GREENWICH

SPECTROSCOPIC AND PHOTOGRAPHIC RESULTS.

1891.

RESULTS

OF THE

SPECTROSCOPIC AND PHOTOGRAPHIC OBSERVATIONS

MADE AT THE

ROYAL OBSERVATORY, GREENWICH,

IN THE YEAR

1891:

UNDER THE DIRECTION OF

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

(EXTRACTED FROM THE GREENWICH OBSERVATIONS, 1891.)

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1893.

GREENWICH SPECTROSCOPIC AND PHOTOGRAPHIC RESULTS, 1891.

INTRODUCTION.

§ 1. *Spectroscopic Observations in the Year* 1891.

The spectroscope used for these observations was mounted on the South-east equatorial, 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:—Measures of Displacement of Lines in the Spectra of Stars and the Moon; and Collected Results for Motions of Stars in the line of Sight.

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. A displacement of 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 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 6°.

§ 2. *Measures of Positions and Areas of Sun Spots and Faculæ on Photographs taken at the Royal Observatory, Greenwich, at Dehra Dûn in India, and at the Royal Alfred Observatory, Mauritius, in the year* 1891; *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 usually 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. But towards the end of the year, the photographic refractor of 9 inches aperture, presented to the Royal Observatory by Sir Henry Thompson, was fitted with the enlarging lens formerly used in the Dallmeyer Photoheliograph, and with a camera and shutter for rapid exposure, so as to take photographs of the Sun on a scale of about 8 inches to the solar diameter. The photographs selected for measurement on December 17, 28 and 31 were taken with this instrument.

The photographs have been taken throughout the year on gelatine dry plates, either Thomas's "Thickly-coated Landscape" plates, or "Lantern" plates supplied by the same firm. A hydroquinone developer has generally been used, but occasionally the plates have been developed with pyrogallic acid and ammonia.

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 the Deputy Surveyor General, 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 8 inches in diameter. At the Mauritius Observatory bromo-iodized gelatine dry plates have been used with alkaline development.

Photographs of the Sun were taken at Greenwich with the Dallmeyer photoheliograph on 198 days, and with the Thompson photoheliograph on 3 days, and Indian photographs on 146 days with Mauritius photographs on 16 days have been received from the Solar Physics Committee to complete the total of 363 days for which there are either Greenwich, Indian, or Mauritius photographs of the Sun available for measurement in 1891.

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 1891 :—

E. W. Maunder - -	M	Annie S. D. Russell -	AR
H. Appleyard - -	HA	C. C. Lacey - -	CL
Alice Everett - -	AE	J. S. Gillingham - -	JG
Edith Mary Rix - -	ER	A. G. Bell - - -	AB

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 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-spider-lines which serve to determine the zero of position-angles on the photograph.

The spider-lines were found to be broken on December 9, and a fresh pair of spider lines was in consequence inserted on December 14.

The zero of position-angles for the Dallmeyer Photoheliograph, employed at Greenwich, has generally been determined throughout 1891 by the measurement of a plate which had been exposed to the Sun's rays twice, with an interval of about 100 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 approximately through the centre of the plate, the inclination of the wires of the photoheliograph to this line was measured with the position-micrometer, and a small correction for the inclination of the Sun's path was then applied. The following table gives the correction for zero of position for the mean of the two wires as thus determined :—

Date, Greenwich Civil Time.			Correction for Zero.
		h	° ′
1890	November	26. 10	— 0. 12
1891	January	16. 10	0. 12
	February	12. 12	0. 13
	March	6. 11	0. 4
	April	6. 10	0. 24
	July	13. 12	0. 6
	August	29. 11	0. 18
	September	10. 10	1. 18
		10. 11	1. 31
		10. 11	1. 38
		29. 12	1. 37
	October	23. 12	1. 50
		23. 12	2. 3
		28. 12	1. 56
		29. 12	1. 49
	November	25. 12	1. 56
	December	14. 11	2. 36
1892	February	16. 12	— 2. 31

The zero of position has also been determined on several occasions by allowing the diurnal motion to carry a spot or the Sun's limb along the equatorial wire,

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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, further corrected for the error of the perpendicularity of the wires, being then taken. The correction for error of perpendicularity of the wires in use up to 1891 December 9 was $-0^{\circ}.16'$; for the new wires inserted 1891 December 14 it was $-0^{\circ}.21'$. The following table gives the correction for zero of position of the mean of the two wires as obtained by this method :—

Date, Greenwich Civil Time.			Corrected Zero of Position-Circle from Transit.	Zero of Position-Circle obtained when using R.A. Slow Motion.
		h	° ′	° ′
1890	September	8. 11	— 0. 5	— 0. 9
1891	February	12. 12	— 0. 10	— 0. 12
	March	6. 12	— 0. 9	— 0. 8
	April	6. 11	— 0. 0	— 0. 2
	July	13. 12	— 0. 8	— 0. 10
	August	29. 11	— 0. 16	— 0. 16
	September	10. 11	— 1. 32	...
1892	February	16. 11	— 1. 59	...

The Dallmeyer Photoheliograph was removed on September 9 from its stand in the Photoheliograph dome, and was mounted on stand No. 3 which was placed in the first floor of the New Museum building.

In the use at Greenwich of the Dallmeyer Photoheliograph the position-circle has usually been set to some convenient reading near that for zero, 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 position-circle was set to the reading 354°·0 throughout 1891.

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 position of the wires has therefore been applied 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.

No correction has been applied to the 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 $\delta R = + c \,.\, \tan^2 z \times R \times \frac{1}{2} \left\{ \frac{1 + \cos 2 (\theta_0 - v)}{2} + \frac{1 + \cos 2 (\theta_0 + 90^\circ - v)}{2} \right\} = + \frac{1}{2} c R \,.\, \tan^2 z$, 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 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 Position-Angle (from the N. point) corrected for refraction 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 disk 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—

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

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—

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

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° 18′, 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 the 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 mean noon, 1854, Jan. 1. The period of rotation assumed is 25·38 days.

The Heliographic Longitude and Latitude of the Centre of the Sun's Disk at the time of the exposure of each photograph are also given (in brackets) in the *sixth* and *seventh* columns respectively. The Longitude of the Centre of the Disk is found by subtracting the Reduction to the Prime Meridian from L, the Longitude of the Centre from the Node. The Latitude of the Centre is of course the same as D, the Heliographic Latitude of the Earth.

The measures of areas given in the *last three* columns were made with a glass diaphragm ruled into squares, with sides of one hundreth 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.

§ 3. *Ledgers of Areas and Positions of Groups of Sun Spots deduced from the measurement of the Solar photographs for each day in the year* 1891.

In these Ledgers the daily results for each group are collected together from the measures of the individual spots and given in a condensed form. The first column gives for each day, on which the group was observed, the Greenwich civil time at which each photograph was taken, expressed by the day of the month (civil reckoning) and the decimals of a day reckoning from Greenwich mean midnight. The second and third columns give the sums, for each day, of the projected areas of all the umbræ and whole spots comprised in the group, the projected area being the area as it is measured upon the photograph, uncorrected for foreshortening, and expressed in millionths of the Sun's apparent disk. The fourth and fifth columns give the sums for each day of the areas of all the umbræ and whole spots comprised in the group, corrected for foreshortening, and expressed in millionths of the Sun's visible hemisphere. The sixth and seventh columns give the mean longitude and latitude of the group, found by multiplying the longitude and latitude of each separately measured component of the group by its area, and dividing the sum of the products by the sum of the areas. The last column gives the mean longitude of the group from the central meridian, and is found by subtracting the longitude of the centre of the disk from the mean longitude of the group. At the foot of these daily results for each group are given the mean areas of umbræ and whole spots and the mean longitude and latitude for the period of observation.

§ 4. *Total Projected Areas of Sun Spots and Faculæ, for each day, and Mean Areas and Mean Heliographic Latitude of Sun Spots and Faculæ, for each Rotation of the Sun, and for the Year* 1891.

This section requires no further explanation.

W. H. M. CHRISTIE.

1893 *November* 2.

ROYAL OBSERVATORY, GREENWICH.

SPECTROSCOPIC OBSERVATIONS

MADE AT THE

ROYAL OBSERVATORY, GREENWICH.

1891.

MEASURES of DISPLACEMENT of LINES in the SPECTRA of STARS, AND MOON, 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 1891.

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 counting 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 18½° 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 has been always employed. 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.

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 6°.

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, 1891. Greenwich Civil Time.	Observer.	Object.	Position Circle.	Line.	Width of Slit.	Displacement.		Earth's Motion in Miles per Second.	Concluded Motion of Star in Miles per Second.		REMARKS.
						Measured.	Estimated.		Measured.	Estimated.	
			°		r	r					
June 26. 23. 16	M	Vega	6	F		−0·073	− ⅓	− 1·3	− 20·9	− 30·3	Sky not clear enough for a second observation.
July 2. 22. 22	M	Vega	6	F	0·210	−0·045	− ¼	− 0·4	− 13·3	− 23·3	Spectrum bright and fairly steady.
22. 25	M	,,	6	F	0·210	−0·089	− ¼	− 0·4	− 25·6	− 23·3	
22. 54	M	,,	96	F	0·210	−0·036	0	− 0·4	− 10·5	+ 0·4	
22. 56	M	,,	96	F	0·210	−0·016	0	− 0·4	− 4·5	+ 0·4	
23. 27	M	Altair	96	F	0·210	−0·011	0	− 5·2	+ 1·9	+ 5·2	Spectrum bright and fairly steady. Star-line very diffused.
23. 29	M	,,	96	F	0·210	−0·068	− ⅓	− 5·2	− 15·4	− 26·4	
23. 42	M	,,	6	F	0·210	−0·037	− 1/10	− 5·2	− 6·1	− 4·3	It was found easier to observe at P.A. 6° than at 96°.
23. 45	M	,,	6	F	0·210	−0·022	− 1/10	− 5·2	− 1·5	− 4·3	
23. 59	M	α Cygni	6	F	0·210	−0·089	− ⅖	− 7·1	− 19·9	− 30·8	
3. 0. 4	M	,,	6	F	0·210	−0·035	− ⅕	− 7·1	− 3·6	− 11·8	
0. 17	M	,,	96	F	0·210	−0·093	− ⅖	− 7·1	− 21·1	− 30·8	
0. 24	M	,,	96	F	0·210	−0·079	− ⅓	− 7·1	− 16·9	− 24·5	
0. 44	M	Vega	96	F	0·210	−0·194	− ½	− 0·4	− 58·5	− 47·0	
0. 47	M	,,	96	F	0·210	−0·078	− 1/10	− 0·4	− 23·3	− 9·0	
0. 53	M	,,	6	F	0·210	−0·014	− 1/10	− 0·4	− 3·9	− 9·1	Sky not clear enough for second observation.
July 6. 22. 30	M	Altair	6	F	0·192	−0·136	− ⅖	− 4·2	− 37·1	− 32·2	Observations much interrupted by cloud.
22. 33	M	,,	6	F	0·192	−0·185	− ½	− 4·2	− 51·9	− 41·3	
22. 57	M	,,	276	F	0·192	−0·316	−1	− 4·2	− 91·8	− 86·9	
22. 59	M	,,	276	F	0·192	−0·052	− ¼	− 4·2	− 11·5	− 18·6	
23. 25	M	,,	96	F	0·192	−0·030	− 1/10	− 4·2	− 4·9	− 4·9	Observations much interrupted by cloud.
23. 32	M	,,	96	F	0·192	−0·030	− 1/10	− 4·2	− 4·9	− 4·9	
23. 38	M	,,	6	F	0·192	−0·249	− ⅗	− 4·2	− 71·4	− 50·5	Observations much interrupted by passing clouds. Measures very rough.
23. 43	M	,,	6	F	0·192	−0·147	− ½	− 4·2	− 40·5	− 41·3	
7. 0. 1	M	,,	186	F	0·192	−0·127	− ⅓	− 4·2	− 34·4	− 26·2	
0. 7	M	,,	186	F	0·192	−0·170	− ⅖	− 4·2	− 47·4	− 41·3	
0. 14	M	,,	276	F	0·192	−0·159	− ½	− 4·2	− 44·1	− 41·3	
0. 18	M	,,	276	F	0·192	−0·046	− 3/10	− 4·2	− 9·8	− 23·1	
0. 27	M	,,	96	F	0·192	−0·065	− ¼	− 4·2	− 15·5	− 18·6	
0. 30	M	,,	96	F	0·192	−0·148	− ⅖	− 4·2	− 40·8	− 32·2	

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						Measured.	Estimated.		Measured.	Estimated.	
d h m			°		r	r			″	″	
July 7. 0. 50	M	Altair.....	186	F	0·192	−0·080	− 1/4	− 4·2	− 20·0	− 18·6	
0. 53	M	,,	186	F	0·192	−0·070	− 1/3	− 4·2	− 17·0	− 26·2	
July 8. 22. 38	M	Altair.....	96	F	0·192	−0·171	− 1/2	− 3·7	− 48·3	− 44·0	
22. 43	M	,,	96	F	0·192	−0·123	− 2/3	− 3·7	− 33·7	− 34·5	
22. 36	M	,,	6	F	0·192	−0·163	− 1/2	− 3·7	− 45·8	− 34·5	
22. 39	M	,,	6	F	0·192	−0·147	− 1/3	− 3·7	− 41·0	− 28·1	
23. 24	M	,,	276	F	0·192	−0·330	− 1	− 3·7	− 96·5	− 91·6	Observations continually interrupted by cloud throughout the evening.
July 10. 22. 45	M	Vega	96	F	0·168	−0·158	− 1/3	+ 0·7	− 48·7	− 38·5	
22. 53	M	,,	96	F	0·168	−0·169	− 1/3	+ 0·7	− 52·0	− 38·5	
23. 16	M	,,	6	F	0·168	−0·204	− 2/3	+ 0·7	− 62·6	− 46·1	
23. 26	M	,,	6	F	0·168	−0·107	0	+ 0·7	− 33·2	− 0·7	
23. 47	M	,,	276	F	0·168	−0·121	− 1/3	+ 0·7	− 37·4	− 38·5	
23. 50	M	,,	276	F	0·168	−0·116	− 1/3	+ 0·7	− 36·0	− 38·5	
11. 0. 7	M	,,	186	F	0·168	−0·130	− 2/5	+ 0·7	− 40·2	− 61·2	
0. 10	M	,,	186	F	0·168	−0·062	− 1/5	+ 0·7	− 19·5	− 31·0	
0. 17	M	,,	96	F	0·168	−0·239	− 1/2	+ 0·7	− 73·3	− 38·5	
0. 21	M	,,	96	F	0·168	−0·018	− 1/10	+ 0·7	− 6·2	− 8·3	
0. 28	M	,,	6	F	0·168	−0·040	− 1/5	+ 0·7	− 12·8	− 15·8	
0. 33	M	,,	6	F	0·168	−0·142	− 2/5	+ 0·7	− 43·8	− 31·0	
0. 40	M	,,	276	F	0·168	−0·200	− 3/5	+ 0·7	− 61·4	− 46·1	
0. 43	M	,,	276	F	0·168	−0·181	− 3/5	+ 0·7	− 55·6	− 46·1	
0. 50	M	,,	186	F	0·168	−0·162	− 2/5	+ 0·7	− 49·9	− 38·5	
0. 51	M	,,	186	F	0·168	−0·199	− 3/5	+ 0·7	− 61·1	− 46·1	The earlier observations took a long while to make owing to the awkward position of the observer, and there was much light cloud about. The second series, after 0h 10m, were made under more favourable conditions.
July 14. 22. 44	M	Vega	96	F	0·208	+0·029	+ 1/10	+ 1·4	+ 7·4	+ 8·9	The definition was bad throughout the evening, the star spectra exceedingly tremulous, and owing to passing cloud the observations were made with difficulty.
22. 52	M	,,	96	F	0·208	+0·043	+ 1/10	+ 1·4	+ 11·7	+ 8·9	
22. 59	M	,,	6	F	0·208	−0·035	− 1/10	+ 1·4	− 12·0	− 11·7	
23. 3	M	,,	6	F	0·208	−0·092	− 1/3	+ 1·4	− 29·3	− 35·8	
23. 28	M	,,	276	F	0·208	−0·178	− 3/5	+ 1·4	− 55·5	− 63·4	
July 22. 22. 25	M	Vega	6	F	0·208	−0·043	− 1/5	+ 2·3	− 15·4	− 22·9	The sky clouded over before any observations could be secured at 186°. The observations at 6° and 276° were made under fair conditions, although light cloud interrupted the work from time to time. Still, at the moments of bisection the spectrum was fairly bright and steady, and the star-line fairly well seen.
22. 30	M	,,	6	F	0·208	−0·046	− 1/5	+ 2·3	− 16·2	− 22·9	
22. 45	M	,,	276	F	0·208	−0·156	− 1/2	+ 2·3	− 49·7	− 53·8	
22. 50	M	,,	276	F	0·208	−0·321	− 1	+ 2·3	− 99·8	−105·6	
July 24. 22. 53	M	Vega	186	F	0·212	−0·064	− 1/10	+ 2·6	− 22·0	− 12·9	
22. 55	M	,,	186	F	0·212	−0·150	− 1/3	+ 2·6	− 48·1	− 40·2	
23. 6	M	,,	96	F	0·212	−0·165	− 1/3	+ 2·6	− 52·7	− 58·9	
23. 11	M	,,	96	F	0·212	−0·062	− 1/4	+ 2·6	− 21·4	− 30·7	
23. 33	M	,,	6	F	0·212	−0·059	− 1/4	+ 2·6	− 20·5	− 30·7	
23. 37	M	,,	6	F	0·212	−0·138	− 1/3	+ 2·6	− 44·5	− 40·2	
23. 50	M	,,	276	F	0·212	−0·255	− 2/3	+ 2·6	− 80·1	− 77·8	
23. 52	M	,,	276	F	0·212	−0·171	− 1/2	+ 2·6	− 54·5	− 58·9	
25. 0. 4	M	,,	186	F	0·212	−0·015	0	+ 2·6	− 7·1	− 2·6	
0. 6	M	,,	186	F	0·212	−0·092	− 1/4	+ 2·6	− 30·5	− 30·7	
0. 13	M	,,	276	F	0·212	−0·070	− 1/4	+ 2·6	− 23·9	− 30·7	

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						Measured.	Estimated.		Measured.	Estimated.	
d h m			°		r	r					
July 25. 0. 18	M	Vega	96	F	0·212	+0·040	+ 1/10	+ 2·6	+ 9·5	+ 8·7	
0. 20	M	,,	96	F	0·212	−0·073	− 1/4	+ 2·6	− 24·7	− 30·7	
0. 38	M	Moon	96	F	0·212	−0·111			− 33·7		
0. 39	M	,,	96	F	0·212	−0·042			− 12·7		
0. 40	M	,,	96	F	0·212	−0·020			− 6·1		
0. 41	M	,,	96	F	0·212	−0·117			− 35·5		
0. 42	M	,,	96	F	0·212	+0·039			+ 11·8		
0. 47	M	,,	6	F	0·212	+0·006			+ 1·8		
0. 48	M	,,	6	F	0·212	+0·006			+ 1·8		
0. 50	M	,,	6	F	0·212	+0·014			+ 4·2		
0. 51	M	,,	6	F	0·212	+0·026			+ 7·9		
0. 52	M	,,	6	F	0·212	−0·027			− 8·2		
0. 56	M	,,	276	F	0·212	−0·064			− 19·4		
0. 57	M	,,	276	F	0·212	−0·037			− 11·2		
0. 59	M	,,	276	F	0·212	−0·030			− 9·1		
1. 0	M	,,	276	F	0·212	−0·018			− 5·5		
1. 1	M	,,	276	F	0·212	−0·074			− 22·5		
1. 7	M	,,	186	F	0·212	+0·033			+ 10·0		
1. 8	M	,,	186	F	0·212	+0·006			+ 1·8		
1. 10	M	,,	186	F	0·212	−0·002			− 0·6		
1. 11	M	,,	186	F	0·212	+0·004			+ 1·2		
1. 12	M	,,	186	F	0·212	+0·007			+ 2·1		
July 27. 22. 27	M	Altair.....	96	F	0·176	−0·061	− 1/10	+ 1·2	− 19·7	− 10·0	
22. 31	M	,,	96	F	0·176	+0·022	+ 1/4	+ 1·2	+ 5·5	+ 20·9	
22. 37	M	,,	6	F	0·176	−0·146	− 1/2	+ 1·2	− 45·5	− 45·4	
22. 43	M	,,	6	F	0·176	−0·204	− 2/3	+ 1·2	− 63·1	− 60·1	
22. 47	M	,,	276	F	0·176	−0·125	− 1/3	+ 1·2	− 39·1	− 30·7	
22. 54	M	,,	276	F	0·176	−0·293	− 3/4	+ 1·2	− 90·2	− 67·5	
23. 15	M	,,	186	F	0·176	−0·234	− 2/5	+ 1·2	− 72·2	− 36·5	The micrometer was reversed after the observations at 276° and before those at 186°.
23. 17	M	,,	186	F	0·176	−0·103	− 1/3	+ 1·2	− 32·5	− 30·7	
23. 30	M	Vega	186	F	0·176	−0·056	− 1/5	+ 3·0	− 20·0	− 20·7	
23. 34	M	,,	186	F	0·176	−0·070	− 1/4	+ 3·0	− 24·2	− 25·1	
23. 40	M	,,	276	F	0·176	−0·027	− 1/3	+ 3·0	− 11·2	− 32·5	
23. 43	M	,,	276	F	0·176	−0·053	− 1/3	+ 3·0	− 19·1	− 32·5	
23. 48	M	,,	6	F	0·176	+0·002	− 1/10	+ 3·0	− 2·4	− 11·8	
23. 53	M	,,	6	F	0·176	−0·014	− 1/10	+ 3·0	− 7·2	− 11·8	
28. 0. 0	M	,,	96	F	0·176	+0·006	0	+ 3·0	− 1·2	− 3·0	
0. 3	M	,,	96	F	0·176	+0·038	+ 1/10	+ 3·0	+ 8·5	+ 5·8	
0. 14	M	Altair.....	96	F	0·176	−0·044	− 1/5	+ 1·2	− 14·6	− 18·9	
0. 17	M	,,	96	F	0·176	+0·010	0	+ 1·2	+ 1·8	− 1·2	
0. 25	M	,,	6	F	0·176	+0·298	− 3/4	+ 1·2	− 91·7	− 67·5	
0. 27	M	,,	6	F	0·176	−0·184	− 1/2	+ 1·2	− 57·1	− 45·4	Spectra bright and fairly steady.
0. 34	M	,,	276	F	0·176	−0·118	− 2/5	+ 1·2	− 37·0	− 36·5	The definition was, however, only moderately good for Vega, and decidedly poor for Altair. With both stars the definition at 276° and 96° was markedly inferior to that at 6° and 186°.
0. 37	M	,,	276	F	0·176	−0·032	− 1/5	+ 1·2	− 10·9	− 18·9	
0. 43	M	,,	186	F	0·176	+0·004	0	+ 1·2	0·0	− 1·2	
0. 44	M	,,	186	F	0·176	−0·132	− 2/5	+ 1·2	− 41·2	− 36·5	
July 29. 22. 35	M	Vega	96	F	0·176	+0·103	+ 1/3	+ 3·3	+ 28·0	+ 26·2	Several other bisections were made which are not recorded, but which were all in close accord and all gave a displacement towards the *red*, not towards the *blue*.
22. 55	M	,,	96	F	0·176	+0·059	+ 1/4	+ 3·3	+ 14·6	+ 18·8	
Aug 3. 22. 26	M	Vega	186	F	0·196	−0·137	− 1/3	+ 3·9	− 45·5	− 29·7	
22. 30	M	,,	186	F	0·196	−0·121	− 1/3	+ 3·9	− 40·6	− 29·7	
22. 37	M	,,	276	F	0·196	−0·067	− 1/3	+ 3·9	− 24·2	− 29·7	
22. 45	M	,,	276	F	0·196	−0·026	− 1/8	+ 3·9	− 11·8	− 19·4	
22. 51	M	,,	6	F	0·196	−0·054	− 1/4	+ 3·9	− 20·3	− 23·3	
22. 57	M	,,	6	F	0·196	−0·070	− 1/4	+ 3·9	− 25·2	− 23·3	
23. 6	M	,,	96	F	0·196	−0·092	− 1/3	+ 3·9	− 31·8	− 29·7	
23. 15	M	,,	96	F	0·196	+0·016	0	+ 3·9	+ 0·9	− 3·9	

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						Measured.	Estimated.		Measured.	Estimated.	
d h m			°		r	r					
Aug. 3. 23. 34	M	Altair.....	96	F	0·196	+0·002	0	+ 3·0	− 2·5	− 3·0	
23. 36	M	,,	96	F	0·196	+0·007	0	+ 3·0	− 0·9	− 3·0	
23. 48	M	,,	6	F	0·196	−0·105	− 2/5	+ 3·0	− 35·1	− 34·0	
23. 50	M	,,	6	F	0·196	−0·041	− 1/5	+ 3·0	− 15·4	− 18·5	
4. 0. 1	M	,,	276	F	0·196	−0·101	− 1/4	+ 3·0	− 33·6	− 22·4	
0. 3	M	,,	276	F	0·196	−0·103	− 1/2	+ 3·0	− 34·3	− 41·8	
0. 8	M	,,	186	F	0·196	−0·027	− 1/5	+ 3·0	− 11·2	− 18·5	
0. 12	M	,,	186	F	0·196	−0·008	− 1/10	+ 3·0	− 5·4	− 10·8	
Aug. 29. 20. 59	M	Vega	96	F	0·178	+0·112	+ 1/3	+ 6·8	+ 27·2	+ 20·8	Definition very bad, measures made with extreme difficulty. Nevertheless several other bisections all agreed in giving displacement towards the red, and to about the same amount as above observations. Spectrum bright and steady.
21. 1	M	,,	96	F	0·178	+0·173	+ 1/2	+ 6·8	+ 45·7	+ 34·7	
21. 21	M	,,	6	F	0·178	−0·146	− 2/5	+ 6·8	− 51·1	− 40·0	Star-line seen very much better than at 96°.
21. 24	M	,,	6	F	0·178	−0·194	− 1/4	+ 6·8	− 65·7	− 27·5	
21. 43	M	,,	276	F	0·178	−0·145	− 1/3	+ 6·8	− 50·8	− 34·4	
21. 49	M	,,	276	F	0·178	−0·028	− 1/3	+ 6·8	− 15·3	− 34·4	
22. 0	M	,,	186	F	0·178	−0·197	− 1/2	+ 6·8	− 66·6	− 48·3	
22. 4	M	,,	186	F	0·178	−0·128	− 1/2	+ 6·8	− 45·7	− 48·3	
22. 36	M	Altair.....	186	F	0·178	−0·096	− 1/5	+ 9·2	− 38·3	− 25·8	
22. 41	M	,,	186	F	0·178	+0·002	0	+ 9·2	− 8·6	− 9·2	
22. 50	M	,,	276	F	0·178	−0·163	− 1/2	+ 9·2	− 58·7	− 50·7	
22. 55	M	,,	276	F	0·178	−0·269	− 3/5	+ 9·2	− 90·9	− 59·0	
23. 1	M	,,	6	F	0·178	−0·049	− 1/3	+ 9·2	− 24·1	− 36·8	
23. 3	M	,,	6	F	0·178	−0·121	− 2/5	+ 9·2	− 45·9	− 42·4	
23. 11	M	,,	96	F	0·178	+0·137	+ 1/3	+ 9·2	+ 32·4	+ 18·4	Definition for Altair bad throughout, especially at 96°.
23. 17	M	,,	96	F	0·178	−0·002	0	+ 9·2	− 9·8	− 9·2	
Sept. 4. 22. 56	M	Vega	96	F	0·178	−0·101	− 1/3	+ 7·3	− 37·9	− 35·0	Definition at 96° much better than usual at that reading.
23. 0	M	,,	96	F	0·178	−0·082	− 2/5	+ 7·3	− 32·2	− 40·6	
23. 6	M	,,	6	F	0·178	−0·233	− 3/5	+ 7·3	− 78·1	− 57·2	
23. 9	M	,,	6	F	0·178	−0·061	− 1/4	+ 7·3	− 25·8	− 28·1	Definition at 6° very poor.
Sept. 9. 20. 6	M	Vega	96	F	0·178	+0·111	+ 1/3	+ 7·7	+ 26·0	+ 20·0	The spectrum was very tremulous and observations therefore made with difficulty. Star-line seen fairly well at times, but very difficult to hold.
20. 11	M	,,	96	F	0·178	+0·152	+ 1/2	+ 7·7	+ 38·5	+ 33·9	
20. 20	M	,,	6	F	0·178	−0·042	− 1/5	+ 7·7	− 20·4	− 24·4	Spectrum still very tremulous, but star-line seen better than at 96°.
20. 25	M	,,	6	F	0·178	−0·098	− 1/3	+ 7·7	− 37·5	− 35·4	
20. 34	M	,,	276	F	0·178	−0·053	− 1/4	+ 7·7	− 23·8	− 28·5	Spectrum steadier.
20. 38	M	,,	276	F	0·178	−0·047	− 2/5	+ 7·7	− 21·9	− 41·0	
20. 57	M	,,	186	F	0·178	−0·198	− 1/2	+ 7·7	− 67·8	− 49·3	
21. 1	M	,,	186	F	0·178	−0·167	− 1/2	+ 7·7	− 58·4	− 49·3	
21. 12	M	Altair.....	186	F	0·178	+0·034	0	+ 11·5	− 1·2	− 11·5	Spectrum rather faint, but fairly steady. Star-line seen fairly well; other and independent bisections gave the same result: measures considered good.
21. 17	M	,,	186	F	0·178	−0·010	0	+ 11·5	− 14·5	− 11·5	
21. 26	M	,,	276	F	0·178	−0·090	− 1/4	+ 11·5	− 38·8	− 32·3	Spectrum tremulous; definition bad.
21. 30	M	,,	276	F	0·178	−0·176	− 1/2	+ 11·5	− 65·0	− 53·1	
21. 43	M	,,	6	F	0·178	−0·096	− 1/5	+ 11·5	− 40·6	− 53·1	Spectrum unsteady; definition poor.
21. 47	M	,,	6	F	0·178	−0·150	− 1/2	+ 11·5	− 57·0	− 53·1	
21. 54	M	,,	96	F	0·178	−0·003	0	+ 11·5	− 12·4	− 11·5	
21. 57	M	,,	96	F	0·178	−0·032	+ 1/5	+ 11·5	− 21·2	+ 5·1	
22. 5	M	,,	186	F	0·178	−0·094	+ 1/5	+ 11·5	− 40·0	+ 5·1	
22. 7	M	,,	186	F	0·178	−0·030	+ 1/10	+ 11·5	− 20·6	− 3·2	
22. 14	M	,,	276	F	0·178	−0·020	− 1/4	+ 11·5	− 17·6	− 32·3	
22. 19	M	,,	276	F	0·178	−0·011	− 1/4	+ 11·5	− 14·8	− 32·3	
22. 25	M	,,	6	F	0·178	−0·147	− 1/2	+ 11·5	− 56·1	− 53·1	Definition bad.

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						Measured.	Estimated.		Measured.	Estimated.	
d h m			°		r	r					
Sept. 9. 22. 30	M	Altair.....	6	F	0·178	−0·255	− 3/5	+ 11·5	− 89·0	− 61·4	
22. 35	M	,,	96	F	0·178	−0·047	− 1/10	+ 11·5	− 25·7	− 19·8	Definition bad.
22. 41	M	,,	96	F	0·178	+0·083	+ 2/5	+ 11·5	+ 13·7	+ 21·8	
Sept. 10. 22. 32	M	Vega	276	F	0·216	−0·048	− 1/4	+ 7·8	− 22·4	− 34·2	
22. 40	M	,,	276	F	0·216	−0·113	− 1/3	+ 7·8	− 42·1	− 43·0	
23. 8	M	,,	186	F	0·216	−0·013	0	+ 7·8	− 11·7	− 7·8	
23. 12	M	,,	186	F	0·216	−0·009	0	+ 7·8	− 10·5	− 7·8	
23. 30	M	Altair.....	186	F	0·216	−0·189	− 2/5	+ 11·7	− 69·1	− 54·0	
23. 33	M	,,	186	F	0·216	−0·148	− 2/5	+ 11·7	− 56·6	− 54·0	
23. 54	M	,,	276	F	0·216	−0·020	− 1/10	+ 11·7	− 17·8	− 22·3	
11. 0. 1	M	,,	276	F	0·216	−0·179	− 1/2	+ 11·7	− 66·0	− 64·5	
0. 10	M	,,	6	F	0·216	−0·181	− 2/5	+ 11·7	− 66·7	− 54·0	
0. 11	M	,,	6	F	0·216	−0·186	− 1/2	+ 11·7	− 68·1	− 64·5	
0. 23	M	,,	96	F	0·216	+0·084	+ 1/5	+ 11·7	+ 13·8	+ 9·4	
0. 27	M	,,	96	F	0·216	+0·066	+ 1/10	+ 11·7	+ 8·3	− 1·1	
Sept. 16. 22. 47	M	Vega	96	F	0·216	+0·093	+ 1/4	+ 8·1	+ 20·1	+ 18·3	
22. 51	M	,,	96	F	0·216	+0·245	+ 1/2	+ 8·1	+ 66·3	+ 44·7	
22. 59	M	,,	6	F	0·216	−0·194	− 1/5	+ 8·1	− 67·0	− 60·9	
23. 9	M	,,	6	F	0·216	−0·090	− 1/4	+ 8·1	− 35·4	− 34·5	
23. 21	M	,,	276	F	0·216	−0·038	− 1/3	+ 8·1	− 19·6	− 43·3	
23. 27	M	,,	276	F	0·216	+0·003	0	+ 8·1	− 7·3	− 8·1	
Sept. 25. 21. 14	M	Vega	96	F	0·195	−0·078	− 1/5	+ 8·5	− 32·2	− 27·2	
21. 18	M	,,	96	F	0·195	+0·080	+ 1/4	+ 8·5	+ 15·8	+ 14·9	
21. 26	M	,,	6	F	0·195	−0·182	− 1/2	+ 8·5	− 63·8	− 55·3	
21. 30	M	,,	6	F	0·195	−0·039	− 1/4	+ 8·5	− 20·3	− 31·9	
21. 35	M	,,	276	F	0·195	−0·065	− 1/3	+ 8·5	− 28·2	− 39·7	
21. 39	M	,,	276	F	0·195	−0·098	− 1/2	+ 8·5	− 38·3	− 55·3	
21. 57	M	,,	186	F	0·195	+0·032	+ 1/5	+ 8·5	+ 1·2	+ 10·2	
22. 0	M	,,	186	F	0·195	+0·119	+ 1/4	+ 8·5	+ 27·6	+ 14·9	
22. 10	M	,,	96	F	0·195	−0·018	− 1/20	+ 8·5	− 14·0	− 13·2	
22. 14	M	,,	96	F	0·195	−0·035	− 1/10	+ 8·5	− 19·1	− 17·9	
22. 31	M	,,	6	F	0·195	−0·033	− 1/10	+ 8·5	− 18·5	− 17·9	
22. 34	M	,,	6	F	0·195	−0·187	− 1/2	+ 8·5	− 65·3	− 57·3	
22. 42	M	,,	276	F	0·195	−0·041	− 1/4	+ 8·5	− 20·9	− 31·9	
22. 45	M	,,	276	F	0·195	+0·003	0	+ 8·5	− 7·6	− 8·5	
22. 53	M	,,	186	F	0·195	−0·218	− 1/3	+ 8·5	− 74·7	− 39·7	
22. 55	M	,,	186	F	0·195	−0·139	− 1/3	+ 8·5	− 50·7	− 39·7	
23. 2	M	,,	186	F	0·195	+0·038	+ 1/4	+ 8·5	+ 3·0	+ 14·9	
23. 8	M	,,	186	F	0·195	+0·009	0	+ 8·5	− 5·8	− 8·5	
23. 16	M	,,	96	F	0·195	−0·167	− 1/3	+ 8·5	− 59·2	− 39·7	The sky became misty and spectrum faint ; star-line seen with difficulty.
23. 18	M	,,	96	F	0·195	−0·013	0	+ 8·5	− 12·4	− 8·5	
Sept. 28. 20. 53	M	Altair.....	96	F	0·243	+0·022	0	+ 14·5	− 7·8	− 14·5	Spectrum bright, but very unsteady. The star-line was very broad, faint, and diffused. It was most difficult to observe, the definition being bad, and the measures must be regarded as extremely rough.
20. 59	M	,,	96	F	0·243	+0·157	+ 1/3	+ 14·5	+ 33·2	+ 23·4	
21. 10	M	,,	6	F	0·243	−0·004	0	+ 14·5	− 15·7	− 14·5	Conditions unchanged.
21. 13	M	,,	6	F	0·243	−0·258	− 1/2	+ 14·5	− 92·9	− 71·3	
21. 24	M	,,	276	F	0·243	−0·001	0	+ 14·5	− 14·8	− 14·5	
21. 27	M	,,	276	F	0·243	−0·138	− 3/5	+ 14·5	− 56·4	− 82·7	Definition, if possible, rather worse.
21. 37	M	,,	186	F	0·243	−0·024	0	+ 14·5	− 21·8	− 14·5	Definition decidedly improved.
21. 38	M	,,	186	F	0·243	−0·084	− 1/4	+ 14·5	− 40·0	− 42·9	
21. 46	M	,,	96	F	0·243	−0·124	− 1/3	+ 14·5	− 52·2	− 52·4	Definition again very bad.
21. 48	M	,,	96	F	0·243	+0·143	+ 1/2	+ 14·5	+ 28·9	+ 42·3	

Date, 1891. Greenwich Civil Time.	Observer.	Object.	Position Circle.	Line.	Width of Slit.	Displacement.		Earth's Motion in Miles per Second.	Concluded Motion of Star in Miles per Second.		REMARKS.
						Measured.	Estimated.		Measured.	Estimated.	
d h m			°		r	r					
Sept. 28. 21. 55	M	Altair.....	6	F	0·243	−0·089	− 1/3	+ 14·5	− 41·5	− 52·4	
21. 57	M	,,	6	F	0·243	−0·026	− 1/10	+ 14·5	− 22·4	− 25·9	
22. 15	M	,,	276	F	0·243	−0·165	− 1/4	+ 14·5	− 64·6	− 42·9	Definition still very bad.
22. 17	M	,,	276	F	0·243	−0·138	− 2/5	+ 14·5	− 56·4	− 59·9	
22. 30	M	,,	186	F	0·243	−0·170	− 1/3	+ 14·5	− 66·1	− 52·4	The definition was bad throughout the evening, and it was therefore not thought worth while to take further measures.
22. 32	M	,,	186	F	0·243	−0·042	− 1/10	+ 14·5	− 27·2	− 25·9	
Oct. 2. 21. 22	M	Altair.....	186	F	0·243	+0·036	+ 1/10	+ 15·0	− 4·1	− 4·8	
21. 24	M	,,	186	F	0·243	+0·001	0	+ 15·0	− 14·7	− 15·0	
21. 38	M	,,	276	F	0·243	−0·042	− 1/10	+ 15·0	− 27·7	− 25·2	
21. 42	M	,,	276	F	0·243	−0·006	0	+ 15·0	− 16·8	− 15·0	
21. 56	M	,,	6	F	0·243	−0·104	− 1/4	+ 15·0	− 46·6	− 40·4	
21. 59	M	,,	6	F	0·243	−0·289	− 2/3	+ 15·0	−102·8	− 76·1	
22. 3	M	,,	96	F	0·243	+0·229	+ 2/3	+ 15·0	+ 54·5	+ 25·7	
22. 6	M	,,	96	F	0·243	+0·253	+ 1/2	+ 15·0	+ 61·8	+ 35·9	
22. 11	M	,,	96	F	0·243	+0·031	+ 1/10	+ 15·0	− 5·6	− 4·8	
22. 23	M	,,	96	F	0·243	−0·029	0	+ 15·0	− 16·5	− 15·0	
22. 33	M	,,	6	F	0·243	−0·156	− 1/3	+ 15·0	− 62·4	− 48·9	
22. 35	M	,,	6	F	0·243	−0·173	− 1/3	+ 15·0	− 67·5	− 48·9	
22. 50	M	,,	276	F	0·243	−0·028	− 1/10	+ 15·0	− 23·5	− 25·2	Definition fair throughout evening, much better than on Sept. 28.
22. 53	M	,,	276	F	0·243	−0·064	− 1/10	+ 15·0	− 34·4	− 25·2	
23. 11	M	,,	186	F	0·243	−0·043	− 1/10	+ 15·0	− 28·0	− 25·2	
23. 13	M	,,	186	F	0·243	−0·022	− 1/10	+ 15·0	− 21·7	− 25·2	
Oct. 7. 21. 22	M	Vega	186	F	0·232	+0·202	+ 1/3	+ 8·7	+ 52·7	+ 32·0	Cloud constantly passing; spectrum faint, and very unsteady; definition bad.
21. 24	M	,,	186	F	0·232	+0·121	+ 1/3	+ 8·7	+ 28·0	+ 32·0	
21. 33	M	,,	276	F	0·232	−0·101	− 1/4	+ 8·7	− 39·3	− 39·2	Spectrum brighter and steadier; definition better than at 186°. Sky clouded before any observations could be secured at 6°.
21. 35	M	,,	276	F	0·232	−0·045	− 1/10	+ 8·7	− 22·3	− 20·9	
Oct. 9. 21. 8	M	Vega	96	F	0·220	+0·011	+ 1/5	+ 8·7	− 5·4	− 14·5	
21. 10	M	,,	96	F	0·220	−0·005	0	+ 8·7	− 10·2	− 8·7	
21. 19	M	,,	6	F	0·220	−0·190	− 1/3	+ 8·7	− 66·4	− 66·9	
21. 22	M	,,	6	F	0·220	−0·164	− 2/3	+ 8·7	− 58·5	− 47·5	
21. 29	M	,,	276	F	0·220	−0·089	− 2/5	+ 8·7	− 35·7	− 55·2	
21. 37	M	,,	276	F	0·220	+0·003	0	+ 8·7	− 7·8	− 8·7	
21. 46	M	,,	186	F	0·220	+0·106	+ 1/2	+ 8·7	+ 23·5	+ 49·5	
21. 50	M	,,	186	F	0·220	+0·026	+ 1/3	+ 8·7	− 0·8	+ 14·5	
21. 55	M	,,	186	F	0·220	−0·051	− 1/10	+ 8·7	− 24·2	− 20·3	
21. 56	M	,,	186	F	0·220	−0·005	0	+ 8·7	− 10·2	− 8·7	
22. 7	M	,,	276	F	0·220	−0·004	0	+ 8·7	− 9·9	− 8·7	
22. 13	M	,,	276	F	0·220	−0·028	− 1/5	+ 8·7	− 17·2	− 31·9	
22. 20	M	,,	6	F	0·220	−0·101	− 1/3	+ 8·7	− 39·4	− 47·5	
22. 23	M	,,	6	F	0·220	−0·192	− 1/2	+ 8·7	− 67·0	− 66·9	
22. 29	M	,,	96	F	0·220	+0·038	+ 1/10	+ 8·7	− 20·3	− 20·3	
22. 32	M	,,	96	F	0·220	−0·010	0	+ 8·7	− 11·7	− 8·7	
22. 35	M	,,	96	F	0·220	+0·054	+ 1/5	+ 8·7	+ 7·7	+ 14·5	
22. 38	M	,,	96	F	0·220	−0·006	0	+ 8·7	− 10·5	− 8·7	
22. 49	M	,,	6	F	0·220	−0·102	− 1/4	+ 8·7	− 39·7	− 37·8	
22. 53	M	,,	6	F	0·220	−0·094	− 1/4	+ 8·7	− 37·3	− 37·8	
23. 3	M	,,	276	F	0·220	−0·139	− 1/3	+ 8·7	− 50·9	− 66·9	The spectrum was bright and the definition fair throughout the evening, except for the last two observations, which were much interrupted by light cloud.
23. 11	M	,,	276	F	0·220	−0·104	− 1/4	+ 8·7	− 40·3	− 37·8	
23. 29	M	,,	186	F	0·220	+0·014	0	+ 8·7	− 4·4	− 8·7	
23. 33	M	,,	186	F	0·220	+0·056	+ 1/10	+ 8·7	+ 8·3	+ 2·9	
Oct. 12. 21. 30	M	Moon	6	F	0·168	−0·050			− 15·2		
21. 31	M	,,	6	F	0·168	−0·041			− 12·4		
21. 33	M	,,	6	F	0·168	−0·026			− 7·9		
21. 35	M	,,	6	F	0·168	+0·019			+ 5·8		
21. 36	M	,,	6	F	0·168	−0·117			− 5·1		
21. 39	M	,,	96	F	0·168	+0·038			+ 11·5		
21. 41	M	,,	96	F	0·168	+0·020			+ 6·1		

Date, 1891. Greenwich Civil Time.	Observer.	Object.	Position Circle.	Line.	Width of Slit.	Displacement.		Earth's Motion in Miles per Second.	Concluded Motion of Star in Miles per Second.		REMARKS.
						Measured.	Estimated.		Measured.	Estimated.	
d h m			°		′	″					
Oct. 12. 21. 43	M	Moon	96	F	0·168	+0·017			+ 5·1		
21. 45	M	,,	96	F	0·168	+0·051			+ 15·5		
21. 48	M	,,	96	F	0·168	+0·020			+ 6·1		
22. 5	M	,,	276	F	0·168	−0·004			− 1·2		
22. 7	M	,,	276	F	0·168	−0·052			− 15·8		
22. 9	M	,,	276	F	0·168	+0·102			+ 31·0		
22. 11	M	,,	276	F	0·168	−0·071			− 21·6		
22. 13	M	,,	276	F	0·168	+0·016			+ 4·9		
22. 20	M	,,	186	F	0·168	−0·021			− 6·4		The Moon was frequently in light cloud, which greatly interfered with the spectrum and its definition. It was best seen during the observations at 96°.
22. 21	M	,,	186	F	0·168	−0·075			− 22·8		
22. 23	M	,,	186	F	0·168	+0·024			+ 7·3		
22. 24	M	,,	186	F	0·168	−0·032			− 9·7		
22. 25	M	,,	186	F	0·168	−0·015			− 4·6		
22. 40	M	Vega	186	F	0·168	−0·080	− 1/4	+ 8·7	− 33·0	− 33·2	
22. 43	M	,,	186	F	0·168	+0·108	+ 1/3	+ 8·7	+ 24·1	+ 23·9	
22. 54	M	,,	276	F	0·168	+0·038	+ 1/10	+ 8·7	+ 2·9	+ 1·1	
22. 58	M	,,	276	F	0·168	−0·050	− 1/4	+ 8·7	− 23·9	− 33·2	
23. 7	M	,,	6	F	0·168	−0·055	− 1/3	+ 8·7	− 25·4	− 41·3	
23. 12	M	,,	6	F	0·168	−0·114	− 1/2	+ 8·7	− 43·3	− 57·6	
23. 18	M	,,	96	F	0·168	−0·008	0	+ 8·7	− 11·1	− 8·7	
23. 22	M	,,	96	F	0·168	+0·102	+ 1/2	+ 8·7	+ 22·3	+ 40·2	
23. 26	M	,,	96	F	0·168	+0·011	+ 1/5	+ 8·7	− 5·4	+ 10·8	
23. 28	M	,,	96	F	0·168	+0·085	+ 2/5	+ 8·7	+ 17·1	+ 30·4	
23. 36	M	,,	6	F	0·168	−0·102	− 1/2	+ 8·7	− 39·7	− 57·6	
23. 38	M	,,	6	F	0·168	−0·129	− 1/2	+ 8·7	− 47·8	− 57·6	
23. 47	M	,,	276	F	0·168	−0·124	− 2/5	+ 8·7	− 46·4	− 47·8	
23. 51	M	,,	276	F	0·168	−0·102	− 1/2	+ 8·7	− 39·7	− 57·6	
13. 0. 0	M	,,	186	F	0·168	+0·081	+ 1/4	+ 8·7	+ 15·9	+ 15·8	Spectrum bright ; rather tremulous.
0. 3	M	,,	186	F	0·168	+0·089	+ 1/4	+ 8·7	+ 18·3	+ 15·8	Definition fair.
Oct. 16. 21. 22	M	Altair	96	F	0·182	+0·074	+ 1/4	+ 16·0	+ 6·5	+ 5·6	
21. 26	M	,,	96	F	0·182	−0·090	− 1/4	+ 16·0	− 43·3	− 37·6	
21. 31	M	,,	6	F	0·182	−0·267	− 3/5	+ 16·0	− 97·1	− 67·7	
21. 33	M	,,	6	F	0·182	−0·197	− 3/5	+ 16·0	− 75·8	− 67·7	Cloud passing.
21. 50	M	,,	276	F	0·182	−0·171	− 1/2	+ 16·0	− 68·0	− 59·1	
21. 52	M	,,	276	F	0·182	−0·042	− 1/4	+ 16·0	− 28·7	− 37·6	

COLLECTED RESULTS for MOTIONS of STARS in the line of Sight, from SPECTROSCOPIC OBSERVATIONS made at the ROYAL OBSERVATORY, GREENWICH, in the Year 1891.

(F for the Star or Moon is compared with Hβ of Hydrogen.)

(+ denotes Recession ; − Approach.)

Date, 1891.	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*). Position-Circle Reading, 6°.									
d h m									
June 26. 23. 16	M	1	1	6°		F	− 1·3	− 20·9	− 30·3
July 2. 22. 24	M	2	1	6	0·210	F	− 0·4	− 19·5	− 23·3
3. 0. 53	M	1	1	6	0·210	F	− 0·4	− 3·9	− 9·1
10. 23. 21	M	2	1	6	0·168	F	+ 0·7	− 47·9	− 23·4
11. 0. 31	M	2	1	6	0·168	F	+ 0·7	− 28·3	− 23·4
14. 23. 1	M	2	1	6	0·208	F	+ 1·4	− 20·7	− 23·8
22. 22. 28	M	2	1	6	0·208	F	+ 2·3	− 15·8	− 22·9
24. 23. 35	M	2	1	6	0·212	F	+ 2·6	− 32·5	− 35·5
27. 23. 51	M	2	1	6	0·176	F	+ 3·0	− 4·8	− 11·8
August 3. 22. 54	M	2	1	6	0·196	F	+ 3·9	− 22·8	− 23·3
29. 21. 23	M	2	1	6	0·178	F	+ 6·8	− 58·4	− 33·8
September 4. 23. 8	M	2	1	6	0·178	F	+ 7·3	− 52·0	− 42·7
9. 20. 23	M	2	1	6	0·178	F	+ 7·7	− 29·0	− 29·9
16. 23. 4	M	2	1	6	0·216	F	+ 8·1	− 51·2	− 47·7
25. 21. 28	M	2	1	6	0·195	F	+ 8·5	− 42·1	− 43·6
25. 22. 33	M	2	1	6	0·195	F	+ 8·5	− 41·9	− 37·6
October 9. 21. 21	M	2	1	6	0·220	F	+ 8·7	− 62·5	− 57·2
9. 22. 22	M	2	1	6	0·220	F	+ 8·7	− 53·2	− 57·2
9. 22. 51	M	2	1	6	0·220	F	+ 8·7	− 38·5	− 37·8
12. 23. 10	M	2	1	6	0·168	F	+ 8·7	− 34·4	− 49·5
12. 23. 37	M	2	1	6	0·168	F	+ 8·7	− 43·8	− 57·6
							Means ...	− 33·6	− 32·4
α LYRÆ (*Vega*). Position-Circle Reading, 96°.									
July 2. 22. 55	M	2	1	96°	0·210	F	− 0·4	− 7·5	+ 0·4
3. 0. 46	M	2	1	96	0·210	F	− 0·4	− 40·9	− 28·0
10. 22. 48	M	2	1	96	0·168	F	+ 0·7	− 50·4	− 38·5
11. 0. 19	M	2	1	96	0·168	F	+ 0·7	− 39·8	− 23·4
14. 22. 48	M	2	1	96	0·208	F	+ 1·4	+ 9·6	+ 8·9
24. 23. 9	M	2	1	96	0·212	F	+ 2·6	− 37·1	− 44·8
25. 0. 19	M	2	1	96	0·212	F	+ 2·6	− 7·6	− 11·0
28. 0. 2	M	2	1	96	0·176	F	+ 3·0	+ 3·7	+ 1·4
29. 22. 45	M	2	1	96	0·176	F	+ 3·3	+ 21·3	+ 22·5
August 3. 23. 11	M	2	1	96	0·196	F	+ 3·9	− 15·5	− 16·8
29. 21. 0	M	2	1	96	0·178	F	+ 6·8	+ 36·5	+ 27·8
September 4. 22. 58	M	2	1	96	0·178	F	+ 7·3	− 35·1	− 37·8
9. 20. 9	M	2	1	96	0·178	F	+ 7·7	+ 32·3	+ 27·0
16. 22. 49	M	2	1	96	0·216	F	+ 8·1	+ 43·2	+ 31·5
25. 21. 16	M	2	1	96	0·195	F	+ 8·5	− 8·2	− 6·2
25. 22. 12	M	2	1	96	0·195	F	+ 8·5	− 16·6	− 15·6
25. 23. 17	M	2	1	96	0·195	F	+ 8·5	− 35·8	− 24·1
October 9. 21. 9	M	2	1	96	0·220	F	+ 8·7	− 7·8	+ 2·9
9. 22. 31	M	2	1	96	0·220	F	+ 8·7	− 16·0	− 14·5
9. 22. 37	M	2	1	96	0·220	F	+ 8·7	− 1·4	+ 2·9
12. 23. 20	M	2	1	96	0·168	F	+ 8·7	+ 5·6	+ 15·8
12. 23. 27	M	2	1	96	0·168	F	+ 8·7	+ 5·9	+ 20·6
							Means ...	− 7·3	− 4·5

Date, 1891.	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*). Position-Circle Reading, 186°.									
July d h m 11. 0. 9	M	2	1	186°	0·168	F	+ 0·7	− 29·9	− 46·1
11. 0. 51	M	2	1	186	0·168	F	+ 0·7	− 55·5	− 42·3
24. 22. 54	M	2	1	186	0·212	F	+ 2·6	− 35·1	− 26·6
25. 0. 5	M	2	1	186	0·212	F	+ 2·6	− 18·8	− 16·7
27. 23. 32	M	2	1	186	0·176	F	+ 3·0	− 22·1	− 22·9
August 3. 22. 28	M	2	1	186	0·196	F	+ 3·9	− 43·1	− 29·7
29. 22. 2	M	2	1	186	0·178	F	+ 6·8	− 56·2	− 48·3
September 9. 20. 59	M	2	1	186	0·178	F	+ 7·7	− 63·1	− 49·3
10. 23. 10	M	2	1	186	0·216	F	+ 7·8	− 11·1	− 7·8
25. 21. 59	M	2	1	186	0·195	F	+ 8·5	+ 14·4	+ 12·6
25. 22. 54	M	2	1	186	0·195	F	+ 8·5	− 62·7	− 39·7
25. 23. 5	M	2	1	186	0·195	F	+ 8·5	− 1·4	+ 3·2
October 7. 21. 23	M	2	1	186	0·232	F	+ 8·7	+ 40·4	+ 32·0
9. 21. 48	M	2	1	186	0·220	F	+ 8·7	+ 11·4	+ 32·0
9. 21. 56	M	2	1	186	0·220	F	+ 8·7	− 17·2	− 14·5
9. 23. 31	M	2	1	186	0·220	F	+ 8·7	+ 2·0	− 2·9
12. 22. 42	M	2	1	186	0·168	F	+ 8·7	− 4·5	− 4·7
13. 0. 2	M	2	1	186	0·168	F	+ 8·7	+ 17·1	+ 15·8
							Means ...	− 18·6	− 14·2
α LYRÆ (*Vega*). Position-Circle Reading, 276°.									
July 10. 23. 49	M	2	1	276°	0·168	F	+ 0·7	− 36·7	− 38·5
11. 0. 42	M	2	1	276	0·168	F	+ 0·7	− 58·5	− 46·1
14. 23. 28	M	1	1	276	0·208	F	+ 1·4	− 55·5	− 63·4
22. 22. 48	M	2	1	276	0·208	F	+ 2·3	− 74·8	− 79·7
24. 23. 51	M	2	1	276	0·212	F	+ 2·6	− 67·3	− 68·4
25. 0. 13	M	1	1	276	0·212	F	+ 2·6	− 23·9	− 30·7
27. 23. 42	M	2	1	276	0·176	F	+ 3·0	− 15·2	− 32·5
August 3. 22. 41	M	2	1	276	0·196	F	+ 3·9	− 18·0	− 24·6
29. 21. 46	M	2	1	276	0·178	F	+ 6·8	− 33·0	− 34·4
September 9. 20. 36	M	2	1	276	0·178	F	+ 7·7	− 22·9	− 34·8
10. 22. 36	M	2	1	276	0·216	F	+ 7·8	− 32·3	− 38·6
16. 23. 24	M	2	1	276	0·216	F	+ 8·1	− 13·5	− 25·7
25. 21. 37	M	2	1	276	0·195	F	+ 8·5	− 33·3	− 47·5
25. 22. 44	M	2	1	276	0·195	F	+ 8·5	− 14·3	− 20·2
October 7. 21. 34	M	2	1	276	0·232	F	+ 8·7	− 30·8	− 30·1
9. 21. 33	M	2	1	276	0·220	F	+ 8·7	− 22·8	− 32·0
9. 22. 10	M	2	1	276	0·220	F	+ 8·7	− 13·6	− 20·3
9. 23. 7	M	2	1	276	0·220	F	+ 8·7	− 45·6	− 52·4
12. 22. 56	M	2	1	276	0·168	F	+ 8·7	− 10·5	− 16·1
12. 23. 49	M	2	1	276	0·168	F	+ 8·7	− 43·1	− 52·7
							Means ...	− 31·8	− 38·0

Date, 1891.	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 AQUILÆ (*Altair*). Position-Circle Reading, 6°.									
d h m									
July 2. 23. 44	M	2	1	6°	0·210	F	− 5·2	− 3·8	− 4·3
6. 22. 32	M	2	1	6	0·192	F	− 4·2	− 44·5	− 36·8
6. 23. 41	M	2	1	6	0·192	F	− 4·2	− 56·0	− 45·9
8. 22. 38	M	2	1	6	0·192	F	− 3·7	− 43·4	− 31·3
27. 22. 40	M	2	1	6	0·176	F	+ 1·2	− 54·3	− 52·8
28. 0. 26	M	2	1	6	0·176	F	+ 1·2	− 74·4	− 56·5
August 3. 23. 49	M	2	1	6	0·196	F	+ 3·0	− 25·3	− 26·3
29. 23. 2	M	2	1	6	0·178	F	+ 9·2	− 35·0	− 39·6
September 9. 21. 45	M	2	1	6	0·178	F	+ 11·5	− 48·8	− 53·1
9. 22. 28	M	2	1	6	0·178	F	+ 11·5	− 72·6	− 57·3
11. 0. 11	M	2	1	6	0·216	F	+ 11·7	− 67·4	− 59·3
28. 21. 12	M	2	1	6	0·243	F	+ 14·5	− 54·3	− 42·9
28. 21. 56	M	2	1	6	0·243	F	+ 14·5	− 32·0	− 39·2
October 2. 21. 58	M	2	1	6	0·243	F	+ 15·0	− 74·7	− 58·3
2. 22. 34	M	2	1	6	0·243	F	+ 15·0	− 65·0	− 48·9
16. 21. 32	M	2	1	6	0·182	F	+ 16·0	− 86·5	− 67·7
							Means ...	− 52·4	− 45·0
α AQUILÆ (*Altair*). Position-Circle Reading, 96°.									
July 2. 23. 28	M	2	1	96°	0·210	F	− 5·2	− 6·8	− 10·6
6. 23. 29	M	2	1	96	0·192	F	− 4·2	− 4·9	− 4·9
7. 0. 29	M	2	1	96	0·192	F	− 4·2	− 28·2	− 25·4
8. 22. 41	M	2	1	96	0·192	F	− 3·7	− 41·0	− 39·3
27. 22. 29	M	2	1	96	0·176	F	+ 1·2	− 7·1	+ 5·5
28. 0. 16	M	2	1	96	0·176	F	+ 1·2	− 6·4	− 10·1
August 3. 23. 35	M	2	1	96	0·196	F	+ 3·0	− 1·7	− 3·0
29. 23. 14	M	2	1	96	0·178	F	+ 9·2	+ 11·3	+ 4·6
September 9. 21. 56	M	2	1	96	0·178	F	+ 11·5	− 16·8	− 3·2
9. 22. 38	M	2	1	96	0·178	F	+ 11·5	− 6·0	+ 1·0
11. 0. 25	M	2	1	96	0·216	F	+ 11·7	+ 11·1	+ 4·3
28. 20. 56	M	2	1	96	0·243	F	+ 14·5	+ 12·7	+ 4·5
28. 21. 47	M	2	1	96	0·243	F	+ 14·5	− 11·7	− 5·1
October 2. 22. 5	M	2	1	96	0·243	F	+ 15·0	+ 58·2	+ 30·8
2. 22. 17	M	2	1	96	0·243	F	+ 15·0	− 11·1	− 9·9
16. 21. 24	M	2	1	96	0·182	F	+ 16·0	− 18·4	− 16·0
							Means ...	− 4·2	− 4·8

Date, 1891.	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 AQUILÆ (*Altair*). Position-Circle Reading, 186°.									
July d h m 7. 0. 4	M	2	1	186°	0·192	F	− 4·2	− 40·9	− 33·8
7. 0. 52	M	2	1	186	0·192	F	− 4·2	− 18·5	− 22·4
27. 23. 16	M	2	1	186	0·176	F	+ 1·2	− 52·4	− 33·6
28. 0. 44	M	2	1	186	0·176	F	+ 1·2	− 20·6	− 18·9
August 4. 0. 10	M	2	1	186	0·196	F	+ 3·0	− 8·3	− 14·7
29. 22. 39	M	2	1	186	0·178	F	+ 9·2	− 23·5	− 17·5
September 9. 21. 15	M	2	1	186	0·178	F	+ 11·5	− 7·9	− 11·5
9. 22. 6	M	2	1	186	0·178	F	+ 11·5	− 30·3	+ 1·0
10. 23. 32	M	2	1	186	0·216	F	+ 11·7	− 62·9	− 54·0
28. 21. 38	M	2	1	186	0·243	F	+ 14·5	− 30·9	− 28·7
28. 22. 31	M	2	1	186	0·243	F	+ 14·5	− 46·7	− 39·2
October 2. 21. 23	M	2	1	186	0·243	F	+ 15·0	− 9·4	− 9·9
2. 23. 12	M	2	1	186	0·243	F	+ 15·0	− 24·9	− 25·2
							Means ...	− 29·0	− 23·7
α AQUILÆ (*Altair*). Position-Circle Reading, 276°.									
July 6. 22. 58	M	2	1	276°	0·192	F	− 4·2	− 51·7	− 52·8
7. 0. 16	M	2	1	276	0·192	F	− 4·2	− 27·0	− 32·2
8. 23. 24	M	1	1	276	0·192	F	− 3·7	− 96·5	− 91·6
27. 22. 51	M	2	1	276	0·176	F	+ 1·2	− 64·7	− 49·1
28. 0. 36	M	2	1	276	0·176	F	+ 1·2	− 24·0	− 27·7
August 4. 0. 2	M	2	1	276	0·196	F	+ 3·0	− 34·0	− 32·1
29. 22. 53	M	2	1	276	0·178	F	+ 9·2	− 74·8	− 54·9
September 9. 21. 28	M	2	1	276	0·178	F	+ 11·5	− 51·9	− 42·7
9. 22. 17	M	2	1	276	0·178	F	+ 11·5	− 16·2	− 32·3
10. 23. 58	M	2	1	276	0·216	F	+ 11·7	− 41·9	− 43·4
28. 21. 26	M	2	1	276	0·243	F	+ 14·5	− 35·6	− 48·6
28. 22. 16	M	2	1	276	0·243	F	+ 14·5	− 60·5	− 51·4
October 2. 21. 40	M	2	1	276	0·243	F	+ 15·0	− 22·3	− 20·1
2. 22. 52	M	2	1	276	0·243	F	+ 15·0	− 29·0	− 25·2
16. 21. 51	M	2	1	276	0·182	F	+ 16·0	− 48·4	− 48·4
							Means ...	− 43·5	− 41.8
α CYGNI. Position-Circle Reading, 6°.									
July 3. 0. 2	M	2	1	6°	0·210	F	− 7·1	− 11·7	− 21·3
α CYGNI. Position-Circle Reading, 96°.									
July 3. 0. 21	M	2	1	96	0·210	F	− 7·1	− 19·0	− 27·6

Date, 1891.	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. Position-Circle Reading, 6°.									
July 25. 0. 50	M	5	1	6°	0·212	F	...	+ 1·5	...
October 12. 21. 33	M	5	1	6	0·168	F	...	− 7·0	...
MOON. Position-Circle Reading, 96°.									
July 25. 0. 40	M	5	1	96°	0·212	F	...	− 15·2	...
October 12. 21. 43	M	5	1	96	0·168	F	...	+ 8·8	...
MOON. Position-Circle Reading, 186°.									
July 25. 1. 10	M	5	1	186°	0·212	F	...	+ 2·9	...
October 12. 22. 23	M	5	1	186	0·168	F	...	− 7·2	...
MOON. Position-Circle Reading, 276°.									
July 25. 0. 59	M	5	1	276°	0·212	F	...	− 13·5	...
October 12. 22. 9	M	5	1	276	0·168	F	...	− 0·5	...

ROYAL OBSERVATORY, GREENWICH.

MEASURES OF POSITIONS AND AREAS

OF

SUN SPOTS AND FACULÆ

ON

PHOTOGRAPHS

TAKEN WITH THE

PHOTOHELIOGRAPHS

AT GREENWICH, IN INDIA, AND IN MAURITIUS,

WITH THE DEDUCED

HELIOGRAPHIC LONGITUDES AND LATITUDES.

1891.

MEASURES of POSITIONS and AREAS of SUN SPOTS and FACULÆ on PHOTOGRAPHS taken at the ROYAL OBSERVATORY, GREENWICH, at DEHRA DÛN in INDIA, and at the ROYAL ALFRED OBSERVATORY, MAURITIUS, in the Year 1891.

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 Midnight, January 1d. 0h.
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 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).
1891.				°	°	°			
0d.560	HA,M	2166	0·527	6·1	214·0	+28·2	0	4	
		2166	0·542	11·1	210·8	+28·7	0	10	
			0·925	108·0	149·9	−18·0			130
Jan. 1		Centre			(217·6)	(−3·3)	(0)	(14)	(130)
1·321	HA,M		0·970	294·2	280·7	+22·5			187
		2167	0·541	13·9	199·2	+28·2	0	13	
I.		2167	0·556	19·0	195·8	+28·3	0	5	
			0·966	108·3	132·5	−18·6			222
Jan. 2		Centre			(207·6)	(−3·4)	(0)	(18)	(409)
2·161	HA,M		0·942	50·2	134·0	+35·5			177
I.									
Jan. 3		Centre			(196·5)	(−3·5)	(0)	(0)	(177)
3·254	HA,M		0·872	47·0	131·9	+34·1			120
I.									
Jan. 4		Centre			(182·1)	(−3·6)	(0)	(0)	(120)
4·481	HA,M		0·975	210·1	237·1	−58·9			191
			0·809	41·3	125·7	+34·6			107
Jan. 5		Centre			(166·0)	(−3·7)	(0)	(0)	(298)
5·246	HA,M		0·880	308·6	209·1	+31·0			239
			0·956	184·3	160·1	−75·9			142
I.		2168	0·665	56·7	120·2	+18·3	0	20	
			0·950	111·0	85·4	−21·1			716
Jan. 6		Centre			(155·9)	(−3·8)	(0)	(20)	(1097)
6·452							0	0	0
Jan. 7		Centre			(140·0)	(−3·9)	(0)	(0)	(0)

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).
1891.				°	°	°			
7d.568							0	0	0
Jan. 8		Centre			(125·3)	(−4·0)	(0)	(0)	(0)
8·465							0	0	0
Jan. 9		Centre			(113·6)	(−4·2)	(0)	(0)	(0)
9·201	HA,M		0·872	111·9	43·8	−21·2			277
I.			0·937	116·9	34·9	−26·6			356
Jan. 10		Centre			(103·8)	(−4·3)	(0)	(0)	(633)
10·164							0	0	0
M.									
Jan. 11		Centre			(91·2)	(−4·4)	(0)	(0)	(0)
11·176	HA,M		0·918	311·3	134·9	+34·9			130
			0·905	50·6	21·9	+32·6			279
I.			0·907	63·5	17·1	+21·7			129
			0·964	118·2	3·1	−28·4			110
Jan. 12		Centre			(77·8)	(−4·5)	(0)	(0)	(648)
12·225	HA,M		0·870	293·0	120·8	+17·4			160
			0·856	60·6	10·6	+22·1			71
I.			0·914	55·0	5·0	+29·3			157
			0·897	121·1	1·9	−29·8			173
Jan. 13		Centre			(64·0)	(−4·6)	(0)	(0)	(561)
13·434							0	0	0
Jan. 14		Centre			(48·1)	(−4·7)	(0)	(0)	(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 longitude and latitude of the centre of the disk are given in brackets.
The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 2166, 1890 Dec 29–1891 Jan. 1. A small faint spot, *a*. A cluster of very small faint spots is seen preceding it on Dec. 31.
Group 2167, 1891 Jan. 2. Two small faint spots.
Group 2168, Jan. 6. Five very small faint spots.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°				1891.				°	°	°			
14^{d}·246	HA, M	2169*a*	0·997	115·9	310·1	−26·2	0	594		19^{d}·198	HA, M		0·895	240·2	34·5	−28·9			231
I.			0·986	122·7	316·2	−33·0			179			2171	0·842	292·5	25·9	+15·7	7	16	} 58*c*
Jan. 15		Centre			(37·5)	(−4·8)	(0)	(594)	(179)	I.		2171	0·811	296·5	21·7	+17·8	0	14	
												2170	0·513	160·6	320·4	−33·9	6	11	
												2169*a*	0·501	137·8	310·2	−26·6	83	345	
15·427	HA, M	2170	0·884	124·8	322·4	−32·8	0	27	} 104*c*			2169	0·545	138·6	308·0	−28·8	0	9	
		2170	0·910	123·0	318·0	−32·0	0	14				2169	0·592	134·8	303·6	−29·1	0	14	
		2169*a*	0·937	115·7	312·6	−25·7	81	349	259*c*			2173*a*	0·798	116·9	281·0	−24·5	11	27	604*nf*
			0·968	119·2	306 0	−29·5			251			2172	0·858	114·2	274·0	−23·3	0	6	} 774*f*
Jan. 16		Centre			(21·9)	(−4·9)	(81)	(390)	(614)			2172	0·857	111·8	273·8	−21·3	0	9	
										Jan. 20		Centre			(332·2)	(−5·2)	(107)	(451)	(1667)
16·226	HA, M		0·924	239·4	77·9	−30·1			484										
		2171	0·405	332·9	22·3	+16·2	0	11		20·476	HA, M	2171	0·958	289·0	26·0	+16·5	0	9	} 117*c*
M.		2171	0·379	336·6	20·2	+15·3	0	2				2171	0·933	290·3	21·2	+16·8	0	12	
		2170	0·807	128·9	322·5	−33·7	2	16	} 74*c*			2169*a*	0·377	166·8	309·9	−26·8	64	315	
		2170	0·846	126·3	317·3	−33·0	0	13				2169	0·427	163·7	307·5	−29·4	0	3	
		2169*a*	0·876	117·5	311·4	−26·4	75	300	650*f*			2169	0·467	165·2	307·4	−32·0	0	7	
			0·917	61·7	309·9	+23·4			264			2173	0·587	121·4	282·8	−22·2	0	2	
Jan. 17		Centre			(11·3)	(−5·0)	(77)	(342)	(1472)			2173	0·585	118·7	282·3	−20·8	0	8	
												2173*a*	0·620	123·6	281·0	−24·4	0	6	
										Jan. 21		Centre			(315·4)	(−5·3)	(64)	(362)	(117)
17·191	HA, M		0·957	239·8	71·7	−30·3			427										
		2170	0·708	135·1	321·6	−34·1	9	35	}										
I.		2170	0·712	132·2	320·0	−32·6	2	17		21·455	HA, M	2169*a*	0·386	197·2	309·8	−27·0	61	333	
		2170	0·723	130·6	317·5	−32·4	5	14	375*c*			2173	0·448	132·3	281·6	−22·5	0	13	
		2170	0·755	130·2	315·4	−32·9	4	34				2172	0·497	127·8	277·4	−22·6	0	15	
		2169*a*	0·773	120·1	310·6	−26·2	83	337	892*f*			2172	0·513	128·3	276·6	−23·3	0	13	
			0·854	59·6	305·9	+22·5			574			2172	0·549	124·3	273·2	−22·7	0	11	
Jan. 18		Centre			(358·6)	(−5·1)	(103)	(437)	(2268)	Jan. 22		Centre			(302·5)	(−5·4)	(61)	(385)	(0)
18·308	HA, M		0·795	236·1	33·1	−29·6			140	22·208	HA, M	2170	0·604	213·3	316·3	−35·3	0	6	
		2171	0·717	298·0	24·9	+15·8	6	15				2169	0·475	221·3	312·8	−26·1	0	6	
I.		2171	0·693	302·3	21·7	+17·7	6	33		M.		2169*a*	0·461	214·7	309·7	−27·5	55	293	
		2170	0·588	146·7	321·1	−34·1	8	18				2169	0·476	207·8	307·3	−30·1	0	3	
		2170	0·601	140·8	317·3	−32·2	0	3				2173	0·338	149·9	281·9	−22·4	0	8	
		2170	0·639	140·1	314·5	−33·8	0	5		Jan. 23		Centre			(292·5)	(−5·5)	(55)	(316)	(0)
		2169*a*	0·623	126·9	310·3	−26·2	105	327											
		2169	0·708	128·8	304·4	−30·2	0	8											
		2172	0·940	112·7	273·6	−23·1	0	7	1503*p*										
Jan. 19		Centre			(343·9)	(−5·1)	(125)	(416)	(1643)	Jan. 24		No photograph.							

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 longitude and latitude of the centre of the disk are given in brackets.
The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 2169, Jan. 15–28. A large regular spot, *a*. One or two small companions are occasionally seen near it.
Group 2170, Jan. 16–20. A chain of small spots *s*,*p*. Group 2169. The group is arranged in two compact clusters on Jan. 16 and 17, and in four on Jan. 18, one of which has disappeared by Jan. 19. Only one spot remains on Jan. 20.
Group 2171, Jan. 17–21. Four very small spots on Jan. 17, measured as two. The group is not seen on Jan. 18. Two close clusters of very small spots on Jan. 19 and the succeeding days.
Group 2172, Jan. 19–22. A small faint spot. A second spot is seen on Jan. 20, and the group consists of three spots on Jan. 22, but is not seen on Jan. 21.
Group 2173, Jan. 20–25. A small but dark and sharply defined spot, *a*, just preceding Group 2172 on Jan. 20. *a* has greatly diminished in size by Jan. 21, on which day two small faint spots are seen following it. Only one small faint spot is seen on Jan. 22 and 23. A second very small spot is seen near the first on Jan. 25.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°			
24^{d}·489	HA,M		0·827	306·0	310·0	+25·2			144
		2169*a*	0·762	238·1	309·2	−27·7	52	240	302*c*
		2169	0·733	236·6	306·2	−27·9	0	6	
		2173	0·433	228·4	282·9	−22·0	0	7	
		2173	0·422	225·7	281·5	−22·4	0	3	
		2174	0·366	213·5	275·1	−23·2	0	2	
		2174	0·375	206·3	273·0	−25·2	0	4	
		2174	0·348	205·9	272·0	−23·8	0	11	
		2174	0·347	205·7	271·9	−23·8	1	17	
		2174	0·312	209·0	271·8	−21·4	0	2	
		2174	0·375	201·6	271·3	−25·9	0	17	
		2175	0·932	69·0	197·1	+17·2	0	15	318*c*
		2175	0·942	68·1	195·6	+18·4	9	94	
		2175	0·952	69·2	193·6	+17·8	3	82	
		2175	0·959	65·6	192·9	+21·4	0	67	
Jan. 25		Centre			(262·5)	(−5·7)	(65)	(567)	(764)
25·538	HA,M		0·909	296·7	309·2	+21·4			178
		2169	0·882	241·4	309·6	−27·8	28	233	591*c*
		2169	0·845	242·2	305·0	−26·4	0	3	
		2174	0·513	225·3	272·6	−26·3	0	12	
		2174	0·483	227·2	271·5	−24·3	1	6	
		2175	0·832	63·9	197·1	+18·0	11	107	285*c*
		2175	0·857	63·6	194·6	+19·1	3	78	
		2175	0·875	60·9	194·5	+19·8	0	18	
		2175	0·859	65·3	193·9	+17·8	7	65	
			0·977	60·0	176·1	+27·7			136
Jan. 26		Centre			(248·7)	(−5·7)	(50)	(522)	(1190)
Jan. 27			No	photo	graph.				
27·211	HA,M		0·797	245·2	278·4	−23·2			519
		2169	0·989	242·0	310·1	−28·6	21	294	614*f*
I.		2175	0·611	50·7	197·1	+17·6	7	46	
		2175	0·644	51·9	194·5	+18·4	24	188	
		2175	0·686	48·9	193·0	+21·9	1	8	
		2175	0·669	51·8	192·9	+19·5	0	32	
		2175	0·684	50·7	192·2	+21·4	0	2	
		2176*a*	0·864	52·5	175·9	+28·1	22	119	214*c*
		2176	0·894	54·5	171·4	+28·0	0	12	
Jan. 28		Centre			(226·7)	(−5·9)	(75)	(701)	(1347)
1891				°	°	°			
28^{d}·180	HA,M		0·980	242·1	293·8	−28·5			184
		2174	0·862	245·9	272·9	−23·7	0	56	1375*c*
I.		2175	0·508	37·1	195·2	+18·1	46	268	
		2176*a*	0·767	45·4	175·9	+27·9	28	91	233*f*
Jan. 29		Centre			(213·9)	(−6·0)	(74)	(415)	(1792)
29·459	HA,M		0·951	246·4	202·6	−24·3			518
		2175	0·392	0·7	196·8	+17·0	0	16	
		2175	0·425	2·4	196·0	+19·0	0	22	
		2175	0·416	6·0	194·5	+18·4	0	21	
		2175	0·431	6·6	194·1	+19·3	0	11	
		2175	0·403	7·2	194·1	+17·5	0	4	
		2176*a*	0·647	31·5	174·7	+27·9	12	63	
		2176	0·662	33·0	173·1	+28·1	0	2	
Jan. 30		Centre			(197·1)	(−6·0)	(12)	(139)	(518)
30·538	HA,M	2175	0·472	331·4	196·6	+18·4	0	3	
		2176	0·571	12·3	175·0	+27·8	8	48	
Jan. 31		Centre			(182·9)	(−6·1)	(8)	(51)	(0)
31·551	HA,M	2175	0·595	309·1	198·2	+16·6	8	24	
		2176*a*	0·568	351·9	174·7	+27·9	9	34	
Feb. 1		Centre			(169·5)	(−6·2)	(17)	(58)	(0)
32·423	HA,M	2175	0·716	299·9	198·2	+16·2	0	6	
		2176*a*	0·612	335·4	174·8	+27·7	6	22	
Feb. 2		Centre			(158·1)	(−6·2)	(6)	(28)	(0)
33·373	HA,M		0·958	289·7	215·8	+16·8			140
			0·848	300·5	197·2	+21·6			726
I.		2176*a*	0·705	321·7	175·2	+28·1	0	29	
			0·910	108·6	79·6	−19·5			56
Feb. 3		Centre			(145·6)	(−6·3)	(0)	(29)	(922)
34·210	HA,M		0·912	293·7	196·1	+18·6			784
			0·777	313·7	173·7	+27·5			181
I.			0·892	120·6	72·2	−30·1			183
Feb. 4		Centre			(134·5)	(−6·4)	(0)	(0)	(1148)
35·299	HA,M		0·971	293·7	193·4	+21·2			258
			0·883	305·6	174·9	+27·2			179
I.			0·925	125·0	54·2	−34·7			47
Feb. 5		Centre			(121·2)	(−6·4)	(0)	(0)	(484)

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

Group 2174, Jan. 25–29. A fresh outbreak nearly in the position of Group 2172. An irregular group of many small spots on Jan. 25. Only two small spots remain on Jan. 26, and the group is not seen on Jan. 28. It has reappeared again, however, by Jan. 29.
Group 2175, Jan. 25–Feb. 2. A close cluster of spots of very irregular shape. Only one very small spot remains by Jan. 31, and this has disappeared by Feb. 1. Another spot has, however, appeared by this day, but has disappeared by Feb. 3.
Group 2176, Jan. 28–Feb. 3. A regular spot, *a*. A small companion is seen on Jan. 28 and Jan. 30.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
				°	°	°			
1891.									
36^{d}·175	HA,M		0·946	301·9	173·1	+27·3			150
		2177	0·759	237·0	155·1	−29·0	3	24	
I.			0·980	71·9	32·8	+16·2			152
Feb. 6		Centre			(108·6)	(−6·5)	(3)	(24)	(302)
			0·878	242·2	156·3	−27·5			82
37·171	HA,M		0·942	69·6	28·5	+16·7			458
I.			0·938	117·6	25·3	−28·1			131
Feb. 7		Centre			(95·5)	(−6·5)	(0)	(0)	(671)
			0·959	242·6	157·2	−28·2			193
38·164	HA,M		0·913	66·4	20·9	+18·4			329
I.					(82·5)	(−6·6)	(0)	(0)	(522)
Feb. 8		Centre							
		2178*a*	0·257	151·8	61·5	−19·7	0	16	
39·195	HA,M	2178*b*	0·231	140·8	60·2	−16·9	0	4	
I.			0·812	62·8	19·9	+17·5			382
Feb. 9		Centre			(68·9)	(−6·7)	(0)	(20)	(382)
		2178*a*	0·286	220·8	62·3	−19·0	3	15	
40·554	HA,M	2178*b*	0·256	219·5	60·8	−18·0	0	5	
		2179	0·482	39·0	32·7	+15·6	4	27	
		2179	0·490	41·9	31·3	+15·0	0	7	
		2179	0·512	43·4	29·7	+15·6	5	32	
		2179	0·533	41·7	29·3	+17·2	7	38	
		2179	0·531	45·3	28·0	+15·7	9	37	
		2179	0·559	45·0	26·7	+17·1	0	23	
		2179	0·592	50·5	23·7	+16·2	0	6	
Feb. 10		Centre			(51·0)	(−6·7)	(28)	(190)	(0)
		2178*a*	0·438	240·8	63·1	−18·6	2	7	
41·428	HA,M	2178*b*	0·407	239·1	60·9	−18·4	1	8	
		2178	0·430	226·0	59·1	−23·7	0	3	
		2179	0·383	12·6	34·5	+15·1	11	48	
		2179	0·429	17·3	31·8	+17·4	0	4	
		2179	0·397	19·0	31·7	+15·2	0	12	
		2179	0·414	23·5	29·6	+15·6	3	25	
		2179	0·432	22·5	29·5	+16·8	1	8	
		2179	0·429	26·3	28·1	+15·9	13	69	
1891.									
41^{d}·428	HA,M	2179	0·461	29·4	25·8	+17·0	5	36	
		2180*a*	0·254	139·6	29·5	−17·8	3	18	
		2180	0·266	139·6	29·0	−18·3	0	4	
		2180	0·279	139·7	28·5	−18·9	0	3	
		2180*b*	0·308	136·6	26·5	−19·5	4	15	
Feb. 11		Centre			(39·4)	(−6·8)	(43)	(260)	(0)
			0·968	249·2	103·0	−21·8			64
42·440	HA,M	2178*a*	0·614	248·7	63·1	−18·4	0	3	
		2178*b*	0·582	247·5	60·6	−18·4	0	2	
		2178	0·552	249·1	58·7	−17·1	0	5	
		2179*a*	0·417	335·9	36·3	+15·6	17	133	
		2179	0·391	353·1	29·0	+16·0	16	71	
		2179	0·401	0·7	25·9	+16·8	6	19	
		2180*a*	0·192	200·5	30·2	−17·1	4	15	
		2180	0·214	188·8	28·2	−19·0	0	4	
		2180*b*	0·227	179·6	26·1	−19·8	8	24	
			0·968	120·4	309·4	−31·1			262
Feb. 12		Centre			(26·2)	(−6·8)	(51)	(276)	(326)
		2179*a*	0·543	313·3	36·9	+15·6	45	179	
43·452	HA,M	2179	0·508	315·5	34·3	+14·9	0	6	
		2179	0·488	319·6	31·9	+15·3	0	3	
		2179	0·468	324·6	29·1	+15·8	4	30	
		2179	0·457	331·5	25·9	+17·0	2	19	
		2180*a*	0·354	240·6	31·5	−16·5	1	6	
		2180	0·324	233·3	28·5	−17·7	0	7	
		2180*b*	0·312	222·3	25·7	−20·0	8	23	
		2181	0·649	129·3	337·6	−29·8	0	4	
		2181	0·709	127·6	332·1	−30·8	0	22	
			0·913	120·3	307·1	−30·3			396
Feb. 13		Centre			(12·8)	(−6·8)	(60)	(299)	(396)
			0·849	250·5	62·1	−20·8			239
44·175	HA,M	2179*a*	0·662	303·3	38·3	+15·7	53	180	
		2179	0·578	310·0	30·7	+15·7	6	17	
I.		2179	0·547	316·2	26·6	+16·8	0	16	
		2180*b*	0·439	236·3	26·2	−20·4	3	12	
		2181	0·584	134·5	334·7	−30·2	9	43	
		2181	0·631	131·8	330·4	−30·6	6	30	
			0·890	55·7	308·5	+26·2			302
			0·883	120·5	302·2	−30·0			836
			0·984	113·3	281·8	−24·1			200
Feb. 14		Centre			(3·4)	(−6·9)	(77)	(298)	(1577)

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 longitude and latitude of the centre of the disk are given in brackets.
The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 2177, Feb. 6. A small spot.
Group 2178, Feb. 9–12. Two small spots, *a* and *b*. Another small spot is seen in the neighbourhood on Feb. 11, and a fourth on Feb. 12.
Group 2179, Feb. 10–17. A long stream of small spots, on Feb. 10 and 11. The spots have coalesced to form three spots by Feb. 12, of which the leader, *a*, is a large regular spot. *a* alone remains by Feb 15.
Group 2180, Feb. 11–17. Two small regular spots, *a* and *b*, with a few small spots between them. Only *b* remains by Feb. 14. Two small spots, *c* and *d* are seen preceding *b* on Feb. 15. Only *c* remains by Feb. 16, and *c* has also disappeared by Feb. 17, but a small spot representing the group is seen on that day.
Group 2181, Feb. 13–16. Four or five very small spots in a straight stream.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°			
45^{d}·509	HA,M	2181	0·396	168·4	340·6	−29·6	0	2	
		2181	0·424	159·5	336·0	−30·1	3	11	
I.		2181	0·451	153·0	332·1	−30·3	2	8	
		2181	0·475	149·4	329·8	−30·7	0	12	
		2181	0·500	149·4	328·4	−32·0	5	23	
		2182	0·931	112·5	276·5	−23·4	0	46	} 260*c*
		2182	0·971	111·8	268·6	−22·8	0	126	
		2179*a*	0·836	293·4	38·3	+15·2	36	236	
		2180*c*	0·691	251·1	29·0	−18·0	5	28	
		2180*d*	0·673	250·7	27·5	−18·0	0	5	
		2180*b*	0·667	248·6	26·8	−19·3	3	18	
Feb. 15		Centre			(345·8)	(−6·9)	(49)	(482)	(260)
46·414	M,ER	2179*a*	0·930	289·9	38·8	+15·6	36	235	474*nf*
		2180*c*	0·837	253·3	28·5	−17·8	6	21	34*c*
		2181	0·404	178·2	333·0	−30·7	0	8	
		2181	0·442	167·8	327·5	−32·4	0	11	
		2182	0·803	113·8	281·0	−23·2	0	17	577*c*
		2182	0·856	113·7	275·1	−23·8	0	14	} 645*c*
		2182	0·918	112·6	266·5	−23·5	8	46	
		2183	0·885	65·7	276·1	+17·7	0	55	106*c*
Feb. 16		Centre			(333·8)	(−7·0)	(50)	(407)	(1836)
47·218	HA,M		0·854	235·9	20·1	−32·5			56
			0·845	297·1	14·9	+18·5			112
I.		2179*a*	0·980	287·0	39·1	+15·0	69	213	514*nf*
		2180	0·932	254·0	32·9	−17·4	0	8	376*sf*
		2183*a*	0·787	60·4	277·5	+17·9	50	161	
		2183*b*	0·826	61·6	273·4	+18·6	17	146	113*c*
		2182	0·735	114·3	277·0	−22·5	0	6	305*p*
		2182	0·837	114·7	266·9	−24·4	0	32	
		2182	0·843	113·1	266·0	−23·2	0	9	550*c*
Feb. 17		Centre			(323·3)	(−7·0)	(136)	(575)	(2026)
48·518	HA,M		0·957	291·0	15·6	+17·7			90
		2183*a*	0·608	47·0	278·3	+18·3	54	251	
		2183	0·643	49·6	275·1	+18·5	0	18	
		2183*b*	0·683	51·5	271·8	+19·3	96	321	
		2184*a*	0·841	55·4	257·0	+24·0	0	13	
Feb. 18		Centre			(306·1)	(−7·0)	(150)	(603)	(90)
1891.				°	°	°			
49^{d}·305	HA,M	2182	0·403	132·5	277·1	−22·5	2	6	
		2183*a*	0·506	30·6	280·1	+18·9	56	250	
I.		2183	0·513	35·6	277·6	+17·8	9	34	
		2183	0·534	37·1	276·0	+18·4	7	28	
		2183	0·526	40·9	274·8	+16·7	0	3	
		2183	0·542	41·9	273·6	+17·1	0	16	
		2183*b*	0·577	40·9	272·3	+19·2	48	239	
		2184*a*	0·747	48·6	258·1	+24·0	4	7	
		2184	0·756	50·0	256·7	+23·6	0	8	
		2185	0·943	68·6	229·1	+17·4	4	19	280*f*
Feb. 19		Centre			(295·8)	(−7·1)	(130)	(610)	(280)
50·229	HA,M	2182	0·281	160·6	277·7	−22·5	1	10	
		2183*a*	0·456	6·3	280·5	+19·8	32	210	
M.		2183	0·439	11·8	278·1	+18·3	5	13	
		2183	0·445	14·6	276·7	+18·4	2	14	
		2183	0·428	17·1	276·0	+17·0	0	2	
		2183	0·451	22·1	273·3	+17·7	6	51	
		2183*b*	0·491	23·1	271·7	+19·8	36	242	
		2184*a*	0·632	37·6	258·7	+23·5	4	10	
		2185	0·860	64·9	229·0	+17·3	0	13	365*f*
		2186	0·958	61·1	214·0	+25·0	0	23	590*f*
Feb. 20		Centre			(283·5)	(−7·1)	(86)	(588)	(955)
51·237	HA,M		0·885	236·8	331·5	−32·5			170
		2183*a*	0·483	338·5	281·0	+19·6	49	219	
I.		2183	0·452	339·3	279·9	+17·9	0	6	
		2183	0·454	341·6	279·0	+18·4	5	19	
		2183	0·422	344·1	277·2	+16·8	0	14	
		2183	0·443	345·2	277·1	+18·2	3	48	
		2183	0·441	351·4	274·3	+18·6	0	10	
		2183	0·403	352·1	273·6	+16·3	0	9	
		2183	0·419	354·9	272·5	+17·4	5	37	
		2183*b*	0·447	356·5	271·9	+19·3	31	150	
		2182	0·294	206·1	278·3	−22·3	0	10	
		2182	0·291	192·5	274·2	−23·5	0	8	
		2185	0·736	58·3	229·5	+17·4	4	8	245*f*
		2186	0·882	57·2	215·1	+25·8	4	13	
		2186	0·910	57·8	212·0	+25·4	0	8	
		2186	0·919	56·3	211·3	+27·1	0	10	} 995*c*
		2186	0·924	58·0	209·8	+26·0	0	36	
			0·957	68·6	201·0	+18·0			176
Feb. 21		Centre			(270·3)	(−7·1)	(101)	(605)	(1586)

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 longitude and latitude of the centre of the disk are given in brackets.

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

Group 2182, Feb. 15–24. A few spots in a straggling stream. The group varies much in size and appearance from day to day. It is not seen on Feb. 18, owing possibly to a defect in the photograph.

Group 2183, Feb. 16–25. A cluster of small spots on Feb. 16. On Feb. 17 and the succeeding days the group consists of two large regular spots, *a* and *b*, with a number of small spots in an irregular stream between them. *b* has divided into two parts, *c* and *d*, by Feb. 22. The smaller spots have all disappeared by Feb. 23, and *d* by Feb. 25.

Group 2184, Feb. 18–20. A small spot, *a*, following Group 2183. A second spot is seen near *a* on Feb. 19.

Group 2185, Feb. 19–21. A small spot.

Group 2186, Feb. 20–March 2. Several small faint spots. A very irregular group, which changes in size and appearance and number of spots from day to day.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
				°	°	°								°	°	°			
1891.										1891.									
52d·559	HA,M	2183*a*	0·628	315·1	281·0	+20·0	80	252		56d·514	HA,M		0·968	292·1	271·9	+19·2			273
		2183	0·588	316·1	279·2	+17·6	0	33					0·921	245·6	268·0	−25·2			487
		2183*c*	0·534	324·1	272·1	+18·8	40	109				2186	0·573	334·9	215·7	+24·2	0	22	
		2183*d*	0·545	326·8	271·4	+20·3	8	38				2186	0·565	348·6	207·4	+26·3	0	8	
		2182	0·336	219·7	265·2	−21·8	0	16				2186	0·544	350·9	205·7	+25·2	7	70	
		2185	0·603	41·5	227·8	+20·3	0	11	106*f*			2186	0·494	355·9	202·4	+22·2	4	16	
		2186	0·735	46·8	217·0	+24·4	0	27	644*f*			2186	0·567	359·7	200·5	+27·2	0	15	
Feb. 22		Centre			(252·9)	(−7·1)	(128)	(486)	(750)	Feb. 26		Centre			(200·3)	(−7·2)	(11)	(131)	(760)
53·536	HA,M		0·895	238·3	303·0	−31·5			248	57·435	HA,M		0·955	247·9	262·7	−23·2			523
		2183*a*	0·753	304·9	281·0	+20·1	50	215				2186	0·598	332·7	206·3	+25·1	3	25	
		2183*c*	0·659	310·5	271·9	+19·2	10	48				2186	0·548	335·8	202·8	+22·9	2	10	
		2183*d*	0·655	312·8	270·7	+20·2	3	34				2186	0·592	343·0	199·9	+27·3	0	13	
		2182	0·533	241·8	270·0	−20·8	5	28		Feb. 27		Centre			(188·7)	(−7·2)	(5)	(48)	(523)
		2182	0·485	235·7	265·5	−22·3	10	45											
		2186	0·632	35·6	216·3	+24·2	0	16											
Feb. 23		Centre			(240·0)	(−7·2)	(78)	(386)	(248)	58·509	HA,M		0·860	298·9	227·9	+20·4			233
												2186	0·769	310·1	214·6	+24·2	0	5	1778*p*
54·237	HA,M		0·951	239·0	303·8	−31·6			252			2186	0·658	317·8	203·1	+22·8	0	7	
			0·861	238·7	289·3	−30·5			116			2186	0·669	322·4	201·4	+25·5	0	3	}
I.			0·754	244·7	278·8	−23·7			267			2186	0·637	320·3	200·7	+22·8	3	31	} 164*c*
		2183*a*	0·839	299·5	281·7	+19·9	78	274	508*f*			2186	0·643	322·5	199·9	+24·2	0	3	
		2183*c*	0·749	303·5	272·1	+19·0	9	34	} 495*c*			2186	0·646	325·9	198·2	+25·7	3	10	
		2183*d*	0·745	305·3	271·1	+20·0	3	8		Feb. 28		Centre			(174·6)	(−7·2)	(6)	(59)	(574)
		2182	0·601	241·1	265·6	−22·8	19	53											
		2186	0·570	24·4	216·0	+24·2	2	12											
		2186	0·582	27·4	213·9	+24·1	0	10		59·452	HA,M		0·883	301·8	217·0	+23·7			343
Feb. 24		Centre			(230·9)	(−7·2)	(111)	(391)	(1638)			2186	0·793	301·0	207·9	+19·1	0	4	
												2186	0·769	309·3	202·5	+23·7	16	47	
55·477	HA,M		0·968	252·7	290·7	−18·5			121			2186	0·775	310·9	202·2	+25·0	3	8	
			0·958	240·5	289·0	−30·3			106			2186	0·744	308·5	200·8	+22·0	2	24	
			0·886	245·9	277·1	−24·6			277			2186	0·751	312·6	199·5	+24·8	0	4	
			0·786	246·0	265·7	−23·2			376			2186	0·740	311·0	199·4	+23·3	0	31	386*p*
		2183*a*	0·950	294·5	281·7	+20·5	58	292	241*f*	Mar. 1		Centre			(162·1)	(−7·2)	(21)	(118)	(729)
		2183*c*	0·883	296·4	271·2	+19·3	11	39	218*c*										
		2186	0·465	351·4	218·7	+20·1	3	25		60·522	HA,M	2186	0·893	301·6	204·1	+23·9	3	35	
		2186	0·517	357·9	215·7	+23·8	12	45				2186	0·876	301·9	201·9	+23·3	0	3	} 806*c*
		2186	0·538	14·8	205·9	+24·1	2	18				2186	0·850	302·3	198·9	+22·5	0	13	}
		2186	0·561	16·4	204·4	+25·4	19	91		Mar. 2		Centre			(148·0)	(−7·3)	(3)	(51)	(806)
		2186	0·532	22·4	201·9	+22·3	7	22											
		2186	0·560	20·8	201·9	+24·4	5	16		61·416	HA,M		0·855	35·4	100·8	+31·6			115
		2186	0·587	20·9	201·1	+26·1	8	64					0·946	29·9	88·7	+50·4			606
Feb. 25		Centre			(214·5)	(−7·2)	(125)	(612)	(1339)	Mar. 3		Centre			(136·3)	(−7·3)	(0)	(0)	(721)

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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 Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°			
62d·372	M,ER		0·950	297·5	190·1	+23·3			121
		2187 *a*	0·992	109·2	38·9	−19·9	0	25	60 *f*
I.			0·898	113·3	59·3	−24·1			28
			0·952	94·4	51·2	− 6·4			64
Mar. 4		Centre			(123·7)	(−7·3)	(0)	(25)	(273)
63·423	HA,M	2188	0·892	302·7	165·4	+24·8	0	7	50 *f*
		2189	0·547	114·5	78·1	−19·3	1	7	
		2187 *b*	0·922	109·0	41·7	−20·3	5	20	} 224 *f*
		2187 *a*	0·943	108·2	38·1	−19·6	0	9	
		2190 *a*	0·960	71·0	39·1	+16·1	33	116	223 *c*
Mar. 5		Centre			(109·8)	(−7·3)	(39)	(159)	(497)
64·410	HA,M	2187 *b*	0·812	109·9	42·5	−20·4	3	26	374 *f*
		2190 *a*	0·883	68·3	38·7	+15·3	24	131	339 *f*
Mar. 6		Centre			(96·8)	(−7·3)	(27)	(157)	(713)
65·237	HA,M	2191	0·876	295·9	141·8	+18·5	0	12	97 *c*
		2187 *b*	0·698	112·6	42·4	−20·9	0	7	
I.		2190	0·782	61·0	40·3	+17·2	0	3	505 *c*
		2190 *a*	0·787	63·3	39·1	+15·7	16	108	
		2190	0·805	59·6	38·7	+19·1	0	6	
Mar. 7		Centre			(85·8)	(−7·3)	(16)	(136)	(602)
66·173	HA,M	2191	0·982	291·3	149·2	+19·3	0	11	103 *f*
I.		2190 *a*	0·662	56·4	38·8	+15·5	16	89	173 *c*
Mar. 8		Centre			(73·6)	(−7·2)	(16)	(100)	(276)
67·192	HA,M	2190 *a*	0·510	42·6	39·2	+15·3	11	69	
		2190	0·543	39·0	39·1	+18·1	7	24	
I.		2190	0·563	38·6	38·3	+19·3	7	32	
			0·949	74·0	351·1	+12·7			234
Mar. 9		Centre			(60·1)	(−7·2)	(25)	(125)	(234)
68·296	M,HA	2190	0·449	11·9	40·0	+18·8	1	7	
		2190	0·406	14·2	39·7	+15·9	1	10	
I.		2190	0·437	13·1	39·6	+18·0	0	5	
		2190	0·440	14·7	38·9	+18·0	1	20	
		2190	0·395	16·8	38·8	+15·0	9	37	
			0·847	74·1	350·1	+ 9·4			217
Mar. 10		Centre			(45·6)	(−7·2)	(12)	(79)	(217)
69·471	HA,M	2190	0·406	338·6	38·9	+14·9	0	28	
		2190	0·452	337·6	38·3	+17·5	0	14	
Mar. 11		Centre			(30·1)	(−7·2)	(0)	(42)	(0)
1891.				°	°	°			
70d·466	HA,M		0·893	255·0	80·9	−16·6			160
		2190	0·531	315·3	39·7	+15·6	5	14	
		2192	0·963	107·9	301·3	−19·1	0	34	
			0·925	60·0	315·8	+24·2			236
			0·960	108·4	300·7	−19·5			179
Mar. 12		Centre			(17·0)	(−7·2)	(5)	(48)	(575)
71·449	HA,M		0·981	252·2	84·5	−18·8			117
		2190	0·674	302·7	40·0	+15·5	0	8	
		2193	0·987	68·4	287·0	+19·8	40	231	
			0·940	54·2	302·5	+30·1			199
			0·918	109·4	296·7	−20·6			403
			0·922	119·4	296·6	−29·8			41
Mar. 13		Centre			(4·1)	(−7·2)	(40)	(239)	(760)
72·160	M,ER		0·923	239·7	62·3	−30·7			143
		2193	0·962	66·4	284·8	+20·3	62	269	771 *c*
I.			0·778	50·3	313·6	+24·4			127
			0·852	109·4	295·9	−20·3			490
			0·946	55·0	291·6	+29·7			248
			0·970	112·6	276·9	−23·7			88
Mar. 14		Centre			(354·6)	(−7·2)	(62)	(269)	(1867)
73·192	M,ER		0·972	241·8	59·0	−29·0			57
			0·876	249·0	42·5	−21·8			77
I.			0·904	291·6	41·8	+16·1			262
			0·852	300·6	32·8	+21·4			110
		2193	0·881	62·5	284·9	+20·1	63	212	300 *c*
			0·884	49·8	291·2	+30·5			238
			0·830	129·5	288·6	−36·3			40
			0·893	119·4	278·0	−29·4			312
			0·952	65·6	273·3	+20·6			125
			0·955	106·4	267·1	−17·7			134
Mar. 15		Centre			(341·0)	(−7·1)	(63)	(212)	(1655)
74·510	HA,M		0·970	248·9	41·2	−22·2			61
			0·887	251·3	26·8	−19·9			302
		2194	0·643	313·3	353·4	+20·0	0	25	
		2194	0·622	313·8	352·0	+19·2	0	15	
		2193	0·730	53·9	285·0	+20·0	42	218	197 *c*
			0·862	59·9	270·6	+21·4			298
Mar. 16		Centre			(323·7)	(−7·1)	(42)	(258)	(858)

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

March 11. The photograph on this day is faint and badly defined, and the measures have been made with difficulty.

Group 2187, March 4–7. A small spot, *a*; another spot, *b*, is seen preceding *a* on March 5. *b* alone remains on March 6.

Group 2188, March 5. A very small spot.

Group 2189, March 5. A very small spot.

Group 2190, March 5–13. A regular spot, *a*. Two very small companions are seen near *a* on March 7. Two well defined spots are seen *n* of *a* on March 9, but *a* has divided into two parts by March 10, and the two northern spots into a circular cluster of about ten very small spots, which are measured in three sections. The group diminishes rapidly on the succeeding days.

Group 2191, March 7–8. A very small faint spot on March 7. A similar spot on March 8, but apparently not the same.

Group 2192, March 12. A small spot.

Group 2193, March 13–25. A large regular spot.

Group 2194, March 16–20. Two small faint spots on March 16. Several additional spots are seen on March 17. The group increases in size on the succeeding days, and a large regular spot, *a*, has formed by March 19.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°			
75^{d}·400	M,ER	2194	0·778	304·0	355·4	+20·7	4	9	
		2194	0·765	303·6	354·5	+19·8	1	5	
I.		2194	0·743	304·3	352·4	+19·3	2	7	
		2194	0·740	305·9	351·6	+20·3	0	8	116*c*
		2193	0·614	44·4	285·0	+19·7	53	201	
			0·799	52·9	268·0	+23·7			168
			0·813	120·2	259·1	−28·5			256
			0·844	120·0	255·5	−29·0			91
Mar. 17		Centre			(312·0)	(−7·1)	(60)	(230)	(631)
76·196	M,AE		0·851	295·3	355·0	+17·2			167
		2194	0·880	298·6	357·2	+21·0	21	43	
I.		2194	0·840	300·5	352·0	+20·7	15	64	288*c*
		2194	0·833	300·1	351·5	+20·2	3	21	
		2193	0·522	31·3	284·8	+19·6	46	178	198*c*
			0·970	66·4	229·8	+20·7			541
Mar. 18		Centre			(301·5)	(−7·1)	(85)	(306)	(1194)
77·295	M,ER		0·925	287·7	351·7	+13·4			260
		2194	0·970	293·8	358·7	+21·0	4	30	
I.		2194*a*	0·931	295·6	350·6	+20·7	34	181	217*c*
		2194	0·952	294·6	344·6	+20·8	0	5	
		2193	0·449	5·0	284·6	+19·5	55	206	217*c*
			0·886	61·5	230·6	+21·2			440
Mar. 19		Centre			(287·0)	(−7·0)	(93)	(422)	(1134)
78·191	M,ER	2194*a*	0·982	292·2	350·4	+20·1	19	178	115*c*
		2193	0·468	341·1	284·3	+19·3	43	179	
I.			0·805	55·2	229·6	+22·5			512
			0·946	56·2	211·4	+28·8			166
			0·944	64·1	209·3	+21·6			156
Mar. 20		Centre			(275·1)	(−7·0)	(62)	(357)	(949)
79·228	M,ER		0·882	254·8	324·0	−16·7			61
			0·871	236·9	320·8	−32·1			29
I.			0·891	301·8	317·4	+24·2			102
			0·728	326·2	289·6	+31·0			137
		2193	0·571	319·7	284·4	+19·3	44	201	
			0·903	54·8	205·3	+27·6			229
Mar. 21		Centre			(261·5)	(−7·0)	(44)	(201)	(558)
80·548	M,ER	2193	0·739	304·5	284·2	+19·5	26	176	
Mar. 22		Centre			(244·1)	(−6·9)	(26)	(176)	(0)
81^{d}·529	M,ER		0·900	249·6	295·8	−21·4			251
		2193	0·855	297·8	284·2	+19·4	16	159	206*nf*
Mar. 23		Centre			(231·1)	(−6·9)	(16)	(159)	(457)
82·425	M,ER		0·968	249·2	296·2	−21·8			267
			0·869	238·1	278·5	−30·9			199
		2193	0·936	293·8	284·4	+19·4	28	152	184*nf*
			0·880	114·3	157·7	−24·6			32
			0·974	65·4	146·8	+22·0			87
Mar. 24		Centre			(219·4)	(−6·8)	(28)	(152)	(769)
83·404	HA,ER		0·854	251·1	265·4	−19·7			67
		2193	0·987	290·7	283·9	+19·0	0	144	146*oc*
			0·914	62·5	145·7	+22·0			96
			0·967	113·3	129·9	−24·2			236
Mar. 25		Centre			(206·5)	(−6·8)	(0)	(144)	(1859)
84·399	M,ER		0·950	252·4	266·1	−18·8			110
			0·881	238·9	254·2	−30·5			233
			0·748	266·6	241·9	− 7·0			164
			0·741	310·2	231·2	+23·3			142
			0·874	63·6	137·5	+19·2			245
			0·872	114·9	132·8	−25·0			114
			0·933	110·3	123·5	−21·4			82
Mar. 26		Centre			(193·3)	(−6·7)	(0)	(0)	(1090)
85·470	HA,M		0·950	240·1	251·9	−30·5			170
			0·848	299·5	231·0	+20·6			224
			0·835	112·5	122·8	−22·5			130
Mar. 27		Centre			(179·2)	(−6·7)	(0)	(0)	(524)
86·128	ER,M		0·917	292·5	228·6	+17·5			88
			0·909	299·7	225·3	+23·4			78
I.			0·879	106·4	104·1	−17·6			42
			0·989	107·6	83·1	−18·4			208
Mar. 28		Centre			(166·1)	(−6·7)	(0)	(0)	(416)
87·463	HA,AE	2195*a*	0·986*a*	68·9	75·8	+19·4	28	222	
			0·907	111·2	87·3	−22·0			401
Mar. 29		Centre			(152·9)	(−6·6)	(28)	(222)	(401)

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 longitude and latitude of the centre of the disk are given in brackets.

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

Group 2195, March 29-April 10. A regular spot, *a*, sometimes accompanied by one or two very small companions.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°				1891.				°	°	°			
88^{d}·395	ER,M	2196	0·442	355·8	142·6	+19·5	3	11		93^{d}·133	M,AE	2195*a*	0·450	8·9	73·8	+20·0	59	252	
		2195*a*	0·931*a*	66·3	76·3	+19·2	42	217	520*c*			2195	0·435	12·2	72·4	+18·8	0	16	
			0·830	112·6	84·9	−22·4			129	I.		2195	0·490	11·8	71·8	+22·3	0	5	
Mar. 30		Centre			(140·6)	(−6·5)	(45)	(228)	(649)				0·995	65·0	257·3	+24·0			206
										Apr. 4		Centre			(78·0)	(−6·3)	(59)	(300)	(836)
89·409	HA,M		0·932	299·7	189·9	+24·6			152										
		2196	0·501	330·7	142·2	+19·5	0	10		94·510	HA,M		0·885	245·2	121·9	−24·8			124
		2197	0·356	155·2	117·7	−25·2	5	20				2195	0·477	336·2	74·8	+19·7	0	22	
		2197	0·404	153·9	115·7	−27 6	3	10				2195*a*	0·490	333·6	73·3	+20·0	46	245	
		2195*a*	0·845*a*	62·2	75·0	+19·3	43	264	514*f*				0·927	62·8	357·1	+22·3			332
			0·958	119·1	53·0	−29·7			56	Apr. 5		Centre			(59·9)	(−6·2)	(46)	(267)	(456)
Mar. 31		Centre			(127·2)	(−6·5)	(51)	(304)	(722)										
										95·476	M,AE		0·943	244·5	113·3	−20·9			73
90·433	HA,M	2196	0·660	307·9	146·9	+18·6	3	25	117*c*			2195*a*	0·584	316·4	73·0	+19·5	53	232	
		2197	0·319	193·8	118·5	−24·5	7	14					0·837	57·7	357·9	+22·7			534
		2197	0·340	190·4	117·6	−25·9	1	13		Apr. 6		Centre			(47·8)	(−6·1)	(53)	(232)	(607)
		2197	0·370	184·8	115·7	−28·0	0	4		96·395	HA,M		0·825	249·2	87·6	−14·1			262
		2195*a*	0·725	55·2	74·7	+19·5	62	249	350*c*			2195*a*	0·712	305·3	73·0	+19·5	65	226	431*c*
			0·948	69·1	45·7	+17·5			145	I.			0·723	46·7	359·8	+24·7			416
Apr. 1		Centre			(113·7)	(−6·4)	(73)	(305)	(612)	Apr. 7		Centre			(35·1)	(−6·1)	(65)	(226)	(1109)
91·176	M,ER		0·906	258·5	169·4	−13·1			44	97·412	HA,M		0·906	249·3	86·8	−21·3			286
		2196	0·771	300·6	148·2	+18·5	2	13	315*nf*			2195*a*	0·835	298·2	72·8	+19·5	51	230	610*c*
I.		2197	0·393	214·3	118·0	−25·1	13	24					0·933	60·2	318·5	+25·0			86
		2195*a*	0·634	47·2	74·4	+19·9	81	276	154*c*	Apr. 8		Centre			(21·6)	(−6·0)	(51)	(230)	(982)
			0·700	49·7	69·0	+21·7			157										
			0·805	122·2	52·6	−29·5			105	98·191	HA,M		0·949	249·9	83·5	−20·9			206
			0·829	106·9	47·8	−17·6			90			2195*a*	0·912	294·9	72·5	+19·7	43	229	298*nf*
			0·893	66·0	45·0	−18·0			225	M.			0·898	58·1	314·0	+25·2			97
Apr. 2		Centre			(103·9)	(−6·4)	(96)	(313)	(1090)				0·946	113·8	299·6	−24·4			72
										Apr. 9		Centre			(11·2)	(−5·9)	(43)	(229)	(673)
92·341	M,HA	2196	0·904	295·0	148·6	+19·4	0	14	355*f*										
		2197	0·557	236·8	118·8	−23·2	0	6		99·205	HA,M		0·825	297·8	48·3	+19·0			103
I.		2195*a*	0·498	28·1	74·1	+19·9	71	295				2195*a*	0·980	291·3	73·4	+19·5	38	202	
		2195	0·489	33·0	72·3	+18·1	0	5		I.		2198*a*	0·231	138·9	349·0	−15·7	8	46	
			0·804	58·9	41·4	+20·3			235			2198	0·239	130·1	347·2	−14·6	2	7	
Apr. 3		Centre			(88·5)	(−6·3)	(71)	(320)	(590)			2198	0·273	132·5	345·9	−16·3	4	21	
												2198	0·255	126·0	345·8	−14·3	3	9	
93·133	M,AE		0·841	242·1	134·2	−26·8			156			2198	0·279	126·1	344·6	−15·1	0	4	294*f*
		2196	0·971	290·8	150·8	+18·4	0	16	} 474*c*				0·868	114·8	298·3	−24·4			79
I.		2196	0·942	292·2	144·6	+18·4	0	8					0·949	111·9	285·7	−22·6			143
		2197	0·683	241 6	118·8	−23·7	0	3		Apr. 10		Centre			(358·0)	(−5·8)	(55)	(289)	(619)

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 longitude and latitude of the centre of the disk are given in brackets.
The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 2196, March 30–April 4. A small spot on March 30 and 31. Another, apparently not the same, on April 1, and a third on April 2. On April 3 and the succeeding days the group is a compact cluster of very small spots.
Group 2197, March 31–April 4. Two small spots on March 31. A short stream of very small spots on April 1. Only one remains by April 3.
Group 2198, April 10–14. A small spot, *a*, followed by a train of small spots. The group diminishes in size from day to day.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°			
100d·140	HA,M		0·829	251·6	41·3	−18·5			184
			0·867	297·3	40·4	+20·1			231
I.		2198*a*	0·198	210·1	351·4	−15·6	6	35	
		2198	0·181	205·2	350·1	−15·1	0	3	
		2198	0·171	194·9	348·1	−15·3	0	12	
		2198	0·183	182·8	346·0	−16·3	4	12	
		2198	0·156	181·9	345·8	−14·7	7	14	
			0·811	117·5	292·9	−25·5			73
			0·919	65·9	282·8	+19·5			139
			0·911	111·2	279·7	−21·7			249
Apr. 11		Centre			(345·5)	(−5·8)	(17)	(76)	(876)
101·466	HA,M		0·983	253·8	41·1	−17·2			73
		2198*a*	0·441	246·5	352·8	−15·3	6	25	
		2198	0·395	245·1	349·8	−14·9	0	3	
		2198	0·355	239·5	346·5	−15·7	0	6	
		2198	0·336	241·7	345·8	−14·6	0	8	
			0·848	61·3	275·7	+20·6			339
			0·907	114·8	263·2	−24·8			157
Apr. 12		Centre			(328·1)	(−5·7)	(6)	(42)	(569)
102·293	HA,M		0·886	294·0	15·3	+18·2			123
			0·797	305·4	2·0	+23·5			135
			0·724	308·6	354·7	+22·4			115
I.		2198*a*	0·596	251·1	352·8	−15·6	7	12	
		2198	0·569	251·2	350·9	−15·2	0	2	
		2198	0·566	248·3	350·3	−15·8	0	1	
		2198	0·497	249·9	345·9	−14·7	3	8	
		2198	0·478	248·4	344·4	−15·1	0	4	
			0·780	57·0	321·1	+21·2			137
			0·860	128·8	261·6	−35·8			126
			0·938	121·4	247·8	−31·3			72
Apr. 13		Centre			(317·1)	(−5·6)	(10)	(27)	(708)
103·431	HA,M		0·884	301·6	357·8	+24·5			185
		2198*a*	0·786	254·1	353·7	−15·9	0	14	
		2198	0·770	252·4	352·0	−17·0	0	1	
		2198	0·743	253·8	349·7	−15·7	0	10	77*c*
		2199	0·539	328·6	319·7	+22·0	3	16	
		2199	0·516	330·7	317·8	+21·4	0	2	
		2199	0·518	334·5	316·0	+22·5	14	51	
		2200	0·738	136·1	262·8	−36·4	0	13	
			0·845	127·3	248·0	−34·1			61
Apr. 14		Centre			(302·1)	(−5·5)	(17)	(107)	(323)
1891.									
104d·491	HA,M		0·944	297·3	354·1	+23·5			163
			0·885	255·0	350·6	−15·9			357
		2199	0·710	314·9	321·8	+25·4	0	3	
		2199*a*	0·676	311·3	321·1	+21·8	7	47	
		2199*b*	0·636	313·5	317·6	+21·1	0	4	
		2199*c*	0·641	314·7	317·4	+21·9	5	25	
		2199*d*	0·624	318·4	314·7	+22·8	10	39	
		2200	0·589	148·8	266·2	−35·3	0	6	
		2200	0·641	145·2	261·1	−36·6	0	1	
			0·977	112·4	209·5	−23·0			50
Apr. 15		Centre			(288·1)	(−5·5)	(22)	(125)	(570)
105·436	HA,M		0·950	255·6	348·0	−15·4			299
		2199*a*	0·805	302·5	322·6	+21·9	18	91	280*c*
		2199*b*	0·774	302·4	319·8	+20·6	0	7	
		2199*c*	0·756	304·9	317·3	+21·5	34	103	
		2199*d*	0·735	308·5	314·2	+23·0	6	16	
		2200	0·520	166·7	267·3	−35·7	0	9	
		2200	0·508	163·2	265·5	−34·3	0	4	
		2200	0·560	159·6	261·6	−36·8	0	6	
		2201*a*	0·493	20·4	265·1	+22·1	4	12	
		2202*a*	0·904	112·7	211·2	−22·8	0	5	
			0·950	255·6	348·0	−15·4			299
			0·944	171·2	245·2	−73·5			48
			0·908	113·0	210·5	−23·2			139
Apr. 16		Centre			(275·7)	(−5·4)	(62)	(253)	(1065)
106·403	HA,M		0·898	354·3	272·5	+57·9			74
		2199*a*	0·912	296·9	323·9	+21·9	17	84	414*c*
		2199*b*	0·882	297·1	319·8	+20·8	0	11	
		2199*c*	0·854	299·9	315·7	+22·0	25	104	
		2199*d*	0·843	302·4	313·6	+23·5	0	10	
		2201*a*	0·458	354·3	265·7	+21·7	1	5	
		2201	0·477	357·2	264·4	+23·0	0	13	
		2200	0·492	178·3	261·3	−34·7	0	6	
		2202*a*	0·791	114·7	211·9	−22·7	0	8	88*c*
		2202*b*	0·828	114·3	208·1	−23·0	0	16	
			0·956	60·6	195·1	+26·1			169
Apr. 17		Centre			(262·9)	(−5·3)	(43)	(257)	(745)

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 longitude and latitude of the centre of the disk are given in brackets.
The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 2199, April 14–19. Three small spots on April 14. The group has increased in size by April 15, and contains, besides some very small spots, four principal spots, *a*, *b*, *c*, and *d*. The former pair shows a distinct tendency to move away from the latter. Only *c* remains by April 18.
Group 2200, April 14–19. A cluster of very small and faint spots on April 14, and on the succeeding days. The group is not seen on April 18. Two small and very faint spots are seen on April 19.
Group 2201, April 16–17. A small spot, *a*, on April 16. A second is seen near it on April 17.
Group 2202, April 16–22. A very small spot, *a*, on April 16. A second spot, *b*, is seen on April 17. *a* has broken up into a short stream of very small spots by April 18, and has disappeared by April 19. By April 20 the group has become a short stream of small spots, of which the leader *c* is the largest.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°			
107d·462	ER,M	2199*c*	0·941	295·9	314·8	+22·2	0	78	197*p*
		2202*a*	0·641	119·3	211·8	−22·4	0	21	
		2202*b*	0·688	117·5	207·8	−22·4	0	29	
			0·889	57·0	193·0	+26·1			268
Apr. 18		Centre			(248·9)	(−5·2)	(0)	(128)	(465)
108·264	HA,ER	2199*c*	0·986	295·5	315·2	+24·1	21	224	156*c*
		2200	0·638	215·8	265·6	−35·7	0	17	
I.		2200	0·610	214·7	263·2	−34·7	0	27	
		2203	0·579	25·8	222·0	+26·4	0	4	
		2202*b*	0·570	123·0	207·3	−22·4	0	11	
			0·770	46·2	199·4	+28·1			123
			0·850	56·1	187·3	+25·1			207
			0·926	51·9	178·9	+32·3			112
Apr. 19		Centre			(238·3)	(−5·1)	(21)	(283)	(598)
109·518	HA,M		0·970	249·5	298·4	−21·1			62
			0·857	247·9	280·1	−21·4			109
			0·756	224·4	256·8	−23·2			134
		2203	0·499	352·9	225·7	+24·5	7	15	
		2203	0·517	0·3	221·6	+26·0	2	18	
		2202*c*	0·329	152·8	212·5	−21·9	4	43	
		2202	0·358	148·0	210·0	−22·5	0	7	
			0·951	69·6	152·7	+17·7			360
Apr. 20		Centre			(221·8)	(−5·0)	(13)	(83)	(665)
110·429	HA,M		0·899	242·3	272·8	−27·0			58
			0·833	229·1	260·7	−36·1			204
		2203	0·559	331·8	226·5	+24·7	0	17	
		2202*c*	0·296	190·1	212·9	−21·8	9	42	
		2202	0·322	189·0	212·8	−23·3	0	2	
		2202	0·297	179·8	209·8	−22·2	0	3	
		2204*a*	0·963	108·8	134·8	−19·4	26	203	330*c*
			0·898	65·5	149·9	+19·4			283
Apr. 21		Centre			(209·7)	(−4·9)	(35)	(267)	(875)
111·370	M,ER		0·895	267·6	260·8	− 4·3			30
			0·904	232·1	258·9	−36·0			256
I.		2203	0·658	318·1	226·2	+25·0	1	8	
		2203	0·666	319·6	226·0	+26·2	0	5	
		2203	0·638	323·4	222·3	+26·4	0	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		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).
1891.				°	°	°			
111d·370	M,ER	2202	0·391	221·4	213·4	−21·6	2	4	
		2205	0·459	321·8	214·5	+16·5	1	7	
I.		2205	0·456	327·2	212·3	+17·8	0	8	
		2204*a*	0·873	109·3	136·8	−19·2	57	342	
		2204*b*	0·907	109·1	132·3	−19·3	64	217	759*c*
		2204	0·923	110·2	129·9	−20·5	0	29	
			0·883	60·9	146·3	+20·9			590
Apr. 22		Centre			(197·3)	(−4·8)	(125)	(622)	(1635)
112·411	HA,M		0·934	235·1	250·4	−33·7			382
			0·912	193·3	213·3	−65·0			164
		2203	0·786	308·6	226·5	+25·8	9	81	357*c*
		2205	0·607	306·5	214·2	+17·0	0	37	
		2204*a*	0·730	112·2	138·0	−19·3	58	282	
		2204	0·754	110·6	135·7	−18·6	0	41	541*c*
		2204*b*	0·797	111·2	131·7	−19·7	59	340	
			0·766	54·5	141·3	+22·5			43
			0·872	53·3	131·3	+28·1			59
Apr. 23		Centre			(183·6)	(−4·8)	(126)	(781)	(1546)
113·421	HA,M		0·915	236·2	234·5	−32·6			161
		2203	0·905	300·7	229·3	+25·2	13	78	
		2203	0·877	303·3	224·7	+26·0	7	38	482*c*
		2205	0·781	295·9	217·2	+16·8	24	85	131*c*
		2204*a*	0·568	118·6	138·3	−19·8	68	293	
		2204	0·601	115·5	135·4	−18·9	1	10	
		2204	0·628	117·1	133·7	−20·4	3	33	
		2204*b*	0·662	114·9	130·7	−19·8	28	178	
		2204	0·678	117·5	130·0	−21·8	0	4	
		2204	0·741	117·2	124·6	−23·1	0	14	
		2204	0·768	116·4	122·0	−23·1	0	9	
Apr. 24		Centre			(170·2)	(−4·7)	(144)	(742)	(774)
114·080	HA,M		0·987	210·5	240·1	−59·3			88
			0·802	244·9	213·1	−22·7			130
I.		2203	0·955	297·5	229·8	+24·5	3	23	377*c*
		2203	0·926	300·4	223·7	+25·8	4	21	
		2205*a*	0·867	291·8	218·2	+16·3	23	167	447*c*
		2205	0·826	293·4	213·4	+16·3	18	78	
		2204*a*	0·460	125·7	138·1	−19·8	49	301	
		2204	0·496	124·5	135·7	−20·4	2	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 longitude and latitude of the centre of the disk are given in brackets.
The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 2203, April 19–25. A small spot on April 19. A second is seen on April 20. Only one spot remains on April 21. A stream of very small spots on April 22, which has greatly increased in size by April 23. Two small spots on April 25.
Group 2204. April 21–May 2. A large regular spot, *a*, followed on April 22 and the succeeding days by a fine train of spots, of which *b* is the largest. *b* has completely broken up by April 30, and the other spots of the train diminish until by May 2 *a* alone remains.
Group 2205. April 22–26. A great number of very small spots on April 22. A short stream of small spots on April 23. The group increases in size on the succeeding days, and the leading spot *a* is a fine regular spot on April 25

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°			
114d·080	HA,M	2204	0·489	121·3	135·3	−18·8	3	12	
		2204	0·521	122·3	133·5	−20·3	0	21	
I.		2204*b*	0·552	119·0	130·7	−19·5	23	155	
		2204	0·639	120·7	125·0	−22·7	3	16	
		2204	0·684	119·1	121·1	−22·9	0	7	
Apr. 25		Centre			(161·4)	(−4·6)	(128)	(806)	(1042)
115·586	HA,M		0·937	246·1	211·1	−24·0			160
			0·832	303·5	191·2	+24·4			248
		2205*a*	0·982	287·5	218·7	+16·2	56	318	
		2205	0·964	289·5	213·7	+17·4	0	44	259*c*
		2205	0·955	288·9	212·0	+16·5	2	41	
		2204*a*	0·275	166·1	137·7	−20·0	44	276	
		2204	0·298	155·0	134·0	−20·1	0	12	
		2204*b*	0·297	148·3	132·2	−19·0	11	77	
		2204	0·349	144·5	129·2	−20·9	0	1	
		2204	0·396	141·7	126·4	−22·4	3	32	
		2204	0·425	135·8	123·1	−22·0	4	18	
			0·943	66·7	74·6	+20·2			292
Apr. 26		Centre			(141·7)	(−4·5)	(120)	(819)	(959)
116·413	HA,M		0·986	248·3	211·6	−22·1			54
			0·908	300·4	190·2	+25·2			346
		2206*a*	0·605	321·5	154·8	+24·2	22	84	
		2206	0·584	324·9	152·1	+24·4	3	20	
		2206	0·570	327·5	150·1	+24·5	9	30	
		2204*a*	0·297	203·9	137·8	−20·1	49	257	
		2204	0·262	193·6	134·2	−19·2	0	3	
		2204	0·280	190·1	133·5	−20·4	0	3	
		2204*b*	0·261	186·4	132·4	−19·5	14	90	
		2204	0·316	167·4	126·2	−22·3	4	14	
		2204	0·340	157·0	122·3	−22·5	6	21	
		2207	0·577	36·8	108·5	+23·3	2	6	
			0·884	63·2	72·9	+21·2			215
			0·959	96·2	56·8	− 7·2			114
Apr. 27		Centre			(130·5)	(−4·4)	(109)	(528)	(729)
117·442	HA,M	2208*a*	0·863	311·4	166·7	+32·0	0	3	
		2208*b*	0·834	314·7	161·8	+32·8	4	30	
		2206*a*	0·734	309·4	155·4	+24·3	30	228	
1891.									
117d·442	HA,M	2206*b*	0·705	312·1	152·1	+24·7	12	63	
		2206	0·696	316·1	149·6	+26·4	0	3	
		2206	0·680	314·7	149·2	+24·9	6	48	
		2204*a*	0·429	230·3	137·6	−19·9	51	252	
		2204	0·351	206·3	136·8	−22·5	2	6	
		2204	0·426	225·0	135·9	−21·5	0	5	
		2204	0·382	227·3	134·3	−19·0	0	7	
		2204*b*	0·371	223·8	132·8	−19·6	19	66	
		2204	0·346	226·0	132·2	−18·0	0	5	
		2204	0·356	217·9	130·5	−20·4	1	20	
		2207	0·472	12·9	110·6	+23·0	0	23	
			0·806	60·3	68·9	+20·6			57
			0·880	58·1	61·6	+25·3			103
			0·877	96·3	55·8	− 7·6			232
			0·943	70·0	49·3	+17·2			80
			0·928	104·9	48·9	−15·4			68
Apr. 28		Centre			(117·1)	(−4·3)	(125)	(759)	(540)
118·193	HA,M		0·812	293·6	157·7	+16·3			154
		2208	0·931	306·7	168·4	+31·8	0	12	347*c*
I.		2208	0·900	310·1	162·1	+33·0	0	13	
		2206*a*	0·822	303·7	155·5	+24·3	28	205	
		2206*b*	0·790	305·6	151·8	+24·3	16	98	572*c*
		2206	0·763	308·7	148·1	+25·2	5	38	
		2204*a*	0·552	238·4	137·1	−20·4	47	255	
		2204*b*	0·494	236·1	132·8	−19·8	13	47	
		2204	0·471	236·3	131·5	−19·0	0	3	
		2204	0·444	223·4	126·3	−22·7	0	3	
		2207	0·464	347·5	113·3	+22·7	3	10	
			0·777	52·7	64·3	+25·0			149
			0·887	109·8	45·0	−19·5			43
Apr. 29		Centre			(107·1)	(−4·2)	(112)	(684)	(1265)
119·485	HA,M		0·971	305·7	160·4	+33·2			110
			0·917	289·8	153·9	+16·3			143
		2206*a*	0·934	298·5	154·5	+24·7	18	181	512*c*
		2206*b*	0·916	299·3	151·5	+24·7	5	28	
		2206	0·888	302·0	146·7	+25·8	0	18	
		2204*a*	0·750	247·2	137·2	−19·7	28	257	
		2204	0·728	244·6	134·7	−21·1	0	18	
		2204	0·706	246·6	133·3	−19·3	3	22	
		2207	0·580	318·4	114·5	+21·9	0	7	
Apr. 30		Centre			(90·1)	(−4·1)	(54)	(531)	(765)

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

Group 2206, April 27–May 1. A regular spot, *a*, followed on April 27 by two short trains of small spots. The two trains form one long slightly curved stream on April 28, and the spot *b*, next following *a*, has become of considerable size. *b*, and the other spots of the train diminish after April 29, and have disappeared by May 1.

Group 2207, April 27–May 3. A very small spot on April 27. Three very small spots, measured together, on April 28. Two very small spots on April 29. One very small spot on April 30, May 1 and May 2. Two small spots on May 3.

Group 2208, April 28–29. A very small spot, *a*, on April 28, followed by a close pair, *b*. *b* is a single spot on April 29, and *a* and *b* are about equal in size.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°				1891.				°	°	°			
120^{d}·597	M,HA	2206*a*	0·990	295·4	154·3	+24·4	0	230	368*f*	124^{d}·482	HA,M	2210	0·952	66·0	315·1	+21·5	0	27	
		2204	0·906	249·6	139·9	−20·1	0	7				2210*a*	0·966	64·7	312·3	+23·3	11	128	832*c*
		2204*a*	0·883	250·1	136·9	−19·4	47	216	608*c*			2211*a*	0·940	116·1	314·7	−25·7	24	190	298*c*
		2204	0·882	247·6	136·5	−21·6	0	5		May 5		Centre			(24·0)	(−3·6)	(35)	(391)	(1278)
		2204	0·867	247·5	134·5	−21·4	4	35											
		2204	0·858	250·0	133·8	−19·2	0	8											
		2207	0·682	320·1	105·0	+28·0	0	5											
		2209	0·580	129·5	45·9	−25·1	0	11		125·493	HA,M	2210	0·827	60·6	320·0	+21·7	0	9	
		2209	0·607	127·3	43·3	−25·0	4	22				2210	0·845	62·3	317·6	+21·1	0	6	
			0·970	108·6	359·2	−19·0			142			2210	0·893	62·7	311·8	+22·4	0	26	
			0·935	180·0	75·4	−72·9			33			2210*a*	0·899	61·3	311·4	+23·8	11	83	503*c*
May 1		Centre			(75·4)	(−4·0)	(55)	(539)	(1151)			2211*a*	0·855	117·9	314·1	−25·4	45	199	
												2211	0·880	117·9	311·0	−26·0	0	4	502*c*
121·415	M,AR		0·971	295·1	137·3	+23·2			55			2211	0·905	115·7	307·2	−24·6	6	36	
			0·888	244·7	125·9	−24·2			337	May 6		Centre			(10·7)	(−3·4)	(62)	(363)	(1005)
			0·825	301·8	114·0	+23·2			95										
			0·767	249·5	113·4	−18·1			26										
		2204*a*	0·955	251·2	137·3	−19·1	26	177	554*f*	126·421	HA,M		0·851	260·3	56·6	−10·0			118
		2207	0·796	304·4	110·3	+24·0	0	5	180*c*				0·788	295·7	46·4	+17·7			186
		2209	0·461	144·7	47·4	−25·7	0	23					0·759	238·6	44·1	−25·6			199
		2209	0·502	138·3	42·9	−25·6	4	20				2210	0·733	56·2	317·7	+21·5	0	27	553*c*
			0·942	61·0	358·7	+25·6			258			2210*a*	0·797	57·4	311·7	+23·2	8	116	
			0·934	108·8	355·6	−19·0			197			2211*a*	0·743	122·0	314·3	−25·5	40	262	656*c*
May 2		Centre			(64·5)	(−3·9)	(30)	(225)	(1702)			2211	0·755	119·4	312·5	−24·0	0	9	
												2211	0·808	118·3	307·2	−24·5	11	41	
										May 7		Centre			(358·4)	(−3·3)	(59)	(455)	(1712)
122·503	HA,M		0·939	248·4	119·7	−21·5			309										
		2207	0·919	297·2	112·7	+23·1	0	10	159*c*										
		2207	0·907	297·6	110·3	+23·0	0	7											
		2209	0·399	162·4	42·5	−26·1	1	11		127·332	HA,M		0·968	300·2	57·6	+28·2			64
			0·901	60·9	350·9	+24·0			61				0·932	260·9	54·8	− 9·6			77
May 3		Centre			(50·2)	(−3·8)	(1)	(28)	(529)	I.			0·900	265·3	50·2	− 5·7			46
													0·906	292·8	48·0	+19·0			79
123·409	HA,M		0·971	294·7	111·1	+22·8			242				0·871	250·3	45·8	−18·7			102
		2212	0·961	252·7	112·3	−17·7	0	15	206*c*			2210	0·565	45·4	320·8	+20·4	0	4	
		2210	0·989	67·9	319·0	+21·2	0	58	363*c*			2210	0·646	51·1	313·6	+21·2	0	5	
		2211*a*	0·994	115·2	313·7	−25·4	9	175				2210*a*	0·686	49·9	311·3	+23·5	10	84	293*c*
			0·948	106·6	326·7	−16·9			162			2211*a*	0·623	128·8	313·7	−25·6	51	243	
May 4		Centre			(38·2)	(−3·7)	(9)	(248)	(973)			2211	0·642	124·7	310·9	−24·0	0	4	
												2211	0·684	122·8	307·2	−24·2	2	8	495*c*
124·482	HA,M		0·852	294·7	78·6	+18·7			148			2214*a*	0·972	68·0	272·1	+20·5	14	47	319*c*
		2213	0·852	63·2	330·0	+20·4	0	8					0·929	60·1	282·4	+26·2			114
		2210	0·928	65·1	319·5	+21·4	0	38		May 8		Centre			(346·1)	(−3·2)	(77)	(395)	(1589)

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 longitude and latitude of the centre of the disk are given in brackets.
The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 2209, May 1–3. Two close clusters of very small spots. The following cluster alone remains by May 3.
Group 2210, May 4–15. An irregular group of small spots. The principal spot, *a*, follows the rest of the group, but has broken up by May 10, and the group consists on that day of a great number of very small spots irregularly scattered over a wide area. The group has diminished in area, narrowed, and lengthened out by May 11, consists of two compact clusters on May 12, has scattered again by May 13, is not seen on May 14, and consists of two spots on May 15.
Group 2211, May 4–16. A regular spot, *a*, with two or three small companions during the greater part of its course.
Group 2212, May 4. A small faint spot.
Group 2213, May 5. A small cluster of very small faint spots, preceding Group 2210.
Group 2214, May 8–14. A small regular spot, *a*, which has broken up by May 13.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°			
128d·448	HA,M		0·982	253·2	50·9	−17·1			96
		2210	0·484	31·8	315·8	+21·2	0	16	
		2210*a*	0·541	36·9	311·1	+22·6	7	93	
		2211*a*	0·471	145·1	314·3	−25·6	46	262	
		2211	0·471	139·8	312·3	−24·0	0	8	
		2211	0·507	141·3	311·0	−26·2	0	81	
		2214*a*	0·887	65·1	272·8	+20·3	11	45	472*c*
May 9		Centre			(331·6)	(−3·1)	(64)	(505)	(568)
129·087	HA,M	2210	0·427	15·1	316·3	+21·3	5	20	
		2210	0·443	17·4	314·9	+22·0	0	7	
I.		2210	0·494	17·8	313·5	+25·0	1	13	
		2210	0·445	21·4	313·1	+21·4	0	3	
		2210	0·478	25·3	310·4	+22·6	12	115	
		2211	0·414	166·9	317·1	−26·7	0	3	
		2211*a*	0·406	159·1	313·9	−25·2	69	269	
		2211	0·386	154·1	312·6	−23·2	0	13	
		Mercury	0·802	171·8	311·6	−55·2			
		2214*a*	0·824	61·8	272·2	+21·0	17	74	422*f*
			0·961	121·3	250·2	−30·9			170
May 10		Centre			(323·1)	(−3·0)	(104)	(517)	(592)
130·404	HA,M		0·801	250·0	357·7	−17·2			114
		2215*a*	0·779	304·5	350·2	+24·0	6	14	187*c*
		2215*b*	0·753	306·8	347·1	+24·6	5	15	
		2210	0·474	330·2	320·3	+21·4	0	8	
		2210	0·449	334·5	317·6	+21·0	5	20	
		2210	0·450	343·6	313·6	+22·6	2	5	
		2210	0·459	349·7	310·8	+23·8	9	28	
		2210	0·444	351·3	309·9	+23·1	0	12	
		2210	0·420	351·7	309·4	+21·5	10	30	
		2211*a*	0·399	202·7	315·4	−24·3	45	224	
		2211	0·397	197·1	313·1	−25·0	11	37	
		2211	0·358	199·3	313·0	−22·5	2	4	
		2214*a*	0·651	53·0	272·1	+20·6	19	60	239*c*
			0·879	127·9	248·9	−34·2			148
			0·956	56·9	237·7	+30·4			94
			0·964	65·2	234·1	+22·9			50
May 11		Centre			(305·7)	(−2·9)	(114)	(457)	(832)
131·453	HA,M		0·891	249·3	353·9	−19·7			179
		2215*a*	0·899	297·6	351·7	+23·2	0	43	256*c*
		2215*b*	0·868	301·1	346·7	+25·0	0	31	
1891.				°	°	°			
131d·453	HA,M	2210	0·558	318·5	315·2	+22·0	8	71	
		2210	0·515	325·9	309·9	+22·5	6	68	
		2211*a*	0·526	225·3	315·9	−24·2	30	245	
		2211	0·506	219·9	312·8	−25·4	14	53	
		2211	0·496	216·3	310·8	−26·1	0	18	
		2214*a*	0·509	38·9	271·9	+20·6	20	64	
		2216*a*	0·966	72·5	218·5	+16·1	26	176	248*f*
		2217*a*	0·987	110·2	210·9	−20·4	30	306	
			0·800	129·7	245·0	−32·6			335
			0·899	58·6	233·1	+26·4			376
May 12		Centre			(291·8)	(−2·8)	(134)	(1075)	(1394)
132·454	HA,M		0·953	297·1	347·5	+24·8			149
		2210	0·758	301·0	322·5	+21·0	0	7	
		2210	0·717	304·3	318·0	+21·7	2	20	
		2210	0·704	305·6	316·6	+22·0	0	7	
		2210	0·680	306·8	314·3	+21·7	5	32	
		2210	0·687	312·2	312·7	+25·2	0	4	841*c*
		2210	0·659	312·1	310·8	+23·8	2	11	
		2210	0·627	309·1	309·9	+20·9	0	2	
		2211*a*	0·676	236·3	316·5	−24·1	38	195	
		2211	0·646	232·3	312·9	−25·4	5	15	
		2214	0·402	13·4	272·9	+20·3	3	6	
		2214	0·407	16·5	271·6	+20·2	9	42	
		2216*a*	0·887	70·2	218·5	+16·2	31	152	210*f*
		2217*a*	0·930	111·4	210·9	−20·9	27	240	383*c*
		2217	0·964	112·4	204·4	−22·3	0	49	
			0·840	47·4	231·4	+32·8			67
			0·814	58·1	229·8	+23·5			287
May 13		Centre			(278·6)	(−2·7)	(122)	(782)	(1937)
133·470	HA,M		0·821	301·6	315·3	+23·8			171
		2211*a*	0·810	242·6	317·1	−23·5	23	174	131*c*
		2214	0·402	344·0	272·3	+20·0	0	34	
		2214	0·406	354·5	268·0	+21·1	0	7	
		2216*a*	0·764	66·5	219·0	+16·0	19	111	
		2217*a*	0·834	113·3	210·8	−20·8	37	231	154*f*
		2217	0·886	113·4	204·6	−21·9	0	11	
			0·949	63·1	196·8	+25·0			146
May 14		Centre			(265·6)	(−2·6)	(79)	(568)	(602)

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 longitude and latitude of the centre of the disk are given in brackets.
The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

The photograph on 1891, May 10, was taken during a Transit of Mercury, and shows the planet on the Sun's disk.
Group 2215, May 11-12. Two small spots, *a* and *b*, which have separated by May 12.
Group 2216, May 12-22. A regular spot, *a*, with a small companion on May 16.
Group 2217, May 12-23. A regular spot, *a*, with, from time to time, a number of small companions.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°			
134d·420	HA,M	2210	0·946	294·2	320·9	+21·9	0	81	
		2210	0·885	293·0	312·0	+19·0	0	10	708*e*
		2111*a*	0·910	245·6	316·8	−23·1	19	141	3118*f*
		2216*a*	0·626	60·1	218·4	+16·2	19	112	
		2217	0·674	115·1	212·8	−18·4	0	3	}
		2217*a*	0·712	117·0	210·2	−20·6	30	207	} 208*e*
		2217	0·778	116·5	204·3	−21·9	0	12	}
			0·874	59·8	196·7	+24·7			298
May 15		Centre			(252·7)	(−2·4)	(68)	(566)	(1525)
135·470	HA,M		0·956	294·2	309·0	+22·3			297
		2211*a*	0·977	247·1	316·2	−22·9	18	86	211*f*
		2216	0·429	48·8	219·3	+14·2	0	9	
		2216*a*	0·463	47·1	218·1	+16·2	33	122	
		2217*a*	0·558	124·8	209·5	−20·5	29	193	
		2218	0·714	48·9	202·1	+26·1	0	24	
		2218	0·738	51·8	199·0	+25·3	5	28	
May 16		Centre			(238·7)	(−2·3)	(85)	(462)	(508)
136·524	HA,M	2216*a*	0·336	19·3	218·4	+16·3	17	92	
		2217*a*	0·405	142·3	209·7	−20·8	20	147	
		2217	0·447	135·7	205·6	−20·6	0	14	
		2219*a*	0·933	72·0	157·9	+15·9	13	54	318*f*
May 17		Centre			(225·0	(−2·2)	(50)	(307)	(318)
137·158	HA,M		0·855	298·7	270·6	+23·0			363
		2216*a*	0·319	354·4	218·1	+16·3	29	90	
I.		2217*a*	0·341	160·4	209·3	−20·8	27	92	
		2217	0·366	150·4	205·2	−20·6	1	6	
		2219*a*	0·868	70·7	158·3	+15·6	36	110	}
		2219	0·904	70·3	153·8	+16·8	5	31	} 725*e*
		2219	0·916	70·5	152·0	+16·9	10	32	}
		2220	0·985	108·7	136·4	−18·7	0	57	1488*p*
			0·948	51·4	151·3	+35·3			105
May 18		Centre			(216·3)	(−2·1)	(108)	(418)	(1341)
138·523	HA,M		0·956	291·7	269·1	+20·1			161
		2216*a*	0·456	313·9	218·3	+16·5	20	92	
		2217*a*	0·366	208·5	209·0	−20·7	22	103	
		2217	0·343	206·0	207·5	−19·9	0	6	
1891.				°	°	°			
138d·523	HA,M	2217	0·347	199·9	205·5	−21·0	0	5	
		2217	0·382	194·0	204·1	−23·7	0	6	
		2219*a*	0·672	64·1	159·6	+15·4	45	269	}
		2219	0·721	64·5	155·7	+16·6	7	53	} 521*f*
		2219	0·751	64·7	153·1	+17·3	5	61	}
		2220	0·894	110·4	136·0	−19·1	11	81	478*f*
		2221*a*	0·988	68·6	118·8	+20·8	0	78	317*f*
May 19		Centre			(198·3)	(−2·0)	(110)	(754)	(1477)
139·187	CL,HA		0·757	309·2	230·6	+27·1			210
		2216*a*	0·564	304·1	218·6	+16·8	14	70	
I.		2217*a*	0·451	224·1	209·0	−20·6	14	67	
		2219	0·545	54·4	162·1	+16·8	5	14	
		2219*a*	0·560	57·3	160·3	+15·9	50	248	
		2219	0·634	59·3	154·8	+17·2	19	140	256*e*
		2220	0·826	112·1	135·6	−19·2	10	66	311*f*
		2221*a*	0·956	67·5	118·8	+20·8	19	96	240*e*
			0·843	41·9	144·4	+37·5			106
			0·826	58·1	139·2	+24·7			196
May 20		Centre			(189·5)	(−1·9)	(131)	(701)	(1319)
140·335	HA,ER		0·869	303·7	229·0	+27·7			400
		2216*a*	0·739	294·5	218·8	+16·5	5	40	
I.		2217*a*	0·629	238·1	209·1	−20·8	15	64	
		2219*a*	0·381	35·7	161·1	+16·2	63	352	
		2219	0·399	40·6	158·8	+15·9	0	8	
		2219	0·420	44·3	156·7	+15·7	4	16	
		2219	0·441	41·2	156·7	+17·6	15	97	
		2219	0·463	44·4	154·6	+17·5	0	8	
		2219	0·488	45·8	152·9	+18·2	16	128	
		2220	0·667	117·2	135·7	−19·1	13	73	
		2221*a*	0·853	64·5	119·4	+20·4	12	62	309*f*
			0·700	29·6	149·3	+35·7			172
			0·939	115·3	106·0	−24·3			141
May 21		Centre			(174·4)	(−1·8)	(143)	(848)	(1022)
141·522	HA,M	2216*a*	0·883	289·7	218·5	+16·5	0	30	305*nf*
		2217*a*	0·795	245·0	208·7	−20·6	9	54	4138*f*
		2222	0·753	308·0	199·9	+26·3	0	22	168*e*
		2219*b*	0·328	340·8	165·0	+16·4	5	53	
		2219*c*	0·302	347·3	162·5	+15·4	34	191	

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

Group 2218, May 16. Two small spots.

Group 2219, May 17–28. A regular spot, *a*, followed on May 18 and the succeeding days by a stream of smaller spots. The group, as a whole, rapidly increases in size, and *a* in particular; the extension in the case of *a* taking place principally on the following side. *a* is measured in three portions on May 22, though it has not completely divided up until May 23. Of these portions, *b*, *c*, and *d*, the leader, *b*, is a regular spot, and is the only remaining spot on May 27 and 28.

Group 2220, May 18–29. A regular spot.

Group 2221, May 19–29. A regular spot, *a*, on May 19, 20, and 21. *a* has greatly diminished in size by May 22, and two new spots are seen following it at some little distance. *a* has disappeared by May 23, and the group consists on May 23 and the succeeding days of several spots in a straight stream. The group diminishes in size after May 24.

Group 2222, May 22–25. A small faint spot on May 22. Not seen on May 23 and 24. Two small spots on May 25.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°				1891.				°	°	°			
141d·522	HA,M	2219*c*	0·313	354·1	160·5	+16·5	36	244		144d·341	HA,M	2222	0·978	296·2	197·0	+25·2	0	20	
		2219*d*	0·329	4·7	157·0	+17·5	16	113				2222	0·950	296·3	190·3	+24·4	0	19	517*c*
		2219	0·334	11·7	154·5	+17·5	3	44		I.		2219*b*	0·695	294·0	162·3	+15·4	41	165	
		2219	0·346	17·2	152·5	+17·7	17	82				2219	0·700	297·0	162·0	+17·5	3	19	
		2220	0·482	130·3	135·7	−19·5	11	67				2219*c*	0·674	296·7	160·1	+16·6	25	103	765*c*
		2221	0·580	52·2	129·7	+19·3	0	9	169*c*			2219	0·654	297·5	158·4	+16·5	0	1	
		2221	0·603	54·6	127·4	+19·0	3	20				2219	0·645	300·1	157·0	+17·8	5	28	
		2221*a*	0·700	58·7	119·2	+20·0	7	29	92*c*			2219	0·610	302·9	153·8	+18·2	2	71	
			0·801	58·8	110·5	+23·4			365			2220	0·394	215·4	135·3	−20·0	11	71	
			0·880	118·6	99·8	−25·7			230			2221	0·407	330·6	133·5	+19·4	5	18	
May 22		Centre			(158·6)	(−1·6)	(141)	(958)	(1742)			2221	0·376	346·2	126·8	+20·0	12	35	
												2221	0·384	357·5	122·3	+21·2	0	2	
142·581	HA,M	2217*a*	0·897	247·7	206·8	−20·6	0	19	115*c*			2225*a*	0·831	63·9	68·6	+20·6	11	29	
		2219	0·454	311·5	165·2	+16·1	2	19				2225*b*	0·854	64·2	66·0	+21·1	0	23	
		2219*b*	0·417	314·6	162·5	+15·6	37	183				2224*a*	0·923	106·9	54·7	−16·1	66	280	
		2219	0·425	318·3	161·7	+17·0	7	42				2224	0·945	106·4	51·0	−15·9	0	10	402*c*
		2219	0·430	323·7	160·1	+18·7	0	1				2224	0·957	108·7	48·9	−18·2	0	21	
		2219*c*	0·396	322·4	159·1	+16·8	26	213				2224	0·961	106·8	47·9	−16·5	0	64	
		2219*d*	0·381	330·3	156·0	+17·8	9	48		May 25		Centre			(121·3)	(−1·3)	(181)	(979)	(1684)
		2219	0·443	338·2	154·8	+22·8	2	12		145·465									
		2219	0·364	335·2	153·8	+17·8	6	50			HA,M	2219	0·872	290·2	165·1	+16·9	0	20	
		2220	0·347	154·5	135·5	−19·7	7	52				2219*b*	0·850	288·9	162·8	+15·3	19	98	1413*c*
		2221	0·411	33·1	130·9	+18·6	7	43				2219*c*	0·827	291·1	159·9	+16·6	0	78	
		2221	0·475	38·7	126·2	+20·3	14	90				2220	0·559	234·8	135·4	−19·8	12	51	
		2221	0·509	41·9	123·4	+20·8	0	4				2221	0·569	309·3	134·3	+20·0	1	14	
May 23		Centre			(144·6)	(−1·5)	(117)	(776)	(115)			2221	0·498	315·1	128·3	+19·5	5	21	
												2221	0·488	310·0	129·4	+17·1	0	5	
143·204	HA,M		0·925	246·1	202·4	−22·5			106			2221	0·477	319·0	125·9	+19·9	0	15	
			0·914	301·0	198·0	+27·4			297			2225*a*	0·660	56·1	70·8	+20·6	3	22	263*c*
M		2219*b*	0·515	305·4	162·1	+16·0	24	170				2225*b*	0·711	57·9	66·4	+21·2	0	15	
		2219*c*	0·492	309·2	159·7	+16·8	14	127				2224*a*	0·791	109·4	55·8	−16·0	39	234	
		2219*d*	0·469	314·7	156·7	+17·9	9	88				2224	0·823	111·1	52·9	−17·9	0	15	1116*c*
		2219	0·444	320·6	153·5	+18·7	11	53		May 26		2224	0·851	108·9	49·6	−16·6	14	95	
		2219	0·413	320·7	152·1	+17·2	0	4				Centre			(105·5)	(−1·2)	(93)	(683)	(2792)
		2220	0·317	177·9	135·6	−19·8	12	51		146·439	HA,M	2219*b*	0·939	286·8	162·9	+15·4	16	90	1053*nf*
		2221	0·358	12·4	131·7	+19·0	7	39				2220	0·708	242·6	136·0	−19·7	11	58	
		2221	0·404	24·2	126·2	+20·2	18	101				2226	0·751	237·8	138·3	−24·3	7	40	
		2221	0·441	30·1	122·7	+21·0	0	9				2226	0·725	235·5	135·3	−24·9	7	38	517*c*
		2221	0·516	26·7	121·4	+26·0	0	3				2226	0·705	231·5	132·3	−25·7	0	18	
		2223	0·927	109·9	69·4	−18·9	0	10				2221	0·718	300·0	135·7	+20·3	0	11	
		2224*a*	0·986	107·3	56·2	−17·3	17	126	160*np*			2221	0·650	302·7	129·7	+19·7	0	5	221*c*
May 24		Centre			(136·3)	(−1·4)	(112)	(781)	(563)			2221	0·628	306·1	127·0	+20·8	0	4	

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

Group 2223, May 24. A small spot.
Group 2224, May 24–June 4. A regular spot, *a*, with a number of small spots following it. The group diminishes in size after May 28.
Group 2225, May 25–27. A number of small spots in two compact clusters, *a* and *b*.
Group 2226, May 27–28. Three spots, of which only one remains by May 28.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°				1891.				°	°	°			
146d·439	HA,M	2227	0·405	309·7	113·0	+14·0	0	19		150d·512	HA,M	2229	0·467	45·4	20·8	+18·6	7	36	} 110*f*
		2225*a*	0·518	44·4	71·6	+20·8	0	19				2229	0·514	50·8	15·1	+18·4	17	117	
		2225*b*	0·568	48·3	67·4	+21·2	0	23				2228	0·643	58·4	4·5	+19·2	0	7	
		2224*a*	0·646	113·7	56·5	−15·8	39	210	}				0·835	60·2	347·4	+24·1			209
		2224	0·683	112·2	53·4	−15·7	4	54	} 1128*c*				0·971	67·9	325·1	+21·3			301
		2224	0·684	114·2	51·8	−23·1	0	5	}	May 31		Centre			(39·8)	(−0·5)	(52)	(357)	(620)
		2224	0·725	111·8	49·9	−16·3	24	73	}										
May 27		Centre			(94·3)	(−1·0)	(108)	(667)	(2919)										
										151·439	HA,M	2230	0·789	297·6	75·8	+21·2	0	21	96*f*
147·454	HA,M	2219*c*	0·986	285·7	159·6	+15·3	0	61	333*nf*			2224	0·524	242·5	55·9	−14·3	0	11	
		2220	0·839	247·0	135·0	−19·7	6	33	} 792*c*			2224*a*	0·529	236·7	54·8	−17·2	29	134	
		2226	0·831	237·6	131·8	−27·0	0	34	}			2224	0·511	240·1	54·6	−15·1	0	5	
		2221	0·803	295·5	130·2	+19·7	0	4	} 603*c*			2229	0·356	19·6	20·2	+19·1	8	33	
		2221	0·764	298·4	125·8	+20·6	10	27	}			2229	0·379	32·9	14·9	+18·1	18	85	
		2224*a*	0·482	123·6	55·5	−16·3	49	210				2231*a*	0·990	66·8	306·6	+22·9	0	41	126*p*
		2224	0·503	120·0	53·4	−15·3	7	98					0·918	65·2	323·3	+22·4			377
		2224	0·556	117·8	49·5	−15·7	4	33		June 1		Centre			(27·4)	(−0·4)	(55)	(330)	(599)
		2228	0·976	69·4	4·1	+19·8	0	85	139*f*										
May 28		Centre			(80·1)	(−0·9)	(76)	(585)	(1867)	152·342	HA,M		0·781	248·6	19·9	−16·7			151
												2232	0·910	254·9	82·3	−17·5	0	15	115*f*
148·520	HA,M		0·785	300·1	113·2	+22·6			338	I.		2230	0·876	294·4	74·0	+21·0	0	56	521*c*
		2220	0·938	249·3	134·5	−19·7	0	13	544*nf*			2224*a*	0·676	244·2	54·9	−17·3	24	111	} 285*c*
		2221	0·881	293·9	125·0	+20·4	2	45	361*c*			2224	0·661	247·6	54·5	−14·8	0	8	
		2224*a*	0·335	146·0	54·8	−16·9	47	207				2233	0·634	301·9	50·1	+19·3	0	7	
		2224	0·318	140·5	54·0	−14·9	4	38				2229	0·323	343·6	21·0	+17·7	0	13	
		2224	0·346	140·8	52·9	−16·3	0	22				2229	0·350	346·2	20·6	+19·5	13	22	
		2224	0·391	134·1	49·0	−16·5	0	19				2229	0·330	2·4	16·3	+18·9	16	83	
		2224	0·453	135·7	46·5	−19·6	0	18				2231*a*	0·948	65·0	306·2	+23·5	12	97	952*p*
		2228	0·899	67·9	4·2	+19·4	14	47	353*f*				0·911	119·6	313·1	−26·8			218
May 29		Centre			(66·0)	(−0·8)	(67)	(409)	(1596)	June 2		Centre			(15·5)	(−0·3)	(65)	(412)	(2242)
149·647	HA,M		0·898	295·4	112·3	+22·3			298	153·642	HA,M		0·982	256·8	76·8	−13·0			151
		2224*a*	0·290	192·9	55·1	−17·1	34	172				2230	0·962	292·4	70·8	+21·5	0	19	462*c*
		2224	0·252	193·8	54·7	−14·9	0	5				2224	0·852	250·2	54·9	−16·9	10	62	382*c*
		2224	0·280	183·9	52·3	−16·9	3	25				2229	0·492	310·4	21·4	+18·4	5	22	
		2229	0·598	57·8	19·2	+17·9	0	33	} 72*c*			2229	0·477	315·3	19·0	+19·6	1	5	
		2229	0·647	60·0	15·2	+18·3	8	80	}			2229	0·452	316·3	17·4	+18·8	1	4	
		2228	0·764	64·0	4·8	+19·0	0	41	74*c*			2229	0·424	320·7	14·6	+18·9	7	33	
May 30		Centre			(51·2)	(−0·7)	(45)	(356)	(444)			2231	0·789	61·9	309·9	+21·7	0	4	} 757*c*
												2231*a*	0·807	61·9	308·1	+22·2	18	89	
150·512	HA,M	2224*a*	0·378	221·9	55·0	−16·8	28	177				2231	0·857	64·3	302·2	+21·7	0	8	
		2224	0·352	217·6	52·7	−16·6	0	13				2231	0·888	65·0	298·2	+21·9	2	17	
		2224	0·334	203·4	47·8	−18·3	0	7		June 3		Centre			(358·2)	(−0·2)	(44)	(263)	(1752)

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 longitude and latitude of the centre of the disk are given in brackets.

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

Group 2227, May 27. Two small faint spots measured together.

Group 2228, May 28–31. A single spot which rapidly decreases.

Group 2229, May 30–June 5. A number of small spots in two compact clusters, which form just in advance of Group 2228. The group tends to lengthen out, and is composed of four small spots in a straight line on June 3. These have all disappeared by June 4, except two small spots at the following end of the group.

Group 2230, June 1–3. A small spot on June 1; two small spots measured together on June 2; only the following member of the pair remains by June 3.

Group 2231, June 1–11. A regular spot, *a*, preceded on June 3 and 4 by a very small spot, and followed by two or three small spots. A very small spot is seen preceding *a* on June 6 and 7. This portion of the group has greatly increased by June 8, and the leading spot, *b*, has become a considerable regular spot by June 9. *a* has disappeared by June 11.

Group 2232, June 2. A small spot.

Group 2233, June 2. A very small spot.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°				1891.				°	°	°			
154^{d}·669	HA,M	2224	0·947	251·4	54·8	−17·6	0	22	481*c*	159^{d}·406	HA,M	2231*b*	0·650	305·4	317·4	+22·5	14	83	
		2229	0·576	304·0	14·8	+18·7	4	35				2231	0·628	308·2	314·3	+23·4	14	67	
		2229	0·578	306·9	14·1	+20·2	0	7				2231*a*	0·580	310·4	310·4	+22·6	13	60	
		2231	0·641	52·7	311·3	+22·7	0	4					0·908	62·4	344·4	+25·1			521
		2231*a*	0·664	54·0	309·2	+22·8	13	101		June 9		Centre			(281·9)	(+0·6)	(41)	(210)	(521)
		2231	0·688	55·8	306·8	+22·7	0	13											
		2231	0·741	57·3	302·0	+23·5	0	11		160·441	HA,ER	2231*b*	0·800	298·0	318·0	+22·5	0	78	
June 4		Centre			(344·7)	(−0·1)	(17)	(193)	(481)			2231	0·759	300·5	313·4	+23·1	11	46	397*c*
												2231	0·761	302·8	312·9	+24·8	9	36	
												2231*a*	0·729	300·3	310·9	+22·6	4	35	
155·326	CL,M		0·975	287·7	52·5	+17·2			417			2234	0·601	53·6	237·1	+21·4	18	76	
			0·965	251·1	49·7	−18·2			541			2234	0·649	57·7	232·5	+20·8	6	53	
I.		2229	0·700	298·1	16·7	+19·3	0	3	223*f*			2235	0·976	65·2	192·1	+24·3	0	30	537*p*
		2229	0·683	298·5	15·2	+19·0	2	12					0·850	58·4	214·3	+26·8			295
		2231*a*	0·571	45·8	309·6	+23·5	24	92					0·925	118·5	203·8	−25·9			121
		2231	0·621	49·5	305·1	+23·8	0	5		June 10		Centre			(268·3)	(+0·7)	(48)	(354)	(1350)
		2231	0·654	51·4	302·1	+24·1	0	6											
June 5		Centre			(336·0)	(+0·1)	(26)	(118)	(1181)	161·436	HA,M		0·873	237·2	310·9	−27·7			166
													0·760	304·9	299·0	+26·3			613
156·328	CL,HA		0·952	299·8	32·1	+28·2			98			2231*b*	0·906	294·2	318·1	+22·2	0	44	916*c*
			0·968	301·8	35·6	+30·7			53			2231	0·890	295·7	315·5	+23·0	0	39	
I.			0·841	292·8	17·6	+19·1			451			2231	0·877	296·9	313·6	+23·8	0	61	
		2231	0·428	20·5	313·3	+23·7	0	5				2234*a*	0·438	36·3	239·0	+21·4	32	149	
		2231*a*	0·445	27·5	309·8	+23·3	16	89				2234	0·484	45·0	233·7	+20·7	0	6	
		2231	0·454	33·1	307·2	+22·5	0	10				2234	0·504	47·2	231·9	+20·7	23	111	
		2231	0·473	34·8	305·7	+23·0	0	20				2235	0·906	63·8	192·5	+23·9	0	14	494*c*
		2231	0·517	35·8	303·3	+24·9	0	17					0·735	52·6	214·3	+27·0			206
		2231	0·492	39·6	303·0	+22·4	0	6		June 11		Centre			(255·1)	(+0·8)	(55)	(424)	(2395)
June 6		Centre			(322·7)	(+0·2)	(16)	(147)	(602)										
										162·647	HA,ER		0·922	236·4	302·5	+31·0			204
													0·899	297·7	300·4	+25·1			556
157·316	HA,M		0·869	294·1	7·5	+20·9			292			2234*a*	0·352	358·7	239·6	+21·4	19	141	
		2231	0·410	351·1	313·6	+24·1	0	9				2234	0·360	20·2	231·5	+20·6	0	41	
I.		2231*a*	0·391	359·4	309·9	+23·2	11	81				2235*a*	0·695	52·1	201·7	+25·9	16	86	
		2231	0·400	8·5	305·9	+23·5	2	10				2235	0·718	51·3	201·2	+27·3	0	12	291*c*
June 7		Centre			(309·6)	(+0·3)	(13)	(100)	(292)			2235	0·699	53·7	200·8	+25·0	0	15	
												2235	0·762	53·5	195·6	+27·5	2	27	
													0·833	59·6	186·6	+25·5			482
													0·947	104·2	168·8	−13·1			226
158·644	HA,M	2231	0·555	313·3	318·0	+22·7	4	25		June 12		Centre			(239·1)	(+0·9)	(37)	(322)	(1759)
		2231	0·532	316·2	315·5	+22·8	0	19											
		2231	0·514	319·4	313·4	+23·3	12	44		163·510			0·940	295·5	295·9	+24·2			409
		2231*a*	0·476	322·6	310·3	+22·5	15	74				2234*a*	0·393	331·1	239·4	+21·0	29	121	
June 8		Centre			(292·1)	(+0·4)	(31)	(162)	(0)			2234	0·406	335·3	238·2	+22·5	1	11	

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 longitude and latitude of the centre of the disk are given in brackets.
The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 2234, June 10–16. Two spots of irregular outline on June 10. The preceding spot of the pair has become a regular spot, *a*, by June 11. The following spot tends to break up and diminish in size on the succeeding days, and *a* remains alone by June 14.
Group 2235, June 10–20. A small faint spot, on June 10 and 11. By June 12 a fresh outbreak has taken place *s p* of the spot first seen, and a regular spot, *a*, is seen followed by several smaller spots. The group diminishes after June 16, and only *a* remains on June 18. A few very small faint spots are all that remain on June 19 and 20.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°			
163d·510	HA,ER	2234	0·382	340·9	235·4	+22·0	0	9	
		2234	0·349	348·2	232·3	+20·9	2	20	
		2235*a*	0·578	41·4	202·5	+26·5	18	92	
		2235	0·642	34·3	202·3	+32·8	0	5	
		2235	0·578	45·0	201·0	+24·9	0	8	
		2235	0·655	46·7	195·3	+27·5	8	50	
		2236	0·881	73·7	166·9	+14·8	0	9	823*c*
		2236	0·885	74·7	166·3	+14·0	0	6	
June 13		Centre			(227·7)	(+1·0)	(58)	(331)	(1232)
164·629	HA,M	2234*a*	0·537	310·5	238·8	+21·4	18	113	
		2235*a*	0·468	18·2	203·5	+27·5	5	57	
		2235	0·468	21·6	201·8	+26·9	9	79	
		2235	0·504	25·9	198·5	+28·0	0	12	
		2236	0·732	71·2	167·4	+14·4	0	8	
		2236	0·764	71·7	164·5	+14·7	0	4	
		2237*a*	0·955	71·6	140·9	+17·9	28	258	194*c*
		2237	0·987	70·3	132·6	+19·6	0	155	
June 14		Centre			(212·9)	(+1·2)	(60)	(686)	(194)
165·307	CL,JG		0·959	284·9	276·9	+14·7			138
		2238	0·905	290·5	267·3	+19·0	0	8	
I.		2238	0·882	292·4	263·9	+20·3	0	12	186*c*
		2238	0·874	295·0	262·4	+22·3	0	10	
		2234	0·634	302·7	238·5	+21·0	10	87	154*c*
		2235	0·438	0·4	203·6	+27·1	16	47	
		2235	0·420	3·7	202·1	+26·0	4	19	
		2235	0·435	4·6	201·6	+26·9	1	13	255*c*
		2235	0·443	6·6	200·5	+27·3	0	4	
		2235	0·461	11·0	198·1	+28·1	10	25	
		2235	0·477	19·1	193·7	+28·0	0	8	
		2236	0·609	67·7	168·4	+14·4	19	129	
		2236	0·639	66·0	166·6	+16·0	4	15	353*c*
		2236	0·679	70·1	162·7	+14·3	0	8	
		2237	0·907	70·5	139·9	+18·2	80	264	
		2237	0·928	69·4	136·8	+19·6	0	24	1028*c*
		2237	0·954	69·2	132·2	+20·2	13	112	
		2237	0·957	71·8	131·3	+17·8	6	58	
			0·776	63·9	155·8	+20·7			376
			0·942	111·3	135·4	−19·5			97
June 15		Centre			(203·8)	(+1·3)	(163)	(843)	(2587)
166·534	HA,ER	2238	0·992	290·5	270·2	+20·5	0	104	515*c*
		2238	0·973	290·6	263·7	+20·4	71	441	
166d·534	HA,ER	2238	0·966	293·5	261·7	+23·0	22	100	515*c* 386*nf*
		2234*a*	0·798	296·0	237·9	+21·4	3	45	
		2235*a*	0·499	330·2	203·8	+26·9	11	63	
		2235	0·486	333·4	201·8	+27·0	3	31	
		2235	0·477	340·5	198·0	+28·0	2	25	
		2239*a*	0·422	5·0	185·4	+26·2	3	16	
		2239*b*	0·461	8·5	183·3	+28·4	5	27	
		2236	0·376	54·2	169·5	+14·0	6	44	
		2236	0·396	53·3	168·6	+15·0	6	11	
		2236	0·414	56·1	167·0	+14·6	3	19	
		2236	0·433	59·0	165·3	+14·1	5	23	
		2236	0·461	56·9	164·1	+15·9	6	21	
		2236	0·439	64·1	164·0	+12·3	0	5	
		2236	0·465	61·9	162·8	+13·9	1	33	
		2237*a*	0·761	67·5	140·3	+17·8	34	309	
		2237	0·796	66·8	137·1	+19·2	1	11	
		2237	0·836	66·5	133·1	+20·2	4	40	1209*f*
		2237	0·846	69·7	131·5	+17·8	7	85	
June 16		Centre			(187·7)	(+1·4)	(193)	(1453)	(2110)
167·430	CL,HA		0·875	294·2	234·8	+21·8			405
		2240	0·695	299·8	215·9	+21·3	0	31	242*p*
		2240	0·679	304·4	213·3	+23·7	0	18	
		2235*a*	0·597	315·6	203·4	+26·5	7	30	237*c*
		2235	0·578	318·3	201·1	+26·8	0	5	
		2239*a*	0·450	339·1	186·0	+26·2	0	14	
		2239*b*	0·463	347·1	182·4	+28·2	0	35	
		2236	0·237	26·1	169·3	+13·7	13	113	
		2236	0·277	28·0	168·0	+15·6	0	10	
		2236	0·294	30·5	166·8	+16·1	2	17	
		2236	0·282	36·1	165·8	+14·6	7	40	
		2236	0·323	38·2	163·7	+16·2	0	4	
		2236	0·306	43·5	163·2	+14·3	1	16	
		2237	0·593	63·5	142·2	+16·6	0	8	
		2237*a*	0·632	63·4	139·3	+18·2	53	280	
		2237	0·704	64·8	133·6	+18·6	0	6	836*c*
		2237	0·714	63·3	133·2	+19·8	0	21	
		2237	0·713	66·5	132·6	+17·5	2	40	
		2237	0·742	66·7	130·1	+18·1	0	12	
June 17		Centre			(175·7)	(+1·5)	(85)	(700)	(1720)
168·454	HA,M		0·951	292·7	233·1	+22·0			381
		2240	0·833	294·5	216·5	+21·1	0	27	369*c*
		2240	0·808	297·1	213·2	+22·6	2	62	

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 longitude and latitude of the centre of the disk are given in brackets.
The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 2236, June 13–23. Two very small faint spots on June 13. The group increases in size and complexity on the succeeding days, and becomes an extensive group composed of a great number of spots irregularly disposed, but not widely scattered. The group diminishes rapidly after June 17, but has revived again by June 22. It consists, on June 22 and 23, principally of two well-defined spots.
Group 2237, June 14–26. A large regular spot, *a*, followed by a number of small spots. The smaller spots have disappeared by June 23.
Group 2238, June 15–16. Two very small spots on June 15. The group has undergone an enormous extension by the succeeding day.
Group 2239, June 16–21. Two spots of irregular outline, *a* and *b*. Only *b* remains by June 18. A number of small spots have appeared by June 19, and are measured with *b*. These have separated more widely by June 20, and are measured individually.
Group 2240, June 17–20. A small group forming just in advance of Group 2235. Two spots on June 17 and 19, three on June 18, one on June 20.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°			
168d·454	HA,M	2240	0·792	300·6	210·7	+24·8	0	12	369*c*
		2235*a*	0·729	306·2	203·3	+27·0	5	18	
		2239*b*	0·536	327·2	181·4	+28·2	0	22	
		2236	0·259	328·1	170·3	+14·3	11	102	
		2236	0·229	351·2	164·3	+14·6	5	44	
		2237*a*	0·455	51·4	140·3	+18·0	44	274	
		2237	0·547	58·3	133·0	+18·0	0	7	
		2237	0·582	59·3	130·5	+18·6	0	9	
			0·924	62·1	96·9	+26·2			125
			0·961	106·2	89·3	−15·1			75
June 18		Centre			(162·2)	(+1·6)	(67)	(577)	(950)
169·446	HA,M		0·893	275·1	212·2	+ 5·3			335
		2240	0·913	293·0	213·5	+21·6	5	30	420*p*
		2235	0·839	300·7	202·5	+26·3	0	7	510*c*
		2235	0·831	306·6	199·8	+30·7	0	6	
		2235	0·813	302·5	199·2	+26·9	0	9	
		2235	0·787	303·2	196·3	+26·6	0	11	
		2239	0·666	308·3	184·4	+25·7	4	56	
		2236	0·425	300·4	171·2	+14·0	5	79	
		2236	0·365	312·1	165·4	+15·7	4	21	
		2237*a*	0·323	27·9	140·0	+18·2	35	206	
		2237	0·318	35·9	137·9	+16·5	2	15	
		2237	0·370	30·8	137·5	+20·1	2	18	
			0·925	108·6	83·2	−16·5			145
			0·971	59·8	74·2	+29·7			133
			0·968	70·6	74·1	+19·2			156
June 19		Centre			(149·1)	(+1·7)	(57)	(458)	(1699)
170·090	CL,M	2240	0·960	292·6	213·4	+22·2	0	16	342*n*
		2235	0·893	294·7	201·8	+22·7	0	8	585*nf*
I.		2235	0·877	296·3	199·5	+23·8	0	2	
		2239	0·781	301·6	187·8	+25·4	0	7	436*c*
		2239	0·770	299·2	187·3	+23·2	0	11	
		2239	0·767	302·7	186·1	+25·7	0	11	
		2239	0·751	301·4	185·0	+24·3	0	7	
		2239	0·734	302·2	183·3	+24·3	0	2	
		2239	0·734	305·2	182·3	+26·3	14	30	
		2236	0·559	292·3	172·5	+13·7	2	32	
		2236	0·475	299·8	165·7	+15·3	0	4	
		2241*a*	0·561	244·8	171·7	−12·3	9	18	
		2241*b*	0·541	239·9	169·2	−14·1	6	15	
		2237*a*	0·285	1·2	140·2	+18·3	43	179	
1891.				°	°	°			
170d·090	CL,M	2237	0·322	9·9	137·1	+20·3	0	15	
		2237	0·309	22·4	133·4	+18·3	0	4	
I.		2237	0·369	24·4	131·1	+21·3	0	18	
		2242*a*	0·987	75·7	59·8	+14·4	0	138	
			0·792	53·5	93·8	+29·3			135
			0·857	109·6	82·8	+17·7			333
			0·937	58·7	73·4	+29·8			380
			0·937	69·0	71·9	+20·3			459
			0·955	105·6	69·1	−14·3			102
June 20		Centre			(140·5)	(+1·8)	(74)	(517)	(2772)
171·621	HA,M	2239	0·919	298·1	185·0	+26·5	0	14	774*c*
		2239	0·896	298·9	181·4	+26·6	0	17	
		2241*a*	0·813	253·7	173·0	−12·0	2	16	220*c*
		2241*b*	0·780	250·3	169·3	−13·9	0	13	
		2236	0·772	287·3	169·7	+14·6	6	25	923*c*
		2236	0·753	288·5	167·8	+15·1	0	4	
		2236	0·724	288·1	165·4	+14·4	6	56	
		2237*a*	0·426	311·9	139·8	+18·4	34	190	
		2237	0·421	318·4	137·6	+20·2	0	13	
		2237	0·375	311·7	137·2	+16·3	0	6	
		2242*a*	0·862	74·8	61·5	+14·1	18	234	
		2243	0·925	74·8	53·1	+14·8	0	75	559*c*
		2244*a*	0·973	73·4	44·0	+16·6	11	138	
			0·904	110·9	58·0	−17·9			292
June 21		Centre			(120·3)	(+2·0)	(77)	(801)	(2768)
172·473	HA,M		0·933	298·9	175·9	+29·6			572
		2241*a*	0·913	255·6	173·4	−12·3	0	17	235*f*
		2236	0·885	285·0	170·5	+14·2	20	95	
		2236	0·863	285·9	167·8	+14·8	0	9	1071*nf*
		2236	0·838	285·1	165·1	+13·8	19	85	
		2245*a*	0·574	264·4	143·6	− 2·1	2	14	
		2245	0·552	263·6	142·0	− 1·7	0	4	
		2237*a*	0·559	300·7	139·2	+18·3	38	189	
		2237	0·526	300·0	137·2	+17·1	0	2	
		2237	0·546	307·8	136·4	+21·4	0	23	
		2242*a*	0·749	73·2	61·5	+13·9	30	212	
		2243	0·809	73·1	55·9	+14·9	0	22	318*c*
		2343	0·839	69·3	53·3	+18·4	0	7	
		2243*a*	0·843	73·4	52·3	+15·1	18	94	
		2244*a*	0·917	72·4	43·1	+17·0	36	192	346*c*
		2246	0·968	74·8	33·7	+15·2	8	41	
			0·855	114·4	53·4	−19·5			306

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 longitude and latitude of the centre of the disk are given in brackets.
The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 2241, June 20–22. Two small faint spots, *a* and *b*. Both are dark distinct spots on June 21. Only *a* remains by June 22.
Group 2242, June 20–July 1. One large spot, *a*, of irregular outline on June 21. Three nuclei are seen in the spot on June 22, which has become regular in outline by June 23. A small companion is seen near *a* on this day, and another on June 27. *a* remains a large regular spot until it reaches the west limb on July 1.
Group 2243, June 21–29. One spot of irregular outline on June 21. Two short streams of small spots at right angles to each other, followed by a small regular spot, *a*, on June 22. On June 23 the group consists almost entirely of one stream, of which *a* is the last member, one small spot alone lying to the north. On June 24 the group consists of two converging streams, the southern of which is much the larger. On the succeeding days the group consists of a single stream which decreases from day to day.
Group 2244, June 21–July 3. A large regular spot, *a*. A few small faint companions are seen near *a* on June 25, 26, and 30, and July 1 and 2.
Group 2245, June 22–25. Two small spots on June 22, of which only the preceding, *a*, is seen on June 23. A second, *b*, is seen on June 24 with *a*, but *a* has disappeared by June 25.
Group 2246, June 22–25. A small spot on June 22. Two small spots measured together on June 23. One small spot on the succeeding days.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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.
					Longitud.	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).
1891.				°	°	°				1891.				°	°	°			
172d·473	HA,M		0·887	79·4	46·7	+10·4			50	175d·200	HA,M	2237*a*	0·922	288·0	139·4	+17·5	42	199	1642*nf*
			0·980	111·6	32·2	−20·7			103			2242*a*	0·269	41·7	62·2	+13·9	25	195	
June 22		Centre			(108·9)	(+2·1)	(171)	(1006)	(3001)	I.		2243	0·384	47·3	55·7	+17·3	0	10	
												2243	0·385	54·3	54·0	+15·3	2	86	
173·310	CL,HA		0·967	255·2	171·9	−13·7			165			2243	0·425	47·5	53·5	+18·9	0	4	
			0·846	298·6	152·9	+25·2			290			2243*a*	0·410	59·1	51·6	+14·3	0	29	
I.		2236	0·969	283·3	173·5	+13·4	7	104	916*nf*			2244	0·553	59·8	42·7	+18·2	0	4	
		2236	0·927	283·6	165·5	+13·4	7	72				2244*a*	0·545	62·8	42·6	+16·4	34	155	
		2245*a*	0·718	265·3	143·4	− 1·9	0	16	641*c*			2248	0·597	115·2	39·3	−12·7	0	6	173*c*
		2237*a*	0·695	294·1	139·6	+18·1	36	182				2248	0·629	113·6	36·7	−12·6	0	11	
		2242*a*	0·607	69·7	62·1	+14·0	46	225				2246	0·642	68·9	34·6	+15·2	0	12	
		2242	0·633	69·2	60·3	+14·7	0	5				2247*a*	0·694	124·4	35·1	−21·1	8	21	
		2243	0·693	70·4	55·5	+15·1	4	25				2247	0·695	121·6	34·1	−19·5	0	9	385*c*
		2243	0·725	69·6	53·0	+16·2	4	23				2247	0·747	120·6	29·6	−20·6	0	7	
		2243	0·732	69·0	52·6	+16·7	0	5	372*c*			2249*a*	0·985	121·3	335·7	−30·3	0	39	
		2243	0·730	71·2	52·4	+15·1	0	17		June 25		Centre			(72·8)	(+2·4)	(111)	(818)	(2725)
		2243	0·745	65·0	52·2	+19·9	5	19											
		2243*a*	0·738	71·5	51·6	+15·0	13	61		176·478	HA,M	2237*a*	0·995	287·3	140·7	+17·5	0	201	728*nf*
		2244*a*	0·833	71·1	42·7	+16·9	26	144	629*f*			2242*a*	0·237	330·4	63·0	+14·3	31	198	
		2246	0·911	73·5	32·9	+15·9	0	23				2243	0·241	355·4	57·2	+16·3	3	27	
			0·802	117·9	48·9	−20·6			172			2243	0·230	7·7	54·3	+15·7	6	25	
			0·892	106·0	36·4	−13·2			51			2243	0·207	8·8	54·3	+14·3	0	2	
			0·926	113·5	32·9	−20·7			149			2243	0·205	19·3	52·1	+13·6	0	5	
June 23		Centre			(97·9)	(+2·2)	(148)	(921)	(3385)			2244	0·304	40·9	44·2	+15·7	1	11	
												2244*a*	0·326	43·5	42·7	+16·0	26	127	
174·632	HA,M		0·945	295·5	150·3	+24·8			190			2248	0·362	137·2	41·5	−12·9	3	12	
			0·903	237·3	139·7	−28·0			74			2248	0·389	131·2	39·1	−12·4	0	14	
			0·958	1·9	73·4	+75·2			97			2248	0·427	128·7	36·2	−13·1	3	7	
		2245*b*	0·909	267·7	145·5	− 1·1	3	22	141*c*			2247*a*	0·508	143·0	37·0	−21·5	36	206	
		2245*a*	0·883	267·1	142·2	− 1·5	0	13				2247	0·516	136·7	34·1	−19·7	3	14	
		2237*a*	0·864	289·6	139·1	+18·0	33	151	1009*nf*			2247	0·556	137·7	32·4	−21·9	10	28	
		2242*a*	0·366	56·1	62·3	+14·0	35	250				2247*b*	0·563	133·4	30·2	−21·2	30	114	
		2243	0·455	61·0	56·3	+14·9	0	3				2249*a*	0·921	125·3	355·1	−30·9	8	33	416*c*
		2243	0·484	63·1	54·1	+14·7	4	21				2249	0·948	125·4	350·2	−32·3	0	5	
		2243	0·506	57·3	54·0	+17·8	3	10					0·960	67·3	341·5	+22·5			199
		2243	0·546	56·7	51·7	+19·4	2	6	290*c*	June 26		Centre			(56·1)	(+2·5)	(160)	(1029)	(1343)
		2243*a*	0·517	65·5	51·6	+14·3	3	34											
		2244*a*	0·641	67·0	42·7	+16·3	24	154											
		2247*a*	0·773	119·8	34·8	−20·9	3	10	403*f*	177·430	HA,M		0·905	304·9	104·7	+32·4			166
		2246	0·732	71·7	34·7	+14·9	2	8	388*f*			2242*a*	0·391	302·4	63·3	+14·6	24	171	
June 24		Centre			(80·5)	(+2·3)	(112)	(682)	(2597)			2242	0·364	300·8	62·1	+13·3	2	16	
												2243	0·340	312·0	58·5	+15·7	0	5	
175·200	HA,M		0·921	240·5	135·6	−25·9			324			2243	0·292	320·5	54·5	+15·6	11	44	
I.		2245*b*	0·956	268·0	145·4	− 1·2	0	31	201*c*			2244*a*	0·231	1·7	43·0	+16·0	27	141	

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 longitude and latitude of the centre of the disk are given in brackets.
The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 2247, June 24–July 3. A small spot, *a*, on June 24. Two small spots are seen following *a* on June 25. The group has undergone a very remarkable expansion by June 26, and consists of two large regular spots, *a* and *b*, connected by a stream of small spots. The intermediate spots decrease on the succeeding days, and *a* and *b* alone remain by July 2.

Group 2248, June 25–July 1. Two small spots on June 25, which have formed *n* of Group 2247. The group varies much in form and size from day to day. Its general appearance is that of a straight stream of small spots parallel to Group 2247.

Group 2249, June 25–27. A small spot, *a*, on June 25. A very small companion is seen near it on June 26 and 27.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°				1891.				°	°	°			
177d·430	HA,M	2248	0·290	161·4	38·0	−13·2	3	17		179d·505	HA,M	2247	0·496	211·8	32·2	−22·0	0	7	
		2248	0·301	156·3	36·3	−13·3	0	2				2247	0·501	207·8	30·6	−23·4	0	5	
		2247*a*	0·420	167·6	37·9	−21·4	53	345				2247*b*	0·447	209·7	29·5	−20·0	32	191	
		2247	0·420	157·2	33·5	−20·0	5	28				2251*a*	0·918	59·6	311·4	+28·9	3	16	640*c*
		2247	0·474	158·2	32·4	−23·3	4	36				2251	0·944	57·9	307·1	+31·1	0	8	
		2247*b*	0·451	150·5	29·8	−20·4	34	260					0·773	61·2	331·9	+22·8			306
		2249*a*	0·844	130·4	354·7	−31·3	0	8	362*p*				0·963	122·2	306·9	−29·9			100
		2249	0·881	128·7	349·6	−31·8	0	4		June 29		Centre			(15·9)	(+2·9)	(171)	(953)	(2474)
		2250	0·925	66·7	336·7	+22·5	0	11	549*f*										
			0·910	124·2	343·9	−29·3			125										
June 27		Centre			(43·4)	(+2·7)	(163)	(1088)	(1202)	180·464	HA,M		0·939	290·2	72·7	+20·0			138
												2242*a*	0·863	285·1	62·5	+14·6	21	150	250*c*
178·577	HA,M		0·874	246·5	85·9	−18·9			116			2244	0·740	288·1	49·9	+15·3	2	11	
		2242*a*	0·594	290·7	63·1	+14·4	28	208				2244	0·704	288·6	46·8	+15·1	0	5	141*c*
		2243	0·540	298·4	57·9	+17·3	0	3				2244*a*	0·668	290·1	43·8	−15·5	24	147	
		2243	0·521	294·8	57·4	+15·0	0	5				2248	0·678	248·8	43·4	−11·9	6	15	
		2243	0·504	300·4	55·2	+17·2	0	4				2247*a*	0·672	233·8	38·7	−20·9	50	314	
		2243	0·479	297·1	54·3	+15·1	5	28				2247	0·595	227·7	31·3	−20·9	0	18	
		2243	0·434	298·7	51·3	+14·6	0	5				2247	0·581	225·2	29·5	−21·4	10	38	
		2244*a*	0·338	312·0	43·3	+15·7	26	115				2247*b*	0·561	228·2	29·5	−19·2	24	131	
		2248	0·339	215·3	39·8	−13·3	4	95				2251*a*	0·822	56·9	311·9	+28·5	0	9	127*f*
		2247*a*	0·437	202·8	38·6	−20·9	47	326					0·891	126·3	307·4	−30·1			192
		2247	0·403	192·8	33·6	−20·3	0	27		June 30		Centre			(3·3)	(+3·0)	(137)	(838)	(848)
		2247	0·442	186·9	31·5	−23·1	3	29											
		2247*b*	0·392	182·9	29·4	−20·1	25	237		181·187	CL,M		0·971	292·6	69·5	+22·7			177
		2250	0·802	64·9	337·0	+21·6	0	8	515*f*				0·943	248·2	61·4	−19·3			114
		2251*a*	0·978	60·7	310·7	+29·2	0	8	216*c*	I.		2242*a*	0·933	284·0	62·3	+14·2	23	132	
June 28		Centre			(28·2)	(+2·8)	(138)	(1098)	(847)			2244	0·839	286·2	49·9	+15·3	0	9	851*c*
												2244*a*	0·773	287·4	43·2	+15·3	25	128	
179·505	HA,M		0·940	248·9	83·5	−18·7			106			2248	0·792	251·1	43·5	−12·9	4	14	498*c*
			0·849	294·5	72·2	+22·2			267			2248	0·748	250·1	39·4	−12·6	0	6	
			0·860	306·4	70·8	+32·4			126			2247*a*	0·766	238·5	37·8	−21·3	69	328	
			0·807	247·8	66·7	−15·9			327			2247	0·724	234·7	33·0	−22·3	0	17	
		2242*a*	0·741	287·1	62·8	+14·6	28	162	330*c*			2247	0·697	234·9	31·0	−21·1	0	10	654*c*
		2243	0·635	290·5	53·8	+15·1	3	13	169*c*			2247*b*	0·668	235·6	29·2	−19·7	24	138	
		2244*a*	0·503	297·3	43·5	+15·9	27	151	103*c*			2247	0·677	233·1	28·9	−21·4	9	22	
		2248	0·556	243·6	46·4	−11·8	0	4				2251*a*	0·737	52·9	311·6	+28·7	0	6	
		2248	0·516	239·3	42·8	−12·7	9	59				2251	0·761	55·2	308·7	+27·8	0	17	365*c*
		2248	0·504	232·1	40·2	−15·3	0	2				2251	0·796	54·5	305·5	+29·5	0	10	
		2248	0·483	229·4	38·2	−15·6	0	10				2252	0·971	67·7	277·4	+22·4	0	40	
		2248	0·483	228·7	38·0	−15·9	0	7				2252*a*	0·971	71·3	277·3	+18·9	33	193	550*c*
		2248	0·457	232·5	37·7	−13·4	3	19					0·836	128·6	305·1	−29·3			202
		2247*a*	0·541	222·1	38·7	−20·9	66	295					0·886	60·4	293·5	+27·5			360
		2247	0·485	215·8	33·4	−20·3	0	4		July 1		Centre			(353·5)	(+3·1)	(187)	(1070)	(3771)

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 longitude and latitude of the centre of the disk are given in brackets.
The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 2250, June 27–28. A small faint spot.
Group 2251, June 28–July 5. A small faint spot, *a*. A very small companion is seen near it on June 29. *a* has decreased by June 30, and has disappeared by July 2. But some new spots have formed near it by July 1, and these form a straight stream, considerably inclined to the solar equator. One of these spots, *b*, on July 4 and 5, is a small but dark and regular spot.
Group 2252, July 1–12. A large regular spot, *a*, with a companion on July 1. A second regular spot, *b*, follows *a* on July 2 and the succeeding days. A few very small companions are seen near them on July 6 and 7. A number of small spots are seen in advance of *a* on July 8. These increase in number and size on the succeeding days, and have formed a considerable stream by July 10, the leader of which, *c*, is a large regular spot. *b* diminishes in size after July 3.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°				1891.				°	°	°			
182d·480	HA,M	2244	0·931	288·1	44·9	+18·0	0	34	848c	186d·314	HA,M		0·939	234·2	349·1	−31·7			191
		2244a	0·922	285·6	43·6	+15·6	15	163					0·876	231·7	338·6	−30·7			75
		2247a	0·905	244·3	37·6	−21·5	67	293	241c		I.		0·823	240·1	335·8	−21·9			48
		2247b	0·831	244·0	28·8	−19·4	11	71					0·758	297·4	332·4	+22·8			381
		2251	0·578	44·9	309·5	+27·0	4	43				2252	0·243	28·5	278·8	+15·9	0	3	
		2251	0·622	46·5	306·0	+28·0	0	3				2252a	0·303	28·3	277·0	+19·0	43	188	
		2251	0·650	45·0	304·7	+30·0	0	14				2252	0·318	32·4	275·4	+19·1	0	13	
		2252a	0·862	70·5	277·9	+18·4	33	219	864c			2252b	0·383	47·4	268·5	+18·4	10	37	
		2252b	0·929	71·9	268·0	+18·9	14	166				2253	0·450	45·3	265·6	+21·8	0	1	
July 2		Centre			(336·6)	(+3·2)	(144)	(1006)	(1953)			2253	0·496	49·5	261·8	+22·0	0	4	
												2253	0·551	48·7	258·8	+24·5	5	28	
183·423	HA,M		0·982	256·0	41·8	−13·1			335			2254a	0·931	68·7	217·6	+21·1	3	52	
		2244a	0·984	285·1	44·0	+15·5	25	168	474f			2254	0·946	67·7	214·9	+22·3	0	157	768c
I.		2247a	0·972	247·0	37·7	−21·4	66	283	738c			2254b	0·964	65·4	210·1	+24·8	0	50	
		2247b	0·922	247·1	28·2	−19·6	11	44					0·788	61·8	236·3	+24·2			212
		2251	0·444	22·7	312·9	+27·3	0	2			July 6		Centre		(285·7)	(+3·6)	(61)	(535)	(1675)
		2251b	0·439	27·6	311·0	+26·1	7	22											
		2251	0·471	29·2	309·1	+27·4	3	26		187·450	HA,M		0·891	294·5	332·2	+23·5			174
		2251	0·499	30·3	307·4	+28·5	1	7				2252a	0·288	338·1	277·3	+19·2	31	154	
		2251	0·543	32·5	304·4	+30·2	0	4				2252b	0·256	5·7	269·3	+18·4	5	18	
		2252a	0·743	67·8	277·7	+18·6	35	207	1218c			2254a	0·808	67·8	218·2	+20·0	29	269	
		2252b	0·832	69·6	268·8	+18·7	26	195				2254	0·839	65·9	215·3	+22·1	3	59	
July 3		Centre			(324·0)	(+3·3)	(174)	(958)	(2765)			2254	0·866	65·3	212·2	+23·2	11	72	
												2254	0·873	62·0	211·9	+26·1	0	13	
184·581	HA,M		0·725	245·8	351·9	−14·8			137			2254b	0·884	63·8	210·1	+24·8	17	116	
			0·783	326·6	345·2	+43·5			218	July 7		Centre			(270·8)	(+3·7)	(96)	(701)	(174)
		2251b	0·380	353·9	311·5	+25·5	0	8											
		2251	0·398	359·3	309·2	+26·8	0	21		188·189	HA,EE		0·920	296·4	327·9	+25·7			191
		2251	0·430	3·3	307·3	+28·8	0	10					0·807	301·0	311·7	+26·9			273
		2252a	0·564	61·4	277·5	+18·6	34	212			M.	2252	0·452	308·3	283·0	+19·7	0	8	
		2252b	0·673	66·2	268·6	+18·3	14	136				2252	0·458	312·3	282·2	+21·4	2	19	
			0·868	56·5	251·9	+30·5			126			2252a	0·380	315·9	277·2	+19·4	28	181	
			0·848	80·2	251·0	+10·2			110			2252	0·351	318·2	275·2	+18·8	0	5	
			0·937	66·4	240·0	+23·3			143			2252	0·285	326·7	270·4	+17·5	0	4	
July 4		Centre			(308·9)	(+3·4)	(48)	(387)	(734)			2252b	0·286	331·0	269·4	+18·2	5	31	
												2254a	0·689	64·8	219·6	+19·9	44	262	
185·225	HA,M		0·857	230·7	350·4	−30·6			239			2254	0·736	63·8	215·9	+21·6	7	120	
		2251b	0·421	333·8	312·0	+25·5	4	9				2254	0·757	64·0	214·0	+21·9	0	12	
I.		2252a	0·460	53·6	277·3	+19·0	36	188				2254b	0·793	61·1	211·2	+25·0	13	184	210c
		2252	0·518	61·5	271·8	+17·4	0	3	618c			2255a	0·992	74·9	177·6	+15·5	0	43	
		2252b	0·567	61·6	268·6	+18·6	20	105					0·898	63·4	198·5	+25·4			88
			0·901	65·3	277·1	+23·7			198				0·967	64·3	185·8	+25·8			418
			0·725	56·9	257·9	+25·9			544				0·983	80·1	181·3	+10·5			83
July 5		Centre			(300·2)	(+3·5)	(60)	(305)	(1599)	July 8		Centre			(261·0)	(+3·8)	(99)	(869)	(1263)

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 longitude and latitude of the centre of the disk are given in brackets.
The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 2253, July 6. A few very small spots in a straggling stream, *n f* of Group 2252.
Group 2254, July 6–17. A fine stream of spots inclined at a considerable angle to the Sun's equator. The first and last spots, *a* and *b*, are large regular spots. The following portion of the group decreases rapidly after passing the central meridian, and *a* alone remains by July 15.
Group 2255, July 8–20. A fine stream of spots parallel to the Sun's equator. The leader, *a*, is a large regular spot. The smaller spots which follow it decrease as the group crosses the disk.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°				1891.				°	°	°			
189d·165	HA,ER		0·874	301·5	306·4	+29·2			769	191d·499	HA,M	2252*c*	0·929	288·8	285·4	+19·0	13	104	} 293*c*
			0·883	230·4	301·1	−31·9			104			2252	0·892	291·6	279·7	+21·1	0	15	
I.		2252	0·629	297·9	284·2	+20·3	0	4				2252*a*	0·869	289·1	277·0	+18·6	30	190	
		2252	0·614	296·0	283·5	+18·8	4	24				2252*b*	0·813	288·7	270·9	+17·5	0	16	
		2252	0·617	300·6	282·7	+21·5	0	3				2254*a*	0·272	343·4	221·9	+19·2	35	252	
		2252	0·591	299·9	281·0	+20·4	0	7				2254	0·304	357·4	218·0	+21·7	0	26	
		2252*a*	0·536	300·6	277·1	+19·2	42	174				2254	0·369	11·9	212·4	+25·2	0	22	
		2252*b*	0·430	306·0	269·9	+18·3	3	12				2254*b*	0·371	17·0	210·4	+24·7	7	69	
		2254*a*	0·538	56·7	220·4	+20·6	66	271				2257	0·607	121·6	185·0	−15·0	0	4	
		2254	0·557	58·9	217·6	+20·1	2	14				2255*a*	0·627	69·8	179·7	+15·7	23	169	
		2254	0·573	56·1	217·3	+22·0	3	52				2255	0·658	71·3	177·1	+15·3	0	24	
		2254	0·599	57·0	215·2	+22·3	2	12				2255	0·742	71·4	170·2	+16·5	0	23	
		2254*b*	0·653	56·3	211·5	+24·3	27	172				2256*a*	0·718	60·2	174·4	+23·9	33	230	
		2255*a*	0·945	76·1	177·0	+14·4	6	142				2256*b*	0·766	62·3	168·5	+25·9	34	178	
		2255	0·977	73·9	170·0	+16·6	2	125	558*c*				0·902	117·8	159·0	−20·5			121
		2256	0·957	65·2	175·1	+24·8	0	11	470*c*				0·962	68·8	142·9	+21·5			261
			0·922	109·0	203·0	−12·1			203	July 11		Centre			(217·2)	(+4·1)	(175)	(1322)	(675)
July 9		Centre			(248·0)	(+3·9)	(157)	(1023)	(2104)										
										192·194	CL,M	2252*c*	0·977	289·1	286·2	+19·6	0	113	} 209*p*
190·251	HA,ER		0·955	234·5	300·3	−32·2			108			2252	0·952	291·5	280·1	+21·7	0	39	
			0·908	299·6	297·2	+28·8			605	M.		2252*a*	0·934	288·5	277·0	+18·8	25	186	
I.		2252*c*	0·790	291·5	284·7	+19·3	11	99	}			2254*a*	0·353	318·9	222·1	+19·5	52	300	
		2252	0·771	294·7	282·3	+21·4	0	3	}			2254	0·345	333·4	217·4	+22·0	0	9	
		2252	0·755	293·7	281·0	+20·3	5	52	} 531*c*			2254	0·357	349·0	212·2	+24·6	2	13	
		2252*a*	0·708	292·9	277·1	+18·9	54	198	}			2254	0·374	353·3	210·7	+25·9	0	10	
		2252*b*	0·621	294·3	270·1	+18·0	5	11	}			2254*b*	0·352	355·1	209·8	+24·7	9	38	
		2254*a*	0·343	36·5	221·2	+19·9	44	227				2254	0·381	356·9	209·2	+26·5	0	4	
		2254	0·375	39·5	219·0	+20·6	3	13				2254	0·394	0·1	207·9	+27·3	0	6	
		2254	0·405	39·4	217·7	+22·0	7	50				2255*a*	0·495	64·6	180·3	+16·0	37	183	
		2254	0·397	43·7	216·8	+20·4	1	10				2255	0·522	62·2	179·0	+17·8	0	3	
		2254	0·447	43·1	214·4	+22·7	4	22				2255	0·521	66·8	178·2	+15·5	0	9	
		2254	0·499	40·3	212·7	+26·1	0	17				2255	0·542	66·6	176·9	+16·0	0	8	
		2254*b*	0·510	44·1	210·7	+25·1	21	104				2255	0·539	68·4	176·8	+15·0	0	5	
		2255*a*	0·824	73·1	178·8	+16·2	14	112	}			2255	0·594	67·5	173·1	+16·6	0	8	
		2255	0·851	73·2	175·8	+16·4	4	46	} 787*c*			2255	0·631	68·7	170·2	+16·6	0	18	
		2255	0·886	71·6	171·7	+18·1	2	13	}			2256*a*	0·612	54·9	174·8	+24·1	43	246	
		2255	0·908	72·6	168·7	+17·4	4	20	} 1351*c*			2256	0·651	53·8	172·3	+26·0	0	15	
		2256	0·856	62·3	176·7	+25·6	0	7	}			2256*b*	0·684	58·8	168·2	+24·0	45	265	
		2256	0·885	63·7	172·6	+25·0	0	21	} 787*c*			2258*a*	0·978	70·0	129·5	+20·4	66	527	605*f*
		2256	0·903	64·8	170·2	+24·3	9	43	}	July 12		Centre			(207·9)	(+4·2)	(279)	(2005)	(814)
			0·777	60·0	185·5	+25·2			225										
			0·808	113·9	183·5	−16·6			255	193·481	CL,M		0·905	297·4	254·7	+26·6			1015
			0·978	113·4	158·7	−21·9			171			2254*a*	0·559	298·1	222·2	+18·9	55	292	
July 10		Centre			(233·7)	(+4·0)	(188)	(1068)	(4820)			2257*a*	0·354	172·2	188·1	−16·2	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 longitude and latitude of the centre of the disk are given in brackets.
The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 2256, July 9–21. A fine stream of spots north of Group 2255, and parallel to it and to the Sun's equator. The leader, *a*, is a large regular spot; the last spot of the group, *b*, is also a large spot, but has broken up into a compact cluster of small spots by July 14. These are still measured as one until July 16.
Group 2257, July 11–14. A very small faint spot on July 11. The group is not seen on July 12. Two small faint spots, *a* and *b*, on July 13, which are joined by a third on July 14.
Group 2258, July 12–24. A very fine regular spot, *a*, with a much smaller regular spot, *b*, close to it, and occasionally two or three very small companions. *a* becomes much elongated after passing the central meridian on July 18, and *b* has come into actual contact with *a* by July 19, though it is still measured separately. A number of spots begin to form on all sides of *a*, about July 18, and of these two, *c* and *d*, have become large regular spots by July 22, whilst the smaller spots decrease and have all disappeared by July 23.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°			
193d.481	CL,M	2257*b*	0·372	162·5	184·2	−16·4	0	17	
		2255*a*	0·256	37·4	181·6	+15·9	48	232	
		2255	0·281	38·5	180·4	+16·9	0	30	
		2255	0·277	42·5	179·7	+16·0	0	18	
		2255	0·305	39·1	179·3	+17·8	0	19	
		2255	0·284	49·9	178·0	+14·7	0	15	
		2255	0·323	51·7	175·7	+15·7	0	45	
		2255	0·376	53·7	172·5	+16·9	15	71	
		2256*a*	0·427	36·1	174·9	+24·3	39	173	
		2256*b*	0·497	45·3	168·2	+24·3	39	301	
		2258*a*	0·885	69·2	129·2	+20·4	78	395	
		2258*b*	0·904	68·8	126·7	+20·9	13	85	
		2259	0·929	69·0	122·8	+21·1	0	17	
		2259	0·936	69·8	121·6	+20·4	0	21	1389*c*
		2259	0·957	69·6	117·5	+20·8	0	66	
		2259	0·958	69·0	117·3	+21·4	0	74	
		2259*a*	0·976	68·3	112·8	+22·2	28	216	
			0·901	61·2	128·0	+27·7			374
July 13		Centre			(190·9)	(+4·3)	(315)	(2102)	(2778)
			0·918	295·9	244·0	+25·5			542
194·450	CL,HA	2254*a*	0·715	292·0	222·4	+18·7	48	261	
		2254	0·642	299·4	215·0	+21·9	0	16	206*c*
		2254	0·621	303·9	212·2	+23·8	0	3	
		2257*a*	0·385	206·2	188·2	−15·8	0	7	
		2257	0·356	203·4	186·5	−14·6	0	9	
		2257*b*	0·369	195·6	184·0	−16·4	0	9	
		2260*a*	0·517	192·1	185·0	−25·9	9	26	
		2255*a*	0·205	342·2	181·8	+15·6	49	271	
		2255	0·144	336·3	181·5	+12·0	0	11	
		2255	0·186	4·4	177·3	+15·0	11	69	
		2255	0·205	12·3	175·5	+15·9	0	21	
		2256	0·368	2·4	177·1	+25·9	0	6	
		2256*a*	0·341	6·7	175·6	+24·1	19	129	
		2256	0·358	10·6	174·0	+24·9	0	11	
		2255	0·240	23·3	172·4	+17·1	15	77	
		2256	0·348	20·6	170·5	+23·3	0	16	
		2256	0·391	20·6	169·4	+25·7	0	23	
		2256*b*	0·378	25·1	168·0	+24·3	28	141	
		2256	0·421	27·9	165·5	+26·1	0	11	
		2258*a*	0·763	67·1	129·8	+20·2	90	369	
		2258*b*	0·789	66·9	127·4	+20·8	12	82	
1891.				°	°	°			
194d.450	CL,HA	2258	0·814	72·6	124·1	+16·7	0	18	
		2259	0·855	67·5	120·3	+21·4	13	70	
		2259*c*	0·891	67·7	115·9	+21·5	15	121	
		2259	0·892	67·3	115·6	+22·2	0	10	957*c*
		2259*a*	0·908	67·7	113·4	+22·0	24	174	
		2259	0·911	69·4	112·7	+20·6	0	20	
		2259	0·926	67·3	110·5	+22·7	0	21	
July 14		Centre			(178·1)	(+4·4)	(333)	(2002)	(1705)
			0·883	225·3	214·5	−35·5			107
195·503	CL,M	2254*a*	0·857	289·3	222·7	+18·8	51	260	615*nf*
		2260*a*	0·596	213·5	185·5	−25·5	4	16	206*c*
		2260	0·562	206·5	180·3	−25·8	0	7	
		2255*a*	0·360	302·6	182·5	+15·4	58	286	
		2255	0·367	309·4	181·4	+17·7	0	10	
		2255	0·315	310·8	178·5	+16·2	10	28	
		2255	0·299	327·7	173·9	+19·0	0	5	
		2255	0·273	328·8	172·7	+18·0	8	24	
		2255	0·249	328·1	172·1	+16·6	12	38	
		2256	0·426	329·0	178·2	+25·7	0	6	
		2256*a*	0·386	330·0	176·3	+23·8	18	109	
		2256	0·383	334·7	174·5	+24·7	5	21	
		2256	0·379	342·1	171·6	+25·5	2	8	
		2256	0·347	342·6	170·7	+23·8	3	13	
		2256*b*	0·366	347·8	169·1	+25·4	11	64	
		2256	0·345	351·8	167·3	+24·4	22	85	
		2256	0·370	356·3	165·7	+26·1	0	9	
		2258	0·601	57·4	131·1	+22·6	0	13	
		2258*a*	0·599	62·0	130·1	+20·0	82	404	
		2258	0·628	59·6	128·5	+22·2	0	8	
		2258*b*	0·632	62·9	127·5	+20·3	16	58	
		2258	0·667	61·2	125·2	+22·2	0	8	1193*c*
		2259	0·706	64·3	121·4	+21·1	7	24	
		2259	0·721	63·0	120·4	+22·3	0	9	
		2259	0·755	64·6	117·0	+22·0	11	121	
		2259	0·777	66·8	114·6	+20·8	0	12	
		2259*a*	0·801	65·7	112·5	+22·0	38	209	
			0·963	114·2	93·3	−21·8			207
July 15		Centre			(164·2)	(+4·5)	(358)	(1855)	(2328)
			0·944	229·5	213·5	−35·7			131
196·451	CL,M	2254*a*	0·942	288·0	222·2	+18·5	37	340	1054*nf*
		2255	0·554	294·5	183·3	+17·2	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 longitude and latitude of the centre of the disk are given in brackets.
The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 2259, July 13–25. A straight stream of spots following Group 2258 at a little distance. The last spot, *a*, is the largest, and is a large regular spot. The relation of the group to Group 2258 suggests that both formed part of one great stream when in the further hemisphere, but that the small middle spots had already died out before the group came into view at the East limb. *a* is much elongated on July 19, and has broken up into a cluster of small spots by July 20. The group consists principally of two regular spots, *b* and *c*, on July 21 and the succeeding day.
Group 2260, July 14–15. A small spot, *a*, forming south of Group 2257. A second spot is seen near *a* on July 15.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°			
196d·451	CL,M	2255*a*	0·527	291·6	182·0	+15·1	46	268	
		2255	0·481	295·3	178·4	+15·9	4	16	
		2255	0·404	302·5	172·3	+16·8	2	22	
		2256*a*	0·507	312·2	175·7	+23·4	18	113	
		2256	0·490	314·7	174·0	+24·3	0	4	
		2256	0·456	317·1	171·3	+23·8	0	4	
		2256	0·444	319·2	170·0	+24·0	0	3	
		2256*b*	0·446	324·1	168·4	+25·5	14	88	
		2256	0·414	322·0	167·6	+23·4	6	13	
		2256	0·418	326·5	166·3	+24·8	7	42	
		2258*a*	0·442	52·2	129·9	+20·0	78	408	
		2258*b*	0·473	53·7	127·7	+20·4	11	42	
		2258	0·478	57·9	126·4	+18·9	0	12	
		2259	0·565	58·8	120·6	+20·9	4	8	
		2259	0·612	59·3	117·2	+22·0	11	145	
		2259	0·645	62·6	114·0	+20·9	0	27	
		2259*a*	0·675	61·9	111·8	+22·0	31	170	
			0·924	117·0	88·6	−22·8			133
			0·952	73·1	79·1	+17·5			116
July 16		Centre			(151·6)	(+4·6)	(269)	(1730)	(1434)
197·434	CL,M		0·792	242·6	186·3	−18·2			239
			0·794	230·4	181·9	−27·0			262
		2254*a*	0·991	288·2	221·7	+18·6	53	360	603*nf*
		2261	0·790	301·1	188·0	+27·1	0	20	267*p*
		2255	0·716	289·2	183·5	+16·9	0	10	661*c*
		2255*a*	0·698	287·2	182·3	+15·3	58	286	
		2255	0·661	289·2	179·1	+16·2	5	15	
		2256*a*	0·655	303·2	175·7	+24·7	28	182	
		2256	0·576	308·4	168·4	+25·0	3	19	
		2256	0·578	310·7	167·8	+26·2	3	39	
		2256	0·553	311·7	165·8	+25·7	1	13	
		2258*a*	0·298	27·6	130·3	+19·9	72	410	
		2258*b*	0·337	31·4	127·9	+21·2	8	53	
		2258	0·380	37·8	124·2	+22·0	0	6	
		2259	0·409	45·9	120·4	+21·0	0	8	
		2259	0·438	45·8	119·0	+22·2	0	40	
		2259	0·477	50·8	115·3	+21·8	10	53	
		2259*a*	0·525	54·0	111·5	+22·1	33	136	
			0·841	121·2	87·6	−22·8			187
			0·943	76·2	67·8	+14·6			225
July 17		Centre			(138·7)	(+4·7)	(274)	(1650)	(2444)
198d·177	CL, M		0·988	295·3	210·7	+25·7			597
			0·879	246·3	186·3	−18·1			120
		I.	0·870	235·2	181·8	−26·9			193
		2261	0·887	298·2	189·9	+27·1	0	4	310*c*
		2255*a*	0·812	285·1	182·7	+15·0	68	311	901*c*
		2255	0·782	286·5	179·7	+15·9	0	10	
		2256*a*	0·766	298·7	176·3	+24·9	48	155	
		2256	0·747	298·9	174·5	+24·5	0	8	228*c*
		2256	0·729	301·0	172·3	+25·5	9	46	
		2256	0·690	303·4	168·4	+26·0	0	13	
		2258	0·235	348·2	131·6	+18·0	0	2	
		2258*a*	0·268	353·2	130·6	+20·2	80	395	
		2258	0·224	359·0	128·9	+17·7	0	3	
		2258*b*	0·307	1·3	128·3	+22·7	6	29	
		2258	0·274	1·7	128·2	+20·7	7	39	
		2259	0·343	26·9	119·1	+22·5	0	10	
		2259	0·369	33·9	115·9	+22·5	0	7	
		2259	0·376	42·6	113·0	+20·7	0	15	
		2259*a*	0·415	42·4	111·2	+22·3	24	139	
			0·753	126·1	87·6	−22·7			52
			0·932	113·2	63·5	−19·5			146
			0·912	73·6	62·8	+16·9			426
			0·981	104·7	51·6	−13·4			579
July 18		Centre			(128·7)	(+4·8)	(242)	(1186)	(3552)
199·536	CL,HA		0·844	300·4	166·2	+28·1			587
		2255*a*	0·947	285·4	182·4	+16·2	43	337	857*nf*
		2255	0·944	287·9	181·9	+18·6	0	7	
		2256	0·920	296·7	177·1	+26·4	0	53	727*c*
		2256*a*	0·917	294·7	176·9	+24·5	21	125	
		2262	0·560	303·6	140·9	+22·3	0	6	
		2258	0·425	298·7	133·6	+16·3	4	11	
		2258	0·384	300·6	130·8	+15·9	2	16	
		2258*a*	0·416	311·1	130·3	+20·4	68	440	
		2258	0·369	308·8	128·3	+18·0	0	25	
		2258*b*	0·418	319·7	127·8	+23·2	9	52	
		2263*a*	0·252	314·1	121·6	+14·9	37	102	
		2263	0·227	315·0	120·3	+14·0	0	6	
		2263*b*	0·209	322·5	118·3	+14·4	19	92	
		2259*a*	0·295	0·3	110·7	+22·0	24	98	
		2264	0·879	108·6	51·9	−13·8	0	9	734*c*
		2265*a*	0·908	77·4	45·4	+13·5	9	57	369*p*
			0·835	63·5	55·7	+24·7			266
July 19		Centre			(110·8)	(+4·9)	(236)	(1436)	(3540)

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 longitude and latitude of the centre of the disk are given in brackets.
The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 2261, July 17–18. A very small spot forming north of Group 2255.
Group 2262, July 19. A small faint spot preceding Group 2258.
Group 2263, July 19–23. A small group consisting principally of two regular spots, *a* and *b*. *b* has broken up by July 22, but is still measured as one spot. It has disappeared by July 23.
Group 2264, July 19–20. A small faint spot.
Group 2265, July 19–29. A regular spot, *a*, which has broken up by July 22. The group is reduced to a single small spot by July 25, but has increased in size again by July 26, forming an elliptical ring of very small spots. The group forms a short straight stream of spots on July 27, of which the first and last spots, *b* and *c*, are the largest.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°				1891.				°	°	°			
200^{d}·428	CL,HA	2255*a*	0·992	284·3	182·6	+14·8	96	512	886*f*	201^{d}·210	CL,HA	2266	0·819	116·8	38·4	−18·4	0	5	627*c*
		2256*a*	0·978	293·8	177·8	+24·3	21	108	913*f*			2266*a*	0·901	118·0	29·4	−22·5	17	59	
		2256	0·968	295·5	174·8	+25·8	0	111		July 21		Centre			(88·6)	(+5·1)	(231)	(1220)	(1432)
		2258	0·592	289·9	134·1	+15·4	0	16											
		2258	0·570	293·2	132·0	+16·8	4	20		202·414	CL,M	2258*c*	0·885	287·1	135·0	+17·6	36	116	
		2258*a*	0·570	298·6	131·1	+20·1	81	392				2258	0·852	287·0	131·0	+17·2	0	20	
		2258	0·548	291·0	130·9	+15·6	0	33				2258*a*	0·854	290·5	130·9	+20·1	72	418	1961*c*
		2258	0·535	296·9	129·8	+18·3	7	69				2258	0·837	293·9	128·6	+22·8	0	6	
		2258	0·523	293·1	128·9	+16·2	0	5				2258*d*	0·823	289·0	127·7	+18·6	35	171	
		2258	0·547	302·3	128·6	+21·3	9	55				2263*a*	0·784	285·0	124·1	+15·0	31	174	
		2258*b*	0·559	306·0	128·4	+23·5	0	27				2263	0·728	285·1	119·1	+14·5	0	21	
		2263*a*	0·426	294·5	122·5	+14·7	29	178				2263	0·715	283·9	118·1	+13·6	0	10	517*c*
		2263	0·378	295·3	119·5	+14·0	0	13				2263*b*	0·698	285·9	116·6	+14·8	4	34	
		2263*b*	0·353	298·5	117·6	+14·4	32	159				2259*b*	0·696	293·8	115·2	+20·1	17	104	1604*c*
		2259	0·372	319·5	114·0	+21·2	8	54				2259*c*	0·636	297·4	109·8	+21·2	27	158	
		2259	0·345	319·3	112·7	+19·3	2	11				2267	0·680	227·4	105·5	−23·0	4	18	
		2259	0·350	321·8	112·3	+20·8	0	3				2267	0·664	225·2	103·4	−23·3	3	9	437*c*
		2259	0·329	326·1	110·3	+20·7	4	14				2265	0·454	65·7	47·4	+15·4	5	21	
		2259	0·345	329·3	109·9	+22·1	8	44				2265	0·481	67·9	45·3	+15·1	2	22	
		2264	0·760	111·6	52·7	−12·8	0	40	835*p*			2265	0·521	65·6	43·1	+16·9	0	37	
		2265*a*	0·805	75·3	45·5	+14·8	24	106	560*c*			2266*a*	0·768	125·1	30·0	−22·4	20	90	
		2266*a*	0·957	115·4	29·9	−22·5	11	103	629*c*			2266	0·767	123·7	29·6	−21·4	0	6	745*c*
July 20		Centre			(99·0)	(+5·0)	(336)	(2073)	(3823)				0·862	122·9	20·0	−24·8			759
										July 22		Centre			(72·7)	(+5·2)	(256)	(1435)	(5506)
			0·979	287·8	167·7	+18·5			310										234
201·210	CL,HA	2256	0·995	295·6	174·3	+25·9	0	49	495*f*	203·410	CL,M	2258*c*	0·977	286·9	138·2	+17·7	9	117	
M.		2258	0·699	290·1	131·9	+17·6	6	47		I.		2258*a*	0·950	289·5	132·0	+20·2	55	415	
		2258	0·703	295·9	131·3	+21·6	0	8				2258*d*	0·932	287·7	128·7	+18·4	29	176	1645*c*
		2258	0·709	298·6	131·2	+23·6	0	7				2263*a*	0·910	283·8	125·4	+14·7	18	127	
		2258	0·684	286·6	131·2	+15·0	0	8				2263	0·838	284·1	116·5	+14·7	0	7	
		2258*a*	0·695	293·8	131·0	+20·1	90	467				2259*b*	0·844	290·1	116·8	+19·9	15	76	
		2258	0·671	289·2	129·8	+16·6	17	77				2259	0·824	290·0	114·6	+19·5	0	3	
		2258*b*	0·672	300·5	127·7	+23·9	0	6				2259	0·787	291·9	110·6	+20·4	0	16	999*c*
		2263*a*	0·579	288·2	123·1	+14·7	25	147				2259	0·781	297·1	109·1	+24·3	0	13	
		2263	0·516	289·0	118·7	+14·1	5	20				2259*c*	0·771	293·3	108·8	+21·2	11	72	
		2263*b*	0·497	292·0	117·0	+15·2	11	73				2267	0·809	237·3	106·9	−22·4	11	33	247*c*
		2259*b*	0·480	303·4	113·7	+19·9	23	122				2267	0·781	233·0	102·0	−24·3	6	24	
		2259	0·466	310·0	111·2	+22·1	4	12				2265	0·271	48·0	47·6	+15·5	0	4	
		2259*c*	0·445	308·6	110·3	+20·8	25	73				2265	0·282	55·1	45·9	+14·3	0	2	
		2259	0·427	312·5	108·3	+21·5	0	7				2265	0·305	58·9	44·1	+14·0	0	5	
		2267	0·543	211·5	106·4	−22·6	0	9				2266*a*	0·652	134·5	29·5	−22·7	17	64	5998*f*
		2265*a*	0·690	73·2	45·5	+15·3	8	24		July 23		Centre			(59·6)	(+5·2)	(171)	(1154)	(3724)

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 longitude and latitude of the centre of the disk are given in brackets.
The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 2266, July 20–25. A regular spot, *a*. A very small distant companion is seen *n.p.*, on July 21, a close companion on July 22. *a* decreases in size after July 22.
Group 2267, July 21–25. Two or three small spots irregularly arranged until July 24 and 25, when the group is seen as a regular spot, *a*, followed by one or two small spots.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°				1891.				°	°	°			
204·430	CL,HA	2258*a*	0·992	290·1	130·1	+20·6	56	372	}	208·390	CL,M		0·877	251·3	52·0	−13·4			435
		2258*d*	0·986	287·9	127·4	+18·5	18	110	1309*c*			2265*b*	0·824	287·2	48·9	+17·4	6	28	
		2259*b*	0·942	289·0	116·9	+19·7	17	74	}			2265	0·807	287·6	47·1	+17·5	6	16	} 632*p*
		2259*c*	0·883	291·5	107·9	+21·5	11	78	}			2265	0·792	288·7	45·6	+18·2	0	8	
		2267*a*	0·915	244·0	107·8	−21·2	25	124	}			2265*c*	0·762	290·7	42·4	+19·3	18	126	
		2267	0·887	241·4	103·2	−22·3	8	18	} 507*c*			2269	0·887	110·7	294·4	−15·4	12	69	459*f*
		2267	0·875	238·5	100·8	−24·2	3	17	}			2270*b*	0·891	75·3	290·3	+15·7	7	39	} 738*e*
		2268	0·654	297·6	84·6	+21·8	3	12				2270*a*	0·917	75·0	286·7	+16·0	20	159	
		2265	0·167	358·8	46·3	+14·9	0	5					0·928	127·7	294·0	−31·6			165
		2265	0·212	10·1	43·9	+17·3	0	9					0·934	67·3	284·3	+23·2			451
		2265	0·163	15·6	43·5	+14·3	3	6		July 28		Centre			(353·6)	(+5·6)	(69)	(445)	(2880)
		2266*a*	0·535	150·5	29·7	−22·6	11	36											
July 24		Centre			(46·1)	(+5·3)	(155)	(861)	(1816)										
										209·291	CL,HA		0·949	252·9	50·8	−14·2			746
205·400	CL,M		0·944	306·9	102·8	+36·5			191				0·790	232·5	25·1	−24·6			672
		2259*b*	0·993	288·9	117·7	+19·4	0	64	} 1047*f*	I.		2265*b*	0·927	285·9	50·2	+16·9	0	18	} 1127*c*
		2259*c*	0·959	291·1	107·3	+21·7	0	18				2265*c*	0·878	288·9	43·1	+19·3	18	80	
		2267*a*	0·982	246·8	109·0	−21·5	24	138	} 259*f*			2269	0·788	114·4	293·8	−15·2	7	49	375*p*
		2267	0·959	244·8	102·7	−22·3	3	13	}			2270*b*	0·772	74·4	290·4	+15·6	4	26	} 482*c*
		2268	0·808	292·8	86·2	+21·5	4	13	} 173*c*			2270*a*	0·823	74·4	286·3	+16·1	15	143	
		2268	0·779	295·3	82·9	+23·0	3	9					0·889	130·7	289·2	−32·0			236
		2265	0·284	306·2	46·9	+14·9	0	7					0·842	52·0	288·2	+34·6			123
		2266*a*	0·480	172·2	29·2	−22·9	4	12					0·934	66·7	272·3	+23·8			642
			0·971	64·4	316·3	+26·1			161	July 29		Centre			(341·7)	(+5·7)	(44)	(316)	(4403)
July 25		Centre			(33·2)	(+5·4)	(38)	(274)	(1831)										
206·552	CL,M		0·913	291·8	83·9	+22·1			338	210·432	CL,M		0·973	286·3	44·3	+17·2			546
		2265	0·531	297·8	47·7	+19·1	0	5					0·894	238·5	23·6	−24·7			739
		2265	0·519	295·3	47·4	+17·6	11	37				2269	0·622	123·8	294·4	−15·3	9	33	
		2265	0·509	300·6	45·7	+19·9	0	9				2270	0·577	71·3	292·3	+15·4	2	15	
		2265	0·477	298·6	44·0	+18·1	0	3				2270*b*	0·595	71·9	290·9	+15·3	0	5	
		2265	0·474	301·3	43·3	+19·2	3	13				2270*a*	0·650	72 2	286·8	+15·9	21	134	
			0·919	63·5	311·6	+26·4			436				0·882	65·2	265·3	+24·5			688
July 26		Centre			(18·0)	(+5·5)	(14)	(67)	(774)	July 30		Centre			(326·7)	(+5·8)	(32)	(187)	(1973)
207·437	CL,M		0·981	290·4	86·2	+21·1			405	211·427	CL,HA		0·960	241·3	23·1	−26·1			523
			0·884	284·9	70·4	+18·6			321			2270	0·385	62·6	292·9	+15·7	2	9	
I.		2265*b*	0·693	289·3	49·4	+17·4	8	31	}			2270	0·492	70·1	290·5	+13·2	0	14	
		2265	0·678	290·8	47·9	+18·1	0	6	} 904*c*			2270	0·415	66·3	290·5	+15·0	0	46	
		2265*c*	0·625	294·4	43·3	+19·4	9	58	}			2270	0·448	65·9	288·5	+15·9	6	40	
		2269	0·968	107·7	293·4	−15·6	27	115	918*f*			2270	0·472	65·3	287·1	+16·6	0	15	
		2270*a*	0·984	75·0	285·8	+15·7	0	90	1017*p*			2269	0·478	138·5	294·5	−15·4	0	14	
			0·909	60·5	301·7	+29·1			486				0·900	59·7	250·3	+29·8			269
July 27		Centre			(6·3)	(+5·6)	(44)	(300)	(4051)	July 31		Centre			(313·6)	(+5·9)	(8)	(138)	(792)

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 longitude and latitude of the centre of the disk are given in brackets.
The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 2268, July 25. Two small spots.
Group 2269, July 27–Aug. 1. A spot of irregular outline which decreases rapidly on the succeeding days. A very small companion is seen near it on Aug. 1.
Group 2270, July 27–Aug. 2. A compact cluster of very small spots, *a*, on July 27. A second similar but smaller cluster, *b*, precedes it on July 28 and the succeeding days. Both clusters have broken up by July 31.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°			
212d·412	CL,M	2269	0·374	164·9	294·8	−15·3	0	4	
		2269	0·342	162·5	294·6	−13·1	0	5	
		2270	0·210	39·2	292·7	+15·2	0	1	
		2270	0·241	37·1	291·9	+16·9	0	9	
		2270	0·216	44·1	291·7	+14·7	2	12	
		2270	0·233	46·0	290·7	+15·1	0	10	
		2270	0·257	48·6	289·1	+15·5	0	28	
		2271	0·584	131·3	273·3	−17·4	0	5	
		2272*a*	0·972	73·0	223·2	+17·9	8	118	356*c*
Aug. 1		Centre			(300·6)	(+5·9)	(10)	(192)	(356)
213·556	CL,M	2270	0·174	338·1	289·2	+15·3	0	4	
		2271	0·427	160·3	276·7	−17·7	2	11	
		2271	0·463	160·1	275·8	−19·8	0	2	
		2271	0·445	158·1	275·4	−18·4	0	3	
		2271	0·440	154·8	274·1	−17·5	2	20	
		2271	0·431	150·0	272·5	−16·0	0	3	
		2271	0·467	148·1	270·5	−17·5	0	8	
		2272*a*	0·885	72·8	222·9	+18·0	10	82	343*c*
Aug. 2		Centre			(285·4)	(+6·0)	(14)	(133)	(343)
214·472	CL,HA		0·941	249·6	340·3	−16·9			103
		2273	0·355	325·1	286·0	+22·8	0	8	
		2271	0·417	188·1	276·8	−18·2	10	59	
		2271	0·405	182·8	274·5	−17·7	0	31	
		2271	0·429	182·5	274·4	−19·2	0	6	
		2271	0·410	172·5	270·1	−17·8	0	4	
		2274	0·489	140·1	254·3	−16·2	0	4	
		2272*a*	0·773	72·0	223·0	+17·8	7	87	349*f*
		2272	0·800	72·2	220·4	+17·8	0	3	
		2275*a*	0·993	109·7	192·7	−18·7	9	116	
			0·974	128·7	204·5	−35·5			237
Aug. 3		Centre			(273·3)	(+6·1)	(26)	(318)	(689)
215·436	CL,M	2273	0·512	305·3	287·3	+22·6	6	17	
		2273	0·464	310·5	283·0	+23·1	0	4	
		2271	0·483	213·3	276·6	−17·9	12	125	
		2271	0·498	210·1	275·8	−19·6	6	23	
		2271	0·494	207·0	274·3	−20·1	8	26	
		2276	0·260	311·6	272·1	+15·9	0	6	
		2276	0·267	320·6	270·7	+17·9	0	2	
1891.									
215d·436	CL,M	2272*a*	0·620	69·0	223·2	+17·7	12	69	
		2275*a*	0·953	111·7	191·7	−18·5	35	261	680*c*
		2275*b*	0·978	111·2	185·7	−19·2	0	34	
		2277*a*	0·972	75·3	183·1	+15·7	37	221	282*p*
		2278*a*	0·983	67·4	179·7	+23·3	67	305	94*p*
		2278*b*	0·994	66·2	174·5	+24·3	0	128	
			0·925	133·9	204·5	−36·6			150
			0·872	61·9	200·8	+27·3			359
			0·947	83·2	188·9	+ 8·4			172
Aug. 4		Centre			(260·5)	(+6·1)	(183)	(1221)	(1737)
216·474	CL,M	2273	0·682	296·5	287·9	+22·4	1	9	
		2271*a*	0·617	228·9	276·0	−18·5	34	300	
		2271	0·585	226·7	273·3	−18·0	8	31	
		2271	0·562	227·8	272·4	−16·5	7	38	
		2271	0·575	221·2	270·5	−19·9	4	11	
		2272	0·418	60·9	224·4	+17·4	6	29	
		2272	0·453	61·7	222·1	+18·0	0	6	
		2272	0·505	61·1	218·9	+19·6	0	14	
		2275*a*	0·864	115·3	191·7	−18·1	27	234	754*c*
		2275*b*	0·906	114·0	186·1	−18·7	0	12	
		2277*a*	0·896	75·1	182·7	+16·1	36	221	834*c*
		2278*a*	0·923	67·2	179·0	+23·4	43	288	1045*c*
		2278*b*	0·944	66·0	175·4	+24·7	0	58	
Aug. 5		Centre			(246·8)	(+6·2)	(166)	(1251)	(1633)
217·474	CL,HA		0·940	299·2	303·9	+29·6			506
			0·858	285·5	292·8	+16·5			401
M.			0·885	249·3	292·3	−15·0			262
			0·910	230·4	289·1	−32·0			191
		2271*a*	0·759	238·3	276·4	−18·9	39	496	374*c*
		2271	0·717	238·4	273·1	−17·2	4	40	
		2272	0·247	36·5	224·7	+17·6	0	11	
		2272	0·253	43·6	223·1	+16·7	0	4	
		2272	0·282	47·5	221·0	+17·1	0	4	
		2272	0·342	42·1	219·4	+20·8	0	8	
		2275*a*	0·750	121·2	191·2	−18·2	19	247	371*c*
		2275*b*	0·803	118·5	185·7	−18·3	0	15	
		2277*a*	0·776	73·9	182·7	+16·5	18	198	243*c*
		2278*a*	0·828	65·6	178·3	+23·7	30	264	1403*c*
		2278*b*	0·850	65·1	175·9	+24·4	0	16	
Aug. 6		Centre			(233·5)	(+6·3)	(110)	(1303)	(3751)

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

Group 2271, Aug. 1–9. A very small faint spot on Aug. 1. The group undergoes a rapid extension on the succeeding days, forming a close cluster of small spots very irregularly arranged by Aug. 3 and 4. The preceding portion of the group tends to coalesce, and a very large elongated spot, *a*, has been formed by Aug. 6, the major axis of which is considerably inclined to the solar equator.

Group 2272, Aug. 1–10. A regular spot, *a*, which has broken up into a scattered group of small spots by Aug. 5. The group is not seen on Aug. 9.

Group 2273, Aug. 3–5. A very small spot on Aug. 3. A short stream of very small spots on Aug. 4. Only one very small spot remains by Aug. 5.

Group 2274, Aug. 3. A very small faint spot.

Group 2275, Aug. 3–15. A large regular spot, *a*. A small companion, *b*, is seen near *a* on Aug. 4 and the succeeding days. *b* has broken up by Aug. 7, and *a* alone remains by Aug. 8.

Group 2276, Aug. 4. Two very small faint spots.

Group 2277, Aug. 4–16. A large regular spot, *a*. A small companion is seen near *a* on Aug. 11. The nucleus of *a* has divided into two portions by Aug. 7, and the entire spot is divided into two independent spots by Aug. 15, but they are still measured as one spot.

Group 2278, Aug. 4–16. A large regular spot, *a*, closely followed by a faint irregular spot, *b*, apparently part of the penumbra of *a*, recently separated from it. *b* decreases in size on the succeeding days and has disappeared by Aug. 7. Other small faint spots are seen in the neighbourhood of *a* on Aug. 10 and the succeeding days.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°				1891.				°	°	°			
218d.606	CL,M		0·928	287·7	287·3	+18·7			477	221·406	CL,M		0·906	298·6	246·3	+28·6			756
		2271*a*	0·882	244·7	275·8	−18·8	88	632	} 660*c*			2272	0·666	292·4	222·2	+19·6	0	5	} 235*c*
		2271	0·852	245·4	272·6	−17·1	0	19				2272	0·639	292·9	220·1	+19·5	0	2	
		2271	0·845	241·8	270·7	−19·7	0	43				2282	0·577	277·6	216·9	+ 9·7	0	3	
		2272	0·225	331·4	225·1	+17·6	0	6				2282	0·555	280·0	215·3	+10·9	0	4	
		2272	0·201	337·4	223·1	+17·0	0	1				2275*a*	0·436	202·2	191·5	−17·3	50	248	
		2272	0·209	343·8	222·1	+17·8	0	11				2277*a*	0·193	358·6	181·9	+17·6	27	185	
		2275*a*	0·596	131·9	190·9	−17·8	36	253	218*c*			2278*a*	0·320	13·3	177·0	+24·5	48	275	
		2275	0·627	129·2	188·0	−17·8	0	6	} 234*c*			2278	0·316	24·6	172·4	+23·0	0	2	
		2275	0·666	127·1	184·7	−18·4	0	5				2283	0·741	72·2	134·1	+17·5	0	5	}
		2277*a*	0·601	70·1	182·5	+16·9	28	190				2283*a*	0·762	69·2	132·5	+20·0	0	5	
		2278*a*	0·680	61·1	178·1	+24·0	41	272				2283*b*	0·761	71·7	132·3	+18·1	2	8	} 908*c*
		2278*b*	0·716	61·0	175·1	+24·9	0	4				2283*c*	0·799	67·8	129·1	+21·5	3	15	
		2278	0·756	61·3	171·4	+25·6	0	4					0·893	60·1	119·0	+29·5			393
			0·964	69·8	143·0	+21·1			532				0·918	70·9	114·4	+20·1			721
Aug. 7		Centre			(218·6)	(+6·3)	(193)	(1446)	(2121)				0·949	117·4	109·3	+28·0			132
										Aug. 10		Centre			(181·6)	(+6·5)	(130)	(757)	(3145)
219·461	CL,M		0·932	291·4	276·8	+22·3			413	222·479	CL,M		0·929	304·4	235·3	+34·3			188
		2271*a*	0·953	248·3	276·0	−18·4	84	609					0·801	292·7	220·0	+22·0			566
		2271	0·922	245·0	270·0	−20·1	6	48					0·803	246·3	216·7	−14·6			179
		2279	0·750	270·5	255·9	+ 4·6	0	3	647*c*			2275*a*	0·559	224·5	191·6	−17·5	33	222	
		2272	0·353	305·4	224·8	+17·8	0	4				2277*a*	0·308	309·9	181·7	+17·7	29	177	
		2272	0·308	321·4	219·1	+20·1	0	3				2277	0·289	306·0	181·4	+16·0	0	6	
		2280	0·171	24·3	203·1	+15·3	0	6				2278*a*	0·345	334·4	176·8	+24·5	41	234	
		2280	0·212	31·7	200·7	+16·7	0	7				2278	0·379	337·2	176·8	+26·8	3	29	
		2275*a*	0·484	146·8	191·2	−17·7	46	243	405*c*			2283*a*	0·591	65·1	132·8	+19·8	2	11	}
		2277*a*	0·450	63·7	182·4	+17·3	37	195	324*c*			2283*b*	0·585	68·0	132·8	+18·0	0	10	} 676*c*
		2278*a*	0·559	54·7	177·4	+24·4	51	269	406*c*			2283	0·626	66·9	129·9	+19·5	0	2	
		2281	0·864	68·8	147·6	+21·5	0	5				2283*c*	0·637	63·3	129·8	+21·8	3	12	
			0·760	61·4	159·7	+25·7			820				0·860	67·0	108·3	+23·0			898
			0·911	70·5	141·2	+20·4			979	Aug. 11		Centre			(167·4)	(+6·5)	(111)	(703)	(2507)
Aug. 8		Centre			(207·3)	(+6·4)	(224)	(1392)	(3994)										
										222·431	CL,M		0·871	223·2	201·3	−34·9			159
220·428	CL,M		0·898	296·5	258·2	+26·5			414			2275*a*	0·690	235·5	191·3	−17·7	36	214	
		2271*a*	0·998	249·8	277·4	−19·5	0	827	} 1173*c*			2277*a*	0·475	295·4	181·5	+17·7	33	162	
I.		2271	0·981	246·7	269·6	−21·3	0	40				2278	0·514	313·7	179·3	+26·8	0	3	
		2275*a*	0·408	172·6	191·4	−17·4	45	257				2278	0·497	316·1	177·5	+27·0	2	13	
		2277*a*	0·284	45·8	182·2	+17·7	31	185				2278*a*	0·466	312·8	176·8	+24·5	42	245	
		2278*a*	0·419	40·4	177·2	+24·7	46	252				2283*a*	0·423	57·7	132·6	+19·2	0	13	
			0·911	57·3	129·6	+32·3			270			2283*c*	0·470	55·9	130·2	+21·3	0	10	
			0·904	71·1	129·4	+19·8			1148				0·906	121·7	96·7	−25·0			263
Aug. 9		Centre			(194·5)	(+6·4)	(122)	(1561)	(3005)				0·870	63·5	94·8	+26·2			386
										Aug. 12		Centre			(154·8)	(+6·6)	(113)	(660)	(808)

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

Group 2279, Aug. 8. A very small faint spot.
Group 2280, Aug. 8. Two very small faint spots.
Group 2281, Aug. 8. A very small faint spot.
Group 2282, Aug. 10. Two very small faint spots.
Group 2283, Aug. 10–15. A few very small spots, none of which persist more than three days.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°			
224d·404	CL,HA		0·881	296·7	203·4	+26·6			306
		2275*a*	0·819	242·8	191·7	−17·8	18	198	434*f*
		2277*a*	0·642	289·4	181·2	+17·4	24	140	291*sp*
		2278*a*	0·611	302·1	176·5	+24·3	30	241	220*c*
		2278	0·613	305·7	175·6	+26·4	0	31	
		2283*d*	0·235	25·2	136·0	+18·8	0	5	
			0·853	124·2	91·3	−24·5			100
			0·931	110·6	76·8	−16·5			182
Aug. 13		Centre			(142·0)	(+6·6)	(72)	(615)	(1533)
225·436	CL,HA		0·949	289·5	200·9	+20·6			441
		2275*a*	0·922	247·6	191·5	−17·6	29	174	555*8f*
		2277*a*	0·798	286·6	181·3	+17·3	29	172	601*c*
		2278*a*	0·758	296·7	176·1	+24·4	34	201	612*c*
		2278	0·754	299·1	175·3	+26·1	5	22	
		2278	0·726	298·6	172·9	+25·2	0	4	
		2283*d*	0·255	333·7	135·2	+19·8	0	5	
		2283*e*	0·218	344·6	131·8	+18·8	0	3	
			0·872	75·9	67·1	+15·6			126
			0·964	111·8	57·4	−18·9			229
			0·971	71·9	50·8	+19·1			344
Aug. 14		Centre			(128·3)	(+6·7)	(97)	(581)	(2908)
226·546	CL,HA	2275*a*	0·988	250·5	191·7	−17·9	0	114	298*f*
		2277*a*	0·921	285·3	181·5	+16·7	15	107	432*c*
		2278*a*	0·884	294·1	175·9	+24·4	44	253	428*f*
		2278	0·874	295·6	174·3	+25·5	0	7	
		2284	0·695	298·8	156·8	+24·5	0	10	
		2284	0·675	298·3	154·0	+23·8	0	5	266*c*
		2284*a*	0·668	302·1	152·6	+26·0	13	40	
		2283*e*	0·368	306·3	131·9	+18·9	3	28	
Aug. 15		Centre			(113·7)	(+6·7)	(75)	(564)	(1424)
227·287	CL,HA	2277*a*	0·970	285·3	181·0	+16·5	0	104	691*f*
		2278*a*	0·943	293·3	175·3	+24·2	22	216	956*f*
I.		2284*b*	0·810	295·5	157·2	+24·5	4	22	
		2284	0·787	295·6	154·8	+24·2	4	38	757*c*
		2284*a*	0·766	298·7	152·1	+26·1	16	66	
		2284*c*	0·733	299·0	149·1	+25·7	0	8	
		2285	0·861	77·4	44·0	+14·3	6	27	949*np*
		2286	0·921	75·7	36·1	+15·8	0	9	
Aug. 16		Centre			(103·9)	(+6·8)	(52)	(490)	(3353)
1891.				°	°	°			
228d·463	CL,HA	2284*b*	0·936	294·5	158·5	+25·3	16	227	1475*c*
		2284	0·911	294·3	154·3	+24·9	0	44	
		2284*c*	0·882	296·6	149·9	+26·6	22	154	
		2285	0·682	77·1	45·3	+13·8	0	9	
Aug. 17		Centre			(88·3)	(+6·8)	(38)	(434)	(1475)
229·130	CL,HA		0·821	289·9	134·7	+20·3			809
		2284*b*	0·975	294·2	158·2	+25·0	0	287	
I.		2284	0·959	294·0	154·3	+25·0	0	37	941*c*
		2284*c*	0·936	295·8	149·7	+26·6	33	193	
		2284	0·924	295·0	147·6	+25·7	0	6	
		2285	0·563	74·9	45·6	+14·1	2	11	
		2286	0·703	75·7	34·8	+15·0	0	5	
			0·890	129·5	26·9	−30·4			156
			0·944	120·4	15·1	−25·7			231
Aug. 18		Centre			(79·5)	(+6·9)	(35)	(539)	(2137)
230·519	CL,HA		0·905	289·0	126·6	+20·1			696
			0·774	290·5	111·5	+20·1			204
		2284*c*	0·996	296·6	147·7	+27·0	0	138	
		2285	0·280	60·7	46·7	+14·5	0	4	
		2285	0·309	62·7	44·8	+14·7	0	10	
			0·868	128·0	10·6	−28·0			224
Aug. 19		Centre			(61·2)	(+6·9)	(0)	(152)	(1124)
231·264	CL,HA		0·964	288·2	127·0	+19·3			350
			0·852	294·5	109·4	+24·4			811
I.		2285	0·155	29·1	46·9	+14·7	0	2	
			0·792	132·7	10·5	−27·3			110
Aug. 20		Centre			(51·3)	(+6·9)	(0)	(2)	(1271)
232·477	CL,M		0·905	118·1	336·3	−21·7			78
		2286	0·123	19·3	32·9	+13·7	0	9	
M.		2286	0·094	312·1	39·4	+10·6	0	7	
			0·914	292·2	102·0	+23·1			315
Aug. 21		Centre			(35·3)	(+7·0)	(0)	(16)	(393)
233·447	CL,M		0·914	298·4	88·6	+28·8			279
		2287	0·741	289·3	69·9	+18·9	0	5	
		2286	0·254	296·9	35·8	+13·4	1	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 longitude and latitude of the centre of the disk are given in brackets.

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

Group 2284, Aug. 15–19. A small regular spot, *a*, with double nucleus on Aug. 15, preceded by a few faint companions. The group rapidly increases on the succeeding day, and has become a straight stream of spots by Aug. 17, of which *b* and *c*, the first and last, are two large regular spots.

Group 2285, Aug. 16–20. A short stream of very small spots, measured on most occasions as one spot.

Group 2286, Aug. 16–27. Two or three very small faint spots. The group is not seen on Aug. 17, 19, 20 or 24. The group attains a very considerable area after its third revival on Aug. 25.

Group 2287, Aug. 22. A very small faint spot.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°			
233d.447	CL,M	2286	0·206	306·7	32·2	+14·0	0	12	
		2288	0·313	51·1	7·6	+18·1	0	4	
		2289	0·949	76·7	309·9	+14·8	0	24	122*f*
			0·855	126·1	332·5	−25·8			98
Aug. 22		Centre			(22·4)	(+7·0)	(1)	(65)	(499)
234·173	CL,HA		0·925	299·3	80·8	+29·7			370
			0·847	290·7	70·8	+21·2			288
I.		2286	0·426	285·9	37·6	+13·0	0	12	
		2286	0·363	290·7	33·2	+14·0	0	9	
		2289	0·886	76·5	309·8	+15·2	0	67	398*c*
		2289	0·908	75·5	306·9	+16·1	0	32	
			0·922	59·9	305·4	+30·4			456
Aug. 23		Centre			(12·8)	(+7·0)	(0)	(120)	(1512)
235·434	CL,M	2290	0·914	241·3	56·3	−22·6	3	30	319*c*
		2289	0·730	75·9	309·2	+15·1	11	100	434*c*
		2289	0·749	75·6	307·6	+15·4	0	9	
			0·877	56·7	296·1	+32·5			183
			0·960	130·4	292·3	−35·6			248
			0·931	70·0	286·7	+21·2			269
			0·962	112·3	285·9	−19·2			213
Aug. 24		Centre			(356·2)	(+7·1)	(14)	(139)	(1666)
236·473	CL,HA		0·931	286·7	51·9	+18·1			104
		2290	0·972	245·7	54·4	−21·5	0	29	430*c*
M.		2290	0·961	241·5	50·8	−24·9	0	9	
		2286	0·832	281·0	39·1	+13·1	0	5	268*c*
		2286	0·802	282·3	36·0	+14·1	9	43	
		2289	0·562	72·0	308·8	+15·9	0	6	
		2289	0·584	73·2	307·1	+15·6	5	41	
		2291	0·932	110·6	277·2	−16·3	0	14	455*c*
Aug. 25		Centre			(342·4)	(+7·1)	(16)	(156)	(1257)
237·415	CL,M		0·832	142·5	291·5	−35·7			285
			0·863	64·5	270·6	+25·5			209
		2286	0·938	282·7	40·5	+14·3	15	90	630*c*
		2286	0·920	282·1	37·7	+13·9	16	109	
		2289	0·380	67·6	308·8	+14·9	4	12	
		2289	0·398	67·5	307·7	+15·3	0	18	
		2289	0·433	67·2	305·5	+16·2	0	8	
		2292	0·560	141·2	308·3	−19·2	0	6	
		2291	0·831	115·2	278·6	−16·3	0	11	945*f*
Aug. 26		Centre			(330·0)	(+7·1)	(35)	(254)	(2069)
1891.				°	°	°			
238d.476	CL,HA	2286	0·982	283·4	36·4	+14·5	0	34	622*c*
		2289	0·243	47·8	305·2	+16·3	0	8	
M.		2289	0·284	49·1	303·0	+17·7	0	7	
		2291	0·692	123·0	278·9	−16·5	0	3	
Aug. 27		Centre			(316·0)	(+7·1)	(0)	(52)	(622)
239·494	CL,HA		0·947	355·8	321·6	+77·7			75
		2289	0·166	346·3	304·9	+16·5	0	2	
		2292	0·464	181·5	303·3	−20·3	0	9	
		2291	0·554	128·1	276·1	−13·5	0	5	
			0·968	61·1	225·5	+29·7			365
Aug. 28		Centre			(302·6)	(+7·2)	(0)	(16)	(440)
240·399	CL,M	2292	0·519	209·6	306·3	−19·8	0	6	
		2289	0·304	298·9	306·5	+15·3	0	9	
		2289	0·291	303·3	305·2	+16·2	0	3	
		2289	0·276	308·8	303·5	+17·0	0	2	
		2293*a*	0·908	70·5	224·6	+20·7	11	108	
		2293	0·924	70·3	222·2	+20·9	0	16	547*c*
		2293	0·937	69·1	220·1	+22·0	0	7	
		2293*b*	0·940	70·4	219·5	+20·8	12	89	
Aug. 29		Centre			(290·6)	(+7·2)	(23)	(240)	(547)
241·555	CL,M	2289	0·550	287·6	308·2	+15·6	1	16	
		2289	0·493	289·2	304·2	+15·6	0	4	
		2293*a*	0·777	68·4	224·7	+21·2	0	131	
		2293	0·826	67·5	219·9	+22·6	0	59	788*c*
		2293*b*	0·838	69·2	218·4	+21·4	29	265	
Aug. 30		Centre			(275·4)	(+7·2)	(30)	(475)	(788)
242·457	M,HA	2293	0·618	64·4	226·9	+21·3	9	65	
		2293*a*	0·644	66·1	224·6	+20·7	38	258	
		2293	0·667	68·3	222·5	+19·8	8	32	
		2293	0·691	62·8	221·5	+23·8	0	9	
		2293*b*	0·717	66·9	218·5	+21·5	68	549	
		2294*a*	0·992	66·3	178·9	+24·3	41	320	396*p*
			0·915	77·1	196·5	+14·7			182
Aug. 31		Centre			(263·5)	(+7·2)	(164)	(1233)	(578)

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 longitude and latitude of the centre of the disk are given in brackets.

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

Group 2288, Aug. 22. A very small faint spot.

Group 2289, Aug. 22–30. A compact group of small faint spots. The group is irregular in outline and arrangement.

Group 2290, Aug. 24–25. A small spot. A very small companion is seen near it on Aug. 25.

Group 2291, Aug. 25–28. A very small faint spot. This has disappeared by Aug. 28, but another spot is seen near its place on that day.

Group 2292, Aug. 26–29. A succession of very small faint spots, none of which are seen on a second day. No spot is seen on Aug. 27.

Group 2293, Aug. 29–Sept. 10. A stream of spots on Aug. 29, of which *a* and *b*, the first and last, are much the largest. The group rapidly increases in size on the succeeding days, *a* and *b* expanding into very large spots, showing a great abundance of detail. Contrary to the usual course of events in stream groups, the spots in the middle of the group tend to increase, and a large spot, *c*, has formed by Sept. 4. *b* also, and not the leader *a*, increases in size up till Sept. 5. Both *b* and *c* have broken up by Sept. 8, and the entire group, except *a*, is one close cluster of large spots. These are all measured together on Sept. 8, but in four sections on Sept. 9, and in two on Sept. 10.

Group 2294, Aug. 31–Sept. 13. A large regular spot, *a*, followed by a stream of small spots. The latter have all disappeared by Sept. 8. One or two small companions are seen near *a* on Sept. 10 and 11.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°			
243d.412	CL,HA		0·822	284·7	306·6	+16·2			272
		2293*a*	0·469	58·9	225·6	+20·5	68	507	
		2293	0·530	57·9	221·9	+22·6	0	28	
		2293*b*	0·571	61·7	218·3	+21·8	86	576	
		2294*a*	0·949	66·4	177·1	+24·6	45	321	} 729*c*
		2294	0·972	65·4	172·8	+25·5	26	247	
Sept. 1		Centre			(250·9)	(+7·2)	(225)	(1679)	(1001)
244·421	CL,M		0·929	285·8	306·7	+17·3			183
			0·897	300·3	301·0	+30·3			172
		2293	0·339	21·7	229·6	+25·4	0	10	
		2293*a*	0·293	37·0	226·7	+20·6	64	451	
		2293	0·325	48·7	222·6	+19·3	0	2	
		2293	0·355	42·3	222·6	+22·1	2	19	
		2293*b*	0·413	49·5	217·7	+22·3	96	588	
		2295	0·645	75·0	197·5	+15·1	5	30	
		2295	0·677	73·9	195·1	+16·2	3	16	
		2296	0·791	71·5	185·2	+19·0	0	5	
		2294*a*	0·858	65·1	178·6	+25·0	62	351	} 1022*c*
		2294	0·885	67·3	174·9	+23·4	6	22	
		2294	0·912	65·0	171·2	+25·7	20	248	
		2297	0·991	62·4	152·7	+28·2	22	219	294*p*
			0·970	116·2	166·5	−23·2			272
Sept. 2		Centre			(237·5)	(+7·2)	(280)	(1961)	(1943)
245·318	HA,M		0·933	298·6	295·2	+29·3			444
			0·860	249·6	281·4	−13·5			171
I.			0·810	237·7	272·5	−20·7			340
		2293*a*	0·248	352·2	227·7	+21·4	112	461	
		2293	0·266	4·5	224·3	+22·5	7	26	
		2293	0·243	12·1	222·5	+20·9	10	66	
		2293	0·260	17·4	220·8	+21·5	0	8	
		2293	0·297	15·9	220·5	+23·7	0	25	
		2293*b*	0·301	27·2	217·1	+22·6	149	731	
		2295	0·473	71·8	198·0	+14·9	0	11	
		2295	0·544	70·6	193·5	+16·5	0	14	
		2294*a*	0·760	62·2	177·6	+25·7	105	395	}
		2294	0·785	65·0	174·7	+24·0	0	14	
		2294	0·826	62·6	170·8	+26·6	23	166	} 810*c*
		2294	0·842	64·9	168·6	+25·0	5	17	
		2297*a*	0·960	62·4	150·4	+28·5	25	170	553*c*
		2298	0·983	78·9	145·1	+12·2	0	68	270*c*
			0·934	118·1	162·2	+23·0			644
Sept. 3		Centre			(225·6)	(+7·2)	(436)	(2172)	(3232)
1891.				°	°	°			
246d.408	CL,HA		0·929	244·8	274·6	−20·1			547
		2293*a*	0·376	313·0	228·3	+21·8	75	462	
		2293	0·397	326·2	225·4	+26·3	0	12	
		2293*c*	0·306	316·6	224·1	+19·9	17	186	
		2293	0·264	328·6	219·6	+20·3	0	24	
		2293*b*	0·280	341·9	216·6	+22·7	87	691	
		2295	0·257	55·8	198·5	+15·4	0	9	
		2295	0·296	63·9	195·3	+14·5	0	2	
		2294*a*	0·598	56·3	177·9	+25·5	70	312	
		2294	0·618	52·8	177·5	+28·0	0	7	
		2294	0·622	60·4	175·1	+23·8	1	37	275*c*
		2294	0·682	59·4	170·6	+25·9	12	119	
		2294	0·686	62·3	169·7	+24·1	0	28	
		2297*a*	0·874	61·5	150·6	+28·4	20	149	323*c*
		2298*a*	0·892	80·5	147·5	+11·8	15	106	
		2298	0·938	80·3	140·7	+11·7	0	83	350*c*
			0·848	124·1	161·3	−23·7			514
Sept. 4		Centre			(211·2)	(+7·3)	(297)	(2227)	(2009)
247·468	CL,M		0·919	298·2	264·4	+28·8			84
		2293*a*	0·569	299·4	229·5	+22·4	66	435	
		2293*c*	0·499	301·0	224·4	+21·4	35	321	
		2293	0·458	308·1	220·2	+23·1	9	47	
		2293	0·429	302·2	219·8	+20·0	0	16	
		2293*b*	0·412	312·1	216·4	+22·0	66	805	
		2295	0·183	321·8	203·9	+15·5	2	27	
		2295	0·153	331·0	201·6	+15·0	18	55	
		2295	0·154	350·7	198·7	+16·0	9	60	
		2295	0·151	10·3	195·6	+15·9	0	15	
		2294*a*	0·440	42·2	178·1	+25·9	60	293	
		2294	0·455	49·5	175·1	+23·9	3	31	
		2294	0·530	54·7	169·0	+24·3	0	10	
		2294	0·546	51·4	168·9	+26·4	2	42	
		2297*a*	0·760	58·4	149·9	+28·5	24	142	351*f*
		2298*a*	0·755	80·3	147·8	+12·1	15	111	}
		2298	0·833	80·7	138·1	+11·7	3	38	} 387*c*
			0·876	69·3	135·6	+21·7			415
			0·952	72·0	123·9	+19·3			33
Sept. 5		Centre			(197·2)	(+7·3)	(312)	(2448)	(1270)
248·391	CL,HA	2293*a*	0·718	294·0	229·9	+22·2	57	315	
		2293*c*	0·658	293·1	225·1	+20·6	40	219	
		2293*b*	0·569	300·7	217·0	+23·1	65	619	

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 longitude and latitude of the centre of the disk are given in brackets.
The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 2295, Sept. 2–11. A group of small spots forming between Groups 2293 and 2294, but somewhat further to the south. It changes much from day to day as to the number and size of its component spots, but it always presents the appearance of a number of somewhat small spots closely crowded together.
Group 2296, Sept. 2. A small faint spot.
Group 2297, Sept. 2–15. A regular spot, *a*. A small companion is sometimes seen near it.
Group 2298, Sept. 3–14. A regular spot, *a*, followed by a short stream of small spots. The latter have all disappeared by Sept. 9; but *a* has again two very small companions on Sept. 10.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°			
248d.391	CL,HA	2295	0·328	294·7	202·9	+14·8	9	145	
		2295	0·265	306·0	197·9	+16·1	3	98	
		2294*a*	0·338	18·4	178·2	+25·9	55	276	
		2294	0·337	29·2	174·7	+24·3	0	6	
		2294	0·401	38·1	169·2	+25·4	0	47	
		2297*a*	0·638	53·1	149·7	+28·5	18	134	
		2298*a*	0·599	79·5	148·1	+12·1	12	85	
		2298	0·711	81·0	139·4	+11·6	5	14	
Sept. 6		Centre			(185·0)	(+7·3)	(264)	(1958)	(0)
249·524	CL,HA	2293*a*	0·856	291·5	229·2	+22·2	64	576	1126*c*
		2293*c*	0·808	290·5	223·9	+20·8	28	172	
		2293	0·769	291·2	220·0	+20·9	18	172	
		2293*b*	0·735	294·6	216·5	+23·0	68	630	
		2295	0·581	285·2	205·4	+14·8	15	70	
		2295	0·510	287·9	200·2	+15·3	53	318	
		2294*a*	0·349	338·0	178·4	+26·1	67	300	
		2294	0·291	337·4	177·0	+22·8	0	6	
		2294	0·309	7·1	167·7	+25·1	0	18	
		2297*a*	0·492	40·6	148·8	+28·7	19	144	
		2298*a*	0·376	74·9	148·4	+12·4	17	87	
		2298	0·461	78·2	142·8	+11·9	0	2	
		2298	0·486	78·1	141·0	+12·1	0	4	
		2298	0·505	80·0	139·7	+11·4	2	13	
			0·897	114·7	111·2	−18·3			361
			0·898	67·5	105·7	+23·3			421
Sept. 7		Centre			(170·1)	(+7·3)	(351)	(2512)	(1908)
250·397	CL,M	2293*a*	0·938	291·0	229·3	+22·2	62	543	1658*c*
		2293	0·864	291·3	218·5	+22·0	86	1255	
		2295	0·719	283·8	204·6	+15·0	16	126	
		2295	0·657	285·0	199·5	+15·3	20	114	
		2295	0·621	287·1	196·5	+16·3	19	82	
		2294*a*	0·447	317·0	178·2	+25·9	59	281	
		2297*a*	0·402	23·2	148·1	+28·8	28	136	
		2298*a*	0·200	62·1	148·1	+12·6	13	78	
		2298	0·296	73·6	141·7	+11·8	0	4	
		2298	0·328	75·7	139·6	+11·5	0	8	
			0·876	64·2	97·4	+26·0			358
Sept. 8		Centre			(158·5)	(+7·3)	(303)	(2627)	(2016)
1891.				°	°	°			
251d.235	CL,HA	2293	0·988	291·5	230·7	+22·3	14	533	
		2293	0·968	289·5	224·4	+20·6	0	157	
M.		2293	0·936	290·0	217·9	+21·2	43	587	1446*c*
		2293	0·931	293·6	217·7	+25·2	12	311	
		2295	0·858	283·5	207·1	+15·3	0	32	
		2295	0·827	281·3	203·8	+13·4	6	24	
		2295	0·804	282·7	201·4	+14·5	0	13	276*c*
		2295	0·793	284·4	200·3	+15·8	13	144	
		2295	0·750	285·6	196·2	+16·5	19	70	
		2294*a*	0·576	306·0	178·6	+26·0	50	257	
		2298*a*	0·096	352·3	148·3	+12·8	13	70	
		2297*a*	0·368	359·3	147·8	+28·8	12	142	
			0·968	67·1	70·5	+23·9			429
Sept. 9		Centre			(147·5)	(+7·3)	(182)	(2340)	(2151)
252·416	HA,M	2293	0·997	293·8	220·9	+24·1	0	412	783*c*
		2293	0·994	290·3	217·4	+20·9	81	742	
		2295	0·962	283·8	207·1	+15·2	0	4	
		2295	0·952	281·6	205·0	+13·2	4	47	642*c*
		2295	0·914	283·4	198·7	+15·1	15	128	
		2295	0·897	284·6	196·4	+16·3	3	72	
		2294*a*	0·746	298·2	178·6	+25·7	50	291	443*c*
		2294	0·712	295·6	176·0	+23·1	0	12	
		2297*a*	0·447	327·5	147·8	+29·0	31	139	
		2298*a*	0·311	290·3	149·3	+13·1	12	64	
		2298	0·255	317·9	142·2	+17·9	0	6	
		2298	0·167	298·4	140·5	+11·7	0	5	
		2299*a*	0·982	76·7	51·6	+14·4	45	290	574*c*
			0·870	66·3	71·4	+24·1			405
Sept. 10		Centre			(131·9)	(+7·2)	(241)	(2212)	(2847)
253·394	CL,M	2295	0·970	284·3	196·1	+15·6	0	54	668*c*
		2294*a*	0·861	295·4	178·3	+25·5	47	298	
		2294	0·844	292·4	176·5	+22·7	0	4	1004*c*
		2294	0·828	294·5	174·5	+24·3	0	4	
		2298*a*	0·505	284·1	149·1	+13·3	16	62	
		2297*a*	0·566	312·8	147·2	+29·0	26	137	
		2299*a*	0·914	77·4	52·2	+14·4	56	339	865*c*
		2299	0·928	75·7	50·1	+15·9	0	6	
			0·953	120·2	52·9	−25·9			136
Sept. 11		Centre			(119·0)	(+7·2)	(145)	(904)	(2673)

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 longitude and latitude of the centre of the disk are given in brackets.
The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 2299, Sept. 10–22. A large regular spot, *a*. A few very small companions are sometimes seen near it.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°			
254^{d}·408	M,JG		0·841	232·2	153·2	+26·2			178
		2294*a*	0·941	294·3	176·8	+25·3	44	229	761*f*
		2298*a*	0·684	281·7	148·9	+13·3	9	48	
		2297*a*	0·697	304·1	146·5	+28·5	22	109	
		2297	0·673	304·8	144·3	+28·2	0	3	
		2299*a*	0·805	77·3	51·6	+14·5	62	302	688*f*
Sept. 12		Centre			(105·6)	(+7·2)	(137)	(691)	(1627)
			0·944	237·8	156·2	−27·1			228
255·397	M,JG								
		2294*a*	0·988	294·5	175·7	+25·2	21	116	475*f*
		2298*a*	0·827	281·3	148·7	+13·4	9	45	158*c*
		2297	0·828	298·4	147·5	+27·5	0	5	175*c*
		2297*a*	0·816	300·1	145·8	+28·6	24	129	
		2300	0·204	314·3	101·2	+15·3	1	13	
		2300	0·169	322·0	98·7	+14·8	0	1	
		2301	0·364	42·6	77·7	+16·4	3	34	
		2301	0·369	46·7	75·8	+21·5	1	6	
		2301	0·404	49·5	73·2	+22·0	7	30	
		2299*a*	0·657	76·0	51·5	+14·6	49	308	322*c*
			0·838	75·7	35·1	+15·9			180
Sept. 13		Centre			(92·5)	(+7·2)	(115)	(687)	(1538)
			0·864	288·0	140·4	+19·1			86
256·337	M,JG								
			0·861	305·2	137·8	+33·7			276
I.		2298*a*	0·931	281·2	149·6	+13·0	18	55	223*nf*
		2297*a*	0·912	298·1	146·3	+28·6	15	115	235*c*
		2301	0·265	9·0	77·6	+22·3	12	40	
		2301	0·282	17·9	74·8	+22·7	0	7	
		2301	0·288	24·0	73·0	+22·3	3	21	
		2301	0·320	23·9	72·1	+24·1	0	7	
		2299*a*	0·487	72·0	51·7	+15·0	87	251	
		2299	0·520	70·2	49·7	+16·3	0	8	173*c*
		2299	0·536	70·6	48·5	+16·4	0	8	
			0·948	130·4	19·0	−34·7			218
Sept. 14		Centre			(80·2)	(+7·2)	(135)	(512)	(1211)
			0·930	285·5	138·2	+17·0			346
257·185	M,JG								
			0·811	287·1	123·3	+18·0			100
I.		2297*a*	0·967	297·1	145·7	+27·9	15	137	292*f*
		2301	0·311	327·3	79·8	+22·2	13	42	
		2301	0·294	335·2	76·5	+22·6	1	13	
		2301	0·279	343·0	73·9	+22·6	4	23	
		2301	0·267	346·9	72·6	+22·2	8	22	
		2301	0·301	349·8	72·2	+24·4	3	18	
1891.				°	°	°			
257^{d}·185	M,JG	2299*a*	0·325	63·5	51·4	+15·2	56	278	173*c*
			0·902	133·9	17·2	−34·3			168
I.			0·930	118·8	6·4	−23·4			198
Sept. 15		Centre			(68·9)	(+7·2)	(100)	(533)	(1277)
258·184	M,JG		0·979	301·8	136·4	+32·6			199
			0·965	292·5	131·9	+23·5			163
I.			0·760	292·8	104·5	+21·9			178
		2301*a*	0·467	303·3	80·4	+21·4	10	38	
		2301*b*	0·399	315·9	73·3	+23·5	40	324	
		2299*a*	0·150	28·8	51·4	+14·7	57	249	
		2299	0·194	29·5	50·0	+16·9	0	11	
		2299	0·192	38·4	48·6	+15·8	0	16	
		2302	0·824	122·9	7·7	−21·9	0	21	269*c*
		2302	0·862	123·5	4·0	−24·0	12	38	
			0·832	142·0	16·9	−35·4			136
Sept. 16		Centre			(55·7)	(+7·2)	(119)	(697)	(945)
259·391	M,JG		0·862	292·3	99·4	+22·8			183
		2301*a*	0·676	295·0	81·0	+22·0	6	22	
		2301*c*	0·604	298·7	74·7	+22·7	56	262	149*c*
		2301	0·584	302·0	72·5	+24·0	0	47	
		2301*d*	0·560	305·2	70·0	+25·0	60	325	
		2299*a*	0·239	304·3	51·5	+14·7	61	341	
		2299	0·247	317·6	49·8	+17·5	0	11	
		2299	0·197	316·2	47·9	+15·2	0	4	
		2302	0·683	133·9	7·8	−22·2	5	67	
		2302	0·728	132·2	3·9	−23·5	0	16	142*c*
		2302	0·746	133·0	3·0	−24·9	3	18	
Sept. 17		Centre			(39·8)	(+7·1)	(191)	(1113)	(474)
260·248	M,JG		0·953	292·3	102·0	+23·3			363
			0·889	300·9	90·7	+30·6			91
M.			0·916	242·5	89·2	−21·7			111
		2301*a*	0·792	292·5	80·5	+22·1	0	7	
		2301*c*	0·736	294·8	74·8	+22·9	45	242	
		2301	0·700	296·6	71·4	+23·5	0	29	
		2301*d*	0·683	300·0	69·2	+25·4	59	364	
		2299	0·420	286·0	52·9	+13·1	0	7	
		2299*a*	0·400	290·2	51·2	+14·5	58	325	
		2299	0·388	284·6	51·0	+12·2	0	18	
		2299	0·383	298·1	49·1	+17·0	0	13	
		2302	0·591	145·9	7·5	−22·6	7	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 longitude and latitude of the centre of the disk are given in brackets.

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

Group 2300, Sept. 13. Two very small spots.

Group 2301, Sept. 13–21. A number of small spots in a sinuous stream. The group on Sept. 16 consists of *a*, a small regular spot, and *b*, a large spot of irregular outline formed by the coalescence of the small spots in the following part of the group. *b* has broken up by Sept. 17 into a stream of spots, of which *c* and *d*, the first and last, are the largest; *d* is a large regular spot.

Group 2302, Sept. 16–26. A few small spots in a straggling stream. The leading spot, *a*, has become a large well-defined spot with double nucleus by Sept. 19, and by Sept. 21 it has become quite regular in form. Two of the following spots have become large and well-defined, *b* by Sept. 21, *c* by Sept. 22; and the group consists chiefly of these three spots until it reaches the west limb.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°			
260^{d}·248	M,JG	2302	0·611	144·4	5·9	−23·2	0	31	
M.		2302	0·633	143·0	4·0	−23·8	0	11	
		2302	0·658	142·3	2·2	−25·0	3	24	
Sept. 18		Centre			(28·5)	(+7·1)	(172)	(1113)	(565)
261·284	M,JG		0·924	302·1	82·3	+32·3			99
			0·936	252·9	81·4	−13·2			94
I.		2301	0·881	293·3	76·8	+23·8	0	17	
		2301*c*	0·877	291·1	76·4	+21·9	50	228	
		2301	0·859	293·0	74·0	+23·3	0	16	563*c*
		2301	0·822	293·0	69·8	+22·9	6	74	
		2301*d*	0·821	295·9	69·3	+25·2	91	394	
		2299*a*	0·608	284·5	52·1	+14·4	81	312	184*c*
		2299	0·602	280·2	51·9	+11·8	1	9	
		2302*a*	0·505	167·7	8·1	−22·4	14	91	
		2302	0·555	158·9	2·2	−24·2	0	30	
			0·938	73·9	304·2	+17·5			322
Sept. 19		Centre			(14·8)	(+7·1)	(243)	(1171)	(1262)
262·230	M,JG	2301*c*	0·964	290·3	78·2	+21·4	24	199	444*c*
		2301*d*	0·914	294·9	68·9	+25·6	61	338	261*c*
I.		2299*a*	0·759	282·9	51·9	+14·4	67	318	268*c*
		2302*a*	0·503	190·6	8·0	−22·5	64	277	
		2302	0·487	183·3	4·0	−21·9	0	26	
		2302	0·521	182·3	3·6	−24·2	1	7	
		2302	0·503	181·7	3·2	−23·0	3	25	
		2302	0·527	179·6	2·1	−24·6	5	42	
		2303	0·986	115·8	286·3	−23·9	0	15	90*c*
			0·901	72·8	297·4	+18·5			282
			0·966	104·1	289·5	−11·5			348
Sept. 20		Centre			(2·3)	(+7·1)	(2·25)	(1247)	(1693)
263·446	M,JG		0·935	238·0	48·6	−26·6			86
		2301*d*	0·982	294·9	67·3	+25·7	27	233	269*c*
		2299*a*	0·904	282·5	51·7	+14·3	40	284	464*f*
		2299	0·894	280·6	50·3	+12·6	0	16	
		2302*a*	0·602	216·2	8·8	−22·5	56	275	
		2302	0·591	213·2	6·7	−22·3	6	30	
		2302	0·600	209·5	5·2	−24·7	0	3	
		2302*b*	0·562	207·6	2·7	−23·1	25	160	
		2302*c*	0·583	204·8	1·9	−25·1	3	38	
		2303	0·915	120·6	286·7	−24·3	0	16	157*c*
			0·881	108·3	287·6	−12·5			268
Sept. 21		Centre			(346·3)	(+7·0)	(157)	(1055)	(1244)
1891.				°	°	°			
264^{d}·436	M,JG	2299*a*	0·977	283·5	52·1	+14·7	50	243	658*f*
		2304	0·851	223·5	17·5	−33·2	0	4	178*c*
		2302*a*	0·718	228·7	8·8	−22·6	53	360	
		2302	0·707	225·0	6·3	−24·1	0	5	
		2302	0·711	223·5	5·8	−25·1	8	18	644*c*
		2302*b*	0·687	219·8	2·3	−25·7	11	118	
		2302*c*	0·665	222·1	2·2	−23·4	22	175	
		2305	0·524	71·2	302·3	+15·7	0	3	
		2305	0·550	68·9	300·8	+17·4	0	5	
			0·849	124·7	283·3	−24·5			184
			0·943	116·3	267·8	−21·9			188
Sept. 22		Centre			(333·2)	(+7·0)	(144)	(931)	(1852)
265·436	M,JG		0·920	229·8	16·5	−32·7			100
		2302*a*	0·834	236·4	8·8	−22·9	50	347	
		2302	0·823	234·2	6·8	−24·0	2	13	
		2302	0·824	233·3	6·5	−24·8	3	19	687*c*
		2302*b*	0·780	231·8	1·8	−23·6	21	173	
		2302*c*	0·791	229·4	1·6	−25·7	14	123	
		2305	0·343	58·7	302·2	+16·9	0	3	
		2305	0·368	60·7	300·5	+16·9	0	2	
		2305	0·403	61·8	298·2	+17·5	0	3	
			0·882	118·5	264·1	−21·0			246
Sept. 23		Centre			(320·0)	(+7·0)	(90)	(683)	(1033)
266·378	M,JG	2302*a*	0·923	242·0	9·3	−22·5	41	355	
		2302	0·914	239·9	7·3	−23·9	0	18	
		2302	0·887	237·2	2·7	−24·8	0	12	558*c*
		2302*b*	0·875	238·6	1·8	−23·2	9	161	
		2302*c*	0·881	235·9	1·4	−25·6	0	94	
		2306*a*	0·978	67·9	227·9	+23·0	53	410	1270*c*
Sept. 24		Centre			(307·6)	(+6·9)	(103)	(1050)	(1820)
267·200	M,JG		0·993	287·7	21·7	+18·4			130
		2302*a*	0·975	244·2	9·3	−23·2	73	399	
I.		2302	0·952	237·4	1·9	−28·1	0	11	727*c*
		2302*b*	0·948	238·8	1·6	−26·6	5	45	
		2302*c*	0·942	241·5	1·4	−23·9	15	94	
		2307	0·540	65·8	265·5	+18·7	0	2	
		2307	0·556	65·1	264·5	+19·4	0	+	
		2307	0·575	64·7	263·3	+19·9	0	3	

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 longitude and latitude of the centre of the disk are given in brackets.

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

Group 2303, Sept. 20–21. A small faint spot.
Group 2304, Sept. 22. A very small faint spot.
Group 2305, Sept. 22–23. A few very small faint spots.
Group 2306, Sept. 24–Oct. 5. A large spot, *a*, followed by a short stream. *a* has broken up by Sept. 28 into an irregular group, mostly of small spots. It tends to disintegrate further, and the entire group to diminish on the succeeding days.
Group 2307, Sept. 25–27. A few very small faint scattered spots.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°			
267d.200	M,JG	2306*a*	0·933	67·6	227·0	+23·3	77	467	
		2306	0·955	68·0	222·7	+23·0	0	119	2031*c*
I.		2306	0·966	67·6	220·3	+23·4	6	49	
Sept. 25		Centre			(296·7)	(+6·9)	(176)	(1193)	(2888)
268·153	M,JG	2302	0·988	245·5	1·2	−22·8	0	66	250*c*
		2307	0·360	54·6	266·2	+18·6	0	15	
I.		2307	0·377	59·0	264·5	+17·6	0	4	
		2307	0·404	58·7	263·0	+18·5	0	2	
		2306*a*	0·839	66·6	227·4	+23·3	88	504	
		2306	0·880	67·7	222·3	+22·9	0	60	1066*c*
		2306	0·894	67·9	220·5	+22·8	0	19	
			0·944	67·6	212·5	+23·4			1122
			0·966	86·4	208·9	+ 5·3			809
Sept. 26		Centre			(284·2)	(+6·9)	(88)	(670)	(3247)
269·480	M,JG	2307	0·469	181·5	267·4	−21·1	1	12	
		2307	0·454	177·7	265·5	−20·0	0	10	
		2307	0·482	177·0	265·0	−21·8	0	8	
		2306	0·586	62·4	232·8	+21·4	0	7	
		2306*a*	0·650	61·3	228·3	+23·5	72	453	108*f*
		2306	0·680	66·7	224·9	+20·7	0	9	
		2306	0·708	64·2	223·0	+22·9	0	25	
		2308	0·895	75·7	202·5	+15·8	0	31	995*c*
			0·853	60·4	209·1	+28·6			882
Sept. 27		Centre			(266·6)	(+6·8)	(73)	(555)	(1985)
270·469	M,JG	2306	0·485	53·4	228·7	+23·0	29	157	
		2306	0·474	58·6	228·1	+20·4	0	8	
		2306	0·496	51·4	228·6	+24·2	0	34	
		2306	0·515	49·9	227·8	+25·5	1	15	
		2306	0·511	55·4	226·5	+22·9	3	20	
		2306	0·486	63·4	226·4	+18·6	0	4	
		2306	0·529	54·9	225·5	+23·7	0	14	
		2306	0·537	56·3	224·6	+23·3	0	7	
		2306	0·546	57·7	223·7	+22·8	0	7	
		2308	0·696	77·2	209·4	+13·8	0	8	
		2308	0·708	76·8	208·5	+14·1	0	3	562*n*
		2308	0·735	77·5	206·2	+13·8	0	6	
		2308	0·785	74·8	201·7	+16·2	0	4	
		2309	0·641	63·6	215·5	+21·9	0	11	
		2309	0·686	62·7	212·1	+23·4	0	17	
1891.				°	°	°			
270d.469	M,JG	2310	0·994	117·6	174·4	−26·3	0	273	116*c*
		2311*a*	0·982	65·6	172·8	+25·2	11	177	3128*f*
			0·765	58·3	216·1	+28·4			624
Sept. 28		Centre			(253·6)	(+6·8)	(44)	(765)	(1614)
271·451	M,JG		0·933	250·7	306·3	−15·3			303
			0·978	234·9	311·4	−32·2			106
		2306	0·349	29·6	229·8	+24·2	1	8	
		2306	0·339	32·7	229·2	+23·1	22	105	
		2306	0·366	32·5	228·2	+24·5	0	3	
		2306	0·385	31·0	227·9	+25·7	0	11	
		2306	0·351	35·8	227·8	+23·0	2	13	
		2306	0·392	36·1	225·9	+24·9	0	12	
		2306	0·384	41·8	223·9	+27·7	0	19	
		2309	0·482	60·0	213·4	+19·9	0	4	
		2308	0·505	70·0	211·2	+15·8	0	2	
		2308	0·519	73·6	209·8	+14·2	0	3	
		2308	0·528	75·4	209·1	+13·4	3	23	
		2310	0·949	120·4	175·1	−26·1	36	138	602*c*
		2311*a*	0·923	64·3	172·9	+26·2	32	133	691*c*
Sept. 29		Centre			(240·6)	(+6·7)	(96)	(474)	(1702)
272·313	M,JG		0·931	286·0	298·5	+17·3			160
			0·869	237·8	282·4	−23·7			169
		2306	0·226	351·5	231·2	+19·6	0	5	
		2306	0·301	354·2	231·1	+24·0	0	7	
		2306	0·244	356·4	230·1	+20·8	0	2	
		2306	0·286	357·2	230·1	+23·2	23	120	
		2306	0·281	1·8	228·6	+23·0	1	4	
		2306	0·312	8·7	226·2	+24·6	5	20	
		2306	0·253	16·9	224·7	+20·6	0	2	
		2306	0·288	28·9	220·7	+21·2	0	3	
		2306	0·356	28·7	218·4	+24·7	0	2	
		2308	0·325	63·4	211·8	+14·7	0	7	
		2308	0·329	67·7	211·1	+13·5	0	3	
		2310	0·882	124·0	175·1	−25·7	26	131	339*c*
		2310	0·892	122·9	173·4	−25·3	0	5	
		2311*a*	0·838	62·5	173·2	+26·6	24	122	478*c*
			0·961	66·9	154·1	+24·0			405
			0·992	72·0	144·5	+18·6			78
Sept. 30		Centre			(229·2)	(+6·7)	(79)	(433)	(1629)

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 longitude and latitude of the centre of the disk are given in brackets.
The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 2308, Sept. 27–Oct. 7. A few very small faint scattered spots. The group is not seen on Oct. 1 and Oct. 3.
Group 2309, Sept. 28–29. A few very small faint spots.
Group 2310, Sept. 28–Oct. 10. A regular spot, *a*, which gradually diminishes in size. It has divided by Oct. 4 into two portions, which are, however, still measured together, and by Oct. 7 it has completely broken up and forms a compact cluster of very small spots. Two small spots are seen preceding *a* on Oct. 8.
Group 2311, Sept. 28–Oct. 10. A regular spot, *a*. A very small companion is seen near *a* on Oct. 3 and 9.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°				1891.				°	°	°			
273d·182	CL,HA		0·884	239·3	273·7	−23·7			509	275d·396	CL,HA	2313	0·687	69·5	146·0	+18·7	4	12	
		2312	0·433	300·6	240·9	+18·9	3	10				2313	0·707	68·8	144·4	+19·5	0	17	
I.		2312	0·404	305·6	238·2	+19·9	0	5				2313	0·706	71·0	144·2	+18·0	14	72	346c
		2306	0·313	323·8	229·2	+21·2	0	11				2313	0·728	68·7	142·6	+19·9	11	101	
		2306	0·337	329·3	228·5	+23·3	14	59				2315a	0·902	109·8	127·5	−14·7	15	87	
		2306	0·278	324·1	227·7	+19·6	0	3				2315	0·905	108·4	126·7	−13·6	0	26	449c
		2306	0·367	339·2	226·1	+26·6	8	32				2315	0·949	108·0	119·8	−14·8	0	23	
		2306	0·324	339·7	224·8	+24·2	5	41					0·872	60·8	128·7	+28·6			613
		2310	0·808	129·1	173·8	−25·9	27	157	615f	Oct. 3		Centre			(188·6)	(+6·5)	(92)	(673)	(1881)
		2311a	0·747	60·0	171·6	+26·6	23	112	444f										
		2313	0·957	70·5	143·5	+20·6	0	53	390c	276·470	CL,HA		0·866	62·5	115·1	+27·0			313
		2313	0·958	72·2	143·3	+19·0	0	24				2306	0·809	296·1	227·4	+24·9	0	22	
Oct. 1		Centre			(217·8)	(+6·7)	(80)	(507)	(1958)			2306	0·781	294·9	224·7	+23·4	0	7	6668f
												2306	0·733	296·1	220·0	+23·3	0	14	
274·342	CL,HA		0·922	239·8	263·5	−24·5			267			2308	0·617	284·8	212·2	+14·2	0	10	
			0·847	288·7	260·5	+19·3			265			2308	0·603	287·1	211·0	+15·5	8	54	
I.		2314	0·653	309·4	237·9	+29·8	0	5				2308	0·555	287·2	207·5	+14·9	0	18	
		2306	0·470	297·5	228·5	+18·5	0	3				2308	0·494	292·0	202·8	+16·4	0	39	
		2306	0·481	301·3	228·4	+20·4	5	110	400c			2310a	0·526	178·9	173·8	−25·2	8	70	
		2306	0·498	307·1	228·0	+23·4	13	48				2311a	0·356	9·7	170·6	+27·0	17	93	
		2306	0·510	312·0	227·3	+25·9	8	26				2316	0·209	43·6	165·9	+15·1	0	4	
		2306	0·466	311·1	225·0	+23·9	4	23				2316a	0·249	47·6	163·4	+16·0	3	12	
		2308	0·185	314·0	210·3	+13·9	4	12				2313	0·506	63·8	145·9	+18·6	4	8	
		2308	0·175	322·2	208·8	+14·5	0	4				2313	0·524	63·5	144·8	+19·2	3	36	
		2308	0·148	323·7	207·6	+13·4	0	11				2313	0·536	65·8	143·5	+18·3	9	60	
		2310a	0·677	140·4	174·0	−25·5	28	123	757f			2313	0·557	63·5	142·5	+19·9	10	93	
		2311a	0·589	52·3	171·2	+26·8	24	117	573f			2315a	0·777	114·8	127·8	−14·6	15	109	
		2313	0·829	71·9	146·4	+18·7	3	28				2315b	0·803	113·4	125·0	−14·3	0	12	
		2313	0·843	70·5	145·0	+20·0	0	9	336c			2315c	0·831	113·1	122·2	−15·1	11	103	
		2313	0·849	73·2	144·2	+17·7	8	59				2315d	0·850	112·0	119·9	−14·9	0	12	
		2313	0·862	70·4	142·8	+20·3	0	54		Oct. 4		Centre			(174·4)	(+6·5)	(88)	(776)	(979)
		2315	0·987	106·9	124·3	−15·4	0	83											
			0·870	124·9	150·2	−25·9			466	277·264	CL,HA	2306	0·904	290·5	228·9	+21·2	0	6	1600c
			0·925	62·3	134·6	+28·1			236			2308	0·754	284·0	212·9	+14·8	6	39	
Oct. 2		Centre			(202·5)	(+6·6)	(97)	(715)	(3300)	I.		2308	0·726	283·4	210·4	+14·1	0	18	1519nf
												2308	0·719	285·6	209·7	+15·7	30	91	
275·396	CL,HA	2306	0·656	294·0	228·2	+20·5	0	15				2308	0·683	285·3	206·7	+15·1	0	2	
		2306	0·663	301·3	227·2	+25·2	10	51	473p			2310a	0·549	197·1	174·1	−25·3	13	53	
		2306	0·658	303·6	226·2	+26·4	0	4				2311a	0·367	344·4	170·2	+27·0	20	96	
		2306	0·633	299·4	225·3	+23·3	0	32				2316a	0·170	3·1	163·4	+16·2	0	9	99c
		2310a	0·575	156·5	174·0	−25·4	21	99				2313	0·369	53·6	145·7	+18·7	8	21	
		2311a	0·445	37·3	171·1	+26·9	17	120				2313	0·396	54·2	144·1	+19·3	1	7	
		2311	0·513	38·7	167·0	+29·6	0	6				2313	0·395	57·4	143·5	+18·3	19	83	
		2313	0·661	69·4	148·1	+18·4	0	8				2313	0·415	54·6	142·9	+19·9	15	73	

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 longitude and latitude of the centre of the disk are given in brackets.
The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 2312, Oct. 1. Two very small faint spots.
Group 2313, Oct. 1–12. A compact cluster comprising many spots, mostly small. The number and size of the component spots undergo many changes, but the general character of the group remains the same.
Group 2314, Oct. 2. A small faint spot.
Group 2315, Oct. 2–14. A fine stream of spots. On Oct. 4 it consists of four spots, *a*, *b*, *c* and *d*, of which two, *a* and *c*, are large and regular, *b* increases in size on the succeeding days, but *d* has disappeared by Oct. 7. On Oct. 8 and the succeeding days the group consists almost entirely of the three spots, *a*, *b*, and *c*; all of which are large, with well-defined nuclei, and showing much detail.
Group 2316, Oct. 4–6. A small but well-defined spot, *a*. A very small companion is seen near it on Oct. 4.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°			
277d·264	CL,HA	2313	0·440	56·8	141·0	+19·8	4	11	
		2315*a*	0·664	121·1	128·0	−14·9	35	164	} 474*c*
I.		2315*b*	0·696	118·4	124·8	−14·4	0	12	
		2315*c*	0·731	118·4	122·2	−15·6	49	176	
		2315	0·753	120·3	121·1	−17·6	0	4	
		2315*d*	0·754	116·6	119·8	−15·1	3	13	
			0·796	61·0	112·8	+26·8			403
			0·926	67·6	95·5	+23·2			226
Oct. 5		Centre			(163·9)	(+6·4)	(203)	(878)	(4321)
278·215	CL,HA		0·897	292·0	215·3	+22·5			2112
		2308	0·879	283·3	213·3	+14·7	0	13	
I.		2308	0·861	283·7	211·1	+15·0	9	41	} 1104*c*
		2308	0·857	282·2	210·6	+13·7	0	13	
		2308	0·839	284·4	208·6	+15·5	12	27	
		2310*a*	0·625	213·7	173·8	−25·4	15	67	
		2311*a*	0·455	321·8	169·6	+26·9	22	91	
		2316*a*	0·267	310·8	163·4	+16·2	1	9	
		2313	0·245	21·6	145·8	+19·3	0	20	
		2313	0·263	31·2	143·0	+19·2	22	146	
		2313	0·294	36·6	140·6	+19·8	0	6	
		2317	0·436	46·2	131·3	+23·5	0	13	
		2315*a*	0·513	134·0	128·9	−15·0	52	258	
		2315*b*	0·547	129·4	125·5	−14·6	3	22	
		2315	0·584	128·7	123·1	−15·9	2	6	
		2315*c*	0·601	126·7	121·4	−15·6	48	196	
		2315	0·617	129·3	121·4	−17·5	0	4	
		2315*d*	0·620	124·7	119·5	−15·3	2	7	
			0·877	85·9	89·8	+16·6	0	10	
Oct. 6		Centre			(151·3)	(+6·3)	(188)	(949)	(3216)
279·405	CL,HA		0·915	298·4	201·7	+28·5			594
		2308	0·957	283·7	209·6	+14·9	0	13	894*c*
		2310*a*	0·741	227·4	172·5	−25·0	6	43	
		2311*a*	0·616	306·8	169·0	+26·9	15	84	
		2313	0·308	319·7	147·8	+19·7	0	3	
		2313	0·300	323·2	146·6	+20·1	0	7	
		2313	0·257	329·3	143·5	+19·0	30	195	
		2317	0·305	12·5	131·5	+23·6	3	21	
		2317	0·327	21·9	128·0	+23·8	0	10	
		2317	0·351	23·5	126·8	+25·0	9	23	
		2315*a*	0·366	165·0	130·0	−14·4	72	422	
		2315	0·341	161·0	129·1	−12·5	0	5	
		2315	0·374	158·1	127·4	−14·0	0	4	
1891.				°	°	°			
279d·405	CL,HA	2315*b*	0·396	154·7	125·6	−14·5	24	89	
		2315	0·438	151·3	123·0	−16·3	0	8	
		2315*c*	0·439	146·5	121·1	−15·3	33	183	
		2315	0·480	149·0	120·6	−18·1	0	8	
		2318*a*	0·991	77·2	52·2	+13·5	22	139	273*p*
			0·909	65·0	70·2	+25·3			768
Oct. 7		Centre			(135·6)	(+6·3)	(214)	(1257)	(2529)
280·441	CL,HA		0·971	292·8	199·4	+23·6			205
			0·858	293·0	180·8	+22·9			291
		2310	0·862	238·7	174·9	−22·9	0	10	} 372*c*
		2310	0·859	238·2	174·4	−23·1	0	18	
		2310*a*	0·851	235·3	172·4	−25·1	5	34	
		2311*a*	0·756	300·3	168·8	+26·7	11	80	91*c*
		2319	0·716	229·9	158·2	−22·4	0	8	} 401*c*
		2319	0·709	227·3	156·5	−23·6	0	5	
		2319	0·691	224·3	153·9	−24·3	1	20	
		2319	0·676	220·0	150·7	−25·7	5	21	
		2313	0·456	300·9	146·4	+19·2	19	156	
		2313	0·444	308·8	143·8	+21·9	5	30	
		2313	0·414	305·7	142·8	+19·7	25	174	
		2315*a*	0·396	204·5	131·7	−15·0	62	386	
		2315*b*	0·372	188·0	125·1	−15·4	29	161	
		2315*c*	0·368	176·4	120·6	−15·3	38	186	
		2317	0·324	334·1	130·8	+23·0	7	49	
		2317	0·320	347·3	126·4	+24·3	9	48	
		2318*a*	0·930	77·8	53·0	+13·6	19	128	494*c*
			0·813	62·2	69·1	+26·0			713
Oct. 8		Centre			(122·0)	(+6·2)	(235)	(1514)	(2567)
281·491	CL,HA		0·938	292·0	179·3	+22·8			330
		2310*a*	0·939	240·1	173·0	−25·3	0	23	539*c*
		2311	0·877	301·7	168·9	+30·6	0	5	} 202*c*
		2311*a*	0·871	297·3	168·8	+26·7	14	102	
		2319	0·841	239·6	160·0	−21·3	0	12	} 216*c*
		2319	0·822	236·7	157·0	−22·7	3	16	
		2319	0·831	234·4	156·9	−24·8	14	40	
		2319	0·820	233·7	155·6	−24·8	0	7	
		2319	0·793	231·2	152·0	−25·3	0	15	
		2313	0·641	292·7	147·6	+19·2	7	106	
		2313	0·614	296·8	144·8	+21·0	0	8	
		2313	0·617	299·3	144·5	+22·6	7	46	
		2313	0·593	295·1	143·6	+19·6	10	78	
		2315	0·523	228·1	132·6	−14·7	62	381	

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 longitude and latitude of the centre of the disk are given in brackets.
The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 2317, Oct. 6–14. A group of small spots, following Group 2313 at a little distance. The component parts are irregularly distributed and undergo frequent changes in number and size from day to day. The group is not seen on Oct. 12 except as an exceedingly faint and ill-defined patch, too faint and ill-defined to be regarded as a spot.
Group 2318, Oct. 7–19. A regular spot, *a*, with a small companion on Oct. 9 and 11.
Group 2319, Oct. 8–11. A few small spots in an irregular cluster.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°			
281d·491	CL,HA	2315	0·457	218·5	125·2	−15·0	30	241	
		2315	0·417	209·6	120·7	−15·1	41	182	
		2317	0·461	311·0	130·3	+23·3	0	37	
		2317	0·424	318·3	126·1	+24·3	4	45	
		2318*a*	0·817	77·9	53·1	+13·5	23	123	471*f*
		2318	0·840	74·8	50·8	+16·1	0	10	
Oct. 9		Centre			(108·1)	(+6·2)	(215)	(1477)	(1758)
282·146	CL,HA	2310*a*	0·979	242·5	173·1	−25·2	0	42	765*c*
		2311*a*	0·929	296·3	168·1	+26·7	12	64	340*c*
I.		2319	0·912	243·0	160·3	−21·5	0	11	431*c*
		2319	0·888	240·1	156·1	−22·9	0	9	
		2319	0·892	238·4	156·0	−24·5	0	29	
		2313	0·752	290·8	147·7	+19·7	8	58	
		2313	0·699	292·4	142·9	+20·0	8	90	795*c*
		2313	0·708	295·9	142·8	+22·0	8	33	
		2313	0·679	296·0	140·6	+22·0	0	8	
		2315	0·619	237·6	132·1	−14·1	59	418	
		2315	0·583	233·7	128·5	−14·7	0	9	
		2315	0·558	232·4	126·6	−14·3	0	22	
		2315	0·542	229·2	124·6	−15·1	40	257	
		2315	0·526	221·6	121·0	−17·4	0	3	
		2315	0·496	224·0	120·4	−15·0	29	169	
		2317	0·583	303·7	131·6	+24·2	0	1	
		2317	0·558	303·6	129·9	+23·3	3	15	
		2317	0·518	308·7	125·9	+24·5	4	36	
		2318*a*	0·729	76·9	52·8	+13·8	14	95	522*f*
Oct. 10		Centre			(99·6)	(+6·2)	(185)	(1369)	(2853)
283·168	CL,HA	2319	0·969	242·5	157·0	−24·7	0	41	384*c*
		2313	0·881	288·9	148·0	+19·5	0	87	
I.		2313	0·845	288·1	143·8	+18·5	12	52	924*c*
		2313	0·843	291·6	143·3	+21·5	9	59	
		2315	0·778	245·5	133·0	−14·7	61	438	
		2315	0·720	242·0	127·1	−15·1	0	13	
		2315	0·723	239·0	126·4	−17·2	0	3	569*c*
		2315	0·695	240·2	124·7	−15·4	30	168	
		2315	0·655	237·2	120·8	−15·7	36	168	
		2317	0·720	295·9	130·5	+22·7	0	8	328*c*
		2317	0·680	299·0	126·5	+23·9	0	5	
		2318*a*	0·550	74·2	53·2	+13·7	19	108	
		2318	0·600	71·7	50·0	+15·8	0	7	
Oct. 11		Centre			(86·1)	(+6·1)	(167)	(1157)	(2205)
1891.				°	°	°			
284d·402	CL,HA	2313	0·955	287·3	143·3	+18·3	0	24	451*c*
		2315	0·911	251·4	132·5	−14·1	43	437	
		2315	0·883	249·5	128·5	−15·0	0	14	472*c*
		2315	0·847	247·7	123·9	−15·3	13	171	
		2315	0·818	245·3	120·3	−16·2	5	103	
		2320	0·760	290·8	118·6	+19·7	0	5	
		2320	0·735	289·5	116·5	+18·3	0	8	
		2321*a*	0·265	317·4	80·6	+17·1	3	16	
		2321	0·251	329·7	77·4	+18·4	5	29	
		2318*a*	0·308	61·9	53·6	+14·1	17	87	
		2322	0·935	117·6	5·7	−23·1	0	11	531*c*
Oct. 12		Centre			(69·8)	(+6·0)	(86)	(905)	(1454)
285·286	CL,HA	2315	0·979	254·4	134·3	−14·0	65	403	
		2315	0·960	252·9	129·4	−14·6	0	19	803*c*
I.		2315	0·929	251·3	123·6	−15·0	9	121	
		2315	0·911	249·6	120·5	−15·8	0	84	
		2317	0·949	292·1	130·4	+22·8	6	27	503*c*
		2320	0·876	288·4	119·4	+19·0	0	14	
		2320	0·844	288·5	115·6	+18·7	0	31	47*c*
		2320	0·840	291·6	114·8	+21·3	0	9	
		2321*a*	0·435	297·4	81·8	+16·9	7	38	
		2321	0·393	302·5	78·4	+17·7	5	12	
		2321	0·377	305·6	76·8	+18·2	9	33	
		2318*a*	0·165	28·0	53·5	+14·2	18	77	
		2322	0·848	121·5	6·7	−22·7	0	11	634*f*
			0·919	105·6	353·6	−11·8			112
Oct. 13		Centre			(58·1)	(+5·9)	(119)	(879)	(2099)
286·386	CL,HA		0·851	294·9	101·2	+24·2			145
		2317	0·983	294·2	124·7	+24·9	0	49	606*c*
		2315	0·984	253·7	121·2	−14·9	0	114	344*c*
		2320	0·944	287·0	115·0	+18·0	0	26	454*c*
		2320	0·912	289·8	109·6	+20·4	0	10	
		2321*a*	0·642	288·7	82·8	+16·4	15	57	
		2321	0·572	293·2	77·0	+17·8	0	12	
		2318*a*	0·224	310·7	53·6	+14·1	12	78	
		2322	0·719	129·7	6·9	−22·7	0	16	320*c*
		2323*a*	0·979	66·7	324·0	+24·0	0	64	195*c*
			0·843	128·6	355·6	−27·9			418
			0·962	73·8	328·6	+17·2			86
Oct. 14		Centre			(43·6)	(+5·8)	(27)	(426)	(2568)

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

Group 2320, Oct. 12–14. Two very small spots on Oct. 12, three on Oct. 13, two on Oct. 14.
Group 2321, Oct. 12–17. A number of small spots in a straight stream. The leader, *a*, increases in size and becomes a regular spot, and on Oct. 15 is seen alone.
Group 2322, Oct. 12–14. A close pair of very small spots.
Group 2323, Oct. 14–20. A regular spot, *a*, with a very small companion close to it. The two are usually measured together. *a* diminishes rapidly from day to day.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°			
287d·289	CL,HA		0·924	292·8	99·4	+23·2			158
		2321*a*	0·797	286·1	84·4	+16·2	11	68	365*np*
I.		2318*a*	0·493	293·3	54·1	+14·4	17	68	
		2323*a*	0·931	66·1	322·9	+24·3	15	129	229*c*
			0·756	135·2	354·8	−27·9			299
			0·895	72·7	328·0	+18·0			162
Oct. 15		Centre			(31·7)	(+5·7)	(43)	(265)	(1213)
288·306	CL,HA		0·750	300·1	64·2	+26·0			338
		2321*a*	0·916	285·2	84·9	+16·2	5	90	747*nf*
I.		2321	0·879	286·4	79·9	+17·1	0	33	
		2324*a*	0·796	286·2	70·7	+16·2	3	21	199*c*
		2324*b*	0·761	288·5	67·3	+17·7	3	15	
		2318*a*	0·592	286·9	53·9	+14·5	9	61	
		2325	0·750	72·0	330·1	+17·2	0	8	196*c*
		2325	0·782	70·5	327·3	+18·7	3	11	
		2323*a*	0·834	63·6	322·9	+25·0	10	81	180*c*
Oct. 16		Centre			(18·2)	(+5·5)	(33)	(320)	(1660)
289·402	CL,HA		0·902	296·2	67·8	+26·1			474
		2321*a*	0·988	284·7	85·8	+15·4	0	101	
		2321	0·960	285·9	78·2	+16·8	0	6	
		2324*a*	0·916	284·3	70·6	+15·4	0	19	538*c*
		2324*b*	0·887	286·5	66·5	+17·2	0	7	
		2318*a*	0·768	283·8	53·9	+14·2	16	50	
		2325	0·608	66·1	328·0	+18·8	0	8	
		2325	0·561	67·3	331·1	+17·2	10	73	
		2325	0·586	65·6	329·7	+18·6	0	6	
		2325	0·598	69·2	328·2	+16·8	4	14	
		2323*a*	0·694	58·3	323·1	+25·6	9	44	
		2323	0·688	61·1	322·9	+23·7	0	2	
Oct. 17		Centre			(3·8)	(+5·6)	(39)	(330)	(1012)
290·449	CL,HA		0·919	296·9	56·4	+26·8			394
		2318*a*	0·897	283·3	54·1	+14·4	9	61	323*c*
		2325*a*	0·352	51·6	333·2	+17·9	24	197	
		2325*b*	0·421	67·9	328·1	+18·0	16	123	
		2323*a*	0·556	48·6	322·4	+26·4	7	23	
Oct. 18		Centre			(350·0)	(+5·5)	(56)	(404)	(717)
291·199	CL,HA		0·962	297·7	55·1	+28·2			255
		2318*a*	0·962	283·6	55·1	+14·6	5	24	361*f*
I.		2326	0·497	209·7	355·4	−20·2	0	6	
1891.				°	°	°			
291d·199	CL,HA	2325*a*	0·226	26·3	334·2	+17·1	43	174	
		2325	0·257	35·0	331·3	+17·6	2	11	
I.		2325*b*	0·299	44·8	327·5	+17·6	14	121	
		2323*a*	0·461	37·9	321·8	+26·5	4	12	
		2327	0·967	111·6	268·2	−19·2	8	46	378*f*
			0·888	119·3	283·2	−22·8			229
Oct. 19		Centre			(340·2)	(+5·5)	(76)	(394)	(1223)
292·311	CL,HA		0·781	236·9	10·0	−21·5			344
		2325*a*	0·249	317·2	335·6	+15·7	39	162	
I.		2325	0·231	336·0	331·1	+17·4	0	7	
		2325	0·243	347·8	328·6	+19·0	0	28	
		2325*b*	0·211	350·7	327·5	+17·2	30	110	
		2323*a*	0·374	9·4	321·6	+26·9	2	18	
		2327	0·881	115·5	268·2	−19·5	0	26	684*f*
			0·810	123·1	278·3	−22·7			278
Oct. 20		Centre			(325·5)	(+5·3)	(71)	(351)	(1306)
293·391	CL,HA		0·891	241·2	8·8	−22·7			264
		2325	0·466	297·1	336·5	+16·8	0	5	
		2325*a*	0·450	293·0	336·5	+14·8	34	147	
		2325	0·410	301·3	332·6	+17·1	2	21	
		2325	0·364	307·9	328·7	+17·8	0	9	
		2325	0·379	312·2	328·5	+19·7	0	6	
		2325*b*	0·343	307·6	327·6	+17·1	20	119	
		2327	0·751	121·4	268·6	−19·2	4	13	429*f*
			0·945	71·5	239·8	+19·2			689
Oct. 21		Centre			(311·2)	(+5·2)	(60)	(320)	(1382)
294·174	CL,HA		0·917	240·4	1·9	−24·5			535
		2325*a*	0·603	287·7	337·2	+14·7	20	135	
M.		2325	0·508	296·6	329·3	+17·7	0	5	
		2325*b*	0·479	296·6	327·4	+16·9	6	94	
		2328*a*	0·985	72·7	219·7	+18·0	0	86	869*n*
Oct. 22		Centre			(300·9)	(+5·1)	(26)	(320)	(1404)
295·462	CL,HA		0·966	239·3	359·1	+30·9			286
		2325*a*	0·804	284·7	337·3	+14·9	19	134	328*c*
		2325	0·782	284·3	335·2	+14·4	5	53	
		2325*b*	0·694	288·4	327·1	+16·4	10	43	
		2329*a*	0·831	62·8	229·3	+25·3	12	63	479*f*
		2328*a*	0·907	73·5	218·7	+17·1	13	140	1380*f*
Oct. 23		Centre			(283·9)	(+5·1)	(59)	(433)	(2473)

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

Group 2324, Oct. 16–17. A pair of small well-defined spots, *a* and *b*, between Groups 2321 and 2318.
Group 2325, Oct. 16–25. Two small well-defined spots on Oct. 16. The group rapidly increases in size, and consists on Oct. 18 and the succeeding days of two large regular spots, *a* and *b*, with a few very small companions. *b* diminishes after Oct. 21, and has disappeared by Oct. 25.
Group 2326, Oct. 19. Two very small faint spots.
Group 2327, Oct. 19–21 A small spot.
Group 2328, Oct. 22–Nov. 2. A regular spot, *a*. A number of spots appear suddenly north of *a* on Oct. 26. This northern part of the group forms a straight stream, of which the first and last spots, *b* and *c*, are the largest. *b* has disappeared by Oct. 29, and *c* has broken up by Oct. 30, and the last of the northern spots has disappeared by Oct. 31. Two spots are seen south of *a* on Oct. 31.
Group 2329, Oct. 23–30. A regular spot, *a*, with a very small companion on Oct. 24 and 30.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°			
296d·224	CL,HA	2325*a*	0·897	284·3	337·8	+15·1	26	129	
		2325	0·883	283·4	336·0	+14·2	2	29	576*c*
I.		2325*b*	0·811	287·0	327·7	+16·8	4	13	
		2329	0·723	58·2	230·8	+26·1	0	3	
		2329*a*	0·739	59·3	229·1	+25·8	15	70	
		2330	0·738	68·3	227·4	+19·3	3	14	739*c*
		2328*a*	0·832	72·6	217·8	+17·3	21	98	1252*f*
Oct. 24		Centre			(273·8)	(+5·1)	(71)	(356)	(2567)
297·204	CL,HA	2325*a*	0·977	284·0	339·2	+14·7	0	80	614*f*
		2331	0·440	202·1	270·9	−19·0	0	3	
I.		2331	0·454	197·8	269·4	−20·6	2	6	
		2329*a*	0·600	51·8	229·4	+26·0	11	49	212*f*
		2330	0·609	65·3	225·3	+18·8	3	10	
		2328*a*	0·694	70·1	217·9	+17·4	25	96	232*f*
		2332	0·783	79·0	209·4	+11·7	2	10	228*f*
		2333	0·866	70·1	201·2	+19·7	0	8	359*c*
			0·863	60·0	203·1	+28·2			989
Oct. 25		Centre			(260·9)	(+5·0)	(43)	(262)	(2634)
298·216	CL,HA		0·957	289·2	321·2	+19·8			284
			0·864	297·6	305·9	+26·2			109
I.		2329*a*	0·468	39·1	228·5	+25·9	10	39	
		2328*a*	0·527	64·5	217·8	+17·4	22	106	
		2328	0·543	59·5	217·8	+20·3	12	88	
		2333	0·608	77·5	210·5	+11·5	0	4	
			0·786	60·7	198·2	+25·8			879
Oct. 26		Centre			(247·6)	(+4·9)	(44)	(237)	(1272)
299·277	CL,HA	2334	0·299	325·4	243·9	+18·8	0	12	
		2329*a*	0·376	14·6	227·6	+25·9	9	23	
I.		2330	0·279	28·8	225·5	+18·8	0	5	
		2328*b*	0·330	41·0	220·4	+18·9	13	49	
		2328	0·359	42·7	218·7	+19·8	0	4	
		2328*a*	0·344	49·1	217·8	+17·5	21	101	
		2328*c*	0·396	47·8	215·5	+19·9	13	65	
			0·776	52·6	187·6	+31·3			231
			0·882	62·4	173·1	+26·4			296
			0·946	121·4	167·4	−27·7			331
Oct. 27		Centre			(233·6)	(+4·7)	(56)	(259)	(858)
300·391	CL,HA	2334	0·490	300·6	245·2	+18·6	2	9	
		2329*a*	0·394	339·9	227·5	+26·2	4	12	
		2335	0·451	356·7	220·6	+31·3	0	7	
1891.									
300d·391	CL,HA	2328*b*	0·254	348·7	221·9	+19·0	6	25	
		2328*a*	0·228	2·6	218·3	+17·7	16	95	
		2328	0·277	4·4	217·6	+20·6	0	16	
		2328*c*	0·274	12·9	215·2	+20·0	7	49	
			0·722	60·3	175·6	+24·3			112
			0·732	71·5	174·2	+10·2			180
			0·891	127·3	164·1	−30·0			209
			0·890	58·5	157·9	+30·0			323
Oct. 28		Centre			(218·9)	(+4 6)	(35)	(213)	(824)
301·454	CL,HA		0·888	242·4	262·7	−21·9			203
		2334	0·679	293·3	246·0	+19·0	3	8	
		2329*a*	0·512	318·5	227·1	+26·6	4	16	
		2335	0·508	324·9	224·3	+28·8	0	6	
		2335	0·505	328·6	222·5	+29·8	0	4	
		2328*a*	0·328	317·4	218·4	+18·3	19	94	
		2328*c*	0·320	327·4	215·4	+20·0	5	39	
		2336	0·858	67·8	146·6	+21·3	10	82	
		2336	0·865	66·5	146·0	+22·5	5	21	432*c*
			0·948	107·6	135·7	−15·1			509
			0·957	66·1	131·6	+24·2			374
Oct. 29		Centre			(204·9)	(+4·5)	(45)	(270)	(1518)
302·399	CL,HA		0·949	243·8	260·0	−23·1			204
		2329	0·655	304·7	228·8	+25·4	0	8	
		2329*a*	0·638	306·7	227·0	+26·0	2	8	
		2328*a*	0·479	299·8	218·2	+17·7	15	97	
		2328	0·481	304·9	217·1	+19·9	3	22	
		2328	0·452	303·3	215·8	+18·4	1	20	
		2337*a*	0·616	69·5	155·7	+16·0	2	7	94*c*
		2337*b*	0·658	67·7	152·8	+17·8	1	9	
		2336	0·727	66·0	147·5	+20·3	7	26	
		2336	0·749	66·7	145·4	+20·2	0	8	168*c*
		2336	0·764	64·2	144·5	+22·4	3	9	
		2336	0·783	65·5	142·3	+21·0	0	5	
		2338	0·934	64·5	123·8	+25·4	0	11	
		2338	0·982	65·0	112·6	+25·4	0	39	694*c*
		2338	0·960	66·2	118·4	+24·1	18	77	
			0·915	110·9	129·2	−17·1			477
Oct. 30		Centre			(192·4)	(+4·4)	(52)	(346)	(1637)
303·400	CL,HA		0·841	290·2	238·6	+23·9			305
		2328	0·674	288·0	220·7	+15·3	3	18	
		2328*a*	0·651	292·6	218·2	+17·8	9	78	

[d] 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 longitude and latitude of the centre of the disk are given in brackets.

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

Group 2330, Oct. 24–27. A small spot, not seen on Oct. 26.
Group 2331, Oct. 25. Two very small spots.
Group 2332, Oct. 25. Two very small spots close together and measured as one.
Group 2333, Oct. 25–26. A very small spot.
Group 2334, Oct. 27–29. A very small spot.
Group 2335, Oct. 28–Nov. 2. Two very small faint spots, measured as one on Oct. 28, but separately on Oct. 29. The group is not seen on Oct. 30 and 31, but has reappeared, very greatly enlarged, by Nov. 1. The leader, *a*, is a fairly large spot, with a dark nucleus.
Group 2336, Oct. 29–Nov. 2. A number of small spots in a compact cluster on Oct. 29. The group lengthens out on the succeeding days and becomes a long straggling stream of spots.
Group 2337, Oct 30–Nov. 1. Two very small spots, *a* and *b*. *a* has disappeared by Nov. 1, but a third spot, *c*, has appeared.
Group 2338, Oct. 30–Nov. 6. Two small spots on Oct. 30 and 31. Another spot, *a*, is seen south of these on Nov. 1, and the more northern spots have disappeared by Nov. 3, leaving only *a*, which is sometimes followed by a few very small companions.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°			
303d·400	CL,HA	2328	0·633	289·2	217·3	+15·4	0	12	
		2337*a*	0·434	62·6	155·7	+15·4	0	3	
		2337*b*	0·481	59·2	153·5	+18·1	1	13	
		2336	0·573	59·1	147·6	+20·8	3	34	
		2338	0·868	63·6	120·4	+24·9	8	29	} 720*c*
		2338	0·917	64·0	113·5	+25·5	0	16	
			0·872	77·4	118·5	+13·1			69*c*
			0·816	114·1	128·3	−16·7			272
Oct. 31		Centre			(179·2)	(+4·3)	(24)	(203)	(1366)
304·502	M,JG		0·935	290·8	233·8	+20·9			590
		2335*a*	0·883	299·6	224·9	+28·0	21	89	} 451*c*
		2335	0·879	301·1	224·0	+29·2	0	29	
		2335	0·852	302·5	220·2	+29·6	0	17	
		2328*a*	0·810	289·2	218·0	+18·0	15	61	210*c*
		2337*b*	0·306	37·7	153·4	+18·1	0	9	
		2337*c*	0·331	40·6	151·6	+18·6	0	13	
		2336	0·396	42·1	148·2	+21·1	0	12	
		2336	0·399	44·8	147·3	+20·4	0	9	
		2338*a*	0·688	63·8	123·5	+20·8	0	40	} 500*c*
		2338	0·730	59·1	121·2	+25·0	0	20	
			0·847	69·8	107·6	+19·3			338
			0·916	60·8	99·6	+28·4			349
			0·961	74·6	90·4	+16·0			165
			0·979	113·2	86·1	+23·5			128
Nov. 1		Centre			(164·7)	(+4·2)	(36)	(299)	(2731)
305·388	M,JG		0·844	281·2	210·6	+11·7			87
			0·826	302·3	205·6	+28·7			266
			0·803	293·5	205·1	+21·2			158
		2335*a*	0·954	297·9	225·3	+27·9	17	111	}
		2335	0·954	299·2	225·2	+29·1	0	43	
		2335	0·945	297·5	223·5	+27·3	0	20	
		2335	0·944	299·4	223·1	+29·1	0	9	} 658*c*
		2335	0·930	301·5	220·1	+30·7	0	16	
		2335	0·927	299·6	219·9	+28·9	0	37	
		2335	0·926	298·1	219·8	+27·5	0	22	
		2328*a*	0·907	287·6	218·0	+17·7	9	39	593*c*
		2336	0·313	13·9	148·5	+21·7	0	5	
		2336	0·344	27·4	143·3	+21·7	0	3	
		2338*a*	0·539	56·3	124·5	+20·9	0	12	
		2338	0·570	54·7	122·9	+22·7	0	8	
		2338	0·606	52·1	121·3	+25·3	0	9	
		2338	0·621	55·1	119·3	+24·2	0	8	

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).
1891.				°	°	°			
305d·388	M,JG	2339	0·747	67·8	106·2	+19·2	3	11	} 101*c*
		2339	0·768	68·2	104·2	+19·3	0	15	
		2339	0·787	67·6	102·6	+20·0	3	19	
		2339	0·789	68·7	102·2	+19·2	0	9	
			0·855	58·2	97·1	+29·0			199
			0·903	74·4	88·6	+15·9			117
			0·933	115·2	88·0	−21·7			146
			0·987	63·6	71·6	+26·7			73
Nov. 2		Centre			(153·1)	(+4·1)	(32)	(396)	(2398)
306·194	M,JG		0·918	286·2	209·0	+16·5			338
			0·876	296·3	202·1	+24·9			477
I.			0·828	305·6	194·2	+31·3			240
		2338*a*	0·413	44·2	124·5	+21·0	0	10	
		2340	0·573	53·9	112·3	+23·2	0	7	
		2340	0·594	51·1	111·8	+25·3	12	38	
		2339	0·560	62·8	110·9	+18·2	0	3	
		2339	0·628	65·0	105·6	+18·6	0	8	
		2339	0·644	65·6	104·3	+18·6	11	70	
		2339	0·679	66·5	101·5	+18·7	14	53	
			0·802	74·3	89·5	+15·0			234
			0·861	119·4	88·2	−22·7			322
			0·951	63·6	70·8	+26·3			248
Nov. 3		Centre			(142·4)	(+4·0)	(37)	(189)	(1859)
307·241	M,JG		0·947	295·1	199·4	+25·0			533
			0·914	302·4	192·7	+31·1			376
I.			0·811	314·3	175·2	+37·2			130
			0·786	304·2	174·9	+28·8			255
		2338*a*	0·298	6·9	126·4	+21·1	0	10	
		2338	0·326	15·2	123·3	+22·2	0	2	
		2340	0·340	43·6	114·4	+18·0	0	2	
		2340	0·439	32·4	113·6	+25·4	0	3	
		2340	0·449	33·5	112·7	+25·7	0	1	
		2340	0·461	35·7	111·3	+25·6	9	36	
		2339	0·391	48·7	110·6	+18·6	4	27	
		2339	0·459	55·1	105·3	+18·7	26	122	
		2339	0·474	53·1	104·9	+20·1	1	7	
		2339	0·482	57·4	103·3	+18·6	0	8	
		2339	0·473	60·8	103·2	+16·8	0	7	
		2339	0·488	60·8	102·2	+17·2	0	3	
		2339	0·495	59·1	102·2	+18·2	0	7	
		2339	0·508	57·3	101·8	+19·4	4	21	
		2339	0·523	58·8	100·5	+19·1	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 longitude and latitude of the centre of the disk are given in brackets.
The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 2339, Nov. 2–10. A number of small spots in a compact cluster on Nov. 2. The group expands on the succeeding days into a long straight stream.
Group 2340, Nov. 3–8. A number of small spots in a short stream forming north of Group 2339. The group is not seen on Nov. 6 and 7.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°			
307d·241	M,JG	2341	0·938	80·2	58·8	+10·6	0	6	
		2341	0·946	79·5	57·3	+11·2	0	75	578c
I.		2341	0·967	80·3	53·1	+ 9·9	0	73	
			0·857	71·7	70·2	+17·7			200
			0·874	61·4	69·6	+26·8			228
			0·947	63·2	57·9	+26·6			149
			0·958	70·3	55·1	+20·0			253
Nov. 4		Centre			(128·6)	(+3·9)	(44)	(419)	(2702)
308·279	M,JG		0·935	299·6	183·0	+29·0			367
			0·910	309·7	176·5	+37·4			144
I.			0·864	232·1	166·4	−29·6			130
		2338a	0·372	326·0	127·8	+21·6	2	15	
		2338	0·354	335·3	124·1	+22·5	0	8	
		2339	0·258	3·5	114·0	+18·7	0	4	
		2339	0·271	14·4	110·8	+19·0	0	43	
		2339	0·304	30·0	105·7	+18·9	12	76	
		2339	0·342	40·0	101·5	+18·8	1	31	
		2340	0·380	8·1	111·5	+25·8	4	17	
		2341	0·781	81·1	63·7	+ 9·3	0	3	
		2341	0·828	79·0	59·1	+11·2	5	30	796c
		2341	0·854	80·0	56·3	+10·6	6	33	
		2341	0·875	80·3	53·9	+10·3	8	37	
			0·890	59·4	54·2	+28·8			146
			0·891	60·4	53·8	+27·9			354
Nov. 5		Centre			(114·9)	(+3·8)	(38)	(297)	(1937)
309·279	M,JG		0·947	311·2	169·9	+40·0			172
			0·918	299·7	166·7	+28·6			259
I.			0·907	237·9	161·1	−27·0			188
		2338a	0·524	307·4	128·2	+21·8	2	6	
		2338	0·482	313·5	123·9	+22·8	1	15	
		2338	0·483	316·2	123·1	+23·8	0	8	
		2339	0·340	319·3	115·2	+18·5	1	7	
		2339	0·324	322·5	113·6	+18·4	2	13	
		2339	0·316	330·2	111·2	+19·5	4	51	
		2339	0·284	345·4	106·0	+19·6	11	74	
		2339	0·280	349·5	104·8	+19·7	4	12	
		2339	0·263	1·8	101·2	+18·9	3	11	
		2342	0·459	35·5	84·7	+24·9	1	6	
		2341	0·611	78·6	64·4	+ 9·9	0	5	
		2341	0·652	78·2	61·4	+10·5	1	11	566c
		2341	0·683	77·1	59·1	+11·5	2	20	
		2341	0·716	77·5	56·4	+11·5	3	20	

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).
1891.				°	°	°			
309d·279	M,JG	2341	0·722	79·3	55·7	+10·3	15	37	
		2341	0·745	81·2	53·7	+ 9·0	2	28	
			0·770	65·9	53·1	+20·8			103
			0·838	56·9	48·2	+29·4			134
Nov. 6		Centre			(101·7)	(+3·7)	(52)	(324)	(1422)
310·207	M,JG		0·794	294·2	140·3	+21·2			212
		2339	0·488	301·3	115·4	+17·8	6	11	
I.		2339	0·443	307·4	111·2	+18·9	10	90	
		2339	0·382	314·7	106·1	+18·9	16	71	
		2343	0·483	36·8	70·8	+26·1	4	10	
		2341a	0·455	74·0	63·2	+10·3	14	33	
		2341	0·493	73·6	60·8	+11·0	6	24	
		2341	0·559	74·7	56·3	+11·4	5	68	
		2341	0·592	75·2	53·9	+11·5	0	11	
			0·985	112·2	11·9	−21·1			381
Nov. 7		Centre			(89·5)	(+3·5)	(61)	(318)	(593)
311·266	M,JG		0·948	292·6	146·6	+22·5			187
			0·883	246·8	134·2	−18·6			573
I.			0·818	300·7	127·3	+26·8			318
			0·724	292·2	120·2	+18·3			265
		2339	0·669	292·5	115·7	+17·4	4	9	
		2339	0·612	296·2	110·7	+18·4	0	21	
		2339	0·552	299·2	105·9	+18·6	16	74	
		2340	0·650	306·7	110·6	+25·5	0	17	
		2343	0·383	8·9	71·8	+25·6	0	5	
		2343	0·399	15·2	68·9	+25·9	0	1	
		2341a	0·215	60·3	64·6	+ 9·5	6	39	
		2341	0·241	62·4	63·0	+ 9·8	3	8	
		2341	0·341	68·2	56·8	+10·5	0	3	
		2341	0·360	68·6	55·6	+10·7	8	52	
		2341	0·393	69·9	53·5	+10·9	0	2	
		2344	0·716	114·9	33·4	−15·0	0	4	
			0·928	116·2	11·2	−22·7			319
			0·979	64·1	357·3	+26·0			145
Nov. 8		Centre			(75·5)	(+3·4)	(37)	(235)	(1807)
312·277	M,JG		0·951	251·1	131·9	−16·8			387
			0·914	295·9	126·9	+25·0			565
I.			0·889	242·3	120·4	−22·7			180
			0·811	295·5	114·3	+22·5			331
		2339	0·726	293·2	106·8	+19·0	10	35	304f
		2341a	0·131	330·1	65·9	+ 9·8	11	37	

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 longitude and latitude of the centre of the disk are given in brackets.
The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 2341, Nov. 4–13. A number of small spots in a compact cluster. The group lengthens out on the succeeding days into a straight stream, the leader of which, *a*, is a small but well-defined spot.
Group 2342, Nov. 6. A very small spot.
Group 2343, Nov. 7–12. A few very small faint spots on Nov. 7 and 8. The group is not seen on Nov. 9, but two well-defined spots, *a* and *b*, have appeared by Nov. 10.
Group 2344. Nov. 8. A very small spot.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°			
312d·277	M,JG	2341	0·129	345·2	64·0	+10·4	0	13	
		2341	0·167	31·0	57·1	+11·5	0	80	
I.			0·800	42·5	18·6	+38·5			118
			0·861	120·1	7·8	−23·7			357
			0·931	61·3	354·9	+27·8			234
Nov. 9		Centre			(62·1)	(+3·3)	(21)	(165)	(2476)
313·403	M,JG		0·982	293·3	128·1	+23·2			443*f*
			0·927	296·7	114·1	+25·9			697
			0·901	302·5	108·9	+30·4			99
		2339	0·865	290·1	106·3	+18·9	0	14	241*f*
		2343*a*	0·534	316·8	71·2	+25·7	0	51	
		2343*b*	0·520	320·5	69·0	+26·6	9	29	
		2341*a*	0·341	288·6	66·4	+ 9·3	6	34	
		2341	0·298	292·4	63·6	+ 9·6	0	44	
		2341	0·226	308·6	57·7	+11·2	0	11	
			0·914	122·5	347·0	−27·8			316
			0·953	73·2	335·1	+17·0			400
Nov. 10		Centre			(47·4)	(−3·2)	(15)	(183)	(2196)
314·179	CL,JG		0·924	283·0	104·5	+13·2			730
			0·894	300·2	98·1	+28·2			153
I.			0·845	242·2	90·3	−21·4			120
		2343*a*	0·649	307·1	72·0	+25·5	9	33	179*c*
		2343*b*	0·621	310·2	68·9	+26·2	12	29	
		2341*a*	0·501	283·0	66·6	+ 9·2	13	41	
		2341	0·461	282·2	64·1	+ 8·4	0	6	
		2341	0·424	286·1	61·4	+ 9·6	0	23	
		2341	0·373	292·5	57·6	+11·1	0	15	
		2341	0·326	306·2	52·8	+14·0	0	2	
		2345*a*	0·985	71·0	316·7	+19·3	46	131	412*p*
			0·840	126·7	347·5	−28·1			188
Nov. 11		Centre			(37·1)	(+3·1)	(80)	(280)	(1782)
315·420	CL,JG		0·962	286·3	94·8	+16·5			223
		2343*a*	0·805	300·1	71·3	+25·7	0	11	244*c*
		2343*b*	0·780	301·2	68·3	+25·8	0	14	
		2341	0·719	280·0	66·4	+ 9·3	0	31	220*c*
		2341	0·692	281·9	64·0	+10·4	2	16	
		2345*a*	0·902	70·4	317·0	+19·0	14	108	2238*f*
Nov. 12		Centre			(20·7)	(+3·0)	(16)	(180)	(910)
1891.									
316d·487	CL,JG		0·906	297·0	70·0	+25·6			350
		2341	0·844	280·9	64·0	+10·7	0	17	984*c*
		2345*a*	0·787	68·7	316·3	+18·4	17	109	298*c*
			0·979	110·0	316·0	−15·1			540
Nov. 13		Centre			(6·7)	(+2·9)	(17)	(126)	(2172)
317·447	CL,JG		0·923	280·7	61·2	+10·9			538
		2346	0·649	285·9	33·5	+12·3	0	6	
		2347	0·453	218·1	11·5	−18·3	0	9	
		2345*a*	0·638	64·6	316·8	+18·0	17	111	
		2348	0·939	112·5	286·8	−20·0	0	17	438*c*
Nov. 14		Centre			(354·0)	(+2·7)	(17)	(143)	(976)
318·131	HA,AE		0·949	282·6	56·5	+12·8			927
			0·906	302·8	47·0	+30·6			304
I.			0·769	282·9	34·7	+11·6			214
		2347	0·553	230·6	11·6	−18·1	1	7	
		2345*a*	0·534	59·4	316·2	+18·0	24	117	
		2348	0·884	114·5	287·3	−20·1	0	2	
		2349	0·997	107·1	260·9	−16·8	0	401	
			0·851	115·7	290·4	−20·1			729
Nov. 15		Centre			(345·0)	(+2·6)	(25)	(527)	(2174)
319·180	CL,HA		0·953	305·1	41·2	+34·1			213
			0·900	282·0	35·1	+11·9			166
I.			0·886	252·8	31·7	−14·0			134
		2345	0·344	44·1	316·8	+16·7	0	3	
		2345*a*	0·368	42·4	316·1	+18·1	24	81	
		2349*a*	0·938	109·4	263·6	−17·2	37	168	884*c*
		2349	0·944	107·6	262·3	−15·7	2	40	
		2349*b*	0·966	109·5	258·1	−18·1	2	59	
			0·720	121·0	290·4	−19·8			234
Nov. 16		Centre			(331·2)	(+2·5)	(65)	(351)	(1631)
320·239	CL,HA		0·927	308·1	21·3	+35·9			131
			0·835	241·6	9·5	−21·9			354
I.			0·978	180·9	320·7	−75·2			158
		2345	0·263	358·9	317·6	+17·6	0	6	
		2345*a*	0·267	5·3	315·9	+17·7	12	64	
		2345	0·276	8·2	314·9	+18·2	0	10	
		2348	0·624	124·0	284·4	−18·3	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 longitude and latitude of the centre of the disk are given in brackets.

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

Group 2345, Nov. 11–20. A regular spot, *a*. One or two very small companions are seen near it from Nov. 16–18.

Group 2346, Nov. 14. A very small spot.

Group 2347, Nov. 14–15. A very small spot.

Group 2348, Nov. 14–24. A small faint spot on Nov. 14. It has greatly diminished in size by Nov. 15, and has disappeared by Nov. 16. The group is seen again on Nov. 17, and consists of a few small spots irregularly scattered, which undergo considerable changes from day to day.

Group 2349, Nov. 15–27. A very fine group, consisting of two large spots, *a* and *b*, with a stream of smaller spots between them. The group increases in size until it has passed the central meridian on Nov. 21. The leader, *a*, undergoes many changes from Nov. 20 to Nov. 25, and has partially broken up on Nov. 23, but has become a regular spot by Nov. 25. *a* is seen as a notch on the limb on Nov. 26.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°				1891.				°	°	°			
320d·239	CL,HA	2349*a*	0·829	113·8	264·6	−18·0	28	159		323d·194	CL,M	2349	0·420	141·5	262·5	−17·2	3	9	
		2349	0·838	112·4	263·3	−17·2	6	39				2349	0·449	143·5	261·9	−19·2	8	21	
I.		2349	0·852	110·0	261·3	−15·6	0	12	530*c*	I.		2349	0·463	139·1	259·8	−18·5	4	46	
		2349	0·868	109·2	259·3	−15·3	0	15				2349	0·486	141·7	259·6	−20·5	0	20	
		2349*b*	0·893	112·5	256·9	−18·8	22	80				2349*b*	0·511	135·9	256·2	−19·6	67	303	
			0·932	73·8	249·0	+15·9			318			2349	0·499	132·2	255·6	−17·7	0	2	
Nov. 17		Centre			(317·3)	(+2·4)	(68)	(392)	(1491)			2351	0·243	85·8	264·3	+ 3·0	0	2	
												2351	0·277	85·0	262·3	+ 3·3	5	29	
321·218	CL,HA		0·914	244·6	7·0	−22·0			488			2351	0·324	80·1	259·7	+ 5·1	0	8	
		2345*a*	0·326	324·5	315·7	+17·6	6	29				2352	0·346	131·6	263·1	−11·3	3	20	
I.		2345	0·316	328·0	314·4	+17·8	0	3				2352	0·372	130·6	261·6	−12·1	1	8	
		2348	0·470	140·2	285·8	−18·9	4	23				2352	0·372	127·8	260·9	−11·3	2	12	
		2348	0·478	138·8	284·9	−18·9	2	25				2352	0·397	125·4	259·1	−11·4	4	16	
		2348	0·488	135·7	283·4	−18·3	0	2				2350	0·781	63·8	229·6	+21·5	0	2	
		2349*a*	0·703	118·3	264·0	−17·7	20	135				2350	0·775	69·1	229·2	+17·4	0	4	1001*c*
		2349	0·732	118·1	261·6	−18·4	3	29				2350*a*	0·789	66·7	228·2	+19·5	64	277	
		2349	0·725	114·5	261·2	−15·7	0	13	456*c*			2350	0·819	65·5	225·5	+21·1	0	16	
		2349	0·762	118·5	259·1	−19·7	0	16				2350*c*	0·852	62·0	222·6	+24·7	10	25	668*c*
		2349*b*	0·793	116·9	255·9	−19·5	19	125				2350*b*	0·859	59·9	222·3	+26·6	3	17	
		2350*a*	0·979	71·3	226·2	+18·7	44	215	844*c*	Nov. 20		Centre			(278·3)	(+2·0)	(270)	(1284)	(2156)
		2350	0·996	63·1	219·0	+27·0	0	131	809*p*										
Nov. 18		Centre			(304·3)	(+2·3)	(98)	(746)	(2607)	324·182	CL,M		0·965	235·6	335·5	−32·3			80
													0·860	290·7	323·1	+18·7			645
322·305	CL,HA		0·951	245·7	359·5	−22·4			80	I.		2348	0·477	224·7	285·8	−18·0	3	18	
			0·889	296·9	350·7	+24·7			246			2348	0·459	216·0	281·8	−20·0	3	21	
I.		2345	0·486	301·3	315·7	+16·5	0	4				2348	0·438	218·6	281·8	−18·1	0	5	
		2345*a*	0·489	303·7	315·3	+17·6	5	21				2351	0·029	13·1	264·8	+ 3·5	5	28	
		2348	0·368	190·2	294·0	−19·0	0	9				2351	0·056	53·6	262·6	+ 3·8	0	4	
		2348	0·389	160·0	282·0	−19·3	7	25				2351	0·074	77·7	261·1	+ 2·8	0	12	
		2349*a*	0·548	130·5	264·1	−18·9	47	321				2351	0·102	56·0	260·3	+ 5·2	0	4	
		2349	0·550	125·3	262·3	−16·6	4	10				2352	0·250	164·0	261·2	−12·0	0	15	
		2349	0·602	126·9	259·6	−19·3	2	21				2349*a*	0·363	176·6	263·9	−19·3	81	543	
		2349*b*	0·635	124·3	256·5	−19·2	35	141				2349*b*	0·396	157·9	256·1	−19·6	97	486	
		2350*a*	0·892	69·5	228·1	+19·2	50	252				2350	0·559	60·9	234·5	+17·4	0	8	
		2350*b*	0·935	62·3	222·5	+26·6	0	15	986*c*			2350	0·638	57·2	230·1	+21·7	0	16	
		2350*c*	0·938	64·3	221·7	+24·8	0	20				2350*a*	0·640	61·3	228·8	+19·4	68	306	193*c*
Nov. 19		Centre			(290·1)	(+2·1)	(150)	(839)	(1312)			2350	0·664	59·1	227·6	+21·4	0	12	
												2350*c*	0·726	56·7	223·4	+24·9	0	10	
323·194	CL,M		0·920	236·4	339·9	−29·6			297			2350*b*	0·747	54·5	222·3	+27·0	0	9	
			0·845	291·0	334·5	+18·7			190			2353	0·879	138·2	215·9	−39·6	0	9	88*c*
I.		2345*a*	0·636	296·0	315·1	+17·8	0	4				2353	0·892	139·6	214·8	−41·5	0	8	
		2348	0·366	198·3	285·2	−18·3	11	28					0·892	60·5	204·8	+27·0			942
		2348	0·377	188·9	281·8	−19·8	8	34					0·949	107·0	195·2	−15·4			77
		2349*a*	0·423	147·6	264·5	−18·9	77	381		Nov. 21		Centre			(265·2)	(+1·9)	(257)	(1514)	(2025)

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 longitude and latitude of the centre of the disk are given in brackets.

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

Group 2350, Nov. 18–29. A large spot, *a*, nearly regular in outline, with a tendency to throw off small spots on the *s. f.* side. Some very small companions are seen preceding *a* on Nov. 20 and 21. Two small spots, *b* and *c*, are seen *n. f. a* Nov. 18–21. *c* moves forward in longitude passing *b*

Group 2351, Nov. 20–25. A number of small spots irregularly arranged on Nov. 20. The group lengthens out into a straight stream on the succeeding days. Only one very small spot remains on November 24, but a fresh spot is seen following it on Nov. 25.

Group 2352, Nov. 20–27. A group of small spots, forming north of Group 2349, and south of Group 2352. It has greatly diminished in size by Nov. 21, but has increased again by Nov. 23, and forms a straight stream on Nov. 24, the leader, *a*, being a large regular spot. The smaller following spots have all disappeared by Nov. 26. *a* is seen as a notch on the limb on Nov. 26.

Group 2353, Nov. 21. Two small faint spots.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°			
325d·284	CL,HA		0·896	290·2	313·1	+18·8			192
		2348	0·660	239·1	287·2	−18·4	0	23	
I.		2348	0·639	238·3	285·4	−18·1	0	26	
		2348	0·609	237·0	283·0	−17·8	0	13	
		2348	0·606	232·5	281·4	−20·1	0	16	
		2351	0·271	277·9	266·2	+ 3·8	3	34	
		2351	0·231	277·7	263·9	+ 3·5	0	4	
		2349*a*	0·436	211·1	264·5	−20·2	70	562	
		2349	0·393	205·9	261·1	−19·0	9	96	
		2349*b*	0·382	191·9	255·5	−20·2	92	504	
		2352	0·326	223·8	264·0	−11·9	0	21	
		2350*a*	0·461	49·0	229·2	+19·1	61	358	
		2350	0·470	55·0	227·0	+17·1	0	9	
			0·885	59·4	191·6	+27·6			675
Nov. 22		Centre			(250·7)	(+1·7)	(235)	(1666)	(867)
326·189	CL,HA		0·928	291·4	305·8	+20·4			209
		2348	0·782	245·2	286·9	−18·0	3	26	
I.		2348	0·762	242·4	284·4	−19·5	0	4	
		2348	0·721	241·3	280·6	−18·9	0	18	662*p*
		2351	0·485	276·0	267·6	+ 4·4	0	19	
		2351	0·431	274·9	264·1	+ 0·6	0	14	
		2351	0·384	277·1	261·1	+ 1·2	0	5	
		2349*a*	0·560	228·0	265·0	−20·4	75	398	
		2349	0·499	225·0	260·6	−19·0	4	22	
		2349*b*	0·457	216·4	255·5	−19·9	78	481	
		2349	0·461	208·4	252·4	−22·2	0	8	
		2352	0·479	243·9	264·7	−10·6	11	47	
		2352	0·437	241·9	261·8	−10·3	0	30	
		2352	0·456	237·1	261·8	−12·8	4	19	
		2350*a*	0·338	27·5	229·3	+19·0	74	359	
		2350	0·332	34·7	227·4	+17·5	3	25	
		2350	0·390	29·7	226·9	+21·4	0	22	
		2350	0·399	32·9	225·4	+21·1	0	7	
			0·854	55·4	184·7	+30·0			347
Nov. 23		Centre			(238·8)	(+1·7)	(252)	(1504)	(1218)
327·218	CL,HA		0·965	289·9	299·4	+19·6			78
		2348	0·908	248·8	288·2	−18·5	0	18	521*c*
I.		2349	0·770	236·8	269·8	−23·8	0	5	
		2349*a*	0·736	238·2	267·3	−21·7	74	366	471*c*
		2349	0·683	237·5	262·9	−20·3	3	23	
		2349	0·672	239·5	262·7	−18·7	0	29	
1891.									
327d·218	CL,HA	2349	0·651	236·8	260·4	−19·6	0	9	
		2349*b*	0·597	232·1	255·2	−20·1	64	426	
I.		2351	0·688	273·7	268·5	+ 3·6	0	6	
		2352*a*	0·679	252·6	266·3	−10·6	23	121	
		2352	0·664	250·2	264·7	−11·8	2	14	
		2352	0·632	250·1	262·3	−11·2	0	13	
		2352	0·607	248·0	260·2	−11·9	5	59	
		2350*a*	0·307	346·0	229·7	+18·8	66	360	
			0·870	50·4	171·0	+34·5			247
			0·921	74·4	158·8	+14·9			223
			0·958	64·2	153·2	+25·1			142
Nov. 24		Centre			(225·2)	(+1·5)	(237)	(1449)	(1682)
328·432	HA,M		0·966	250·0	282·7	−18·9			102
		2351	0·865	273·6	268·9	+ 3·8	2	10	227*c*
		2351	0·850	274·3	267·2	+ 4·4	0	16	
		2349*a*	0·889	245·1	268·9	−21·3	79	444	695*c*
		2349	0·835	244·6	262·4	−20·1	0	23	
		2349*b*	0·766	242·5	255·2	−19·7	75	441	
		2352*a*	0·863	257·1	267·8	−10·4	25	152	420*c*
		2352	0·801	255·0	261·0	−11·1	0	18	
		2352	0·792	253·2	259·9	−12·3	0	5	
		2350*a*	0·450	311·0	230·1	+18·4	67	456	
		2350	0·470	316·4	229·5	+21·2	0	11	
		2350	0·433	318·2	227·0	+20·1	0	8	
			0·891	127·6	152·9	−32·1			148
			0·920	67·9	143·6	+20·8			221
			0·921	77·4	142·6	+12·1			81
			0·944	109·0	140·1	−17·4			203
Nov. 25		Centre			(209·2)	(+1·4)	(248)	(1584)	(2097)
329·482	CL,HA	2349*a*	0·970	247·6	269·4	−21·3	28	386	126*c*
		2349*b*	0·884	247·2	254·9	−19·3	53	326	
		2352*a*	0·958	258·4	267·9	−10·7	20	96	
		2350*a*	0·625	299·1	230·5	+18·7	76	359	
		2350	0·605	295·8	229·8	+16·3	0	6	
		2350	0·598	294·2	229·7	+15·2	0	4	
		2350	0·584	298·7	227·7	+17·3	0	15	
Nov. 26		Centre			(195·4)	(+1·3)	(177)	(1192)	(126)
330·230	CL,HA		0·984	274·1	265·0	+ 4·3			148
		2349*a*	0·999	248·5	272·1	−21·4	0	384	
I.		2349*b*	0·949	249·2	255·2	−19·2	72	333	969*p*
		2352*a*	0·995	259·0	268·9	−10·6	0	244	

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 longitude and latitude of the centre of the disk are given in brackets.

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

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°			
330d·230	CL,HA	2350*a*	0·742	294·6	230·8	+18·8	87	345	
		2350	0·713	291·4	229·0	+15·9	0	13	774*p*
I.		2350	0·704	293·5	227·8	+17·2	0	7	
			0·852	113·4	129·9	−19·1			365
			0·884	62·3	126·2	+24·8			295
Nov. 27		Centre			(185·5)	(+1·2)	(159)	(1326)	(2551)
331·461	CL,HA	2350*a*	0·885	290·4	230·0	+18·4	51	357	636*p*
		2354	0·458	44·9	149·3	+19·8	8	36	
		2354	0·478	46·3	147·8	+20·1	0	5	
		2354	0·502	47·7	146·0	+20·6	6	48	
		2354	0·534	48·2	144·0	+21·7	0	6	
		2355	0·915	69·1	104·5	+19·5	10	50	462*c*
Nov. 28		Centre			(169·3)	(+1·0)	(75)	(502)	(1098)
332·181	CL,JG		0·864	298·9	216·3	+25·2			954
		2350*a*	0·946	289·2	229·9	+18·4	47	327	742*c*
I.		2354	0·370	24·7	150·3	+20·5	14	54	
		2354	0·424	35·0	144·8	+21·1	9	83	
		2354	0·463	40·2	141·2	+21·5	0	6	
		2355	0·851	67·0	103·6	+19·9	11	55	790*sf*
			0·969	112·8	85·8	−21·8			981
Nov. 29		Centre			(159·8)	(+0·9)	(81)	(525)	(3467)
333·222	CL,JG		0·881	298·6	204·8	+25·4			1036
			0·848	339·1	176·0	+52·8			121
I.		2354*a*	0·349	343·9	152·0	+20·3	17	65	
		2354*b*	0·344	2·0	145·4	+20·8	17	70	
		2355	0·718	62·4	103·7	+20·0	7	32	370*f*
			0·896	115·8	85·5	−22·5			872
			0·967	76·6	71·3	+13·2			338
Nov. 30		Centre			(146·1)	(+0·8)	(41)	(167)	(2737)
334·248	CL,M		0·937	242·6	199·3	−25·3			185
			0·917	297·7	196·4	+25·5			688
I.			0·811	312·5	178·2	+33·5			300
		2354*a*	0·464	315·6	152·7	+19·8	10	54	
		2354*b*	0·404	328·9	145·4	+20·8	8	34	
		2354	0·404	336·1	142·7	+22·2	0	9	
		2355	0·564	53·5	103·9	+20·1	2	16	
			0·823	119·2	81·4	−23·2			935
			0·908	75·1	68·3	+13·7			481
			0·929	63·2	66·6	+25·0			233
Dec. 1		Centre			(132·6)	(+0·6)	(20)	(113)	(2822)
1891.				°	°	°			
335d·485	M,AB		0·929	305·4	180·2	+32·7			114
		2354*a*	0·654	300·2	153·0	+19·6	7	24	
		2354*b*	0·577	306·9	145·7	+20·6	2	15	
		2355	0·387	31·6	103·9	+19·7	2	11	
			0·868	77·7	56·8	+10·9			555
Dec. 2		Centre			(116·3)	(+0·5)	(11)	(50)	(669)
336·296	M,AB		0·918	306·0	167·5	+32·8			541
			0·888	236·9	163·5	+28·8			265
I.			0·855	288·9	162·8	+16·3			82
		2354*a*	0·772	295·0	153·2	+19·2	11	23	344*c*
		2355	0·332	4·5	104·0	+19·7	4	16	
			0·936	54·8	40·4	+32·8			131
Dec. 3		Centre			(105·6)	(+0·4)	(15)	(39)	(1363)
337·303	M,AB	2354*a*	0·888	291·5	153·1	+19·1	0	7	321*nf*
		2354	0·824	295·5	144·9	+20·9	0	1	141*c*
I.		2354	0·810	296·4	143·2	+21·2	0	2	
		2356*a*	0·449	293·3	117·0	+10·5	8	11	
		2356	0·421	296·5	114·8	+11·1	0	2	
		2355	0·380	329·0	104·2	+19·2	0	5	
			0·902	51·0	34·0	+34·7			172
			0·931	112·6	25·7	−20·8			211
Dec. 4		Centre			(92·3)	(+0·3)	(8)	(28)	(845)
338·237	M,AB		0·920	292·5	107·7	+11·0			351
		2356*a*	0·622	286·3	117·2	+10·1	0	2	
I.		2357*a*	0·677	303·6	117·3	+22·0	12	25	
		2357	0·658	305·1	115·4	+22·2	0	6	
		2357*b*	0·653	307·8	114·1	+23·6	2	17	
			0·858	45·6	30·0	+36·9			122
			0·941	113·3	11·6	−21·9			243
Dec. 5		Centre			(80·0)	(+0·1)	(14)	(50)	(716)
339·234	M,AB		0·909	245·4	129·9	−22·2			559
		2357	0·806	296·6	118·9	+21·1	0	4	800*c*
I.		2357*a*	0·812	296·9	117·8	+21·5	5	20	
		2357*b*	0·778	300·5	113·5	+23·2	9	39	
		2358	0·491	333·3	81·0	+25·9	2	9	
		2358	0·477	340·7	77·0	+26·6	4	9	
		2359	0·198	19·2	63·1	+10·7	0	2	
		2360	0·643	119·2	30·8	−18·3	11	19	
			0·888	115·9	7·1	−22·8			298
Dec. 6		Centre			(66·9)	(0·0)	(31)	(102)	(1657)

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

Group 2354, Nov. 28–Dec. 4. A number of small spots in a straight stream. Only two spots, *a* and *b*, remain on Nov. 30. Some very small spots are sometimes seen following *a* and *b*. *b* has disappeared by Dec. 3, but is represented on Dec 4 by some very small spots.
Group 2355, Nov. 28–Dec. 4. A small spot with a dark nucleus.
Group 2356, Dec. 4–5. A small very dark spot *a*, with a very small companion on Dec. 4, which has disappeared by Dec. 5.
Group 2357, Dec. 5–7. Two small very dark spots, *a* and *b*, with one very small companion on Dec. 5 and another on Dec. 6. Only *b* and a small companion are seen on Dec. 7.
Group 2358, Dec. 6–10. A few small spots in a straight stream.
Group 2359, Dec. 6. A very small faint spot.
Group 2360, Dec. 6–13. A regular spot, *a*, with a very small companion on Dec. 7, and with two on Dec. 8.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°			
340^{d}·309	M,AB		0·950	247·2	122·9	−21·6			118
			0·789	299·6	100·6	+22·8			299
I.		2357	0·910	293·4	116·1	+21·2	0	15	549*c*
		2357*b*	0·894	296·3	113·2	+23·3	0	5	
		2358	0·608	315·1	81·0	+25·4	0	7	
		2358	0·604	316·1	80·3	+25·7	3	9	
		2358	0·586	319·9	77·6	+26·5	8	24	
		2358	0·577	321·4	76·3	+26·6	3	9	
		2360	0·482	132·9	30·8	−19·2	1	3	
		2360*a*	0·447	133·1	32·7	−17·8	21	75	
			0·910	110·6	348·9	−18·7			499
Dec. 7		Centre			(52·7)	(−0·1)	(36)	(147)	(1465)
341·328	M,AB		0·893	296·5	99·6	+23·3			805
			0·793	241·0	87·9	−22·7			867
I.		2358	0·747	305·7	81·6	+26·0	4	16	287*c*
		2358	0·735	306·5	80·1	+25·6	0	8	
		2358	0·707	309·6	76·6	+26·4	14	48	
		2361	0·510	2·2	38·0	+30·2	0	2	
		2360*a*	0·314	163·5	34·0	−17·8	14	76	
		2360	0·351	157·9	31·3	−19·2	0	4	
		2360	0·363	152·1	29·0	−18·9	0	2	
		2362	0·679	124·8	2·2	−23·0	0	3	
			0·828	113·3	345·8	−19·3			428
Dec. 8		Centre			(39·3)	(−0·3)	(32)	(159)	(2387)
342·329	M,AB		0·956	295·9	96·6	+24·4			535
			0·898	244·2	87·4	−23·2			970
I.		2358	0·901	296·7	87·3	+23·7	0	12	472*c*
		2358	0·864	300·3	81·6	+25·5	0	5	
		2358	0·825	303·5	76·2	+26·8	12	35	
		2360*a*	0·329	205·6	34·5	−17·5	14	55	
		2362	0·557	138·2	1·9	−24·9	0	2	
Dec. 9		Centre			(26·0)	(−0·4)	(26)	(109)	(1977)
343·312	M,AB		0·939	244·4	81·0	−24·1			519
			0·870	285·1	72·5	+12·8			346
I.			0·823	299·6	64·4	+23·6			105
		2358	0·912	299·6	76·0	+27·1	3	19	537*nf*
		2360*a*	0·466	230·4	35·2	−17·7	11	36	
			0·961	108·4	300·1	−17·8			99
Dec. 10		Centre			(13·2)	(−0·5)	(14)	(55)	(1606)
1891.				°	°	°			
344^{d}·292	M,AB		0·970	243·1	74·6	− 26·2			142
			0·914	288·9	64·6	+15·9			1019
I.		2360*a*	0·633	242·5	36·1	−17·4	10	29	
		2360	0·580	236·8	31·0	−19·0	0	10	
		2363	0·463	222·7	19·7	−20·4	0	4	
			0·914	112·3	295·9	−20·5			303
Dec. 11		Centre			(0·2)	(−0·6)	(10)	(43)	(1464)
345·219	CL,M		0·970	297·8	61·6	+26·7			73
			0·931	284·9	55·6	+13·6			308
I.		2360*a*	0·772	247·7	36·3	−17·5	8	24	
		2364	0·987	110·0	267·9	−19·8	32	135	224*p*
			0·978	100·3	270·4	−10·3			158
Dec. 12		Centre			(348·0)	(−0·8)	(40)	(159)	(763)
346·233	CL,HA		0·880	298·9	32·3	+24·6			183
		2360	0·892	250·7	36·3	−17·5	0	14	183*f*
I.		2365	0·774	113·7	286·4	−18·6	0	11	115*p*
		2364	0·933	110·8	266·9	−19·7	25	147	551*c*
			0·923	285·0	40·8	+13·4			116
			0·914	102·5	269·2	−11·7			247
Dec. 13		Centre			(334·6)	(−0·9)	(25)	(172)	(1395)
347·318	CL,HA		0·951	249·7	31·4	−19·6			198
			0·949	281·9	31·2	+10·9			165
I.		2365	0·645	119·5	284·1	−19·2	0	2	
		2364	0·821	114·0	267·6	−20·1	27	127	649*f*
			0·758	103·6	271·5	−10·9			192
			0·825	119·2	268·4	−24·3			262
			0·953	71·8	241·0	+23·1			235
Dec. 14		Centre			(320·4)	(−1·0)	(27)	(129)	(1701)
348·210	CL,M		0·986	280·5	27·0	+ 8·5			113
			0·900	245·4	10·7	−22·5			133
I.		2366	0·944	251·2	18·4	−18·1	0	14	190*c*
		2366	0·931	249·4	16·0	−19·5	0	8	
		2365	0·469	130·0	286·4	−18·5	0	11	37*c*
		2365	0·515	128·4	283·3	−19·6	0	11	
		2367	0·617	129·3	277·3	−23·8	0	6	101*c*
		2364	0·699	118·0	267·9	−20·0	27	136	100*c*
			0·863	115·4	251·4	−22·3			756
			0·932	68·1	241·9	+19·9			923
Dec. 15		Centre			(308·6)	(−1·1)	(27)	(186)	(2353)

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 longitude and latitude of the centre of the disk are given in brackets.

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

Group 2361, Dec. 8. A very small faint spot.
Group 2362, Dec. 8–9. A very small faint spot.
Group 2363, Dec 11. Two very small spots measured together.
Group 2364, Dec. 12–24. A regular spot.
Group 2365, Dec. 13–23. Two very small faint spots preceding Group 2364 on Dec. 13. Only one very small spot remains on Dec. 14. The group has begun to revive by Dec. 15, and on Dec. 17 and the succeeding days it consists of two large regular spots, *a* and *b*, with a few small spots between them. These have disappeared by Dec. 22.
Group 2366, Dec. 15. Two small faint spots.
Group 2367, Dec. 15–16. A very small faint spot forming between Groups 2364 and 2365, but a little further south.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°			
349^{d}·201	CL,M		0·978	248·8	12·9	−21·0			115
			0·903	238·4	356·6	−28·8			169
I.			0·831	245·9	349·4	−20·6			352
		2365	0·340	155·5	287·0	−19·2	0	6	
		2365	0·349	151·2	285·3	−19·0	5	27	
		2365	0·384	146·7	282·6	−20·0	25	72	
		2367	0·475	144·0	277·8	−23·8	0	3	
		2364	0·546	126·4	267·7	−20·0	25	120	102*c*
		2368	0·941	68·3	227·4	+19·8	8	43	1226*p*
		2368	0·942	69·4	227·0	+18·9	9	57	
			0·751	117·5	250·1	−21·2			262
			0·834	71·9	240·8	+14·2			220
			0·992	110·4	213·0	−20·4			122
Dec. 16		Centre			(295·5)	(−1·3)	(72)	(328)	(2568)
350·499	CL,M	2365*a*	0·337	204·1	286·7	−19·2	23	130	
		2365	0·319	199·4	284·8	−18·8	12	38	
		2365*b*	0·318	192·0	282·2	−19·5	36	208	
		2364	0·359	152·0	268·1	−19·8	19	148	
		2368	0·753	59·0	234·5	+21·8	0	6	
		2368	0·786	59·5	231·4	+22·5	0	4	1130*c*
		2368	0·818	65·8	226·6	+18·7	11	61	
		2368	0·838	63·1	225·2	+21·4	0	11	
			0·925	112·9	209·2	−21·6			395
Dec. 17		Centre			(278·4)	(−1·4)	(101)	(606)	(1525)
351·196	CL,HA		0·961	289·6	318·4	+18·4			68
		2365*a*	0·432	223·2	287·4	−19·8	35	167	
I.		2365	0·405	221·2	285·5	−19·1	3	24	
		2365*b*	0·384	214·7	282·6	−19·8	50	217	
		2364	0·322	176·3	267·9	−20·2	26	130	
		2368	0·722	261·3	227·2	+19·2	0	18	919*c*
			0·874	114·6	210·4	−22·1			331
			0·935	63·5	203·1	+24·0			447
			0·965	249·6	343·4	−20·1			190
Dec. 18		Centre			(269·2)	(−1·5)	(114)	(556)	(1955)
352·399	HA,CL	2365*a*	0·621	240·9	288·3	−18·9	34	198	
		2365	0·586	238·4	285·2	−19·3	4	39	
		2365*b*	0·557	236·4	282·8	−19·4	34	297	
		2364	0·396	217·3	268·1	−19·9	18	117	
		2369	0·897	57·5	194·7	+27·9	0	16	300*c*
		2369	0·923	59·4	190·3	+27·2	0	20	
Dec. 19		Centre			(253·4)	(−1·7)	(90)	(687)	(300)

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).
1891.				°	°	°			
353^{d}·224	CL,HA	2365*a*	0·774	247·3	287·7	−18·6	6	150	
		2365	0·752	245·2	285·3	−19·6	1	32	
I.		2365*b*	0·714	245·4	282·1	−18·6	26	222	
		2364	0·548	235·4	267·5	−19·7	15	98	
		2369	0·808	52·7	196·0	+28·0	4	18	
		2369	0·840	53·7	192·1	+28·8	0	7	533*c*
		2369	0·846	55·5	190·9	+27·5	0	9	
		2369	0·860	57·1	188·7	+26·8	3	18	
Dec. 20		Centre			(242·5)	(−1·8)	(55)	(554)	(533)
354·490	CL,HA	2365*a*	0·890	250·2	287·6	−18·4	16	142	
		2365	0·865	248·6	284·3	−19·4	0	25	439*c*
		2365*b*	0·847	249·6	282·4	−18·2	23	223	
		2364	0·703	243·9	267·7	−19·4	8	103	
		2369*a*	0·651	40·4	197·5	+28·9	17	114	
		2369	0·668	44·1	194·6	+27·0	0	2	
		2369	0·686	44·5	193·2	+27·6	0	5	
		2369	0·706	44·6	191·1	+28·5	12	44	
		2369	0·708	49·2	189·5	+25·9	0	6	
		2369	0·712	50·4	188·6	+25·4	0	5	
		2370	0·965	117·4	152·3	−26·9	0	16	334*c*
Dec. 21		Centre			(225·9)	(−1·9)	(76)	(685)	(773)
355·304	CL,HA		0·873	257·2	275·5	−12·1			160
			0·867	240·9	272·4	−26·0			410
I.		2365*a*	0·957	250·6	287·7	−19·1	3	102	708*c*
		2365*b*	0·930	250·5	282·9	−18·9	27	214	
		2364	0·816	246·7	267·9	−20·0	14	120	265*c*
		2369*a*	0·568	26·2	198·7	+28·6	20	144	
		2369	0·587	28·0	196·9	+29·2	1	13	
		2369	0·570	30·5	196·3	+27·4	17	66	
		2369	0·616	33·6	192·4	+28·9	26	105	
		2370	0·882	116·9	155·6	−24·5	9	65	295*c*
		2370	0·906	118·2	152·5	−26·2	0	115	
			0·931	75·0	148·0	+13·1			84
Dec. 22		Centre			(215·2)	(−2·0)	(117)	(944)	(1922)
356·299	CL,HA	2365*a*	0·987	251·2	282·7	−18·9	35	157	
		2364	0·915	249·1	267·2	−20·0	23	95	429*f*
I.		2369*a*	0·517	6·3	198·3	+28·6	68	392	
		2369	0·499	11·1	195·8	+27·0	2	8	
		2369	0·532	12·6	194·4	+29·0	2	33	
		2369	0·510	17·8	191·0	+26·8	13	41	
		2369	0·549	18·0	190·8	+29·2	32	208	

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 longitude and latitude of the centre of the disk are given in brackets.
The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere.

Group 2368, Dec. 16–18. Two spots with well-defined nuclei on Dec. 16. The spots have become very faint and have broken up by Dec. 17. Only one small spot remains by Dec. 18.
Group 2369, Dec. 19–30. A number of spots in a straight stream, of which *a*, the leader, is the largest and best defined. The group rapidly increases in size after Dec. 21, *a* becoming a very large spot of nearly circular shape. *a* has divided into two regular spots, *b* and *c*, by Dec. 27, but these are measured as one on Dec. 29. *a* is seen as a notch on the limb on Dec. 30.
Group 2370, Dec. 21–30. A small spot on Dec. 21. Other spots appear on the succeeding days, and the group lengthens out into a straight stream, of which the first and last spots, *a* and *b*, are the largest. The group diminishes after Dec. 23, and only *a* and *b* remain after Dec. 26. The group is not seen on Dec. 29, but a very small spot is seen in the neighbourhood on Dec. 30.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°				1891.				°	°	°			
356d·299	CL,HA	2370*a*	0·773	120·5	155·1	−24·5	31	145	} 493*c*	359d·162	CL,JG	2370*a*	0·392	159·5	155·7	−23·9	15	64	
		2370	0·806	122·3	152·4	−26·9	13	31				2370	0·420	156·4	153·7	−25·0	0	3	
		2370*b*	0·816	120·9	151·0	−26·1	25	96				2370	0·466	153·1	150·7	−26·9	0	8	
Dec. 23		Centre			(202·0)	(−2·2)	(244)	(1206)	(922)			2370*b*	0·481	150·8	149·1	−27·1	7	14	
												2371	0·987	64·4	85·9	+24·8	0	32	5908
357·221	CL,HA		0·869	291·2	247·6	+17·1			348				0·800	66·3	114·5	+17·1			239
			0·744	303·3	232·0	+22·4			576				0·856	54·1	112·4	+28·5			350
I.		2364	0·977	250·3	267·5	−19·8	20	86	4788*f*				0·967	114·5	89·7	+24·3			379
		2369*a*	0·527	347·8	197·2	+28·6	115	760		Dec. 26		Centre			(164·3)	(−2·5)	(182)	(1215)	(3656)
		2369	0·492	357·2	191·4	+27·0	16	83											
		2369	0·523	360·0	189·9	+29·2	34	246											
		2370*a*	0·648	126·3	155·1	−24·4	20	81	} 237*c*	360·484	CL,JG		0·934	297·3	212·2	+24·2			273
		2370	0·699	127·7	151·6	−27·1	4	22				2369*b*	0·863	308·5	198·5	+30·7	45	289	} 398*c*
		2370	0·694	124·5	151·0	−24·9	0	9				2369*c*	0·839	307·5	196·2	+28·9	66	469	
		2370*b*	0·711	126·2	150·2	−26·5	6	51				2369	0·766	311·3	187·6	+28·3	8	64	
			0·939	62·0	123·7	+25·2			205			2369	0·771	313·5	187·0	+30·0	14	69	
			0·970	72·4	118·5	+12·9			144			2370*a*	0·384	201·2	155·6	−23·6	4	24	
Dec. 24		Centre			(189·9)	(−2·3)	(215)	(1338)	(1988)			2370*b*	0·418	184·9	149·2	−27·2	2	17	
												2372	0·596	68·9	112·6	+10·2	0	10	
												2372	0·626	67·2	110·9	+11·8	0	16	
358·297	CL,M		0·945	243·1	245·4	−26·2			228			2371	0·895	62·0	87·6	+23·5	0	7	
			0·934	288·5	242·8	+16·3			350			2371	0·945	63·4	79·5	+24·0	0	4	
I.			0·865	298·8	231·1	+23·2			680				0·859	118·5	90·2	−25·7			177
		2369*a*	0·615	328·0	197·5	+29·1	181	798					0·911	62·2	85·4	+23·8			510
		2369	0·581	331·1	194·2	+28·2	0	21		Dec. 27		Centre			(146·9)	(−2·7)	(139)	(969)	(1358)
		2369	0·551	334·5	191·1	+27·4	18	91											
		2369	0·558	339·7	188·4	+29·1	29	251											
		2370*a*	0·485	139·3	155·6	−23·8	11	82		361·477	CL,JG		0·954	247·9	205·8	−21·9			136
		2370	0·510	139·2	154·2	−24·8	0	3				2369*b*	0·936	304·0	197·7	+30·3	48	342	} 1398*c*
		2370	0·557	139·2	152·0	−25·8	0	5				2369*c*	0·915	303·0	194·4	+28·5	62	409	
		2370*b*	0·576	136·3	150·0	−26·7	0	19				2369	0·860	307·4	185·5	+29·7	0	48	
			0·887	58·0	118·2	+26·8			228			2373*a*	0·817	258·4	188·2	−11·1	24	201	} 205*c*
			0·892	70·4	114·9	+16·2			356			2373*b*	0·768	256·2	183·4	−12·3	9	117	
Dec. 25		Centre			(175·7)	(−2·4)	(239)	(1270)	(1842)			2370*a*	0·485	222·8	154·8	−23·4	3	9	
												2370*b*	0·471	210·2	149·1	−26·6	3	13	
												2372	0·388	51·4	115·9	+11·3	0	10	
359·162	CL,JG		0·969	241·6	239·2	−28·1			244			2372	0·461	57·9	110·4	+11·6	7	39	
			0·909	293·9	226·6	+20·4			746			2371	0·794	57·1	85·9	+23·6	0	20	} 599*c*
I.			0·890	305·7	220·6	+29·9			202			2371	0·864	60·5	79·3	+23·5	0	12	
			0·767	296·3	210·4	+18·1			253				0·761	50·0	93·0	+27·1			431
		2369*a*	0·706	317·4	197·4	+29·2	123	785	} 653*c*				0·767	123·3	88·1	−26·8			385
		2369	0·665	321·2	192·6	+28·9	2	8					0·906	74·9	70·4	+12·4			355
		2369	0·632	321·4	190·5	+27·3	4	41					0·985	109·2	53·6	−19·4			124
		2369	0·629	325·4	188·2	+28·8	31	260		Dec. 28		Centre			(133·8)	(−2·8)	(156)	(1220)	(3633)

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

Group 2371, Dec. 26–28. A very small faint spot on Dec. 26. Two very small faint spots on Dec. 27 and 28.
Group 2372, 1891 Dec. 27–1892 Jan. 2. A few small spots in a straight stream. The individual spots undergo many changes.
Group 2373, 1891 Dec. 28–30. Two large spots, *a* and *b*, appearing suddenly near the W limb.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*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).
1891.				°	°	°			
362d.502	CL,JG	2369*a*	0·984	300·6	196·7	+29·4	43	690	} 1166*c*
		2369	0·937	303·3	184·5	+29·7	0	13	
		2373*a*	0·936	259·9	189·7	−10·5	18	137	} 265*c*
		2373*b*	0·899	257·8	184·2	−12·2	0	206	
		2372	0·244	16·7	116·3	+10·6	0	8	
		2372	0·320	33·3	110·1	+12·6	0	12	
		2372	0·297	37·1	109·9	+10·8	0	3	
		2374	0·406	155·6	109·8	−24·5	0	6	
		2374	0·428	149·3	106·6	−24·3	0	9	
		2375	0·896	110·5	57·6	−19·6	0	18	479*c*
		2376*a*	0·987	67·8	41·7	+21·4	0	190	686*c*
Dec. 29		Centre			(120·4)	(−2·9)	(61)	(1292)	(2596)
363·288	CL,JG		0·934	308·0	172·4	+33·6			153
			0·888	286·4	170·8	+13·1			161
I.			0·852	294·4	164·9	+18·9			208
		2369*a*	0·998	298·0	194·0	+27·7	0	313	1074*nf*
		2373*a*	0·988	260·5	191·2	− 9·9	13	261	} 623*c*
		2373*b*	0·958	258·4	183·4	−12·0	43	409	
		2370	0·728	244·4	154·3	−20·4	0	8	235*c*
		2377	0·597	307·1	140·0	+18·4	0	11	
		2377	0·580	309·8	138·0	+19·0	0	7	
		2378	0·547	319·5	132·4	+21·7	0	3	
		2372	0·243	347·5	113·0	+10·7	0	3	
		2372	0·275	1·2	109·7	+12·9	1	6	
		2372	0·250	4·1	109·0	+11·4	0	4	
		2379	0·550	20·0	97·7	+28·0	0	4	247*c*
1891.									
363d.288	CL,JG	2379	0·579	22·3	95·4	+29·3	0	3	247*c*
		2375	0·804	112·9	58·1	−20·1	0	3	209*c*
		2380	0·908	64·0	48·5	+22·0	0	25	} 833*c*
		2376*a*	0·950	66·4	41·2	+21·2	20	185	
		2376	0·979	65·9	34·3	+22·8	0	29	
			0·938	73·5	42·1	+14·4			348
Dec. 30		Centre			(110·0)	(−3·0)	(77)	(1274)	(4091)
364·502	CL,JG		0·848	237·6	148·6	−28·8			269
		2377	0·799	295·6	143·1	+18·1	16	54	} 169*c*
		2377	0·753	298·3	138·3	+18·7	0	33	
		2372	0·496	309·9	117·2	+15·6	0	5	} 135*c*
		2372	0·436	301·7	116·1	+10·3	4	22	
		2372	0·395	307·4	112·5	+10·9	0	7	
		2379*a*	0·509	348·9	100·3	+26·8	19	187	} 307*c*
		2379	0·494	357·7	95·3	+26·4	11	76	
		2381	0·323	18·0	88·1	+14·7	3	22	
		2380	0·764	57·1	50·3	+22·2	5	26	} 774*c*
		2380	0·788	58·5	47·6	+22·2	0	21	
		2376*a*	0·835	62·3	41·9	+20·9	33	209	
		2376	0·826	66·6	41·7	+17·2	0	17	
		2376	0·878	63·0	36·8	+21·8	0	116	
		2382	0·920	58·1	32·3	+27·7	0	21	} 666*c*
		2383	0·932	64·4	28·7	+22·5	0	17	
		2384*a*	0·941	106·5	24·0	−16·6	12	155	470*c*
			0·880	75·3	34·0	+11·4			518
Dec. 31		Centre			(94·0)	(−3·1)	(103)	(988)	(3308)

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

Group 2374, 1891 Dec. 29. Two very small spots.

Group 2375, 1891 Dec. 29–30. A small faint spot.

Group 2376, 1891 Dec. 29–1892 Jan. 10. A large spot, *a*, showing great detail, and followed by several small spots.

Group 2377, 1891 Dec. 30–1892 Jan. 3. Two very small faint spots on Dec. 30. The two spots increase in size up to Jan. 1, after which they diminish again. They are measured together on Jan. 3.

Group 2378, 1891 Dec. 30. A very small faint spot.

Group 2379, 1891 Dec. 30–1892 Jan. 5. Two very small faint spots on Dec. 30. The group has greatly increased in size by Dec. 31, and consists of a large regular spot, *a*, followed by several smaller spots in a straight stream.

Group 2380, 1891 Dec. 30–1892 Jan. 7. A disturbed region preceding Group 2376 in which short-lived small spots appear.

Group 2381, 1891 Dec. 31. Two small spots measured together.

Group 2382, 1891 Dec. 31–1892 Jan. 5. A small spot appearing near Group 2376 to the north.

Group 2383, 1891 Dec. 31–1892 Jan. 9. A small spot on Dec. 31 appearing just following Group 2376. The group increases on the succeeding day, and on Jan. 3 the group consists of a large spot, *a*, with a few small companions, and by Jan. 4 a second spot, *b*, has formed to the north of *a*. The group diminishes after this, and on Jan. 8 *b* alone remains.

Group 2384, 1891 Dec. 31–1892 Jan. 12. A large regular spot, *a*, with a very small companion on Jan. 8.

ROYAL OBSERVATORY, GREENWICH.

LEDGERS

OF

AREAS AND POSITIONS OF GROUPS OF SUN SPOTS

DEDUCED FROM THE MEASUREMENT

OF THE

SOLAR PHOTOGRAPHS,

FOR EACH DAY IN THE YEAR

1891.

AREAS and HELIOGRAPHIC POSITIONS of GROUPS of SUN SPOTS DEDUCED FOR EACH DAY from the MEASUREMENTS of the PHOTOGRAPHS taken at the ROYAL OBSERVATORY, GREENWICH, at DEHRA DÛN IN INDIA, and at the ROYAL ALFRED OBSERVATORY, MAURITIUS, in the YEAR 1891.

NOTE.—The Greenwich Civil Time at which the photograph was taken is expressed by the month, day of the month (civil reckoning), and decimal of a day, reckoned from Greenwich Mean Midnight.

The Projected Area of the Umbræ and Whole Spots is the area as it is measured on the photograph, uncorrected for the effect of foreshortening, and expressed in millionths of the Sun's apparent disk.

The Column "Longitude from Central Meridian" gives the Mean heliographic longitude of the group, reckoned from the meridian passing through the centre of the Sun's disk at the moment of observation; longitudes west of the centre being reckoned as positive.

Dates for which no numbers are given indicate days for which no photographic record is at present available.

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2166.							
1890. d					°	°	°
Dec. 29·230	3	36	3	31	214·4	+28·8	−47·0
30·311	0	15	0	10	214·8	+28·6	−32·5
31·291	4	27	3	17	212·4	+28·5	−22·9
1891.							
Jan. 1·560	0	24	0	14	211·7	+28·6	− 5·9
Means ...	...	...	2	18	213·33	+28·63	...
Group 2167.							
Jan. 2·321	0	30	0	18	198·3	+28·2	− 9·3
Means ...	...	...	0	18	198·30	+28·20	...
Group 2168.							
Jan. 6·246	1	30	0	20	120·2	+18·3	− 35·7
Means ...	...	...	0	20	120·20	+18·30	...

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2169.							
1891. d					°	°	°
Jan. 15·246	0	98	0	594	310·1	−26·2	− 87·4
16·427	57	245	81	349	312·6	−25·7	− 69·3
17·226	73	293	75	300	311·4	−26·4	− 59·9
18·191	106	430	83	337	310·6	−26·2	− 48·0
19·308	165	524	105	335	310·2	−26·3	− 33·7
20·198	144	636	83	368	309·9	−26·8	− 22·3
21·476	119	599	64	325	309·8	−26·9	− 5·6
22·455	114	615	61	333	309·8	−27·0	+ 7·3
23·208	98	531	55	302	309·7	−27·5	+ 17·2
24·	No photograph.						
25·489	68	320	52	246	309·1	−27·7	+ 46·6
26·538	27	224	28	236	309·5	−27·8	+ 60·8
27·	No photograph.						
28·211	6	89	21	294	310·1	−28·6	+ 83·4
Means ...	...	...	59	335	310·23	−26·93	...
Group 2170.							
Jan. 16·427	0	37	0	41	320·9	− 32·5	− 61·0
17·226	3	33	2	29	320·2	− 33·4	− 51·1
18·191	28	137	20	100	318·6	− 33·2	− 40·0
19·308	13	41	8	26	319·4	− 33·8	− 24·5
20·198	11	19	6	11	320·4	− 33·9	− 11·8
21·476	0	0	0	0	...	...	...
22·455	0	0	0	0	...	...	...
23·208	0	9	0	6	316·3	− 35·3	+ 23·8
Means ...	...	...	5	27	319·30	− 33·68	...

AREAS and HELIOGRAPHIC POSITIONS of GROUPS of SUN SPOTS—*continued.*

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2171.							
1891. d					°	°	°
Jan. 17·226	0	22	0	13	22·0	+ 16·1	+ 10·7
18·191	0	0	0	0	...	...	...
19·308	18	68	12	48	22·7	+ 17·1	+ 38·8
20·198	8	33	7	30	23·9	+ 16·7	+ 51·7
21·476	0	14	0	21	23·3	+ 16·7	+ 67·9
Means ...	...	...	4	22	22·98	+ 16·65	...
Group 2172.							
Jan. 19·308	0	5	0	7	273·6	− 23·1	− 70·3
20·198	0	16	0	15	273·9	− 22·1	− 58·3
21·476	0	0	0	0	...	...	...
22·455	0	67	0	39	276·0	− 22·9	− 26·5
Means ...	...	...	0	15	274·50	− 22·70	...
Group 2173.							
Jan. 20·198	14	32	11	27	281·0	− 24·5	− 51·2
21·476	0	25	0	16	281·9	− 22·3	− 33·5
22·455	0	25	0	13	281·6	− 22·5	− 20·9
23·208	0	15	0	8	281·9	− 22·4	− 10·6
24·	No photograph.						
25·489	0	16	0	10	282·5	− 22·1	+ 20·0
Means ...	...	...	2	15	281·78	− 22·76	...
Group 2174.							
Jan. 25·489	2	99	1	53	271·9	− 24·5	+ 9·4
26·538	2	31	1	18	272·2	− 25·6	+ 23·5
27·	No photograph.						
28·211	0	0	0	0	...	...	...
29·180	0	58	0	56	272·9	− 23·7	+ 59·0
Means ...	...	...	1	32	272·33	− 24·60	...

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2175.							
1891. d					°	°	°
Jan. 25·489	8	165	12	258	194·3	+ 18·9	− 68·2
26·538	23	285	21	268	195·4	+ 18·4	− 53·3
27·	No photograph.						
28·211	50	422	32	276	194·7	+ 18·5	− 32·0
29·180	79	464	46	268	195·2	+ 18·1	− 18·7
30·459	0	135	0	74	195·4	+ 18·4	− 1·7
31·538	0	5	0	3	196·6	+ 18·4	+ 13·7
Feb. 1·551	13	39	8	24	198·2	+ 16·6	+ 28·7
2·423	0	8	0	6	198·2	+ 16·2	+ 40·1
Means ...	...	...	15	147	196·00	+ 17·94	...
Group 2176.							
Jan. 28·211	22	131	22	131	175·5	+ 28·1	− 51·2
29·180	36	117	28	91	175·9	+ 27·9	− 38·0
30·459	18	100	12	65	174·7	+ 27·9	− 22·4
31·538	13	79	8	48	175·0	+ 27·8	− 7·9
Feb. 1·551	15	56	9	34	174·7	+ 27·9	+ 5·2
2·423	9	34	6	22	174·8	+ 27·7	+ 16·7
3·373	0	41	0	29	175·2	+ 28·1	+ 29·6
Means ...	...	...	12	60	175·11	+ 27·91	...
Group 2177.							
Feb. 6·175	4	31	3	24	155·1	−29·0	+ 46·5
Means ...	...	...	3	24	155·10	−29·00	...
Group 2178.							
Feb. 9·195	0	39	0	20	61·2	− 19·1	− 7·7
10·554	5	39	3	20	61·9	− 18·7	+ 10·9
11·428	5	33	3	18	61·5	− 19·4	+ 22·1
12·440	0	15	0	10	60·4	− 17·8	+ 34·2
Means ...	...	...	2	17	61·25	− 18·75	...

AREAS and HELIOGRAPHIC POSITIONS of GROUPS of SUN SPOTS—*continued.*

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2179.							
1891. d					°	°	°
Feb. 10·554	44	287	25	170	29·2	+ 16·2	− 21·8
11·428	62	366	33	202	29·7	+ 15·9	− 9·7
12·440	72	409	39	223	33·1	+ 15·8	+ 6·9
13·452	86	404	51	237	34·9	+ 15·7	+ 22·1
14·175	89	329	59	213	36·8	+ 15·8	+ 33·4
15·509	40	261	36	236	38·3	+ 15·2	+ 52·5
16·414	26	174	36	235	38·8	+ 15·6	+ 65·0
17·218	28	87	69	213	39·1	+ 15·0	+ 75·8
Means ...	...	...	44	216	34·99	+ 15·65	...
Group 2180.							
Feb. 11·428	13	78	7	40	28·2	− 18·6	− 10·2
12·440	25	85	12	43	27·7	− 18·8	+ 1·5
13·452	18	68	9	36	27·2	− 19·0	+ 14·4
14·175	6	21	3	12	26·2	− 20·4	+ 22·8
15·509	12	75	8	51	28·1	− 18·5	+ 42·3
16·414	7	22	6	21	28·5	− 17·8	+ 54·7
17·218	0	6	0	8	32·9	− 17·4	+ 69·6
Means ...	...	...	6	30	28·40	− 18·64	...
Group 2181.							
Feb. 13·452	0	37	0	26	332·9	− 30·6	− 39·9
14·175	23	117	15	73	332·9	− 30·4	− 30·5
15·509	17	98	10	56	331·2	− 31·0	− 14·6
16·414	0	35	0	19	329·8	− 31·7	− 4·0
Means ...	...	...	6	44	331·70	− 30·93	...
Group 2182.							
Feb. 15·509	0	96	0	172	270·7	− 23·0	− 75·1
16·414	6	71	8	77	271·3	− 23·5	− 62·5
17·218	0	52	0	47	268·0	− 23·9	− 55·3
18·518	0	0	0	0	...	...	...
19·305	3	12	2	6	277·1	− 22·5	− 18·7
20·229	1	19	1	10	277·7	− 22·5	− 5·8
21·237	0	33	0	18	276·5	− 22·8	+ 6·2
22·559	0	30	0	16	266·2	− 21·8	+ 13·3
23·536	26	127	15	73	267·2	− 21·7	+ 27·2
24·237	30	84	19	53	265·6	− 22·8	+ 34·7
Means ...	...	...	5	47	271·14	− 22·73	...

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2183.							
1891. d					°	°	°
Feb. 16·414	0	51	0	55	276·1	+ 17·7	− 57·7
17·218	80	364	67	307	275·5	+ 18·2	− 47·8
18·518	225	889	150	590	274·7	+ 18·8	− 31·4
19·305	202	962	120	570	276·3	+ 18·9	− 19·5
20·229	141	933	81	532	275·6	+ 19·5	− 7·9
21·237	164	903	93	512	276·9	+ 19·0	+ 6·6
22·559	201	697	128	432	277·8	+ 19·5	+ 24·9
23·536	84	408	63	297	278·4	+ 20·0	+ 38·4
24·237	102	357	90	316	280·4	+ 19·8	+ 49·5
25·477	47	222	69	331	280·5	+ 20·4	+ 66·0
Means ...	...	...	86	394	277·22	+ 19·18	...
Group 2184.							
Feb. 18·518	0	14	0	13	257·0	+ 24·0	− 49·1
19·305	5	21	4	15	257·4	+ 23·8	− 38·5
20·229	6	16	4	10	258·7	+ 23·5	− 24·8
Means ...	...	...	3	13	257·70	+ 23·77	...
Group 2185.							
Feb. 19·305	3	12	4	19	229·1	+ 17·4	− 66·7
20·229	0	13	0	13	229·0	+ 17·3	− 54·5
21·237	5	11	4	8	229·5	+ 17·4	− 40·8
22·559	0	18	0	11	227·8	+ 20·3	− 25·1
Means ...	...	...	2	13	228·85	+ 18·10	...
Group 2186.							
Feb. 20·229	0	13	0	23	214·0	+ 25·0	− 69·5
21·237	7	65	4	67	211·3	+ 26·1	− 59·0
22·559	0	36	0	27	217·0	+ 24·4	− 35·9
23·536	0	25	0	16	216·3	+ 24·2	− 23·7
24·237	3	36	2	22	215·0	+ 24·2	− 15·9
25·477	93	468	56	281	206·5	+ 24·5	− 8·0
26·514	19	219	11	131	206·5	+ 25·0	+ 6·2
27·435	7	78	5	48	203·8	+ 25·2	+ 15·1
28·509	8	88	6	29	202·8	+ 24·5	+ 28·2
Mar. 1·452	26	155	21	118	201·4	+ 23·2	+ 39·3
2·522	3	49	3	51	202·6	+ 23·5	+ 54·6
Means ...	...	...	10	74	208·84	+ 24·44	...

AREAS and HELIOGRAPHIC POSITIONS of GROUPS of SUN SPOTS—*continued.*

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2187.							
1891. d					°	°	°
Mar. 4·372	0	6	0	25	38·9	− 19·9	− 84·8
5·423	4	23	5	29	40·6	− 20·1	− 69·2
6·410	4	30	3	26	42·5	− 20·4	− 54·3
7·237	0	10	0	7	42·4	− 20·9	− 43·4
Means ...	...	...	2	22	41·10	− 20·33	...
Group 2188.							
Mar. 5·423	0	7	0	7	165·4	+ 24·8	+ 55·6
Means ...	...	...	0	7	165·40	+ 24·80	...
Group 2189.							
Mar. 5·423	2	12	1	7	78·1	− 19·3	− 31·7
Means ...	...	...	1	7	78·10	− 19·30	...
Group 2190.							
Mar. 5·423	19	66	33	116	39·1	+ 16·1	− 70·7
6·410	23	124	24	131	38·7	+ 15·3	− 58·1
7·237	19	146	16	117	39·1	+ 15·9	− 46·7
8·173	23	134	16	89	38·8	+ 15·5	− 34·8
9·192	42	210	25	125	38·9	+ 16·9	− 21·2
10·296	22	144	12	79	39·1	+ 16·4	− 6·5
11·471	0	74	0	42	38·7	+ 15·8	+ 8·6
12·466	9	23	5	14	39·7	+ 15·6	+ 22·7
13·449	0	12	0	8	40·0	+ 15·5	+ 35·9
Means ...	...	...	15	80	39·12	+ 15·89	...
Group 2191.							
1891. d					°	°	°
Mar. 7·237	0	11	0	12	141·8	+ 18·5	+ 56·0
8·173	0	4	0	11	149·2	+ 19·3	+ 75·6
Means ...	...	...	0	12	145·50	+ 18·90	...
Group 2192.							
Mar. 12·466	0	19	0	34	301·3	− 19·1	− 75·7
Means ...	...	...	0	34	301·30	− 19·10	...
Group 2193.							
Mar. 13·449	13	76	40	231	287·0	+ 19·8	− 77·1
14·160	34	149	62	269	284·8	+ 20·3	− 69·8
15·192	59	201	63	212	284·9	+ 20·1	− 56·1
16·510	57	299	42	218	285·0	+ 20·0	− 38·7
17·400	85	321	53	201	285·0	+ 19·7	− 27·0
18·196	78	304	46	178	284·8	+ 19·6	− 16·7
19·295	98	368	55	206	284·6	+ 19·5	+ 2·4
20·191	75	314	43	179	284·3	+ 19·3	+ 9·2
21·228	73	330	44	201	284·4	+ 19·3	+ 22·9
22·128	35	239	26	176	284·2	+ 19·5	+ 40·1
23·529	18	166	16	159	284·2	+ 19·4	+ 53·1
24·425	20	109	28	152	284·4	+ 19·4	+ 65·0
25·404	0	47	0	144	283·9	+ 19·0	+ 77·4
Means ...	...	...	40	194	284·70	+ 19·61	...
Group 2194.							
Mar. 16·510	0	62	0	40	352·9	+ 19·7	+ 29·2
17·400	9	38	7	29	353·5	+ 20·1	+ 41·5
18·196	39	134	39	128	353·7	+ 20·7	+ 52·2
19·295	27	152	38	216	351·6	+ 20·7	+ 64·6
20·191	7	69	19	178	350·4	+ 20·1	+ 75·3
Means ...	...	...	21	118	352·42	+ 20·26	...

AREAS and HELIOGRAPHIC POSITIONS of GROUPS of SUN SPOTS—*continued.*

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2195.							
1891. d					°	°	°
Mar. 29·463	10	76	28	222	75·8	+ 19·4	− 77·1
30·395	31	160	42	217	76·3	+ 19·2	− 64·3
31·409	47	288	43	264	75·0	+ 19·3	− 52·2
Apr. 1·433	84	342	62	249	74·7	+ 19·5	− 39·0
2·176	128	433	81	276	74·4	+ 19·9	− 29·5
3·341	123	520	71	300	74·1	+ 19·9	− 14·4
4·133	106	489	59	273	73·7	+ 20·0	− 4·3
5·510	80	469	46	267	73·4	+ 20·0	+ 13·5
6·476	85	377	53	232	73·0	+ 19·5	+ 25·2
7·395	92	323	65	226	73·0	+ 19·5	+ 37·9
8·412	56	255	51	230	72·8	+ 19·5	+ 51·2
9·191	35	189	43	229	72·5	+ 19·7	+ 61·3
10·205	15	82	38	202	73·4	+ 19·5	+ 75·4
Means ...	...	...	52	237	74·01	+ 19·61	...
Group 2196.							
Mar. 30·395	5	21	3	11	142·6	+ 19·5	+ 2·0
31·409	0	18	0	10	142·2	+ 19·5	+ 15·0
Apr. 1·433	5	39	3	25	146·9	+ 18·6	+ 33·2
2·176	2	17	2	13	148·2	+ 18·5	+ 44·3
3·341	0	12	0	14	148·6	+ 19·4	+ 60·1
4·133	0	13	0	24	148·7	+ 18·4	+ 70·7
Means ...	...	...	1	16	146·20	+ 18·98	...
Group 2197.							
Mar. 31·409	14	56	8	30	117·0	− 26·0	− 10·2
Apr. 1·433	13	57	8	31	117·8	− 25·5	+ 4·1
2·176	23	44	13	24	118·0	− 25·1	+ 14·1
3·341	0	10	0	6	118·8	− 23·2	+ 30·3
4·133	0	5	0	3	118·8	− 23·7	+ 40·8
Means ...	...	...	6	19	118·05	− 24·70	...

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2198.							
1891. d					°	°	°
Apr. 10·205	33	166	17	87	347·6	− 15·6	− 10·4
11·140	34	150	17	76	348·9	− 15·5	+ 3·4
12·466	10	79	6	42	350·4	− 15·2	+ 22·3
13·293	17	46	10	27	349·3	− 15·3	+ 32·2
14·431	0	32	0	25	352·0	− 15·9	+ 49·9
Means ...	...	...	10	51	349·64	− 15·50	...
Group 2199.							
Apr. 14·431	29	118	17	69	316·9	+ 22·4	+ 14·8
15·491	32	178	22	118	318·1	+ 22·2	+ 30·0
16·436	74	276	58	217	319·4	+ 21·8	+ 43·7
17·403	41	199	42	209	319·1	+ 22·0	+ 56·2
18·462	0	53	0	78	314·8	+ 22·2	+ 65·9
19·264	7	77	21	224	315·2	+ 24·1	+ 76·9
Means ...	...	...	27	153	317·25	+ 22·45	...
Group 2200.							
Apr. 14·431	0	18	0	13	262·8	− 36·4	− 39·3
15·491	0	12	0	7	265·5	− 35·5	− 22·6
16·436	0	33	0	19	265·1	− 35·8	− 10·6
17·403	0	11	0	6	261·3	− 34·7	− 1·6
18·462	0	0	0	0	...	...	...
19·264	0	69	0	44	264·1	− 35·1	+ 25·8
Means ...	...	...	0	15	263·76	− 35·50	...
Group 2201.							
Apr. 16·436	8	21	4	12	265·1	+ 22·1	− 10·6
17·403	2	33	1	18	264·7	+ 22·7	+ 1·8
Means ...	...	...	3	15	264·90	+ 22·40	...

AREAS and HELIOGRAPHIC POSITIONS of GROUPS of SUN SPOTS—*continued.*

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2202.							
1891. d					°	°	°
Apr. 16·436	0	5	0	5	211·2	− 22·8	− 64·5
17·403	0	28	0	24	209·3	− 22·9	− 53·6
18·462	0	74	0	50	209·5	− 22·4	− 39·4
19·264	0	16	0	11	207·3	− 22·4	− 31·0
20·518	8	95	4	50	212·1	− 22·0	− 9·7
21·429	17	90	9	47	212·7	− 21·9	+ 3·0
22·370	4	7	2	4	213·4	− 21·6	+ 16·1
Means ...	...	...	2	27	210·79	− 22·29	...
Group 2203.							
Apr. 19·264	0	7	0	4	222·0	+ 26·4	− 16·3
20·518	16	56	9	33	223·5	+ 25·3	+ 1·7
21·429	0	29	0	17	226·5	+ 24·7	+ 16·8
22·370	2	23	1	15	225·6	+ 25·6	+ 28·3
23·411	11	100	9	81	226·5	+ 25·8	+ 42·9
24·421	18	104	20	116	227·8	+ 25·5	+ 57·6
25·080	5	30	7	44	226·9	+ 25·1	+ 65·5
Means ...	...	...	7	44	225·54	+ 25·49	...
Group 2204.							
Apr. 21·429	14	111	26	203	134·8	− 19·4	− 74·9
22·370	110	539	121	588	134·8	− 19·3	− 62·5
23·411	152	854	117	663	134·4	− 19·5	− 49·2
24·421	160	853	100	541	134·6	− 20·0	− 35·6
25·080	137	892	80	517	135·0	− 19·9	− 26·4
26·586	119	797	62	416	135·1	− 20·1	− 6·6
27·413	140	746	73	388	135·2	− 20·2	+ 4·7
28·442	133	653	73	361	136·2	− 19·9	+ 19·1
29·193	101	517	60	308	136·3	− 20·3	+ 29·2
30·485	41	400	31	297	136·8	− 19·8	+ 46·7
May 1·597	50	256	51	271	136·6	− 19·7	+ 61·2
2·415	15	106	26	177	137·3	− 19·1	+ 72·8
Means ...	...	...	68	394	135·59	− 19·77	...

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2205.							
1891. d					°	°	°
Apr. 22·370	2	26	1	15	213·3	+ 17·2	+ 16·0
23·411	0	59	0	37	214·2	+ 17·0	+ 30·6
24·421	30	107	24	85	217·2	+ 16·8	+ 47·0
25·080	44	258	41	245	216·7	+ 16·3	+ 55·3
26·586	23	172	58	403	217·5	+ 16·4	+ 75·8
Means ...	...	...	25	157	215·78	+ 16·74	...
Group 2206.							
Apr. 27·413	54	218	34	134	153·3	+ 24·3	+ 22·8
28·442	67	478	48	342	153·9	+ 24·5	+ 36·8
29·193	58	404	49	341	153·6	+ 24·4	+ 46·5
30·485	17	172	23	227	153·5	+ 24·8	+ 63·4
May 1·597	0	67	0	230	154·3	+ 24·4	+ 78·9
Means ...	...	...	31	255	153·72	+ 24·48	...
Group 2207.							
Apr. 27·413	2	10	2	6	108·5	+ 23·3	− 22·0
28·442	0	41	0	23	110·6	+ 23·0	− 6·5
29·193	5	18	3	10	113·3	+ 22·7	+ 6·2
30·485	0	12	0	7	114·5	+ 21·9	+ 24·4
May 1·597	0	7	0	5	105·0	+ 28·0	+ 29·6
2·415	0	7	0	5	110·3	+ 24·0	+ 45·8
3·503	0	14	0	17	111·9	+ 23·1	+ 61·7
Means ...	...	...	1	10	110·59	+ 23·71	...
Group 2208.							
Apr. 28·442	5	36	4	33	162·2	+ 32·7	+ 45·1
29·193	2	22	0	25	165·1	+ 32·4	+ 58·0
Means ...	...	...	2	29	163·65	+ 32·55	...

AREAS and HELIOGRAPHIC POSITIONS of GROUPS of SUN SPOTS—*continued.*

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2209.							
1891. d					°	°	°
May 1·597	7	53	4	33	44·2	− 25·0	− 31·2
2·415	7	75	4	43	45·3	− 25·7	− 19·2
3·503	2	19	1	11	42·5	− 26·1	− 7·7
Means ...	...	...	3	29	44·00	− 25·60	...
Group 2210.							
May 4·409	0	18	0	58	319·0	+ 21·2	− 79·2
5·482	6	113	11	193	314·1	+ 22·7	− 69·9
6·493	10	114	11	124	312·4	+ 23·2	− 58·3
7·421	10	178	8	143	312·8	+ 22·9	− 45·6
8·332	15	137	10	93	311·8	+ 23·2	− 34·3
9·448	12	183	7	109	311·8	+ 22·4	− 19·8
10·087	31	279	18	158	311·6	+ 22·6	− 11·5
11·404	47	187	26	103	312·5	+ 22·2	+ 6·8
12·453	24	235	14	139	312·6	+ 22·2	+ 20·8
13·454	13	119	9	83	315·4	+ 22·1	+ 36·8
14·470	0	0	0	0	...	...	...
15·420	0	62	0	91	319·9	+ 21·6	+ 67·2
Means ...	...	...	10	108	313·99	+ 22·39	...
Group 2211.							
May 4·409	2	40	9	175	313·7	− 25·4	− 84·5
5·482	17	131	24	190	314·7	− 25·7	− 69·3
6·493	52	242	51	239	313·0	− 25·3	− 57·7
7·421	67	410	51	312	313·4	− 25·3	− 45·0
8·332	83	399	53	255	313·5	− 25·5	− 32·6
9·448	81	613	46	351	313·5	− 25·7	− 18·1
10·087	127	521	69	285	313·9	− 25·1	− 9·2
11·404	106	488	58	265	315·0	− 24·4	+ 9·3
12·453	75	541	44	316	315·1	− 24·5	+ 23·3
13·454	64	311	43	210	316·2	− 24·2	+ 37·6
14·470	27	206	23	174	317·1	− 23·5	+ 51·5
15·420	16	119	19	141	316·8	− 23·1	+ 64·1
16·470	8	37	18	86	316·2	− 22·9	+ 77·5
Means ...	...	...	39	231	314·78	− 24·67	...

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2212.							
1891. d					°	°	°
May 4·409	0	9	0	15	112·3	− 17·7	+ 74·1
Means ...	...	...	0	15	112·30	− 17·70	...
Group 2213.							
May 5·482	0	8	0	8	330·0	+ 20·4	− 54·0
Means ...	...	...	0	8	330·00	+ 20·40	...
Group 2214.							
May 8·332	6	22	14	47	272·1	+ 20·5	− 74·0
9·448	10	42	11	45	272·8	+ 20·3	− 58·8
10·087	19	84	17	74	272·2	+ 21·0	− 50·9
11·404	30	92	19	60	272·1	+ 20·6	− 33·6
12·453	34	110	20	64	271·9	+ 20·6	− 19·9
13·454	23	88	12	48	271·8	+ 20·2	− 6·8
14·470	0	76	0	41	271·6	+ 20·2	+ 6·0
Means ...	...	...	13	54	272·07	+ 20·49	...
Group 2215.							
May 11·404	14	38	11	29	348·6	+ 24·3	+ 42·9
12·453	0	70	0	74	349·6	+ 24·0	+ 57·8
Means ...	...	...	6	52	349·10	+ 24·15	...

AREAS and HELIOGRAPHIC POSITIONS of GROUPS of SUN SPOTS—*continued.*

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2216.							
1891. d					°	°	°
May 12·453	14	93	26	176	218·5	+ 16·1	− 73·3
13·454	29	141	31	152	218·5	+ 16·2	− 60·1
14·470	24	144	19	111	219·0	+ 16·0	− 46·6
15·420	29	175	19	112	218·4	+ 16·2	− 34·3
16·470	58	231	33	131	218·2	+ 16·1	− 20·5
17·524	31	175	17	92	218·4	+ 16·3	− 6·6
18·158	55	170	29	90	218·1	+ 16·3	+ 1·8
19·523	35	164	20	92	218·3	+ 16·5	+ 20·0
20·187	24	115	14	70	218·6	+ 16·8	+ 29·1
21·335	7	54	5	40	218·8	+ 16·5	+ 44·4
22·522	0	28	0	30	218·5	+ 16·5	+ 59·9
Means ...	...	...	19	100	218·48	+ 16·32	...
Group 2217.							
May 12·453	10	98	30	306	210·9	− 20·4	− 80·9
13·454	20	206	27	289	209·8	− 21·1	− 68·8
14·470	41	266	37	242	210·5	− 20·8	− 55·1
15·420	42	311	30	222	209·9	− 20·6	− 42·8
16·470	48	320	29	193	209·5	− 20·5	− 29·2
17·524	37	295	20	161	209·3	− 20·8	− 15·7
18·158	52	182	28	98	209·0	− 20·8	− 7·3
19·523	42	225	22	120	208·5	− 20·8	+ 10·2
20·187	25	118	14	67	209·0	− 20·6	+ 19·5
21·335	23	99	15	64	209·1	− 20·8	+ 34·7
22·522	11	66	9	54	208·7	− 20·6	+ 50·1
23·581	0	17	0	19	206·8	− 20·6	+ 62·2
Means ...	...	..	22	153	209·25	− 20·70	...
Group 2218.							
May 16·470	6	73	5	52	200·4	+ 25·7	− 38·3
Means ...	...	...	5	52	200·40	+ 25·70	...

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2219.							
1891. d					°	°	°
May 17·524	9	40	13	54	157·9	+ 15·9	− 67·1
18·158	48	163	51	173	156·3	+ 16·1	− 60·0
19·523	82	551	57	383	158·0	+ 15·9	− 40·3
20·187	119	653	74	402	158·4	+ 16·4	− 31·1
21·335	180	1113	98	609	158·4	+ 16·8	− 16·0
22·522	208	1373	111	727	159·5	+ 16·5	+ 0·9
23·581	160	1033	89	568	159·8	+ 16·7	+ 15·2
24·204	100	771	58	442	159·2	+ 16·9	+ 22·9
25·341	109	575	76	387	159·8	+ 16·5	+ 38·5
26·465	20	211	19	196	161·9	+ 16·0	+ 55·4
27·439	11	63	16	90	162·9	+ 15·4	+ 68·6
28·454	0	21	0	61	159·6	+ 15·3	+ 79·5
Means ...	...	...	55	341	159·31	+ 16·20	...
Group 2220.							
May 18·158	0	20	0	57	136·4	− 18·7	− 79·9
19·523	10	73	11	81	136·0	− 19·1	− 62·3
20·187	11	75	10	66	135·6	− 19·2	− 53·9
21·335	19	108	13	73	135·7	− 19·1	− 38·7
22·522	19	115	11	67	135·7	− 19·5	− 22·9
23·581	12	97	7	52	135·5	− 19·7	− 9·1
24·204	22	97	12	51	135·6	− 19·8	− 0·7
25·341	20	131	11	71	135·3	− 20·0	+ 14·0
26·465	20	84	12	51	135·4	− 19·8	+ 28·9
27·439	16	83	11	58	136·0	− 19·7	+ 41·7
28·454	6	36	6	33	135·0	− 19·7	+ 54·9
29·520	0	9	0	13	134·5	− 19·7	+ 68·5
Means ...	...	...	9	56	135·53	− 19·43	...
Group 2221.							
May 19·523	0	25	0	78	118·8	+ 20·8	− 79·5
20·187	11	57	19	96	118·8	+ 20·8	− 70·7
21·335	12	66	12	62	119·4	+ 20·4	− 55·0
22·522	15	87	10	58	123·7	+ 19·5	− 34·9
23·581	37	242	21	137	127·6	+ 19·8	− 17·0
24·204	47	280	25	152	127·3	+ 20·1	− 9·0
25·341	32	103	17	55	128·8	+ 19·8	+ 7·4
26·465	11	94	6	55	129·3	+ 19·5	+ 22·8
27·439	0	29	0	20	132·5	+ 20·2	+ 38·2
28·454	13	40	10	31	126·4	+ 20·5	+ 46·3
29·520	2	43	2	45	125·0	+ 20·4	+ 59·0
Means ...	...	...	11	72	125·24	+ 20·17	...

AREAS and HELIOGRAPHIC POSITIONS of GROUPS of SUN SPOTS—*continued.*

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2222.							
1891. d					°	°	°
May 22·522	0	29	0	22	199·9	+ 26·3	+ 41·3
23·581	0	0	0	0	...	...	...
24·204	0	0	0	0	...	...	...
25·341	0	19	0	39	193·7	+ 24·8	+ 72·4
Means ...	...	...	0	15	196·80	+25·55	...
Group 2223.							
May 24·204	0	8	0	10	69·4	— 18·9	— 66·9
Means ...	...	...	0	10	69·40	— 18·90	...
Group 2224.							
May 24·204	6	43	17	126	56·2	— 17·3	— 80·1
25·341	52	275	66	375	53·1	— 16·3	— 68·2
26·465	63	404	53	344	54·0	— 16·2	— 52·5
27·439	99	508	67	342	54·5	— 16·0	— 39·8
28·454	106	589	60	341	54·3	— 16·0	— 25·8
29·520	95	571	51	304	53·7	— 16·7	— 12·3
30·647	71	389	37	202	54·7	— 17·0	+ 3·5
31·502	52	365	28	197	54·6	— 16·8	+ 14·8
June 1·439	48	254	29	150	54·9	— 17·1	+ 27·5
2·342	35	176	24	119	54·9	— 17·1	+ 39·4
3·642	11	65	10	62	54·9	— 16·9	+ 56·7
4·669	0	14	0	22	54·8	— 17·6	+ 70·1
Means ...	...	...	37	215	54·64	— 16·75	...
Group 2225.							
May 25·341	12	56	11	52	67·4	+ 20·8	— 53·9
26·465	5	55	3	37	69·0	+ 20·8	— 37·5
27·439	0	69	0	42	69·3	+ 21·0	— 25·0
Means ...	...	...	5	44	68·56	+ 20·86	...

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2226.							
1891. d					°	°	°
May 27·439	18	130	14	96	136·0	— 25·0	+ 41·7
28·454	0	38	0	34	131·8	— 27·0	+ 51·7
Means ...	...	...	7	65	133·90	— 26·00	...
Group 2227.							
May 27·439	0	34	0	19	113·0	+ 14·0	+ 18·7
Means ...	...	...	0	19	113·00	+ 14·00	...
Group 2228.							
May 28·454	0	38	0	85	4·1	+ 19·8	— 76·0
29·520	13	42	14	47	4·2	+ 19·4	— 61·8
30·647	0	53	0	41	4·8	+ 19·0	— 46·4
31·502	0	10	0	7	4·5	+ 19·2	— 35·3
Means ...	...	...	4	45	4·40	+ 19·35	...
Group 2229.							
May 30·647	12	176	8	113	16·4	+ 18·2	— 34·8
31·502	42	263	24	153	16·4	+ 18·4	— 23·4
June 1·439	48	219	26	118	16·5	+ 18·4	— 10·9
2·342	54	223	29	118	17·6	+ 18·9	+ 2·1
3·642	24	115	14	64	17·5	+ 18·8	+ 19·3
4·669	7	68	4	42	14·7	+ 19·0	+ 30·0
5·326	3	22	2	15	15·5	+ 19·1	+ 39·5
Means ...	...	...	15	89	16·37	+ 18·69	...
Group 2230.							
June 1·439	0	26	0	21	75·8	+ 21·2	+ 48·4
2·342	0	54	0	56	74·0	+ 21·0	+ 58·5
3·642	0	10	0	19	70·8	+ 21·5	+ 72·6
Means ...	...	...	0	32	73·53	+ 21·23	...

AREAS and HELIOGRAPHIC POSITIONS of GROUPS of SUN SPOTS—*continued.*

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2231.							
1891. d					°	°	°
June 1·439	0	12	0	41	306·6	+ 22·9	− 80·8
2·342	8	62	12	97	306·2	+ 23·5	− 69·3
3·642	23	133	20	118	306·3	+ 22·1	− 51·9
4·669	19	192	13	129	308·4	+ 22·8	− 36·3
5·326	39	167	24	103	308·9	+ 23·5	− 27·1
6·328	30	261	16	147	308·2	+ 23·4	− 14·5
7·316	24	183	13	100	309·8	+ 23·3	+ 0·2
8·644	53	279	31	162	312·9	+ 22·8	+ 20·8
9·406	63	330	41	210	314·4	+ 22·8	+ 32·5
10·441	32	251	24	195	314·7	+ 23·0	+ 46·4
11·436	0	132	0	144	315·5	+ 23·1	+ 60·4
Means ...	...	...	18	132	310·17	+ 23·02	...
Group 2232.							
June 2·342	0	13	0	15	82·3	− 17·5	+ 66·8
Means ...	...	...	0	15	82·30	− 17·50	...
Group 2233.							
June 2·342	0	10	0	7	50·1	+ 19·3	+ 34·6
Means ...	...	...	0	7	50·10	+ 19·30	...
Group 2234.							
June 10·441	38	203	24	129	235·2	+ 21·2	− 33·1
11·436	98	472	55	266	235·9	+ 21·1	− 19·2
12·647	36	342	19	182	237·8	+ 21·2	− 1·3
13·510	60	300	32	161	238·2	+ 21·1	+ 10·5
14·629	30	189	18	113	238·8	+ 21·4	+ 25·9
15·274	16	134	10	87	238·5	+ 21·0	+ 34·7
16·534	4	55	3	45	237·9	+ 21·4	+ 50·2
Means ...	...	...	23	140	237·47	+ 21·20	...
Group 2235.							
1891. d					°	°	°
June 10·441	0	13	0	30	192·1	+ 24·3	− 76·2
11·436	0	12	0	14	192·5	+ 23·9	− 62·6
12·647	25	198	18	140	200·4	+ 26·2	− 38·7
13·510	42	246	26	155	200·0	+ 26·9	− 27·7
14·629	25	260	14	148	202·2	+ 27·2	− 10·7
15·274	52	209	31	116	201·2	+ 27·2	− 2·6
16·534	28	207	16	119	202·1	+ 27·2	+ 14·4
17·430	10	55	7	35	203·1	+ 26·6	+ 27·4
18·454	7	25	5	18	203·3	+ 27·0	+ 41·1
19·446	0	38	0	33	199·0	+ 27·4	+ 49·9
20·090	0	9	0	10	201·3	+ 22·9	+ 60·8
Means ...	...	...	11	74	199·74	+ 26·07	...
Group 2236.							
June 13·510	0	14	0	15	166·7	+ 14·5	− 61·0
14·629	0	17	0	12	166·4	+ 14·5	− 46·5
15·274	37	239	23	152	167·9	+ 14·6	− 35·9
16·534	49	284	27	156	166·2	+ 14·3	− 21·5
17·430	44	390	23	200	167·7	+ 14·3	− 8·0
18·454	33	284	16	146	167·7	+ 14·4	+ 5·5
19·446	17	182	9	100	170·0	+ 14·4	+ 20·9
20·090	4	60	2	36	171·7	+ 13·9	+ 31·2
21·621	16	114	12	85	166·8	+ 14·5	+ 46·5
22·473	40	192	39	189	167·9	+ 14·0	+ 59·0
23·310	9	107	14	176	170·3	+ 13·4	+ 72·4
Means ...	...	...	15	115	168·21	+ 14·24	...
Group 2237.							
June 14·629	17	207	28	413	137·8	+ 18·5	− 75·1
15·274	79	345	99	458	136·8	+ 18·7	− 67·0
16·534	58	554	46	445	137·9	+ 18·1	− 49·8
17·430	85	556	55	367	137·9	+ 18·2	− 37·8
18·454	78	515	44	290	139·8	+ 18·0	− 22·4
19·446	75	456	39	239	139·7	+ 18·2	− 9·4
20·090	83	410	43	216	139·1	+ 18·7	− 1·4
21·621	63	381	34	209	139·6	+ 18·5	+ 19·3
22·473	64	356	38	214	138·9	+ 18·6	+ 30·0
23·310	51	263	36	182	139·6	+ 18·1	+ 41·7
24·632	34	153	33	151	139·1	+ 18·0	+ 58·6
25·200	30	144	42	199	139·4	+ 17·5	+ 66·6
26·468	0	42	0	201	140·7	+ 17·5	+ 84·6
Means ...	...	...	41	277	138·95	+ 18·20	...

AREAS and HELIOGRAPHIC POSITIONS of GROUPS of SUN SPOTS—*continued*.

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2238.							
1891. d					°	°	°
June 15·274	0	28	0	30	264·3	+ 20·6	+ 60·5
16·534	45	288	93	645	264·4	+ 20·8	+ 76·7
Means ...	...	...	47	337	264·35	+ 20·70	...
Group 2239.							
June 16·534	15	77	8	43	184·1	+ 27·6	— 3·6
17·430	0	87	0	49	183·4	+ 27·6	+ 7·7
18·454	0	37	0	22	181·4	+ 28·2	+ 19·2
19·446	5	83	4	56	184·4	+ 25·7	+ 35·3
20·090	19	89	14	68	184·6	+ 25·3	+ 44·1
21·621	0	26	0	31	183·0	+ 26·6	+ 62·7
Means ...	...	...	4	45	183·48	+ 26·83	...
Group 2240.							
June 17·430	0	71	0	49	214·9	+ 22·2	+ 39·2
18·454	2	119	2	101	213·8	+ 22·5	+ 51·6
19·446	4	25	5	30	213·5	+ 21·6	+ 64·4
20·090	0	9	0	16	213·4	+ 22·2	+ 72·9
Means ...	...	...	2	49	213·90	+ 22·13	...
Group 2241.							
June 20·090	25	54	15	33	170·6	— 13·1	+ 30·1
21·621	3	35	2	29	171·3	— 12·9	+ 51·0
22·473	0	14	0	17	173·4	— 12·3	+ 64·5
Means ...	...	...	6	26	171·77	— 12·77	...

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2242.							
1891. d					°	°	°
June 20·090	0	45	0	138	59·8	+ 14·4	— 80·7
21·621	19	239	18	234	61·5	+ 14·1	— 58·8
22·473	39	281	30	212	61·5	+ 13·9	— 47·4
23·310	74	367	46	230	62·1	+ 14·0	— 35·8
24·632	57	407	35	250	62·3	+ 14·0	— 18·2
25·200	44	347	25	195	62·2	+ 13·9	— 10·6
26·468	60	384	31	198	63·0	+ 14·3	+ 6·9
27·430	47	345	26	187	63·2	+ 14·5	+ 19·8
28·577	44	333	28	208	63·1	+ 14·4	+ 34·9
29·505	38	216	28	162	62·8	+ 14·6	+ 46·9
30·464	21	153	21	150	62·5	+ 14·6	+ 59·2
July 1·187	17	96	23	132	62·3	+ 14·2	+ 68·8
Means ...	...	...	26	191	62·21	+ 14·24	...
Group 2243.							
June 21·621	0	58	0	75	53·1	+ 14·8	— 67·2
22·473	20	135	18	123	53·0	+ 15·3	— 55·9
23·310	37	206	26	150	52·7	+ 15·9	— 45·2
24·632	19	127	12	74	52·8	+ 15·3	— 27·7
25·200	4	220	2	129	53·6	+ 15·3	— 19·2
26·468	19	116	9	59	55·4	+ 15·7	— 0·7
27·430	21	94	11	49	54·5	+ 15·6	+ 11·1
28·577	8	79	5	45	54·6	+ 15·4	+ 26·4
29·505	5	21	3	13	53·8	+ 15·1	+ 37·9
Means ...	...	...	10	80	53·50	+ 15·38	...
Group 2244.							
June 21·621	5	65	11	138	44·0	+ 16·6	— 76·3
22·473	29	154	36	192	43·1	+ 17·0	— 65·8
23·310	29	160	26	144	42·7	+ 16·9	— 55·2
24·632	37	239	24	154	42·7	+ 16·3	— 37·8
25·200	53	246	34	159	42·6	+ 16·9	— 30·2
26·468	51	264	27	138	42·8	+ 16·0	— 13·3
27·430	53	274	27	141	43·0	+ 16·0	— 0·4
28·577	48	217	26	115	43·3	+ 15·7	+ 15·1
29·505	46	263	27	151	43·5	+ 15·9	+ 27·6
30·464	39	241	26	163	44·3	+ 15·5	+ 41·0
July 1·187	32	173	25	137	43·6	+ 15·3	+ 50·1
2·480	12	153	15	197	43·8	+ 16·0	+ 67·2
3·423	9	61	25	168	44·0	+ 15·5	+ 80·0
Means ...	...	...	25	154	43·34	+ 16·12	...

AREAS and HELIOGRAPHIC POSITIONS of GROUPS of SUN SPOTS—*continued.*

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2245.							
1891. d					°	°	°
June 22·473	4	30	2	18	143·2	− 2·0	+ 34·3
23·310	0	23	0	16	143·4	− 1·9	+ 45·5
24·632	3	31	3	35	144·3	− 1·2	+ 63·8
25·200	0	17	0	31	145·4	− 1·2	+ 72·6
Means ...	...	...	1	25	144·08	− 1·58	...
Group 2246.							
June 22·473	4	21	8	41	33·7	+ 15·2	− 75·2
23·310	0	19	0	23	32·9	+ 15·9	− 65·0
24·632	3	11	2	8	34·7	+ 14·9	− 45·8
25·200	0	17	0	12	34·6	+ 15·2	− 38·2
Means ...	...	...	3	21	33·98	+ 15·30	...
Group 2247.							
June 24·632	4	13	3	10	34·8	− 20·9	− 45·7
25·200	11	49	8	37	33·8	− 20·6	− 39·0
26·468	133	616	79	362	34·4	− 21·4	− 21·7
27·430	173	1206	96	669	34·3	− 21·1	− 9·1
28·577	135	1125	75	619	34·5	− 20·7	+ 6·3
29·505	168	865	98	502	35·0	− 20·6	+ 19·1
30·464	132	777	84	501	35·3	− 20·5	+ 32·0
July 1·187	138	697	102	515	34·8	− 20·9	+ 41·3
2·480	71	332	78	364	35·9	− 21·1	+ 59·3
3·423	40	169	77	327	36·4	− 21·2	+ 72·4
Means ...	...	...	70	391	34·92	− 20·90	...
Group 2248.							
June 25·200	0	25	0	17	37·7	− 12·6	− 35·1
26·468	11	60	6	33	39·4	− 12·7	− 16·7
27·430	6	38	3	19	37·8	− 13·2	− 5·6
28·577	8	181	4	95	39·8	− 13·3	+ 11·6
29·505	21	174	12	101	41·1	− 13·4	+ 25·2
30·464	8	22	6	15	43·4	− 11·9	+ 40·1
July 1·187	4	25	4	20	42·3	− 12·8	+ 48·8
Means ...	...	...	5	43	40·21	− 12·84	...

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2249.							
1891. d					°	°	°
June 25·200	0	13	0	39	355·7	− 30·3	− 77·1
26·468	6	30	8	38	354·5	− 31·1	− 61·6
27·430	0	12	0	12	353·0	− 31·5	− 50·4
Means ...	...	...	3	30	354·40	− 30·97	...
Group 2250.							
June 27·430	0	8	0	11	336·7	+ 22·5	− 66·7
28·577	0	10	0	8	337·0	+ 21·6	− 51·2
Means ...	...	...	0	10	336·85	+ 22·05	...
Group 2251.							
June 28·577	0	3	0	8	310·7	+ 29·2	− 77·5
29·505	2	18	3	24	310·0	+ 29·6	− 65·9
30·464	0	10	0	9	311·9	+ 28·5	− 51·4
July 1·187	0	43	0	33	308·3	+ 28·5	− 45·2
2·480	6	95	4	60	308·2	+ 28·2	− 28·4
3·423	18	108	11	61	309·4	+ 27·2	− 14·6
4·581	0	73	0	39	309·2	+ 27·0	+ 0·3
5·225	8	17	4	9	312·0	+ 25·5	+ 11·8
Means ...	...	...	3	30	309·96	+ 27·96	...
Group 2252.							
July 1·187	16	114	33	233	277·3	+ 19·5	− 76·2
2·480	44	349	47	385	273·6	+ 18·6	− 63·0
3·423	75	493	61	402	273·4	+ 18·6	− 50·6
4·581	78	557	48	348	274·0	+ 18·5	− 34·9
5·225	98	511	56	296	274·2	+ 18·8	− 26·0
6·314	101	458	53	241	275·6	+ 18·9	− 10·1
7·450	69	331	36	172	276·5	+ 19·1	+ 5·7
8·189	64	464	35	248	276·6	+ 19·4	+ 15·6
9·165	82	373	49	224	277·7	+ 19·2	+ 29·7
10·251	105	494	75	363	279·6	+ 19·2	+ 45·9
11·499	39	308	43	325	279·5	+ 18·8	+ 62·3
12·194	18	208	25	338	280·4	+ 19·4	+ 72·5
Means ...	...	...	47	298	276·53	+ 19·00	...

AREAS and HELIOGRAPHIC POSITIONS of GROUPS of SUN SPOTS—*continued.*

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2253.							
1891. d					°	°	°
July 6·314	8	55	5	33	259·4	+ 24·1	− 26·3
Means ...	...	...	5	33	259·40	+ 24·10	...
Group 2254.							
July 6·314	2	169	3	259	214·5	+ 22·5	− 71·2
7·450	66	577	60	529	215·1	+ 21·9	− 55·7
8·189	90	789	64	578	216·0	+ 21·9	− 45·0
9·165	164	846	100	521	217·0	+ 21·8	− 31·0
10·251	146	804	80	443	217·5	+ 21·8	− 16·2
11·499	82	707	42	369	218·9	+ 20·8	+ 1·7
12·194	118	710	63	380	219·8	+ 20·6	+ 11·9
13·481	90	481	55	292	222·2	+ 18·9	+ 31·3
14·450	67	394	48	280	221·9	+ 18·9	+ 43·8
15·503	52	269	51	260	222·7	+ 18·8	+ 58·5
16·451	25	231	37	340	222·2	+ 18·5	+ 70·6
17·434	15	99	53	360	221·7	+ 18·6	+ 83·0
Means ...	...	...	55	384	219·13	+ 20·42	...
Group 2255.							
July 8·189	0	11	0	43	177·6	+ 15·5	− 83·4
9·165	5	149	8	267	173·7	+ 15·4	− 74·3
10·251	26	205	24	191	176·5	+ 16·5	− 57·2
11·499	36	328	23	216	178·4	+ 15·7	− 38·8
12·194	64	401	37	234	179·0	+ 16·0	− 28·9
13·481	119	821	63	430	179·1	+ 16·2	− 11·8
14·450	146	874	75	449	179·2	+ 15·7	+ 1·1
15·503	167	734	88	391	180·5	+ 15·8	+ 16·3
16·451	88	526	52	311	181·1	+ 15·3	+ 29·5
17·434	90	446	63	311	182·2	+ 15·4	+ 43·5
18·177	79	377	68	321	182·6	+ 15·0	+ 53·9
19·536	28	227	43	344	182·4	+ 16·2	+ 71·6
20·428	25	134	96	512	182·6	+ 14·8	+ 83·6
Means ...	...	...	49	309	179·61	+ 15·65	...

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2256.							
1891. d					°	°	°
July 9·165	0	7	0	11	175·1	+ 24·8	− 72·9
10·251	8	64	9	71	171·6	+ 24·6	− 62·1
11·499	90	548	67	408	171·8	+ 24·8	− 45·4
12·194	134	803	88	526	171·4	+ 24·1	− 36·5
13·481	137	832	78	474	170·6	+ 24·3	− 20·3
14·450	89	628	47	337	171·4	+ 24·4	− 6·7
15·503	116	587	61	315	171·7	+ 24·5	+ 7·5
16·451	80	471	45	267	171·3	+ 24·4	+ 19·7
17·434	46	355	35	253	173·4	+ 25·0	+ 34·7
18·177	73	293	57	222	174·9	+ 25·1	+ 46·2
19·536	17	142	21	178	177·0	+ 25·1	+ 66·2
20·428	9	102	21	219	176·3	+ 25·1	+ 77·3
21·210	0	10	0	49	174·3	+ 25·9	+ 85·7
Means ...	...	...	48	256	173·14	+ 24·78	...
Group 2257.							
July 11·499	0	6	0	4	185·0	− 15·0	− 32·2
12·194	0	0	0	0	...	...	...
13·481	0	60	0	32	186·0	− 16·3	− 4·9
14·450	0	46	0	25	186·1	− 15·6	+ 8·0
Means ...	...	...	0	15	185·70	− 15·63	...
Group 2258.							
July 12·194	28	223	66	527	129·5	+ 20·4	− 78·4
13·481	85	443	91	480	128·8	+ 20·5	− 62·1
14·450	132	601	102	469	129·2	+ 20·2	− 48·9
15·503	155	780	98	491	129·7	+ 20·2	− 34·5
16·451	160	825	89	462	129·6	+ 20·0	− 22·0
17·434	154	896	80	469	130·0	+ 20·1	− 8·7
18·177	179	897	93	468	130·3	+ 20·4	+ 1·6
19·536	150	990	83	544	130·1	+ 20·3	+ 19·3
20·428	167	1014	101	617	130·7	+ 19·7	+ 31·7
21·210	162	891	113	620	130·9	+ 19·5	+ 42·3
22·414	148	766	143	731	130·8	+ 19·3	+ 58·1
23·410	61	444	93	708	132·2	+ 19·3	+ 72·6
24·430	21	135	74	482	129·5	+ 20·1	+ 83·4
Means ...	...	...	94	544	130·10	+ 20·00	...

AREAS and HELIOGRAPHIC POSITIONS of GROUPS of SUN SPOTS—*continued.*

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2259.							
1891. d					°	°	°
July 13·481	13	205	28	394	115·3	+ 21·7	− 75·6
14·450	47	372	52	416	115·2	+ 21·7	− 62·9
15·503	71	469	56	375	114·8	+ 21·9	− 49·4
16·451	69	535	46	350	114·4	+ 21·9	− 37·2
17·434	73	407	43	237	113·9	+ 22·0	− 24·8
18·177	44	310	24	171	112·0	+ 22·2	− 16·7
19·536	46	188	24	98	110·7	+ 22·0	− 0·1
20·428	40	234	22	126	112·0	+ 21·3	+ 13·0
21·210	93	379	52	214	112·2	+ 20·4	+ 23·6
22·414	66	397	44	262	111·9	+ 20·8	+ 39·2
23·410	31	212	26	180	112·5	+ 20·8	+ 52·9
24·430	22	124	28	152	112·3	+ 20·6	+ 66·2
25·400	0	26	0	82	115·4	+ 19·9	+ 82·2
Means ...	...	...	34	235	113·28	+ 21·32	...
Group 2260.							
July 14·450	15	44	9	26	185·0	− 25·9	+ 6·9
15·503	6	36	4	23	183·9	− 25·6	+ 19·7
Means ...	...	...	7	25	184·45	− 25·75	...
Group 2261.							
July 17·434	0	25	0	20	188·0	+ 27·1	+ 49·3
18·177	0	4	0	4	189·9	+ 27·1	+ 61·2
Means ...	...	...	0	12	188·95	+ 27·10	...
Group 2262.							
July 19·536	0	9	0	6	140·9	+ 22·3	+ 30·1
Means ...	...	...	0	6	140·90	+ 22·30	...

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2263.							
1891. d					°	°	°
July 19·536	109	388	56	200	120·0	+ 14·6	+ 9·2
20·428	113	644	61	350	120·2	+ 14·5	+ 21·2
21·210	68	398	41	240	120·9	+ 14·8	+ 32·3
22·414	45	308	35	239	122·3	+ 14·9	+ 49·6
23·410	15	114	18	134	124·9	+ 14·7	+ 65·3
Means ...	...	...	42	233	121·66	+ 14·70	...
Group 2264.							
July 19·536	0	8	0	9	51·9	− 13·8	− 58·9
20·428	0	52	0	40	52·7	− 12·8	− 46·3
Means ...	...	...	0	25	52·30	− 13·30	...
Group 2265.							
July 19·536	8	48	9	57	45·4	+ 13·5	− 65·4
20·428	28	126	24	106	45·5	+ 14·8	− 53·5
21·210	11	36	8	24	45·5	+ 15·3	− 43·1
22·414	12	138	7	80	44·8	+ 16·0	− 27·9
23·410	0	21	0	11	45·7	+ 14·6	− 13·9
24·430	6	38	3	20	44·4	+ 15·8	− 1·7
25·400	0	13	0	7	46·9	+ 14·9	+ 13·7
26·552	24	114	14	67	46·2	+ 18·4	+ 28·2
27·437	27	143	17	95	45·6	+ 18·7	+ 39·3
28·390	37	224	30	178	44·0	+ 18·8	+ 50·4
29·291	17	91	18	98	44·4	+ 18·9	+ 62·7
Means ...	...	...	12	68	45·31	+ 16·34	...
Group 2266.							
July 20·428	6	61	11	103	29·9	− 22·5	− 69·1
21·210	14	57	17	64	30·1	− 22·2	− 58·5
22·414	26	124	20	96	30·0	− 22·3	− 42·7
23·410	26	98	17	64	29·5	− 22·7	− 30·1
24·430	18	61	11	36	29·7	− 22·6	− 16·4
25·400	8	22	4	12	29·2	− 22·9	− 4·0
Means ...	...	...	13	63	29·73	− 22·53	...

AREAS and HELIOGRAPHIC POSITIONS of GROUPS of SUN SPOTS—*continued.*

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2267.							
1891. d					°	°	°
July 21·210	0	14	0	9	106·4	− 22·6	+ 17·8
22·414	10	40	7	27	104·8	− 23·1	+ 32·1
23·410	20	70	17	57	104·8	− 23·2	+ 45·2
24·430	30	134	36	159	106·5	− 21·6	+ 60·4
25·400	11	61	27	151	108·5	− 21·6	+ 75·3
Means ...	...	...	17	81	106·20	− 22·42	...
Group 2268.							
July 24·430	5	18	3	12	84·6	+ 21·8	+ 38·5
25·400	8	27	7	22	84·8	+ 22·1	+ 51·6
Means ...	...	...	5	17	84·70	+ 21·95	...
Group 2269.							
July 27·437	14	59	27	115	293·4	− 15·6	− 72·9
28·390	11	64	12	69	294·4	− 15·4	− 59·2
29·291	9	61	7	49	293·8	− 15·2	− 47·9
30·432	15	51	9	33	294·4	− 15·3	− 32·3
31·427	0	24	0	14	294·5	− 15·4	− 19·1
Aug. 1·412	0	17	0	9	294·7	− 14·1	− 5·9
Means ...	...	...	9	48	294·20	− 15·17	...
Group 2270.							
July 27·437	0	33	0	90	285·8	+ 15·7	− 80·5
28·390	22	163	27	198	287·4	+ 15·9	− 66·2
29·291	23	196	19	169	286·9	+ 16·0	− 54·8
30·432	36	238	23	154	287·5	+ 15·8	− 39·2
31·427	15	224	8	124	289·6	+ 15·3	− 24·0
Aug. 1·412	4	116	2	60	290·4	+ 15·5	− 10·2
2·556	0	8	0	4	289·2	+ 15·3	+ 3·8
Means ...	...	...	11	114	288·11	+ 15·64	...

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2271.							
1891. d					°	°	°
Aug. 1·412	0	7	0	5	273·3	− 17·4	− 27·3
2·556	8	85	4	47	274·1	− 17·6	− 11·3
3·472	19	180	10	100	275·7	− 18·1	+ 2·4
4·436	45	303	26	174	276·2	− 18·5	+ 15·7
5·474	85	601	53	380	275·3	− 18·3	+ 28·5
6·474	57	699	43	536	276·2	− 18·8	+ 42·7
7·606	84	664	88	694	275·4	− 18·8	+ 56·8
8·461	56	412	90	657	275·6	− 18·5	+ 68·3
9·428	0	128	0	867	277·0	− 19·6	+ 82·5
Means ...	...	...	35	384	275·42	− 18·40	...
Group 2272.							
Aug. 1·412	4	56	8	118	223·2	+ 17·9	− 77·4
2·556	10	84	10	82	222·9	+ 18·0	− 62·5
3·472	9	115	7	90	222·9	+ 17·8	− 50·4
4·436	19	109	12	69	223·2	+ 17·7	− 37·3
5·474	11	86	6	49	222·5	+ 18·1	− 24·3
6·474	0	53	0	27	222·3	+ 18·3	− 11·2
7·606	0	35	0	18	223·2	+ 17·7	+ 4·6
8·461	0	14	0	7	222·4	+ 18·8	+ 15·1
9·428	0	0	0	0	...	...	...
10·406	0	11	0	7	221·6	+ 19·6	+ 40·0
Means ...	...	...	4	47	222·69	+ 18·21	...
Group 2273.							
Aug. 3·472	0	14	0	8	286·0	+ 22·8	+ 12·7
4·436	10	36	6	21	286·5	+ 22·7	+ 26·0
5·474	1	14	1	9	287·9	+ 22·4	+ 41·1
Means ...	...	...	2	13	286·80	+ 22·63	...
Group 2274.							
Aug. 3·472	0	7	0	4	254·3	− 16·2	− 19·0
Means ...	...	...	0	4	254·30	− 16·20	...

AREAS and HELIOGRAPHIC POSITIONS of GROUPS of SUN SPOTS—*continued.*

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2275.							
1891. d					°	°	°
Aug. 3·472	2	28	9	116	192·7	− 18·7	− 80·6
4·436	22	175	35	295	191·0	− 18·6	− 69·5
5·474	27	245	27	246	191·4	− 18·1	− 55·4
6·474	25	345	19	262	190·9	− 18·2	− 42·6
7·606	57	421	36	264	190·7	− 17·8	− 27·9
8·461	80	423	46	243	191·2	− 17·7	− 16·1
9·428	82	470	45	257	191·4	− 17·4	− 3·1
10·406	89	444	50	248	191·5	− 17·3	+ 9·9
11·479	54	364	33	222	191·6	− 17·5	+ 24·2
12·431	51	307	36	214	191·3	− 17·7	+ 36·5
13·404	21	227	18	198	191·7	− 17·8	+ 49·7
14·436	23	135	29	174	191·5	− 17·6	+ 63·2
15·546	0	36	0	114	191·7	− 17·9	+ 78·0
Means ...	...	...	29	219	191·43	− 17·87	...
Group 2276.							
Aug. 4·436	0	17	0	8	271·8	+ 16·4	+ 11·3
Means ...	...	...	0	8	271·80	+ 16·40	...
Group 2277.							
Aug. 4·436	18	106	37	221	183·1	+ 15·7	− 77·4
5·474	32	198	36	221	182·7	+ 16·1	− 64·1
6·474	23	250	18	198	182·7	+ 16·5	− 50·8
7·606	45	303	28	190	182·5	+ 16·9	− 36·1
8·461	66	344	37	195	182·4	+ 17·3	− 24·9
9·428	60	356	31	185	182·2	+ 17·7	− 12·3
10·406	53	360	27	185	181·9	+ 17·6	+ 0·3
11·479	55	346	29	183	181·7	+ 17·6	+ 14·3
12·431	57	283	33	162	181·5	+ 17·7	+ 26·7
13·404	36	214	24	140	181·2	+ 17·4	+ 39·2
14·436	34	207	29	172	181·3	+ 17·3	+ 53·0
15·546	11	84	15	107	181·5	+ 16·7	+ 67·8
16·287	0	52	0	104	181·0	+ 16·5	+ 77·1
Means ...	...	...	27	166	181·98	+ 17·00	...

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2278.							
1891. d					°	°	°
Aug. 4·436	25	144	67	433	178·2	+ 23·6	− 82·3
5·474	33	261	43	346	178·4	+ 23·6	− 68·4
6·474	34	314	30	280	178·2	+ 23·7	− 55·3
7·606	61	408	41	280	178·0	+ 24·0	− 40·6
8·461	84	443	51	269	177·4	+ 24·4	− 29·9
9·428	83	457	46	252	177·2	+ 24·7	− 17·3
10·406	92	524	48	277	177·0	+ 24·5	− 4·6
11·479	83	493	44	263	176·8	+ 24·8	+ 9·4
12·431	78	459	44	261	176·9	+ 24·7	+ 22·1
13·404	48	428	30	272	176·4	+ 24·5	+ 34·4
14·436	50	296	39	227	176·0	+ 24·6	+ 47·7
15·546	42	245	44	260	175·9	+ 24·4	+ 62·2
16·287	15	146	22	216	175·3	+ 24·2	+ 71·4
Means ...	...	...	42	280	177·05	+ 24·28	...
Group 2279.							
Aug. 8·461	0	4	0	3	255·9	+ 4·6	+ 48·6
Means ...	...	...	0	3	255·90	+ 4·60	...
Group 2280.							
Aug. 8·461	0	24	0	13	201·8	+ 16·1	− 5·5
Means ...	...	...	0	13	201·80	+ 16·10	...
Group 2281.							
Aug. 8·461	0	5	0	5	147·6	+ 21·5	− 59·7
Means ...	...	...	0	5	147·60	+ 21·50	...
Group 2282.							
Aug. 10·406	0	11	0	7	216·0	+ 10·4	+ 34·4
Means ...	...	...	0	7	216·00	+ 10·40	...

AREAS and HELIOGRAPHIC POSITIONS of GROUPS of SUN SPOTS—*continued.*

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2283.							
1891. d					°	°	°
Aug. 10·406	6	41	5	33	131·1	+ 19·8	− 50·5
11·479	7	54	5	35	131·6	+ 20·0	− 35·8
12·431	0	41	0	23	131·6	+ 20·1	− 23·2
13·404	0	9	0	5	136·0	+ 18·8	− 6·0
14·436	0	16	0	8	133·9	+ 19·4	+ 5·6
15·546	5	53	3	28	131·9	+ 18·9	+ 18·2
Means ..	...	...	2	22	132·68	+ 19·50	...
Group 2284.							
Aug. 15·546	20	82	13	55	153·5	+ 25·5	+ 39·8
16·287	30	168	24	134	153·5	+ 25·3	+ 49·6
17·463	32	344	38	425	154·9	+ 25·7	+ 66·6
18·130	24	294	33	523	154·7	+ 25·6	+ 75·2
19·519	0	26	0	138	147·7	+ 27·0	+ 86·5
Means ...	...	...	22	255	152·86	+ 25·82	...
Group 2285.							
Aug. 16·287	6	28	6	27	44·0	+ 14·3	− 59·9
17·463	0	14	0	9	45·3	+ 13·8	− 43·0
18·130	3	18	2	11	45·6	+ 14·1	− 33·9
19·519	0	26	0	14	45·3	+ 14·6	− 15·9
20·264	0	5	0	2	46·9	+ 14·7	− 4·4
Means ...	...	...	2	13	45·42	+ 14·30	...
Group 2286.							
Aug. 16·287	0	7	0	9	36·1	+ 15·8	− 67·8
17·463	0	0	0	0	...	...	...
18·130	0	7	0	5	34·8	+ 15·0	− 44·7
19·519	0	0	0	0	...	...	...
20·264	0	0	0	0	...	...	...
21·477	0	32	0	16	35·7	+ 12·3	+ 0·4
22·447	1	62	1	32	34·4	+ 13·6	+ 12·0
23·173	0	38	0	21	35·7	+ 13·4	+ 22·9
24·434	0	0	0	0	...	...	...
25·473	11	58	9	48	36·3	+ 14·0	+ 53·9
26·415	23	149	31	199	39·0	+ 14·1	+ 69·0
27·476	0	13	0	34	36·4	+ 14·5	+ 80·4
Means ...	...	...	3	30	36·05	+ 14·09	...

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2287.							
1891. d					°	°	°
Aug. 22·447	0	7	0	5	69·9	+ 18·9	+ 47·5
Means ...	...	...	0	5	69·90	+ 18·90	...
Group 2288.							
Aug. 22·447	0	7	0	4	7·6	+ 18·1	− 14·8
Means ...	...	...	0	4	7·60	+ 18·10	...
Group 2289.							
Aug. 22·447	0	16	0	24	309·9	+ 14·8	− 72·5
23·173	0	90	0	99	308·9	+ 15·5	− 63·9
24·434	14	149	11	109	309·1	+ 15·1	− 47·1
25·473	9	76	5	47	307·3	+ 15·6	− 35·1
26·415	8	70	4	38	307·4	+ 15·4	− 22·6
27·476	0	28	0	15	304·2	+ 16·9	− 11·8
28·494	0	4	0	2	304·9	+ 16·5	+ 2·3
29·399	0	25	0	14	305·8	+ 15·7	+ 15·2
30·555	2	34	1	20	307·4	+ 15·6	+ 32·0
Means ...	...	...	2	41	307·21	+ 15·68	...
Group 2290.							
Aug. 24·434	2	25	3	30	56·3	− 22·6	+ 60·1
25·473	0	19	0	38	53·5	− 22·3	+ 71·1
Means ...	...	...	2	34	54·90	− 22·45	...
Group 2291.							
Aug. 25·473	0	11	0	14	277·2	− 16·3	− 65·2
26·415	0	12	0	11	278·6	− 16·3	− 51·4
27·476	0	4	0	3	278·9	− 16·5	− 37·1
28·494	0	8	0	5	276·1	− 13·5	− 26·5
Means ...	...	...	0	8	277·70	− 15·65	...

AREAS and HELIOGRAPHIC POSITIONS of GROUPS of SUN SPOTS—*continued.*

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2292.							
1891. d					°	°	°
Aug. 26·415	0	10	0	6	308·3	− 19·2	− 21·7
27·476	0	0	0	0	...	...	...
28·494	0	16	0	9	303·3	− 20·3	+ 0·7
29·399	0	10	0	6	306·3	− 19·8	+ 15·7
Means ...	...	...	0	5	305·97	− 19·77	...
Group 2293.							
Aug. 29·399	18	169	23	220	222·1	+ 20·8	− 68·5
30·555	32	523	29	455	220·4	+ 21·5	− 55·0
31·457	179	1326	123	913	221·0	+ 21·2	− 42·5
Sept. 1·412	261	1891	154	1111	221·7	+ 21·2	− 29·2
2·421	300	1982	162	1070	221·7	+ 21·6	− 15·8
3·318	533	2527	278	1317	221·3	+ 22·1	− 4·3
4·408	336	2572	179	1375	221·7	+ 22·0	+ 10·5
5·468	306	2846	176	1624	221·6	+ 22·0	+ 24·4
6·391	274	2486	177	1583	222·1	+ 22·3	+ 37·1
7·524	214	1870	178	1550	222·4	+ 22·2	+ 52·3
8·397	130	1640	148	1798	221·8	+ 22·1	+ 63·3
9·235	43	891	69	1588	222·9	+ 22·3	+ 75·4
10·416	19	237	81	1154	218·6	+ 22·0	+ 86·7
Means ...	...	...	137	1212	221·48	+ 21·79	...
Group 2294.							
Aug. 31·457	11	84	41	320	178·9	+ 24·3	− 84·6
Sept. 1·412	41	323	71	568	175·2	+ 25·0	− 75·7
2·421	86	584	88	621	175·5	+ 25·2	− 62·0
3·318	171	739	133	592	175·4	+ 25·9	− 50·2
4·408	131	782	83	503	175·5	+ 25·4	− 35·7
5·468	114	665	65	376	176·6	+ 25·7	− 20·6
6·391	104	617	55	329	176·8	+ 25·8	− 8·2
7·524	124	607	67	324	177·8	+ 26·0	+ 7·7
8·397	104	500	59	281	178·2	+ 25·9	+ 19·7
9·235	84	432	50	257	178·6	+ 26·0	+ 31·1
10·416	68	416	50	303	178·5	+ 25·6	+ 46·6
11·394	47	312	47	306	178·2	+ 25·4	+ 59·2
12·408	30	157	44	229	176·8	+ 25·3	+ 71·2
13·397	7	37	21	116	175·7	+ 25·2	+ 83·2
Means ...	...	...	62	366	176·98	+ 25·48	...
Group 2295.							
1891. d					°	°	°
Sept. 2·421	11	70	8	46	196·7	+ 15·5	− 40·8
3·318	0	43	0	25	195·4	+ 15·8	− 30·2
4·408	0	21	0	11	197·9	+ 15·2	− 13·3
5·468	59	307	29	157	200·3	+ 15·6	+ 3·1
6·391	23	464	12	243	200·9	+ 15·3	+ 15·9
7·524	116	658	69	388	201·1	+ 15·2	+ 31·0
8·397	81	474	55	322	200·7	+ 15·4	+ 42·2
9·235	48	347	38	283	200·4	+ 15·7	+ 52·9
10·416	17	199	22	251	199·4	+ 15·1	+ 67·5
11·394	0	27	0	54	196·1	+ 15·6	+ 77·1
Means ...	...	...	23	178	198·89	+ 15·44	...
Group 2296.							
Sept. 2·421	0	7	0	5	185·2	+ 19·0	− 52·3
Means ...	...	...	0	5	185·20	+ 19·00	...
Group 2297.							
Sept. 2·421	6	60	22	219	152·7	+ 28·2	− 84·8
3·318	14	97	25	170	150·4	+ 28·5	− 75·2
4·408	20	144	20	149	150·6	+ 28·4	− 60·6
5·468	31	184	20	142	149·9	+ 28·5	− 47·3
6·391	27	206	18	134	149·7	+ 28·5	− 35·3
7·524	33	250	19	144	148·8	+ 28·7	− 21·3
8·397	52	247	28	136	148·1	+ 28·8	− 10·4
9·235	23	260	12	142	147·8	+ 28·8	+ 0·3
10·416	56	247	31	139	147·8	+ 29·0	+ 15·9
11·394	43	226	26	137	147·2	+ 29·0	+ 28·2
12·408	32	160	22	112	146·4	+ 28·5	+ 40·8
13·397	28	157	24	134	145·9	+ 28·6	+ 53·4
14·337	12	95	15	115	146·3	+ 28·6	+ 66·1
15·185	8	71	15	137	145·7	+ 27·9	+ 76·8
Means ...	...	...	21	144	148·38	+ 28·57	...

AREAS and HELIOGRAPHIC POSITIONS of GROUPS of SUN SPOTS—*continued.*

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2298.							
1891. d					°	°	°
Sept. 3·318	0	26	0	68	145·1	+ 12·2	− 80·5
4·408	13	153	15	189	144·5	+ 11·8	− 66·7
5·468	23	187	18	149	145·3	+ 12·0	− 51·9
6·391	26	156	17	99	146·9	+ 12·0	− 38·1
7·524	36	194	19	106	146·9	+ 12·3	− 23·2
8·397	26	176	13	90	147·1	+ 12·5	− 11·4
9·235	25	138	13	70	148·3	+ 12·8	+ 0·8
10·416	22	143	12	75	148·2	+ 13·4	+ 16·3
11·394	27	106	16	62	149·1	+ 13·3	+ 30·1
12·408	13	70	9	48	148·9	+ 13·3	+ 43·3
13·397	10	50	9	45	148·7	+ 13·4	+ 56·2
14·337	13	41	18	55	149·6	+ 13·0	+ 69·4
Means ...	...	...	13	88	147·38	+ 12·67	...
Group 2299.							
Sept. 10·416	18	112	45	290	51·6	+ 14·4	− 80·3
11·394	45	281	56	345	52·2	+ 14·4	− 66·8
12·408	74	359	62	302	51·6	+ 14·5	− 54·0
13·397	75	470	49	308	51·5	+ 14·6	− 41·0
14·337	152	467	87	267	51·5	+ 15·1	− 28·7
15·185	106	530	56	278	51·4	+ 15·2	− 17·5
16·184	113	546	57	276	51·2	+ 14·9	− 4·5
17·391	119	691	61	356	51·4	+ 14·8	+ 11·6
18·248	106	663	58	363	51·1	+ 14·5	+ 22·6
19·284	131	512	82	321	52·1	+ 14·3	+ 37·3
20·230	87	414	67	318	51·9	+ 14·4	+ 49·6
21·446	35	259	40	300	51·6	+ 14·2	+ 65·3
22·436	22	106	50	243	52·1	+ 14·7	+ 78·9
Means ...	...	...	59	305	51·63	+ 14·62	...
Group 2300.							
Sept. 13·397	2	28	1	14	101·0	+ 15·3	+ 8·5
Means ...	...	...	1	14	101·00	+ 15·30	...

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2301.							
1891. d					°	°	°
Sept. 13·397	21	130	11	70	75·6	+ 19·2	− 16·9
14·337	29	143	15	75	75·5	+ 22·5	− 4·7
15·185	57	227	29	118	75·8	+ 22·7	+ 6·9
16·184	92	665	50	362	74·0	+ 23·3	+ 18·3
17·391	198	1065	122	656	72·4	+ 23·9	+ 32·6
18·248	147	905	104	642	71·5	+ 24·3	+ 43·0
19·284	160	789	147	729	71·8	+ 23·9	+ 57·0
20·230	63	393	85	537	72·3	+ 24·0	+ 70·0
21·446	10	90	27	233	67·3	+ 25·7	+ 81·0
Means ...	...	...	66	380	72·91	+ 23·28	...
Group 2302.							
Sept. 16·184	12	63	12	59	5·3	− 23·3	− 50·4
17·391	12	144	8	101	6·3	− 22·9	− 33·5
18·248	17	170	10	108	5·5	− 23·4	− 23·0
19·284	24	208	14	121	6·6	− 22·9	− 8·2
20·230	126	653	73	377	6·7	− 22·8	+ 4·4
21·446	144	822	90	506	6·2	− 22·9	+ 19·9
22·436	133	971	94	676	5·9	− 23·4	+ 32·7
23·436	105	788	90	675	5·6	− 23·7	+ 45·6
24·378	41	546	50	640	6·1	− 23·2	+ 58·5
25·200	46	281	93	549	7·2	− 23·7	+ 70·5
26·153	0	21	0	66	1·2	− 22·8	+ 77·0
Means ...	...	...	49	353	5·69	− 23·18	...
Group 2303.							
Sept. 20·230	0	5	0	15	286·3	− 23·9	− 76·0
21·446	0	13	0	16	286·7	− 24·3	− 59·6
Means ...	...	...	0	16	286·50	− 24·10	...
Group 2304.							
Sept. 22·436	0	5	0	4	17·5	− 33·2	+ 44·3
Means ...	...	...	0	4	17·50	− 33·20	...

AREAS and HELIOGRAPHIC POSITIONS of GROUPS of SUN SPOTS—*continued.*

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2305.							
1891. d					°	°	°
Sept.22·436	0	14	0	8	301·4	+ 16·8	− 31·8
23·436	0	15	0	8	300·3	+ 17·1	− 19·7
Means ...	...	...	0	8	300·85	+ 16·95	...
Group 2306.							
Sept.24·378	23	174	53	410	227·9	+ 23·0	− 79·7
25·200	60	438	83	635	225·7	+ 23·3	− 71·0
26·153	97	629	88	583	226·7	+ 23·2	− 57·5
27·480	110	750	72	494	228·0	+ 23·4	− 38·6
28·469	57	457	33	266	228·0	+ 23·2	− 25·6
29·451	45	318	25	171	228·2	+ 24·0	− 12·4
30·313	54	320	29	165	229·3	+ 23·2	+ 0·1
Oct. 1·182	51	274	27	146	227·0	+ 24·0	+ 9·2
2·342	51	364	30	210	227·8	+ 22·1	+ 25·3
3·396	15	157	10	102	226·7	+ 24·0	+ 38·1
4·470	0	55	0	43	224·6	+ 24·1	+ 50·2
5·264	0	5	0	6	228·9	+ 21·2	+ 65·0
Means ...	...	...	38	269	227·40	+ 23·23	...
Group 2307.							
Sept.25·200	0	16	0	9	264·3	+ 19·4	− 32·4
26·153	0	40	0	21	265·6	+ 18·4	− 18·6
Means ...	...	...	0	15	264·95	+ 18·90	...
Group 2307*.							
Sept.27·480	2	52	1	30	266·1	− 20·9	− 0·5
Means ...	...	...	1	30	266·10	− 20·90	...

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2308.							
1891. d					°	°	°
Sept.27·480	0	28	0	31	202·5	+ 15·8	− 64·1
28·469	0	28	0	21	206·9	+ 14·3	− 46·7
29·451	5	46	3	28	209·3	+ 13·7	− 31·3
30·313	0	20	0	10	211·6	+ 14·3	− 17·6
Oct. 1·182	0	0	0	0	...	...	...
2·342	7	51	4	27	209·0	+ 13·8	+ 6·5
3·396	0	0	0	0	...	...	...
4·470	12	198	8	121	207·9	+ 15·6	+ 33·5
5·264	50	205	36	150	210·6	+ 15·3	+ 46·7
6·215	22	97	21	94	210·6	+ 14·9	+ 59·3
7·405	0	8	0	13	209·6	+ 14·9	+ 74·0
Means ...	...	...	7	45	208·67	+ 14·73	...
Group 2309.							
Sept.28·469	0	41	0	28	213·4	+ 22·8	− 40·2
29·451	0	7	0	4	213·4	+ 19·9	− 27·2
Means ...	...	...	0	16	213·40	+ 21·35	...
Group 2310.							
Sept.28·469	0	62	0	273	174·4	− 26·3	− 79·2
29·451	23	88	36	138	175·1	− 26·1	− 65·5
30·313	25	129	26	136	175·0	− 25·7	− 54·2
Oct. 1·182	32	186	27	157	173·8	− 25·9	− 44·0
2·342	41	180	28	123	174·0	− 25·5	− 28·5
3·396	34	161	21	99	174·0	− 25·4	− 14·6
4·470	14	118	8	70	173·8	− 25·2	− 0·6
5·264	21	89	13	53	174·1	− 25·3	+ 10·2
6·215	23	105	15	67	173·8	− 25·4	+ 22·5
7·405	8	57	6	43	172·5	− 25·0	+ 36·9
8·441	6	64	5	62	173·4	− 24·2	+ 51·4
9·491	0	16	0	23	172·1	− 25·3	+ 64·0
10·146	0	18	0	42	173·1	− 25·2	+ 73·5
Means ...	...	...	14	99	173·78	− 25·42	...

AREAS and HELIOGRAPHIC POSITIONS of GROUPS of SUN SPOTS—*continued.*

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2311.							
1891. d					°	°	°
Sept. 28·469	4	68	11	177	172·8	+ 25·2	− 80·8
29·451	24	102	32	133	172·9	+ 26·2	− 67·7
30·313	26	135	24	122	173·2	+ 26·6	− 56·0
Oct. 1·182	31	150	23	112	171·6	+ 26·6	− 46·2
2·342	40	189	24	117	171·2	+ 26·8	− 31·3
3·396	30	225	17	126	170·9	+ 27·0	− 17·7
4·470	32	174	17	93	170·6	+ 27·0	− 3·8
5·264	37	178	20	96	170·2	+ 27·0	+ 6·3
6·215	39	162	22	91	169·6	+ 26·9	+ 18·3
7·405	24	133	15	84	169·0	+ 26·9	+ 33·4
8·441	15	107	11	80	168·8	+ 26·7	+ 46·8
9·491	14	105	14	107	167·9	+ 26·9	+ 59·8
10·146	9	48	12	64	168·1	+ 26·7	+ 68·5
Means ...	...	...	19	108	170·52	+ 26·65	...
Group 2312.							
Oct. 1·182	6	27	3	15	240·0	+ 19·2	+ 22·2
Means ...	...	...	3	15	240·00	+ 19·20	...
Group 2313.							
Oct. 1·182	0	45	0	77	143·4	+ 20·1	− 74·4
2·342	12	159	11	150	144·2	+ 19·0	− 58·3
3·396	39	296	29	210	143·7	+ 19·1	− 44·9
4·470	44	330	26	197	143·4	+ 19·2	− 31·0
5·265	86	356	47	195	143·4	+ 19·1	− 20·5
6·215	43	331	22	172	143·2	+ 19·2	− 8·1
7·405	59	397	30	205	143·7	+ 19·0	+ 8·1
8·441	87	646	49	360	144·4	+ 19·7	+ 22·4
9·491	39	373	24	238	144·7	+ 20·1	+ 36·6
10·146	35	265	24	189	144·3	+ 20·3	+ 44·7
11·168	23	203	21	198	145·5	+ 19·8	+ 59·4
12·402	0	14	0	24	143·3	+ 18·3	+ 73·5
Means ...	...	...	24	185	143·93	+ 19·41	...

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2314.							
1891. d					°	°	°
Oct. 2·342	0	7	0	5	237·9	+ 29·8	+ 35·4
Means ...	...	...	0	5	237·90	+ 29·80	...
Group 2315.							
Oct. 2·342	0	28	0	83	124·3	− 15·4	− 78·2
3·396	13	114	15	136	126·0	− 14·5	− 62·6
4·470	31	279	26	236	124·8	− 14·8	− 49·6
5·264	121	521	87	369	124·8	− 15·3	− 39·1
6·215	179	822	107	493	125·5	− 15·3	− 25·8
7·405	239	1323	129	719	127·0	− 14·7	− 8·6
8·441	238	1350	129	733	127·4	− 15·2	+ 5·4
9·491	234	1408	133	804	127·3	− 14·9	+ 19·2
10·146	210	1443	128	878	127·3	− 14·6	+ 27·7
11·168	176	1077	127	790	128·5	− 15·1	+ 42·4
12·402	56	678	61	725	128·7	− 14·7	+ 58·9
13·286	34	341	74	627	130·2	− 14·5	+ 72·1
14·386	0	41	0	114	121·2	− 14·9	+ 77·6
Means ...	...	...	78	516	126·38	− 14·92	...
Group 2316.							
Oct. 4·470	6	31	3	16	164·0	+ 15·8	− 10·4
5·264	0	17	0	9	163·4	+ 16·2	− 0·5
6·215	2	18	1	9	163·4	+ 16·2	+ 12·1
Means ...	...	...	1	11	163·60	+ 16·07	...
Group 2317.							
Oct. 6·215	0	23	0	13	131·3	+ 23·5	− 20·0
7·405	22	104	12	54	128·9	+ 24·2	− 6·7
8·441	30	184	16	97	128·6	+ 23·6	+ 6·6
9·491	7	147	4	82	128·0	+ 23·8	+ 19·9
10·146	13	105	7	62	127·9	+ 24·2	+ 28·3
11·168	0	19	0	13	129·0	+ 23·2	+ 42·9
12·402	0	0	0	0	...	...	...
13·286	4	18	6	27	130·4	+ 22·8	+ 72·3
14·386	0	18	0	49	124·7	+ 24·9	+ 81·1
Means ...	...	...	5	44	128·69	+ 23·78	...

AREAS and HELIOGRAPHIC POSITIONS of GROUPS of SUN SPOTS—*continued.*

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2318.							
1891. d					°	°	°
Oct. 7·405	6	37	22	139	52·2	+ 13·5	— 83·4
8·441	14	95	19	128	53·0	+ 13·6	— 69·0
9·491	26	153	23	133	52·9	+ 13·7	— 55·2
10·146	19	131	14	95	52·8	+ 13·8	— 46·8
11·168	32	193	19	115	53·0	+ 13·8	— 33·1
12·402	32	166	17	87	53·6	+ 14·1	— 16·2
13·286	35	151	18	77	53·5	+ 14·2	— 4·6
14·386	23	152	12	78	53·6	+ 14·1	+ 10·0
15·289	31	124	17	68	54·1	+ 14·4	+ 22·4
16·306	14	99	9	61	53·9	+ 14·5	+ 35·7
17·402	21	65	16	50	53·9	+ 14·2	+ 50·1
18·449	8	55	9	61	54·1	+ 14·4	+ 64·1
19·199	3	13	5	24	55·1	+ 14·6	+ 74·9
Means ...	...	...	15	86	53·52	+ 14·15	...
Group 2319.							
Oct. 8·441	9	78	6	54	153·5	— 24·5	+ 31·5
9·491	19	103	17	90	155·5	— 24·9	+ 47·4
10·146	0	44	0	49	157·0	— 23·5	+ 57·4
11·168	0	21	0	41	157·0	— 24·7	+ 70·9
Means ...	...	...	6	59	155·75	— 24·40	...
Group 2320.							
Oct. 12·402	0	17	0	13	117·3	+ 18·8	+ 47·5
13·286	0	57	0	54	116·5	+ 19·2	+ 58·4
14·386	0	25	0	36	113·5	+ 18·7	+ 69·9
Means ...	...	...	0	34	115·77	+ 18·90	...
Group 2321.							
Oct. 12·402	16	88	8	45	78·5	+ 17·9	+ 8·7
13·286	37	153	21	83	79·3	+ 17·5	+ 21·2
14·386	22	107	15	69	81·8	+ 16·6	+ 38·2
15·289	13	83	11	68	84·4	+ 16·2	+ 52·7
16·306	4	105	5	123	83·6	+ 16·4	+ 65·4
17·402	0	36	0	107	85·4	+ 15·5	+ 81·6
Means ...	...	...	10	·83	82·17	+ 16·68	...

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2322.							
1891. d					°	°	°
Oct. 12·402	0	8	0	11	5·7	— 23·1	— 64·1
13·286	0	12	0	11	6·7	— 22·7	— 51·4
14·386	0	22	0	16	6·9	— 22·7	— 36·7
Means ...	...	...	0	13	6·43	— 22·83	...
Group 2323.							
Oct. 14·386	0	26	0	64	324·0	+ 24·0	— 79·6
15·289	11	95	15	129	322·9	+ 24·3	— 68·8
16·306	11	90	10	81	322·9	+ 25·0	— 55·3
17·402	13	67	9	46	323·1	+ 25·5	— 40·7
18·449	12	38	7	23	322·4	+ 26·4	— 27·6
19·199	7	21	4	12	321·8	+ 26·5	— 18·4
20·311	4	34	2	18	321·6	+ 26·9	— 3·9
Means ...	...	...	7	53	322·67	+ 25·51	...
Group 2324.							
Oct. 16·306	8	45	6	36	69·3	+ 16·8	+ 51·1
17·402	0	21	0	26	69·5	+ 15·9	+ 65·7
Means ...	...	...	3	31	69·40	+ 16·35	...
Group 2325.							
Oct. 16·306	4	25	3	19	328·5	+ 18·1	— 49·7
17·402	23	166	14	101	330·4	+ 17·4	— 33·4
18·449	74	592	40	320	331·2	+ 17·9	— 18·8
19·199	113	592	59	306	331·4	+ 17·3	— 8·8
20·311	135	601	69	307	332·0	+ 16·6	+ 6·5
21·391	103	558	56	307	332·4	+ 16·1	+ 21·2
22·174	43	394	26	234	333·1	+ 15·6	+ 32·2
23·462	43	287	34	230	334·9	+ 15·1	+ 51·0
24·224	29	156	32	171	336·7	+ 15·1	+ 62·9
25·204	0	35	0	80	339·2	+ 14·7	+ 78·3
Means ...	...	...	33	228	333·98	+ 16·39	...

AREAS and HELIOGRAPHIC POSITIONS of GROUPS of SUN SPOTS—*continued.*

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2326.							
1891. d					°	°	°
Oct. 19·199	0	11	0	6	355·4	− 20·2	+ 15·2
Means ...	...	...	0	6	355·40	− 20·20	...
Group 2327.							
Oct. 19·199	4	24	8	46	268·2	− 19·2	− 72·0
20·311	0	25	0	26	268·2	− 19·5	− 57·3
21·391	5	17	4	13	268·6	− 19·2	− 42·6
Means ...	...	...	4	28	268·33	− 19·30	...
Group 2328.							
Oct. 22·174	0	30	0	86	219·7	+ 18·0	− 81·2
23·462	11	119	13	140	218·7	+ 17·1	− 65·2
24·224	24	109	21	98	217·8	+ 17·3	− 56·0
25·204	36	138	25	96	217·9	+ 17·4	− 43·0
26·216	58	327	34	194	217·8	+ 18·7	− 29·8
27·277	89	411	47	219	217·7	+ 18·6	− 15·9
28·391	55	357	29	185	217·9	+ 18·7	− 1·0
29·454	45	253	24	133	217·5	+ 18·8	+ 12·6
30·399	32	245	19	139	217·7	+ 18·1	+ 25·3
31·400	19	163	12	108	218·5	+ 17·1	+ 39·3
Nov. 1·502	17	71	15	61	218·0	+ 18·0	+ 53·3
2·388	8	33	9	39	218·0	+ 17·7	+ 64·9
Means ...	...	...	21	125	218·10	+ 17·96	...
Group 2329.							
Oct. 23·462	13	70	12	63	229·3	+ 25·3	− 54·6
24·224	21	98	15	73	229·2	+ 25·8	− 44·6
25·204	17	78	11	49	229·4	+ 26·0	− 31·5
26·216	17	69	10	39	228·5	+ 25·9	− 19·1
27·277	17	42	9	23	227·6	+ 25·9	− 6·0
28·391	7	22	4	12	227·5	+ 26·2	+ 8·6
29·454	7	27	4	16	227·1	+ 26·6	+ 22·2
30·399	3	25	2	16	227·9	+ 25·7	+ 35·5
Means ...	...	...	8	36	228·19	+ 25·93	...
Group 2330.							
1891. d					°	°	°
Oct. 24·224	4	18	3	14	227·4	+ 19·3	− 46·4
25·204	5	16	3	10	225·3	+ 18·8	− 35·6
26·216	0	0	0	0	...	...	...
27·277	0	10	0	5	225·5	+ 18·8	− 8·1
Means ...	...	...	2	7	225·73	+ 18·97	...
Group 2331.							
Oct. 25·204	4	16	2	9	269·9	− 20·1	+ 9·0
Means ...	...	...	2	9	269·90	− 20·10	...
Group 2332.							
Oct. 25·204	3	12	2	10	209·4	+ 11·7	− 51·5
26·216	0	7	0	4	210·5	+ 11·5	− 37·1
Means ...	...	...	1	7	209·95	+ 11·60	...
Group 2333.							
Oct. 25·204	0	8	0	8	201·2	+ 19·7	− 59·7
Means ...	...	...	0	8	201·20	+ 19·70	...
Group 2334.							
Oct. 27·277	0	23	0	12	243·9	+ 18·8	+ 10·3
28·391	4	15	2	9	245·2	+ 18·6	+ 26·3
29·454	5	12	3	8	246·0	+ 19·0	+ 41·1
Means ...	...	...	2	10	245·03	+ 18·80	...

AREAS and HELIOGRAPHIC POSITIONS of GROUPS of SUN SPOTS—*continued.*

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2335.							
1891. d					°	°	°
Oct. 28·391	0	13	0	7	220·6	+ 31·3	+ 1·7
29·454	0	17	0	10	223·6	+ 29·2	+ 18·7
30·399	0	0	0	0	...	...	...
31·400	0	0	0	0	...	...	...
Nov. 1·502	20	130	21	135	224·1	+ 28·5	+ 59·4
2·388	10	169	17	258	223·5	+ 28·4	+ 70·4
Means ...	...	...	6	68	222·95	+ 29·35	...
Group 2336.							
Oct. 29·454	15	106	15	103	146·5	+ 21·5	− 58·4
30·399	14	64	10	48	146·0	+ 20·8	− 46·4
31·400	6	55	3	34	147·6	+ 20·8	− 31·6
Nov. 1·502	0	38	0	21	147·8	+ 20·8	− 16·9
2·388	0	16	0	8	146·5	+ 21·7	− 6·6
Means ...	...	...	6	43	146·88	+ 21·12	...
Group 2337.							
Oct. 30·399	5	24	3	16	154·1	+ 17·0	− 38·3
31·400	2	28	1	16	153·9	+ 17·6	− 25·3
Nov. 1·502	0	43	0	22	152·3	+ 18·4	− 12·4
Means ...	...	...	1	18	153·43	+ 17·67	...
Group 2338.							
Oct. 30·399	10	67	18	127	117·1	+ 24·6	− 75·3
31·400	8	42	8	45	117·9	+ 25·1	− 61·3
Nov. 1·502	0	85	0	60	122·7	+ 22·2	− 42·0
2·388	0	59	0	37	122·3	+ 23·1	− 30·8
3·194	0	17	0	10	124·5	+ 21·0	− 17·9
4·241	0	23	0	12	125·9	+ 21·3	− 2·7
5·279	4	43	2	23	126·5	+ 21·9	+ 11·6
6·279	4	49	3	29	124·6	+ 22·9	+ 22·9
Means ...	...	...	4	43	122·69	+ 22·76	...

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2339.							
1891. d					°	°	°
Nov. 2·388	9	68	6	54	103·7	+ 19·5	− 49·4
3·194	37	203	25	134	103·4	+ 18·6	− 39·0
4·241	60	371	35	211	105·1	+ 18·7	− 23·5
5·279	26	294	13	154	106·5	+ 18·9	− 8·4
6·279	48	322	25	168	108·2	+ 19·4	+ 6·5
7·207	56	310	32	172	109·4	+ 18·8	+ 19·9
8·266	32	168	20	104	107·7	+ 18·5	+ 32·2
9·277	14	47	10	35	106·8	+ 19·0	+ 44·7
10·403	0	15	0	14	106·3	+ 18·9	+ 58·9
Means ...	...	...	18	116	106·34	+ 18·92	...
Group 2340.							
Nov. 3·194	19	72	12	45	111·9	+ 25·0	− 30·5
4·241	16	73	9	42	111·6	+ 25·2	− 17·0
5·279	6	31	4	17	111·5	+ 25·8	− 3·4
6·279	0	0	0	0	...	...	...
7·207	0	0	0	0	...	...	...
8·266	0	26	0	17	110·6	+ 25·5	+ 35·1
Means ...	...	...	4	20	111·40	+ 25·38	...
Group 234							
Nov. 4·241	0	91	0	154	55·4	+ 10·6	− 73·2
5·279	20	109	19	103	56·5	+ 10·6	− 58·4
6·279	32	169	23	121	56·8	+ 10·4	− 44·9
7·207	43	228	25	136	58·6	+ 11·1	− 30·9
8·266	33	197	17	104	59·5	+ 10·2	− 16·0
9·277	22	254	11	130	60·3	+ 10·9	− 1·8
10·403	12	169	6	89	63·9	+ 9·7	+ 16·5
11·179	22	155	13	87	63·2	+ 9·7	+ 26·1
12·420	3	67	2	47	65·6	+ 9·7	+ 44·9
13·487	0	18	0	17	64·0	+ 10·7	+ 57·3
Means ...	...	...	12	99	60·38	+ 10·36	...

AREAS and HELIOGRAPHIC POSITIONS of GROUPS of SUN SPOTS—*continued*.

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2342.							
1891. d					°	°	°
Nov. 6·279	2	11	1	6	84·7	+24·9	−17·0
Means ...	...	...	1	6	84·70	+24·90	...
Group 2343.							
Nov. 7·207	6	17	4	10	70·8	+26·1	−18·7
8·266	0	12	0	6	71·3	+25·7	− 4·2
9·277	0	0	0	0	...	...	...
10·403	15	134	9	80	70·4	+26·0	+23·0
11·179	32	95	21	62	70·5	+25·8	+33·4
12·420	0	31	0	25	69·6	+25·8	+48·9
Means ...	...	...	6	31	70·52	+25·88	...
Group 2344.							
Nov. 8·266	0	5	0	4	33·4	−15·0	−42·1
Means ...	...	...	0	4	33·40	−15·00	...
Group 2345.							
Nov. 11·179	16	46	46	131	316·7	+19·3	−80·4
12·420	13	95	14	108	317·0	+19·0	−63·7
13·487	21	134	17	109	316·3	+18·4	−50·4
14·447	26	171	17	111	316·8	+18·0	−37·2
15·131	40	198	24	117	316·2	+18·0	−28·8
16·180	44	156	24	84	316·1	+18·0	−15·1
17·239	22	154	12	80	315·9	+17·8	− 1·4
18·218	11	61	6	32	315·6	+17·6	+11·3
19·305	9	44	5	25	315·4	+17·4	+25·3
20·194	0	7	0	4	315·1	+17·8	+36·8
Means ...	...	...	17	80	316·11	+18·13	...

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2346.							
1891. d					°	°	°
Nov. 14·447	0	9	0	6	33·5	+12·3	+39·5
Means ...	...	...	0	6	33·50	+12·30	...
Group 2347.							
Nov. 14·447	0	16	0	9	11·5	−18·3	+17·5
15·131	1	11	1	7	11·6	−18·1	+26·6
Means ...	...	...	1	8	11·55	−18·20	...
Group 2348.							
Nov. 14·447	0	12	0	17	286·8	−20·0	−67·2
15·131	0	2	0	2	286·3	−20·1	−58·7
16·180	0	0	0	0	...	...	...
17·239	0	11	0	7	284·4	−18·3	−32·9
18·218	11	88	6	50	285·3	−18·9	−19·0
19·305	13	62	7	34	285·2	−19·2	− 4·9
20·194	35	115	19	62	283·3	−19·1	+ 5·0
21·182	10	77	6	44	283·4	−19·0	+18·2
22·284	0	122	0	78	284·7	−18·5	+33·8
23·189	3	62	3	48	284·3	−18·5	+45·5
24·218	0	16	0	18	288·2	−18·5	+63·0
Means ...	...	...	4	33	285·19	−19·01	...
Group 2349.							
Nov. 15·131	0	66	0	401	260·9	−16·8	−84·1
16·180	28	175	41	267	262·2	−17·2	−69·0
17·239	58	321	56	305	262·0	−17·9	−55·3
18·218	56	420	42	318	260·2	−18·5	−44·1
19·305	141	817	88	493	261·7	−19·0	−28·4
20·194	281	1387	159	782	260·8	−19·2	−17·5
21·182	327	1898	178	1029	260·2	−19·4	− 5·0
22·284	308	2115	171	1162	260·3	−20·1	+ 9·6
23·189	270	1564	157	909	259·8	−20·1	+21·0
24·218	208	1278	141	858	261·0	−20·7	+35·8
25·432	170	1002	154	908	262·1	−20·5	+52·9
26·482	63	457	81	712	262·8	−20·4	+67·4
27·230	46	251	72	717	264·3	−20·4	+78·8
Means ...	...	...	103	681	261·41	−19·25	...

AREAS and HELIOGRAPHIC POSITIONS of GROUPS of SUN SPOTS—*continued.*

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2350.							
1891. d					°	°	°
Nov. 18·218	18	113	44	346	223·5	+21·8	−80·8
19·305	46	255	50	287	227·3	+20·0	−62·8
20·194	92	413	77	341	227·4	+20·2	−50·9
21·182	105	550	68	361	228·6	+19·9	−36·6
22·284	109	654	61	367	229·1	+19·1	−21·6
23·189	146	738	77	413	229·0	+19·1	− 9·8
24·218	126	688	66	360	229·7	+18·8	+ 4·5
25·432	119	844	67	475	230·0	+18·5	+20·8
26·482	118	600	76	384	230·4	+18·6	+35·0
27·230	118	492	87	365	230·7	+18·7	+45·2
28·461	49	337	51	357	230·0	+18·4	+60·7
29·181	31	214	47	327	229·9	+18·4	+70·1
Means ...	...	...	64	365	228·80	+19·29	...
Group 2351.							
Nov. 20·194	10	76	5	39	261·9	+ 3·7	−16·4
21·182	10	96	5	48	263·3	+ 3·5	− 1·9
22·284	6	74	3	38	266·0	+ 3·8	+15·3
23·189	0	68	0	38	265·5	+ 2·6	+26·7
24·218	0	9	0	6	268·5	+ 3·6	+43·3
25·432	2	26	2	26	267·9	+ 4·2	+58·7
Means ...	...	...	3	33	265·52	+ 3·57	...
Group 2352.							
Nov. 20·194	17	103	10	56	261·3	−11·4	−17·0
21·182	0	30	0	15	261·2	−12·0	− 4·0
22·284	0	41	0	21	264·0	−11·9	+13·3
23·189	27	170	15	96	263·2	−10·9	+24·4
24·218	46	315	30	207	264·2	−11·1	+39·0
25·432	26	182	25	175	266·9	−10·5	+57·7
26·482	12	56	20	96	267·9	−10·7	+72·5
27·230	0	51	0	244	268·9	−10·6	+83·4
Means ...	...	...	13	114	264·70	−11·14	...
Group 2353.							
Nov. 21·182	0	16	0	17	215·4	−40·5	−49·8
Means ...	...	...	0	17	215·40	−40·50	...

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2354.							
1891. d					°	°	°
Nov. 28·461	24	167	14	95	147·2	+20·3	−22·1
29·181	42	259	23	143	146·7	+20·9	−13·1
30·222	63	251	34	135	148·6	+20·6	+ 2·5
Dec. 1·248	32	175	18	97	149·2	+20·4	+16·6
2·485	15	59	9	39	150·2	+20·0	+33·9
3·296	13	29	11	23	153·2	+19·2	+47·6
4·303	0	10	0	10	150·3	+19·7	+58·0
Means ...	...	...	17	77	149·34	+20·16	...
Group 2355.							
Nov. 28·461	9	41	10	50	104·5	+19·5	−64·8
29·181	12	58	11	55	103·6	+19·9	−56·2
30·222	10	45	7	32	103·7	+20·0	−42·4
Dec. 1·248	4	27	2	16	103·9	+20·1	−28·7
2·485	4	21	2	11	103·9	+19·7	−12·4
3·296	8	29	4	16	104·0	+19·7	− 1·6
4·303	0	8	0	5	104·2	+19·2	+11·9
Means ...	...	...	5	26	103·97	+19·73	...
Group 2356.							
Dec. 4·303	14	22	8	13	116·7	+10·6	+24·4
5·237	0	3	0	2	117·2	+10·1	+37·2
Means ...	...	...	4	8	116·95	+10·35	...
Group 2357.							
Dec. 5·237	22	71	14	48	115·9	+22·6	+35·9
6·234	18	77	14	63	115·2	+22·5	+48·3
7·309	0	17	0	20	115·4	+21·7	+62·7
Means ...	...	...	9	44	115·60	+22·50	...

AREAS and HELIOGRAPHIC POSITIONS of GROUPS of SUN SPOTS—*continued.*

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2358.							
1891. d					°	°	°
Dec. 6·234	10	31	6	18	79·0	+26·3	+12·1
7·309	22	81	14	49	78·3	+26·2	+25·6
8·328	25	98	18	72	78·1	+26·2	+38·8
9·329	14	55	12	52	79·3	+26·0	+53·3
10·312	4	22	3	19	76·0	+27·1	+62·8
Means ...	...	...	12	42	78·14	+26·36	...
Group 2359.							
Dec. 6·234	0	4	0	2	63·1	+10·7	− 3·8
Means ...	...	...	0	2	63·10	+10·70	...
Group 2360.							
Dec. 6·234	17	30	11	19	30·8	−18·3	−36·1
7·309	39	138	22	78	32·6	−17·9	−20·1
8·328	27	153	14	82	33·7	−17·9	− 5·6
9·329	27	102	14	55	34·5	−17·5	+ 8·5
10·312	19	63	11	36	35·2	−17·7	+22·0
11·292	16	62	10	39	34·8	−17·8	+34·6
12·219	10	31	8	24	36·3	−17·5	+48·3
13·233	0	13	0	14	36·3	−17·5	+61·7
Means ...	...	...	11	43	34·28	−17·76	...
Group 2361.							
Dec. 8·328	0	4	0	2	38·0	+30·2	− 1·3
Means ...	...	...	0	2	38·00	+30·20	...
Group 2362.							
Dec. 8·328	0	4	0	3	2·2	−23·0	−37·1
9·329	0	4	0	2	1·9	−24·9	−24·1
Means ...	...	...	0	3	2·05	−23·95	...

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2363.							
1891. d					°	°	°
Dec. 11·292	0	7	0	4	19·7	−20·4	+19·5
Means ...	...	...	0	4	19·70	−20·40	...
Group 2364.							
Dec. 12·219	11	45	32	135	267·9	−19·8	−80·1
13·233	18	107	25	147	266·9	−19·7	−67·7
14·318	31	146	27	127	267·6	−20·1	−52·8
15·210	38	194	27	136	267·7	−20·0	−40·9
16·201	41	200	25	120	267·7	−20·0	−27·8
17·499	36	276	19	148	268·1	−19·8	−10·3
18·196	49	245	26	130	267·9	−20·2	− 1·3
19·399	33	215	18	117	268·1	−19·9	+14·7
20·224	25	162	15	98	267·5	−19·7	+28·5
21·490	12	149	8	103	267·7	−19·4	+41·8
22·304	16	138	14	120	267·9	−20·0	+52·7
23·299	19	77	23	95	267·2	−20·0	+65·2
24·221	9	37	20	86	267·5	−19·8	+77·6
Means ...	...	...	21	120	267·67	−19·88	...
Group 2365.							
Dec. 13·233	0	13	0	11	286·4	−18·6	−48·2
14·318	0	3	0	2	284·1	−19·2	−36·3
15·210	0	38	0	22	284·9	−19·1	−23·7
16·201	56	195	30	105	283·5	−19·7	−12·0
17·499	134	715	71	376	284·0	−19·3	+ 5·6
18·196	161	742	88	408	284·8	−19·8	+15·6
19·399	117	871	72	534	285·0	−19·2	+31·6
20·224	46	548	33	404	284·4	−18·7	+45·4
21·490	39	394	39	390	284·4	−18·3	+58·5
22·304	22	218	30	316	284·4	−19·0	+69·2
23·299	12	52	35	157	282·7	−18·9	+80·7
Means ...	...	...	36	248	284·42	−19·07	...
Group 2366.							
Dec. 15·210	0	15	0	22	17·5	−18·6	+68·9
Means ...	...	...	0	22	17·50	−18·60	...

AREAS and HELIOGRAPHIC POSITIONS of GROUPS of SUN SPOTS—*continued.*

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2367.							
1891. d					°	°	°
Dec. 15·210	0	10	0	6	277·3	−23·8	−31·3
16·201	0	5	0	3	277·8	−23·8	−17·7
Means ...	...	...	0	5	277·55	−23·80	...
Group 2368.							
Dec. 16·201	12	69	17	100	227·2	+19·3	−68·3
17·499	13	95	11	82	227·2	+19·5	−51·2
18·196	0	24	0	18	227·2	+19·2	−42·0
Means ...	...	...	9	67	227·20	+19·33	...
Group 2369.							
Dec. 19·399	0	30	0	36	192·3	+27·5	−61·1
20·224	7	52	7	52	192·1	+27·6	−50·4
21·490	42	264	29	176	195·4	+28·0	−30·5
22·304	102	533	64	328	196·1	+28·5	−19·1
23·299	198	1160	117	682	195·4	+28·7	− 6·6
24·221	279	1849	165	1089	195·1	+28·6	+ 5·2
25·297	368	1874	228	1161	195·0	+29·0	+19·3
26·162	233	1598	160	1094	194·9	+29·0	+30·6
27·484	146	974	133	891	195·6	+29·5	+48·7
28·477	85	625	110	799	195·3	+29·3	+61·5
29·502	16	261	43	703	196·5	+29·4	+76·1
30·288	0	43	0	313	194·0	+27·7	+84·0
Means ...	...	...	88	610	194·81	+28·57	...
Group 2370.							
Dec. 21·490	0	8	0	16	152·3	−26·9	−73·6
22·304	9	160	9	180	153·6	−25·6	−61·6
23·299	83	335	69	272	153·3	−25·3	−48·7
24·221	45	240	30	163	152·9	−25·4	−37·0
25·297	20	187	11	109	154·4	−24·4	−21·3
26·162	40	161	22	89	154·1	−24·6	−10·2
27·484	11	77	6	41	152·9	−25·1	+ 6·0
28·477	12	39	6	22	151·4	−25·3	+17·6
29·502	0	0	0	0	...	...	...
30·288	0	10	0	8	154·3	−20·4	+44·3
Means ...	...	...	15	90	153·24	−24·78	...

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2371.							
1891. d					°	°	°
Dec. 26·162	0	11	0	32	85·9	+24·8	−78·4
27·484	0	9	0	11	84·7	+23·7	−62·2
28·477	0	36	0	32	83·4	+23·6	−50·4
Means ...	...	...	0	25	84·67	+24·03	...
Group 2372.							
Dec. 27·484	0	41	0	26	111·6	+11·2	−35·3
28·477	13	87	7	49	111·5	+11·5	−22·3
29·502	0	44	0	23	112·2	+11·7	− 8·2
30·288	3	72	1	38	112·1	+11·1	+ 2·1
31·502	8	61	4	34	115·5	+11·2	+21·5
1892.							
Jan. 1·403	0	33	0	20	116·8	+ 9·8	+34·7
2·403	0	12	0	9	113·5	+10·4	+44·5
Means ...	...	...	2	28	113·31	+10·99	...
Group 2373.							
1891.							
Dec. 28·477	40	383	33	318	186·4	−11·5	+52·6
29·502	20	345	28	422	186·4	−11·5	+66·0
30·288	29	321	56	670	186·4	−11·2	+76·4
Means ...	...	...	39	470	186·40	−11·40	...
Group 2374.							
Dec. 29·502	0	27	0	15	107·9	−24·4	−12·5
Means ...	...	...	0	15	107·90	−24·40	...

AREAS and HELIOGRAPHIC POSITIONS of GROUPS OF SUN SPOTS—*continued.*

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2375.							
1891. d					°	°	°
Dec. 29·502	0	16	0	18	57·6	−19·6	−62·8
30·288	0	4	0	3	58·1	−20·1	−51·9
Means ...	...	...	0	11	57·85	−19·85	...
Group 2376.							
Dec. 29·502	0	56	0	190	41·7	+21·4	−78·7
30·288	13	130	20	214	40·3	+21·4	−69·7
31·502	36	361	33	342	40·2	+21·0	−53·8
1892.							
Jan. 1·403	127	545	95	412	39·2	+20·7	−42·9
2·403	91	898	57	569	39·3	+21·2	−29·7
3·221	181	882	106	516	38·9	+21·5	−18·5
4·460	128	1028	70	564	39·8	+21·0	− 2·0
5·300	210	937	118	528	39·8	+21·2	+ 9·0
6·335	193	974	116	585	39·4	+21·3	+22·2
7·182	168	757	111	502	39·3	+20·9	+33·3
8·435	78	524	65	444	37·8	+21·4	+48·3
9·196	58	426	62	467	38·3	+21·1	+58·7
10·198	45	166	84	309	37·7	+20·6	+71·5
Means ...	...	...	72	434	39·36	+21·13	...
Group 2377.							
1891.							
Dec. 30·288	0	28	0	18	139·2	+18·6	+29·2
31·502	20	108	16	87	141·3	+18·3	+47·3
1892.							
Jan. 1·403	44	258	47	280	141·8	+17·6	+59·7
2·403	10	129	19	224	140·3	+17·4	+71·3
3·221	0	17	0	75	139·4	+18·4	+82·0
Means ...	...	...	16	137	140·40	+18·06	...
Group 2378.							
1891.							
Dec. 30·288	0	5	0	3	132·4	+21·7	+22·4
Means ...	...	...	0	3	132·40	+21·70	...

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
Group 2379.							
1891. d					°	°	°
Dec. 30·288	0	12	0	7	96·7	+28·6	−13·3
31·502	51	453	30	263	98·9	+26·7	+ 4·9
1892.							
Jan. 1·403	51	349	31	210	98·8	+26·3	+16·7
2·403	50	337	33	225	98·1	+27·0	+29·1
3·221	38	213	29	168	99·0	+27·1	+41·6
4·460	10	46	11	53	100·6	+26·8	+58·8
5·300	11	43	20	80	101·4	+27·3	+70·6
Means ...	...	...	22	144	99·07	+27·11	...
Group 2380.							
1891.							
Dec. 30·288	0	21	0	25	48·5	+22·0	− 61·5
31·502	7	61	5	47	49·1	+22·2	− 44·9
1892.							
Jan. 1·403	6	44	4	28	51·5	+21·2	− 30·6
2·403	14	74	8	43	51·1	+22·0	− 17·9
3·221	11	52	6	30	51·1	+22·5	− 6·3
4·460	6	26	3	14	52·7	+21·5	+ 10·9
5·300	8	24	5	14	52·2	+21·6	+ 21·4
6·335	2	23	2	16	52·1	+22·3	+ 34·9
7·182	2	7	2	6	51·5	+22·1	+ 45·5
Means ...	...	...	4	25	51·09	+21·93	...
Group 2381.							
1891.							
Dec. 31·502	7	42	3	22	88·1	+14·7	− 5·9
Means ...	...	...	3	22	88·10	+14·70	...
Group 2382.							
Dec. 31·502	0	17	0	21	32·3	+27·7	− 61·7
1892.							
Jan. 1·403	0	29	0	26	32·3	+27·1	− 49·8
2·403	7	26	5	19	32·8	+28·1	− 36·2
3·221	5	19	3	12	32·2	+27·7	− 25·2
4·460	0	16	0	9	33·2	+26·6	− 8·6
5·300	3	10	2	6	33·9	+26·9	+ 3·1
Means ...	...	...	2	16	32·78	+27·35	...

AREAS and HELIOGRAPHIC POSITIONS of GROUPS of SUN SPOTS—*concluded.*

Date. Greenwich Civil Time.	Projected Area of		Area for Group.		Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.			
	Group 2383.						
1891. d					°	°	°
Dec. 31·502	0	12	0	17	28·7	+22·5	− 65·3
1892.							
Jan. 1·403	35	93	31	80	31·9	+21·2	− 50·2
2·403	34	193	25	137	32·8	+24·5	− 36·2
3·221	52	278	33	174	30·3	+21·7	− 27·1
4·460	42	342	24	196	29·4	+22·4	− 12·4
5·300	86	430	49	242	29·8	+23·4	− 1·0
6·335	33	207	19	119	28·5	+23·5	+ 11·3
7·182	6	30	4	18	26·5	+23·9	+ 20·5
8·435	10	34	7	25	26·5	+25·0	+ 37·0
9·196	0	31	0	26	26·8	+24·4	+ 47·2
Means ...	...	...	19	103	29·12	+23·25	...
	Group 2384.						
1891. d					°	°	°
Dec. 31·502	8	106	12	155	24·0	−16·6	− 70·0
1892.							
Jan. 1·403	32	164	31	160	23·5	−16·9	− 58·6
2·403	14	151	10	110	23·1	−16·3	− 45·9
3·221	36	167	23	105	21·9	−16·7	− 35·5
4·460	40	209	22	113	22·6	−16·9	− 19·2
5·300	47	228	24	119	22·4	−16·6	− 8·4
6·335	38	227	20	117	22·2	−16·7	+ 5·0
7·182	35	142	19	76	22·1	−16·9	+ 16·1
8·435	28	134	17	81	22·0	−15·9	+ 32·5
9·196	27	101	18	70	21·9	−16·2	+ 42·3
10·198	30	88	27	79	21·7	−16·1	+ 55·5
11·293	13	34	19	51	22·7	−15·7	+ 70·9
12·288	0	18	0	87	23·8	−15·9	+ 85·0
Means ...	...	...	19	102	22·61	−16·42	...

ROYAL OBSERVATORY, GREENWICH.

TOTAL PROJECTED AREAS OF SUN SPOTS AND FACULÆ

FOR EACH DAY,

AND

MEAN AREAS AND MEAN HELIOGRAPHIC LATITUDE

OF

SUN SPOTS AND FACULÆ

FOR EACH ROTATION OF THE SUN,

AND FOR THE YEAR

1891.

TOTAL PROJECTED AREAS OF SUN SPOTS AND FACULÆ FOR EACH DAY IN THE YEAR 1891.

The Projected Area is the area as it is measured on the photograph, uncorrected for the effect of foreshortening, and expressed in millionths of the Sun's apparent disk.

The Greenwich Civil Time is expressed by the month, day of the month (civil reckoning) and decimal of a day, reckoned from Greenwich Mean Midnight.

Greenwich Civil Time.	Projected Area.		
	Umbræ.	Whole Spots.	Faculæ.
1891 d			
Jan. 1·6	0	24	98
2·3	0	30	210
3·2	0	0	121
4·3	0	0	119
5·5	0	0	212
6·2	1	30	770
7·5	0	0	0
8·6	0	0	0
9·5	0	0	0
10·2	0	0	526
11·2	0	0	0
12·2	0	0	511
13·2	0	0	517
14·4	0	0	0
15·2	0	98	61
16·4	57	282	398
17·2	76	348	1186
18·2	134	567	2409
19·3	196	639	1411
20·2	177	737	1770
21·5	119	638	82
22·5	114	706	0
23·2	98	555	0
24	...	...	...
25·5	78	599	770
26·5	51	540	1105
27	...	...	...
28·2	79	643	1240
29·2	115	639	1668
30·5	18	235	325
31·5	13	84	0
Feb. 1·6	28	95	0
2·4	9	43	0
3·4	40	941	905
4·2	0	0	1042
5·3	0	0	332
6·2	4	31	161
7·2	0	0	482
8·2	0	0	383
9·2	0	39	449
10·6	49	326	0
11·4	79	478	0
12·4	97	509	167
13·5	104	509	327
14·2	117	466	604
15·5	69	530	158
16·4	39	354	1719
17·2	108	508	1963
18·5	224	903	53
19·3	213	1008	146
20·2	149	1012	573
21·2	177	979	1423

Greenwich Civil Time.	Projected Area.		
	Umbræ.	Whole Spots.	Faculæ.
1891 d			
Feb. 22·6	201	781	945
23·5	111	560	223
24·2	136	477	1854
25·5	140	689	1242
26·5	19	219	522
27·4	7	78	314
28·5	8	88	714
March 1·5	26	155	803
2·5	3	49	716
3·4	0	0	517
4·4	0	6	155
5·4	25	108	326
6·4	26	154	660
7·2	19	168	603
8·2	23	139	328
9·2	42	210	149
10·3	23	144	232
11·5	0	74	0
12·5	9	42	419
13·4	13	88	537
14·2	34	149	1376
15·2	59	201	1421
16·5	57	362	888
17·4	93	359	751
18·2	118	438	1079
19·3	125	520	1136
20·2	82	382	863
21·2	73	330	569
22·1	35	239	0
23·5	18	166	444
24·4	20	109	580
25·4	0	47	337
26·4	0	0	1118
27·5	0	0	466
28·1	0	0	241
29·5	10	76	337
30·4	36	181	515
31·4	61	361	631
April 1·4	103	438	731
2·2	153	494	1355
3·3	123	542	620
4·1	106	508	517
5·5	80	469	365
6·5	85	377	637
7·4	92	323	1485
8·4	56	255	733
9·2	35	189	538
10·2	49	249	452
11·1	34	150	844
12·5	10	79	463
13·3	17	46	791

Greenwich Civil Time.	Projected Area.		
	Umbræ.	Whole Spots.	Faculæ.
1891 d			
April 14·4	29	167	338
15·5	32	190	464
16·4	82	334	494
17·4	42	270	724
18·5	0	127	367
19·3	7	170	515
20·5	24	151	545
21·4	32	229	700
22·4	118	597	1601
23·4	162	1014	1642
24·4	209	1064	749
25·1	186	1180	943
26·6	143	969	734
27·4	197	975	579
28·4	205	1209	496
29·2	165	959	1400
30·5	59	583	612
May 1·6	57	383	880
2·4	22	189	1368
3·5	2	33	400
4·4	2	66	502
5·5	22	253	964
6·5	62	356	952
7·4	78	588	2134
8·3	105	558	1664
9·4	103	837	441
10·1	176	884	503
11·4	196	803	961
12·5	156	1146	1273
13·5	149	866	2130
14·5	92	692	607
15·4	86	666	1477
16·5	120	662	307
17·5	78	510	225
18·2	155	536	1213
19·5	168	1039	1217
20·2	191	1018	1439
21·3	240	1440	1022
22·5	253	1698	2096
23·6	210	1388	100
24·2	175	1199	401
25·3	225	1160	1957
26·5	118	849	3318
27·4	144	916	2610
28·5	125	761	2318
29·5	110	664	1448
30·6	83	617	468
31·5	94	638	543
June 1·4	96	511	479
2·3	97	538	2113
3·6	57	323	1555

Greenwich Civil Time.	Projected Area.		
	Umbræ.	Whole Spots.	Faculæ.
1891 d			
June 4·7	27	274	355
5·3	41	189	797
6·3	30	261	583
7·3	24	183	288
8·6	53	279	0
9·4	63	330	441
10·4	70	467	1220
11·4	98	616	2688
12·6	62	540	1736
13·5	102	559	1045
14·6	72	673	105
15·3	184	956	2779
16·5	199	1464	2011
17·4	140	1159	2261
18·5	119	979	809
19·4	101	784	1472
20·1	130	676	2541
21·6	105	918	2797
22·5	200	1184	2843
23·3	200	1145	3451
24·6	156	982	2765
25·2	142	1077	2554
26·5	280	1513	798
27·4	300	1978	964
28·6	245	1948	685
29·5	279	1557	2805
30·5	200	1203	8537
July 1·2	208	1148	3848
2·5	133	928	1531
3·4	143	831	2259
4·6	78	630	806
5·2	106	528	2223
6·3	112	682	1542
7·5	134	908	160
8·2	154	1263	1090
9·2	251	1374	1766
10·3	285	1567	4014
11·5	246	1898	532
12·2	363	2343	529
13·5	443	2840	2329
14·5	495	2958	1801
15·5	568	2874	2831
16·5	423	2588	1250
17·4	378	2228	2576
18·2	376	1881	2970
19·5	357	2000	3138
20·4	389	2367	3360
21·2	349	1784	986
22·4	307	1773	7456
23·4	152	958	3751
24·4	101	510	1421
25·4	26	148	1093

TOTAL PROJECTED AREAS OF SUN SPOTS AND FACULÆ—*concluded.*

Greenwich Civil Time.		Projected Area.			Greenwich Civil Time.		Projected Area.			Greenwich Civil Time.		Projected Area.			Greenwich Civil Time.		Projected Area.		
		Umbræ.	Whole Spots.	Faculæ.			Umbræ.	Whole Spots.	Faculæ.			Umbræ.	Whole Spots.	Faculæ.			Umbræ.	Whole Spots.	Faculæ.
1891	d				1891	d				1891	d				1891	d			
July	26·6	24	114	622	Sept.	4·4	500	3672	1972	Oct.	14·4	45	392	1873	Nov.	23·2	445	2603	1313
	27·4	40	235	3047		5·5	534	4191	1353		15·3	55	302	1313		24·2	379	2306	1642
	28·4	71	450	2622		6·4	453	3929	2065		16·3	41	363	1870		25·4	318	2055	2059
	29·3	49	348	4034		7·5	524	3580	2065		17·4	57	355	818		26·5	193	1113	99
	30·4	51	289	1579		8·4	392	3036	1890		18·4	94	685	621		27·2	164	795	2306
	31·4	15	248	533		9·2	223	2068	1429		19·2	127	660	870		28·5	81	544	960
						10·4	199	1355	1902		20·3	140	660	1324		29·2	84	531	2705
Aug.	1·4	8	197	161		11·4	163	951	2103		21·4	108	574	1226		30·2	73	296	2535
	2·6	18	177	317		12·4	149	746	1531		22·2	43	424	1071					
	3·5	30	345	572		13·4	143	872	1563		23·5	67	476	2045					
	4·4	138	889	1262		14·3	207	746	1214		24·2	78	381	3136					
	5·5	190	1404	2141		15·2	170	828	1240		25·2	65	302	2631	Dec.	1·2	36	201	2667
	6·5	140	1661	3643		16·2	217	1274	834		26·2	75	403	1375		2·5	18	80	679
	7·6	247	1830	2006		17·4	328	1899	623		27·3	106	486	794		3·3	22	58	1301
	8·5	286	1670	4571		18·2	270	1738	396		28·4	66	407	889		4·3	14	41	785
	9·4	225	1411	1971		19·3	315	1509	1253		29·5	72	415	1166		5·2	22	74	570
	10·4	240	1391	3188		20·2	276	1464	1290		30·4	63	424	1424		6·2	45	142	1667
	11·5	200	1258	3009		21·4	190	1184	973		31·4	35	288	1470		7·3	61	236	1324
	12·4	186	1090	762		22·4	154	1094	1943							8·3	52	260	2648
	13·4	105	878	1841		23·4	105	803	1128							9·3	41	161	1660
	14·4	107	654	2222		24·4	64	721	1153	Nov.	1·5	37	367	2569		10·3	23	85	1242
	15·5	78	501	1341		25·2	106	735	1813		2·4	26	344	2097		11·3	16	69	1153
	16·3	51	400	3371		26·2	97	690	2417		3·2	56	292	1770		12·2	20	76	510
	17·5	32	358	1305		27·5	112	830	2060		4·2	76	559	2168		13·2	18	133	1191
	18·1	27	319	1793		28·5	61	657	1779		5·3	57	477	1817		14·3	31	150	1719
	19·5	0	52	1082		29·5	98	560	1208		6·3	86	552	1545		15·2	38	257	2094
	20·3	0	5	1180		30·3	105	604	1336		7·2	105	555	392		16·2	109	469	2389
	21·5	0	32	325							8·3	65	407	1690		17·5	183	1086	1646
	22·4	1	92	562							9·3	35	301	2343		18·2	210	1012	1752
	23·2	0	128	1313	Oct.	1·2	120	681	1849		10·4	27	317	1562		19·4	150	1116	245
	24·4	17	174	277		2·3	150	978	4094		11·2	70	296	1643		20·2	78	761	561
	25·5	20	163	945		3·4	131	953	2142		12·4	16	192	912		21·5	94	814	619
	26·4	31	241	1917		4·5	140	1183	1045		13·5	21	152	2036		22·3	149	1049	1672
	27·5	0	45	228		5·3	315	1371	4964		14·4	26	209	781		23·3	312	1624	1510
	28·5	0	27	235		6·2	307	1565	3108		15·1	41	276	1899		24·2	332	2126	2079
	29·4	18	204	419		7·4	357	2061	1939		16·2	72	331	1269		25·3	388	2061	1624
	30·6	34	556	932		8·4	399	2523	2700		17·2	80	485	1319		26·2	274	1769	3356
	31·5	190	1410	258		9·5	339	2304	1583		18·2	95	683	1832		27·5	157	1101	1280
						10·1	286	2054	2944		19·3	209	1177	1076		28·5	150	1169	3661
Sept.	1·4	302	2214	838		11·2	231	1512	2442		20·2	434	2100	2127		29·5	35	749	1535
	2·4	404	2703	1573		12·4	105	972	1111		21·2	452	2669	1940		30·3	45	645	2976
	3·3	718	3432	2808		13·3	110	731	2137		22·3	424	3007	807		31·5	136	1220	3314

MEAN AREAS of SUN SPOTS and FACULÆ, as measured on PHOTOGRAPHS taken at the ROYAL OBSERVATORY, GREENWICH, at DEHRA DÛN, INDIA, and in MAURITIUS, for each ROTATION of the SUN, from 1890 December 21 to 1892 January 7.

The Mean Areas have been formed by taking the Means of the Areas for each day of observation throughout each Rotation of the Sun, the Projected Areas being the areas as measured on the photographs and expressed in millionths of the Sun's apparent disk, and the Areas corrected for foreshortening being expressed in millionths of the Sun's visible hemisphere.

The rotations adopted in the following table (which is in continuation of those for the years 1873–1890 printed in the Greenwich Observations for 1884 and succeeding years) 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.					
					Projected.			Corrected for Foreshortening.		
					Umbræ.	Whole Spots.	Faculæ.	Umbræ.	Whole Spots.	Faculæ.
			d							
498	1890	December	21·75	27	6·2	41·7	368	6·7	58·3	689
499	1891	January	18·09	26	66·1	385	601	41·7	240	693
500		February	14·43	27	67·0	353	641	50·9	270	714
501		March	13·76	27	61·3	278	731	46·7	225	840
502		April	10·05	27	72·9	444	760	56·9	370	888
503		May	7·30	27	142	825	1276	94·8	596	1256
504		June	3·51	28	131	865	1824	88·3	610	1600
505		June	30·71	27	246	1458	2183	183	1133	2336
506		July	27·91	27	92·4	670	1804	71·3	578	1917
507		August	24·14	28	243	1608	1227	170	1207	1415
508		September	20·41	27	159	1044	1990	117	823	2096
509		October	17·69	27	67·3	422	1577	44·6	288	1710
510		November	13·99	28	140	807	1513	95·4	593	1685
511		December	11·31	27	183	1141	1792	129	864	1915

MEAN AREAS of SUN SPOTS, and FACULÆ, as measured on PHOTOGRAPHS taken at the ROYAL OBSERVATORY, GREENWICH, at DEHRA DÛN, INDIA, and in MAURITIUS, for the YEAR 1891.

The Mean Projected Areas are expressed in millionths of the Sun's apparent disk.

The Mean Areas corrected for foreshortening are expressed in millionths of the Sun's visible hemisphere.

Year.	No. of Days on which Photographs were taken.	Mean of Daily Areas.					
		Projected.			Corrected for Foreshortening.		
		Umbræ.	Whole Spots.	Faculæ.	Umbræ.	Whole Spots.	Faculæ
1891	363	120	745	1322	86·2	569	1412

MEAN HELIOGRAPHIC LATITUDE of SUN SPOTS, as measured on PHOTOGRAPHS taken at the ROYAL OBSERVATORY, GREENWICH, at DEHRA DÛN, INDIA, and in MAURITIUS, for each ROTATION of the SUN, from 1890 December 21 to 1892 January 7.

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 (corrected for foreshortening), 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 (corrected for foreshortening) 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			°		°	°	°
498	1890 Dec. 21·75	27	9·7	23·22	48·6	26·33	− 18·11	25·81
499	1891 Jan. 18·09	26	105	18·86	135	26·86	− 6·78	23·35
500	Feb. 14·43	27	242	19·17	28·0	22·66	+ 14·84	19·53
501	Mar. 13·76	27	221	19·73	3·5	25·38	+ 19·02	19·81
502	Apr. 10·05	27	149	22·36	221	20·45	− 3·20	21·22
503	May 7·30	27	316	18·20	280	20·57	+ 0·01	19·31
504	June 3·51	28	486	18·40	124	19·32	+ 10·72	18·58
505	June 30·71	27	1049	19·67	84·4	20·87	+ 16·65	19·76
506	July 27·91	27	337	21·09	240	18·38	+ 4·66	19·96
507	Aug. 24·14	28	1175	21·47	32·3	22·69	+ 20·29	21·51
508	Sept. 20·41	27	400	20·78	423	18·64	+ 0·51	19·68
509	Oct. 17·69	27	284	18·29	3·9	19·22	+ 17·79	18·30
510	Nov. 13·99	28	219	19·48	374	18·78	− 4·67	19·04
511	Dec. 11·31	27	567	25·09	297	18·46	+ 10·12	22·81

MEAN HELIOGRAPHIC LATITUDE of SUN SPOTS, as measured on PHOTOGRAPHS taken at the ROYAL OBSERVATORY, GREENWICH, at DEHRA DÛN, INDIA, and in MAURITIUS, for the YEAR 1891.

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.		
			°		°	°	°
1891	363	401	20·49	169	19·91	+ 8·52	20·31

NOTE.—In the computations for forming the corresponding Tables given in the Volumes for 1884 and 1885 the latitudes of the Spots were only taken to the nearest whole degree, the next higher whole degree being adopted whenever the fractional part of the latitude amounted to or exceeded ·5. Thus, under 8°, for example, would be included all Spots from 7°·5 to 8°·4, both inclusive; and the corresponding mean latitude should have been taken as 7°·95 instead of 8°. The Mean Heliographic Latitudes, therefore, both for Spots North and Spots South of the Equator, and the Mean Distances from the Equator of all Spots, both for the rotations and for entire years, require a correction of − 0°·05. The Mean Latitude of the entire Spotted Area requires the following correction:—

$$-0^{\circ}\cdot05 \times \frac{\text{Mean Area N.} - \text{Mean Area S.}}{\text{Mean Area N.} + \text{Mean Area S.}}$$

These corrections have been applied in computing the Mean Heliographic Latitudes and Mean distance from the Equator given in the above Tables for 1891, and in corresponding Tables for the years 1886 to 1890.