GREENWICH SPECTROSCOPIC AND PHOTOGRAPHIC RESULTS.

1885.

SPECTROSCOPIC AND PHOTOGRAPHIC OBSERVATIONS

MADE AT THE

ROYAL OBSERVATORY, GREENWICH,

1885.

(EXTRACTED FROM THE GREENWICH OBSERVATIONS, 1885.)

GREENWICH SPECTROSCOPIC AND PHOTOGRAPHIC RESULTS, 1885.

INTRODUCTION.

§ 14. *Spectroscopic Observations in the Year* 1885.

The spectroscope used for these observations was mounted on the South-east equatoreal, the object-glass of which (made by Merz and Son of Munich) has a clear aperture of 12·8 inches, with a focal length of about $17^{ft}\ 10^{in}$.

This section contains:—Observations of Solar Prominences; Observation of the Spectrum of a Sun Spot; Measures of Displacement of Lines in the Spectra of Stars and of Venus, Jupiter, and Saturn, and Concluded Motions in the Line of Sight; and Observations of the Spectra of Nova Andromedæ and Nova Orionis.

For the observations of solar pominences, the Greenwich Civil Times, commencing at Greenwich mean midnight and reckoning from 0 to 24 hours, are given; and the position-angle from the Sun's axis of the two extremities of each prominence, together with its height in seconds of arc. The Sun's image was always placed centrally with respect to the position-circle, a radial excentricity being given to the spectroscope, so that the slit swept round the Sun's limb.

The position-angles have been first corrected for index-error of the position-circle, which is determined at the time of observation.

The method employed for this purpose has been to set the position-circle to 90° *plus* the approximate index-error, so that the slit points approximately E. and W., and to move the telescope by the slow motions until either the north or the south limb of the Sun just comes into the middle of the field. The position-circle is then read, and the spectroscope rotated through 180°, the telescope remaining rigidly clamped, and as the diurnal motion brings the Sun up to the slit again, the limb previously observed is again brought to the centre of the field by means of the rotation of the spectroscope. The position-circle is read a second time, and the mean of the two readings, corrected for the inclination of the Sun's path, is taken as the zero of the position-circle.

▲ 21191. Wt. 24012.

The corrected position-angles have then been converted into Heliographic N. P. D. by applying as a correction the position-angle of the Sun's north pole, taken from the "Auxiliary Tables for determining the Angle of Position of the Sun's Axis, and the Latitude and Longitude of the Earth referred to the Sun's Equator," by Warren De La Rue, F.R.S.

The heights of the bright lines seen in the prominences or chromosphere were read off on a pearl scale, divided to 0·005 inch (corresponding to 2″·4), and carried by the micrometer of the spectroscope. Other particulars are given in the note at the head of this section.

The measures of displacement of lines in the spectra of stars were made with a micrometer in the viewing telescope of the "Half-prism" Spectroscope. The eye-piece used gives a magnifying power of 14. Estimations of the displacement, in terms of the apparent breadth of the bright comparison-line, were also made; the breadth corresponding to any given width of slit being determined by a careful observation under similar conditions. $1^{rev.}$ of the screw for opening the slit corresponds to 0·01 inch, or 10″. It has not been thought necessary to give in detail all these particulars of the reductions. The values used in each case may be inferred from the observed motion, which is the algebraic sum of the concluded motion and of the Earth's motion. One tenth-metre corresponds at D to a motion of 31·7 miles per second, at *b* to a motion of 36·1 miles, and at F to a motion of 38·4 miles. For comparison with the spectrum of hydrogen or other chemical element, an image of the vacuum tube or electrodes is formed on the slit, by means of a transparent plate of glass placed at an angle of 45° with the axis of the collimator, in connexion with a collimating lens, so that the cone of rays from the comparison-light, as well as that from the star, fills the whole of the object-glass of the collimator.

Whenever the star-line was sufficiently distinct to allow of its being seen at the same time as the bright comparison-line, a direct comparison of the two was made; in other cases the bright line was compared with the pointer of the micrometer which had just previously been placed on the star-line, giving an indirect comparison.

The reading of the position-circle is given, as it is conceivable that the results might be affected by the position of the spectroscope. The slit lies north and south when the reading is 5°.

With regard to the observations of the spectrum of Nova Orionis, it is sufficient to remark that a curve has been laid down in the usual manner, connecting micrometer readings and wave-lengths, and that the value of a revolution of the micrometer in tenthmetres of wave-length has been inferred from these for the point of the spectrum measured. The tabular wave-lengths of comparison-lines

have been taken from Ångström's *Spectre Normal du Soleil.* For the single-prism spectroscope also, with which the observations of the spectrum of Nova Andromedæ were made, a similar curve has been laid down, and for each series of observations a correction for index-error has been deduced from observations of comparison-lines and applied to the observed readings to reduce them to the standard curve, from which the corresponding wave-lengths have been read off.

§ 15. *Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk on Photographs taken at the Royal Observatory, Greenwich, at Dehra Dûn in India, and at the Royal Alfred Observatory, Mauritius, in the year* 1885*; with the deduced Heliographic Longitudes and Latitudes.*

The photographs from which these measures were made were taken either at Greenwich, at Dehra Dûn, North-West Provinces, India, or at the Royal Alfred Observatory, Mauritius.

The photographs of the Greenwich series were taken with the Dallmeyer Photoheliograph returned from the Transit of Venus expedition to New Zealand, which, as now adapted, gives a solar image of 8 inches diameter on the photographic plate.

Bromo-iodized gelatine dry plates with alkaline development have been regularly used throughout the year.

The Indian photographs, which have been forwarded by the Solar Physics Committee to fill the gaps in the Greenwich series, were taken under the superintendence of J. B. N. Hennessey, F.R.S., Deputy Superintendent, Trigonometrical Survey of India, with a Dallmeyer photoheliograph giving an image of the Sun nearly 8 inches in diameter. In the process adopted at Dehra Dûn bromo-iodized collodion has been used in connexion with iron development.

The Mauritius photographs were taken under the superintendence of Dr. C. Meldrum, Director of the Royal Alfred Observatory, Mauritius, with a Dallmeyer photoheliograph, giving an image of the Sun about 4 inches in diameter up to 1885 February 21, but which was altered so as to give an image 8 inches in diameter before 1885 March 11. In the process adopted at the Mauritius Observatory, as at Dehra Dûn, bromo-iodized collodion has been used in connexion with iron development.

Photographs of the Sun were taken at Greenwich on 206 days, and Indian photographs on 128 days and Mauritius photographs on 20 days have been received from the Solar Physics Committee to complete the total of 354 days for which there are either Greenwich, Indian, or Mauritius photographs of the Sun available for measurement in 1885.

The *first* column on each page contains the Greenwich Civil Time at which each photograph was taken, expressed by the day of the year and decimals of a day, reckoning from Greenwich mean midnight January 1d. 0h., and also by the day of the month (civil reckoning), which latter is placed opposite the total area of Spots and Faculæ for the day. The photographs taken in India are distinguished by the letter I, and those taken in Mauritius by the letter M.

The *second* column contains the initials of the two persons measuring the photograph; the initial on the left being that of the person who measured the photograph on the left of the centre of the measuring instrument, and that on the right being that of the person who measured on the right of the centre.

The following are the signatures of those persons who measured the photographs for the year 1885:—

E. W. Maunder - -	M	S. Phillips - - -	SP
H. P. Hollis - -	H	A. E. Pilkington - -	EP
J. Hawton - - -	JH		

The *third* column gives the No. of the group, and the letter for the spot. The groups are numbered in the order of their appearance.

The *next two* columns give the Distance from the Centre of the Sun in terms of the Sun's Radius, and the Position-Angle from the Sun's Axis, reckoned from the Sun's North Pole in the direction n, f, s, p, both results being corrected for the effects of instrumental distortion and astronomical refraction.

The measures of the photographs were made with a large position-micrometer, specially constructed by Messrs. Troughton and Simms for the measurement of photographs of the Sun up to 12 inches in diameter. In this micrometer the photograph is held with its film-side uppermost on three pillars fixed on a circular plate, which can be turned through a small angle, about a pivot in its circumference, by means of a screw and antagonistic spring acting at the opposite extremity of the diameter. The pivot of this plate is mounted on the circumference of another circular plate, which can be turned by screw-action about a pivot in its circumference, 90° distant from that of the upper plate, this pivot being mounted on a circular plate with position-circle which rotates about its centre. By this means small movements in two directions at right angles to each other can be readily given, and the photograph can be accurately centred with respect to the position-circle. When this has been done, a positive eye-piece, having at its focus a glass diaphragm ruled with cross-lines into squares, with sides of one-hundredth of an inch (for measurement of areas), is moved along a slide diametrically across the photograph, the diaphragm being nearly in contact with the photographic film, so

that parallax is avoided. The distance of a spot or facula from the centre of the Sun is read off by means of a scale and vernier to 1-250th of an inch (corresponding to 0·001 of the Sun's radius for photographs having a solar diameter of 8 inches). The position-angle is read off on a large position-circle which rotates with the photographic plate. The photograph is illuminated by diffused light reflected from white paper placed at an angle of 45° between the photograph and the plate below.

The following is the process of measurement of a photograph :—By means of the screws attached to the plates carrying the pillars which hold the photograph, the image of the Sun is centred as accurately as possible by rotation. The position-circle is then set to the readings 0°, 90°, 180°, and 270° in succession, and the scale readings taken for the two limbs. The scale being so adjusted that its zero coincides with the centre of rotation of the position-circle, the mean of the eight readings for the limb gives the mean radius of the Sun directly.

At the principal focus of the photoheliograph are two cross-wires which serve to determine the zero of position-angles on the photograph.

The zero of the Dallmeyer Photoheliograph employed at Greenwich has been determined up to 1885 August 29 by allowing the diurnal motion to carry the spot or Sun's limb along the wire, a correction for the inclination of the Sun's path being applied to the reading of the position-circle so obtained, and also by running the image along the wire by the use of the R.A. slow motion, the mean of the two determinations being adopted as the zero.

Date, Greenwich Civil Time.		Corrected Zero of Position-Circle from transit.		Zero of Position-Circle obtained when using R. A. Slow Motion.		Zero Adopted.
		Wire *a*.	Wire *b*.	Wire *a*.	Wire *b*.	
	h	° ′	° ′	° ′	° ′	° ′
1884, November	5. 10	355. 29	85. 29	355. 32	85. 32	355. 30
1885, April	27. 10	355. 45	85. 39	355. 40	85. 36	355. 40
May	1. 10	355. 54	85. 48	355. 54	85. 51	355. 52
	27. 12	355. 56	85. 47	356. 0	85. 57	355. 55
June	4. 12	356. 1	85. 55	356. 6	86. 0	356. 0
July	7. 12	356. 0	85. 53	356. 0	86. 0	355. 58
August	6. 10	356. 12	86. 0	356. 12	86. 0	356. 6

The correctness of the adjustment of the wires was also tested on 1884 November 29 and December 19, and 1885 January 6, 23, February 12, March 1, 28, by allowing the diurnal motion to carry a spot or the Sun's limb along the equatoreal wire *a*, but the position-circle was not altered.

On 1885 August 29 the zero of the photoheliograph was determined by the measurement of a plate which had been exposed to the Sun's rays twice, with an interval of about 115 seconds between the two exposures, the instrument being firmly clamped. Two images of the Sun, overlapping each other by a little more than the fifth part of the Sun's diameter, were therefore produced upon the plate, and the exposures having been so given that the line joining the cusps passed through the centre of the plate, it was easy to measure with the position-micrometer the inclination of the wires of the photoheliograph to the Sun's path, and a small correction for the inclination of the Sun's path was then applied. This method of determining the zero of the photoheliograph has been always employed since 1885 August 29. The following table gives the correction for zero of position of the photoheliograph for the mean of the two wires as thus determined :—

Date, Greenwich Civil Time.		Correction for Zero.
	h	° ′
1885, August	29. 12	+ 0. 27
October	16. 10	+ 0. 36
November	18. 11	+ 0. 16
December	10. 12	+ 0. 17
1886, January	12. 11	+ 0. 53

In the use at Greenwich of the Dallmeyer Photoheliograph the position-circle has usually been set to some convenient reading near that for zero, 355°·6 for 1885, so that the wires are respectively very nearly parallel and perpendicular to the circle of declination, and a correction for zero of position of the photoheliograph for the mean of the two wires has been applied to the zero of the position-circle of the micrometer. The correction for zero of position of the photoheliograph adopted for any date has been the mean of the determinations of that zero made next before and next after that date. The zero of the position-circle of the micrometer has been determined from the readings of the position-circle for the four extremities of the two wires. The resulting combined correction is applied to all position-circle readings for spots and faculæ, so as to give true position-angles.

In the use of the Photoheliographs at Dehra Dûn and in Mauritius the position-circle has always been set to the zero as determined by allowing the diurnal motion to carry a spot or the Sun's limb along the horizontal wire, and the accuracy of the adjustment has been tested at short intervals. No correction for zero of the photoheliograph has therefore been required for the reduction of the photographs taken in India or in Mauritius.

The uncorrected distance from the Sun's centre for spots and faculæ is read off directly to 1-250th of an inch by means of a scale and vernier, the zero of the scale of the new micrometer being adjusted to coincide with the centre of the instrument.

Two sets of measures of the Sun's limb and of spots and faculæ on each photograph have been taken and the mean of the two sets adopted.

Corrections are then applied for optical distortion of the photoheliographs and for refraction. The distortion has been determined for the Dallmeyer photoheliographs giving a solar image of four inches diameter from measures of photographs of a scale of equal parts, 16 feet long, constructed by Mr. De La Rue, and lent by him for this purpose. The scale has eight plates of iron with edges carefully planed, the plates being each exactly one foot in breadth, and attached to a braced iron framework so as to leave equidistant spaces of exactly one foot between the plates. The scale was photographed at a distance of about 1,200 feet, and extended completely across the field of view.

The following table gives the distortion for the Dallmeyer Photoheliographs for images of the Sun, of about four inches diameter thus determined for every tenth of an inch distance from the centre of the field :—

Distance from Centre.	Correction for Distortion.	Distance from Centre.	Correction for Distortion.	Distance from Centre.	Correction for Distortion.
r	r	r	r	r	r
0	0·000	9	+ 0·035	18	+ 0·010
1	+ ·006	10	+ ·036	19	+ ·004
2	+ ·012	11	+ ·035	20	— ·004
3	+ ·017	12	+ ·034	21	— ·012
4	+ ·022	13	+ ·032	22	— ·020
5	+ ·026	14	+ ·028	23	— ·029
6	+ ·029	15	+ ·024	24	— ·038
7	+ ·032	16	+ ·020	25	— ·047
8	+ ·034	17	+ ·016	26	— ·057

$1^r = 0^{in}\cdot10$, corresponding to $49''\cdot3$.

The distances as measured on the four-inch photographs taken at Greenwich have been corrected for the corresponding distortion, and in cases where the centre of the Sun's image did not fall very close to the centre of the plate, a correction has been applied to the position-angles for the resolved part of the distortion. No correction has been applied to the measure of Sun's radius on account of distortion, the scales adopted in forming the tables having been so chosen that the distortion shall be 0 at the average place of the Sun's limb on the photographic plate; viz., 19r·5.

No correction has been applied to the eight-inch photographs on account of distortion.

The correction for the effect of refraction has been thus found, the Sun's image being assumed to be sensibly an ellipse. The refraction being sensibly $c \tan z$ where $c = \sin 57''{\cdot}5 = \frac{1}{3600}$ nearly, and z is the apparent zenith distance, we shall have—

$$\frac{\text{Vertical Diameter}}{\text{Horizontal Diameter}} = \frac{1 - c \sec^2 z}{1 - c} = 1 - c \tan^2 z;$$

and thus the effect of refraction will be to diminish any vertical ordinate y by the quantity $c \tan^2 z$. Resolving this along and perpendicular to the radius vector r, and putting v for the position-angle of the vertex, we have for δr and $\delta \theta$, the corrections to radius vector and position-angle for the effect of refraction—

$$\delta r = + c \,.\, \tan^2 z \times r \,.\, \cos^2 (\theta - v) = + c \,.\, \tan^2 z \times r \times \frac{1 + \cos 2 (\theta - v)}{2},$$

$$\delta \theta = - c \,.\, \tan^2 z \,.\, \sin (\theta - v) \,.\, \cos (\theta - v) = - c \,.\, \tan^2 z \, \frac{\sin 2 (\theta - v)}{2}.$$

The quantity δr thus found is the correction, on the supposition that a horizontal diameter of the Sun is taken as the scale. But, as the mean of two diameters at right angles has been used, the scale itself requires the correction $\delta \mathrm{R} = + c \,.\, \tan^2 z \times \mathrm{R} \times \frac{1}{2} \left\{ \frac{1 + \cos 2 (\theta_0 - v)}{2} + \frac{1 + \cos 2 (\theta_0 + 90^\circ - v)}{2} \right\} = + \frac{1}{2} c \,\mathrm{R} \,.\, \tan^2 z$, where R is the Sun's mean radius and θ_0, $\theta_0 + 90^\circ$ the position-angles of the two diameters measured. Thus the final correction to r becomes—

$$\delta r = + c \,.\, \tan^2 z \times r \times \frac{\cos 2 (\theta - v)}{2}.$$

The quantities $c \tan^2 z$, $-\frac{\sin 2(\theta - v)}{2}$, and $\frac{\cos 2(\theta - v)}{2}$ have been tabulated for use as follows, $c \tan^2 z$ being expressed in circular measure and in arc for application to distances and position-angles respectively :—

$c \tan^2 z$.

z.	In Circular Measure.	In Arc.	z.	In Circular Measure.	In Arc.	z.	In Circular Measure.	In Arc.
°		′	°		′	°		
80	·0089	31	70	·0021	7	60	·0008	3
79	·0073	25	69	·0019	6½	58	·0007	2
78	·0061	21	68	·0017	6	56	·0006	2
77	·0052	18	67	·0015	5½	54	·0005	2
76	·0045	15	66	·0014	5	52	·0005	2
75	·0039	13	65	·0013	4½	50	·0004	1
74	·0034	11½	64	·0012	4	45	·0003	1
73	·0030	10	63	·0011	4	40	·0002	1
72	·0026	9	62	·0010	3	30	·0001	0
71	·0023	8	61	·0009	3			

Factors for Refraction.

$\theta - v$	$\theta - v$	$-\frac{\text{Sin } 2(\theta-v)}{2}$	$\frac{\text{Cos } 2(\theta-v)}{2}$	$\theta - v$	$\theta - v$	$-\frac{\text{Sin } 2(\theta-v)}{2}$	$\frac{\text{Cos } 2(\theta-v)}{2}$
°	°			°	°		
0	180	·00	+ ·50	95	275	+ ·09	− ·49
5	185	− ·09	+ ·49	100	280	+ ·17	− ·47
10	190	− ·17	+ ·47	105	285	+ ·25	− ·43
15	195	− ·25	+ ·43	110	290	+ ·32	− ·38
20	200	− ·32	+ ·38	115	295	+ ·38	− ·32
25	205	− ·38	+ ·32	120	300	+ ·43	− ·25
30	210	− ·43	+ ·25	125	305	+ ·47	− ·17
35	215	− ·47	+ ·17	130	310	+ ·49	− ·09
40	220	− ·49	+ ·09	135	315	+ ·50	·00
45	225	− ·50	·00	140	320	+ ·49	+ ·09
50	230	− ·49	− ·09	145	325	+ ·47	+ ·17
55	235	− ·47	− ·17	150	330	+ ·43	+ ·25
60	240	− ·43	− ·25	155	335	+ ·38	+ ·32
65	245	− ·38	− ·32	160	340	+ ·32	+ ·38
70	250	− ·32	− ·38	165	345	+ ·25	+ ·43
75	255	− ·25	− ·43	170	350	+ ·17	+ ·47
80	260	− ·17	− ·47	175	355	+ ·09	+ ·49
85	265	− ·09	− ·49	180	360	·00	+ ·50
90	270	·00	− ·50				

The position-angle of the Vertex v is readily taken from a globe.

The distance from centre in terms of the Sun's radius given in the *fourth* column is then readily found by dividing the measured distance r_0, as corrected for distortion and refraction, by the measured mean radius of the Sun, R; and the Position-Angle from the Sun's Axis given in the *fifth* column is obtained by applying to the Corrected Position-Angle (from the N. point) the Position-Angle of the Sun's Axis derived from the "Auxiliary Tables for determining the Angle of Position of the Sun's Axis, and the Latitude and Longitude of the Earth referred to the Sun's Equator," by Warren De La Rue, F.R.S.

The *sixth* and *seventh* columns give the heliographic longitude and latitude of the spot, which are thus computed.* Let r be the measured distance of a spot from the centre of the Sun's apparent disc, R the measured radius of the Sun on the photograph, (R) the tabular semidiameter of the Sun in arc, and ρ, ρ' the angular distances of a spot from the centre of the apparent disc as viewed from the Sun's centre and from the Earth respectively. Then we have—

$$\rho' = \frac{r}{R}(R); \text{ and } \sin(\rho + \rho') = \frac{r}{R},$$

$$\text{whence } \rho = \sin^{-1}\frac{r}{R} - \rho'.$$

Log sin ρ and log cos ρ as computed from this formula are given in "Tables for the Reduction of Solar Observations No. 2," by Warren De La Rue, F.R.S. Then, if D, λ are the heliographic latitudes of the Earth and the Spot respectively, referred to the Sun's Equator, and L, l the heliographic longitudes reckoned from the ascending node of the Sun's Equator on the ecliptic, and χ the position-angle from the Sun's axis, we have by the ordinary equations of spherical trigonometry—

$$\sin\lambda = \cos\rho \sin \mathrm{D} + \sin\rho \cos \mathrm{D} \cos\chi$$
$$\sin(\mathrm{L} - l) = \sin\chi \sin\rho \sec\lambda.$$

The quantities L and D are derived from Warren De La Rue's Auxiliary Tables before referred to, in the computation of which the following formulæ have been used—

$$\tan \mathrm{L} = \cos \mathrm{I} \tan(\odot - \mathrm{N})$$
$$\sin \mathrm{D} = \sin \mathrm{I} \sin(\odot - \mathrm{N})$$

where I is the inclination of the Sun's Equator to the ecliptic, N the longitude of the ascending node, and $\odot$ the longitude of the Sun.

* Researches on Solar Physics: Heliographical Positions and Areas of Sun Spots observed with the Kew Photoheliograph during the years 1862 and 1863, by W. De La Rue, B. Stewart, and B. Loewy. Phil. Trans. 1869.

The position-angle χ is given by the formula—

$$\chi = P + G + H$$

where P is the position-angle from the north point of the Sun, and G and H two auxiliary angles given by the formulæ—

$$\tan G = \tan \omega \cos \odot$$
$$\tan H = \tan I \cos (\odot - N)$$

where ω is the obliquity of the ecliptic.

It will be seen that G is the inclination of two planes through the line joining the centres of the Earth and Sun passing through the poles of the Earth and of the ecliptic respectively, and that H is the inclination of two planes through the same line and the poles of the Sun and of the ecliptic. The values assumed for I, N, ω in the computation of the Tables are 7° 15′, 74°, and 23° 27′·5 respectively.

The Heliographic Longitude of the Spot is found from l, the Heliographic Longitude from Node, by subtracting the Reduction to Prime Meridian, which is the Longitude of the Node at the epoch of the photograph, referred to the assumed Prime Meridian, the latter being the meridian which passed through the ascending node at the epoch 1854·0. The period of rotation assumed is 25·38 days.

The measures of areas given in the *last three* columns were made with a glass diaphragm ruled into squares, with sides of one hundredth of an inch, and placed nearly in contact with the photographic film. The integral number of squares and parts of a square contained in the area of a spot or facula was estimated by the observer, two independent sets of measures being made by two observers. The mean of the two sets of measures has been taken for each photograph. The factor for converting the areas, as measured in ten-thousandths of a square inch, into millionths of the Sun's visible hemisphere, allowing for the effect of foreshortening, has been inferred by means of a table of double entry, giving the equivalent of one square for different values of the Sun's radius, and for different distances of the spot or facula from the Sun's centre, as measured by means of the Position-Micrometer.

The individual spots in a group have in some cases not been measured separately, but combined into a cluster of two or three small spots close together, the position of the centre of gravity and the aggregate area of the cluster being given. The actual number of individual spots is usually stated in the Notes.

The Mean Areas of Spots and Faculæ and the mean Heliographic Latitude of Spots for each synodic Rotation of the Sun, and for the year 1885, are given at the and of this section, and require no further explanation.

W. H. M. CHRISTIE.

1887, *April* 1.

DISCUSSION OF PROBABLE ERROR, AND PERSONALITY IN MEASUREMENTS OF SOLAR PHOTOGRAPHS.

I.—Probable Error in Measurements on Eight-inch Photographs.

For the determination of probable error in measurements of distance, position-angle, and area, six *eight-inch* photographs, containing in all 50 spots, which had been already measured twice (on the right and left of the centre) in 1884 and 1885 for publication in the daily results, were re-measured on the right and left by each of four observers in 1885 October; so that in all 10 independent measurements of each photograph were available for comparison. The mean of each set of measures of distance, position-angle, area of umbra, and area of whole spot was then formed; next the discordance of individual measures from the mean; and, finally, the mean discordance of individual measures from the mean. The means and mean discordances are given in the subjoined tables.

The number and small letter in the *first* column of each table is the same as that given in the printed results, the letter I denoting that the spot was measured on an Indian photograph.

The spots are arranged in the first table in order of distance from the Sun's centre, the quantity $\frac{r}{R}$ in the *second* column giving this distance in parts of the radius of the apparent disk.

In the second table they are arranged according to area of whole spot, as given in the *twelfth* column.

In the measures of distance, which are expressed in divisions of the scale, systematic differences were noticed between those made on the right of the centre and those on the left; partly due to error of assumed zero of the scale, and partly to personality of the nature of an error of bisection.

The following corrections have been applied to the measures right and left of the centre respectively, on account of these systematic differences:—

Measurer.	Right.	Left.	Measurer.	Right.	Left.
	d	d		d	d
M	− 1·0	+ 1·0	JH	− 0·3	+ 0·3
H	− 0·8	+ 0·8	SP	− 0·5	+ 0·5

In the measures of position-angle it is obvious that the mean discordance depends on the distance of the spot from the Sun's centre. Accordingly in the *seventh*

column is given the equivalent at the uniform distance of the Sun's radius (R), obtained by multiplying each term in this column by the corresponding factor in column 2.

The measures of areas are expressed in ten-thousandths of a square inch. It is obvious that the mean discordance bears some relation to the mean area, the simplest supposition being that it varies directly as the mean area. The results of this supposition are given in columns 10 and 14 respectively, where the mean discordance is exhibited as a per-centage; but as these are not satisfactorily accordant, another hypothesis was tried, viz., that the mean discordance is proportional to the perimeter of the spot, which would be the case if we suppose it due to the existence of an ill-defined border of constant breadth. The results of this hypothesis are exhibited in columns 11 and 15 respectively, the square root of the area being considered roughly proportional to the perimeter.

TABLE I. (arranged according to distance from Sun's centre).

No. and Letter for Spot.	$\frac{r}{R}$	Distance.		Position Angle.			Area of Umbra.				Area of Whole Spot.			
		Mean Reading.	Mean Discordance.	Mean Reading.	Mean Discordance.	Mean Discordance at Distance R.	Mean Area.	Mean Discordance.	Mean Discordance per cent. of Umbra.	Mean Discordance divided by Square Root of Umbra.	Mean Area.	Mean Discordance.	Mean Discordance per cent. of Whole Spot.	Mean Discordance divided by Square Root of Whole Spot.
		d	d	°	°	°								
I. 1388 *a*	0·993	931·7	0·78	250·0	0·09	0·089	3·3	0·97	29·4	0·533	18·7	3·10	16·6	0·718
I. 1495	0·964	923·2	0·56	279·0	0·08	0·077	7·8	0·90	11·5	0·323	53·1	3·78	7·1	0·519
I. 1503	0·960	919·0	0·36	127·9	0·03	0·029	0·4	0·29	72·5	0·461	3·3	0·48	14·6	0·264
1484 *b*	0·947	937·3	0·41	296·7	0·08	0·076	2·1	0·83	39·5	0·572	28·5	2·39	8·4	0·448
I. 1497 *a*	0·939	898·7	0·56	279·5	0·05	0·047	12·1	1·24	10·3	0·357	69·0	3·85	5·6	0·463
I. 1389 *b*	0·929	872·3	0·48	239·0	0·08	0·074	6·6	0·71	10·8	0·276	57·0	5·60	9·8	0·742
1520 *b*	0·922	916·3	0·61	134·8	0·03	0·028	13·3	3·72	28·0	1·019	57·2	7·60	13·3	1·007
1514	0·915	908·7	0·85	266·1	0·07	0·064	0·3	0·46	153·0	0·836	7·2	1·05	14·6	0·392
1515	0·900	894·4	0·59	262·3	0·06	0·054	1·0	0·85	85·0	0·850	12·9	2·02	15·7	0·563
1520 *a*	0·876	869·7	0·45	133·6	0·07	0·061	9·6	1·90	20·0	0·613	53·8	6·50	12·1	0·887
I. 1597 *a*	0·864	831·2	0·86	59·1	0·05	0·043	7·5	1·08	14·4	0·394	41·3	4·87	11·8	0·758
1486 *b*	0·855	844·3	0·63	99·3	0·07	0·060	11·1	2·81	25·3	0·844	44·1	6·28	14·2	0·946
1482 *a*	0·846	835·1	0·71	295·9	0·04	0·034	13·6	2·31	17·0	0·626	84·2	4·59	5·5	0·500
1488	0·842	830·9	1·11	275·8	0·04	0·034	1·1	0·78	71·0	0·743	8·0	1·94	24·3	0·686
1486 *a*	0·831	820·5	0·51	101·5	0·01	0·008	16·4	3·93	24·0	0·971	95·6	7·91	8·3	0·809

TABLE I.—*concluded.*

No. and Letter for Spot.	$\frac{r}{R}$	Distance.		Position Angle.			Area of Umbra.				Area of Whole Spot.			
		Mean Reading.	Mean Discordance.	Mean Reading.	Mean Discordance.	Mean Discordance at Distance R.	Mean Area.	Mean Discordance.	Mean Discordance per cent. of Umbra.	Mean Discordance divided by Square Root of Umbra.	Mean Area.	Mean Discordance.	Mean Discordance per cent. of Whole Spot.	Mean Discordance divided by Square Root of Whole Spot.
		d	d	°	°	°								
I. 1501	0·796	762·4	0·90	101·9	0·08	0·064	7·6	1·25	16·4	0·453	48·8	3·79	7·8	0·542
1518 *b*	0·788	782·2	0·59	136·7	0·04	0·032	6·8	0·57	8·4	0·218	37·1	2·14	5·8	0·351
1482 *b*	0·777	767·1	0·65	298·5	0·04	0·031	0·0	0·00	0·0	0·000	9·8	1·18	12·0	0·377
I. 1501 *b*	0·773	740·4	1·12	103·9	0·01	0·008	31·8	4·23	13·3	0·750	209·0	11·40	5·5	0·786
1518 *a*	0·768	763·2	0·49	140·0	0·09	0·069	6·6	1·70	25·8	0·661	49·9	3·66	7·3	0·519
1485	0·756	749·0	0·39	304·7	0·05	0·038	5·5	1·72	31·3	0·732	30·0	3·78	12·6	0·690
I. 1595 *a*	0·712	684·6	0·58	97·5	0·05	0·036	1·3	1·18	90·8	0·104	22·6	3·29	14·5	0·693
1489 *b*	0·709	699·7	0·47	112·7	0·08	0·057	1·2	1·48	123·0	1·346	23·0	2·16	9·4	0·450
I. 1400	0·708	664·9	0·52	107·6	0·01	0·007	5·7	0·78	13·7	0·326	41·2	4·98	12·1	0·776
I. 1498 *a*	0·705	675·4	0·58	270·7	0·08	0·056	27·3	1·49	5·5	0·285	122·7	5·30	4·3	0·478
I. 1594 *a*	0·702	675·4	0·92	60·7	0·08	0·056	34·7	2·24	6·5	0·381	193·7	10·30	5·3	0·741
1489 *a*	0·677	667·7	0·65	115·7	0·09	0·061	0·4	0·66	165·0	1·048	20·0	4·59	23·0	1·027
1485	0·674	667·5	0·35	306·7	0·08	0·054	4·5	0·79	17·6	0·373	21·2	3·48	16·4	0·756
I. 1501 *a*	0·673	644·4	1·12	101·3	0·09	0·061	44·4	3·58	8·1	0·538	287·5	13·90	4·8	0·820
1485	0·603	596·3	0·65	312·3	0·04	0·024	1·2	0·64	53·3	0·582	13·0	1·19	9·2	0·330
I. 1596	0·601	578·1	0·64	89·7	0·09	0·054	1·3	0·44	33·8	0·385	16·1	2·98	18·5	0·744
I. 1399	0·596	560·3	0·32	115·7	0·11	0·066	4·1	0·86	21·0	0·426	9·6	0·83	8·7	0·268
I. 1393	0·589	552·8	0·64	238·1	0·11	0·065	38·5	1·04	2·7	0·168	175·6	4·03	2·3	0·303
I. 1398	0·499	468·8	0·83	38·7	0·10	0·050	5·9	1·19	20·2	0·490	16·4	3·13	19·1	0·772
I. 1396	0·487	456·9	0·78	97·8	0·15	0·073	7·3	1·63	22·3	0·604	21·3	3·06	14·3	0·662
1492	0·486	480·6	0·53	167·7	0·09	0·044	5·3	0·62	11·7	0·270	23·8	2·24	9·4	0·459
1516 *a*	0·464	461·3	0·73	265·7	0·07	0·032	18·7	4·95	26·5	1·146	119·1	9·88	8·3	0·906
1485	0·429	422·6	0·77	94·8	0·09	0·039	7·1	2·19	30·9	0·823	54·1	3·67	6·8	0·499
I. 1394 *a*	0·426	400·4	0·62	23·1	0·18	0·077	21·4	1·90	8·9	0·411	102·9	3·26	3·2	0·323
I. 1395	0·410	384·8	0·78	111·3	0·17	0·070	20·0	2·25	11·3	0·503	135·8	7·87	5·8	0·673
1489	0·355	350·8	0·45	301·6	0·15	0·053	3·3	1·56	47·3	0·857	10·0	1·26	12·6	0·399
I. 1598 *a*	0·343	330·4	0·96	226·1	0·17	0·058	0·0	0·00	0·0	0·000	13·9	2·29	16·5	0·614
I. 1593 *b*	0·335	321·8	0·90	73·7	0·13	0·044	28·0	1·82	6·5	0·344	135·5	6·70	4·9	0·578
1491 *a*	0·330	325·7	0·89	161·5	0·20	0·066	12·2	2·86	23·5	0·848	81·7	9·08	11·1	1·004
I. 1593 *d*	0·284	272·9	0·78	70·0	0·32	0·091	16·3	2·79	17·1	0·691	117·7	9·95	8·5	0·913
I. 1593 *c*	0·252	242·0	0·44	70·1	0·24	0·060	19·8	3·29	16·6	0·739	81·2	7·80	9·6	0·866
1486 *a*	0·214	211·9	0·71	336·2	0·33	0·071	32·7	2·39	7·3	0·418	202·4	8·07	4·0	0·568
1486 *b*	0·214	211·7	0·45	351·8	0·32	0·068	21·6	2·10	9·7	0·452	101·8	4·40	4·3	0·436
I. 1499	0·172	164·7	0·46	305·5	0·42	0·072	2·7	1·13	41·9	0·689	10·3	2·16	21·0	0·673
1484 *b*	0·107	105·6	0·87	270·2	0·64	0·068	16·8	5·89	35·1	1·437	117·4	11·75	10·0	1·084

MEANS OF EACH GROUP IN TABLE I.

	Mean $\frac{r}{R}$	Distance. Mean Discordance.	Position Angle. Mean Discordance.	Position Angle. Mean Discordance at Distance R.	Area of Umbra. Mean Area.	Area of Umbra. Mean Discordance.	Area of Umbra. Mean Discordance per cent. of Umbra.	Area of Umbra. Mean Discordance divided by Square Root of Umbra.	Area of Whole Spot. Mean Area.	Area of Whole Spot. Mean Discordance.	Area of Whole Spot. Mean Discordance per cent. of Whole Spot.	Area of Whole Spot. Mean Discordance divided by Square Root of Whole Spot.
		d	°	°								
	0·961	0·53	0·07	0·064	5·1	0·85	32·6	0·449	34·5	2·72	10·5	0·482
	0·908	0·60	0·06	0·056	6·2	1·53	59·4	0·719	37·6	4·55	13·1	0·718
	0·848	0·76	0·04	0·036	9·9	2·18	30·3	0·716	54·6	5·12	12·8	0·740
	0·780	0·75	0·05	0·041	10·6	1·55	12·8	0·416	70·9	4·43	7·5	0·515
	0·718	0·51	0·05	0·039	8·2	1·33	52·9	0·559	47·9	3·90	10·6	0·615
	0·666	0·74	0·08	0·051	17·0	1·58	50·1	0·584	107·1	6·69	11·7	0·735
	0·554	0·64	0·11	0·062	11·4	1·03	20·0	0·415	47·8	2·81	12·6	0·550
	0·443	0·69	0·12	0·052	14·5	2·38	17·9	0·631	87·1	5·38	6·7	0·572
	0·329	0·80	0·19	0·062	12·0	1·81	18·9	0·548	71·8	5·86	10·8	0·702
	0·192	0·59	0·39	0·068	18·7	2·96	22·1	0·747	102·6	6·84	9·8	0·725
General Mean	0·640	0·661	0·116	0·053	11·36	1·722	31·70	0·578	66·19	4·830	10·61	0·6354

TABLE II. (arranged according to Area of Whole Spot).

No. and Letter for Spot.	$\frac{r}{R}$	Distance. Mean Reading.	Distance. Mean Discordance.	Position Angle. Mean Reading.	Position Angle. Mean Discordance.	Position Angle. Mean Discordance at distance R.	Area of Umbra. Mean Area.	Area of Umbra. Mean Discordance.	Area of Umbra. Mean Discordance per cent. of Umbra.	Area of Umbra. Mean Discordance divided by Square Root of Umbra.	Area of Whole Spot. Mean Area.	Area of Whole Spot. Mean Discordance.	Area of Whole Spot. Mean Discordance per cent. of Whole Spot.	Area of Whole Spot. Mean Discordance divided by Square Root of Whole Spot.
		d	d	°	°	°								
I. 1501 *a*	0·673	644·4	1·12	101·3	0·09	0·061	44·4	3·58	8·1	0·538	287·5	13·90	4·8	0·820
I. 1501 *b*	0·773	740·4	1·12	103·9	0·01	0·008	31·8	4·23	13·3	0·750	209·0	11·40	5·5	0·786
1486 *a*	0·214	211·9	0·71	336·2	0·33	0·071	32·7	2·39	7·3	0·418	202·4	8·07	4·0	0·568
I. 1594 *a*	0·702	675·4	0·92	60·7	0·08	0·056	34·7	2·24	6·5	0·381	193·7	10·30	5·3	0·741
I. 1393	0·589	552·8	0·64	238·1	0·11	0·065	38·5	1·04	2·7	0·168	175·6	4·03	2·3	0·303
I. 1395	0·410	384·8	0·78	111·3	0·17	0·070	20·0	2·25	11·3	0·503	135·8	7·87	5·8	0·673
I. 1593 *b*	0·335	321·8	0·90	73·7	0·13	0·044	28·0	1·82	6·5	0·344	135·5	6·70	4·9	0·578
I. 1498 *a*	0·705	675·4	0·58	270·7	0·08	0·056	27·3	1·49	5·5	0·285	122·7	5·30	4·3	0·478
1516 *a*	0·464	461·3	0·73	265·7	0·07	0·032	18·7	4·95	26·5	1·146	119·1	9·88	8·3	0·906
I. 1593 *d*	0·284	272·9	0·78	70·0	0·32	0·091	16·3	2·79	17·1	0·691	117·7	9·95	8·5	0·913

TABLE II.—(*concluded*).

No. and Letter for Spot.	$\frac{r}{R}$	Distance.		Position Angle.			Area of Umbra.				Area of Whole Spot.			
		Mean Reading.	Mean Discordance.	Mean Reading.	Mean Discordance.	Mean Discordance at distance R.	Mean Area.	Mean Discordance.	Mean Discordance per cent. of Umbra.	Mean Discordance divided by Square Root of Umbra.	Mean Area.	Mean Discordance.	Mean Discordance per cent. of Whole Spot.	Mean Discordance divided by Square Root of Whole Spot.
		d	d	°	°	°								
1484 *b*	0·107	105·6	0·87	270·2	0·64	0·068	16·8	5·89	35·1	1·437	117·4	11·75	10·0	1·084
I. 1394 *a*	0·426	400·4	0·62	23·1	0·18	0·077	21·4	1·90	8·9	0·411	102·9	3·26	3·2	0·323
1486 *b*	0·214	211·7	0·45	351·8	0·32	0·068	21·6	2·10	9·7	0·452	101·8	4·40	4·3	0·436
1486 *a*	0·831	820·5	0·51	101·5	0·01	0·008	16·4	3·93	24·0	0·971	95·6	7·91	8·3	0·809
1482 *a*	0·846	835·1	0·71	295·9	0·04	0·034	13·6	2·31	17·0	0·626	84·2	4·59	5·5	0·500
1491 *a*	0·330	325·7	0·89	161·5	0·20	0·066	12·2	2·86	23·5	0·848	81·7	9·08	11·1	1·004
I. 1593 *c*	0·252	242·0	0·44	70·1	0·24	0·060	19·8	3·29	16·6	0·739	81·2	7·80	9·6	0·866
I. 1497 *a*	0·939	898·7	0·56	279·5	0·05	0·047	12·1	1·24	10·3	0·357	69·0	3·85	5·6	0·463
1520 *b*	0·922	916·3	0·61	134·8	0·03	0·028	13·3	3·72	28·0	1·019	57·2	7·60	13·3	1·007
I. 1389 *b*	0·929	872·3	0·48	239·0	0·08	0·074	6·6	0·71	10·8	0·276	57·0	5·60	9·8	0·742
1485	0·429	422·6	0·77	94·8	0·09	0·039	7·1	2·19	30·9	0·823	54·1	3·67	6·8	0·499
1520 *a*	0·876	869·7	0·45	133·6	0·07	0·061	9·6	1·90	20·0	0·613	53·8	6·50	12·1	0·887
I. 1495	0·964	923·2	0·56	279·0	0·08	0·077	7·8	0·90	11·5	0·323	53·1	3·78	7·1	0·519
1518 *a*	0·768	763·2	0·49	140·0	0·09	0·069	6·6	1·70	25·8	0·661	49·9	3·66	7·3	0·519
I. 1501	0·796	762·4	0·90	101·9	0·08	0·064	7·6	1·25	16·4	0·453	48·8	3·79	7·8	0·542
1486 *b*	0·855	844·3	0·63	99·3	0·07	0·060	11·1	2·81	25·3	0·844	44·1	6·28	14·2	0·946
I. 1597 *a*	0·864	831·2	0·86	59·1	0·05	0·043	7·5	1·08	14·4	0·394	41·3	4·87	11·8	0·758
I. 1400	0·708	664·9	0·52	107·6	0·01	0·007	5·7	0·78	13·7	0·326	41·2	4·98	12·1	0·776
1518 *b*	0·788	782·2	0·59	136·7	0·04	0·032	6·8	0·57	8·4	0·218	37·1	2·14	5·8	0·351
1485	0·756	749·0	0·39	304·7	0·05	0·038	5·5	1·72	31·3	0·732	30·0	3·78	12·6	0·690
1484 *b*	0·947	937·3	0·41	296·7	0·08	0·076	2·1	0·83	39·5	0·572	28·5	2·39	8·4	0·448
1492	0·486	480·6	0·53	167·7	0·09	0·044	5·3	0·62	11·7	0·270	23·8	2·24	9·4	0·459
1489 *b*	0·709	699·7	0·47	112·7	0·08	0·057	1·2	1·48	123·0	1·346	23·0	2·16	9·4	0·450
I. 1596	0·712	684·6	0·58	97·5	0·05	0·036	1·3	1·18	90·8	0·104	22·6	3·29	14·5	0·693
I. 1396	0·487	456·9	0·78	97·8	0·15	0·073	7·3	1·63	22·3	0·604	21·3	3·06	14·3	0·662
1485	0·674	667·5	0·35	306·7	0·08	0·054	4·5	0·79	17·6	0·373	21·2	3·48	16·4	0·756
1489 *a*	0·677	667·7	0·65	115·7	0·09	0·061	0·4	0·66	165·0	1·048	20·0	4·59	23·0	1·027
I. 1388 *a*	0·993	931·7	0·78	250·0	0·09	0·089	3·3	0·97	29·4	0·533	18·7	3·10	16·6	0·718
I. 1398	0·499	468·8	0·83	38·7	0·10	0·050	5·9	1·19	20·2	0·490	16·4	3·13	19·1	0·772
I. 1596	0·601	578·1	0·64	89·7	0·09	0·054	1·3	0·44	33·8	0·385	16·1	2·98	18·5	0·744
I. 1598 *a*	0·343	330·4	0·96	226·1	0·17	0·058	0·0	0·00	0·0	0·000	13·9	2·29	16·5	0·614
1485	0·603	596·3	0·65	312·3	0·04	0·024	1·2	0·64	53·3	0·582	13·0	1·19	9·2	0·330
1515	0·900	894·4	0·59	262·3	0·06	0·054	1·0	0·85	85·0	0·850	12·9	2·02	15·7	0·563
I. 1499	0·172	164·7	0·46	305·5	0·42	0·072	2·7	1·13	41·9	0·689	10·3	2·16	21·0	0·673
1489	0·355	350·8	0·45	301·6	0·15	0·053	3·3	1·56	47·3	0·857	10·0	1·26	12·6	0·399
1482 *b*	0·777	767·1	0·65	298·5	0·04	0·031	0·0	0·00	0·0	0·000	9·8	1·18	12·0	0·377
I. 1399	0·596	560·3	0·32	115·7	0·11	0·066	4·1	0·86	21·0	0·426	9·6	0·83	8·7	0·268
1488	0·842	830·9	1·11	275·8	0·04	0·034	1·1	0·78	71·0	0·743	8·0	1·94	24·3	0·686
1514	0·915	908·7	0·85	266·1	0·07	0·564	0·3	0·46	153·0	0·836	7·2	1·05	14·6	0·392
I. 1503	0·960	919·0	0·36	127·9	0·03	0·029	0·4	0·29	72·5	0·461	3·3	0·48	14·6	0·264

MEANS OF EACH GROUP IN TABLE II.

	Distance.		Position Angle.		Area of Umbra.				Area of Whole Spot.			
	Mean $\frac{r}{R}$	Mean Discordance.	Mean Discordance.	Mean Discordance at distance R.	Mean Area.	Mean Discordance.	Mean Discordance per cent. of Umbra.	Mean Discordance divided by Square Root of Umbra.	Mean Area.	Mean Discordance.	Mean Discordance per cent. of Whole Spot.	Mean Discordance divided by Square Root of Whole Spot.
		d	°	°								
	0·590	0·90	0·12	0·052	36·4	2·70	7·6	0·451	213·6	9·54	4·4	0·644
	0·440	0·75	0·15	0·059	22·1	2·66	13·4	0·594	126·2	7·94	6·4	0·710
	0·485	0·63	0·24	0·051	18·0	3·23	18·9	0·779	100·4	6·38	6·3	0·630
	0·674	0·60	0·12	0·055	12·8	2·36	17·8	0·648	69·2	6·79	9·9	0·816
	0·767	0·63	0·08	0·062	7·7	1·59	20·9	0·575	51·9	4·28	8·2	0·593
	0·794	0·60	0·04	0·036	7·3	1·39	18·6	0·503	38·7	4·41	11·3	0·704
	0·668	0·55	0·09	0·057	3·4	1·15	57·5	0·579	23·8	2·63	11·2	0·542
	0·689	0·65	0·09	0·062	3·1	0·81	53·2	0·566	18·5	3·46	18·7	0·803
	0·475	0·62	0·17	0·052	1·6	0·84	45·5	0·596	12·0	1·78	15·0	0·516
	0·818	0·66	0·06	0·045	1·2	0·48	63·5	0·493	7·6	1·10	14·8	0·397
General Mean	0·640	0·659	0·12	0·053	11·36	1·721	31·7	0·578	66·19	4·831	10·6	0·635

1^d of scale in measure of distance $= \frac{1}{250}$ in. corresponding to $0{\cdot}001026 \times R$.

The areas are expressed in ten-thousandths of a square inch, this unit corresponding to 1·06 millionths of the Sun's visible hemisphere for a spot at the centre of the disk.

Expressing the "Mean Discordance in distance" in terms of $\frac{r}{R}$ and the areas and mean discordances in areas in millionths of the Sun's visible hemisphere for a spot at the centre of the disk we have:—

Distance.		Position Angle.		Area of Umbræ.				Area of Whole Spots.			
Mean $\frac{r}{R}$	Mean Discordance in $\frac{r}{R}$	Mean Discordance.	Mean Discordance at Distance R.	Mean Area.	Mean Discordance.	Mean Discordance per cent. of Umbra.	Mean Discordance divided by Square Root of Umbra.	Mean Area.	Mean Discordance.	Mean Discordance per cent. of Whole Spot.	Mean Discordance divided by Square Root of Whole Spot.
		°	°								
0·640	0·000676	0·12	0·053	12·04	1·825	31·7	0·611	70·16	5·12	10·6	0·672

It appears from these tables that the means of two measures of distance and position-angle as printed may be taken as correct to the last figure, the probable error in distance $\frac{r}{R}$ being 0·0004, and in position-angle (at distance R) 0°·033. As regards areas of umbræ and whole spots, Tables I. and II. indicate that the mean discordance may be taken to vary as the square root of the measured area, and that it does not sensibly depend on the distance from the Sun's centre Assuming that the mean discordance varies as the square root of the measured area, the following table gives the values of the probable errors in measures of umbræ and whole spots for spots of various sizes at the centre of the Sun's disk, the probable error being inferred from the mean discordance by the formula :—

$$\text{Probable error} = 0{\cdot}845 \frac{\text{Sum of Discordances}}{\sqrt{10 \times 9}}$$
$$= 0{\cdot}891 \times \text{Mean Discordance.}$$

Umbræ.			Whole Spots.		
Area in Millionths.	Probable Error in Millionths.		Area in Millionths.	Probable Error in Millionths.	
	One Measure.	Mean of Two Measures.		One Measure.	Mean of Two Measures.
1	0·5	0·4	5	1·3	0·9
2	0·8	0·5	10	1·9	1·3
4	1·1	0·8	20	2·7	1·9
6	1·3	0·9	30	3·3	2·3
8	1·5	1·1	40	3·8	2·7
10	1·7	1·2	50	4·2	3·0
20	2·4	1·7	100	6·0	4·2
30	3·0	2·1	150	7·3	5·2
40	3·4	2·4	200	8·5	6·0
50	3·8	2·7	250	9·5	6·7
70	4·6	3·2	350	11·2	7·9
100	5·4	3·8	500	13·4	9·5
150	6·7	4·7	750	16·4	11·6
200	7·7	5·4	1000	18·9	13·4
250	8·6	6·1	1250	21·2	15·0
300	9·4	6·7	1500	23·2	16·4
350	10·2	7·2	2000	26·8	18·9

The quantities given in the *third* and *sixth* columns represent the mean discordances of the measured areas as given in the photographic results for spots not far from the centre of the disk. For spots at a considerable distance from the centre, these quantities should probably be multiplied by $\frac{1}{\sqrt[4]{1-\left(\frac{r}{R}\right)^2}}$, *i.e.*, by the square

root of the factor for the effect of foreshortening, the argument being the area in millionths as given in the photographic results. It is assumed that the probable error varies as the square root of the measured or projected area, and not as the square root of the area corrected for foreshortening.

The following are the values of $\frac{r}{R}$ corresponding to different values of the factor $\frac{1}{\sqrt[4]{1-\left(\frac{r}{R}\right)^2}}$:—

$\frac{r}{R}$	0·000	0·722	0·862	0·922	0·952	0·969	0·988	0·994	0·997	0·998
Factor $\frac{1}{\sqrt[4]{1-\left(\frac{r}{R}\right)^2}}$	1·0	1·2	1·4	1·6	1·8	2·0	2·5	3·0	3·5	4·0

By the help of these tables the probable error may be readily inferred for the area of any spot on an *eight-inch* photograph as printed in the photographic results.

II. Personality in Measurement of Areas on Four-inch Photographs.

In the preceding investigation the measures of area by the different observers have been considered as comparable, without the application of any correction for systematic difference in habit. Sensible differences of this kind have been suspected, and there has appeared to be some evidence of their reality. But on investigation it has been found that the determination of such differences, which are after all not large compared with the probable error of observation, is subject to much uncertainty.

The following series of comparisons was extracted from the daily measures of *four-inch* photographs in previous years (1882 January to 1884 February) it being the practice for two observers to measure each photograph, so that material for a comparison is ready to hand. The fifth and sixth columns under each heading are referred to below, for the other columns no explanation is required.

For M and H.

UMBRÆ.	No. of Obs.	Total Area as measured by M	Total Area as measured by H	$\frac{H}{M}$	$\sqrt{H}-\sqrt{M}$
Under 5 squares	151	382·5	263·3	0·688	− ·272
Above 5 & under 10 .	55	366·5	252·2	0·688	− ·439
Above 10 & under 20	18	288·2	224·4	0·778	− ·470
Above 20 squares....	6	198·0	169·9	0·858	− ·423
Total & Means ...	230	5·4	3·9	0·699	− ·331

WHOLE SPOTS.	No. of Obs.	Total Area as measured by M	Total Area as measured by H	$\frac{H}{M}$	$\sqrt{H}-\sqrt{M}$
Under 5 squares	88	239·8	222·2	0·927	− ·061
Above 5 & under 10 ..	50	347·4	349·5	1·006	+ ·008
Above 10 & under 20 .	51	830·5	782·5	0·942	− ·118
Above 20 & under 50 .	53	1842·2	1732·2	0·940	− ·179
Above 50 & under 100	32	2207·7	2140·8	0·970	− ·127
Above 100 squares....	9	1386·0	1350·2	0·974	− ·163
Total & Means	283	24·2	23·2	0·952	− ·092

FACULÆ.	No. of Obs.	Total Area as measured by M	Total Area as measured by H	$\frac{H}{M}$	$\sqrt{H}-\sqrt{M}$
Under 50 squares	112	2570·0	3280·4	1·276	+ ·621
Above 50 & under 100 .	39	2287·0	2785·0	1·218	+ ·792
Above 100 & under 200	14	1599·0	1941·0	1·214	+1·088
Above 200 squares.....					
Total & Means	165	39·1	48·5	1·257	+ ·701

For M and J P.

		M	J P	$\frac{JP}{M}$	$\sqrt{JP}-\sqrt{M}$
Under 5 squares	15	35·1	28·0	0·798	− ·163
Above 5 & under 10 .	8	67·6	59·2	0·876	− ·187
Above 10 & under 20	2	27·8	27·6	0·993	− ·013
Above 20 squares....	1	21·0	24·0	1·143	+ ·316
Total & Means ...	26	5·8	5·3	0·850	− ·140

		M	J P	$\frac{JP}{M}$	$\sqrt{JP}-\sqrt{M}$
Under 5 squares	11	23·8	23·5	0·987	− ·007
Above 5 & under 10 ..	6	37·8	43·0	1·138	+ ·168
Above 10 & under 20 .	7	94·0	88·8	0·945	− ·103
Above 20 & under 50 .	5	179·3	176·3	0·983	− ·050
Above 50 & under 100	2	132·0	126·0	0·947	− ·187
Above 100 squares....					
Total & Means	31	15·1	14·8	1·003	− ·013

		M	J P	$\frac{JP}{M}$	$\sqrt{JP}-\sqrt{M}$
Under 50 squares	4	325·5	320·5	0·985	− ·069
Above 50 & under 100 .	3	250·0	249·0	0·996	− ·019
Above 100 & under 200					
Above 200 squares.....					
Total & Means	7	82·3	81·4	0·990	− ·048

For M and F.

		M	F	$\frac{F}{M}$	$\sqrt{F}-\sqrt{M}$
Under 5 squares	85	187·0	169·5	0·907	− ·072
Above 5 & under 10 .	34	240·7	225·8	0·938	− ·084
Above 10 & under 20	6	84·1	77·1	0·917	− ·159
Above 20 squares....	1	23·0	24·0	1·044	+ ·103
Total & Means ...	126	4·2	3·9	0·917	− ·078

		M	F	$\frac{F}{M}$	$\sqrt{F}-\sqrt{M}$
Under 5 squares	42	85·9	91·4	1·064	+ ·034
Above 5 & under 10 ..	15	102·4	101·5	0·991	− ·011
Above 10 & under 20 .	19	277·6	289·0	1·041	+ ·076
Above 20 & under 50 .	8	291·7	304·0	1·042	+ ·126
Above 50 & under 100	6	396·9	406·5	1·024	+ ·098
Above 100 squares....	3	340·2	351·5	1·033	+ ·176
Total & Means	93	16·1	16·6	1·042	+ ·052

		M	F	$\frac{F}{M}$	$\sqrt{F}-\sqrt{M}$
Under 50 squares	11	1028·0	1014·0	1·006	+ ·028
Above 50 & under 100 .	5	531·0	550·0	1·036	+ ·182
Above 100 & under 200	1	160·0	150·0	0·938	− ·402
Above 200 squares.....					
Total & Means	17	99·9	100·8	1·011	+ ·048

For M and J H.

	UMBRÆ.					WHOLE SPOTS.					FACULÆ.				
	No. of Obs.	Total Area as measured by M	Total Area as measured by J H	$\frac{J H}{M}$	$\sqrt{J H} - \sqrt{M}$	No. of Obs.	Total Area as measured by M	Total Area as measured by J H	$\frac{J H}{M}$	$\sqrt{J H} - \sqrt{M}$	No. of Obs.	Total Area as measured by M	Total Area as measured by J H	$\frac{J H}{M}$	$\sqrt{J H} - \sqrt{M}$
Under 5 squares	60	135·8	121·9	0·898	− ·078	39	84·5	89·3	1·057	+ ·040	25	1292·5	1460·0	1·130	+ ·452
Above 5 & under 10..	16	114·1	104·5	0·916	− ·115	22	158·3	153·0	0·967	− ·043	11	1194·0	1245·0	1·043	+ ·221
Above 10 & under 20	9	134·6	115·0	0·854	− ·293	16	244·3	238·5	0·976	− ·052	9	1960·0	2046·0	1·044	+ ·321
Above 20 squares....	8	396·3	388·0	0·980	− ·074	25	766·4	727·0	0·949	− ·143					
						14	929·0	863·5	0·929	− ·292					
						8	1799·0	1918·0	1·066	+ ·488					
Total & Means ...	93	8·4	7·8	0·904	− ·105	124	32·1	32·2	0·995	− ·032	45	98·8	105·6	1·091	+ ·369

For M and S P.

		M	S P	$\frac{S P}{M}$	$\sqrt{S P} - \sqrt{M}$		M	S P	$\frac{S P}{M}$	$\sqrt{S P} - \sqrt{M}$		M	S P	$\frac{S P}{M}$	$\sqrt{S P} - \sqrt{M}$
Under 5 squares	27	64·1	58·8	0·917	− ·063	7	23·4	22·7	0·970	− ·028	4	381·0	382·0	1·003	+ ·012
Above 5 & under 10 .	7	48·2	44·1	0·915	− ·115	3	18·0	19·0	1·056	+ ·067	1	140·0	140·0	1·000	·000
Above 10 & under 20	7	96·4	92·3	0·957	− ·079	7	106·4	97·0	0·912	− ·176	3	377·0	365·0	0·968	− ·180
Above 20 squares....	1	23·5	22·0	0·936	− ·158	7	252·3	243·5	0·965	− ·105	2	420·0	400·0	0·952	− ·349
						5	345·1	337·0	0·977	− ·098					
						1	117·0	120·0	1·026	+ ·137					
Total & Means ...	42	5·5	5·2	0·924	− ·077	30	28·7	28·0	0·967	− ·077	10	131·8	128·7	0·982	− ·119

For H and J P.

		H	J P	$\frac{J P}{H}$	$\sqrt{J P} - \sqrt{H}$		H	J P	$\frac{J P}{H}$	$\sqrt{J P} - \sqrt{H}$		H	J P	$\frac{J P}{H}$	$\sqrt{J P} - \sqrt{H}$
Under 5 squares	182	355·5	380·6	1·071	+ ·050	39	100·4	95·1	0·947	− ·041	26	2029·5	2102·5	1·036	+ ·158
Above 5 & under 10 .	34	231·9	241·5	1·041	+ ·054	27	200·5	196·8	0·983	− ·024	24	3376·0	3093·0	0·916	− ·508
Above 10 & under 20	15	196·9	207·1	1·052	+ ·092	25	364·2	357·8	0·982	− ·034	15	3011·0	2836·0	0·942	− ·419
Above 20 squares....	4	119·1	139·1	1·168	+ ·440	32	1061·8	1067·3	1·005	+ ·015	1	145·0	340·0	2·345	+6·397
						14	959·9	954·1	0·994	− ·025					
						5	1140·0	1208·0	1·060	+ ·443					
Total & Means ...	245	3·8	4·1	1·067	+ ·060	142	27·0	27·3	0·982	− ·005	66	129·7	126·8	0·991	− ·121

For H and F.

	UMBRÆ.					WHOLE SPOTS.					FACULÆ.				
	No. of Obs.	Total Area as measured by H	Total Area as measured by F	$\frac{F}{H}$	$\sqrt{F}-\sqrt{H}$	No. of Obs.	Total Area as measured by H	Total Area as measured by F	$\frac{F}{H}$	$\sqrt{F}-\sqrt{H}$	No. of Obs.	Total Area as measured by H	Total Area as measured by F	$\frac{F}{H}$	$\sqrt{F}-\sqrt{H}$
Under 5 squares	32	61·7	94·4	1·530	+ ·329	25	65·8	84·4	1·283	+ ·216	9	556·0	596·0	1·072	+ ·278
Above 5 & under 10 .	16	97·6	133·9	1·372	+ ·423	22	154·6	191·6	1·239	+ ·300	6	492·0	457·0	0·929	− ·327
Above 10 & under 20	5	52·5	67·7	1·290	+ ·440	20	239·0	310·8	1·300	+ ·485	2	125·0	100·0	0·800	− ·835
Above 20 squares ...	1	22·5	24·5	1·089	+ ·207	31	1038·5	1122·5	1·081	+ ·229					
						8	484·8	517·2	1·067	+ ·256					
						6	1529·6	1734·9	1·134	+1·037					
Total & Means ...	54	4·3	5·9	1·453	+ ·365	112	31·4	35·4	1·198	+ ·331	17	69·0	67·8	0·980	− ·066

For H and J H.

		H	J H	$\frac{J H}{H}$	$\sqrt{J H}-\sqrt{H}$		H	J H	$\frac{J H}{H}$	$\sqrt{J H}-\sqrt{H}$		H	J H	$\frac{J H}{H}$	$\sqrt{J H}-\sqrt{H}$
Under 5 squares	16	28·2	31·2	1·106	+ ·069	19	52·7	55·5	1·053	+ ·045	2	350·0	320·0	0·914	− ·580
Above 5 & under 10 .	3	22·7	19·0	0·837	− ·235	12	91·3	93·5	1·024	+ ·032	2	194·0	226·0	1·165	+ ·781
Above 10 & under 20	2	29·1	30·0	1·031	+ ·059	9	125·9	132·5	1·053	+ ·097	2	992·0	932·0	0·940	− ·684
Above 20 squares....	2	71·7	74·5	1·039	+ ·116	9	362·3	356·0	0·983	− ·055	2	980·0	880·0	0·898	−1·160
						13	963·1	951·6	0·988	− ·052					
						12	2515·3	2390·0	0·950	− ·365					
Total & Means ...	23	6·6	6·7	1·059	+ ·033	74	55·5	53·8	1·012	− ·047	8	314·5	294·8	0·979	− ·411

For J P and F.

		J P	F	$\frac{F}{J P}$	$\sqrt{F}-\sqrt{J P}$		J P	F	$\frac{F}{J P}$	$\sqrt{F}-\sqrt{J P}$		J P	F	$\frac{F}{J P}$	$\sqrt{F}-\sqrt{J P}$
Under 5 squares	59	154·7	139·0	0·898	− ·083	27	88·5	103·3	1·167	+ ·146	9	525·8	747·0	1·420	+1·467
Above 5 & under 10 .	26	175·6	178·3	1·026	+ ·034	25	182·5	186·0	1·019	+ ·026	4	465·0	504·0	1·083	+ ·443
Above 10 & under 20	6	86·9	92·0	1·058	+ ·110	36	494·8	540·8	1·093	+ ·169	4	601·0	668·0	1·111	+ ·665
Above 20 squares....	4	86·0	91·5	1·064	+ ·144	35	1177·4	1220·5	1·036	+ ·105					
						8	545·2	558·6	1·025	+ ·101					
						4	445·0	448·0	1·007	+ ·035					
Total & Means ...	95	5·3	5·3	0·950	− ·027	135	21·7	22·6	1·073	+ ·113	17	93·6	112·9	1·268	+1·039

For J P and J H.

UMBRÆ.						WHOLE SPOTS.						FACULÆ.					
	No. of Obs.	Total Area as measured by J P	Total Area as measured by J H	$\frac{J H}{J P}$	$\sqrt{J H} - \sqrt{J P}$		No. of Obs.	Total Area as measured by J P	Total Area as measured by J H	$\frac{J H}{J P}$	$\sqrt{J H} - \sqrt{J P}$		No. of Obs.	Total Area as measured by J P	Total Area as measured by J H	$\frac{J H}{J P}$	$\sqrt{J H} - \sqrt{J P}$
Under 5 squares	13	23·6	16·8	0·712	− ·213	Under 5 squares	6	17·8	18·0	1·011	+ ·009	Under 50 squares	5	591·0	597·0	1·010	+ ·055
Above 5 & under 10 .	3	24·2	21·0	0·868	− ·195	Above 5 & under 10 ..	7	53·4	55·5	1·039	+ ·054	Above 50 & under 100 .	5	598·0	656·0	1·097	+ ·518
Above 10 & under 20	3	39·0	34·5	0·885	− ·215	Above 10 & under 20 .	5	77·8	78·5	1·009	+ ·017	Above 100 & under 200					
Above 20 squares....						Above 20 & under 50 .	3	105·0	88·0	0·838	− ·500	Above 200 squares.....					
						Above 50 & under 100	2	151·0	147·0	0·974	− ·116						
						Above 100 squares....	3	359·0	326·0	0·908	− ·513						
Total & Means ...	19	4·6	3·8	0·764	− ·210	Total & Means	26	29·4	27·4	0·983	− ·106	Total & Means	10	118·9	125·3	1·054	+ ·287

For F and J H.

		F	J H	$\frac{J H}{F}$	$\sqrt{J H} - \sqrt{F}$			F	J H	$\frac{J H}{F}$	$\sqrt{J H} - \sqrt{F}$			F	J H	$\frac{J H}{F}$	$\sqrt{J H} - \sqrt{F}$
Under 5 squares	52	124·6	95·5	0·766	− ·193	Under 5 squares	35	108·4	109·4	1·009	+ ·001	Under 50 squares	23	1299·6	1587·5	1·222	+ ·791
Above 5 & under 10 .	13	92·1	84·7	0·920	− ·108	Above 5 & under 10 ..	17	114·0	118·0	1·035	+ ·044	Above 50 & under 100 .	10	1150·0	1381·0	1·201	+1·027
Above 10 & under 20	11	164·7	145·5	0·883	− ·232	Above 10 & under 20 .	16	230·2	235·5	1·023	+ ·044	Above 100 & under 200	2	346·0	360·0	1·040	+ ·263
Above 20 squares....	2	66·0	59·5	0·902	− ·291	Above 20 & under 50 .	24	783·9	749·5	0·956	− ·127	Above 200 squares.....	1	250·0	300·0	1·200	+1·510
						Above 50 & under 100	11	781·5	749·0	0·958	− ·177						
						Above 100 squares....	6	951·0	996·0	1·047	+ ·295						
Total & Means ...	78	5·7	4·9	0·812	− ·187	Total & Means	109	27·2	27·1	1·000	− ·016	Total & Means	36	84·6	100·8	1·205	+ ·847

For J H and S P.

		J H	S P	$\frac{S P}{J H}$	$\sqrt{S P} - \sqrt{J H}$			J H	S P	$\frac{S P}{J H}$	$\sqrt{S P} - \sqrt{J H}$			J H	S P	$\frac{S P}{J H}$	$\sqrt{S P} - \sqrt{J H}$
Under 5 squares	57	105·9	102·1	0·964	− ·026	Under 5 squares	40	95·0	99·3	1·045	+ ·032	Under 50 squares	13	2450·0	2383·0	0·973	− ·189
Above 5 & under 10 .	13	91·5	84·8	0·927	− ·100	Above 5 & under 10 ..	23	166·0	154·5	0·931	− ·095	Above 50 & under 100 .	8	662·0	680·0	1·027	+ ·123
Above 10 & under 20	8	107·0	112·0	1·047	+ ·084	Above 10 & under 20 .	30	472·5	459·0	0·973	− ·055	Above 100 & under 200	4	890·0	855·0	0·961	− ·296
Above 20 squares ...	1	21·7	20·1	0·926	− ·175	Above 20 & under 50 .	30	932·0	925·5	0·993	− ·020	Above 200 squares.....	1	200·0	200·0	1·000	·000
						Above 50 & under 100	15	1038·5	1041·0	1·002	+ ·011						
						Above 100 squares....	6	634·0	636·0	1·003	+ ·016						
Total & Means ...	79	4·1	4·0	0·966	− ·029	Total & Means	144	23·2	23·0	0·995	− ·020	Total & Means	26	161·6	158·4	0·989	− ·102

Corresponding with the hypotheses made in connexion with probable error, two suppositions have been made in the case of personality:—

(1.) That the measures of each observer are to be multiplied by a constant factor to reduce them to a uniform standard, in which case (*a*) the ratio of the areas (as given in each of the third columns) should be constant for the same pair of observers measuring spots of varying area; and (*b*) the ratios for the various pairs of observers should be accordant, *i.e.*, for any three observers the product of the ratios for each pair taken in order should be unity.

With regard to (*a*), an inspection of the deduced factors will show that there is no very satisfactory agreement among them, and it is possible that the variation of personality with area is better represented by some other hypothesis. But the assortment of spots measured in all cases being roughly the same, the mean factor, deduced by any uniform method, ought still to be subject to the condition (*b*). It is found, however, that many of the measures bear traces of being not altogether independent, so that the personal factor does not remain constant when the companion observer varies. This is doubtless due to the fact that in order to secure the same grouping of complicated spot-groups by the two measurers, the measures of the first are necessarily referred to by the second; and a certain amount of bias, more noticeable in the case of the junior observers, is thus introduced.

In the case of whole spots the accordance was actually tested as follows:—The ratios were reduced to algebraical differences by taking logarithms in each case, and these differences were then treated in the same manner as the personal equations in clock-error, as described in the various Introductions to the Greenwich Observations, *i.e.*, the various equations in which the same observer occurs are added together, so that in the resulting equation that observer is affected by a large co-efficient. Then writing for convenience m, h, &c. for log. M, log. H, &c., so that—

$$h - m = \log \frac{\mathrm{H}}{\mathrm{M}} = \left.\begin{matrix}\log 0{\cdot}699\\ \log 0{\cdot}952\\ \log 1{\cdot}257\end{matrix}\right\} = \left\{\begin{matrix}9{\cdot}8445\\ 9{\cdot}9786\\ 0{\cdot}0993\end{matrix}\right\} \text{ for } \left\{\begin{matrix}\text{Umbræ,}\\ \text{Whole Spots,}\\ \text{Faculæ,}\end{matrix}\right.$$

and making M the standard observer, *i.e.*, putting $\mathrm{M} = 1$ or $m = 0$, we obtain the following systems of equations:—

		Umbræ.	Whole Spots.	Faculæ.
$4h - jp - f - jh$	=	9·6292,	9·9019,	0·1213
$4jp - h - f - jh$	=	0·0968,	9·9703,	0·0181
$4f - h - jp - jh$	=	0·1928,	0·1269,	9·8658
$5jh - h - jp - f - sp$	=	9·7887,	9·9977,	0·1372
$2sp - jh$	=	9·9507,	9·9833,	9·9873

The solution of these equations gives the following values for m, h, jp, &c. :—

	Umbræ.	Whole Spots.	Faculæ.
m	0·0000	0·0000	0·0000
h	9·8716	9·9784	9·9530
jp	9·9651	9·9921	9·9959
f	9·9843	0·0234	9·9736
jh	9·9078	9·9963	9·9555
sp	9·9292	9·9898	9·9841

and hence the following values of the ratios $\frac{H}{M}$, $\frac{JP}{M}$, &c., M being taken as 1 :—

	Umbræ.	Whole Spots.	Faculæ.
$\frac{H}{M}$	0·744	0·952	0·897
$\frac{JP}{M}$	0·923	0·982	0·991
$\frac{F}{M}$	0·965	1·055	0·941
$\frac{JH}{M}$	0·809	0·992	0·903
$\frac{SP}{M}$	0·850	0·977	0·964

The following table exhibits the differences between the values of the ratios for the several pairs of observers found by direct comparison, and those deduced from the solution of the equations :—

Ratio.	Umbræ.			Whole Spots.			Faculæ.		
	Value deduced from		Difference.	Value deduced from		Difference.	Value deduced from		Difference.
	Direct Comparison.	Equations.		Direct Comparison.	Equations.		Direct Comparison.	Equations.	
H ÷ M	0·699	0·744	+·045	0·952	0·952	·000	1·257	1·114	−·143
JP ÷ M	0·850	0·923	+·073	1·003	0·982	−·021	0·990	0·991	+·001
F ÷ M	0·917	0·965	+·048	1·042	1·055	+·013	1·011	1·063	+·052
JH ÷ M	0·904	0·809	−·095	0·995	0·992	−·003	1·091	1·108	+·017
SP ÷ M	0·924	0·850	−·074	0·967	0·977	+·010	0·982	1·037	+·055
JP ÷ H	1·067	1·240	+·173	0·982	1·032	+·050	0·991	0·889	−·102
F ÷ H	1·453	1·296	−·157	1·198	1·109	−·089	0·980	0·954	−·026
JH ÷ H	1·059	1·087	+·028	1·012	1·042	+·030	0·979	0·994	+·015
F ÷ JP	0·950	1·045	+·095	1·073	1·075	+·002	1·268	1·073	−·195
JH ÷ JP	0·764	0·876	+·112	0·983	1·010	+·027	1·054	1·118	+·064
JH ÷ F	0·812	0·838	+·026	1·000	0·939	−·061	1·205	1·043	−·162
SP ÷ JH	0·966	1·051	+·085	0·995	0·985	−·010	0·989	0·936	−·053

The following table gives the factors for the various pairs of observers, who have measured four-inch photographs:—

FACTORS BY WHICH THE AREAS (ON FOUR-INCH PHOTOGRAPHS), AS MEASURED BY THE VARIOUS PAIRS OF OBSERVERS, ARE TO BE MULTIPLIED TO REDUCE TO THE STANDARD OBSERVER, M.

Observers	M, H	M, J P	M, F	M, J H	M, S P	H, J P	H, F	H, J H	H, S P	J P, F	J P, J H	J P, S P	F, J H	F, S P	J H, S P
Umbræ	1·147	1·040	1·018	1·106	1·081	1·200	1·170	1·288	1·255	1·059	1·155	1·128	1·127	1·102	1·206
Whole Spots	1·025	1·009	0·973	1·004	1·012	1·034	0·996	1·029	1·037	0·982	1·013	1·021	0·977	0·984	1·016
Faculæ.....	1·054	1·005	1·030	1·051	1·018	1·059	1·088	1·111	1·075	1·035	1·056	1·023	1·085	1·050	1·071

(2.) The second hypothesis tried is that each observer has a tendency to add to or subtract from the area of each spot a ring of constant breadth, owing to the indefinite nature of the border. He is thus characterised by the algebraical excess of the square root of his measure of a spot over the square root of the measure of the standard observer. The fourth column in the tables of comparisons shows the value of this difference, as deduced from the various measures; so that to reduce the measure of any observer to that of another we subtract algebraically the mean value of the corresponding fourth column from the square root of his measure, and square the result. These quantities, to be in satisfactory accordance, should fulfil two conditions similar to (*a*) and (*b*) above.

The accordance between the results obtained from spots of different area appears to be hardly more satisfactory on the second hypothesis than on the first, but the second hypothesis is to be preferred as corresponding to that which is indicated by the results for probable error.

The following are the equations deduced from the above sets of measures by a method similar to that used in the case of factors:—

	Umbræ.	Whole Spots.	Faculæ.
$4\sqrt{H} - \sqrt{JP} - \sqrt{F} - \sqrt{JH}$	$= -0{\cdot}789$	$-0{\cdot}371$	$+1{\cdot}300$
$4\sqrt{JP} - \sqrt{H} - \sqrt{F} - \sqrt{JH}$	$= +0{\cdot}159$	$-0{\cdot}025$	$-1{\cdot}495$
$4\sqrt{F} - \sqrt{H} - \sqrt{JP} - \sqrt{JH}$	$= +0{\cdot}445$	$+0{\cdot}512$	$+0{\cdot}173$
$5\sqrt{JH} - \sqrt{H} - \sqrt{JP} - \sqrt{F} - \sqrt{SP}$	$= -0{\cdot}440$	$-0{\cdot}181$	$+1{\cdot}194$
$2\sqrt{SP} - \sqrt{JH}$	$= -0{\cdot}106$	$-0{\cdot}097$	$-0{\cdot}221$

Solving these equations we get the following values for $\sqrt{H} - \sqrt{M}$, &c. :—

	Umbræ.	Whole Spots.	Faculæ.
$\sqrt{H} - \sqrt{M}$	−0·274	−0·091	+0·437
$\sqrt{JP} - \sqrt{M}$	−0·084	−0·022	−0·122
$\sqrt{F} - \sqrt{M}$	−0·027	+0·085	+0·212
$\sqrt{JH} - \sqrt{M}$	−0·195	−0·057	+0·358
$\sqrt{SP} - \sqrt{M}$	−0·151	−0·077	+0·069

The following table exhibits the differences between the values for the several pairs of observers found by direct comparison, and those deduced from the solution of the equations :—

	Umbræ.			Whole Spots.			Faculæ.		
	Value deduced from		Difference.	Value deduced from		Difference.	Value deduced from		Difference.
	Direct Comparison.	Equations.		Direct Comparison.	Equations.		Direct Comparison.	Equations.	
$\sqrt{H} - \sqrt{M}$	−·331	−·274	+·057	−·092	−·091	+·001	+·701	+·413	−·288
$\sqrt{JP} - \sqrt{M}$	−·140	−·084	+·056	−·013	−·022	−·009	−·048	−·137	−·089
$\sqrt{F} - \sqrt{M}$	−·078	−·027	+·051	+·052	+·085	+·033	+·048	+·172	+·124
$\sqrt{JH} - \sqrt{M}$	−·105	−·195	−·090	−·032	−·057	−·025	+·369	+·341	−·028
$\sqrt{SP} - \sqrt{M}$	−·077	−·151	−·074	−·077	−·077	·000	−·119	+·060	+·179
$\sqrt{JP} - \sqrt{H}$	+·060	+·190	+·130	−·005	+·069	+·074	−·121	−·550	−·429
$\sqrt{F} - \sqrt{H}$	+·365	+·247	−·118	+·331	+·176	−·155	−·066	−·241	−·175
$\sqrt{JH} - \sqrt{H}$	+·033	+·079	+·046	−·047	+·034	+·081	−·411	−·072	+·339
$\sqrt{F} - \sqrt{JP}$	−·029	+·057	+·086	+·113	+·107	−·006	+1·039	+·309	−·730
$\sqrt{JH} - \sqrt{JP}$	−·210	−·111	+·099	−·106	−·035	+·071	+·287	+·478	+·191
$\sqrt{JH} - \sqrt{F}$	−·187	−·168	+·019	−·016	−·142	−·126	+·847	+·169	−·678
$\sqrt{SP} - \sqrt{JH}$	−·029	+·044	+·073	−·020	−·020	·000	−·102	−·281	−·179

For the application of these corrections the following tables have been constructed for the various pairs of observers who have measured photographs; the corrections are applicable algebraically to the areas as printed in the daily results, to obtain the area as measured by the standard observer, M :—

UMBRÆ.

Correction to be applied to measured area on hypothesis of error varying as perimeter.

Pairs of Observers.

Area.	M, H	M, J P	M, F	M, J H	M, S P	H, J P	H, F	H, J H	H, S P	J P, F	J P, J H	J P, S P	F, J H	F, S P	J H, S P
1	+ 0·7	+0·2	+0·1	+0·5	+0·4	+ 0·9	+ 0·8	+ 1·2	+ 1·1	+0·3	+ 0·7	+0·6	+0·5	+0·4	+ 0·8
2	+ 1·0	+0·3	+0·1	+0·7	+0·5	+ 1·2	+ 1·1	+ 1·6	+ 1·5	+0·4	+ 0·9	+0·8	+0·8	+0·6	+ 1·2
4	+ 1·3	+0·4	+0·1	+0·9	+0·7	+ 1·6	+ 1·4	+ 2·1	+ 1·9	+0·5	+ 1·2	+1·0	+1·0	+0·8	+ 1·5
6	+ 1·5	+0·5	+0·2	+1·1	+0·8	+ 2·0	+ 1·7	+ 2·6	+ 2·3	+0·6	+ 1·5	+1·3	+1·2	+1·0	+ 1·9
8	+ 1·7	+0·5	+0·2	+1·2	+0·9	+ 2·2	+ 1·9	+ 2·9	+ 2·6	+0·7	+ 1·7	+1·4	+1·4	+1·1	+ 2·1
10	+ 1·9	+0·6	+0·2	+1·3	+1·0	+ 2·5	+ 2·1	+ 3·2	+ 2·9	+0·7	+ 1·9	+1·6	+1·5	+1·2	+ 2·3
20	+ 2·7	+0·8	+0·3	+1·9	+1·4	+ 3·4	+ 2·9	+ 4·5	+ 4·1	+1·0	+ 2·6	+2·2	+2·1	+1·7	+ 3·3
30	+ 3·2	+1·0	+0·3	+2·3	+1·7	+ 4·3	+ 3·5	+ 5·5	+ 4·9	+1·3	+ 3·2	+2·7	+2·6	+2·0	+ 4·0
40	+ 3·7	+1·1	+0·4	+2·6	+2·0	+ 4·8	+ 4·0	+ 6·2	+ 5·7	+1·5	+ 3·7	+3·1	+2·9	+2·4	+ 4·6
50	+ 4·1	+1·2	+0·4	+2·9	+2·2	+ 5·3	+ 4·5	+ 6·9	+ 6·3	+1·6	+ 4·1	+3·4	+3·3	+2·6	+ 5·1
70	+ 4·8	+1·5	+0·5	+3·4	+2·6	+ 6·3	+ 5·3	+ 8·2	+ 7·4	+1·9	+ 4·9	+4·1	+3·9	+3·1	+ 6·0
100	+ 5·7	+1·7	+0·6	+4·0	+3·1	+ 7·4	+ 6·3	+ 9·7	+ 8·8	+2·3	+ 5·7	+4·8	+4·6	+3·7	+ 7·1
150	+ 6·9	+2·1	+0·7	+4·9	+3·8	+ 9·0	+ 7·6	+11·8	+10·7	+2·8	+ 7·0	+5·9	+5·6	+4·5	+ 8·7
200	+ 8·0	+2·4	+0·8	+5·7	+4·4	+10·3	+ 8·7	+13·6	+12·3	+3·2	+ 8·1	+6·8	+6·4	+5·1	+10·0
250	+ 8·9	+2·7	+0·9	+6·3	+4·9	+11·6	+ 9·7	+15·2	+13·7	+3·6	+ 9·0	+7·6	+7·2	+5·7	+11·2
300	+ 9·8	+3·0	+1·0	+6·9	+5·4	+12·7	+10·7	+16·6	+15·1	+3·9	+ 9·9	+8·3	+7·9	+6·3	+12·3
350	+10·5	+3·2	+1·0	+7·5	+5·8	+13·7	+11·5	+18·0	+16·3	+4·2	+10·7	+9·0	+8·5	+6·8	+13·2

WHOLE SPOTS.

Correction to be applied to measured area on hypothesis of error varying as perimeter.

Pairs of Observers.

Area.	M, H	M, J P	M, F	M, J H	M, S P	H, J P	H, F	H, J H	H, S P	J P, F	J P, J H	J P, S P	F, J H	F, S P	J H, S P
5	+0·5	+0·1	−0·4	+0·3	+0·4	+ 0·6	+0·1	+ 0·7	+ 0·8	−0·3	+0·4	+0·5	−0·1	0·0	+ 0·6
10	+0·6	+0·2	−0·6	+0·4	+0·5	+ 0·7	+0·1	+ 1·0	+ 1·1	−0·4	+0·5	+0·7	−0·2	−0·1	+ 0·9
20	+0·9	+0·2	−0·8	+0·5	+0·7	+ 1·1	+0·1	+ 1·4	+ 1·6	−0·6	+0·7	+0·9	−0·3	−0·1	+ 1·2
30	+1·0	+0·3	−1·0	+0·7	+0·9	+ 1·3	+0·1	+ 1·7	+ 1·9	−0·7	+0·9	+1·1	−0·3	−0·1	+ 1·5
40	+1·2	+0·3	−1·1	+0·8	+1·0	+ 1·5	+0·1	+ 2·0	+ 2·2	−0·8	+1·0	+1·3	−0·3	−0·1	+ 1·7
50	+1·3	+0·3	−1·2	+0·8	+1·1	+ 1·6	+0·1	+ 2·1	+ 2·4	−0·9	+1·1	+1·4	−0·4	−0·1	+ 1·9
100	+1·9	+0·5	−1·7	+1·2	+1·6	+ 2·3	+0·2	+ 3·0	+ 3·4	−1·3	+1·6	+2·0	−0·6	−0·2	+ 2·7
150	+2·3	+0·6	−2·1	+1·4	+1·9	+ 2·8	+0·2	+ 3·7	+ 4·2	−1·6	+2·0	+2·5	−0·7	−0·2	+ 3·3
200	+2·6	+0·6	−2·4	+1·7	+2·2	+ 3·2	+0·2	+ 4·3	+ 4·8	−1·8	+2·3	+2·8	−0·8	−0·2	+ 3·8
250	+2·9	+0·7	−2·7	+1·8	+2·5	+ 3·6	+0·2	+ 4·7	+ 5·4	−2·0	+2·5	+3·2	−0·9	−0·3	+ 4·3
350	+3·5	+0·8	−3·2	+2·1	+2·9	+ 4·3	+0·3	+ 5·6	+ 6·4	−2·4	+3·0	+3·7	−1·1	−0·3	+ 5·1
500	+4·1	+1·0	−3·8	+2·6	+3·5	+ 5·2	+0·3	+ 6·7	+ 7·7	−2·9	+3·6	+4·5	−1·2	−0·3	+ 6·1
750	+5·0	+1·2	−4·7	+3·2	+4·3	+ 6·2	+0·3	+ 8·2	+ 9·3	−3·5	+4·4	+5·5	−1·5	−0·4	+ 7·5
1000	+5·8	+1·4	−5·4	+3·7	+5·0	+ 7·2	+0·4	+ 9·5	+10·8	−4·0	+5·1	+6·4	−1·8	−0·5	+ 8·6
1250	+6·5	+1·6	−6·1	+4·1	+5·5	+ 8·0	+0·4	+10·5	+12·0	−4·6	+5·6	+7·0	−2·0	−0·6	+ 9·6
1500	+7·1	+1·7	−6·7	+4·5	+6·1	+ 8·9	+0·5	+11·6	+13·2	−5·0	+6·2	+7·8	−2·2	−0·6	+10·5
2000	+8·2	+2·0	−7·7	+5·2	+7·0	+10·1	+0·5	+13·3	+15·1	−5·8	+7·1	+8·9	−2·6	−0·8	+12·1

FACULÆ.

Correction to be applied to measured area on hypothesis of error varying as perimeter.

Pairs of Observers.

Area.	M, H	M, J P	M, F	M, J H	M, S P	H, J P	H, F	H, J H	H, S P	J P, F	J P, J H	J P, S P	F, J H	F, S P	J H, S P
10	− 2·4	+0·8	−0·7	− 2·1	−0·5	− 1·6	− 3·1	− 4·5	− 2·9	+0·1	− 1·3	+0·4	− 2·8	− 1·2	− 2·5
20	− 3·6	+1·2	−1·0	− 3·0	−0·6	− 2·4	− 4·6	− 6·5	− 4·1	+0·2	− 1·8	+0·6	− 4·0	− 1·6	− 3·5
30	− 4·5	+1·4	−1·2	− 3·7	−0·8	− 3·1	− 5·7	− 8·2	− 5·2	+0·2	− 2·3	+0·7	− 4·9	− 2·0	− 4·5
50	− 5·9	+1·8	−1·6	− 4·9	−1·0	− 4·1	− 7·4	−10·7	− 6·8	+0·2	− 3·1	+0·8	− 6·4	− 2·5	− 5·8
70	− 7·0	+2·1	−1·9	− 5·8	−1·2	− 4·9	− 8·9	−12·8	− 8·2	+0·3	− 3·7	+1·0	− 7·7	− 3·0	− 7·0
100	− 8·5	+2·5	−2·3	− 7·0	−1·4	− 6·0	−10·7	−15·4	− 9·9	+0·3	− 4·5	+1·1	− 9·2	− 3·7	− 8·4
150	−10·6	+3·0	−2·8	− 8·6	−1·7	− 7·6	−13·3	−19·2	−12·3	+0·3	− 5·6	+1·3	−11·4	− 4·5	−10·3
200	−12·1	+3·5	−3·2	−10·0	−2·0	− 8·6	−15·3	−22·1	−14·1	+0·4	− 6·5	+1·5	−13·2	− 5·1	−12·0
250	−13·6	+3·9	−3·6	−11·2	−2·2	− 9·7	−17·2	−24·8	−15·8	+0·4	− 7·3	+1·7	−14·8	− 5·8	−13·4
300	−15·0	+4·3	−3·9	−12·3	−2·4	−10·7	−18·9	−27·3	−17·4	+0·4	− 8·0	+1·9	−16·2	− 6·3	−14·7
350	−16·2	+4·6	−4·2	−13·3	−2·6	−11·6	−20·4	−29·5	−18·8	+0·4	− 8·7	+2·0	−17·5	− 6·8	−15·9
400	−17·3	+4·9	−4·5	−14·3	−2·8	−12·4	−21·8	−31·5	−20·1	+0·4	− 9·4	+2·1	−18·8	− 7·3	−17·1
500	−19·4	+5·6	−5·1	−15·9	−3·2	−13·9	−24·5	−35·3	−22·6	+0·5	−10·4	+2·4	−21·0	− 8·3	−19·1
1000	−27·6	+7·9	−7·1	−22·6	−4·4	−19·7	−34·7	−50·2	−31·9	+0·8	−14·8	+3·5	−29·7	−11·5	−27·0

It will be seen that these corrections are generally smaller than the probable error of the mean of two measures (as given in a previous table for eight-inch photographs) and that in the case of Whole Spots they are insignificant. It seems, therefore, unnecessary to apply them to the measured areas as printed, except in cases of special discussions of changes of area from day to day where extreme accuracy is desired.

ROYAL OBSERVATORY, GREENWICH.

SPECTROSCOPIC OBSERVATIONS

MADE AT THE

ROYAL OBSERVATORY, GREENWICH,

1885.

POSITION-ANGLES and HEIGHTS of SOLAR PROMINENCES, observed with the SPECTROSCOPE, and OBSERVATIONS of BRIGHT LINES in their SPECTRA, made at the ROYAL OBSERVATORY, GREENWICH, in the Year 1885.

Civil Time commencing at Greenwich Mean Midnight and reckoning from 0 to 24 hours is used throughout.

Note.—The position-angles reckoned from the north pole of the Sun's axis in the direction N., E., S., W., N., are given for the two extremities of the prominence. The extreme height in seconds of arc is given for each prominence. Where the estimated brightness of any of the bright lines seen is given, the *average* brightness of the line has been estimated in terms of the brightness of the corresponding part of the solar spectrum. The lines are usually fainter at the extremity than at the base. Where the estimated breadth is given, the *average* breadth of the line has been estimated in terms of the breadth of the corresponding dark line in the solar spectrum, except in the case of the bright line D_3, the breadth of which is estimated in terms of the dark line C. The bright lines are usually narrower at the extremity than at the base. On each occasion the entire limb of the Sun was examined first on the C line only, and the heights and position-angles of the prominences were determined. If possible a second examination of the entire limb was then made in which the entire spectrum from B to F was examined at each prominence. The first time given for any prominence is the time when it was first seen; the second time, the time of the second examination.

The "Half-prism" Spectroscope with a train of two "half-prisms" was used throughout. For viewing the prominences and chromosphere the spectroscope is reversed end for end, the slit and eye-piece being interchanged, so that the pencil is incident on the oblique face and emerges at the perpendicular face of each "half-prism." Thus the breadth of the spectrum-lines, considered as monochromatic images of the slit, is diminished, and greater purity of spectrum is obtained. In order to view a prominence in its just proportions, the breadth can be afterwards magnified by means of a small "half-prism" (direct-vision) placed between the eye-piece and the eye.

A displacement of 1 tenth-metre corresponds to a motion in the line of sight of 28·4 miles per second for the C line, of 36·1 miles for the *b* lines, and of 38·4 miles for the F line.

Observer, M.

Greenwich Civil Time, 1885.	Position-Angle from Sun's Axis.	Height in Seconds of arc.				Brightness.				Breadth.				REMARKS.
		C	D_3	$\frac{1474}{K}$	F	C	D_3	$\frac{1474}{K}$	F	C	D_3	$\frac{1474}{K}$	F	
d h m	° ′	″	″	·″	″									
Feb. 21. 12. 50	260. 16	32												Very bright prominence. Considerable detail.
	257. 18													
13. 10	62. 25	20												Straight jet.
	60. 46													
13. 0	55. 28	26												Faint straight jet.
	54. 35													
														The entire limb of the Sun was examined once with the slit radial on the C line only.
Feb. 24. 12. 36	301. 21	46												Tall faint prominence. Sun in much haze.
	298. 36													
12. 35	297. 51	22												Partly detached. The Sun was in too much haze for the prominence to be examined on any other line but C.
	295. 58													
12. 33	290. 41	24	19	4	14	$\frac{3}{4}$	$\frac{1}{3}$	$\frac{1}{10}$	$\frac{1}{6}$	$\frac{3}{4}$	$\frac{1}{2}$	1	1	Bright straight jet. b_1 and b_2 appear to be faintly reversed for a height of 5″.
13. 5	287. 56	19												
12. 28	279. 16	17	17		12	1	1		$\frac{1}{6}$	$\frac{3}{4}$	$\frac{1}{2}$		1	Short bright straight jet.
	278. 21													
12. 16	256. 21	24	36		24	$1\frac{1}{4}$	$\frac{2}{3}$		$\frac{2}{3}$	1	$\frac{1}{2}$		$\frac{2}{3}$	Very bright prominence; so bright that though the Sun was in so much haze as to render the chromosphere invisible, yet the prominence could be readily seen. At $12^h.\ 22^m$ the height of the prominence was 34″, but the sky was then very much clearer.
12. 22	253. 34	34												
12. 46	147. 56	26	26			$\frac{1}{4}$	$\frac{1}{5}$			$\frac{1}{3}$	$\frac{1}{4}$			Faint straight jet.
	146. 56													
12. 43	136. 21	38												Faint straight jet.
	135. 16													
12. 41	76. 21	34												Nearly detached. Bending over towards the south.
	73. 41													
12. 40	70. 56	26												A long low faint prominence.
	64. 56													
														The entire limb of the Sun was examined twice with the slit radial. In the first search only the prominence at 254° could be seen as the Sun was then in thick white haze. Later the sky became clearer, but the Sun was frequently again enveloped in the white haze, and only four of the prominences could be seen on any line but C. Even when the Sun was best seen, the limb was very unsteady. The average height of the chromosphere was 8″.
July 22. 12. 58	319. 2	46	55			$\frac{1}{2}$	$\frac{1}{3}$			$\frac{2}{3}$	$\frac{1}{2}$			Fine prominence, partly detached, and showing much detail. It could not be made out on the F line.
13. 31	315. 42	55												
13. 28	307. 22	18	17		17	$\frac{1}{2}$	$\frac{1}{4}$		$\frac{1}{5}$	$\frac{3}{4}$	$\frac{1}{2}$		1	Faint straight jet. The F line was displaced $\frac{2}{3}$ tenth-metre towards the red, indicating a motion of recession of about 26 miles per second.
	302. 42	18												
12. 55	287. 10	18	22		19	$\frac{3}{4}$	$\frac{1}{2}$		$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$		$\frac{1}{2}$	The F line was displaced about $\frac{2}{3}$ tenth-metre towards the blue, indicating a motion of approach of about 26 miles per second.
13. 25	276. 20	22												

Greenwich Civil Time, 1885.	Position Angle from Sun's Axis.	Height in Seconds of arc.				Brightness.				Breadth.				REMARKS.
		C	D_3	1474 K	F	C	D_3	1474 K		C	D_3	1474 K	F	
d h m	° ′	″	″	″	″									
July 22. 13. 20	263. 18	14	14		14	¾	½		⅕	¾	½		¾	Nearly detached. Bending over towards the south. The jets at 256°. 17′—254°. 50′ and 254°. 17′—250°. 34′ are part of this great prominence.
—continued.	254. 50	14												
13. 16	256. 17	21	21	2	19	1	½	1/10	⅔	1	½	1	1	Partly detached. The F line was displaced ½ tenth-metre towards the red, indicating a motion of recession of about 19 miles per second. b_1 and b_2 were also reversed, brightness 1/10, breadth 1·0, height 5″.
	254. 50	21												
13. 12	254. 17	24	24		24	1	1		1	1	¾		1¼	Bright straight jet.
	250. 34	24												
13. 6	104. 27	16	14		14	1	1½		⅕	1	⅔		1	b_1 and b_2 appeared to be faintly reversed, 5″ in height.
	103. 42	16												
12. 50	75. 29	21	19		18	1	½		⅓	1	½		1	Prominence with two jets, one 18″, the other 21″ high.
13. 4	70. 43	19												
13. 2	46. 18	14	14		12	⅔	½		⅕	¾	⅔		1	The F line was displaced ¼ tenth-metre towards the blue at upper part of prominence, corresponding to a motion of approach of about 10 miles per second.
13. 34	43. 47	14												The entire limb of the Sun was examined twice with the slit radial.
Oct. 7. 11. 21	252. 29	43	43		43	1	⅕		1/10	¾	⅔		1	Prominence with two jets.
	242. 29	43												
11. 39	257. 34	38												A third jet further to the north had appeared since $11^h.\ 21^m$.
	242. 9													
11. 19	121. 49	22	22		19	½	⅓		¼	½	⅓		½	Straight jet.
11. 34	119. 39	19												
11. 18	118. 34	31	29		29	1	½		¼	¾	¾		½	Straight jet.
11. 30	116. 49	29												
11. 13	97. 34	120	48			½	1/10			½	½			Very large prominence with brilliant veins of light on a continuous but much fainter background. Though the fainter parts of the prominence could be distinctly seen on the C line, the very brightest parts could only be made out with extreme difficulty on D_3 and not at all on F. The Sun was in considerable mist, which enfeebled the blue end of the spectrum, but did not seem materially to affect the yellow.
11. 45	81. 49	72												The measures on C and D_3 were obtained by taking the tallest and also one of the brightest jets of this prominence. On D_3 it could only be seen faintly. On F nothing could be satisfactorily made out.
11. 24	37. 49	22	26			⅓	⅕			½	½			Faint straight jet. It was not made out on the F line.
11. 42	35. 34	26												The entire limb of the Sun was examined twice with the slit radial. No other lines were seen besides C, D_3, and F, but the Sun was in much haze. The dark line 1474 K of the sky spectrum was not distinctly reversed, but seemed faint or vanished entirely for about 2″ in height all round the limb.
Dec. 2. 13. 7	316. 16	22	22	2	?	⅓	½	*f*	?	½	1/10		?	Low prominence with three jets.
	312. 53	22												
12. 52	239. 11	22	22			⅓	⅕			½	⅓			Narrow straight jet. The F line merely suspected. A small displacement towards the blue was noticed on the C line of about ½ tenth-metre, indicating a motion of approach of about 6 miles per second. The chromosphere was undulating, and varied in height from 6″ to 9″.
12. 58	237. 31	22												
12. 44	71. 11	19	19	2	19	⅔	½	*f*	1	⅔	½		⅕	Narrow straight jet.
	70. 16	19												The entire limb of the Sun was examined with the slit radial.
Dec. 15. 13. 2	302. 59	22	17	5	12	¼	⅕	*f*	*f*	½	⅓			Faint jet.
13. 24	300. 9	17												
13. 21	236. 29	17	14			⅔	½			⅔	⅓			Small jet. Not satisfactorily made out on F.
13. 35	236. 9	10												

Observations of Solar Prominences, made with the Spectroscope,

Greenwich Civil Time, 1885.	Position Angle from Sun's Axis.	Height in Seconds of arc.				Brightness.				Breadth.				REMARKS.
		C	D_3	1474 K	F	C	D_3	1474 K	F	C	D_3	1474 K	F	
d h m	° ′	″	″	″	″									
Dec. 15. 13. 18	122. 39	17	17	5	17	$\frac{1}{3}$	$\frac{1}{5}$	*f*	$\frac{1}{5}$	$\frac{1}{3}$	$\frac{1}{4}$		$\frac{2}{3}$	
13. 30	121. 39	17												Faint jet.
13. 12	35. 9	17	22	5	22	$\frac{1}{3}$	$\frac{1}{3}$	*f*	$\frac{1}{10}$	$\frac{1}{2}$	$\frac{1}{2}$		1	
13. 28	33. 29	22												Faint jet.
13. 8	30. 19	19	19		19	$\frac{1}{3}$	$\frac{1}{4}$		$\frac{1}{10}$	$\frac{1}{2}$	$\frac{1}{4}$		1	
13. 26	29. 19	19												The entire limb of the Sun was examined twice with the slit radial. The sun was throughout in white haze, and the limb boiled violently. Perhaps this would partly account for the prominences being faint, and being only traced a small distance from the limb. The dark line 1474 K in the spectrum of the sky was not distinctly reversed, but was very faint for a height of 5″ from the limb all the way round, and the D lines, b_1 and b_2, had a similar appearance for a height of 2″. The chromosphere was undulating, its average height being about 6″. There were several regions of the Sun's disk that were very noticeable in the spectroscope as presenting the appearance of large diffused but faint spots. A great number of lines were evidently slightly broader and darker over these regions. The regions themselves could be made out from the finder as slightly dusky districts. The definition was not good enough to allow of any very definite observations.

OBSERVATION of the SPECTRUM of a SUN SPOT made at the ROYAL OBSERVATORY, GREENWICH, in the Year 1885.

Spot-Group No. 1716.

1885 July 6.

Two spots, *f* and *d*, were examined, the slit being so arranged that both were seen at the same time. The definition was very bad, and the work of examination went on very slowly and not very satisfactorily, it being very difficult to identify the lines, or to satisfactorily determine the amount of broadening. The spectroscope was first adjusted to the part of the spectrum on the more refrangible side of *b*, and the two spots showed some slight but unmistakeable differences in this region. The spot, *f*, which was circular with dark central nucleus, showed a very black spectrum, but with fewer broadened lines than the other spot, *d*, the spectrum of which was not by any means so dark. The first spot, *f*, therefore showed the greater *general* absorption, and the latter, *d*, the greater *selective* absorption.

On turning from this region, which is usually well-marked in a spot-spectrum, being the district in which the "bands" of 1880, November 27 were seen, to F a bright lozenge of flame was at once detected ($13^h\ 50^m$ G.C.T.). It lay on that edge of the nucleus of spot *f* which was nearest to spot *d*. Another lozenge was seen on C but of a different shape, the bright lozenge on F being more extended in the direction of the length of the spectrum than that on C, but perhaps in no greater proportion than that in which the breadth of the dark F line in the spectrum of the spot exceeded the breadth of the dark C line. The dark C line was bisected right across the spot by a very fine bright line. Nothing of the kind could be seen on the D, E, or *b* lines, nor could D_3 or 1474 K be detected as bright lines. But a faint point of light was suspected on λ 4918 and λ 4919.

No such reversal could be detected on any line in the spectrum of spot *d*. Sweeping through the length of the spectrum it became very evident that on this occasion the part of the spectrum first examined was the most barren which could have been selected, the lines broadened between D and *b* and between C and D, being both numerous and well marked. The sky clouded over before they could be recorded.

The above observations were made by Mr. Maunder with the half-prism spectroscope mounted on the South East Equatoreal. The spectroscope was used in the direct position, with a train of two half-prisms, giving under these conditions a dispersion of about 80° from A to H. A power of 14 was used on the viewing telescope. Position angle of slit 112° 30′.

The numbers of the spots are taken from the Photographic Results.

MEASURES of DISPLACEMENT of LINES in the SPECTRA of STARS, as compared with those of TERRESTRIAL ELEMENTS, and CONCLUDED MOTIONS in the LINE of SIGHT, from OBSERVATIONS at the ROYAL OBSERVATORY, GREENWICH, in the Year 1885.

The day specified in the first column is the Civil Day, and the hours and minutes are those of Greenwich Civil Time, commencing at Greenwich Mean Midnight, and reckoning from 0 to 24 hours.

Note.—The motion corresponding to the displacement actually observed may be inferred from the Concluded Motion by adding the Earth's Motion algebraically.

The "Half-prism" Spectroscope was used throughout. Each "Half-prism" is compound, and is composed of a flint "half-prism," (*i.e.*, the half of an isosceles prism, cut by a plane perpendicular to the base,) and a crown prism, cemented on the emergent face, so as to form the half of a direct-vision prism. With one such half-prism, a dispersion of about $18\frac{1}{2}°$ from A to H, equivalent to that produced by four flint prisms of 60°, is obtained; and with a train of two a dispersion of about 80°, equivalent to that produced by sixteen flint prisms of 60°. One half-prism was usually employed; when two half-prisms were used the fact is stated in the "Remarks." The dispersions have been inferred from measurements of the distance between b_1 and b_4 as compared with the wave-length measure.

1 rev. of the micrometer corresponds, with one "half-prism" to 10·4 tenth-metres or 375 miles per second for the *b* lines, and to 7·91 tenth-metres or 304 miles per second for the F line; and with two "half-prisms" to 2·1 tenth-metres or 77 miles per second for *b*, and to 1·71 tenth-metres or 66 miles per second for F.

1 rev. of the screw for opening the slit corresponds to 0·01 inch, or about 10″.

The slit lies north and south when the reading of the Position-Circle is 5°.

The velocity of light has been taken as 186,660 miles per second, and the distance of the Sun as 92,250,000 miles.

The estimations of displacements have been made by *indirect* comparison with the comparison-line, except where the contrary is expressly stated. The displacement is estimated in terms of the breadth of the comparison-line.

The sign + denotes a displacement towards the red or a motion of recession, — a displacement towards the blue or a motion of approach.

Date, 1885, Greenwich Civil Time.	Observer.	Object.	Line.	Width of Slit.	Displacement.		Earth's Motion in Miles per Second.	Concluded Motion of Stars in Miles per Second.		REMARKS.
					Measured.	Estimated.		Measured.	Estimated.	
d h m				r	r					
Feb. 3. 21. 50	M	Aldebaran	F	0·260	+0·075	+ $\frac{1}{4}$	+ 17·3	+ 5·5	+ 10·3	Spectrum steady. Star-line faint, but well defined.
22. 5	M	,,	F	0·260	+0·086	+ $\frac{3}{10}$	+ 17·3	+ 8·8	+ 15·8	
22. 15	M	Sirius	F	0·260	−0·023	− $\frac{1}{10}$	+ 7·9	− 14·9	− 18·9	Spectrum very tremulous, and star-line ill-defined. Repeated direct comparisons seemed to show a *slight* displacement towards the blue, but the two lines were evidently nearly coincident.
22. 20	M	,,	F	0·260	−0·031	− $\frac{1}{10}$	+ 7·9	− 17·3	− 18·9	
22. 25	M	,,	F	0·260	−0·056	− $\frac{1}{5}$	+ 7·9	− 24·9	− 29·9	
22. 30	M	,,	F	0·260	+0·040	+ $\frac{1}{10}$	+ 7·9	+ 4·2	+ 3·1	
22. 35	M	,,	F	0·260	−0·042	− $\frac{1}{10}$	+ 7·9	− 20·6	− 18·9	
22. 40	M	,,	F	0·260	+0·003	0	+ 7·9	− 7·0	− 7·9	
22. 55	M	Procyon	F	0·260	+0·010	0	+ 6·6	− 3·6	− 6·6	Spectrum bright and fairly steady. Star-line fairly well seen.
23. 0	M	,,	F	0·260	−0·049	− $\frac{1}{5}$	+ 6·6	− 21·5	− 28·6	
23. 20	M	Pollux	F	0·260	−0·119	− $\frac{3}{10}$	+ 7·3	− 43·4	− 40·4	Spectrum fairly steady. Star-line very faint and difficult to see.
23. 35	M	,,	F	0·260	−0·065	− $\frac{1}{5}$	+ 7·3	− 27·0	− 29·3	
4. 0. 15	M	Castor.....	F	0·260	−0·098	− $\frac{3}{10}$	+ 8·4	− 38·2	− 41·5	Spectrum fairly steady. Star-line dark, but ill-defined.
0. 30	M	,,	F	0·260	+0·010	0	+ 8·4	− 5·4	− 8·4	
0. 35	M	Moon	F	0·260	−0·011			− 3·3		
0. 40	M	,,	F	0·260	−0·011			− 3·3		
0. 45	M	,,	F	0·260	−0·019			− 5·8		
0. 50	M	,,	F	0·260	+0·006			+ 1·8		
0. 55	M	,,	F	0·260	−0·017			− 5·1		
										Position Circle, 186°.
Feb. 5. 18. 50	M	Aldebaran	F	0·130	+0·046	+ $\frac{3}{10}$	+ 17·6	− 3·6	+ 10·3	Spectrum faint and somewhat unsteady. Star-line difficult to see.
19. 0	M	,,	F	0·130	+0·048	+ $\frac{1}{10}$	+ 17·6	− 3·0	− 8·3	
19. 10	M	,,	F	0·130	+0·156	+ $\frac{1}{2}$	+ 17·6	+ 29·8	+ 28·9	Star-line very well seen.
19. 20	M	Rigel	F	0·130	+0·087	+ $\frac{1}{4}$	+ 14·3	+ 12·1	+ 8·9	Spectrum bright and fairly steady. Star-line fairly well seen.
19. 25	M	,,	F	0·130	+0·077	+ $\frac{1}{4}$	+ 14·3	+ 9·1	+ 8·9	
19. 35	M	γ Orionis	F	0·130	+0·016	0	+ 15·3	− 10·4	− 15·3	Spectrum bright and fairly steady.
19. 40	M	,,	F	0·130	−0·029	− $\frac{1}{10}$	+ 15·3	− 24·1	− 24·6	
19. 55	M	β Tauri.....	F	0·130	+0·012	+ $\frac{1}{10}$	+ 15·6	− 12·0	− 6·3	Spectrum fairly bright and steady. Star-line diffused and somewhat difficult to bisect.
20. 0	M	,,	F	0·130	−0·132	− $\frac{1}{2}$	+ 15·6	− 55·7	− 62·1	
20. 10	M	,,	F	0·130	−0·069	− $\frac{1}{3}$	+ 15·6	− 36·6	− 46·6	
20. 15	M	,,	F	0·130	−0·067	− $\frac{3}{10}$	+ 15·6	− 36·0	− 43·5	
20. 20	M	δ Orionis	F	0·130	−0·142	− $\frac{2}{5}$	+ 14·4	− 57·5	− 51·6	Star-line faint and diffused, observation very difficult.
20. 25	M	,,	F	0·130	+0·935	0	+ 14·4	− 3·8	− 14·4	

Date, 1885, Greenwich Civil Time.	Observer.	Object.	Line.	Width of Slit.	Displacement.		Earth's Motion in Miles per Second.	Concluded Motion of Stars in Miles per Second.		REMARKS.
					Measured.	Estimated.		Measured.	Estimated.	
d h m				r	r					
Feb. 5. 20. 30	M	δ Orionis	F	0·130	−0·062	− 3/10	+ 14·4	− 33·2	− 42·3	
20. 35	M	,,	F	0·130	+0·055	+ 1/5	+ 14·4	+ 2·3	+ 4·2	
20. 40	M	ε Orionis	F	0·130	−0·040	− 1/10	+ 14·2	− 26·3	− 23·5	Spectrum fairly bright and steady. Star-line fairly well seen.
20. 45	M	,,	F	0·130	+0·017	+ 1/10	+ 14·2	− 9·1	− 9·6	
20. 50	M	ζ Orionis	F	0·130	−0·080	− 1/4	+ 13·9	− 38·2	− 37·1	Spectrum very bright and steady. Star-line fairly well seen by glimpses.
20. 55	M	,,	F	0·130	+0·015	0	+ 13·9	− 9·3	− 13·9	
21. 0	M	κ Orionis	F	0·130	−0·122	− 1/2	+ 12·6	− 49·7	− 59·1	Spectrum faint, but fairly steady. Star-line very difficult to bisect.
21. 3	M	,,	F	0·130	+0·060	+ 1/5	+ 12·6	+ 5·6	+ 6·0	
21. 6	M	,,	F	0·130	−0·117	− 1/4	+ 12·6	− 48·1	− 35·8	
21. 10	M	,,	F	0·130	+0·019	+ 1/10	+ 12·6	− 6·8	− 3·3	
21. 15	M	γ Geminorum .	F	0·130	−0·140	− 1/2	+ 12·0	− 54·5	− 58·5	Spectrum bright. Star-line broad and diffused at edges, but dark and fairly distinct. The star seemed to show a most remarkable displacement towards the blue.
21. 20	M	,,	F	0·130	−0·316	− 3/5	+ 12·0	−108·0	− 86·3	
21. 25	M	,,	F	0·130	−0·418	− 1	+ 12·0	−139·0	−104·9	
21. 30	M	,,	F	0·130	−0·201	− 2/3	+ 12·0	− 73·1	− 67·8	
21. 40	M	Sirius	F	0·130	−0·150	− 1/2	+ 8·3	− 53·9	− 54·8	Spectrum bright and somewhat tremulous. Star-line very diffused and ill-defined. The displacement towards the blue was very strongly marked. Direct comparison showed a very large and well marked displacement.
21. 45	M	,,	F	0·130	−0·100	− 1/3	+ 8·3	− 38·7	− 39·3	
21. 50	M	,,	F	0·130	−0·121	− 1/2	+ 8·3	− 45·0	− 54·8	
21. 55	M	,,	F	0·130	−0·079	− 1/3	+ 8·3	− 32·3	− 39·3	
22. 5	M	Procyon.....	F	0·130	+0·033	+ 1/10	+ 7·2	+ 2·8	+ 2·1	Spectrum bright and steady. Star-line faint and diffused.
22. 10	M	,,	F	0·130	+0·075	+ 1/4	+ 7·2	+ 15·6	+ 16·0	
22. 15	M	,,	F	0·130	+0·005	0	+ 7·2	− 5·7	− 7·2	
22. 20	M	,,	F	0·130	−0·019	− 1/10	+ 7·2	− 13·0	− 16·5	
										Position Circle, 186°.
Feb. 7. 19. 0	M	β Persei	F	0·120	−0·132	− 2/5	+ 17·4	− 57·5	− 68·6	Spectrum faint. Star-line faint. Measures made with great difficulty and therefore rough.
19. 10	M	,,	F	0·120	−0·050	− 1/3	+ 17·4	− 32·6	− 45·9	
19. 15	M	α Persei	F	0·120	−0·227	− 1	+ 16·0	− 85·0	−101·4	Spectrum faint. Star-line faint. Measures made with great difficulty and therefore rough.
19. 20	M	,,	F	0·120	−0·160	− 2/3	+ 16·0	− 64·6	− 72·9	
19. 40	M	Aldebaran	F	0·120	+0·226	+ 4/5	+ 17·8	+ 50·9	+ 50·5	Star-line faint and only seen by glimpses, but when seen it appeared sharp and well-defined.
19. 45	M	,,	F	0·120	+0·130	+ 3/5	+ 17·8	+ 21·7	+ 33·4	
19. 50	M	Capella	F	0·120	+0·016	0	+ 14·9	− 10·0	− 14·9	Spectrum bright and steady. Star-line fairly well seen.
19. 55	M	,,	F	0·120	+0·086	+ 1/3	+ 14·9	+ 11·2	+ 13·6	
20. 0	M	,,	F	0·120	+0·021	+ 1/10	+ 14·9	− 8·5	− 6·4	
20. 5	M	,,	F	0·120	+0·109	+ 1/2	+ 14·9	+ 18·2	+ 27·8	
20. 10	M	Rigel	F	0·120	−0·043	− 1/4	+ 14·5	− 27·6	− 35·9	Spectrum bright, but unsteady. The first two measures, although so discordant from the usual result and from the succeeding four, seemed satisfactory at the time. The star-line was however somewhat more steadily seen in the last four observations, and particularly in the last three.
20. 12	M	,,	F	0·120	+0·018	0	+ 14·5	− 9·0	− 14·5	
20. 14	M	,,	F	0·120	+0·107	+ 1/3	+ 14·5	+ 18·0	+ 14·0	
20. 16	M	,,	F	0·120	+0·139	+ 1/2	+ 14·5	+ 27·7	+ 28·2	
20. 18	M	,,	F	0·120	+0·166	+ 1/2	+ 14·5	+ 35·9	+ 28·2	
20. 20	M	,,	F	0·120	+0·160	+ 1/2	+ 14·5	+ 34·1	+ 28·2	
20. 25	M	γ Orionis	F	0·120	−0·030	− 1/5	+ 15·7	− 24·8	− 32·8	Spectrum fairly bright and steady. Star-line fairly well seen.
20. 27	M	,,	F	0·120	−0·050	− 1/3	+ 15·7	− 30·9	− 44·2	
20. 29	M	,,	F	0·120	−0·028	− 1/10	+ 15·7	− 24·2	− 24·2	
20. 36	M	,,	F	0·120	−0·026	− 1/10	+ 15·7	− 23·6	− 24·2	
20. 40	M	β Tauri	F	0·120	−0·059	− 2/3	+ 16·0	(− 33·9)	(− 50·1)	
20. 45	M	,,	F	0·120	−0·116	− 1	+ 16·0	(− 51·3)	(− 58·7)	
20. 50	M	,,	F	0·120	−0·060	− 1/3	+ 16·0	(− 34·2)	(− 44·5)	
21. 14	M	Sirius.....	F	0·120	−0·232	− 2/3	+ 8·7	(− 79·2)	(− 65·6)	
21. 18	M	,,	F	0·120	−0·281	− 1/2	+ 8·7	(− 94·1)	(− 51·4)	
21. 22	M	,,	F	0·120	−0·105	− 3/10	+ 8·7	(− 40·6)	(− 34·3)	
21. 50	M	β Aurigæ	F	0·120	−0·187	− 2/3	+ 13·6	(− 70·4)	(− 70·5)	
21. 58	M	,,	F	0·120	−0·051	− 1/3	+ 13·6	(− 29·1)	(− 42·1)	
										The sky clouded over before the measures of β Tauri were obtained. The measures of that star and of Sirius and β Aurigæ were therefore obtained under very unfavourable conditions, and should be rejected.
										Position Circle, 186°.

Date, 1885, Greenwich Civil Time.	Observer.	Object.	Line.	Width of Slit.	Displacement.		Earth's Motion in Miles per Second.	Concluded Motion of Stars in Miles per Second.		REMARKS.
					Measured.	Estimated.		Measured.	Estimated.	
d h m				r	r					
Feb. 19. 19. 25	M	Aldebaran	F	0·163	+0·086	+ 1/4	+ 18·5	+ 7·5	− 1·1	Spectrum faint. Star-line very faint.
19. 35	M	,,	F	0·163	+0·217	+ 3/4	+ 18·5	+ 47·3	+ 34·0	
19. 45	M	Moon	F	0·163	−0·054			− 16·4		The coincidence of the two spectra appeared perfect.
19. 49	M	,,	F	0·163	−0·020			− 6·1		
19. 53	M	,,	F	0·163	−0·128			− 38·9		
19. 57	M	,,	F	0·163	+0·042			+ 12·7		
20. 0	M	,,	F	0·163	−0·031			− 9·4		Position Circle, 186°.
Feb. 21. 19. 11	M	Aldebaran	F	0·114	+0·164	+ 5/6	+ 18·6	+ 31·2	+ 26·1	Spectrum faint. Star-line faint. Star in thin cloud. Observation rough.
19. 15	M	,,	F	0·114	+0·179	+ 5/6	+ 18·6	+ 35·8	+ 26·1	
19. 19	M	Moon	F	0·114	−0·015			− 4·6		Third and fourth measures were considered rough. So far as could be judged from the comparisons the two spectra were *perfectly* coincident, and the apparent displacement was entirely due to uncertainty of the bisection of the line in the Moon's spectrum.
19. 21	M	,,	F	0·114	+0·014			+ 4·3		
19. 23	M	,,	F	0·114	−0·095			− 28·8		
19. 25	M	,,	F	0·114	−0·068			− 20·7		
19. 27	M	,,	F	0·114	−0·006			− 1·8		
19. 36	M	Rigel	F	0·114	+0·107	+ 2/5	+ 15·7	+ 16·8	+ 14·1	Spectrum very faint. Star-line faint, but fairly well defined. Star in light cloud. Measures rough.
19. 40	M	,,	F	0·114	+0·184	+ 2/5	+ 15·7	+ 40·2	+ 29·0	Position Circle, 185°.
Feb. 23. 20. 5	M	Capella	b_1	0·175	+0·040	+ 1/5	+ 16·7	− 1·7	+ 5·6	Spectrum bright, but very unsteady. Wind high. Star-line in consequence very difficult to observe.
20. 35	M	,,	b_1	0·175	+0·152	+ 2/5	+ 16·7	+ 40·4	+ 27·9	
20. 50	M	Aldebaran	b_1	0·175	+0·092	+ 1/3	+ 18·6	+ 15·9	+ 9·3	Spectrum very unsteady. Star-line fairly well seen by glimpses.
21. 5	M	,,	b_1	0·175	+0·118	+ 1/3	+ 18·6	+ 25·7	+ 18·6	
21. 10	M	Moon	b_1	0·175	−0·030			− 11·3		Moon spectrum very bright, and lines very well seen at times. Wind, however, still high, and spectrum unsteady. The coincidence of the two spectra appeared perfect.
21. 14	M	,,	b_1	0·175	−0·041			− 15·4		
21. 18	M	,,	b_1	0·175	+0·035			+ 13·1		
21. 21	M	,,	b_1	0·175	+0·011			+ 4·1		
21. 25	M	,,	b_1	0·175	−0·002			− 0·8		
21. 40	M	α Orionis	b_1	0·175	+0·081	+ 3/10	+ 16·7	+ 13·7	+ 16·8	Spectrum very bright, but unsteady. The b_1 line could be seen faintly, but distinctly isolated from the band on which it stands.
21. 50	M	,,	b_1	0·175	+0·122	+ 2/5	+ 16·7	+ 29·1	+ 27·9	
22. 5	M	Pollux	b_1	0·175	+0·003	0	+ 12·7	− 11·6	− 12·7	Spectrum unsteady. Star-line exceedingly faint, but glimpsed satisfactorily at times.
22. 20	M	,,	b_1	0·175	−0·027	− 1/10	+ 12·7	− 22·8	− 23·9	
22. 35	M	α Hydræ.....	b_1	0·175	−0·002	0	+ 3·0	− 3·8	− 3·0	Spectrum faint and very unsteady. Star-line seen with the greatest difficulty. Measures very rough.
22. 50	M	,,	b_1	0·175	+0·065	+ 1/5	+ 3·0	+ 21·4	+ 19·3	Position Circle, 185°.
Feb. 25. 19. 27	M	Aldebaran	b_1	0·118	+0·078	+ 1/3	+ 18·6	+ 10·7	+ 8·3	Spectrum bright. Star-line well seen. Observation considered very good.
19. 37	M	,,	b_1	0·118	+0·120	+ 1/2	+ 18·6	+ 26·5	+ 13·7	
19. 57	M	Capella.....	b_1	0·118	+0·137	+ 1/2	+ 16·8	+ 34·6	+ 23·6	Spectrum bright, but very unsteady. Star-lines exceedingly faint. Measures very rough.
20. 12	M	,,	b_1	0·118	+0·025	+ 1/10	+ 16·8	− 7·4	− 8·7	
20. 22	M	α Orionis	b_1	0·118	+0·027	+ 1/10	+ 16·9	− 6·8	− 8·8	Spectrum exceedingly tremulous and also faint, as light cloud was forming. The bisections were difficult to obtain, and are therefore rough. The b_1 line was seen isolated from the dark band upon which it stands, but not nearly so distinctly as on February 23.
20. 32	M	,,	b_1	0·118	+0·130	+ 1/2	+ 16·9	+ 31·9	+ 17·7	
20. 52	M	Moon	b_1	0·118	−0·031			− 11·6		Moon line seen very well. The coincidence of the two spectra appeared perfect.
20. 54	M	,,	b_1	0·118	−0·029			− 10·9		
20. 57	M	,,	b_1	0·118	−0·018			− 6·8		
20. 59	M	,,	b_1	0·118	+0·021			+ 7·9		
21. 2	M	,,	b_1	0·118	+0·011			+ 4·1		
21. 22	M	Pollux	b_1	0·118	−0·055	− 1/2	+ 13·1	− 33·7	− 40·0	Spectrum unsteady, but bright. Star-line darker and more distinct than usual. Measures difficult, but considered good.
21. 32	M	,,	b_1	0·118	−0·053	− 1/2	+ 13·1	− 33·0	− 40·0	Position Circle, 185°.

Date, 1885, Greenwich Civil Time.	Observer.	Object.	Line.	Width of Slit.	Displacement. Measured.	Displacement. Estimated.	Earth's Motion in Miles per Second.	Concluded Motion of Stars in Miles per Second. Measured.	Concluded Motion of Stars in Miles per Second. Estimated.	REMARKS.
d h m				r	r					
Mar. 10. 22. 32	N	Aldebaran	b_1	0·142	+0·139	+ $\frac{1}{2}$	+ 18·1	+ 34·1	+ 30·9	Spectrum unsteady. Star-lines distinct and sharp.
22. 41	N	,,	b_1	0·142	+0·178	+ $\frac{2}{3}$	+ 18·1	+ 48·7	+ 47·2	
23. 10	N	Capella.....	b_1	0·142	+0·021	0	+ 17·2	− 9·3	− 17·2	Star-line very faint.
23. 15	N	,,	b_1	0·142	+0·070	+ $\frac{1}{4}$	+ 17·2	+ 9·1	+ 7·3	Position Circle, 185°.
Mar. 11. 22. 50	M	Pollux	b_1	0·125	−0·042	− $\frac{1}{4}$	+ 15·9	− 31·7	− 36·3	Spectrum tremulous. Star-line fairly well seen.
23. 5	M	,,	b_1	0·125	−0·011	− $\frac{1}{10}$	+ 15·9	− 20·0	− 24·1	
23. 25	M	α Hydræ.....	b_1	0·125	+0·057	+ $\frac{1}{4}$	+ 7·5	+ 13·9	+ 12·9	Spectrum faint and tremulous. Definition fair.
23. 40	M	,,	b_1	0·125	+0·012	+ $\frac{1}{10}$	+ 7·5	− 3·0	+ 0·7	
23. 45	M	γ Leonis.....	b_1	0·125	+0·114	+ $\frac{1}{2}$	+ 7·4	+ 35·4	+ 33·4	Spectrum fairly steady. Star-line faint, but seen well by glimpses.
12. 0. 10	M	,,	b_1	0·125	+0·048	+ $\frac{1}{4}$	+ 7·4	+ 10·6	+ 13·0	
0. 25	M	ϵ Virginis.....	b_1	0·125	−0·008	− $\frac{1}{10}$	− 5·1	+ 2·1	− 3·1	Star spectrum and line both faint.
0. 35	M	,,	b_1	0·125	+0·021	+ $\frac{1}{7}$	− 5·1	+ 13·0	+ 16·7	
0. 55	M	Arcturus	b_1	0·125	−0·065	− $\frac{1}{3}$	− 8·2	− 16·2	− 18·9	Spectrum bright, but tremulous. Star-line faint.
1. 5	M	,,	b_1	0·125	−0·045	− $\frac{1}{5}$	− 8·2	− 8·7	− 8·1	Position Circle, 185°.
Mar. 12. 21. 17	N	Capella.....	b_1	0·161	+0·140	+ $\frac{1}{2}$	+ 17·1	+ 35·5	+ 35·9	Spectrum bright and steady. Star-line tolerably distinct. Slight tremor occasionally, due to wind.
21. 22	N	,,	b_1	0·161	+0·135	+ $\frac{1}{2}$	+ 17·1	+ 33·6	+ 35·9	
21. 26	N	,,	b_1	0·161	+0·111	+ $\frac{2}{5}$	+ 17·1	+ 24·6	+ 25·2	
22. 42	N	Aldebaran	b_1	0·161	+0·087	+ $\frac{1}{3}$	+ 17·9	+ 14·8	+ 17·4	Spectrum faint and tremulous. A rough observation. Position Circle, 185°.
Mar. 14. 20. 25	M	Sirius	F	0·158	−0·011	− $\frac{1}{20}$	+ 13·6	− 16·9	− 18·5	Direct comparison showed only a very slight displacement towards the blue, scarcely sufficient to be detected.
20. 30	M	,,	F	0·158	−0·033	− $\frac{1}{10}$	+ 13·6	− 23·6	− 23·4	
20. 35	M	,,	F	0·158	+0·008	0	+ 13·6	− 11·2	− 13·6	
20. 40	M	,,	F	0·158	−0·067	− $\frac{1}{4}$	+ 13·6	− 34·0	− 38·0	
20. 45	M	,,	F	0·158	−0·218	− $\frac{1}{4}$	+ 13·6	− 27·9	− 38·1	Two prism train employed. Spectrum tremulous, but bright. The star-line appeared as a very broad diffused band, with no definition of the edges.
20. 50	M	,,	F	0·158	−0·476	− $\frac{2}{5}$	+ 13·6	− 44·9	− 52·8	
20. 55	M	,,	F	0·158	+0·232	+ $\frac{1}{4}$	+ 13·6	+ 1·6	+ 10·9	
21. 0	M	,,	F	0·158	−0·039	− $\frac{1}{10}$	+ 13·6	− 16·2	− 23·4	
21. 4	M	Procyon	F	0·158	+0·015	0	+ 15·5	− 10·9	− 15·5	Spectrum bright and steady. Star-line unusually well defined.
21. 6	M	,,	F	0·158	−0·029	− $\frac{1}{10}$	+ 15·5	− 24·3	− 25·3	
21. 8	M	,,	F	0·158	−0·046	− $\frac{1}{7}$	+ 15·5	− 29·5	− 29·4	
21. 10	M	,,	F	0·158	+0·008	+ $\frac{1}{20}$	+ 15·5	− 13·1	− 10·6	
21. 15	M	Pollux	F	0·158	−0·023	− $\frac{1}{20}$	+ 16·3	− 23·3	− 21·2	Spectrum bright and steady. Star-line faint.
21. 20	M	,,	F	0·158	−0·030	− $\frac{1}{10}$	+ 16·3	− 25·4	− 26·1	
21. 25	M	,,	F	0·158	−0·058	− $\frac{1}{7}$	+ 16·3	− 33·9	− 30·2	
21. 30	M	,,	F	0·158	−0·011	− $\frac{1}{20}$	+ 16·3	− 19·6	− 21·2	
21. 35	M	Castor.....	F	0·158	−0·128	− $\frac{1}{2}$	+ 16·7	− 55·6	− 65·5	Spectrum bright and steady. Star-line broad and diffused, and therefore difficult to bisect. It seemed, however, better defined than usual, and there was an unmistakable displacement towards the blue.
21. 40	M	,,	F	0·158	−0·060	− $\frac{1}{5}$	+ 16·7	− 34·9	− 36·2	
21. 45	M	,,	F	0·158	+0·039	+ $\frac{1}{5}$	+ 16·7	− 4·9	+ 2·8	
21. 50	M	,,	F	0·158	−0·143	− $\frac{1}{2}$	+ 16·7	− 60·1	− 65·5	
22. 0	M	Regulus	F	0·158	−0·008	− $\frac{1}{10}$	+ 8·3	− 10·7	− 18·1	Spectrum bright and steady. Star-line fairly well defined.
22. 5	M	,,	F	0·158	−0·041	− $\frac{1}{7}$	+ 8·3	− 20·7	− 22·2	
22. 15	M	β Leonis.....	F	0·158	+0·119	+ $\frac{1}{4}$	+ 1·4	+ 34·7	+ 23·0	Spectrum bright and steady. Star-line dark, very broad and ill-defined at edges. Displacement evidently small.
22. 18	M	,,	F	0·158	−0·088	− $\frac{1}{6}$	+ 1·4	− 28·1	− 20·9	
22. 22	M	,,	F	0·158	−0·103	− $\frac{1}{4}$	+ 1·4	− 32·7	− 25·8	
22. 25	M	,,	F	0·158	−0·127	− $\frac{1}{3}$	+ 1·4	− 40·0	− 33·9	
22. 30	M	Spica	F	0·158	−0·138	− $\frac{1}{2}$	− 8·6	− 50·5	− 57·4	Spectrum faint and very tremulous. Star-line faint and very badly defined. Measures very rough.
22. 35	M	,,	F	0·158	+0·027	+ $\frac{1}{10}$	− 8·6	− 0·4	+ 1·2	
22. 40	M	Arcturus	F	0·158	−0·121	− $\frac{3}{7}$	− 7·5	− 44·2	− 49·3	Spectrum bright, but tremulous. Star-line faint. Definition poor.
22. 50	M	,,	F	0·158	−0·137	− $\frac{1}{2}$	− 7·5	− 49·1	− 56·3	For the first four stars observed the definition was exceptionally good; after that it grew rapidly worse. Position Circle, 185°.
Mar. 27. 20. 55	N	Sirius	F	0·105	+0·036	+ $\frac{1}{7}$	+ 14·1	− 3·2	− 3·6	Spectrum faint and tremulous. Measures made with difficulty.
21. 5	N	,,	F	0·105	−0·011	0	+ 14·1	− 17·4	− 14·1	

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					Measured.	Estimated.		Measured.	Estimated.	
d h m				r	r					
Mar. 27. 21. 20	N	Procyon	F	0·105	−0·057	− ¼	+ 17·0	− 34·3	− 35·5	Spectrum much brighter than that of Sirius. Star-line fairly distinct.
21. 25	N	,,	F	0·105	−0·054	− ⅕	+ 17·0	− 33·4	− 31·7	
21. 45	N	Castor	F	0·105	+0·006	0	+ 17·8	− 16·0	− 17·8	Star-line broad and diffused.
21. 50	N	,,	F	0·105	+0·069	+ ¼	+ 17·8	+ 3·2	+ 0·7	
21. 55	N	,,	F	0·105	+0·003	0	+ 17·8	− 16·9	− 17·8	
22. 8	N	Moon	F	0·105	+0·011			+ 3·3		
22. 10	N	,,	F	0·105	−0·004			− 1·2		
22. 13	N	,,	F	0·105	−0·012			− 3·6		
22. 17	N	,,	F	0·105	−0·010			− 3·0		Position Circle, 185°.
Apr. 18. 21. 20	M	Regulus	F	0·162	+0·145	+ ⅗	+ 15·9	+ 28·1	+ 21·8	Definition exceedingly bad.
21. 28	M	,,	F	0·162	+0·005	0	+ 15·9	− 14·4	− 15·9	Position Circle, 185°.
Apr. 21. 21. 50	M	Pollux	b_1	0·230	−0·013	− 1/10	+ 17·8	− 22·7	− 27·5	Spectrum bright, but very tremulous.
22. 5	M	,,	b_1	0·230	−0·016	− 1/10	+ 17·8	− 23·8	− 27·5	
22. 10	M	Moon	b_1	0·230	+0·016			+ 6·0		The coincidence of the two spectra appeared perfect.
22. 13	M	,,	b_1	0·230	+0·013			+ 4·9		
22. 15	M	,,	b_1	0·230	−0·028			− 10·5		
22. 17	M	,,	b_1	0·230	−0·024			− 9·0		
22. 20	M	,,	b_1	0·230	+0·001			+ 0·4		Position Circle, 180°.
Apr. 29. 22. 0	M	ε Virginis	b_1	0·088	−0·034	− ¼	+ 9·1	− 21·9	− 28·2	Spectrum faint and tremulous. Star-line faint and difficult to see.
22. 10	M	,,	b_1	0·088	−0·013	− 1/10	+ 9·1	− 14·0	− 16·7	
22. 20	M	Arcturus	b_1	0·088	−0·131	− ⅗	+ 4·6	− 53·8	− 50·3	Spectrum exceedingly tremulous. Definition bad.
22. 25	M	,,	b_1	0·088	−0·015	− ⅓	+ 4·6	− 17·7	− 30·0	
22. 30	M	Moon	b_1	0·088	+0·010			+ 3·8		The coincidence of the two spectra appeared perfect.
22. 34	M	,,	b_1	0·088	−0·006			− 2·2		
22. 36	M	,,	b_1	0·088	−0·010			− 3·8		
22. 38	M	,,	b_1	0·088	−0·017			− 6·4		
22. 40	M	,,	b_1	0·088	+0·001			+ 0·4		Position Circle, 185°.
May 7. 22. 48	N	Arcturus	b_1	0·158	−0·143	− ½	+ 6·6	− 60·3	− 64·4	Spectrum faint. Passing cloud troublesome. Sky misty.
22. 53	N	,,	b_1	0·158	−0·196	− ⅔	+ 6·6	− 80·2	− 83·7	Position Circle, 186°.
May 29. 22. 28	N	Arcturus	b_1	0·170	−0·099	− ⅖	+ 11·1	− 48·3	− 49·8	Measures made with difficulty. Star-line faint and indistinct.
22. 35	N	,,	b_1	0·170	−0·159	− ⅔	+ 11·1	− 70·8	− 75·7	
22. 40	N	,,	b_1	0·170	−0·039	− 1/10	+ 11·1	− 25·8	− 27·2	
23. 35	N	Moon	b_1	0·170	+0·015			+ 5·6		The coincidence of the two spectra appeared perfect.
23. 38	N	,,	b_1	0·170	+0·001			+ 0·4		
23. 42	N	,,	b_1	0·170	−0·016			− 6·0		
23. 45	N	,,	b_1	0·170	−0·021			− 7·9		
30. 1. 10	N	α Lyræ	F	0·130	−0·020	− 1/10	− 4·8	(− 1·3)	(− 0·5)	Measures difficult and probably of little value on account of the awkward position of the spectroscope.
1. 20	N	,,	F	0·130	−0·060	− ⅓	− 4·8	(− 13·4)	(− 13·0)	Position Circle, 186°.
June 2. 22. 50	N	Arcturus	F	0·164	−0·086	− ⅓	+ 11·8	− 37·9	− 35·2	Star-line very faint.
22. 55	N	,,	F	0·164	−0·078	− ⅓	+ 11·8	− 35·5	− 35·2	
23. 20	N	,,	F	0·205	−0·128	− ⅓	+ 11·8	− 50·7	− 51·4	Much better definition than for first two measures.
23. 25	N	,,	F	0·205	−0·064	− ⅕	+ 11·8	− 31·2	− 35·6	Position Circle, 186°.
June 18. 22. 41	N	Arcturus	F	0·157	−0·108	− ⅔	+ 13·9	− 46·7	− 46·0	Measures considered good.
22. 46	N	,,	F	0·157	−0·113	− ⅔	+ 13·9	− 48·2	− 46·0	
23. 31	N	α Ophiuchi	F	0·157	−0·132	− ⅘	+ 1·8	− 41·9	− 41·9	Star-line broad and diffused. The displacement towards the blue was unmistakable.
23. 36	N	,,	F	0·157	−0·109	− ⅘	+ 1·8	− 34·9	− 33·9	Position Circle, 186°.
July 9. 22. 58	M	Arcturus	F	0·116	−0·178	− ⅔	+ 15·2	− 69·3	− 52·4	Spectrum tremulous. Definition bad.
23. 13	M	,,	F	0·116	−0·065	− ⅓	+ 15·2	− 34·9	− 33·8	

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					Measured.	Estimated.		Measured.	Estimated.	
d h m				r	r					
July 9. 23. 28	M	α Coronæ Bor..	F	0·116	+0·053	+ 1/5	+ 11·7	+ 4·4	− 0·5	Spectrum faint. Definition bad.
23. 38	M	,,	F	0·116	+0·056	+ 1/5	+ 11·7	+ 5·3	− 0·5	
23. 48	M	α Ophiuchi....	F	0·116	−0·102	− 1/2	+ 6·6	− 37·6	− 34·6	Spectrum faint. Definition poor.
23. 58	M	,,	F	0·116	−0·117	− 1/2	+ 6·6	− 42·1	− 34·6	
10. 0. 13	M	α Lyræ	F	0·116	−0·124	− 3/5	+ 0·6	− 38·3	− 34·1	Spectrum bright, but tremulous.
0. 23	M	,,	F	0·116	−0·083	− 2/5	+ 0·6	− 25·8	− 22·9	
0. 33	M	α Aquilæ	F	0·116	−0·158	− 3/4	− 3·3	− 44·7	− 38·6	Spectrum fairly steady.
0. 43	M	,,	F	0·116	−0·160	− 3/4	− 3·3	− 45·3	− 38·6	
0. 58	M	α Cygni	F	0·116	−0·134	− 3/5	− 6·4	− 34·3	− 27·1	Spectrum steady. Definition good.
1. 8	M	,,	F	0·116	−0·141	− 3/5	− 6·4	− 36·4	− 30·8	
										Position Circle, 186°.
July 23. 22. 8	N	α Ophiuchi....	F	0·110	−0·069	− 1/4	+ 9·4	− 30·4	− 32·2	Star-line faint. Moon close to star. Measures
22. 12	N	,,	F	0·110	−0·070	− 1/4	+ 9·4	− 30·6	− 32·2	doubtful.
22. 23	N	Moon	F	0·110	+0·028			+ 8·5		The coincidence of the two spectra appeared
22. 26	N	,,	F	0·110	+0·007			+ 2·1		perfect.
22. 30	N	,,	F	0·110	0·000			0·0		
22. 33	N	,,	F	0·110	−0·001			− 0·3		
22. 53	N	α Aquilæ	F	0·110	−0·019	− 1/10	+ 0·3	− 6·1	− 9·4	Star-line broad.
22. 58	N	,,	F	0·110	−0·010	0	+ 0·3	− 3·3	− 0·3	
23. 28	N	α Pegasi.....	F	0·110	−0·124	− 2/5	− 13·0	− 24·7	− 23·4	Spectrum faint. Star-line very indistinct.
23. 36	N	,,	F	0·110	−0·083	− 1/3	− 13·0	− 12·2	− 17·4	Measures uncertain.
										Position Circle, 186°.
Aug. 3. 22. 10	M	α Lyræ	F	0·125	−0·078	− 1/3	+ 4·0	− 27·7	− 28·7	Definition good for first observation; fairly
22. 40	M	,,	F	0·125	−0·119	− 1/2	+ 4·0	− 40·1	− 41·1	satisfactory for second.
23. 5	M	α Aquilæ	F	0·125	−0·106	− 1/3	+ 3·2	− 35·4	− 27·9	Definition poor. Spectrum faint. Observa-
23. 40	M	,,	F	0·125	−0·206	− 3/5	+ 3·2	− 65·8	− 52·6	tion very difficult, but there was unmis-
										takably a large displacement towards the
										blue.
										Position Circle, 185°.
Aug. 5. 22. 56	M	α Lyræ	F	0·125	−0·166	− 2/3	+ 4·2	− 54·6	− 53·6	Spectrum faint. Definition fair.
23. 21	M	,,	F	0·125	−0·089	− 1/3	+ 4·2	− 31·2	− 28·9	
										Position Circle, 185°.
Aug. 10. 21. 7	M	α Lyræ	F	0·125	−0·199	− 4/5	+ 4·8	− 65·2	− 64·1	Spectrum bright and steady. The star-line,
21. 22	M	,,	F	0·125	−0·129	− 1/2	+ 4·8	− 44·0	− 41·9	however, seemed more than usually broad
										and diffused.
21. 42	M	ζ Draconis	F	0·125	−0·126	− 1/2	+ 1·1	− 39·4	− 38·2	Spectrum faint, but steady. Definition fair.
21. 52	M	,,	F	0·125	−0·170	− 3/5	+ 1·1	− 52·7	− 50·5	
22. 12	M	α Draconis....	F	0·125	+0·182	+ 3/5	+ 2·1	+ 53·2	+ 47·3	Spectrum faint, but steady. Star-line broad
22. 22	M	,,	F	0·125	+0·106	+ 1/3	+ 2·1	+ 30·1	+ 35·0	and diffused at edges as usual in the
22. 32	M	,,	F	0·125	+0·111	+ 1/3	+ 2·1	+ 31·6	+ 35·0	type. Definition fair.
22. 42	M	,,	F	0·125	+0·088	+ 1/3	+ 2·1	+ 24·6	+ 22·6	
22. 52	M	η Ursæ Majoris	F	0·125	+0·072	+ 1/3	+ 6·2	+ 15·7	+ 18·5	Spectrum fairly bright, but rather tremulous.
23. 2	M	,,	F	0·125	+0·067	+ 1/4	+ 6·2	+ 14·1	+ 12·3	Definition not quite so good as for fore-
23. 7	M	,,	F	0·125	+0·045	+ 1/5	+ 6·2	+ 7·5	+ 8·6	going stars. Direct comparison showed
23. 12	M	,,	F	0·125	+0·090	+ 2/5	+ 6·2	+ 21·1	+ 23·4	the lines in the two spectra to be very
										nearly coincident; if there was any dis-
										placement it was towards the red.
23. 22	M	ξ Ursæ Majoris	F	0·125	+0·163	+ 2/3	+ 4·2	+ 45·3	+ 45·2	Both stars observed as one. Displacement
23. 32	M	,,	F	0·125	+0·092	+ 1/3	+ 4·2	+ 23·8	+ 20·5	towards the red more marked than in
										η Ursæ Majoris.
23. 42	M	ε Ursæ Majoris	F	0·125	−0·152	− 2/3	+ 3·4	− 49·6	− 52·8	Spectrum fairly bright, but a little unsteady.
23. 52	M	,,	F	0·125	−0·178	− 2/3	+ 3·4	− 57·5	− 52·8	Definition fair. Star-line, a difficult
11. 0. 2	M	,,	F	0·125	−0·137	− 1/3	+ 3·4	− 45·0	− 40·5	example of the type, broad and diffused
0. 7	M	,,	F	0·125	−0·037	− 1/10	+ 3·4	− 14·6	− 18·2	at the edges.
0. 22	M	δ Ursæ Majoris	F	0·125	+0·067	+ 1/4	+ 2·1	+ 18·2	+ 16·4	Spectrum exceedingly faint. Star-line broad
0. 32	M	,,	F	0·125	+0·145	+ 3/5	+ 2·1	+ 41·9	+ 42·4	and ill-defined. Observations very diffi-
										cult.
										Position Circle, 185°.
Aug. 14. 21. 36	M	α Ursæ Majoris	F	0·125	−0·017	− 1/10	− 1·7	− 3·4	− 5·7	Spectrum faint. Definition poor.
										Position Circle, 185°.

Date, 1885, Greenwich Civil Time.	Observer.	Object.	Line.	Width of Slit.	Displacement.		Earth's Motion in Miles per Second.	Concluded Motion of Stars in Miles per Second.		REMARKS.
					Measured.	Estimated.		Measured.	Estimated.	
d h m				r	r					
Aug. 17. 21. 15	M	α Coronæ Bor..	F	0·125	+0·048	+ 1/5	+ 12·4	+ 2·2	+ 2·4	Spectrum faint. Star-line very broad. Definition fair.
21. 30	M	,,	F	0·125	−0·044	− 1/5	+ 12·4	− 25·8	− 27·2	Definition good.
22. 55	M	α Lyræ	F	0·125	−0·075	− 1/3	+ 5·6	− 28·4	− 30·3	
23. 5	M	,,	F	0·125	−0·065	− 1/4	+ 5·6	− 25·3	− 24·1	Position Circle, 185°.
Aug. 25. 22. 43	M	α Lyræ	F	0·125	−0·137	− 1/2	+ 6·5	− 48·1	− 47·8	Spectrum bright and fairly steady. Definition fair.
23. 3	M	,,	F	0·125	−0·054	− 1/4	+ 6·5	− 22·9	− 27·2	
23. 18	M	α Aquilæ	F	0·125	−0·142	− 1/2	+ 8·5	− 51·6	− 49·8	Definition fair.
23. 28	M	,,	F	0·125	−0·132	− 1/2	+ 8·5	− 48·6	− 49·8	
23. 38	M	α Cygni	F	0·125	−0·102	− 2/5	− 0·1	− 30·9	− 33·0	Definition fair. Spectrum steady.
23. 48	M	,,	F	0·125	−0·099	− 2/5	− 0·1	− 30·0	− 33·0	
26. 0. 3	M	α Cephei	F	0·125	−0·099	− 2/5	− 4·0	− 26·1	− 29·1	Spectrum faint, but steady. Definition fair.
0. 13	M	,,	F	0·125	−0·041	− 1/5	− 4·0	− 8·5	− 12·5	The awkward position of the star made the measures difficult and rough.
0. 23	M	Moon	F	0·125	−0·028			− 8·5		The coincidence of the two spectra appeared perfect.
0. 26	M	,,	F	0·125	−0·034			− 10·3		
0. 28	M	,,	F	0·125	+0·012			+ 3·6		
0. 30	M	,,	F	0·125	−0·008			− 2·4		
0. 33	M	,,	F	0·125	−0·009			− 2·7		
0. 48	M	α Pegasi.....	F	0·125	−0·020	− 1/10	− 5·5	− 0·6	− 2·8	Spectrum faint, but steady. Definition fair.
0. 53	M	,,	F	0·125	+0·042	+ 1/7	− 5·5	+ 18·2	+ 17·3	The spectra throughout the evening were steady, and the definition better than usual. The moonlight, however, made the spectra appear faint, and there was a good deal of light cloud. Position Circle, 185°.
Aug. 27. 22. 10	M	α Lyræ.....	F	0·125	−0·062	− 1/4	+ 6·6	− 25·4	− 27·3	Spectrum tremulous.
22. 25	M	,,	F	0·125	−0·023	− 1/10	+ 6·6	− 13·6	− 14·9	Position Circle, 185°.
Aug. 29. 21. 32	M	α Lyræ.....	F	0·125	−0·138	− 1/2	+ 6·8	− 48·7	− 48·1	Spectrum bright and steady. Definition good.
21. 47	M	,,	F	0·125	−0·068	− 1/4	+ 6·8	− 27·5	− 27·5	
22. 2	M	α Aquilæ	F	0·125	−0·052	− 1/5	+ 9·4	− 25·2	− 25·9	Cloud constantly passing. Spectrum steady and definition good in the clear intervals.
22. 12	M	,,	F	0·125	−0·123	− 1/2	+ 9·4	− 46·8	− 50·7	Position Circle, 185°.
Sept. 26. 20. 7	M	α Cygni	b_1	0·144	−0·186	− 4/7	+ 4·6	− 74·4	− 66·6	Spectrum very tremulous. Definition bad.
20. 37	M	,,	b_1	0·144	−0·150	− 3/5	+ 4·6	− 60·9	− 69·7	Position Circle, 185°.
Oct. 5. 21. 46	M	β Pegasi.....	b_4	0·108	−0·064	− 1/3	+ 4·1	− 28·1	− 25·3	Spectrum bright, but tremulous. Definition bad. The b lines could not be isolated from the shaded band on which they stand.
22. 16	M	,,	b_4	0·108	−0·084	− 1/2	+ 4·1	− 35·7	− 35·8	
22. 36	M	α Cassiopeiæ ..	b_1	0·108	+0·125	+ 1/2	− 5·0	+ 51·9	+ 54·4	Spectrum very tremulous. Definition bad.
23. 1	M	,,	b_1	0·108	+0·146	+ 1/2	− 5·0	+ 59·8	+ 54·4	Position Circle, 5°.
Oct. 16. 13. 38	M	Venus.....	b_1	0·140	−0·013	− 1/7		− 4·9	− 7·8	The estimated displacement as compared with the sky lines was about 1/7 of the breadth of the bright magnesium line towards the blue.
13. 39	M	,,	b_1	0·140	−0·056			− 21·0		
13. 40	M	,,	b_1	0·140	−0·109			− 40·9		
13. 40	M	,,	b_1	0·140	−0·033			− 12·4		Calculated motion −7·4 miles per second.
13. 41	M	,,	b_1	0·140	−0·047			− 17·7		
13. 41	M	,,	b_1	0·140	−0·055			− 20·6		
13. 42	M	,,	b_1	0·140	−0·038			− 14·3		
13. 42	M	,,	b_1	0·140	−0·035			− 13·1		
13. 43	M	,,	b_1	0·140	−0·020			− 7·5		
13. 44	M	,,	b_1	0·140	−0·067			− 25·2		
13. 44	M	,,	b_1	0·140	−0·009			− 3·4		
13. 45	M	,,	b_1	0·140	−0·057			− 21·4		
13. 45	M	,,	b_1	0·140	+0·013			+ 4·9		

Date, 1885, Greenwich Civil Time.	Observer.	Object.	Line.	Width of Slit.	Displacement. Measured.	Displacement. Estimated.	Earth's Motion in Miles per Second.	Concluded Motion of Stars in Miles per Second. Measured.	Concluded Motion of Stars in Miles per Second. Estimated.	REMARKS.
d h m				r	r					
Oct. 16. 13. 46	M	Venus.....	b_1	0·140	−0·009			− 3·4		
13. 46	M	,,	b_1	0·140	−0·024			− 9·0		Position Circle, 185°.
Nov. 5. 18. 50	M	α Lyræ	F	0·214	−0·027	− 1/5	+ 7·7	− 15·9	− 26·2	Observations difficult. Star observed sometimes through cloud. Definition poor.
18. 55	M	,,	F	0·214	−0·190	− 1/2	+ 7·7	− 65·4	− 53·9	
19. 5	M	,,	F	0·214	−0·032	− 1/10	+ 7·7	− 17·4	− 17·0	
19. 10	M	,,	F	0·214	−0·100	− 1/2	+ 7·7	− 38·1	− 53·9	
6. 0. 5	M	α Andromedæ .	F	0·214	−0·056	− 1/5	+ 8·7	− 25·7	− 27·2	Definition somewhat poor.
0. 15	M	,,	F	0·214	−0·040	− 1/4	+ 8·7	− 20·8	− 31·8	
0. 25	M	Aldebaran	F	0·214	+0·082	+ 1/3	− 7·7	+ 32·6	+ 38·5	Definition fair. Measures considered good.
0. 35	M	,,	F	0·214	+0·074	+ 1/3	− 7·7	+ 30·2	+ 38·5	
0. 50	M	Capella.....	F	0·214	+0·045	+ 1/5	− 10·3	+ 23·9	+ 28·7	Spectrum bright and steady. Star-line clearly seen. Definition very good.
1. 5	M	,,	F	0·214	+0·076	+ 1/4	− 10·3	+ 33·3	+ 33·3	
1. 15	M	β Tauri.....	F	0·214	−0·104	− 1/3	− 11·2	− 20·4	− 19·6	Definition fair. Displacement evidently large.
1. 20	M	,,	F	0·214	−0·146	− 1/2	− 11·2	− 33·2	− 35·0	Measures considered good.
1. 30	M	γ Orionis	F	0·214	−0·011	0	− 10·4	+ 13·7	+ 10·4	Star-line faint and difficult to see steadily.
1. 40	M	,,	F	0·214	−0·034	− 1/10	− 10·4	+ 0·1	+ 1·1	
1. 50	M	Rigel.....	F	0·214	−0·046	− 1/7	− 8·3	(− 5·7)	(− 4·9)	Spectrum very tremulous. Star-line exceedingly difficult to see. Decided displacement towards the *blue*.
2. 0	M	,,	F	0·214	−0·077	− 1/4	− 8·3	(− 15·1)	(− 14·8)	
2. 10	M	,,	F	0·214	−0·227	− 3/4	− 8·3	(− 60·7)	(− 61·0)	
2. 20	M	Sirius	F	0·214	−0·078	− 1/3	− 12·3	− 11·4	− 18·5	Spectrum very bright, but tremulous. Star-line very broad and ill-defined. The star-line did not seem to be quite symmetrical, but to have a broader fringe towards the blue than towards the red; the most condensed portion of the line being slightly on the red side of the centre.
2. 25	M	,,	F	0·214	−0·167	− 1/2	− 12·3	− 38·4	− 33·9	
2. 30	M	,,	F	0·214	−0·108	− 1/2	− 12·3	− 20·5	− 33·9	
2. 35	M	,,	F	0·214	−0·086	− 1/3	− 12·3	− 13·8	− 18·5	
2. 40	M	,,	F	0·214	−0·081	− 1/4	− 12·3	− 12·3	− 10·8	
2. 45	M	,,	F	0·214	−0·124	− 1/2	− 12·3	− 25·4	− 33·9	Position Circle, 185°.
Nov. 6. 12. 26	M	Sun.....	F	0·214	+0·031			+ 9·4		
12. 30	M	,,	F	0·214	−0·016			− 4·9		
12. 35	M	,,	F	0·214	+0·008			+ 2·4		
12. 40	M	,,	F	0·214	−0·013			− 4·0		
12. 46	M	,,	F	0·214	+0·016			− 4·9		Position Circle, 185°.
Nov. 17. 18. 15	M	α Lyræ.....	F	0·138	−0·145	− 3/5	+ 6·6	− 50·6	− 57·4	Spectrum bright, but very unsteady.
18. 20	M	,,	F	0·138	−0·067	− 1/2	+ 6·6	− 27·0	− 49·0	
18. 40	M	α Aquilæ	F	0·138	−0·258	− 2/3	+ 14·8	− 93·2	− 71·3	Spectrum very tremulous.
18. 45	M	,,	F	0·138	−0·129	− 1/2	+ 14·8	− 54·0	− 57·2	
18. 50	M	ζ Aquilæ	F	0·138	+0·001	0	+ 12·0	− 12·0	− 12·0	Spectrum tremulous and extremely faint. Measures very difficult.
18. 55	M	,,	F	0·138	−0·083	− 1/4	+ 12·0	− 37·2	− 33·2	
19. 0	M	,,	F	0·138	+0·050	+ 1/5	+ 12·0	+ 3·2	+ 4·9	
19. 5	M	,,	F	0·138	−0·138	− 1/2	+ 12·0	− 53·9	− 54·4	
19. 10	M	γ Cygni	F	0·138	−0·039	− 1/7	+ 10·2	− 22·0	− 22·3	Spectrum fairly steady. Definition good.
19. 15	M	,,	F	0·138	+0·029	+ 1/10	+ 10·2	− 1·4	− 1·7	
19. 20	M	α Cygni	F	0·138	−0·102	− 1/3	+ 9·3	− 40·3	− 37·6	Spectrum steady. Definition good.
19. 25	M	,,	F	0·138	−0·106	− 2/5	+ 9·3	− 41·5	− 43·2	
19. 30	M	ε Cygni.....	F	0·138	+0·120	+ 3/10	+ 12·2	+ 24·2	+ 13·2	Spectrum steady. Star-line faint. Definition fair.
19. 34	M	,,	F	0·138	+0·034	+ 1/10	+ 12·2	− 1·9	− 3·7	
19. 37	M	,,	F	0·138	+0·011	0	+ 12·2	− 8·9	− 12·2	
19. 41	M	,,	F	0·138	+0·023	+ 1/3	+ 12·2	− 5·2	+ 16·1	
19. 45	M	,,	F	0·138	+0·130	+ 1/2	+ 12·2	+ 27·3	+ 30·2	
19. 55	M	α Cephei	F	0·138	−0·088	− 1/3	+ 4·7	− 31·4	− 33·0	Spectrum steady. Definition fair.
20. 0	M	,,	F	0·138	−0·098	− 1/3	+ 4·7	− 34·5	− 47·1	
20. 5	M	α Pegasi.....	F	0·138	−0·023	− 1/10	+ 15·9	− 22·9	− 24·4	Definition fair.
20. 10	M	,,	F	0·138	−0·028	− 1/5	+ 15·9	− 24·4	− 32·8	
20. 15	M	Moon	F	0·138	−0·009			− 2·7		The coincidence of the two spectra appeared perfect.
20. 18	M	,,	F	0·138	−0·010			− 3·0		
20. 20	M	,,	F	0·138	−0·042			− 12·7		
20. 23	M	,,	F	0·138	+0·010			+ 3·0		
20. 25	M	,,	F	0·138	+0·005			+ 1·5		

Date, 1885, Greenwich Civil Time.	Observer.	Objects.	Line.	Width of Slit.	Displacement.		Earth's Motion in Miles per Second.	Concluded Motion of Stars in Miles per Second.		REMARKS.
					Measured.	Estimated.		Measured.	Estimated.	
d h m				r	r					
Nov. 17. 20. 35	M	γ Pegasi	F	0·138	−0·063	− 1/6	+ 13·7	− 32·8	− 42·0	Spectrum faint and tremulous. Measures rather rough.
20. 40	M	,,	F	0·138	−0·042	− 1/4	+ 13·7	− 26·4	− 34·9	Spectrum steady. Definition good.
20. 45	M	α Andromedæ .	F	0·138	−0·103	− 1/2	+ 11·6	− 42·9	− 54·0	
20. 50	M	,,	F	0·138	−0·075	− 3/8	+ 11·6	− 34·4	− 45·5	
20. 55	M	β Arietis.....	F	0·138	−0·104	− 1/2	+ 7·4	− 39·0	− 41·3	Spectrum fairly bright and steady. Star-line very broad and diffused. Definition fair.
21. 0	M	,,	F	0·138	−0·153	− 5/8	+ 7·4	− 53·9	− 58·2	
21. 5	M	α Arietis.....	F	0·138	+0·002	0	+ 6·3	− 5·7	− 6·3	Spectrum steady. Star-line very faint and only seen with great difficulty by glimpses.
21. 10	M	,,	F	0·138	−0·019	− 1/6	+ 6·3	− 12·1	− 23·2	
21. 15	M	γ Persei	F	0·138	+0·265	+ 3/4	− 0·7	+ 81·2	+ 64·3	Spectrum faint. Star-line faint and diffused. Bisections very difficult.
21. 25	M	,,	F	0·138	+0·172	+ 1/2	− 0·7	+ 53·0	+ 57·2	
21. 30	M	β Persei	F	0·138	−0·107	− 1/3	− 0·4	− 32·9	− 42·8	Spectrum fairly bright and steady. Definition good.
21. 35	M	,,	F	0·138	−0·150	− 1/2	− 0·4	− 46·0	− 56·9	Position Circle, 185°.
Nov. 18. 19. 8	N	α Lyræ.....	F	0·210	−0·118	− 5/8	+ 6·5	− 42·3	− 39·3	
19. 13	N	,,	F	0·210	−0·131	− 1/2	+ 6·5	− 46·3	− 47·5	
19. 48	N	α Aquilæ	F	0·210	−0·032	− 1/7	+ 14·7	− 24·4	− 25·0	Star-line diffused. Measures difficult and doubtful.
19. 55	N	,,	F	0·210	−0·105	− 1/2	+ 14·7	− 46·6	− 45·5	
20. 15	N	α Cygni	F	0·210	−0·107	− 1/2	+ 9·4	− 41·9	− 40·2	
20. 20	N	,,	F	0·210	−0·098	− 3/8	+ 9·4	− 39·2	− 40·2	
21. 28	N	Moon	F	0·210	−0·007			− 2·1		The coincidence of the two spectra appeared perfect.
21. 30	N	,,	F	0·210	−0·025			− 7·6		
21. 32	N	,,	F	0·210	+0·008			+ 2·4		
21. 34	N	,,	F	0·210	+0·020			+ 6·1		Position Circle, 185°.
Nov. 28. 21. 30	M	α Andromedæ .	F	0·095	−0·076	− 3/10	+ 13·8	− 36·9	− 25·7	
21. 55	M	,,	F	0·095	−0·064	− 3/10	+ 13·8	− 33·2	− 25·7	
22. 25	M	Aldebaran	F	0·095	+0·064	+ 3/10	− 0·4	+ 19·8	+ 12·3	
22. 40	M	,,	F	0·095	+0·122	+ 2/3	− 0·4	+ 37·5	+ 26·9	
23. 0	M	Rigel	F	0·095	+0·060	+ 3/10	− 2·3	+ 20·5	+ 14·2	
23. 10	M	,,	F	0·095	+0·102	+ 2/3	− 2·3	+ 33·3	+ 28·8	
23. 25	M	Sirius	F	0·095	−0·068	− 1/2	− 8·5	− 12·2	− 11·4	Displacement seemed to be small and towards the blue.
23. 35	M	,,	F	0·095	−0·022	− 1/5	− 8·5	+ 1·8	+ 0·6	
23. 40	M	,,	F	0·095	−0·106	− 3/4	− 8·5	− 23·7	− 18·0	
23. 50	M	,,	F	0·095	−0·027	− 1/4	− 8·5	+ 0·3	− 1·4	
23. 55	M	,,	F	0·095	−0·121	− 3/4	− 8·5	− 28·2	− 21·3	
29. 0. 5	M	,,	F	0·095	+0·004	0	− 8·5	+ 9·7	+ 8·5	Throughout the evening the spectra were bright and steady, but the star lines were exceedingly difficult to make out, and the measures are therefore rough. Position Circle, 185°.
Dec. 1. 20. 32	N	α Andromedæ .	F	0·140	−0·028	− 1/5	+ 14·3	− 22·8	− 23·9	Slit too narrow for satisfactory work.
20. 41	N	,,	F	0·140	−0·074	− 2/3	+ 14·3	− 36·8	− 37·4	
21. 36	N	β Arietis.....	F	0·265	−0·096	− 1/3	+ 11·4	− 40·5	− 48·0	Spectrum faint. Measures difficult.
21. 47	N	,,	F	0·265	−0·159	− 1/2	+ 11·4	− 59·7	− 66·4	
22. 26	N	α Arietis	F	0·265	−0·100	− 1/3	+ 10·4	− 40·8	− 47·0	Measures difficult.
22. 34	N	,,	F	0·265	−0·065	− 1/4	+ 10·4	− 30·1	− 37·9	
23. 31	N	Aldebaran	F	0·265	−0·083	− 1/4	+ 0·6	(− 25·8)	(− 28·1)	Star-line very faint and indistinct.
23. 41	N	,,	F	0·265	−0·048	− 1/8	+ 0·6	(− 15·2)	(− 14·3)	Position Circle, 186°.
Dec. 8. 19. 43	N	α Andromedæ .	F	0·192	−0·116	− 2/3	+ 15·4	− 50·7	− 47·8	Spectrum bright and steady. Star-line distinct.
19. 47	N	,,	F	0·192	−0·107	− 2/3	+ 15·4	− 47·9	− 47·8	
20. 9	N	γ Pegasi.....	F	0·192	−0·072	− 1/4	+ 17·3	− 39·2	− 37·6	
20. 14	N	,,	F	0·192	−0·050	− 1/5	+ 17·3	− 32·5	− 33·5	
20. 34	N	β Arietis.....	F	0·192	−0·032	− 1/6	+ 13·2	− 22·9	− 23·3	
20. 44	N	,,	F	0·192	−0·086	− 1/2	+ 13·2	− 39·3	− 40·2	
20. 59	N	α Arietis	F	0·192	−0·115	− 3/5	+ 12·2	− 47·1	− 44·6	
21. 4	N	,,	F	0·192	−0·056	− 1/4	+ 12·2	− 29·2	− 32·5	

Date, 1885, Greenwich Civil Time.	Observer.	Object.	Line.	Width of Slit.	Displacement.		Earth's Motion in Miles per Second.	Concluded Motion of Stars in Miles per Second.		REMARKS.
					Measured.	Estimated.		Measured.	Estimated.	
d h m				r	r					
Dec. 8. 21. 1	N	β Persei	F	0·192	−0·037	− 1/7	+ 6·7	− 18·0	− 18·3	
21. 49	N	,,	F	0·192	−0·048	− 1/5	+ 6·7	− 21·3	− 22·9	
22. 24	N	Aldebaran	F	0·192	+0·087	+ 1/3	+ 2·9	+ 23·5	+ 24·1	Spectrum tremulous. Wind high.
22. 29	N	,,	F	0·192	+0·107	+ 2/5	+ 2·9	+ 29·6	+ 29·5	
23. 4	N	Rigel	F	0·192	+0·110	+ 2/5	+ 0·5	+ 32·9	+ 31·9	Wind very troublesome.
23. 9	N	,,	F	0·192	+0·048	+ 1/5	+ 0·5	+ 14·1	+ 15·7	
23. 34	N	β Tauri	F	0·192	−0·123	− 1/2	− 1·2	− 36·2	− 39·4	
23. 39	N	,,	F	0·192	−0·128	− 1/2	− 1·2	− 37·7	− 39·4	
										Position Circle, 186°.
Dec. 15. 19. 35	N	α Pegasi	F	0·199	+0·015	0	+ 17·9	− 13·3	− 17·9	Star-line broad and dark.
19. 40	N	,,	F	0·199	+0·079	+ 1/3	+ 17·9	+ 6·1	+ 6·5	
19. 55	N	γ Pegasi	F	0·199	−0·035	− 1/6	+ 18·0	− 28·7	− 30·2	
20. 0	N	,,	F	0·199	−0·038	− 1/6	+ 18·0	− 29·6	− 30·2	
20. 15	N	α Andromedæ .	F	0·199	+0·007	0	+ 16·2	− 14·1	− 16·2	Spectrum bright and steady. Star-line faint.
20. 20	N	,,	F	0·199	−0·013	0	+ 16·2	− 20·2	− 16·2	
20. 35	N	Moon	F	0·199	+0·009			+ 2·7		The coincidence of the two spectra appeared perfect.
20. 37	N	,,	F	0·199	+0·005			+ 1·5		
20. 40	N	,,	F	0·199	−0·002			− 0·6		
20. 42	N	,,	F	0·199	+0·006			+ 1·8		
21. 10	N	β Arietis.....	F	0·199	−0·064	− 1/4	+ 14·7	− 34·1	− 33·0	Star-line faint. Measures difficult.
21. 15	N	,,	F	0·199	−0·037	− 1/6	+ 14·7	− 25·9	− 26·9	
21. 50	N	α Arietis	F	0·199	+0·033	+ 1/8	+ 13·9	− 3·9	− 4·8	
22. 0	N	,,	F	0·199	+0·015	0	+ 13·9	− 9·3	− 13·9	
22. 15	N	Aldebaran	F	0·199	+0·142	+ 1/2	+ 5·2	+ 37·9	+ 31·4	
22. 20	N	,,	F	0·199	+0·096	+ 2/5	+ 5·2	+ 23·9	+ 24·1	
22. 35	N	Rigel	F	0·199	+0·111	+ 1/2	+ 2·5	+ 31·2	+ 34·1	
22. 40	N	,,	F	0·199	+0·060	+ 1/4	+ 2·5	+ 15·7	+ 15·8	
22. 52	N	γ Orionis	F	0·199	+0·030	+ 1/7	+ 1·6	+ 7·5	+ 8·8	
22. 57	N	,,	F	0·199	+0·007	0	+ 1·6	− 3·7	− 1·6	
23. 20	N	Sirius	F	0·199	−0·083	− 1/3	− 4·6	− 20·6	− 19·8	
23. 25	N	,,	F	0·199	−0·068	− 1/4	− 4·6	− 16·1	− 13·7	
23. 35	N	Procyon	F	0·199	−0·133	− 1/2	− 9·1	− 31·3	− 27·5	
23. 40	N	,,	F	0·199	−0·071	− 1/4	− 9·1	− 12·5	− 9·2	
23. 44	N	,,	F	0·199	−0·060	− 1/4	− 9·1	− 9·1	− 9·2	
23. 48	N	,,	F	0·199	−0·077	− 1/3	− 9·1	− 14·3	− 15·3	
										Position Circle, 186°.

ROTATION OF JUPITER deduced from the Relative Displacement of Lines in the Spectrum at the East and West Limbs respectively.

Date, 1885, Greenwich Civil Time.	Observer.	W. Limb.	E. Limb.	Line.	Width of Slit.	Displacement Measured	Concluded Motion in Miles per Second. W − E.	Position Circle.	REMARKS.
d h m		r	r		r	r		° ′	
Apr. 21. 22. 25	M	0·653	0·745	b_1	0·230	+ 0·092	+ 34·5	207 30	Cylindrical lens before slit. Slit tangential to limb. The limb of the planet was brought as accurately as possible up to the outer edge of the slit.
22. 29	M	0·708	0·751	b_1	0·230	+ 0·043	+ 16·1		
22. 32	M	0·685	0·812	b_1	0·230	+ 0·127	+ 47·7		
22. 37	M	0·709	0·780	b_1	0·230	+ 0·071	+ 26·6		
22. 41	M	0·710	0·798	b_1	0·230	+ 0·088	+ 33·0		
						Mean	+ 31·6		
22. 45	M	0·168	0·190	b_1	0·230	+ 0·022	+ 8·3	117 30	No cylindrical lens before slit. Slit radial, parallel to planet's equator. The upper and lower edge of the spectrum represented the W. and E. limbs of the planet. The spectrum was bright and the definition fair, but it was found much more difficult to measure the line at the actual limb than with the former arrangement.
22. 48	M	0·071	0·205	b_1	0·230	+ 0·134	+ 50·3		
22. 51	M	0·058	0·092	b_1	0·230	+ 0·034	+ 12·8		
22. 55	M	0·058	0·091	b_1	0·230	+ 0·033	+ 12·4		
23. 0	M	0·041	0·090	b_1	0·230	+ 0·049	+ 18·4		
						Mean	+ 20·4		
Apr. 27. 21. 6	M	0·267	0·386	b_1	0·125	+ 0·119	+ 44·7	207 30	Cylindrical lens. Slit tangential. The limb of the planet was brought as accurately as possible up to the outer edge of the slit. Misty. The lines in the spectrum of Jupiter were very faint and difficult to see.
21. 16	M	0·379	0·413	b_1	0·125	+ 0·034	+ 12·8		
						Mean	+ 28·8		
Apr. 29. 20. 45	M	0·940	0·960	b_1	0·088	+ 0·020	+ 7·5	207 30	Cylindrical lens. Slit tangential. The limb of the planet was brought as accurately as possible up to the outer edge of the slit. The lines in the spectrum of Jupiter were very faint and difficult to see.
20. 50	M	0·854	0·938	b_1	0·088	+ 0·084	+ 31·6		
20. 55	M	0·889	0·922	b_1	0·088	+ 0·033	+ 12·4		
						Mean	+ 17·2		
21. 18	M	0·307	0·372	b_1	0·088	+ 0·065	+ 24·4	27 30	
21. 21	M	0·248	0·293	b_1	0·088	+ 0·045	+ 16·9		
21. 25	M	0·297	0·432	b_1	0·088	+ 0·135	+ 50·7		
						Mean	+ 30·7		

Calculated Relative Motion of the limbs, +32 miles per second.

The following Measures of the Relative Displacement of the Lines in the Spectrum of JUPITER at the North and South Limbs were made as a check upon the preceding Measures :—

Date, 1885, Greenwich Civil Time.	Observer.	N. Limb.	S. Limb.	Line.	Width of Slit.	Displacement Measured.	Concluded Motion in Miles per Second. N − S.	Position Circle.	REMARKS.
d h m		r	r		r	r		° ′	
Apr. 29. 21. 2	M	0·193	0·161	b_1	0·088	− 0·032	− 12·0	117 30	Cylindrical lens. Slit tangential. The limb of the planet was brought as accurately as possible up to the outer edge of the slit. The lines in the spectrum of Jupiter were very faint and difficult to see. It was found more difficult to measure the lines with the slit horizontal than with the slit vertical.
21. 6	M	0·093	0·101	b_1	0·088	+ 0·008	+ 3·0		
21. 11	M	0·048	0·075	b_1	0·088	+ 0·027	+ 10·1		
						Mean	+ 0·4		
21. 32	M	0·461	0·513	b_1	0·088	+ 0·052	+ 19·5	297 30	
21. 36	M	0·567	0·533	b_1	0·088	− 0·034	− 12·8		
21. 40	M	0·563	0·561	b_1	0·088	− 0·002	− 0·8		
						Mean	+ 2·0		

The "half-prism" spectroscope in the direct position with a dispersion of one "half-prism" was used in all the above observations of Jupiter.

ROTATION of SATURN'S RINGS deduced from the Relative Displacement of Lines in the Spectrum at the East and West Ansæ respectively.

Date, 1885, Greenwich Civil Time.	Observer.	W. Ansa.	E. Ansa.	Line.	Width of Slit.	Displacement Measured.	Concluded Motion in Miles per Second. W − E.	Position Circle.	REMARKS.
d h m		r	r		r	r		° ′	
Apr. 21. 20. 50	M	0·656	0·741	b_1	0·230	+ 0·085	+ 31·9	180 0	Cylindrical lens before slit. Slit parallel to minor axis of ring. So far as could be ascertained the Cassinian division was on the inner edge of the slit at each observation. The lines in the spectrum of the ring were exceedingly faint and difficult to see. It was not found possible to make observations for determining the velocity of rotation of the ball.
20. 55	M	0·371	0·410	b_1	0·230	+ 0·039	+ 14·7		
21. 0	M	0·386	0·410	b_1	0·230	+ 0·024	+ 9·0		
21. 4	M	0·578	0·565	b_1	0·230	− 0·013	− 4·9		
21. 9	M	0·415	0·542	b_1	0·230	+ 0·127	+ 47·7		
21. 13	M	0·477	0·499	b_1	0·230	+ 0·022	+ 8·3		
21. 17	M	0·435	0·550	b_1	0·230	+ 0·115	+ 43·2		
21. 21	M	0·597	0·703	b_1	0·230	+ 0·106	+ 39·8		
21. 25	M	0·721	0·823	b_1	0·230	+ 0·102	+ 38·3		
21. 30	M	0·538	0·643	b_1	0·230	+ 0·105	+ 39·4		
						Mean	+ 26·7		

Assuming that the particles of the ring revolve as Satellites round Saturn, and taking the distance of the points of the Ansæ observed from centre of Saturn, as 18″·4 at mean distance (9·5389), the mass of Saturn as $\frac{1}{3500}$, and the Sun's mean distance as 92,250,000 miles, the Calculated Relative Motion of the Ansæ in the line of sight (for the points observed) would be +18·9 miles per second.
The "half-prism" spectroscope in the direct position with a dispersion of one "half-prism" was employed throughout.

COLLECTED RESULTS for MOTIONS of STARS in the line of Sight, from SPECTROSCOPIC OBSERVATIONS made at the ROYAL OBSERVATORY, GREENWICH, in the Year 1885.

(F for the Star or Moon is compared with H_β of Hydrogen, and b_1, b_2, b_4 with Mg_1, Mg_2, Mg_3 of Magnesium.)

(+ denotes Recession; − Approach.)

Date, 1885.	Observer.	Number of Measures.	Number of Prisms.	Position Circle.	Width of Slit.	Line.	Earth's Motion in Miles per Second.	Concluded Motion of Star in Miles per Second.	
								Measured.	Estimated.
α ANDROMEDÆ.									
				°	r				
November 6	M	2	1	185	0·214	F	+ 8·7	− 23·3	− 29·5
17	M	2	1	185	0·138	F	+ 11·6	− 38·7	− 49·8
28	M	2	1	185	0·095	F	+ 13·8	− 35·1	− 25·7
December 1	N	2	1	186	0·140	F	+ 14·3	− 29·8	− 30·7
8	N	2	1	186	0·192	F	+ 15·4	− 49·3	− 47·8
15	N	2	1	186	0·199	F	+ 16·2	− 17·2	− 16·2
γ PEGASI.									
November 17	M	2	1	185	0·138	F	+ 13·7	− 29·6	− 38·5
December 8	N	2	1	186	0·192	F	+ 17·3	− 35·9	− 35·6
15	N	2	1	186	0·199	F	+ 18·0	− 29·2	− 30·2
α CASSIOPEIÆ.									
October 5	M	2	1	5	0·108	b_1	− 5·0	+ 55·9	+ 54·4
β ARIETIS.									
November 17	M	2	1	185	0·138	F	+ 7·4	− 46·5	− 49·8
December 1	N	2	1	186	0·265	F	+ 11·4	− 50·1	− 57·2
8	N	2	1	186	0·192	F	+ 13·2	− 31·1	− 31·8
15	N	2	1	186	0·199	F	+ 14·7	− 30·0	− 30·0
α ARIETIS.									
November 17	M	2	1	185	0·138	F	+ 6·3	− 8·9	− 14·8
December 1	N	2	1	186	0·265	F	+ 10·4	− 35·5	− 42·5
8	N	2	1	186	0·192	F	+ 12·2	− 38·2	− 38·6
15	N	2	1	186	0·199	F	+ 13·9	− 6·6	− 9·4

Date, 1885.	Observer.	Number of Measures.	Number of Prisms.	Position Circle.	Width of Slit.	Line.	Earth's Motion in Miles per Second.	Concluded Motion of Star in Miles per Second.	
								Measured.	Estimated.
γ PERSEI.									
November 17	M	2	1	° 185	r 0·138	F	− 0·7	+ 67·1	+ 60·8
β PERSEI.									
February 7	M	2	1	186	0·120	F	+ 17·4	− 45·1	− 57·3
November 17	M	2	1	185	0·138	F	+ 0·4	− 39·5	− 49·9
December 8	N	2	1	186	0·192	F	+ 6·7	− 19·7	− 20·6
α PERSEI.									
February 7	M	2	1	186	0·120	F	+ 16·0	− 74·8	− 87·2
α TAURI (*Aldebaran*).									
February 3	M	2	1	186	0·260	F	+ 17·3	+ 7·2	+ 13·1
5	M	3	1	186	0·130	F	+ 17·6	+ 7·7	+ 10·3
7	M	2	1	186	0·120	F	+ 17·8	+ 36·3	+ 42·0
19	M	2	1	186	0·163	F	+ 18·5	+ 27·4	+ 16·5
21	M	2	1	185	0·114	F	+ 18·6	+ 33·5	+ 26·1
23	M	2	1	185	0·175	b_1	+ 18·6	+ 20·8	+ 14·0
25	M	2	1	185	0·118	b_1	+ 18·6	+ 18·6	+ 11·0
March 10	N	2	1	° 185	0·142	b_1	+ 18·1	+ 41·4	+ 39·1
12	N	1	1	185	0·161	b_1	+ 17·9	+ 14·8	+ 17·4
November 6	M	2	1	° 185	0·214	F	− 7·7	+ 31·9	+ 38·5
28	M	2	1	185	0·095	F	− 0·4	+ 28·7	+ 19·6
December 1	N	2	1	186	0·265	F	+ 0·6	(− 20·5)	(− 21·2)
8	N	2	1	186	0·192	F	+ 2·9	+ 26·6	+ 26·8
15	N	2	1	186	0·199	F	+ 5·2	+ 30·9	+ 27·8
α AURIGÆ (*Capella*).									
February 7	M	4	1	186	0·120	F	+ 14·9	+ 2·7	+ 5·0
23	M	2	1	185	0·175	b_1	+ 16·7	+ 19·4	+ 16·8
25	M	2	1	185	0·118	b_1	+ 16·8	+ 13·6	+ 7·5
March 10	N	2	1	° 185	0·142	b_1	+ 17·2	− 0·1	− 5·0
12	N	3	1	185	0·161	b_1	+ 17·1	+ 31·2	+ 32·3
November 6	M	2	1	° 185	0·214	F	− 10·3	+ 28·6	+ 31·0

Date, 1885.	Observer.	Number of Measures.	Number of Prisms.	Position Circle.	Width of Slit.	Line.	Earth's Motion in Miles per Second.	Concluded Motion of Star in Miles per Second.	
								Measured.	Estimated.
β ORIONIS (*Rigel*).									
				°	r				
February 5	M	2	1	186	0·130	F	+ 14·3	+ 10·6	+ 8·9
7	M	6	1	186	0·120	F	+ 14·5	+ 13·2	+ 8·0
21	M	2	1	185	0·114	F	+ 15·7	+ 28·5	+ 21·6
November 6	M	3	1	185	0·214	F	− 8·3	(− 27·2)	(− 26·9)
28	M	2	1	185	0·095	F	− 2·3	+ 26·9	+ 21·5
December 8	N	2	1	186	0·192	F	+ 0·5	+ 23·5	+ 25·8
15	N	2	1	186	0·199	F	+ 2·5	+ 23·5	+ 25·0
γ ORIONIS.									
February 5	M	2	1	186	0·130	F	+ 15·3	− 17·3	− 20·0
7	M	4	1	186	0·120	F	+ 15·7	− 25·9	− 31·4
November 6	M	2	1	185	0·214	F	− 10·4	+ 6·9	+ 5·8
December 15	N	2	1	186	0·199	F	+ 1·6	+ 1·9	+ 3·6
β TAURI.									
February 5	M	4	1	186	0·130	F	+ 15·6	− 35·9	− 39·6
7	M	3	1	186	0·120	F	+ 16·0	(− 39·8)	(− 51·1)
November 6	M	2	1	185	0·214	F	− 11·2	− 26·8	− 27·3
December 8	N	2	1	186	0·192	F	− 1·2	− 37·0	− 39·4
δ ORIONIS.									
February 5	M	4	1	186	0·130	F	+ 14·4	− 23·1	− 26·0
ε ORIONIS.									
February 5	M	2	1	186	0·130	F	+ 14·2	− 17·7	− 16·6
ζ ORIONIS.									
February 5	M	2	1	186	0·130	F	+ 13·9	− 23·8	− 25·5

Date, 1885.	Observer.	Number of Measures.	Number of Prisms.	Position Circle.	Width of Slit.	Line.	Earth's Motion in Miles per Second.	Concluded Motion of Star in Miles per Second.	
								Measured.	Estimated.
κ Orionis.									
				°	r				
February 5	M	4	1	186	0·130	F	+ 12·6	− 24·8	− 23·1
α Orionis.									
February 23	M	2	1	185	0·175	b_1	+ 16·7	+ 21·4	+ 22·4
25	M	2	1	185	0·118	b_1	+ 16·9	+ 12·6	+ 4·5
β Aurigæ.									
February 7	M	2	1	186	0·120	F	+ 13·6	(− 49·8)	(− 56·3)
γ Geminorum.									
February 5	M	4	1	186	0·130	F	+ 12·0	− 93·7	− 79·4
α Canis Majoris (*Sirius*).									
February 3	M	6	1	186	0·260	F	+ 7·9	− 13·4	− 15·2
5	M	4	1	186	0·130	F	+ 8·3	− 42·5	− 47·1
7	M	3	1	186	0·120	F	+ 8·7	(− 71·3)	(− 50·4)
March 14	M	4	1	185	0·158	F	+ 13·6	− 21·4	− 23·4
14	M	4	2	185	0·158	F	+ 13·6	− 21·9	− 25·9
27	N	2	1	185	0·105	F	+ 14·1	− 10·3	− 8·9
November 6	M	6	1	185	0·214	F	− 12·3	− 20·3	− 24·9
28	M	6	1	185	0·095	F	− 8·5	− 8·7	− 7·2
December 15	N	2	1	186	0·199	F	− 4·6	− 18·4	− 16·8
α Geminorum (*Castor*).									
February 4	M	2	1	186	0·260	F	+ 8·4	− 21·8	− 25·0
March 14	M	4	1	185	0·158	F	+ 16·7	− 38·9	− 41·1
27	N	3	1	185	0·105	F	+ 17·8	− 9·9	− 11·6

Date, 1885.		Observer.	Number of Measures.	Number of Prisms.	Position Circle.	Width of Slit.	Line.	Earth's Motion in Miles per Second.	Concluded Motion of Star in Miles per Second.	
									Measured.	Estimated.
α CANIS MINORIS (*Procyon*).										
					°	r				
February	3	M	2	1	186	0·260	F	+ 6·6	− 12·6	− 17·6
	5	M	4	1	186	0·130	F	+ 7·2	− 0·1	− 1·4
March	14	M	4	1	185	0·158	F	+ 15·5	− 19·5	− 20·2
	27	N	2	1	185	0·105	F	+ 17·0	− 33·9	− 33·6
December	15	N	4	1	186	0·199	F	− 9·1	− 16·8	− 15·3
β GEMINORUM (*Pollux*).										
February	3	M	2	1	186	0·260	F	+ 7·3	− 35·2	− 34·9
	23	M	2	1	185	0·175	b_1	+ 12·7	− 17·2	− 18·3
	25	M	2	1	185	0·118	b_1	+ 13·1	− 33·4	− 40·0
March	11	M	2	1	185	0·125	b_1	+ 15·9	− 25·9	− 30·2
	14	M	4	1	185	0·158	F	+ 16·3	− 25·6	− 24·7
April	21	M	2	1	180	0·230	b_1	+ 17·8	− 23·3	− 27·5
α HYDRÆ.										
February	23	M	2	1	185	0·175	b_1	+ 3·0	+ 8·8	+ 8·2
March	11	M	2	1	185	0·125	b_1	+ 7·5	+ 5·5	+ 6·8
α LEONIS (*Regulus*).										
March	14	M	2	1	185	0·158	F	+ 8·3	− 15·7	− 20·2
April	18	M	2	1	185	0·162	F	+ 15·9	+ 6·9	+ 3·0
γ^1 LEONIS.										
March	11	M	2	1	185	0·125	b_1	+ 7·4	+ 23·0	+ 23·2
α URSÆ MAJORIS.										
August	14	M	1	1	185	0·125	F	− 1·7	− 3·4	− 5·7

Date, 1885.	Observer.	Number of Measures.	Number of Prisms.	Position Circle.	Width of Slit.	Line.	Earth's Motion in Miles per Second.	Concluded Motion of Star in Miles per Second,	
								Measured.	Estimated.
β Leonis.									
March 14	M	4	1	° 185	r 0·158	F	+ 1·4	− 16·5	− 14·4
δ Ursæ Majoris.									
August 11	M	2	1	185	0·125	F	+ 2·1	+ 30·1	+ 29·4
ε Ursæ Majoris.									
August 10	M	4	1	185	0·125	F	+ 3·4	− 41·7	− 41·1
ε Virginis.									
March 12	M	2	1	185	0·125	b_1	− 5·1	+ 7·6	+ 6·8
April 29	M	2	1	185	0·088	b_1	+ 9·1	− 18·0	− 22·5
α Virginis (*Spica*).									
March 14	M	2	1	185	0·158	F	− 8·6	− 25·5	− 28·1
ζ Ursæ Majoris.									
August 10	M	2	1	185	0·125	F	+ 4·2	+ 34·6	+ 32·9
η Ursæ Majoris.									
August 10	M	4	1	185	0·125	F	+ 6·2	+ 14·6	+ 15·7

Date, 1885.	Observer.	Number of Measures.	Number of Prisms.	Position Circle.	Width of Slit.	Line.	Earth's Motion in Miles per Second.	Concluded Motion of Star in Miles per Second.	
								Measured.	Estimated.
α DRACONIS.									
August 10	M	4	1	° 185	r 0·125	F	+ 2·1	+ 34·9	+ 35·0
α BOÖTIS (*Arcturus*).									
March 11	M	2	1	185	0·125	b_1	− 8·2	− 12·5	− 13·5
14	M	2	1	185	0·158	F	− 7·5	− 46·7	− 52·8
April 29	M	2	1	185	0·088	b_1	+ 4·6	− 35·8	− 40·2
May 7	N	2	1	186	0·158	b_1	+ 6·6	− 70·3	− 74·1
29	N	3	1	186	0·170	b_1	+ 11·1	− 48·3	− 50·9
June 2	N	2	1	186	0·164	F	+ 11·8	− 36·7	− 35·2
2	N	2	1	186	0·205	F	+ 11·8	− 42·0	− 43·5
18	N	2	1	186	0·157	F	+ 13·9	− 47·5	− 46·0
July 9	M	2	1	186	0·116	F	+ 15·2	− 52·1	− 43·1
α CORONÆ BOREALIS.									
July 9	M	2	1	186	0·116	F	+ 11·7	+ 4·9	− 0·5
August 17	M	2	1	185	0·125	F	+ 12·4	− 11·8	− 12·4
ζ DRACONIS.									
August 10	M	2	1	185	0·125	F	+ 1·1	− 46·1	− 44·4
α OPHIUCHI.									
June 18	N	2	1	186	0·157	F	+ 1·8	− 38·4	− 37·9
July 9	M	2	1	186	0·116	F	+ 6·6	− 39·9	− 34·6
23	N	2	1	186	0·110	F	+ 9·4	− 30·5	− 32·2
α LYRÆ (*Vega*).									
May 30	N	2	1	186	0·130	F	− 4·8	(− 7·4)	(− 6·8)
July 10	M	2		186	0·116	F	+ 0·6	− 32·1	− 28·5

Date, 1885.	Observer.	Number of Measures.	Number of Prisms.	Position Circle.	Width of Slit.	Line.	Earth's Motion in Miles per Second.	Concluded Motion of Star in Miles per Second.	
								Measured.	Estimated.
α LYRÆ (*Vega*)—*cont.*									
				°	r				
August 3	M	2	1	185	0·125	F	+ 4·0	− 33·9	− 34·9
5	M	2	1	185	0·125	F	+ 4·2	− 42·9	− 41·3
10	M	2	1	185	0·125	F	+ 4·8	− 54·6	− 53·0
17	M	2	1	185	0·125	F	+ 5·6	− 26·9	− 27·2
25	M	2	1	185	0·125	F	+ 6·5	− 35·5	− 37·5
27	M	2	1	185	0·125	F	+ 6·6	− 19·5	− 21·1
29	M	2	1	185	0·125	F	+ 6·8	− 38·1	− 37·8
November 5	M	4	1	185	0·214	F	+ 7·7	− 34·2	− 37·8
17	M	2	1	185	0·138	F	+ 6·6	− 38·8	− 53·2
18	N	2	1	185	0·210	F	+ 6·5	− 44·3	− 43·4
ζ AQUILÆ.									
November 17	M	4	1	185	0·138	F	+ 12·0	− 25·0	− 23·7
α AQUILÆ (*Altair.*)									
July 10	M	2	1	186	0·116	F	− 3·3	− 45·0	− 38·6
23	N	2	1	186	0·110	F	+ 0·3	− 4·7	− 4·9
August 3	M	2	1	185	0·125	F	+ 3·2	− 50·6	− 40·3
25	M	2	1	185	0·125	F	+ 8·5	− 50·1	− 49·8
29	M	2	1	185	0·125	F	+ 9·4	− 36·0	− 38·3
November 17	M	2	1	185	0·138	F	+ 14·8	− 73·6	− 64·3
18	N	2	1	185	0·210	F	+ 14·7	− 35·5	− 35·3
γ CYGNI.									
November 17	M	2	1	185	0·138	F	+ 10·2	− 11·7	− 12·0
α CYGNI.									
July 10	M	2	1	186	0·116	F	− 6·4	− 35·4	− 29·0
August 25	M	2	1	185	0·125	F	− 0·1	− 30·5	− 33·0
September 26	M	2	1	185	0·144	b_1	+ 4·6	− 67·7	− 68·2
November 17	M	2	1	185	0·138	F	+ 9·3	− 40·9	− 40·4
18	N	2	1	185	0·210	F	+ 9·4	− 40·6	− 40·2

Date, 1885.	Observer.	Number of Measures.	Number of Prisms.	Position Circle.	Width of Slit.	Line.	Earth's Motion in Miles per Second.	Concluded Motion of Star in Miles per Second.	
								Measured.	Estimated.
ε CYGNI.									
November 17	M	5	1	° 185	r 0·138	F	+ 12·2	+ 7·1	+ 2·3
α CEPHEI.									
August 26	M	2	1	185	0·125	F	− 4·0	− 17·3	− 20·8
November 17	M	2	1	185	0·138	F	+ 4·7	− 33·0	− 40·1
β PEGASI.									
October 5	M	2	1	5	0·108	b_4	+ 4·1	− 31·9	− 30·6
α PEGASI.									
July 23	N	2	1	186	0·110	F	− 13·0	− 18·5	− 20·4
August 26	M	2	1	185	0·125	F	− 5·5	+ 8·8	+ 7·3
November 17	M	2	1	185	0·138	F	+ 15·9	− 23·7	− 28·6
December 15	N	2	1	186	0·199	F	+ 17·9	− 3·6	− 5·7
MOON.									
February 4	M	5	1	186	0·260	F	..	− 3·1	..
19	M	5	1	186	0·163	F	..	− 11·6	..
21	M	5	1	185	0·114	F	..	− 10·3	..
23	M	5	1	185	0·175	b_1	..	− 2·1	..
February 25	M	5	1	185	0·118	b_1	..	− 3·5	..
March 27	N	4	1	185	0·105	F	..	− 1·1	..
April 21	M	5	1	180	0·230	b_1	..	− 1·6	..
29	M	5	1	185	0·088	b_1	..	− 1·6	..
May 29	N	4	1	186	0·170	b_1	..	− 2·0	..

Date, 1885.	Observer.	Number of Measures.	Number of Prisms.	Position Circle.	Width of Slit.	Line.	Earth's Motion in Miles per Second.	Concluded Motion of Star in Miles per Second.	
								Measured.	Estimated.
MOON—*cont.*									
				°	r				
July 23	N	4	1	186	0·110	F	..	+ 2·6	..
August 26	M	5	1	185	0·125	F	..	− 4·1	..
November 17	M	5	1	185	0·138	F	..	− 2·8	..
18	N	4	1	185	0·210	F	..	− 1·2	..
December 15	N	4	1	186	0·199	F	..	+ 1·4	..
SUN.									
November 6	M	5	1	185	0·214	F	..	− 0·4	..
VENUS.									
October 16	M	15	1	185	0·140	b_1	..	− 14·0	− 7·8
Calculated relative motion of Venus −7·4 miles per second.									
ROTATION OF JUPITER. Displacement between the *p* and *f* Limbs.									
				° ′					
April 21	M	5	1	207. 30	0·230	b_1	..	+ 31·6	..
21	M	5	1	117. 30	0·230	b_1	..	+ 20·4	..
27	M	2	1	207. 30	0·125	b_1	..	+ 28·8	..
29	M	3	1	207. 30	0·088	b_1	..	+ 17·2	..
29	M	3	1	27. 30	0·088	b_1	..	+ 30·7	..
Calculated relative motion, *p* − *f* limb, +32 miles per second.									
DISPLACEMENT BETWEEN THE N. AND S. LIMBS.									
April 29	M	3	1	117. 30	0·088	b_1	..	+ 0·4	..
29	M	3	1	297. 30	0·088	b_1	..	+ 2·0	..
ROTATION OF SATURN'S RINGS. Displacement between the *p* and *f* Ansæ.									
April 21	M	10	1	180. 0	0·230	b_1	..	+ 26·7	..

OBSERVATIONS of the SPECTRA of NOVA ANDROMEDÆ and NOVA ORIONIS, made at the ROYAL OBSERVATORY, GREENWICH, in the YEAR 1885.

NOVA ANDROMEDÆ.

1885, September 4.

Half-prism Spectroscope. One prism train both direct and reversed.

Observer, M.

The Nova was very bright and was judged to be quite equal in brightness to a star of the 8th magnitude.

The spectrum appeared to be simply a plain continuous spectrum without bright or dark lines. The red, orange, and violet portions were very faint or altogether wanting, the spectrum being traceable from about D to F, but being scarcely, if at all, discernible beyond those limits. The spectrum of the star resembled that of the nebula precisely, except that it was, of course, brighter, and probably in consequence of this greater brightness, was traceable a little further in either direction.

With the spectroscope in the direct position magnifying powers of 7 and 14 were used on the viewing telescope; with the spectroscope reversed, powers of 14 and 28 were employed. A cylindrical lens was used in front of the slit, which was about $0^r.4 = 0^{in}.004$, in width corresponding to about 4″ of arc.

1885, September 11.

Single-prism Spectroscope.

No cylindrical lens.

Observer, M.

The spectrum of the *Nova* was compared with those of Arg. Z. + 38° No. 90, Arg. Z. + 38° No. 88, and of the Nebula as to the distance to which it could be traced in either direction, with a view to ascertaining whether the faintness of the extreme portions of the spectra of the star and nebula was due to the spectroscope, the observer's eye, or the general feebleness of the light to be examined, or whether it indicated a real deficiency in the objects themselves. The following rough settings were obtained for the limits of visibility towards the red and towards the violet. The positions obtained were but very rough, as there was no definite point to be measured in any case; the micrometer indeed was only read to the nearest integral revolution.

Object.	Magnitude.	Limit towards the Red.		Limit towards the Violet.	
		Reading.	Wave-length.	Reading.	Wave-length.
		r	tenth-metres.	r	tenth-metres.
Arg. Z. + 38° No. 90	5·5	5·0	7380	85·0	3948
Arg. Z. + 38° No. 88	8·0	10·0	6808	76·0	4095
Nova - -	8·3	12·0	6615	64·0	4319
Nebula - - -		17·0	6196	62·0	4363

The spectrum of the *Nova* was traceable a little further in both directions than that of the nebula. Towards the violet this would seem to be entirely due to its greater brightness, but towards the red the difference seemed greater than could be fairly explained on this ground. The spectrum of the *Nova* seemed slightly brighter than that of No. 88 in the central district from D to F, but was decidedly feebler in the red and violet regions. The *Nova* was estimated as being three-tenths of a magnitude fainter than No. 88.

The spectrum of the *Nova* was very faint in the red and orange, and began to brighten at a definite point, either at D or close to it. Then followed a space, relatively very bright, the centre of which was not far from E, the brightest part being however at λ 5457, where at times the brightening appeared so definite as to suggest a bright line. The same general region was also much the brightest in the spectrum of the Nebula. The spectrum rapidly declined in brightness beyond F; practically it only extended from D to F; nothing like a bright line was seen either at F, *b*, or D. From time to time the presence of bright lines in the region of the green was suspected, and two other estimations of the places of bright points were made; viz., λ 5508 for the bright point observed before, and λ 5327 for a second but less distinct bright point. The mean of the two estimations for the first bright point gives λ 5482 for its wave length.

1885, September 15.

Observer, M.

The spectrum of the *Nova* was observed with a small direct-vision half-prism held behind the eye-piece. The centre of the green was relatively very bright. There seemed to be two *maxima* in this portion of the spectrum; the more refrangible was estimated from the colour to be near E. It was not easy to decide whether these were, strictly speaking, bright lines.

1885, September 18.

Single-prism Spectroscope.

No cylindrical lens.

Observer, M.

The spectrum of the *Nova* being too faint for satisfactory work on account of the fog, the telescope was turned first to γ Cassiopeiæ, and next to β Andromedæ. With the former star, when the spectrum was faint from the combined effect of fog, diminished aperture, and narrow slit, the red end of the spectrum was quite as difficult to see as with the *Nova*, and the bright F line was not more conspicuous than the supposed bright line at λ 5482 in the spectrum of the *Nova*, perhaps scarcely so conspicuous. On the other hand, the spectrum of β Andromedæ appeared full of bright lines. It seems clear, therefore, that with a very faint spectrum, and when no cylindrical lens is used, it is exceedingly difficult to be sure of the presence of bright lines in a star spectrum unless they are remarkably distinct.

The *Nova* was compared for magnitude with the stars Arg. Z. + 38° No. 85 and 87 early in the evening and later with Arg. Z. + 39° Nos. 159 and 163, and + 40° No. 144; the estimated magnitude being 9·2 in both cases.

The *Nova* seemed perfectly sharp and well-defined with a magnifying power of 220, but there was the faintest suspicion of a larger disk than a star would show. The fog often all but concealed the nebula, but did not alter the sharp definition of the *Nova*. The colour was still about that of the D lines, perhaps a little paler than on previous occasions.

1885, September 21.

Observer, M.

The only observation which could be made, the Moon being bright and there being much mist, was to notice that the *Nova* bore every power up to and including 500 quite as well as did the neighbouring stars. It was distinctly and sharply stellar in appearance, there was no fuzziness, nor could anything be detected which might reasonably be called a disk. The fog all but extinguished M. 31, but M. 32 was quite distinct, and was therefore clearly the brighter of the two. A comparison with Arg. Z. + 40° Nos. 144 and 145 gave the magnitude of the *Nova* as about 9·6 or 9·7. The colour was still markedly an orange yellow, not unlike that of the D lines, but paler than on September 18.

1885, September 30.

Half-prism Spectroscope reversed.

One prism train.

No cylindrical lens. Magnifying power 15.

Observer, M.

The spectrum of the *Nova* was not much brighter than that of the nucleus of the nebula, and was traceable but little further in either direction. The two bright lines seen before were recognised fairly easily, and a third suspected further towards the red. It was not found possible to obtain any measures of the positions of the lines, but their places were estimated as follows :—

The brightest line was not far from the bright line of magnesium at λ 5527, but a little nearer the blue. The second in brightness was about midway between the first and *b*. The faintest was about as far to the red of the magnesium line λ 5527, as the first was to the blue. Adopting λ 5482 as the wave-length of the first line the second would have its wave-length as λ 5321, and the third λ 5575.

A narrow slit was used, and it was found very difficult, almost impossible, to keep the star on the slit, the spectrum being so exceedingly faint that it was frequently lost.

It could not be decided whether the lines were brighter than on September 11. It was believed that the brightest could be traced over or near the nucleus of the nebula, but the spectrum was so faint, and it was so difficult to see it steadily, that no certain conclusion on the point could be arrived at.

With a magnifying power of 220 the *Nova* appeared sharply stellar, the colour, though a decided yellow, was less marked than before, the light now seeming to have only just a tinge of orange about the colour of the D lines. The part of the nebula immediately preceding the *Nova* was faint, so that in the spectroscope the spectrum of the nebula seemed on the preceding edge to terminate sharply with that of the star. This had been noticed on every evening on which the spectrum of the *Nova* had been examined.

NOVA ORIONIS.

1885, December 29.

Half-prism Spectroscope reversed.

One prism train.

Width of slit $0^{in}\cdot0069$ = about 7″.

Observer, M.

A cylindrical lens was employed before the slit, which was not quite sufficiently narrow to separate the bright lines of the magnesium spectrum which correspond to b_2 and b_4.

The spectrum was an exceedingly pronounced example of Secchi's third type. The dark bands were *very* dark; the bright zones or interspaces *very* bright, and with a low dispersion would undoubtedly have presented the appearance of bright lines. With the dispersion employed, however, no bright lines could be detected, nor was any local irregularity of brightness, which could reasonably be suspected to be a bright line, seen anywhere; notwithstanding that as just stated, the brilliance of the bright zones, especially close to the sharp edges of the dark bands, was very striking.

Four dark bands were very conspicuous. Adopting the numeration employed in the observations of β Pegasi made on 1876 October 18, and published in the volume of Greenwich Observations for 1876, these were Bands IV., V., VI., and VII. The following three measures were obtained of the sharp and more refrangible edge of Band VI. (Band 7 in Dunér's nomenclature):—

	Wave-length.
	Tenth-metres.
	5167·76
	5170·29
	5170·57
Mean	- 5169·54

Bands IV. and V. were identified beyond any doubt by their proximity to the line of the magnesium spectrum λ 5527, and Band VII. (Dunér's Band 8) by its neighbourhood to the double line of air λ 5002, and it was clear that they occupied their usual places. These were measured in the spectrum of β Pegasi on the occasion above referred to as λ 5610, λ 5450, and λ 4953. The dark line on Band VI., the wave-length of which was measured in the spectrum of β Pegasi as λ 5272 (Dunér's Band 6) was not identified, but Band VI. was so broad that it evidently embraced this line or sub-band within its limits. A band was also seen at D, without doubt Band II., λ 5869 (Dunér's Band 3) and another beyond F, probably Band VIII., λ 4761 (Dunér's Band 9). Band I. λ 6169 (Dunér's Band 2) was only just suspected. The spectrum was not traced far enough for bands to be detected beyond these, either towards the red or the violet. Some feeble bands or lines were suspected between Bands V. and VI., but none of the great bands were resolved into lines. The *breadth* of the great bands seemed to be about the same as usually observed in stars of this type. Band VI. is often confused with the dark line or narrow band at λ 5272, and its breadth was not greater than would result from this cause.

ROYAL OBSERVATORY, GREENWICH.

MEASURES OF POSITIONS AND AREAS

OF

SPOTS AND FACULÆ

UPON THE SUN'S DISK

ON

PHOTOGRAPHS

TAKEN WITH THE

PHOTOHELIOGRAPHS

AT GREENWICH, IN INDIA, AND IN THE MAURITIUS;

WITH THE DEDUCED

HELIOGRAPHIC LONGITUDES AND LATITUDES.

1885.

MEASURES of POSITIONS and AREAS of SPOTS and FACULÆ upon the SUN'S DISK on PHOTOGRAPHS taken at the ROYAL OBSERVATORY, GREENWICH, at DEHRA DUN in INDIA, and at the ROYAL ALFRED OBSERVATORY, MAURITIUS, in the Year 1885.

NOTE.—The Greenwich Civil Time at which the photograph was taken is expressed by the Day of the Year and decimals of a day, reckoning from Greenwich Mean Midnight, January $1^d.\ 0^h$.

For convenience of reference the Month and Day of the Month (Civil Reckoning) are added.

The letter I. signifies that the photograph was taken in India; the letter M. that the photograph was taken in the Mauritius; the time given is Greenwich Civil Time.

The position-angles are reckoned from the North Pole of the Sun's Axis in the direction N., E., S., W., N.

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1885.				°	°	°			
$0^d.240$	H, SP		0·912	246·7	45·6	−22·6			172
		1561*a*	0·986	280·1	60·2	+ 9·4	25	309	
I.		1561*c*	0·941	281·4	49·8	+ 9·5	6	89	1492 *c*
		1564	0·519	254·7	11·2	−10·7	0	10	
		1563*a*	0·280	287·5	356·1	+ 1·7	12	103	
		1566*a*	0·839	103·1	284·0	−12·8	0	19	
		1566*b*	0·868	104·2	280·8	−14·0	0	23	392 *c*
		1567*a*	0·933	76·4	273·2	+11·4	0	9	226 *f*
			0·949	100·9	269·1	−11·4			103
			0·983	85·5	261·7	+ 3·8			302
Jan. 1							(43)	(562)	(2687)
1·282	SP, JH		0·959	238·9	49·4	−30·7			487
			0·831	293·1	19·8	+17·0			1007
I.		1563*a*	0·497	279·1	356·2	+ 1·5	17	92	
		1568	0·301	92·1	309·4	− 3·9	0	6	
		1568	0·311	88·1	308·9	− 2·7	0	6	
		1568	0·334	90·4	307·4	− 3·3	0	7	
		1569*a*	0·570	91·9	292·2	− 3·9	5	22	
		1569*b*	0·608	92·7	289·5	− 4·3	0	10	124 *c*
		1566*a*	0·674	105·7	285·4	−13·0	8	29	
		1566*b*	0·733	106·5	280·6	−14·4	7	25	263 *c*
		1567*a*	0·820	73·1	273·8	+11·7	0	16	154 *f*
			0·904	79·8	263·3	+ 7·7			478
			0·938	102·9	257·2	−13·3			615
Jan. 2							(37)	(213)	(3128)
1885.				°	°	°			
$3^d.239$	H, SP		0·927	278·5	22·3	+ 9·3			126
			0·894	290·3	15·0	+16·3			457
M.			0·833	259·2	10·6	−11·0			316
			0·885	305·3	9·6	+28·7			106
		1563*a*	0·672	276·5	356·0	+ 1·7	18	90	
		1569*a*	0·357	92·4	293·4	− 4·3	7	25	
		1569	0·406	91·9	290·4	− 4·0	0	27	
		1566*a*	0·492	109·3	286·0	−12·5	23	72	
		1566*b*	0·568	109·6	281·0	−14·0	0	10	
		1567*a*	0·666	67·3	275·5	+12·1	16	42	
		1567	0·696	66·5	273·5	+13·4	2	11	
		1567	0·706	68·9	272·1	+12·0	6	26	
			0·843	82·1	257·6	+ 4·7			14
			0·925	101·9	246·6	−12·4			68
			0·942	70·6	246·3	+16·9			158
Jan. 3							(72)	(303)	(1245)
3·245	H, JH		0·973	285·1	16·0	+13·8			630
			0·929	260·0	9·4	−10·7			792
I.			0·887	299·5	358·4	+23·9			562
		1563*a*	0·831	274·8	356·7	+ 1·9	15	94	816 *n*
		1569*a*	0·103	96·7	295·1	− 4·4	4	13	
		1569	0·184	96·0	290·5	− 4·7	5	21	
		1566*a*	0·290	125·7	287·1	−13·3	10	52	
		1566	0·322	120·5	284·5	−12·9	0	4	
		1566	0·352	118·1	282·5	−13·0	6	20	

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n*, *s*, *p*, *f*, *c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 1561, 1884 Dec. 20–1885 Jan. 1. A very large regular spot, *a*, followed at a considerable distance by three regular but much smaller spots, *b*, *c*, and *d*. A number of small spots are scattered irregularly over the intermediate space. *a* and *c* have very dark umbræ.

Group 1563, 1884 Dec. 25–1885 Jan. 5. A regular spot, *a*. A small spot, *b*, is seen preceding it on Dec. 26 and 27, and another *c*, on Dec. 29 and 30. A fourth spot, *d*, is seen on Dec. 29.

Group 1564, 1884 Dec. 27–1885 Jan. 1. A small faint spot on Dec. 27 and 28; two small faint spots on Dec. 29. Neither is seen on Dec. 30. On Dec. 31 the group consists of three small spots, two of which are measured together. Only one spot remains on Jan. 1.

Group 1566, 1885 Jan. 1–9. Two small spots, *a* and *b*; *a* moves forward and increases in size, and has broken up into several small spots by Jan. 4, which are, however, still measured together. *b* has disappeared by Jan. 4, but several other small spots have appeared near its place. The entire group forms a long straight stream on Jan. 5, of which only the first and last spots remain on Jan. 6, and only the first spot on Jan. 7.

Group 1567, Jan. 1–10. A small faint spot, *a*, on Jan. 1 and 2. Five other spots measured in two clusters are seen near it on Jan. 3. Of these all but one, *b*, has disappeared by Jan. 4. *a* has disappeared by Jan. 7, and *b* by Jan. 9. A third small spot, *c*, is seen on Jan. 9 and 10.

Group 1568, Jan. 2. Several very small faint spots.

Group 1569, Jan. 2–5. A small spot, *a*, followed by two or three small faint spots. The latter undergo several changes, and are usually measured together as one.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
3d·245	H, JH	1567*a*	0·473	55·8	277·5	+12·0	10	53	
		1567*b*	0·533	59·2	273·2	+12·5	0	49	
I.			0·807	101·8	247·4	−11·7			418
			0·881	72·4	241·5	+13·6			333
			0·907	118·6	237·5	−27·3			635
			0·952	99·7	228·7	−10·4			237
Jan. 4							(50)	(306)	(4423)
4·175	SP, H		0·923	260·5	356·2	−10·3			408
			0·938	293·8	355·2	+20·8			300
I.		1563*a*	0·930	273·7	356·8	+ 2·0	16	67	868*c&nf*
		1569*a*	0·133	266·2	296·4	− 4·3	0	10	
		1569	0·080	259·8	293·3	− 4·6	0	18	
		1569	0·038	274·4	291·0	− 3·6	0	28	
		1566	0·159	176·5	288·2	−12·9	5	20	
		1566	0·161	163·0	286·0	−12·6	0	33	
		1566	0·181	147·4	283·1	−12·6	0	27	
		1566	0·198	140·3	281·4	−12·5	3	13	
		1567*a*	0·330	32·9	278·3	+12·3	7	55	
		1567*b*	0·382	43·5	273·3	+12·4	0	41	
			0·879	122·6	230·1	−30·2			259
			0·936	99·2	219·3	−10·0			566
Jan. 5							(31)	(312)	(2401)
5·469	H, JH	1566	0·340	241·6	289·5	−13·0	3	14	
		1566	0·244	231·2	282·9	−12·6	0	9	
		1567*a*	0·307	335·5	279·2	+12·3	0	9	
		1567*b*	0·280	354·6	273·2	+12·3	0	25	
Jan. 6							(3)	(57)	(0)
6·455	SP, JH	1566	0·541	252·7	290·6	−12·7	0	20	
		1567	0·385	317·5	274·2	+12·6	0	19	
Jan. 7							(0)	(39)	(0)
7·450	SP, JH	1566	0·721	255·8	291·5	−13·1	0	21	
		1567	0·543	300·5	274·3	+12·4	0	18	
Jan. 8							(0)	(39)	(0)
8·517	SP, JH		0·735	191·2	244·5	−50·1			30
		1566	0·874	258·0	292·6	−12·6	0	12	
		1567*c*	0·751	290·9	277·5	+12·6	0	18	
Jan. 9							(0)	(30)	(30)
1885.				°	°	°			
9d·290	SP, H		0·928	261·4	289·8	− 9·6			686
			0·777	256·9	272·2	−12·8			94
I.		1567*c*	0·848	287·9	277·1	+12·7	4	38	415 *f*
			0·779	63·5	174·7	+17·4			139
			0·829	113·0	166·6	−21·5			643
			0·971	97·8	145·1	− 8·6			226
Jan. 10							(4)	(38)	(2203)
11·499	H, SP		0·965	284·7	267·6	+15·4			301
			0·958	258·9	265·9	−11·9			434
M.			0·951	274·3	264·4	+ 5·5			146
			0·844	259·0	249·9	−11·7			546
			0·836	292·3	148·0	−21·0			243
		1570*a*	0·385	130·3	174·3	−18·6	2	16	
		1570*b*	0·417	130·7	172·7	−20·0	0	13	
		1570*c*	0·430	125·1	170·6	−18·5	6	26	
			0·753	98·3	143·5	− 9·2			237
			0·841	113·7	136·2	−22·3			246
Jan. 12							(8)	(55)	(2153)
12·470	H, SP		0·882	259·2	241·6	−11·7			664
			0·904	291·2	241·1	+16·9			364
M.		1570*a*	0·253	159·0	174·2	−18·2	12	25	
		1570*c*	0·285	149·4	170·8	−18·7	12	62	
Jan. 13							(24)	(87)	(1028)
13·218	H, JH		0·967	262·4	245·2	− 8·5			457
			0·959	290·1	240·4	+17·7			219
I.			0·871	245·7	229·4	−23·5			417
		1570*a*	0·253	200·6	175·1	−18·3	3	17	
		1570*c*	0·246	183·4	170·6	−18·9	12	67	
			0·887	103·7	107·1	−14·3			528
			0·907	74·3	106·7	+12·1			361
			0·929	121·0	102·4	−30·5			198
Jan. 14							(15)	(84)	(2180)
14·236	H, SP		0·867	255·1	216·3	−15·3			801
		1570*c*	0·325	222·3	169·5	−18·6	8	22	
M.		1571*a*	0·305	151·0	147·3	−20·2	7	23	
		1571*b*	0·303	146·6	146·2	−19·3	3	6	
		1571*c*	0·350	145·8	144·2	−21·4	1	4	
			0·782	108·1	105·5	−17·1			372

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n*, *s*, *p*, *f*, *c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Jan. 6, 7, 8, 9. Photographs very faint. Spots and faculæ hardly visible.

Group 1570, Jan. 12–17. Three small spots, *a*, *b*, and *c*. *a* has disappeared by Jan. 15, *b* by Jan. 13.

Group 1571, Jan. 15–18. Three small spots, *a*, *b*, and *c*, on Jan. 15. *b* has disappeared by Jan. 17, *c* by Jan. 18. The group forms a compact cluster on Jan. 15, but *a* and *c* have moved in latitude by Jan. 16, so that the three spots then follow each other on nearly the same parallel of latitude.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.	Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).						Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1885.				°	°	°				1885.				°	°	°			
14d·236	H, SP		0·860	71·0	99·7	+13·6			450	19d·186	H, SP		0·976	249·6	169·3	−21·0			582
			0·882	120·8	96·2	−29·3			362				0·895	300·7	153·3	−29·7			195
M.			0·881	91·0	94·6	− 3·2			124	I.			0·894	284·7	152·5	+10·6			240
			0·970	107·9	79·7	−18·6			355				0·826	264·2	146·9	− 7·7			159
Jan. 15							(19)	(55)	(2464)				0·830	248·9	146·6	−20·4			266
												1573a	0·359	264·2	112·1	− 7·0	60	371	
												1573	0·333	274·2	110·4	− 3·6	0	10	
15·292	H, SP		0·903	259·8	207·3	−11·3			512			1573b	0·264	270·0	106·4	− 5·0	19	156	
		1570c	0·508	240·7	170·3	−18·7	5	23				1572a	0·310	152·7	82·4	−21·1	60	307	
I.		1571a	0·280	202·2	148·9	−19·8	4	24				1572	0·353	147·1	79·2	−22·3	6	18	
		1571b	0·267	197·8	147·4	−19·5	0	3				1572	0·335	142·6	78·6	−20·4	0	12	
		1571c	0·269	189·5	145·2	−20·2	0	7				1572	0·348	137·2	76·6	−19·8	1	11	
		1572a	0·873	112·3	82·3	−21·8	0	22				1572	0·382	141·0	76·1	−22·2	20	71	
		1572b	0·907	111·7	77·6	−21·7	0	24	292 c			1572	0·407	134·1	72·9	−21·4	11	54	
			0·969	84·9	67·5	+ 3·7			582			1574a	0·390	54·4	72·5	+ 8·1	4	21	
Jan. 16							(9)	(103)	(1386)			1575	0·950	98·2	18·9	− 9·5	16	73	
												1575	0·951	99·7	18·7	−10·8	0	40	550 c
16·217	SP, JH		0·911	246·2	195·5	−23·7			165				0·915	61·8	30·0	+23·2			333
			0·794	250·6	182·1	−18·4			320				0·944	78·7	21·8	+ 8·9			717
I.		1570c	0·662	247·2	170·1	−18·7	3	8	88 c	Jan. 20							(197)	(1144)	(3042)
		1571a	0·401	230·7	149·3	−19·4	4	16											
		1571c	0·361	221·7	145·0	−20·4	0	7											
		1572a	0·744	114·7	83·8	−21·5	9	70	376 c	20·183	H, JH		0·938	237·6	147·1	−32·1			141
		1572b	0·806	113·7	77·7	−22·0	3	81					0·931	257·5	147·1	−13·6			1152
		1572	0·812	111·2	76·7	−20·1	0	14		I.			0·940	295·4	143·9	+21·7			223
			0·853	128·3	75·8	−34·8			99				0·857	243·5	135·9	−25·4			224
Jan. 17							(19)	(196)	(1048)			1573a	0·561	263·7	112·2	− 8·0	29	209	
												1573	0·551	266·6	111·6	− 6·3	11	36	
												1573	0·531	265·9	110·2	− 6·7	3	28	
17·212	H, JH		0·912	293·8	179·0	+19·2			383			1573	0·531	268·7	110·2	− 5·2	0	15	
			0·823	249·8	171·9	−19·5			763			1573	0·509	267·3	108·7	− 6·0	3	9	
I.			0·728	286·3	161·8	+ 8·2			347			1573b	0·473	269·7	106·3	− 4·8	53	252	
		1571a	0·576	244·1	150·2	−18·9	1	4				1576a	0·355	318·9	91·8	+10·3	3	16	
		1573	0·010	99·6	116·5	− 5·2	0	8				1576b	0·326	328·4	88·1	+10·9	0	14	
		1573	0·146	99·1	108·8	− 6·4	0	19				1572a	0·280	193·7	82·2	−21·1	36	270	
		1572a	0·597	120·0	83·5	−21·5	9	101				1572	0·286	182·9	79·0	−21·9	3	31	
		1572	0·647	114·4	78·6	−19·5	0	24				1572	0·257	171·9	75·9	−20·0	5	85	
		1572b	0·667	117·4	77·6	−21·8	14	123				1572	0·308	170·4	74·9	−22·9	6	50	
		1572	0·701	115·6	74·5	−21·4	2	16				1572	0·298	162·2	72·5	−21·7	11	43	
		1572	0·705	117·9	74·7	−23·0	0	7				1574a	0·238	16·2	74·3	+ 7·9	0	18	
			0·792	78·4	66·0	+ 5·9			74			1574b	0·240	29·7	71·3	+ 6·7	0	11	
			0·909	77·4	53·4	+ 9·2			932			1574c	0·282	31·3	69·6	+ 8·6	0	3	
			0·909	117·5	52·5	−27·0			132			1575a	0·784	95·4	26·4	− 7·5	4	37	
Jan. 18							(26)	(302)	(2631)			1575	0·804	97·4	24·4	− 9·1	0	25	

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n*, *s*, *p*, *f*, *c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Jan. 16, 17. Photographs faint. Faculæ ill-defined.

Jan. 20. The limb is marked only by a faint outline.

Group 1572, Jan. 16–26. Two small spots, *a* and *b*, on Jan. 16. These increase in size, and other spots appear near them on the succeeding days. *b* has broken up into a number of small spots by Jan. 20, and *a* has divided to form two regular spots, *c* and *d*, by Jan. 22. The smaller following spots have all disappeared by Jan. 24, leaving *c* and *d* alone.

Group 1573, Jan. 18–25. Two small faint spots on Jan. 18. The group has greatly increased in size by Jan. 20, and consists of two large spots, *a* and *b*, and one small one. *a* diminishes on the following days, throwing off small spots in the direction of *b*. These spots combine to form a large spot, *c*, on Jan. 23.

Group 1574, Jan. 20–26. A small spot, *a*, on Jan. 20. Two others, *b* and *c*, have appeared near it by Jan. 21. *a* has disappeared by Jan. 22. A fourth spot, *d*, is seen on Jan. 24.

Group 1575, Jan. 20–29. Two small spots on Jan. 20. The group has increased in size by Jan. 21, on which date it consists of a regular spot, *a*, followed at a little distance by a large irregular group. This group, which consists of a number of small spots, changes rapidly from day to day. Two spots combine to form *b* on Jan. 24. *a* has disappeared by Jan. 27, and *b* has divided into two spots by Jan. 28.

Group 1576, Jan. 21–22. Two small spots, *a* and *b*, on Jan. 21. Both have moved forward in longitude, and *b* has also shown a motion in latitude by Jan. 22.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
20d·183	H, JH	1575	0·857	98·7	18·9	−10·2	14	161	382 *c*
			0·917	64·0	16·2	+21·2			845
I.			0·944	78·8	8·8	+ 8·7			410
			0·950	99·9	5·9	−11·0			932
Jan. 21							(181)	(1313)	(4309)
21·214	SP, JH		0·937	254·2	133·4	−32·2			515
		1573*a*	0·744	264·0	112·7	− 8·1	26	122	
I.		1573	0·729	266·5	111·4	− 6·3	12	133	
		1573	0·709	267·5	109·7	− 5·6	5	24	
		1573*b*	0·673	269·2	106·8	− 4·6	70	385	713 *c*
		1576*a*	0·534	300·2	92·4	+10·7	3	8	
		1576*b*	0·508	305·0	89·6	+12·0	0	7	
		1572*c*	0·388	229·4	82·7	−19·7	17	75	
		1572*d*	0·394	225·2	81·9	−21·2	12	82	
		1572	0·370	224·2	80·4	−20·6	1	9	
		1572	0·373	221·1	79·7	−21·5	0	5	
		1572	0·334	219·2	77·4	−20·3	0	9	
		1572	0·343	214·9	76·6	−21·6	7	29	
		1572	0·339	208·4	74·5	−22·7	10	48	
		1572	0·308	205·2	72·6	−21·5	3	21	
		1574*b*	0·243	330·0	71·5	+ 6·8	0	15	
		1574*c*	0·252	338·4	69·9	+ 8·1	2	9	
		1575*a*	0·610	94·6	26·9	− 7·1	9	62	
		1575	0·625	96·5	25·8	− 8·3	0	5	
		1575	0·644	97·2	24·4	− 8·8	6	19	177 *c*
		1575	0·684	98·2	21·3	− 9·6	2	7	
		1575	0·700	95·3	20·0	− 7·5	0	15	
		1575	0·701	99·3	20·0	−10·3	7	54	
		1575	0·703	97·4	19·8	− 9·1	15	73	261 *c*
		1577	0·914	86·5	358·9	+ 0·9	1	10	239*c*&*f*
			0·874	55·2	11·2	+26·7			120
			0·852	101·3	5·9	−12·5			396
			0·907	79·2	0·8	+ 7·4			384
Jan. 22							(208)	(1226)	(2805)
22·366	EP, H	1573*a*	0·887	263·5	112·1	− 8·4	16	126	} 460 *c*
		1573*c*	0·877	266·7	110·7	− 5·5	66	259	
		1573*b*	0·839	268·7	106·3	− 4·1	57	502	
		1572*c*	0·573	243·1	82·0	−19·7	10	73	
		1572*d*	0·562	240·1	80·6	−20·9	5	104	
		1572	0·493	231·7	74·0	−22·8	0	4	
		1572	0·487	229·2	72·9	−23·6	0	20	
1885.				°	°	°			
22d·366	EP, H	1574*b*	0·432	297·9	71·8	+ 6·5	1	20	
		1574	0·408	301·7	69·7	+ 7·2	0	2	
		1574*d*	0·398	306·6	68·1	+ 8·5	4	12	
		1575*a*	0·381	94·9	26·9	− 7·0	2	61	
		1575	0·428	98·5	24·1	− 8·6	0	73	
		1575	0·491	101·4	20·1	−10·4	0	32	
		1575	0·487	97·7	20·2	− 8·6	18	60	
		1575	0·499	95·4	19·4	− 7·5	7	48	
		1575	0·532	94·5	17·1	− 7·0	0	35	
			0·887	76·0	348·7	+ 9·7			275
Jan. 23							(186)	(1431)	(735)
23·225	H, SP		0·913	256·7	104·2	−14·4			158
			0·902	284·8	100·3	+10·7			351
M.			0·841	251·5	95·0	−18·6			123
			0·804	288·1	88·9	+11·0			288
		1573*a*	0·965	262·7	113·1	− 8·5	7	83	759 *e*
		1573*c*	0·957	265·9	111·3	− 5·6	49	264	
		1573*b*	0·925	268·2	105·6	− 3·8	121	525	
		1572*c*	0·704	247·7	81·5	−19·6	17	70	
		1572*d*	0·695	245·5	80·3	−20·9	12	81	
		1574*b*	0·594	289·5	72·1	+ 6·8	0	12	
		1574*c*	0·564	293·4	69·3	+ 8·1	0	9	
		1574*d*	0·531	293·1	67·3	+ 7·1	0	1	
		1575*a*	0·189	97·8	27·1	− 7·0	8	29	
		1575	0·233	102·6	24·7	− 8·4	0	3	
		1575*b*	0·278	99·3	21·9	− 8·0	34	119	
		1575	0·291	106·7	21·5	−10·2	7	24	
		1575	0·318	95·1	19·4	− 7·0	0	2	
		1575	0·324	98·7	19·1	− 8·1	4	21	
		1575	0·349	95·2	17·5	− 7·1	4	9	
		1578*a*	0·965	76·5	324·9	+11·4	13	65	488 *e*
			0·912	97·5	331·8	− 9·1			254
Jan. 24							(276)	(1317)	(2421)
24·542	SP, H	1573*b*	0·997	267·3	106·1	− 3·2	0	300	
		1572*c*	0·875	251·0	81·5	−19·3	10	45	} 83 *e*
		1572*d*	0·866	249·3	80·3	−20·8	7	76	
		1574*b*	0·809	283·4	72·8	+ 7·3	0	10	
		1574*c*	0·779	285·6	69·6	+ 8·4	0	17	
		1575*a*	0·116	259·4	27·1	− 6·9	5	22	
		1575*b*	0·066	221·8	23·0	− 8·5	35	148	
		1575	0·060	183·1	20·7	− 9·1	0	8	

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n*, *s*, *p*, *f*, *c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Jan. 23. The limb at 90° is almost invisible.
Jan. 23, 25. Photographs faint. Spots ill-defined.
Group 1577, Jan. 22. A small spot.
Group 1578, Jan. 24–Feb. 1. A regular spot, *a*. Two small spots are seen near it on Jan. 28.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
24d·542	SP, H	1575	0·065	135·2	17·9	− 8·4	1	9	
		1579*a*	0·215	35·6	13·3	+ 4·4	10	59	
		1579	0·235	40·2	11·7	+ 4·7	0	3	
		1579	0·258	41·2	10·7	+ 5·5	0	8	
		1579	0·248	50·9	9·4	+ 3·4	3	10	
		1579	0·269	47·9	9·0	+ 4·8	6	30	
		1578*a*	0·851	72·6	324·7	+11·6	7	55	145 *f*
		1580*a*	0·984	102·3	300·1	−13·1	21	226	259 *c*
Jan. 25							(105)	(1026)	(487)
			0·883	246·4	73·1	−23·5			594
25·246	H, M	1572*c*	0·940	251·6	82·0	−19·3	9	58	255 *c*
		1572*d*	0·933	250·0	80·8	−20·8	7	27	
I.		1574*b*	0·897	281·4	73·7	+ 7·5	0	12	875 *nf*
		1575*a*	0·274	265·6	27·3	− 6·8	5	11	
		1575	0·241	246·6	24·4	−11·1	0	14	
		1575*b*	0·216	255·5	23·6	− 8·8	26	179	
		1575	0·126	248·3	18·2	− 8·4	0	4	
		1575	0·115	236·4	16·9	− 9·4	0	3	
		1575	0·121	224·4	16·3	−10·7	0	6	
		1575	0·094	227·5	15·4	− 9·5	2	5	
		1579*a*	0·193	341·3	14·9	+ 4·7	9	70	
		1579	0·176	354·2	12·4	+ 4·2	0	7	
		1579	0·202	7·8	9·8	+ 5·7	1	10	
		1579	0·174	15·2	8·8	+ 3·8	0	5	
		1578*a*	0·765	69·7	324·5	+11·4	13	94	430 *f*
		1580*a*	0·946	102·5	299·8	−13·7	78	426	1273 *c*
			0·936	90·7	302·1	− 2·7			89
Jan. 26							(150)	(931)	(3516)
			0·952	283·6	65·6	+11·0			196
26·473	SP, JH	1581	0·891	284·8	56·3	+10·4	0	32	
		1581	0·853	284·9	51·8	+ 9·5	0	28	191 *c*
		1582*a*	0·629	273·3	34·1	− 2·5	5	12	
		1582*b*	0·612	276·9	32·5	− 0·4	0	23	
		1582	0·604	273·6	32·3	− 2·5	0	8	
		1575*b*	0·488	261·9	24·5	− 9·0	20	81	
		1575	0·445	260·8	21·6	− 9·3	0	20	
		1575	0·404	263·9	19·1	− 7·8	0	7	
		1575	0·369	258·8	16·7	− 9·5	0	13	
		1579*a*	0·393	297·6	15·7	+ 5·0	6	42	
		1579	0·359	298·0	13·7	+ 4·2	2	23	

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
26d·473	SP, JH	1579	0·371	302·7	13·5	+ 6·0	0	6	
		1579	0·323	308·2	10·0	+ 5·9	0	15	
		1579	0·293	305·5	9·1	+ 4·2	0	24	
		1578*a*	0·577	60·1	324·7	+11·7	7	77	
		1580*a*	0·815	102·7	300·6	−13·7	82	438	394 *c f*
Jan. 27							(122)	(849)	(781)
			0·669	269·6	27·4	− 4·7			51
27·220	M, SP	1581	0·984	278·6	63·9	+ 7·3	0	19	119 *c*
		1581	0·960	281·8	57·5	+ 9·6	0	50	640 *c*
M.		1581	0·928	283·4	51·7	+10·1	0	20	
		1582*a*	0·754	272·2	34·1	− 2·3	10	29	243 *c*
		1582*b*	0·741	274·8	32·8	− 0·5	6	23	
		1575	0·658	262·2	26·6	− 9·6	0	23	
		1575	0·626	263·2	24·2	− 8·9	15	67	
		1575	0·578	263·4	20·8	− 8·6	0	13	
		1575	0·565	268·1	19·9	− 6·0	0	13	
		1575	0·534	262·3	17·7	− 9·1	0	10	
		1579*a*	0·536	289·9	15·7	+ 5·4	11	59	
		1579	0·508	289·3	14·0	+ 4·4	0	9	
		1579	0·424	292·6	8·4	+ 3·9	0	12	
		1578*a*	0·456	49·3	324·8	+11·7	17	60	
		1578	0·487	49·5	323·2	+12·9	0	13	
		1578	0·466	58·0	321·9	+ 8·9	0	6	
		1580*a*	0·700	103·7	301·1	−13·8	85	449	251 *c*
		1584	0·793	99·4	292·8	−11·0	0	22	608 *c*
		1584	0·840	101·9	288·0	−13·2	6	114	
			0·826	6·9	336·7	+49·0			74
			0·935	72·7	278·8	+13·8			362
			0·965	101·8	269·9	−12·9			86
Jan. 28							(150)	(1011)	(2434)
			0·852	286·8	29·1	+10·9			410
28·148	SP, JH	1582*a*	0·899	270·9	36·9	− 1·9	7	54	
		1582*b*	0·888	272·9	35·4	− 0·3	5	22	
I.		1582	0·880	271·9	34·5	− 1·2	0	9	539 *c*
		1575	0·788	263·1	25·3	− 9·2	7	17	
		1575	0·784	264·5	24·9	− 8·1	7	32	
		1575	0·744	264·1	21·3	− 8·4	0	6	
		1575	0·719	265·9	19·2	− 7·1	0	24	522 *c*
		1579*a*	0·711	284·3	16·7	+ 5·8	8	50	77 *c*
		1583	0·243	283·1	346·7	− 2·7	3	8	

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n, s, p, f, c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Jan. 27. Photograph faint. Faculæ ill-defined.

Group 1579, Jan. 25–31. A regular spot, *a*, followed by a number of scattered small spots. The group appears suddenly near the centre of the Sun. The following spots gradually disappear, and *a* alone remains on Jan. 29.

Group 1580, Jan. 25–Feb. 6. A large regular spot, *a*, followed by a number of small spots. *a* has broken up into three parts by Feb. 5. They are, however, still measured together as one on that day. On Feb. 6 only two of the three parts remain, and these are measured separately. The small spots following *a* have all disappeared by Feb. 2.

Group 1581, Jan. 27–28. Two small spots. A third is seen on Jan. 28.

Group 1582, Jan. 27–29. Two small spots, *a* and *b*. A third spot is seen on Jan. 27, and a fourth on Jan. 29.

Group 1583, Jan. 29. A small spot.

Group 1584, Jan. 28–31. Several small spots irregularly distributed. They are measured together on Jan. 29, in two clusters on Jan. 28 and 30, and in three on Jan. 31. On Jan. 29 a small spot is seen following the group at a little distance.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
28d·148	SP, JH	1578*a*	0·337	25·5	324·6	+11·7	14	54	
		1580*a*	0·538	106·6	301·2	−13·9	93	474	
I.		1580	0·561	111·6	300·2	−17·0	2	9	
		1580	0·576	107·7	298·6	−15·1	6	24	
		1580	0·576	104·5	298·3	−13·3	1	29	
		1580	0·613	103·1	295·5	−12·8	0	5	
		1584	0·718	102·9	287·3	−13·4	3	48	
		1584	0·786	101·3	281·1	−12·6	0	12	320 *c*
			0·865	71·8	276·3	+11·7			214
			0·890	102·4	269·8	−13·8			212
			0·964	112·8	257·6	−23·5			200
Jan. 29							(156)	(877)	(2494)
29·552	H, SP	1579*a*	0·890	279·6	16·3	+ 5·7	0	13	
		1585	0·811	259·4	9·0	−12·1	0	13	
		1578*a*	0·353	330·6	324·8	+12·0	6	44	
		1580*a*	0·259	122·7	301·7	−13·9	60	403	
		1580	0·290	125·6	300·5	−15·5	5	23	
		1580	0·300	116·2	298·6	−13·4	0	8	
		1580	0·336	113·7	296·3	−13·4	0	13	
		1584	0·420	111·6	290·9	−14·4	0	11	
		1584	0·423	108·0	290·3	−13·0	0	17	
		1586	0·940	87·1	245·0	+ 0·7	23	86	
Jan. 30							(94)	(631)	(0)
30·187	H, M		0·968	261·3	22·2	− 9·9			376
			0·951	289·2	15·3	+16·2			251
I.			0·838	274·6	2·6	+ 0·5			27
			0·838	285·4	1·0	+ 9·4			111
			0·813	233·9	357·2	−32·5			62
		1579*a*	0·949	278·3	16·7	+ 5·9	0	14	221 *f*
		1585	0·889	258·8	9·4	−12·7	3	20	501 *c*
		1578*a*	0·439	313·5	325·1	+11·7	7	49	
		1580*a*	0·154	148·5	301·5	−13·6	112	433	
		1580	0·189	153·1	301·1	−15·7	5	44	
		1580	0·178	135·2	298·8	−13·3	0	2	
		1580	0·211	129·0	296·5	−13·6	3	21	
		1584	0·274	113·8	291·4	−12·2	0	2	
		1584	0·312	115·6	289·5	−13·6	1	23	
		1584	0·345	115·8	287·6	−14·4	0	3	
		1586	0·883	85·8	244·7	+ 0·8	53	201	1269 *s f*
			0·822	99·8	250·7	−11·6			34
1885.				°	°	°			
30d·187	H, M		0·877	109·5	244·8	−20·0			221
I.			0·980	100·1	227·0	−11·1			105
Jan. 31							(184)	(812)	(3178)
31·387	M, JH		0·957	269·4	3·6	− 2·4			153
			0·924	284·0	356·0	+10·4			82
I.		1585	0·980	258·2	9·8	−12·8	0	21	302 *s*
		1578*a*	0·633	297·4	325·4	+11·9	0	23	
		1580*a*	0·236	235·4	302·0	−13·8	112	501	
		1580	0·177	222·1	297·5	−13·7	1	9	
		1580	0·093	201·0	292·4	−11·2	0	9	
		1580	0·096	184·0	290·9	−11·7	0	3	
		1586	0·716	82·6	245·4	+ 0·9	55	188	615 *s*
		1587	0·920	103·4	223·0	−14·8	31	181	
		1587	0·935	102·3	220·7	−13·7	1	30	348 *c*
		1587	0·954	106·2	217·1	−17·3	0	8	457 *c*
			0·838	118·0	234·8	−26·7			74
			0·911	92·7	224·7	− 5·1			178
			0·946	121·0	219·2	−31·3			146
Feb. 1							(200)	(973)	(2355)
32·457	SP, JH	1580*a*	0·446	252·7	302·3	−13·3	62	458	
		1588	0·365	147·4	264·1	−24·0	0	13	
		1588	0·370	142·6	262·4	−23·2	0	2	
		1586	0·527	77·3	245·7	+ 1·3	39	196	
		1587	0·801	103·2	223·1	−14·3	32	211	
		1587	0·851	106·2	218·0	−17·1	0	37	
Feb. 2							(133)	(917)	(0)
33·220	H, M		0·834	287·4	220·3	+10·7			331
		1580*a*	0·589	255·7	302·2	−13·5	64	422	
M.		1588	0·311	174·3	264·5	−24·2	6	12	
		1588	0·299	165·0	261·6	−23·0	1	20	
		1586	0·365	70·1	246·4	+ 1·2	31	197	
		1589	0·415	88·7	241·9	− 5·2	14	55	
		1589	0·429	91·9	240·9	− 6·5	0	5	
		1589	0·447	86·0	240·0	− 3·9	16	126	
		1589	0·459	90·8	239·0	− 6·0	17	55	
		1589	0·489	84·6	237·4	− 2·5	3	11	
		1589	0·498	88·2	236·6	− 4·6	1	13	
		1587	0·671	106·4	224·6	−15·7	0	12	222 *c*
		1587	0·691	104·3	222·8	−14·4	16	134	

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n*, *s*, *p*, *f*, *c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Jan. 30. Photograph very faint. Spots and faculæ hardly visible.

Feb. 2. Photograph faint. Spots ill-defined.

Group 1585, Jan. 30–Feb. 1. A small faint spot.

Group 1586, Jan. 30–Feb. 10. A regular spot. A very small spot is seen near it on Feb. 6, and another on Feb. 9.

Group 1587, Feb. 1–13. A number of small spots irregularly scattered over a considerable area. The group becomes somewhat more scattered, and the spots decrease in area until they have passed the central meridian on Feb. 7. The following part of the group then rapidly increases in size and becomes more compact, the individual spots coalescing with one another until on Feb. 11 the group consists of three large spots so close together as almost to form a single very large spot. These have broken up by Feb. 13. The preceding part of the group has disappeared by Feb. 11.

Group 1588, Feb. 2–4. Several small spots arranged in two compact clusters.

Group 1589, Feb. 3–11. A large irregular spot surrounded by several small spots. It appears suddenly on the disk, not at the limb. The large spot has broken up by Feb. 5, and the group then consists of a large regular spot, *a*, closely followed by a number of small spots in a long stream. The following spots gradually diminish in size and number, and on Feb. 11 *a* remains alone.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.	Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).						Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1885.				°	°	°				1885.				°	°	°			
33d·220	H, M	1587	0·695	101·7	222·4	−12·7	3	57		36d·173	SP, JH	1587	0·193	146·4	221·1	−15·7	9	46	
M.		1587	0·754	107·0	217·7	−16·9	0	13	370 *c*			1587	0·247	144·6	218·8	−18·0	3	20	
			0·980	109·2	185·3	−20·6			301	I.		1587	0·250	136·7	217·1	−16·9	6	16	
Feb. 3							(172)	(1132)	(1224)			1587	0·295	129·3	213·6	−17·1	0	2	
												1587	0·333	135·0	213·0	−19·9	0	4	
													0·827	112·2	172·0	−22·0			395
34·447	H, SP	1580*a*	0·799	258·2	303·5	−13·3	44	403	135	Feb. 6							(203)	(1099)	(1204)
		1588	0·387	216·6	264·9	−24·2	0	11											
		1588	0·333	211·8	261·2	−22·7	2	23											
		1586	0·150	22·0	247·1	+ 1·6	31	199		37·499	SP, H		0·980	258·6	315·7	−12·4			411
		1589	0·162	79·4	241·1	− 4·7	68	460					0·871	258·0	297·3	−13·7			64
		1589	0·243	79·1	236·5	− 3·6	2	20				1586	0·629	281·3	248·0	+ 1·9	21	149	
		1587	0·452	112·1	224·6	−15·6	0	3				1589*a*	0·559	271·4	244·0	− 4·7	62	362	
		1587	0·482	114·5	223·1	−17·2	1	4				1589	0·502	271·9	240·2	− 4·8	2	54	
		1587	0·477	108·4	222·6	−14·3	13	101				1589	0·486	274·7	239·0	− 3·6	2	15	
		1587	0·513	110·8	220·5	−16·0	0	28				1589	0·469	272·5	238·0	− 4·7	8	77	
		1587	0·550	111·4	218·1	−17·0	4	58				1590	0·391	233·8	229·6	−19·5	3	10	
			0·924	109·5	182·2	−20·4			103			1590	0·409	227·0	228·9	−22·4	3	11	
Feb. 4							(165)	(1310)	(238)			1587	0·290	236·5	224·6	−15·6	0	20	
												1587	0·269	238·6	223·8	−14·5	2	8	
												1587	0·257	234·0	222·5	−15·1	1	6	
35·500	SP, JH	1580*a*	0·916	258·2	303·2	−13·4	47	365	340 *c*			1587	0·247	230·1	221·4	−15·6	12	41	
		1586	0·235	306·6	247·1	+ 1·7	30	164				1587	0·269	208·5	217·9	−20·2	0	4	
		1589	0·090	291·2	241·1	− 4·7	79	460				1587	0·246	196·1	214·3	−20·2	21	168	
		1589	0·038	357·9	236·4	− 4·3	5	13				1587	0·211	198·8	214·2	−18·0	8	88	
		1589	0·059	18·3	235·2	− 3·3	2	11				1591	0·493	55·7	185·8	+10·1	2	8	
		1587	0·269	122·7	222·8	−14·7	11	33					0·897	100·1	145·9	−12·0			160
		1587	0·312	121·6	220·4	−15·7	17	51		Feb. 7							(147)	(1021)	(635)
		1587	0·359	125·0	218·4	−18·1	5	19											
		1587	0·375	120·0	216·5	−16·9	4	27											
Feb. 5							(200)	(1143)	(340)	38·153	H, JH		0·912	290·9	263·7	+16·0			335
													0·870	246·2	261·8	−23·9			210
										I.		1586	0·740	279·3	248·3	+ 2·3	21	172	
36·173	SP, JH	1580	0·981	258·5	307·1	−12·5	29	152				1589*a*	0·679	270·7	244·2	− 4·4	57	329	
		1580	0·969	258·0	303·9	−13·2	22	129	809 *f*			1589	0·626	271·5	240·2	− 4·3	0	27	
I.		1586	0·376	291·9	247·7	+ 2·0	31	164				1589	0·617	273·0	239·5	− 3·4	0	34	
		1586	0·350	302·0	244·6	+ 4·4	0	4				1589	0·590	271·8	237·6	− 4·3	13	79	
		1589*a*	0·287	275·5	244·0	− 4·7	61	352				1590	0·517	242·7	230·5	−19·5	4	35	
		1589	0·261	266·8	242·6	− 7·1	3	8				1590	0·487	237·7	227·6	−21·0	3	21	
		1589	0·214	278·5	239·6	− 4·6	26	126				1587	0·409	248·5	224·6	−14·7	0	30	
		1589	0·202	287·7	238·5	− 3·1	0	4				1587	0·374	244·9	222·0	−15·3	6	32	
		1589	0·167	286·5	236·6	− 3·7	5	36				1587	0·329	231·1	217·1	−18·3	31	99	
		1587	0·157	153·9	223·3	−14·6	7	29				1587	0·301	230·0	215·4	−17·5	1	34	
		1587	0·174	153·2	222·8	−15·4	1	7				1587	0·297	221·5	213·5	−19·3	56	409	

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n*, *s*, *p*, *f*, *c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Feb. 4, 5. Photographs faint. Faculæ ill-defined.

Group 1590, Feb. 7–10. Two small spots on Feb. 7 and 8, but the following spot on Feb. 8 differs considerably in longitude and latitude from the following spot on Feb. 7. Both spots have broken up by Feb. 9, each forming a compact cluster of small spots which are measured together.

Group 1591, Feb. 7–10. Three very small spots in a compact cluster on Feb. 7. These have disappeared by Feb. 8, and three small spots, *a*, *b*, and *c*, are seen. *a* has disappeared by Feb. 9, and another spot, *d*, has appeared in the place of the original cluster. *c* has disappeared by Feb. 10.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued*.

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
38d·153	H, JH	1591*a*	0·393	25·8	191·4	+14·1	2	19	
		1591*b*	0·343	38·1	189·2	+ 9·2	0	13	
I.		1591*c*	0·423	31·7	188·3	+14·6	2	31	
		1592	0·998	94·0	115·0	− 4·4	0	479	675 *c*
			0·859	101·5	141·9	−13·3			269
Feb. 8							(196)	(1843)	(1489)
39·480	SP, JH		0·936	250·2	254·3	−20·9			249
		1586	0·909	275·7	248·6	+ 2·4	15	145	
		1586	0·889	275·5	246·1	+ 1·7	0	9	500 *c*
		1589*a*	0·867	269·0	244·1	− 4·3	47	304	
		1589	0·814	270·6	238·5	− 3·5	6	51	375 *c*
		1590	0·751	248·8	232·2	−20·3	6	49	
		1590	0·697	245·9	227·1	−21·5	0	52	
		1587	0·636	254·4	223·3	−15·0	11	29	
		1587	0·615	250·4	221·3	−17·2	0	12	
		1587	0·557	247·3	216·7	−18·1	48	268	
		1587	0·531	242·0	214·0	−20·3	9	87	
		1587	0·488	242·7	211·3	−18·9	59	209	
		1591*b*	0·291	342·3	189·2	+ 9·3	0	26	
		1591*c*	0·376	351·0	187·6	+15·0	0	6	
		1591*d*	0·296	355·2	185·5	+10·4	3	19	
		1592*a*	0·917	92·3	117·5	− 4·8	19	238	661 *c*
		1592*b*	0·934	94·6	114·7	− 6·7	16	186	
			0·781	99·6	132·5	−11·7			82
			0·971	92·0	107·9	− 3·6			344
Feb. 9							(239)	(1690)	(2211)
40·509	SP, JH	1586	0·977	273·8	247·5	+ 2·3	16	116	
		1589*a*	0·957	268·0	243·6	− 3·9	47	375	
		1589	0·923	268·9	237·8	− 3·6	0	24	618 *c*
		1590	0·887	251·3	233·3	−19·7	1	13	
		1590	0·825	248·8	225·8	−21·2	5	29	203 *c*
		1587	0·807	256·4	224·5	−14·9	0	6	
		1587	0·775	254·2	221·2	−16·5	0	6	
		1587	0·727	251·1	216·6	−18·3	77	198	
		1587	0·677	249·0	212·2	−19·0	48	409	
		1591*b*	0·415	310·1	189·1	+ 9·1	0	20	
		1591*d*	0·390	318·5	185·6	+10·4	0	15	
		1592*a*	0·799	91·9	117·3	− 5·6	36	213	
		1592*b*	0·830	93·7	114·1	− 6·8	39	181	
		1592	0·891	91·8	107·3	− 4·7	0	12	332 *c*
1885.				°	°	°			
40d·509	SP, JH	1593*a*	0·989	85·0	89·8	+ 3·9	13	174	339 *e*
			0·886	90·8	108·0	− 3·9			111
			0·990	110·1	86·9	−20·8			236
Feb. 10							(282)	(1791)	(1839)
41·191	SP, JH	1589*a*	0·992	267·1	244·2	− 3·7	39	487	1411*n f*
		1587	0·825	252·8	217·1	−18·0	44	246	
I.		1587	0·788	250·5	213·2	−19·5	3	108	
		1587	0·767	250·2	211·1	−19·5	28	307	941*c&p*
		1592*a*	0·695	91·3	117·3	− 5·8	25	278	
		1592*b*	0·734	93·1	114·0	− 6·9	20	183	354 *c*
		1593*a*	0·957	83·9	89·1	+ 3·8	24	248	906*c&f*
		1594	0·964	109·5	85·6	−20·6	4	91	543*c&n*
			0·812	91·0	107·1	− 4·8			255
Feb. 11							(187)	(1948)	(4410)
42·545	SP, JH	1587	0·949	252·7	216·1	−18·6	22	214	
		1587	0·928	251·0	212·4	−20·1	1	13	
		1587	0·912	251·2	209·9	−19·9	8	64	578 *c*
		1592*a*	0·432	88·9	118·0	− 5·7	41	314	
		1592*b*	0·491	91·1	114·1	− 6·5	41	166	
		1595	0·739	104·9	95·9	−15·6	3	12	
		1595	0·764	104·9	93·7	−15·8	0	8	
		1595	0·795	104·4	90·8	−15·6	0	8	
		1595	0·797	105·8	90·6	−16·7	0	6	62 *c*
		1593*a*	0·817	80·1	90·0	+ 4·0	56	315	
		1593	0·863	81·0	85·1	+ 4·3	6	26	385 *c*
		1594	0·829	110·3	87·7	−20·6	7	35	118 *c*
		1594	0·885	110·2	81·0	−21·1	11	36	105 *c*
		1596*a*	0·940	77·7	75·4	+ 9·1	9	68	
		1596	0·959	79·4	71·6	+ 8·1	0	17	348 *c*
			0·956	70·3	73·9	+16·6			83
			0·956	112·4	69·6	−23·3			207
Feb. 12							(205)	(1302)	(1878)
43·288	H, M		0·968	235·6	210·5	−34·9			85
			0·862	289·6	190·2	+13·1			217
I.		1587	0·994	252·5	219·3	−18·1	0	89	
		1587	0·992	251·0	218·7	−19·7	0	41	
		1587	0·987	253·2	216·2	−17·7	0	43	

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n, s, p, f, c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

February 9, 10. Photographs faint, faculæ ill-defined.

Group 1592, Feb. 8–20. A large irregular spot, *a*, closely followed by a large regular spot, *b*. *a* has broken up by Feb. 13 forming two spots, *c* a regular spot, and *d* an irregular spot with several umbræ. *d* breaks up yet further, and diminishes in size on the succeeding days, but remaining a compact cluster is measured as a single spot. It has disappeared by Feb. 17. On Feb. 16 and the succeeding days, the group is almost entirely made up of the two large regular spots, *b* and *c*. Two or three very small spots are seen in the neighbourhood of the large spots on Feb. 10, 15, and 19.

Group 1593, Feb. 10–22. A large regular spot, *a*. A small spot is seen near it on Feb. 12, and another on Feb. 14.

Group 1594, Feb. 11–22. This group undergoes frequent and striking changes. On Feb. 11 it is an ill-defined spot. On Feb. 12 two close clusters of small spots. On Feb. 13 three spots. On Feb. 14 other small spots are also seen. On Feb. 15 two large clusters of spots. On Feb. 16 a long stream of spots following each other so closely as almost to form a single spot. The preceding spot, *a*, is the largest and best defined. By Feb. 17 the stream has begun to break up, the last spot, *b*, has become clearly isolated by Feb. 18, the centre spots fade away on the succeeding days, and by Feb. 20 only *a* and *b* remain.

Group 1595, Feb. 12–17. A stream of small spots. The spots change in number and area from day to day.

Group 1596, Feb. 12–23. A regular spot, *a*, followed by a few small scattered spots.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
43d·288	H, M	1587	0·980	250·6	213·8	−20·3	0	13	
		1587	0·972	251·6	211·5	−19·4	0	14	738 *c*
I.		1597*a*	0·345	243·1	152·4	−15·4	0	14	
		1592*c*	0·252	87·4	119·3	− 6·0	22	98	
		1592*d*	0·284	87·2	117·4	− 5·8	21	147	
		1592*b*	0·336	90·9	114·2	− 6·7	33	161	
		1595	0·602	106·9	97·3	−15·6	2	23	
		1595	0·646	107·5	94·1	−16·5	0	10	
		1595	0·682	107·6	91·3	−16·9	0	92	
		1593*a*	0·704	77·9	90·5	+ 3·6	55	325	
		1594	0·712	114·6	89·8	−22·1	4	37	
		1594	0·737	112·2	87·2	−20·9	0	4	94 *c*
		1594	0·801	111·6	81·0	−21·3	7	34	169 *c*
		1598	0·769	78·6	85·0	+ 4·3	0	3	
		1598	0·774	79·8	84·3	+ 3·5	0	2	299 *c*
		1596*a*	0·865	76·3	76·0	+ 8·2	19	111	329 *n*
		1596	0·898	77·4	71·8	+ 8·1	0	4	333 *c*
		1596	0·919	76·9	69·1	+ 9·2	0	15	
			0·891	114·5	70·8	−24·9			175
Feb. 13							(163)	(1332)	(2439)
44·330	SP, JH		0·948	286·4	188·9	+13·1			171
			0·907	254·6	185·9	−16·9			233
I.		1597	0·571	251·8	154·3	−16·0	1	9	
		1597	0·549	250·8	152·7	−16·3	4	12	
		1597*a*	0·532	252·7	151·7	−15·0	7	32	
		1597	0·527	249·9	151·0	−16·3	0	4	
		1597	0·525	247·3	150·5	−17·6	0	4	
		1597	0·510	252·2	150·1	−15·0	0	2	
		1592*c*	0·023	53·8	119·0	− 6·2	12	93	
		1592*d*	0·053	72·6	117·2	− 6·0	13	154	
		1592*b*	0·098	88·5	114·5	− 6·7	34	172	
		1595	0·384	114·8	99·0	−15·7	6	27	
		1595	0·410	114·0	97·2	−16·0	0	5	
		1595	0·456	112·5	94·2	−16·3	0	10	
		1595	0·498	111·6	91·3	−16·6	0	25	
		1593*a*	0·509	71·5	91·3	+ 3·2	38	239	
		1593	0·540	74·8	88·8	+ 2·3	0	10	
		1594	0·535	121·8	90·8	−22·4	8	41	
		1594	0·539	117·1	89·5	−20·1	0	6	
		1594	0·547	119·8	89·5	−21·7	0	5	
		1594	0·588	119·0	86·5	−22·3	3	8	
		1594	0·611	112·6	83·6	−19·1	0	4	
		1594	0·655	114·6	80·6	−21·2	1	6	79 *c*
1885.				°	°	°			
44d·330	SP, JH	1598	0·596	71·2	85·7	+ 5·4	0	17	
		1598	0·627	71·7	83·5	+ 5·8	1	23	128 *c*
I.		1596*a*	0·717	71·4	76·9	+ 8·2	12	116	115 *c*
		1596	0·805	73·5	68·9	+ 8·9	3	9	
		1596	0·831	72·6	66·6	+10·3	0	4	179 *c*
			0·737	115·3	73·8	−23·2			55
			0·929	72·4	54·7	+13·5			379
			0·990	90·5	38·3	− 1·6			953
Feb. 14							(143)	(1037)	(2292)
45·158	JH, M		0·988	282·8	188·5	+11·4			108
			0·969	254·2	185·9	−17·0			106
I.			0·891	251·1	172·8	−20·0			82
		1597	0·700	254·4	153·6	−15·8	0	13	
		1597*a*	0·674	255·2	151·4	−15·0	5	38	
		1597	0·640	252·9	148·7	−16·2	3	25	
		1599*a*	0·506	251·1	138·9	−15·4	0	3	
		1599*b*	0·453	246·4	134·9	−16·7	0	4	
		1592*c*	0·177	273·3	119·5	− 6·2	11	77	
		1592*d*	0·176	288·7	118·9	− 3·6	0	2	
		1592*a*	0·145	274·6	117·6	− 6·2	0	48	
		1592*b*	0·100	272·7	115·0	− 6·6	26	163	
		1592	0·081	243·2	113·5	− 9·0	0	4	
		1592	0·060	272·8	112·7	− 6·7	0	1	
		1595	0·223	135·1	99·9	−15·9	4	11	
		1595	0·251	128·4	97·6	−15·7	0	3	
		1595	0·267	125·8	96·4	−15·7	0	1	
		1595	0·288	124·8	95·1	−16·1	0	1	
		1593*a*	0·343	59·8	92·1	+ 3·5	44	269	
		1594	0·392	133·2	91·4	−22·1	12	105	
		1594	0·457	125·8	85·9	−21·8	22	177	
		1598	0·480	63·5	83·8	+ 6·1	0	15	
		1598	0·484	66·9	82·9	+ 4·8	2	16	
		1596*a*	0·572	64·8	77·9	+ 8·2	30	153	
		1596	0·640	64·7	73·4	+10·6	4	9	
		1596	0·681	68·7	69·5	+ 9·1	0	12	
		1600*a*	0·920	90·6	42·4	− 3·3	0	5	
		1600	0·946	92·1	38·1	− 4·2	0	7	575 *n*
			0·839	69·7	55·7	+12·8			95
			0·887	127·3	48·7	−36·1			56
			0·979	102·3	30·0	−13·4			162
Feb. 15							(163)	(1162)	(1184)

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n, s, p, f, c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 1597, Feb. 13–17. A small spot, *a*. Other small spots are seen near it on Feb. 14 and 15, and form with it an irregular scattered group.

Group 1598, Feb. 13–15. The group consists of two small spots on each day on which it is seen, but it is not clear that the spots are the same on each day.

Group 1599, Feb. 15–17. Two small spots, *a* and *b*. *b* has disappeared by Feb. 17.

Group 1600, Feb. 15–16. Three very small spots. Two of these are measured together on Feb. 15. One member of this pair has disappeared by Feb. 16, and another spot has broken out.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
46d·151	H, SP		0·943	248·8	167·8	−22·3			165
		1597	0·861	256·8	156·2	−14·9	3	36	
I.		1597	0·854	258·0	155·3	−13·9	0	6	
		1597	0·840	255·4	153·8	−16·1	2	5	
		1597	0·836	253·5	153·2	−17·6	0	6	
		1597*a*	0·821	256·7	151·8	−14·9	5	42	
		1597	0·786	254·5	148·2	−16·5	4	25	196 *c*
		1599*a*	0·662	254·4	137·5	−15·6	5	14	
		1599*b*	0·618	252·9	134·0	−16·0	5	11	
		1592*c*	0·392	270·4	119·3	− 6·3	14	78	
		1592*d*	0·363	271·8	117·5	− 5·9	0	21	
		1592*b*	0·323	270·6	115·1	− 6·5	24	179	
		1595	0·176	204·5	100·5	−16·2	0	9	
		1595	0·150	191·2	97·9	−15·4	0	3	
		1593*a*	0·191	20·2	92·4	+ 3·3	36	262	
		1594*a*	0·256	165·3	92·2	−21·3	19	154	
		1594	0·298	158·6	89·4	−23·0	6	9	
		1594	0·295	141·9	85·1	−20·3	2	20	
		1594	0·322	145·2	84·8	−22·1	35	345	
		1596*a*	0·394	49·2	78·7	+ 8·2	24	147	
		1596	0·427	55·5	75·5	+ 7·4	2	6	
		1596	0·456	52·3	74·8	+ 9·6	0	5	
		1596	0·453	56·9	73·8	+ 7·8	0	2	
		1596	0·473	56·3	72·8	+ 8·8	2	8	
		1601*a*	0·442	100·0	70·0	−10·7	2	11	
		1601	0·461	102·4	68·9	−11·9	0	2	
		1601	0·477	100·3	67·8	−11·0	0	9	
		1600*a*	0·804	88·9	42·8	− 3·3	0	4	
		1600	0·825	86·9	40·9	− 1·5	0	3	
		1600	0·832	89·9	39·9	− 3·9	0	3	
		1602	0·889	89·3	33·6	− 2·6	0	3	550 *c*
			0·923	101·8	28·1	−13·6			671
			0·963	76·0	24·0	+11·4			310
Feb. 16							(190)	(1428)	(1892)
47·371	M, JH	1597	0·959	256·6	154·5	−14·8	6	38	366 *c*
		1599*a*	0·861	256·8	140·0	−14·9	0	10	202 *c*
I.		1592*c*	0·642	269·0	120·0	− 6·0	16	81	
		1592*b*	0·583	269·7	115·7	− 5·9	31	168	
		1595	0·363	244·3	99·8	−15·7	0	7	
		1593*a*	0·292	308·8	93·1	+ 3·7	50	279	
		1594*a*	0·318	221·4	92·9	−20·6	34	138	
		1594	0·311	214·4	90·8	−21·7	11	64	

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
47d·371	M, JH	1594	0·326	210·4	90·3	−23·2	0	11	
		1594	0·291	209·2	88·7	−21·6	7	87	
I.		1594	0·248	213·1	88·2	−18·9	0	3	
		1594	0·268	193·0	83·7	−22·0	36	219	
		1596*a*	0·270	0·1	80·0	+ 8·6	34	155	
		1596	0·295	13·5	76·0	+ 9·6	0	17	
		1596	0·307	24·0	72·8	+ 9·3	3	16	
		1601*a*	0·165	110·6	71·0	−10·2	4	48	
		1601	0·220	116·4	68·4	−12·5	2	12	
		1601	0·224	111·7	67·8	−11·6	0	3	
		1601	0·243	107·5	66·4	−11·0	3	16	
		1602	0·729	87·8	33·3	− 3·2	0	6	
			0·928	58·3	18·8	+25·9			40
			0·898	81·8	17·2	+ 4·2			70
			0·910	98·7	13·9	−10·8			214
			0·966	89·7	5·1	− 1·6			81
Feb. 17							(237)	(1386)	(973)
48·490	H, SP	1592*c*	0·813	266·6	119·9	− 6·9	3	40	
		1592*b*	0·770	267·8	115·8	− 6·2	12	149	
		1603	0·633	296·8	100·3	+10·8	0	8	
		1593*a*	0·498	290·3	93·1	+ 3·7	29	203	
		1594*a*	0·498	239·5	92·5	−20·9	25	150	
		1594	0·479	236·8	90·7	−21·5	10	81	
		1594	0·437	232·5	87·1	−21·9	0	20	
		1594	0·407	229·9	84·8	−21·7	6	45	
		1594*b*	0·384	225·1	82·3	−22·4	19	158	
		1596*a*	0·371	316·3	80·3	+ 8·8	27	136	
		1596	0·348	324·3	77·1	+ 9·5	0	4	
		1596	0·328	326·2	75·9	+ 8·9	2	19	
		1596	0·307	337·6	72·1	+ 9·5	3	36	
		1601*a*	0·130	248·9	72·3	− 9·6	16	99	
		1601	0·070	243·6	68·9	− 8·8	0	5	
		1601	0·070	193·3	66·2	−10·9	0	5	
Feb. 18							(152)	(1150)	(0)
49·146	H, SP		0·981	255·7	136·7	−15·4			328
		1592*c*	0·894	266·0	120·4	− 6·8	6	40	
I.		1592*b*	0·862	267·2	116·4	− 6·0	25	136	
		1592	0·854	269·2	115·4	− 4·4	0	3	520 *c*
		1604*a*	0·800	281·9	108·3	+ 5·1	2	20	
		1604*b*	0·792	284·0	107·2	+ 6·6	0	27	

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The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Feb. 17, 18. Photographs faint, faculæ ill-defined.

Group 1601, Feb. 16–23. A small regular spot, *a*, on Feb. 16, followed by several very small spots. *a* increases in size on the succeeding days. The small spots which follow it undergo constant changes, and have all disappeared by Feb. 22.

Group 1602, Feb. 16–17. A very small spot on Feb. 16. A close pair of very small spots on Feb. 17.

Group 1603, Feb. 18. A small spot.

Group 1604, Feb. 19–20. Two small spots, *a* and *b*, on Feb. 19. Only *a* is seen on Feb. 20.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued*.

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.	Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).						Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1885.				°	°	°				1885.				°	°	°			
49d·146	H, SP	1593*a*	0·622	285·4	93·5	+ 3·8	46	243		51d·433	SP, JH	1593*a*	0·927	277·2	93·7	+ 3·9	39	184	263 *c*
		1594*a*	0·610	244·5	92·7	−21·0	23	131				1594*a*	0·908	249·8	92·6	−21·3	20	181	
I.		1594	0·585	243·0	90·6	−21·3	4	69				1594*b*	0·825	248·4	82·2	−21·8	9	44	376 *c*
		1594	0·541	240·2	86·9	−21·7	0	8				1596*a*	0·831	285·2	80·7	+ 8·5	18	60	76 *c*
		1594	0·522	238·8	85·3	−21·9	0	8				1601*a*	0·731	263·6	74·0	− 9·6	26	142	
		1594*b*	0·489	236·4	82·6	−22·0	13	140				1601	0·659	261·1	68·1	−11·2	0	12	
		1596*a*	0·479	302·8	80·6	+ 8·5	19	150				1606	0·078	200·0	28·3	−11·3	0	3	
		1596	0·441	305·1	78·0	+ 8·1	0	19				1606	0·055	208·3	28·2	− 9·9	1	5	
		1596	0·430	309·7	76·2	+ 9·2	0	21				1606*a*	0·038	195·4	27·3	− 9·2	0	4	
		1596	0·384	314·4	72·7	+ 8·8	0	4				1606	0·079	140·1	23·8	−10·6	0	5	
		1596	0·385	319·1	71·5	+10·0	3	13				1606	0·095	146·2	23·6	−11·6	0	4	
		1601*a*	0·284	259·2	73·1	− 9·9	11	119				1607*a*	0·507	77·1	357·2	+ 0·3	17	113	
		1601	0·232	250·7	69·5	−11·3	4	28				1608*a*	0·755	96·3	337·4	− 9·4	11	39	
		1601	0·182	247·7	66·5	−11·0	0	4				1608*b*	0·804	96·5	332·8	− 9·5	0	4	88 *c*
			0·896	88·2	353·3	− 1·6			424				0·956	75·8	316·0	+11·3			134
			0·914	75·7	352·9	+10·0			234				0·970	103·3	309·6	−14·6			241
			0·993	98·1	332·8	− 8·9			435	Feb. 21							(141)	(800)	(1526)
Feb. 19							(156)	(1183)	(1941)										
										52·203	SP, JH		0·906	198·4	58·5	−64·8			62
50·216	H, SP		0·907	234·7	106·9	−34·9			91			1593*a*	0·980	275·5	94·0	+ 3·9	37	374	610*c&n*
		1592*b*	0·956	265·6	115·9	− 6·3	18	133	917 *c*	I.		1594*a*	0·970	249·4	93·7	−21·6	10	185	
M.		1604*a*	0·925	278·4	109·1	+ 5·0	0	31	285 *nf*			1594*b*	0·908	248·9	82·2	−22·1	0	18	963*c&f*
		1605	0·862	254·5	102·6	−16·9	0	5	469 *c*			1596*a*	0·917	282·4	81·1	+ 8·4	15	70	308 *c*
		1593*a*	0·781	280·7	92·7	+ 3·8	48	221	169 *c*			1601*a*	0·844	263·4	74·4	− 9·4	26	132	135 *c*
		1594*a*	0·760	247·8	91·5	−21·4	28	178	620 *c*			1606*a*	0·188	255·6	27·0	− 9·6	13	45	
		1594*b*	0·652	244·2	81·7	−22·0	12	83				1606	0·154	245·9	24·6	−10·6	7	51	
		1596*a*	0·650	291·7	80·1	+ 8·3	18	81	144 *c*			1607*a*	0·344	71·7	357·4	− 0·5	12	169	
		1596	0·619	291·7	77·9	+ 7·4	0	13				1608*a*	0·628	96·4	337·3	− 9·5	4	36	
		1596	0·604	294·2	76·3	+ 8·4	0	12				1608*b*	0·686	96·2	332·8	− 9·4	0	21	128 *c*
		1601*a*	0·502	262·6	72·8	− 9·9	29	120					0·960	101·6	301·8	−13·1			608
		1601	0·437	258·2	68·4	−11·5	8	25		Feb. 22							(124)	(1101)	(2814)
		1606	0·269	101·6	27·2	− 9·9	4	12											
		1607*a*	0·709	80·8	358·3	+ 1·5	0	10	} 323 *c*										
		1607	0·714	83·8	357·6	− 0·7	4	21		53·511	H, JH		0·965	250·1	75·5	−21·1			344
		1607	0·746	84·4	354·9	− 0·7	0	16					0·868	289·5	56·2	+13·0			91
		1608*a*	0·912	97·4	336·3	− 9·6	11	56	513*c&f*			1596*a*	0·989	279·2	79·4	+ 8·0	0	120	304 *nf*
			0·729	24·6	21·0	+34·9			60			1601*a*	0·958	262·2	73·3	− 9·5	8	71	269 *sf*
			0·833	73·6	348·7	+ 9·5			382			1606*a*	0·473	261·5	27·6	−10·4	17	116	
			0·963	75·8	330·4	+11·6			22			1606	0·438	261·3	25·3	−10·3	2	17	
Feb. 20							(180)	(1017)	(3804)			1606*b*	0·411	259·2	23·5	−11·0	11	116	
												1607	0·133	354·0	0·1	+ 0·4	0	2	
51·433	SP, JH		0·986	280·1	105·5	+ 8·6			145			1607	0·115	5·6	358·7	− 0·7	2	28	
			0·887	280·8	87·7	+ 6·2			203			1607	0·152	12·8	357·4	+ 1·3	2	10	

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The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 1605. Feb. 20. A very small spot.

Group 1606. Feb. 20–26. A small spot on Feb. 20; five very small spots on Feb. 21; four small spots, three of which are measured together, on Feb. 22. Two of these four spots, *a* and *b*, have greatly increased in size by Feb. 23. A few very small spots, measured together, are seen between them on that day. The group undergoes yet further changes on the succeeding days.

Group 1607. Feb. 20–24. A spot, *a*, of very irregular shape on Feb. 20, with two small spots near it. These latter have disappeared by Feb. 21. *a* has broken up into a number of small spots by Feb. 23. Only one spot remains on Feb. 24.

Group 1608, Feb. 20–25. A single spot, *a*, on Feb. 20. A second spot, *b*, has appeared by Feb. 21, and has disappeared by Feb. 25.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
53d.511	H, JH	1607	0·128	14·7	357·5	− 0·1	0	8	
		1608*a*	0·354	97·9	338·6	− 9·5	5	12	
		1608*b*	0·433	97·0	333·6	− 9·5	0	7	
		1609*a*	0·904	93·0	294·4	− 5·8	0	23	143 *s f*
			0·840	107·7	301·9	−18·7			52
			0·901	102·4	294·3	−14·3			377
Feb. 23							(47)	(530)	(1580)
54·451	SP, JH		0·983	260·9	67·2	−10·3			144
			0·952	285·4	56·6	+12·3			238
			0·817	271·9	43·1	+11·3			179
		1606*a*	0·656	262·4	28·1	−10·4	13	109	
		1606	0·618	263·5	25·3	− 9·7	0	34	
		1606	0·603	259·4	24·1	−12·1	5	30	
		1606*b*	0·592	261·7	23·3	−10·7	15	110	195 *c*
		1607	0·241	311·2	357·3	+ 2·0	1	5	
		1608*a*	0·144	105·5	338·9	− 9·3	2	15	
		1608*b*	0·222	97·1	334·1	− 8·6	0	3	
		1609*a*	0·784	91·4	295·1	− 5·6	4	13	
		1609*b*	0·799	91·6	293·7	− 5·6	0	7	
		1609*c*	0·827	94·0	290·8	− 7·4	0	5	436 *c&s*
		1610	0·949	69·9	278·8	+16·5	0	23	171 *c*
Feb. 24							(40)	(354)	(1363)
55·167	H, JH		0·920	258·3	45·1	−13·6			60
			0·896	272·2	40·7	− 1·3			532
I.		1606*a*	0·777	261·9	28·7	−10·8	6	74	
		1606	0·738	263·1	25·3	−10·0	2	54	
		1606*b*	0·720	261·0	23·7	−11·4	7	109	596 *c*
		1611	0·615	279·1	14·6	− 0·2	0	23	
		1608*a*	0·050	216·3	339·1	− 9·5	0	8	
		1609*a*	0·664	90·3	295·7	− 5·6	3	13	
		1609*b*	0·687	93·3	293·8	− 7·5	0	3	
		1610	0·888	67·8	278·8	+15·9	0	21	532 *f*
Feb. 25							(18)	(305)	(1720)
56·159	SP, M		0·962	268·1	38·6	− 3·9			78
			0·949	281·9	34·1	+ 8·9			49
I.			0·894	289·6	24·3	+13·9			44
			0·865	283·6	22·2	+ 8·0			96
			0·889	308·2	17·2	+29·1			75
1885.									
56d.159	SP, M	1606*a*	0·901	261·1	29·1	−11·1	12	22	} 572 *c*
		1606	0·863	259·6	24·5	−12·6	0	6	
I.		1606*b*	0·852	261·1	23·2	−11·4	0	16	
		1609*a*	0·460	87·8	296·9	− 5·4	0	5	
		1609*c*	0·536	92·0	291·8	− 7·2	0	3	
		1610	0·770	62·1	279·4	+16·0	2	16	174 *f*
		1612*a*	0·982	91·5	245·1	− 2·9	53	310	
			0·907	103·8	258·5	−15·5			43
			0·960	90·6	250·6	− 2·7			65
Feb. 26							(67)	(378)	(1196)
57·207	H, JH		0·963	259·4	25·7	−12·1			1106
			0·957	280·8	22·0	+ 8·1			101
I.			0·943	289·9	17·6	+16·0			77
			0·905	273·1	14·9	− 0·4			176
			0·941	305·0	12·7	+29·5			95
		1610	0·627	53·1	279·2	+15·9	0	3	
		1612*a*	0·907	89·8	245·5	− 2·9	51	264	305 *c*
		1612	0·959	94·6	236·6	− 6·5	13	53	} 675 *f*
		1612	0·960	92·6	236·5	− 4·6	0	10	
		1613*a*	0·981	71·9	234·4	+16·3	1	21	334 *n*
		1614	0·982	107·8	229·8	−18·8	8	25	1204 *c*
			0·829	88·6	254·6	− 2·9			69
			0·869	257·8	249·6	−14·1			140
			0·913	67·7	248·7	+16·9			207
Feb. 27							(73)	(376)	(4489)
58·216			0·958	255·9	11·6	−15·5			370
			0·962	284·7	9·0	+12·0			205
I.	H, JH		0·869	273·9	357·1	− 0·2			583
		16 0	0·484	40·6	278·3	+14·7	0	5	
		1610	0·532	40·9	275·9	+17·0	2	8	
		1612*a*	0·777	88·5	246·3	− 3·4	39	269	204 *c*
		1612	0·838	92·1	240·1	− 5·7	5	28	
		1612	0·854	93·7	238·3	− 7·0	10	46	
		1612	0·873	92·1	236·2	− 5·4	0	22	198 *c*
		1613*b*	0·903	69·3	236·3	+15·2	10	52	
		1613*a*	0·918	69·1	234·3	+15·9	0	6	
		1614	0·902	102·2	232·1	−14·1	0	12	} 607 *c*
		1614	0·899	108·8	232·5	−20·0	16	141	
		1614	0·929	110·9	228·1	−22·0	20	130	
		1615	0·945	68·6	230·1	+17·5	0	23	487 *c*

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The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Feb. 25. The limb is marked only by a faint outline.

Feb. 26. The limb is marked only by a faint outline, the faintness extending in some places to a considerable distance within the limb.

Feb. 28. Limb rugged.

Group 1609, Feb. 23–26. A small spot, *a*, on Feb. 23. Two other small spots, *b* and *c*, have appeared by Feb. 24.

Group 1610, Feb. 24–28. A small spot. A second is seen near it on Feb. 28.

Group 1611, Feb. 25. A small spot.

Group 1612, Feb. 26–March 9. A large regular spot, *a*, on Feb. 26. On Feb. 27 several small spots are seen *s f* of *a*. These increase in number and size on the succeeding days, and approach *a*. On March 3 and the succeeding days some small spots are seen *n p* of *a*. *a* diminishes in size from day to day, but the preceding spots of the stream *s f* of *a* have coalesced by March 5 to form a large regular spot, *b*.

Group 1613, Feb. 27–March 4. A small spot, *a*, on Feb. 27. A second, *b*, is seen on Feb. 28. *a* has disappeared by March 1.

Group 1614, Feb. 27–March 11. A small spot on Feb. 27. This has greatly increased in size by Feb. 28, another spot of about the same area has appeared following it, and a small spot north of it. The group rapidly increases in size on the succeeding days, and forms two irregular streams of spots which together enclose an immense area. The leading spot, *a*, of the northern stream has become a regular spot by March 2, and increases in size on the following days. The preceding spots of the southern stream have coalesced to form a large irregular spot, *b*, by March 5. This spot has, however, divided into two spots by March 8, and re-combined by March 9. The two streams have become intermingled by March 6, and the entire group undergoes continual changes.

Group 1615, Feb. 28–March 5. A small spot. A second is seen near it on March 5, and is measured with it.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.	Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).						Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
				°	°	°								°	°	°			
1885.										1885.									
58d·216	H, JH		0·843	81·4	240·8	+ 3·3			88	61d·161	H, SP	1612	0·248	61·4	245·9	— 0·4	0	2	
			0·921	92·1	230·0	— 4·7			562			1612	0·234	84·0	244·9	— 5·8	4	14	
I.			0·921	109·2	229·3	—20·4			274	I.		1612	0·250	79·8	244·2	— 4·6	0	11	
Feb. 28							(102)	(742)	(3578)			1612	0·259	83·5	243·5	— 5·4	1	13	
												1612	0·288	82·3	241·8	— 4·8	3	9	
59·442	H, JH	1612*a*	0·572	84·3	246·5	— 2·7	22	234	67 *c*			1612	0·324	87·0	239·5	— 5·9	0	6	
		1612	0·622	89·9	242·6	— 5·6	6	26				1612	0·344	86·8	238·3	— 5·8	1	40	
		1612	0·669	90·9	239·0	— 5·9	5	19				1613*b*	0·512	42·7	237·4	+15·3	5	17	
		1612	0·689	90·7	237·4	— 5·7	6	73				1614*a*	0·391	108·0	236·0	—13·7	39	248	
		1613*b*	0·768	62·5	236·2	+15·7	10	60				1614	0·444	118·4	234·1	—18·9	8	44	
		1614	0·736	102·0	233·5	—13·7	18	159				1614	0·438	113·3	233·7	—16·6	0	7	
		1614	0·741	109·4	233·5	—19·2	13	82				1614	0·460	116·7	232·8	—18·5	0	16	
		1614	0·795	105·6	228·2	—16·7	11	110				1614	0·469	119·1	232·7	—19·7	4	15	
		1614	0·802	111·1	227·9	—21·2	7	68	310 *c*			1614	0·482	120·1	232·1	—20·5	0	7	
		1615	0·843	62·7	229·2	+18·4	16	40	386 *c*			1614	0·507	116·6	229·8	—19·5	2	28	
			0·783	92·0	229·4	— 6·0			135			1614	0·488	106·3	229·6	—14·3	25	73	
			0·911	109·8	214·7	—21·0			478			1614	0·526	120·3	229·3	—21·7	0	12	
			0·967	126·4	204·3	—37·0			77			1614	0·531	109·8	227·1	—16·6	12	52	
Mar. 1							(114)	(871)	(1453)			1614	0·571	117·6	225·6	—21·5	11	124	
												1615	0·654	48·2	227·4	+19·6	9	27	
60·581	H, SP		0·942	281·2	334·7	+ 8·0			73								(158)	(970)	(861)
			0·905	305·5	322·2	+27·7			46	Mar. 3									
		1616	0·482	29·2	251·8	+17·8	0	5											
		1612*a*	0·343	78·2	246·4	— 2·9	18	193		62·456	SP, JH		0·908	255·1	307·3	—16·6			447
		1612	0·365	87·0	244·6	— 5·7	0	15				1617	0·294	245·6	257·3	—14·0	35	179	
		1612	0·461	89·4	238·5	— 6·2	4	36				1617	0·281	236·5	255·4	—16·0	0	5	
		1613*b*	0·601	51·4	236·9	+15·6	4	51				1612	0·187	311·4	249·3	— 0·2	0	6	
		1614*a*	0·514	104·6	235·3	—13·7	29	259				1612	0·156	311·5	248·0	— 1·4	0	24	
		1614	0·555	111·6	233·3	—18·0	5	71				1612*a*	0·132	311·3	247·0	— 2·3	26	130	
		1614	0·589	114·7	231·4	—20·3	0	26				1612	0·094	293·6	246·2	— 5·2	11	100	
		1614	0·587	104·0	230·2	—14·1	5	31				1612	0·045	328·2	242·7	— 5·1	5	37	
		1614	0·619	114·2	229·0	—20·6	0	4				1612	0·067	350·8	241·9	— 3·6	3	21	
		1614	0·627	107·6	227·6	—16·6	10	103				1613*b*	0·392	6·1	238·8	+15·6	0	14	
		1614	0·657	114·7	226·3	—21·5	6	132				1614	0·131	141·6	236·5	—13·1	36	270	
		1615	0·722	53·9	227·9	+19·5	7	39				1614	0·238	151·2	234·4	—19·2	31	130	
			0·794	113·1	213·9	—22·7			685			1614	0·202	144·2	234·2	—16·7	0	7	
			0·868	79·5	207·2	+ 5·4			119			1614	0·164	131·8	234·1	—13·5	3	22	
			0·907	126·9	201·9	—36·4			94			1614	0·194	130·1	232·5	—14·4	0	3	
Mar. 2							(88)	(965)	(1017)			1614	0·180	119·7	232·1	—12·3	0	6	
												1614	0·269	145·0	231·9	—19·9	3	59	
61·161	H, SP		0·968	285·8	331·3	+13·3			212			1614	0·306	139·8	229·2	—20·6	11	108	
			0·849	288·2	313·5	+11·2			315			1614	0·257	126·9	229·0	—16·0	0	34	
I.			0·732	264·0	305·8	— 9·4			334			1614	0·239	120·0	229·0	—14·0	7	61	
		1612	0·219	58·1	247·7	— 0·6	0	5				1614	0·282	124·8	227·4	—16·3	18	37	
		1612*a*	0·222	69·8	246·4	— 2·8	34	200				1614	0·356	133·2	225·2	—21·1	16	94	

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column, it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n, s, p, f, c,* denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

March 2. Photograph faint, spots ill-defined.

March 3. The limb is marked only by a faint outline, the faintness extending in some places to a considerable distance within the limb.

Group 1616, March 2. A small spot.

Group 1617–March 4–8. A large spot with a small companion appearing suddenly near the centre of the disk. The large spot has begun to break up by March 5, and other spots have appeared near it, but as the group is still very compact it is measured together on that day. It has become more scattered by March 6, and diminishes in size after that day.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued*.

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1885.				°	°	°			
62d·456	SP, JH	1615	0·505	26·5	227·5	+19·7	0	16	
		1618*a*	0·984	104·9	159·3	−15·9	16	283	752 *c*/*s*
Mar. 4							(221)	(1646)	(1199)
63·573	H, JH		0·901	260·0	291·6	−12·1			318
			0·814	296·3	276·1	+16·5			111
		1617	0·513	255·5	257·3	−13·6	12	414	
		1612	0·381	285·9	248·1	− 0·8	0	88	
		1612	0·361	275·2	247·8	− 4·9	15	216	
		1612*a*	0·362	282·8	247·3	− 2·2	22	129	
		1612	0·275	279·0	242·4	− 4·6	6	103	
		1612	0·256	284·8	241·0	− 3·2	0	18	
		1619	0·181	281·0	236·9	− 5·1	0	6	
		1619	0·134	289·0	234·0	− 4·7	0	10	
		1614*a*	0·209	240·3	237·4	−13·0	20	200	
		1614	0·202	225·0	235·2	−15·3	0	15	
		1614*b*	0·234	208·5	233·4	−19·0	6	158	
		1614	0·186	216·8	233·3	−15·7	3	34	
		1614	0·169	205·1	231·0	−16·0	4	26	
		1614	0·120	195·3	228·6	−13·8	4	27	
		1614	0·244	184·5	227·9	−21·2	20	165	
		1614	0·155	183·5	227·3	−16·1	4	21	
		1615	0·440	351·8	230·5	+18·5	0	14	
Mar. 5		1618*a*	0·915	104·4	159·7	−16·0	34	269	390 *c*
							(150)	(1913)	(819)
64·192	H, JH		0·950	258·1	291·3	−13·6			850
			0·891	293·9	277·0	+17·5			236
I.		1617	0·650	257·5	259·1	−13·6	42	388	
		1617	0·618	259·8	256·8	−12·0	6	38	
		1617	0·586	258·0	254·3	−12·8	0	5	
		1617	0·571	255·0	253·1	−14·4	12	43	
		1612	0·514	280·4	248·7	− 0·9	5	47	
		1612*b*	0·497	273·4	248·2	− 4·6	35	209	
		1612*a*	0·492	278·8	247·5	− 2·0	18	104	
		1612	0·411	274·8	242·7	− 4·6	4	87	
		1619	0·332	275·0	237·8	− 5·1	0	4	
		1614*a*	0·343	251·4	237·9	−13·1	35	152	
		1614	0·324	243·7	235·9	−15·1	0	6	
		1614	0·355	232·6	235·8	−19·3	1	13	
		1614	0·306	248·8	235·5	−13·2	2	42	
		1614	0·291	243·1	234·0	−14·5	4	31	
		1614	0·303	238·5	234·0	−16·0	1	24	
1885.				°	°	°			
64d·192	H, JH	1614*b*	0·327	229·2	233·6	−19·3	29	156	
		1614	0·271	244·2	233·0	−13·8	0	34	
I.		1614	0·311	221·0	231·0	−20·6	0	10	
		1614	0·261	232·2	230·8	−16·2	2	75	
		1614	0·304	212·8	228·7	−21·8	1	16	
		1614	0·207	233·3	228·3	−14·3	0	12	
		1614	0·279	211·7	227·5	−20·8	5	59	
		1614	0·214	222·7	227·2	−16·2	4	13	
		1614	0·288	205·5	226·2	−22·2	21	84	
		1614	0·261	202·7	224·7	−21·1	4	39	
		1620	0·677	109·2	176·4	−18·3	1	96	51 *c*
		1618*a*	0·859	104·2	158·8	−15·9	60	225	670 *c*/*s*
			0·781	109·1					103
Mar. 6							(292)	(2012)	(1910)
65·493	SP, JH	1617	0·842	258·6	259·3	−13·5	22	259	
		1617	0·827	260·5	257·6	−11·9	0	39	
		1617	0·773	256·6	252·3	−14·9	5	20	357 *c*
		1612	0·753	275·7	249·7	− 0·5	3	57	
		1612*b*	0·738	270·8	248·9	− 4·3	27	176	
		1612*a*	0·727	274·2	247·7	− 1·9	21	86	
		1612	0·662	271·6	242·8	− 4·4	0	42	334 *c*
		1619	0·563	270·9	235·7	− 5·5	0	10	
		1619	0·505	272·0	231·7	− 5·2	0	1	
		1614*a*	0·600	257·3	238·2	−13·4	26	159	
		1614	0·566	254·8	235·6	−14·6	6	92	
		1614*b*	0·560	246·7	234·2	−18·9	21	205	
		1614	0·529	249·2	232·3	−17·1	0	7	
		1614	0·533	243·0	231·7	−20·2	3	13	
		1614	0·507	254·4	231·5	−14·1	12	101	
		1614	0·515	240·0	229·9	−21·2	12	45	
		1614	0·486	241·9	228·4	−19·7	0	15	
		1614	0·462	252·6	228·3	−14·4	0	3	
		1614	0·449	249·0	227·1	−15·7	2	7	
		1614	0·476	238·6	227·0	−20·8	12	116	
		1614	0·465	235·0	225·6	−22·0	13	70	
		1614	0·446	236·6	224·8	−20·8	0	17	
		1620	0·431	117·9	177·9	−18·2	1	8	
		1620	0·472	117·9	175·3	−19·2	2	10	
		1620	0·521	116·6	171·8	−20·1	2	7	
		1618	0·651	103·1	160·8	−14·0	0	7	
		1618*a*	0·671	105·6	159·4	−15·7	39	249	194 *c*
			0·948	67·4	134·1	+18·7			56

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column, it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated, are indicated by the letters *n*, *s*, *p*, *f*, *c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

March 6. Photograph faint, spots ill-defined.

Group 1618, March 4–16. A large regular spot, *a*, with occasionally, a small spot or two near it. The umbra of *a* appears abnormally large on March 6 and 8; this is probably due to the manner in which the photograph has been developed.

Group 1619, March 5–9. A few very small faint spots following Group 1612. They form two clusters on March 5 and 7, but only one on March 6 and 9. No trace of the group can be detected on March 8.

Group 1620, March 6–10. A small spot on March 6. Three small spots on March 7 and 8; two of these have disappeared by March 9.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.	Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).						Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1885.				°	°	°				1885.				°	°	°			
65d·493	SP, JH		0·979	98·3	122·4	− 9·6			120	67d·482	H, SP	1614	0·804	257·8	229·1	−14·1	0	5	690 *c*
			0·991	108·8	117·3	−19·5			97			1614	0·805	247·6	228·5	−22·3	8	94	
Mar. 7							(229)	(1821)	(1158)			1614	0·800	250·6	228·3	−19·8	0	12	
												1614	0·773	248·3	225·4	−21·3	22	131	440 *c*
												1620	0·216	164·3	171·7	−19·1	4	11	
66·175	H, SP		0·901	278·1	255·6	+ 4·1			333			1618	0·281	122·7	161·0	−15·7	0	8	
			0·817	297·2	241·8	+17·3			468			1618*a*	0·300	118·8	159·5	−15·3	31	229	
I.		1617	0·935	259·1	261·7	−12·7	6	141					0·834	152·9	135·5	−53·6			36
		1617	0·904	256·9	257·8	−14·9	0	61					0·812	96·3	120·5	− 9·3			468
		1617	0·866	256·8	253·0	−15·0	0	26	888 *c*				0·882	72·9	116·1	+11·4			183
		1612	0·852	273·3	250·5	− 1·0	3	53					0·859	109·8	115·7	−20·7			299
		1612*b*	0·841	269·9	249·1	− 4·0	32	206					0·982	112·2	94·2	−23·1			183
		1612*a*	0·833	272·8	248·0	− 1·8	18	100					0·991	81·9	92·3	− 8·9			360
		1612	0·781	270·8	243·7	− 3·9	0	15	637 *c*	Mar. 9							(146)	(1181)	(5033)
		1614*a*	0·721	258·5	237·4	−13·3	26	179											
		1614	0·694	256·1	236·4	−14·9	0	57											
		1614	0·694	250·6	235·9	−18·6	8	219		68·465	H, JH		0·954	267·3	234·9	− 4·8			198
		1614	0·654	256·5	233·3	−14·3	0	76					0·943	292·3	228·7	+18·3			252
		1614	0·660	249·8	233·0	−18·6	8	105				1614*a*	0·966	258·0	238·2	−13·4	15	129	
		1614	0·613	256·4	230·1	−14·0	6	40				1614	0·953	252·9	235·8	−18·5	16	246	1003 *c*
		1614	0·629	244·7	229·9	−21·4	14	175				1614	0·907	248·8	227·9	−22·2	0	44	} 322 *c*
		1614	0·621	248·6	229·9	−18·8	0	39				1614	0·894	250·7	226·2	−20·5	0	90	
		1614	0·596	244·8	227·4	−20·6	6	98				1614	0·873	249·3	223·4	−21·6	0	13	
		1614	0·579	241·6	225·6	−22·0	9	80				1620	0·266	214·1	171·3	−19·8	0	7	
		1614	0·564	243·5	224·9	−20·7	0	10				1618	0·104	161·8	160·3	−12·9	0	5	
		1620	0·304	129·9	178·3	−18·2	1	5				1618*a*	0·140	164·8	160·0	−14·9	30	226	
		1620	0·352	126·6	175·1	−18·9	0	2				1618	0·190	153·7	157·2	−16·9	9	19	
		1620	0·405	123·3	171·4	−19·6	0	7				1618	0·218	151·9	156·0	−18·2	0	12	
		1618	0·527	108·0	161·2	−15·6	2	15				1621	0·688	109·9	119·2	−18·9	0	6	
		1618*a*	0·553	107·8	159·4	−15·8	83	235				1622*a*	0·979	83·2	85·1	+ 5·1	44	277	239 *c*
			0·949	96·0	120·3	− 8·0			826				0·922	80·2	96·4	+ 6·1			118
			0·961	108·4	117·1	−19·7			298				0·938	110·2	91·5	−21·4			284
Mar. 8							(222)	(1944)	(3450)				0·982	76·6	85·2	+11·6			121
										Mar. 10							(114)	(1074)	(2537)
67·482	H, SP		0·985	256·6	256·5	−14·4			576										
			0·882	295·3	237·1	−25·6			620	69·493	SP, H		0·976	264·8	226·5	− 6·7			43
			0·853	267·0	233·9	− 6·3			314				0·895	244·9	212·4	−25·6			142
		1612*b*	0·956	268·3	248·0	− 3·7	15	144	} 864 *c*	M.			0·897	272·1	212·1	− 1·3			71
		1612*a*	0·953	270·8	247·4	− 1·5	7	58					0·867	262·8	209·2	− 9·9			49
		1619	0·858	267·4	234·5	− 6·0	0	17					0·641	312·4	178·6	+19·3			69
		1614*a*	0·887	258·7	238·3	−13·3	18	173				1614	0·975	252·0	227·2	−19·1	7	75	} 1671 *c*
		1614	0·859	258·9	235·0	−13·3	0	4				1614	0·969	247·9	225·9	−23·2	0	51	
		1614	0·860	252·9	234·9	−18·3	41	295				1618	0·242	210·9	156·1	−19·1	0	8	

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column, it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated, are indicated by the letters *n, s, p, f, c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

March 8. The limb of the sun from 70° to 220° is quite invisible.

Group 1621, March 10–14. A very small spot on March 10. Three small spots on March 11, two on March 12, one on March 13 and 14.

Group 1622, March 10–22. A large regular spot, *a*. It gradually lengthens out, and has divided into two spots, *b* and *c*, by March 15. *c* diminishes in size on the succeeding days, and has broken up into a number of small spots by March 18. A few very small spots are seen near the principal spots occasionally.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
69d.493	SP, H	1618*a*	0·242	235·8	160·5	−14·9	34	196	
		1618	0·221	216·6	156·5	−17·3	0	17	
M.		1621	0·491	115·4	120·8	−18·5	0	25	
		1621	0·509	113·4	119·3	−18·0	0	22	
		1621	0·537	112·9	117·3	−18·3	0	7	
		1622*a*	0·908	80·0	84·8	+ 5·9	34	348	
		1623	0·896	105·0	84·3	−16·6	2	16	
		1623	0·906	103·0	82·8	−14·9	0	9	131 *c*
		1624	0·975	77·1	76·5	+10·9	0	105	
		1624*a*	0·983	79·4	70·8	+ 8·9	0	146	801 *c*
			0·808	75·9	96·7	+ 7·0			178
			0·825	109·0	92·9	−19·7			318
			0·948	67·1	81·3	+19·0			39
			0·933	112·7	78·7	−23·8			365
			0·955	99·7	75·1	−11·4			151
Mar. 11							(77)	(1025)	(4028)
70·412	SP, JH		0·975	249·7	215·3	−21·4			422
			0·763	245·4	185·3	−23·3			66
		1618*a*	0·421	250·6	160·6	−14·6	31	175	
		1618	0·371	240·9	156·2	−17·1	0	8	
		1621	0·332	139·1	122·9	−21·5	0	2	
		1621	0·334	127·3	120·3	−18·6	0	13	
		1622*a*	0·802	78·0	84·7	+ 5·2	63	326	277 *c*
		1623	0·777	105·4	85·3	−16·5	0	14	
		1623	0·806	103·3	82·4	−15·0	0	10	166 *c*
		1624	0·911	75·2	73·2	+10·3	4	64	
		1624*a*	0·923	77·1	71·1	+ 8·9	20	204	553 *c*
			0·857	67·8	81·5	+14·9			97
			0·879	117·9	75·3	−27·9			209
Mar. 12							(118)	(816)	(1790)
71·488	H, M	1618*a*	0·623	254·8	160·7	−15·0	35	162	
		1621	0·249	176·5	121·5	−21·5	2	7	
M.		1622*a*	0·643	73·2	84·4	+ 5·1	74	353	207 *c*
		1623	0·608	107·6	85·4	−16·4	0	3	
		1623	0·634	104·9	83·2	−15·0	0	5	
		1623	0·665	107·0	81·0	−16·6	0	2	
		1624	0·771	72·7	74·5	+ 8·5	0	12	
		1624	0·792	70·8	73·1	+10·4	13	48	
		1624	0·796	76·6	71·4	+ 6·2	0	5	490 *c*
		1624	0·824	67·4	70·9	+14·0	0	7	
		1624*a*	0·813	73·1	70·6	+ 9·3	18	144	
			0·917	73·5	58·6	+12·0			165
1885.				°	°	°			
71d.488	H, M		0·906	120·9	57·6	−31·0			107
M.			0·945	88·2	51·8	− 0·8			124
			0·962	102·5	47·3	−14·0			417
Mar. 13							(142)	(748)	(1510)
72·333	H, SP		0·932	245·5	180·8	−25·4			67
			0·893	251·8	175·1	−19·5			280
M.			0·900	290·0	171·9	+14·5			60
		1618*a*	0·755	256·7	160·5	−14·8	25	169	170 *c*
		1618	0·691	253·8	154·8	−16·4	0	1	
		1618	0·675	253·0	153·4	−16·8	0	3	124 *c*
		1621	0·309	216·4	122·5	−21·4	2	7	
		1622*a*	0·487	65·5	84·9	+ 5·2	46	296	
		1622	0·535	66·4	81·8	+ 6·1	0	6	
		1622	0·580	70·5	78·0	+ 5·1	0	5	
		1622	0·586	68·3	78·1	+ 6·5	0	2	
		1624	0·633	66·3	75·4	+ 8·9	0	14	
		1624	0·669	65·4	73·1	+10·4	6	24	
		1624*a*	0·694	67·8	70·7	+ 9·7	9	104	
		1625*a*	0·915	100·2	44·3	−12·2	0	16	518 *c*
			0·850	69·2	56·6	+13·5			310
			0·898	88·7	47·5	− 2·1			370
Mar. 14							(88)	(647)	(1899)
73·482	H, SP	1618*a*	0·897	257·6	160·5	−14·3	33	171	
		1618	0·861	256·0	155·9	−15·6	0	10	
		1618	0·839	254·6	153·4	−16·8	0	19	299 *c*
		1626	0·270	228·8	108·2	−17·2	0	5	
		1622*b*	0·258	35·1	87·5	+ 5·2	12	142	
		1622*c*	0·288	41·2	85·1	+ 5·5	25	203	
		1624	0·405	49·2	78·0	+ 8·6	0	2	
		1624	0·420	53·5	76·2	+ 7·8	0	6	
		1624	0·448	53·7	74·7	+ 8·7	0	3	
		1624	0·470	51·8	74·1	+10·3	0	8	
		1624*a*	0·487	55·7	72·0	+ 9·4	16	60	
			0·828	102·2	39·7	−14·1			246
			0·938	99·1	25·6	−11·0			115
Mar. 15							(86)	(629)	(660)
74·282	H, JH		0·964	263·6	160·6	− 8·1			141
		1618*a*	0·962	257·0	160·6	−14·4	31	198	
I.		1618	0·935	255·7	155·6	−15·9	0	10	
		1618	0·916	255·1	152·7	−16·5	0	6	837 *c&s*
		1618	0·903	254·4	150·7	−17·1	4	9	

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column, it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n*, *s*, *p*, *f*, *c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

March 12. Photograph very faint, spots and faculæ hardly visible.

Group 1623, March 11–17. A few very small spots irregularly arranged. The group is not seen on the photographs taken on March 14, 15, and 16.

Group 1624, March 11–19. A regular spot, *a*, preceded by several smaller spots. *a* has broken up by March 17. The group is very unstable, the spots composing it changing from day to day.

Group 1625, March 14–19. A small spot, *a*, seen only on March 14. Another small spot, *b*, is seen on March 16, and another, *c*, on March 18 and 19. No spot belonging to this group is seen on March 17.

Group 1626, March 15–16. A small spot. The spot seen on March 16 is probably not the same as that seen on March 15.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.	Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).						Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1885.				°	°	°				1885.				°	°	°			
74d·282	H, JH	1626	0·422	248·4	109·4	−15·4	2	11		77d·431	H, SP		0·940	263·8	114·5	− 8·2			249
		1622*b*	0·212	351·2	87·4	+ 5·0	17	144					0·905	255·5	109·5	−16·0			164
I.		1622*c*	0·216	3·9	84·7	+ 5·3	9	129					0·728	274·9	90·3	− 1·3			55
		1624	0·297	26·8	77·7	+ 9·0	0	3				1622	0·738	282·1	90·1	+ 4·0	0	7	
		1624*a*	0·370	40·8	71·4	+ 9·3	6	37				1622*b*	0·716	284·1	88·0	+ 5·1	13	88	
		1624	0·387	39·6	71·0	+10·4	0	6				1622	0·683	283·5	85·6	+ 4·0	2	16	
		1624	0·380	45·1	69·9	+ 8·7	0	2				1622	0·680	285·1	85·0	+ 4·9	0	9	81 *c*
		1625*b*	0·660	100·9	44·1	−12·5	0	6				1622	0·683	287·3	84·8	+ 6·5	0	7	
			0·910	69·8	23·5	+15·0			151			1624	0·569	296·2	74·9	+ 8·5	0	8	
			0·941	104·0	14·4	−15·6			482			1624	0·563	298·9	73·9	+ 9·7	0	5	
Mar. 16							(69)	(561)	(1611)			1624	0·532	296·6	72·6	+ 7·7	0	3	
												1625*c*	0·123	217·2	48·4	−12·6	0	10	
												1627	0·294	120·3	28·8	−15·3	0	7	
												1627	0·331	117·4	26·3	−15·4	0	3	
75·444	H, JH		0·989	253·6	153·1	−17·2			284			1628	0·931	82·5	336·5	+ 4·3	0	22	181 *f*
			0·777	264·4	70·1	−55·9			90				0·938	76·0	336·5	+10·5			75
		1622*b*	0·362	305·3	87·3	+ 5·3	24	135					0·931	97·0	334·9	− 9·1			106
		1622*c*	0·330	312·8	84·1	+ 6·0	14	87		Mar. 19							(15)	(185)	(911)
		1623	0·298	232·8	84·4	−17·2	0	6											
		1624	0·305	331·3	78·6	+ 8·4	3	8											
		1624	0·300	342·6	75·3	+ 9·5	3	24		78·579	SP, JH		0·949	280·3	98·9	+ 7·4			145
		1624	0·246	350·4	72·5	+ 6·9	0	6					0·878	249·8	90·7	−21·1			416
		1624	0·288	357·4	70·9	+ 9·6	3	14					0·879	288·7	87·3	+12·7			115
			0·798	101·2	16·8	−13·3			98				0·785	287·0	78·1	+ 8·7			52
			0·908	93·0	4·7	− 5·7			212			1622*b*	0·867	279·7	87·7	+ 4·8	11	70	390 *c*
Mar. 17							(47)	(280)	(684)			1627	0·146	186·2	29·8	−15·4	0	16	
												1627	0·162	160·5	25·7	−15·7	0	12	
													0·954	102·5	315·4	−14·0			183
76·452	SP, JH		0·944	267·9	127·7	− 4·3			280				0·970	95·7	312·5	− 7·3			188
			0·853	259·7	115·9	−12·4			518	Mar. 20							(11)	(98)	(1489)
		1622	0·552	287·8	88·9	+ 9·1	1	7											
		1622*b*	0·549	290·4	87·9	+ 5·0	13	105		79·173	H, SP		0·879	248·1	82·8	−22·5			613
		1622	0·517	289·2	86·1	+ 3·7	0	4				1622*b*	0·931	277·8	88·5	+ 4·7	36	102	1212 *nf*
		1622	0·522	294·1	85·4	+ 6·2	2	17		I.			0·917	105·2	313·8	−16·6			366
		1622	0·502	291·1	84·8	+ 4·2	0	20					0·948	93·6	309·3	− 5·6			284
		1622	0·505	295·2	84·1	+ 6·2	7	19		Mar. 21							(36)	(102)	(2475)
		1624	0·434	309·9	76·5	+ 9·5	0	13											
		1624	0·401	312·8	74·2	+ 9·1	0	13											
		1624	0·381	316·6	72·2	+ 9·3	0	17		80·205	SP, JH		0·916	246·7	74·3	−24·1			437
		1625*c*	0·187	119·9	47·4	−12·3	2	9					0·927	283·2	73·4	+ 9·5			1238
			0·915	67·4	354·8	+17·4			174	I.		1622*b*	0·994	275·6	90·2	+ 4·7	10	91	96 *c*
			0·943	79·6	347·9	+ 7·4			128				0·778	102·2	316·1	−13·8			156
Mar. 18							(25)	(224)	(1100)				0·894	91·0	304·0	− 4·0			308

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The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 1627, March 19–20. Two small spots.
Group 1628, March 19. A small spot.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
80d·205	SP, JH		0·897	110·7	303·2	−21·6			98
I.			0·933	99·5	297·8	−11·4			390
Mar. 22							(10)	(91)	(2723)
81·412	H, JH		0·962	283·5	63·6	+11·0			388
			0·840	258·0	49·1	−13·8			80
Mar. 23							(0)	(0)	(468)
82·427	H, JH	1629	0·449	88·7	311·4	− 5·5	1	20	
Mar. 24							(1)	(20)	(0)
83·430	SP, JH	1629	0·214	87·3	312·5	− 6·1	3	15	
		1630	0·463	103·1	297·6	−12·1	2	10	
		1630	0·503	101·7	294·8	−11·8	0	9	
		1631	0·995	109·7	238·8	−20·2	0	169	625 *c*
			0·953	101·3	251·8	−12·8			313
Mar. 25							(5)	(203)	(938)
84·473	H, JH	1629	0·033	291·5	313·0	− 6·0	2	14	
		1630	0·247	115·1	298·0	−12·6	4	46	
		1630	0·286	113·3	295·6	−13·0	0	8	
		1630	0·293	109·2	294·8	−12·0	0	7	
		1630	0·316	109·4	293·5	−12·4	0	9	
		1631	0·951	109·0	238·2	−20·1	26	246	
		1632	0·970	105·3	234·1	−16·5	0	146	1174 *c*
			0·904	97·4	246·1	− 9·6			186
			0·944	69·5	244·0	+16·8			168
Mar. 26							(32)	(476)	(1528)
85·483	SP, H		0·967	257·3	14·0	−14·0			155
		1629	0·265	273·2	313·2	− 5·6	2	6	
		1630	0·104	198·9	299·9	−12·3	6	23	
		1630	0·127	158·4	295·2	−13·5	1	8	
		1630	0·124	139·9	293·2	−12·1	3	11	
		1631	0·864	109·4	237·9	−20·1	32	265	
		1632	0·895	104·9	233·8	−16·3	5	187	
		1632	0·922	102·9	230·0	−14·5	0	20	
		1632	0·932	104·7	228·3	−16·2	0	37	1208 *c*
			0·827	89·4	242·2	− 3·3			71
			0·890	67·3	239·1	+16·6			166
Mar. 27							(49)	(557)	(1600)
1885.				°	°	°			
86d·547	H, M		0·858	265·5	343·1	− 7·3			187
		1629	0·507	270·0	314·3	− 5·7	0	4	
		1630	0·312	250·0	301·2	−12·4	2	6	
		1630	0·262	244·6	297·8	−12·8	0	9	
		1630	0·232	238·0	295·4	−13·6	0	14	
		1630	0·192	239·6	293·5	−12·1	0	11	
		1630	0·192	233·1	292·8	−13·1	0	1	
		1633	0·593	108·2	248·1	−16·0	0	8	
		1633	0·618	109·4	246·4	−17·1	2	6	
		1634	0·676	103·5	241·3	−14·0	4	17	
		1631	0·736	111·0	237·1	−19·8	32	271	
		1632	0·734	104·6	236·6	−15·1	0	13	
		1632	0·772	105·4	233·3	−16·0	7	68	
		1632	0·779	107·8	232·8	−18·0	0	19	
		1632	0·802	102·4	230·2	−13·9	14	79	
		1632	0·820	105·9	228·5	−16·8	26	123	1000 *f*
		1635	0·947	77·8	214·3	+ 9·3	0	4	52 *c*
			0·875	64·2	227·7	+18·8			63
Mar. 28							(87)	(653)	(1302)
87·242	H, M		0·908	263·2	340·2	− 9·0			300
		1634	0·545	106·5	242·1	−14·5	0	7	
I.		1631	0·628	113·6	237·0	−19·8	41	243	72 *sp*
		1632	0·602	107·2	238·1	−15·6	0	22	
		1632	0·645	104·3	234·6	−14·3	0	4	
		1632	0·657	109·7	234·3	−17·8	0	6	
		1632	0·657	106·7	233·9	−15·9	3	29	153 *n*
		1632	0·680	108·1	232·2	−17·1	6	23	
		1632	0·688	103·6	231·2	−14·1	14	78	
		1632	0·722	107·2	228·7	−16·9	16	175	
			0·819	117·3	220·8	−26·0			192
			0·830	109·6	218·5	−20·0			255
Mar. 29							(80)	(587)	(972)
88·446	H, JH	1631	0·424	124·4	236·9	−19·9	28	210	
		1632	0·384	115·5	237·6	−15·6	8	74	
		1632	0·426	113·4	234·8	−15·7	0	29	
		1632	0·441	107·4	233·1	−13·4	4	27	
		1632	0·459	109·0	232·1	−14·4	0	5	
		1632	0·486	115·3	231·2	−17·8	3	42	
		1632	0·504	111·0	229·4	−16·1	0	27	
Mar. 30							(43)	(414)	(0)

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column, it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n, s, p, f, c,* denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

March 21, 29. The limb is marked only by a faint outline, the faintness extending in some places to a considerable distance within the limb.
March 22. Very bad photograph; limb very faint and completely obliterated at 90° and 180°.
March 24, 26, 30. Photographs faint, faculæ ill-defined.
Group 1629, March 24–28. A small regular spot.
Group 1630, March 25–28. An irregular straggling group of small spots.
Group 1631, March 25–April 6. A large regular spot. It has broken up in two portions by April 4.
Group 1632, March 26–April 6. A scattered group composed of a number of small spots. The preceding spots of the group have united to form one regular spot, *a*, and the following spots to form another, *b*, by April 2. A third regular spot, *c*, has also formed between these two by April 4, but it is measured with some smaller spots on April 5. *b*, which has greatly diminished in size, is measured with some small spots on April 6.
Group 1633, March 28. Two small spots.
Group 1634, March 28–29. A small spot.
Group 1635, March 28. A small spot.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1885.				°	°	°			
89d·437	SP, H		0·926	256·8	314·1	−14·7			63
		1631	0·276	148·1	236·7	−20·0	24	205	
		1632	0·193	148·1	239·5	−15·9	21	136	
		1632	0·200	137·2	237·6	−14·9	4	26	
		1632	0·228	142·8	237·4	−16·9	5	29	
		1632	0·235	134·5	235·6	−15·9	7	62	
		1632	0·226	122·1	234·3	−13·3	8	21	
		1632	0·248	122·4	233·2	−14·0	0	3	
		1632	0·315	130·0	231·0	−18·0	4	42	
		1632	0·299	119·9	230·1	−14·8	0	4	
Mar. 31							(73)	(528)	(63)
90·429	SP, JH		0·903	262·3	297·5	− 9·7			480
		1631	0·247	196·0	236·6	−20·1	34	186	
		1632	0·217	219·1	240·6	−16·0	26	143	
		1632	0·221	209·7	239·1	−17·4	0	23	
		1632	0·172	196·3	235·4	−15·9	24	92	
		1632	0·126	201·2	235·2	−13·1	1	10	
		1632	0·191	182·0	232·9	−17·4	2	9	
		1632	0·213	170·3	230·3	−18·5	0	6	
		1636	0·956	102·1	158·8	−13·4	10	86	239 *c*
Apr. 1							(97)	(555)	(719)
91·434	H, SP	1631	0·369	229·0	236·4	−20·0	4	114	
		1632*a*	0·410	244·9	241·8	−15·8	22	227	
		1632*b*	0·318	239·3	235·6	−15·4	6	174	
		1632	0·295	246·4	235·2	−12·8	0	4	
		1637	0·060	267·3	222·6	− 6·5	0	8	
		1637	0·010	276·6	219·8	− 6·3	0	5	
		1636	0·867	101·8	158·7	−13·4	10	85	64 *c*
Apr. 2							(42)	(617)	(64)
92·413	H, SP	1631	0·532	241·4	236·0	−20·2	10	132	
		1632*a*	0·606	251·8	242·9	−16·0	32	242	
		1632*b*	0·509	248·6	235·7	−16·2	5	80	
		1637	0·309	268·8	224·3	− 6·3	0	9	
		1636	0·736	102·3	158·9	−13·3	7	87	
Apr. 3							(54)	(550)	(0)
93·423	H, JH	1631	0·696	250·5	237·2	−18·0	0	5	
		1631	0·695	247·1	235·8	−20·3	9	98	
1885.				°	°	°			
93d·423	H, JH	1632*a*	0·773	254·2	244·4	−16·2	34	307	
		1632*c*	0·730	254·5	240·5	−15·5	0	41	
		1632*b*	0·684	253·1	235·7	−16·0	7	56	
		1637	0·476	267·6	222·3	− 6·6	0	3	
		1636	0·570	104·8	158·6	−13·5	17	82	42 *c*
		1638	0·960	76·1	121·3	+11·4	32	483	352 *c*
Apr. 4							(99)	(1075)	(394)
94·514	H, JH	1631	0·843	251·9	236·1	−18·6	0	42	
		1631	0·837	249·8	235·2	−20·3	0	21	
		1632*a*	0·905	255·1	243·9	−16·1	33	328	
		1632*c*	0·869	255·7	239·2	−15·4	13	172	
		1632*b*	0·836	254·8	235·4	−16·0	2	25	
		1636	0·364	112·8	158·5	−13·8	12	90	
		1638	0·837	70·6	124·8	+12·6	15	51	
		1638	0·849	72·2	123·2	+11·6	0	136	
		1638	0·856	74·9	121·9	+ 9·6	29	146	
		1638	0·881	71·7	119·7	+12·9	6	95	
		1638	0·892	73·4	118·0	+11·9	11	106	167 *c*
			0·959	68·9	108·5	+18·2			97
Apr. 5							(121)	(1212)	(264)
95·166	JH, M		0·967	270·2	245·0	− 1·5			68
			0·976	289·9	244·4	+17·8			62
I.			0·904	291·1	231·2	+16·1			38
			0·881	299·9	225·7	+22·7			67
		1631	0·918	251·6	237·1	−19·3	10	103	} 2269 *c*
		1631	0·915	249·7	236·6	−21·0	0	14	
		1631	0·894	251·0	233·6	−19·7	0	7	
		1632*a*	0·964	254·3	245·5	−16·8	135	257	
		1632*c*	0·952	254·8	242·9	−16·3	15	117	
		1632	0·921	254·0	237·6	−17·1	9	48	
		1637	0·829	266·6	226·1	− 6·3	4	13	310 *c*
		1636	0·243	126·0	158·4	−14·1	27	86	
		1638	0·760	67·6	124·1	+12·6	25	167	
		1638	0·773	72·2	121·9	+ 9·6	18	180	
		1638	0·802	69·0	120·0	+12·8	31	224	
		1638	0·799	71·2	119·8	+11·0	3	7	
		1638	0·828	71·5	116·9	+11·6	13	171	1028 *f*
			0·867	105·9	109·7	−16·8			48
			0·954	112·3	96·8	−23·0			109
			0·979	105·9	96·2	−16·8			161

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n*, *s*, *p*, *f*, *c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

March 31, April 1. Photograph faint, faculæ ill-defined.

April 2, 3. Photograph faint, spots and faculæ ill-defined.

April 6. The limb is marked only by a faint outline, the faintness extending in some places to a considerable distance within the limb.

Group 1636, April 1–11. A regular group.

Group 1637, April 2–6. A few small scattered spots which change from day to day. The group is not seen on April 5.

Group 1638, April 4–15. A large group of very irregular form, which undergoes constant changes. It has become a long straight stream by April 9, and has divided into two groups by April 12, the first spot in each group being large and regular.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1885.				°	°	°			
95d·166	JH, M		0·962	118·5	95·1	−29·0			135
I.			0·972	79·3	95·0	+ 8·9			246
			0·971	100·0	93·2	−11·1			43
Apr. 6							(290)	(1394)	(4584)
96·428	SP, JH	1636	0·164	213·9	158·8	−13·8	15	62	
		1638	0·545	56·2	126·6	+12·3	24	214	
		1638	0·583	62·7	121·8	+10·4	25	250	
		1638	0·630	60·0	119·4	+13·4	21	157	
		1638	0·665	58·0	117·7	+15·7	0	12	
		1638	0·655	63·8	116·6	+12·0	25	194	
		1639	0·939	79·5	84·9	+ 7·7	0	16	} 473 *c*
		1639	0·970	78·9	79·0	+ 9·2	0	55	
Apr. 7							(110)	(960)	(473)
97·157	H, JH		0·985	263·6	224·3	− 7·4			435
			0·956	248·7	217·6	−22·1			1073
I.		1636	0·289	239·9	158·7	−14·1	13	67	
		1638	0·424	42·9	126·7	+12·3	19	232	
		1638	0·461	53·4	121·8	+10·3	34	307	
		1638	0·507	51·3	119·9	+13·0	20	133	
		1638	0·549	51·2	117·7	+14·7	0	67	
		1638	0·543	55·9	116·5	+12·4	26	267	
		1638	0·568	53·2	115·9	+14·6	0	49	
		1639	0·865	80·5	85·1	+ 5·1	0	4	
		1639	0·870	78·2	84·9	+ 7·2	4	63	
		1639	0·891	77·2	82·5	+ 8·5	0	8	} 1012 *c*
		1639	0·896	78·7	81·7	+ 7·3	2	17	
		1639	0·928	77·6	77·4	+ 9·2	3	61	
			0·843	109·7	86·5	+19·8			592
Apr. 8							(121)	(1275)	(3112)
98·183	H, JH		0·967	247·6	206·4	−23·2			393
			0·949	237·9	201·9	−32·3			140
I.			0·948	289·7	198·6	+16·6			91
		1636	0·484	251·8	158·3	−13·9	5	33	
		1638	0·319	7·3	127·8	+12·5	31	227	
		1638	0·323	17·9	124·4	+12·0	3	30	
		1638	0·321	26·5	121·8	+10·9	30	276	
		1638	0·364	28·1	120·1	+12·8	30	212	
		1638	0·396	28·5	119·0	+14·5	5	41	

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1885.				°	°	°			
98d·183	H, JH	1638	0·388	36·8	116·5	+12·3	27	250	
		1638	0·420	32·8	116·6	+14·9	0	90	
I.		1639	0·731	75·0	85·1	+ 6·8	10	163	
		1639	0·748	73·4	84·0	+ 8·2	0	12	
		1639	0·758	76·4	82·6	+ 6·3	0	31	
		1639	0·767	75·1	82·0	+ 7·5	3	35	} 775 *c*
		1639	0·812	74·0	78·1	+ 9·3	6	63	
		1639	0·817	71·8	78·1	+11·1	0	34	
			0·759	110·9	81·6	−19·7			270
			0·917	119·5	64·2	−29·3			260
			0·975	102·1	52·3	−13·1			194
Apr. 9							(150)	(1497)	(2123)
99·133	H, JH	1640	0·706	260·8	162·6	−10·6	2	16	
		1636	0·656	255·6	158·3	−13·8	5	14	
I.		1638	0·372	328·1	129·2	+12·7	49	238	
		1638	0·358	338·8	125·2	+13·7	0	17	
		1638	0·320	337·4	124·8	+11·4	36	245	
		1638	0·286	349·1	120·7	+10·4	8	58	
		1638	0·329	353·0	120·0	+13·2	38	248	
		1638	0·314	2·2	116·9	+12·4	29	283	
		1639	0·582	70·2	84·3	+ 6·5	65	433	
		1639	0·626	66·4	82·1	+ 9·8	0	5	
		1639	0·672	68·1	78·5	+10·0	7	145	
		1641	0·933	97·8	48·3	− 9·4	0	48	
		1641	0·956	98·7	44·2	−10·0	0	12	348 *c*
			0·811	68·0	67·0	+14·0			372
			0·826	122·8	64·5	−30·1			248
			0·910	86·4	52·6	+ 0·9			44
Apr. 10							(239)	(1762)	(1012)
100·492	H, SP	1636	0·848	258·1	157·9	−13·1	0	5	
		1638	0·587	301·4	130·5	+12·8	30	188	
		1638	0·528	304·8	125·9	+12·4	24	144	
		1638	0·467	306·9	122·0	+11·0	5	20	
		1638	0·469	314·0	119·9	+13·6	32	282	
		1638	0·431	317·9	116·9	+13·1	28	226	
		1639*a*	0·332	50·3	84·9	+ 6·7	38	355	
		1639	0·410	51·5	80·8	+ 9·3	4	34	
		1639	0·380	58·6	80·7	+ 6·0	4	66	
		1639	0·451	51·7	78·7	+10·9	7	75	
		1641	0·765	97·4	49·7	− 9·3	0	17	

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column, it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated, are indicated by the letters *n, s, p, f, c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

April 7. Photograph faint, spots ill-defined.

Group 1639, April 7–18. A large group of very irregular form which undergoes constant changes. The preceding spots have coalesced by April 11 to form a large spot, *a*, which has divided into two spots, *b* and *c*, by April 15.

Group 1640, April 10. Two small spots measured together.

Group 1641, April 10-13. Two small spots, *a* and *b*. *b* has disappeared by April 13.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
100d.492	H, SP	1641	0·825	98·2	43·9	−10·0	0	11	215 *c*
			0·982	81·4	21·7	+ 7·3			328
April 11							(172)	(1423)	(543)
									538
									(1380)
101·164	H, SP		0·937	256·8	160·9	−14·3			337
			0·876	246·0	151·6	−23·7			125
I.		1642*a*	0·794	287·6	141·0	+10·2	2	19	112 *c*
		1642*b*	0·771	288·2	138·8	+10·1	0	5	
		1638	0·695	294·0	131·2	+12·0	24	158	
		1638	0·679	295·4	129·7	+12·5	3	9	
		1638	0·670	298·6	128·1	+14·1	0	12	
		1638	0·658	295·5	128·1	+11·9	9	124	
		1638	0·617	296·6	125·0	+11·3	0	7	
		1638	0·568	298·5	121·3	+10·8	0	12	
		1638	0·577	303·1	120·6	+13·4	20	190	
		1638	0·530	297·8	119·1	+ 9·3	0	2	
		1638	0·537	304·4	117·8	+12·6	16	296	
		1639*a*	0·229	23·4	85·7	+ 6·4	40	385	
		1639	0·287	27·4	83·2	+ 9·1	3	10	
		1639	0·265	32·6	82·7	+ 7·2	2	20	
		1639	0·258	41·1	81·1	+ 5·6	2	33	
		1639	0·329	36·3	79·5	+ 9·8	12	119	
		1641	0·654	97·6	50·0	− 9·3	0	11	
		1641	0·729	99·0	44·0	−10·4	0	6	
			0·953	80·5	19·8	+ 7·2			754
April 12							(133)	(1418)	(1328)
102·251	H, JH	1642*a*	0·921	283·6	141·7	+10·2	0	13	
		1642*b*	0·888	285·3	137·0	+10·9	0	2	224 *c*
I.		1638	0·845	288·0	131·5	+11·9	14	152	
		1638	0·821	288·6	129·0	+11·8	8	147	
		1638	0·802	288·3	127·2	+11·0	0	3	
		1638	0·777	290·3	124·4	+11·9	0	6	284 *c*
		1638	0·749	293·9	121·1	+13·7	22	154	
		1638	0·705	294·3	117·5	+12·6	13	159	334 *c*
		1638	0·708	297·7	116·8	+15·0	0	22	
		1639*a*	0·267	322·9	85·8	+ 6·7	48	404	
		1639	0·323	332·8	85·1	+11·1	0	4	
		1639	0·283	333·3	83·9	+ 9·0	1	4	
		1639	0·248	338·8	81·7	+ 7·7	4	41	
		1639	0·214	336·7	81·4	+ 5·8	3	21	
		1639	0·285	348·6	79·8	+10·6	6	179	

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
102d.251	H, JH	1639	0·274	353·8	78·2	+10·2	5	29	
		1641	0·445	98·7	50·2	− 8·9	1	14	
I.			0·848	77·2	20·1	+ 7·8			538
April 13							(125)	(1354)	(1380)
103·483	H, JH	1638	0·952	284·7	130·4	+12·1	15	235	279 *c*
		1638	0·894	288·8	120·7	+14·1	12	125	
		1638	0·862	288·3	117·0	+12·7	0	77	171 *c*
		1639*a*	0·483	295·7	86·1	+ 7·1	39	365	
		1639	0·410	298·7	81·3	+ 6·2	0	13	
		1639	0·418	302·6	80·9	+ 7·8	3	17	
		1639	0·399	305·0	79·4	+ 8·0	0	4	
		1639	0·404	310·9	78·2	+10·0	0	16	
April 14							(69)	(852)	(450)
104·476	SP, JH	1638	0·972	285·6	121·4	+13·7	13	125	505 *c*
		1638	0·951	285·5	117·0	+13·0	0	29	
		1639*b*	0·673	285·9	87·3	+ 6·5	30	195	
		1639*c*	0·651	289·3	85·0	+ 8·1	12	120	
		1639	0·627	286·9	83·8	+ 6·2	0	9	
		1639	0·621	289·4	82·9	+ 7·5	0	4	
		1639	0·596	289·6	81·1	+ 7·0	1	19	
		1639	0·586	288·5	80·6	+ 6·2	0	5	
April 15							(56)	(506)	(505)
105·237	H, SP		0·969	286·9	110·4	+14·9			753
			0·900	270·6	101·0	− 1·9			53
I.			0·814	247·2	90·5	−21·5			554
		1639*b*	0·787	282·5	87·5	+ 6·5	32	188	
		1639*c*	0·768	285·2	85·3	+ 8·1	15	112	
		1639	0·754	283·4	84·4	+ 6·5	0	11	586 *c*
		1639	0·753	288·2	83·4	+ 9·9	0	11	
		1639	0·729	284·6	82·1	+ 6·8	0	21	
		1643*a*	0·968	93·5	321·4	− 4·8	25	179	314 *f*
			0·968	104·8	320·8	−15·7			72
April 16							(72)	(522)	(2332)
106·437	H, JH		0·943	253·3	92·2	−17·5			142
		1639*b*	0·921	279·2	87·1	+ 6·3	20	173	
		1639*c*	0·907	281·7	84·9	+ 8·3	4	61	966 *c*
		1639	0·889	285·3	81·8	+11·0	0	36	

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column, it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n, s, p, f, c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

April 11, 14, 15. Photograph faint; spots ill-defined.

April 12–13. The limb is marked only by a faint outline, the faintness extending in some places to a considerable distance within the limb.

Group 1642, April 12–13. Two small spots, *a* and *b*. They have moved away from each other by April 13.

Group 1643, April 16–27. A regular spot, *a*, followed by a number of small spots. These have all disappeared by April 24.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1885.				°	°	°			
106d·437	H, JH	1643*a*	0·861	92·6	321·7	— 5·0	18	193	} 366 *c*
		1643	0·883	91·0	319·3	— 3·4	0	9	
		1643	0·913	90·1	315·4	— 2·3	3	43	
Apr. 17							(45)	(515)	(1474)
107·406	H, SP	1639*b*	0·983	277·8	86·9	+ 6·7	14	140	} 323 *c*
		1639*c*	0·975	279·7	84·4	+ 8·2	0	45	
		1643*a*	0·729	91·5	321·6	— 4·7	22	197	
		1643	0·749	89·8	320·0	— 3·3	0	9	
		1643	0·786	90·5	316·6	— 3·6	0	10	
		1643	0·792	88·9	316·2	— 2·4	0	30	
			0·930	103·8	299·6	—14·8			87
Apr. 18							(36)	(431)	(410)
108·512	H, SP	1644	0·380	54·8	335·7	+ 7·8	0	6	
		1643*a*	0·531	90·7	321·8	— 4·7	24	172	
		1643	0·559	88·1	320·0	— 3·2	0	4	
		1643	0·562	92·3	319·7	— 5·5	0	4	
		1643	0·592	90·9	317·6	— 4·7	0	5	
		1643	0·616	87·3	316·0	— 2·4	0	9	
		1645*a*	0·991	105·0	270·9	—15·5	0	137	
			0·966	83·6	279·7	+ 4·8			106
			0·977	101·3	275·6	—12·1			80
Apr. 19							(24)	(337)	(186)
109·442	H, SP		0·923	257·5	49·2	—13·5			227
		1643*a*	0·330	89·0	322·3	— 4·4	26	156	
		1643	0·363	93·0	320·2	— 5·8	0	7	
		1643	0·364	85·5	320·3	— 3·1	0	7	
		1643	0·401	90·8	317·9	— 5·0	0	17	
		1645*a*	0·943	104·7	270·6	—15·5	15	141	615 *c*
			0·887	80·7	280·1	+ 5·9			132
			0·960	92·3	267·8	— 3·6			702
Apr. 20							(41)	(328)	(1676)
110·391	H, SP		0·980	260·0	47·9	—10·7			184
			0·849	282·5	25·6	+ 8·0			407
		1643*a*	0·115	86·7	322·4	— 4·5	27	158	
		1643	0·152	100·7	320·4	— 6·5	0	3	

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1885.				°	°	°			
110d·391	H, SP	1643	0·176	100·3	319·0	— 6·6	0	3	
		1643	0·198	90·6	317·6	— 5·0	0	4	
		1643	0·228	84·6	315·9	— 3·6	0	5	
		1646	0·270	118·4	315·0	—12·1	2	12	
		1646	0·292	116·2	313·5	—12·1	0	2	
		1646	0·302	112·7	312·6	—11·4	2	13	
		1645*a*	0·848	105·6	271·1	—15·9	16	162	346 *c*
		1645	0·912	105·8	263·1	—16·4	0	16	} 993 *c*
		1647*a*	0·996	106·4	243·0	—16·8	0	63	
			0·876	89·9	268·0	— 2·3			327
Apr. 21							(47)	(441)	(2257)
111·420	H, SP		0·908	282·8	18·9	+ 9·5			243
		1643	0·173	268·6	325·3	— 5·0	0	3	
		1643*a*	0·132	271·7	322·9	— 4·6	16	144	
		1643	0·097	252·8	320·6	— 6·4	0	7	
		1643	0·077	242·1	319·2	— 6·9	0	3	
		1646	0·134	203·5	318·4	—11·9	3	21	
		1646	0·123	184·7	315·9	—11·9	2	32	
		1646	0·126	160·1	312·8	—11·6	5	35	
		1645*a*	0·697	107·9	271·9	—15·9	22	166	} 170 *c*
		1645	0·732	108·6	269·1	—16·8	0	3	
		1645	0·799	107·1	262·7	—16·5	0	8	306 *c*
		1647*a*	0·949	105·6	243·3	—16·3	26	183	1063 *c*
			0·733	86·8	268·4	— 0·9			270
Apr. 22							(74)	(605)	(2052)
112·444	H, JH		0·963	284·2	14·4	+12·3			311
		1643*a*	0·362	269·6	323·0	— 4·6	18	150	
		1643	0·316	264·3	320·2	— 6·3	0	2	
		1643	0·296	268·0	319·0	— 5·1	0	3	
		1643	0·266	270·1	317·2	— 4·6	0	2	
		1646	0·320	246·5	319·2	—11·9	2	6	
		1646	0·294	241·1	317·0	—12·7	3	22	
		1646	0·270	240·0	315·6	—12·3	0	2	
		1646	0·219	238·1	312·7	—11·3	11	79	
		1645*a*	0·527	113·3	271·7	—16·1	14	129	
		1645	0·567	112·9	268·9	—16·7	0	1	
		1647*a*	0·857	106·3	243·0	—16·4	20	170	} 985 *c*
		1647	0·867	103·7	241·7	—14·2	0	11	
		1647	0·882	107·3	240·0	—17·5	0	7	

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column, it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n*, *s*, *p*, *f*, *c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

April 18. Photograph faint; spots ill-defined.

Group 1644, April 19. A cluster of very small spots which are measured together.

Group 1645, April 19–May 1. A regular spot, *a*, followed, April 21–28, by a few very small spots. A small spot has separated from *a* by April 25. Two very small spots are seen preceding *a* on April 28.

Group 1646, April 21–25. A number of small spots suddenly appearing near the centre of the Sun. The last spot of the group has attained a considerable size by April 23, but has decreased again by April 24, and broken up into a number of small spots by April 25.

Group 1647, April 21–May 3. A large regular spot, *a*, occasionally accompanied by small spots.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.	Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in term's of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).						Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1885.				°	°	°				1885.				°	°	°			
112d·444	H, JH		0·886	114·0	240·2	−23·3			416	115d·485	H, SP	1645	0·203	223·0	269·8	−12·8	0	3	
			0·933	96·3	232·7	− 7·6			169			1649	0·272	142·0	251·7	−16·7	0	6	
Apr. 23							(68)	(584)	(1881)			1650	0·381	34·0	249·1	+14·1	2	14	
												1650	0·402	33·8	248·4	+15·1	3	21	
												1650	0·396	37·1	247·5	+14·1	0	4	
113·168	H, JH	1643*a*	0·517	268·7	323·4	− 4·7	8	128				1650	0·413	37·6	246·7	+14·8	1	13	
		1646	0·474	252·8	319·8	−12·1	2	8				1647*a*	0·374	124·3	243·0	−16·3	30	169	
I.		1646	0·444	250·5	317·6	−12·7	0	5					0·893	113·7	199·2	−23·1			305
		1646	0·361	250·0	312·5	−11·4	6	51		Apr. 26							(67)	(475)	(1145)
		1645*a*	0·394	120·9	271·8	−16·0	12	117											
		1645	0·441	118·7	268·6	−16·4	0	1											
		1647*a*	0·765	107·3	243·0	−16·2	25	170		116·408	H, JH								
		1647	0·785	104·5	240·9	−14·2	0	11					0·904	259·1	314·3	−11·7			488
			0·921	96·9	225·1	− 8·2			142			1643*a*	0·959	266·8	323·0	− 4·3	7	89	399*f*
			0·928	109·8	224·2	−20·1			944			1651	0·496	257·3	278·8	−10·0	0	12	
Apr. 24							(53)	(491)	(1086)			1652	0·417	266·3	274·1	− 5·5	2	8	
												1645*a*	0·439	241·3	273·0	−16·0	9	108	
												1645	0·422	238·4	271·5	−16·8	0	3	
114·395	H, SP		0·891	264·6	339·1	− 6·9			108			1649	0·223	192·4	252·3	−16·8	0	2	
			0·885	278·1	337·4	+ 5·0			230			1650	0·315	355·7	250·9	+13·9	3	24	
			0·888	290·1	335·7	+15·4			88			1650	0·317	359·2	249·8	+14·1	0	5	
		1643*a*	0·739	268·1	323·6	− 4·5	15	113	184 *c*			1650	0·332	3·8	248·2	+15·0	1	11	
		1646	0·705	257·3	320·5	−12·2	2	6				1650	0·333	10·5	245·9	+14·7	8	36	
		1646	0·689	255·8	319·1	−13·1	2	6				1647*a*	0·235	153·0	243·1	−16·3	29	164	
		1646	0·669	256·4	317·6	−12·5	1	10				1653*a*	0·977	99·3	171·5	−10·0	38	300	365 *c*
		1646	0·648	256·1	315·9	−12·5	0	12	148 *c*				0·767	121·0	202·6	−26·2			286
		1646	0·600	257·5	312·5	−11·1	3	19		Apr. 27			0·855	108·9	191·3	−18·4			59
		1646	0·598	255·7	312·2	−12·2	0	7									(97)	(762)	(1597)
		1645*a*	0·212	163·0	272·3	−16·2	19	123											
		1645	0·211	154·6	270·6	−15·5	0	16		117·405	SP, JH								
		1648	0·595	121·0	242·9	−21·7	0	6											
		1647*a*	0·572	112·1	242·6	−16·3	29	163					0·968	261·0	312·1	− 9·8	·		403
			0·883	112·9	214·6	−22·4			1020				0·884	251·5	298·1	−18·3			131
Apr. 25							(71)	(481)	(1778)			1652	0·633	266·3	275·5	− 5·6	2	12	
												1652	0·621	265·8	274·6	− 5·9	0	3	
												1652	0·603	267·5	273·3	− 4·9	1	12	
115·485	H, SP		0·951	314·7	323·4	+40·0			62			1652*a*	0·580	267·7	271·7	− 4·8	6	40	
			0·822	269·3	316·9	− 3·1			358			1645	0·669	250·1	277·1	−16·3	0	2	
			0·814	258·0	316·1	−12·3			242			1645	0·646	251·5	275·5	−15·1	0	2	
		1643*a*	0·884	267·3	323·8	− 4·4	14	116	178 *c*			1645	0·636	250·1	274·6	−15·8	0	2	
		1645*a*	0·279	222·7	273·0	−16·2	17	112				1645*a*	0·618	249·1	273·1	−16·1	10	85	
		1645	0·271	218·2	271·7	−16·6	0	5				1645	0·570	248·9	269·6	−15·3	0	9	
		1645	0·252	215·4	270·4	−16·2	0	8				1649	0·358	228·9	252·7	−17·5	0	7	
		1645	0·240	227·5	272·1	−13·6	0	4				1650	0·405	319·4	252·0	+13·8	3	17	

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column, it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n, s, p, f, c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 1648, Apri 25. A very small spot. Group 1649, April 26–28. A very small spot on April 26. A compact cluster of very small faint spots on April 27 and 28.

Group 1650, April 26–May 2. A compact cluster of small spots on April 26. The group forms a long stream of spots on April 27 and 28; the central spots then disappear, and the group forms two compact clusters on April 29, of which the preceding one rapidly diminishes in size on the succeeding days.

Group 1651, April 27–30. Two very small faint spots measured together on April 27, but separately on April 29. The group has increased in size by April 30 when it forms a compact cluster composed of four spots. The first and second are measured separately; the last two are taken together. It is not seen on April 28.

Group 1652, April 27–30. Three very small spots measured together on April 27. The group has greatly increased in size by April 28, and forms a short stream of spots, the last of which, *a*, is the largest. Only *a* and one very small spot remain by April 29.

Group 1653, April 27–May 9. A large regular spot, *a*, accompanied by a number of smaller spots. The latter undergo frequent changes in number, area, and arrangement.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued*.

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
117d·405	SP, JH	1650	0·403	322·8	250·8	+14·6	15	29	
		1650	0·396	327·6	249·0	+15·4	0	4	
		1650	0·374	327·2	248·3	+14·1	0	3	
		1650	0·364	331·7	246·5	+14·5	0	9	
		1650	0·364	336·6	244·9	+15·3	13	66	
		1654	0·205	228·5	245·3	−12·0	0	2	
		1647*a*	0·241	208·3	243·1	−16·4	23	156	
		1647	0·213	199·2	240·5	−15·8	0	8	
		1655	0·164	152·4	231·9	−12·5	1	2	
		1653*a*	0·910	98·9	170·7	− 9·9	58	331	
		1653	0·942	98·5	165·7	− 9·5	15	48	
		1653	0·956	99·3	163·1	−10·2	0	30	
		1653	0·956	97·6	163·2	− 8·5	0	7	
		1653	0·958	102·2	162·7	−12·9	0	4	829 *c*
		1656	0·988	105·3	154·6	−15·8	0	51	177 *c*
Apr. 28							(147)	(941)	(1540)
118·293	SP, H		0·965	252·8	299·6	−17·7			271
		1651	0·829	259·9	280·4	−10·7	1	18	
I.		1651	0·805	261·2	278·1	− 9·6	0	6	
		1652	0·786	265·6	276·3	− 6·0	0	5	
		1652*a*	0·739	267·1	272·1	− 4·9	17	63	326 *c*
		1645*a*	0·760	251·8	273·1	−16·5	11	77	128 *c*
		1650	0·548	303·0	252·6	+13·7	7	70	
		1650	0·529	307·0	250·3	+14·8	0	4	
		1650	0·490	313·0	246·3	+15·7	0	6	
		1650	0·476	314·0	245·2	+15·4	0	28	
		1650	0·465	315·2	244·3	+15·4	6	30	
		1647*a*	0·379	234·5	243·2	−16·6	15	142	
		1647	0·345	233·9	241·2	−15·6	0	5	
		1647	0·318	233·2	239·7	−14·9	0	5	
		1653*a*	0·815	98·7	169·9	− 9·5	84	388	
		1653	0·856	98·1	165·6	− 9·1	8	83	
		1653	0·885	99·4	162·2	−10·3	0	24	826 *sf*
		1656	0·936	105·4	155·0	−15·9	0	9	
Apr. 29							(149)	(963)	(1551)
119·424	H, SP	1651	0·952	260·1	282·0	−10·7	0	59	288 *c*
		1651	0·934	261·8	278·8	− 9·1	0	28	
		1651	0·923	260·2	277·0	−10·6	0	56	
		1652*a*	0·891	266·7	272·6	− 4·8	0	9	224 *c*
		1645*a*	0·895	253·7	272·9	−16·3	10	68	559 *f*
		1650	0·728	293·3	252·9	+13·8	0	57	

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
119d·424	H, SP	1650	0·641	300·2	244·5	+15·4	0	78	
		1647*a*	0·582	247·1	243·4	−16·4	12	138	
		1653*a*	0·639	100·7	170·2	− 9·9	74	391	
		1653	0·664	97·6	168·1	− 8·0	0	13	
		1653	0·693	98·1	165·9	− 8·5	0	53	
		1653	0·730	100·4	162·9	−10·3	0	16	
		1658*a*	0·967	77·2	135·8	+11·3	0	91	413 *c*
		1658*b*	0·985	77·7	130·8	+11·4	0	278	
Apr. 30							(96)	(1335)	(1484)
120·421	H, JH		0·963	268·2	270·6	− 2·8			300
			0·844	254·7	253·6	−15·0			580
		1645*a*	0·967	253·9	271·9	−16·6	13	54	316 *f*
		1650	0·860	289·3	253·1	+14·4	0	12	398 *c*
		1650	0·850	290·1	251·9	+14·8	0	9	
		1650	0·788	291·6	245·3	+14·3	2	25	
		1650	0·782	293·4	244·3	+15·4	7	93	
		1647*a*	0·743	251·2	243·4	−16·5	10	109	64 *c*
		1659	0·635	265·7	235·8	− 5·8	3	5	
		1659	0·600	265·5	233·2	− 5·9	3	9	
		1660	0·640	246·7	234·3	−17·7	1	13	
		1660	0·641	246·2	234·3	−18·0	0	3	
		1653	0·424	98·9	171·5	− 7·3	0	14	
		1653*a*	0·448	105·2	170·5	−10·3	70	385	
		1653	0·511	100·5	166·0	− 8·7	1	8	
		1653	0·511	97·9	165·8	− 7·4	0	7	
		1653	0·535	101·2	164·4	− 9·3	0	5	
		1653	0·556	102·7	163·1	−10·3	0	4	
		1653	0·575	101·0	161·6	− 9·5	0	1	
		1657	0·673	106·3	154·9	−13·8	0	3	
		1658*a*	0·885	75·2	135·9	+11·1	4	79	
		1658*b*	0·914	75·7	132·0	+11·4	16	181	
		1658	0·932	77·1	129·1	+10·5	0	22	
		1661*a*	0·977	74·8	120·4	+13·9	28	456	1040 *c*
			0·836	72·7	141·9	+12·1			41
May 1							(158)	(1497)	(2739)
121·435	H, SP		0·936	256·1	252·5	−14·4			389
		1650	0·897	289·7	244·1	+15·7	0	38	252 *p*
		1647*a*	0·871	253·7	243·2	−16·0	5	70	53 *c*
		1659	0·812	266·6	237·2	− 5·0	4	25	
		1659	0·762	265·1	232·6	− 6·2	0	11	120 *c*

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column, it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n*, *s*, *p*, *f*, *c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

April 29–30. The spots on these photographs are not well-defined.

Group 1654, April 28. A very small faint spot.

Group 1655, April 28. A very small spot.

Group 1656, April 28–29. A single spot. It has greatly decreased in size by April 29.

Group 1657, May 1. A very small spot.

Group 1658, April 30–May 11. Two regular spots, *a* and *b*, accompanied by a number of smaller spots. The latter undergo continual changes in number, area, and arrangement. *b* alone remains by May 9. On April 30 *b* is confused with the smaller spots near it through the effect of foreshortening.

Group 1659, May 1–3. Two small spots. Only one is seen on May 3.

Group 1660, May 1. Two small spots.

Group 1661, May 1–12. A large irregular spot, *a*. The outer part of the spot has broken up into a number of small spots by May 6, but a large spot still remains in the centre. It decreases in size on the succeeding days.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
121d·435	H, SP	1653	0·221	128·9	172·9	−11·7	0	4	
		1653	0·194	111·2	172·5	− 7·8	0	14	
		1653*a*	0·235	119·3	171·0	−10·3	62	402	
		1658*a*	0·758	71·9	136·0	+11·0	6	43	
		1658*b*	0·800	72·7	132·0	+11·4	27	167	
		1658	0·826	75·0	129·1	+10·1	0	19	
		1661*a*	0·910	73·2	119·5	+13·6	27	533	957 *c*
May 2							(131)	(1326)	(1771)
									124
									(1324)
122·585	H, JH		0·987	286·0	246·9	+15·1			239
			0·908	245·6	232·2	−23·7			267
		1647*a*	0·964	254·0	242·6	−16·4	0	34	369 *n f*
		1659	0·934	265·6	236·9	− 5·4	0	8	
		1653*a*	0·136	206·3	171·4	−10·7	44	345	
		1653	0·114	192·8	169·4	−10·0	0	9	
		1653	0·173	147·6	162·5	−12·1	0	7	
		1658*a*	0·578	63·9	136·0	+11·6	8	53	
		1658*b*	0·624	66·4	132·4	+11·4	12	135	
		1658	0·651	68·9	129·9	+10·6	0	7	
		1661*a*	0·781	68·8	119·5	+13·9	36	489	490 *c*
		1662*a*	0·977	84·4	90·8	+ 4·7	0	66	125 *n*
			0·941	76·6	99·2	+11·3			301
May 3							(100)	(1153)	(1791)
123·490	H, JH		0·927	251·5	223·6	−18·5			959
			0·810	234·3	205·5	−30·5			185
		1653	0·331	239·2	172·8	−13·1	3	14	
		1653*a*	0·296	244·6	171·6	−10·7	46	324	
		1653	0·259	244·1	169·5	−10·0	0	3	
		1658*a*	0·422	52·5	136·0	+11·4	4	40	
		1658*b*	0·465	57·4	132·5	+11·1	25	167	
		1661*a*	0·649	63·9	119·2	+13·7	41	462	
		1662*a*	0·911	83·7	90·9	+ 4·3	11	93	1157 *c*
		1663*a*	0·986	74·2	77·1	+14·9	0	33	206 *c*
			0·923	113·1	89·2	−22·7			342
May 4							(130)	(1136)	(2849)
124·159	EP, M		0·935	249·3	215·8	−20·6			465
		1653*a*	0·433	251·3	171·6	−11·1	67	310	
I.		1653	0·397	246·0	168·7	−12·5	0	8	
		1653	0·386	244·1	167·8	−13·0	0	5	
1885.				°	°	°			
124d·159	EP, M	1658*a*	0·322	35·8	136·0	+11·7	8	27	
		1658*b*	0·354	43·9	132·6	+11·4	36	170	
I.		1658	0·406	49·6	128·7	+12·0	0	4	
		1658	0·418	47·7	128·6	+13·1	0	3	
		1661*a*	0·541	57·6	119·1	+13·7	58	400	
		1662*a*	0·842	82·2	90·4	+ 4·7	18	136	} 735 *c*
		1663*a*	0·958	73·0	75·6	+15·1	8	130	
			0·895	111·2	84·2	−20·5			124
May 5							(195)	(1193)	(1324)
125·488	SP, JH		0·939	242·6	198·4	−26·9			268
		1653	0·720	263·1	175·4	− 7·3	0	4	
		1653	0·714	261·7	174·9	− 8·4	0	4	
		1653*a*	0·680	257·8	171·9	−10·8	41	281	
		1653	0·667	261·2	171·1	− 8·4	0	41	
		1653	0·641	256·0	168·7	−11·6	1	6	
		1653	0·601	262·4	166·3	− 7·3	0	8	
		1653	0·570	261·4	164·0	− 7·7	0	4	
		1658	0·242	321·1	138·3	+ 7·4	0	2	
		1658*a*	0·287	335·8	136·4	+11·7	6	21	
		1658*b*	0·267	346·6	133·1	+11·6	27	195	
		1658	0·310	349·9	132·7	+14·3	1	10	
		1658	0·255	2·2	128·9	+11·3	0	33	
		1661	0·314	17·2	124·0	+14·0	0	10	
		1661	0·330	21·3	122·4	+14·5	0	3	
		1661	0·303	24·4	122·2	+12·6	0	2	
		1661*a*	0·351	29·2	119·4	+14·4	61	343	
		1661	0·410	26·9	118·3	+18·0	1	29	
		1661	0·333	36·8	117·8	+12·1	1	2	
		1661	0·366	36·4	116·6	+13·8	0	8	
		1662	0·636	81·6	90·6	+ 2·7	0	52	
		1662*a*	0·641	79·0	90·5	+ 4·4	14	125	
		1663*a*	0·830	69·9	76·1	+14·6	10	113	241 *c*
		1664*a*	0·940	97·6	59·4	− 8·3	2	90	
		1664*b*	0·966	99·0	54·4	− 9·6	0	99	570 *c*
			0·774	76·2	80·2	+ 8·4			214
			0·856	114·9	72·2	−23·0			150
			0·945	121·2	60·0	−30·5			102
May 6							(165)	(1485)	(1545)
126·544	H, JH		0·969	243·2	190·8	−26·8			58
			0·966	250·8	190·5	−19·4			87
		1653	0·884	264·1	177·5	− 6·8	6	30	
		1653	0·867	264·8	175·4	− 6·2	0	14	

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column, it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n*, *s*, *p*, *f*, *c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

May 3. The spots on this photograph are not well-defined.

Group 1662, May 3–14. A regular spot, *a*. It increases in size from day to day until May 7 and 8. On May 6 the penumbra of the spot becomes extended towards the south, the extension being measured as a separate spot. On May 7 and the succeeding days, spots are seen *s.p.* of *a*, and the group becomes a short stream of spots closely following each other.

Group 1663, May 4–16. A regular spot, *a*, closely followed from May 7 to May 12, and on May 16 by a stream of small spots.

Group 1664, May 6–16. Two regular spots, *a* and *b*, on May 6. Other spots appear on the succeeding days, and *b* diminishes in size, so that by May 9 the group has become a long stream of small spots closely following each other, with *a* as their leader. The small spots rapidly disappear after May 9, and by May 14 *a* remains alone.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
126d·544	H, JH	1653*a*	0·830	259·4	171·3	−10·6	35	326	
		1653	0·824	261·5	170·8	− 8·9	13	100	
		1653	0·800	258·1	168·2	−11·5	0	9	
		1653	0·778	261·9	166·3	− 8·4	0	5	
		1653	0·758	261·6	164·5	− 8·5	7	21	
		1665	0·716	256·0	160·5	−12·3	3	17	
		1665	0·679	255·4	157·5	−12·3	0	8	797 *c*
		1658*a*	0·434	306·3	136·2	+11·7	1	14	
		1658	0·436	315·5	133·8	+14·9	1	7	
		1658*b*	0·398	310·6	133·3	+11·8	25	177	
		1658	0·418	316·1	132·7	+14·3	0	6	
		1658	0·396	315·1	132·0	+13·1	0	1	
		1658	0·383	317·2	130·8	+13·1	0	8	
		1658	0·328	319·2	128·0	+11·1	0	3	
		1661*a*	0·310	348·2	119·1	+14·3	13	231	
		1661	0·332	355·4	117·0	+16·0	0	5	
		1662	0·404	75·1	92·5	+ 2·9	1	10	
		1662*a*	0·438	73·1	90·7	+ 4·3	11	155	
		1663*a*	0·685	64·9	75·8	+14·3	14	104	
		1663	0·707	66·8	73·6	+13·7	0	7	293 *c&f*
		1663	0·721	66·5	72·6	+14·3	0	25	
		1664*a*	0·826	97·8	59·8	− 8·4	17	106	
		1664	0·850	101·1	57·4	−11·2	0	6	410 *c*
		1664*b*	0·876	99·5	54·3	− 9·9	8	75	
May 7							(155)	(1470)	(1645)
127·390	H, SP	1653	0·962	264·1	178·5	− 6·6	5	97	
		1653	0·939	262·8	174·2	− 7·8	7	46	
		1653*a*	0·919	259·7	171·0	−10·7	34	312	538 *c*
		1653	0·914	261·7	170·3	− 8·9	4	79	
		1653	0·867	262·5	164·3	− 8·1	3	12	
		1665	0·831	257·6	160·2	−12·1	5	20	418 *c*
		1665	0·804	256·6	157·4	−12·7	4	27	
		1658*a*	0·580	295·6	136·5	+11·7	0	3	
		1658*b*	0·551	298·0	134·0	+12·1	26	171	
		1658	0·565	301·9	133·9	+14·6	0	4	
		1658	0·497	302·9	129·5	+12·7	3	13	
		1666	0·344	268·7	124·4	− 3·5	8	31	
		1666	0·305	270·6	122·0	− 2·9	0	4	
		1666	0·294	267·5	121·3	− 3·8	0	14	
		1666	0·275	270·1	120·2	− 3·1	7	15	
		1661	0·412	312·9	122·3	+13·2	0	4	
		1661*a*	0·399	320·6	119·4	+14·8	19	156	
1885.				°	°	°			
127d·390	H, SP	1661	0·397	327·4	117·1	+16·3	0	12	
		1667	0·350	343·3	110·3	+16·3	0	18	
		1662	0·228	61·1	92·8	+ 3·2	11	66	
		1662*a*	0·269	61·0	90·7	+ 4·4	18	156	
		1662	0·309	63·4	88·3	+ 4·9	0	2	
		1663*a*	0·554	57·9	75·5	+14·3	20	104	
		1663	0·585	60·6	72·8	+14·0	10	70	
		1664*a*	0·693	98·1	60·6	− 7·9	17	105	
		1664	0·725	100·5	58·2	− 9·8	3	28	
		1664	0·751	102·5	56·1	−11·5	5	18	289 *c&n*
		1664*b*	0·767	100·7	54·5	−10·3	9	55	
			0·951	85·7	32·8	+ 3·1			216
May 8							(218)	(1642)	(1461)
128·409	H, SP		0·850	286·1	147·2	+11·9			186
		1653	0·991	262·7	173·2	− 7·7	0	62	
		1653*a*	0·984	259·8	170·7	−10·6	11	295	
		1653	0·979	261·6	169·1	− 8·9	0	25	
		1665	0·932	258·7	159·5	−11·7	2	30	
		1665	0·917	257·5	157·2	−12·7	0	43	803 *c*
		1658*b*	0·723	290·6	134·5	+12·5	19	177	
		1666	0·571	268·5	125·5	− 3·4	7	89	
		1666	0·502	269·1	120·8	− 3·2	6	23	
		1661	0·581	300·7	121·7	+14·6	0	4	
		1661	0·586	306·0	120·5	+17·4	1	24	
		1661	0·554	300·9	120·0	+13·8	3	46	
		1661*a*	0·567	304·0	119·9	+15·7	9	69	
		1661	0·535	307·4	116·9	+16·1	0	13	
		1668	0·369	181·4	91·4	−24·7	0	5	
		1662	0·143	331·8	94·7	+ 4·1	2	8	
		1662	0·112	343·9	92·6	+ 3·1	6	26	
		1662*a*	0·134	1·8	90·6	+ 4·6	14	122	
		1662	0·135	15·9	88·7	+ 4·3	0	5	
		1663*a*	0·395	41·4	75·2	+14·2	18	115	
		1663	0·437	42·6	73·0	+15·7	0	8	
		1663	0·424	47·1	72·2	+13·8	0	7	
		1663	0·454	50·5	69·7	+13·8	0	5	
		1664*a*	0·504	100·5	60·9	− 8·0	13	103	
		1664	0·532	103·8	59·3	− 9·9	0	7	
		1664	0·531	101·0	59·1	− 8·5	0	20	
		1664	0·555	100·6	57·5	− 8·5	1	10	
		1664	0·577	107·2	56·6	−12·4	0	3	
		1664	0·577	105·0	56·3	−11·1	2	6	

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column, it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n, s, p, f, c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 1665, May 7–9. A short stream of very small spots. It is measured in two parts on each day.

Group 1666, May 8–10. A short stream of spots, which appears suddenly near the centre of the disk.

Group 1667, May 8. A small faint spot.

Group 1668, May 9. A very small faint spot.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.	Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).						Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1885.				°	°	°				1885.				°	°	°			
128d·409	H, SP	1664	0·575	102·6	56·2	− 9·8	4	7		131d·419	SP,JH	1662*a*	0·652	279·6	91·0	+ 4·2	14	73	
		1664	0·575	100·0	56·0	− 8·2	0	6				1663*a*	0·496	306·2	75·3	+14·5	10	114	
		1664*b*	0·596	103·4	54·8	−10·4	4	20				1663	0·511	310·7	74·8	+16·9	1	3	
		1664	0·596	99·5	54·5	− 8·2	0	5				1663	0·465	303·4	74·3	+12·3	0	2	
			0·899	117·6	28·5	−26·1			137			1663	0·471	313·9	71·6	+16·5	0	4	
			0·900	78·7	27·8	+ 8·8			366			1664	0·246	251·7	64·6	− 7·1	0	6	
May 9							(122)	(1388)	(1492)			1664*a*	0·199	245·7	61·5	− 7·3	11	69	
												1664	0·135	213·8	55·3	− 9·2	0	24	
													0·917	80·5	345·4	+ 7·6			107
129·508	H, JH		0·992	257·4	159·4	−12·9			404	May 12							(39)	(382)	(1538)
			0·879	254·7	137·4	−14·8			58										
		1658*b*	0·870	286·1	134·8	+12·4	9	136	342 *c*										
		1666	0·757	267·6	125·4	− 3·7	2	52	} 99 *c*	133·384	H, SP		0·926	284·6	91·3	+12·5			168
		1666	0·704	268·8	120·9	− 2·9	0	12					0·903	243·4	87·6	−25·0			110
		1661*a*	0·729	294·7	119·6	+15·6	5	35				1662*a*	0·923	276·5	91·7	+ 5·0	0	24	152 *c*
		1662	0·296	290·7	92·3	+ 3·2	5	104				1663*a*	0·792	290·7	74·7	+14·6	10	86	
		1662*a*	0·280	296·8	90·8	+ 4·4	4	74				1664*a*	0·611	261·8	62·3	− 7·0	10	63	
		1663	0·296	11·8	79·9	+13·9	0	6					0·882	91·7	318·4	−16·4			159
		1663*a*	0·297	2·9	75·4	+14·3	9	123		May 14							(20)	(173)	(589)
		1664*a*	0·276	108·9	61·1	− 8·0	5	103											
		1664	0·344	108·7	57·1	− 9·1	0	8											
		1664*b*	0·382	109·3	54·9	− 9·9	1	10		134·431	SP,JH		0·952	279·0	82·6	+ 7·8			335
May 10							(40)	(663)	(903)			1663*a*	0·909	287·4	74·7	+14·7	5	69	124 *c*
												1664*a*	0·784	262·5	62·6	− 7·4	10	65	50 *c*
													0·981	76·4	293·5	+12·8			361
130·432	SP,JH	1658*b*	0·951	284·0	134·8	+12·4	10	96	422*c&f*	May 15							(15)	(134)	(870)
		1661*a*	0·846	290·7	119·2	+15·8	5	39											
		1662	0·498	283·0	93·1	+ 4·0	4	42											
		1662*a*	0·467	285·3	90·8	+ 4·6	8	97		135·381	H, JH	1663*a*	0·973	285·8	74·0	+14·8	0	70	} 386 *c*
		1663*a*	0·356	326·9	75·6	+14·6	8	121				1663	0·965	286·2	72·1	+15·0	0	8	
		1663	0·359	335·6	72·9	+16·2	0	9				1663	0·965	287·4	71·9	+16·1	0	9	
		1664	0·072	170·3	63·4	− 6·9	0	4				1664*a*	0·902	262·9	63·0	− 7·4	10	43	253 *c*
		1664*a*	0·091	150·5	61·5	− 7·4	10	97				1669*a*	0·689	99·4	315·5	− 8·1	5	18	
		1664	0·115	148·3	60·6	− 8·4	0	22				1669*b*	0·726	101·0	312·6	− 9·6	0	5	
		1664	0·134	150·6	60·3	− 9·5	0	7				1670*a*	0·896	73·9	296·7	+13·3	9	28	
		1664	0·191	124·1	54·9	− 8·9	1	12				1670	0·905	74·7	295·4	+12·8	0	12	
May 11							(46)	(546)	(422)			1670	0·931	74·7	291·6	+13·3	0	37	247 *c*
													0·959	101·9	285·3	−12·1			289
										May 16							(24)	(230)	(1175)
131·419	SP,JH		0·951	267·5	122·9	− 3·2			332										
			0·912	293·9	113·6	+20·4			182										
		1661*a*	0·938	287·7	118·8	+15·5	3	36	741*c&s*	136·493	SP,JH		0·944	259·1	54·5	−11·0			171
		1662	0·699	277·9	94·8	+ 3·6	0	19	} 176 *c*			1669*a*	0·471	102·3	316·4	− 7·7	0	28	
		1662	0·674	279·2	92·6	+ 4·2	0	32				1669*b*	0·547	103·6	311·4	− 9·2	0	10	

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column, it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n, s, p, f, c,* denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

May 11, 14, 15, 17. Photographs faint; spots and faculæ ill-defined.

Group 1669, May 16–18. Two small spots, *a* and *b*. They move somewhat away from each other. *a* has broken up into a number of very small spots by May 18, but is still measured as one.

Group 1670, May 16–26. A small regular spot, *a*, followed by several very small spots. The group increases in size, and *a* has become a spot of very considerable size by May 20, apparently by coalescing with several of the neighbouring spots. The following spots soon disappear, and by May 24 *a* remains alone.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
136d·493	SP,JH	1670*a*	0·745	69·6	298·2	+13·5	9	42	} 369 *c*
		1670	0·767	70·8	296·0	+13·1	0	16	
		1670	0·784	71·6	294·3	+12·9	0	14	
		1670	0·814	71·3	291·6	+13·8	0	41	
May 17							(9)	(151)	(540)
137·389	H, JH	1669*a*	0·270	108·6	317·2	− 6·9	0	20	
		1669*b*	0·368	110·6	311·8	− 9·1	0	6	
		1670*a*	0·594	63·0	299·2	+14·0	8	85	
		1670	0·622	65·1	296·8	+13·6	4	17	
		1670	0·630	67·7	295·6	+12·2	5	12	
		1670	0·688	67·4	291·4	+13·8	9	77	
		1671*a*	0·969	102·5	256·5	−12·6	16	144	638 *p*
		1672*a*	0·980	75·7	254·6	+13·6	82	339	} 255 *c*
		1673	0·979	98·2	254·0	− 8·4	0	80	
			0·912	51·8	273·8	+32·8			35
May 18							(124)	(780)	(928)
138·415	H, SP		0·941	279·4	27·9	+ 8·2			120
		1670*a*	0·412	48·1	300·0	+14·1	7	92	
		1670	0·427	52·0	298·3	+13·4	0	25	
		1670	0·447	56·7	296·0	+12·4	0	11	
		1670	0·525	59·4	290·8	+13·8	2	26	
		1671*a*	0·891	103·6	255·9	−13·0	24	179	
		1672*a*	0·909	73·8	254·6	+13·8	58	479	
		1673	0·906	97·8	253·6	− 7·9	10	58	525 *f*
			0·981	110·6	239·8	−20·6			167
May 19							(101)	(870)	(812)
139·474	EP, H	1670*a*	0·274	10·8	301·5	+13·8	28	246	
		1670	0·317	20·8	297·8	+15·4	0	6	
M.		1670	0·293	23·7	297·6	+13·7	4	17	
		1670	0·296	28·2	296·3	+13·3	4	21	
		1674*a*	0·432	44·1	286·3	+16·3	2	13	
		1674*b*	0·447	48·0	284·4	+15·7	0	7	
		1674*c*	0·478	48·8	282·6	+16·6	0	5	
		1675*a*	0·809	109·7	251·9	−16·9	0	18	250 *c*
		1671*a*	0·765	104·7	255·5	−12·3	29	240	69 *c*
		1672*a*	0·791	70·4	254·5	+14·2	133	498	498 *c*
		1673	0·778	97·4	253·7	− 6·9	5	58	102 *c*
		1676	0·850	99·8	246·6	− 9·3	0	31	246 *c*
1885.				°	°	°			
139d·474	EP, H	1677*a*	0·937	79·8	235·8	+ 8·9	101	433	362 *c*
		1678*a*	0·981	107·3	225·9	−17·3	0	205	75 *f*
M.			0·926	112·9	237·9	−21·9			361
May 20							(306)	(1798)	(1963)
140·556	H, SP		0·887	259·0	352·3	−10·6			76
		1679	0·898	267·5	353·9	− 3·0	0	12	98 *p*
		1680	0·261	252·5	304·6	− 6·2	0	12	
		1680	0·245	247·5	303·3	− 7·0	0	9	
		1670*a*	0·325	322·7	301·8	+13·3	26	251	
		1670	0·286	336·8	296·8	+13·6	0	13	
		1670	0·283	346·3	294·1	+14·3	0	4	
		1674*a*	0·321	10·6	286·7	+16·6	0	8	
		1675	0·613	117·1	255·4	−17·5	0	4	
		1675*a*	0·629	114·4	253·7	−16·4	0	10	
		1671*a*	0·593	110·3	255·5	−13·3	27	197	
		1672*a*	0·624	65·5	254·6	+13·6	129	482	
		1672	0·656	60·5	253·6	+17·5	0	30	
		1673	0·592	100·4	254·4	− 7·5	7	38	} 469 *c*
		1676	0·700	102·9	246·5	−10·2	1	16	
		1677*a*	0·820	78·2	236·1	+ 8·6	29	396	507 *c*
		1678*a*	0·900	108·9	227·1	−17·7	20	186	624 *c*
			0·719	66·3	247·3	+15·5			283
			0·814	117·1	238·6	−22·8			320
			0·819	97·4	235·5	− 7·0			99
May 21							(239)	(1668)	(2476)
141·477	SP, H		0·953	259·9	350·2	−10·2			113
			0·815	264·7	332·4	− 5·2			178
M.		1679	0·968	266·5	353·3	− 3·8	0	17	211 *p*
		1670*a*	0·482	301·2	302·9	+13·0	39	241	
		1670	0·447	308·9	299·0	+14·7	0	4	
		1675	0·381	127·4	259·8	−14·9	4	14	
		1675	0·425	125·4	257·0	−15·7	1	69	
		1675	0·478	126·5	254·3	−18·0	0	1	
		1675*a*	0·464	123·0	254·2	−16·1	1	2	
		1671*a*	0·427	116·9	255·1	−12·6	23	178	
		1671	0·457	117·0	253·4	−13·4	0	4	
		1671	0·502	114·7	250·1	−13·5	0	4	
		1672*a*	0·473	55·7	254·4	+13·9	121	549	
		1672	0·510	47·4	254·8	+18·7	0	7	
		1672	0·517	50·6	253·3	+17·7	5	43	

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The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 1671, May 18–30. A large regular spot, *a*. One or two very small spots are seen near it May 22–28.

Group 1672, May 18–30. A very large regular spot, *a*, with from time to time several small spots near it.

Group 1673, May 18–27. A regular spot.

Group 1674, May 20–21. Three small spots, *a*, *b*, and *c*, on May 20; only *a* remains by May 21.

Group 1675, May 20–28. A small spot, *a*, on May 20. Other spots appear near it on the succeeding days, and the group becomes a long straggling stream of small spots, which change from day to day. *a* has disappeared by May 23. The group is mainly measured in two clusters on May 23–26; the first of these two clusters has disappeared by May 27.

Group 1676, May 20–23. A small spot.

Group 1677, May 20–31. A large spot, *a*, of irregular outline. It rapidly diminishes in size, throwing off some small spots on May 22 and the succeeding days. It has entirely broken up by May 27, but the group is measured together on that day. It has begun to increase in size again by May 29.

Group 1678, May 20–June 1. A regular spot, *a*. A few very small spots are seen near it on May 24, 27, 30, and 31.

Group 1679, May 21–22. A small spot.

Group 1680, May 21. Two small spots.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.	Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).						Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1885.				°	°	°				1885.				°	°	°			
141d·477	SP, H	1673	0·408	103·3	254·5	− 6·9	10	46		143d·375	H, JH	1683*a*	0·291	265·3	269·7	− 2·7	1	5	
		1676	0·538	105·0	246·4	− 9·4	1	15				1683*b*	0·259	260·6	267·7	− 3·7	1	5	
M.		1677*a*	0·683	74·6	236·3	+ 9·3	25	369				1675	0·286	211·5	261·8	−15·4	8	29	
		1677	0·725	74·8	233·0	+ 9·8	0	12				1675	0·302	198·9	258·8	−17·8	0	4	
		1678*a*	0·800	110·5	226·5	−17·2	44	179	378 *f*			1675	0·265	199·9	258·3	−15·7	4	36	
			0·816	127·8	229·4	−31·0			163			1671	0·196	209·4	258·5	−11·1	0	2	
			0·911	114·1	214·0	−22·5			261			1671*a*	0·199	191·1	255·1	−12·5	24	161	
			0·979	105·8	200·0	−15·8			283			1672	0·335	347·0	257·4	+17·7	0	3	
May 22							(274)	(1754)	(1587)			1672	0·276	346·0	256·8	+14·2	0	5	
												1672*a*	0·261	354·1	254·5	+13·7	85	519	
												1672	0·321	358·3	253·5	+17·4	0	5	
142·418	SP, JH		0·859	265·2	324·6	− 4·9			563			1672	0·294	2·6	252·1	+15·7	3	35	
		1670*a*	0·647	291·7	303·5	+12·6	35	245				1672	0·247	4·7	251·7	+12·9	0	42	
		1670	0·594	297·4	298·5	+14·6	0	6	17 *c*			1672	0·274	4·9	251·5	+14·5	0	5	
		1681	0·258	233·9	277·8	−10·2	0	20				1673	0·101	202·8	255·1	− 6·7	3	26	
		1675	0·264	161·3	260·6	−15·9	0	26				1677	0·315	50·6	238·6	+10·2	0	2	
		1675	0·276	153·0	258·2	−15·7	0	8				1677	0·328	52·7	237·6	+10·2	3	17	
		1671*a*	0·264	138·3	255·3	−12·8	25	134				1677*a*	0·334	57·7	236·4	+ 9·1	9	179	
		1671	0·330	128·8	250·3	−13·4	0	6				1677	0·371	60·8	233·8	+ 9·2	0	16	
		1672	0·372	24·6	256·3	+18·3	1	10				1678*a*	0·505	123·8	226·9	−17·5	41	188	
		1672*a*	0·322	35·2	254·6	+13·7	96	477				1678	0·511	118·7	225·3	−15·3	0	8	
		1672	0·380	32·6	253·3	+17·2	0	10				1678	0·534	121·8	224·6	−17·4	0	9	
		1672	0·307	43·1	253·3	+11·4	0	6				1682*a*	0·925	98·5	185·5	− 8·4	8	77	472 *f*
		1672	0·388	36·8	251·6	+16·6	0	2					0·870	112·0	194·2	−19·7			836
		1672	0·350	42·5	251·6	+13·4	0	18					0·896	123·5	193·3	−30·2			139
		1672	0·412	37·8	250·3	+17·5	0	11		May 24							(213)	(1616)	(2477)
		1673	0·202	116·9	255·2	− 6·7	3	47											
		1676	0·347	114·3	247·0	− 9·6	0	5											
		1677*a*	0·511	69·3	236·8	+ 9·1	11	204		145·273	H, JH		0·847	253·1	284·5	−14·9			399
		1677	0·549	71·3	234·0	+ 8·8	0	29				1670*a*	0·984	282·4	306·6	+12·0	19	188	989 *f*
		1678*a*	0·666	115·4	226·6	−17·7	32	188	195 *c*	I.		1681*a*	0·809	259·4	281·2	− 9·2	0	65	
		1682*a*	0·985	98·6	185·6	− 8·8	16	88	176 *c*			1681	0·774	255·9	277·5	−11·6	0	4	
			0·849	166·8	244·8	−56·9			49			1681	0·757	255·7	276·0	−11·5	5	43	278 *c*
			0·912	119·2	202·4	−27·1			182			1681	0·745	257·6	275·1	− 9·9	0	4	
			0·949	110·2	194·9	−19·6			975			1681	0·723	255·5	273·0	−11·1	7	20	
May 23							(219)	(1540)	(2157)			1683*c*	0·712	268·3	272·9	− 2·0	4	21	
												1683*a*	0·672	266·7	269·7	− 3·1	1	16	138 *c*
												1683*b*	0·647	266·0	267·8	− 3·5	0	10	
143·375	H, JH		0·962	254·0	326·5	−15·7			146			1675	0·636	246·4	264·8	−15·6	7	50	
			0·925	269·3	320·4	− 1·2			266			1675	0·557	242·1	258·4	−16·0	3	24	
			0·873	260·9	313·3	− 8·6			342			1675	0·501	239·0	254·1	−15·9	0	8	
		1670*a*	0·798	286·5	304·2	+12·3	17	186	276 *c&n*			1671	0·521	245·5	256·7	−13·4	0	6	
		1681*a*	0·471	252·7	279·9	− 9·2	6	33				1671*a*	0·487	246·0	254·7	−12·4	26	169	
		1681	0·420	247·6	276·0	−10·4	0	19				1672	0·561	299·6	257·9	+15·1	3	35	

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column, it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n*, *s*, *p*, *f*, *c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 1681, May 23–28. A small spot on May 23. On May 24 and succeeding days a regular spot, *a*, followed by a cluster of small spots.
Group 1682, May 23–June 1. A regular spot *a*. It diminishes in size from May 23 to May 29. A very small spot is seen near it on June 1.
Group 1683, May 24–27. Two very small spots, *a* and *b*, on May 24. A third spot, *c*, is seen near them on May 26, *b* and *c* have disappeared by May 27, and a fourth spot, *d*, is seen near *a*.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued*.

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
145d·273	H, JH	1672	0·548	303·4	256·1	+16·5	0	15	
		1672*a*	0·506	300·6	254·2	+13·9	95	496	
I.		1672	0·486	306·2	251·6	+15·6	0	37	
		1672	0·424	307·9	247·8	+14·0	0	15	
		1673	0·469	259·3	255·2	− 6·0	4	12	
		1677*a*	0·244	324·8	235·9	+10·4	5	126	
		1678*a*	0·281	176·9	226·8	−17·3	43	207	
		1682*a*	0·685	100·4	185·0	− 7·9	12	55	
			0·838	105·6	171·8	−13·7			923
May 26							(234)	(1626)	(2727)
146·445	H, SP		0·987	284·9	292·2	+14·6			126
		1681*a*	0·937	261·2	281·4	− 8·6	3	62	} 654 *c*
		1681	0·895	258·3	275·2	−10·9	10	62	
		1681	0·876	258·5	272·8	−10·5	3	16	
		1683*d*	0·890	269·7	274·9	− 0·8	0	19	
		1683*a*	0·850	267·3	270·2	− 2·8	4	29	355 *c*
		1675	0·738	249·2	257·8	−15·9	3	26	
		1675	0·694	249·6	254·3	−14·7	0	21	
		1675	0·664	252·9	252·5	−12·0	0	1	} 416 *c*
		1671	0·719	254·2	257·0	−12·0	0	2	
		1671	0·718	252·3	256·7	−13·3	0	8	
		1671*a*	0·694	253·5	254·9	−12·1	20	126	
		1672	0·745	291·2	258·0	+14·9	4	21	
		1672*a*	0·697	291·3	254·0	+13·8	49	493	
		1672	0·674	294·2	251·6	+15·2	0	99	
		1673	0·687	262·7	255·3	− 5·8	0	5	
		1677	0·451	295·7	236·5	+10·3	14	152	
		1678*a*	0·374	221·6	227·2	−17·1	34	186	
		1678	0·348	225·3	227·0	−15·1	0	3	
		1678	0·327	217·0	224·0	−16·1	0	4	
		1682*a*	0·468	105·2	185·2	− 7·9	4	30	
		1684	0·970	78·1	137·0	+11·3	0	15	593 *c*
			0·793	112·2	161·8	−18·1			397
May 27							(148)	(1380)	(2541)
147·490	SP, JH		0·951	267·4	270·2	− 2·8			332
			0·821	242·3	250·4	−23·0			128
		1681	0·972	259·4	274·5	−10·6	0	15	291 *c*
		1675	0·839	252·3	254·1	−15·3	0	10	
		1671	0·861	255·9	257·0	−12·6	1	15	} 789 *c*
		1671*a*	0·840	256·3	254·7	−12·0	11	94	
		1672*a*	0·841	287·5	254·0	+14·1	48	494	579 *c*
1885.				°	°	°			
147d·490	SP, JH	1677	0·670	288·1	238·7	+11·3	1	16	
		1677	0·646	285·5	237·3	+ 9·2	0	13	
		1677	0·632	287·6	236·0	+10·3	1	30	
		1678*a*	0·539	238·9	227·1	−16·9	31	181	
		1682*a*	0·256	115·9	185·0	− 7·3	4	24	
		1684	0·888	76·3	136·8	+11·7	0	12	1049 *e*
			0·952	95·2	126·5	− 5·2			93
			0·961	113·1	125·6	−22·4			504
May 28							(97)	(904)	(3765)
148·403	H, JH		0·798	233·2	233·1	−28·9			125
		1671*a*	0·933	257·4	254·7	−12·0	9	90	955 *c*&*s*
		1672*a*	0·933	285·3	254·2	+14·0	24	488	751 *c*
		1677	0·806	284·7	238·9	+11·4	3	19	} 321 *c*
		1677	0·786	281·2	237·4	+ 8·3	0	17	
		1677	0·766	283·6	235·3	+ 9·9	2	78	
		1678*a*	0·689	245·9	227·3	−16·8	27	178	247 *c*
		1682*a*	0·115	169·1	185·2	− 7·1	2	14	
		1684	0·773	74·4	137·1	+11·5	2	8	1000 *f*
		1685	0·890	116·5	126·1	−23·7	0	13	
		1685	0·890	114·7	125·8	−22·2	0	10	446 *c*
			0·860	96·8	127·4	− 6·2			133
May 29							(60)	(915)	(3978)
149·411	SP, H		0·917	248·3	237·9	−20·1			248
			0·890	237·2	231·7	−29·1			319
		1671*a*	0·987	257·9	253·4	−12·1	0	108	559 *c*
		1672*a*	0·988	283·9	253·4	+13·6	13	336	654 *c*
		1677	0·924	283·2	239·6	+12·0	0	9	
		1677	0·915	282·6	238·4	+11·3	0	2	
		1677	0·895	281·6	235·7	+10·1	7	52	} 414 *c*
		1677	0·859	282·5	231·3	+10·4	0	9	
		1677	0·850	281·0	230·5	+ 9·0	0	10	
		1678*a*	0·825	250·4	226·9	−16·4	31	167	
		1678	0·798	252·5	224·6	−14·2	0	2	174 *c*
		1682*a*	0·233	241·6	184·9	− 6·9	2	13	
		1685	0·788	118·9	124·8	−22·7	0	5	
		1685	0·814	118·4	122·1	−23·1	0	5	
		1686*a*	0·775	70·3	124·2	+14·7	0	18	
		1686*b*	0·778	71·9	123·7	+13·6	0	13	277 *f*
		1687	0·835	103·7	117·3	−11·7	2	28	
		1687	0·863	103·9	114·2	−12·3	0	12	108 *c*

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column, it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n*, *s*, *p*, *f*, *c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 1684, May 27–29. A small spot.

Group 1685, May 29–June 1. Two small spots on May 29 and 30. No trace of the group can be seen on May 31, but one small spot is seen on June 1.

Group 1686, May 30–June 8. Two small spots, *a* and *b*, on May 30. These have moved apart by May 31. *b* has greatly increased in size by June 1, and several very small spots have appeared between *a* and *b*. Only *a* and *b* remain by June 6, and only *a* by June 7.

Group 1687, May 30–June 9. Two small spots on May 30. The group increases in size and consists mainly of three spots, *a*, *b*, and *c*. Between *b* and *c* is a group of small spots, which change their position considerably. By June 7 only *a* and *b* remain.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
149d·411	SP, H		0·809	117·0	122·2	−21·9			258
			0·942	79·5	103·3	+ 9·6			286
May 30							(55)	(389)	(3297)
150·177	H, JH		0·963	249·0	236·1	−20·3			432
			0·927	235·4	226·7	−31·9			194
			0·846	242·3	219·2	−26·1			567
I.		1677	0·961	280·5	236·3	+10·0	0	70	} 677 *p*
		1677	0·935	280·8	231·4	+ 9·9	4	27	
		1678*a*	0·911	251·8	227·3	−16·8	35	187	
		1678	0·896	254·1	225·5	−14·4	0	3	483 *c*
		1682*a*	0·393	252·9	185·0	− 7·1	3	12	
		1686*a*	0·648	65·4	125·4	+15·2	5	38	
		1686*b*	0·673	68·6	122·9	+13·8	0	9	
		1687	0·728	105·9	117·4	−11·9	19	98	
		1687	0·739	109·2	117·0	−14·4	0	6	
		1687	0·740	103·4	116·1	−10·2	2	20	
		1687	0·763	107·5	114·6	−13·6	2	27	
		1687	0·769	104·7	113·7	−11·6	7	67	
			0·758	67·8	116·1	+16·3			310
			0·920	79·0	96·7	+ 9·9			866
			0·946	116·5	93·9	−25·1			206
			0·958	110·4	90·6	−19·7			112
May 31							(77)	(564)	(3847)
151·388	SP, JH		0·952	243·9	217·0	−24·9			371
			0·835	252·4	202·0	−14·9			152
		1678*a*	0·988	253·7	227·4	−16·2	0	191	389 *nf*
		1682*a*	0·630	259·4	185·2	− 6·9	0	11	
		1682	0·608	260·8	183·8	− 5·9	0	3	
		1688	0·258	144·7	138·1	−12·6	5	22	
		1688	0·282	144·1	137·0	−13·6	2	11	
		1688	0·269	139·3	136·5	−12·1	1	16	
		1688	0·296	137·5	135·0	−13·0	7	24	
		1685	0·512	141·7	126·6	−24·0	0	10	
		1686*a*	0·443	52·3	125·6	+15·3	6	34	
		1686	0·443	55·9	124·7	+14·0	0	8	
		1686	0·475	55·9	122·9	+15·0	0	7	
		1686*b*	0·472	59·2	122·2	+13·6	9	60	
		1687*a*	0·520	118·0	118·6	−14·4	0	6	
		1687*b*	0·520	112·3	117·5	−11·7	7	111	
		1687	0·520	109·9	117·1	−10·5	0	14	

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
151d·388	SP, JH	1687	0·545	107·9	115·2	−10·0	1	5	
		1687	0·571	113·2	114·3	−13·3	0	13	
		1687*c*	0·582	109·4	112·9	−11·5	13	161	
		1689	0·561	76·1	113·6	+ 7·4	2	11	
		1689	0·588	76·7	111·7	+ 7·4	0	7	
		1690*a*	0·988	100·3	66·1	−10·3	26	355	417 *nf*
			0·853	120·0	92·1	−25·5			570
			0·889	80·4	84·6	+ 8·4			295
June 1							(79)	(1080)	(2194)
152·423	H, JH		0·925	253·8	199·8	−15·1			253
			0·858	242·8	189·0	−23·2			193
		1688	0·231	209·4	139·7	−11·9	9	18	
		1688	0·229	197·4	137·1	−12·9	0	3	
		1688	0·227	188·1	135·0	−13·3	4	36	
		1686*a*	0·287	21·3	126·9	+15·1	5	25	
		1686	0·289	26·8	125·4	+14·6	0	7	
		1686	0·316	31·0	123·4	+15·4	0	19	
		1686*b*	0·314	38·1	121·6	+14·0	0	69	
		1687*a*	0·330	135·4	119·4	−13·8	4	13	
		1687*b*	0·321	127·8	118·2	−11·6	8	69	
		1687	0·362	129·2	116·4	−13·5	0	4	
		1687	0·339	121·9	116·2	−10·6	0	12	
		1687*c*	0·397	119·6	112·6	−11·6	31	166	
		1689	0·343	66·1	114·7	+ 7·7	0	5	
		1689	0·355	67·2	113·9	+ 7·6	0	2	
		1689	0·374	67·2	112·8	+ 8·0	1	12	
		1690*a*	0·928	101·0	65·5	−10·3	43	427	} 648 *c*
		1690*b*	0·950	101·1	61·8	−10·7	0	83	
		1690*c*	0·973	100·8	57·0	−10·6	0	200	
		1690*d*	0·976	103·0	56·3	−12·7	0	188	
			0·868	98·0	73·3	− 7·1			99
			0·923	65·2	68·1	+22·6			122
June 2							(105)	(1358)	(1315)
153·380	H, JH		0·942	248·1	189·4	−20·6			323
			0·879	261·7	181·7	− 7·4			403
		1688	0·406	238·1	141·2	−12·5	1	19	
		1688	0·354	235·0	137·8	−11·8	0	2	
		1688	0·338	227·9	135·5	−13·2	3	37	
		1686*a*	0·285	335·3	127·6	+14·9	4	21	
		1686	0·264	340·4	125·8	+14·3	0	8	
		1686	0·269	354·5	122·1	+15·4	0	8	

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column, it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n, s, p, f, c,* denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 1688, June 1–5. A group of four spots. The group has entirely changed its appearance by June 2, when it consists of a nearly straight stream of very small spots. It is measured in three clusters on June 2 and 3, and in five on June 4. It has again changed its appearance by the latter date, the stream being now nearly circular. Only two spots are seen on June 5.

Group 1689, June 1–4. Two spots. On June 2 the following spot has broken up into four very small spots. One of these is measured by itself.

Group 1690, June 1–13. A fine group, consisting mainly of four spots. On June 6 *c*, which has broken up, is measured in two parts. On June 7 *a* and *b* have joined, and are measured together. *d* has broken up by June 7, and has disappeared by June 11. *c* increases in size after June 10. A small spot has appeared preceding *a* by June 7, and other small spots are seen occasionally.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1885.				°	°	°			
153d·380	H, JH	1686*b*	0·241	358·3	121·0	+13·8	4	66	
		1686	0·229	3·1	119·9	+13·1	0	5	
		1687*a*	0·241	179·8	120·6	−14·0	3	50	
		1687*b*	0·205	171·1	118·8	−11·8	5	76	
		1687	0·259	173·2	118·7	−15·0	0	3	
		1687	0·195	159·1	116·6	−10·6	0	21	
		1687	0·247	162·1	116·1	−13·7	3	35	
		1687	0·247	152·3	113·9	−12·7	0	11	
		1687*c*	0·244	146·4	112·7	−11·8	29	122	
		1689	0·156	35·5	115·4	+ 7·1	0	8	
		1689	0·191	43·6	113·0	+ 7·8	0	7	
		1691	0·436	116·8	97·3	−11·4	0	4	
		1691	0·484	116·6	94·4	−12·6	0	5	
		1691	0·511	116·9	92·8	−13·4	0	5	
		1690*a*	0·832	102·8	65·2	−10·7	39	393	
		1690*b*	0·859	102·5	62·2	−10·8	4	95	
		1690*c*	0·906	101·7	56·3	−10·6	12	206	844 *c*
		1690*d*	0·913	104·7	55·6	−13·4	5	191	
		1690	0·922	99·4	53·9	− 8·7	0	13	
		1690	0·946	99·6	50·0	− 9·1	0	4	
			0·930	37·4	64·2	+47·4			86
June 3							(112)	(1415)	(1656)
154·400	SP, JH		0·987	246·6	186·8	−23·1			254
			0·966	264·5	181·8	− 5·3			219
			0·895	253·0	169·2	−15·1			309
		1688	0·597	248·6	141·6	−12·6	0	5	
		1688	0·587	247·3	140·6	−13·1	0	5	
		1688	0·566	249·6	139·6	−11·4	1	11	
		1688	0·560	245·8	138·5	−13·3	0	11	
		1688	0·535	246·0	136·9	−12·6	0	19	
		1686*a*	0·430	306·2	127·9	+14·7	5	16	
		1686*b*	0·341	315·3	121·2	+14·0	8	43	
		1687*a*	0·342	223·0	120·9	−14·4	12	51	
		1687	0·324	222·1	119·9	−13·8	4	13	
		1687*b*	0·292	226·6	119·4	−11·6	8	51	
		1687	0·296	221·2	118·5	−12·8	0	10	
		1687	0·317	217·4	118·4	−14·6	1	5	
		1687	0·251	224·3	117·2	−10·3	0	4	
		1687	0·291	213·4	116·5	−14·0	3	37	
		1687	0·261	216·6	116·1	−12·1	0	6	
		1687	0·248	214·5	115·2	−11·7	0	3	
		1687	0·258	212·0	115·0	−12·6	2	7	

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1885.				°	°	°			
154d·400	SP, JH	1687	0·234	212·5	114·3	−11·3	0	5	
		1687*c*	0·224	206·3	112·8	−11·6	13	94	
		1689	0·203	310·4	115·9	+ 7·5	0	5	
		1690*a*	0·682	105·9	65·3	−10·7	68	371	
		1690*b*	0·716	104·9	62·4	−10·6	8	150	
		1690*c*	0·781	103·7	56·7	−10·6	17	197	510 *c*
		1690	0·792	99·9	55·2	− 7·8	12	27	
		1690*d*	0·802	107·3	55·2	−13·8	32	222	
		1692	0·989	92·0	25·8	− 2·0	0	58	203 *c*
			0·863	106·2	48·6	−13·9			82
			0·870	101·0	47·2	− 9·6			368
			0·900	125·1	47·9	−31·1			143
			0·957	82·4	34·2	+ 7·3			249
June 4							(194)	(1426)	(2337)
155·384	H, SP		0·926	252·6	160·5	−16·0			138
		1688	0·748	252·9	140·8	−12·6	0	10	
		1688	0·696	251·6	136·3	−12·6	0	16	
		1686*a*	0·603	294·3	128·3	+14·4	4	26	
		1686*b*	0·505	299·1	120·9	+14·3	5	27	
		1686	0·503	303·3	119·7	+16·1	0	4	
		1687*a*	0·513	239·6	121·0	−14·9	4	49	
		1687*b*	0·470	244·6	119·5	−11·5	7	36	
		1687	0·476	240·2	118·9	−13·6	0	6	
		1687	0·430	237·4	115·6	−13·3	0	56	
		1687*c*	0·377	238·1	112·9	−11·3	8	63	
		1690*a*	0·509	111 6	65·2	−10·7	52	378	
		1690*b*	0·544	109·3	62·6	−10·3	5	181	
		1690	0·571	107·5	60·5	− 9·8	0	15	
		1690*c*	0·621	106·5	56·8	−10·1	14	205	
		1690	0·616	102·1	56·7	− 7·4	3	21	
		1690*d*	0·653	111·5	55·3	−13·8	11	126	
		1692	0·930	91·9	25·7	−11·7	0	25	458 *f*
June 5							(113)	(1244)	(596)
156·245	H, SP		0·862	255·3	141·0	−12·7			278
			0·838	289·4	137·7	+16·3			364
M.		1686*a*	0·750	289·4	129·3	+14·5	8	34	155 *c*
		1686*b*	0·659	292·3	121·4	+14·6	5	18	
		1687*a*	0·663	246·7	121·4	−15·0	10	65	
		1687*b*	0·630	251·2	119·8	−11·5	7	57	
		1687	0·606	252·7	118·4	−10·2	0	9	

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column, it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n, s, p, f, c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 1691, June 3. Three small spots seen only on this day.
Group 1692, June 4–6. A faint spot.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.	Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).						Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1885.				°	°	°				1885.				°	°	°			
156d·245	H, SP	1687*c*	0·542	248·4	113·3	−11·3	3	47		158d·284	H, JH	1690	0·243	229·7	66·4	− 8·5	1	18	
		1690*a*	0·353	122·6	65·0	−10·7	84	424				1690*a*	0·240	220·0	64·6	−10·1	103	479	
M.		1690*b*	0·381	118·2	62·6	−10·2	16	191		I.		1690*c*	0·181	201·4	59·4	− 9·2	3	39	
		1690	0·443	106·5	57·3	− 7·0	5	18				1690	0·138	206·0	59·1	− 6·6	0	3	
		1690*c*	0·445	112·9	58·0	− 9·8	4	101				1690*c*	0·170	187·3	56·8	− 9·2	9	63	
		1690	0·475	117·8	57·1	−12·6	0	10				1690	0·142	177·3	55·2	− 7·6	0	17	
		1690*c*	0·476	112·4	56·1	−10·3	39	148				1690*d*	0·227	177·9	55·1	−12·6	31	206	
		1690*d*	0·503	118·6	55·6	−13·7	25	141				1690*d*	0·254	167·2	52·3	−13·8	2	26	
		1690	0·514	105·2	52·6	− 7·5	0	4				1694*a*	0·865	107·2	357·2	−14·6	210	665	} 520*c&f*
		1690	0·561	106·6	49·6	− 9·1	3	15				1695	0·953	106·2	344·3	−15·3	0	263	
		1692	0·843	92·4	25·3	− 1·9	0	15	592 *f*	June 8							(372)	(1955)	(2213)
			0·984	91·3	3·0	− 1·2			259										
June 6							(209)	(1297)	(1648)	159·162	H, JH		0·960	246·2	115·8	−22·6			139
													0·944	287·2	113·8	+16·4			927
										I.			0·861	301·0	99·4	+26·6			110
157·416	SP, H		0·952	256·5	138·4	−12·7			187			1687*a*	0·977	253·8	120·8	−15·7	0	34	} 718 *f*
			0·883	244·9	126·2	−21·8			67			1687*b*	0·970	257·7	119·2	−11·7	0	26	
		1686*a*	0·888	286·1	128·5	+14·4	0	16	283 *c*			1693	0·821	254·3	97·8	−12·5	0	9	} 191 *c*
		1687*a*	0·826	251·0	120·9	−15·3	8	41	} 154 *c*			1693	0·757	249·3	91·0	−15·1	0	5	
		1687*b*	0·805	255·2	119·4	−11·6	5	28				1690	0·403	247·6	66·0	− 8·2	0	28	
		1693	0·519	245·0	95·7	−12·3	3	50				1690*a*	0·399	241·4	64·8	−10·4	93	492	
		1693	0·489	237·5	92·1	−14·9	3	44				1690	0·378	249·1	64·7	− 7·1	0	2	
		1690	0·161	178·5	66·8	− 8·8	0	45				1690	0·357	250·4	63·7	− 6·3	0	3	
		1690*a*	0·191	168·7	64·8	−10·3	67	492				1690*c*	0·322	338·7	60·1	− 9·1	4	14	
		1690*c*	0·220	139·7	58·7	− 9·2	6	41				1690	0·279	245·5	58·7	− 6·0	0	11	
		1690	0·195	130·0	58·4	− 6·8	0	8				1690*c*	0·278	233·2	57·0	− 9·0	9	53	
		1690*c*	0·250	134·3	56·6	− 9·6	13	73				1690*d*	0·309	220·6	55·9	−13·0	5	29	
		1690*d*	0·311	138·4	54·8	−13·0	19	141				1690*d*	0·288	220·2	54·9	−12·1	5	54	
		1690*d*	0·343	137·9	53·3	−14·3	0	10				1690*d*	0·295	211·6	53·1	−13·9	4	54	
		1690*d*	0·348	133·5	52·0	−13·4	1	14				1694*a*	0·754	109·9	357·1	−14·4	192	671	
		1690	0·317	121·1	51·1	− 9·0	0	1				1694	0·761	106·4	355·9	−12·0	2	34	} 325 *c*
		1690	0·333	118·9	49·9	− 8·8	0	7				1694	0·785	107·6	354·0	−13·3	0	9	
		1694*a*	0·949	105·6	356·4	−14·7	83	494	559*c&f*			1694	0·800	109·3	352·8	−15·0	0	7	
			0·913	92·5	1·4	− 2·1			281			1695	0·878	107·9	344·2	−15·3	13	174	513 *c*
June 7							(208)	(1505)	(1531)			1696	0·960	89·4	330·5	+ 8·8	0	18	
													0·932	95·7	335·7	− 5·1			52
158·284	H, JH		0·957	262·1	128·2	− 7·4			77	June 9							(327)	(1727)	(2975)
			0·934	245·4	122·3	−22·7			280										
I.		1686	0·963	284·9	129·3	+14·4	0	16	924 *f*	160·397	SP, H		0·948	285·2	98·4	+14·6			113
		1687*a*	0·918	252·9	120·9	−15·4	0	49	} 412 *f*				0·923	255·7	94·0	−12·9			127
		1687*b*	0·906	256·9	119·7	−11·6	4	40				1690*a*	0·627	252·6	65·0	−10·2	60	521	
		1693	0·683	251·4	96·9	−12·2	5	31				1690*c*	0·565	250·8	60·4	−10·1	0	17	
		1693	0·624	245·2	91·3	−14·7	4	40				1690*c*	0·527	251·7	58·0	− 8·9	4	71	

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column, it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n, s, p, f, c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

June 8. The limb on this photograph is very ill-defined at 90°.

Group 1694, June 7–18. A very large spot, *a*. On June 9 it has three companions, which are measured together on June 10 and 12. On June 11 *a* breaks into two parts, *b* and *c*. Small spots are detached on June 14 and 15.

Group 1695, June 8–14. A large spot which rapidly diminishes in size. On June 11 it breaks into two parts, and the preceding spot is not seen on the next day. A different spot is seen preceding on June 13. On June 14 the group consists of several very faint spots.

Group 1696, June 9. A faint spot.

Group 1693, June 7–9. Two spots which separate and diminish in size.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued*.

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
160d·397	SP H	1690*d*	0·507	243·5	55·3	−12·4	0	35	
		1690*d*	0·489	239·8	53·4	−13·6	0	48	
		1694*a*	0·551	117·9	357·7	−14·3	108	659	
		1694	0·575	113·1	355·0	−12·4	2	43	
		1694	0·602	117·5	354·2	−15·5	0	9	
		1695	0·718	111·8	344·2	−14·9	9	105	
			0·917	95·1	321·6	− 4·4			211
			0·960	77·3	314·5	+12·4			228
June 10							(183)	(1508)	(679)
161·406	H, SP	1690*a*	0·781	255·7	64·3	−10·6	48	498	
		1690*c*	0·736	256·1	60·4	− 9·6	6	122	
		1690*c*	0·698	257·1	57·5	− 8·4	19	128	
		1697	0·277	284·0	29·8	+ 4·6	0	2	
		1694*b*	0·348	134·8	359·6	−13·4	49	176	
		1694*c*	0·403	131·8	356·2	−14·7	51	385	
		1694	0·404	125·8	354·7	−12·8	0	23	
		1694	0·439	128·7	353·5	−15·1	0	16	
		1695	0·546	120·7	345·2	−15·4	0	20	
		1695	0·565	118·9	343·5	−15·1	4	48	
			0·880	76·4	313·3	+12·4			208
			0·982	75·8	295·5	+14·1			216
June 11							(177)	(1418)	(424)
162·449	H, SP		0·966	278·5	75·2	+ 8·5			140
			0·950	264·3	71·8	− 5·1			175
			0·935	292·4	68·2	+21·2			196
		1690*a*	0·906	257·9	64·5	−10·6	78	467	
		1690*c*	0·885	259·6	61·9	− 8·7	16	116	} 543 *c*
		1690*c*	0·870	257·6	59·9	−10·2	5	44	
		1690	0·846	260·2	57·5	− 7·8	31	192	
		1690	0·827	250·8	54·2	−15·1	0	8	301 *c*
		1697	0·532	278·0	32·2	+ 5·1	4	50	
		1697	0·507	278·6	30·5	+ 5·2	0	5	
		1697	0·486	277·1	29·2	+ 4·3	0	8	
		1697	0·479	279·6	28·6	+ 5·5	0	11	
		1697	0·454	278·7	27·1	+ 4·8	11	24	
		1694*b*	0·248	180·1	0·4	−13·3	29	191	
		1694*c*	0·279	163·7	355·8	−14·5	72	452	
		1694	0·301	155·3	353·0	−14·8	0	31	
		1695	0·392	134·1	343·5	−14·9	5	14	
		1695	0·376	128·7	343·0	−12·6	0	1	
1885.				°	°	°			
162d·449	H, SP	1698	0·731	71·6	315·0	+14·0	0	1	
		1698	0·779	71·1	310·8	+15·3	0	5	
		1699*a*	0·961	98·8	286·9	− 8·2	19	187	660*c*&*p*
		1700	0·977	91·5	282·9	− 1·3	0	17	108 *s*
			0·779	75·2	310·2	+12·1			184
			0·908	73·8	296·1	+15·1			298
June 12							(270)	(1824)	(2605)
163·404	H, JH	1690*a*	0·973	258·4	63·7	−11·0	31	356	} 599*c*&*s*
		1690	0·961	260·1	61·1	− 9·2	0	321	
		1690	0·944	261·7	58·0	− 7·5	0	110	
		1697	0·717	276·4	33·3	+ 5·4	0	54	
		1697	0·686	275·5	30·9	+ 4·6	0	9	
		1697	0·668	277·2	29·4	+ 5·6	0	4	
		1697	0·633	276·1	26·8	+ 4·7	0	24	
		1694*b*	0·341	220·7	1·0	−13·8	24	198	
		1694*c*	0·302	205·8	355·6	−14·7	63	429	
		1695	0·269	171·4	345·4	−14·3	0	3	
		1695	0·285	164·4	343·3	−14·8	0	5	
		1699*a*	0·881	100·3	286·8	− 8·5	8	136	179 *c*
		1700	0·914	92·1	282·0	− 1·5	1	22	
			0·846	105·4	291·4	−12·4			118
Ju e13							(127)	(1671)	(896)
164·541	SP, JH		0·962	256·8	45·9	−12·3			359
		1697	0·870	275·7	32·9	+ 5·5	0	51	} 192 *c*
		1697	0·816	274·6	27·2	+ 4·4	0	52	
		1694*b*	0·533	239·9	1·0	−14·4	21	164	
		1694	0·488	237·1	357·6	−14·3	0	13	
		1694*c*	0·455	233·3	354·8	−14·6	58	366	
		1695	0·360	227·9	348·5	−12·7	0	8	
		1695	0·399	219·7	348·1	−16·7	0	10	
		1695	0·367	217·0	345·9	−15·8	0	21	
		1695	0·334	210·1	342·7	−15·6	0	8	
		1699	0·707	100·9	288·5	− 6·8	1	27	} 248 *c*
		1699*a*	0·727	102·6	287·1	− 8·3	12	154	
		1699	0·763	100·6	283·8	− 7·3	0	10	
		1700	0·778	92·7	281·9	− 1·4	0	15	42 *c*
		1701*a*	0·895	102·6	270·2	−10·7	0	20	304*c*&*s*
		1702	0·955	81·3	260·2	+ 8·6	10	134	675*c*&*n*
		1703*a*	0·982	112·5	255·2	−21·8	0	54	324 *c*
June 14							(102)	(1107)	(2144)

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column, it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n*, *s*, *p*, *f*, *c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 1697, June 11–14. One faint spot on June 11, five on June 12, four on June 13. Of the four seen on June 13 the third has disappeared by June 14, and the two preceding are measured together.

Group 1698, June 12. Two very small spots.

Group 1699, June 12–21. A large spot, *a*, with two small companions, on June 14. *a* has broken up by June 16 into two principal spots, *b* and *c*, with small companions.

Group 1700, June 12–18. A small regular spot.

Group 1701, June 14–18. One spot, *a*, on June 14. Another, *b*, appears on June 15, and has disappeared by June 18.

Group 1702, June 14–25. A regular spot.

Group 1703, June 14–18. Two spots, *a* and *b*, are seen on June 15. Another spot, *c*, is seen near *b* on June 16. *b* has disappeared by June 17, and *a* has divided into two portions.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.	Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).						Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1885.				°	°	°				1885.				°	°	°			
165d·482	H, SP		0·912	272·6	25·9	+ 2·9			721	166d·431	H, JH	1706a	0·894	79·7	244·9	+ 9·8	90	536	⎫
		1694b	0·695	247·4	1·6	−14·5	15	148				1706	0·920	79·0	241·2	+10·7	7	265	}771 c
		1694	0·684	244·7	0·2	−16·3	0	8				1706	0·954	78·1	235·6	+11·7	48	509	⎭
		1694c	0·614	243·5	354·8	−14·8	55	373					0·792	76·5	256·2	+11·5			171
		1704	0·350	105·2	300·6	− 4·0	0	12					0·883	69·1	247·4	+18·9			229
		1704	0·372	102·1	299·0	− 3·3	1	24					0·935	113·8	241·1	−21·6			67
		1699a	0·551	106·3	288·2	− 7·8	11	158					0·966	103·3	233·7	−12·5			319
		1700	0·623	93·8	282·0	− 1·3	0	7		June 16							(295)	(2418)	(2750)
		1701a	0·778	104·9	270·6	−10·7	4	27											
		1701b	0·808	104·3	267·7	−10·7	0	9											301
		1705	0·838	107·5	265·2	−13·8	0	30	}370 f	167·218	SP, JH		0·920	267·3	3·9	− 1·9			
		1705	0·872	107·6	261·3	−14·6	6	43				1694b	0·922	253·2	3·0	−14·9	19	92	}598 c
		1702	0·867	80·7	260·6	+ 8·7	11	117		I.		1694c	0·859	251·4	354·6	−15·1	74	365	
		1703a	0·924	114·4	255·5	−21·9	14	214	}578 c			1707a	0·640	245·5	334·1	−14·1	1	32	
		1703b	0·949	113·7	251·0	−22·0	0	43				1707b	0·602	242·5	330·7	−14·9	3	38	
		1706a	0·971	80·0	244·4	+10·0	56	404	}1060			1704	0·140	223·7	302·8	− 4·3	0	7	
		1706	0·987	79·4	239·7	+10·7	0	114	c & n			1704	0·118	217·1	301·4	− 3·9	0	3	
			0·924	105·9	254·2	−14·1			366			1704	0·076	194·7	298·4	− 2·7	0	5	
June 15							(173)	(1731)	(3095)			1699b	0·201	138·3	289·6	− 7·1	0	26	
												1699c	0·227	135·6	288·1	− 7·8	13	57	
166·431	H, JH		0·982	273·2	26·7	+ 3·5			300			1700	0·269	101·6	282·1	− 1·7	0	5	
			0·950	265·6	19·2	− 3·7			180			1701a	0·480	116·6	271·5	−11·0	7	27	
			0·849	270·1	5·7	+ 0·8			79			1701b	0·529	113·4	267·8	−10·8	1	6	
		1694b	0·830	251·7	2·0	−14·3	15	131	214 c			1705	0·577	117·8	265·7	−14·3	0	94	
		1694c	0·757	249·3	354·6	−14·6	54	318	131 c			1705	0·596	115·2	263·8	−13·4	0	7	
		1707a	0·494	237·0	333·0	−14·3	2	10				1705	0·634	115·6	261·2	−14·7	16	153	
		1707b	0·466	234·5	330·8	−14·3	3	20				1702	0·599	78·5	261·1	+ 8·1	21	128	
		1704	0·142	133·8	301·9	− 4·3	0	5				1703a	0·736	123·1	255·6	−22·5	3	30	
		1704	0·148	126·4	301·0	− 3·6	0	3				1703a	0·758	121·6	253·2	−22·3	0	12	
		1704	0·173	114·6	298·8	− 2·8	2	3				1703c	0·806	121·0	248·6	−23·5	0	19	
		1699b	0·346	114·1	289·3	− 6·8	2	58				1706a	0·806	78·8	244·1	+ 9·9	137	676	
		1699c	0·373	115·5	288·0	− 7·9	15	101				1706	0·884	77·5	235·7	+11·7	44	774	894 c
		1699	0·366	110·5	287·7	− 6·0	0	2					0·923	97·5	230·5	− 6·3			365
		1699	0·387	109·3	286·4	− 6·0	0	2					0·936	106·8	229·4	−15·1			359
		1699	0·414	106·0	284·3	− 5·3	0	6		June 17							(339)	(2556)	(2517)
		1700	0·434	95·9	282·3	− 1·3	0	7											
		1701a	0·623	109·2	271·2	−10·7	16	38											
		1701b	0·668	107·8	267·6	−10·7	0	9		168·470	H, SP	1694b	0·991	255·1	2·3	−14·6	0	136	}803 c
		1705	0·702	111·1	265·6	−13·6	4	45				1694c	0·963	254·2	353·9	−14·7	42	253	
		1705	0·750	110·2	261·5	−14·0	11	102				1699b	0·217	227·4	290·0	− 6·7	0	11	
		1702	0·734	79·8	261·1	+ 8·5	17	126				1699c	0·205	221·0	288·6	− 7·2	11	33	
		1703a	0·836	118·3	255·2	−22·4	9	84	⎫			1699	0·169	222·8	287·4	− 5·4	0	2	
		1703b	0·876	116·4	250·1	−22·2	0	24	}289 c			1700	0·060	207·9	282·4	− 1·3	0	7	
		1703c	0·895	117·8	248·0	−23·9	0	14	⎭			1701a	0·258	146·5	272·5	−10·7	4	17	

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column, it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n, s, p, f, c,* denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 1704, June 15–17. Three small spots; two are measured together on June 15.
Group 1705, June 15–25. Two irregularly shaped groups, which diminish in size after June 20. Small companions are measured separately on June 17, 21, and 22.
Group 1706, June 15–27. A very large group consisting of a large spot, *a*, preceding and an irregular mass following. The latter undergoes constant changes. The entire group appears and is measured as one spot on June 25. On June 27 it appears as two spots on the limb, which are measured separately.
Group 1707, June 16–17. Two small regular spots, *a* and *b*.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
168d.470	H, SP	1705	0·378	139·4	266·1	−15·0	14	124	
		1705	0·432	131·6	261·3	−15·0	12	251	
		1702	0·353	71·3	261·1	+ 8·1	17	121	
		1703	0·565	136·6	256·0	−22·6	0	14	
		1706*a*	0·609	76·2	244·1	+ 9·8	106	705	
		1706	0·647	72·1	241·8	+12·8	0	3	
		1706	0·661	76·3	240·2	+10·3	0	67	
		1706	0·695	75·2	237·7	+11·4	0	91	
		1706	0·733	74·6	234·7	+12·4	54	616	
			0·868	109·2	222·7	−15·7			137
			0·920	119·2	217·8	−25·9			159
			0·962	105·8	207·9	−14·7			95
June 18							(260)	(2451)	(1194)
169·484	H, SP		0·974	252·4	339·3	−12·8			285
			0·914	253·8	331·8	−14·0			152
		1708	0·441	240·8	290·3	−10·7	0	12	
		1699*b*	0·425	248·9	290·7	− 7·1	0	10	
		1699*c*	0·392	247·6	288·6	− 6·9	5	27	
		1705	0·290	179·6	267·2	−15·0	4	86	
		1705	0·311	161·0	261·3	−15·3	13	162	
		1702	0·153	42·2	261·4	+ 8·3	13	105	
		1706*a*	0·413	69·7	244·3	+ 9·9	121	702	
		1706	0·482	70·0	239·9	+11·1	5	186	
		1706	0·565	70·3	234·4	+12·4	51	595	
June 19							(212)	(1885)	(437)
170·414	H, SP		0·971	254·6	329·8	−14·4			237
			0·882	262·7	316·2	− 5·5			111
			0·882	285·2	316·1	+14·3			135
		1708	0·616	249·7	290·8	−10·8	1	6	
		1699*c*	0·574	255·1	288·7	− 6·9	5	14	
		1705	0·363	217·3	268·0	−14·9	9	95	
		1705	0·316	200·8	261·5	−15·2	8	193	
		1702	0·160	315·7	261·4	+ 8·5	15	127	
		1706*a*	0·228	53·0	244·3	+ 9·8	102	734	
		1706	0·282	44·7	243·2	+13·4	0	4	
		1706	0·348	60·2	237·0	+11·7	33	916	
			0·845	110·3	199·6	−15·9			195
			0·922	99·1	188·5	− 7·6			67
			0·959	81·8	181·5	+ 8·5			75
June 20							(173)	(2089)	(820)
1885.				°	°	°			
171d.510	H, SP		0·966	284·6	315·3	+14·6			152
			0·943	258·8	310·1	− 9·9			68
			0·783	293·8	289·9	+19·7			76
		1699*c*	0·756	259·6	288·8	− 6·5	2	10	
		1705	0·549	240·1	269·8	−14·1	7	98	
		1705	0·467	234·6	263·5	−13·8	0	20	
		1705	0·482	228·3	262·5	−16·8	2	18	
		1705	0·450	228·7	260·9	−15·4	24	159	
		1702	0·375	288·5	261·5	+ 8·6	11	106	
		1706*a*	0·150	337·0	243·9	+ 9·9	128	986	
		1706	0·189	23·1	236·2	+12·0	23	931	
June 21							(197)	(2328)	(296)
172·409	H, SP		0·954	265·9	300·7	− 3·3			79
			0·929	284·0	296·5	+13·8			198
			0·871	257·3	288·0	−10·0			329
		1705	0·699	247·1	270·1	−14·2	9	38	
		1705	0·614	239·6	261·9	−16·3	0	6	
		1705	0·594	240·3	260·8	−15·1	8	126	
		1702	0·555	283·0	261·6	+ 8·9	14	117	
		1706	0·375	285·9	249·8	+ 7·8	0	5	
		1706	0·375	291·5	249·3	+ 9·9	0	5	
		1706*a*	0·301	297·3	244·3	+ 9·9	100	903	
		1706	0·228	321·0	237·0	+12·3	30	886	
			0·813	125·8	181·1	−27·0			134
			0·850	109·9	172·7	−15·7			109
			0·954	105·8	157·5	−14·4			96
			0·975	76·3	151·6	+13·8			185
June 22							(161)	(2086)	(1130)
173·416	H, JH		0·978	287·5	293·6	+17·6			304
			0·949	259·8	286·0	− 8·9			803
I.		1705	0·845	251·5	270·9	−14·2	7	39	297 *c*
		1705	0·748	247·1	260·7	−15·3	26	77	137 *c*
		1702	0·732	280·5	261·9	+ 9·2	15	95	53 *c*
		1706*a*	0·503	286·2	244·6	+10·1	138	907	
		1706	0·402	295·3	237·0	+12·0	25	748	
		1706	0·368	285·5	236·2	+ 7·8	0	31	
		1709	0·306	132·5	201·1	− 9·7	0	7	
		1709	0·327	127·3	200·1	− 9·2	2	6	
		1710	0·839	108·9	160·5	−14·4	12	35	258 *c*
		1710	0·881	107·9	155·5	−14·6	19	60	

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column, it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n, s, p, f, c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 1708, June 20. A very small spot.

Group 1709, June 23–24. Two very small faint spots.

Group 1710, June 23–July 2. Two spots, which appear to separate. The following spot diminishes and has disappeared by June 27, on which day the preceding spot has developed into a large group, which, after some changes, remains as two principal spots, *a* and *b*. *a* has a small companion on June 30 and July 1, and by July 2 has divided into two spots. *b* is measured as two spots on July 1.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.	Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).						Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1885.				°	°	°				1885.				°	°	°			
173d·416	H, JH	1711	0·951	107·9	145·0	−16·2	21	142	} 665 *c*	177d·445	H, SP	1706	0·989	277·7	243·4	+ 8·0	0	351	} 657 *c*
		1711	0·971	108·1	140·8	−16·9	8	50				1706	0·972	280·9	238·3	+11·2	0	79	
I.			0·947	73·8	144·4	+16·1			403			1710	0·284	191·8	165·3	−13·4	38	378	
			0·957	86·2	142·3	+ 4·3			236			1710	0·311	176·1	160·6	−15·3	3	135	
			0·969	97·6	140·2	− 6·8			176			1710	0·252	174·6	160·5	−11·7	0	26	
June 23							(273)	(2197)	(3332)			1710	0·270	169·3	159·0	−12·7	0	12	
												1710	0·273	163·3	157·3	−12·4	0	25	
174·401	H, SP		0·862	287·3	260·9	+16·1			400			1710	0·308	164·6	157·1	−14·5	7	123	
			0·814	237·6	250·9	−24·3			135			1711	0·424	139·0	145·2	−16·0	3	37	
		1705	0·869	250·2	260·2	−15·8	0	63		June 27							(51)	(1166)	(657)
		1705	0·837	247·3	256·0	−17·4	0	9	858 *c&p*										
		1702	0·867	279·2	262·1	+ 9·2	5	65	119 *c&f*										
		1706*a*	0·676	282·2	244·2	+10·0	65	923		178·412	H, SP		0·983	282·9	228·5	+13·2			245
		1706	0·606	285·8	238·5	+11·4	5	465					0·919	241·0	211·4	−25·1			153
		1706	0·562	289·9	234·9	+13·1	0	10				1710*a*	0·393	226·4	165·9	−13·0	76	462	
		1706	0·546	287·1	234·2	+11·3	0	8				1710	0·360	221·1	163·0	−13·0	0	8	
		1706	0·530	285·4	233·3	+10·2	0	9				1710	0·356	210·7	159·8	−15·0	10	86	
		1709	0·223	180·3	202·2	−10·4	0	5				1710	0·301	208·5	157·4	−12·5	0	22	
		1709	0·210	169·6	200·0	− 9·5	0	2				1710*b*	0·325	204·1	156·8	−14·4	12	171	
		1710	0·684	113·7	162·2	−14·1	10	89				1711	0·328	169·0	145·3	−15·9	6	28	
		1710	0·771	111·5	154·5	−14·8	11	90				1713	0·148	172·2	147·8	− 5·6	0	5	
		1711	0·864	110·0	144·8	−15·9	20	166	} 696 *c*			1713	0·164	159·8	145·7	− 6·0	7	33	
		1711	0·897	110·8	141·0	−17·4	5	35				1713	0·182	144·1	142·9	− 5·7	0	23	
		1711	0·926	111·8	136·9	−19·1	1	50				1713	0·204	148·6	142·9	− 7·2	0	8	
			0·932	72·0	134·0	+17·6			574			1713	0·211	141·2	141·4	− 6·7	0	20	
June 24							(122)	(1989)	(2782)			1714*a*	0·995	98·7	65·4	− 8·4	0	60	284 *p*
													0·902	78·6	84·8	+11·5			289
175·251	H, JH		0·940	287·1	260·7	+16·9			165				0·925	97·4	82·0	− 5·8			137
		1705	0·948	251·9	260·7	−16·3	0	18	} 424 *c*	June 28							(111)	(926)	(1108)
I.		1705	0·930	249·9	257·3	−17·7	0	8											
		1702	0·950	279·1	262·9	+ 9·5	4	33	235 *n f*										
		1712	0·910	246·0	253·5	−20·6	0	5	384 *s*										
		1706	0·783	281·3	242·2	+10·4	56	1212	658 *c*	179·581	H, SP	1710*a*	0·585	244·3	166·2	−12·3	55	475	
		1710	0·538	121·8	163·1	−14·2	8	78				1710	0·531	236·5	160·8	−14·4	4	27	
		1710	0·589	120·2	159·4	−15·1	0	8				1710	0·512	233·1	158·7	−15·2	0	7	
		1710	0·654	116·9	154·1	−15·2	3	44				1710	0·493	236·8	158·6	−13·0	0	42	
		1711	0·759	113·7	145·0	−16·0	18	149	260 *c*			1710*b*	0·476	232·6	156·5	−14·1	14	138	
		1711	0·811	113·8	140·2	−17·5	2	37	52 *c*			1711	0·373	211·2	145·2	−15·7	0	18	
		1711	0·843	114·7	137·2	−19·1	0	12	272 *s f*			1713	0·310	244·3	149·9	− 5·0	0	19	
			0·764	101·2	142·3	− 6·9			88			1713	0·293	238·3	148·1	− 6·0	0	17	
			0·867	71·1	132·0	+17·6			257			1713	0·281	242·1	148·1	− 4·7	0	5	
			0·937	101·1	122·6	− 9·5			620			1713	0·253	234·6	145·6	− 5·6	0	56	
			0·936	75·6	122·0	+14·4			319			1713	0·240	228·6	144·1	− 6·3	0	8	
June 25							(91)	1604)	(3734)			1713	0·208	220·1	141·4	− 6·2	0	16	

The Groups of Spots are numbered in the order of their appearance When there is no number in the third column, it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n, s, p, f, c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

June 25. The film on this photograph is much broken at the limb from 90°–150°.

Group 1711, June 23–July 2. Three spots on June 24. Only one is seen after June 25.

Group 1712, June 25. A small spot.

Group 1713, June 28–July 3. A group of ten spots on June 28. They separate and form a straight line of spots, the largest being in the middle.

Group 1714, June 28–July 11. Seven large spots, *a, b, c, d, e, f*, and *g*, on June 30, with some smaller spots following. *b* has disappeared by July 2, and *a* begins to break up on July 4. *e* is an irregular mass which has broken up and partly disappeared by July 4, causing an apparent change of place on that day. On July 5 the group appears as a multitude of small spots, and after this the group consists of the three spots *d, f*, and *g*, with several small spots at some distance. The small spot following *d* on July 6 is measured with it on July 7.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
179d·581	H, SP	1714*a*	0·940	100·1	64·7	— 8·4	0	120	} 460 *c*
		1714*b*	0·948	98·4	63·1	— 7·0	0	78	
		1714*c*	0·952	102·2	62·7	—10·7	0	121	
		1714	0·993	101·4	51·4	—11·0	0	444	546 *c*
June 29							(73)	(1591)	(1006)
180·409	H, SP		0·928	247·1	187·9	—19·9			84
			0·913	261·6	187·8	— 6·4			97
			0·897	278·4	186·4	+ 8·9			94
		1710*a*	0·723	250·9	166·7	—11·5	43	441	
		1710	0·702	247·1	164·2	—13·6	0	12	
		1710*b*	0·614	242·7	156·7	—13·8	13	153	
		1711	0·483	228·9	144·8	—15·7	1	22	
		1713	0·498	253·9	151·3	— 5·3	0	16	
		1713	0·476	251·5	149·6	— 6·0	2	19	
		1713	0·470	254·2	149·6	— 4·7	0	37	
		1713	0·454	251·1	148·2	— 5·7	0	4	
		1713	0·416	248·2	145·5	— 6·1	14	147	
		1713	0·367	244·5	142·1	— 6·2	0	38	
		1714*a*	0·861	102·0	64·5	— 8·7	13	178	} 177 *c*
		1714*b*	0·869	100·3	63·4	— 7·4	0	42	
		1714*c*	0·876	104·1	63·0	—10·9	6	114	
		1714*d*	0·918	103·0	57·4	—10·7	0	51	
		1714*e*	0·944	101·7	53·1	—10·0	0	266	
		1714*f*	0·946	104·0	53·1	—12·2	29	153	
		1714*g*	0·953	99·0	51·2	— 7·7	0	65	
		1714	0·965	101·0	48·9	— 9·8	0	59	506 *c*
			0·914	109·8	59·0	—16·8			256
June 30							(121)	(1817)	(1214)
181·496	H, SP	1710*a*	0·874	255·3	167·7	—11·2	58	539	} 289 *f*
		1710	0·856	252·3	165·1	—13·4	0	3	
		1710*b*	0·792	250·1	158·2	—13·7	4	34	} 161 *c*
		1710*b*	0·776	249·1	156·5	—14·0	3	109	
		1713	0·702	259·4	152·1	— 5·2	0	8	
		1713	0·688	258·1	150·8	— 5·9	3	5	
		1713	0·670	258·9	149·5	— 5·1	2	10	
		1713	0·623	256·4	145·7	— 6·0	7	126	
		1713	0·585	254·6	142·8	— 6·4	3	34	
		1711	0·649	241·5	144·5	—15·5	0	5	
		1714	0·658	104·0	68·6	— 6·7	1	6	
1885.									
181d·496	H, SP	1714	0·680	106·1	67·2	— 8·5	0	2	
		1714*a*	0·710	105·1	64·7	— 8·4	19	115	
		1714*b*	0·724	103·2	63·3	— 7·4	3	27	
		1714*c*	0·735	107·5	63·1	—10·6	21	165	
		1714	0·747	102·8	61·3	— 7·4	0	5	
		1714	0·758	101·4	60·2	— 6·6	0	2	
		1714	0·780	100·3	58·1	— 6·0	0	5	
		1714*d*	0·803	105·6	56·7	—10·6	29	117	
		1714	0·815	102·0	55·0	— 7·9	0	15	
		1714*e*	0·839	104·5	53·0	—10·3	12	240	
		1714*f*	0·847	106·5	52·4	—12·2	31	167	} 758 *p*
		1714*g*	0·843	101·0	52·0	— 7·5	13	140	
		1714	0·868	104·5	49·8	—10·9	0	6	
		1714	0·872	103·3	49·1	—10·0	4	43	
		1715*a*	0·880	114·3	50·3	—19·6	0	22	277 *e* & *p*
			0·955	86·2	35·8	+ 4·6			205
July 1							(213)	(1950)	(1690)
182·402	H, SP	1710	0·960	257·3	168·7	—11·2	40	339	} 371 *f*
		1710	0·944	255·7	165·5	—12·3	0	64	
		1710*b*	0·886	252·2	156·5	—14·1	0	96	346 *c*
		1713	0·828	261·0	151·3	— 5·6	0	24	
		1713	0·778	260·0	146·5	— 5·8	0	76	
		1713	0·744	258·5	143·3	— 6·4	4	36	186 *c*
		1711	0·783	247·2	144·6	—15·5	0	6	163 *f*
		1714	0·528	112·0	66·7	— 8·6	0	7	
		1714*a*	0·552	110·5	64·9	— 8·4	21	106	
		1714*b*	0·572	108·3	63·2	— 7·7	2	9	
		1714*c*	0·591	112·9	62·8	—10·6	18	170	
		1714	0·591	107·4	61·8	— 7·5	0	14	
		1714	0·601	105·7	60·8	— 6·7	0	2	
		1714	0·614	104·7	59·8	— 6·4	0	3	
		1714	0·633	103·2	58·2	— 5·8	1	9	
		1714*d*	0·669	109·9	56·7	—10·7	18	112	
		1714*e*	0·717	108·1	52·6	—10·6	6	221	
		1714*f*	0·724	110·4	52·5	—12·3	26	157	
		1714*g*	0·714	103·9	52·1	— 7·6	15	138	} 195 *c*
		1714	0·745	105·7	49·8	— 9·5	3	14	
		1714	0·763	110·2	49·2	—13·1	0	8	
		1714	0·811	102·9	43·4	— 8·5	0	8	306 *s*
		1715	0·724	119·6	54·9	—18·5	0	3	
		1715	0·741	118·7	53·2	—18·4	0	2	
		1715*a*	0·770	119·2	50·9	—19·8	7	24	134 *c*

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column, it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n, s, p, f, c,* denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

June 29, 30. Photograph faint; spots ill-defined.

Group 1715, July 1–11. A small spot, *a*, is seen on July 1. Several very small spots appear preceding *a* on July 2, and a spot, *b*, somewhat larger than *a*, appears on July 3. On July 5 the group is much broken up. By July 6 *a* and *b* have much increased in size, and appear as broken spots with a small spot following. By July 8 *a* and *b* have coalesced and are measured together, and by July 9 the group following is included.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
182d·402	H, SP		0·885	83·5	34·1	+ 7·3			302
			0·930	95·4	28·4	− 3·8			79
July 2							(161)	(1648)	(2082)
183·463	H, JH		0·970	252·9	156·4	−15·7			558
			0·875	289·1	142·6	+18·3			215
			0·855	246·8	137·7	−17·8			573
		1713	0·913	262·2	147·4	− 5·8	0	38	} 439 *c*
		1713	0·878	261·5	142·9	− 5·8	7	33	
		1714	0·287	134·8	70·5	− 8·4	0	10	
		1714	0·274	122·5	68·9	− 5·2	0	23	
		1714	0·321	125·9	67·2	− 7·6	0	8	
		1714*a*	0·366	124·4	64·6	− 8·8	10	109	
		1714*c*	0·409	126·0	62·7	−10·7	22	143	
		1714	0·425	112·6	59·2	− 6·3	1	21	
		1714*d*	0·489	119·0	56·6	−10·7	19	98	
		1714*e*	0·540	115·7	52·7	−10·6	15	223	
		1714*f*	0·550	118·7	52·8	−12·4	28	150	
		1714*g*	0·533	110·4	52·2	− 7·8	9	81	
		1714	0·640	107·2	44·3	− 8·3	0	15	
		1715*b*	0·549	131·8	56·9	−18·4	8	59	
		1715*a*	0·628	128·5	50·9	−20·1	3	38	
			0·955	113·3	12·5	−21·1			56
			0·974	107·2	7·2	−15·9			247
July 3							(122)	(1049)	(2088)
184·459	H, JH		0·972	261·7	144·7	− 7·3			350
			0·932	247·4	134·9	−19·6			316
			0·814	257·2	122·3	− 8·4			93
		1714	0·202	169·4	67·0	− 8·0	2	9	
		1714*a*	0·241	158·9	64·1	− 9·5	0	41	
		1714*c*	0·272	155·4	62·5	−10·9	16	80	
		1714	0·230	137·6	60·2	− 6·4	8	33	
		1714	0·283	133·3	57·2	− 7·8	0	13	
		1714	0·297	135·9	57·1	− 8·9	0	7	
		1714*d*	0·325	139·0	56·6	−10·9	19	100	
		1714	0·279	128·3	56·4	− 6·6	1	9	
		1714	0·344	136·5	55·2	−11·1	15	29	
		1714*e*	0·356	135·6	54·4	−11·4	10	126	
		1714	0·362	134·3	53·9	−11·3	0	78	
		1714*f*	0·388	135·0	52·8	−12·6	26	160	
		1714*g*	0·344	123·0	52·3	− 7·5	5	43	
		1714	0·382	128·4	51·5	−10·4	0	13	
1885.				°	°	°			
184d·459	H, JH	1714	0·439	129·0	48·7	−12·8	0	10	
		1715*b*	0·414	153·2	57·8	−18·3	6	54	
		1715	0·402	149·7	56·9	−16·9	0	2	
		1715	0·473	145·7	52·7	−19·7	0	4	
		1715	0·498	146·6	52·1	−21·2	0	4	
		1715*a*	0·490	142·7	50·8	−19·6	3	39	
		1715	0·502	140·3	49·3	−19·5	0	15	
		1716	0·972	106·5	354·4	−15·1	7	103	414 *c s p*
July 4							(118)	(972)	(1173)
185·326	SP, JH		0·942	251·6	125·8	−16·0			1208
			0·921	299·7	123·2	+28·7			358
I.			0·908	287·5	122·5	+17·4			1397
		1717	0·558	231·1	84·5	−17·2	5	29	
		1717	0·541	231·3	83·6	−16·5	0	4	
		1717	0·520	229·4	81·8	−16·5	0	3	
		1717	0·513	225·8	80·2	−17·6	1	30	
		1714	0·264	220·0	67·4	− 8·1	2	5	
		1714	0·248	213·8	65·6	− 8·3	0	1	
		1714	0·264	206·4	64·4	−10·0	0	10	
		1714	0·159	227·4	64·3	− 2·6	0	2	
		1714	0·238	202·9	63·0	− 9·1	0	16	
		1714*c*	0·259	199·8	62·7	−10·4	9	84	
		1714	0·164	210·3	62·3	− 4·6	0	1	
		1714	0·174	205·1	61·8	− 5·5	0	1	
		1714	0·183	199·8	61·2	− 6·3	12	31	
		1714	0·309	181·7	58·1	−14·3	0	2	
		1714	0·207	179·8	57·6	− 8·3	0	5	
		1714*d*	0·252	177·9	57·1	−10·9	32	90	
		1714	0·175	172·4	56·3	− 6·3	2	16	
		1714	0·289	175·1	56·2	−13·1	0	25	
		1714	0·256	172·0	55·5	−11·0	9	40	
		1714	0·224	170·8	55·5	− 9·2	0	2	
		1714	0·225	170·4	55·4	− 9·2	0	3	
		1714	0·166	166·7	55·4	− 5·6	0	1	
		1714*f*	0·288	165·5	53·4	−12·6	47	162	
		1714	0·253	163·0	53·3	−10·3	0	14	
		1714*g*	0·203	157·6	53·1	− 7·1	9	30	
		1714	0·273	155·7	51·1	−10·8	0	9	
		1714	0·311	150·6	48·6	−12·1	0	12	
		1714	0·257	140·6	48·2	− 7·8	0	4	
		1714	0·301	147·4	48·1	−11·1	0	2	
		1714	0·284	133·5	45·7	− 7·7	2	42	

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column, it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n, s, p, f, c,* denoting respectively north, south, preceding, following concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 1716, July 4–15. A regular spot.
Group 1717, July 5–8. A spot with smaller spots following, one of which has disappeared by July 6, and the others have coalesced by July 7 to form one spot.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
185d·326	SP, JH	1715*b*	0·372	180·8	57·9	−18·2	9	46	
		1715	0·373	176·6	56·3	−18·2	5	16	
I.		1715	0·375	170·1	53·7	−18·0	4	16	
		1715	0·409	168·0	52·4	−20·0	3	9	
		1715	0·426	168·1	52·2	−20·9	0	5	
		1715	0·471	169·3	52·1	−23·9	0	2	
		1715*a*	0·398	163·7	50·9	−18·2	5	22	
		1715	0·414	159·4	48·8	−19·2	6	29	
		1715	0·397	158·5	48·8	−18·0	0	9	
		1716	0·909	108·2	354·5	−14·9	35	99	938 *c*
			0·949	133·8	355·3	−39·4			512
July 5							(197)	(929)	(4413)
186·460	H, JH		0·974	260·8	118·7	− 8·1			177
			0·965	296·5	117·2	+26·5			134
			0·934	288·0	111·6	+18·1			378
			0·947	245·4	110·6	−21·9			64
			0·859	254·2	100·0	−11·6			184
		1717	0·728	243·4	85·2	−16·3	15	46	
		1717	0·710	243·4	83·8	−15·7	0	2	
		1717	0·695	240·1	81·7	−17·4	1	20	
		1714	0·454	241·3	66·4	− 9·2	0	9	
		1714	0·444	238·0	65·1	−10·2	0	6	
		1714	0·421	235·1	63·2	−10·4	0	17	
		1714	0·368	243·1	61·9	− 6·0	6	12	
		1714*d*	0·356	225·1	57·5	−11·0	16	81	
		1714	0·372	218·7	56·4	−13·2	0	23	
		1714	0·345	221·8	56·2	−11·3	5	23	
		1714*f*	0·334	214·2	53·7	−12·3	29	164	
		1714*g*	0·268	225·3	53·7	− 7·2	5	21	
		1714	0·278	210·3	50·9	−10·2	0	16	
		1714	0·304	204·2	50·0	−12·4	0	10	
		1714	0·231	210·2	49·4	− 7·8	0	3	
		1714	0·215	207·1	48·3	− 7·3	0	2	
		1714	0·194	202·9	47·0	− 6·6	0	2	
		1714	0·203	192·3	45·2	− 7·7	0	19	
		1715*b*	0·445	212·9	57·4	−18·3	47	326	
		1715	0·396	211·5	55·1	−16·1	0	6	
		1715*a*	0·413	203·7	52·7	−18·5	33	280	
		1715	0·381	196·1	49·0	−17·7	2	6	
		1715	0·399	193·5	48·3	−19·0	4	33	
		1716	0·782	113·2	354·7	−15·4	14	90	134 *c*
186d·460	H, JH		0·845	112·3	348·3	−16·5			302
			0·976	74·1	325·1	+16·3			94
July 6							(177)	(1217)	(1467)
187·482	H, JH		0·954	257·5	100·4	−10·7			138
		1717	0·861	248·3	85·5	−16·5	4	124	144 *c*
		1717	0·829	246·0	81·5	−17·4	4	82	112 *c*
		1714	0·562	243·5	59·9	−11·2	0	3	
		1714*d*	0·523	241·3	57·0	−11·1	5	85	
		1714*f*	0·485	235·6	53·3	−12·4	22	171	
		1714*g*	0·454	245·9	53·8	− 7·2	0	5	
		1714	0·390	239·4	48·9	− 7·8	0	5	
		1714	0·359	235·8	46·6	− 8·0	1	29	
		1714	0·328	231·8	44·2	− 8·0	0	7	
		1715*b*	0·572	228·7	56·1	−18·7	40	570	
		1715	0·533	231·2	54·7	−16·0	0	10	
		1715*a*	0·526	223·5	51·6	−18·9	21	387	
		1715	0·522	217·7	49·1	−20·7	0	22	
		1715	0·487	217·0	47·2	−19·2	5	80	
		1716	0·643	119·5	353·9	−15·3	20	91	
			0·785	119·7	342·8	−20·3			177
			0·933	75·8	320·3	+14·6			246
July 7							(122)	(1671)	(817)
188·427	H, JH		0·926	283·8	84·3	+14·3			248
		1717	0·948	251·4	85·6	−16·2	5	117	437 *c*
		1717	0·927	249·3	81·7	−17·5	3	51	
		1714*d*	0·695	249·4	57·9	−11·2	8	83	
		1714	0·648	248·9	54·8	−10·4	0	5	
		1714*f*	0·653	246·0	54·5	−12·3	26	165	
		1714	0·597	239·3	48·9	−14·4	0	2	
		1714	0·560	239·5	46·6	−13·1	0	11	
		1715	0·690	237·6	54·8	−18·6	144	1087	
		1715	0·658	231·2	50·2	−21·1	0	10	
		1715	0·617	231·6	47·6	−19·1	6	51	
		1716	0·490	131·8	354·8	−15·4	10	97	
			0·849	76·5	319·1	+13·5			202
			0·964	103·6	303·9	−12·0			582
			0·964	77·9	302·2	+12·7			186
July 8							(202)	(1679)	(1655)

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The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
189d·488	H, JH		0·989	251·0	82·0	−18·1			186
			0·912	256·1	66·7	−10·9			607
			0·835	259·9	58·2	− 6·2			399
		1714*d*	0·841	253·7	57·8	−11·4	1	34	} 230 *c*
		1714*f*	0·812	251·3	54·4	−12·6	20	143	
		1714	0·697	252·9	44·8	− 8·9	0	12	
		1715	0·818	243·6	53·1	−18·8	127	1249	319 *c*
		1716	0·360	156·5	354·1	−15·3	13	92	
		1718*a*	0·956	99·2	290·7	− 7·5	18	213	
		1718	0·976	99·0	286·2	− 7·8	0	31	459 *c*
			0·872	107·0	304·1	−12·7			533
July 9							(179)	(1774)	(2733)
190·439	H, JH	1714*f*	0·920	254·7	55·0	−12·4	0	162	} 1331 *c*
		1715	0·910	247·3	52·1	−18·6	65	1270	
		1716	0·338	191·9	354·0	−15·1	6	64	
		1718*a*	0·868	101·3	290·9	− 7·7	17	268	
		1718	0·914	100·5	285·0	− 7·9	0	77	623 *c*
			0·780	112·3	301·9	−14·4			184
			0·936	112·9	283·8	−19·7			131
			0·970	75·8	273·6	+14·8			178
July 10							(88)	(1841)	(2447)
191·406	H, JH	1714*f*	0·982	256·8	54·8	−12·1	0	259	} 1238
		1715	0·973	249·5	51·2	−18·8	53	1246	*c & n*
		1716	0·431	220·4	353·8	−15·1	7	67	
		1718*a*	0·730	104·5	291·8	− 7·6	33	236	150 *c*
		1718	0·808	102·7	284·6	− 7·7	0	97	639*c&f*
			0·915	72·1	271·0	+18·1			245
			0·936	81·1	267·6	+ 9·8			159
July 11							(93)	(1905)	(2431)
192·195	SP, JH		0·985	256·4	45·3	−12·6			1908
			0·912	272·4	32·5	+ 4·0			286
I.		1716	0·552	234·0	354·1	−15·0	11	65	
		1718*a*	0·595	109·2	292·3	− 7·7	64	266	} 200 *c*
		1718	0·684	105·8	285·3	− 7·5	5	18	
		1718	0·708	106·9	283·6	− 8·8	0	22	
		1719	0·676	73·2	284·9	+14·4	0	3	
		1720	0·961	83·8	252·6	+ 7·1	28	180	} 1056
		1720	0·990	80·3	244·6	+10·2	77	665	*c & p*
			0·861	110·5	270·2	−15·2			440
1885.				°	°	°			
192d·195	SP, JH		0·869	80·3	266·3	+10·6			181
			0·919	69·3	260·2	+20·7			368
I.			0·952	104·4	256·3	−12·3			437
			0·973	118·4	254·2	−26·3			431
July 12							(185)	(1219)	(5307)
193·489	SP, M		0·888	252·5	10·0	−13·3			147
			0·825	243·9	0·9	−18·5			83
		1716	0·742	245·4	353·8	−14·8	8	80	86 *c*
		1718*a*	0·359	126·2	292·8	− 8·0	53	282	
		1718	0·442	117·3	286·5	− 7·6	0	30	
		1718	0·490	117·2	283·6	− 8·9	0	4	
		1719	0·407	62·4	287·9	+14·9	1	25	
		1719	0·461	62·1	284·7	+16·4	0	4	
		1719	0·447	67·7	284·6	+13·7	0	3	
		1720*a*	0·831	84·1	253·5	+ 7·4	17	56	} 836 *c&s*
		1720	0·848	82·5	251·7	+ 8·7	0	18	
		1720	0·883	83·6	247·6	+ 7·7	0	14	
		1720*b*	0·903	80·6	245·0	+10·4	68	569	
			0·792	70·0	258·2	+18·4			94
			0·847	110·5	254·8	−14·7			113
			0·897	123·1	252·4	−27·0			200
July 13			0·954	78·2	236·9	+12·6	(147)	(1085)	671 (2230)
194·494	SP, JH		0·964	254·8	9·0	−13·4			97
			0·929	248·7	1·5	−17·9			183
		1716	0·867	249·9	353·5	−14·9	2	54	89 *c*
		1718*a*	0·227	165·3	293·0	− 8·2	48	251	
		1719	0·234	39·2	287·5	+14·9	0	21	
		1719	0·256	47·6	285·1	+14·3	0	36	
		1721	0·640	91·4	256·6	+ 2·6	0	7	
		1720*a*	0·664	83·8	254·7	+ 7·5	3	71	} 456 *c*
		1720	0·708	81·9	251·3	+ 8·9	0	55	
		1720	0·747	83·7	248·0	+ 7·7	0	7	
		1720*b*	0·774	80·6	245·6	+10·2	69	503	
		1720	0·789	84·9	244·2	+ 6·8	0	27	
		1722*a*	0·985	98·6	217·2	− 7·7	0	53	348*c&n*
			0·831	111·8	243·4	−15·3			113
			0·872	78·6	235·6	+12·1			320
			0·903	71·3	231·9	+18·8			145
			0·930	106·8	230·1	−13·8			110
			0·923	99·5	230·0	− 7·0			162
July 14							(122)	(1085)	(2023)

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The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 1718, July 9–20. A regular spot, *a*. A faint spot follows *a* on July 9 and the succeeding days. It has divided into two portions by July 12.

Group 1719, July 12–18. A very small spot on July 12. On July 13 an irregular spot with two small spots following it. On the next day the group consists of two faint broken patches. By July 15 the preceding patch has become a regular spot. The following patch has disappeared by July 16. A fresh spot has appeared by July 18.

Group 1720, July 12–24. Two principal spots, *a* and *b*, and a stream of small spots; *a* has divided into two by July 17, and breaks up still further on the succeeding days; *b* at first has two nuclei, but on July 15 and following days there is only one.

Group 1721, July 14. A very small spot.

Group 1722, July 14–25. A regular spot, *a*, with two companions. These are measured together on July 15 and 17, and with the large spot on July 19. Only the large spot, *a*, is seen on July 20. Two spots, *b* and *c*, have appeared by July 21 following *a*; *b* increases in size, and has broken into two, *d* and *e*, by July 23.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued*.

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
195d.484	SP, JH	1716	0·950	252·5	352·7	−15·0	0	20	193 *c*
		1718*a*	0·283	217·7	293·2	− 8·4	44	256	
		1719	0·201	330·3	289·1	+14·6	6	21	
		1719	0·173	330·7	284·8	+14·4	0	22	
		1720*a*	0·472	83·6	255·1	+ 7·1	11	86	
		1720	0·523	80·7	251·9	+ 8·8	0	48	
		1720	0·591	72·9	247·8	+13·8	0	5	
		1720	0·599	85·2	246·4	+ 6·6	0	9	
		1720*b*	0·614	79·9	245·5	+ 9·9	24	432	
		1720	0·629	84·8	244·2	+ 6·9	0	4	
		1720	0·652	83·1	242·6	+ 8·0	0	12	
		1722*a*	0·929	100·2	216·1	− 7·7	2	129	907 *c&f*
		1722	0·934	98·4	215·1	− 6·2	0	26	
			0·808	69·0	230·2	+19·7			89
			0·862	111·0	226·8	−15·4			90
July 15							(87)	(1070)	(1279)
196·459	SP, JH		0·965	252·8	342·9	−15·2			206
			0·787	283·4	308·3	+13·4			118
		1718*a*	0·453	240·9	293·8	− 8·4	32	260	
		1719	0·376	299·4	290·0	+15·0	1	10	
		1720	0·205	81·3	258·6	+ 6·4	0	4	
		1720*a*	0·249	79·4	256·1	+ 7·1	4	69	
		1720	0·347	74·7	250·5	+ 9·7	0	5	
		1720	0·387	82·0	247·7	+ 7·4	2	18	
		1720	0·408	71·9	247·1	+11·6	0	3	
		1720	0·414	68·2	247·1	+13·2	0	24	
		1720	0·412	82·6	246·1	+ 7·4	0	3	
		1720*b*	0·418	77·0	246·0	+ 9·7	28	331	
		1720	0·447	69·9	244·9	+13·0	0	6	
		1720	0·444	83·7	244·0	+ 7·0	0	11	
		1720	0·465	74·5	243·2	+11·3	0	4	
		1723	0·585	136·6	244·9	−20·8	0	8	
		1722*a*	0·823	102·5	216·4	− 7·5	8	138	
		1722	0·828	100·1	215·5	− 5·6	0	47	
		1722	0·849	102·3	213·7	− 7·8	0	8	
		1724	0·813	109·7	218·7	−13·0	0	14	
		1724	0·864	108·4	213·1	−13·3	0	48	758 *c*
		1724	0·889	106·3	209·7	−12·1	0	30	
		1725	0·884	100·4	209·4	− 6·9	0	12	
			0·915	108·8	193·1	−15·1			77
July 16							(75)	(1053)	(1159)
1885.				°	°	°			
197d.493	SP, JH		0·893	286·3	319·8	+16·6			231
			0·785	246·7	304·7	−15·0			203
		1718*a*	0·638	250·1	293·8	− 8·8	43	224	
		1726	0·589	243·1	288·9	−11·5	3	20	
		1726	0·577	244·6	288·5	−10·3	0	66	
		1726	0·585	241·3	288·1	−12·3	0	1	
		1726	0·568	242·1	287·3	−11·3	0	3	
		1726	0·563	240·7	286·6	−11·9	3	8	
		1719	0·574	289·4	290·5	+14·9	3	9	
		1727	0·447	220·7	274·1	−15·3	0	3	
		1727	0·429	217·1	272·1	−15·4	0	3	
		1720	0·039	323·2	258·0	+ 6·5	1	9	
		1720	0·041	20·4	255·8	+ 6·9	1	16	
		1720	0·158	71·8	247·9	+ 7·5	0	3	
		1720	0·216	48·3	247·1	+12·8	3	16	
		1720	0·185	78·3	246·1	+ 6·8	0	4	
		1720*b*	0·203	66·0	245·8	+ 9·3	37	330	
		1723	0·647	117·5	220·6	−13·6	0	1	
		1723	0·663	119·4	220·0	−15·1	0	1	
		1723	0·657	116·1	219·5	−13·0	0	2	
		1722*a*	0·678	105·5	215·6	− 6·9	29	189	
		1722	0·707	106·3	213·5	− 8·0	0	3	
		1724*a*	0·702	114·4	215·7	−13·3	20	58	
		1724	0·743	113·8	212·3	−14·1	19	66	616 *c*
		1724	0·765	108·2	209·1	−10·6	0	33	
		1724	0·776	111·0	208·8	−13·0	0	41	
		1725	0·754	104·6	209·4	− 7·8	1	13	
		1728*a*	0·988	100·9	176·8	−10·0	43	342	362 *c*
			0·856	121·2	203·8	−23·5			187
			0·894	83·4	193·1	+ 8·0			104
July 17							(206)	(1464)	(1703)
198·180	SP, JH		0·954	284·5	320·4	+15·3			677
			0·936	268·9	316·6	+ 0·7			316
I.			0·884	252·5	307·2	−13·0			490
		1718*a*	0·752	253·2	294·2	− 9·3	60	247	170 *c*
		1718	0·726	252·5	291·9	− 9·2	0	7	
		1726	0·719	248·6	290·5	−11·7	2	14	
		1726	0·666	246·8	286·0	−11·4	2	9	
		1719	0·687	286·4	290·3	+14·7	2	16	
		1719	0·688	288·1	290·2	+15·9	3	6	
		1727	0·541	231·6	273·5	−15·3	0	19	
		1727	0·520	230·4	271·9	−14·9	0	3	
		1727	0·512	227·3	270·4	−15·8	3	8	

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n*, *s*, *p*, *f*, *c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

July 15. Photograph faint; faculæ ill-defined.

Group 1723, July 16. A very small spot.

Group 1724, July 16–23. Three spots on July 16. By the next day each has broken up, the first into three small spots, the second into a regular spot, *a*, and a group of small spots, and the last into a long group of small spots (measured in two) stretching northwards. The first portion of the group has disappeared by July 18, and the last by July 19, leaving only the centre portion which forms a line of spots on that day. By July 21 the group has much changed, and consists of a large scattered group with two small spots preceding, which are not seen on the next day.

Group 1725, July 16–18. Two small spots, measured together.

Group 1726, July 17–19. Three well-defined spots with small companions on July 17. Only one small spot is seen on July 19.

Group 1727, July 17–20. Two faint spots on July 17. A third has appeared by July 18.

Group 1728, July 17–29. A regular spot, *a*. Small spots are seen following *a* on July 20, 25, and 27.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
198d·180	SP, JH	1720	0·192	275·2	258·5	+ 5·7	7	53	
		1720	0·147	285·4	255·7	+ 7·1	7	21	
I.		1720	0·151	295·1	255·4	+ 8·5	0	5	
		1720	0·131	273·7	255·1	+ 9·6	0	8	
		1720	0·102	351·7	248·4	+10·6	0	6	
		1720	0·126	0·8	247·4	+12·0	1	2	
		1720	0·148	6·1	246·6	+13·3	5	16	
		1720	0·046	25·0	246·4	+ 7·2	1	2	
		1720*b*	0·082	18·7	246·0	+ 9·2	57	292	
		1720	0·073	53·8	244·1	+ 7·3	2	10	
		1720	0·183	50·2	239·3	+11·4	1	12	
		1724	0·546	119·6	218·6	−11·4	0	16	
		1724*a*	0·586	120·4	216·4	−13·1	11	79	
		1724	0·618	118·7	213·8	−13·2	1	5	
		1724	0·652	118·6	211·4	−14·3	15	66	
		1724	0·684	114·0	207·9	−12·4	2	48	
		1722*a*	0·558	110·0	215·7	− 6·9	24	136	
		1722	0·551	105·7	215·5	− 4·5	0	14	
		1722	0·567	107·5	214·7	− 5·8	5	44	
		1725	0·663	109·5	208·4	− 9·1	0	7	
		1728*a*	0·964	102·4	174·4	−10·6	146	383	740*c&s*
			0·945	118·3	181·4	−24·7			221
July 18							(357)	(1554)	(2614)
199·641	M, JH		0·935	288·7	297·7	+19·2			35
			0·927	265·1	295·6	− 2·7			55
			0·863	283·9	287·9	+14·5			190
		1718*a*	0·920	257·1	293·5	− 9·8	42	203	722*c&s*
		1726	0·913	253·6	291·9	−12·8	0	8	
		1727	0·768	245·4	274·4	−15·3	3	16	45*c*
		1727	0·736	242·7	270·9	−16·1	0	2	
		1727	0·723	241·1	269·4	−16·8	0	4	
		1720	0·519	273·5	259·5	+ 6·0	4	39	
		1720	0·466	271·2	256·0	+ 5·0	7	40	
		1720	0·461	276·2	255·6	+ 7·2	0	5	
		1720	0·360	295·2	247·7	+13·4	0	6	
		1720*b*	0·313	283·5	246·1	+ 8·9	32	225	
		1720	0·314	288·6	245·7	+10·4	0	12	
		1720	0·214	298·7	239·2	+10·7	0	9	
		1724*a*	0·343	149·2	217·9	−12·3	6	54	
		1724	0·376	144·1	215·2	−12·9	0	11	
		1724	0·418	142·1	212·9	−14·4	0	29	
		1724	0·426	138·3	211·3	−13·8	0	34	
1885.									
199d·641	M, JH	1722*a*	0·284	132·7	216·1	− 6·3	15	113	
		1728*a*	0·825	106·3	174·8	−10·4	78	387	222 *c*
			0·950	108·5	158·9	−15·9			601
			0·901	112·6	167·5	−17·9			34
			0·963	71·6	153·4	+19·0			61
			0·966	99·2	154·2	− 7·6			279
July 19							(187)	(1197)	(2244)
200·560	SP, JH		0·945	283·5	287·3	+14·4			111
		1718*a*	0·981	258·8	293·5	−10·0	12	186	369*c&f*
		1727	0·882	250·1	274·9	−14·9	0	30	394 *c*
		1727	0·863	249·4	272·5	−15·0	0	29	
		1720	0·708	273·7	261·1	+ 6·2	1	44	
		1720	0·678	275·4	258·7	+ 7·3	0	11	
		1720	0·651	271·7	256·6	+ 4·9	1	29	469 *c*
		1720	0·651	275·5	256·6	+ 7·4	0	1	
		1720	0·636	275·4	255·5	+ 7·3	0	6	
		1720	0·634	272·8	255·4	+ 5·7	0	4	
		1720*b*	0·500	279·0	245·8	+ 8·9	19	200	
		1724*a*	0·300	191·9	219·6	−12·0	1	27	
		1724	0·302	182·4	216·7	−12·5	0	14	
		1724	0·340	168·6	212·0	−14·4	2	100	
		1722*a*	0·196	183·0	216·6	− 6·2	9	87	
		1728*a*	0·697	110·9	174·7	−10·6	67	400	
		1728	0·723	108·7	172·2	− 9·8	0	17	
			0·901	112·6	155·3	−17·8			504
			0·905	102·3	152·7	− 8·9			244
			0·905	70·7	151·3	+19·5			220
July 20							(112)	(1185)	(2311)
201·507	SP, JH		0·950	251·7	272·8	−15·6			548
			0·890	286·2	266·5	+16·8			314
		1720	0·852	274·1	262·0	+ 6·2	0	19	234 *c*
		1720	0·810	272·7	257·6	+ 5·2	0	16	
		1720*b*	0·676	277·5	246·0	+ 8·9	19	189	135 *c*
		1724	0·412	226·8	221·3	−11·5	0	10	
		1724	0·397	228·2	220·9	−10·4	0	3	
		1724	0·342	216·7	215·4	−10·9	0	53	
		1724	0·356	211·6	214·5	−12·0	0	4	
		1724	0·318	209·1	212·5	−11·1	0	9	
		1724	0·361	204·9	212·5	−14·0	0	106	

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The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
201d·507	SP, JH	1724	0·311	209·4	212·4	−10·6	0	2	
		1722*a*	0·310	231·3	217·5	− 6·2	4	64	
		1722	0·276	232·5	216·1	− 4·7	0	2	
		1722*b*	0·264	221·0	213·5	− 6·5	0	45	
		1722*c*	0·238	213·6	211·1	− 6·4	0	38	
		1728*a*	0·543	119·8	174·9	−11·1	71	380	
July 21							(94)	(940)	(1231)
202·475	SP, JH		0·934	288·0	260·1	+18·7			437
		1720*b*	0·818	277·8	245·7	+ 9·3	5	174	217 *c*
		1729	0·779	285·1	241·6	+15·0	0	19	117 *c*
		1722*a*	0·496	247·5	218·0	− 6·3	0	18	
		1722*b*	0·430	246·5	213·9	− 5·1	0	41	
		1722*c*	0·386	242·8	210·8	− 5·2	0	68	
		1724	0·510	238·7	216·9	−10·7	0	22	
		1724	0·457	234·3	212·8	−10·6	0	26	
		1724	0·486	228·7	212·7	−13·8	0	102	
		1728*a*	0·392	137·1	175·0	−11·7	52	382	
		1730	0·675	120·9	153·8	−16·1	0	11	
		1730	0·713	120·5	150·8	−17·2	0	21	
July 22							(57)	(884)	(771)
203·410	M, JH		0·903	268·2	242·5	+ 0·7			266
		1720*b*	0·919	277·7	245·4	+ 9·2	13	148	923 *c*
		1729	0·888	283·8	241·1	+14·7	0	6	
		1722*a*	0·665	254·5	218·3	− 6·2	0	7	
		1722*d*	0·618	254·9	214·9	− 5·0	13	177	
		1722*e*	0·592	252·5	212·7	− 5·8	3	21	
		1722*c*	0·551	253·5	210·2	− 4·5	9	62	
		1724	0·662	247·0	216·5	−10·9	0	5	
		1724	0·632	239·3	212·3	−14·4	0	39	
		1728*a*	0·297	168·8	174·9	−11·6	89	413	
		1730	0·533	131·2	153·8	−15·7	0	15	
		1730	0·596	130·5	150·0	−18·1	7	47	
			0·833	104·6	123·8	− 9·1			93
			0·992	103·7	97·2	−12·8			160
July 23							(134)	(940)	(1442)
204·451	SP, JH	1720*b*	0·983	278·4	244·5	+ 9·3	0	245	668*e*&*f*
		1722*d*	0·792	259·9	215·8	− 4·6	20	197	403 *c*
		1722*e*	0·763	258·5	213·0	− 5·2	0	21	
		1722*c*	0·728	259·0	210·1	− 4·2	0	75	
1885.				°	°	°			
204d·451	SP, JH	1728*a*	0·344	210·5	174·7	−11·9	83	422	
		1730	0·468	149·0	149·8	−18·4	0	20	
		1731	0·749	111·3	119·2	−12·0	4	28	
		1731	0·770	110·3	117·1	−11·9	0	18	
		1732*a*	0·963	105·6	92·3	−13·4	0	15	346 *e*
			0·862	108·1	107·6	−12·6			133
July 24							(107)	(1041)	(1550)
205·576	M, JH		0·901	251·6	211·2	−14·0			264
		1722*d*	0·926	262·3	216·6	− 5·0	0	44	389 *e*
		1722*c*	0·882	262·4	210·7	− 4·1	0	6	
		1728*a*	0·513	235·1	175·0	−12·1	100	409	
		1728	0·477	238·0	173·8	− 9·7	0	5	
		1728	0·519	229·9	173·8	−14·6	1	4	
		1731	0·526	121·5	122·6	−11·1	0	4	
		1731	0·546	119·8	121·0	−11·0	10	45	
		1731	0·570	121·5	120·0	−12·6	2	36	
		1731	0·616	121·0	116·9	−14·0	1	10	
		1731	0·608	117·3	116·4	−11·7	7	75	
		1732*a*	0·863	108·5	92·8	−13·0	0	16	116 *f*
July 25							(121)	(654)	(769)
206·501	SP, JH	1728*a*	0·666	245·2	175·5	−11·9	50	385	
		1731	0·386	136·7	121·9	−11·0	7	54	
		1731	0·418	137·3	120·7	−12·6	0	40	
		1731	0·482	134·1	116·6	−14·4	0	50	
		1731	0·462	130·1	116·4	−12·1	0	47	
		1732*b*	0·691	114·7	97·7	−12·5	0	12	210 *e*
		1732*c*	0·733	114·2	94·2	−13·5	0	17	
		1732*a*	0·749	113·5	92·7	−13·5	0	19	
			0·937	103·8	91·9	−10·9			535
July 26							(57)	(624)	(745)
207·433	JH, M	1728*a*	0·803	250·8	175·7	−11·8	75	396	255 *e*
		1728	0·797	246·6	174·1	−14·8	0	9	
		1731	0·282	170·0	122·2	−10·4	5	32	
		1731	0·341	165·2	120·0	−13·6	3	27	
		1731	0·373	156·6	116·3	−14·4	0	55	
		1732*b*	0·532	124·8	98·6	−12·6	2	14	
		1732*c*	0·585	122·7	94·8	−13·6	6	35	

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column, it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n, s, p, f, e*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

July 22. Spots and faculæ ill-defined.

Group 1730, July 22–24. Two small spots. The second has increased in size by July 23. The first is not seen on July 24.

Group 1731, July 24–28. Two small spots on July 24. Both have broken up by July 25. Only three spots remain on July 27.

Group 1732, July 24–Aug. 3. A small spot, *a*. Two others, *b* and *c*, have appeared by July 26. *a* has disappeared by July 27, *c* by July 30, and *b* has broken up into several portions by July 28,

July 25. Photograph faint; faculæ ill-defined.

Group 1729, July 22–23. A small spot.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
207d·433	JH, M	1733*a*	0·969	112·1	52·8	−19·7	0	63	} 394 *c*
		1733*b*	0·977	114·2	51·1	−22·2	0	144	
			0·923	105·8	60·0	−12·3			621
			0·985	120·4	49·9	−28·6			177
July 27							(91)	(775)	(1447)
*208·441	SP, M		0·978	243·3	185·4	−24·6			52
			0·911	249·2	174·0	−16·3			60
			0·806	250·1	162·4	−12·3			55
			0·759	255·4	159·3	− 7·2			30
			0·775	243·0	157·6	−16·6			178
		1728*a*	0·913	254·3	175·4	−11·8	74	370	230 *c*
		1731	0·331	212·9	122·2	−10·4	5	26	
		1731	0·361	204·2	120·4	−13·5	4	20	
		1731	0·349	192·6	116·2	−14·1	7	44	
		1732	0·367	148·6	100·4	−12·6	8	16	
		1732	0·390	141·5	97·4	−12·1	0	6	
		1732*c*	0·437	137·5	94·1	−13·3	8	30	
		1734	0·830	109·2	58·5	−12·4	0	11	1204 *p*
		1733*a*	0·900	115·1	52·0	−19·6	15	90	} 1809 *c*
		1733*c*	0·918	115·0	49·5	−20·2	0	42	
		1733*b*	0·923	117·1	49·3	−22·3	49	230	(3518)
July 28							(170)	(885)	
209·546	SP, JH		0·912	256·6	161·0	− 9·7			127
			0·867	245·6	152·8	−17·8			209
			0·829	288·7	152·8	+18·7			341
		1728*a*	0·984	256·7	174·9	−11·9	14	441	458 *c*
		1732	0·317	191·5	100·7	−12·3	6	29	
		1732	0·306	182·5	97·8	−12·0	0	12	
		1732*c*	0·328	171·0	94·0	−13·0	0	15	
		1733*a*	0·782	121·4	51·9	−20·0	8	64	} 1350 *c*
		1733*c*	0·803	121·2	50·0	−20·6	0	23	
		1733*b*	0·821	122·6	48·7	−22·4	21	215	
			0·907	84·1	31·7	+ 7·8			247
			0·940	72·1	26·4	+18·8			162
July 29							(49)	(799)	(2894)
210·482	SP, JH		0·948	249·5	153·0	−17·3			389
			0·938	247·0	150·7	−15·2			187
			0·895	281·4	148·7	+12·8			70

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
210d·482	SP, JH		0·874	290·6	145·6	+20·8			375
			0·759	239·0	128·0	−18·8			144
		1732	0·412	223·5	101·6	−11·8	12	61	
		1732	0·388	221·6	100·0	−11·2	0	6	
		1732	0·371	217·4	98·0	−11·4	1	18	
		1733*a*	0·657	129·5	52·3	−19·8	6	50	} 315 *c*
		1733*c*	0·688	127·6	49·5	−20·0	0	37	
		1733*b*	0·707	129·6	49·0	−22·0	18	192	
			0·860	70·3	25·6	+19·9			110
			0·957	109·4	14·7	−16·6			121
July 30							(37)	(364)	(1711)
211·459	SP, JH	1735	0·796	247·6	121·0	−13·8	0	12	} 389 *c*
		1735	0·773	246·0	118·5	−14·3	0	19	
		1732	0·579	240·1	102·6	−11·7	5	59	
		1732	0·524	236·4	98·3	−11·5	0	18	
		1733*a*	0·533	143·5	52·3	−19·8	4	33	
		1733*b*	0·588	141·5	48·8	−21·9	12	198	
		1733	0·612	140·1	46·9	−22·5	0	10	
		1733	0·598	138·1	46·7	−21·0	0	16	
			0·908	113·7	10·8	−18·6			248
July 31							(21)	(365)	(637)
213·516	SP, M		0·974	254·2	119·3	−13·8			378
		1732	0·885	252·5	104·3	−12·4	10	58	402 *f*
		1733*a*	0·450	196·7	52·6	−19·5	10	35	
		1733	0·508	191·4	51·0	−23·8	0	2	
		1733	0·513	187·2	48·7	−24·5	0	8	
		1733*b*	0·475	187·5	48·5	−22·0	30	176	
		1733	0·494	182·9	46·3	−23·5	2	77	
			0·914	118·1	344·1	−22·6			614
			0·954	70·5	331·4	+20·4			124
Aug. 2							(52)	(356)	(1518)
214·188	SP, M		0·983	284·8	116·2	+15·7			478
		1732	0·948	253·9	104·8	−13·1	8	44	375*c*&*f*
I.		1733*a*	0·506	212·6	52·4	−19·3	1	14	
		1733	0·553	202·2	48·9	−24·7	0	2	
		1733*b*	0·510	203·5	48·3	−21·8	18	176	
		1733	0·516	198·2	45·8	−23·2	4	51	
		1733	0·480	196·4	44·0	−21·3	0	5	

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column, it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n*, *s*, *p*, *f*, *c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

July 30, 31. Photograph faint; faculæ ill-defined.

Group 1733, July 27–Aug. 7. Two spots, *a* and *b*, when first seen. A third spot, *c*, has become detached from *b* by July 28. Small companions are seen on July 31 and following days.

Group 1734, July 28. A small spot.

Group 1735, July 31. Two small spots.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
214d·188	SP, M	1736*a*	0·433	85·0	10·0	+ 7·7	1	7	
		1736*b*	0·463	84·1	8·1	+ 8·1	3	14	
I.			0·824	118·6	345·8	−19·3			327
			0·937	72·1	325·5	+18·9			510
Aug. 3							(35)	(313)	(1690)
215·409	SP, JH	1733*b*	0·634	225·2	48·3	−21·1	11	144	} 241 *c*
		1733	0·626	220·0	45·4	−23·0	0	8	
		1736*a*	0·141	79·3	11·6	+ 7·7	0	43	
		1736*b*	0·205	78·7	7·9	+ 8·4	0	33	
			0·948	108·0	310·9	−14·9			324
Aug. 4							(11)	(228)	(565)
216·488	H, SP		0·983	268·3	84·4	− 0·5			260
			0·891	257·0	66·6	− 8·6			851
M.			0·791	250·4	54·7	−11·4			199
		1733*b*	0·768	235·8	48·1	−21·0	8	195	378 *c*
		1736*a*	0·123	281·0	12·4	+ 7·5	8	61	
		1736	0·091	273·7	10·6	+ 6·6	1	12	
		1736	0·090	295·9	10·1	+ 8·5	0	1	
		1736*b*	0·058	299·5	8·3	+ 7·8	6	19	
		1737*a*	0·938	103·9	297·7	−10·7	35	155	} 436 *c*
		1738*a*	0·987	103·4	286·5	−12·1	0	40	
Aug. 5							(58)	(483)	(2124)
217·389	SP, M	1733*b*	0·870	241·3	48·1	−21·1	6	99	} 179 *c*
		1733	0·869	236·9	46·4	−24·6	0	13	
		1736*a*	0·331	274·8	12·7	+ 7·5	0	48	
		1736*b*	0·257	275·9	8·3	+ 7·6	5	46	
		1737*a*	0·848	106·5	297·9	−10·4	31	158	118 *c*
		1738*a*	0·924	105·4	288·2	−11·7	0	79	234 *c*
Aug. 6							(42)	(443)	(531)
218·451	SP, JH		0·956	259·9	51·0	− 7·7			185
		1733*b*	0·951	245·4	47·2	−21·0	7	140	1002 *c&n*
		1739	0 876	254·5	38·3	−10·3	1	10	} 205 *c*
		1739	0·851	251·9	35·0	−11·7	0	17	
		1736*a*	0·548	274·4	12·8	+ 7·8	0	24	
1885.				°	°	°			
218d·451	SP, JH	1736	0·525	274·3	11·2	+ 7·7	0	6	
		1736*b*	0·479	273·3	8·2	+ 7·2	8	68	
		1740	0·262	23·3	333·2	+20·3	0	2	
		1740	0·277	23·6	332·7	+21·0	0	2	
		1740	0·287	25·3	332·0	+21·4	1	4	
		1737*a*	0·706	111·9	297·9	−10·5	25	147	165 *c*
		1738*a*	0·809	109·2	288·5	−11·4	40	196	} 837 *c*
		1738	0·839	108·9	285·5	−12·0	0	12	
		1738	0·855	108·0	283·5	−11·8	0	48	
		1738	0·873	107·5	281·4	−11·9	0	21	
			0·920	121·0	279·1	−25·2			192
			0·943	84·4	268·6	+ 7·4			1166
			0·958	105·6	268·5	−13·0			117
Aug. 7							(82)	(697)	(3869)
219·386	SP, JH		0·982	246·0	42·2	−22·0			540
			0·948	256·2	36·5	−10·9			267
		1741	0·738	285·0	14·6	+15·4	0	9	
		1741	0·708	286·0	11·9	+15·8	0	12	
		1736*a*	0·713	274·7	12·7	+ 7·8	0	6	
		1736*b*	0·656	273·2	8·2	+ 6·9	9	21	
		1740	0·282	330·0	335·7	+20·4	0	8	
		1740	0·263	331·3	334·8	+19·7	0	6	
		1740	0·241	332·5	333·8	+18·6	0	5	
		1740	0·263	337·7	333·2	+20·4	2	4	
		1740	0·265	344·0	331·6	+21·1	0	17	
		1737*b*	0·553	125·7	299·8	−13·1	4	66	} 229 *c*
		1737	0·561	123·2	298·5	−12·3	0	7	
		1737*a*	0·559	119·9	297·7	−10·6	30	197	
		1737*c*	0·607	120·6	294·9	−12·6	0	8	
		1738	0·658	112·6	289·2	− 9·6	0	4	
		1738*a*	0·672	115·1	288·9	−11·5	32	217	
		1738	0·698	112·4	286·2	−10·6	0	13	
		1738	0·715	111·8	284·8	−10·7	3	66	
		1738	0·742	112·2	282·7	−11·7	3	9	456 *c*
		1738	0·764	111·3	280·8	−12·1	6	48	
		1738	0·775	112·9	280·1	−13·2	0	11	
		1742	0·975	79·0	249·1	+12·1	0	144	399 *c*
			0·856	117·1	273·5	−19·2			364
			0·881	86·1	265·1	+ 6·5			440
			0·892	76·2	263·5	+15·2			828
			0·937	99·2	258·8	− 6·3			282
Aug. 8							(89)	(878)	(3805)

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column, it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n*, *s*, *p*, *f*, *c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Aug. 6. Photograph faint. Spots and faculæ ill-defined.

Group 1736, Aug. 3–9. Two spots, *a* and *b*. Two smaller spots are seen between them on Aug. 5. On Aug. 7 another companion is seen. Only *b* remains on Aug. 9.

Group 1737, Aug. 5–16. A regular spot, *a*, on Aug. 5. Another spot, *b*, with two companions has appeared by Aug. 8. By Aug. 9 *b* seems to have changed its position, and a new spot, *d*, has appeared. *b* breaks up, and is measured as two on Aug. 12 and 13.

Group 1738, Aug. 5–17. A regular spot, *a*. Several small spots have appeared following *a* by Aug. 7 forming a long stream on the succeeding days.

Group 1739, Aug. 7. Two small spots.

Group 1740, Aug. 7–10. A group of very small spots. By Aug. 9 the preceding spot has broken into two, which are measured together. Only one spot is seen on Aug. 10.

Group 1741, Aug. 8. Two small spots.

Group 1742, Aug. 8–19. One large spot when first seen; it has broken up into a group of small spots by Aug. 9, which continually change in number and position.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
220d·210	EP, H		0·989	257·9	35·9	−10·9			277
		1736*b*	0·788	273·7	8·3	+ 6·9	0	10	176 *np*
M.		1740	0·399	310·0	335·1	+21·0	5	17	
		1740	0·368	312·1	333·0	+20·4	0	2	
		1740	0·355	316·0	331·3	+21·0	7	22	
		1737*d*	0·397	141·5	301·6	−11·7	15	68	
		1737	0·430	141·4	300·2	−13·4	0	3	
		1737*b*	0·451	138·5	298·3	−13·5	10	72	
		1737*a*	0·431	133·5	297·6	−11·1	23	167	
		1737	0·492	135·8	295·4	−14·5	0	6	
		1737	0·477	133·2	295·3	−12·9	0	1	
		1737*c*	0·486	132·6	294·6	−13·1	8	23	
		1738*a*	0·538	123·6	289·0	−11·5	24	197	
		1738	0·579	120·3	285·6	−11·3	0	9	
		1738	0·601	118·2	283·6	−11·0	2	8	
		1738	0·619	119·3	282·7	−12·2	0	11	
		1738	0·654	120·4	280·7	−14·0	0	12	
		1738	0·651	117·0	279·9	−12·0	6	16	
		1743	0·673	78·5	273·8	+12·6	5	28	
		1743	0·696	76·3	272·1	+14·2	0	9	
		1743	0·705	79·4	271·1	+12·1	3	10	
		1742	0·876	81·2	254·5	+10·9	0	10	
		1742	0·898	79·1	251·7	+12·6	0	27	
		1742	0·901	80·8	251·3	+11·1	0	19	602 *c*
		1742	0·921	80·4	248·5	+11·4	1	32	
		1742	0·921	77·8	248·4	+13·8	0	11	
			0·808	79·6	261·9	+12·3			118
			0·864	68·5	256·4	+21·8			189
			0·943	89·6	245·7	+ 2·6			322
			0·959	71·0	241·5	+20·1			52
Aug. 9							(109)	(790)	(1736)
221·513	SP, M		0·947	276·9	227·2	+ 8·6			205
		1740	0·632	297·3	336·0	+22·0	0	15	
		1737*d*	0·318	192·9	303·0	−11·6	18	129	
		1737*b*	0·345	177·7	298·1	−13·6	16	151	
		1737*a*	0·307	175·3	297·4	−11·3	33	171	
		1737*c*	0·344	168·8	295·0	−13·2	0	12	
		1738*a*	0·347	151·8	289·3	−11·4	36	205	
		1738	0·366	144·2	286·4	−10·9	0	7	
		1738	0·401	138·5	283·3	−11·1	1	7	
		1738	0·441	133·4	279·9	−11·4	4	21	
		1738	0·459	135·6	279·7	−12·9	0	14	

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
221d·513	SP, M	1742	0·730	79·0	251·9	+12·5	0	14	
		1742	0·736	78·0	251·4	+13·3	1	22	
		1742	0·766	80·2	248·7	+11·7	0	13	239 *c*
		1742	0·770	78·5	248·3	+13·0	0	13	
		1742	0·783	76·3	247·2	+14·8	3	36	
		1745*a*	0·947	85·3	227·3	+ 6·6	0	26	
		1745*b*	0·971	84·4	222·4	+ 7·0	0	34	267 *c*
			0·889	77·6	235·7	+14·0			150
			0·970	101·3	224·6	− 9·3			398
Aug. 10							(109)	(890)	(1259)
222·457	SP, JH		0·881	245·0	343·5	−18·3			275
		1737*d*	0·424	225·0	304·2	−11·1	8	119	
		1737*b*	0·396	211·3	298·7	−13·3	16	100	
		1737*a*	0·357	212·4	297·7	−11·0	28	168	
		1737*c*	0·375	205·2	295·9	−13·3	1	11	
		1738*a*	0·308	190·7	289·8	−11·0	32	196	
		1738	0·300	178·3	286·0	−10·8	0	25	
		1738	0·313	171·1	283·7	−11·4	1	8	
		1738	0·321	163·4	281·2	−11·3	0	26	
		1738	0·337	158·8	279·4	−11·7	0	5	
		1738	0·389	158·9	278·2	−14·7	0	7	
		1742	0·564	76·9	252·4	+12·8	4	71	
		1742	0·598	77·8	249·9	+12·6	0	18	
		1742	0·635	74·4	247·4	+15·0	2	24	
		1742	0·642	70·1	247·3	+17·7	0	6	262 *c*
		1745*a*	0·843	86·6	228·9	+ 6·5	10	80	
		1745	0·863	87·2	226·7	+ 5·8	0	11	353*cs n*
		1745*b*	0·897	85·8	222·5	+ 6·7	9	108	
			0·779	76·5	235·2	+14·6			251
			0·921	103·5	221·4	− 9·7			1202
Aug. 11							(111)	(983)	(2343)
223·401	H, SP		0·855	290·3	332·7	+20·8			291
		1737*d*	0·582	240·0	304·7	−11·2	6	67	
		1737*b*	0·525	231·4	298·7	−13·1	4	41	
		1737*b*	0·529	228·9	298·1	−14·3	0	6	
		1737*a*	0·494	232·7	297·4	−11·3	15	151	
		1737	0·519	228·1	297·3	−14·2	0	21	
		1737*c*	0·506	227·9	296·5	−13·7	1	7	
		1738*a*	0·401	221·6	289·6	−11·1	30	194	
		1738	0·367	217·3	286·9	−10·5	1	8	
		1738	0·357	207·6	283·6	−11·9	0	22	

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column, it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n, s, p, f, c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Aug. 10. Photograph faint. Faculæ ill-defined.

Group 1743, Aug. 9. A group of four well-defined spots, the two smallest, long. 272°·1. being measured together.

Group 1745, Aug. 10-20. Two spots, *a* and *b*. There is a small companion on Aug. 11, and a different one on Aug. 12. By that day *b* has broken into two. On Aug. 13 there are three small spots following *a*, two of which have disappeared by the next day. *b* has broken up into a group of small spots by Aug. 16, and is not seen after Aug. 17.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.	Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).						Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1885.				°	°	°				1885.				°	°	°			
223d·401	H, SP	1738	0·347	203·6	282·0	−12·0	0	6		225d·541	H, JH	1737d	0·890	254·0	306·0	−10·9	0	18	54 *p*
		1738	0·332	196·8	279·5	−11·9	0	3				1737a	0·814	251·3	297·2	−11·0	19	145	283 *o*
		1742	0·378	71·7	252·4	+12·9	6	35				1738a	0·736	248·3	289·6	−11·0	35	204	
		1742	0·461	70·3	247·3	+14·9	0	7				1738	0·707	244·4	286·2	−12·7	0	12	
		1746	0·746	123·6	232·8	−19·4	1	18				1742	0·193	309·2	254·5	+13·7	0	16	
		1746	0·784	122·8	229·4	−20·4	0	3				1742	0·156	306·2	253·0	+11·9	0	11	
		1745a	0·693	87·9	229·9	+ 6·2	9	78	} 359 *c*			1742	0·125	308·4	251·3	+11·1	0	2	
		1745	0·730	86·9	226·9	+ 6·8	0	15				1742	0·134	314·6	250·2	+12·1	0	6	
		1745b	0·772	88·2	223·3	+ 5·6	0	25				1745a	0·251	89·5	231·0	+ 6·6	11	79	
		1745b	0·788	87·5	221·8	+ 6·0	0	56				1745	0·275	93·4	229·7	+ 5·5	0	4	
			0·855	107·3	217·8	−11·1			643			1745	0·284	90·0	229·1	+ 6·5	2	13	
Aug. 12							(73)	(763)	(1293)			1745	0·368	88·9	224·0	+ 6·7	0	26	
												1745b	0·381	92·1	223·2	+ 5·4	0	2	
												1745b	0·399	89·5	222·0	+ 6·3	3	34	
224·407	H, SP		0·944	290·0	332·3	+21·1			189			1747	0·399	129·2	227·5	− 8·2	3	18	
			0·812	249·1	311·5	−12·7			103			1747	0·421	129·6	226·5	− 9·2	0	7	
		1737d	0·747	248·6	305·7	−11·1	3	53				1747	0·470	129·4	224·0	−11·1	0	7	
		1737b	0·683	243·1	299·2	−12·7	8	45				1748	0·961	106·6	174·3	−13·8	31	198	297 *cefn*
		1737b	0·680	240·7	298·2	−14·1	0	7					0·864	106·5	188·4	−10·6			90
		1737a	0·654	244·3	297·5	−11·1	16	145	322 *c*	Aug. 14							(104)	(802)	(724)
		1738a	0·561	238·8	289·9	−11·0	33	184											
		1738	0·526	238·3	287·6	−10·1	0	5											
		1738	0·516	234·4	285·9	−11·4	0	3		226·428	H, SP		0·913	239·9	293·5	−23·9			25
		1738	0·469	227·7	281·4	−12·1	0	13				1737d	0·964	256·9	306·5	−10·7	0	9	} 445 *c*
		1738	0·449	226·1	279·9	−11·8	0	8				1737a	0·912	255·0	297·4	−10·7	12	113	
		1742	0·158	37·7	255·0	+13·8	0	38				1738a	0·857	252·6	290·1	−11·1	25	171	
		1742	0·166	50·5	253·2	+12·7	0	9				1742	0·368	286·6	255·0	+12·4	1	10	
		1742	0·192	52·4	251·7	+13·4	0	4				1742	0·371	291·0	254·7	+14·0	0	6	
		1742	0·179	60·3	251·6	+11·7	0	5				1742	0·331	289·4	252·5	+12·8	0	3	
		1742	0·267	52·2	248·1	+16·0	0	2				1745a	0·046	94·4	231·3	+ 6·6	15	77	
		1742	0·263	57·1	247·6	+14·7	6	10				1745	0·076	97·1	229·1	+ 6·5	4	13	
		1746	0·604	134·7	233·8	−19·1	0	11				1745	0·120	87·3	227·0	+ 7·1	0	7	
		1745a	0·496	89·0	230·9	+ 6·3	12	95				1745	0·167	86·0	224·3	+ 7·4	0	18	
		1745	0·532	88·2	228·5	+ 6·7	6	26				1745b	0·198	96·3	222·5	+ 5·4	2	19	
		1745	0·563	86·2	226·3	+ 7·7	2	7				1745b	0·214	90·1	221·5	+ 6·7	3	21	
		1745	0·566	88·6	226·1	+ 6·4	0	13				1748	0·896	109·6	173·6	−14·2	35	226	347 *cefnp*
		1745	0·585	86·1	224·8	+ 7·7	0	5									(97)	(693)	(817)
		1745b	0·609	90·0	223·2	+ 5·4	2	6		Aug. 15									
		1745b	0·626	88·4	221·9	+ 6·2	5	41											
		1747	0·604	113·4	226·8	− 8·3	0	13		227·407	H, SP		0·777	275·2	272·3	+ 8·4			443
		1747	0·652	114·9	223·9	−10·6	0	3				1737a	0·978	257·4	297·1	−10·8	9	142	108 *c*
			0·778	117·6	214·9	−16·5			172			1738a	0·946	255·7	289·8	−11·1	25	161	664 *sf*
			0·904	105·9	198·4	−11·3			22			1742	0·565	280·7	255·4	+11·7	4	34	
Aug. 13							(93)	(751)	(808)			1742	0·540	283·5	253·5	+13·0	0	15	

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column, it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n, s, p, f, c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Aug. 14. Photograph faint. Faculæ ill-defined.

Group 1746, Aug 12–13. Two spots on Aug. 12. On the second day there are two spots close together measured as one.

Group 1747, Aug. 13, 14. Four small faint spots on Aug. 13, three being measured together; of these one has disappeared by Aug. 14, and the other two are measured separately.

Group 1748, Aug. 14–25. A regular spot.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
				°	°	°			
1885.									
227d·407	H, SP	1742	0·526	286·7	252·2	+14·5	2	29	
		1742	0·521	283·5	252·2	+12·8	0	1	
		1742	0·499	280·1	250·9	+11·0	2	4	
		1742	0·496	283·3	250·5	+12·5	0	8	
		1742	0·498	290·2	249·9	+15·9	0	4	
		1749	0·329	214·6	231·9	− 9·0	2	9	
		1745*a*	0·177	270·2	231·2	+ 6·8	8	66	
		1745	0·148	268·6	229·5	+ 6·5	2	9	
		1745	0·100	276·6	226·7	+ 7·4	3	11	
		1745*c*	0·057	269·5	224·3	+ 6·8	0	16	
		1745*b*	0·029	271·5	222·7	+ 6·9	0	2	
		1745*b*	0·039	226·1	222·6	+ 5·2	0	6	
		1745*b*	0·003	261·6	221·2	+ 6·8	1	9	
		1748	0·786	113·9	173·4	−14·0	38	257	188 *c*
			0·730	113·1	177·9	−11·7			91
			0·917	112·3	158·5	−17·3			214
			0·954	67·8	147·4	+23·2			161
Aug. 16							(96)	(783)	(1969)
228·430	H, SP		0·879	272·4	269·1	+ 5·4			292
			0·902	284·4	272·4	+15·9			154
			0·876	250·8	265·4	−13·1			86
		1738*a*	0·995	258·1	290·0	−11·1	5	122	268 *s f*
		1742	0·746	279·7	255·9	+11·7	1	22	
		1742	0·733	281·6	254·7	+13·1	0	13	
		1742	0·711	281·2	252·9	+12·8	0	8	
		1742	0·690	282·9	251·0	+13·8	2	28	
		1745*a*	0·402	270·6	231·2	+ 6·5	10	57	
		1745	0·383	270·6	230·0	+ 6·5	0	3	
		1745	0·368	268·7	229·0	+ 5·9	0	14	
		1745	0·343	268·7	227·5	+ 5·9	0	4	
		1745	0·326	272·9	226·5	+ 7·4	0	3	
		1745	0·285	268·5	224·0	+ 6·2	0	1	
		1745*b*	0·264	265·5	222·7	+ 5·4	0	7	
		1745*b*	0·239	269·8	221·3	+ 6·6	0	2	
		1748	0·645	121·7	173·1	−14·1	36	257	
			0·940	67·8	136·5	+23·2			126
			0·942	83·2	136·5	+ 8·7			305
Aug. 17							(54)	(541)	(1231)
229·191	H, JH		0·959	275·0	271·3	+ 6·8			310
I.			0·948	285·9	269·9	+17·3			166
			0·743	268·8	245·3	+ 3·8			158
1885.									
229d·191	H, JH	1742	0·850	278·8	256·1	+11·1	8	27	} 946 *c*
		1742	0·806	284·6	251·3	+15·9	0	2	
I.		1742	0·803	281·0	251·2	+13·0	0	6	
		1742	0·791	280·2	250·0	+12·3	0	3	
		1745	0·553	271·1	231·0	+ 6·4	12	60	
		1745*a*	0·539	269·2	230·0	+ 5·4	0	1	
		1745	0·518	269·5	228·6	+ 5·6	0	6	
		1750	0·138	98·4	189·5	+ 5·7	0	7	
		1750	0·164	91·1	187·9	+ 6·7	0	12	
		1750	0·185	98·0	186·9	+ 5·4	6	13	
		1748	0·534	130·9	172·9	−14·1	62	256	
		1751	0·533	62·0	167·4	+20·4	8	18	
		1751	0·551	65·4	165·5	+19·1	4	7	
		1751	0·567	64·3	164·6	+20·0	2	3	
		1751	0·584	62·4	163·8	+21·5	0	5	
			0·751	121·7	155·3	−18·1			336
			0·870	67·9	136·8	+22·6			134
			0·887	83·5	134·5	+ 9·0			263
			0·965	103·7	124·6	−11·3			334
			0·982	72·6	117·0	+18·3			144
Aug. 18							(102)	(426)	(2791)
230·475	H, SP		0·909	271·1	246·0	+ 3·9			318
			0·923	249·7	244·4	−15·7			286
I.			0·774	251·9	228·6	− 9·3			176
		1742	0·944	280·0	252·0	+11·7	2	12	1196 *n f*
		1752	0·828	253·1	233·9	− 9·8	1	4	
		1745*a*	0·774	273·0	231·5	+ 6·7	9	44	
		1750	0·202	266·5	192·2	+ 6·1	0	5	
		1750	0·174	263·7	190·6	+ 5·7	0	2	
		1750	0·152	259·5	189·2	+ 5·3	3	5	
		1750	0·120	256·6	187·3	+ 5·2	6	17	
		1748	0·344	159·0	173·4	−11·8	0	8	
		1748	0·384	160·4	172·8	−14·3	52	227	
		1748	0·366	155·4	171·7	−12·6	3	14	
		1751	0·323	42·5	167·2	+20·4	2	3	
		1751	0·328	47·7	165·8	+19·4	0	5	
		1751	0·350	45·3	165·2	+20·9	1	6	
		1751	0·373	47·2	163·6	+21·2	0	4	
			0·890	108·3	120·8	−12·8			218
			0·894	73·8	116·7	+17·5			148
			0·944	102·0	111·7	− 8·9			233
			0·961	108·4	109·7	−15·5			131
Aug. 19							(79)	(356)	(2706)

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The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Aug. 19. Limb ill-defined on the photograph.
Group 1750, Aug. 18–21. A group of faint spots. Only one spot is seen on Aug. 20.
Group 1752, Aug. 19. A small spot.

Group 1749, Aug. 16. A small spot.
Group 1751, Aug 18–19. A group of four faint spots.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued*.

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1885.				°	°	°			
231d·492	H, JH		0·941	286·4	238·3	+17·8			451
			0·895	257·0	228·7	− 8·3			208
		1745*a*	0·900	274·5	231·6	+ 7·1	0	17	160 *f*
		1753	0·879	250·2	225·2	−13·7	9	41	202 *e*
		1753	0·852	248·9	221·9	−13·9	7	53	
		1750	0·343	265·4	187·1	+ 5·1	0	16	
		1748	0·372	196·4	173·3	−13·9	34	230	
			0·836	105·4	112·7	− 8·8			167
Aug. 20							(50)	(357)	(1188)
232·492	SP, JH		0·950	275·2	226·0	+ 7·1			533
			0·934	255·4	220·5	−10·9			547
			0·877	243·1	209·7	−19·5			484
		1750	0·613	271·3	191·7	+ 6·4	3	9	
		1750	0·561	270·7	188·0	+ 6·2	0	3	
		1750	0·546	268·6	186·9	+ 5·1	0	2	
		1748	0·474	222·6	173·0	−13·8	39	189	
			0·943	104·5	85·6	−11·1			323
			0·941	75·8	82·7	+15·7			220
Aug. 21							(42)	(203)	(2107)
235·577	H, JH		0·969	274·9	189·1	+ 6·5			371
		1748	0·893	250·3	172·8	−14·0	8	150	470 *c*
		1754*a*	0·842	107·7	58·5	−10·7	21	202	
		1754	0·874	105·9	54·6	−10·2	6	55	
		1754	0·878	103·4	53·6	− 8·1	3	20	618 *c*
		1754	0·900	103·5	50·9	− 8·9	3	15	
		1754*b*	0·908	101·0	49·3	− 6·9	6	134	
			0·734	112·5	69·4	−11·2			170
			0·953	114·2	45·2	−20·4			678
Aug. 24							(47)	(576)	(2307)
236·459	SP, H		0·917	289·5	168·7	+20·7			135
		1748	0·961	253·5	172·6	−13·6	10	94	296 *c*
		1754*a*	0·727	112·1	58·3	−10·7	17	193	
		1754	0·760	111·2	55·4	−11·0	0	6	
		1754	0·765	110·3	54·7	−10·6	0	15	
		1754	0·767	107·4	53·8	− 8·5	0	9	285 *c*
		1754	0·794	108·0	51·6	− 9·6	0	19	
		1754	0·803	105·1	50·1	− 7·7	0	26	
		1754*b*	0·806	103·5	49·5	− 6·5	7	92	
			0·920	120·0	40·9	−24·0			342
Aug. 25							(34)	(454)	(1058)
1885.									
237d·457	SP, JH		0·908	245·5	148·8	−18·7			141
		1755	0·523	227·2	111·5	−14·2	0	22	
		1755	0·519	223·7	110·0	−15·4	0	13	
		1754*a*	0·569	121·2	58·7	−10·9	21	163	
		1754	0·612	117·6	55·0	−10·4	0	10	
		1754	0·616	114·6	53·9	− 8·9	0	26	
		1754*b*	0·649	107·8	50·1	− 5·8	5	76	187 *f*
			0·770	124·7	45·8	−20·8			215
			0·896	130·9	35·6	−31·7			232
			0·943	82·3	17·2	+ 9·6			285
Aug. 26							(26)	(310)	(1060)
239·480	H, JH	1755	0·842	247·1	114·7	−14·9	0	86	151 *c*
		1755	0·807	246·8	111·2	−14·0	0	21	
		1755	0·794	244·1	109·1	−15·4	9	131	
		1754*a*	0·319	171·8	58·9	−11·1	5	163	
		1754*b*	0·279	141·1	51·4	− 5·5	0	12	
		1756	0·680	105·4	20·5	− 5·0	0	20	
		1756	0·719	105·0	17·4	− 5·6	0	21	158 *c*
		1756	0·757	102·3	13·8	− 4·6	0	56	
		1756	0·799	101·6	10·0	− 4·8	8	86	
		1757	0·978	79·5	342·5	+11·8	23	174	540 *c*
		1757	0·989	81·5	339·2	+ 9·5	0	163	
Aug. 28							(45)	(933)	(849)
240·444	H, JH	1755	0·935	251·3	114·8	−14·6	6	173	270 *c*
		1755	0·903	250·3	109·8	−14·3	0	28	
		1755	0·893	249·0	108·2	−15·1	8	149	
		1754*a*	0·358	209·8	59·1	−11·0	14	134	
		1754*b*	0·226	192·4	51·5	− 5·5	0	7	
		1758	0·241	169·0	46·1	− 6·5	0	6	
		1758	0·265	160·9	43·7	− 7·3	0	4	
		1756	0·498	113·2	21·5	− 4·9	0	12	
		1756	0·543	110·6	18·2	− 4·8	0	46	
		1756	0·580	108·1	15·3	− 4·4	4	63	
		1756	0·643	105·5	10·4	− 4·3	16	83	
		1757	0·910	80·1	342·6	+12·0	24	240	450 *c*
		1757	0·933	82·7	339·2	+ 9·4	12	118	
		1757	0·936	80·3	338·0	+11·6	0	16	
Aug. 29							(84)	(1079)	(720)

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column, it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n, s, p, f, c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Aug. 20. Photograph faint. Faculæ ill-defined.

Group 1753, Aug. 20. Two well-defined spots.

Group 1754, Aug. 24–Sept. 3. Two large spots, *a* and *b*, with smaller spots between them. *b* decreases in size, and is not seen on Sept. 1, by which day the group as a whole has very much increased in size, and consists of several fine spots, which have become two large spots with small companions by Sept. 2.

Group 1755, Aug. 26–29. Two small spots. They have greatly increased in size, and a new spot has appeared by Aug. 28.

Group 1756, Aug. 28–Sept. 7. A well-defined spot with three fainter spots preceding on Aug. 28. The preceding spot increases in size after Aug. 29. One of the middle spots has disappeared by Sept. 1, and the other has broken into a number of very small spots by Sept. 2.

Group 1757, Aug. 28–Sept. 9. Two spots which increase in size and have coalesced by Sept. 3. This spot has divided into three by Sept. 5, but is measured as one except on Sept. 9. Small companions are seen on Aug. 29, Sept. 5 and 7.

Aug. 28. Photograph faint. Spots and faculæ ill-defined.

Group 1758, Aug. 29. Two very small spots.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.									
243d·399	H, JH		0·898	252·7	70·7	−12·0			208
		1754	0·805	251·0	60·3	−10·6	4	58	
		1754	0·775	251·3	57·6	− 9·6	18	228	
		1754	0·766	247·3	55·8	−12·2	0	17	146 *s*
		1754	0·736	250·6	54·2	− 9·1	12	98	
		1754	0·731	248·3	53·2	−10·4	0	35	
		1756	0·315	230·1	23·7	− 4·7	10	132	
		1756	0·238	206·6	15·8	− 5·1	1	27	
		1756	0·212	187·6	11·3	− 4·9	9	26	
		1757	0·470	78·6	341·8	+11·7	28	255	
		1757	0·493	83·1	340·1	+ 9·7	13	297	
		1759*a*	0·979	104·1	293·7	−12·1	0	69	155
Sept. 1							(95)	(1242)	(509)
244·391	H, JH		0·984	257·4	74·4	−11·0			915
			0·845	245·0	49·5	−16·6			309
I.			0·813	235·0	42·7	−22·9			172
		1754	0·902	255·0	58·7	−10·2	54	499	
		1754	0·891	251·5	56·5	−12·9	0	21	
		1754	0·865	254·1	54·0	− 9·9	55	330	479 *c*
		1754	0·816	256·1	49·3	− 7·0	4	26	
		1756	0·507	247·7	24·6	− 4·7	21	163	
		1756	0·498	244·8	23·4	− 5·8	3	58	
		1756	0·493	241·9	22·5	− 6·9	0	8	
		1756	0·466	244·0	21·4	− 5·2	0	8	
		1756	0·456	242·2	20·4	− 5·6	0	6	
		1756	0·395	238·5	16·3	− 5·1	0	13	
		1756	0·335	231·5	11·8	− 5·1	8	59	
		1757	0·266	71·8	341·7	+11·7	48	235	
		1757	0·286	79·7	340·1	+ 9·9	23	357	
		1759*a*	0·923	106·4	291·9	−12·1	20	112	319 *n f*
			0·869	107·6	299·1	−11·4			240 *c*
			0·993	88·3	273·4	+ 2·5			345
Sept. 2							(236)	(1895)	(2779)
245·423	SP, JH		0·925	244·2	45·6	−20·6			268
			0·879	225·6	31·3	−33·0			107
		1754	0·977	258·4	58·9	− 9·7	17	233	853 *c*
		1754	0·932	257·4	53·2	− 9·6	15	261	
		1756	0·684	255·3	24·4	− 4·6	25	279	
		1756	0·525	248·0	12·1	− 5·0	5	45	
		1757	0·069	28·0	341·1	+10·7	32	394	
1885.									
245d·423	SP, JH	1759	0·052	83·6	340·0	+ 7·5	0	5	
		1759*a*	0·805	111·0	292·9	−12·1	17	114	155 *c*
			0·923	87·2	276·1	+ 5·4			265
			0·963	75·4	267·5	+16·0			150
Sept. 3							(111)	(1331)	(1798)
246·525	SP, JH	1756	0·844	259·6	24·6	− 4·8	16	276	114 *c*
		1756	0·717	255·1	12·3	− 5·4	3	44	44 *c*
		1757	0·223	285·0	341·0	+10·3	27	368	
		1760	0·326	178·1	327·8	−11·7	0	23	
		1759*a*	0·649	118·4	292·8	−12·1	12	101	
Sept. 4							(58)	(812)	(158)
247·414	SP, JH	1756	0·932	262·5	24·4	− 4·3	6	293	256 *c*
		1756	0·841	259·0	12·5	− 5·2	4	23	
		1757	0·418	279·7	341·4	+10·6	37	232	
		1757	0·401	273·0	340·4	+ 7·8	0	8	
		1757	0·405	287·0	340·1	+13·4	0	4	
		1757	0·386	283·6	339·1	+11·9	0	8	
		1760	0·381	211·6	328·4	−11·9	15	99	
		1760	0·334	207·2	325·6	−10·1	0	28	
		1761	0·361	152·1	306·8	−11·4	0	6	
		1761	0·387	148·1	304·7	−12·1	0	9	
		1761	0·411	146·8	303·4	−13·0	0	6	
		1759*a*	0·509	129·6	293·1	−12·3	12	114	
		1762	0·584	120·9	286·1	−11·2	0	6	
			0·947	72·5	244·3	+18·9			95
Sept. 5							(74)	(836)	(351)
248·408	SP, JH	1756	0·988	264·5	23·7	− 4·3	6	296	619 *c*
		1756	0·943	261·9	12·8	− 5·1	0	31	
		1757	0·611	277·7	341·3	+10·5	23	194	
		1760	0·523	233·1	328·7	−11·6	0	50	
		1760	0·471	231·3	325·3	−10·3	0	12	
		1759*a*	0·377	152·3	293·2	−12·3	10	111	
			0·873	76·0	242·1	+15·7			418
			0·940	85·1	233·1	+ 7·1			107
			0·963	106·8	231·9	−14·0			94
Sept. 6							(39)	(694)	(1238)

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n*, *s*, *p*, *f*, *c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible hemisphere.

Sept. 4. Photograph faint. Spots ill-defined. Faculæ scarcely visible.

Group 1759, Sept. 1–12. A regular spot, *a*. A small companion is seen on Sept. 3, and another on Sept. 7.

Group 1760, Sept. 4–7. A small spot on Sept. 4, which has divided into two by the next day.

Group 1761, Sept. 5. Three small spots.

Sept. 6. Photograph faint. Faculæ ill-defined.

Group 1762, Sept. 5. A very small spot.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued*.

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
249d·273	H, JH		0·980	277·0	11·4	+ 8·3			153
			0·966	254·9	4·8	−12·5			169
I.		1756	0·991	263·3	13·4	− 5·6	0	43	456 *c*
		1757	0·761	277·0	342·1	+10·1	38	212	
		1757	0·750	273·7	341·0	+ 7·6	0	14	234 *c*
		1757	0·734	277·2	339·7	+10·3	0	3	
		1760	0·659	242·3	328·7	−12·0	5	37	
		1760	0·614	242·0	325·5	−10·6	0	6	
		1759*a*	0·340	183·7	293·5	−12·4	13	92	
		1759	0·342	177·9	291·5	−12·6	0	2	
			0·817	71·0	237·3	+19·7			367
			0·927	108·6	227·4	−14·2			586
			0·923	89·0	224·8	+ 3·7			358
Sept. 7							(56)	(409)	(2323)
250·404	SP, JH		0·942	240·5	341·5	−24·6			82
		1757	0·898	277·5	341·7	+ 9·9	21	199	525 *c*
		1759*a*	0·435	219·4	293·7	−12·6	12	75	
		1763	0·970	105·8	203·8	−13·4	52	498	658 *c*
			0·971	83·6	200·6	+ 8·0			85
Sept. 8							(85)	(772)	(1350)
251·410	SP, JH	1757	0·972	279·3	341·2	+10·7	19	97	
		1757	0·969	278·1	340·3	+ 9·6	0	33	263 *c*
		1759*a*	0·584	236·1	293·7	−12·7	14	64	
		1763	0·896	109·3	203·8	−13·5	66	566	300 *c*
			0·908	87·5	198·6	+ 5·4			219
Sept. 9							(99)	(760)	(782)
252·260	H, JH		0·900	275·6	317·4	+ 8·2			200
			0·910	259·2	316·7	− 6·7			792
I.		1759*a*	0·709	243·9	293·4	−12·6	23	82	180 *c & p*
		1763	0·803	112·6	203·4	−13·3	136	653	
		1763	0·828	114·3	201·5	−15·4	0	13	
		1763	0·848	110·3	198·3	−12·9	0	31	699 *c*
			0·766	125·7	211·1	−21·1			68
			0·793	85·8	200·1	+ 7·8			342
			0·950	103·8	183·2	−10·6			104
Sept. 10							(159)	(779)	2385)

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
253d·208	H, JH		0·928	253·2	305·6	−12·7			438
			0·895	240·2	297·3	−22·7			159
I.		1759*a*	0·846	250·0	294·6	−12·7	9	64	56 *c*
		1763	0·637	116·1	204·8	−10·4	0	4	
		1763	0·665	119·1	203·7	−13·1	147	588	429 *s f*
			0·892	113·2	181·4	−16·9			586
Sept. 11							(156)	(656)	(1668)
254·229	H, JH	1759*a*	0·940	253·3	293·9	−13·0	1	54	322 *c*
		1763	0·519	129·8	202·6	−12·8	90	671	
I.			0·854	113·4	172·3	−15·7			113
			0·970	70·0	149·2	+21·1			125
Sept. 12							(91)	(725)	(560)
255·178	H, JH		0·983	250·0	290·3	−18·0			164
			0·968	255·3	287·3	−12·2			211
I.			0·793	289·0	263·7	+10·3			198
		1764	0·762	242·1	258·4	−15·8	0	36	127 *c*
		1764	0·739	240·5	256·0	−16·0	0	7	
		1764	0·723	237·7	253·8	−17·2	0	21	
		1763	0·397	151·8	203·1	−13·4	106	571	
		1763	0·386	144·7	201·1	−11·3	0	45	
		1763	0·435	148·1	200·5	−14·6	0	12	
		1763	0·390	141·0	199·8	−10·6	0	16	
		1763	0·419	144·5	199·8	−12·9	0	36	
		1763	0·438	143·3	198·6	−13·6	0	23	
Sept. 13							(106)	(767)	(700)
256·558	H, JH		0·918	287·2	263·5	+18·6			334
		1764	0·915	249·9	258·7	−15·1	0	68	223 *c*
		1764	0·901	248·0	256·4	−16·2	0	94	
		1763	0·398	204·8	206·0	−14·0	0	20	
		1763	0·368	198·8	203·1	−13·1	65	527	
		1763	0·333	198·2	202·2	−11·2	0	6	
		1763	0·333	192·4	200·3	−11·7	0	21	
		1763	0·354	190·1	199·7	−13·1	0	23	
		1763	0·373	187·3	198·9	−14·5	4	47	
Sept. 14							(69)	(806)	(557)

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n, s, p, f, c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Sept. 10. Limb very faint on the photograph, especially about Position angle 120° (from the Sun's axis).

Sept. 11. Limb very faint on the photograph.

Sept. 12. Limb faint on the photograph.

Group 1763, Sept. 8–19. A very large spot. The following portion, which is of irregular shape, has become detached by Sept. 13 and 14, and is measured in five portions. These have disappeared by Sept. 15. The nucleus has divided into two portions by Sept. 14, and the whole spot by Sept. 17, although still measured as one. Some small spots are seen near the principal spots on Sept. 14, 18, and 19.

Group 1764, Sept. 13–14. A group of faint spots.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
257d·389	SP,JH		0·968	280·2	261·4	+11·7			312
			0·962	251·9	256·2	−15·1			342
		1763	0·463	221·1	203·3	−13·6	54	464	
			0·945	108·4	117·3	−14·7			591
Sept. 15							(54)	(464)	(1245)
258·572	H, SP		0·914	288·3	236·3	+19·6			138
			0·908	254·7	232·2	−10·6			61
		1763	0·636	238·2	203·0	−13·6	58	479	
		1765	0·787	116·0	122·4	−15·3	5	50	144 *c*
			0·861	113·3	114·3	−15·9			392
Sept. 16							(63)	(529)	(735)
259·180	H, JH		0·904	292·9	226·5	+23·7			486
			0·916	252·8	224·8	−12·6			286
I.			0·893	274·3	224·8	+ 7·0			242
			0·831	238·9	210·7	−20·9			158
		1763	0·728	242·7	203·0	−14·2	85	448	
		1765	0·642	121·9	127·3	−14·0	0	2	
		1765	0·659	121·4	126·0	−14·3	2	8	
		1765	0·685	120·7	123·9	−14·9	5	15	
		1765	0·685	119·1	123·4	−13·9	0	2	
		1765	0·710	119·6	121·7	−15·1	9	61	326 *f*
			0·842	113·8	108·4	−15·6			447
Sept. 17							(101)	(536)	(1945)
260·507	H, JH		0·962	254·4	215·4	−12·8			90
			0·950	248·3	211·7	−18·9			59
			0·793	274·4	196·5	+ 7·8			217
		1763	0·892	253·1	204·2	−11·6	0	3	}
		1763	0·889	250·0	203·1	−14·1	55	396	} 556 *c*
		1763	0·857	251·1	199·6	−12·2	0	2	}
		1763	0·861	246·6	198·9	−16·0	0	2	}
		1765	0·415	141·9	128·7	−12·1	0	2	
		1765	0·448	143·6	127·9	−14·2	4	13	
		1765	0·433	138·4	126·8	−12·0	0	2	
		1765	0·426	133·0	125·4	−10·1	0	3	
		1765	0·468	136·5	124·6	−13·1	0	15	
		1765	0·490	138·5	124·3	−14·8	1	5	
		1765	0·485	136·9	123·9	−14·0	0	5	
		1765	0·521	137·5	122·4	−15·9	4	36	
		1765	0·553	136·0	120·2	−16·9	0	3	

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
260d·507	H, JH	1765	0·563	132·0	118·2	−15·7	0	3	
			0·939	105·7	76·4	−12·1			586
Sept. 18							(64)	(490)	(1508)
261·214	SP,JH	1763	0·963	254·7	206·4	−12·6	0	24	
		1763	0·949	251·9	203·1	−14·7	62	509	895 *c*
I.		1765	0·400	152·7	123·7	−13·7	0	9	
		1765	0·434	152·8	122·7	−15·7	2	6	
		1765	0·468	145·8	118·7	−15·9	0	15	
		1766	0·754	74·5	85·5	+16·3	2	16	
			0·921	107·8	70·4	−13·3			336
Sept. 19							(66)	(579)	(1231)
262·561	H, SP	1766	0·522	69·1	86·4	+16·7	0	3	
			0·941	103·5	48·8	−10·2			335
Sept. 20							(0)	(3)	(335)
263·443	SP,JH		0·934	253·8	171·5	−12·4			260
		1766	0·355	60·7	86·3	+16·6	0	5	
		1766	0·411	66·4	82·1	+15·9	0	12	
		1767	0·975	94·7	28·7	− 2·9	27	202	325 *c*
		1768	0·987	83·7	23·9	+ 7·3	0	197	354 *c*
			0·819	108·4	53·0	−10·7			308
Sept. 21							(27)	(416)	(1247)
264·441	H, SP	1766	0·212	32·5	85·0	+17·2	2	20	
		1766	0·232	42·1	82·5	+16·8	9	37	
		1767	0·902	96·8	28·3	− 3·1	16	168	256 *f*
		1768	0·929	85·3	23·2	+ 7·0	20	201	308 *c&f*
Sept. 22							(47)	(426)	(564)
265·428	H, JH	1767	0·784	99·1	28·2	− 2·7	10	114	77 *c*
		1768	0·824	86·1	23.1	+ 7·1	8	106	96 *c*
			0·903	102·5	16·1	− 8·1			70
			0·910	85·5	13·0	+ 7·0			97
Sept. 23							(18)	(220)	(340)
266·574	H, JH	1767	0·597	103·6	28·3	− 2·4	3	57	
		1768	0·651	87·0	23·0	+ 7·2	0	101	
Sept. 24							(3)	(158)	(0)

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n, s, p, f, c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's Hemisphere.

Sept. 20. Limb rough on the photograph. Faculæ ill-defined.

Group 1765, Sept. 16–19. Two faint spots, measured as one, on Sept. 16. On the next day the group appears as three well-defined spots with some very small companions. On Sept. 19 only three spots are seen.

Group 1766, Sept. 19–22. A small spot on Sept. 19. A second is seen near it on Sept. 21. On Sept. 22 the group consists of four small spots which are measured in pairs.

Group 1767, Sept. 21–Oct. 3. A large regular spot. A small spot is seen near it on Sept. 25.

Group 1768, Sept. 21–Oct. 3. A large regular spot.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
267d·407	H, SP		0·896	247·8	112·3	−16·3			409
			0·970	251·2	111·8	−16·3			369
		1767	0·436	109·9	28·6	− 2·3	5	145	
		1767	0·489	110·9	25·6	− 3·9	0	8	
		1768	0·490	87·2	23·3	+ 7·4	37	202	
		1769	0·701	75·8	8·2	+14·9	0	9	86 *c*
		1769	0·713	72·3	7·5	+17·5	0	18	
		1770	0·925	79·7	344·4	+12·1	8	117	175 *c*
			0·911	84·4	346·7	+ 8·0			189
Sept. 25							(50)	(499)	(1228)
268·447	H, JH		0·965	251·0	110·7	−16·3			342
		1767	0·235	131·4	28·9	− 2·1	9	129	
		1768	0·270	86·8	23·3	+ 7·5	23	224	
		1771	0·463	122·8	15·9	− 8·1	0	16	
		1769	0·500	67·2	10·3	+17·2	0	9	
		1769	0·505	70·8	9·5	+15·6	1	25	
		1769	0·540	68·4	7·4	+17·4	3	48	
		1770	0·814	80·1	344·1	+12·1	9	75	154 *sp*
Sept. 26							(45)	(526)	(496)
269·132	SP,JH		0·961	280·5	104·8	+12·0			78
			0·968	249·4	102·1	−18·0			216
I.			0·951	261·5	100·8	− 5·9			97
			0·936	301·5	99·6	+31·8			74
			0·769	239·1	73·9	−18·4			172
		1767	0·159	168·9	28·3	− 2·1	34	142	
		1768	0·125	82·5	22·8	+ 7·7	48	224	
		1771	0·354	134·8	15·4	− 7·8	4	13	
		1769	0·368	56·9	11·2	+18·0	4	15	
		1769	0·380	59·2	10·1	+17·6	4	10	
		1769	0·382	61·1	9·6	+17·1	0	2	
		1769	0·380	63·5	9·4	+16·2	2	5	
		1769	0·397	63·3	8·4	+16·6	2	10	
		1769	0·429	62·8	6·5	+17·5	12	40	
		1769	0·481	58·0	4·2	+20·9	0	3	
		1769	0·489	58·3	3·7	+20·9	0	6	
		1770	0·728	79·4	343·1	+12·3	19	113	145 *c*
			0·955	107·0	320·0	−14·0			110
Sept. 27							(129)	(583)	(892)

Grewenich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
270d·469	SP,JH		0·934	286·4	82·3	+17·7			84
			0·903	260·4	75·6	− 5·6			176
			0·859	250·4	68·3	−13·0			158
		1767	0·323	241·4	28·8	− 2·4	14	120	
		1772	0·254	297·6	25·7	+13·4	0	10	
		1768	0·189	275·9	23·3	+ 7·8	32	208	
		1771	0·263	193·5	15·9	− 8·0	0	6	
		1769	0·192	1·2	12·2	+17·8	2	10	
		1769	0·148	5·5	11·6	+15·3	0	6	
		1769	0·190	12·3	10·0	+17·4	0	8	
		1769	0·186	19·9	8·6	+16·8	0	4	
		1769	0·204	20·2	8·2	+17·8	0	2	
		1769	0·188	25·0	7·7	+16·5	0	3	
		1769	0·201	25·1	7·3	+17·2	6	40	
		1770	0·448	77·0	346·0	+11·9	0	3	
		1770	0·478	77·1	344·1	+12·1	10	78	
			0·956	108·3	302·4	−15·3			342
Sept. 28							(64)	(498)	(760)
271·164	SP,JH		0·951	256·2	73·2	−10·9			880
			0·774	248·9	50·6	−11·7			96
I.		1767	0·459	250·5	28·9	− 2·8	20	149	
		1768	0·345	273·4	23·5	+ 7·5	35	222	
		1771	0·340	220·1	16·0	− 8·5	2	9	
		1769	0·244	320·7	12·6	+17·5	0	8	
		1769	0·228	332·7	9·6	+18·3	1	14	
		1769	0·211	333·9	8·9	+17·5	2	9	
		1769	0·194	339·2	7·4	+17·1	10	40	
		1770	0·334	72·9	344·3	+12·0	19	103	
			0·930	113·0	299·0	−18·5			562
			0·939	78·1	292·6	+13·5			79
Sept. 29							(89)	(554)	(1617)
272·195	SP,JH		0·911	250·7	52·0	−14·5			511
		1767	0·641	257·6	28·2	− 2·7	21	128	128 *c*
I.		1768	0·553	273·8	23·3	+ 7·7	39	191	
		1769	0·374	301·2	9·1	+17·5	0	3	
		1769	0·348	302·8	7·4	+17·2	3	6	
		1770	0·130	42·4	344·5	+12·2	20	88	
			0·865	108·7	292·7	−12·5			410
			0·942	83·5	278·7	+ 8·4			803
Sept. 30							(83)	(416)	(1852)

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column, it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters, *n*, *s*, *p*, *f*, *c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Sept. 27. Limb very faint, especially about Position-angle 20° (from the Sun's axis). Photograph faint; faculæ ill-defined.

Group 1769, Sept. 25–30. A number of small spots irregularly distributed. The group is measured in two clusters on Sept. 25, but it becomes more scattered on the succeeding days until Sept. 28, after which date many of the spots disappear.

Group 1770, Sept. 25–Oct. 5. A regular spot. A very small spot is seen near it on Sept. 28.

Group 1771, Sept. 26–29. A small spot.

Group 1772, Sept. 28. A small spot.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
				°	°	°			
1885.									
273d·388	H, SP		0·951	259·2	44·2	− 8·1			165
			0·702	275·2	18·6	+ 8·4			61
		1767	0·821	262·1	28·1	− 2·7	6	93	89 *c*
		1768	0·759	274·5	23·4	+ 7·7	15	189	140 *c*
		1770	0·215	296·4	345·1	+12·0	7	83	
		1773*a*	0·957	109·0	263·8	−16·0	36	291	
		1773*b*	0·970	110·8	261·3	−18·3	14	176	
		1773	0·978	108·7	258·7	−16·7	0	43	849 *c*
			0·797	87·9	280·8	+ 5·7			342
			0·921	70·5	266·1	+20·5			130
Oct. 1							(78)	(875)	(1776)
274·171	H, JH		0·907	227·9	17·3	−33·7			353
			0·846	254·3	19·0	− 9·5			326
I.			0·724	287·4	9·6	+17·1			158
		1767	0·913	263·6	28·6	− 3·1	19	110	180 *c*
		1768	0·864	274·9	23·5	+ 7·5	32	202	299*c*&*f*
		1770	0·378	285·6	345·2	+12·0	15	78	
		1773*a*	0·898	111·6	263·3	−16·1	98	395	
		1773*b*	0·924	112·6	260·0	−18·0	48	282	
		1773	0·939	110·8	260·0	−16·9	0	50	917 *c*
			0·847	73·4	265·4	+17·6			286
			0·900	83·5	259·0	+ 8·8			131
Oct. 2							(212)	(1117)	(2650)
275·381	H, JH		0·948	259·6	17·6	− 7·7			261
			0·869	286·1	8·3	+17·2			198
		1767	0·984	265·8	26·6	− 2·9	0	36	
		1768	0·967	276·4	23·3	+ 7·8	0	118	269 *f*
		1770	0·611	280·9	345·2	+11·8	6	71	
		1773*a*	0·757	117·6	263·6	−15·9	62	401	
		1773*b*	0·802	117·5	259·6	−17·4	25	296	
		1773	0·796	115·8	259·6	−15·9	0	32	
		1773	0·819	115·8	257·4	−16·8	0	16	459 *c*
			0·940	70·5	236·8	+20·5			168
Oct. 3							(93)	(970)	(1355)
276·567	H, SP		0·951	285·7	4·7	+16·9			117
			0·837	275·8	349·0	+ 8·4			130
		1770	0·799	279·8	345·2	+11·7	5	32	56 *c*
		1774*a*	0·487	104·3	263·9	− 1·2	7	44	
		1774*b*	0·537	102·6	260·4	− 1·3	0	22	
		1773*a*	0·588	128·7	263·5	−15·9	72	384	
		1773*b*	0·655	127·2	258·8	−18·0	26	217	
1885.									
276d·567	H, SP	1773	0·642	125·0	258·8	−16·2	0	11	
		1773	0·661	124·2	257·3	−16·5	0	7	
			0·877	110·5	234·0	−14·6			86
Oct. 4							(110)	(717)	(389)
277·200	H, JH		0·991	285·5	7·1	+16·2			280
			0·919	277·5	350·8	+ 9·4			230
I.			0·879	271·1	345·1	+ 4·1			68
		1770	0·877	279·5	345·3	+11·4	2	17	144 *c*
		1774*a*	0·349	110·4	264·6	− 0·9	20	108	
		1774	0·419	107·6	260·2	− 1·4	4	24	
		1774	0·430	109·1	259·7	− 2·2	4	6	
		1773*a*	0·503	137·8	263·1	−15·8	81	410	
		1773	0·535	133·4	259·9	−15·7	0	1	
		1773*b*	0·572	134·5	258·3	−17·8	39	236	
		1773	0·556	132·1	258·3	−16·0	2	22	
		1773	0·597	131·3	255·7	−17·5	0	11	
		1775	0·996	104·0	200·7	−13·3	41	110	201 *n f*
Oct. 5							(193)	(945)	(923)
278·398	H, JH		0·971	279·4	344·5	+10·7			225
		1774*a*	0·127	167·1	266·1	− 0·8	10	99	
		1774	0·186	141·5	261·1	− 2·1	0	6	
		1774	0·181	138·5	260·8	− 1·5	0	12	
		1774	0·209	137·1	259·5	− 2·6	0	7	
		1773*a*	0·387	168·4	263·1	−15·9	74	398	
		1773	0·378	159·8	260·0	−14·4	0	4	
		1773*b*	0·439	158·8	258·1	−17·8	18	211	
		1773	0·437	154·9	256·6	−17·1	0	6	
		1775	0·933	107·0	201·4	−13·4	15	124	345 *c*
Oct. 6							(117)	(867)	(570)
279·417	H, SP		0·932	255·6	320·9	−11·0			34
			0·835	250·2	307·8	−12·8			46
		1774*a*	0·249	242·7	267·0	−0·5	18	110	
		1774	0·224	241·4	265·6	− 0·1	0	5	
		1774	0·202	232·5	263·5	− 0·9	0	7	
		1774	0·175	225·7	261·5	− 0·9	0	10	
		1773*a*	0·404	201·9	263·3	−15·8	69	402	
		1773*b*	0·412	189·1	258·2	−17·7	17	174	
		1775	0·834	110·8	201·2	−13·6	22	127	237 *c*
		1776	0·910	105·8	191·1	−11·6	0	24	120 *s f*
Oct. 7							(126)	(859)	(437)

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The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Oct. 6, 7. Photograph faint ; faculæ ill-defined.

Group 1773, Oct. 1–13. Two large regular spots, *a* and *b*. Several small spots are also seen near *b*.

Group 1774, Oct. 4–12. Two spots, *a* and *b*. *a* has increased in size by Oct. 5, and become a well-defined regular spot ; *b* has broken up and forms on Oct. 5, and the succeeding days a train of small spots following *a*. *a* has broken up by Oct. 8, and the group consists on Oct. 9 and the succeeding days of a number of small spots irregularly distributed.

Group 1775, Oct. 5–14. A regular spot. It has broken up into several small spots by Oct. 13.

Group 1776, Oct. 7–11. A small spot. Two others are seen near it on Oct. 11.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued*.

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
280d·184	SP, JH		0·896	253·9	305·4	−11·5			464
		1774	0·401	254·1	266·8	− 0·6	14	42	
I.		1774	0·377	253·5	265·3	− 0·4	1	9	
		1774	0·359	251·9	264·1	− 0·5	0	4	
		1774	0·339	249·0	262·6	− 1·1	5	9	
		1774	0·327	242·0	260·9	− 2·9	0	7	
		1774	0·317	245·7	260·9	− 1·6	0	7	
		1773*a*	0·484	219·4	262·8	−16·0	67	383	
		1773	0·454	215·5	260·0	−15·7	0	6	
		1773*b*	0·465	208·9	257·8	−17·9	27	161	
		1773	0·437	209·9	257·3	−16·2	0	4	
		1773	0·493	204·8	256·9	−20·4	0	2	
		1773	0·432	207·0	256·0	−16·5	1	6	
		1773	0·447	204·7	255·5	−17·8	2	16	
		1773	0·472	201·9	254·9	−19·8	0	2	
		1773	0·448	198·9	253·0	−18·9	0	17	
		1775	0·739	114·4	200·6	−13·3	27	130	405 *c*
		1776	0·827	108·8	191·3	−11·7	6	19	68 *c*
			0·917	106·2	180·2	−12·1			556
			0·975	78·8	166·2	+12·3			265
Oct. 8							(150)	(824)	(1758)
281·446	SP, JH	1774	0·662	262·1	268·3	− 0·6	0	5	
		1774	0·648	263·1	267·4	+ 0·3	0	8	
		1774	0·650	261·1	267·3	− 1·1	0	12	
		1774	0·629	261·9	265·9	− 0·3	0	19	
		1774	0·564	257·3	260·8	− 2·0	0	11	
		1773*a*	0·667	237·4	263·1	−16·1	68	345	
		1773*b*	0·626	230·8	258·0	−18·0	10	129	
		1773	0·594	232·8	256·8	−15·7	0	7	
		1773	0·607	228·6	256·0	−18·3	0	4	
		1773	0·590	229·5	255·4	−17·1	0	10	
		1775	0·546	126·8	200·9	−13·6	6	86	
		1776	0·632	118·5	193·0	−12·5	3	11	
			0·871	112·0	170·7	−15·7			69
Oct. 9							(87)	(647)	(69)
282·151	SP, H		0·902	264·1	282·0	− 2·7			575
			0·850	287·4	276·6	+18·0			268
I.			0·720	250·8	261·7	− 9·3			110
		1774	0·770	265·0	268·2	+ 0·1	3	15	
		1774	0·762	263·6	267·3	− 0·9	0	7	
		1774	0·745	263·5	265·9	− 0·8	2	28	
		1774	0·721	263·3	263·8	− 0·5	2	6	245 *c*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
285d·381	SP, H	1773*a*	0·761	242·5	262·8	−16·2	70	379	184 *c*
		1773	0·703	241·8	258·0	−14·7	1	21	
		1773*b*	0·721	237·3	257·8	−18·2	17	127	
		1773	0·701	239·7	257·2	−16·0	1	5	190 *c*
		1775	0·446	138·4	200·6	−13·6	5	92	
		1776	0·515	126·9	193·5	−12·4	2	5	
			0·932	121·7	156·0	−26·6			244
Oct. 10							(103)	(685)	(1816)
283·162	H, JH		0·952	273·2	277·3	+ 4·9			282
			0·955	258·5	276·2	− 9·1			236
I.			0·933	285·4	274·5	+16·5			458
			0·806	277·5	258·9	+ 9·6			73
		1774	0·884	266·4	266·7	− 0·4	8	29	
		1774	0·874	265·5	265·4	− 1·0	4	14	538 *c*
		1774	0·877	261·9	265·3	− 4·2	9	15	
		1774	0·861	265·4	263·9	− 0·9	8	18	
		1773*a*	0·880	247·7	262·8	−16·3	89	404	311 *f*
		1773*b*	0·843	243·6	257·5	−18·4	8	127	
		1773	0·822	244·8	255·8	−16·8	0	4	390 *c*
		1773	0·824	242·9	255·4	−18·2	1	8	
		1775	0·353	167·6	200·5	−14·1	13	73	
		1776	0·366	150·3	194·3	−12·6	1	3	
		1776	0·389	144·7	191·7	−12·7	0	7	
		1776	0·409	140·2	189·5	−12·5	0	2	
			0·910	119·6	145·4	−23·7			209
			0·889	60·5	143·2	+28·8			58
			0·962	103·9	132·8	−11·6			167
Oct. 11							(141)	(704)	(2722)
284·268	H, EP		0·934	281·8	259·9	+13·1			252
			0·876	298·4	250·5	+27·7			69
I.			0·792	285·3	242·6	+15·7			109
		1774	0·977	263·7	267·2	− 4·9	10	70	
		1774	0·961	265·2	263·6	− 2·9	0	27	466 *c*
		1774	0·955	262·7	262·1	− 5·2	0	23	
		1774	0·949	265·2	261·3	− 2·7	25	65	
		1773*a*	0·964	251·2	262·0	−16·3	97	388	846 *c*
		1773*b*	0·939	247·7	256·5	−18·6	9	77	
		1775	0·388	205·0	200·0	−14·7	7	44	
			0·888	59·3	128·8	+29·9			42
			0·911	109·2	127·7	−14·7			406
			0·980	77·4	111·0	+13·5			190
Oct. 12							(148)	(694)	(2380)

The Groups of Spots are numbered in the order of their appearance. When their is no number in the third column it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the spots with which they are associated are indicated by the letters *n*, *s*, *p*, *f*, *c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Oct. 9, 12. Photograph very faint.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued*.

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
285d·155	H, JH		0·973	244·4	251·1	−23·2			84
			0·915	296·8	244·6	+26·8			63
I.			0·901	250·3	239·8	−15·0			266
			0·819	289·4	233·3	+19·2			352
		1773*b*	0·984	249·6	255·5	−18·9	8	134	578 *n*
		1775	0·501	225·2	200·1	−15·2	7	28	
		1775	0·485	226·0	199·6	−14·2	0	4	
		1775	0·464	225·4	198·4	−13·5	0	10	
			0·872	110·9	121·3	−15·0			311
			0·940	80·1	108·1	+11·3			411
Oct. 13							(15)	(176)	(2065)
286·151	SP, JH		0·946	252·8	234·0	−14·2			166
			0·894	285·3	229·2	+16·3			337
I.		1775	0·651	238·5	200·4	−15·1	3	19	
			0·886	80·4	102·8	+11·2			256
			0·966	102·9	92·2	−10·8			374
Oct. 14							(3)	(19)	(1133)
287·413	H, JH		0·808	247·2	198·9	−14·6			72
			0·885	101·5	87·9	− 7·4			146
Oct. 15							(0)	(0)	(218)
288·405	H, SP		0·935	260·8	203·8	− 6·6			126
			0·921	250·4	199·8	−15·6			270
			0·896	109·9	175·2	−15·0			506
Oct. 16							(0)	(0)	(902)
289·212	H, M		0·967	253·3	198·0	−14·6			211
			0·820	252·2	177·7	−11·2			200
I.		1777	0·935	85·2	55·7	+ 6·5	0	23	161 *c*
		1777	0·951	85·4	52·9	+ 6·1	0	2	
		1778	0·939	76·1	54·7	+14·9	8	84	198 *c*
		1779*a*	0·994	83·8	40·8	+ 6·8	0	258	
			0·840	115·9	72·6	−18·2			580
			0·899	108·5	63·8	−14·0			185
			0·957	114·6	55·9	−21·6			130
			0·947	101·4	55·3	− 8·9			201
Oct. 17							(8)	(367)	(1866)
1885.				°	°	°			
290d·147	H, M		0·916	255·3	177·0	−11·1			121
			0·874	247·6	169·9	−16·5			116
I.		1780	0·656	249·9	151·1	− 8·7	0	5	
		1781	0·495	72·3	83·8	+13·4	2	6	
		1777	0·818	86·2	57·7	+ 6·3	2	11	187 *f*
		1778	0·847	75·6	54·8	+15·1	2	4	207 *c*
		1779*a*	0·937	85·1	42·9	+ 6·6	46	210	
		1779*b*	0·949	82·2	40·7	+ 9·2	15	87	
		1779	0·965	86·7	37·7	+ 4·7	0	7	
		1779	0·970	85·1	36·5	+ 6·1	0	26	
		1779	0·980	82·6	33·7	+ 8·4	21	322	732 *c*
			0·707	119·5	73·0	−16·1			55
			0·786	113·5	64·7	−14·6			111
			0·918	114·8	50·3	−20·2			272
			0·902	101·4	49·7	− 7·8			225
Oct. 18							(88)	(678)	(2026)
291·416	H, JH	1780	0·857	256·0	153·1	− 9·1	2	18	49 *c*
		1780	0·824	256·9	149·9	− 7·6	0	9	54 *c*
		1782*a*	0·734	250·3	140·5	−10·5	4	55	40 *c*
		1782*b*	0·696	248·1	137·0	−11·0	0	22	
		1779*a*	0·785	86·3	44·2	+ 6·3	14	227	
		1779*b*	0·809	83·7	41·8	+ 8·3	16	91	
		1779	0·822	86·5	40·6	+ 6·0	0	12	
		1779	0·839	85·1	38·8	+ 7·1	0	2	491 *c*
		1779	0·863	85·7	36·2	+ 6·5	2	25	
		1779*c*	0·874	82·0	34·9	+ 9·6	11	119	
		1779	0·879	85·1	34·3	+ 6·9	2	62	
			0·929	98·2	28·7	− 5·6			269
			0·964	82·1	21·0	+ 9·1			148
Oct. 19							(51)	(642)	(1051)
292·509	SP, JH		0·948	259·1	151·6	− 8·5			63
		1782*a*	0·879	255·4	141·2	−10·2	0	17	176 *c*
		1782*b*	0·839	253·1	136·3	−11·0	0	12	
		1779*a*	0·600	85·8	44·7	+ 6·8	23	175	
		1779	0·636	86·6	42·1	+ 6·2	3	28	
		1779*b*	0·640	83·0	41·8	+ 8·5	6	92	
		1779	0·717	82·2	35·8	+ 9·3	0	5	
		1779	0·731	83·3	34·6	+ 8·5	1	16	
		1779*c*	0·732	81·2	34·5	+10·0	16	106	147 *c*
		1779	0·733	85·7	34·4	+ 6·8	0	12	
		1779	0·744	83·7	33·4	+ 8·2	0	9	

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n*, *s*, *p*, *f*, *c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Oct. 15, 18. Photograph faint; faculæ ill-defined.

Oct. 18. Limb very faint on the photograph.

Group 1777, Oct. 17–18. A small spot with a very small companion on the first day.

Group 1778, Oct. 17–18. A spot which has very much decreased in size by Oct. 18.

Group 1779, Oct. 17–28. A large regular spot, *a*, followed by a stream of smaller spots. Of these, two, *b* and *c*, are of considerable size. *a* moves rapidly forward in longitude on Oct. 17, 18, and 19; and more slowly subsequently. It decreases in size until Oct. 21, but has slightly recovered by the succeeding day. It is very much larger on Oct. 26 than on Oct. 25 and 27. *b* and *c* diminish in size from day to day, *c* having disappeared by Oct. 23. The smaller spots of the group undergo constant changes.

Group 1780, Oct. 18–19. A very small spot on Oct. 18. Two small spots on Oct. 19.

Group 1781, Oct. 18. A very small spot.

Group 1782, Oct. 19–21. Two spots, *a* and *b*. They have moved away from each other and diminished in size by Oct. 20. *b* has disappeared by Oct. 21.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued*.

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
292d.509	SP, JH	1783*a*	0·980	94·3	3·7	— 3·1	0	47	446 *c*
			0·839	102·9	26·2	— 7·8			184
			0·895	88·7	18·1	+ 3·6			274
			0·897	78·8	17·6	+12·4			249
Oct. 20							(49)	(519)	(1539)
293·272	H, SP		0·989	261·1	151·9	— 8·0			114
			0·925	239·3	133·3	—25·7			77
I.			0·920	231·7	129·8	—32·1			97
			0·850	246·4	125·8	—16·9			180
		1782*a*	0·951	257·2	141·9	—10·5	0	23	330 *f*
		1779*a*	0·450	85·1	44·8	+ 6·9	26	162	
		1779	0·490	87·3	42·2	+ 5·9	0	10	
		1779*b*	0·503	82·0	41·4	+ 8·5	11	91	
		1779	0·502	86·2	41·4	+ 6·5	4	28	
		1779	0·526	83·5	39·8	+ 7·8	0	2	
		1779	0·603	82·5	34·5	+ 8·6	0	20	
		1779*c*	0·614	80·5	33·7	+10·0	5	72	
		1779	0·614	84·3	33·6	+ 7·7	0	3	
		1783*a*	0·937	95·6	2·7	— 3·4	15	151	705 *c*
		1783	0·979	96·1	354·0	— 4·9	0	94	
			0·680	80·7	28·7	+10·2			111
			0·808	81·7	17·5	+ 9·8			212
			0·909	74·2	5·9	+16·5			144
			0·956	82·5	358·3	+ 8·7			73
Oct. 21							(61)	(656)	(2043)
294·418	H, SP		0·991	257·7	137·2	—11·4			145
			0·893	247·3	116·0	—17·7			266
		1779*a*	0·192	81·5	45·4	+ 6·6	22	198	
		1779	0·193	95·8	45·4	+ 3·9	0	4	
		1779	0·197	90·9	45·1	+ 4·8	0	5	
		1779	0·234	85·6	42·9	+ 6·0	0	7	
		1779*b*	0·258	77·1	41·7	+ 8·2	6	67	
		1779	0·261	83·2	41·3	+ 6·7	1	34	
		1779	0·326	89·0	37·4	+ 5·2	0	3	
		1779	0·363	76·9	35·5	+ 9·5	4	40	
		1779	0·366	81·3	35·1	+ 8·0	0	3	
		1779*c*	0·387	77·8	34·0	+ 9·4	0	16	
		1779	0·430	80·3	31·1	+ 8·8	0	3	
		1783*a*	0·800	98·6	4·2	— 3·7	38	182	210 *c*
1885.									
294d.418	H, SP	1783	0·860	96·5	357·8	— 2·9	15	47	406 *c*
		1783	0·886	98·7	355·0	— 5·2	4	62	
		1784	0·900	112·1	355·7	—17·4	0	7	89 *c*
			0·873	83·1	355·4	+ 8·5			163
Oct. 22							(90)	(678)	(1279)
295·165	H, SP		0·933	247·7	112·1	—18·7			306
			0·867	277·1	106·9	+ 8·7			114
I.		1785	0·878	283·2	108·1	+14·0	0	9	113 *f*
		1779*a*	0·037	36·7	45·3	+ 6·7	31	195	
		1779	0·028	89·3	45·0	+ 5·0	3	18	
		1779*b*	0·108	55·3	41·5	+ 8·5	8	46	
		1779	0·104	71·1	40·9	+ 6·9	3	66	
		1779	0·175	70·7	37·0	+ 8·2	0	43	
		1779	0·218	67·5	34·9	+ 9·7	0	21	
		1783*a*	0·685	100·5	4·3	— 3·5	38	226	155 *c*
		1783	0·763	97·5	357·6	— 2·4	14	52	516 *c*
		1783	0·796	100·2	354·9	— 5·0	4	33	
		1784	0·809	114·7	356·7	—16·5	0	7	
		1784	0·810	111·7	355·8	—14·3	4	26	170 *c*
		1784	0·831	112·3	353·9	—15·3	10	30	
Oct. 23							(115)	(772)	(1374)
296·175	H, SP		0·970	277·4	109·6	+ 8·4			78
			0·954	283·9	106·2	+14·7			188
I.			0·847	284·1	91·2	+14·6			101
			0·790	257·0	84·0	— 7·1			210
		1779*a*	0·225	278·9	46·2	+ 6·8	34	165	
		1779	0·206	272·9	45·2	+ 5·4	3	15	
		1779	0·188	281·7	43·9	+ 7·0	1	4	
		1779	0·160	282·7	42·3	+ 6·9	7	43	
		1779*b*	0·162	294·6	41·8	+ 8·7	11	32	
		1779	0·119	288·2	39·8	+ 7·0	0	4	
		1779	0·091	297·7	37·9	+ 7·3	1	25	
		1779	0·075	284·4	37·5	+ 5·9	2	4	
		1779	0·098	319·4	37·0	+ 9·2	2	19	
		1783*a*	0·500	106·4	4·7	— 3·8	46	211	
		1783	0·581	103·3	358·9	— 3·6	0	3	
		1783	0·592	105·4	358·5	— 5·0	0	5	
		1783	0·598	101·1	357·5	— 2·6	12	45	
		1783	0·619	102·6	356·2	— 3·9	0	3	
		1783	0·639	103·9	354·9	— 5·0	3	12	

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n*, *s*, *p*, *f*, *c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 1783, Oct. 20–Nov. 1. A regular spot, *a*, followed by several small spots. *a* diminishes in size after Oct. 26, and the small spots have all disappeared by Oct. 28.

Group 1784. Oct. 22–Nov. 1. A very small spot on Oct. 22, three spots on Oct. 23, six spots, measured in three clusters, on Oct. 24. On Oct. 25 and the succeeding days the group consists of a stream of small spots, *a* and *b*, the first and last of the stream, being the largest. *b* has broken up and diminished in size by Oct. 27.

Group 1785, Oct. 23. A small spot.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.	Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).						Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
			.	°	°	°								°	°	°			
1885.										1885.									
296d·175	H, SP	1784	0·658	119·5	357·1	−14·9	15	63		299d·422	H, JH		0·927	272·8	58·3	+ 4·3			138
I.		1784	0·682	121·4	356·0	−16·9	0	2					0·903	254·7	53·0	−11·7			345
		1784	0·715	117·6	352·3	−15·6	14	65				1779*a*	0·840	274·8	47·6	+ 6·6	23	184	} 241 *c*
Oct. 24							(151)	(720)	(577)			1779*b*	0·803	276·9	43·9	+ 8·3	2	9	
												1779	0·702	275·5	35·0	+ 7·1	2	3	} 131 *c*
												1779	0·680	274·5	33·2	+ 6·5	0	4	
												1779	0·665	276·1	32·0	+ 7·5	0	6	
297·558	H, JH	1779*a*	0·530	274·8	47·1	+ 6·6	11	184				1783*a*	0·303	241·5	5·8	− 3·9	27	177	
		1779	0·494	276·2	44·7	+ 7·3	0	6				1783	0·281	241·7	4·7	− 3·2	0	14	
		1779	0·469	275·7	43·0	+ 6·9	0	5				1783	0·192	215·7	356·8	− 4·4	5	19	
		1779*b*	0·468	279·0	42·8	+ 8·5	0	24				1784*a*	0·370	207·1	0·4	−14·6	18	83	
		1783*a*	0·221	133·2	5·9	− 3·9	24	234				1784	0·367	195·0	356·1	−16·1	0	4	
		1783	0·324	114·7	358·0	− 3·2	3	15				1784	0·360	188·6	353·6	−16·2	0	12	
		1783	0·355	116·7	356·6	− 4·6	0	32				1784*b*	0·353	186·3	352·7	−15·9	5	32	
		1784*a*	0·422	141·9	359·5	−14·7	9	60				1786	0·684	108·3	309·5	− 8·9	0	23	} 279 *c*
		1784	0·453	139·0	357·2	−15·3	1	12				1786*a*	0·723	106·5	306·1	− 8·5	35	349	
		1784*b*	0·506	133·0	352·6	−15·7	6	46				1786	0·712	96·2	305·5	− 1·1	0	9	128 *c*
		1786*a*	0·937	100·9	306·9	− 8·4	14	189	} 293 *c*			1786*b*	0·797	105·2	299·4	− 9·2	19	207	328 *c*
		1786*b*	0·972	100·3	300·0	− 8·8	0	233				1787	0·949	102·6	280·3	−10·4	0	9	642 *c*
			0·940	92·5	305·5	− 0·7			88				0·852	92·2	292·3	+ 0·5			288
Oct. 25							(68)	(1040)	(381)				0·900	77·0	286·1	+13·7			233
										Oct. 27							(136)	(1144)	(2753)
298·273	M, SP		0·922	251·0	70·2	−15·5			352	300·436	H, JH	1779*a*	0·945	275·7	48·0	+ 6·9	9	134	} 449 *c*
			0·913	240·2	66·1	−24·7			223			1779*b*	0·918	277·1	43·8	+ 8·3	0	7	
I.			0·805	271·3	59·2	+ 3·9			76			1779	0·839	277·1	34·1	+ 8·4	0	16	} 378 *p*
		1779*a*	0·660	274·1	46·9	+ 6·3	37	248	} 163 *c*			1779	0·819	276·4	32·0	+ 7·8	0	7	
		1779*b*	0·610	276·3	43·1	+ 7·5	3	24				1783*a*	0·504	254·8	6·0	− 3·6	18	150	
		1783*a*	0·150	178·5	5·4	− 3·9	29	198				1784*a*	0·504	230·1	0·5	−14·7	7	66	
		1783	0·214	142·1	358·1	− 5·1	0	8				1784*b*	0·432	217·6	352·8	−15·6	4	25	
		1783	0·196	135·9	357·8	− 3·5	0	13				1786	0·501	116·6	310·2	− 8·9	4	17	
		1783	0·225	133·5	356·2	− 4·3	0	7				1786	0·521	114·4	308·5	− 8·5	1	11	
		1784*a*	0·345	163·0	359·6	−14·5	10	72				1786*a*	0·556	112·4	305·8	− 8·4	16	270	
		1784	0·362	159·0	357·9	−15·0	0	9				1786*b*	0·641	111·0	299·8	− 9·6	14	130	
		1784	0·383	157·2	356·8	−15·9	0	13				1787	0·857	105·4	280·0	−10·7	0	5	91 *c*
		1784*b*	0·415	147·8	352·4	−15·9	5	78				1788*a*	0·972	107·4	262·8	−15·7	24	146	250 *c*
		1786*a*	0·877	102·5	305·8	− 8·6	49	375					0·885	108·2	277·3	−13·8			160
		1786*b*	0·927	101·4	299·0	− 8·7	43	344	772 *c*				0·894	97·7	274·5	− 4·8			88
			0·835	113·3	312·7	−16·5			167				0·914	91·2	271·2	+ 0·8			85
			0·866	107·2	307·9	−12·4			105				0·926	96·1	269·9	− 3·9			110
			0·867	92·8	305·8	− 0·1			301	Oct. 28							(97)	(984)	(1611)
			0·949	78·2	293·7	+12·7			472										
			0·964	109·4	293·6	−17·3			124	301·431	H, SP		0·952	276·7	36·2	+ 7·8			482
Oct. 26							(176)	(1389)	(2755)				0·923	265·3	30·7	− 2·6			166

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column, it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n*, *s*, *p*, *f*, *c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Oct. 26. Faculæ faint on the photograph.

Group 1786, Oct. 25–Nov. 4. Two large spots, *a* and *b*, on Oct. 25. Both have broken up by Oct. 27, though on that day (as also on Oct. 28) the spots are grouped for measurement so as to correspond nearly with *a* and *b*. On Oct. 29 and the succeeding days the group has broken up further and spread out into a long stream of spots, but the largest portions of *a* and *b* are still recognisable and form well-defined spots. The letters are therefore still attached to them. Only *a* remains after Nov. 1.

Group 1787, Oct. 27–28. A small spot.

Group 1788, Oct. 28–Nov. 9. A large regular spot, *a*. Some very small spots are seen near it on Nov. 3–4.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued*.

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.	Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).						Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1885.				°	°	°				1885.				°	°	°			
301d·431	H, SP		0·837	257·3	19·2	− 8·1			87	303d·155	H, M		0·818	284·2	355·9	+14·0			61
		1783*a*	0·680	259·7	5·8	− 3·7	9	131					0·765	270·5	351·1	+ 3·1			35
		1784*a*	0·655	241·3	0·2	−14·7	8	53		I.			0·882	218·8	347·8	−40·5			165
		1784	0·611	234·0	354·9	−17·2	0	3				1783*a*	0·909	263·1	5·9	− 4·5	21	132	242 *c*
		1784*b*	0·579	234·5	353·1	−15·7	12	40				1784*a*	0·881	249·8	0·2	−15·6	5	22	} 280 *c*
		1786	0·321	137·0	311·1	− 9·2	5	11				1784	0·851	247·8	356·3	−16·3	10	52	
		1786	0·342	131·8	309·0	− 8·9	0	34				1784*b*	0·819	247·4	352·9	−15·7	25	199	
		1786	0·352	125·1	307·1	− 7·4	0	1				1786	0·294	216·5	311·5	− 9·5	0	6	
		1786	0·362	122·4	306·0	− 7·0	0	4				1786	0·266	207·1	308·3	− 9·5	0	7	
		1786*a*	0·384	124·5	305·3	− 8·4	13	265				1786*a*	0·247	197·3	305·5	− 9·4	28	149	
		1786	0·430	121·1	302·1	− 8·7	3	20				1786	0·217	196·5	304·9	− 7·8	0	7	
		1786*b*	0·474	121·5	299·8	−10·3	16	89				1786	0·199	191·3	303·5	− 7·0	0	4	
		1788*a*	0·906	109·6	261·7	−15·6	34	186	502 *c*			1786	0·232	182·2	301·9	− 9·2	0	5	
			0·809	99·2	270·8	− 4·8			93			1786*b*	0·254	172·7	299·4	−10·3	8	55	
Oct. 29							(100)	(837)	(1330)			1788*a*	0·708	116·4	260·4	−15·1	44	229	
										Oct. 31							(141)	(867)	(1446)
302·170	H, SP		0·972	265·7	30·2	− 3·2			99										
			0·929	257·8	21·1	− 9·6			121	304·407	H, JH		0·954	264·6	356·6	− 3·9			638
I.			0·874	273·8	15·2	+ 5·5			104				0·864	289·2	343·9	+18·6			59
			0·865	284·8	14·0	+15·0			229			1783*a*	0·990	265·4	6·0	− 4·0	0	58	171 *c*
		1783*a*	0·797	261·3	6·3	− 4·3	18	130	304 *c*			1784*b*	0·939	252·7	352·4	−14·7	9	132	259 *c*
		1784*a*	0·764	245·7	0·3	−15·3	14	60	139 *c*			1786	0·451	237·1	307·2	−10·3	0	12	
		1784	0·713	242·7	355·3	−15·8	4	32				1786	0·441	234·9	306·2	−10·9	0	10	
		1784	0·699	243·4	354·4	−14·9	0	5				1786	0·452	231·9	306·0	−12·3	0	10	
		1784*b*	0·687	241·5	353·0	−15·7	14	101	79 *c*			1786*a*	0·422	237·2	305·7	− 9·3	10	89	
		1786	0·245	167·3	311·2	− 9·5	2	11				1786	0·377	231·9	302·1	− 9·5	1	7	
		1786	0·251	159·0	309·1	− 9·2	0	10				1786*b*	0·346	228·9	299·9	− 9·2	0	10	
		1786	0·244	143·0	305·8	− 6·9	0	13				1789	0·223	110·7	272·7	− 0·5	0	8	
		1786*a*	0·273	146·7	305·6	− 8·9	20	141				1789	0·283	111·6	269·5	− 2·0	0	11	
		1786	0·271	139·2	304·1	− 7·6	4	54				1788*a*	0·514	128·9	260·3	−15·1	26	195	
		1786	0·341	133·4	299·8	− 9·3	0	31		Nov. 1							(46)	(542)	(1127)
		1786*b*	0·361	135·6	299·5	−10·7	10	56											
		1788*a*	0·839	111·6	260·5	−15·4	59	247	414 *c&m*	305·422	SP, JH	1786*a*	0·602	248·5	305·8	− 9·4	7	75	
			0·876	89·1	253·2	+ 2·9			118			1789	0·078	185·8	271·8	− 0·4	0	7	
			0·931	117·4	250·2	−23·5			97			1788*a*	0·369	149·7	260·3	−14·6	32	219	
			0·936	74·9	244·8	+15·7			91				0·958	107·6	200·1	−15·6			162
Oct. 30							(145)	(891)	(1795)	Nov. 2							(39)	(301)	(162)
303·155	H, M		0·979	284·6	19·9	+15·1			88	306·132	H, SP		0·914	251·5	325·6	−15·1			204
			0·914	286·6	7·3	+16·9			139				0·799	250·4	312·3	−13·1			86
I.			0·832	261·2	356·7	− 5·0			330	I.		1786*a*	0·717	252·1	305·6	− 9·9	17	99	} 188 *c*
			0·816	277·5	356·0	+ 8·6			106			1786	0·667	250·3	301·3	−10·0	0	7	

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column, it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n*, *s*, *p*, *f*, *c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Oct. 31. Photograph faint. Faculæ ill-defined.

Nov. 2. Spots ill-defined on the photograph.

Group 1789, Nov. 1–7. A short stream of very small spots on Nov. 1. Only one spot is seen on Nov. 2. The group consists of a number of very small scattered spots on Nov. 3. Only one spot is seen on Nov. 4. The group is not seen at all on Nov. 5. On Nov. 6 and 7 the group consists of a regular spot, *a*, followed at a little distance by three very small spots close together, which are measured as one.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued*.

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1884.				°	°	°			
306d·132	H, SP	1789	0·247	240·6	274·3	− 3·1	0	3	
		1789	0·217	253·3	273·8	+ 0·3	0	2	
I.		1789	0·185	248·3	271·8	− 0·1	0	1	
		1789	0·164	233·5	269·4	− 1·7	1	5	
		1789	0·172	227·8	269·2	− 2·8	0	3	
		1788	0·292	178·3	261·4	−13·0	0	3	
		1788*a*	0·324	173·6	259·8	−14·9	36	190	
			0·816	103·2	208·7	− 8·4			99
			0·871	79·1	201·4	+11·4			142
			0·906	109·5	199·5	−15·8			443
Nov. 3							(54)	(313)	(1162)
307·114	SP, H		0·835	264·0	305·0	− 2·9			141
		1786*a*	0·854	255·9	306·0	− 9·9	9	42	639 *c*
I.		1789	0·374	257·1	270·3	− 1·2	0	12	
		1788*a*	0·368	210·5	260·1	−14·7	44	193	
		1788	0·342	208·3	258·6	−13·7	0	12	
		1788	0·326	206·4	257·5	−13·1	0	5	
			0·828	110·5	195·9	−14·6			250
			0·935	93·5	180·2	− 1·9			108
Nov. 4							(53)	(264)	(1138)
308·122	SP, M		0·919	260·0	301·5	− 7·7			734
I.		1788*a*	0·5c8	231·9	260·1	−14·9	44	190	
Nov. 5							(44)	(190)	(734)
309·129	M, SP		0·969	259·2	297·1	− 9·5			184
			0·933	268·1	291·1	− 0·5			146
I.			0·915	282·1	288·7	+12·6			23
			0·840	253·6	277·7	−11·7			168
		1789*a*	0·805	264·4	275·6	− 2·4	14	56	} 452 *c*
		1789	0·772	262·2	272·3	− 3·7	4	36	
		1788*a*	0·666	243·0	260·2	−14·7	33	175	123 *c*
			0·897	64·1	160·1	+24·7			60
			0·904	94·2	158·3	− 2·3			60
			0·913	83·9	156·6	+ 7·1			194
Nov. 6							(51)	(267)	(1410)
310·130	H, EP		0·891	255·4	270·6	−11·3			212
			0·870	289·7	269·0	+18·8			106
I.			0·793	299·7	258·8	+25·4			83
		1789*a*	0·926	266·0	276·6	− 2·4	16	71	} 338 *c*
		1789	0·890	263·7	271·6	− 4·0	1	16	

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
310d·130	H, EP	1788*a*	0·809	248·3	260·3	−15·2	35	164	113 *c*
		1790	0·415	137·5	192·5	−14·4	4	12	
I.		1791	0·432	102·5	184·4	− 2·2	0	9	
		1791	0·476	103·6	181·8	− 3·3	3	9	
			0·924	116·6	145·8	−22·8			38
			0·923	105·4	143·7	−12·7			116
Nov. 7							(59)	(281)	(1006)
311·121	H, M		0·970	265·7	271·7	− 3·3			435
			0·866	254·8	254·4	−11·3			111
I.			0·842	246·8	250·2	−17·4			82
		1788*a*	0·914	251·9	260·1	−15·0	34	154	145 *c*
		1790*a*	0·292	180·3	196·3	−13·5	5	14	
		1790	0·306	172·4	193·8	−14·1	1	9	
		1790	0·322	169·2	192·6	−15·0	2	14	
		1792	0·947	84·7	125·0	+ 6·1	7	50	87 *f*
			0·834	108·4	142·0	−13·3			78
			0·887	123·6	140·0	−27·5			93
			0·945	105·7	127·0	−13·6			179
Nov. 8							(49)	(241)	(1210)
312·139	EP, H		0·973	259·1	258·3	− 9·8			29
			0·932	245·7	248·1	−21·2			109
I.		1788*a*	0·981	253·8	260·0	−15·2	30	155	103 *c*
		1790*a*	0·385	220·4	197·5	−13·8	10	82	
		1790	0·356	220·3	196·3	−12·5	0	8	
		1790	0·360	214·8	194·9	−13·9	3	13	
		1790	0·326	215·6	193·8	−12·1	0	3	
		1790	0·353	210·2	193·2	−14·4	1	5	
		1790	0·369	206·8	192·6	−15·9	1	5	
		1790	0·281	203·7	189·3	−11·6	0	2	
		1791*a*	0·104	203·3	185·0	− 2·2	3	13	
		1791*b*	0·093	189·5	183·6	− 2·0	0	3	
		1792	0·850	84·6	124·5	+ 6·4	7	42	248 *c* & *f*
			0·609	136·9	155·9	−23·3			19
			0·889	111·2	122·8	−17·1			187
			0·973	74·8	105·9	+15·6			50
Nov. 9							(55)	(331)	(745)
313·121	H, SP		0·973	240·1	242·6	−28·1			25
			0·903	286·0	234·0	+15·8			269
I.			0·888	268·8	232·2	+ 0·4			37

The Group of Spots are numbered in the order of their appearance. When there is no number in the third column it is to be understood that there is a Faacula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n*, *s*, *p*, *f*, *c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots in Faculæ are expressed in millionths of the Sun's visible hemisphere.

Nov. 4, 7. Limb faint on the photograph.

Group 1790, Nov. 7–13. A small spot on Nov. 7. Two other small spots are seen preceding it on Nov. 8. The first of these, *a*, increases in size very rapidly, and has become a large regular spot by Nov. 10. A great number of smaller spots have appeared by Nov. 9; these follow *a* at a little distance, but the stream does not lie along a parallel of latitude as is generally the case. They have all disappeared except one spot by Nov. 13. *a* has partially broken up by Nov. 12.

Group 1791, Nov. 7–11. Two small spots on Nov. 7. Not seen on Nov. 8. Two small spots, *a* and *b*, on Nov. 9 and 10. A third, *c*, is seen on Nov. 11. *a* moves forward on Nov. 9, 10, and 11.

Nov. 8. Limb very faint on the photograph. Definition of solar surface very good.

Group 1792, Nov. 8–12. A regular spot.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued*.

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
313d·121	H, SP	1790*a*	0·535	238·2	197·6	−13·5	42	252	
		1790	0·518	230·5	194·3	−16·3	4	39	
I.		1790	0·505	233·0	194·3	−14·7	0	3	
		1790	0·477	236·7	193·8	−12·2	7	26	
		1790	0·485	234·2	193·6	−13·5	6	26	
		1790	0·473	231·4	192·1	−14·1	0	9	
		1790	0·443	233·8	191·2	−12·1	2	5	
		1791*a*	0·300	254·8	186·6	− 1·5	4	14	
		1791*b*	0·254	248·7	183·4	− 2·2	2	8	
		1792	0·709	84·4	124·8	+ 6·3	0	21	73 *c*
		1793	0·987	76·2	88·8	+14·1	33	160	52 *c*
			0·788	83·9	117·9	+ 6·8			191
			0·868	116·0	113·6	−20·6			389
			0·880	74·4	108·6	+15·3			84
Nov. 10							(100)	(563)	(1120)
314·126	H, EP		0·869	255·2	215·3	−11·3			103
			0·859	300·4	213·0	+27·4			149
I.		1790*a*	0·693	246·9	197·4	−13·5	29	283	
		1790	0·701	243·3	197·1	−16·1	0	4	
		1790	0·649	247·7	194·3	−11·9	4	40	
		1790	0·661	242·2	193·8	−15·6	2	37	159 *c*
		1790	0·647	245·0	193·5	−13·4	0	44	
		1790	0·620	247·1	192·1	−11·5	0	5	
		1791*a*	0·526	261·8	187·9	− 1·7	0	8	
		1791*c*	0·493	261·0	185·6	− 1·8	0	5	
		1791*b*	0·467	259·2	183·8	− 2·4	0	3	
		1794	0·371	134·1	140·9	−12·0	5	7	
		1792	0·529	82·9	124·9	+ 6·3	1	7	
		1793	0·923	75·7	89·5	+14·3	36	163	293*c*&*f*
			0·811	120·0	107·6	−21·9			124
			0·912	101·7	92·0	− 9·3			468
Nov. 11							(77)	(606)	(1296)
315·142	H, SP		0·943	259·7	212·7	− 8·7			112
		1790	0·850	249·8	198·8	−15·4	0	3	
I.		1790*a*	0·836	252·5	197·8	−12·8	18	187	
		1790	0·837	250·1	197·5	−14·9	4	18	
		1790	0·817	248·5	195·1	−15·6	0	11	
		1790	0·793	252·1	193·6	−12·3	2	14	504 *c*
		1790	0·793	248·5	192·8	−15·0	0	40	
		1790	0·789	250·3	192·8	−13·6	7	39	
		1790	0·759	251·5	190·4	−12·0	1	2	

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
315d·142	H, SP	1794	0·269	174·2	141·6	−12·6	0	3	
		1792	0·312	79·6	125·3	+ 6·0	1	5	
I.		1793	0·810	75·0	89·7	+13·8	33	163	349 *f*
			0·764	97·0	93·9	− 3·5			109
			0·838	103·3	87·6	− 9·5			99
			0·926	108·0	77·4	−15·4			368
Nov. 12							(66)	(485)	(1541)
316·185	H, SP		0·844	266·1	186·7	− 1·8			180
		1790*a*	0·942	255·6	198·4	−12·6	25	130	759 *c*
I.		1790	0·936	254·1	197·3	−13·8	0	21	
		1793	0·650	71·8	90·2	+13·8	30	151	99 *c*
		1795*a*	0·964	75·1	55·0	+15·1	108	420	
		1795*b*	0·989	74·0	47·9	+16·2	16	227	475 *c*
			0·741	65·7	83·8	+19·7			76
			0·845	112·2	74·8	−17·0			342
			0·956	99·5	57·4	− 8·2			182
			0·974	83·0	52·6	+ 7·4			281
Nov. 13							(179)	(949)	(2394)
317·127	SP, EP		0·974	254·7	192·5	−14·2			359
			0·933	266·9	185·5	− 1·9			74
I.		1793	0·481	65·1	90·4	+14·0	21	129	
		1796	0·714	117·3	75·6	−17·1	7	27	
		1796	0·745	119·0	73·6	−19·1	5	19	
		1796	0·751	113·3	71·5	−15·4	0	6	
		1795*a*	0·879	74·2	56·0	+15·2	118	416	552 *c*
		1795	0·916	75·9	51·0	+14·0	4	15	
		1795*b*	0·937	73·3	47·8	+16·6	24	253	
			0·877	101·0	56·7	− 8·3			66
			0·908	83·2	51·9	+ 7·3			278
			0·939	111·8	49·6	−19·4			139
			0·961	87·5	43·1	+ 3·2			124
Nov. 14							(179)	(865)	(1592)
318·491	H, JH	1793	0·243	33·2	91·1	+14·3	14	104	
		1796	0·470	132·8	78·1	−16·2	0	9	
		1796	0·490	130·9	76·4	−16·2	2	15	
		1796	0·550	131·4	73·3	−18·9	5	48	
		1795*a*	0·694	71·1	56·4	+14·9	86	511	
		1795*b*	0·791	70·3	48·0	+17·1	26	165	
Nov. 15							(133)	(852)	(0)

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n*, *s*, *p*, *f*, *c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 1793, Nov. 10–21. A regular spot.

Group 1794, Nov. 11–12. A very small spot.

Group 1795, Nov. 13–24. A very large spot, *a*, followed by a large spot, *b*. A number of very small spots are seen in the immediate neighbourhood of *a* and *b*, especially on Nov. 16 and 20. *b* and nearly all the small spots have disappeared by Nov. 21. Both *a* and *b* diminish in size after passing the central meridian on Nov. 19.

Group 1796, Nov. 14–18. Five small spots on Nov. 14, of which four are measured in two pairs. The group lengthens out on the succeeding days, and becomes a straggling stream of small spots. The members of the group change from day to day.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued*.

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
				°	°	°			
1885.									
319d·428	H, JH	1793	0·212	339·6	90·9	+14·0	12	102	
		1796	0·333	150·7	82·0	−14·4	0	3	
		1796	0·345	156·6	78·4	−15·9	0	5	
		1796	0·359	153·7	77·1	−16·2	9	26	
		1796	0·375	150·5	75·5	−16·5	1	7	
		1796	0·452	147·0	71·5	−19·8	10	53	
		1795	0·196	345·8	57·1	+13·4	0	2	
		1795*a*	0·539	66·6	56·0	+14·5	73	543	
		1795	0·630	65·5	49·9	+17·1	0	5	
		1795*b*	0·657	65·9	47·8	+17·5	20	127	
		1795	0·663	69·6	46·7	+15·3	0	7	
		1795	0·665	68·6	46·7	+16·0	0	16	
		1795	0·688	68·5	44·9	+16·5	0	1	
			0·875	98·2	26·3	− 5·9			121
			0·966	91·2	11·8	− 0·8			319
Nov. 16							(125)	(897)	(440)
320·477	H, SP	1793	0·364	304·3	90·9	+14·0	13	85	
		1796	0·334	196·4	78·5	−16·3	3	14	
		1796	0·374	180·2	73·0	−19·6	0	3	
		1796	0·383	176·2	71·4	−20·1	7	32	
		1795*a*	0·360	55·5	55·2	+13·9	74	525	
		1795*b*	0·487	58·3	47·4	+16·9	28	145	
		1795	0·489	62·3	46·3	+15·1	0	41	
		1797	0·900	95·6	9·2	− 4·0	0	10	} 148 *c*
		1797	0·961	94·2	359·4	− 3·4	0	19	
			0·965	108·0	359·8	−16·7			211
Nov. 17							(125)	(874)	(359)
321·419	SP, JH	1793	0·534	292·8	90·8	+13·8	11	84	
		1796	0·483	226·6	82·0	−17·2	0	4	
		1796	0·443	225·6	79·6	−15·9	2	14	
		1795*a*	0·224	24·3	55·1	+13·9	71	485	
		1795*b*	0·338	40·9	47·2	+16·9	30	137	
		1795	0·319	47·3	46·5	+14·6	0	42	
		1797	0·772	96·5	10·5	− 3·6	1	11	
		1797	0·822	96·2	5·7	− 3·9	0	34	
		1797	0·855	95·4	2·2	− 3·5	8	60	} 356 *c*
		1797	0·883	94·9	359·0	− 3·3	0	15	
			0·900	110·1	358·6	−16·9			213
Nov. 18							(123)	(886)	(569)

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
				°	°	°			
1885.									
322d·246	H, EP		0·952	277·6	121·5	+ 7·9			164
		1798	0·861	284·4	108·3	+13·5	4	43	} 118 *c*
I.		1798	0·837	283·7	105·7	+12·6	0	29	
		1793	0·675	288·1	90·7	+13·7	13	81	
		1795*a*	0·224	339·2	54·2	+14·1	58	473	
		1795	0·254	0·6	49·3	+16·8	0	4	
		1795*b*	0·265	12·0	46·2	+17·1	5	92	
		1797	0·637	97·1	10·4	− 2·9	3	13	26 *c*
		1797	0·699	97·8	5·7	− 3·9	6	19	} 203 *c*
		1797	0·754	96·5	1·1	− 3·5	5	60	
		1797	0·783	95·6	358·4	− 3·1	0	9	
			0·827	112·6	356·6	−17·2			323
			0·819	104·4	355·9	−10·5			51
			0·965	81·3	334·7	+ 9·0			76
Nov. 19							(94)	(823)	(961)
323·148	H, SP		0·939	258·7	106·5	− 9·9			34
			0·916	241·3	100·0	−25·2			95
I.			0·817	259·0	91·4	− 7·8			87
			0·934	183·4	45·6	−66·5			41
		1798	0·953	283·3	109·7	+13·3	0	43	} 176 *c*
		1798	0·929	282·1	105·5	+12·0	0	11	
		1793	0·805	285·2	90·4	+13·4	12	72	129 *c*
		1795*a*	0·350	308·3	54·0	+14·4	86	395	
		1795	0·316	315·6	50·8	+15·0	0	4	
		1795	0·336	320·7	50·4	+17·0	1	3	
		1795	0·335	324·8	49·2	+17·8	0	2	
		1795	0·275	323·4	47·3	+14·7	0	1	
		1795*b*	0·300	329·0	46·8	+16·8	5	55	
		1797	0·462	100·4	10·7	− 3·0	4	15	
		1797	0·526	100·3	6·5	− 3·7	4	18	
		1797	0·600	97·9	1·2	− 3·1	8	13	
		1797	0·639	97·5	358·4	− 3·2	0	7	
			0·879	80·6	336·4	+ 9·2			144
Nov. 20							(120)	(639)	(706)
324·453	H, SP	1793	0·942	283·5	90·5	+13·3	0	32	70 *c*
		1795*a*	0·591	292·7	54·7	+14·7	59	342	
		1795	0·502	303·4	46·5	+17·7	3	14	
		1797	0·161	116·7	12·3	− 2·3	0	28	
		1797	0·206	117·2	10·0	− 3·5	2	24	
		1797	0·253	112·6	7·0	− 3·7	0	5	

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n*, *s*, *p*, *f*, *c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Nov. 17. Faculæ ill-defined on the photograph.

Nov. 19. Limb faint on the photograph at about Position angle 120° (from the Sun's axis).

Group 1797, Nov. 17–26. A stream of small spots. Only one spot is seen on Nov. 24. The group is not visible on Nov. 25, but one spot is seen on Nov. 26.

Group 1798, Nov. 19–20. Three small spots, of which the two preceding are measured together on Nov. 19. One of this pair has disappeared by Nov. 20, but a small spot has appeared near the following spot, and is measured with it.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
324d·453	H, SP	1797	0·329	104·7	2·0	− 3·0	0	9	
			0·897	105·3	318·2	−12·8			376
			0·960	97·6	307·3	− 6·8			260
Nov. 21							(64)	(454)	(706)
325·155	EP,SP		0·928	253·6	77·8	−14·4			382
		1795*a*	0·706	288·9	54·7	+14·5	65	315	240 *c*
I.		1795	0·662	297·5	49·5	+19·2	0	6	
		1795	0·615	297·9	46·0	+18·2	3	13	
		1797	0·070	196·1	12·3	− 2·1	3	11	
		1797	0·097	170·1	10·2	− 3·7	0	10	
		1797	0·130	148·2	7·3	− 4·6	0	1	
		1797	0·168	123·6	3·2	− 3·6	0	10	
		1797	0·198	126·2	2·0	− 4·9	0	14	
		1797	0·185	117·5	1·8	− 3·1	1	8	
		1797	0·212	119·7	0·6	− 4·3	0	7	
		1797	0·239	117·0	358·9	− 4·4	0	2	
			0·863	107·7	313·4	−14·3			336
			0·931	133·7	311·3	−39·1			44
			0·926	97·8	304·0	− 6·5			364
Nov. 22							(72)	(397)	(1366)
326·211	H, SP		0·949	248·1	66·5	−20·1			91
			0·867	256·0	56·0	−11·3			160
I.			0·785	274·6	48·6	+ 4·6			112
			0·811	242·7	47·3	−20·8			100
		1795*a*	0·855	285·6	55·0	+14·1	72	314	469 *f*
		1797	0·284	256·2	13·1	− 2·3	0	5	
		1797	0·242	251·4	10·3	− 2·9	0	6	
		1797	0·225	245·1	8·8	− 3·9	0	17	
		1799	0·367	127·9	340·0	−11·4	1	10	
			0·864	103·3	298·5	−10·6			285
			0·886	89·8	294·9	+ 0·9			91
			0·926	70·9	290·2	+18·3			63
			0·974	76·3	280·4	+13·7			51
Nov. 23							(73)	(352)	(1422)
327·153	H, EP		0·880	266·5	46·2	− 2·4			79
			0·856	248·9	41·3	−17·1			55
I.			0·820	277·2	39·7	+ 6·8			65

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
327d·153	H, EP	1795*a*	0·944	284·3	55·2	+14·0	22	310	763 *f*
		1797	0·422	257·4	9·2	− 4·0	0	5	
I.			0·796	105·1	293·6	−11·0			123
			0·806	83·6	291·4	+ 6·1			41
			0·924	74·3	278·0	+15·1			183
			0·946	95·2	274·3	− 4·4			236
Nov. 24							(22)	(315)	(1545)
328·157	EP,SP		0·961	288·3	45·0	+17·9			127
			0·815	71·7	278·5	+15·6			64
I.			0·844	97·1	274·6	− 5·3			150
			0·857	105·2	274·1	−12·3			26
			0·955	107·1	260·3	−15·9			116
Nov. 25							(0)	(0)	(483)
329·257	H, SP		0·837	265·4	13·7	− 3·2			312
			0·817	289·0	10·5	+16·1			98
I.		1797	0·705	263·1	1·6	− 4·0	0	10	
		1800	0·250	162·0	312·7	−12·6	0	9	
			0·860	108·9	259·8	−15·5			177
Nov. 26							(0)	(19)	(587)
330·459	H, JH		0·907	265·4	6·0	− 3·7			186
			0·839	238·3	353·3	−25·4			81
Nov. 27							(0)	(0)	(267)
331·162	EP, M		0·969	252·9	6·6	−16·3			49
			0·942	264·8	2·0	− 4·6			394
I.			0·913	249·4	355·9	−18·3			87
		1801*a*	0·601	231·7	322·2	−20·9	4	11	
		1801*b*	0·585	228·3	320·0	−22·0	3	12	
		1802*a*	0·243	184·3	293·1	−13·0	0	2	
		1802*b*	0·235	176·8	291·2	−12·6	1	4	
			0·812	71·0	239·2	+15·9			20
			0·925	65·3	226·2	+23·2			31
Nov. 28							(8)	(29)	(581)
332·142	H, SP		0·951	250·9	349·7	+17·9			231
		1801*b*	0·715	238·1	319·7	−21·5	3	11	
I.		1802*a*	0·350	227·7	294·4	−12·8	0	4	

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The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Nov. 25. Limb faint on the photograph.

Group 1799, Nov. 23. Three very small spots close together and measured as one.

Group 1801, Nov. 28–29. Two small spots, *a* and *b*, on Nov. 28. Only *b* remains on Nov. 29.

Group 1802, Nov. 28–29. Two very small spots, *a* and *b*.

Group 1800, Nov. 26. A small spot.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
322d·142	H, SP	1802*b*	0·319	221·3	291·5	−13·1	0	2	
			0·887	105·3	217·9	−13·1			73
			0·881	80·5	217·8	+ 8·8			123
			0·890	98·4	216·8	− 7·1			116
Nov. 29							(3)	(17)	(543)
333·147	EP, SP		0·943	281·3	336·0	+10·9			103
			0·930	265·1	333·9	− 4·3			43
I.			0·836	249·0	320·4	−17·0			272
			0·938	105·7	197·3	−14·4			503
			0·941	93·3	196·0	− 2·9			97
Nov. 30							(0)	(0)	(1018)
334·457	SP, JH		0·958	248·0	320·3	−20·8			101
			0·928	254·7	315·7	−13·9			314
Dec. 1							(0)	(0)	(415)
335·447	H, JH		0·964	256·0	309·4	−13·4			137
		1803*a*	0·722	289·2	281·0	+14·1	0	15	
		1803	0·711	287·7	279·4	+12·8	0	2	
		1803	0·701	290·2	278·2	+14·3	0	14	
		1803	0·698	288·7	278·2	+13·3	0	5	
		1803	0·679	290·0	276·5	+13·7	0	6	
		1803	0·659	288·2	275·3	+12·3	2	12	
			0·978	108·3	158·7	−17·8			92
Dec. 2							(2)	(54)	(229)
336·183	H, EP		0·956	268·4	298·6	− 1·5			160
			0·940	283·3	295·3	+12·6			131
I.			0·938	258·1	294·9	−11·0			93
		1803*a*	0·831	287·0	280·8	+14·3	18	47	
		1803	0·813	287·1	278·9	+14·0	0	23	116 *c*
		1803	0·800	287·1	277·7	+13·8	0	38	
		1803	0·772	285·6	275·2	+12·3	0	17	
			0·924	74·5	159·2	+14·5			55
			0·939	108·2	157·3	−16·9			136
Dec. 3							(18)	(125)	(691)
1885.				°	°	°			
337d·554	H, JH		0·949	261·9	278·9	− 7·6			92
		1803*a*	0·964	284·9	281·7	+14·4	0	95	346 *c*
Dec. 4							(0)	(95)	(438)
338·257	H, SP		0·967	264·7	273·5	− 5·1			62
			0·902	252·6	261·7	−15·6			129
I.		1803	0·994	285·7	281·9	+15·6	3	65	
		1803*a*	0·993	284·9	281·4	+14·8	0	104	327 *c*
		1803	0·978	282·5	276·0	+12·2	0	16	
		1803	0·975	285·7	275·1	+15·3	0	47	
			0·916	81·2	132·7	+ 8·1			62
Dec. 5							(3)	(232)	(580)
339·143	EP, SP		0·970	254·7	262·0	−14·8			180
			0·835	293·9	240·8	−19·7			25
I.			0·915	191·7	211·3	−63·5			50
			0·907	86·5	122·0	− 3·1			68
			0·965	75·3	112·7	+14·2			107
Dec. 6							(0)	(0)	(430)
340·153	EP, H		0·940	247·1	241·9	−21·5			24
			0·884	295·7	232·9	+22·4			54
I.			0·864	288·6	231·7	+15·9			21
			0·918	19·1	137·1	+59·8			24
			0·911	73·0	109·2	+15·4			127
			0·910	82·1	108·6	+ 7·1			70
			0·944	97·9	103·3	− 7·5			69
			0·967	104·0	98·9	−13·6			240
Dec. 7							(0)	(0)	(629)
341·151	H, SP		0·965	261·9	234·9	− 7·9			96
			0·786	73·9	110·1	+12·4			92
I.			0·917	105·6	95·0	−14·4			607
Dec. 8							(0)	(0)	(795)
342·226	EP, H		0·966	255·5	220·6	−14·1			47
			0·852	251·6	203·2	−15·9			158
M.		1804	0·788	256·9	197·3	−10·6	0	6	41 *c*
		1804	0·758	254·2	194·3	−12·3	2	11	

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The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 1803, Dec. 2–5. A number of very small spots on Dec. 2. The preceding spot, *a*, increases in size on the following days. On Dec. 3 the smaller spots follow it closely in a short stream. On Dec. 4 *a* alone is seen. On Dec. 5 three spots are seen close to *a*.

Group 1804, Dec. 9. Two small spots.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued*.

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
342d·226	EP, H	1805	0·786	106·4	95·7	−13·1	0	5	94 *c*
			0·865	110·5	88·1	−17·8			139
M.			0·903	100·2	82·1	− 9·5			72
			0·930	110·7	79·3	−19·3			161
Dec. 9							(2)	(22)	(712)
343·470	H, JH	1806*a*	0·976	73·9	53·3	+15·6	9	117	113 *c*
			0·933	73·5	62·1	+15·1			27
			0·947	80·3	59·1	+ 9·0			79
Dec. 10							(9)	(117)	(219)
344·406	M, SP	1806*a*	0·910	72·6	53·3	+15·5	30	177	527 *c&n*
			0·849	76·0	60·4	+11·4			250
I.			0·926	86·6	49·9	+ 2·9			70
			0·967	97·4	42·4	− 7·3			98
Dec. 11							(30)	(177)	(945)
345·193	H, EP	1807*a*	0·539	125·5	79·7	−18·9	2	11	
		1807*b*	0·611	122·4	74·1	−19·7	0	5	
M.		1806*a*	0·825	70·5	53·6	+15·5	27	205	207 *c*
			0·885	67·7	47·3	+19·2			263
			0·887	107·7	45·9	−16·0			88
			0·910	98·6	42·0	− 8·2			214
			0·980	93·7	28·9	− 3·8			260
Dec. 12							(29)	(221)	(1032)
346·194	H, EP	1807*a*	0·386	143·5	80·0	−18·9	2	11	
		1807*c*	0·359	137·5	79·4	−16·2	0	8	
I.		1808*a*	0·631	102·3	55·6	− 8·4	0	8	
		1808*b*	0·653	100·7	53·8	− 7·7	2	11	
		1806*a*	0·692	66·0	53·2	+15·6	29	213	253 *f*
			0·803	97·7	40·9	− 6·7			128
			0·940	96·8	24·2	− 6·7			580
Dec. 13							(33)	(251)	(961)
347·157	SP, H	1808*a*	0·433	108·0	56·9	− 8·6	0	6	
		1808*b*	0·462	105·5	54·8	− 8·1	0	7	
I.		1806*a*	0·540	58·2	53·1	+15·5	28	171	
		1806	0·555	62·1	51·2	+14·1	0	1	
1885.				°	°	°			
347d·157	SP, H	1809	0·843	93·4	24·2	− 3·5	0	5	412 *c*
		1809	0·854	93·6	23·0	− 3·6	0	2	
I.			0·900	101·9	17·8	−11·1			578
			0·950	73·9	10·8	+14·9			85
			0·959	91·7	8·1	− 2·0			372
Dec. 14							(28)	(192)	(1447)
348·471	SP, H	1806	0·292	21·7	57·6	+14·5	0	11	
		1806	0·317	27·1	55·4	+15·1	0	6	
		1806*a*	0·339	32·0	53·3	+15·4	26	131	
Dec. 15							(26)	(148)	(0)
349·474	SP, M	1806	0·299	334·3	58·5	+14·2	1	9	
		1806	0·247	348·6	53·7	+12·6	0	4	
		1806*a*	0·293	352·0	53·2	+15·4	27	131	
Dec. 16							(28)	(144)	(0)
350·192	H, EP		0·943	256·3	111·4	−13·4			107
			0·939	284·2	110·0	+12·8			154
M.			0·873	254·7	101·3	−14·1			286
			0·891	237·9	100·7	−29·0			104
		1806	0·405	311·7	59·4	+14·1	0	5	
		1806*a*	0·358	324·4	53·7	+15·4	26	135	
		1806	0·347	328·7	52·0	+15·7	0	3	
			0·975	103·9	324·4	−13·9			515
Dec. 17							(26)	(143)	(1166)
351·192	SP, EP		0·935	254·9	96·8	−14·7			422
			0·931	238·8	94·0	−29·4			78
M.			0·792	248·9	78·7	−17·5			131
			0·802	293·2	78·5	+17·4			111
		1806	0·526	303·4	55·1	+15·3	1	6	
		1806*b*	0·503	304·4	53·4	+15·0	14	62	
		1806*c*	0·505	307·2	52·8	+16·3	3	37	
		1810	0·175	185·5	29·1	−11·6	0	3	
		1810	0·179	174·7	27·1	−11·8	1	6	
			0·889	100·9	325·7	−10·4			144
			0·937	109·7	319·5	−19·0			116
			0·964	95·5	313·7	− 5·8			219
Dec. 18							(19)	(114)	(1221)

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n, s, p, f, c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Dec. 10. Limb rugged on the photograph.

Group 1805, Dec. 9. A very small spot.

Group 1806, Dec. 10–21. A large regular spot, *a*, with double nucleus. Small spots are seen near it on Dec. 14–19. *a* has divided into two distinct spots by Dec. 17. These are not measured separately until Dec. 18, when they are lettered *b* and *c*.

Group 1807, Dec. 12–13. Two small spots, *a* and *b*. *b* has disappeared by Dec. 13, and another small spot, *c*, has formed.

Group 1808, Dec. 13–14. Two small faint spots, *a* and *b*.

Group 1810, Dec. 18–23. Two very small spots on Dec. 18. On Dec. 19 and the succeeding days a short stream of spots, of which *a* and *b*, the first and last, are the largest. *a* moves forward rapidly in longitude. Only *a* and *b* remain on Dec. 22, and only *a* on Dec. 23.

Dec. 11. East limb faint on the photograph.

Group 1809, Dec. 14. Two very small spots.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
352d·139	H, EP		0·936	285·8	83·6	+14·1			34
			0·896	249·1	77·9	−19·4			132
I.			0·900	292·7	77·1	+19·5			51
		1811	0·805	284·8	67·8	+10·8	0	8	145 *c*
		1806*b*	0·652	294·7	53·1	+14·4	22	82	
		1806*c*	0·649	296·5	52·5	+15·4	3	15	
		1806	0·632	296·8	51·2	+15·1	0	5	
		1810*a*	0·285	231·4	28·7	−11·9	4	28	
		1810	0·268	226·0	26·9	−12·4	0	5	
		1810*b*	0·232	223·2	24·9	−11·4	12	38	
			0·818	105·9	321·7	−13·9			229
			0·902	100·1	311·5	− 9·9			164
			0·945	79·3	305·5	+ 9·5			32
			0·972	71·9	300·7	+17·1			64
Dec. 19							(41)	(181)	(851)
353·164	SP, EP		0·924	262·7	69·5	− 7·4			55
			0·901	281·4	65·6	+ 9·5			188
I.			0·761	298·0	47·6	+19·7			85
		1806*b*	0·802	289·5	53·3	+14·4	18	74	} 186 *c*
		1806*c*	0·799	290·6	52·8	+15·1	0	6	
		1810*a*	0·504	250·4	31·0	−11·3	12	58	
		1810	0·486	250·9	29·9	−10·7	0	2	
		1810*b*	0·411	247·1	24·8	−10·9	6	35	
		1812*a*	0·405	264·0	25·9	− 4·1	3	13	
		1812*b*	0·345	261·4	22·1	− 4·6	0	3	
		1813*a*	0·971	72·3	287·5	+16·7	30	211	212 *c&p*
			0·904	70·8	299·5	+16·5			27
			0·954	115·4	290·9	−24·7			35
			0·964	95 8	287·8	− 6·0			255
Dec. 20							(69)	(402)	(1043)
354·279	H, SP		0·968	279·8	62·1	+ 8·9			154
			0·941	258·4	57·4	−11·6			68
I.			0·861	258·6	46·5	−10·9			110
			0·853	294·1	42·8	+19·2			198
			0·833	287·4	41·9	+13·3			48
		1806*b*	0·918	286·6	52·4	+14·4	5	74	227 *c*
		1810*a*	0·716	256·7	32·4	−10·9	4	41	
		1810	0·696	254·8	30·6	−12·0	0	3	
		1810*b*	0·617	255·2	24·6	−10·7	2	21	
		1812*a*	0·633	265·6	26·5	− 4·3	0	8	
1885.				°	°	°			
354·d279	H, SP	1812*b*	0·561	263·2	21·3	− 5·5	0	5	
		1814	0·442	264·3	13·5	− 4·3	0	5	
I.		1814	0·383	263·3	9·7	− 4·4	0	8	
		1813*a*	0·891	70·2	286·6	+16·6	39	245	781 *c&f*
		1813	0·895	95·9	284·1	− 6·2	0	3	} 549 *c*
		1813	0·895	97·6	284·1	− 7·7	0	2	
			0·806	67·8	296·5	+16·4			106
Dec. 21							(50)	(415)	(2241)
355·189	EP, M		0·955	267·8	48·0	− 2·8			40
			0·960	287·6	47·6	+16·3			69
I.			0·931	292·4	41·4	+19·9			115
			0·860	286·9	32·9	+13·3			52
			0·800	276·5	28·c	+ 3·9			47
		1810*a*	0·859	258·4	34·2	−11·0	13	49	283 *c*
		1810*b*	0·774	258·4	25·6	−10·3	2	13	58 *c*
		1812*a*	0·776	266·4	26·1	− 4·2	0	16	} 111 *p*
		1812*b*	0·744	265·1	23·3	− 5·1	0	11	
		1814	0·655	265·7	16·2	− 4·4	1	11	
		1813*a*	0·776	66·2	287·7	+16·8	39	235	142 *c*
			0·792	96·3	283·2	− 6·3			234
			0·859	69·5	278·6	+16·3			448
			0·923	62·0	271·8	+24·7			73
			0·926	83·5	268·2	+ 5·2			67
Dec. 22							(55)	(335)	(1739)
356·149	H, SP		0·837	274·4	19·2	+ 2·5			73
			0·825	258·3	17·9	−10·9			103
I.		1810*a*	0·952	259·0	34·8	−11·1	0	37	214 *f*
		1812*b*	0·879	265·8	24·2	− 4·7	0	9	315 *c*
		1814	0·819	266·1	17·6	− 4·5	1	17	
		1814	0·795	266·9	15·3	− 3·8	0	17	48 *c*
		1814	0·755	266·2	11·7	− 4·3	0	8	
		1813*a*	0·639	59·8	287·7	+16·9	43	189	77 *c&f*
		1815*a*	0·973	106·1	246·3	−16·2	12	115	156 *f*
			0·815	142·2	281·1	−41·5			62
			0·772	68·1	275·0	+15·3			141
			0·796	81·2	270·8	+ 5·6			75
			0·982	96·9	243·8	− 7·2			114
Dec. 23							(56)	(392)	(1378)

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n, s, p, f, c,* denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 1811, Dec. 19. A small spot.

Group 1812, Dec. 20–23. Two small spots, *a* and *b*. Only *b* is seen on Dec. 23. *b* moves rapidly forward in longitude.

Group 1813, Dec. 20–31. A large regular spot, *a*. A very small spot is seen near it on Dec. 24 and 25.

Group 1814, Dec. 21–25. Two small spots on Dec. 21, one on Dec. 22, three on Dec. 23, two on Dec. 25. None are seen on Dec. 24, but there is a large group of faculæ in the place the spots would occupy.

Group 1815, Dec. 23–30. A regular spot, *a*, followed by a short stream of small spots. The group diminishes in size from day to day and all the small spots have disappeared by Dec. 29.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*concluded.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic Longitude.	Heliographic Latitude.	Spots. Area of UMBRA for each Spot (and for Day).	Spots. Area of WHOLE for each Spot (and for Day).	Faculæ. Area for each Group (and for Day).
1885.				°	°	°			
357d·490	SP, M		0·928	266·0	13·1	− 4·6			453
		1813*a*	0·433	40·0	288·2	+17·1	30	185	
		1813	0·467	37·2	287·7	+19·5	0	9	
		1816*a*	0·557	91·0	271·4	− 2·5	0	11	
		1816*b*	0·598	88·5	268·5	− 0·9	0	9	
		1815*a*	0·856	107·2	247·1	−15·9	23	113	
		1815	0·910	108·3	241·3	−17·6	0	20	309 *c*
		1817*a*	0·859	97·1	246·1	− 7·3	0	17	
		1817	0·885	97·6	243·0	− 7·8	0	44	311 *c*
		1817	0·893	99·5	242·1	− 9·5	0	17	
Dec. 24							(53)	(425)	(1073)
358·130	SP, H	1814	0·986	266·6	16·9	− 3·7	0	43	} 207 *c&f*
		1814	0·972	266·6	13·0	− 3·9	0	31	
I.		1818	0·856	267·5	355·4	− 3·4	0	6	65 *f*
		1813*a*	0·367	22·5	288·3	+17·4	34	194	
		1813	0·408	21·8	287·5	+19·8	0	2	
		1816*a*	0·416	90·1	272·2	− 2·3	0	12	
		1816*b*	0·469	87·3	268·9	− 0·9	1	4	
		1815*a*	0·772	108·0	247·3	−15·4	27	120	67 *c*
		1815	0·818	110·8	243·3	−18·3	7	21	
		1815	0·850	110·3	239·7	−18·4	0	35	133 *c*
		1817*a*	0·774	96·9	246·2	− 6·9	6	9	
		1817	0·803	97·6	243·5	− 7·5	0	4	
		1817	0·824	97·8	241·4	− 7·8	0	4	125 *c*
		1819	0·800	79·1	244·5	+ 7·3	5	24	} 281 *c*
		1819	0·829	75·4	242·2	+10·6	3	8	
		1819	0·835	80·1	240·9	+ 6·9	0	7	
			0·925	63·7	232·5	+23·2			61
Dec. 25							(83)	(524)	(939)
359·143	EP, M		0·963	245·7	357·1	−24·0			33
		1813*a*	0·350	345·8	288·5	+17·2	38	189	
I.		1815*a*	0·610	113·1	247·9	−15·9	12	78	
		1815	0·677	114·6	243·2	−18·3	2	20	
		1815	0·719	115·5	239·9	−19·9	1	4	
		1815	0·719	113·4	239·5	−18·4	4	42	106 *c*
		1817	0·590	98·3	247·5	− 7·0	2	10	
		1817	0·618	98·7	245·5	− 7·4	5	15	
		1819	0·623	75·5	246·1	+ 6·9	5	12	} 163 *f*
		1819	0·686	76·3	241·3	+ 7·4	0	9	
			0·705	61·1	243·1	+17·9			45
Dec. 26							(69)	(379)	(347)
1885.									
360d·143	H, SP		0·822	258·1	325·1	−11·3			194
			0·762	246·0	317·8	−19·9			114
I.		1813*a*	0·455	318·3	288·6	+17·2	38	193	
		1815*a*	0·439	122·5	247·6	−16·1	10	57	
		1815	0·514	122·6	243·2	−18·4	3	15	
		1815	0·563	119·1	239·2	−18·1	0	12	
		1817	0·417	101·2	246·0	− 7·1	0	3	
		1819	0·432	69·4	246·3	+ 6·2	0	14	
		1819	0·465	69·1	244·4	+ 7·1	7	34	
		1819	0·481	67·5	243·6	+ 8·2	0	10	
		1819	0·477	72·0	243·2	+ 6·0	0	12	
		1819	0·498	72·9	241·7	+ 6·0	0	17	
		1819	0·515	70·7	241·0	+ 7·4	13	57	
Dec. 27								(71)	(424) (308)
361·144	H, EP		0·923	255·6	324·1	−14·4			170
			0·901	248·2	320·3	−20·8			73
I.			0·837	260·4	313·6	− 9·6			81
		1813*a*	0·607	303·3	288·9	+17·1	31	183	
		1815*a*	0·284	147·1	247·8	−16·5	4	51	
		1815	0·348	141·6	243·9	−18·5	2	7	
		1817	0·231	116·6	245·0	− 8·7	0	5	
		1819	0·255	48·7	245·9	+ 6·9	9	90	
		1819	0·304	54·3	242·6	+ 7·5	0	7	
		1819	0·320	57·6	241·3	+ 7·2	3	22	
Dec. 28							(49)	(365)	(324)
362·516	SP, M		0·951	260·3	310·9	−10·2			140
		1813*a*	0·806	294·6	289·0	+17·7	25	123	135 *c*
		1815*a*	0·269	212·2	247·4	−16·0	0	26	
		1819	0·216	322·9	246·4	+ 7·0	3	34	
		1819	0·219	329·2	245·4	+ 8·0	0	8	
		1819	0·209	333·6	244·3	+ 7·8	0	8	
		1819	0·185	337·7	242·9	+ 6·9	5	19	
		1819	0·197	344·4	242·0	+ 8·0	4	44	
		1819	0·206	349·4	241·1	+ 8·7	0	2	
Dec. 29							(37)	(264)	(275)

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column, it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n, s, p, f, c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Dec. 24. Photograph over-exposed. Definition poor.

Group 1816, Dec. 24–25. Two small spots, *a* and *b*.

Group 1817, Dec. 24–28. Three small spots on Dec. 24. Of these only the first, *a*, is seen on Dec. 25, but *a* is followed by two clusters of very small spots on that day. On Dec. 26 only two spots are seen. On Dec. 27 and 28 only one spot is seen.

Group 1818, Dec. 25. A very small spot.

Group 1819, 1885 Dec. 25–1886 Jan. 2. Three small spots on Dec. 25; two small spots on Dec. 26. The group has expanded by Dec. 27 into a short straight stream composed of many small spots. The stream tends to form two compact clusters of spots, and by Jan. 2 the following cluster has disappeared, and the preceding cluster has become a regular spot with one small companion.

Dec. 25, 28. Film of the photograph broken at Position-angle 160° (from the Sun's axis).

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.	Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).						Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1885.				°	°	°				1885.				°	°	°			
363d·127	H, SP		0·923	287·4	296·3	+14·8			128	364d·150	SP, EP		0·948	241·5	287·9	−28·0			107
			0·859	264·1	290·0	− 6·6			169				0·939	263·1	287·4	− 7·6			280
I.		1813*a*	0·872	292·1	288·6	+17·5	12	125	181*c&f*	I.		1813*a*	0·956	289·2	288·2	+17·2	9	103	434*c&f*
		1815*a*	0·361	230·3	247·6	−16·2	0	30				1819	0·514	289·2	246·7	+ 6·9	15	71	
		1819	0·330	301·7	247·3	+ 7·1	9	33				1819	0·494	290·3	245·2	+ 7·0	1	13	
		1819	0·322	304·3	246·4	+ 7·5	0	2				1819	0·471	291·0	243·7	+ 6·9	0	9	
		1819	0·308	304·6	245·6	+ 7·1	6	33				1819	0·449	290·4	242·4	+ 6·1	5	22	
		1819	0·262	310·9	242·4	+ 6·9	13	92				1819	0·427	294·3	240·5	+ 7·1	5	31	
			0·838	157·3	198·4	−53·0			50			1820	0·976	79·9	141·0	+ 9·2	0	143	214 *c*
Dec. 30							(40)	(315)	(528)	Dec. 31							(35)	(392)	(1035)

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column, it is to be understood that there is a Facula unaccompanied by a spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n*, *s*, *p*, *f*, *c*, denoting respectively north, south, preceding, following, concentric.

The Areas of Spots and Faculæ are expressed in millionths of the Sun's whole Hemisphere.

Dec. 31. Film of the photograph broken at Position-angle 30° (from the Sun's axis).

Group 1820, 1885 Dec. 31–1886 Jan. 7. A regular spot, which diminishes in size from day to day.

MEAN AREAS of UMBRÆ, WHOLE SPOTS, and FACULÆ upon the SUN'S DISK, as measured on PHOTOGRAPHS taken at the ROYAL OBSERVATORY, GREENWICH, at DEHRA DUN, INDIA, and in the MAURITIUS, for each ROTATION of the SUN, from 1884 December 31 to 1885 December 20.

The Mean Areas have been formed by taking the Means of the Areas for each day of observation throughout each Rotation of the Sun, and are expressed in millionths of the Sun's visible Hemisphere.

The rotations adopted in the following table (which is in continuation of that for the years 1873–1884 printed in the Greenwich Observations for 1884) correspond to the synodic rotation of the Sun, and the commencement of each is defined by the coincidence of the assumed prime meridian with the central meridian, the assumed prime meridian being that meridian which passed through the ascending node at mean noon on January 1, 1854, and the assumed period of the Sun's sidereal rotation being 25·38 days. The rotations adopted in the volumes of Greenwich Observations, 1877 to 1883, correspond on the other hand to the sidereal rotation of the Sun, the commencement of each being defined by the coincidence of the assumed prime meridian with the ascending node. The numeration of the rotations is in continuation of Carrington's series (*Observations of Solar Spots made at Redhill* by R. C. Carrington, F.R.S.), No. 1 being the rotation commencing 1853, November 9. The dates of commencement of the rotations are given in GREENWICH CIVIL TIME, reckoning from midnight.

No. of Rotation.	Date of Commencement of each Rotation.	No. of Days on which Photographs were taken.	Mean of Daily Areas.		
			Umbræ.	Whole Spots.	Faculæ.
	d				
418	1884 December 31·27	25	69	472	1936
419	1885 January 26·11	27	173	1181	1703
420	February 22·45	28	100	803	1937
421	March 22·76	27	89	791	1038
422	April 18·04	26	95	844	1507
423	May 15·27	27	168	1272	2016
424	June 12·47	26	168	1712	1817
425	July 9·67	26	106	935	1864
426	August 5·89	22	76	680	1622
427	September 2·13	28	77	633	1100
428	September 29·40	27	93	666	1400
429	October 26·70	27	94	620	1136
430	November 23·01	28	16	120	733

MEAN AREAS of UMBRÆ, WHOLE SPOTS, and FACULÆ upon the SUN'S DISK, as measured on PHOTOGRAPHS taken at the ROYAL OBSERVATORY, GREENWICH, at DEHRA DUN, INDIA, and in the MAURITIUS, for the Year 1885.

The Mean Areas are expressed in millionths of the Sun's visible Hemisphere.

Year.	No. of Days on which Photographs were taken.	Mean of Daily Areas.		
		Umbræ.	Whole Spots.	Faculæ.
1885	354	101	811	1496

MEAN HELIOGRAPHIC LATITUDE of the SPOTS upon the SUN'S DISK, as measured on PHOTOGRAPHS taken at the ROYAL OBSERVATORY, GREENWICH, at DEHRA DUN, INDIA, and in the MAURITIUS, for each ROTATION of the SUN, from 1884 December 31 to 1885 December 20.

The numbers given in the accompanying table have been formed as follows:—

The Heliographic Latitude of each spot for each day has been multiplied by its area for the day, and the sum of the products for Spots North of the Sun's Equator has been divided by the sum of the corresponding Areas to form Mean Heliographic Latitude of Spotted Area North of Equator; similarly for Spots South of the Equator. In forming the Mean Heliographic Latitude of entire Spotted Area the algebraic sum of the products for Spots North and South of the Equator has been divided by the sum of the Areas; and for the Mean Distance from the Equator for all Spots, the numerical sum of the products, without regard to the sign of the latitude, has been similarly divided.

The Mean Areas have been formed by dividing the sum of the Daily Areas by the number of days of observation for each Rotation of the Sun, and are expressed in millionths of the Sun's visible hemisphere.

No. of Rotation.	Date of Commencement of each Rotation.	No. of Days on which Photographs were taken.	Spots NORTH of the Equator.		Spots SOUTH of the Equator.		Mean Heliographic Latitude of entire Spotted Area.	Mean Distance from Equator of all Spots.
			Mean of Daily Areas.	Mean Heliographic Latitude.	Mean of Daily Areas.	Mean Heliographic Latitude.		
	d			°		°	°	°
418	1884 Dec. 31·27	25	100	7·80	373	11·28	— 7·26	10·55
419	1885 Jan. 26·11	27	298	4·77	883	12·26	— 7·95	10·36
420	Feb. 22·45	28	170	7·41	633	13·07	— 8·74	11·87
421	Mar. 22·76	27	492	10·66	298	15·70	+ 0·72	12·56
422	Apr. 18·04	26	363	11·99	480	10·94	— 1·06	11·39
423	May 15·27	27	419	12·88	853	12·31	— 4·02	12·50
424	June 12·47	26	686	10·55	1026	13·43	— 3·83	12·28
425	July 9·67	26	226	9·30	709	13·03	— 7·64	12·13
426	Aug. 5·89	22	178	10·07	501	11·76	— 6·03	11·32
427	Sept. 2·13	28	178	10·27	455	10·93	— 4·97	10·74
428	Sept. 29·40	27	189	8·01	477	12·55	— 6·73	11·26
429	Oct. 26·70	27	287	14·34	333	11·46	+ 0·48	12·76
430	Nov. 23·01	28	106	15·06	14	11·42	+ 11·94	14·63

MEAN HELIOGRAPHIC LATITUDE of SPOTS upon the SUN'S DISK, as measured on the PHOTOGRAPHS taken at the ROYAL OBSERVATORY, GREENWICH, AT DEHRA DUN, INDIA, and in the MAURITIUS, for the YEAR 1885.

Year.	No. of Days on which Photographs were taken.	Spots NORTH of the Equator.		Spots SOUTH of the Equator.		Mean Heliographic Latitude of entire Spotted Area.	Mean Distance from Equator of all Spots.
		Mean of Daily Areas.	Mean Heliographic Latitude.	Mean of Daily Areas.	Mean Heliographic Latitude.		
			°		°	°	°
1885	354	283	10·59	528	12·46	— 4·42	11·81