 43. 0	Sun	19·8	21·2	1·4					..	..	Sun obscured by dense cirro-stratus clouds throughout this set of Observations.	N
	44. 30	Shade	21·7	22·0	0·3	1·1				..	..	,,	,,
	46. 0	Sun	22·0	23·3	1·3	1·0				..	..	,,	,,
	47. 30	Shade	23·7	24·0	0·3	1·1	1·1	1. 48. 0	14	..	..	,,	,,
	49. 0	Sun	24·0	25·5	1·5	1·2				..	..	,,	,,
	50. 30	Shade	25·8	26·0	0·2	1·1				..	..	,,	,,
	1. 52. 0	Sun	26·0	27·1	1·1					..	..	,,	N
Jan. 28	22. 56. 0	Sun	2·0	14·8	12·8					..	..	Sun free from cloud.	N
	57. 30	Shade	17·2	19·4	2·2	7·7				..	..	,,	,,
	22. 59. 0	Sun	20·4	27·4	7·0	5·1				..	..	Clouds passing over the Sun.	,,
	23. 0. 30	Shade	28·9	30·5	1·6	8·8				..	..	,,	,,
	2. 0	Sun	31·4	45·2	13·8	12·1				..	..	Clear about the Sun.	,,
	3. 30	Shade	47·7	49·5	1·8	12·1				..	..	,,	,,
	5. 0	Sun	50·5	64·5	14·0	12·1				..	..	,,	,,
	6. 30	Shade	67·1	69·0	1·9	13·0				..	..	,,	,,
	8. 0	Sun	70·0	85·8	15·8	13·9	11·7	23. 7. 0	37	..	..	,,	,,
	9. 30	Shade	88·5	90·5	2·0	12·7				..	..	,,	,,
	11. 0	Sun	3·3	17·0	13·7	11·8				..	..	Light clouds.	,,
	12. 30	Shade	19·3	21·2	1·9	13·4				..	..	A dense small cloud. Sun wholly obscured.	,,
	14. 0	Sun	22·1	39·0	16·9	15·0				..	..	Quite clear about the Sun.	,,
	15. 30	Shade	42·0	43·9	1·9	13·8				..	..	,,	,,
	23. 17. 0	Sun	44·5	59·1	14·6					36·0	..	,,	N
Jan. 29	2. 49. 0	Sun	10·0	18·6	8·6					38·2	..	Clear throughout.	N
	50. 30	Shade	19·4	18·8	−0·6	9·0				..	..	,,	,,
	52. 0	Sun	18·3	26·5	8·2	8·9				..	..	,,	,,
	53. 30	Shade	27·0	26·2	−0·8	9·2	9·0	2. 54. 0	9	..	..	,,	,,
	55. 0	Sun	26·0	34·6	8·6	9·5				..	..	,,	,,
	56. 30	Shade	35·0	34·0	−1·0	8·5				..	..	,,	,,
	2. 58. 0	Sun	33·3	39·7	6·4					39·8	..	,,	N
Feb. 1	2. 41. 0	Sun	21.6	28·3	6·7					28·0	..	Cloudy throughout.	N
	42. 30	Shade	29.8	31·8	2·0	4·1				..	..	,,	,,
	44. 0	Sun	32.5	37·9	5·4	3·6				..	..	,,	,,
	45. 30	Shade	39.3	40·9	1.6	5·3	5·3	2. 46. 0	11	..	..	,,	,,
	47. 0	Sun	41.5	49·9	8·4	6·8				..	..	,,	,,
	48. 30	Shade	51.5	53·0	1·5	6·7				..	..	,,	,,
	2. 50. 0	Sun	53.8	61·8	8·0					29·8	..	,,	N
Feb. 6	2. 6. 0	Sun	15·2	18·9	3·7					20·0	..	Dense clouds; Sun seen occasionally.	N
	7. 30	Shade	20·0	21·5	1·5	2·3				..	..	,,	,,
	9. 0	Sun	22·0	25·9	3·9	2·6	2·6	2. 9. 30	16	..	..	,,	,,
	10. 30	Shade	27·0	28·1	1·1	2·8				..	..	,,	,,
	2. 12. 0	Sun	28·5	32·4	3·9					21·0	..	,,	N
Feb. 6	2. 19. 0	Sun	40·3	49·5	9·2					..	..	Sun shining brightly.	N
	20. 30	Shade	51·5	52·9	1·4	4·8	4·8	2. 21. 0	15	..	..	,,	,,
	2. 22. 0	Sun	53·2	56·4	3·2					..	..	Dense clouds.	N

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	h m s		div.	div.	div.	div.	div.	h m s	°	°	°		
Mar. 2	2. 36. 0	Sun	18·0	23·0	5·0					38·0	..	Cloudy.	N
	37. 30	Shade	24·1	26·1	2·0	5·2				..	..	,,	,,
	39. 0	Sun	26·8	36·2	9·4	7·6				..	..	,,	,,
	40. 30	Shade	37·7	39·3	1·6	6·4	6·0	2. 41. 0	21	..	..	,,	,,
	42. 0	Sun	40·1	46·6	6·5	5·1				..	..	,,	,,
	43. 30	Shade	47·9	49·1	1·2	5·6				..	..	,,	,,
	2. 45. 0	Sun	49·5	56·6	7·1					40·0	..	,,	N
Mar. 14	2. 41. 0	Sun	26·2	32·4	6·2					43·8	..	Sun obscured by dense cirro-stratus cloud.	N ,,
	42. 30	Shade	33·6	34·8	1·2	4·1	3·7	2. 43. 45	25	..	..	,,	,,
	44. 0	Sun	35·2	39·6	4·4	3·3				..	..	,,	,,
	45. 30	Shade	40·5	41·5	1·0					..	..	,,	,,
	47. 0	Sun	41·5	60·5	19·0	18·1				..	..	Clear about Sun.	,,
	48. 30	Shade	63·3	64·1	0·8	18·0				..	..	,,	,,
	50. 0	Sun	64·3	82·9	18·6	17·8	17·0	2. 50. 30	25	..	..	,,	,,
	51. 30	Shade	18·0	18·8	0·8	16·2				..	..	,,	,,
	53. 0	Sun	19·1	34·5	15·4	14·7				..	..	Thin clouds.	,,
	2. 54. 30	Shade	36·7	37·3	0·6					46·0	.	,,	N
Mar. 15	22. 18. 0	Sun	11·5	25·8	14·3					30·3	..	Cloudless.	N
	19. 30	Shade	28·1	29·4	1·3	13·2				..	..	,,	,,
	21. 0	Sun	29·7	44·4	14·7	13·5				..	..	,,	,,
	22. 30	Shade	47·0	48·2	1·2	14·3	14·2	22. 23. 0	32	..	..	,,	,,
	24. 0	Sun	48·5	64·8	16·3	15·0				..	..	,,	,,
	25. 30	Shade	67·5	68·8	1·3	14·9				..	..	,,	,,
	22. 27. 0	Sun	69·2	85·4	16·2					34·0	..	,,	N
Mar. 15	23. 40. 0	Sun	8·8	31·5	22·7					44·0	..	Clear.	N
	41. 30	Shade	34·8	36·0	1·2	20·8				..	..	,,	,,
	43. 0	Sun	37·0	58·4	21·4	20·3				..	..	,,	,,
	44. 30	Shade	61·8	62·8	1·0	19·2				..	..	,,	,,
	46. 0	Sun	63·4	82·4	19·0	18·0				..	..	,,	,,
	47. 30	Shade	7·2	8·2	1·0	18·9				..	..	,,	,,
	49. 0	Sun	9·0	29·8	20·8	20·3				..	..	,,	,,
	50. 30	Shade	32·4	32·4	0·0	20·2	19·1	23. 51. 0	37	..	..	,,	,,
	52. 0	Sun	32·4	51·9	19·5	19·5				..	..	,,	,,
	53. 30	Shade	53·8	53·8	0·0	16·5				..	..	,,	,,
	55. 0	Sun	53·6	67·0	13·4	13·6				..	..	Light clouds passing over. The Sun was obscured for 50s.	,, ,,
	56. 30	Shade	68·7	68·3	−0·4	17·8				..	..	Light clouds.	,,
	58. 0	Sun	68·2	89·5	21·3	21·9				..	..	Clear.	,,
	23. 59. 30	Shade	91·5	90·7	−0·8	21·7				..	..	,,	,,
16	0. 1. 0	Sun	13·7	34·2	20·5					51·3	..	,,	N
Mar. 16	2. 26. 0	Sun	14·2	34·2	20·0					53·8	..	Clear.	N
	27. 30	Shade	34·8	32·6	−2·2	20·6				..	..	,,	,,
	29. 0	Sun	31·6	48·3	16·7	19·5				..	..	,,	,,
	30. 30	Shade	48·8	45·5	−3·3	20·0				..	..	,,	,,
	32. 0	Sun	43·9	60·5	16·6	20·0				..	..	,,	,,
	33. 30	Shade	60·6	57·1	−3·5	19·8	19·7	2. 34. 0	27	..	..	,,	,,
	35. 0	Sun	55·2	71·2	16·0	19·6				..	..	,,	,,
	36. 30	Shade	71·2	67·6	−3·6	19·6				..	..	,,	,,
	38. 0	Sun	65·8	81·8	16·0	19·6				..	..	,,	,,
	39. 30	Shade	81·9	78·2	−3·7	18·4				..	..	,,	,,
	2. 41. 0	Sun	76·1	89·5	13·4					56·0	..	,,	N

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	h m s		div.	div.	div.	div.	div.	h m s	°	°	°		
Mar. 17	23. 26. 0	Sun	18·5	35·3	16·8					28·0	54·3	Clear throughout.	N
	27. 30	Shade	38·8	41·5	2·7	14·7				..	..	,,	,,
	29. 0	Sun	42·6	60·6	18·0	15·1				..	..	,,	,,
	30. 30	Shade	64·7	67·8	3·1	15·0				..	..	,,	,,
	32. 0	Sun	68·9	87·1	18·2	15·9				..	..	,,	,,
	33. 30	Shade	8·0	9·5	1·5	16·7	15·9	23. 34. 0	37	..	..	,,	,,
	35. 0	Sun	9·9	28·2	18·3	16·2				..	..	,,	,,
	36. 30	Shade	32·0	34·7	2·7	16·2				..	..	,,	,,
	38. 0	Sun	35·7	55·1	19·4	16·6				..	..	,,	,,
	39. 30	Shade	58·8	61·7	2·9	16·7				..	..	,,	,,
	23. 41. 0	Sun	62·7	82·6	19·9					34·0	57·4	,,	N
Mar. 18	0. 28. 0	Sun	16·2	37·8	21·6					42·0	58·6	Clear throughout.	N
	29. 30	Shade	40·7	42·2	1·5	19·9				..	..	,,	,,
	31. 0	Sun	42·6	63·8	21·2	19·9				..	..	,,	,,
	32. 30	Shade	66·7	67·8	1·1	20·3				..	..	,,	,,
	34. 0	Sun	68·2	89·8	21·6	20·6				..	..	,,	,,
	35. 30	Shade	92·5	93·3	0·8	20·7	20·4	0. 36. 0	36	..	..	,,	,,
	37. 0	Sun	7·5	28·9	21·4	20·7				..	..	,,	,,
	38. 30	Shade	30·5	31·1	0·6	20·4				..	..	,,	,,
	40. 0	Sun	30·9	51·5	20·6	20·0				..	..	,,	,,
	41. 30	Shade	52·3	52·9	0·6	20·8				..	..	,,	,,
	0. 43. 0	Sun	52·8	75·0	22·2					48·0	62·8	,,	N
Mar. 18	2. 4. 0	Sun	7·5	25·5	18·0					51·4	57·8	Clear throughout.	N
	5. 30	Shade	26·8	24·7	−2·1	20·7				..	..	,,	,,
	7. 0	Sun	23·7	42·9	19·2	21·0				..	..	,,	,,
	8. 30	Shade	42·5	41·1	−1·4	20·7	21·1	2. 9. 0	32	..	..	,,	,,
	10. 0	Sun	40·3	59·7	19·4	21·5				..	..	,,	,,
	11. 30	Shade	60·5	57·7	−2·8	21·6				..	..	,,	,,
	2. 13. 0	Sun	57·0	75·2	18·2					51·0	65·8	,,	N
Mar. 18	2. 47. 0	Sun	10·3	26·8	16·5					51·0	47·8	Clear throughout.	N
	48. 30	Shade	26·5	23·7	−2·8	15·9				..	..	,,	,,
	50. 0	Sun	23·0	32·7	9·7	12·7				..	..	,,	,,
	51. 30	Shade	31·7	28·5	−3·2	15·4	15·7	2. 52· 0	27	..	..	,,	,,
	53. 0	Sun	27·3	42·0	14·7	18·2				..	..	,,	,,
	54. 30	Shade	41·9	38·0	−3·9	16·3				..	..	,,	,,
	2. 56. 0	Sun	36·5	46·5	10·0					52·2	60·6	,,	N
Mar. 19	3. 22. 0	Sun	58·0	71·6	13·6					39·7	63·8	Clear.	N
	23. 30	Shade	73·7	75·5	1·8	11·7				..	..	,,	,,
	25. 0	Sun	75·1	88·4	13·3	11·6				..	..	,,	,,
	26. 30	Shade	88·0	89·5	1·5	11·7				..	..	,,	,,
	28. 0	Sun	13·6	26·7	13·1	11·9				..	..	,,	,,
	29. 30	Shade	29·3	30·1	0·8	13·0	12·6	3. 30. 0	21	..	..	,,	,,
	31. 0	Sun	30·5	45·0	14·5	13·8				..	..	Light cirrus.	,,
	32. 30	Shade	47·0	47·6	0·6	13·3				..	..	,,	,,
	34. 0	Sun	47·5	60·8	13·3	12·9				..	..	,,	,,
	35. 30	Shade	62·7	62·9	0·2	13·8				..	..	,,	,,
	3. 37. 0	Sun	63·0	77·8	14·8					43·0	..	,,	N
Mar. 19	3. 57. 0	Sun	11·0	24·8	13·8					44·0	53·5	Clear with the exception of a few light Clouds.	N
	3. 58. 30	Shade	26·0	26·0	0·0	13·6				..	..	,,	,,
	4. 0. 0	Sun	25·8	39·2	13·4	13·6				..	..	,,	,,
	1. 30	Shade	40·5	40·0	−0·5	12·2	12·0	4. 2. 0	18	..	60·0	,,	,,
	3. 0	Sun	39·0	49·0	10·0	10·7				..	..	,,	,,
	4. 30	Shade	49·8	48·9	−0·9	9·9				..	..	,,	,,
	4. 6. 0	Sun	48·8	56·8	8·0					45·0	60·8	,,	N

In every observation, whether in the Sun's rays or in the shade, the terminal reading was taken exactly one minute after the initial reading.
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The initial N is that of Mr. W. C. Nash.

OBSERVATIONS WITH THE ACTINOMETER—*continued.*

Day, 1864.	Greenwich Mean Solar Time of the Initial Reading.	Instrument exposed to the Sun's Rays, or in the Shade.	Readings of the Graduated Scale. Initial A.	Readings of the Graduated Scale. Terminal B.	Change in One Minute, B–A.	Apparent effect of the Sun's Radiation in parts of the Scale.	Mean Result of each Group in parts of the Scale.	Greenwich Mean Solar Time corresponding to the Mean of each Group.	Altitude of the Sun.	Thermometer in the fluid of the Actinometer.	Blackened Bulb Thermometer on Grass.	General Remarks.	Observer.
	h m s		div.	div.	div.	div.	div.	h m s	°	°	°		
Mar. 21	2. 36. 0	Sun	13·2	29·0	15·8					41·0	59·9	Clear about Sun.	N
	37. 30	Shade	31·7	33·8	2·1	14·6				..	..	„	„
	39. 0	Sun	34·5	52·1	17·6	15·8				..	63·5	„	„
	40. 30	Shade	54·7	56·2	1·5	10·4				..	..	„	„
	42. 0	Sun	56·8	63·0	6·2	5·0	11·1	2. 42. 30	27	..	55·0	Cloudy.	„
	43. 30	Shade	65·3	66·1	0·8	9·6				..	53·9	„	„
	45. 0	Sun	66·4	81·0	14·6	13·8				..	58·7	No clouds about Sun.	„
	46. 30	Shade	83·0	83·7	0·7	8·8				..	57·3	Cloudy.	„
	2. 48. 0	Sun	83·9	88·3	4·4					43·0	55·5	„	N
Mar. 23	2. 26. 0	Sun	7·8	27·0	19·2					54·0	68·5	Light cirrus.	N
	27. 30	Shade	29·5	30·1	0·6	18·7				..	66·5	„	„
	29. 0	Sun	30·3	49·7	19·4	19·0	18·7	2. 29. 30	30	..	65·6	„	„
	30. 30	Shade	52·0	52·2	0·2	18·5				..	65·6	„	„
	2. 32. 0	Sun	52·2	70·2	18·0					56·0	65·0	„	N
Mar. 23	2. 56. 0	Sun	20·0	38·8	18·8					53·0	64·2	Clear.	N
	57. 30	Shade	40·2	39·5	−0·7	18·9				..	..	„	„
	2. 59. 0	Sun	39·3	57·0	17·7	18·7	19·1	2. 59. 30	28	..	63·2	„	„
	3. 0. 30	Shade	58·2	56·8	−1·4	19·7				..	64·7	„	„
	3. 2. 0	Sun	56·4	75·3	18·9					54·0	64·3	„	N
Mar. 24	0. 41. 0	Sun	10·9	27·5	16·6					32·4	67·8	Clear throughout.	N
	42. 30	Shade	30·5	33·5	3·0	13·8				..	69·0	„	„
	44. 0	Sun	34·8	51·7	16·9	13·9				..	67·8	„	„
	45. 30	Shade	55·0	58·0	3·0	14·2				..	67·5	„	„
	47. 0	Sun	59·5	77·0	17·5	14·4				..	67·5	„	„
	48. 30	Shade	80·3	83·5	3·2	14·2	14·3	0. 49. 0	39	..	..	„	„
	50. 0	Sun	12·2	29·5	17·3	14·2				..	..	„	„
	51. 30	Shade	32·8	35·8	3·0	14·5				..	66·6	„	„
	53. 0	Sun	37·3	55·0	17·7	14·6				..	..	„	„
	54. 30	Shade	59·0	62·2	3·2	14·6				..	67·0	„	„
	0. 56. 0	Sun	64·0	82·0	18·0					39·7	67·2	„	N
Mar. 24	1. 26. 0	Sun	0·3	19·4	19·1					46·6	80·8	Clear.	N
	27. 30	Shade	23·2	26·7	3·5	16·1				..	75·5	„	„
	29. 0	Sun	28·5	48·5	20·0	16·6				..	73·0	„	„
	30. 30	Shade	52·5	55·8	3·3	16·7				..	..	„	„
	32. 0	Sun	56·2	76·2	20·0	17·0	17·0	1. 32. 30	36	..	65·5	„	„
	33. 30	Shade	79·3	81·9	2·6	17·2				..	..	„	„
	35. 0	Sun	7·0	26·6	19·6	17·4				..	68·5	„	„
	36. 30	Shade	29·0	30·8	1·8	17·7				..	..	„	„
	1. 38. 0	Sun	31·5	51·0	19·5					50·0	71·0	„	N
Mar. 24	23. 40. 0	Sun	2·7	5·8	3·1					22·0	53·3	Sun partially obscured by light clouds. Haze.	N
	41. 30	Shade	6·1	6·1	0·0	2·0				..	..	„	„
	43. 0	Sun	5·6	6·5	0·9	0·9	2·0	23. 43. 30	40	..	55·4	„	„
	44. 30	Shade	6·5	6·5	0·0	3·1				..	56·0	„	„
	23. 46. 0	Sun	6·5	11·7	5·2					23·8	..	„	N
Mar. 24	23. 48. 0	Sun	2·0	12·8	10·8					24·0	62·2	Light cirrus.	N
	49. 30	Shade	15·0	17·0	2·0	8·3				..	..	„	„
	51. 0	Sun	17·5	27·3	9·8	7·8				..	64·3	„	„
	52. 30	Shade	30·6	32·6	2·0	6·7				..	..	„	„
	54. 0	Sun	34·0	41·6	7·6	5·6	7·4	23. 54. 30	40	..	60·8	Clouds somewhat denser about the Sun.	„
	55. 30	Shade	43·5	45·5	2·0	6·6				..	59·0	„	„
	57. 0	Sun	47·0	56·6	9·6	7·6				..	56·1	„	„
	23. 58. 30	Shade	58·8	60·8	2·0	9·3				..	55·6	Thin clouds.	„
Mar. 25	0. 0. 0	Sun	61·6	74·6	13·0					29·8	59·0 62·5	„	N

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

OBSERVATIONS WITH THE ACTINOMETER—*continued.*

Day, 1864.	Greenwich Mean Solar Time of the Initial Reading.	Instrument exposed to the Sun's Rays or in the Shade.	Readings of the Graduated Scale. Initial A.	Readings of the Graduated Scale. Terminal B.	Change in One Minute, B–A.	Apparent effect of the Sun's Radiation in parts of the Scale.	Mean Result of each Group in parts of the Scale.	Greenwich Mean Solar Time corresponding to the Mean of each Group.	Altitude of the Sun.	Thermometer in the fluid of the Actinometer.	Blackened Bulb Thermometer on Grass.	General Remarks.	Observer.
	h m s		div.	div.	div.	div.	div.	h m s	°	°	°		
Mar. 25	1. 21. 0	Sun	12·0	31·9	19·9					44·0	67·8	Clear about the Sun.	N
	22. 30	Shade	34·2	37·6	3·4	16·6				..	..	,,	,,
	24. 0	Sun	38·8	58·8	20·0	17·0	17·0	1. 24. 30	37	..	69·0	,,	,,
	25. 30	Shade	62·1	64·8	2·7	17·5				..	67·5	,,	,,
	1. 27. 0	Sun	66·2	86·7	20·5					48·0	68·0	,,	
April 6	4. 58. 0	Sun	9·0	11·0	2·0					31·8	47·8	Overcast: dense clouds.	N
	4. 59. 30	Shade	11·9	13·6	1·7	0·2				..	..	,,	,,
	5. 1. 0	Sun	14·0	15·8	1·8	0·4				..	46·8	,,	,,
	2. 30	Shade	16·6	17·7	1·1	0·6	0·5	5. 3. 0	14	..	..	,,	,,
	4. 0	Sun	18·0	19·5	1·5	0·6				..	..	,,	,,
	5. 30	Shade	19·9	20·5	0·6	0·5				..	46·2	,,	,,
	5. 7. 0	Sun	21·0	21·7	0·7					31·8	46·0	,,	N
April 13	1. 53. 0	Sun	0·6	18·8	18·2					34·2	71·0	Clear throughout.	N
	54. 30	Shade	22·2	25·0	2·8	15·8				..	71·1	,,	,,
	56. 0	Sun	26·0	45·0	19·0	16·1				..	72·1	,,	,,
	57. 30	Shade	49·0	52·0	3·0	16·8				..	70·2	,, Brisk wind.	,,
	1. 59. 0	Sun	53·1	73·8	20·7	17·9				..	71·2	,,	,,
	2. 0. 30	Shade	77·8	80·5	2·7	17·8	17·3	2. 1. 0	41	..	..	,,	,,
	2. 0	Sun	3·6	24·0	20·4	17·5				..	73·7	,,	,,
	3. 30	Shade	27·6	30·6	3·0	17·8				..	..	,,	,,
	5. 0	Sun	31·9	53·1	21·2	18·2				..	72·0	,,	,,
	6. 30	Shade	57·1	60·0	2·9	18·2				..	69·7	,,	,,
	2. 8. 0	Sun	61·5	82·5	21·0					41·3	71·2	,,	N
April 14	22. 34. 0	Sun	3·2	21·5	18·3					30·5	82·5	Clear.	N
	35. 30	Shade	25·2	29·0	3·8	15·3				..	82·5	,,	,,
	37. 0	Sun	30·8	50·7	19·9	15·5				..	..	,,	,,
	38. 30	Shade	55·8	60·8	5·0	15·8				..	83·8	,,	,,
	40. 0	Sun	63·1	84·9	21·8	16·8				..	..	,,	,,
	41. 30	Shade	90·5	95·4	4·9	18·2	17·3	22. 41. 15	44	..	86·1	,,	,,
	43. 0	Sun	3·5	28·0	24·5	19·1				..	87·0	,,	,,
	44. 30	Shade	33·1	39·0	5·9	18·7				..	..	,,	,,
	46. 0	Sun	42·0	66·7	24·7	18·8				..	86·6	,,	,,
	22. 47. 30	Shade	73·0	78·9	5·9					41·0	86·0	,,	N
April 15	2. 21. 0	Sun	0·0	27·0	27·0					72·0	83·0	Clear.	N
	22. 30	Shade	28·8	28·1	−0·7	27·3				..	85·0	,,	,,
	24. 0	Sun	27·5	53·7	26·2	27·2				..	..	,,	,,
	25. 30	Shade	55·1	53·9	−1·2	26·9	27·1	2. 26. 0	37	..	88·0	,,	,,
	27. 0	Sun	53·0	78·2	25·2	26·9				..	..	,,	,,
	28. 30	Shade	79·9	77·7	−2·2	27·3				..	88·5	,,	,,
	2. 30. 0	Sun	76·8	101·8	25·0					78·4	86·6	,,	N
April 18	22. 56. 0	Sun	5·4	29·5	24·1					42·2	77·0	Clear.	N
	57. 30	Shade	34·2	39·3	5·1	19·7				..	77·4	,,	,,
	22. 59. 0	Sun	41·6	67·0	25·4	20·3				..	78·3	,,	,,
	23. 0. 30	Shade	72·0	77·1	5·1	14·9	17·2	23. 0. 15	47	..	78·4	,,	,,
	2. 0	Sun	0·0	14·6	14·6	12·3				..	79·8	,,	,,
	23. 3. 30	Shade	15·2	14·7	−0·5	18·8				..	80·0	,,	N

In every observation, whether in the Sun's rays or in the shade, the terminal reading was taken exactly one minute after the initial reading.
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The initial N is that of Mr. W. C. Nash.
April 6. The observations on this day were made for comparison with observations by Mr. Glaisher during his balloon ascent from Woolwich.

OBSERVATIONS WITH THE ACTINOMETER—*continued.*

Day, 1864.	Greenwich Mean Solar Time of the Initial Reading.	Instrument exposed to the Sun's Rays, or in the Shade.	Readings of the Graduated Scale. Initial A.	Readings of the Graduated Scale. Terminal B.	Change in One Minute, B–A.	Apparent effect of the Sun's Radiation in parts of the Scale.	Mean Result of each Group in parts of the Scale.	Greenwich Mean Solar Time corresponding to the Mean of each Group.	Altitude of the Sun.	Thermometer in the fluid of the Actinometer.	Blackened Bulb Thermometer. on Grass.	General Remarks.	Observer.
	h m s		div.	div.	div.	div.	div.	h m s	°	°	°		
April 18	23. 5. 0	Sun	14·7	36·7	22·0	20·8				..	77·7	Clear.	N
continued	6. 30	Shade	40·0	42·9	2·9	21·6				..	77·0	„	„
	8. 0	Sun	44·4	71·4	27·0	23·1				..	77·0	„	„
	9. 30	Shade	5·5	10·4	4·9	22·5	22·3	23. 9. 15	47	..	77·0	„	„
	11. 0	Sun	12·9	40·7	27·8	22·8				..	77·0	„	„
											77·2		
	12. 30	Shade	45·8	51·0	5·2	22·9				..	80·0	„	„
	14. 0	Sun	52·8	81·2	28·4	23·7				..	79·4	„	„
	15. 30	Shade	2·8	7·0	4·2	24·6				..	77·2	„	„
	17. 0	Sun	8·8	38·0	29·2	25·2				..	77·0	„	„
											76·5		
	18. 30	Shade	44·5	48·3	3·8	25·0	24·4	23. 19. 0	48	..	..	„	„
	20. 0	Sun	51·2	79·6	28·4	24·4				..	77·0	„	„
											78·0		
	21. 30	Shade	9·5	13·8	4·3	23·7				..	..	„	„
	23. 23. 0	Sun	15·0	42·6	27·6					58·0	77·0	„	„
											77·0	„	N
April 19	0. 35. 0	Sun	6·0	34·4	28·4					65·0	82·9	Clear.	N
											83·9		
	36. 30	Shade	37·4	37·8	0·4	27·9				..	..	„	„
	38. 0	Sun	37·8	65·9	28·1	27·9				..	86·8	„	„
											87·8		
	39. 30	Shade	68·9	68·9	0·0	28·2	28·1	0. 40. 0	48	..	88·8	„	„
	41. 0	Sun	68·9	97·2	28·3	28·4				67·8	87·6	„	„
											87·2		
	42. 30	Shade	1·8	1·6	−0·2	28·2				..	..	„	„
	0. 44. 0	Sun	1·5	29·2	27·7					68·2	88·0	„	N
											87·2		
April 20	2. 33. 0	Sun	4·9	29·0	24·1					72·4	92·5	Light cirrus clouds are prevalent.	N
											90·0		
	34. 30	Shade	30·5	29·1	−1·4	25·9				..	..	„	„
	36. 0	Sun	28·2	53·1	24·9	26·7				..	90·0	„	„
											90·0		
	37. 30	Shade	54·7	52·6	−2·1	25·6	25·5	2. 38. 0	38	..	..	„	„
	39. 0	Sun	51·5	73·6	22·1	24·3				..	91·4	„	„
	40. 30	Shade	74·2	72·0	−2·2	25·1				..	..	„	„
	2. 42. 0	Sun	71·4	95·1	23·7					76·0	91·9	„	N
											92·0		
May 16	0. 20. 0	Sun	5·9	31·8	25·9					50·6	90.5	Cloudless.	N
											89·0		
	21. 30	Shade	36·8	41·2	4·4	22·2				..	..	„	„
	23. 0	Sun	43·7	71·0	27·3	22·7				..	85·5	„	„
	24. 30	Shade	76·2	81·0	4·8	17·6				..	..	„	„
	26. 0	Sun	3·1	20·5	17·4	14·4				..	..	„	„
	27. 30	Shade	22·5	23·8	1·3	20·8	21·4	0. 28. 0	56	..	85·2	„	„
	29. 0	Sun	24·7	51·5	26·8	23·9				..	88·0	„	„
	30. 30	Shade	56·2	60·7	4·5	22·9				..	90·0	„	„
	32. 0	Sun	62·0	90·0	28·0	23·5				..	92·0	„	„
	33. 30	Shade	7·8	12·2	4·4	24·5				..	93·7	„	„
	0. 35. 0	Sun	15·5	45·2	29·7					50·0	93·2	„	N
											93·0		

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	h m s		div.	div.	div.	div.	div.	h m s	°	°	°		
May 16	2. 9. 0	Sun	6·1	34·9	28·8	..	..	..	..	74·4	92·6	Cloudless.	N
											92·2		
	10. 30	Shade	38·0	38·4	0·4	27·7				..	..	,,	,,
	12. 0	Sun	38·4	65·8	27·4	27·6				..	92·1	,,	,,
											92·0		
	13. 30	Shade	68·1	67·4	−0·7	27·9				..	..	,,	,,
	15. 0	Sun	67·0	94·0	27·0	28·0				..	91·0	,,	,,
	16. 30	Shade	3·0	1·8	−1·2	28·1	28·3	2. 17. 0	47	..	..	,,	,,
											93·5		
	18. 0	Sun	0·9	27·8	26·9	28·4				..	93·2	,,	,,
	19. 30	Shade	29·3	27·4	−1·9	28·8				..	93·2	,,	,,
	21. 0	Sun	26·5	53·4	26·9	29·0				..	94·0	,,	,,
	22. 30	Shade	54·6	52·3	−2·3	29·4				..	95·2	,,	,,
	2. 24. 0	Sun	51·5	78·8	27·3	..	..	..	..	79·8	95·0	,,	N
											93·0		
May 18	0. 6. 0	Sun	0·9	27·9	27·0	..	..	..	..	51·3	102·9	Cloudless.	N
	7. 30	Shade	33·0	38·5	5·5	22·4				..	104·4	,,	,,
	9. 0	Sun	41·0	69·8	28·8	22·7				..	105·8	,,	,,
	10. 30	Shade	75·5	82·1	6·6	23·1				..	106·1	,,	,,
	12. 0	Sun	2·0	32·6	30·6	23·7				..	..	,,	,,
	13. 30	Shade	38·8	46·0	7·2	24·2	23·7	0. 14. 0	57	56·0	107·6	,,	,,
	15. 0	Sun	49·9	82·1	32·2	24·3				..	108·0	,,	,,
	16. 30	Shade	2·0	10·6	8·6	24·1				..	108·0	,,	,,
	18. 0	Sun	14·8	48·0	33·2	24·2				..	108·7	,,	,,
	19. 30	Shade	57·0	66·3	9·3	24·7				..	108·0	,,	,,
	0. 21. 0	Sun	57·0	91·8	34·8	..	..	..	..	62·1	108·3	,,	N
May 18	2. 56. 0	Sun	0·3	24·7	24·4	..	..	..	..	68·0	96·2	Cloudless.	N
	57. 30	Shade	27·0	27·3	0·3	24·0				..	99·4	,,	,,
	2. 59. 0	Sun	27·2	51·4	24·2	23·8				..	101·1	,,	,,
	3. 0. 30	Shade	54·0	54·5	0·5	24·9	24·6	3. 1. 0	42	..	100·0	,,	,,
	2. 0	Sun	54·7	81·2	26·5	25·5				..	100·5	,,	,,
	3. 30	Shade	2·1	3·5	1·4	24·8				..	98·0	,,	,,
	3. 5. 0	Sun	4·0	29·9	25·9	..	..	..	..	71·0	97·1	,,	N
											96·0		
May 30	2. 28. 0	Sun	15·5	22·0	6·5	..	..	..	..	42·8	69·6	Cloudy. Sun obscured.	N
	29. 30	Shade	23·2	24·8	1·6	4·5				..	69·0	,, ,,	,,
	31. 0	Sun	25·4	31·0	5·6	4·3				..	68·6	,, ,,	,,
	32. 30	Shade	32·2	33·2	1·0	4·8				..	69·0	,, ,,	,,
	34. 0	Sun	33·8	39·8	6·0	5·1				..	69·0	,, ,,	,,
	35. 30	Shade	40·8	41·6	0·8	5·4	5·2	2. 36. 0	47	..	.	,, ,,	,,
	37. 0	Sun	42·0	48·4	6·4	5·6				..	69·4	,, ,,	,,
	38. 30	Shade	49·5	50·3	0·8	5·7				..	69·1	,, ,,	,,
	40. 0	Sun	51·3	57·9	6·6	5·7				..	..	,, ,,	,,
	41. 30	Shade	58·8	59·7	0·9	5·8				..	68·2	,, ,,	,,
	2. 43. 0	Sun	60·2	67·0	6·8	..	..	..	..	45·0	65·8	,, ,,	N
June 8	2. 47. 0	Sun	24·7	67·0	42·3	..	..	..	..	59·0	90·8	Clear about the sun. Haze.	N
	48. 30	Shade	71·1	76·0	4·9	38·6				..	97·0	,,	,,
	50. 0	Sun	3·2	47·9	44·7	39·1				..	99·2	,,	,,
	51. 30	Shade	54·3	60·6	6·3	36·9				..	99·3	,,	,,
	53. 0	Sun	7·2	48·9	41·7	34·6	38·3	2. 53. 30	47	..	98·9	Light clouds.	,,
	54. 30	Shade	56·0	63·9	7·9	37·5				..	94·0	Clear about the Sun.	,,
	56. 0	Sun	33·0	82·0	49·0	40·7				..	93·0	,,	,,
	57. 30	Shade	90·3	99·0	8·7	40·5				..	93·5	,,	,,
	2. 59. 0	Sun	14·0	63·3	49·3	..	..	..	..	64·6	93·6	,,	N

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	h m s		div.	div.	div.	div.	div.	h m s	°	°	°		
June 8	23. 17. 0	Sun	4·4	42·6	38·2					55·0	87·8	Sun partially obscured by clouds.	N
	18. 30	Shade	49·6	56·0	6·4	34·9				..	89·4	Light clouds about the Sun.	,,
	20. 0	Sun	58·6	103·0	44·4	36·6				..	..	,,	,,
	21. 30	Shade	8·9	18·0	9·1	34·4				..	94·7	,,	,,
	23. 0	Sun	22·0	64·6	42·6	33·1				..	83·0	Clouds denser about the Sun.	,,
											86·8		
	24. 30	Shade	73·0	82·8	9·8	32·2	32·0	23. 25. 0	60	..	..	,,	,,
	26. 0	Sun	10·0	51·5	41·5	31·3				..	91·4	Sun shining through clouds.	,,
	27. 30	Shade	60·2	70·8	10·6	28·7				..	87·8	,,	,,
	29. 0	Sun	7·0	44·2	37·2	26·5				..	81·1	Sun entirely obscured.	,,
											80·8		
	30. 30	Shade	52·2	63·0	10·8	30·7				..	..	,,	,,
	23. 32. 0	Sun	6·3	52·0	45·7					62·3	85·9	Clouds less dense.	N
											85·4		
June 9	23. 21. 0	Sun	12·0	49·0	37·0					52·6	79·5	Sun free from clouds; many clouds in all directions.	N
	22. 30	Shade	54·3	58·9	4·6	33·1				..	82·1	,,	,,
	24. 0	Sun	60·7	99·0	38·3	32·8				..	86·1	Clouds passing over the Sun.	,,
	25. 30	Shade	3·5	10·0	6·5	34·2				..	82·0	,,	,,
	27. 0	Sun	11·9	55·0	43·1	36·6				..	..	,,	,,
	28. 30	Shade	61·8	68·2	6·4	28·6				..	83·5	Sun entirely obscured by dense clouds.	,,
											84·2		
	30. 0	Sun	37·5	64·4	26·9	20·5				..	82·0	Sun obscured by dense clouds for 20s.; partially obscured during the remaining 40 seconds.	,,
											80·3		
	31. 30	Shade	69·0	75·4	6·4	26·3				..	..	Light clouds.	,,
	33. 0	Sun	8·0	46·6	38·6	31·0	30·6	23. 33. 30	60	..	81·2	,,	,,
											83·6		
	34. 30	Shade	54·0	62·8	8·8	34·4				..	..	Sun free from clouds.	,,
	36. 0	Sun	5·0	52·7	47·7	38·7				..	85·7	,,	,,
											87·5		
	37. 30	Shade	61·0	70·2	9·2	38·8				..	88·5	,,	,,
	39. 0	Sun	2·5	50·7	48·2	38·4				58·0	93·0	,,	,,
											93·2		
	40. 30	Shade	60·5	70·8	10·3	29·4				..	..	,,	,,
	42. 0	Sun	6·6	37·8	31·2	21·5				..	84·4	Sun again obscured.	,,
	43. 30	Shade	46·0	55·1	9·1	15·0				..	80·4	,,	,,
	23. 45. 0	Sun	57·0	74·0	17·0					61·0	77·4	Sun entirely obscured by dense clouds.	N
											76·0		
June 10	0. 46. 0	Sun	20·2	42·0	21·8					69·5	79·2	Sun obscured by dense clouds, 40 seconds.	N
	47. 30	Shade	45·0	49·2	4·2	31·2	31·2	0. 48. 0	59	..	..		,,
	49. 0	Sun	51·0	100·0	49·0	44·6				..	83·4	Sun free from cloud.	,,
	50. 30	Shade	6·5	11·0	4·5	43·6	43·6	0. 51. 0	59	..	89·2	,,	,,
	52. 0	Sun	13·0	60·2	47·2	42·7				..	92·7	,,	,,
	53. 30	Shade	67·0	71·5	4·5	25·7				..	94·4	,,	,,
	55. 0	Sun	3·0	16·2	13·2	9·8	16·7	0. 56. 15	59	..	83·4	Sun obscured by dense clouds.	,,
	56. 30	Shade	18·7	21·0	2·3	14·7				..	85·0	Sun again free from cloud.	,,
	0. 58. 0	Sun	22·2	43·0	20·8					72·0	84·6	Sun obscured, 45 seconds.	N

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	h m s		div.	div.	div.	div.	div.	h m s	°	°	°		
June 10	7. 34. 0	Sun	5·5	10·5	5·0					64·0	65·2	Clear about the Sun.	N
	35. 30	Shade	9·2	3·6	−5·6	9·4				..	..	„	„
	37. 0	Sun	2·0	4·6	2·6	8·2				..	64·5	Cirro-stratus. Sun partially obscured.	„
	38. 30	Shade	13·0	7·4	−5·6	7·5	7·6	7. 39. 0	4	..	64·6	„	„
	40. 0	Sun	4·9	6·1	1·2	7·0				..	65·0	„	„
	41. 30	Shade	21·7	15·7	−6·0	6·0				..	64·8	„	„
	7. 43. 0	Sun	13·0	11·7	−1·3					62·4	64·6	„	N
June 10	23. 4. 0	Sun	25·4	73·0	47·6					52·9	84·6	Clear about the Sun.	N
	5. 30	Shade	5·5	13·0	7·5	42·7				..	87·0	„	„
	7. 0	Sun	16·5	69·3	52·8	44·7				..	93·0	„	„
	8. 30	Shade	78·8	87·4	8·6	44·7	44·1	23. 7. 30	59	..	100·8	„	„
										..	99·7	„	„
	10. 0	Sun	8·0	61·8	53·8	44·1				55·1	103·2	„	„
	11. 30	Shade	72·0	82·8	10·8	38·6				..	98·8	Light wind.	„
	13. 0	Sun	18·8	63·8	45·0	33·6	37·2	23. 13. 30	59	..	89·0	Sun shining through thin clouds.	„
	14. 30	Shade	72·1	84·1	12·0	39·5				..	89·6	„	„
	16. 0	Sun	7·0	65·0	58·0	45·3				58·2	92·0	Clear about the Sun.	„
	17. 30	Shade	76·3	89·7	13·4	45·7	46·0	23. 18. 0	59	..	92·5	„	„
	19. 0	Sun	9·6	69·7	60·1	47·1				..	94·0	„	„
	20. 30	Shade	81·8	94·3	12·5	49·7				..	95·0	„	„
	22. 0	Sun	6·4	70·6	64·2	51·4				..	..	„	„
	23. 30	Shade	83·8	97·0	13·2	51·1	50·7	23. 23. 15	60	61·3	91·7	„	„
										..	92·2	„	„
	25. 0	Sun	5·6	70·0	64·4	50·6				..	94·4	„	„
	26. 30	Shade	82·0	96·3	14·3	42·7				..	90·6	„	„
	28. 0	Sun	8·6	58·2	49·6	35·4	38·6	23. 29. 15	60	..	92·5	Light clouds over the Sun for 40 seconds.	„
										..	96·5		„
	29. 30	Shade	69·1	83·1	14·0	37·8				66·2	..	Light clouds.	„
													„
	23. 31. 0	Sun	17·0	71·0	54·0					67·4	94·8	Dense clouds 25 seconds.	N
										..	89·0		
June 21	6. 44. 0	Sun	13·0	28·6	15·6					60·5	65·8	Clear.	N
	45. 30	Shade	29·7	30·3	0·6	14·4				..	66·4	„	„
	47. 0	Sun	29·8	44·1	14·3	13·9				..	66·0	„	„
	48. 30	Shade	44·7	44·9	0·2	12·9	12·2	6. 49. 0	11	..	66·0	„	„
	50. 0	Sun	44·9	56·7	11·8	12·2				..	65·2	„	„
	51. 30	Shade	58·0	57·0	−1·0	12·4				..	65·3	„	„
	6. 53. 0	Sun	56·0	67·0	11·0					60·9	64·6	„	N
July 5	0. 58. 0	Sun	3·2	42·2	39·0					53·4	92·0	Clear.	N
	0. 59. 30	Shade	45·9	54·0	8·1	30·3				..	..	„	„
	1. 1. 0	Sun	57·2	95·0	37·8	29·9	30·9	1. 0. 45	58	..	97·0	„	„
	2. 30	Shade	9·0	16·8	7·8	32·4				..	111·0	„	„
	4. 0	Sun	19·5	62·0	42·5	34·2				..	110·7	„	„
	5. 30	Shade	69·1	77·8	8·7	36·1	36·6	1. 7. 30	58	..	100·6	„	„
	7. 0	Sun	7·4	54·6	47·2	37·7				..	97·0	„	„
	8. 30	Shade	61·8	72·0	10·2	38·4				..	100·8	„	„
	1. 10. 0	Sun	11·4	61·4	50·0					59·0	98·0	„	N

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	h m s		div.	div.	div.	div.	div.	h m s	°		°		
July 11	2. 13. 0	Sun	15·0	64·2	49·2					66·0	94·8	Clear about the Sun.	N
											98·9		
	14. 30	Shade	70·6	73·9	3·3	46·2				..	..	„	„
	16. 0	Sun	11·0	60·7	49·7	46·3				..	97·8	„	„
											103·0		
	17. 30	Shade	67·0	70·5	3·5	46·9				..	104·0	„	„
	19. 0	Sun	6·0	57·1	51·1	47·4	46·7	2. 19. 30	50	..	106·0	„	„
	20. 30	Shade	64·2	68·1	3·9	46·7				..	110·0	„	„
	22. 0	Sun	50·0	100·0	50·0	46·0				..	116·0	„	„
	23. 30	Shade	30·8	34·9	4·1	47·7				..	..	„	„
	2. 25. 0	Sun	41·5	95·0	53·5					69·9	112·0	„	N
											111·0		
July 11	2. 50. 0	Sun	15·6	74·2	58·6					73·0	92·8	Clear.	N
											95·2		
	51. 30	Shade	81·0	86·0	5·0	53·7				..	..	„	„
	53. 0	Sun	5·8	64·5	58·7	53·9				..	93·5	„	„
											94·8		
	54. 30	Shade	70·0	74·6	4·6	52·7	53·0	2. 55. 0	45	..	..	„	„
	56. 0	Sun	18·0	73·8	55·8	51·4				..	102·9	„	„
											105·0		
	57. 30	Shade	80·0	84·2	4·2	53·3				..	..	„	„
	2. 59. 0	Sun	19·8	79·0	59·2					76·0	102·8	„	N
											106·0		
July 12	2. 52. 0	Sun	11·8	60·6	48·8					60·0	94·6	Clear.	N
	53. 30	Shade	67·0	73·0	6·0	43·8				..	97·0	„	„
	55. 0	Sun	8·2	59·0	50·8	44·0				..	99·0	„	„
	56. 30	Shade	72·0	79·6	7·6	43·9	43·4	2. 57. 0	45	..	101·2	„	„
	58. 0	Sun	7·0	59·2	52·2	43·5				..	100·5	„	„
	2. 59. 30	Shade	67·0	76·8	9·8	42·0				..	103·6	„	„
	3. 1. 0	Sun	23·2	74·7	51·5					65·0	107·0	„	N
											101·2		
July 12	22. 34. 0	Sun	11·0	45·7	34·7					53·0	79·6	Very cloudy: Sun seen occasionally.	N
											81·0		
	35. 30	Shade	51·8	56·4	4·6	(20·4)				..	81·6	„	„
	37. 0	Sun	58·6	73·8	15·2	10·7				..	81·5	Sky entirely covered with dense cirro-stratus.	„
											81·0		
	38. 30	Shade	78·0	82·5	4·5	9·8				..	77·7	„	„
	40. 0	Sun	16·0	29·4	13·4	8·6				..	75·4	„	„
	41. 30	Shade	31·8	36·9	5·1	7·3				..	73·9	„	„
	43. 0	Sun	39·0	50·4	11·4	6·6				..	72·2	„	„
											71·8		
	44. 30	Shade	53·0	57·5	4·5	7·5	8·4	22. 44. 15	57	..	71·2	„	„
	46. 0	Sun	60·0	72·5	12·5	8·1				..	72·0	„	„
											72·1		
	47. 30	Shade	76·0	80·2	4·2	8·0				..	71·3	„	„
	49. 0	Sun	82·5	94·5	12·0	7·9				..	70·6	„	„
											72·8		
	50. 30	Shade	8·5	12·5	4·0	9·4				..	..	„	„
	22. 52. 0	Sun	14·4	29·2	14·8					56·2	74·6	„	„
											75·2		N
July 13	23. 6. 0	Sun	6·8	48·6	41·8					51·0	78·2	Cloudless.	N
											81·4		
	7. 30	Shade	54·7	60·0	5·3	36·6				..	83·2	„	„
	9. 0	Sun	9·6	51·6	42·0	36·0				..	88·8	„	„
	10. 30	Shade	58·5	65·3	6·8	36·2	36·2	23. 9. 30	58	..	94·0	„	„
	23. 12. 0	Sun	2·0	46·0	44·0	36·1				..	97·0	„	N
											100·2		

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	h m s		div.	div.	div.	div.	div.	h m s	°	°	°		
July 13	23. 13. 30	Shade	53·5	62·6	9·1	38·4				..	..	Cloudless.	N
(*cont.*)	15. 0	Sun	6·5	57·5	51·0	41·3				..	102·0	,,	,,
											102·0		
	16. 30	Shade	66·7	77·0	10·3	39·5	39·3	23. 17. 45	58	..	..	,,	,,
	18. 0	Sun	8·2	56·9	48·7	38·1				..	98·2	,,	,,
	19. 30	Shade	68·0	79·0	11·0	39·0				..	..	,,	,,
	23. 21. 0	Sun	9·0	60·3	51·3					58·0	97·9	,,	,,
											95·8	,,	N
July 14	2. 0. 0	Sun	4·6	56·7	52·1					87·0	89·6	Cloudless.	N
											90·3		
	1. 30	Shade	59·2	55·4	−3·8	56·0				..	..	,,	,,
	3. 0	Sun	53·7	106·0	52·3	55·5	56·0	2. 2. 45	51	..	96·8	,,	,,
	4. 30	Shade	10·0	7·4	−2·6	56·4				..	101·4	,,	,,
	6. 0	Sun	6·2	61·5	55·3	58·4				..	100·8	,,	,,
											100·6		
	7. 30	Shade	64·6	61·0	−3·6	58·8				..	..	,,	,,
	9. 0	Sun	4·0	59·0	55·0	58·8				..	103·2	,,	,,
							58·5	2. 10. 15	50		103·2		
	10. 30	Shade	61·5	57·5	−4·0	58·4				..	..	,,	,,
	12. 0	Sun	8·9	62·6	53·7	58·4				89·0	103·8	,,	,,
											103·8		
	13. 30	Shade	64·0	58·5	−5·5	58·1				..	..	,,	,,
	15. 0	Sun	5·6	57·0	51·4	56·9	56·7	2. 17. 0	50	..	104·4	,,	,,
	16. 30	Shade	58·4	52·9	−5·5	56·5				..	100·6	,,	,,
	2. 18. 0	Sun	14·0	64·7	50·7					90·7	98·0	,,	,,
											100·8	,,	N
July 14	23. 26. 0	Sun	23·5	83·7	60·2					72·0	97·8	Cloudless.	N
											98·0		
	27. 30	Shade	72·5	86·5	14·0	46·2				..	..	,,	,,
	29. 0	Sun	8·7	68·8	60·1	46·3				..	100·3	,,	,,
											104·7		
	30. 30	Shade	79·0	92·6	13·6	47·2				..	..	,,	,,
	32. 0	Sun	6·0	67·6	61·6	49·7				..	106·8	,,	,,
											102·0		
	33. 30	Shade	77·0	87·2	10·2	49·1				76·0	..	,,	,,
	35. 0	Sun	3·6	60·6	57·0	46·9				..	101·7	,,	,,
											99·0		
	36. 30	Shade	69·9	79·9	10·0	48·1	48·6	23. 37. 0	59	..	..	,,	,,
	38. 0	Sun	8·4	67·6	59·2	49·7				..	97·9	,,	,,
											96·8		
	39. 30	Shade	76·8	85·8	9·0	48·8				..	..	,,	,,
	41. 0	Sun	6·5	62·8	56·3	48·5				78·2	95·0	,,	,,
											100·5		
	42. 30	Shade	71·5	78·0	6·5	49·9				..	..	,,	,,
	44. 0	Sun	8·5	65·0	56·5	50·7				..	102·8	,,	,,
	45. 30	Shade	79·0	84·0	5·0	50·8				..	..	,,	,,
	23. 47. 0	Sun	6·3	61·4	55·1					81·8	108·0	,,	,,
											110·7	,,	N
July 15	1. 30. 0	Sun	1·6	40·6	39·0					74·0	101·0	Cloudless ; haze.	N
											98·6		
	31. 30	Shade	43·2	43·2	0·0	39·2	39·1	1. 32. 0	53	..	..	,,	,,
	33. 0	Sun	43·0	82·4	39·4	39·0				..	97·5	,,	,,
											98·6		
	34. 30	Shade	85·3	86·1	0·8	40·8				..	..	,,	,,
	36. 0	Sun	6·0	49·8	43·8	42·6	41·8	1. 37. 15	53	..	99·0	,,	,,
	37. 30	Shade	54·2	55·8	1·6	42·0				..	98·0	,,	,,
	1. 39. 0	Sun	46·4	89·8	43·4					79·0	97·2	,,	N
											94·6		

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OBSERVATIONS WITH THE ACTINOMETER—*continued.*

Day, 1864.	Greenwich Mean Solar Time of the Initial Reading.	Instrument exposed to the Sun's Rays, or in the Shade.	Readings of the Graduated Scale. Initial A.	Terminal B.	Change in One Minute, B-A.	Apparent effect of the Sun's Radiation in parts of the Scale.	Mean Result of each Group in parts of the Scale.	Greenwich Mean Solar Time corresponding to the Mean of each Group.	Altitude of the Sun.	Thermometer in the fluid of the Actinometer.	Blackened Bulb Thermometer on Grass.	General Remarks.	Observer.
	h m s		div.	div.	div.	divi	div.	h m s	°	°	°		
July 20	1. 38. 0	Sun	9·0	55·0	46·0					64·0	90·4 96·8	Cloudless.	N
	39. 30	Shade	62·0	68·0	6·0	42·3				..	..	,,	,,
	41. 0	Sun	13·0	63·7	50·7	43·7				..	101·0 101·6	,,	,,
	42. 30	Shade	70·9	78·8	7·9	44·1				..	..	,,	,,
	44. 0	Sun	6·8	60·2	53·4	44·9				..	100·8 102·2	,,	,,
	45. 30	Shade	69·0	78·2	9·2	43·3	42· 9	1. 46. 0	51	..	..	,,	,,
	47. 0	Sun	8·2	59·9	51·7	41·9				..	109·7 111·0	,,	,,
	48. 30	Shade	69·0	79·4	10·4	41·8				..	..	,,	,,
	50. 0	Sun	8·0	60·8	52·8	42·8				..	105·0 102·5	,,	,,
	51. 30	Shade	70·9	80·5	9·6	41·7				..	..	,,	
	1. 53. 0	Sun	12·8	62·7	49·9					70·0	98·0 95·5	,,	,, N
Aug. 3	22. 29. 0	Sun	4·9	51·0	46·1					64·0	89·7 90·8	Cloudless.	N
	30. 30	Shade	55·6	59·6	4·0	41·6				..	..	,,	,,
	32. 0	Sun	61·6	106·6	45·0	39·2				..	91·5 93·9	,,	,,
	33. 30	Shade	17·0	24·7	7·7	40·0	41· 0	22. 32. 30	52	..	..	,,	,,
	35. 0	Sun	27·8	78·2	50·4	43·2				..	.. 102·8	,,	,,
	36. 30	Shade	86·5	93·2	6·7	46·0				..	..	,,	,,
	38. 0	Sun	10·8	65·8	55·0	47·6				..	96·0 96·0	,,	,,
	39. 30	Shade	72·5	80·6	8·1	48·4	47· 4	22. 40. 45	52	..	..	,,	,,
	41. 0	Sun	7·0	65·0	58·0	48·6				..	97·2 97·4	,,	,,
	42. 30	Shade	73·5	84·2	10·7	46·6				..	..	,,	,,
	22. 44. 0	Sun	23·0	79·7	56·7					72·0	97·2 98·2	,,	N
Aug. 4	3. 7. 0	Sun	12·6	61·0	48·4					78·8	95·4	Clear.	N
	8. 30	Shade	65·2	67·1	1·9	35·5				..	101·0	,,	,,
	10. 0	Sun	67·6	94·0	26·4	24·2				..	105·0	Clouds over the Sun.	,,
	11. 30	Shade	9·7	12·2	2·5	30·1	34· 0	3. 12. 0	38	..	101·7	Clouds somewhat broken.	,,
	13. 0	Sun	13·0	51·8	38·8	35·6				..	101·4	,,	,,
	14. 30	Shade	55·9	59·7	3·8	44·7				..	102·7	,,	,,
	3. 16. 0	Sun	9·0	67·2	58·2					80·2	104·6	Sun free from clouds.	N
Aug. 5	2. 58. 0	Sun	19·0	63·0	44·0					77·0	97·4 98·5	Cloudless.	N
	2. 59. 30	Shade	67·6	72·0	4·4	41·4				..	..	,,	,,
	3. 1. 0	Sun	5·2	52·2	47·0	42·3				..	103·0 103·4	,,	,,
	2. 30	Shade	57·2	62·2	5·0	42·0	41. 7	3. 3. 0	39	..	..	,,	,,
	4. 0	Sun	4·0	50·9	46·9	41·5				..	108·8 111·3	,,	,,
	5. 30	Shade	57·0	62·8	5·8	41·8				..	..	,,	,,
	3. 7. 0	Sun	5·7	54·0	48·3					81·0	111·0 111·0	,,	N

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	h m s		div.	div.	div.	div.	div.	h m s	°	°	°		
Aug. 10	23. 34. 0	Sun	10·5	49·8	39·3					58·0	73·2 81·6	Clear about the Sun.	N
	35. 30	Shade	54·0	58·0	4·0	36·9				..	..	,,	,,
	37. 0	Sun	59·0	101·4	42·4	36·9				..	95·5 101·6	,,	,,
	38. 30	Shade	12·2	19·2	7·0	34·1				..	..	,,	,,
	40. 0	Sun	20·4	60·2	39·8	33·3				..	105·0	,,	,,
	41. 30	Shade	68·0	74·0	6·0	36·5				..	107·8	,,	,,
	43. 0	Sun	33·5	78·8	45·3	38·5	37·0	23. 42. 0	53	..	105·3 106·0	,,	,,
	44. 30	Shade	84·8	92·5	7·7	38·6				..	..	,,	,,
	46. 0	Sun	6·8	54·2	47·4	38·9				..	109·0 106·2	,,	,,
	47. 30	Shade	61·2	70·4	9·2	39·4				..	..	,,	,,
	23. 49. 0	Sun	16·0	65·9	49·9					65·5	102·1 105·0	,,	,, N
Aug. 19	2. 25. 0	Sun	32·5	40·5	8·0					63·0	70·3	Cirro-stratus and cumulo-stratus.	N
	26. 30	Shade	43·7	46·2	2·5	5·4				..	..	,,	,,
	28. 0	Sun	47·2	55·1	7·9	5·7				..	71·2	,,	,,
	29. 30	Shade	56·1	58·0	1·9	5·1	5·0	2. 30. 0	39	..	71·5	,,	,,
	31. 0	Sun	59·0	65·0	6·0	4·4				..	70·8	,,	,,
	32. 30	Shade	66·2	67·5	1·3	4·4				..	70·7	,,	,,
	2. 34. 0	Sun	69·6	75·0	5·4					64·0	70·0	,,	N
Aug. 19	2. 57. 0	Sun	2·0	38·1	36·1					66·0	78·0	Light clouds.	N
	2. 58. 30	Shade	43·0	48·0	5·0	32·2				..	83·8	,,	,,
	3. 0. 0	Sun	50·0	88·2	38·2	33·0	31·9	2. 59. 45	36	..	88·4	,,	,,
	1. 30	Shade	93·0	98·4	5·4	30·6				..	..	,,	,,
	3. 0	Sun	8·4	42·1	33·7	28·3				..	84·2	,,	,,
	4. 30	Shade	46·6	52·0	5·4	20·1	24·2	3. 5. 0	36	..	..	,,	,,
	3. 6. 0	Sun	55·0	72·2	17·2					69·0	84·7	Clouds becoming denser.	N
Aug. 26	2. 47. 0	Sun	14·0	24·5	10·5					64·0	69·0 66·2	Partially cloudy. Sun obscured. Cirro-stratus.	N
	48. 30	Shade	26·2	28·0	1·8	7·4	6·8	2. 49. 45	36	..	..	,,	,,
	50. 0	Sun	29·4	37·2	7·8	6·2				..	63·7 62·7	Occasional gleams of sunshine.	,,
	51. 30	Shade	38·2	39·6	1·4					..	..	,,	,,
	53. 0	Sun	40·0	75·2	35·2	33·6				..	65·8 71·8	Sun free from cloud.	,,
	54. 30	Shade	78·1	79·9	1·8	32·4	32·4	2. 55. 0	36	..	..	,,	,,
	56. 0	Sun	40·6	73·8	33·2	31·2				..	75·7	,,	,,
	57. 30	Shade	76·5	78·7	2·2	36·0				..	76·5	,,	,,
	2. 59. 0	Sun	6·7	50·0	43·3	40·0	38·3	3. 0. 15	35	..	79·0 79·2	,,	,,
	3. 0. 30	Shade	54·0	58·3	4·3	39·0				..	..	,,	,,
	3. 2. 0	Sun	59·2	102·5	43·3					67·0	78·9 81·2	,,	N
Aug. 29	2. 37. 0	Sun	7·7	54·2	46·5					69·0	96·0 97·2	Clear.	N
	38. 30	Shade	59·0	65·0	6·0	40·2	40·1	2. 39. 0	36	..	..	,,	,,
	2. 40. 0	Sun	65·0	111·0	46·0	40·0				..	98·7 97·0	,,	N

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	h m s		div.	div.	div.	div.	div.	h m s	°	°	°		
Aug. 29	2. 41. 30	Shade	66·6	72·6	6·0	37·5				..	..	Light clouds.	N
cont.)	43. 0	Sun	2·0	43·0	41·0	33·8				..	94·6	„	„
	44. 30	Shade	46·5	55·0	8·5	33·3				..	..	„	„
	46. 0	Sun	6·0	48·6	42·6	34·5	33·5	2. 45. 45	36	..	96·0	Cloudless near Sun.	„
											94·9		
	47. 30	Shade	55·0	62·7	7·7	28·6				..	..	Light clouds.	„
											89·6		
	2. 49. 0	Sun	66·2	96·2	30·0					72·5	87·2	„	N
Aug. 30	3. 21. 0	Sun	6·5	50·0	43·5					72·0	87·2	Cloudless.	N
											87·2		
	22. 30	Shade	54·3	58·0	3·7	40·6				..	..	„	„
	24. 0	Sun	8·9	54·1	45·2	41·1				..	83·8	„	„
											87·7		
	25. 30	Shade	58·5	63·0	4·5	41·2	41·6	3. 26. 0	30	..	..	„ Strong breeze.	„
	27. 0	Sun	26·0	72·2	46·2	42·0				..	90·3	„	„
											88·8		
	28. 30	Shade	77·8	81·6	3·8	43·0				..	..	„	„
	3. 30. 0	Sun	30·7	78·1	47·4					76·0	88·4	„	N
											90·8		
Sept. 14	1. 53. 0	Sun	21·6	30·6	9·0					63·0	65·0	Dense cirro-stratus clouds;	N
											65·5	strong wind.	
	54. 30	Shade	32·6	35·1	2·5	6·6				..	..	Occasional gleams of sunshine.	„
	56. 0	Sun	36·4	45·5	9·1	6·5				..	67·0	„	„
	57. 30	Shade	47·1	49·8	2·7	5·9				..	67·0	„	„
	1. 59. 0	Sun	50·8	58·8	8·0	5·5	6·1	1. 58. 0	34	..	66·8	„	„
											66·3		
	2. 0. 30	Shade	60·3	62·5	2·2	6·0				..	..	„	„
	2. 2. 0	Sun	64·0	72·4	8·4					64·0	67·1	„	N
											67·2		
Sept. 14	21. 57. 0	Sun	6·6	55·0	48·4					56·0	72·5	No clouds about the Sun.	N
											76·0		
	21. 58. 30	Shade	60·2	64·9	4·7	41·7				..	..	„	„
	22. 0. 0	Sun	8·4	52·8	44·4	39·2	40·5	21. 59. 0	34	..	78·2	Cirrus, cirro-cumulus, and cirro-stratus in many directions.	„
													„
	1. 30	Shade	59·2	65·0	5·8	27·0				..	80·1	Light clouds passing over the Sun.	„
	3. 0	Sun	7·0	28·2	21·2	15·4				..	77·7	Cirro-cumulus passing over the	„
							24·4	22. 3. 30			71·4	Sun.	„
	4. 30	Shade	32·8	38·6	5·8	30·7				..	..	„	„
	6. 0	Sun	41·4	93·2	51·8	45·1				..	72·4	Sun free from cloud.	„
											74·4		
	7. 30	Shade	5·0	12·6	7·6	43·0	43·3	22. 8. 0		..	..	„	„
	9. 0	Sun	14·7	64·0	49·3	41·8				..	75·6	Light cirrus over the Sun.	„
											78·8		
	10. 30	Shade	70·4	77·8	7·4	37·1				..	..	„	„
	12. 0	Sun	10·0	49·6	39·6	32·3	34·7	22. 12. 30	35	..	..	„	„
											73·7		
	22. 13. 30	Shade	56·7	63·9	7·2					..	75·5	Sun partially covered with light clouds.	N
Sept. 15	2. 41. 0	Sun	10·5	36·0	25·5					64·5	65·0	Sun shining through thin clouds.	N
	42. 30	Shade	38·0	40·0	2·0	18·0				..	67·2	„	„
	44. 0	Sun	40·5	55·0	14·5	12·9				..	67·9	Clouds denser; strong breeze.	„
	45. 30	Shade	57·3	58·5	1·2	13·9	14·5	2. 46. 0	29	..	66·2	Cirro-stratus clouds.	„
	47. 0	Sun	58·5	74·2	15·7	14·4				..	65·5	„	„
	48. 30	Shade	76·0	77·4	1·4	13·5				..	65·8	„	„
	2. 50. 0	Sun	79·0	93·0	14·0	..	..	..	..	65·5	65·5		N
											65·1		

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	h m s		div.	div.	div.	div.	div.	h m s	°				
Sept. 22	22. 31. 0	Sun	10·5	57·7	47·2	..	..	..	..	58°0	68°6 71°1	Sun free from cloud 53 secs.; obscured 7 secs.	N
	32. 30	Shade	58·8	60·8	2·0	26·3	..	..	..	..	..		,,
	34. 0	Sun	13·5	22·9	9·4	6·9	9·0	23. 35. 15	37	..	68·6	Sun totally obscured by dense clouds.	,,
	35. 30	Shade	24·5	27·6	3·1	11·2				..	63·8	,,	,,
	37. 0	Sun	29·2	48·5	19·3	16·2				..	65·0	Sun shining through thin clouds for 20 secs.; totally obscured 40 secs.	,,
	38. 30	Shade	51·0	54·0	3·0	18·4	18·6	23. 40. 30	37	..	63·0		,,
	40. 0	Sun	55·0	78·5	23·5	20·3				..	65·5 65·5	Sun free from cloud 5 secs., partially seen 15 secs., and totally obscured 40 secs.	,,
	41. 30	Shade	80·5	84·0	3·5	19·5				..	..		,,
	22. 43. 0	Sun	13·6	36·0	22·4	..	..	..	..	61·0	64·4	Sun shining through thin clouds 25 secs.; totally obscured 35 secs.	N
Oct. 4	1. 35. 0	Sun	4·4	46·2	41·8	..	..	..	..	59·0	62·5	Cloudless about the Sun.	N
	36. 30	Shade	49·8	51·3	1·5	40·3	40·4	1. 37. 0	29	..	62·8	Strong East wind.	,,
	38. 0	Sun	52·0	93·8	41·8	40·5				..	66·0	,,	,,
	39. 30	Shade	9·0	10·0	1·0	38·4				..	..	,,	,,
	41. 0	Sun	10·0	47·0	37·0	35·8	37·1	1. 41. 30	..	..	70·9	,,	,,
	42. 30	Shade	50·3	51·8	1·5	37·2				..	..	,,	,,
	44. 0	Sun	52·1	92·4	40·3	39·3	39·8	1. 46. 0	28	..	75·2	,,	,,
	45. 30	Shade	33·3	33·7	0·4	40·3				..	66·4	,,	,,
	1. 47. 0	Sun	33·8	74·9	41·1	..	..	..	..	60·0	65·7	,,	N
Oct. 6	0. 38. 0	Sun	9·4	48·9	39·5	..	..	..	..	56·0	71·0	Cloudless; strong East wind.	N
	39. 30	Shade	53·7	58·2	4·5	34·0				..	70·5	,,	,,
	41. 0	Sun	5·2	42·7	37·5	33·0	34·2	0. 40. 45	32	..	70·0	,,	,,
	42. 30	Shade	46·9	51·4	4·5	35·6				..	71·1	,,	,,
	44. 0	Sun	53·6	96·3	42·7	37·9				..	72·2	,,	,,
	45. 30	Shade	6·4	11·6	5·2	38·3	38·4	0. 46. 0	..	..	72·2	,,	,,
	47. 0	Sun	14·2	58·4	44·2	38·9				..	72·1	,,	,,
	48. 30	Shade	63·7	69·0	5·3	39·5				..	72·4	,,	,,
	50. 0	Sun	5·8	51·2	45·4	40·1	40·3	0. 51. 15	31	..	72·1	,,	,,
	51. 30	Shade	56·5	61·8	5·3	41·2				..	71·2	,,	,,
	0. 53. 0	Sun	10·4	58·0	47·6	..	..	..	..	62·0	72·0 71·0	,,	N
Oct. 18	22. 6. 0	Sun	13·8	52·7	38·9	..	..	..	..	58·0	75·4 76·3	Clear about the Sun; light cirrus clouds elsewhere; strong breeze.	N
	7. 30	Shade	57·7	63·5	5·8	34·8				..	..	,,	,,
	9. 0	Sun	6·7	49·0	42·3	36·5				..	75·4	,,	,,
	10. 30	Shade	55·0	60·8	5·8	37·1	36·4	22. 10. 15	24	..	73·0	,,	,,
	12. 0	Sun	7·4	50·9	43·5	36·6				..	73·7 74·5	,,	,,
	13. 30	Shade	57·8	65·8	8·0	36·9				..	..	,,	,,
	15. 0	Sun	4·0	50·3	46·3	38·1				..	70·8	,,	,,
	16. 30	Shade	57·1	65·4	8·3	38·1				..	72·0	,,	,,
	18. 0	Sun	3·6	50·0	46·4	38·3	38·1	22. 18. 30	24	..	73·7 74·4	,,	,,
	19. 30	Shade	62·5	70·3	7·8	38·0				..	..	,,	,,
	22. 21. 0	Sun	10·8	56·1	45·3	..	..	..	..	62·0	75·0 75·8	,,	N

In every Observation, whether in the Sun's rays or in the shade, the terminal reading was taken exactly one minute after the initial reading.
The "Apparent Effect of the Sun's Radiation" is found by comparing each change (whether in the Sun's rays or in the shade) with the mean of that which immediately precedes and that which immediately follows it.
The Initial N is that of Mr. W. C. Nash.

OBSERVATIONS WITH THE ACTINOMETER—*concluded.*

Day, 1864.	Greenwich Mean Solar Time of the Initial Reading.	Instrument exposed to the Sun's Rays, or in the Shade.	Readings of the Graduated Scale. Initial A.	Readings of the Graduated Scale. Terminal B.	Change in One Minute, B−A.	Apparent effect of the Sun's Radiation in parts of the Scale.	Mean result of each Group in parts of the Scale.	Greenwich Mean Solar Time corresponding to the Mean of each Group.	Altitude of the Sun.	Thermometer in the fluid of the Actinometer.	Blackened Bulb Thermometer on Grass.	General Remarks.	Observer.
	h m s		div.	div.	div.	div.	div.	h m s	°	°	°		
Oct. 24	2. 39. 0	Sun	4·2	36·1	31·9					61·0	67·0	Cloudless about the Sun.	N
	40. 30	Shade	39·8	44·0	4·2	27·6				..	67·9	,,	,,
	42. 0	Sun	45·8	77·5	31·7	27·5	27. 55	2. 41. 0	16	..	67·9	,,	,,
	43. 30	Shade	80·5	84·7	4·2	25·8				..	67·1	,,	,,
	45. 0	Sun	5·6	33·8	28·2	24·6	25. 5	2. 46. 15	16	..	66·0	,,	,,
	46. 30	Shade	36·5	39·5	3·0	26·2				..	65·5	,,	,,
	2. 48. 0	Sun	40·4	70·6	30·2					63·5	66·2	,,	N
Nov. 7	2. 39. 0	Sun	19·5	27·8	8·3					42·5	45·7	Sun shining through thin clouds.	N
	40. 30	Shade	28·9	29·9	1·0	7·9				..	..	,,	,,
	42. 0	Sun	30·0	39·5	9·5	8·4				..	45·8	,,	,,
	43. 30	Shade	41·0	42·2	1·2	7·7	7. 8	2. 44. 0	13	..	..	,,	,,
	45. 0	Sun	43·0	51·3	8·3	7·1				..	46·0	,,	,,
	46. 30	Shade	52·7	53·9	1·2	7·9				..	..	,,	,,
	2. 48. 0	Sun	54·2	64·0	9·8					43·0	46·0	,,	N
Nov. 9	1. 14. 0	Sun	18·9	46·0	27·1					48·7	54·8	Clear about the Sun for 50 secs.	N
										..	58·2	Partially cloudy 10 secs.	,,
	15. 30	Shade	49·5	53·2	3·7	19·6				..	..		,,
	17. 0	Sun	54·9	74·4	19·5	16·0				..	55·5	Sun shining through thin clouds.	,,
										..	55·5		,,
	18. 30	Shade	77·4	80·8	3·4	20·9	19. 1	1. 18. 15	18	..	..	Denser clouds.	,,
										..	54·2	Sun free from cloud.	,,
	20. 0	un	3·9	33·0	29·1	25·4				..	57·2		,,
	21. 30	Shade	37·0	41·0	4·0	13·7				..	50·6	Very dense cumulo-stratus before	,,
										..	48·2	the Sun.	,,
	23. 0	Sun	42·8	49·0	6·2	2·7				..	..		,,
	24. 30	Shade	50·0	53·0	3·0	2·6				..	46·4	,,	,,
	26. 0	Sun	54·0	59·0	5·0	2·5	2. 7	1. 26. 30	18	..	46·0		,,
										..	..	,,	,,
	27. 30	Shade	60·1	62·0	1·9	3·0				..	46·0	,,	,,
	1. 29. 0	Sun	62·8	67·7	4·9					51·5	46·9	,,	N
Nov. 21	2. 36. 0	Sun	4·6	11·0	6·4					56·0	51·2	Sun shining through cirro-stra-	N
	37. 30	Shade	12·8	15·8	3·0	2·9				..	..	tus clouds.	,,
	39. 0	Sun	16·4	21·8	5·4	2·9				..	47·6	,,	,,
										..	47·2		,,
	40. 30	Shade	23·0	25·0	2·0	2·4	2. 4	2. 41. 0	9	..	..	,,	,,
	42. 0	Sun	25·5	28·8	3·3	2·1				..	46·8	Clouds denser.	,,
	43. 30	Shade	29·1	29·5	0·4	1·9				..	..	,,	,,
	2. 45. 0	Sun	29·5	30·8	1·3					56·0	46·1	,,	N
Dec. 1	3. 23. 0	Sun	18·8	22·2	+3·4					..	50·7	Cloudless but hazy near the Sun.	N
										..	48·2		,,
	24. 30	Shade	22·0	21·1	−0·9	3·2				..	..	,,	,,
	26. 0	Sun	20·6	21·8	+1·2	2·5	2. 5	3. 26. 30	3	..	46·3	,,	,,
	27. 30	Shade	21·3	19·6	−1·7	1·8				..	45·3	,,	,,
	3. 29. 0	Sun	16·8	15·8	−1·0					55·6	44·8	Sun in cirro-stratus clouds.	N
										..	44·8		
													N
Dec. 5	2. 42. 0	Sun	10·9	24·8	13·9					56·0	53·5	Cloudless.	,,
	43. 30	Shade	25·9	27·2	1·3	11·3				..	53·8	,,	,,
	45. 0	Sun	28·0	39·2	11·2	10·6				..	53·5	,,	,,
										..	53·1		,,
	46. 30	Shade	40·1	39·9	−0·2	11·9	11. 8	2. 47. 0	7	..	..	,,	,,
	48. 0	Sun	39·9	52·2	12·3	12·6				..	52·9	,,	,,
										..	53·5		,,
	49. 30	Shade	52·8	52·3	−0·5	12·5				..	..	,,	,,
	2. 51. 0	Sun	51·9	63·5	11·6					57·0	52·8	,,	N
										..	52·9		

In every observation, whether in the Sun's rays or in the shade, the terminal reading was taken exactly one minute after the initial reading.
The "Apparent Effect of the Sun's radiation" is found by comparing each change (whether in the Sun's rays or in the shade) with the mean of that which immediately precedes and that which immediately follows it.
The initial N is that of Mr. W. C. Nash.
December 1. The observations on this day, were made for comparison with Mr. Glaisher's results obtained during his balloon ascent from Woolwich.
1864, December 8 to 1865, January 30. The Actinometer was in the hands of its maker for repair.

READINGS OF THERMOMETERS SUNK IN THE GROUND.

(I.)—Reading of a Thermometer whose bulb is sunk to the depth of 25·6 feet (24 French feet) below the surface of the soil, at Noon on every Day, except Sundays, and Good Friday.

Days of the Month, 1864.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
1	51·70	51·18	50·42	49·55	*S*	48·54	48·81	49·47	50·32	51·24	51·82	51·99
2	51·68	51·18	50·37	49·53	*S*	48·54	48·83	49·50	50·33	*S*	51·84	51·98
3	*S*	51·14	50·35	*S*	48·83	48·55	*S*	49·52	50·38	51·29	51·85	52·00
4	51·65	51·10	50·36	49·50	48·78	48·57	48·87	49·55	*S*	51·30	51·82	*S*
5	51·64	51·07	50·32	49·43	48·77	*S*	48·89	49·59	50·44	51·34	51·86	52·00
6	51·58	51·04	*S*	49·40	48·78	48·57	48·88	49·60	50·47	51·38	*S*	52·00
7	51·58	*S*	50·27	49·39	48·77	48·58	48·92	*S*	50·52	51·41	51·82	51·98
8	51·58	51·00	50·24	49·37	*S*	48·58	48·92	49·66	50·55	51·44	51·86	51·97
9	51·60	50·93	50·18	49·35	48·70	48·58	48·85	49·66	50·58	*S*	51·89	51·97
10	*S*	50·93	50·16	*S*	48·71	48·58	*S*	49·68	50·58	51·48	51·89	51·95
11	51·58	50·92	50·16	49·30	48·70	48·57	49·01	49·73	*S*	51·49	51·88	*S*
12	51·57	50·91	50·12	49·28	48·69	*S*	49·02	49·76	50·64	51·52	51·89	51·96
13	51·53	50·89	*S*	49·25	48·68	48·58	49·04	49·78	50·67	51·52	*S*	51·93
14	51·52	*S*	50·08	49·23	48·68	48·60	49·06	*S*	50·72	51·54	51·94	51·90
15	51·48	50·83	50·04	49·21	*S*	48·60	49·09	49·84	50·73	51·57	51·94	51·88
16	51·47	50·80	50·02	49·16	48·66	48·63	49·09	49·85	50·75	*S*	51·93	51·77
17	*S*	50·76	49·97	*S*	48·65	48·64	*S*	49·89	50·78	51·62	51·95	51·83
18	51·46	50·73	49·94	49·14	48·65	48·64	49·17	49·92	*S*	51·63	51·96	*S*
19	51·46	50·67	49·94	49·13	48·64	*S*	49·17	49·94	50·87	51·67	51·99	51·84
20	51·44	50·75	*S*	49·12	48·63	48·68	49·21	49·96	50·88	51·67	*S*	51·86
21	51·42	*S*	49·87	49·08	48·59	48·69	49·22	*S*	50·92	51·68	51·97	51·83
22	51·41	50·62	49·84	49·06	*S*	48·69	49·24	50·02	50·97	51·70	51·98	51·81
23	51·38	50·68	49·81	49·04	48·58	48·69	49·26	50·00	50·98	*S*	51·98	51·78
24	*S*	50·56	49·78	*S*	48·58	48·72	*S*	50·07	51·04	51·73	51·96	51·78
25	51·34	50·52	Good Friday.	48·98	48·58	48·72	49·30	50·09	*S*	51·74	51·97	*S*
26	51·33	50·52	49·71	48·96	48·57	*S*	49·32	50·13	51·08	51·75	51·97	51·75
27	51·32	50·48	*S*	48·94	48·57	48·74	49·36	50·17	51·13	51·76	*S*	51·73
28	51·28	*S*	49·65	48·90	48·55	48·76	49·38	*S*	51·16	51·80	52·02	51·73
29	51·23	50·44	49·63	48·90	*S*	48·79	49·42	50·24	51·18	51·79	52·00	51·73
30	51·22		49·58	48·87	48·54	48·80	49·44	50·27	51·20	*S*	52·00	51·71
31	*S*		49·58		48·54		*S*	50·28		51·81		51·68
Means.	51·48	50·83	50·02	49·19	48·66	48·64	49·11	49·86	50·76	51·57	51·92	51·86

(II.)—Reading of a Thermometer whose bulb is sunk to the depth of 12·8 feet (12 French feet) below the surface of the soil, at the same times.

Days of the Month, 1864.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
1	50·65	48·19	46·71	45·86	*S*	48·65	50·95	53·13	55·01	55·26	54·35	52·28
2	50·55	48·17	46·65	45·86	46·50	48·72	51·06	53·19	55·01	*S*	54·35	52·20
3	*S*	48·11	46·60	*S*	46·54	48·84	*S*	53·27	55·05	55·22	54·31	52·14
4	50·45	48·05	46·58	45·87	46·57	48·95	51·19	53·39	*S*	55·18	54·20	*S*
5	50·38	48·00	46·48	45·81	46·67	*S*	51·28	53·50	55·05	55·18	54·23	52·01
6	50·25	47·95	*S*	45·84	46·75	49·09	51·30	53·55	55·08	55·23	*S*	51·92
7	50·20	*S*	46·40	45·82	46·80	49·20	51·40	*S*	55·13	55·26	54·15	51·84
8	50·15	47·87	46·34	45·82	*S*	49·24	51·44	53·68	55·14	55·19	54·05	51·74
9	50·12	47·78	46·22	45·78	46·88	49·33	51·52	53·71	55·15	*S*	54·04	51·68
10	*S*	47·70	46·18	*S*	46·98	49·38	*S*	53·76	55·12	55·15	54·00	51·57
11	50·00	47·75	46·16	45·78	47·05	49·41	51·72	53·88	*S*	55·10	53·88	*S*
12	49·92	47·70	46·12	45·80	47·14	*S*	51·73	53·97	55·11	55·09	53·82	51·47

(II.)—Reading of a Thermometer whose bulb is sunk to the depth of 12·8 feet (12 French feet)—*concluded.*

Days of the Month, 1864.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
13	49·78	47·70	*S*	45·79	47·19	49·54	51·79	54·07	55·14	55·06	*S*	51·38
14	49·67	*S*	46·06	45·81	47·27	49·62	51·87	*S*	55·17	55·02	53·75	51·26
15	49·57	47·55	46·04	45·83	*S*	49·67	51·95	54·23	55·15	54·99	53·66	51·20
16	49·50	47·50	46·02	45·80	47·39	49·77	51·97	54·22	55·16	*S*	53·57	51·14
17	*S*	47·43	46·00	*S*	47·46	49·87	*S*	54·30	55·17	54·97	53·49	51·02
18	49·32	47·34	45·97	45·86	47·54	49·92	52·15	54·38	*S*	54·92	53·40	*S*
19	49·23	47·27	45·96	45·90	47·60	*S*	52·25	54·43	55·23	54·92	53·35	50·92
20	49·13	47·23	*S*	45·95	47·67	50·10	52·32	54·47	55·26	54·85	*S*	50·90
21	49·02	*S*	45·94	45·95	47·67	50·19	52·32	*S*	55·25	54·80	53·14	50·82
22	48·93	47·12	45·93	45·99	*S*	50·25	52·37	54·58	55·29	54·77	53·05	50·72
23	48·82	47·07	45·90	46·00	47·84	50·30	52·43	54·56	55·27	*S*	52·95	50·64
24	*S*	47·01	45·93	*S*	47·89	50·40	*S*	54·68	55·32	54·70	52·75	50·60
25	48·64	46·95	Good Friday.	46·10	48·00	50·47	52·55	54·70	*S*	54·66	52·72	*S*
26	48·55	46·94	45·87	46·14	48·08	*S*	52·63	54·75	55·25	54·61	52·64	50·42
27	48·52	46·90	*S*	46·20	48·18	50·73	52·75	54·87	55·32	54·56	*S*	50·35
28	48·40	*S*	45·88	46·22	48·28	50·72	52·80	*S*	55·33	54·59	52·55	50·27
29	48·32	46·77	45·85	46·30	*S*	50·83	52·82	54·96	55·27	54·50	52·47	50·21
30	48·26		45·85	46·38	48·44	50·88	52·98	55·04	55·25	*S*	52·37	50·12
31	*S*		45·87		48·54		*S*	54·99		54·40		50·02
Means.	49·47	47·52	46·13	45·94	47·42	49·77	51·98	54·16	55·18	54·93	53·51	51·14

(III.)—Reading of a Thermometer whose bulb is sunk to the depth of 6·4 feet (6 French feet) below the surface of the soil, at the same times.

Days of the Month, 1864.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
1	48·60	45·97	43·80	44·80	*S*	52·48	55·38	58·38	58·40	57·53	54·77	50·01
2	48·49	45·93	43·85	44·79	48·50	52·50	55·43	58·41	58·38	*S*	54·71	49·94
3	*S*	45·78	43·80	*S*	48·58	52·51	*S*	58·53	58·41	57·37	54·59	49·84
4	48·30	45·70		44·80	48·64	52·57	55·51	58·69	*S*	57·26	54·36	*S*
5	48·08	45·62		44·79	48·80	*S*	55·60	58·80	58·39	57·20	54·25	49·63
6	47·85	45·62	*S*	44·86	48·99	52·58	55·59	58·78	58·40	57·12	*S*	49·57
7	47·62	*S*	43·95	44·93	49·09	52·69	55·68	*S*	58·45	56·97	53·84	49·50
8	47·39	45·50	44·00	45·03	*S*	52·75	55·68	58·91	58·46	56·80	53·54	49·41
9	47·15	45·38	44·08	45·09	49·22	52·89	55·74	58·96	58·45	*S*	53·31	49·42
10	*S*	45·29	44·03	*S*	49·40	53·03	*S*	59·06	58·40	56·50	53·10	49·38
11	46·63	45·15	44·20	45·27	49·50	53·16	55·91	59·20	*S*	56·36	52·82	*S*
12	46·42	44·98	44·22	45·43	49·59	*S*	55·90	59·29	58·48	56·25	52·37	49·33
13	46·18	44·84	*S*	45·58	49·67	53·48	55·95	59·35	58·53	56·16	*S*	49·25
14	45·97	*S*	44·30	45·77	49·74	53·67	56·08	*S*	58·52	56·07	52·09	49·16
15	45·80	44·59	44·30	45·94	*S*	53·80	56·22	59·29	58·41	55·98	51·84	49·10
16	45·71	44·56	44·37	46·06	49·98	53·96	56·30	59·20	58·35	*S*	51·68	49·01
17	*S*	44·60	44·60	*S*	50·14	54·09	*S*	59·25	58·27	55·85	51·53	48·90
18	45·55	44·63	44·53	46·33	50·32	54·16	56·63	59·28	*S*	55·72	51·41	*S*
19	45·49	44·63	44·52	46·50	50·35	*S*	56·76	59·30	58·20	55·67	51·30	48·63
20	45·42	44·73	*S*	46·63	50·80	54·40	56·94	59·32	58·11	55·52	*S*	48·48
21	45·37	*S*	44·69	46·80	51·00	54·52	57·05	*S*	58·02	55·50	51·14	48·25
22	45·40	44·60	44·70	46·95	*S*	54·60	57·20	59·33	57·98	55·44	51·10	48·02
23	45·42	44·50	44·72	47·14	51·59	54·73	57·34	59·20	57·84	*S*	51·00	47·84
24	*S*	44·39	44·79	*S*	51·81	54·89	*S*	59·25	57·85	55·38	50·59	47·72
25	45·65	44·25	Good Friday.	47·50	52·03	55·00	57·62	59·14	*S*	55·30	50·61	*S*
26	45·79	44·18	44·83	47·58	52·14	*S*	57·78	59·08	57·69	55·20	50·59	47·39

(III.)—Reading of a Thermometer whose bulb is sunk to the depth of 6·4 feet (6 French feet)—*concluded.*

Days of the Month, 1864.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
27	45·90	44·05	*S*	47·86	52·25	55·08	57·95	58·99	57·72	55·10	*S*	47·25
28	45·90	*S*	44·85	48·00	52·33	55·27	58·03	*S*	57·70	55·08	50·39	47·06
29	45·93	43·90	44·85	48·17	*S*	55·34	58·16	58·70	57·60	54·92	50·28	46·90
30	45·93		44·80	48·29	52·40	55·36	58·24	58·60	57·54	*S*	50·11	46·75
31	*S*		44·84		52·48		*S*	58·47		54·81		46·60
Means .	46·46	44·93	44·40	46·19	50·36	53·83	56·56	58·99	58·18	56·04	52·20	48·61

At temperatures below 43°·50 the fluid of this thermometer descends below the scale ; the readings on March 4 and 5 were both less than 43°·50, and the readings for two or three preceding days were subject to some uncertainty.

(IV.)—Reading of a Thermometer whose bulb is sunk to the depth of 3·2 feet (3 French feet) below the surface of the soil, at the same times.

Days of the Month, 1864.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
1	45·03	42·52	40·20	42·34	*S*	53·54	57·47	61·75	59·48	57·31	52·90	46·30
2	44·68	42·16	40·42	42·65	49·40	53·46	57·56	61·85	59·46	*S*	52·48	46·19
3	*S*	42·10	40·60	*S*	49·69	53·49	*S*	61·80	59·41	56·90	52·00	45·86
4	43·33	42·53	40·70	42·87	49·92	53·63	57·67	61·70	*S*	56·51	51·48	*S*
5	42·95	42·49	41·10	43·24	50·01	*S*	57·63	61·70	59·30	56·10	51·00	45·93
6	42·35	42·18	*S*	43·59	50·04	54·00	57·65	61·88	59·37	55·79	*S*	46·11
7	41·85	*S*	41·83	43·59	50·10	54·50	57·79	*S*	59·37	55·40	49·91	46·26
8	41·31	41·40	42·36	43·80	*S*	54·99	57·75	62·44	59·60	55·24	49·35	46·33
9	40·90	41·07	42·44	44·06	50·57	55·39	57·70	62·53	59·87	*S*	48·90	46·47
10	*S*	40·67	42·33	*S*	50·49	55·80	*S*	62·58	60·09	55·03	48·53	46·28
11	40·47	40·32	42·05	44·94	50·30	56·04	57·85	62·25	*S*	54·92	48·05	*S*
12	40·37	40·03	42·02	45·40	50·43	*S*	58·12	61·80	59·70	54·87	47·58	45·98
13	40·37	40·10	*S*	45·87	50·62	56·41	58·57	61·51	59·20	54·78	*S*	46·00
14	40·55	*S*	42·10	45·94	51·03	56·61	58·89	*S*	58·90	54·68	47·31	45·78
15	40·67	41·02	42·42	46·02	*S*	56·50	59·14	61·54	58·72	54·57	47·53	45·66
16	40·73	41·48	42·63	46·12	51·99	56·53	59·30	61·60	58·60	*S*	47·59	45·34
17	*S*	41·93	42·93	*S*	52·55	56·51	*S*	61·82	58·50	54·15	47·63	44·82
18	40·75	41·95	42·81	46·77	53·11	56·70	60·04	61·89	*S*	54·11	47·64	*S*
19	40·99	41·70	42·63	46·99	53·75	*S*	60·23	61·77	58·14	54·24	47·94	43·62
20	41·36	41·40	*S*	47·28	54·45	57·25	60·53	61·55	57·90	54·31	*S*	43·21
21	41·80	*S*	42·69	47·70	54·79	57·48	60·78	*S*	57·69	54·52	47·95	43·10
22	42·30	40·40	42·83	48·19	*S*	57·74	61·05	61·11	57·72	54·52	48·00	43·23
23	42·76	40·15	42·89	48·48	55·09	57·84	61·20	60·59	57·77	*S*	48·07	43·04
24	*S*	39·90	42·92	*S*	54·98	57·89	*S*	60·27	57·80	54·11	47·49	42·89
25	43·57	39·50	Good Friday	48·92	54·74	57·70	61·35	59·69	*S*	53·85	47·15	*S*
26	43·37	39·40	42·80	49·07	54·45	*S*	61·41	59·19	57·74	53·50	46·70	42·05
27	43·23	39·45	*S*	49·07	54·28	57·70	61·44	58·85	57·80	53·48	*S*	41·85
28	43·23	*S*	42·75	49·10	54·20	57·58	61·32	*S*	57·79	53·67	46·20	41·62
29	43·40	39·87	42·67	49·17	*S*	57·46	61·38	58·60	57·59	53·53	46·45	41·53
30	43·37		42·50	49·15	54·05	57·39	61·48	58·87	57·39	*S*	46·47	41·74
31	*S*		42·39		53·81		*S*	59·08		53·38		41·91
Means .	42·14	41·03	42·15	46·17	52·26	56·16	59·43	61·12	58·26	54·75	48·55	44·41

At temperatures below 39°·70 the fluid of this thermometer descends below the scale ; the readings on February 25, 26, and 27, which are slightly below thisvalue, are estimated readings only, and therefore liable to some uncertainty.

(V.)—Reading of a Thermometer whose bulb is sunk to the depth of 1 inch below the surface of the soil, within the case which covers the tops of the deep-sunk Thermometers, at the same times.

Days of the Month, 1864.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
1	39·4	40·3	41·4	44·3	*S*	54·2	59·3	65·9	60·5	57·2	48·9	43·8
2	36·9	43·7	38·8	43·5	55·3	55·0	61·2	63·0	61·2	*S*	48·4	41·8
3	*S*	45·7	40·5	*S*	54·9	55·9	*S*	61·5	61·3	54·7	47·7	46·2
4	34·4	40·4	45·0	49·0	51·6	56·5	59·3	65·4	*S*	52·4	43·0	*S*
5	35·2	38·0	43·8	44·0	51·8	*S*	60·1	68·0	60·0	53·5	45·8	47·1
6	30·4	38·0	*S*	45·2	53·5	59·2	59·4	67·8	60·0	53·0	*S*	48·2
7	30·0	*S*	46·3	45·6	55·0	61·5	60·2	*S*	63·9	54·6	44·5	47·3
8	33·0	36·4	46·2	45·5	*S*	61·6	58·2	68·3	65·6	53·5	41·3	46·8
9	35·3	34·0	41·2	47·3	50·2	61·9	58·4	64·6	65·3	*S*	43·7	44·6
10	*S*	33·3	40·2	*S*	53·0	60·8	*S*	60·8	61·4	54·8	41·6	44·2
11	38·3	35·8	44·4	51·1	52·3	61·0	64·8	60·7	*S*	55·7	40·3	*S*
12	38·9	40·3	42·9	50·5	56·3	*S*	62·2	62·0	56·2	54·2	41·9	46·8
13	38·6	45·8	*S*	48·4	56·4	60·3	62·2	63·2	57·7	54·0	*S*	44·0
14	39·2	*S*	46·2	48·8	56·6	60·6	61·5	*S*	60·5	53·1	48·0	43·4
15	37·2	44·2	46·8	50·5	*S*	59·1	64·0	65·2	58·1	51·4	45·3	40·6
16	39·0	45·8	44·3	50·3	60·6	59·3	63·4	64·1	59·3	*S*	46·2	39·3
17	*S*	41·3	42·5	*S*	60·8	61·5	*S*	64·9	57·1	54·9	46·4	35·6
18	40·6	39·0	43·0	51·0	62·3	61·3	66·5	61·5	*S*	55·0	49·3	*S*
19	43·1	36·4	44·0	53·8	63·7	*S*	67·0	61·2	57·2	57·2	48·7	36·4
20	44·7	35·5	*S*	56·7	63·9	62·5	67·4	61·7	55·8	55·8	*S*	41·3
21	45·2	*S*	43·5	56·0	57·8	63·2	67·0	*S*	58·4	53·5	45·9	41·9
22	47·2	36·0	43·4	54·5	*S*	62·0	65·9	60·0	60·5	54·6	49·3	39·0
23	48·0	35·4	43·1	53·8	59·8	60·7	66·0	56·0	57·8	*S*	45·4	36·7
24	*S*	36·0	41·5	*S*	55·2	60·0	*S*	55·9	60·3	53·4	43·5	36·8
25	42·7	36·9	Good Friday.	52·1	56·9	60·7	63·5	54·8	*S*	52·3	41·3	*S*
26	42·2	38·1	43·5	53·0	55·2	*S*	64·5	56·2	57·8	53·4	42·6	37·1
27	45·6	38·4	*S*	51·8	55·5	58·9	64·8	55·9	59·2	53·9	*S*	36·4
28	44·0	*S*	43·3	49·5	56·3	59·3	65·3	*S*	58·3	54·7	49·7	37·4
29	42·2	41·2	41·9	50·3	*S*	61·8	65·5	62·3	56·5	53·7	45·0	42·4
30	38·3		40·4	52·5	52·8	60·1	66·7	63·2	57·6	*S*	45·7	41·5
31	*S*		44·0		55·3		*S*	65·3		49·1		37·9
Means.	39·6	39·0	43·2	50·0	56·3	60·0	63·2	62·2	59·5	54·0	45·4	41·6

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

Days of the Month, 1864.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
1	33·7	43·3	45·7	49·6	*S*	60·8	63·9	72·2	57·2	61·8	47·8	47·2
2	30·8	46·4	38·2	47·9	60·4	60·3	66·8	67·0	63·0	*S*	48·2	43·8
3	*S*	47·2	39·2	*S*	56·5	57·3	*S*	64·7	66·2	57·4	52·6	48·8
4	32·5	39·0	50·8	58·5	50·3	67·1	66·5	75·2	*S*	55·0	38·5	*S*
5	31·0	36·7	45·3	40·3	53·5	*S*	68·0	81·0	63·0	58·3	46·9	52·2
6	24·8	34·0	*S*	47·8	64·5	69·4	62·4	71·7	63·0	61·5	*S*	51·5
7	22·9	*S*	49·2	50·6	60·0	73·5	65·3	*S*	67·9	63·2	44·8	48·3
8	30·0	33·6	47·8	51·8	*S*	67·5	58·8	73·3	73·1	61·0	40·0	46·8
9	36·7	30·8	34·8	56·3	47·0	70·8	62·7	65·1	68·1	*S*	48·3	46·6
10	*S*	34·1	43·6	*S*	57·6	67·9	*S*	62·3	61·1	59·4	45·4	45·3
11	44·0	35·9	48·5	58·1	53·0	68·5	76·4	65·5	*S*	55·7	40·0	*S*
12	40·2	46·0	46·5	57·6	65·0	*S*	68·9	71·8	59·6	57·3	41·1	48·5
13	38·3	51·8	*S*	55·7	64·9	62·6	67·0	75·8	61·2	54·8	*S*	44·1
14	38·2	*S*	53·1	57·5	67·8	66·5	68·3	*S*	62·6	54·8	52·8	40·2
15	35·3	48·0	50·7	63·2	*S*	63·6	75·3	73·9	60·1	55·8	48·8	34·8

(VI.)—Reading of a Thermometer within the case covering the deep-sunk Thermometers—*concluded.*

Days of the Month, 1864.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
d	°	°	°	°	°	°	°	°	°	°	°	°
16	37·7	47·7	47·8	51·2	70·5	68·3	70·9	67·8	60·6	*S*	44·8	33·7
17	*S*	42·0	45·8	*S*	73·5	68·4	*S*	71·5	57·5	59·6	47·7	28·7
18	42·0	38·8	48·2	51·3	77·2	66·2	75·6	67·9	*S*	59·7	52·5	*S*
19	45·9	34·2	54·2	64·1	75·3	*S*	76·2	69·0	60·7	64·6	53·8	38·0
20	45·8	31·5	*S*	71·1	75·8	70·5	78·5	66·4	62·8	59·4	*S*	45·0
21	45·7	*S*	44·8	68·2	54·8	69·5	75·5	*S*	64·8	56·2	47·6	39·7
22	51·1	36·8	44·3	63·9	*S*	66·2	71·8	59·0	65·5	57·7	51·2	34·6
23	48·6	34·0	48·8	65·6	62·5	62·2	72·2	52·2	61·8	*S*	46·0	32·5
24	*S*	39·7	47·9	*S*	60·8	63·6	*S*	58·5	65·7	60·2	40·2	32·8
25	40·9	37·0	GoodFriday.	60·3	63·2	63·8	65·1	58·3	*S*	56·6	43·0	*S*
26	44·7	37·8	44·9	57·5	57·5	*S*	68·2	61·8	61·7	55·1	44·3	34·6
27	49·5	38·0	*S*	57·5	60·5	62·3	72·4	64·0	70·0	54·7	*S*	32·7
28	46·4	*S*	45·6	48·0	60·5	64·9	71·0	*S*	67·9	60·4	53·8	39·3
29	42·8	42·0	43·0	55·3	*S*	68·9	73·5	72·5	60·6	53·7	47·8	41·0
30	36·8		39·3	56·0	56·5	63·6	74·2	75·0	60·9	*S*	47·9	39·5
31	*S*		51·7		62·0		*S*	68·4		49·9		36·3
Means.	39·1	39·5	46·1	56·3	62·0	65·9	69·8	67·8	63·3	57·8	46·8	41·0

WEEKLY MEANS of READINGS of THERMOMETERS.

1864. Period.				Thermometers sunk in the ground. Bulb 24 French Feet deep.	Bulb 12 French Feet deep.	Bulb 6 French Feet deep.	Bulb 3 French Feet deep.	Bulb 1 Inch deep.	Thermometer inclosed in the box which covers the scales of the deep-sunk Thermometers, and placed on a level with their scales.
	d		d	°	°	°	°	°	°
January	1	to January	7	51·64	50·41	48·16	43·36	34·4	29·3
	8	to	14	51·66	49·94	46·62	40·66	37·2	37·9
	15	to	21	51·45	49·29	45·56	41·05	41·6	42·1
	22	to	28	51·34	48·64	45·68	43·08	44·9	46·9
	29	to February	4	51·18	48·18	45·87	42·68	41·8	42·6
February	5	to	11	50·98	47·84	45·43	41·35	35·9	34·2
	12	to	18	50·82	47·54	44·70	41·08	42·7	45·7
	19	to	25	50·63	47·11	44·52	40·51	36·0	35·5
	26	to March	3	50·43	46·76	43·93	39·99	39·7	40·1
March	4	to	10	50·25	46·37	44·01	41·79	43·8	45·3
	11	to	17	50·06	46·07	44·33	42·36	44·5	48·7
	18	to	24	49·86	45·94	44·66	42·79	43·1	48·0
	25	to	31	49·63	45·86	44·83	42·62	42·6	44·9
April	1	to April	7	49·47	45·84	44·83	43·05	45·3	49·1
	8	to	14	49·30	45·80	45·36	45·00	48·6	56·2
	15	to	21	49·14	45·88	46·38	46·81	53·0	61·5
	22	to	28	48·98	46·11	47·50	48·81	52·4	58·8
	29	to May	5	48·83	46·44	48·50	49·56	52·7	55·3
May	6	to	12	48·72	46·93	49·30	50·32	53·4	57·8
	13	to	19	48·66	47·41	50·03	52·17	60·1	71·5
	20	to	26	48·59	47·86	51·56	54·75	58·1	62·4
	27	to June	2	48·55	48·47	52·41	53·89	54·8	60·1
June	3	to	9	48·57	49·11	52·66	54·33	59·4	67·6
	10	to	16	48·59	49·56	53·52	56·31	60·2	66·2
	17	to	23	48·67	50·10	54·42	57·25	61·9	67·2
	24	to	30	48·75	50·67	55·16	57·62	60·1	64·5
July	1	to July	7	48·87	51·20	55·53	57·63	59·9	65·5
	8	to	14	48·98	51·68	55·88	58·15	61·2	67·0
	15	to	21	49·16	52·16	56·65	60·00	65·9	75·3
	22	to	28	49·31	52·59	57·65	61·29	65·0	70·1
	29	to August	4	49·48	53·13	58·40	61·66	64·7	71·1
August	5	to	11	49·65	53·68	58·95	62·23	65·0	69·8
	12	to	18	49·84	54·19	59·28	61·69	63·5	71·4
	19	to	25	50·01	54·57	59·26	60·83	58·3	60·6
	26	to September	1	50·23	54·94	58·71	59·01	60·6	66·5
September	2	to	8	50·45	55·08	58·41	59·42	62·0	66·0
	9	to	15	50·65	55·14	58·46	59·41	59·9	62·1
	16	to	22	50·86	55·23	58·15	58·09	58·0	62·0
	23	to	29	51·09	55·29	57·73	57·75	58·3	64·6
	30	to October	6	51·29	55·22	57·34	56·67	54·7	59·1
October	7	to	13	51·48	55·14	56·51	55·04	54·5	58·6
	14	to	20	51·62	54·94	55·80	54·34	54·6	59·0
	21	to	27	51·73	54·68	55·32	54·00	53·5	56·8
	28	to November	3	51·82	54·42	54·81	52·99	50·4	52·1
November	4	to	10	51·86	54·11	53·73	49·86	43·3	44·0
	11	to	17	51·92	53·69	52·05	47·61	44·7	45·9
	18	to	24	51·97	53·11	51·09	47·85	47·0	48·5
	25	to December	1	51·99	52·50	50·33	46·54	44·7	47·3
December	2	to	8	51·99	51·97	49·65	46·11	46·2	48·6
	9	to	15	51·93	51·43	49·27	46·03	43·9	43·2
	16	to	22	51·82	50·92	48·55	43·89	38·9	36·6
	23	to	31	51·74	50·33	47·19	42·08	38·3	38·1

ABSTRACT OF THE CHANGES OF THE DIRECTION OF THE WIND, AS DERIVED FROM OSLER'S ANEMOMETER.

By *direct* motion, in the following statements, is meant that the change of the direction of the wind was in the order N., E., S., W., N., &c., by *retrograde* is meant in the order N., W., S., E., N., &c.

1863. Dec. 31. 12. The direction of the wind was E.N.E.
1864. Jan. 31. 12. ,, ,, S.S.W., which implies a direct motion of 135°.
On Jan. 14. 3, $29^d.\ 22^h$, the trace was shifted to the next set of lines downwards, implying direct motion of 720°.
Therefore the whole excess of direct motion in the month of January was 855°.

1864. Jan. 31. 12. The direction of the wind was S.S.W.
Feb. 29. 12. ,, ,, S., which implies a retrograde motion of $22\frac{1}{2}$°.
On Feb. 10. 22, the trace was shifted to the next set of lines upwards; on Feb. $27^d.\ 22^h$, the trace was shifted to the next set of lines downwards, implying retrograde motion of 360°, and direct motion of 360°.
Therefore the whole excess of retrograde motion in the month of February was $22\frac{1}{2}$°.

1864. Feb. 29. 12. The direction of the wind was S.
March 31. 12. ,, ,, W.S.W., which implies a direct motion of $67\frac{1}{2}$°.
On March 15. 22, the trace was shifted to the next set of lines downwards; on March $20^d.\ 0^h$, the trace was shifted to the next set of lines upwards, implying direct motion of 360°, and retrograde motion of 360°.
Therefore the whole excess of direct motion in the month of March was $67\frac{1}{2}$°.

1864. March 31. 12. The direction of the wind was W.S.W.
April 30. 12. ,, ,, S.S.E., which implies a direct motion of 270°.
On April 4. 22, $8^d.\ 22^h$, $10^d.\ 22^h$, $15^d.\ 22^h$, the trace was shifted to the next set of lines downwards; on April $5^d.\ 22^h$, $28^d.\ 3^h$, the trace was shifted to the next set of lines upwards, implying direct motion of 1440°, and retrograde motion of 720°.
Therefore the whole excess of direct motion in the month of April was 990°.

1864. April 30. 12. The direction of the wind was S.S.E.
May 31. 12. ,, ,, N.N.E., which implies a retrograde motion of 135°.
On May 0. 22, $3^d.\ 22^h$, $8^d.\ 22^h$, $14^d.\ 2^h$, $15^d.\ 1^h$, $19^d.\ 22^h$, $21^d.\ 22^h$, $24^d.\ 22^h$, $28^d.\ 3^h$, $28^d.\ 22^h$, $29^d.\ 22^h$, the trace was shifted to the next set of lines downwards; on May $9^d.\ 3^h$, $12^d.\ 22^h$, $16^d.\ 22^h$, $27^d.\ 22^h$, the trace was shifted to the next set of lines upwards, implying direct motion of 3960°, and retrograde motion of 1440°.
Therefore the whole excess of direct motion in the month of May was 2385°.

1864. May 31. 12. The direction of the wind was N.N.E.
June 30. 12. ,, ,, W.S.W., which implies a retrograde motion of 135°.
On June 2. 3, $4^d.\ 6^h$, $6^d.\ 3^h$, $7^d.\ 22^h$, the trace was shifted to the next set of lines downwards; on June $2^d.\ 22^h$, the trace was shifted to the next set of lines upwards, implying direct motion of 1440°, and retrograde motion of 360°.
Therefore the whole excess of direct motion in the month of June was 945°.

1864. June 30. 12. The direction of the wind was W.S.W.
July 31. 12. ,, ,, S.W., which implies a retrograde motion of $22\frac{1}{2}$°.
On July 1. 3, $8^d.\ 22^h$, $17^d.\ 22^h$, $27^d.\ 22^h$, the trace was shifted to the next set of lines upwards; on July $6^d.\ 22^h$, $14^d.\ 9^h$, $17^d.\ 1\frac{1}{2}^h$, $18^d.\ 22^h$, $19^d.\ 22^h$, the trace was shifted to the next set of lines downwards, implying retrograde motion of 1440°, and direct motion of 1800°.
Therefore the whole excess of direct motion in the month of July was $337\frac{1}{2}$°.

1864. July 31. 12. The direction of the wind was S.W.
Aug. 31. 12. ,, ,, S.W., which implies no change.
On Aug. 3. 3, 8d. 3h, 8d. 22h, 9d. 3h, 11d. 22h, 12d. 22h, 30d. 3h, the trace was shifted to the next set of lines downwards; on Aug. 3d. 22h, 21d. 0h, 23d. 22h, the trace was shifted to the next set of lines upwards, implying direct motion of 2520°, and retrograde motion of 1080°.
Therefore the whole excess of direct motion in the month of August was 1440°.

1864. Aug. 31. 12. The direction of the wind was S.W.
Sept. 30. 12. ,, ,, N.E., which implies a direct motion of 180°.
On Sept. 4. 22, 26d. 22h, the trace was shifted to the next set of lines upwards; on Sept. 28d. 22h, the trace was shifted to the next set of lines downwards, implying retrograde motion of 720°, and direct motion of 360°.
Therefore the whole excess of retrograde motion in the month of September was 180°.

1864. Sept. 30. 12. The direction of the wind was N.E.
Oct. 31. 12. ,, ,, E.S.E., which implies a direct motion of $67\frac{1}{2}$°.
On Oct. 24. 22, 28d. 22h, the trace was shifted to the next set of lines upwards, implying retrograde motion of 720°.
Therefore the whole excess of retrograde motion in the month of October was $652\frac{1}{2}$°.

1864. Oct. 31. 12. The direction of the wind was E.S.E.
Nov. 30. 12. ,, ,, S.S.W., which implies a retrograde motion of 270°.
On Nov. 6. 22, 7d. 22h, 12d. 22h, the trace was shifted to the next set of lines downwards; on Nov. 7d. 3h, 15d. 9h, 23d. 22h, the trace was shifted to the next set of lines upwards, implying direct motion of 1080°, and retrograde motion of 1080°.
Therefore the whole excess of retrograde motion in the month of November was 270°.

1864. Nov. 30. 12. The direction of the wind was S.S.W.
Dec. 31. 12. ,, ,, E.N.E., which implies a direct motion of 225°.
On Dec. 15. 3, the trace was shifted to the next set of lines upwards; on Dec. 18d. 0h, the trace was shifted to the next set of lines downwards, implying retrograde motion of 360°, and direct motion of 360°.
Therefore the whole excess of direct motion in the month of December was 225°.

The whole excess of direct motion to the end of the year was 6120°.

The revolution-counter which is attached to the vertical spindle of the vane, whose readings increase with change of direction of the wind in the order N., E., S., W., &c., or in *direct* motion, and decrease with change of direction in the order N., W., S., E., &c. or in *retrograde* motion, gave the following readings:—

	revs.
On 1863, December 31d. 12h	0·00
On 1864, December 31d. 12h	17·20

Implying an excess of direct motion, during the year, of 17·20 revolutions, or 6192°.

AMOUNT OF RAIN COLLECTED IN EACH MONTH OF THE YEAR 1864.

1864, MONTH.	Monthly Amount of Rain collected in each Gauge.							
	Osler's Anemometer Gauge.	Second Gauge at Osler's Anemometer.	On the Roof of the Octagon Room.	On the Roof of the Library.	On the Roof of the Photographic Thermometer Shed.	Crosley's.	Cylinder partly sunk in the Ground read daily.	Cylinder partly sunk in the Ground read Monthly.
	in.	in.	in.	in.	in.	in.	in.	in.
January	0·45	0·51	0·59	0·65	0·81	0·65	0·88	0·93
February	0·30	0·34	0·39	0·58	0·72	0·66	0·76	0·84
March	1·47	1·60	1·97	2·36	2·53	2·37	2·53	2·72
April	0·67	0·64	0·59	0·83	0·83	0·82	0·82	0·70
May	1·31	1·31	1·57	1·87	2·03	1·94	2·00	1·94
June	0·60	0·45	0·62	0·78	0·85	0·87	0·92	0·88
July	0·18	0·12	0·19	0·24	0·31	0·30	0·27	0·30
August	0·70	0·75	0·93	1·15	1·33	1·15	1·31	1·40
September	2·17	2·10	2·26	2·16	2·75	2·25	2·76	2·80
October	0·74	0·72	0·79	0·85	1·04	0·96	1·06	1·13
November	1·57	1·58	1·77	2·01	2·48	2·16	2·57	2·65
December	0·24	0·28	0·30	0·43	0·46	0·48	0·50	0·60
Sums	10·40	10·40	11·97	13·91	16·14	14·61	16·38	16·89

The heights of the receiving surfaces are as follows:

	Above the Mean Level of the Sea. Ft.	In.		Above the Ground. Ft.	In.
The Two Gauges at Osler's Anemometer	205	6		50	8
Gauge on the Roof of the Octagon Room	193	2½		38	4½
Gauge on the Roof of the Library	177	2		22	4
Gauge on the Roof of the Photographic Thermometer Shed	164	10		10	0
Crosley's Gauge	156	6		1	8
The Two Cylinder Gauges partly sunk in the Ground	155	3		0	5