GREENWICH

SPECTROSCOPIC AND PHOTOGRAPHIC RESULTS.

1897.

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12 39 10 1504 1002
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RESULTS

OF THE

SPECTROSCOPIC AND PHOTOGRAPHIC OBSERVATIONS

MADE AT THE

ROYAL OBSERVATORY, GREENWICH,

IN THE YEAR

1897:

UNDER THE DIRECTION OF

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

(EXTRACTED FROM THE GREENWICH OBSERVATIONS, 1897.)

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1898.

ERRATA.

SPECTROSCOPIC AND PHOTOGRAPHIC RESULTS, 1897.

MEASURES OF POSITIONS AND AREAS OF SUN SPOTS AND FACULÆ, 1897.

Page.	Column.	Line.	
16	2	19	Greenwich Civil Time, *for* 56·216, *read* 56·516.
29	1	10	Greenwich Civil Time, *for* 109·486, *read* 109·611.
39	1	17	Greenwich Civil Time, *for* 182·234, *read* 182·248.
48	Footnote.		Group 4615, *for* August 30–September 10, *read* August 30–September 11.
52	1	28	Latitude, *for* $+5^{\circ}\cdot7$, *read* $-5^{\circ}\cdot7$.
61	2	12	Greenwich Civil Time, *for* 327·301, *read* 327·294.

LEDGERS OF SUN SPOTS, 1897.

Page	Group.	Date.	
91	4632	Sept. 21	Area for Whole Spot, *for* 228, *read* 128.
			Mean Longitude, *for* $140^{\circ}\cdot7$, *read* $139^{\circ}\cdot8$.
			Longitude from Central Meridian, *for* $-73^{\circ}\cdot0$, *read* $-73^{\circ}\cdot9$.
		Means.	Area for Whole Spot, *for* 140, *read* 131.
			Mean Longitude, *for* $144^{\circ}\cdot16$, *read* $144^{\circ}\cdot08$.

GREENWICH SPECTROSCOPIC AND PHOTOGRAPHIC RESULTS, 1897.

INTRODUCTION.

§ 1. *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* 1897; *with the deduced Heliographic Longitudes and Latitudes.*

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

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

The photographs have been taken throughout the year on gelatine dry plates, "Lantern" plates supplied by R. W. Thomas and Co. being used, with hydroquinone development.

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.

Wt.—24563.

The Mauritius photographs were taken under the superintendence of Dr. C. Meldrum, Director of the Royal Alfred Observatory, Mauritius, and of his successor, Mr. T. F. Claxton, 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 on 183 days, and Indian photographs on 156 days with Mauritius photographs on 25 days have been received from the Solar Physics Committee to complete the total of 364 days for which there are either Greenwich, Indian, or Mauritius photographs of the Sun available for measurement in 1897.

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 1897:—

P. H. Cowell	C	C. F. Turner	FT
E. W. Maunder	M	A. J. Wilkin	AW
C. C. Lacey	CL	J. A. West	JW

The *third* column gives the No. of the group, and the letter for the spot. The groups are numbered in 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 circular 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 zero of position-angles for the Dallmeyer Photoheliograph, employed at Greenwich, has been determined 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 about a 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.
	d h	° ′
1896 December	15. 14	+ 3. 14
	31. 11	+ 2. 48
1897 February	17. 11	+ 2. 52
	17. 12	+ 2. 57
March	11. 10	+ 2. 53
May	12. 16	+ 3. 0
June	11. 10	+ 3. 5
July	24. 13	+ 3. 5
August	12. 16	+ 3. 3
September	6. 15	+ 3. 0
October	5. 15	+ 3. 3
December	2. 12	+ 2. 53
1898 February	21. 15	+ 3. 5

The Dallmeyer Photoheliograph has been mounted throughout the year on the terrace roof of the South wing of the new Physical Observatory.

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 1897.

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 $c = \sin 57''\cdot5 = \frac{1}{3600}$ nearly, and z is the apparent zenith distance, we shall have—

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

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

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

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

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

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

The quantities $c \tan^2 z$, $- \frac{\sin 2 (\theta - v)}{2}$, and $\frac{\cos 2 (\theta - v)}{2}$ have been tabulated for use

as follows, $c \tan^2 z$ being expressed in circular measure and in arc for application to distances and position-angles respectively :—

$c \tan^2 z$.

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

Factors for Refraction.

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

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

The distance from centre in terms of the Sun's radius given in the *fourth* column is then readily found by dividing the measured distance r_0, as corrected for 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 disk, 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° 22′, 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-hundredth of an inch, and placed as nearly as possible 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.

§ 2. *Ledgers of Areas and Heliographic Positions of Groups of Sun Spots deduced from the measurement of the Solar photographs for each day in the year* 1897.

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.

§ 3. *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* 1897.

This section requires no further explanation.

W. H. M. CHRISTIE.

Royal Observatory, Greenwich.
1898, *November* 2.

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.

1897.

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 1897.

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 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).
1897.				°	°	°			
0·502	CL, FT	4489*a*	0·988	256·6	167·9	−13·7	0	121	458*f*
		4494	0·469	244·9	112·6	−14·4	0	6	
		4494	0·439	252·3	111·8	−10·7	0	3	
		4494	0·438	248·8	111·3	−12·1	0	3	
		4494	0·426	252·8	111·0	−10·2	0	2	
		4492	0·325	213·3	97·5	−18·9	3	7	
		4492	0·316	209·8	96·2	−19·2	1	7	
		4492	0·296	204·7	94·2	−18·8	0	3	
		4492	0·276	205·9	93·9	−17·6	0	3	
		4495	0·216	226·4	95·9	−11·8	0	3	
		4496	0·549	88·1	53·5	− 1·7	0	3	
		4496	0·636	84·6	47·6	+ 0·9	1	4	
		4491	0·618	108·9	49·8	−14·1	0	4	
		4491*a*	0·628	106·7	48·7	−13·0	26	126	
		4491	0·640	104·9	47·7	−12·0	0	4	
		4491	0·654	106·3	46·7	−13·1	0	7	359*f*
		4491	0·652	103·7	46·6	−11·4	0	5	
		4491	0·660	106·0	46·3	−13·0	0	5	
		4491	0·682	105·2	44·4	−12·7	6	24	
		4493*a*	0·911	96·6	21·1	− 7·4	17	100	217*p*
			0·820	122·4	35·2	−28·1			111
			0·820	100·1	31·8	−10·2			115
			0·912	108·7	21·4	−18·4			155
Jan. 1		Centre			(86·7)	(−3·3)	(54)	(440)	(1415)
1·239	M, JW	4491*a*	0·493	111·2	48·8	−13·3	25	127	
M.		4491	0·518	109·7	47·0	−13·0	2	19	
		4491	0·555	108·3	44·3	−12·8	0	28	
		4493*a*	0·827	96·3	21·2	− 7·1	24	96	152*c*
Jan. 2		Centre			(76·9)	(−3·4)	(51)	(270)	(152)
2·134	CL, FT	4491*a*	0·323	121·0	48·8	−13·0	30	119	
I.		4491	0·332	113·5	47·2	−11·0	0	8	
		4491	0·337	115·5	47·2	−11·7	0	6	
		4491	0·346	117·3	46·9	−12·6	0	12	
		4491	0·381	115·2	44·6	−12·7	0	12	
1897.				°	°	°			
2·134	CL, FT	4493*a*	0·695	95·8	21·3	−6·6	21	89	
		4497*a*	0·968	98·0	349·6	−8·6	50	255	351*c*
I.			0·781	114·2	15·7	−21·0			98
			0·890	96·0	2·3	− 7·0			186
Jan. 3		Centre			(65·2)	(−3·6)	(101)	(501)	(635)
3·204	M, JW	4491*a*	0·165	167·8	49·1	−13·0	19	130	
		4491	0·145	154·7	47·5	−11·2	0	4	
M.		4491	0·191	156·5	46·6	−13·7	3	13	
		4491	0·194	149·5	45·3	−13·3	0	2	
		4491	0·205	147·8	44·7	−13·6	3	10	
		4493*a*	0·491	97·0	21·8	− 6·6	10	57	
		4497*a*	0·873	98·4	350·3	− 9·2	31	228	
		4497	0·881	97·0	349·3	− 8·0	0	24	
		4497	0·887	98·4	348·6	− 9·2	0	22	
		4497*b*	0·941	95·9	340·8	− 6·8	123	912	
		4497	0·947	98·5	339·7	− 9·3	9	85	788*c*
		4497	0·960	95·3	337·3	− 6·1	0	45	
		4497	0·962	98·8	336·8	− 9·5	0	48	
		4497	0·973	98·4	334·3	− 9·1	9	61	
		4497*c*	0·977	96·8	333·3	− 7·4	17	227	
Jan. 4		Centre			(51·1)	(−3·7)	(224)	(1868)	(788)
4·326	CL, JW		0·887	281·9	97·5	+ 8·7			253
		4492	0·875	250·6	96·7	−18·7	0	14	
M.		4492	0·870	249·2	96·0	−20·0	4	36	
		4492	0·868	250·1	95·8	−19·1	2	21	279*c*
		4492	0·854	250·1	94·2	−18·9	0	27	
		4491*a*	0·276	234·8	49·6	−12·8	23	118	
		4491	0·252	228·4	47·4	−13·3	0	12	
		4491	0·219	224·5	45·3	−12·7	0	9	
		4493*a*	0·237	102·7	22·9	− 6·7	9	42	
		4497*a*	0·717	99·2	350·7	− 9·2	35	182	
		4497	0·737	99·2	349·0	− 9·3	0	39	
		4497	0·810	99·2	342·3	− 9·7	0	12	
		4497*b*	0·820	95·7	341·2	− 6·9	161	1501	

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 4489, 1896 December 25–1897 January 1. A few small spots in a straight stream, *f* Group 4486 on December 25. The group increases on the succeeding days, and consists chiefly, on December 27 and 28, of two large composite spots, *a* and *b*, and a few small spots between them. *a* is measured in two parts on December 29. The group undergoes continual change.

Group 4491, 1896 December 29–1897 January 10. A large regular spot, *a*, usually followed by a few small companions in a straight stream.

Group 4492, 1896 December 30–1897 January 6. A few small unstable spots irregularly scattered. The group is not seen on January 2, 3, or 4.

Group 4493, 1896 December 31–1897 January 7. A regular spot, *a*, which is broken up into several very small fragments by January 6.

Group 4494, January 1. Four very small spots.

Group 4495, January 1. One very small spot.

Group 4496, January 1. Two very small spots.

Group 4497, January 3–15. A fine group; the leader *a*, which has alone appeared by the first day, is a moderately large detached spot *sp* the group; *b* is a very large stable spot at the head of the remainder of the group. Its shape is at first regular, but before it reaches the central meridian it has developed a marked indentation in its *sf* boundary. It is followed by an irregular swarm of spots, and the group is usually brought up by some spots of considerable size, though, with the exception of *c* from January 4–6, and *d* from January 5–12, it is impossible to follow any. The central part of the stream is very unstable, and the whole of the following portions of the group has disappeared before the large spot *b* has passed behind the western 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 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).
1897.				°	°	°			
4·326	CL, JW	4497	0·860	94·8	337·0	− 6·1	0	33	796c
		4497	0·861	99·1	336·9	− 9·8	5	32	
M.		4497	0·875	94·9	335·3	− 6·1	0	39	
		4497d	0·877	98·5	335·0	− 9·3	46	196	
		4497c	0·900	96·5	332·1	− 7·5	33	275	
Jan. 5		Centre			(36·3)	(−3·8)	(318)	(2588)	(1328)
5·466	CL, FT	.	0·959	274·1	94·3	+ 2·8			77
			0·961	283·0	93·8	+11·3			219
			0·902	289·5	83·1	+15·7			141
			0·914	299·4	82·4	+24·8			332
			0·872	253·3	81·6	−16·5			295
			0·822	295·4	72·5	+18·2			69
		4492	0·966	252·0	96·6	−18·4	0	11	
		4492	0·964	250·9	96·0	−19·4	4	22	
		4492	0·958	252·2	94·8	−18·2	0	11	211c
		4492	0·957	251·3	94·5	−19·0	0	8	
		4491a	0·496	250·7	49·9	−12·8	21	107	
		4491	0·475	255·9	49·1	−10·1	0	5	
		4491	0·463	252·6	48·0	−11·4	0	3	
		4493	0·046	252·3	23·8	− 4·7	0	2	
		4493	0·068	217·5	23·7	− 7·0	2	6	
		4493	0·056	216·0	23·2	− 6·5	1	6	
		4497a	0·513	102·7	350·9	− 9·8	34	151	
		4497	0·536	101·4	349·3	− 9·4	4	20	
		4497	0·542	97·8	348·6	− 7·5	0	3	
		4497	0·596	92·1	344·8	− 4·4	0	6	
		4497	0·598	91·4	344·6	− 4·0	0	3	
		4497	0·621	90·4	343·0	− 3·3	0	23	
		4497b	0·627	95·2	342·5	− 6·3	213	1188	
		4497	0·631	101·4	342·5	−10·2	1	4	
		4497	0·644	99·4	341·4	− 9·1	3	17	
		4497	0·654	90·9	340·5	− 3·6	0	5	
		4497	0·670	91·6	339·3	− 4·0	0	4	
		4497	0·678	98·6	338·8	− 8·7	26	267	
		4497	0·682	96·3	338·4	− 7·1	9	58	
		4497	0·684	92·4	338·2	− 4·5	1	6	
		4497	0·685	94·1	338·1	− 5·7	3	60	
		4497	0·707	94·5	336·4	− 5·9	0	19	
		4497	0·707	95·8	336·4	− 6·9	0	8	
		4497d	0·730	98·8	334·6	− 9·1	58	435	
		4497	0·741	95·8	333·5	− 6·9	0	42	
		4497	0·755	99·1	332·4	− 9·5	8	41	
		4497c	0·765	97·5	331·5	− 8·2	33	162	
1897.				°	°	°			
5·466	CL, FT	4497	0·781	97·9	330·0	− 8·6	0	5	
Jan. 6		Centre			(21·3)	(−3·9)	(421)	(2708)	(1344)
6·479	AW, FT		0·962	253·8	82·3	−16·6			328
			0·916	246·5	73·7	−23·1			128
			0·910	263·7	73·6	− 7·4			282
			0·830	250·9	63·3	−18·0			264
			0·836	240·1	62·2	−27·0			134
			0·703	245·8	50·8	−19·7			181
		4491a	0·676	255·2	49·9	−13·0	13	82	230p
		4493	0·300	265·0	25·4	− 5·4	0	8	
		4493	0·289	260·1	24·6	− 6·7	2	16	
		4493	0·290	257·6	24·5	− 7·4	0	3	
		4493	0·284	264·0	24·4	− 5·5	0	3	
		4497a	0·302	111·0	351·4	−10·1	41	152	
		4497	0·325	112·0	350·2	−10·8	1	8	
		4497	0·335	116·3	350·2	−12·3	3	15	
		4497	0·329	105·5	349·4	− 8·8	0	4	
		4497	0·333	100·4	348·8	− 7·3	0	8	
		4497	0·365	96·9	346·7	− 6·3	0	10	
		4497	0·406	103·2	344·5	− 9·0	0	5	
		4497	0·406	87·8	344·1	− 2·8	6	46	
		4497b	0·424	97·2	343·0	− 6·7	243	1335	
		4497	0·445	102·5	342·0	− 9·2	3	52	
		4497	0·449	104·4	341·9	−10·0	1	8	
		4497	0·489	101·6	339·1	− 9·2	2	25	
		4497	0·490	94·1	338·7	− 5·5	27	228	
		4497	0·507	101·3	337·9	− 9·2	0	3	
		4497	0·519	99·3	337·0	− 8·2	3	17	
		4497	0·534	102·5	336·2	−10·0	0	23	
		4497	0·552	95·8	334·6	− 6·5	0	13	
		4497	0·560	96·8	334·1	− 7·1	0	12	
		4497d	0·563	99·9	334·0	− 8·9	79	500	
		4497	0·569	95·7	333·4	− 6·5	0	8	
		4497	0·574	96·9	333·1	− 7·3	2	8	
		4497	0·606	98·2	330·9	− 8·2	5	12	
		4497	0·611	99·3	330·6	− 8·8	0	6	
		4497	0·616	97·3	330·1	− 7·7	0	9	
		4497	0·626	99·1	329·4	− 8·8	0	9	
			0·854	143·9	321·3	−46·4			141
			0·841	114·8	312·2	−22·9			362
			0·883	126·6	309·6	−33·9			218
			0·873	80·7	308·2	+ 6·1			230
			0·889	90·0	305·4	− 1·9			149

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 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).
1897.				°	°	°			
6·479	AW, FT		0·934	106·3	298·9	−16·6			
			0·942	97·6	297·5	− 8·5			300
Jan. 7		Centre			(8·0)	−(4·0)	(431)	(2628)	899 (3846)
7·277	CL, FT		0·961	294·5	68·0	+22·2			162
I.			0·945	293·2	65·0	+20·3			186
			0·879	282·4	57·5	+ 8·9			105
			0·870	249·3	57·2	−20·0			624
			0·842	295·9	50·5	+19·1			611
			0·749	240·8	43·0	−24·3			113
			0·689	249·0	39·6	−17·4			99
		4491*a*	0·798	256·6	50·1	−13·1	22	102	281*c*
		4497	0·153	139·6	351·6	−10·8	0	5	
		4497*a*	0·143	134·9	351·5	− 9·9	52	195	
		4497	0·138	107·3	349·8	− 6·5	0	4	
		4497	0·159	109·1	348·7	− 7·1	0	5	
		4497	0·181	104·9	347·3	− 6·7	0	6	
		4497	0·223	113·3	345·5	− 9·1	4	24	
		4497	0·239	81·5	343·8	− 2·0	5	23	
		4497*b*	0·247	96·4	343·2	− 5·5	402	1609	
		4497	0·276	110·9	342·3	− 9·6	2	42	
		4497	0·271	83·4	341·8	− 2·2	0	3	
		4497	0·285	107·1	341·5	− 8·8	0	17	
		4497	0·325	105·5	339·0	− 8·9	4	18	
		4497	0·349	96·6	337·1	− 6·2	16	133	
		4497	0·364	101·7	336·4	− 8·1	4	26	
		4497	0·368	94·5	335·9	− 5·5	0	10	
		4497	0·376	99·5	335·5	− 7·4	6	36	
		4497	0·400	97·2	334·0	− 6·7	19	117	
		4497*d*	0·405	102·7	333·9	− 8·8	63	349	
		4497	0·428	98·3	332·2	− 7·3	4	38	
		4497	0·434	100·7	332·0	− 8·3	0	37	
		4497	0·452	99·9	330·8	− 8·1	5	19	
		4497	0·453	95·0	330·5	− 5·9	0	11	
		4497	0·458	98·2	330·3	− 7·4	3	16	
			0·791	116·1	307·1	−23·0			160
			0·878	96·8	296·0	− 8·0			785
Jan. 8		Centre	0·889	107·7	294·9	−17·6			312
					(357·4)	(−4·1)	(611)	(2845)	(3438)
8·228	AW, FT		0·960	249·3	59·0	−21·1			235
I.			0·962	240·0	58·8	−30·0			77
			0·892	269·3	48·0	− 2·5			59
			0·907	295·7	46·0	+21·1			213
1897.				°	°	°			
8·228	AW, FT		0·852	251·6	42·9	−17·9			365
			0·861	241·2	42·5	−26·8			63
I.			0·775	264·2	35·8	− 7·1			231
		4491*a*	0·906	257·4	50·0	−13·2	15	96	276*c*
		4497*a*	0·160	231·3	352·2	− 9·9	28	143	
		4497	0·069	237·4	348·3	− 6·3	0	2	
		4497	0·082	201·1	346·7	− 8·6	4	29	
		4497	0·095	185·0	345·5	− 9·6	2	14	
		4497	0·040	1·7	344·9	− 1·9	0	2	
		4497	0·092	176·8	344·7	− 9·5	0	5	
		4497	0·043	18·1	344·2	− 1·9	1	2	
		4497*b*	0·031	147·7	344·0	− 5·7	305	1543	
		4497	0·111	166·5	343·5	−10·4	1	4	
		4497	0·108	147·1	341·6	− 9·4	1	13	
		4497	0·100	138·7	341·2	− 8·5	0	2	
		4497	0·110	132·2	340·3	− 8·4	0	2	
		4497	0·091	113·6	340·2	− 6·3	2	14	
		4497	0·087	100·6	340·1	− 5·1	6	39	
		4497	0·116	123·1	339·4	− 7·8	2	27	
		4497	0·143	134·9	339·1	− 9·9	0	5	
		4497	0·135	130·2	339·0	− 9·2	1	6	
		4497	0·160	138·8	338·9	−11·1	0	1	
		4497	0·109	100·7	338·9	− 5·4	9	33	
		4497	0·145	124·1	338·1	− 8·8	0	5	
		4497	0·134	106·5	337·6	− 6·4	4	41	
		4497	0·157	115·7	336·8	− 8·1	1	6	
		4497	0·151	107·1	336·7	− 6·7	4	28	
		4497	0·167	118·0	336·5	− 8·6	11	45	
		4497	0·159	98·8	336·0	− 5·5	1	2	
		4497	0·172	110·4	335·7	− 7·6	0	53	
		4497	0·176	100·3	335·0	− 5·9	0	2	
		4497	0·181	105·3	334·9	− 6·9	1	7	
		4497	0·195	115·8	334·8	− 9·0	11	51	
		4497	0·187	102·7	334·5	− 6·5	0	3	
		4497	0·195	110·9	334·4	− 8·1	1	5	
		4497	0·195	102·7	334·0	− 6·6	0	1	
		4497	0·207	112·3	333·9	− 8·6	5	18	
		4497	0·201	106·3	333·8	− 7·4	0	8	
		4497	0·200	98·8	333·6	− 5·9	0	3	
		4497	0·207	101·5	333·3	− 6·5	0	2	
		4497	0·219	110·4	333·1	− 8·5	0	3	
		4497*d*	0·229	115·6	333·0	− 9·8	29	113	
		4497	0·245	121·4	332·7	−11·4	0	4	
		4497	0·224	109·3	332·7	− 8·4	0	1	

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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 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).
1897.				°	°	°			
8·228	AW, FT	4497	0·223	97·6	332·2	− 5·8	0	2	
		4497	0·230	105·1	332·1	− 7·5	0	6	
I.		4497	0·237	111·0	332·1	− 8·9	0	5	
		4497	0·248	113·1	331·7	− 9·7	0	5	
		4497	0·241	104·0	331·4	− 7·4	0	6	
		4497	0·245	107·7	331·4	− 8·4	0	28	
		4497	0·252	104·5	330·8	− 7·7	0	6	
			0·708	98·0	300·0	− 8·6			166
			0·797	96·2	292·2	− 7·5			368
			0·949	97·7	273·2	− 8·6			101
Jan. 9		Centre			(345·0)	(−4·2)	(445)	(2441)	(2154)
9·204	FT, JW		0·891	263·4	35·2	− 7·8			302
		4491*a*	0·975	258·1	49·7	−12·6	0	70	657*f*
M.		4497*a*	0·360	254·4	352·6	− 9·6	25	150	
		4497	0·283	263·0	348·4	− 6·1	0	2	
		4497	0·282	264·7	348·4	− 5·6	0	6	
		4497	0·274	256·5	347·6	− 7·8	5	46	
		4497	0·240	247·9	345·1	− 9·4	8	111	
		4497*b*	0·215	263·0	344·4	− 5·7	263	1496	
		4497	0·218	244·3	343·5	− 9·6	3	33	
		4497	0·200	240·4	342·2	− 9·9	0	5	
		4497	0·176	245·7	341·4	− 8·4	0	3	
		4497	0·185	239·0	341·3	− 9·8	0	3	
		4497	0·171	243·1	340·9	− 8·7	0	4	
		4497	0·150	250·5	340·3	− 7·1	0	25	
		4497	0·131	263·0	339·6	− 5·2	0	11	
		4497	0·135	251·1	339·5	− 6·7	0	6	
		4497	0·137	243·8	339·2	− 7·7	0	2	
		4497	0·122	259·9	339·0	− 5·5	0	3	
		4497	0·107	256·2	338·1	− 5·8	2	12	
		4497	0·099	260·2	337·7	− 5·3	0	2	
		4497	0·110	242·8	337·7	− 7·2	0	2	
		4497	0·116	236·3	337·7	− 8·0	0	5	
		4497	0·100	236·0	336·9	− 7·5	0	10	
		4497	0·112	228·7	336·9	− 7·7	6	20	
		4497	0·088	245·8	336·7	− 7·5	7	63	
		4497	0·092	215·5	335·2	− 8·6	0	3	
		4497	0·076	222·8	335·1	− 7·5	3	47	
		4497	0·081	206·5	334·2	− 8·5	9	44	
		4497*d*	0·098	190·0	333·1	− 9·9	17	103	
		4497	0·060	193·6	332·9	− 7·7	0	3	
		4497	0·062	183·9	332·4	− 7·8	0	3	
1897.				°	°	°			
9·204	FT, JW	4497	0·134	179·5	332·0	−12·0	0	3	
		4497	0·038	175·1	331·9	− 6·5	0	9	
M.		4497	0·047	166·7	331·5	− 6·9	0	7	
		4497	0·067	176·1	329·5	− 8·1	0	15	
Jan. 10		Centre			(332·1)	(−4·3)	(348)	(2327)	(959)
10·190	FT, JW		0·971	252·7	35·9	−18·0			328
			0·969	262·0	35·0	− 8·8			409
M.			0·894	262·7	22·6	− 8·5			244
			0·842	249·4	15·7	−19·7			165
		4497*a*	0·562	259·0	353·0	− 9·9	26	151	
		4497	0·540	257·9	351·4	−10·2	1	6	
		4497	0·528	257·4	350·5	−10·3	0	5	
		4497	0·491	263·1	348·4	− 7·3	0	9	
		4497	0·457	259·7	346·0	− 8·6	7	81	
		4497*b*	0·432	266·1	344·7	− 5·6	279	1642	
		4497	0·439	256·6	344·7	− 9·8	6	61	
		4497	0·425	259·9	344·0	− 8·3	0	8	
		4497	0·413	256·8	343·1	− 9·5	2	10	
		4497	0·401	256·8	342·3	− 9·3	0	8	
		4497	0·394	259·4	342·0	− 8·2	0	49	
		4497	0·387	256·5	341·4	− 9·3	0	3	
		4497	0·380	269·7	341·4	− 4·2	3	38	
		4497	0·363	267·6	340·4	− 5·0	0	3	
		4497	0·367	256·7	340·2	− 8·9	0	1	
		4497	0·359	260·4	339·9	− 7·5	7	94	
		4497	0·344	266·5	339·2	− 5·4	6	26	
		4497	0·341	258·1	338·7	− 8·2	0	2	
		4497	0·336	259·5	338·5	− 7·7	0	4	
		4497	0·332	256·9	338·1	− 8·5	1	3	
		4497	0·329	258·1	338·0	− 8·0	0	4	
		4497	0·325	262·1	337·9	− 6·7	5	48	
		4497	0·317	260·0	337·4	− 7·4	0	9	
		4497	0·311	258·2	336·9	− 7·8	0	7	
		4497	0·306	261·7	336·8	− 6·7	0	25	
		4497	0·306	255·0	336·4	− 8·8	0	1	
		4497	0·291	258·8	335·8	− 7·4	9	54	
		4497	0·278	256·0	334·8	− 8·1	7	52	
		4497*d*	0·268	249·3	333·8	− 9·7	17	63	
		4497	0·259	246·5	333·0	−10·2	0	2	
		4497	0·245	254·2	332·8	− 8·1	0	27	
		4497	0·268	239·1	332·6	−12·2	0	5	
		4497	0·224	262·0	331·9	− 6·1	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.

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).
1897.				°	°	°			
10·190	FT, JW	4497	0·223	256·6	331·7	− 7·3	0	32	
M.		4498	0·206	328·8	325·2	+ 5·8	1	7	
		4498	0·197	331·3	324·5	+ 5·6	0	2	
		4498	0·209	338·9	323·4	+ 6·9	2	9	
			0·955	91·4	246·4	− 2·7			128
Jan. 11		Centre			(319·1)	(−4·4)	(379)	(2554)	(1274)
11·247	AW, FT		0·933	249·9	14·1	−20·4			235
			0·892	265·2	8·4	− 6·3			158
I.		4497*a*	0·746	260·3	353·3	−10·2	26	149	
		4497	0·726	259·4	351·6	−10·8	0	6	
		4497*b*	0·636	265·8	344·7	− 6·2	340	1864	
		4497	0·614	260·1	342·9	− 9·6	0	5	
		4497	0·599	258·6	341·7	−10·4	0	5	
		4497	0·576	261·1	340·2	− 8·8	0	47	
		4497	0·575	264·4	340·2	− 6·9	12	153	
		4497	0·562	267·0	339·4	− 5·4	12	48	
		4497	0·553	263·1	338·7	− 7·5	0	7	
		4497	0·547	264·2	338·3	− 7·0	0	24	
		4497	0 539	262·5	337·7	− 7·8	4	20	
		4497	0·523	262·6	336·6	− 7·7	16	94	
		4497	0·503	263·2	335·3	− 7·3	0	4	
		4497	0·504	262·0	335·3	− 8·0	0	5	
		4497	0·501	260·9	335·1	− 8·5	6	27	
		4497	0·489	262·2	334·3	− 7·8	0	18	
		4497*d*	0·486	258·2	333·9	− 9·7	3	40	
		4497	0·470	262·2	333·1	− 7·6	0	20	
		4497	0·445	251·0	330·6	−12·4	0	6	
			0·862	90·1	245·8	− 2·4			209
Jan. 12		Centre			(305·2)	−4·5)	(419)	(2542)	(602)
12·298	CL, AW		0·962	263·5	5·6	− 7·5			154
I.		4497	0·883	259·9	353·4	−11·1	7	31	
		4497*a*	0·882	261·3	353·3	− 9·9	17	75	
		4497	0·806	262·4	345·0	− 8·9	0	30	
		4497*b*	0·801	266·3	344·5	− 5·7	338	1798	
		4497	0·789	262·6	343·4	− 8·7	0	31	
		4497	0·788	261·4	343·3	− 9·6	0	33	
		4497	0·774	263·6	342·0	− 7·9	0	13	
		4497	0·771	261·5	341·7	− 9·5	7	55	
		4497	0·759	263·0	340·7	− 8·3	2	20	
		4497	0·754	262·1	340·2	− 9·0	0	4	
1897.				°	°	°			
12·298	CL, AW	4497	0·753	265·9	340·2	− 6·2	0	23	
I.		4497	0·751	264·0	340·0	− 7·5	10	46	
		4497	0·744	265·0	339·4	− 6·8	0	13	
		4497	0·743	267·3	339·3	− 5·1	4	24	1248*c*
		4497	0·733	266·9	338·4	− 5·4	0	8	
		4497	0·729	263·8	338·1	− 7·7	0	5	
		4497	0·724	264·0	337·7	− 7·5	0	15	
		4497	0·708	263·3	336·3	− 8·0	2	11	
		4497	0·703	264·1	336·0	− 7·4	1	8	
		4497	0·698	262·9	335·6	− 8·3	8	29	
		4497	0·693	264·6	335·2	− 7·1	0	2	
		4497	0·688	263·9	334·7	− 7·5	0	3	
		4497	0·685	261·8	334·5	− 9·0	0	9	
		4497	0·678	263·6	334·0	− 7·7	0	2	
		4497	0·678	261·3	333·9	− 9·3	0	7	
		4497	0·672	264·9	333·5	− 6·9	0	12	
		4497	0·665	265·6	333·0	− 6·4	0	2	
		4499*a*	0·983	108·1	211·2	−18·6	91	488	
		4499	0·986	110·1	210·1	−20·6	0	131	836*sp*
Jan. 13		Centre			(291·3)	(−4·6)	(487)	(2928)	(2238)
13·227	L, JW	4497*a*	0·956	261·4	352·3	− 9·7	17	53	
M.		4497	0·910	269·5	344·5	− 2·4	0	16	
		4497	0·906	262·8	344·2	− 8·5	0	19	
		4497*b*	0·905	266·1	344·0	− 5·5	257	1453	
		4497	0·894	262·2	342·6	− 9·1	0	17	
		4497	0·890	261·6	342·1	− 9·6	0	16	
		4497	0·889	263·4	342·0	− 8·1	0	50	
		4497	0·887	268·7	341·5	− 3·3	0	56	2647*c*
		4497	0·885	261·8	341·5	− 9·5	0	11	
		4497	0·868	267·6	339·3	− 4·4	0	15	
		4497	0·866	264·3	339·2	− 7·3	12	136	
		4497	0·864	266·6	338·9	− 5·4	0	16	
		4497	0·861	267·5	338·5	− 4·6	0	4	
		4497	0·837	263·4	336·0	− 8·1	3	12	
		4497	0·823	264·4	334·5	− 7·3	0	9	
		4499*a*	0·918	108·9	212·5	−19·2	50	311	
		4499	0·921	111·0	212·2	−21·1	5	67	1130*c*
		4499	0·930	110·4	210·6	−20·7	0	40	
		4500	0·953	97·3	206·5	− 8·4	17	87	810*s*
			0·887	75·5	218·5	+10·6			187
			0·976	83·3	202·1	+ 5·5			289
Jan. 14		Centre			(279·1)	(−4·7)	(361)	(2388)	(5063)

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

Group 4498, January 11. Three small spots.
Group 4499, January 13–24. A large composite spot, *a*, with several smaller spots, usually *s* or *f*. On January 20–22 the companions form a sparse but moderately long stream. On January 23 the group has diminished, and on January 24 one small spot alone remains.
Group 4500, January 14–24. A composite spot measured in two parts on January 18.

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).
1897.				°	°	°			
14·469	AW, FT		0·887	279·4	324·1	+ 6·0			111
			0·842	274·2	319·6	+ 0·9			68
		4497*b*	0·986	265·3	343·1	− 5·4	224	1524	
		4497	0·978	262·5	341·0	− 8·4	18	240	1728*sf*
		4497	0·973	264·2	339·6	− 6·8	5	40	
		4497	0·968	263·7	338·4	− 7·3	8	37	
		4501	0·152	213·0	267·5	−12·1	1	8	
		4501	0·128	204·4	265·8	−11·5	3	11	
		4499*a*	0·785	110·7	211·9	−19·2	56	307	
		4499	0·789	113·5	211·9	−21·4	6	63	
		4499	0·804	109·4	209·8	−18·4	0	22	902*c*
		4499	0·819	108·8	208·3	−18·1	0	12	
		4499	0·837	106·9	206·2	−16·8	1	6	
		4500	0·833	96·7	206·2	− 8·3	17	80	142*c*
		4502	0·885	100·0	200·3	−11·1	0	4	216*c*
		4502*a*	0·927	99·4	194·5	−10·6	4	35	
			0·776	68·1	215·1	+13·6			55
			0·837	120·9	208·3	−28·2			171
			0·888	86·6	200·5	+ 0·8			111
			0·917	79·3	197·5	+ 7·8			515
Jan. 15		Centre			(262·7)	(−4·8)	(343)	(2389)	(4019)
15·212	AW, FT		0·986	261·9	333·7	− 8·8			1420
			0·962	278·0	326·2	+ 6·3			144
I.		4501	0·285	245·9	268·3	−11·4	0	3	
		4501	0·286	241·5	267·9	−12·6	7	25	
		4501	0·248	241·7	265·8	−11·6	1	13	
		4499	0·664	118·1	214·0	−22·0	0	9	
		4499	0·666	116·0	213·3	−20·8	0	11	
		4499*a*	0·677	112·3	211·8	−18·6	32	344	464*c*
		4499	0·684	115·4	211·8	−20·7	5	61	
		4499	0·705	111·5	209·4	−18·6	0	11	
		4499	0·711	110·4	208·8	−17·8	0	11	
		4500	0·730	96·0	206·1	− 7·8	16	87	125*c*
		4503	0·804	109·6	200·1	−18·6	0	4	371*c*
		4503	0·819	108·7	198·5	−18·1	0	9	
		4502*a*	0·856	97·9	194·0	− 9·3	5	25	291*c*
			0·860	77·8	193·6	−13·0			858
			0·926	110·2	185·1	−20·6			140
			0·937	87·2	183·8	+ 0·9			144
			0·986	100·9	172·0	−11·6			390
Jan. 16		Centre			(253·0)	(−4·9)	(66)	(613)	(4347)
1897.									
16·206	AW, CL		0·834	251·3	296·0	−18·3			274
			0·828	263·8	295·9	− 8·0			284
I.		4504	0·797	285·9	290·7	+ 9·5	2	11	128*c*
		4501	0·503	252·9	269·3	−12·8	0	5	
		4501	0·466	253·4	267·0	−12·1	0	2	
		4499	0·522	123·0	212·1	−20·9	6	29	
		4499	0·520	121·7	211·9	−20·3	0	17	254*c*
		4499*a*	0·514	118·6	211·6	−18·6	54	290	
		4500	0·553	96·6	206·4	− 7·8	21	85	
		4502*a*	0·715	98·6	194·3	− 9·6	3	20	252*f*
			0·653	113·8	200·8	−19·2			233
			0·639	102·1	200·5	−11·6			79
			0·668	79·6	198·9	+ 3·2			172
			0·790	110·1	188·4	−18·9			216
			0·808	74·5	188·0	+ 9·4			333
			0·802	85·1	187·0	+ 0·9			227
			0·919	78·6	174·5	+ 8·4			94
			0·933	101·1	170·6	−12·2			338
Jan. 17		Centre			(2399)	(−5·0)	(86)	(459)	(2884)
17·214	AW, FT		0·943	260·8	297·5	−10·4			428
			0·934	250·5	295·9	−20·0			178
I.			0·910	280·3	290·8	+ 7·2			173
		4501	0·670	255·4	268·3	−13·6	0	3	
		4501	0·660	254·9	267·4	−13·8	0	3	
		4501	0·658	256·2	267·4	−12·9	0	3	
		4501	0·649	254·8	266·6	−13·7	2	7	
		4499	0·358	139·6	212·3	−20·7	0	3	
		4499	0·367	139·8	211·9	−21·2	0	6	
		4499	0·365	137·7	211·5	−20·6	2	13	
		4499*a*	0·347	133·9	211·4	−18·8	49	235	
		4499	0·374	138·9	211·4	−21·3	0	3	
		4499	0·368	135·2	210·7	−20·0	2	18	
		4499	0·343	127·4	210·1	−16·9	0	1	
		4499	0·379	130·3	208·9	−19·0	0	3	
		4499	0·386	131·5	208·8	−19·7	0	2	
		4500	0·345	98·4	206·5	− 7·7	8	29	
		4500	0·355	99·9	206·0	− 8·3	7	25	
		4502*a*	0·535	100·7	194·5	−10·0	0	5	
			0·869	72·2	168·8	+12·7			139
			0·850	102·1	168·3	−13·0			485
Jan. 18		Centre			(226·6)	(−5·1)	(70)	(359)	(1403)

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

Group 4501, January 15–20. A few small unstable spots.
Group 4502, January 15–18. A spot, *a*, with a small companion on January 15, *f* Group 4500: it has considerably diminished by the last day.
Group 4503, January 16. Two very small spots, *f* Group 4499.
Group 4504, January 17. A 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 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).
1897.				°	°	°			
18·188	CL, JW		0·962	262·5	287·8	− 8·6			204
M.		4501	0·804	258·2	266·8	−12·6	0	15	
		4501	0·797	258·9	266·2	−12·0	0	7	124c
		4501	0·795	257·2	265·9	−13·3	10	52	
		4499	0·283	176·0	212·1	−21·5	0	5	
		4499	0·273	175·5	212·0	−20·9	1	6	
		4499	0·271	173·8	211·5	−20·8	0	2	
		4499*a*	0·243	172·1	211·3	−19·1	31	177	
		4499	0·285	173·0	211·2	−21·6	0	2	
		4499	0·224	168·7	210·7	−17·8	0	3	
		4499	0·265	169·8	210·4	−20·3	0	7	
		4499	0·227	165·4	209·9	−17·8	0	25	
		4499	0·240	165·5	209·7	−18·6	0	4	
		4500	0·138	116·7	206·2	− 8·7	10	36	
Jan. 19		Centre			(213·3)	(−5·2)	(52)	(341)	(328)
19·198	AW, FT	4501	0·909	257·9	266·1	−13·2	0	8	225*p*
I.		4499	0·388	216·5	215·0	−23·2	0	2	
		4499	0·329	219·6	213·3	−19·8	1	6	
		4499*a*	0·297	216·9	211·3	−18·9	20	201	
		4499	0·276	214·9	210·0	−18·3	2	23	
		4499	0·328	206·2	209·5	−22·3	0	2	
		4500	0·118	240·7	206·4	− 8·6	16	49	
		4505	0·233	3·4	199·7	+ 8·1	8	20	
		4505	0·232	8·0	198·6	+ 8·0	0	2	
		4505	0·231	10·5	198·1	+ 7·8	0	4	
		4505	0·245	10·3	198·0	+ 8·6	0	4	
		4505	0·252	12·5	197·3	+ 8·9	0	6	
		4505	0·237	15·6	196·8	+ 7·8	0	2	
		4505	0·252	20·0	195·5	+ 8·4	0	4	
		4505	0·252	23·1	194·8	+ 8·1	1	9	
Jan. 20		Centre			(200·5)	(−5·3)	(48)	(342)	(225)
20·182	AW, CL		0·990	257·4	269·8	−13·0			147
			0·863	269·6	247·2	− 3·1			121·
I.		4499	0·470	234·7	211·7	−20·6	0	4	
		4499*a*	0·458	237·6	211·7	−19·1	19	157	
		4499	0·437	238·1	210·5	−18·3	0	33	
		4499	0·411	242·7	209·8	−15·9	0	3	
		4499	0·410	240·5	209·4	−16·6	0	1	
		4499	0·401	242·7	209·2	−15·6	0	7	
		4499	0·409	234·1	208·0	−18·9	0	4	
1897.				°	°	°			
20·182	AW, CL	4499	0·406	234·1	207·8	−18·8	0	7	
I.		4499	0·330	231·5	203·2	−17·1	0	6	
		4499	0·339	226·5	202·6	−18·7	0	3	
		4499	0·321	226·2	201·6	−18·0	0	2	
		4499	0·318	220·3	200·1	−19·2	0	7	
		4500	0·330	258·7	206·6	− 8·8	13	37	
		4505*a*	0·323	312·4	201·5	+ 7·3	21	125	
		4505	0·324	317·0	200·4	+ 8·4	0	4	
		4505	0·305	314·6	200·2	+ 7·0	0	11	
		4505	0·310	318·8	199·5	+ 8·2	3	13	
		4505	0·271	326·7	196·2	+ 7·7	17	69	
		4505	0·257	324·6	196·2	+ 6·7	3	12	
		4505	0·259	330·0	195·1	+ 7·5	0	4	
		4506	0·300	125·7	173·0	−15·3	3	12	
			0·952	106·8	114·8	−17·7			216
Jan. 21		Centre			(187·6)	(−5·4)	(79)	(521)	(484)
21·186	AW, FT	4499	0·664	246·2	214·3	−19·8	2	10	
I.		4499	0·653	247·5	213·7	−18·7	0	3	
		4499	0·647	245·7	212·9	−19·7	0	4	
		4499*a*	0·633	247·2	212·1	−18·5	12	83	
		4499	0·620	245·6	210·9	−19·2	5	22	
		4499	0·612	247·3	210·6	−18·1	0	2	
		4499	0·604	246·2	209·8	−18·6	0	5	
		4499	0·594	244·8	208·8	−19·2	0	1	
		4499	0·561	247·0	206·9	−17·2	1	10	
		4499	0·551	245·6	206·0	−17·8	0	3	
		4499	0·543	245·1	205·3	−18·0	0	5	
		4499	0·521	244·1	203·7	−18·0	0	1	
		4499	0·513	246·6	203·6	−16·5	0	4	
		4499	0·518	242·6	203·2	−18·6	0	3	
		4499	0·506	245·4	202·9	−17·0	2	7	
		4499	0·506	242·2	202·3	−18·5	0	2	
		4500	0·534	262·2	206·5	− 8·8	8	28	
		4505*a*	0·509	292·2	202·5	+ 6·2	42	203	
		4505	0·506	295·2	201·7	+ 7·5	5	19	
		4505	0·470	299·4	198·6	+ 8·3	0	1	
		4505	0·472	300·4	198·5	+ 8·8	0	1	
		4505	0·449	294·6	198·4	+ 5·7	0	7	
		4505	0·450	298·5	197·7	+ 7·3	2	10	
		4505	0·454	301·3	197·3	+ 8·5	0	2	
		4505	0·438	297·7	197·2	+ 6·7	1	3	
		4505	0·447	300·4	197·1	+ 8·0	1	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 4505, January 20–26. A cluster of small spots that appears suddenly a little north of the centre of the sun's disc. On January 21 *a* has formed at the head of the group, and by the next day *b* at the tail. Both *a* and *b* increase rapidly. On January 26 the whole group, except *b*, has passed round the limb.
Group 4506, January 21. A 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 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).
1897.				°	°	°			
21·186	AW, FT	4505	0·439	300·4	196·7	+ 7·7	1	8	
		4505	0·430	301·7	195·9	+ 7·9	8	18	
I.		4505	0·413	299·6	195·4	+ 6·6	0	2	
		4505*b*	0·411	302·3	194·7	+ 7·5	16	53	
			0·930	108·1	105·5	−18·9			389
			0·977	78·5	98·1	+10·0			246
Jan. 22		Centre			(174·3)	(−5·5)	(106)	(523)	(635)
22·213	AW, CL		0·870	288·5	218·5	+13·1			151
		4499*a*	0·792	250·4	212·7	−18·9	7	61	
I.		4499	0·776	249·6	211·0	−19·3	0	5	
		4499	0·746	250·8	208·4	−17·9	0	2	490*c*
		4499	0·693	249·2	203·6	−18·3	0	7	
		4500	0·717	263·1	206·7	− 8·8	11	27	88*c*
		4505*a*	0·704	284·2	203·9	+ 5·9	78	375	
		4505	0·685	284·0	202·5	+ 5·3	0	6	
		4505	0·674	285·5	201·4	+ 6·2	6	45	
		4505	0·662	285·0	200·6	+ 5·6	0	4	
		4505	0·653	284·6	200·0	+ 5·2	0	3	
		4505	0·662	288·9	199·9	+ 8·1	0	5	
		4505	0·646	287·5	199·0	+ 6·9	0	8	
		4505	0·639	285·5	198·9	+ 5·5	0	8	
		4505	0·637	286·8	198·5	+ 6·3	0	9	
		4505	0·630	290·3	197·3	+ 8·2	1	17	
		4505	0·625	288·4	197·3	+ 7·0	4	39	
		4505	0·600	288·2	195·6	+ 6·3	3	35	
		4505*b*	0·605	290·6	195·5	+ 7·8	44	163	
		4505	0·586	290·0	194·4	+ 7·0	10	36	
		4507	0·487	293·6	187·4	+ 6·3	3	15	
		4507	0·467	296·6	185·6	+ 7·0	0	1	
		4507	0·442	299·6	183·5	+ 7·5	8	26	
			0·832	110·1	104·9	−19·7			363
			0·887	67·7	102·0	+16·8			86
			0·885	81·5	99·6	+ 4·9			131
			0·924	74·4	95·5	+12·1			269
			0·966	108·0	85·0	−18·8			233
Jan. 23		Centre			(160·8)	(−5·5)	(175)	(897)	(1811)
23·346	AW, CL		0·961	285·3	217·6	+13·0			65
			0·915	239·4	211·2	−30·2			151
I.			0·802	247·1	198·2	−21·7			129
		4499*a*	0·917	251·5	212·6	−19·2	1	11	1040*c*
1897.				°	°	°			
23·346	AW, CL	4500	0·875	263·3	207·1	− 8·6	0	14	98*c*
		4505*a*	0·876	279·4	205·8	+ 5·5	72	354	
I.		4505	0·856	281·6	203·2	+ 6·9	2	9	
		4505	0·850	280·5	202·8	+ 5·9	0	8	
		4505	0·849	283·2	202·2	+ 8·1	0	3	
		4505	0·845	280·5	202·2	+ 5·8	0	2	
		4505	0·837	280·3	201·4	+ 5·5	0	2	
		4505	0·833	282·8	200·6	+ 7·4	0	9	
		4505	0·834	284·4	200·4	+ 8·8	0	3	
		4505	0·832	283·5	200·4	+ 8·0	1	8	
		4505	0·828	280·8	200·4	+ 5·7	0	5	583*c*
		4505	0·827	282·1	200·1	+ 6·7	0	2	
		4505	0·814	285·1	198·3	+ 8·8	0	2	
		4505	0·801	284·0	197·3	+ 7·7	0	3	
		4505	0·799	282·7	197·3	+ 6·6	4	33	
		4505	0·782	282·2	195·8	+ 5·9	0	5	
		4505*b*	0·783	284·5	195·5	+ 7·7	55	237	
		4505	0·776	282·4	195·2	+ 5·9	1	3	
		4505	0·773	282·7	194·9	+ 6·2	1	6	
		4505	0·765	283·4	194·1	+ 6·5	5	31	
		4507	0·701	284·8	188·6	+ 6·2	0	3	
		4507	0·651	289·2	184·0	+ 8·0	0	3	
		4508	0·520	303·6	171·9	+11·7	2	11	
		4508	0·515	305·2	171·2	+12·1	1	6	
		4508	0·492	308·5	168·9	+12·6	5	11	
			0·760	111·5	97·2	−19·9			197
			0·788	71·1	96·5	+11·1			301
			0·880	108·2	84·1	−18·7			217
			0·924	61·2	83·7	+23·8			110
Jan. 24		Centre			(145·8)	(−5·6)	(150)	(784)	(2891)
24·500	CL, FT		0·971	241·7	207·7	−28·8			61
			0·918	251·1	197·6	−19·6			504
			0·886	263·1	193·3	− 8·8			274
		4505*a*	0·974	277·7	206·6	+ 6·2	53	424	
		4505	0·950	279·0	201·3	+ 6·7	0	6	
		4505	0·922	280·1	196·6	+ 7·0	0	77	1284*c*
		4505	0·915	279·5	195·7	+ 6·3	0	11	
		4505*b*	0·910	281·3	194·7	+ 7·8	42	302	
		4507	0·866	280·9	189·3	+ 6·5	2	8	
		4508	0·672	296·1	168·8	+12·7	1	6	
		4509	0·819	54·0	83·9	+24·9	0	2	122*c*
		4509	0·865	54·0	79·2	+26·8	0	10	

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n, s, p, f, c,* denoting respectively north, south, preceding, following, concentric. The 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 4507, January 23–25. A few small unstable spots, *f* Group 4505.
Group 4508, January 24–25. A few small unstable spots, *nf* Group 4507.
Group 4509, January 25. 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 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).
1897.				°	°	°			
24·500	CL, FT	4510*a*	0·964	82·7	57·1	+ 5·5	57	338	554*c*
			0·733	110·4	84·4	−18·7			127
			0·879	44·2	82·2	+35·3			87
			0·881	66·2	73·1	+17·8			119
			0·920	58·8	70·0	+25·7			37
			0·911	112·1	65·0	−22·4			148
			0·950	101·0	58·4	−12·2			132
Jan. 25		Centre			(130·7)	(−5·7)	(155)	(1184)	(3449)
25·476	CL, FT	4505*b*	0·977	279·2	194·3	+ 7·7	43	281	426*f*
		4511	0·481	115·5	90·9	−17·1	0	6	
		4511	0·498	115·9	89·9	−17·7	0	6	
		4510	0·853	82·4	60·1	+ 3·4	3	19	
		4510*a*	0·880	80·7	57·3	+ 5·4	54	314	340*c*
		4510	0·902	81·9	54·4	+ 4·7	0	9	
			0·895	86·4	54·8	+ 0·7			230
			0·918	106·0	50·8	−16·9			154
Jan. 26		Centre			(117·8)	(−5·8)	(100)	(635)	(1150)
26·183	CL, JW	4510	0·745	80·0	61·4	+ 3·4	0	6	
M.		4510*a*	0·788	78·7	57·8	+ 5·1	47	317	378*c*
			0·904	106·3	43·5	−17·2			179
Jan. 27		Centre			(108·5)	(−5·9)	(47)	(323)	(557)
27·344	CL, JW		0·953	255·5	166·3	−15·6			105
I.		4512	0·448	277·0	119·5	− 2·2	0	2	
		4512	0·438	275·9	119·0	− 2·8	0	2	
		4513	0·446	17·6	85·0	+19·2	0	2	
		4513	0·442	21·3	83·5	+18·4	0	5	
		4514	0·453	33·6	78·1	+16·4	0	3	
		4514	0·461	35·9	76·9	+16·2	0	2	
		4514	0·476	36·7	76·0	+16·7	0	7	
		4515	0·556	25·8	77·9	+24·2	0	4	
		4515	0·559	27·1	77·1	+24·1	0	4	
		4510	0·558	72·7	61·1	+ 3·2	1	7	
		4510	0·586	72·7	59·2	+ 5·2	0	9	
		4510*a*	0·612	72·0	57·5	+ 6·2	66	321	
		4510	0·610	75·2	57·1	+ 4·2	0	5	
		4516	0·801	67·0	43·8	+14·4	0	8	102*c*
		4517	0·971	92·4	17·0	− 3·7	2	14	374*c*
			0·802	107·0	40·0	−17·2			214
1897.				°	°	°			
27·344	CL, JW		0·885	59·2	37·3	+23·7			131
I.			0·906	116·5	28·6	−26·4			188
			0·913	99·4	26·9	−11·0			227
			0·963	107·5	18·0	−18·4			78
Jan. 28		Centre			(93·2)	(−5·9)	(69)	(395)	(1419)
28·213	AW, FT		0·940	186·1	103·6	−74·4			77
I.		4513	0·461	343·4	89·8	+20·2	0	3	
		4513	0·448	344·2	89·2	+19·5	0	3	
		4513	0·449	346·3	88·3	+19·8	0	5	
		4513	0·424	348·1	87·1	+18·4	1	4	
		4513	0·431	349·2	86·7	+19·0	0	2	
		4513	0·427	349·1	86·7	+18·7	0	2	
		4513	0·419	354·0	84·4	+18·6	1	2	
		4513	0·407	355·1	83·9	+17·8	0	1	
		4513	0·414	356·3	83·4	+18·3	4	12	
		4510	0·379	65·7	61·6	+ 3·3	0	2	
		4510	0·434	57·5	60·2	+ 7·9	0	2	
		4510	0·423	62·2	59·8	+ 5·8	0	1	
		4510	0·431	61·1	59·6	+ 6·5	0	3	
		4510	0·462	57·6	58·7	+ 8·8	0	2	
		4510*a*	0·453	63·4	57·9	+ 6·2	64	272	
		4510	0·486	58·7	57·0	+ 9·2	0	2	
		4510	0·491	60·2	56·4	+ 8·7	1	4	
		4510	0·469	66·6	56·3	+ 5·4	0	3	
		4517	0·896	90·4	18·2	− 3·1	1	8	723*c*
			0·950	173·8	56·4	−76·2			85
			0·805	96·1	28·0	− 8·5			67
			0·884	79·2	21·1	+ 6·6			51
			0·917	109·1	14·9	−19·9			232
			0·984	101·1	1·4	−12·0			147
Jan. 29		Centre			(81·8)	(−6·0)	(72)	(333)	(1382)
29·209	CL, JW	4510*a*	0·279	42·4	57·7	+ 5·9	47	269	
M.		4510	0·288	51·0	55·7	+ 4·5	0	4	
		4517	0·755	89·2	19·7	− 3·5	0	5	
		4517	0·779	89·2	17·5	− 3·2	6	27	154*c*
		4518*a*	0·981	93·9	349·5	− 5·0	96	521	549*p*
			0·842	89·1	11·4	− 2·6			180
			0·928	102·3	359·9	−13·7			231
Jan. 30		Centre			(68·6)	(−6·1)	(149)	(826)	(1114)

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 4510, January 25–February 4. A large oval-shaped stable spot, *a*, the elongation being perpendicular to the equator, with a few small companions.
Group 4511, January 26. Two small spots.
Group 4512, January 28. Two very small spots.
Group 4513, January 28–29. A few small spots.
Group 4514, January 28. Three small spots *f* Group 4513.
Group 4515, January 28. Two very small spots.
Group 4516, January 28. A small spot.
Group 4517, January 28–February 8. When first seen, the group consists of a single very small spot, but it rapidly increases, and by February 1 a large regular spot, *a*, has formed at the head of the group; *a* is followed by an irregular stream of small unstable spots. From February 4 the head and tail of the group are separated by an interval from which the intervening spots have disappeared. The whole group has a forward movement in longitude.
Group 4518, January 30–February 11. A very large spot, *a*, on January 30; by the next day another large spot, *b*, has appeared *sf* spot *a*; on February 1 a third large spot, *c*, is seen to the north of *b*; there are usually a few small companions; *b* has a forward motion in longitude, and on February 11 is the leader of the group.

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).
1897.				°	°	°			
30·184	CL, JW	4510*a*	0·213	350·2	57·9	+ 6·0	47	276	
		4519	0·309	55·2	41·1	+ 4·3	8	19	
M.		4520	0·346	58·2	38·7	+ 4·7	2	13	
		4520	0·339	62·0	38·4	+ 3·3	0	26	
		4520	0·364	61·0	37·3	+ 4·4	1	8	
		4517	0·585	86·0	20·2	− 2·7	12	48	
		4517	0·605	86·8	18·7	− 3·0	0	12	
		4517	0·625	87·2	17·3	− 3·1	0	17	
		4517	0·643	87·1	16·0	− 2·9	0	7	
		4517	0·649	89·1	15·4	− 4·1	2	11	
		4521*a*	0·783	101·5	4·1	−12·8	3	16	112*f*
		4518*a*	0·930	92·3	347·3	− 4·4	109	799	1250*c*
		4518*b*	0·945	95·2	344·6	− 6·9	39	176	
Jan. 31		Centre			(55·8)	(−6·1)	(223)	(1428)	(1362)
31·250	CL, FT		0·916	270·4	108·0	− 2·2			145
			0·887	280·6	102·9	+ 6·5			286
I.			0·847	247·7	99·4	−22·2			230
			0·849	288·5	97·0	+12·1			90
			0·860	297·7	95·7	+20·0			250
		4522	0·457	291·2	67·0	+ 3·9	0	10	
		4510*a*	0·353	304·3	58·8	+ 5·5	37	246	
		4519	0·181	353·5	43·0	+ 4·2	5	17	
		4517*a*	0·327	78·6	23·2	− 2·2	29	119	
		4517	0·335	76·1	22·9	− 1·3	2	7	
		4517	0·342	76·2	22·5	− 1·2	0	2	
		4517	0·344	78·5	22·2	− 2·0	2	11	
		4517	0·351	76·9	21·9	− 1·3	0	1	
		4517	0·348	79·9	21·8	− 2·4	2	7	
		4517	0·354	80·5	21·4	− 2·5	1	6	
		4517	0·370	80·2	20·5	− 2·2	0	1	
		4517	0·381	80·3	19·8	− 2·1	1	5	
		4517	0·389	79·5	19·4	− 1·7	0	1	
		4517	0·399	79·8	18·8	− 1·7	0	2	
		4517	0·405	81·3	18·3	− 2·2	7	21	
		4517	0·432	82·9	16·5	− 2·6	0	5	
		4521*a*	0·607	102·4	4·6	−12·4	3	16	
		4518*a*	0·811	90·2	347·6	− 3·9	159	670	
		4518	0·839	88·1	345·0	− 1·8	0	7	
		4518	0·840	89·2	344·8	− 2·7	0	31	851*c*
		4518	0·834	93·1	345·2	− 6·0	0	11	
		4518*c*	0·842	90·9	344·4	− 4·2	33	150	
		4518*b*	0·845	93·8	343·9	− 6·6	33	163	
1897.				°	°	°			
31·250	CL, FT		0·861	103·4	342·1	−14·7			533
I.			0·917	92·8	335·2	− 5·0			1259
Feb. 1		Centre			(41·8)	(−6·2)	(314)	(1509)	(3644)
32·250]	FT, JW		0·932	249·0	98·0	−21·8			237
			0·944	281·1	97·9	+ 8·2			216
M.		4522	0·657	282·2	68·6	+ 3·3	1	23	
		4522	0·609	282·6	65·0	+ 2·6	0	13	
		4510*a*	0·537	291·6	58·7	+ 5·9	39	248	
		4523	0·370	339·3	36·4	+14·0	0	7	
		4523	0·333	340·6	35·2	+12·0	0	8	
		4523	0·358	342·5	35·0	+13·6	0	12	
		4523	0·332	342·1	34·7	+12·1	0	8	
		4523	0·329	344·4	33·9	+11·6	2	8	
		4517*a*	0·105	46·2	24·4	− 2·1	43	304	
		4517	0·132	56·3	22·4	− 2·1	0	6	
		4517	0·183	67·0	19·0	− 2·1	5	28	
		4517	0·199	71·4	17·9	− 2·6	3	12	
		4521*b*	0·412	107·8	5·1	−13·0	2	9	
		4521*c*	0·448	104·6	2·5	−12·1	3	16	
		4518*a*	0·654	89·3	347·9	− 4·3	149	672	
		4518	0·686	89·1	345·4	− 4·0	1	8	
		4518*c*	0·698	90·4	344·4	− 4·8	24	150	
		4518*b*	0·698	94·1	344·3	− 7·4	24	168	
Feb. 2		Centre			(28·7)	(−6·3)	(296)	(1700)	(453)
33·298	AW, CL		0·949	249·9	87·4	− 2·1			
			0·932	292·3	79·8	+18·1			
I.		4522	0·788	277·8	66·1	+ 2·2	2	7	111*p*
		4510*a*	0·724	284·4	59·5	+ 5·9	38	217	
		4523	0·518	308·8	39·3	+13·1	0	1	
		4523*a*	0·531	311·1	39·2	+14·7	32	98	
		4523	0·514	311·4	38·2	+14·1	3	16	
		4523	0·512	312·4	37·8	+14·4	0	3	
		4523	0·502	311·7	37·5	+13·7	0	1	
		4523	0·497	311·9	37·2	+13·6	0	5	
		4523	0·505	313·2	37·1	+14·3	1	6	
		4523	0·497	313·2	36·7	+14·0	1	7	
		4523	0·477	313·7	35·6	+13·3	0	2	
		4523	0·472	313·3	35·5	+13·0	3	11	
		4523	0·466	314·3	34·8	+13·0	0	7	
		4523*b*	0·450	312·0	34·8	+11·6	34	111	

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 4519, January 31–February 1. A small spot.
Group 4520, January 31. A triangle of small faint spots, closely following Group 4519.
Group 4521, January 31–February 3. A small spot, *a*, which breaks up on February 2 into *b* and *c*.
Group 4522, February 1–3. A small spot, *p* Group 4510 on February 1; two small spots on February 2; of which only one remains by February 3.
Group 4523, February 2–7. Five small spots in two rows parallel to the equator; by February 3 the group has much increased, and *a*, *b* have formed *np*, *sf* of the group respectively. *a* has greatly increased by the next day: and on February 6, *a* and *b* alone remain; by February 7, *b* has broken up into two parts, and considerably diminished; *a* has throughout a forward motion in longitude, while *b* is nearly stationary.

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).
1897.				°	°	°			
33·298	AW, CL	4523	0·512	309·4	33·8	+13·2	0	10	
I.		4517*a*	0·215	290·4	26·5	− 1·9	50	251	
		4517	0·224	298·1	26·2	− 0·2	0	3	
		4517	0·187	290·0	25·0	− 2·6	0	1	
		4517	0·187	292·5	24·8	− 2·1	1	5	
		4517	0·190	294·2	24·8	− 1·8	0	1	
		4517	0·183	294·0	24·5	− 2·0	0	1	
		4517	0·170	284·1	24·4	− 3·9	0	2	
		4517	0·181	297·3	24·1	− 1·5	0	11	
		4517	0·156	298·7	22·7	− 2·0	0	2	
		4517	0·142	293·7	22·3	− 3·1	0	1	
		4517	0·144	297·4	22·2	− 2·5	0	6	
		4517	0·148	303·1	22·0	− 1·7	0	1	
		4517	0·119	308·1	20·3	− 2·1	1	12	
		4517	0·108	308·1	19·8	− 2·5	0	3	
		4517	0·113	313·3	19·6	− 1·9	0	2	
		4517	0·088	308·1	18·9	− 3·2	2	8	
		4517	0·082	300·5	18·9	− 3·9	0	3	
		4517	0·092	317·2	18·5	− 2·4	13	43	
		4517	0·071	302·2	18·3	− 4·2	1	8	
		4521*b*	0·200	126·5	5·4	−13·1	2	5	
		4521*c*	0·230	120·7	3·2	−12·9	0	7	
		4518	0·430	80·0	349·9	− 1·5	0	1	
		4518	0·460	79·7	348·1	− 1·0	1	5	
		4518*a*	0·453	87·4	348·0	− 4·5	160	670	
		4518	0·488	79·7	346·3	− 0·6	0	2	
		4518	0·484	91·4	345·9	− 6·2	0	1	
		4518	0·497	86·7	345·9	− 3·9	1	3	
		4518	0·502	108·3	345·5	−14·6	0	4	
		4518	0·495	84·9	345·4	− 2·9	2	7	
		4518*c*	0·500	94·4	344·8	− 7·7	31	173	
		4518*b*	0·506	89·3	344·5	− 5·1	34	126	
			0·934	90·9	305·9	− 3·2			141
			0·947	100·7	303·0	−12·2			354
			0·948	110·4	302·6	−21·3			141
			0·982	72·9	298·3	+15·4			138
			0·984	77·8	296·8	+10·8			117
Feb. 3		Centre			(14·9)	(−6·3)	(413)	(1870)	(~~1504~~) 1002
34·196	CL, FT		0·979	249·3	82·6	−21·5			193
I.			0·960	291·9	73·2	+18·9			113
			0·920	275·8	69·3	+ 2·8			338
			0·831	275·0	58·8	+ 0·6			191

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).
1897.				°	°	°			
34·196	CL, FT		0·822	287·1	55·9	+10·2			122
I.		4510*a*	0·851	280·3	60·1	+ 5·3	28	232	318*c*
		4510	0·835	280·9	58·4	+ 5·5	0	2	
		4510	0·830	280·8	57·8	+ 5·2	0	2	
		4510	0·823	280·5	57·2	+ 4·9	0	2	
		4523*a*	0·681	298·6	41·0	+14·0	46	221	
		4523	0·668	299·0	39·9	+13·8	0	3	
		4523	0·667	299·9	39·6	+14·3	0	6	
		4523	0·653	299·4	38·8	+13·5	0	5	
		4523	0·641	300·0	37·7	+13·4	2	10	
		4523	0·614	298·7	36·4	+11·8	0	1	
		4523	0·618	299·6	36·3	+12·4	1	4	
		4523	0·619	301·2	35·9	+13·3	2	16	
		4523	0·611	300·6	35·6	+12·7	9	22	
		4523	0·604	301·5	34·9	+13·0	2	7	
		4523*b*	0·594	299·5	34·8	+11·6	26	133	
		4517	0·450	278·6	29·4	− 1·9	0	2	
		4517	0·440	281·6	28·5	− 0·7	0	2	
		4517	0·427	275·3	28·2	− 3·6	0	2	
		4517*a*	0·423	278·6	27·7	− 2·2	35	266	
		4517	0·399	279·9	26·2	− 2·0	9	28	
		4517	0·387	278·6	25·5	− 2·7	5	18	
		4517	0·318	283·3	21·1	− 2·0	2	12	
		4517	0·312	281·0	20·9	− 2·7	1	6	
		4517	0·297	282·4	19·9	− 2·5	0	3	
		4517	0·295	284·3	19·6	− 2·0	0	6	
		4517	0·286	279·7	19·4	− 3·4	0	1	
		4517	0·284	281·3	19·2	− 3·0	0	1	
		4517	0·279	277·1	19·1	− 4·2	0	1	
		4517	0·278	280·7	18·9	− 3·2	0	4	
		4517	0·279	283·1	18·8	− 2·5	5	17	
		4518	0·268	71·2	348·5	− 1·3	0	2	
		4518*a*	0·261	83·1	348·1	− 4·4	143	612	
		4518	0·303	78·7	345·9	− 2·7	0	1	
		4518	0·308	76·6	345·7	− 2·0	0	2	
		4518*b*	0·308	96·0	345·2	− 8·0	27	131	
		4518	0·311	82·5	345·2	− 3·8	0	1	
		4518	0·323	77·0	344·8	− 2·0	0	2	
		4518*c*	0·314	87·5	344·8	− 5·3	24	133	
		4518	0·328	80·0	344·3	− 2·8	0	1	
		4518	0·329	81·3	344·2	− 3·2	0	1	
			0·859	91·3	303·8	− 4·4			67
			0·900	109·1	298·5	−20·0			213
			0·923	75·6	297·9	+10·7			158

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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 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).
1897.				°	°	°			
34·196	CL, FT		0·946	67·1	296·0	+19·2			65
I.			0·920	98·8	295·7	−10·6			304
Feb. 4		Centre			(3·1)	(−6·4)	(367)	(1921)	(2082)
Feb. 5		No	photo	graph.					
36·185	CL, JW		0·970	275·2	52·1	+ 3·4			
			0·905	279·0	40·5	+ 5·2			355
M.			0·936	301·6	39·8	+26·6			248
									409
		4523*a*	0·931	288·6	42·5	+14·7	24	193	
		4523*b*	0·870	288·3	34·5	+12·4	20	119	525*c*
		4523	0·873	290·0	34·4	+14·0	0	7	
		4517*a*	0·787	273·8	28·5	− 1·1	53	331	
		4517	0·783	271·8	28·3	− 2·7	2	26	
		4517	0·755	272·2	25·8	− 2·7	0	16	
		4517	0·711	273·2	22·0	− 2·4	4	14	
		4517	0·704	272·4	21·5	− 3·0	0	7	483*c*
		4517	0·700	274·1	21·0	− 1·8	0	5	
		4517	0·685	273·0	19·9	− 2·7	0	4	
		4517	0·680	274·4	19·4	− 1·8	0	4	
		4524*a*	0·665	261·7	18·7	−10·4	8	39	
		4524	0·634	263·3	16·4	− 9·3	0	4	
		4524*b*	0·613	262·1	14·8	−10·0	10	54	
		4518	0·198	261·6	348·3	− 8·1	0	3	
		4518*a*	0·196	279·8	348·0	− 4·5	143	562	
		4518	0·191	259·0	347·8	− 8·5	0	3	
		4518	0·183	262·1	347·4	− 7·8	0	4	
		4518	0·169	262·8	346·6	− 7·7	4	28	
		4518	0·191	297·4	346·6	− 1·4	2	14	
		4518	0·180	296·4	346·1	− 1·9	0	6	
		4518	0·173	294·4	345·9	− 2·4	0	3	
		4518	0·183	305·0	345·5	− 0·4	0	5	
		4518*b*	0·152	256·2	345·4	− 8·5	17	108	
		4518	0·171	299·4	345·4	− 1·7	0	12	
		4518*c*	0·135	274·1	344·6	− 5·9	21	145	
		4518	0·153	299·6	344·5	− 2·1	4	23	
Feb. 6		Centre			(336·9)	(−6·5)	(312)	(1739)	(2020)
37·495	AW, FT		0·947	242·9	31·6	−27·7			107
		4523*a*	0·996	284·5	42·3	+13·7	0	148	
		4523*b*	0·977	284·4	35·2	+12·5	0	16	438*c*
		4523*b*	0·972	285·0	33·7	+12·8	4	25	
1897.				°	°	°			
37·495	AW, FT	4517*a*	0·940	271·7	29·3	− 0·7	52	360	
		4517	0·918	270·3	26·1	− 2·4	0	10	
		4517	0·890	269·9	22·4	− 3·2	3	34	690*f*
		4517	0·885	272·3	21·6	− 1·1	0	3	
		4517	0·882	269·7	21·5	− 3·5	0	4	
		4524*a*	0·874	261·8	20·9	−10·4	9	30	
		4524	0·820	262·5	15·0	− 9·9	2	10	
		4524	0·816	259·4	14·6	−12·5	0	15	202*c*
		4524	0·814	260·4	14·4	−11·7	0	2	
		4518	0·508	276·6	349·8	− 2·4	0	7	
		4518	0·497	264·1	349·5	− 8·7	0	2	
		4518	0·479	263·9	348·3	− 8·7	0	5	
		4518*a*	0·476	272·5	348·0	− 4·6	130	620	
		4518	0·469	265·1	347·7	− 8·2	1	4	
		4518	0·468	278·8	347·0	− 1·8	2	6	
		4518	0·455	266·2	346·7	− 7·6	0	1	
		4518	0·458	279·4	346·4	− 1·6	0	1	
		4518*b*	0·447	263·5	346·2	− 8·8	23	115	
		4518	0·430	277·0	344·8	− 3·0	0	2	
		4518*c*	0·425	269·0	344·8	− 6·4	21	114	
		4518	0·347	270·4	339·9	− 4·8	0	3	
		4518	0·348	260·0	339·9	− 9·7	0	5	
		4518	0·347	255·5	339·5	−11·2	0	5	
		4518	0·335	271·4	339·2	− 5·8	0	2	
		4518	0·335	256·9	338·9	−10·6	0	5	
		4518	0·323	272·8	338·4	− 5·4	0	2	
Feb. 7		Centre			(319·6)	(−6·6)	(247)	(1556)	(1437)
38·184	CL, AW		0·865	247·7	10·4	−22·5			127
			0·804	256·1	4·3	−15·1			98
I.		4517*a*	0·982	270·0	29·5	− 1·3	44	398	
		4517	0·978	268·5	28·6	− 2·8	0	8	
		4517	0·969	268·3	26·3	− 3·3	0	15	1086*c*
		4517	0·953	268·6	23·0	− 3·3	7	45	
		4524*a*	0·942	260·6	21·6	−11·1	5	22	
		4524	0·895	258·7	14·6	−13·1	1	13	359*c*
		4518	0·624	274·1	349·0	− 2·7	0	1	
		4518*a*	0·608	270·1	348·1	− 5·2	137	571	
		4518	0·602	275·1	347·3	− 2·3	0	3	
		4518	0·592	265·4	347·0	− 8·1	0	7	
		4518*b*	0·589	262·8	346·8	− 9·6	24	106	
		4518	0·589	266·4	346·8	− 7·5	0	1	
		4518	0·584	272·5	346·2	− 4·0	0	3	

The Groups of Spots are numbered in the order of their apearance. 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 4524, February 6–8. A few straggling spots that appear suddenly considerably west of the central meridian: *a*, the leader, is fairly steady in place and size: *b*, at the tail of the group, is larger than *a* on the first day, but is not seen again.

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).
1897.				°	°	°			
38·184	CL, AW	4518*c*	0·566	267·0	345·2	− 7·1	21	111	
I.		4518	0·498	259·7	340·4	−10·9	0	5	
		4518	0·495	258·7	340·1	−11·3	0	6	
Feb. 8			0·954	176·0	289·8	−78·2			88
		Centre			(310·6)	(−6·6)	(239)	(1315)	(1758)
39·184	AW, FT		0·981	260·0	17·1	−11·1			350
I.			0·980	269·6	15·8	− 1·8			302
			0·943	248·1	8·8	−22·8			135
			0·891	255·5	0·9	−15·9			134
		4518	0·798	270·7	350·3	− 3·5	2	12	
		4518	0·799	275·2	349·9	+ 0·1	0	2	
		4518	0·774	268·8	348·2	− 5·2	158	585	1301*c*
		4518	0·765	262·9	347·6	− 9·8	31	111	
		4518	0·762	265·5	347·3	− 7·8	0	3	
		4518	0·742	265·8	345·5	− 7·7	29	110	
			0·975	107·2	219·0	−18·2			236
			0·990	83·6	216·5	+ 5·4			238
'eb. 9		Centre			(297·4)	(−6·7)	(220)	(823)	(2696)
40·203	AW, FT		0·966	253·7	0·1	−17·5			81
I.			0·891	253·9	347·4	−17·4			181
		4518	0·912	269·8	349·6	− 2·9	0	17	
		4518*a*	0·899	267·5	348·1	− 5·2	137	537	
		4518*b*	0·896	262·5	348·0	− 9·7	18	97	1286*c*
		4518*c*	0·878	264·7	345·6	− 7·8	22	98	
		4525	0·833	256·2	345·3	−15·2	1	7	177*c*
		4526*a*	0·962	80·7	211·1	+ 7·0	77	364	617*p*
			0·938	107·0	220·0	− 3·9			465
			0·922	71·1	219·8	+14·5			102
			0·948	95·3	212·1	− 7·2			66
			0·951	115·1	211·1	−25·9			264
b. 10		Centre			(283·9)	(−6·7)	(255)	(1120)	(3239)
·204	CL, FT		0·940	253·4	341·7	−17·9			465
M.		4518*b*	0·971	262·2	347·6	− 9·2	12	92	
		4518*a*	0·970	266·4	346·9	− 5·1	107	445	652*f*
		4518*c*	0·959	263·4	344·8	− 8·2	16	103	
		4518	0·957	262·1	344·5	− 9·5	0	11	
		4526*a*	0·875	78·4	211·4	+ 6·7	51	371	409*c*
			0·815	111·5	216·5	−21·4			125
1897.				°	°	°			
41·204	CL, FT		0·862	68·9	214·9	+14·3			96
M.			0·890	118·5	208·3	−28·4			214
			0·923	110·3	202·8	−21·3			154
			0·962	81·6	197·9	+ 6·1			318
Feb. 11		Centre			(270·8)	(−6·8)	(186)	(1022)	(2433)
42·199	AW, FT		0·977	265·8	335·7	− 5·6			517
I.			0·973	255·7	335·4	−15·4			364
			0·904	286·2	319·9	+11·5			124
		4527	0·852	278·5	315·1	+ 3·6	1	5	
		4527	0·852	280·0	314·9	+ 4·9	3	10	
		4527	0·834	281·0	312·8	+ 5·3	0	5	99*c*
		4527	0·828	280·0	312·4	+ 4·3	0	4	
		4526	0·705	78·9	214·0	+ 2·9	0	4	
		4526*a*	0·751	74·3	211·1	+ 7·0	63	324	
		4526	0·780	77·0	208·1	+ 5·8	0	2	322*c*
		4526	0·782	76·2	208·1	+ 6·4	0	3	
		4526	0·789	76·6	207·4	+ 6·2	2	20	
			0·752	109·1	209·3	−18·8			211
			0·797	120·1	206·6	−27·9			255
			0·878	68·1	200·2	+15·5			77
			0·873	97·6	196·5	− 9·9			146
			0·906	78·1	194·5	+ 7·7			894
Feb. 12		Centre			(257·7)	(−6·8)	(69)	(377)	(3009)
43·192	AW, CL		0·938	278·1	316·9	+ 5·1			99
I.			0·879	267·4	306·3	− 5·6			128
			0·798	260·2	297·9	−12·0			150
		4526	0·573	72·1	211·6	+ 4·3	0	5	
		4526*a*	0·593	67·9	211·1	+ 7·1	74	339	
		4526	0·603	72·0	209·6	+ 5·1	0	1	
		4526	0·612	71·7	209·0	+ 5·5	1	7	
			0·785	74·8	195·0	+ 7·4			504
			0·840	111·0	187·5	−21·4			127
			0·919	81·1	179·1	+ 5·4			74
			0·923	100·7	176·6	−12·6			137
Feb. 13		Centre			(244·6)	(−6·9)	(75)	(352)	(1219)

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

Group 4525, February 10. A small spot.
Group 4526, February 10–21. A large regular spot, *a*, steady in size, shape, and position; there are usually a few small companions, but they are insignificant, except on February 17.
Group 4527, February 12. Four 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 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).
1897.				°	°	°			
44·140	CL, AW		0·964	261·9	307·3	− 9·6			119
			0·928	248·9	301·0	−22·1			142
I.			0·910	288·1	294·6	+13·3			230
			0·925	256·8	240·5	−14·8			153
		4528	0·438	328·0	245·9	+15·0	0	3	
		4528	0·450	330·7	245·3	+16·3	0	2	
		4528	0·443	332·1	244·5	+16·2	2	9	
		4528	0·420	335·1	242·6	+15·6	1	5	
		4526*a*	0·422	56·6	211·4	+ 7·0	67	320	
		4526	0·471	59·8	208·0	+ 7·4	0	4	
			0·952	182·3	243·1	−78·5			121
			0·924	172·9	209·6	−72·7			110
			0·919	105·8	164·6	−17·2			242
Feb. 14		Centre			(232·1)	(−6·9)	(70)	(343)	(1117)
45·178	AW, JW		0·978	257·9	297·3	−13·3			165
		4526*a*	0·264	26·2	211·7	+ 6·8	64	322	
I.		4526	0·245	34·8	210·4	+ 4·7	1	10	
		4526	0·281	33·5	209·5	+ 6·7	0	7	
		4526	0·262	37·8	209·2	+ 5·1	1	11	
		4526	0·251	44·1	208·4	+ 3·6	0	7	
			0·924	117·3	150·5	−27·8			181
Feb. 15		Centre			(218·4)	(−6·9)	(66)	(357)	(346)
46·179	AW, FT		0·936	260·6	275·3	−11·3			152
			0·834	272·4	261·4	− 1·9			116
I.		4526*a*	0·264	333·2	212·1	+ 6·6	71	294	
		4526	0·230	338·6	210·0	+ 5·4	0	2	
		4526	0·222	341·5	209·2	+ 5·1	1	3	
		4526	0·261	347·4	208·5	+ 7·7	0	1	
		4526	0·229	351·8	207·1	+ 6·0	0	1	
		4526	0·234	358·5	205·6	+ 6·5	0	2	
		4529	0·054	133·1	202·9	− 9·1	0	4	
		4529	0·089	124·4	200·9	− 9·9	0	2	
			0·974	82·5	129·4	+ 5·6			304
Feb. 16		Centre			(205·2)	(−7·0)	(72)	(309)	(572)
47·180	AW, JW		0·978	258·6	270·9	−12·6			203
			0·927	269·3	259·9	− 3·3			150
I.		4526	0·419	299·1	213·5	+ 5·2	0	5	
		4526	0·403	297·0	213·0	+ 4·0	0	3	
1897.				°	°	°			
47·180	AW, JW	4526*a*	0·419	302·8	212·7	+ 6·5	65	314	
		4526	0·333	307·1	207·4	+ 4·8	3	22	
I.		4526	0·362	313·7	207·2	+ 7·7	6	22	
			0·915	79·2	127·3	+ 6·9			205
Feb. 17		Centre			(192·0)	(−7·0)	(74)	(366)	(558)
48·417	AW, CL	4526	0·634	285·7	213·4	+ 4·4	0	6	
		4526*a*	0·633	288·4	212·8	+ 5·9	59	287	
		4526	0·569	289·6	208·2	+ 5·1	0	3	
		4526	0·564	289·5	207·9	+ 4·9	3	11	
		4526	0·575	293·9	207·7	+ 7·5	1	5	
		4526	0·560	293·8	206·8	+ 7·1	0	4	
			0·908	86·1	169·5	+34·1			165
			0·930	78·0	109·1	+ 8·5			382
Feb. 18		Centre			(175·8)	(−7·0)	(63)	(316)	(547)
49·179	AW, FT		0·829	279·5	220·5	+ 3·7			230
		4526	0·757	281·9	213·5	+ 4·3	0	2	
I.		4526	0·754	280·7	213·4	+ 3·3	0	6	
		4526*a*	0·757	284·2	213·1	+ 5·9	59	278	285*c*
		4526	0·717	284·6	209·7	+ 5·4	0	2	
		4526	0·702	285·3	208·4	+ 5·5	0	3	
		4530	0·371	227·7	182·7	−21·2	0	2	
			0·904	77·5	102·8	+ 8·1			257
			0·942	69·9	98·8	+16·2			127
Feb. 19		Centre			(165·7)	(−7·1)	(59)	(293)	(899)
50·275	AW, JW		0·904	254·8	216·7	−16·8			220
			0·842	248·5	208·7	−21·9			322
I.			0·843	239·8	207·6	−29·2			279
			0·801	262·1	204·9	−10·6			81
			0·817	283·7	204·2	+ 6·9			432
		4526*a*	0·896	280·4	213·5	+ 6·0	70	300	700*c*
		4526	0·894	282·3	212·9	+ 7·7	0	5	
			0·829	70·0	98·6	+12·2			149
			0·892	107·7	87·6	−19·0			119
			0·940	114·1	80·4	−25·0			164
			0·966	94·7	75·9	− 6·3			99
			0·976	83·9	74·8	+ 4·4			97
Feb. 20		Centre			(151·3)	(−7·1)	(70)	(305)	(2662)

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

Group 4528, February 14. Four small spots.
Group 4529, February 16. Two small spots.
Group 4530, February 19. One 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 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).
1897.				°	°	°			
51·484	AW, CL		0·939	251·9	206·3	−19·4			408
			0·937	241·0	205·6	−29·6			323
			0·906	263·1	200·8	− 9·3			216
			0·895	287·4	196·0	+12·1			431
			0·857	246·7	194·4	−23·6			139
		4526*a*	0·981	277·8	213·1	+ 6·2	30	251	651*f*
			0·868	94·8	195·1	+ 0·6			65
			0·887	80·5	74·2	+ 5·0			96
			0·941	100·0	64·4	−11·8			65
			0·965	82·2	61·7	+ 5·6			270
Feb. 21		Centre			(135·4)	(−7·1)	(30)	(251)	(2664)
52·238	AW, FT		0·957	279·5	197·2	+ 6·9			551
I.		4531*a*	0·988	76·3	46·5	+12·3	98	492	244*c*
			0·889	57·9	70·0	+24·2			59
			0·898	81·3	62·8	+ 4·6			182
			0·941	70·2	58·8	−15·9			212
			0·925	88·8	58·0	− 1·7			183
Feb. 22		Centre			(125·5)	(−7·2)	(98)	(492)	(1431)
53·475	AW, CL		0·954	246·8	182·8	−24·2			106
			0·947	257·0	181·3	−14·6			153
			0·842	257·7	167·0	−14·3			105
		4531*a*	0·913	73·2	46·0	+12·1	96	434	1016*nf*
		4532*a*	0·967	88·2	34·2	− 0·1	46	198	662*s*
			0·835	75·0	54·7	+ 8·4			63
			0·927	81·5	42·4	+ 5·1			105
			0·986	99·1	27·9	−10·2			189
Feb. 23		Centre			(109·1)	(−7·2)	(142)	(632)	(2399)
54·288	AW, JW		0·928	257·5	167·4	−14·3			179
I.		4531*a*	0·831	69·7	45·7	+12·4	100	507	
		4531	0·856	69·0	43·3	+13·8	0	4	886*nf*
		4532*a*	0·907	86·4	33·9	+ 0·2	43	224	311*c*
		4533	0·971	93·3	22·0	− 5·0	0	10	
		4533	0·981	92·8	19·4	− 4·2	0	13	404*p*
			0·930	116·1	29·3	−26·9			73
			0·954	98·6	25·3	−10·3			178
Feb. 24		Centre			(98·5)	(−7·2)	(143)	(758)	(2031)
1897.				°	°	°			
55·276	AW, FT		0·952	290·8	153·9	+17·2			148
I.		4531*b*	0·673	66·8	46·7	+ 9·8	1	8	
		4531*a*	0·699	64·7	45·3	+11·9	122	630	
		4531	0·714	62·0	45·0	+14·1	0	10	1185*c*
		4531	0·731	61·7	43·8	+14·9	0	3	
		4531*c*	0·735	64·2	42·7	+13·4	0	7	
		4532	0·760	83·0	36·6	+ 0·6	3	25	
		4532	0·765	83·8	36·1	+ 0·1	0	7	
		4532	0·778	81·0	35·3	+ 2·4	0	2	487*c*
		4532*a*	0·788	84·3	34·4	− 0·1	45	205	
		4533	0·881	91·9	23·5	− 5·1	0	8	
		4533	0·916	91·7	19·0	− 4·5	5	23	648*c*
			0·899	192·5	115·9	−67·5			189
			0·860	52·1	35·8	+27·3			142
			0·841	99·0	27·7	−11·4			173
			0·915	61·9	25·0	+22·1			113
			0·935	99·9	15·4	−11·9			218
Feb. 25		Centre			(85·4)	(−7·2)	(176)	(928)	(3303)
56·216	AW, FT	4531	0·465	52·3	47·3	+ 9·8	0	5	
		4531	0·473	50·9	47·3	+10·6	0	7	
		4531*b*	0·478	52·6	46·5	+10·2	0	25	
		4531*a*	0·506	50·7	45·6	+12·1	92	536	
		4531*c*	0·550	52·1	42·7	+13·3	4	21	
		4532*a*	0·578	80·0	34·5	− 0·2	40	215	
		4532	0·628	77·9	31·4	+ 1·9	3	15	
		4533	0·694	90·2	25·0	− 6·6	2	6	
		4533	0·721	91·3	22·9	− 5·9	2	11	
		4533	0·731	91·9	22·0	− 6·3	0	18	
		4533	0·754	91·3	20·0	− 5·8	1	5	336*c*
		4533	0·756	92·3	19·8	− 6·5	5	14	
		4533	0·767	91·0	17·3	− 5·4	0	3	
		4534	0·804	97·4	15·2	−10·2	0	5	
		4534	0·814	95·6	14·3	− 8·8	0	7	134*c*
		4535*a*	0·988	95·7	347·6	− 6·7	56	377	494*p*
			0·970	86·9	353·6	+ 1·2			131
			0·966	103·1	353·0	−14·5			274
Feb. 26		Centre			(69·1)	(−7·2)	(205)	(1270)	(1369)
57·432	AW, FT	4531*a*	0·381	30·3	45·8	+12·1	89	422	
		4531*d*	0·370	35·4	44·6	+10·4	6	83	
		4531	0·362	41·7	43·1	+ 8·6	1	11	

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Group 4531, February 22–March 6. A large double spot, *a*; two companions, *b* and *c*, appear on February 25, and can be followed for two and three days respectively; *d*, on February 27, is probably a fragment broken off from *a*; on February 28 a cluster of small spots appear *s* of *a*; on subsequent days *a* is seen alone, or with quite insignificant companions.

Group 4532, February 23–March 7. A large regular spot, *a*, with occasionally a few companions, and a forward motion in longitude. On March 5, Group 4533 passes into this group, and spots *a*, *b* of Group 4533 are henceforth lettered *b*, *c* in Group 4532.

Group 4533, February 24–March 4. A cluster of unstable spots, *sf* Group 4532, constantly changing in number and position; *a*, the largest on February 27, rapidly increases, and has a quick motion forward in longitude, and a perceptible motion northwards in latitude; *b* is formed at the tail on March 3. On March 5 the group is merged into Group 4532.

Group 4534, February 26. Two very small spots, *sf* Group 4533.

Group 4535, February 26–March 10. A large regular spot, *a*, occasionally with small companions; *b*, a very small spot is seen on March 5 and 6 *s* of *a*.

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).
1897.				°	°	°			
57·432	AW, FT	4531	0·372	42·3	42·5	+ 9·0	0	1	
		4531c	0·418	34·3	43·2	+13·1	3	21	
		4531	0·397	38·6	42·5	+11·1	0	2	
		4531	0·392	40·3	42·2	+10·4	0	1	
		4532	0·337	79·0	37·8	− 3·1	0	2	
		4532	0·352	72·4	37·6	− 0·7	0	1	
		4532a	0·397	73·9	34·8	− 0·4	39	232	
		4533	0·502	87·4	27·0	− 5·0	0	1	
		4533	0·514	88·1	26·2	− 5·2	1	6	
		4533a	0·532	88·4	25·0	− 5·2	1	9	
		4533	0·546	88·2	24·0	− 5·1	1	2	
		4533	0·565	90·9	22·6	− 6·5	0	3	
		4533	0·572	88·8	22·2	− 5·2	0	2	
		4535a	0·931	95·1	348·1	− 7·4	66	377	501p
		4536a	0·941	84·3	347·7	+ 2·9	22	174	321c
			0·825	90·3	1·5	− 4·3			74
			0·920	105·6	349·3	−17·2			477
			0·970	90·3	341·2	− 2·1			121
Feb. 27		Centre			(57·1)	(−7·2)	(229)	(1350)	(1494)
58·197	AW, JW		0·887	274·1	109·0	+ 0·3			128
			0·889	284·8	107·4	+ 9·6			211
I.		4531	0·296	358·3	47·5	+ 9·9	0	10	
		4531	0·375	359·3	47·3	+14·8	0	1	
		4531	0·296	0·2	46·9	+ 9·9	0	2	
		4531a	0·336	2·4	46·2	+12·4	96	415	
		4531	0·364	2·6	46·0	+14·0	0	4	
		4531	0·301	4·8	45·6	+10·2	0	32	
		4531	0·312	8·2	44·4	+10·7	4	14	
		4531	0·284	11·3	43·8	+ 8·9	3	19	
		4531	0·328	12·4	42·9	+11·4	0	10	
		4531	0·304	15·4	42·3	+ 9·8	0	5	
		4532a	0·239	60·1	35·1	− 0·3	54	245	
		4533a	0·359	85·0	26·1	− 5·0	5	13	
		4533	0·374	86·0	25·1	− 5·2	0	10	
		4533	0·428	87·9	21·7	− 5·6	0	10	
		4535a	0·858	93·8	347·7	− 7·0	90	391	1300s
		4535	0·875	94·6	345·6	− 7·5	0	23	
		4536a	0·857	81·4	349·1	+ 3·6	33	118	362c
		4536a	0·870	82·1	347·5	+ 3·2	0	44	
			0·898	111·4	342·5	−22·4			103
			0·930	89·8	338·8	− 0·9			175
Feb. 28		Centre			(47·0)	(−7·2)	(285)	(1366)	(2279)
1897.				°	°	°			
59·406	CL, FT		0·943	288·2	98·4	+14·4			67
			0·910	295·4	91·5	+19·5			60
		4531a	0·415	322·7	45·8	+12·1	52	403	
		4531	0·434	326·4	45·3	+14·0	0	3	
		4531	0·384	320·7	45·2	+10·2	0	2	
		4531	0·378	320·6	45·0	+ 9·9	0	2	
		4532a	0·141	328·6	35·2	− 0·4	37	208	
		4533a	0·082	54·4	27·2	− 4·6	4	17	
		4533	0·112	53·5	25·8	− 3·5	0	2	
		4533	0·102	71·6	25·4	− 5·4	0	4	
		4533	0·112	61·2	25·4	− 4·2	0	2	
		4533	0·118	64·0	24·9	− 4·3	0	5	
		4533	0·138	73·2	23·4	− 5·0	0	9	
		4533	0·138	83·8	23·1	− 6·4	0	6	
		4535a	0·684	93·3	347·6	− 7·6	52	347	199c
		4535	0·711	94·4	345·4	− 8·3	1	3	
		4536a	0·669	77·3	350·4	+ 2·9	26	151	209c
		4536	0·694	78·1	348·3	+ 2·9	0	8	
		4536	0·724	79·1	345·8	+ 2·7	1	3	
		4536	0·728	78·3	345·6	+ 3·4	0	4	
			0·800	110·5	337·9	−20·8			153
			0·796	99·8	337·8	−12·2			258
			0·802	89·3	337·7	− 3·8			245
			0·931	75·8	324·7	+10·3			135
Mar. 1		Centre			(31·0)	−7·3)	(173)	(1179)	(1326)
60·412	AW, FT		0·910	301·7	76·2	+24·9			137
		4531a	0·563	304·6	46·0	+12·2	58	363	
		4532	0·369	275·6	39·3	− 4·7	0	3	
		4532	0·372	283·2	39·0	− 2·0	0	4	
		4532a	0·321	290·0	35·3	− 0·7	26	204	
		4533a	0·201	286·9	28·9	− 3·9	3	42	
		4533	0·156	282·6	26·6	− 5·3	2	16	
		4533	0·156	290·4	26·2	− 4·2	0	2	
		4533	0·147	293·8	25·5	− 3·9	0	4	
		4533	0·136	301·1	24·5	− 3·3	2	7	
		4533	0·122	287·4	24·5	− 5·2	0	11	
		4533	0·190	290·3	24·2	− 3·5	2	17	
		4533	0·110	285·5	23·9	− 5·6	4	19	
		4533	0·105	295·2	23·2	− 4·7	3	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 4536, February 27–March 10. A large spot, *a*, composite till March 2, subsequently regular, measured in two parts on February 28; with small companions, one of which, *b*, is seen from March 4 to March 9 following, and gradually catching up *a*.

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).
1897.				°	°	°			
60·412	AW, FT	4535*a*	0·502	92·6	347·5	− 7·7	60	273	
		4536*a*	0·466	70·1	351·9	+ 2·5	29	150	
		4536	0·512	68·3	349·4	+ 4·5	0	12	
		4536	0·524	68·3	348·7	+ 4·8	0	5	
		4536	0·535	72·7	347·2	+ 2·8	0	5	
			0·823	71·1	325·5	+11·0			122
			0·966	99·9	301·9	−11·4			123
Mar. 2		Centre			(17·8)	(−7·3)	(189)	(1152)	(382)
61·118	AW, FT		0·965	276·4	82·4	+ 4·2			101
I.			0·833	276·5	64·2	+ 1·3			165
			0·850	299·9	60·3	+20·6			173
			0·791	291·1	57·2	+11·8			92
			0·862	313·8	55·4	+31·8			69
		4531	0·671	294·6	46·7	+10·5	0	5	
		4531*a*	0·672	297·1	46·1	+12·1	86	367	
		4531	0·656	298·7	44·5	+12·4	0	1	
		4531	0·659	299·7	44·4	+13·1	0	3	
		4531	0·653	300·6	43·7	+13·5	1	4	
		4532*a*	0·471	282·3	35·8	− 0·8	34	182	
		4533	0·404	274·6	32·2	− 4·8	0	3	
		4533*a*	0·377	279·9	30·2	− 3·1	32	135	
		4533	0·367	283·4	29·3	− 2·0	0	4	
		4533	0·356	280·0	29·0	− 3·3	4	17	
		4533	0·339	276·1	28·2	− 4·8	0	6	
		4533	0·325	284·6	26·8	− 2·3	0	1	
		4533	0·306	282·4	25·8	− 3·2	3	13	
		4533	0·301	280·1	25·7	− 4·0	1	5	
		4533	0·284	282·0	24·6	− 3·7	7	23	
		4533*b*	0·273	278·2	24·2	− 4·8	6	55	
		4537	0·485	26·1	355·5	+18·6	1	2	
		4535*a*	0·350	92·5	347·9	− 7·7	60	274	
		4535	0·381	93·9	346·0	− 8·3	0	3	
		4535	0·385	92·4	345·8	− 7·7	0	2	
		4535	0·388	93·7	345·6	− 8·2	0	2	
		4535	0·403	89·4	344·7	− 6·5	0	3	
		4535	0·406	91·5	344·5	− 7·3	0	1	
		4536*a*	0·317	58·3	352·9	+ 2·5	30	143	
		4536	0·351	58·4	351·1	+ 3·6	0	1	
		4536	0·385	57·4	349·6	+ 5·1	0	2	
		4536	0·362	65·6	349·3	+ 1·7	0	4	
		4536	0·383	59·6	349·2	+ 4·3	0	2	
1897.				°	°	°			
61·118	AW, FT	4536	0·380	66·4	348·2	+ 1·9	1	3	
		4536	0·388	65·6	347·9	+ 2·4	1	3	
I.		4536	0·397	65·1	347·5	+ 2·8	0	2	
		4536	0·404	63·5	347·4	+ 3·6	0	1	
		4538	0·392	110·9	346·3	−14·8	0	9	
			0·871	85·1	308·5	+ 0·7			65
			0·926	98·2	300·1	−10·3			177
Mar. 3		Centre			(8·5)	(−7·3)	(267)	(1281)	(842)
62·487	CL, FT		0·962	267·4	64·8	− 4·5			162
			0·948	276·5	60·0	+ 3·7			108
			0·952	293·4	58·4	+19·7			56
			0·870	280·0	49·6	+ 5·0			115
			0·838	297·4	41·9	+18·2			489
			0·771	270·6	40·9	− 4·2			89
			0·803	308·6	34·1	+24·9			104
		4531*a*	0·856	288·7	46·2	+11·9	67	340	284*c*
		4532*a*	0·725	275·8	36·5	− 0·9	25	190	
		4532	0·716	273·2	36·0	− 2·8	0	1	
		4533*a*	0·678	274·6	32·9	− 2·3	30	202	
		4533	0·659	274·2	31·5	− 2·8	0	5	
		4533	0·659	275·3	31·4	− 2·1	1	8	
		4533	0·653	274·5	31·0	− 2·6	0	4	
		4533	0·636	274·3	29·8	− 2·9	1	7	
		4533	0·634	272·1	29·8	− 4·3	1	6	
		4533	0·626	275·0	29·0	− 2·6	0	6	
		4533	0·590	272·2	26·6	− 4·7	0	10	
		4533*b*	0·575	272·6	25·5	− 4·5	5	42	
		4533	0·573	274·6	25·3	− 3·4	0	3	
		4533	0·567	270·9	25·1	− 5·5	0	7	
		4533	0·565	272·2	24·9	− 4·8	0	2	
		4533	0·542	269·5	23·4	− 6·5	0	3	
		4535*a*	0·046	107·7	348·0	− 8·1	47	238	
		4536*a*	0·174	339·9	353·9	+ 2·1	24	145	
		4536	0·195	349·7	352·5	+ 3·7	0	2	
		4536*b*	0·172	348·9	352·4	+ 2·4	5	14	
		4536	0·187	351·7	352·0	+ 3·3	0	3	
		4536	0·200	2·1	350·1	+ 4·2	2	10	
		4536	0·206	11·7	348·1	+ 4·3	0	4	
		4536	0·196	14·5	347·7	+ 3·6	2	12	
Mar. 4		Centre			(350·5)	(−7·3)	(210)	(1264)	(1407)

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 4537, March 3. A very small spot.
Group 4538, March 3. A 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 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).
1897.				°	°	°			
63·420	AW, FT		0·936	279·1	46·2	+ 5·9			160
			0·928	294·0	41·6	+19·0			277
			0·898	303·4	34·2	+25·7			90
		4531*a*	0·940	286·0	45·5	+12·3	48	308	411*f*
		4532*a*	0·854	273·8	36·3	− 0·7	33	180	
		4532	0·832	270·7	34·3	− 3·5	0	4	
		4532*b*	0·820	272·6	33·0	− 2·1	40	242	359*c*
		4532	0·790	271·8	30·2	− 3·1	0	2	
		4532*c*	0·738	271·1	25·6	− 4·2	16	87	191*c*
		4535	0·180	274·3	348·5	− 6·5	0	1	
		4535*a*	0·165	266·4	347·6	− 7·8	44	238	
		4535*b*	0·137	241·4	345·1	−11·0	0	2	
		4536*a*	0·314	300·0	353·8	+ 2·0	24	127	
		4536*b*	0·303	302·3	352·9	+ 2·3	5	10	
		4536	0·303	304·2	352·6	+ 2·7	3	7	
		4536	0·258	318·1	348·0	+ 3·9	0	7	
		4536	0·247	319·2	347·4	+ 4·0	2	7	
		4539*a*	0·104	164·1	336·4	−13·0	2	12	
		4539*b*	0·120	148·0	334·4	−13·1	0	4	
Mar. 5		Centre			(338·1)	(−7·3)	(217)	(1238)	(1488)
64·171	AW, FT		0·971	291·8	40·5	+19·0			388
			0·951	265·8	40·5	− 6·3			250
I.			0·928	248·7	37·3	−22·5			158
			0·953	301·7	33·8	+27·2			132
			0·865	261·9	28·6	−10·7			214
			0·860	241·9	27·0	−27·8			110
		4531*a*	0·987	283·5	46·8	+12·0	82	334	675*p*
		4532*a*	0·935	271·7	37·1	− 1·1	48	197	
		4532*b*	0·914	270·3	34·2	− 2·7	51	253	544*c*
		4532	0·901	270·6	32·4	− 2·7	0	17	
		4532*c*	0·846	269·4	26·0	− 4·4	13	84	405*c*
		4535*a*	0·334	266·3	347·8	− 8·1	50	240	
		4535	0·288	266·8	345·0	− 8·0	0	4	
		4535*b*	0·291	255·8	344·8	−11·1	0	2	
		4536*a*	0·462	287·7	354·2	+ 1·5	25	113	
		4536*b*	0·448	289·3	353·1	+ 1·9	2	16	
		4536	0·430	290·2	351·9	+ 1·9	0	2	
		4536	0·424	285·4	352·2	− 0·3	0	1	
		4539*a*	0·189	235·2	337·3	−13·4	4	14	
		4539*b*	0·153	228·5	334·9	−13·1	1	11	
Mar. 6		Centre			(328·2)	(−7·3)	(276)	(1288)	(2876)
1897.				°	°	°			
65·149	AW, JW		0·898	259·6	20·0	−12·6			292
		4532*b*	0·992	269·8	38·0	− 1·1	41	215	
I.		4532*a*	0·985	268·5	35·5	− 2·8	33	244	960*c*
		4532	0·977	268·4	33·1	− 3·1	0	40	
		4532*c*	0·943	268·4	26·0	− 3·9	0	19	
		4535*a*	0·533	265·9	347·8	− 8·3	45	232	
		4536*a*	0·645	281·1	354·6	+ 1·6	23	104	
		4536*b*	0·631	281·7	353·4	+ 1·7	4	12	
		4539*a*	0·397	251·9	338·2	−13·7	0	10	
Mar. 7		Centre			(315·4)	(−7·2)	(146)	(876)	(1252)
66·488	AW, FT		0·895	269·8	1·3	− 3·4			101
			0·760	281·4	345·9	+ 3·9			85
		4535	0·787	266·5	350·0	− 7·3	0	3	
		4535*a*	0·762	265·3	347·7	− 8·3	37	222	125*c*
		4536*a*	0·842	276·7	354·4	+ 1·7	26	105	
		4536*b*	0·836	277·1	353·7	+ 1·9	2	9	277*c*
		4540	0·081	19·4	296·3	− 2·9	0	4	
		4540	0·084	27·7	295·6	− 3·0	1	4	
		4540	0·114	40·5	293·6	− 2·3	0	4	
		4540	0·120	38·6	293·5	− 1·9	0	1	
		4541*a*	0·958	84·2	225·3	+ 3·5	12	62	
		4541*b*	0·972	84·4	222·2	+ 3·7	11	50	
		4541	0·974	85·3	221·6	+ 2·9	0	8	364*c*
		4541*c*	0·991	83·0	216·6	+ 5·9	33	199	
			0·957	76·9	226·7	+10·3			94
Mar. 8		Centre			(297·8)	(−7·2)	(122)	(671)	(1046)
67·181	AW, JW		0·975	258·2	6·8	−13·1			132
			0·945	267·8	359·7	− 4·5			165
I.			0·909	259·3	354·7	−12·7			214
			0·850	278·8	345·7	+ 3·6			165
			0·818	270·7	343·4	− 3·6			61
			0·801	253·8	342·0	−17·2			217
		4535*a*	0·861	264·1	348·4	− 8·8	39	178	275*sf*
		4536*a*	0·921	274·6	355·0	+ 1·4	22	111	
		4536*b*	0·913	274·8	353·9	+ 1·4	3	7	314*c*
		4542	0·352	302·4	305·9	+ 4·0	1	4	
		4542*a*	0·362	305·5	305·7	+ 5·2	8	22	
		4542	0·327	302·1	304·6	+ 3·1	0	1	
		4542	0·344	307·8	304·4	+ 5·2	0	2	
		4542	0·331	307·3	303·8	+ 4·6	0	2	

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 4539, March 5–7. Two small spots, *a* and *b*. *a* is the leader. *b* has increased by March 6, but is not seen again.
Group 4540, March 8–10. Four very small spots on March 8. One very small spot on March 10. The group is not seen on March 9.
Group 4541, March 8–20. Three spots, *a*, *b*, *c*, of which *c*, the last and most northerly, is the largest; *b* has diminished by March 9, and has disappeared by March 10; *a* has diminished by the next day; and from March 12 to 14, *c* remains alone. By March 15 the group has broken up. *d*, from March 15 to 19, is seen *s* of *c*; *e*, from March 15 to 20, *f* of *c*. On March 16, *f* and *g* appear at the head of the group, and last for three and two days respectively. From March 18, *h* is the leader. *c* is the largest spot throughout; it is composite till March 15, and subsequently regular.
Group 4542, March 9–13. A cluster of small spots. The leader, *a*, is seen alone on March 11. On March 12–13, *b* is seen at the end of the group. *a* has greatly increased on the last day. The photosphere appears disturbed on March 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 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).
1897.				°	°	°			
67·181	AW, JW	4542	0·320	307·1	303·4	+ 4·2	0	5	
		4542	0·313	306·3	303·2	+ 3·7	1	4	
I.		4542	0·307	304·9	303·1	+ 3·2	0	1	
		4542	0·315	308·2	302·9	+ 4·2	0	2	
		4543	0·509	70·0	260·1	+ 3·7	0	4	
		4543	0·520	70·3	259·3	+ 3·8	0	2	
		4543	0·535	71·3	258·2	+ 3·7	2	6	
		4541*a*	0·900	82·7	225·4	+ 3·3	17	94	
		4541	0·925	81·6	222·1	+ 5·0	0	5	
		4541*b*	0·929	83·5	221·2	+ 3·3	0	11	420*c*
		4541	0·947	82·7	218·4	+ 4·5	0	6	
		4541*c*	0·964	81·5	215·3	+ 6·2	40	232	
			0·934	74·2	222·1	+ 12·0			189
			0·953	109·3	215·0	− 20·6			302
Mar. 9		Centre			(288·6)	(− 7·2)	(133)	(699)	(2454)
68·411	CL, AW		0·949	254·7	345·0	− 16·8			300
			0·937	249·2	342·9	− 22·0			172
			0·914	270·2	338·4	− 2·8			98
			0·875	260·2	334·0	− 12·0			165
		4535*a*	0·964	263·2	347·6	− 8·5	26	191	574*c*
		4536*a*	0·990	272·3	353·7	+ 1·2	17	90	290*n*
		4542*a*	0·604	289·0	307·3	+ 5·4	9	42	
		4542	0·589	291·0	305·8	+ 6·2	0	2	
		4542	0·545	288·2	303·5	+ 3·6	0	1	
		4542	0·540	288·8	303·1	+ 3·8	3	9	
		4540	0·403	280·5	295·7	− 2·4	0	3	
		4544	0·194	240·0	282·3	− 12·7	0	2	
		4544	0·170	230·8	280·1	− 13·3	0	3	
		4543	0·276	47·8	260·6	+ 3·6	0	2	
		4543	0·285	48·8	260·0	+ 3·8	0	3	
		4543	0·313	53·4	257·9	+ 3·7	2	10	
		4541*a*	0·733	79·3	226·4	+ 2·8	13	44	
		4541	0·816	79·2	219·1	+ 4·5	1	4	453*c*
		4541*c*	0·850	78·7	215·7	+ 5·7	35	201	
			0·893	107·5	208·5	− 18·9			461
			0·924	90·3	204·9	− 3·1			42
			0·927	117·1	203·8	− 27·8			193
			0·946	77·7	203·2	+ 9·2			424
			0·960	85·1	199·4	+ 2·6			94
			0·986	95·8	191·5	− 6·9			112
Mar. 10		Centre			(272·4)	(− 7·2)	(106)	(607)	(3378)
1897.				°	°	°			
69·481	AW, FT	4542*a*	0·778	282·5	307·8	+ 5·1	2	21	128*f*
		4541*a*	0·545	73·4	226·9	+ 2·8	5	13	99*c*
		4541*c*	0·696	74·4	216·1	+ 5·5	31	181	
			0·797	116·3	206·4	− 25·2			266
			0·838	74·5	203·7	+ 8·8			421
			0·866	83·5	199·1	+ 2·0			110
			0·928	76·3	192·3	+ 9·9			113
			0·926	94·4	190·2	− 6·8			99
			0·927	118·9	189·8	− 29·5			126
Mar. 11		Centre			(258·3)	(− 7·2)	(38)	(215)	(1362)
70·477	AW, FT	4542*a*	0·906	279·2	308·8	+ 5·1	5	20	
		4542	0·900	278·9	308·0	+ 4·8	0	11	477*c*
		4542*b*	0·885	279·4	306·1	+ 4·8	5	25	
		4541*c*	0·525	67·5	216·1	+ 5·3	34	183	
			0·769	73·2	197·3	+ 8·1			424
			0·861	113·1	185·6	− 23·5			133
Mar. 12		Centre			(245·1)	(− 7·2)	(44)	(239)	(1034)
71·196	AW, JW		0·908	261·8	301·5	− 10·4			213
		4542*a*	0·970	276·9	310·6	+ 4·9	20	68	673*c*
I.		4542*b*	0·951	277·6	306·6	+ 5·0	3	33	
		4545	0·850	267·8	294·1	− 5·6	0	7	
		4543	0·481	291·7	262·2	+ 3·8	0	10	
		4543	0·450	294·2	259·9	+ 4·0	0	8	
		4541*c*	0·393	57·9	216·3	+ 5·2	35	193	
Mar. 13		Centre			(235·7)	(− 7·2)	(58)	(319)	(886)
72·170									
I.	AW, FT	4541*c*	0·244	28·4	216·1	+ 5·3	38	175	
Mar. 14		Centre			(222·8)	(− 7·1)	(38)	(175)	(0)
73·590	AW, FT	4543	0·878	277·4	264·6	+ 3·0	0	5	
		4543	0·874	278·5	263·9	+ 3·9	0	3	322*c*
		4543	0·859	278·4	262·2	+ 3·5	1	20	
		4541	0·272	306·1	216·8	+ 2·3	2	7	
		4541*d*	0·255	304·2	216·2	+ 1·2	41	158	
		4541*c*	0·296	316·4	215·9	+ 5·4	28	184	
		4541*c*	0·267	316·1	214·8	+ 4·1	22	106	
		4541	0·250	316·8	214·0	+ 3·4	0	4	
			0·943	93·4	133·3	− 5·6			188
Mar. 15		Centre			(204·1)	(− 7·1)	(94)	(487)	(510)

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 4543, March 9–16. A few unstable small spots. The group is not seen on March 11, 12, and 14.
Group 4544, March 10. Two very small spots.
Group 4545, March 13. 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 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).
1897.				°	°	°			
74·541	AW, FT		0·865	268·4	251·6	− 5·0			60
		4543	0·963	275·4	265·2	+ 3·2	0	7	
		4543	0·944	277·9	261·2	+ 5·1	0	3	
		4543	0·943	277·4	261·1	+ 4·5	0	9	431c
		4543	0·937	278·1	260·0	+ 5·0	0	3	
		4543	0·929	278·0	258·8	+ 4·7	0	5	
		4541*f*	0·481	288·2	218·7	+ 2·3	32	116	
		4541	0·454	285·7	217·6	+ 6·3	1	10	
		4541*g*	0·465	289·7	217·5	+ 2·6	5	14	
		4541	0·452	290·4	216·6	+ 2·7	0	3	
		4541*d*	0·443	288·9	216·3	+ 1·8	12	58	
		4541	0·447	291·9	216·0	+ 3·1	1	8	
		4541*c*	0·458	296·4	215·8	+ 5·2	34	206	
		4541	0·438	292·4	215·4	+ 2·9	0	4	
		4541*e*	0·435	294·9	214·8	+ 4·0	4	31	
		4541	0·420	291·0	214·6	+ 2·1	3	8	
		4541	0·416	293·0	214·0	+ 2·8	1	7	
		4541	0·422	295·8	213·9	+ 4·0	0	5	
		4546	0·352	323·4	203·8	+ 9·4	0	3	
			0·867	91·7	125·9	− 18·5			145
			0·957	86·1	119·1	+ 1·7			103
Mar. 16		Centre			(191·6)	(−7·1)	(93)	(500)	(739)
75·411	AW, CL		0·989	275·7	260·6	+ 4·5			345
		4547	0·960	267·5	254·0	− 4·4	11	69	209c
		4547	0·943	267·9	250·8	− 4·4	0	5	
		4541*f*	0·663	282·8	220·3	+ 3·0	24	103	
		4541	0·655	284·0	219·5	+ 3·6	0	3	
		4541	0·648	283·9	219·0	+ 3·5	0	4	
		4541*g*	0·635	284·1	218·0	+ 3·3	3	20	
		4541*d*	0·632	282·9	218·0	+ 2·5	10	31	
		4541	0·618	283·7	216·9	+ 2·8	0	3	
		4541*c*	0·620	288·2	216·2	+ 5·4	31	172	
		4541	0·610	284·6	216·2	+ 3·1	1	5	
		4541	0·605	285·1	215·7	+ 3·3	0	4	
		4541*e*	0·595	287·8	214·6	+ 4·6	13	95	
		4541	0·581	286·0	214·0	+ 3·3	3	10	
		4548	0·370	29·7	169·4	+11·7	1	5	
		4548	0·385	33·7	167·5	+11·7	1	5	
Mar. 17		Centre			(180·1)	(−7·1)	(98)	(534)	(554)
1897.				°	°	°			
76·474	AW, FT		0·817	250·0	220·8	−20·4			165
		4541*h*	0·837	278·4	221·8	+ 3·1	21	95	
		4541*f*	0·822	279·4	220·1	+ 3·6	10	50	
		4541	0·822	278·1	220·3	+ 2·6	0	3	
		4541*d*	0·808	279·5	218·8	+ 3·5	8	51	
		4541	0·801	278·8	218·2	+ 2·8	0	3	
		4541	0·791	279·3	217·2	+ 3·0	2	8	651c
		4541*c*	0·787	282·6	216·3	+ 5·4	27	173	
		4541*e*	0·769	282·5	214·7	+ 5·0	7	40	
		4541	0·765	281·4	214·6	+ 4·1	4	20	
		4541	0·758	279·7	214·2	+ 2·7	1	4	
		4541	0·758	280·5	214·1	+ 3·3	0	4	
			0·935	68·1	100·7	+17·6			112
Mar. 18		Centre			(166·0)	(−7·0)	(80)	(451)	(928)
77·388	AW, CL		0·788	289·6	203·0	+10·8			502
		4541*h*	0·936	276·1	222·6	+ 3·2	14	142	
		4541*d*	0·904	276·7	217·9	+ 3·0	0	54	686c
		4541*c*	0·899	280·0	216·8	+ 5·8	29	158	
		4541*e*	0·881	279·5	214·6	+ 5·0	11	69	
Mar. 19		Centre			(154·1)	(−7·0)	(54)	(423)	(1188)
78·181	CL, FT		0·868	285·9	201·4	+10·1			567
		4541*d*	0·984	274·3	222·7	+ 2·9	0	133	
M.		4541*h*	0·961	277·7	216·4	+ 5·4	30	145	992c
		4541*e*	0·952	277·5	214·7	+ 4·9	0	22	
Mar. 20		Centre			(143·6)	(−7·0)	(30)	(300)	(1559)
79·586	AW, FT		0·953	242·3	198·4	−28·4			165
			0·959	279·4	197·2	+ 7·0			404
			0·906	249·7	190·6	−21·2			212
			0·902	237·0	188·8	−32·6			121
			0·886	287·4	184·7	+11·9			301
			0·879	230·0	183·9	−38·2			105
			0·849	56·9	74·5	+23·3			61
			0·842	92·1	67·6	− 5·5			157
			0·925	82·6	58·4	+ 4·2			302
			0·976	76·2	49·7	+11·8			374
			0·967	95·2	49·4	− 6·8			194
Mar. 21		Centre			(125·1)	(−6·9)	(0)	(0)	(2396)

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

Group 4546, March 16. A very small spot.
Group 4547, March 17. A spot, with a small companion, that appears suddenly close to the west limb.
Group 4548, March 17. Two very 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 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).
1897.				°	°	°			
80·227	AW, FT	4549*a*	0·976	90·9	39·2	− 2·4	22	124	388*p*
			0·908	80·1	52·7	+ 6·0			239
I.			0·924	99·5	48·5	−11·4			127
			0·953	72·5	47·1	+14·3			374
			0·966	85·5	42·2	+ 2·5			176
			0·981	102·8	36·6	−13·9			220
Mar. 22		Centre			(116·6)	(−6·9)	(22)	(124)	(1524)
81·467	AW, FT	4549*a*	0·873	89·1	39·6	− 2·6	18	99	487*sf*
		4550	0·913	71·3	37·5	+13·7	0	6	468*p*
			0·852	82·4	42·7	+ 2·8			201
Mar. 23		Centre			(100·2)	(−6·9)	(18)	(105)	(1156)
82·435	AW, FT	4551	0·705	63·4	47·3	+13·2	0	3	
		4551	0·711	62·8	47·0	+13·8	0	9	
		4551	0·717	61·9	46·9	+14·6	0	3	
		4551	0·740	66·9	43·6	+12·0	1	5	444*c*
		4551	0·766	66·4	41·5	+13·2	3	16	
		4551	0·767	67·4	41·2	+12·5	0	3	
		4551	0·793	66·2	39·2	+14·2	0	5	
		4549*a*	0·740	86·9	40·0	− 2·3	17	92	384*n*
			0·817	91·4	32·6	− 5·1			322
			0·865	84·6	28·2	+ 1·2			154
			0·894	98·3	23·6	−10·5			167
			0·937	92·9	17·8	− 5·1			200
			0·941	104·2	16·4	−15·7			155
Mar. 24		Centre			(87·5)	(−6·8)	(21)	(136)	(1826)
83·430	CL, FT	4552	0·548	195·5	85·0	−38·4	0	3	
		4551	0·520	53·6	49·1	+11·8	0	2	
		4551	0·533	53·3	48·5	+12·4	0	4	
		4551	0·546	53·0	47·8	+13·1	0	3	
		4551	0·558	52·5	47·3	+13·8	0	2	
		4551	0·570	59·9	44·3	+10·7	1	2	
		4551	0·595	60·4	42·6	+11·3	0	3	
		4551	0·613	58·0	42·2	+13·1	1	3	
		4551	0·617	58·9	41·6	+12·8	3	8	
		4551	0·617	59·9	41·3	+12·3	1	5	
		4551	0·673	59·7	37·6	+14·4	0	3	
		4549*a*	0·566	83·6	40·2	− 2·1	14	85	
			0·805	93·6	20·5	− 7·0			145
1897.				°	°	°			
83·430	CL, FT		0·811	101·4	19·8	−13·3			133
			0·885	105·8	11·5	−17·2			54
			0·939	94·1	4·1	− 6·2			132
			0·955	100·7	0·8	−12·3			76
Mar. 25		Centre			(74·3)	(−6·8)	(20)	(123)	(540)
84·654	AW, FT	4551	0·380	39·4	44·2	+10·5	0	2	
		4551	0·407	41·3	42·5	+11·3	0	3	
		4549*a*	0·311	75·7	40·8	− 2·0	21	78	
		4549	0·338	75·7	39·3	− 1·6	0	4	
		4549	0·339	82·7	38·7	− 3·9	0	3	
		4549	0·365	82·7	37·1	− 3·6	0	1	
		4553*a*	0·976	102·1	340·0	−13·3	27	163	359*c*
			0·932	60·9	355·5	+24·0			166
			0·905	82·2	354·5	+ 4·2			148
			0·908	98·3	352·6	−10·3			324
			0·956	110·1	344·3	−21·2			120
			0·959	115·6	343·7	−26·4			89
Mar. 26		Centre			(58·3)	(−6·7)	(48)	(254)	(1206)
85·528	CL, FT	4549*a*	0·128	48·0	41·3	− 1·8	13	52	
		4553*a*	0·914	101·1	340·1	−12·8	33	166	309*c*
			0·766	80·9	357·7	+ 2·6			51
			0·798	98·3	353·4	−10·7			263
			0·878	55·4	353·4	+26·0			111
			0·891	81·6	344·8	+ 4·4			144
			0·908	111·8	341·1	−22·5			252
			0·919	90·4	340·0	− 3·0			70
Mar. 27		Centre			(46·7)	(−6·7)	(46)	(218)	(1200)
86·545	AW, CL		0·943	320·1	88·6	+42·7			205
		4549*a*	0·167	300·3	41·6	− 1·7	17	51	
		4549	0·109	312·4	37·9	− 2·4	0	3	
		4553*a*	0·800	101·2	339·9	−12·9	29	160	558*nf*
		4554*a*	0·973	84·4	317·5	+ 3·9	22	136	385*c*
			0·775	89·6	342·5	− 3·9			104
			0·864	84·0	334·2	+ 1·9			116
Mar. 28		Centre			(33·3)	(−6·6)	(68)	(350)	(1368)

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

Group 4549, March 22–April 1. A large regular spot, *a*, with occasionally a few small companions. *a* diminishes in size, and has a forward motion in longitude.
Group 4550, March 23. A very small spot.
Group 4551, March 24–26. Several small unstable spots.
Group 4552, March 25. A very small spot in a high south latitude.
Group 4553, March 26–April 5. A regular spot, *a*, that diminishes rapidly from April 1, and is not seen on the last day. From April 2 the group consists of a dense cluster of spots, chiefly very small.
Group 4554, March 28–April 9. A large stable and regular spot, *a*, occasionally accompanied by a few 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 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).
1897.				°	°	°			
87·193	AW, JW	4549*a*	0·305	284·2	41·8	− 2·1	11	70	
		4549	0·262	286·7	39·2	− 2·1	0	5	
I.		4549	0·250	285·0	38·6	− 2·7	0	5	
		4553*a*	0·704	101·4	339·9	−12·7	29	133	151*f*
		4554*a*	0·932	82·8	316·9	+ 4·3	30	158	389*f*
Mar. 29		Centre			(24·7)	(−6·6)	(70)	(371)	(540)
88·469	AW, CL	4549	0·589	274·9	43·7	− 2·4	3	11	
		4549	0·590	277·9	43·5	− 0·7	2	9	
		4549*a*	0·572	276·0	42·4	− 2·0	11	58	
		4549	0·563	273·1	42·0	− 3·7	0	3	
		4553	0·343	104·6	348·2	−11·1	0	3	
		4553	0·449	109·0	342·0	−14·3	0	2	
		4553*a*	0·470	104·7	340·3	−12·6	22	97	
		4554*a*	0·785	79·1	317·5	+ 4·4	24	130	383*c*
		4554	0·800	77·0	316·4	+ 6·3	0	7	
			0·675	82·9	326·0	+ 0·1			58
			0·892	95·8	304·4	− 8·1			61
Mar. 30		Centre			(7·9)	(−6·5)	(62)	(320)	(502)
89·185	CL, FT		0·916	270·9	64·5	− 1·9			163
			0·877	282·4	57·9	+ 7·6			217
I.			0·799	268·7	51·5	− 5·0			64
			0·804	291·4	48·4	+12·9			231
		4549	0·722	273·2	44·4	− 2·3	0	3	
		4549	0·721	274·7	44·2	− 1·2	0	6	
		4549	0·710	274·1	43·3	− 1·7	2	12	146*c*
		4549*a*	0·707	273·4	43·1	− 2·2	10	34	
		4549	0·670	272·7	40·3	− 3·1	0	3	
		4553*a*	0·321	110·3	340·5	−12·6	19	100	
		4554*a*	0·676	76·1	317·4	+ 4·4	26	136	
		4554	0·697	74·9	316·0	+ 5·7	0	2	89*c*
		4554	0·708	78·5	314·5	+ 3·5	0	2	
		4555	0·946	99·7	286·7	−11·3	4	20	402*c*
		4555	0·975	99·4	280·5	−10·6	2	19	
			0·776	79·2	308·7	+ 4·2			65
			0·926	71·5	293·6	+14·4			151
Mar. 31		Centre			(358·4)	(−6·5)	(63)	(337)	(1528)
1897.				°	°	°			
90·189	CL, FT		0·946	278·0	55·2	+ 5·4			176
			0·884	263·7	47·7	− 8·6			187
I.			0·909	288·2	47·7	+13·6			590
			0·756	271·6	34·2	− 3·0			76
		4549*a*	0·853	271·3	43·6	− 2·3	5	27	334*c*
		4553*a*	0·126	147·2	341·2	−12·5	15	67	
		4553	0·143	143·6	340·2	−13·0	1	6	
		4553	0·137	129·2	339·0	−11·3	1	4	
		4553	0·146	130·4	338·7	−11·8	0	2	
		4554*a*	0·494	69·1	317·7	+ 4·4	27	142	
		4555	0·836	99·8	288·2	−11·7	5	26	
		4555	0·840	99·2	287·7	−11·2	0	2	
		4555	0·849	99·7	286·8	−11·6	2	9	232*c*
		4555	0·890	98·3	281·9	−10·3	0	10	
		4556*a*	0·993	92·0	262·0	− 2·8	0	193	117*p*
			0·962	82·9	272·0	+ 5·0			308
April 1		Centre			(345·2)	(−6·4)	(56)	(488)	(2020)
91·418	AW, FT		0·950	275·6	40·0	+ 3·3			200
			0·921	269·7	36·0	− 2·8			440
			0·850	264·0	27·5	− 8·4			182
		4553	0·265	252·4	343·8	−10·7	0	1	
		4553	0·277	242·1	343·5	−13·5	6	25	
		4553	0·264	249·4	343·5	−11·4	0	5	
		4553	0·253	251·0	343·0	−10·9	3	13	
		4553*a*	0·250	244·8	342·3	−12·2	9	36	
		4553	0·241	250·4	342·3	−10·8	0	1	
		4553	0·272	234·7	342·2	−15·2	2	6	
		4553	0·261	238·3	342·2	−14·0	0	2	
		4553	0·259	236·7	341·8	−14·3	1	4	
		4553	0·267	232·1	341·6	−15·6	1	2	
		4553	0·240	243·1	341·6	−12·4	2	7	
		4553	0·263	232·9	341·5	−15·3	0	1	
		4553	0·253	236·2	341·5	−14·2	0	1	
		4553	0·249	233·4	340·9	−14·7	5	20	
		4553	0·236	234·9	340·4	−14·0	0	2	
		4553	0·230	235·8	340·2	−13·6	0	2	
		4553	0·244	229·9	340·1	−15·2	0	1	
		4553	0·220	237·4	339·9	−13·0	0	1	
		4553	0·240	225·4	339·2	−15·9	0	1	
		4553	0·221	230·9	339·1	−14·2	0	1	
		4553	0·233	225·7	338·9	−15·6	0	1	
		4557	0·168	326·4	334·3	+ 1·8	0	4	

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 4555, March 31–April 10. A number of small unstable spots. On April 1 a spot is seen at some distance *f* the group; after crossing the central meridian the group begins to spread forwards in longitude, and when last seen is increasing rapidly.
Group 4556, April 1–13. A large spot, *a*, at first composite, but subsequently regular; occasionally with small companions. *a* has a forward motion in longitude.
Group 4557, April 2–7. A few small spots. The group has considerably increased in size on April 5 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 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).
1897.				°	°	°			
91·418	AW, FT	4554*a*	0·268	46·7	317·8	+ 4·4	25	135	
		4555	0·645	101·5	288·9	−12·2	2	9	
		4555	0·655	100·9	288·1	−11·9	1	8	97*f*
		4555	0·662	100·7	287·5	−11·8	0	11	
		4556*a*	0·920	90·7	262·1	− 3·1	17	110	262*c*
			0·868	81·0	269·9	+ 4·6			306
April 2		Centre			(329·0)	(−6·3)	(74)	(410)	(1487)
92·202	AW,JW		0·962	272·8	32·3	+ 1·0			
			0·943	262·9	29·6	− 8·8			357
I.			0·889	255·8	21·8	−15·5			376
		4553	0·445	251·8	344·3	−13·8	1	8	95
		4553	0·425	258·0	343·5	−10·7	0	1	
		4553	0·421	258·8	343·3	−10·4	1	4	
		4553	0·436	246·7	343·1	−15·7	0	2	
		4553	0·415	258·1	342·9	−10·7	0	3	
		4553*a*	0·419	253·2	342·8	−12·7	10	24	
		4553	0·425	248·5	342·6	−14·7	0	2	
		4553	0·409	254·9	342·3	−11·9	0	4	
		4553	0·404	253·1	341·8	−12·6	0	1	
		4553	0·390	256·7	341·2	−11·0	0	1	
		4553	0·400	246·9	340·9	−14·9	0	2	
		4553	0·376	259·1	340·5	− 9·9	0	2	
		4553	0·388	249·1	340·4	−13·8	0	2	
		4553	0·383	250·5	340·3	−13·2	0	4	
		4553	0·367	259·5	340·0	− 9·7	0	1	
		4557	0·319	294·9	335·4	+ 1·7	1	6	
		4557	0·288	299·7	333·0	+ 2·1	0	4	
		4554*a*	0·183	1·6	318·3	+ 4·2	24	130	
		4555	0·491	102·9	289·4	−11·9	0	4	
		4555	0·510	102·5	288·2	−11·8	1	3	
		4555	0·514	101·4	287·8	−11·3	1	3	
		4555	0·517	102·4	287·7	−11·8	0	1	
		4556*a*	0·837	89·2	261·9	− 2·8	28	110	428*sf*
			0·791	77·8	267·8	+ 5·7			403
April 3		Centre			(318·6)	(−6·3)	(67)	(322)	(1659)
93·493	AW, FT		0·907	268·8	6·7	− 3·7			120
			0·910	279·5	5·9	+ 6·0			219
			0·802	264·7	355·1	− 8·0			330
		4553	0·675	255·3	343·8	−14·5	0	1	
		4553	0·663	255·5	342·9	−14·2	0	3	
1897.				°	°	°			
93·493	AW, FT	4553*a*	0·661	258·1	342·9	−12·5	5	18	
		4553	0·638	257·6	341·1	−12·7	0	1	
		4553	0·637	256·3	341·0	−13·5	0	4	
		4553	0·633	257·3	340·7	−12·8	3	9	
		4553	0·629	253·7	340·1	−15·0	0	3	
		4553	0·612	253·3	338·8	−15·1	6	14	
		4557	0·629	280·9	339·6	+ 2·0	0	4	
		4557	0·621	278·0	339·4	+ 0·1	0	1	
		4557	0·586	282·2	336·4	+ 2·0	4	12	
		4557	0·584	281·5	336·4	+ 1·6	0	2	
		4558	0·613	302·4	333·7	+13·8	0	2	
		4554*a*	0·344	300·4	318·8	+ 4·0	18	120	
		4554	0·228	311·2	311·4	+ 2·5	0	5	
		4555	0·239	114·2	288·8	−11·7	0	2	
		4555	0·237	111·8	288·7	−11·1	0	2	
		4555	0·249	115·7	288·4	−12·3	0	5	
		4555	0·243	109·9	288·2	−10·8	0	5	
		4556	0·636	90·8	262·1	− 5·4	0	5	
		4556*a*	0·640	87·5	261·9	− 3·2	21	127	191*c*
		4559*a*	0·955	83·1	229·8	+ 4·7	7	73	
		4560	0·984	82·6	222·9	+ 6·1	0	11	672*f*
		4560	0·991	82·4	220·4	+ 6·6	0	15	
April 4		Centre			(301·6)	(−6·2)	(64)	(444)	(1532)
94·400	AW, FT		0·897	262·5	353·8	− 9·5			388
			0·905	282·1	352·8	+ 8·2			53
			0·766	266·6	339·7	− 6·6			134
		4553	0·783	257·5	341·3	−13·6	0	4	
		4553	0·781	259·0	341·1	−12·5	0	4	
		4553	0·760	254·8	339·0	−15·6	1	3	187*c*
		4553	0·754	255·3	338·6	−15·7	0	2	
		4557	0·750	277·8	337·4	+ 1·7	11	28	
		4557	0·713	278·9	334·2	+ 1·9	3	18	97*c*
		4558	0·749	295·4	333·7	+14·3	0	4	119*c*
		4554	0·570	292·8	321·5	+ 7·5	0	2	
		4554*a*	0·518	288·3	319·0	+ 3·9	18	115	
		4554	0·503	286·1	318·4	+ 2·6	0	2	
		4555	0·116	162·4	287·6	−12·5	1	4	
		4555	0·095	146·4	286·5	−10·7	0	4	
		4555	0·123	154·8	286·5	−12·6	2	5	
		4555	0·114	148·1	286·1	−11·7	0	3	
		4556*a*	0·465	85·3	262·1	− 3·3	15	108	
		4556	0·475	90·4	261·2	− 5·6	0	4	

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 4558, April 4–5. A very small spot, *n* Group 4557.
Group 4559, April 4–14. A regular spot, *a*, until April 8. On April 9 it shows signs of breaking up. The group henceforth consists of a fragment of *a*, accompanied on April 10–11 by several, and on other days by one or two small spots.
Group 4560, April 4–16. The group consists of one or two very small spots on April 4 and 5. On April 6 a pair of spots, *a*, *b* are seen. By April 7 there has been a complete transformation, and the group consists of a large spot, *c*, with *d* following, and three other considerable spots, *e*, *f*, *g*, to the north, *f* being the most northerly. By the next day *d* has disappeared, and *f* has absorbed *e* and *g*. *f* diminishes rapidly, and has broken up by April 11. The fragments have disappeared by April 14, leaving *c* alone, except for a small companion on April 15. *c* is a large regular spot with a progressive motion in longitude.

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).
1897.				°	°	°			
94·400	AW, FT	4556	0·484	89·0	260·7	− 5·0	0	2	
		4556	0·485	90·5	260·6	− 5·6	1	6	
		4556	0·487	88·3	260·5	− 4·6	0	2	
		4559*a*	0·870	81·2	230·2	+ 4·5	11	82	229*sp*
		4560	0·927	81·0	222·9	+ 5·9	0	8	432*f*
			0·898	108·8	225·4	−19·6			57
April 5		Centre			(289·6)	(−6·2)	(63)	(410)	(1696)
95·449	CL, FT		0·910	258·2	341·8	−13·3			255
			0·904	250·0	340·8	−20·7			123
			0·900	264·4	340·2	− 7·7			225
			0·891	290·7	335·4	+15·3			144
			0·848	322·6	316·3	+37·7			96
		4557	0·900	274·9	339·4	+ 1·7	0	12	169*f*
		4557	0·890	275·1	338·1	+ 1·7	0	7	
		4554*a*	0·702	282·0	319·1	+ 4·0	26	114	
		4561*a*	0·609	267·0	313·4	− 6·7	15	29	
		4561	0·600	266·8	312·7	− 6·8	4	13	
		4561	0·563	266·0	310·1	− 7·3	5	15	
		4561*b*	0·551	265·7	309·3	− 7·5	9	41	
		4555	0·266	249·1	290·4	−11·3	0	1	
		4555	0·268	246·8	290·3	−12·0	1	5	
		4555	0·260	247·4	289·9	−11·7	0	3	
		4555	0·234	243·4	288·1	−12·0	2	7	
		4555	0·199	237·8	285·7	−12·1	1	4	
		4556	0·230	88·4	262·5	− 5·6	0	4	
		4556*a*	0·243	79·1	262·0	− 3·3	27	114	
		4559*a*	0·727	77·6	230·6	+ 4·7	10	62	186*c*
		4560	0·819	78·6	222·2	+ 5·8	0	7	
		4560*a*	0·826	82·8	220·9	+ 2·5	15	37	367*c*
		4560*b*	0·840	82·8	219·5	+ 2·7	7	36	
		4560	0·855	81·3	218·1	+ 4·2	2	9	
			0·950	78·0	205·7	+ 9·3			232
		Centre			(275·8)	(−6·1)	(124)	(520)	(1797)
April 6									
96·291	CL, AW		0·953	262·1	337·4	− 9·3			251
			0·946	256·3	336·4	−14·9			252
I.			0·938	250·4	334·9	−20·4			79
			0·953	285·9	334·6	+13·1			153
			0·861	281·5	322·6	+ 6·7			102
1897.				°	°	°			
96·291	CL, AW		0·793	273·3	316·8	− 1·1			81
			0·751	279·3	312·3	+ 2·9			100
		4557	0·973	272·9	340·7	+ 1·4	0	14	329*c*
		4557	0·965	273·2	338·7	+ 1·5	0	4	
		4557	0·952	273·1	336·3	+ 1·1	16	37	
		4554*a*	0·826	278·4	319·3	+ 3·5	23	121	107*c*
		4561*a*	0·759	265·5	314·1	− 7·3	17	100	129*c*
		4561*b*	0·699	264·9	309·1	− 7·9	15	80	
I.		4555	0·460	256·1	291·6	−11·7	2	16	
		4555	0·439	254·1	290·1	−12·3	0	6	
		4555	0·413	251·0	288·1	−13·2	0	5	
		4555	0·402	253·6	287·7	−12·0	0	2	
		4556*a*	0·064	42·0	262·2	− 3·3	26	113	
		4556	0·053	59·0	262·0	− 4·4	0	6	
		4556	0·054	78·7	261·6	− 5·4	0	4	
		4559*a*	0·576	72·4	231·3	+ 5·0	14	73	
		4560*c*	0·691	80·1	221·8	+ 2·4	56	263	458*c*
		4560*d*	0·719	79·7	219·7	+ 3·2	22	121	
		4560	0·740	76·5	218·5	+ 5·8	0	7	
		4560*e*	0·737	78·3	218·4	+ 4·4	3	29	
		4560*f*	0·749	75·1	218·0	+ 7·0	10	61	
		4560*g*	0·751	77·0	217·4	+ 5·7	20	60	
			0·848	76·2	208·5	+ 8·4			217
			0·905	71·6	202·7	+13·8			129
April 7		Centre			(264·6)	(−6·0)	(224)	(1122)	(2387)
97·207	AW, JW		0·904	271·3	317·1	− 1·4			282
			0·861	278·0	311·1	+ 3·8			204
I.		4554*a*	0·927	276·4	319·8	+ 3·7	35	145	216*c*
		4561*a*	0·884	264·9	315·0	− 7·3	16	80	351*c*
		4561	0·871	265·5	313·4	− 6·9	0	8	
		4561	0·840	264·9	309·9	− 7·5	0	13	
		4561*b*	0·828	264·6	308·7	− 7·8	21	71	
		4555	0·652	258·5	293·2	−12·0	2	9	
		4555	0·646	257·8	292·7	−12·4	0	2	
		4555	0·644	259·9	292·7	−11·0	6	19	
		4555	0·632	259·1	291·7	−11·4	3	13	
		4555	0·628	257·5	291·3	−12·4	0	1	
		4555	0·620	258·6	290·8	−11·7	0	4	
		4555	0·593	258·5	288·8	−11·6	10	26	
		4556*a*	0·180	285·2	262·6	− 3·1	25	114	
		4556	0·168	280·0	262·1	− 4·2	1	4	

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 4561, April 6–9. A pair of composite spots, *a* and *b*; both spots have largely increased by April 7, and diminished by April 9; their distance apart increases rapidly till April 8. Some small spots are seen between *a* and *b* on April 6 and 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 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).
1897.				°	°	°			
97·207	AW, JW	4559	0·343	62·0	235·0	+ 3·6	0	1	
I.		4559	0·372	59·9	233·8	+ 5·1	0	4	
		4559	0·362	65·4	233·4	+ 3·1	1	4	
		4559	0·385	66·0	232·1	+ 3·5	0	2	
		4559*a*	0·403	60·9	232·0	+ 5·8	11	73	
		4560*c*	0·512	75·2	223·0	+ 2·4	68	308	
		4560	0·534	73·4	221·9	+ 3·7	0	1	
		4560	0·544	73·6	221·2	+ 3·8	0	1	
		4560	0·548	74·7	220·8	+ 3·5	0	4	
		4560	0·578	75·2	218·7	+ 3·6	2	7	
		4560*f*	0·602	69·8	218·0	+ 7·1	42	240	
		4562	0·644	91·4	212·5	− 5·5	0	3	
		4562	0·653	89·6	211·9	− 4·2	0	3	
			0·762	69·4	206·1	+11·5			136
			0·809	80·7	199·6	+ 4·0			159
			0·861	120·7	194·7	−29·3			86
			0·892	75·6	191·5	+10·0			253
			0·923	125·4	186·5	−34·8			127
April 8		Centre			(252·6)	(−5·9)	(243)	(1160)	(1814)
98·406	AW, FT		0·919	279·9	302·2	+ 6·7			90
		4554*a*	0·992	274·8	318·8	+ 4·0	16	98	201*f*
		4561*a*	0·975	264·4	314·2	− 6·8	0	11	528*c*
		4561*b*	0·946	263·9	308·1	− 7·7	8	34	
		4555	0·850	260·4	295·2	−11·3	11	49	
		4555	0·849	259·7	295·1	−11·9	0	3	
		4555	0·834	260·7	293·5	−11·0	0	10	
		4555	0·819	260·8	291·9	−10·9	0	5	301*c*
		4555	0·808	262·1	290·8	− 9·9	0	3	
		4555	0·782	260·4	288·3	−11·1	7	20	
		4556*a*	0·441	274·8	262·7	− 3·2	25	113	
		4556	0·426	273·7	261·8	− 3·8	0	5	
		4556	0·412	270·7	261·0	− 5·1	1	4	
		4559	0·152	6·8	235·7	+ 2·7	1	3	
		4559	0·197	7·1	235·3	+ 5·4	0	6	
		4559	0·190	14·8	233·9	+ 4·7	0	1	
		4559	0·239	13·5	233·5	+ 7·5	0	2	
		4559*a*	0·217	18·0	232·9	+ 6·0	11	53	
		4559	0·210	32·2	230·3	+ 4·3	0	1	
		4560	0·202	59·5	226·7	+ 0·1	0	2	
		4560	0·207	57·3	226·7	+ 0·6	0	1	
		4560*c*	0·244	60·3	224·5	+ 1·2	71	339	
		4560	0·279	60·6	222·7	+ 2·1	0	2	
1897.				°	°	°			
98·406	AW, FT	4560	0·298	59·1	221·9	+ 3·1	1	6	
		4560	0·343	58·0	219·8	+ 4·8	0	5	
		4560	0·353	57·1	219·5	+ 5·4	0	1	
		4560	0·347	62·7	218·8	+ 3·6	1	2	
		4560*f*	0·379	55·5	218·4	+ 6·8	33	124	
		4560	0·387	59·1	217·3	+ 5·9	0	6	
		4562	0·392	89·9	213·6	− 5·4	1	5	
		4562	0·406	89·0	212·8	− 5·0	0	3	
		4562	0·429	90·3	211·4	− 5·5	0	1	
		4562	0·446	87·4	210·3	− 4·2	1	5	
		4562	0·453	90·6	209·7	− 5·6	1	6	
		4563	0·592	94·4	200·3	− 7·4	0	4	
		4563	0·613	94·6	198·8	− 7·5	1	5	
		4563	0·631	96·3	197·5	− 8·6	2	5	
		4563	0·642	93·3	196·7	− 6·7	1	9	
		4564	0·954	96·9	163·8	− 8·4	0	12	218*c*
		4564	0·970	97·3	160·3	− 8·5	0	4	
			0·793	67·0	188·1	+14·1			84
April 9		Centre			(236·7)	(−5·9)	(193)	(968)	(1422)
99·539	CL, FT		0·787	281·4	272·4	+ 5·2			232
		4555	0·963	260·1	296·8	−11·1	11	77	
		4555	0·947	259·8	293·6	−11·6	6	40	
		4555	0·935	260·0	291·5	−11·4	0	5	
		4555	0·933	257·9	291·2	−13·4	0	3	442*c*
		4555	0·923	259·7	289·6	−11·7	2	9	
		4555	0·913	260·6	288·1	−11·0	2	8	
		4556*a*	0·655	271·7	262·6	− 3·3	19	107	
		4556	0·635	271·4	261·1	− 3·6	0	2	
		4559	0·298	300·7	236·6	+ 3·2	0	1	
		4559	0·282	310·1	234·2	+ 4·8	0	1	
		4559*a*	0·298	316·0	233·8	+ 6·7	6	23	
		4559	0·268	309·9	233·6	+ 4·2	0	1	
		4559	0·282	316·0	233·1	+ 6·0	0	5	
		4559	0·267	313·0	233·1	+ 4·8	0	1	
		4559	0·237	308·7	232·4	+ 2·8	4	12	
		4560*c*	0·144	330·4	225·9	+ 1·4	56	327	
		4560	0·130	339·0	224·5	+ 1·2	1	9	
		4560	0·121	341·5	224·0	+ 0·8	2	22	
		4560	0·147	359·0	222·0	+ 2·7	1	4	
		4560	0·212	7·8	220·1	+ 6·3	1	5	
		4560	0·219	10·3	219·6	+ 6·6	0	3	
		4560	0·228	9·6	219·6	+ 7·2	0	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*, *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 4562, April 8–12. A few small unstable spots.
Group 4563, April 9–16. Several small unstable spots, *f* Group 4562.
Group 4564, April 9–10. Two or three 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 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).
1897.				°	°	°			
99·539	CL, FT	4560	0·216	11·5	219·3	+ 6·4	0	2	
		4560	0·222	11·6	219·2	+ 6·7	0	3	
		4560	0·220	13·2	218·9	+ 6·5	0	6	
		4560*f*	0·227	15·2	218·4	+ 6·9	7	46	
		4560	0·221	17·3	218·0	+ 6·3	0	1	
		4560	0·213	20·3	217·6	+ 5·7	0	3	
		4560	0·226	19·5	217·5	+ 6·5	0	4	
		4562	0·159	91·0	212·6	− 5·9	1	6	
		4562	0·194	87·9	210·6	− 5·3	0	1	
		4562	0·204	88·2	210·0	− 5·4	0	1	
		4563	0·380	93·5	199·4	− 6·7	0	1	
		4563	0·387	93·8	199·0	− 6·8	4	18	
		4563	0·399	95·9	198·3	− 7·7	0	1	
		4563	0·409	96·7	197·7	− 8·0	2	11	
		4563	0·434	96·1	196·1	− 7·9	3	14	
		4563	0·440	95·6	195·7	− 7·7	0	1	
		4565	0·632	89·5	182·6	− 4·3	0	3	
		4565	0·652	89·9	181·1	− 4·4	1	3	
		4564	0·854	96·1	162·9	− 8·2	3	15	} 179*c*
		4564	0·856	96·4	162·7	− 8·5	0	2	
		4564	0·877	96·6	160·3	− 8·6	0	6	
			0·912	131·1	158·9	−39·6			124
			0·938	138·8	156·1	−47·4			59
April 10		Centre			(221·8)	(−5·8)	(132)	(824)	(1036)
100·558	AW, FT		0·974	258·4	285·9	−12·6			389
			0·906	278·3	272·2	+ 5·1			234
			0·782	264·5	259·9	− 7·8			242
		4556*a*	0·817	270·3	263·0	− 3·1	17	82	} 148*c*
		4556	0·796	270·9	260·9	− 2·8	1	4	
		4559*a*	0·483	295·4	234·3	+ 6·8	3	14	
		4559	0·477	293·2	234·3	+ 5·7	0	2	
		4559	0·477	294·0	234·2	+ 6·0	0	1	
		4559	0·467	290·4	234·2	+ 4·2	0	1	
		4559	0·441	287·6	233·1	+ 2·5	0	4	
		4559	0·439	293·1	232·1	+ 4·7	0	2	
		4560*c*	0·350	291·7	227·2	+ 2·0	66	324	
		4560	0·319	293·6	225·2	+ 1·9	0	3	
		4560	0·315	294·9	224·8	+ 2·1	0	4	
		4560	0·302	292·0	224·5	+ 1·0	2	7	
		4560	0·268	291·5	222·7	+ 0·1	0	2	
		4560	0·298	311·8	221·1	+ 5·9	0	2	
1897.				°	°	°			
100·558	AW, FT	4560	0·301	314·1	220·8	+ 6·5	2	8	
		4560	0·298	316·5	220·2	+ 6·9	0	13	
		4560	0·262	313·5	219·2	+ 4·8	1	8	
		4560	0·287	319·9	219·0	+ 7·0	7	30	
		4560	0·258	316·9	218·5	+ 5·2	0	4	
		4562	0·106	273·1	214·4	− 5·4	3	8	
		4563	0·144	90·3	200·0	− 5·7	0	1	
		4563	0·151	92·8	199·6	− 6·0	1	9	
		4563	0·152	88·0	199·6	− 5·4	0	2	
		4563	0·163	102·6	199·1	− 7·7	0	3	
		4563	0·180	100·4	198·1	− 7·5	1	2	
		4563	0·180	87·5	197·9	− 5·2	0	1	
		4563	0·195	96·3	197·1	− 6·8	1	5	
		4563	0·204	101·3	196·7	− 7·9	0	2	
		4563	0·204	97·2	196·6	− 7·0	0	2	
		4563	0·208	100·0	196·4	− 7·7	0	3	
		4565	0·407	86·9	184·4	− 4·0	2	6	
		4565	0·417	87·1	183·7	− 4·0	1	3	
		4565	0·444	88·6	182·0	− 4·5	0	6	
April 11		Centre			(208·3)	(−5·7)	(108)	(568)	(1013)
101·234	AW, JW		0·954	276·2	271·2	+ 4·2			363
			0·871	263·0	260·2	− 8·9			245
		4556*a*	0·897	268·9	263·1	− 3·5	27	114	200*c*
		4559*a*	0·602	288·8	234·3	+ 6·5	5	13	
I.		4559	0·587	289·1	233·2	+ 6·3	0	10	
		4560*c*	0·486	284·2	227·4	+ 1·8	77	341	
		4560	0·463	288·8	225·3	+ 3·5	0	2	
		4560	0·447	282·5	225·2	+ 0·4	0	3	
		4560	0·430	283·9	224·0	+ 0·7	0	4	
		4560	0·426	286·8	223·4	+ 1·9	7	15	
		4560	0·420	298·1	221·2	+ 6·1	0	3	
		4560	0·417	300·2	220·6	+ 6·8	2	9	
		4560	0·403	301·7	219·5	+ 6·9	6	16	
		4562	0·263	270·2	214·6	− 5·0	0	4	
		4562	0·199	271·3	210·9	− 5·4	0	6	
		4563	0·006	98·2	199·1	− 5·8	0	9	
		4563	0·040	146·9	198·1	− 7·6	0	3	
		4565	0·250	86·3	185·0	− 4·6	1	7	
		4565	0·259	85·2	184·5	− 4·3	4	14	
		4565	0·271	88·4	183·7	− 5·1	0	3	
		4565	0·292	88·2	182·4	− 5·0	0	2	
April 12		Centre			(199·4)	(−5·7)	(129)	(578)	(808)

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 4565, April 10–14. A few small spots, *f* Group 4563.

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).
1897.				°	°	°			
102·266	AW, FT	4556*a*	0·978	267·5	263·8	− 3·6	21	135	469*f*
		4559	0·767	279·1	234·9	+ 3·3	0	4	} 199*c*
		4559*a*	0·771	283·1	234·7	+ 6·4	3	9	
I.		4560*c*	0·681	278·8	228·0	+ 1·8	90	374	
		4560	0·640	280·4	224·7	+ 2·3	0	3	
		4560	0·625	280·1	223·6	+ 1·9	0	8	
		4560	0·614	278·3	223·1	+ 0·7	2	13	
		4560	0·621	287·3	222·3	+ 6·1	1	8	
		4560	0·610	288·1	221·3	+ 6·3	1	8	
		4560	0·606	288·8	220·9	+ 6·7	0	3	
		4560	0·597	288·9	220·3	+ 6·6	2	6	
		4563	0·251	267·4	200·3	− 6·1	1	6	
		4563	0·244	265·2	199·9	− 6·6	0	1	
		4563	0·243	263·2	199·8	− 7·1	0	2	
		4563	0·238	267·3	199·6	− 6·1	0	3	
		4563	0·215	269·8	198·2	− 5·5	0	1	
		4563	0·192	263·5	196·8	− 6·8	0	8	
		4565	0·006	353·6	185·9	− 5·3	0	6	
April 13		Centre			(185·8)	(− 5·6)	(121)	(598)	(668)
103·607	AW, FT		0·887	269·6	230·5	− 2·9			94
			0·799	282·5	219·7	+ 6·6			221
			0·711	287·0	211·3	+ 8·0			167
		4559*a*	0·926	279·7	234·7	+ 6·8	0	7	422*c*
		4560*c*	0·869	276·0	227·8	+ 2·4	82	413	575*c*
		4563	0·544	267·1	201·1	− 6·2	1	5	
		4563	0·524	267·1	199·7	− 6·2	0	2	
		4563	0·511	267·8	198·9	− 5·9	2	9	
		4563	0·478	266·1	196·7	− 6·7	0	3	
		4565	0·249	270·9	182·5	− 5·1	1	10	
			0·918	75·9	103·4	+ 10·6			199
April 14		Centre			(168·1)	(− 5·5)	(86)	(449)	(1678)
104·428	M, JW		0·945	266·1	228·3	− 5·5			129
			0·922	251·2	224·7	− 19·4			92
			0·835	266·6	213·9	− 5·8			72
			0·811	285·2	209·4	+ 9·0			126
		4560*c*	0·946	274·7	227·7	+ 2·7	75	394	} 707*n*
		4560	0·926	275·4	224·4	+ 2·9	1	12	
		4563	0·683	266·7	200·3	− 6·2	0	14	
1897.				°	°	°			
104·428	M, JW	4563	0·661	267·2	198·6	− 5·9	2	9	
		4563	0·650	266·4	197·8	− 6·5	0	3	
			0·829	73·9	103·4	+ 10·1			111
April 15		Centre			(157·2)	(− 5·4)	(78)	(432)	(1237)
105·203	CL, AW		0·963	278·5	220·3	+ 6·7			261
			0·917	265·8	213·6	− 6·0			185
			0·906	282·2	210·4	+ 8·7			194
I.			0·877	288·9	205·4	+ 13·7			154
		4560*c*	0·988	273·4	227·5	+ 2·5	132	534	528*f*
		4563	0·806	266·2	200·8	− 6·2	0	5	} 304*c*
		4563	0·801	266·9	200·3	− 5·7	0	4	
		4563	0·774	264·7	197·8	− 7·5	0	5	
April 16		Centre			(147·0)	(− 5·3)	(132)	(548)	(1626)
106·130	AW, FT		0·955	281·3	206·1	+ 9·2			297
			0·936	289·8	201·3	+ 16·5			234
I.			0·909	264·8	200·3	− 6·9			629
		4566	0·391	288·4	156·5	+ 2·3	4	18	
		4566	0·354	292·4	153·8	+ 2·8	0	3	
		4566	0·337	290·3	153·2	+ 1·8	0	3	
			0·946	80·8	64·9	+ 6·9			373
April 17		Centre			(134·8)	(− 5·2)	(4)	(24)	(1533)
107·222	CL, AW		0·922	266·4	187·7	− 5·4			232
		4566	0·616	281·0	157·5	+ 2·6	2	11	
I.		4566	0·567	281·6	154·0	+ 2·2	0	10	
			0·847	75·5	64·4	+ 9·4			155
			0·916	82·7	54·9	+ 4·6			197
			0·937	72·3	53·4	+ 14·6			312
			0·932	94·9	51·5	− 6·5			240
April 18		Centre			(120·4)	(− 5·2)	(2)	(21)	(1136)
108·493	AW, FT	4567*a*	0·682	283·4	145·2	+ 5·3	9	45	
		4567	0·667	285·0	143·8	+ 6·0	2	8	
		4567	0·662	285·7	143·3	+ 6·4	0	3	
		4567	0·651	284·6	142·7	+ 5·5	0	5	
		4567	0·639	287·9	141·3	+ 7·3	0	1	
		4567*b*	0·627	287·6	140·5	+ 6·9	9	39	
		4567	0·621	285·6	140·4	+ 5·5	0	2	

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 4566, April 17–18. Two or three small spots.
Group 4567, April 19–22. A number of spots, mostly small, in a straight stream; *a* the leader increases and is a large spot by April 21; *b*, the last spot on April 20, has disappeared by April 21.

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).
1897.				°	°	°			
108·493	AW, FT	4567	0·615	285·9	139·9	+ 5·6	0	2	
		4567	0·616	286·8	139·8	+ 6·2	0	5	
		4568	0·183	320·7	110·2	+ 3·1	2	4	
			0·751	97·2	54·9	− 8·8			62
			0·796	68·8	54·1	+13·4			169
			0·810	88·7	49·7	− 2·0			218
			0·903	96·3	38·9	− 7·9			134
			0·932	87·7	35·2	+ 0·3			230
April 19		Centre			(103·6)	(−5·1)	(22)	(114)	(813)
109·486	FT, JW		0·919	275·1	155·0	+ 2·7			77
		4567*a*	0·864	279·3	147·5	+ 5·5	7	84	
		4567	0·855	279·4	146·5	+ 5·4	6	19	
		4567	0·849	279·6	145·8	+ 5·5	0	4	
		4567	0·845	278·7	145·5	+ 4·6	0	2	190*c*
		4567	0·837	278·4	144·7	+ 4·3	0	7	
		4567	0·824	278·3	143·4	+ 3·9	0	2	
		4567	0·820	278·5	143·0	+ 4·0	0	4	
		4567*b*	0·798	282·2	140·4	+ 6·6	9	28	
		4568	0·416	288·3	112·0	+ 2·9	0	4	
		4568	0·399	289·8	110·8	+ 3·1	1	5	
		4568	0·372	294·0	108·6	+ 4·0	1	7	
		4568	0·364	292·9	108·3	+ 3·5	0	4	
			0·819	90·7	33·9	− 3·5			120
April 20		Centre			(88·8)	(−5·0)	(24)	(170)	(387)
110·368	CL, JW	4567*a*	0·942	277·7	148·3	+ 5·6	18	162	
		4567	0·929	277·2	146·2	+ 4·8	0	4	
I.		4567	0·914	276·6	144·1	+ 4·0	0	6	454*c*
		4567	0·890	279·9	140·5	+ 6·5	0	7	
		4568	0·549	283·2	111·0	+ 3·1	1	7	
April 21		Centre			(78·8)	(−4·9)	(19)	(186)	(454)
111·435	AW, FT	4567	0·996	275·0	148·9	+ 4·5	5	38	449*f*
		4567*a*	0·995	276·0	148·3	+ 5·5	25	133	
			0·933	184·6	79·4	−72·7			169
			0·921	98·1	357·6	− 9·3			222
			0·954	106·2	351·9	−16·9			194
			0·976	88·5	347·7	+ 0·4			440
April 22		Centre			(64·8)	(−4·8)	(30)	(171)	(1474)
1897.				°	°	°			
112·465	CL, AW		0·877	276·5	111·8	+ 3·4			148
			0·875	288·4	109·7	+13·6			190
			0·960	185·2	73·7	−76·9			90
			0·835	96·6	354·5	− 8·1			177
			0·919	86·0	344·9	+ 1·8			641
			0·922	104·5	343·8	−15·2			302
			0·941	72·0	343·4	+15·1			211
			0·929	96·3	342·8	− 7·6			103
			0·942	113·1	340·8	−23·3			136
April 23		Centre			(51·2)	(−4·7)	(0)	(0)	(1998)
113·431	AW, FT		0·955	274·4	110·5	+ 2·8			119
			0·913	284·4	102·4	+11·1			219
			0·887	293·5	97·1	+18·4			127
			0·934	188·2	63·2	−71·6			120
			0·681	100·7	355·6	−10·7			104
			0·798	84·7	345·9	+ 1·4			575
			0·813	95·8	343·9	− 7·4			101
			0·846	69·3	343·6	+14·7			240
			0·825	103·4	342·8	−13·7			299
			0·872	113·7	338·4	−22·9			198
			0·945	124·1	328·4	−33·7			109
April 24		Centre			(38·3)	(−4·6)	(0)	(0)	(2211)
114·552	FT, AW	4569	0·733	77·8	337·6	+ 5·8	0	19	
		4570	0·902	82·3	319·9	+ 5·0	2	14	152*c*
			0·928	96·3	315·3	− 7·5			258
April 25					(23·5)	(−4·5)	(2)	(33)	(410)
115·472	FT, JW		0·842	281·1	67·5	+ 6·9			99
		4570	0·784	80·1	320·8	+ 5·0	0	8	
		4570	0·797	80·7	319·5	+ 4·7	2	12	99*c*
		4570	0·809	80·4	318·4	+ 5·1	0	8	
			0·847	96·9	313·5	− 8·2			134
			0·965	100·3	296·3	−11·1			404
April 26		Centre			(11·4)	(−4·4)	(2)	(28)	(736)
116·262	CL, JW		0·950	264·3	72·8	− 6·8			150
			0·931	281·1	68·2	+ 8·6			219
I.			0·809	264·4	54·9	− 7·1			236
			0·819	291·2	52·8	+14·6			241
		4571	0·869	276·8	60·5	+ 3·7	3	22	144*f*
			0·914	101·4	294·7	−12·2			476
April 27		Centre			(0·9)	(−4·3)	(3)	(22)	(1466)

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 4568, April 19–21. A few small spots.
Group 4569, April 25–30. A faint, irregular spot. The group is not seen on April 26 and 27, but it re-appears on April 28 as a considerable number of small spots, which rapidly diminish on subsequent days.
Group 4570, April 25–28. A few small spots, *f* Group 4569; the group is not seen on April 27.
Group 4571, April 27. A single 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).
1897.				°	°	°			
117·643	FT, JW		0·939	263·3	52·7	− 7·7			318
			0·950	288·4	52·2	+16·0			339
			0·930	273·5	50·7	+ 1·7			523
			0·865	291·3	39·5	+16·0			189
			0·835	264·9	39·3	− 6·6			279
		4569	0·243	36·8	334·3	+ 7·0	5	10	
		4569	0·245	38·5	333·9	+ 6·9	1	5	
		4569	0·251	37·2	333·9	+ 7·4	0	1	
		4569	0·252	44·9	332·4	+ 6·1	1	4	
		4569	0·280	40·8	332·1	+ 8·1	4	14	
		4569	0·280	42·7	331·7	+ 7·7	1	3	
		4569	0·287	42·9	331·4	+ 8·0	0	2	
		4569	0·294	42·6	331·1	+ 8·3	0	3	
		4570	0·414	68·8	320·0	+ 4·7	1	4	
		4570	0·433	68·6	318·9	+ 5·2	0	1	
		4572*a*	0·991	102·9	259·9	−13·4	22	237	186*c*
			0·754	102·4	294·1	−12·1			89
			0·966	95·6	267·5	− 6·5			156
April 28		Centre			(342·7)	(− 4·2)	(35)	(284)	(2079)
118·442	CL, FT		0·942	253·9	42·7	−16·5			137
			0·946	290·1	40·6	+17·5			190
			0·928	274·0	39·8	+ 2·1			200
			0·924	264·5	39·8	− 6·7			457
			0·929	299·3	35·6	+25·2			132
			0·901	280·7	35·4	+ 8·2			119
			0·843	253·3	29·2	−16·3			110
		4569	0·203	340·5	337·1	+ 6·9	2	6	
		4569	0·201	344·6	335·3	+ 7·0	0	5	
		4569	0·213	2·6	331·6	+ 8·1	2	9	
		4572*a*	0·952	102·6	259·8	−13·3	32	204	
		4572	0·960	103·2	258·2	−13·8	0	16	
		4572	0·964	102·9	257·3	−13·5	0	17	
		4572	0·971	103·6	255·7	−14·2	2	14	543*c*
		4572	0·973	104·2	255·1	−14·8	0	27	
		4572	0·976	106·1	254·4	−16·6	0	19	
			0·909	85·7	267·3	+ 2·2			62
			0·917	95·3	265·7	− 6·5			226
April 29		Centre			(332·2)	(− 4·1)	(38)	(317)	(2176)
1897.				°	°	°			
119·203	CL, JW		0·972	278·2	37·5	+ 7·0			209
			0·948	269·1	33·3	− 2·2			276
I.		4569	0·321	306·2	337·1	+ 7·0	1	6	
		4569	0·313	307·7	336·4	+ 7·1	0	3	
		4572	0·867	100·9	261·9	−11·4	0	2	
		4572	0·873	101·2	261·3	−11·7	0	4	
		4572*a*	0·883	102·4	260·1	−12·8	42	244	
		4572	0·894	103·3	258·7	−13·7	0	11	626*c*
		4572	0·894	102·5	258·6	−13·0	6	26	
		4572	0·911	103·8	256·4	−14·2	5	15	
			0·847	92·9	264·2	− 4·6			171
April 30		Centre			(322·0)	(−4·0)	(54)	(311)	(1282)
120·450	AW, CL	4572	0·701	103·0	261·5	−11·9	0	2	
		4572	0·708	107·3	261·4	−14·9	0	3	
		4572	0·704	102·5	261·2	−11·6	0	1	
		4572	0·715	102·4	260·3	−11·6	0	1	
		4572*a*	0·721	104·3	260·0	−13·0	47	264	
		4572	0·739	106·1	258·6	−14·5	0	3	
		4572	0·742	102·8	258·1	−12·1	0	6	530*c*
		4572	0·751	105·8	257·6	−14·4	2	10	
		4572	0·760	104·3	256·6	−13·4	1	6	
		4572	0·764	105·4	256·3	−14·3	0	1	
		4572	0·767	106·8	256·2	−15·4	0	2	
		4572	0·782	105·5	254·7	−14·6	0	3	
		4573*a*	0·966	85·8	231·1	+ 3·1	30	227	288*c*
		4574	0·967	95·1	230·2	− 6·0	0	11	142*s*
			0·908	81·3	241·3	+ 6·2			202
May 1		Centre			(305·6)	(−3·9)	(80)	(540)	(1162)
121·580	AW, JW		0·947	282·1	0·6	+10·2			120
			0·892	261·6	353·8	− 9·2			318
			0·842	275·4	347·5	+ 2·5			382
			0·840	251·6	347·2	−17·5			190
			0·853	292·4	346·0	+16·8			79
			0·733	281·6	336·7	+ 5·9			243
		4572	0·491	109·5	262·5	−12·8	1	3	
		4572	0·497	110·7	262·3	−13·5	0	6	
		4572	0·509	111·9	261·7	−14·3	0	20	
		4572	0·523	113·2	260·9	−15·2	0	2	
		4572*a*	0·526	108·0	260·0	−12·6	55	395	
		4572	0·556	110·1	258·2	−14·2	0	1	

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 4572, April 28–May 10. A very large irregular composite spot, *a*, increasing rapidly in size till May 4, followed by a swarm of smaller spots, variable in size, shape, and position, of which *b* alone can be followed from May 4 to 8.
Group 4573, May 1–12. A large regular spot, *a*, slowly decreasing in size, generally with a few very small companions, and with a fairly steady forward motion in longitude and a slight drift northward.

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).
1897.				°	°	°			
121·580	AW,JW	4572	0·560	110·9	258·1	−14·7	0	4	
		4572	0·559	108·9	257·9	−13·6	8	56	
		4572	0·580	108·4	256·3	−13·7	3	15	
		4572	0·586	107·5	255·8	−13·3	2	15	
		4573*a*	0·867	84·0	231·2	+ 3·3	31	181	610*n*
		4574	0·858	94·5	231·6	− 5·8	3	7	157*f*
			0·782	77·4	240·6	+ 7·4			166
May 2		Centre			(290·7)	(−3·8)	(103)	(705)	(2265)
122·482	CL, FT		0·933	262·8	347·7	− 8·1			222
			0·930	252·8	347·0	−17·4			189
			0·922	275·2	345·3	+ 3·3			738
			0·906	287·4	341·5	+14·0			146
			0·843	245·9	334·7	−22·2			149
			0·817	280·9	332·4	+ 6·7			206
			0·650	280·0	318·4	+ 3·6			78
		4572	0·319	121·7	262·6	−13·2	0	4	
		4572*a*	0·351	115·9	259·9	−12·3	93	572	
		4572	0·395	118·2	257·7	−14·2	0	7	
		4572	0·396	113·7	257·0	−12·6	0	9	
		4572	0·425	118·1	256·0	−14·9	3	17	
		4572	0·418	115·5	255·9	−13·8	6	28	
		4572	0·431	119·6	255·9	−15·7	0	15	
		4572	0·428	114·3	255·2	−13·5	0	11	
		4572	0·456	116·0	253·7	−14·9	0	3	
		4572	0·452	112·1	253·3	−13·1	0	2	
		4572	0·492	120·1	252·3	−17·5	0	12	
		4572	0·489	118·9	252·2	−16·9	0	2	
		4572	0·497	118·7	251·7	−17·1	0	2	
		4573*a*	0·743	82·2	231·4	+ 3·3	25	183	404*f*
		4574	0·717	94·6	233·0	− 5·9	6	20	
			0·721	69·0	235·3	+12·3			113
			0·901	78·1	215·7	+ 9·1			148
May 3		Centre			(278·7)	(−3·7)	(133)	(887)	(2393)
123·432	AW,FT		0·943	277·9	335·9	− 6·2			230
			0·820	266·5	321·2	− 5·0			104
			0·818	277·0	320·4	− 3·6			90
		4572*a*	0·182	144·4	260·0	−12·1	123	684	
		4572	0·234	139·9	257·3	−13·8	0	2	
		4572	0·217	131·1	256·6	−11·7	1	4	
		4572*b*	0·233	132·0	256·0	−12·5	6	34	
1897.				°	°	°			
123·432	AW, FT	4572	0·276	141·9	256·0	−16·0	2	8	
		4572	0·250	136·0	255·9	−13·9	5	29	
		4572	0·241	128·7	255·2	−12·2	0	2	
		4572	0·263	135·1	255·2	−14·3	2	6	
		4572	0·275	137·9	255·2	−15·3	2	12	
		4572	0·290	140·8	255·2	−16·5	0	1	
		4572	0·254	132·4	255·1	−13·4	3	11	
		4572	0·286	135·6	254·3	−14·7	0	2	
		4572	0·295	135·8	253·9	−15·7	0	3	
		4572	0·328	138·6	253·1	−17·7	2	8	
		4573*a*	0·578	79·1	231·7	+ 3·3	32	164	
		4574	0·534	95·9	234·0	− 6·2	3	10	
		4575	0·764	77·7	217·6	+ 7·0	1	4	221*f*
			0·681	74·7	224·9	+ 7·7			82
			0·922	80·4	200·0	+ 7·4			106
			0·923	95·9	198·8	− 6·9			67
May 4		Centre			(266·2)	(−3·6)	(182)	(984)	(900)
124·193	CL,JW		0·878	277·2	316·7	+ 4·7			173
I.		4572	0·203	221·0	263·8	−12·3	0	2	
		4572	0·190	222·9	263·5	−11·4	0	3	
		4572	0·187	208·5	261·2	−12·9	0	11	
		4572*a*	0·159	206·8	260·2	−11·6	113	641	
		4572	0·132	196·3	258·2	−10·8	0	1	
		4572	0·142	195·0	258·1	−11·3	2	4	
		4572	0·175	187·5	257·3	−13·4	0	5	
		4572*b*	0·159	185·6	256·9	−12·6	10	67	
		4572	0·140	182·0	256·3	−11·3	1	6	
		4572	0·178	181·1	256·2	−13·7	0	1	
		4572	0·182	177·1	255·5	−14·0	1	8	
		4572	0·174	175·6	255·2	−13·4	1	5	
		4572	0·214	176·6	255·2	−15·8	0	2	
		4572	0·226	176·6	255·2	−16·5	0	1	
		4572	0·162	174·6	255·1	−12·7	5	20	
		4572	0·182	174·2	254·9	−13·9	1	2	
		4572	0·218	171·2	254·0	−15·9	0	2	
		4572	0·209	169·7	253·8	−15·3	0	6	
		4572	0·248	169·3	253·2	−17·5	0	1	
		4572	0·254	167·5	252·7	−17·8	0	10	
		4572	0·237	164·2	252·2	−16·6	0	9	
		4573*a*	0·424	73·9	232·0	+ 3·6	32	161	
		4573	0·450	74·9	230·3	+ 3·6	0	3	
		4573	0·453	75·8	230·0	+ 3·3	0	5	

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

Group 4574, May 1–5. A small spot with a rapid forward motion in longitude, *s* Group 4573; it has broken up by May 5.
Group 4575, May 4. A very small spot, *n f* Group 4573.

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).
1897.				°	°	°			
124·193	CL,JW	4574	0·369	97·1	234·5	− 5·9	2	6	
		4574	0·379	96·8	233·9	− 5·9	0	1	
I.		4574	0·397	95·2	232·7	− 5·3	0	3	
			0·875	77·7	196·3	+ 9·0			222
			0·878	94·2	194·7	− 5·4			150
			0·942	109·5	185·8	−19·5			196
May 5		Centre			(256·0)	(−3·5)	(168)	(986)	(741)
125·514	AW,FT		0·939	257·6	308·5	−12·8			246
			0·864	258·5	298·2	−11·7			164
			0·774	256·1	288·8	−12·8			163
		4572	0·432	244·9	262·2	−13·7	0	1	
		4572*a*	0·389	249·0	260·2	−11·2	100	664	
		4572	0·380	252·6	260·1	− 9·7	0	10	
		4572	0·375	254·4	259·9	− 8·9	0	7	
		4572	0·382	240·3	258·5	−14·1	0	2	
		4572	0·354	237·3	256·4	−14·3	0	3	
		4572	0·350	238·6	256·4	−13·7	0	2	
		4572*b*	0·337	242·0	256·2	−12·3	20	117	
		4572	0·355	235·6	256·1	−14·7	0	5	
		4572	0·333	238·5	255·5	−13·3	0	6	
		4572	0·336	236·4	255·3	−14·0	0	1	
		4572	0·366	226·2	254·6	−17·9	0	1	
		4572	0·352	228·0	254·4	−16·9	0	1	
		4572	0·362	224·3	254·0	−18·2	0	1	
		4572	0·345	225·7	253·5	−17·2	0	10	
		4572	0·358	221·1	252·9	−18·9	0	1	
		4572	0·338	222·0	252·3	−17·8	0	2	
		4573	0·199	30·4	232·8	+ 6·5	0	3	
		4573*a*	0·163	39·9	232·6	+ 3·7	27	138	
		4573	0·179	46·4	231·2	+ 3·7	0	2	
		4573	0·216	38·9	230·8	+ 6·3	1	2	
		4573	0·159	60·7	230·7	+ 1·1	0	2	
		4573	0·190	46·7	230·7	+ 4·2	0	3	
		4573	0·168	56·0	230·6	+ 2·0	0	2	
		4573	0·194	50·8	230·0	+ 3·7	1	2	
			0·813	112·2	185·6	−20·0			108
May 6		Centre			(238·6)	(−3·4)	(149)	(988)	(681)
126·225	FT, JW		0·946	257·1	300·3	−13·3			229
		4572*a*	0·527	253·6	260·1	−11·4	89	609	
I.		4572	0·489	247·1	256·7	−13·8	0	1	
1897.				°	°	°			
126·225	FT, JW	4572*b*	0·479	249·1	256·4	−12·8	13	102	
		4572	0·487	245·2	256·3	−14·7	0	1	
I.		4572	0·464	246·6	255·1	−13·6	0	5	
		4573	0·108	318·8	233·3	+ 1·4	3	10	
		4573*a*	0·141	330·8	233·1	+ 3·7	21	132	
		4573	0·090	335·7	231·3	+ 1·5	1	4	
		4573	0·130	348·1	230·7	+ 4·0	0	3	
			0·984	84·6	150·0	+ 4·7			1022
May 7		Centre			(229·2)	(−3·3)	(127)	(867)	(1251)
127·143	CL, JW		0·957	257·7	290·2	−12·7			199
			0·924	285·3	282·9	+12·8			115
I.		4572	0·697	259·4	261·0	− 9·7	0	16	
		4572*a*	0·698	257·1	260·9	−11·3	83	549	
		4572	0·702	252·2	260·6	−14·7	0	3	
		4572	0·692	253·2	259·9	−13·8	0	2	
		4572	0·691	252·2	259·7	−14·5	4	11	
		4572	0·683	253·5	259·3	−13·6	0	1	
		4572	0·677	253·3	258·8	−13·6	0	3	
		4572	0·678	251·7	258·6	−14·7	0	3	
		4572	0·666	253·2	257·9	−13·6	0	5	
		4572	0·659	252·5	257·3	−13·8	0	3	
		4572	0·657	254·9	257·4	−12·3	1	8	
		4572*b*	0·642	253·6	256·1	−12·9	14	59	
		4572	0·643	251·0	255·9	−14·6	0	4	
		4572	0·640	251·4	255·7	−14·3	0	1	
		4572	0·630	251·9	255·0	−13·8	0	1	
		4573	0·299	284·6	233·8	+ 1·3	1	7	
		4573*a*	0·310	293·1	233·6	+ 3·9	19	126	
		4573	0·287	283·5	233·2	+ 0·8	0	2	
		4573	0·316	303·0	232·5	+ 6·8	0	2	
		4573	0·284	294·8	232·0	+ 3·7	0	2	
		4573	0·266	288·9	231·6	+ 1·9	0	2	
		4573	0·261	286·9	231·5	+ 1·2	1	5	
		4573	0·280	298·5	231·3	+ 4·6	0	1	
		4573	0·263	290·3	231·3	+ 2·1	0	2	
			0·931	84·1	149·1	+ 4·3			717
			0·970	105·5	141·1	−15·9			101
May 8		Centre			(217·1)	(−3·2)	(123)	(818)	(1132)
128·458	AW, FT		0·904	268·4	264·2	− 2·8			90
			0·827	250·2	254·4	−18·1			340

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 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).
1897.				°	°	°			
128·458	AW, FT	4572*a*	0·879	259·6	261·1	−10·6	98	546	
		4572	0·879	257·4	261·0	−12·6	0	2	
		4572	0·870	255·6	259·8	−14·1	5	67	437*c*
		4572	0·857	255·0	258·2	−14·4	0	20	
		4572	0·833	256·8	255·7	−12·7	2	11	
		4573	0·574	277·2	234·3	+ 1·6	0	3	
		4573*a*	0·577	281·7	234·1	+ 4·2	24	128	
		4573	0·565	277·4	233·7	+ 1·6	0	6	
		4573	0·540	278·9	231·8	+ 2·1	0	7	
		4573	0·541	280·6	231·7	+ 3·1	0	6	
May 9		Centre			(199·7)	(−3·1)	(129)	(796)	(867)
129·096	CL, JW		0·961	267·2	265·1	− 3·6			109
		4572*a*	0·941	259·5	261·4	−10·9	89	544	
I.		4572	0·937	257·8	260·6	−12·4	0	4	
		4572	0·933	256·6	260·0	−13·6	0	3	1008*s*
		4572	0·926	260·4	258·9	−10·0	0	6	
		4572	0·903	257·4	255·5	−12·7	0	4	
		4573*a*	0·694	278·8	234·5	+ 3·9	19	105	
		4573	0·657	276·4	231·8	+ 1·9	0	3	
May 10		Centre			(191·2)	(−3·0)	(108)	(669)	(1117)
130·414	AW, FT		0·883	262·9	235·7	− 7·6			131
			0·823	285·8	227·5	+11·3			136
			0·785	273·7	225·2	+ 1·2			71
		4573*a*	0·881	276·7	234·9	+ 4·6	11	71	495*c*
May 11		Centre			(173·8)	(−2·8)	(11)	(71)	(833)
131·087	CL, JW		0·803	282·5	217·1	+ 8·4			94
		4573*a*	0·945	275·4	235·3	+ 4·2	9	66	308*c*
I.			0·881	68·7	105·8	+17·3			83
May 12		Centre			(164·9)	(−2·7)	(9)	(66)	(485)
132·162	CL, JW		0·981	272·6	229·3	+ 2·0			281
I.			0·943	280·8	220·3	+ 9·3			289
May 13		Centre			(150·8)	(−2·6)	(0)	(0)	(570)
1897.				°	°	°			
133·088	CL, JW		0·982	278·8	216·9	+ 8·2			374
			0·942	76·8	69·2	+11·6			278
I.			0·950	85·1	67·1	+ 3·9			97
			0·965	96·4	63·6	− 6·9			302
May 14		Centre			(138·4)	(−2·5)	(0)	(0)	(1051)
134·416	FT, JW		0·861	98·2	61·7	− 8·2			320
			0·879	88·8	59·6	− 0·1			189
			0·933	70·0	54·2	+17·7			293
May 15		Centre			(120·9)	(−2·4)	(0)	(0)	(802)
135·445	CL, JW		0·723	278·8	152·9	+ 4·7			360
			0·909	98·2	41·8	+ 8·4			166
May 16		Centre			(107·3)	(−2·3)	(0)	(0)	(526)
136·497	FT, JW		0·863	278·5	152·3	+ 6·2			332
May 17		Centre			(93·4)	(−2·1)	(0)	(0)	(332)
137·397	CL, JW		0·941	277·1	151·0	+ 6·0			318
			0·990	88·7	359·8	+ 1·0			302
May 18		Centre			(81·4)	(−2·0)	(0)	(0)	(620)
138·448	CL, JW		0·980	279·3	145·4	+ 8·7			166
			0·913	100·7	2·0	−10·6			190
			0·928	88·2	359·8	+ 1·0			449
			0·948	75·4	357·4	+13·2			370
			0·973	108·1	351·3	−18·1			122
May 19		Centre			(67·6)	(−1·9)	(0)	(0)	(1297)
139·390	CL, JW	4576	0·808	86·1	1·6	+ 2·1	4	18	
		4576	0·811	88·7	1·2	0·0	2	7	
		4576	0·842	88·0	358·1	+ 0·7	0	14	256*c*
		4576	0·843	86·1	358·1	+ 2·3	8	23	
			0·860	73·4	357·6	+13·3			318
			0·917	110·1	349·7	−19·2			181
May 20		Centre			(55·2)	(−1·8)	(14)	(62)	(755)

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

Group 4576, May 20–27. Four spots on May 20, greatly increased in number by the next day. By May 22 an irregular spot, *a*, has formed near the head of the group, with a rapid forward motion. On May 24 *a* is seen alone, considerably diminished in size. On May 25 there is a fresh outburst; *a* has continued to diminish, and *b*, just formed near the end of the group, is now the largest 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).
1897.				°	°	°			
140·405	CL, JW	4577	0·288	87·1	25·0	− 0·8	5	18	
		4577	0·328	85·2	22·6	− 0·1	2	8	
		4576	0·635	85·6	2·5	+ 1·5	0	3	
		4576	0·635	86·5	2·4	+ 0·9	8	21	
		4576	0·652	86·7	1·2	+ 0·8	0	7	
		4576	0·657	87·4	0·8	+ 0·5	2	11	
		4576	0·660	85·9	0·6	+ 1·5	0	8	
		4576	0·680	86·7	359·0	+ 1·0	4	16	
		4576	0·689	84·7	358·4	+ 2·4	0	11	
		4576	0·690	88·1	358·2	+ 0·1	3	14	
		4576	0·693	86·0	358·0	+ 1·6	0	9	
May 21		Centre			(41·6)	(− 1·7)	(24)	(126)	(0)
141·385	AW, CL	4577	0·036	73·4	26·7	− 1·1	2	9	
		4576	0·432	84·7	3·3	+ 0·9	0	4	
		4576*a*	0·451	83·3	2·2	+ 1·6	17	98	
		4576	0·472	81·8	0·9	+ 2·4	0	5	
		4576	0·486	86·1	359·8	+ 0·5	1	3	
		4576	0·498	86·8	359·0	+ 0·3	0	4	
		4576	0·508	82·0	358·6	+ 2·7	0	10	
		4576	0·506	85·5	358·5	+ 0·9	4	12	
			0·826	72·6	334·8	+ 13·3			148
			0·923	71·9	323·1	+ 16·0			155
May 22		Centre			(28·7)	(− 1·6)	(24)	(145)	(303)
142·239	CL, JW		0·829	286·6	71·7	+ 12·8			165
			0·783	261·7	68·6	− 7·4			127
I.		4576	0·238	79·8	3·9	+ 1·0	0	3	
		4576*a*	0·254	76·7	3·1	+ 1·9	18	87	
		4576	0·276	74·3	2·0	+ 2·8	0	5	
		4576	0·284	72·2	1·8	+ 3·5	0	7	
		4576	0·283	77·0	1·5	+ 2·2	0	3	
		4576	0·312	85·7	359·4	− 0·1	0	5	
		4576	0·320	84·2	358·9	+ 0·4	0	1	
		4576	0·328	82·7	358·5	+ 0·9	1	4	
May 23		Centre			(17·4)	(− 1·5)	(19)	(115)	(292)
143·536	CL, JW		0·898	270·2	63·9	− 0·4			236
		4578	0·672	237·3	37·7	− 22·3	0	27	
1897.				°	°	°			
143·536	CL, JW	4578	0·661	237·3	36·9	− 21·9	0	5	
		4576*a*	0·089	313·0	3·9	+ 2·1	5	46	
			0·879	108·7	299·9	− 17·0			104
May 24		Centre			(0·2)	(− 1·3)	(5)	(78)	(340)
144·450	JW, FT		0·943	260·6	58·4	− 9·3			341
			0·921	293·4	45·8	+ 1·7			146
			0·833	264·9	44·4	− 5·0			180
		4577	0·570	266·2	22·8	− 3·2	0	3	
		4577	0·562	267·9	22·2	− 2·2	1	8	
		4576	0·290	282·4	4·6	+ 2·4	0	2	
		4576	0·287	281·0	4·5	+ 2·0	0	1	
		4576*a*	0·281	281·4	4·1	+ 2·0	5	14	
		4576	0·268	288·7	2·9	+ 3·8	0	8	
		4576	0·251	278·1	2·5	+ 0·9	0	2	
		4576	0·227	284·4	0·9	+ 2·1	1	4	
		4576*b*	0·214	279·7	0·3	+ 0·9	0	21	
		4576	0·180	293·6	357·7	+ 2·9	1	4	
		4579*a*	0·975	99·3	271·2	− 9·3	100	417	532*c*
May 25		Centre			(348·2)	(− 1·2)	(108)	(484)	(1199)
145·187	AW, JW		0·964	291·6	51·2	+ 20·4			156
		4576*a*	0·436	276·3	4·0	+ 1·8	4	13	
I.		4576	0·405	275·3	2·1	+ 1·1	0	2	
		4576*b*	0·374	275·6	0·2	+ 1·1	0	37	
		4579*a*	0·932	99·5	270·0	− 9·3	98	413	683*c*
		4579	0·955	100·2	265·9	− 10·1	0	12	
			0·979	107·1	260·5	− 17·0			351
May 26		Centre			(338·4)	(− 1·1)	(102)	(477)	(1190)
146·458	CL, JW		0·900	269·5	25·5	− 0·9			256
		4576*a*	0·692	274·0	5·0	+ 2·0	0	3	
		4579*a*	0·786	101·3	270·3	− 9·5	87	382	
		4579	0·830	101·7	266·0	− 10·3	2	3	464
		4579	0·832	100·8	265·8	− 9·5	2	10	
		4580*a*	0·991	106·5	239·5	− 16·5	14	68	
			0·910	110·4	257·3	− 18·9			588
May 27		Centre			(321·5)	(− 1·0)	(105)	(466)	(1308)

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Group 4577, May 21–25. Two spots on May 21, the leader being the largest and composite. On May 22 one spot alone remains; the group is not seen on May 23 and 24, but two small spots have appeared by May 25.
Group 4578, May 24. A small spot with a very small companion.
Group 4579, May 25–June 6. A large regular spot, *a*, generally with a number of small companions, varying from day to day in size and position.
Group 4580, May 27–June 4. A single spot, *a*, diminishing after May 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).
1897.				°	°	°			
147·416	CL, JW		0·964	268·9	23·2	− 1·3			155
			0·821	273·1	3·8	+ 2·1			268
			0·803	283·6	1·2	+10·4			131
		4579	0·583	106·4	274·4	−10·1	0	10	
		4579	0·598	107·0	273·5	−10·7	1	6	
		4579	0·609	105·3	272·5	− 9·9	0	2	
		4579	0·622	107·4	271·8	−11·3	5	22	
		4579*a*	0·638	103·5	270·1	− 9·2	85	408	300*c*
		4579	0·679	108·0	267·6	−12·7	0	4	
		4579	0·680	106·6	267·3	−11·8	0	3	
		4579	0·696	106·6	266·1	−12·0	0	3	
		4579	0·693	103·3	265·9	− 9·8	0	7	
		4580*a*	0·945	107·2	238·8	−16·5	11	76	420*f*
			0·820	111·3	255·7	−17·8			764
			0·896	80·7	245·9	+ 8·0			246
			0·927	72·6	242·3	+15·8			201
			0·926	88·0	241·4	+ 1·6			330
			0·947	98·5	237·9	− 8·4			185
May 28		Centre			(308·9)	(−0·8)	(102)	(541)	(3000)
148·185	AW, FT		0·902	273·0	2·8	+ 2·4			317
			0·872	284·0	358·3	+11·9			206
I.		4579	0·437	113·2	274·7	−10·5	0	2	
		4579	0·443	112·1	274·2	−10·2	1	8	
		4579	0·455	109·1	273·0	− 9·2	0	6	
		4579	0·459	103·4	272·1	− 6·7	0	3	
		4579	0·469	106·8	271·8	− 8·4	0	2	
		4579*a*	0·499	107·1	269·9	− 9·1	104	367	
		4580*a*	0·880	108·3	238·4	−16·4	15	68	580*f*
			0·878	88·7	237·6	+ 0·8			186
May 29		Centre			(298·7)	(−0·7)	(120)	(456)	(1289)
149·522	AW, FT		0·960	284·3	353·9	+13·6			313
		4579	0·182	150·0	275·7	− 9·6	0	2	
		4579	0·179	138·4	274·1	− 8·2	1	3	
		4579	0·190	138·2	273·7	− 8·7	1	8	
		4579	0·185	133·2	273·2	− 7·8	1	3	
		4579	0·190	130·5	272·7	− 7·7	0	2	
		4579	0·233	141·4	272·5	−11·0	1	4	
		4579	0·220	135·9	272·1	− 9·6	5	42	
1897.				°	°	°			
149·522	AW, FT	4579	0·242	137·8	271·5	−10·9	0	1	
		4579	0·248	137·6	271·2	−11·1	0	2	
		4579*a*	0·240	127·1	269·9	− 8·9	76	367	
		4579	0·243	117·4	268·5	− 7·0	0	2	
		4579	0·253	119·6	268·2	− 7·8	0	2	
		4580*a*	0·710	113·6	238·3	−16·9	14	76	152*c*
			0·799	113·7	230·5	−19·0			339
			0·822	77·5	226·7	+ 9·9			297
May 30		Centre			(281·0)	(−0·6)	(99)	(514)	(1101)
150·469	CL, JW		0·940	357·5	275·1	+69·2			235
		4579	0·185	220·7	275·5	− 8·6	3	9	
		4579	0·174	210·4	273·6	− 9·1	0	5	
		4579	0·162	210·7	273·3	− 8·5	0	3	
		4579	0·155	211·3	273·1	− 8·1	0	1	
		4579	0·199	202·0	272·8	−11·1	0	1	
		4579	0·173	203·2	272·4	− 9·6	3	10	
		4579	0·163	204·0	272·3	− 9·1	0	1	
		4579	0·190	195·9	271·5	−11·0	0	4	
		4579*a*	0·150	189·9	270·0	− 9·0	78	389	
		4579	0·176	183·7	269·2	−10·6	0	2	
		4579	0·140	177·8	268·2	− 8·5	0	3	
		4579	0·215	171·1	266·6	−12·7	0	2	
		4579	0·199	159·0	264·4	−11·2	0	4	
		4580*a*	0·565	120·5	238·0	−17·1	10	66	
		4581	0·776	76·6	218·7	+10·0	0	5	99*n*
May 31		Centre			(268·5)	(−0·5)	(94)	(505)	(334)
151·172	AW, JW	4579	0·324	244·8	276·4	− 8·3	1	4	
		4579	0·311	236·5	274·4	−10·3	0	3	
I.		4579	0·290	238·3	273·6	− 9·2	0	4	
		4579	0·274	224·9	270·5	−11·6	0	3	
		4579*a*	0·236	231·8	270·0	− 8·8	86	364	
		4579	0·241	217·5	267·8	−11·4	7	20	
		4579	0·255	212·6	267·5	−12·8	0	2	
		4579	0·242	214·0	267·1	−12·0	0	5	
		4579	0·170	202·7	263·0	− 9·4	0	2	
		4580*a*	0·451	129·4	237·9	−16·9	13	55	
June 1		Centre			(259·2)	(−0·4)	(107)	(462)	(0)

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Group 4581, May 31. 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 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).
1897.				°	°	°			
152·223	AW, JW		0·826	252·0	299·4	−15·0			104
		4579*a*	0·444	249·9	270·1	− 9·1	81	376	
I.		4580*a*	0·316	157·6	238·0	−17·2	8	36	
June 2		Centre			(245·2)	(−0·3)	(89)	(412)	(104)
153·258	AW, JW	4579	0·689	254·3	273·9	−10·8	0	4	
		4579	0·681	255·0	273·4	−10·2	0	3	
I.		4579*a*	0·642	255·9	270·5	− 9·1	78	348	
		4579	0·614	255·6	268·4	− 8·8	0	1	
		4580*a*	0·312	201·0	238·3	−17·0	10	26	
			0·965	85·2	157·0	+ 4·7			201
June 3		Centre			(231·6)	(−0·1)	(88)	(382)	(201)
154·630	CL, FT		0·814	252·6	266·5	−14·1			207
		4579	0·920	260·7	279·9	− 8·6	0	16	
		4579	0·886	259·6	275·3	− 9·2	8	27	274*c*
		4579*a*	0·843	259·8	270·3	− 8·6	85	440	
		4580*a*	0·498	234·7	238·5	−16·7	5	18	
			0·896	93·6	186·9	− 3·2			76
			0·806	84·2	160·1	+ 4·7			202
			0·906	79·1	149·2	+ 9·9			116
June 4		Centre			(213·5)	(0·0)	(98)	(501)	(875)
155·707	AW, FT		0·878	252·0	258·9	−15·3			727
		4579*a*	0·949	260·8	270·3	− 8·7	82	340	413*c*
			0·978	92·0	121·5	− 2·0			148
June 5		Centre			(199·2)	(+0·1)	(82)	(340)	(1288)
156·202	AW, JW		0·951	254·2	263·7	−15·0			180
			0·896	278·3	255·8	+ 7·5			113
I.			0·902	246·6	254·8	−20·9			390
		4579*a*	0·981	260·7	271·1	− 9·1	86	399	376*c*
			0·952	91·3	120·7	− 1·2			87
June 6		Centre			(192·6)	(+0·2)	(86)	(399)	(1146)
1897.				°	°	°			
157·153	AW, FT		0·966	249·8	253·7	−19·3			534
			0·913	283·9	245·2	+12·8			82
I.			0·867	269·9	240·0	+ 0·1			270
			0·825	246·7	233·1	−18·8			356
June 7		Centre			(180·1)	(+0·4)	(0)	0)	(1242)
158·125	AW, JW		0·958	269·8	240·2	0·0			271
I.			0·912	248·0	230·8	−19·7			272
June 8		Centre			(167·1)	(+0·5)	(0)	(0)	(543)
159·092	CL, FT		0·971	249·6	229·2	−19·6			127
			0·953	279·0	226·4	+ 8·8			147
I.		4582	0·501	165·4	146·2	−28·3	2	6	
June 9		Centre			(154·4)	(+0·6)	(2)	(6)	(274)
160·529	AW, FT		0·936	279·5	204·1	+ 8·6			118
			0·854	78·9	77·4	+ 9·1			240
			0·892	100·5	72·7	− 9·7			466
			0·912	89·0	69·8	+ 0·7			133
June 10		Centre			(135·3)	(+0·7)	(0)	(0)	(957)
161·402	AW, CL		0·797	100·9	71·8	− 8·1			221
			0·808	88·8	70·1	+ 1·5			137
			0·880	110·1	64·2	−17·1			170
June 11		Centre			(123·8)	(+0·9)	(0)	(0)	(528)
162·389	CL, AW		0·886	136·3	58·9	−39·1			190
June 12		Centre			(110·8)	(+1·0)	(0)	(0)	(190)
163·447	AW, CL		0·921	271·3	163·6	+ 1·7			200
			0·876	279·5	157·4	+ 8·8			108
		4583*a*	0·680	246·2	136·6	−15·0	22	159	
		4583	0·663	242·3	134·4	−17·1	0	2	
		4583	0·651	246·0	134·4	−14·4	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 4582, June 9. A very small spot.
Group 4583, June 13–16. Several irregular spots; *a*, the leader, is the largest and has a forward motion in longitude: *b* and *c* follow *a*, from which they are separated by a short thin stream of small spots; *b* decreases and is not seen after June 14; *c* has greatly increased by June 14 but subsequently diminishes; *d* is seen, *f a* on June 14 and 15. On June 16 the group consists of *a* and *c* with a large new spot *e* between them.

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).
1897.				°	°	°			
163·447	AW, CL	4583	0·637	243·8	132·9	−15·4	0	6	
		4583	0·641	241·8	132·7	−16·7	1	5	
		4583*b*	0·637	240·5	132·1	−17·4	7	41	
		4583	0·619	243·3	131·5	−15·2	0	2	
		4583*c*	0·619	239·3	130·5	−17·5	9	67	
		4583	0·614	240·3	130·4	−16·8	0	4	
			0·916	90·0	30·6	+ 0·5			214
June 13		Centre			(96·7)	(+1·1)	(39)	(291)	(522)
164·669	CL, FT	4583*a*	0·863	251·0	138·3	−15·6	26	161	
		4583*d*	0·848	251·6	136·7	−14·9	8	36	
		4583	0·807	250·1	132·3	−15·2	0	4	
		4583*b*	0·807	247·8	131·8	−17·0	5	29	428*c*
		4583	0·795	249·7	131·0	−15·2	0	5	
		4583	0·790	248·7	130·3	−15·9	3	14	
		4583*c*	0·791	247·0	130·1	−17·2	24	118	
		4583	0·784	248·2	129·7	−16·1	2	11	
			0·800	90·7	27·7	+ 0·2			70
			0·935	90·4	11·6	+ 0·1			132
June 14		Centre			(80·6)	(+1·2)	(68)	(378)	(630)
165·502	FT, AW		0·938	264·9	138·6	− 4·3			209
		4583*a*	0·951	252·9	140·2	−15·8	25	155	
		4583*d*	0·942	252·8	138·5	−15·7	6	34	
		4583	0·922	253·7	135·4	−14·4	3	9	
		4583	0·901	250·6	134·6	−16·8	2	17	
		4583	0·905	252·9	132·9	−14·9	2	10	528*c*
		4583	0·898	252·4	131·9	−15·1	0	5	
		4583	0·895	250·0	131·1	−17·2	0	10	
		4583*c*	0·887	249·3	129·9	−17·6	14	87	
		4583	0·883	250·9	129·7	−16·1	0	4	
			0·893	108·0	8·1	−15·4			110
			0·882	89·7	7·9	+ 0·9			122
			0·911	97·1	4·5	− 5·9			76
			0·911	79·9	4·3	+ 9·7			170
June 15		Centre			(69·6)	(+1·3)	(52)	(331)	(1215)
166·474	CL, AW	4583*a*	0·997	254·3	141·4	−15·6	0	153	
		4583*e*	0·983	254·5	135·0	−14·9	0	86	589*c*
		4583*c*	0·963	251·0	129·4	−17·8	6	38	
June 16		Centre			(56·6)	(+1·5)	(6)	(277)	(589)
1897.				°	°	°			
167·414	CL, FT		0·911	170·8	26·0	−62·3			113
			0·934	69·4	336·2	+19·8			86
			0·939	109·8	336·2	−18·0			90
June 17		Centre			(44·2)	(+1·6)	(0)	(0)	(289)
168·123	CL, AW	4584	0·306	256·5	52·0	− 2·5	0	5	
			0·870	66·7	336·2	+21·0			92
I.			0·883	113·5	335·7	−19·7			78
June 18		Centre			(34·8)	(+1·7)	(0)	(5)	(170)
169·428	CL, FT		0·847	267·5	81·9	−20·6			176
			0·901	255·8	80·5	−12·0			192
			0·879	281·7	78·6	+11·1			273
June 19		Centre			(17·5)	(+1·8)	(0)	(0)	(641)
170·312	AW, JW		0·973	282·2	82·4	+12·3			411
		4585	0·180	7·6	4·5	+12·1	0	3	
I.			0·915	97·1	300·3	− 5·7			98
			0·935	78·4	297·0	+11·6			206
June 20		Centre			(5·9)	(+1·9)	(0)	(3)	(715)
171·466	CL, AW		0·943	258·8	60·1	− 9·9			140
			0·919	266·8	56·9	− 2·1			106
		4586	0·838	97·8	294·2	− 5·4	0	2	149*f*
		4587	0·882	104·6	290·0	−11·9	2	8	289*c*
		4587	0·897	104·8	288·1	−12·3	0	1	
		4588*a*	0·984	99·1	271·4	− 8·6	32	169	315*c*
			0·899	113·5	289·3	−20·1			107
			0·956	93·1	284·8	− 2·3			79
June 21		Centre			(350·5)	(+2·0)	(34)	(180)	(1185)
172·648	CL, AW		0·939	261·6	44·2	− 7·1			98
			0·891	252·2	36·1	−14·7			86
		4589	0·229	303·4	346·1	+ 9·3	0	6	
		4589	0·181	300·1	344·0	+ 7·4	0	3	
		4589	0·190	308·2	343·7	+ 8·9	0	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*, *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 4584, June 18. A very small spot.
Group 4585, June 20. A very small spot.
Group 4586, June 21. A very small spot.
Group 4587, June 21. Two very small spots.
Group 4588, June 21–July 3. A large regular spot *a*, with a small companion on June 24 and 27.
Group 4589, June 22–June 27. A few small unstable 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).
1897.				°	°	°			
172·648	CL, AW	4588*a*	0·904	100·8	271·3	− 8·8	39	219	213*c*
			0·924	107·3	269·2	−15·0			190
			0·937	105·1	266·9	−13·3			163
June 22		Centre			(335·0)	(+2·2)	(39)	(239)	(750)
173·443	CL, FT		0·943	276·9	34·8	+ 7·3			163
		4589	0·397	288·4	346·7	+ 9·3	4	12	
		4589	0·387	290·0	346·0	+ 9·8	0	4	
		4589	0·379	290·6	345·4	+ 9·8	0	3	
		4589	0·357	287·7	344·4	+ 8·4	1	7	
		4589	0·346	290·3	343·5	+ 9·1	1	6	
		4588*a*	0·816	102·1	270·8	− 8·5	31	192	171*c*
			0·852	110·5	268·5	−16·0			149
			0·882	86·7	262·6	+ 4·0			83
			0·939	118·5	258·3	−25·7			120
			0·945	111·8	255·9	−19·7			237
			0·963	81·2	250·1	+ 9·1			211
			0·965	88·8	249·8	+ 1·8			88
			0·968	93·6	249·3	− 2·9			62
June 23		Centre			(324·4)	(+2·3)	(37)	(224)	(1284)
174·439	CL, FT	4589	0·623	282·4	349·1	+ 9·6	1	6	
		4589	0·538	282·2	343·2	+ 8·5	0	3	
		4589	0·536	283·4	342·9	+ 9·2	0	4	
		4588	0·645	107·3	272·8	− 9·2	0	2	
		4588*a*	0·667	105·8	270·9	− 8·6	38	187	146*c*
			0·871	116·7	254·6	−21·7			366
			0·859	109·0	254·2	−14·9			173
			0·880	84·8	249·7	+ 5·8			120
			0·926	124·2	249·0	−30·2			151
			0·900	74·6	247·6	+14·9			161
			0·913	92·2	245·6	− 1·1			166
			0·939	97·7	242·0	− 6·4			120
			0·957	109·0	239·9	−17·4			151
June 24		Centre			(311·2)	(+2·4)	(39)	(202)	(1554)
1897.				°	°	°			
175·246	AW, JW	4589	0·748	280·2	348·5	+ 9·3	2	9	
		4589	0·741	280·0	348·0	+ 9·1	1	3	
I.		4589	0·733	279·8	347·3	+ 8·9	0	2	
		4588*a*	0·524	110·5	270·9	− 8·4	36	193	
			0·838	119·8	248·5	−23·0			156
June 25		Centre			(300·5)	(+2·5)	(39)	(207)	(156)
176·474	CL, FT	4589	0·912	279·9	349·8	+10·1	0	18	228*c*
		4589	0·871	277·6	344·6	+ 7·9	0	10	
		4588*a*	0·297	131·2	271·2	− 8·8	23	163	
June 26		Centre			(284·2)	(+2·6)	(23)	(191)	(228)
177·249	CL, AW	4589	0·977	278·8	351·8	+ 9·2	0	5	251*f*
		4588*a*	0·204	167·8	271·5	− 8·8	27	154	
I.		4588	0·218	164·1	270·5	− 9·3	0	2	
June 27		Centre			(247·0)	(+2·7)	(27)	(161)	(251)
178·538	CL, FT		0·938	218·4	313·4	−45·7			105
		4588*a*	0·322	231·3	271·7	− 8·9	23	144	
		4588	0·313	222·1	269·3	−10·7	0	3	
		4590*a*	0·982	94·1	178·3	− 3·5	11	267	333*c*
			0·892	68·2	195·0	+20·6			46
			0·923	83·0	189·7	+ 7·5			41
June 28		Centre			(257·0)	(+2·8)	(34)	(414)	(525)
179·702	AW, CL	4588*a*	0·533	248·7	271·5	− 8·6	19	132	
		4590*a*	0·893	95·1	178·7	− 3·2	22	172	
		4590*b*	0·904	95·2	177·3	− 3·5	10	35	
		4590*c*	0·921	96·8	175·1	− 5·1	9	37	592*c*
		4590*d*	0·921	94·0	174·9	− 2·5	0	49	
June 29		Centre			(241·5)	(+2·9)	(60)	(425)	(592)
180·482	CL, AW		0·855	263·4	289·3	− 4·0			90
			0·857	255·6	288·6	−10·6			182
		4588*a*	0·672	253·7	271·7	− 8·5	24	130	
		4591	0·248	106·4	217·5	− 1·1	0	4	
		4591	0·262	104·7	216·6	− 0·8	0	10	

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

Group 4590, June 28–July 10. A large irregular spot *a*; on June 29 three nearly equal smaller spots *b*, *c* and *d* are seen following *a*; *b* is not seen again; *c* has broken into two parts by July 1 and then disappears; *d* has broken into two parts by the next day, after which *a* remains alone or with small companions only. On July 7, *a* appears composite, and subsequently diminishes rapidly.
Group 4591, June 30. 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 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).
1897.				°	°	°			
180·482	CL, AW	4590*a*	0·801	96·0	178·5	− 2·9	30	199	
		4590	0·822	96·3	176·5	− 3·4	1	6	
		4590*c*	0·837	97·9	175·1	− 4·9	10	65	655*c*
		4590*d*	0·841	95·3	174·5	− 2·8	11	71	
		4590	0·850	95·9	173·5	− 3·3	0	9	
			0·808	107·3	179·3	−12·0			75
June 30		Centre			(231·2)	(+3·1)	(76)	(494)	(1002)
181·480	CL, AW		0·874	261·0	278·1	− 6·3			123
		4588*a*	0·819	257·3	271·8	− 8·5	20	127	382*s*
		4590*a*	0·644	98·6	178·7	− 3·1	37	194	
		4590*c*	0·692	101·2	175·3	− 5·4	0	17	
		4590*c*	0·691	99·7	175·2	− 4·4	4	15	
		4590*d*	0·699	97·3	174·3	− 2·8	4	37	358*c*
		4590	0·707	96·2	173·6	− 2·1	0	4	
			0·977	104·6	141·8	−13·6			289
July 1		Centre			(218·1)	(+3·2)	(65)	(394)	(1152)
182·234	CL, FT		0·819	239·9	257·6	−22·1			202
			0·767	227·5	247·8	−28·6			101
I.		4588*a*	0·906	258·7	271·7	− 8·8	21	131	369*s*
		4590	0·482	98·4	179·5	− 1·1	0	6	
		4590	0·491	97·4	178·9	− 0·8	0	3	
		4590*a*	0·499	101·9	178·8	− 3·0	36	196	
		4590	0·502	98·8	178·3	− 1·5	0	5	
		4590	0·549	103·8	175·7	− 4·7	0	8	
		4590*d*	0·555	99·5	174·8	− 2·5	5	29	
		4590	0·554	98·5	174·8	− 1·9	0	3	
		4590*d*	0·561	101·1	174·6	− 3·4	3	21	
		4590	0·572	99·0	173·6	− 2·4	1	6	
		4590	0·587	99·5	172·6	− 2·8	0	3	
		4590	0·591	100·5	172·4	− 3·5	0	3	
			0·891	91·1	145·1	+ 0·5			44
			0·943	108·1	139·4	−15·9			439
July 2		Centre			(207·9)	(+3·3)	(66)	(414)	(1155)
183·319	CL, JW		0·900	248·2	254·9	−17·9			291
			0·827	272·2	249·4	+ 3·8			161
I.			0·870	235·0	247·3	−27·9			190
1897.				°	°	°			
183·319	CL, JW	4588*a*	0·983	260·3	272·2	− 8·9	24	147	238*c*
		4590	0·254	107·3	179·7	− 1·1	0	1	
		4590*a*	0·281	114·7	178·9	− 3·5	31	174	
		4590	0·282	108·2	178·2	− 1·8	0	4	
		4590	0·287	109·3	178·0	− 2·1	1	6	
		4590	0·330	115·7	176·4	− 5·0	0	3	
		4590	0·332	109·1	175·5	− 3·0	3	8	
I.		4590	0·330	105·9	175·3	− 2·0	0	3	
		4590	0·339	110·9	175·3	− 3·7	0	4	
		4590	0·335	106·7	175·1	− 2·3	0	5	
		4590	0·363	105·8	173·3	− 2·5	0	12	
		4592*a*	0·983	101·1	115·3	−10·3	24	117	97*c*
			0·867	110·5	136·3	−15·8			393
July 3		Centre			(193·7)	(+3·4)	(83)	(484)	(1370)
184·495	CL, AW		0·939	278·7	248·2	+ 9·4			98
			0·935	268·8	247·1	+ 0·1			147
			0·911	250·3	241·3	−16·3			95
		4590*a*	0·136	191·2	179·7	− 4·2	30	172	
		4590	0·120	163·3	176·2	− 3·1	1	5	
		4590	0·123	151·3	174·8	− 2·7	1	9	
		4592*a*	0·898	103·9	115·8	−10·9	21	124	360*f*
			0·750	118·4	134·4	−18·3			229
July 4		Centre			(178·2)	(+3·5)	(53)	(310)	(929)
185·212	AW, CL	4590*a*	0·246	236·3	180·4	− 4·3	31	162	
		4590	0·225	239·2	179·7	− 3·1	0	3	
M.		4590	0·191	232·1	177·2	− 3·2	0	4	
		4592*a*	0·813	106·4	116·2	−11·0	22	124	494*f*
July 5		Centre			(168·6)	(+3·6)	(53)	(293)	(494)
186·522	CL, AW	4590*a*	0·505	254·7	180·4	− 4·4	21	139	
		4590	0·489	257·0	179·7	− 3·1	0	3	
		4590	0·481	256·8	179·1	− 3·0	0	3	
		4590	0·473	250·4	177·8	− 5·8	0	6	
		4592*a*	0·625	112·6	115·5	−10·9	16	121	240*f*
			0·862	107·1	93·9	−12·7			133
			0·902	80·3	86·9	+10·3			217
			0·951	94·5	79·8	− 3·1			334
			0·957	104·3	79·7	−12·6			267
July 6		Centre			(151·3)	(+3·7)	(37)	(272)	(1191)

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 4592, July 3–14. A large regular spot, *a*, with a small companion on July 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 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).
1897.				°	°	°			
187·395	CL, AW		0·896	347·4	166·5	+64·3			70
		4590*a*	0·665	259·6	180·6	− 4·0	20	120	} 158*c*
		4590	0·633	256·0	177·8	− 5·8	0	3	
		4593	0·399	225·3	156·6	−12·6	2	5	
		4593	0·395	220·1	154·9	−13·8	1	5	
		4592*a*	0·473	121·6	115·7	−10·9	19	105	
		4594*a*	0·966	96·8	65·5	− 5·6	32	211	267*p*
			0·856	106·4	82·9	−12·0			45
			0·957	105·0	68·4	−13·1			71
July 7		Centre			(139·8)	(+3·8)	(74)	(449)	(611)
188·413	AW, CL	4590*a*	0·825	262·6	181·2	− 3·9	19	102	547*j*
		4593	0·593	242·5	158·8	−12·6	4	16	
		4593	0·587	241·4	158·1	−13·0	0	13	
		4593	0·571	241·7	157·1	−11·7	0	4	
		4593	0·562	240·2	156·2	−12·8	0	23	
		4593	0·544	238·0	154·5	−13·3	10	38	
		4592*a*	0·305	145·6	116·2	−10·7	15	98	
		4592	0·346	147·0	115·2	−13·0	0	3	
		4594*a*	0·876	98·6	66·0	− 5·6	28	176	588*f*
			0·781	99·7	75·9	− 5·1			75
July 8		Centre			(126·3)	(+3·9)	(76)	(473)	(1210)
189·628	CL, AW		0·886	276·4	172·6	+ 7·5			90
			0·868	283·6	170·2	+13·8			116
		4590*a*	0·948	264·6	181·1	− 3·8	16	84	517*f*
		4593	0·786	250·9	159·5	−12·3	8	27	}
		4593	0·761	248·6	156·8	−13·4	0	1	
		4593	0·756	248·0	156·2	−13·7	0	2	
		4593	0·752	248·7	156·0	−13·1	0	6	
		4593	0·743	248·5	155·2	−12·9	0	3	} 322*c*
		4593	0·739	248·0	154·8	−13·2	0	5	
		4593	0·731	247·6	154·0	−13·3	2	7	
		4592*a*	0·275	201·5	116·1	−10·8	15	108	
		4594*b*	0·699	102·8	67·1	− 6·0	7	51	}
		4594*c*	0·715	102·0	65·7	− 5·7	25	128	} 256*p*
			0·811	100·5	57·1	− 6·1			712
July 9		Centre			(110·2)	(+4·0)	(73)	(422)	(2013)
1897.				°	°	°			
190·391	AW, CL	4590	0·989	266·3	181·1	− 3·1	0	9	} 430*f*
		4590*a*	0·989	265·6	181·0	− 3·7	0	38	
		4593	0·881	253·6	159·8	−12·4	4	18	395*s*f
		4592*a*	0·376	226·8	116·2	−11·0	17	111	
		4594*b*	0·565	106·4	67·2	− 5·8	10	42	
		4594*c*	0·584	105·5	65·8	− 5·6	23	106	
July 10		Centre			(100·1)	(+4·1)	(54)	(324)	(825)
191·450	CL, JW		0·958	254·2	157·5	−13·8			369
			0·862	250·6	143·0	−14·4			154
			0·793	239·2	132·8	−21·1			231
		4592*a*	0·555	242·7	116·1	−11·1	11	126	
		4594*b*	0·362	117·0	67·3	− 5·5	8	35	
		4594	0·373	117·4	66·7	− 5·9	0	3	
		4594*c*	0·386	114·9	65·6	− 5·4	21	77	
July 11		Centre			(86·1)	(+4·2)	(40)	(241)	(754)
192·250	AW, CL		0·958	256·6	147·3	−11·5			249
			0·904	249·9	137·4	−16·1			130
M.			0·875	241·4	131·5	−22·4			194
		4592*a*	0·689	248·6	116·2	−11·3	11	96	
		4594*b*	0·224	140·2	67·3	− 5·6	7	20	
		4594	0·214	134·9	66·8	− 4·4	0	4	
		4594	0·259	141·7	66·2	− 7·5	0	3	
		4594*c*	0·242	137·0	66·0	− 5·9	15	66	
		4594	0·227	132·8	65·9	− 4·6	0	1	
July 12		Centre			(75·5)	(+4·3)	(33)	(190)	(573)
193·398	AW, CL		0·970	247·5	133·3	−20·6			307
		4592*a*	0·847	253·7	116·1	−11·3	13	75	312*f*
		4595	0·679	247·9	100·1	−11·4	0	1	
		4595	0·660	246·1	98·2	−12·0	1	3	
		4596	0·491	277·4	89·6	+ 7·5	2	7	
		4596	0·458	278·4	87·4	+ 7·7	1	3	
		4596	0·448	278·6	86·7	+ 7·8	0	3	
		4594*b*	0·205	217·7	67·5	− 5·0	5	25	
		4594*c*	0·210	212·6	66·8	− 5·8	13	47	
		4597	0·175	162·1	57·3	− 5·1	1	5	
		4598	0·832	99·4	5·0	− 5·3	0	2	143*f*
			0·931	83·5	351·6	+ 7·7			342
July 13		Centre			(60·3)	(+4·4)	(36)	(171)	(1104)

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

Group 4593. July 7–10. Two very small spots on July 7: by July 8 the group has considerably increased, and consists principally of two pairs of spots: by July 9 the leading pair have coalesced and the following spots have broken up: there is a further diminution by July 10.
Group 4594, July 7–17. A large irregular spot, *a*, breaking up into *b* and *c* by July 9; *b*, the larger and following fragment, is composite. By July 15 *c* alone is left; the group diminishes throughout.
Group 4595. July 13–15. Two very small spots on July 13; the group has largely increased by the next day, *a* being formed near the head of the group; *a* has largely increased by July 15.
Group 4596, July 13–16. A few small spots; the group is not seen on July 14.
Group 4597. July 13. A very small spot.
Group 4598, July 13–19. A few small unstable 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).
1897.				°	°	°			
194·415	AW, JW	4592*a*	0·943	256·4	115·7	−11·3	16	44	326*f*
		4595	0·835	253·3	101·3	−11·3	0	5	
		4595*a*	0·817	252·4	99·3	−11·6	13	39	
		4595	0·816	251·4	98·9	−12·3	0	5	
		4595	0·811	253·3	98·8	−10·7	0	2	299*c*
		4595	0·805	251·8	98·0	−11·7	0	3	
		4595	0·798	254·3	97·8	− 9·6	5	13	
		4595	0·785	250·9	95·9	−11·9	3	8	
		4594*b*	0·397	245·0	67·9	− 5·5	3	13	
		4594*c*	0·386	243·8	67·1	− 5·6	14	52	
		4598	0·661	102·8	6·6	− 5·0	3	9	
		4598	0·674	103·4	5·8	− 5·6	0	3	
		4598	0·684	103·3	5·0	− 5·7	0	3	
		4598	0·692	103·7	4·4	− 6·1	0	2	
		4598	0·689	101·2	4·3	− 4·4	0	1	
		4598	0·696	101·9	3·8	− 5·0	0	2	
		4598	0·713	102·1	2·5	− 5·4	0	5	
		4598	0·713	101·6	2·5	− 5·1	2	11	
July 14		Centre			(46·8)	(+4·5)	(59)	(220)	(625)
195·399	AW, JW	4595*a*	0·938	256·3	101·8	−11·1	21	163	
		4595	0·925	255·9	99·7	−11·1	0	4	
		4595	0·910	253·9	97·2	−12·6	0	4	656*c*
		4595	0·901	257·1	96·5	− 9·5	2	14	
		4595	0·903	253·1	96·1	−13·1	0	3	
		4596	0·803	276·4	87·3	+ 7·9	0	6	
		4596	0·787	276·0	85·7	+ 7·6	0	5	150*c*
		4596	0·780	276·5	85·1	+ 8·0	4	19	
		4594*c*	0·578	253·7	67·5	− 5·5	12	58	
		4598	0·469	110·1	7·7	− 5·1	0	14	
		4598	0·545	107·0	2·4	− 5·2	3	9	
July 15		Centre			(33·8)	(+4·6)	(42)	(299)	(806)
196·398	AW, CL		0·971	257·5	95·3	−10·9			409
			0·861	256·0	78·3	− 9·5			256
		4596	0·933	276·6	89·7	+ 7·9	0	17	363*f*
		4594*c*	0·748	258·1	67·8	− 5·6	4	36	222*c*
		4598	0·302	123·8	6·1	− 5·1	0	5	
		4598	0·341	119·7	3·4	− 5·2	0	1	
		4598	0·349	117·4	2·6	− 4·7	0	3	
		4598	0·359	119·2	2·3	− 5·6	0	3	
July 16		Centre			(20·6)	(+4·7)	(4)	(65)	(1250)
1897.				°	°	°			
197·226	CL, C		0·947	276·8	81·0	+ 8·0			128
			0·920	262·5	75·7	− 5·0			77
M.			0·899	255·7	71·8	−10·6			63
			0·770	258·0	58·6	− 6·0			209
		4594	0·856	259·7	67·3	− 6·2	0	6	182*c*
		4598	0·180	179·4	9·5	− 5·6	0	5	
		4598	0·149	159·2	6·6	− 3·2	0	2	
		4598	0·172	161·7	6·5	− 4·6	0	1	
		4598	0·184	162·8	6·5	− 5·3	2	13	
		4598	0·209	147·1	3·1	− 5·3	4	15	
		4598	0·215	143·8	2·3	− 5·2	0	4	
July 17		Centre			(9·6)	(+4·8)	(6)	(46)	(659)
198·511	CL, AW		0·941	263·3	62·1	− 4·6			551
			0·848	256·3	49·0	− 8·9			128
		4598	0·324	237·4	8·5	− 5·3	7	46	
		4598	0·277	232·7	5·4	− 4·9	4	12	
		4599*a*	0·991	100·2	271·5	− 9·4	0	83	275*p*
			0·930	76·1	284·0	+14·7			113
July 18		Centre			(352·7)	(+4·9)	(11)	(141)	(1067)
199·128	AW, JW		0·974	260·9	60·3	− 7·7			539
		4598	0·460	246·1	9·4	− 6·3	1	6	
I.		4598	0·448	247·5	9·0	− 5·4	2	5	
		4598	0·450	246·3	8·9	− 6·0	3	17	
		4598	0·440	247·1	8·4	− 5·4	0	1	
		4598	0·397	244·8	5·6	− 5·2	3	11	
		4599*a*	0·963	100·9	271·4	− 9·1	14	66	383*s*
July 19		Centre			(344·5)	(+4·9)	(23)	(106)	(922)
200·417	CL, JW	4599*a*	0·840	105·0	272·2	− 9·7	6	36	
		4600*a*	0·980	76·5	248·2	+14·3	28	245	460*c*
July 20		Centre			(327·4)	(+5·0)	(34)	(281)	(460)
201·141	AW, JW		0·792	257·4	8·7	− 6·7			221
		4599*a*	0·747	107·1	271·7	− 9·2	3	19	163*c*
I.		4601	0·909	101·4	253·8	− 8·2	3	27	244*c*
		4601	0·930	100·4	250·7	− 7·7	0	9	
		4600*a*	0·937	76·4	247·9	+14·5	32	207	733*c*
July 21		Centre			(317·8)	(+5·1)	(38)	(262)	(1361)

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

Group 4599, July 18–21. A single spot, *a*, rapidly diminishing in size.
Group 4600, July 20—August 1. A large spot *a*, without companions until July 27, after which it begins to break up.
Group 4601, July 21–31. Two large spots, *a* and *b*, *a* being the leader; on July 23 *c* appears *f* *a* and *d* *s* of *b*; *c* and *d* increase in size, and by July 26 *c* has coalesced with *a*; *d* is not seen after this date, nor *b* after July 28. All the spots are irregular at first, but latterly *a* tends to assume a more regular shape.

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).
1897.				°	°	°			
202·218	AW, JW		0·909	260·6	7·8	− 6·3			308
		4601*a*	0·760	105·6	256·1	− 8·3	35	176	
I.		4601	0·794	105·7	253·1	− 9·1	0	6	423*c*
		4601*b*	0·821	102·2	249·9	− 6·9	47	174	
		4600*a*	0·828	76·1	247·7	+14·4	40	198	697*c*
			0·924	125·7	243·7	−30·1			210
July 22		Centre			(303·6)	(+5·2)	(122)	(554)	(1638)
203·443	CL, JW		0·982	263·2	5·6	− 5·6			257
			0·917	279·3	354·2	+10·6			196
		4601*a*	0·562	114·2	256·3	− 8·8	19	166	
		4601*c*	0·604	113·1	253·3	− 9·3	13	46	
		4601	0·608	111·4	252·6	− 8·5	0	5	335*c*
		4601*d*	0·621	112·6	252·0	− 9·5	3	11	
		4601*b*	0·638	108·3	249·9	− 7·4	45	245	
		4600*a*	0·646	74·8	247·6	+13·8	33	167	
July 23		Centre			(287·4)	(+5·3)	(113)	(640)	(788)
204·460	AW, JW	4601*a*	0·378	129·2	256·7	− 8·6	12	99	
		4601	0·388	131·0	256·7	− 9·5	3	11	
		4601	0·390	128·6	256·0	− 8·9	6	11	
		4601*c*	0·404	127·5	255·0	− 9·1	8	38	
		4601	0·418	125·3	253·8	− 8·8	2	8	
		4601	0·434	121·0	251·9	− 7·9	0	4	
		4601	0·446	122·6	251·7	− 8·9	1	2	
		4601	0·445	119·8	251·1	− 7·8	2	15	
		4601	0·458	121·0	250·6	− 8·6	0	4	
		4601	0·466	121·7	250·3	− 9·2	0	1	
		4601	0·464	120·2	250·1	− 8·5	3	13	
		4601*b*	0·454	116·8	249·9	− 6·9	34	165	
		4601	0·471	119·2	249·4	− 8·4	0	5	
		4601*d*	0·478	119·7	249·2	− 8·8	7	29	
		4601	0·512	114·0	245·9	− 7·3	1	4	
		4600*a*	0·459	70·4	247·6	+13·7	27	153	
		4602	0·926	83·8	205·9	+ 7·8	0	1	159*f*
July 24		Centre			(273·9)	(+5·4)	(106)	(563)	(159)
205·462	AW, JW	4601*a*	0·251	166·1	257·2	− 8·5	23	138	
		4601*c*	0·271	162·1	255·9	− 9·5	29	123	
1897.				°	°	°			
205·462	AW, JW	4601	0·290	153·4	253·2	− 9·5	0	1	
		4601	0·285	150·4	252·5	− 8·9	0	3	
		4601	0·302	145·9	250·9	− 9·1	4	31	
		4601*b*	0·284	140·3	250·2	− 7·2	27	175	
		4601*d*	0·311	142·0	249·6	− 8·8	7	69	
		4601	0·337	138·5	247·7	− 9·2	0	1	
		4600*a*	0·264	56·7	247·6	+13·7	25	143	
			0·838	84·2	203·6	+ 7·9			162
			0·969	95·1	185·6	− 3·6			209
July 25		Centre			(260·7)	(+5·5)	(115)	(684)	(371)
206·328	CL, JW	4601*a*	0·290	207·8	257·1	− 9·3	35	309	
		4601	0·245	207·3	255·8	− 7·1	0	8	
I.		4601	0·249	206·0	255·6	− 7·4	0	8	
		4601	0·230	189·4	251·5	− 7·6	0	3	
		4601	0·246	187·6	251·2	− 8·6	0	5	
		4601	0·214	186·1	250·6	− 6·7	0	20	
		4601*d*	0·253	182·7	250·0	− 9·1	6	90	
		4601*b*	0·225	182·0	249·8	− 7·5	11	124	
		4601	0·286	200·7	245·2	−10·0	0	5	
		4600*a*	0·144	9·3	247·9	+13·7	20	158	
			0·928	96·6	182·0	− 4·0			171
July 26		Centre			(249·3)	(+5·5)	(72)	(730)	(171)
207·648	CL, AW		0·960	276·5	305·8	+ 7·8			175
		4601	0·533	238·6	259·3	−11·1	0	2	
		4601	0·522	240·8	259·2	− 9·8	0	3	
		4601*a*	0·495	240·5	257·6	− 9·1	40	271	
		4601	0·422	236·2	252·5	− 8·3	0	1	
		4601	0·407	238·6	252·2	− 7·0	0	1	
		4601	0·417	234·3	251·7	− 8·8	2	12	
		4601	0·398	238·5	251·7	− 6·7	0	1	
		4601	0·399	235·2	251·0	− 7·8	0	1	
		4601	0·396	233·1	250·4	− 8·4	0	3	
		4601	0·375	237·3	250·2	− 6·3	0	1	
		4601	0·395	231·8	250·0	− 8·8	0	3	
		4601	0·393	230·7	249·7	− 9·1	0	3	
		4601*b*	0·379	233·4	249·6	− 7·7	14	61	
		4600*a*	0·308	298·7	247·9	+13·9	22	113	
			0·953	103·2	161·2	−10·7			222
July 27		Centre			(231·8)	(+5·6)	(78)	(476)	(397)

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 4602, July 24. 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 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).
1897.				°	°	°			
208·248	AW, FT		0·823	244·9	274·7	−16·8			59
			0·801	253·3	274·7	− 9·7			79
I.		4601*a*	0·609	246·3	258·1	− 9·5	52	284	
		4601	0·583	247·1	256·5	− 8·3	0	3	
		4601	0·589	244·5	256·3	− 9·9	2	8	
		4601	0·585	242·3	255·5	−10·9	0	5	
		4601	0·532	244·2	252·6	− 8·4	1	12	
		4601	0·536	242·1	252·4	− 9·5	0	3	
		4601	0·528	242·6	252·0	− 9·1	0	7	
		4601	0·506	243·7	250·9	− 7·8	0	6	
		4601	0·497	242·5	250·1	− 8·1	1	5	
		4601	0·503	240·4	250·0	− 9·2	0	3	
		4601*b*	0·486	242·1	249·4	− 8·0	8	34	
		4600*a*	0·430	290·5	248·2	+13·8	26	108	
		4600	0·420	286·2	248·0	+11·9	0	5	
		4600	0·407	288·1	247·0	+12·5	0	5	
			0·921	108·9	159·6	−14·9			135
			0·947	101·1	154·0	− 8·6			104
July 28		Centre			(223·8)	(+5·7)	(90)	(488)	(377)
209·187	CL, FT		0·905	253·6	273·9	−12·2			243
		4601	0·805	249·7	261·9	−12·6	0	5	
I.		4601*a*	0·759	251·9	258·3	− 9·7	52	284	
		4601	0·756	249·5	257·5	−11·4	2	9	
		4601	0·747	250·1	256·9	−10·7	0	7	135*c*
		4601	0·739	250·3	256·2	−10·3	0	4	
		4601	0·664	252·6	250·9	− 7·0	0	3	
		4601	0·658	250·7	250·1	− 8·1	0	7	
		4600	0·612	281·5	249·0	+11·6	0	4	
		4600*a*	0·607	285·4	248·3	+13·9	21	96	
		4600	0·602	281·9	248·2	+11·8	6	27	
		4600	0·592	283·3	247·4	+12·6	0	6	
		4600	0·584	283·1	246·8	+12·3	0	6	
		4603	0·193	76·7	200·5	+ 8·0	0	5	
		4603	0·205	74·9	199·9	+ 8·5	0	4	
		4603	0·248	77·3	197·3	+ 8·8	0	8	
July 29		Centre			(211·4)	(+5·8)	(81)	(475)	(378)
210·432	CL, JW	4601*a*	0·908	256·7	258·4	− 9·5	51	322	553*f*
		4600	0·811	280·7	249·3	+12·0	8	20	
		4600*a*	0·802	283·3	248·4	+14·1	24	90	254*c*
		4600	0·777	282·8	246·0	+13·6	0	7	
1897.				°	°	°			
210·432	CL, JW	4603	0·135	287·2	202·4	+ 8·1	3	17	
		4603	0·114	290·2	201·2	+ 8·0	1	7	
July 30		Centre			(195·0)	(+5·8)	(87)	(463)	(807)
211·423	AW, JW		0·924	234·3	241·5	−29·8			163
		4601*a*	0·977	258·7	258·1	− 9·7	63	250	727*f*
		4600*a*	0·912	283·0	248·2	+14·3	15	76	533*f*
		4603	0·376	277·3	203·9	+ 8·2	3	11	
		4603	0·329	275·7	201·1	+ 7·4	0	2	
		4603	0·305	277·8	199·6	+ 8·0	0	11	
		4604	0·900	103·0	119·5	− 9·0	4	15	290*s*
			0·978	103·7	105·8	−12·0			222
July 31		Centre			(181·9)	(+5·9)	(85)	(365)	(1935)
212·500	CL, JW	4600*a*	0·982	283·4	247·6	+14·3	11	65	662*nf*
		4604	0·756	107·1	120·8	− 8·7	15	85	417*c*
		4604	0·809	106·4	115·9	− 9·5	8	36	
			0·930	106·6	101·7	−13·0			750
Aug. 1		Centre			(167·6)	(+6·0)	(34)	(186)	(1829)
213·455	CL, JW		0·961	282·1	229·6	+13·3			159
		4604	0·588	114·0	122·2	− 8·8	11	78	94*c*
		4605*a*	0·995	96·4	71·6	− 5·8	43	512	212*p*
			0·849	108·5	99·7	−12·2			576
			0·937	101·6	87·1	− 8·6			245
			0·935	84·8	85·5	+ 7·0			132
Aug. 2		Centre			(155·0)	(+6·0)	(54)	(590)	(1418)
214·452	CL, JW		0·849	275·3	200·1	+ 7·8			212
		4604	0·405	127·1	122·8	− 8·4	2	11	
		4604	0·411	126·4	122·3	− 8·4	1	4	
		4604	0·418	126·2	121·9	− 8·5	0	5	
		4604	0·419	125·2	121·6	− 8·2	0	1	

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 4603, July 29—31. A few small spots.

Group 4604, July 31—August 3. A small spot on July 31; two considerable spots on August 1, of which the leader alone remains by the next day; a few small spots on August 3.

Group 4605, August 2–15. A very large but somewhat irregular spot *a*, accompanied and followed by a large number of small companions. The group, which is of considerable length, is brought up by three considerable spots *b*, *c*, and *d*; *d* diminishes rapidly and is not seen after August 5; *b* has broken into two by August 7, of which only one portion is seen again, and that but once; *c* lasts until August 9. Subsequently the group contracts rapidly in length, and as the west limb is approached, the leader *a* is seen alone.

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).
1897.				°	°	°			
214·452	CL, JW	4605	0·946	96·1	71·6	− 3·7	0	14	
		4605*a*	0·952	97·9	70·7	− 5·6	86	531	
		4605	0·960	99·2	69·3	− 7·0	0	26	
		4605	0·968	96·8	67·2	− 5·0	0	31	
		4605	0·970	96·3	66·7	− 4·6	0	17	
		4605	0·976	96·7	65·3	− 5·1	0	24	1623*c*
		4605	0·981	96·9	64·0	− 5·5	0	23	
		4605*b*	0·984	98·3	63·3	− 7·0	26	229	
		4605*c*	0·991	98·4	60·7	− 7·4	19	95	
		4605*d*	0·995	95·6	58·4	− 4·9	28	211	
			0·720	113·9	99·6	−12·4			260
			0·875	103·7	82·7	− 8·9			97
Aug. 3		Centre			(141·8)	(+6·1)	(162)	(1222)	(2192)
215·406	CL, JW		0·945	277·4	200·6	+ 9·1			292
		4605	0·849	97·9	72·0	− 3·4	0	6	
		4605*a*	0·864	99·8	70·7	− 5·2	94	502	
		4605	0·885	99·0	68·1	− 5·0	4	50	
		4605	0·886	100·0	68·1	− 5·9	0	12	
		4605	0·887	98·1	67·7	− 4·3	2	19	
		4605	0·894	98·7	66·9	− 4·9	0	8	
		4605	0·897	100·2	66·8	− 6·3	0	15	2191*c*
		4605	0·898	98·3	66·3	− 4·7	0	17	
		4605	0·910	98·5	64·8	− 5·1	0	10	
		4605*b*	0·919	100·2	63·8	− 6·9	30	219	
		4605*c*	0·931	99·6	61·9	− 6·6	11	120	
		4605*d*	0·950	97·0	58·3	− 4·7	8	71	
			0·797	105·3	78·4	− 8·2			208
			0·927	111·0	64·7	−16·8			139
Aug. 4		Centre			(129·2)	(+6·2)	(149)	(1049)	(2830)
216·400	FT, JW		0·910	263·2	180·7	− 3·6			150
		4605	0·701	100·1	72·5	− 2·6	1	4	
		4605	0·720	100·5	71·0	− 3·2	5	20	
		4605*a*	0·732	103·0	70·5	− 5·1	88	497	
		4605	0·761	102·1	67·9	− 5·1	4	98	
		4605	0·775	101·6	66·5	− 5·0	2	48	
		4605	0·779	103·0	66·4	− 6·1	5	93	1773*c*
		4605*b*	0·801	103·2	64·4	− 6·7	21	140	
		4605*c*	0·826	103·0	62·0	− 7·1	10	153	
		4605	0·846	99·6	59·4	− 4·7	0	7	
		4605*d*	0·855	98·9	58·3	− 4·3	4	21	
1897.				°	°	°			
216·400	FT, JW	4606*a*	0·970	107·0	42·5	−14·8	19	110	193*c*
Aug. 5		Centre			(116·0)	(+6·2)	(159)	(1191)	(2116)
217·416	CL, JW		0·972	263·6	178·2	− 4·7			263
		4605	0·546	104·9	70·9	− 2·7	0	3	
		4605	0·553	104·2	70·3	− 2·4	0	2	
		4605*a*	0·567	108·2	70·0	− 4·8	90	471	
		4605	0·561	104·3	69·8	− 2·7	0	5	
		4605	0·588	104·1	67·9	− 3·1	0	3	
		4605	0·599	107·3	67·7	− 5·1	3	144	
		4605	0·608	110·0	67·6	− 6·9	2	12	
		4605	0·617	108·6	66·7	− 6·2	1	25	
		4605	0·614	105·7	66·4	− 4·5	1	3	
		4605	0·628	108·7	66·0	− 6·6	0	20	436*c*
		4605	0·624	106·2	65·8	− 5·0	0	7	
		4605	0·628	107·5	65·7	− 5·8	0	6	
		4605*b*	0·646	108·8	64·7	− 7·0	18	134	
		4605	0·644	106·1	64·3	− 5·4	0	1	
		4605	0·650	107·1	64·1	− 6·0	0	2	
		4605	0·659	109·8	64·0	− 8·0	0	1	
		4605*c*	0·676	108·8	62·5	− 7·8	22	140	
		4605	0·680	106·8	61·8	− 6·6	0	2	
		4605	0·699	104·9	60·0	− 5·7	0	1	
		4607	0·751	108·9	56·7	− 9·7	0	3	
		4607	0·765	108·6	55·4	− 9·9	0	2	130*c*
		4607	0·781	107·0	53·6	− 9·1	1	3	
		4606*a*	0·893	110·2	42·7	−14·9	10	76	
		4606	0·917	108·2	39·0	−13·9	0	3	369*c*
			0·947	102·0	33·1	− 9·2			241
Aug. 6		Centre			(102·6)	(+6·3)	(148)	(1069)	(1439)
218·429	CL, JW	4605	0·345	118·6	71·6	− 3·3	0	8	
		4605	0·346	115·5	71·1	− 2·4	0	6	
		4605	0·349	117·7	70·8	− 3·2	0	6	
		4605*a*	0·386	119·7	69·6	− 5·0	94	620	
		4605	0·359	103·8	68·9	+ 1·1	0	4	
		4605	0·385	111·5	68·3	− 2·1	0	3	
		4605	0·395	111·4	67·7	− 2·4	2	10	
		4605	0·431	121·0	67·4	− 6·9	0	5	
		4605	0·431	118·9	67·0	− 6·0	0	5	
		4605	0·440	119·6	66·6	− 6·6	5	47	
		4605	0·432	116·4	66·4	− 5·1	6	34	

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 4606, August 5–12. A spot, *a*, at first large, but diminishing steadily throughout. A small companion is seen near *a* on August 6 and 8.
Group 4607, August 6–11. A few small spots, *f* Group 4605.

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).
1897.				°	°	°			
218·429	CL, JW	4605	0·416	109·6	66·2	− 2·1	0	9	
		4605	0·456	121·5	66·2	− 7·9	0	5	
		4605	0·464	122·8	66·1	− 8·6	0	5	
		4605*b*	0·458	119·6	65·6	− 7·2	9	50	
		4605*b*	0·464	117·4	64·8	− 6·5	5	42	
		4605	0·484	119·7	64·2	− 7·9	0	1	
		4605	0·479	118·2	64·1	− 7·3	0	4	
		4605*c*	0·498	117·9	62·9	− 7·7	28	134	
		4607	0·571	116·1	58·0	− 9·1	0	6	
		4607	0·577	117·4	58·0	− 9·9	3	15	124*c*
		4607	0·588	116·2	57·0	− 9·6	0	6	
		4607	0·625	114·4	54·1	− 9·8	0	9	
		4606*a*	0·781	115·3	42·4	−15·1	9	78	425*nf*
			0·850	106·4	33·4	−10·3			124
			0·921	50·1	23·9	+39·1			140
Aug. 7		Centre			(89·2)	(+6·4)	(161)	(1112)	(813)
219·641	CL, JW	4605	0·150	155·6	69·8	− 1·5	0	2	
		4605*a*	0·210	160·9	69·4	− 5·0	80	609	
		4605	0·153	147·5	68·6	− 1·1	0	12	
		4605	0·178	154·3	68·3	− 3·9	2	6	
		4605	0·203	151·4	67·7	− 3·9	3	40	
		4605	0·250	156·4	67·5	− 6·9	0	23	
		4605	0·263	155·2	66·9	− 7·4	0	3	
		4605	0·262	153·7	66·6	− 7·1	0	3	
		4605	0·235	149·9	66·5	− 5·4	3	11	
		4605	0·251	151·4	66·4	− 6·3	0	4	
		4605	0·212	144·6	66·3	− 3·6	0	2	
		4605	0·235	148·1	66·2	− 5·1	0	4	
		4605*b*	0·271	151·7	65·9	− 7·4	10	35	
		4605	0·243	146·5	65·6	− 5·3	0	4	
		4605	0·266	146·8	64·9	− 6·5	2	10	
		4605	0·279	143·7	63·8	− 6·6	3	11	
		4605*c*	0·303	143·3	62·8	− 7·7	19	82	
		4607	0·365	138·6	59·2	− 9·6	3	11	
		4607	0·365	137·1	58·8	− 9·3	4	8	
		4606*a*	0·617	125·0	41·8	−15·2	9	55	
		4606	0·643	124·0	39·8	−15·7	0	6	
			0·851	102·4	16·7	− 7·0			174
			0·930	98·6	6·0	− 5·6			340
			0·949	78·0	1·0	+13·4			253
Aug. 8		Centre			(73·3)	(+6·4)	(138)	(941)	(767)

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).
1897.				°	°	°			
220·464	CL, AW		0·857	257·5	119·6	− 7·2			133
		4605*a*	0·233	211·8	69·3	− 5·0	105	552	
M.		4605	0·202	210·7	68·2	− 3·5	0	8	
		4605	0·197	209·1	67·8	− 3·4	0	4	
		4605	0·244	202·8	67·7	− 6·5	3	39	
		4605	0·239	198·5	66·7	− 6·6	0	13	
		4605	0·217	200·0	66·6	− 5·2	1	7	
		4605	0·256	196·7	66·5	− 7·7	1	10	
		4605	0·198	199·7	66·1	− 4·2	0	28	
		4605	0·248	194·9	66·0	− 7·3	0	4	
		4605	0·189	196·7	65·4	− 3·9	0	5	
		4605	0·231	192·6	65·2	− 6·5	0	1	
		4605	0·221	188·8	64·2	− 6·1	0	3	
		4605*c*	0·247	183·4	63·1	− 7·7	9	64	
		4607	0·279	169·4	59·3	− 9·3	0	6	
		4607	0·301	159·9	56·3	− 9·9	0	5	
		4606*a*	0·498	137·4	41·9	−15·4	11	37	
			0·869	101·8	3·6	− 6·9			232
			0·880	78·0	0·2	+13·6			178
Aug. 9		Centre			(62·3)	(+6·5)	(130)	(786)	(543)
221·472	FT, JW		0·961	280·3	123·7	+11·7			205
			0·956	256·5	120·0	−10·9			273
			0·849	250·2	103·9	−13·0			167
		4605*a*	0·400	240·8	69·4	− 5·1	102	568	
		4605	0·406	235·1	68·5	− 7·3	0	2	
		4605	0·374	242·2	68·3	− 3·9	0	2	
		4605	0·400	234·5	68·1	− 7·3	0	3	
		4605	0·363	242·5	67·7	− 3·5	0	3	
		4605	0·363	239·3	67·2	− 4·4	0	29	
		4605	0·387	233·3	67·1	− 7·1	0	7	
		4605	0·351	238·4	66·4	− 4·4	2	12	
		4605	0·342	239·3	66·1	− 3·9	0	1	
		4605	0·352	228·4	64·3	− 7·2	4	13	
		4605	0·341	226·2	63·3	− 7·3	0	7	
		4607	0·264	198·1	53·7	− 8·0	0	1	
		4607	0·263	196·1	53·2	− 8·1	0	2	
		4606*a*	0·390	162·6	42·1	−15·3	9	28	
		4608	0·939	70·8	338·3	+20·2	0	14	366*c*
Aug. 10		Centre			(49·0)	(+6·5)	(117)	(692)	(1011)

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 4608, August 10–11. 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 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).
1897.				°	°	°			
222·672	CL, AW		0·956	257·1	104·2	−10·3			238
			0·916	250·4	96·2	−15·0			272
		4605	0·657	253·6	72·2	− 5·6	1	11	
		4605*a*	0·613	252·5	68·9	− 5·3	88	642	
		4605	0·583	250·0	66·4	− 5·9	0	5	
		4605	0·571	251·3	65·8	− 5·0	1	9	
		4605	0·563	250·9	65·2	− 5·0	0	4	
		4605	0·540	252·7	64·1	− 3·6	0	3	
		4605	0·552	245·2	63·3	− 7·7	0	5	
		4607	0·473	236·9	56·6	− 8·9	1	9	
		4606*a*	0·403	202·2	42·1	−15·3	3	13	
		4608	0·821	70·0	338·1	+20·1	2	10	} 314*n*
		4608	0·857	68·7	334·2	+21·6	0	6	
			0·900	113·6	333·3	−17·8			71
Aug. 11		Centre			(33·1)	(+6·6)	(96)	(717)	(895)
223·428	CL, JW		0·916	252·9	86·7	−12·7			240
			0·900	261·1	86·1	− 5·0			155
			0·888	271·6	85·8	+ 4·5			107
			0·788	266·5	74·8	+ 1·3			228
			0·796	248·1	72·2	−13·0			90
		4605	0·738	260·0	69·6	− 2·8	2	12	
		4605*a*	0·738	256·0	68·9	− 5·7	89	660	
		4605	0·739	253·1	68·5	− 7·8	5	21	
		4605	0·739	252·2	68·3	− 8·4	0	6	
		4605	0·740	251·5	68·2	− 8·9	2	12	} 502*c*
		4605	0·713	258·0	67·3	− 3·8	0	25	
		4605	0·707	255·1	66·3	− 5·6	0	4	
		4605	0·703	255·8	66·1	− 5·1	0	9	
		4606*a*	0·486	220·8	42·2	−15·3	3	13	
		4609	0·364	226·5	38·5	− 8·1	3	13	
		4609	0·432	215·7	38·1	−14·1	0	8	
		4609	0·348	227·5	38·0	− 7·2	9	32	
		4609	0·352	220·1	36·3	− 9·1	3	13	
		4609	0·331	219·2	35·3	− 8·4	4	15	
Aug. 12		Centre			(23·1)	(+6·6)	(120)	(843)	(1322)
224·200	CL, AW		0·938	256·0	80·5	−10·6			267
			0·803	248·0	62·6	−13·2			120
M.			0·740	256·6	59·0	− 5·2			176
1897.				°	°	°			
224·200	CL, AW	4605*a*	0·843	259·0	68·9	− 5·5	97	643	} 568*c*
		4605	0·846	255·2	68·5	− 8·7	4	57	
M.		4605	0·829	260·7	67·8	− 3·9	0	9	
		4609*a*	0·514	242·0	40·1	− 8·0	10	50	
		4609	0·499	242·2	39·2	− 7·4	1	7	
		4609	0·492	240·9	38·5	− 7·8	0	1	
		4609	0·486	241·1	38·2	− 7·5	2	10	
		4609	0·483	238·2	37·3	− 8·6	3	10	
		4609	0·469	240·9	37·2	− 7·1	0	5	
		4609	0·479	237·0	36·8	− 8·9	0	6	
		4609	0·471	238·2	36·7	− 8·2	1	7	
		4609	0·469	236·6	36·1	− 8·8	0	5	
		4609	0·455	237·2	35·5	− 8·1	11	39	
		4609	0·446	233·0	34·0	− 9·3	0	4	
			0·977	69·6	293·8	+21·3			342
Aug. 13		Centre			(12·9)	(+6·7)	(129)	(853)	(1473)
225·478	CL, JW		0·914	245·6	57·5	−19·0			109
			0·879	252·7	54·8	−11·7			294
			0·755	243·6	40·2	−14·8			143
		4605*a*	0·959	262·1	68·4	− 5·6	111	610	1280*f*
		4609*a*	0·730	252·5	40·5	− 7·9	25	155	
		4609	0·712	253·0	39·2	− 7·1	7	37	
		4609	0·709	252·1	38·7	− 7·7	0	4	
		4609	0·693	251·1	37·3	− 8·0	0	9	
		4609	0·683	250·5	36·4	− 8·1	9	42	} 360*c*
		4609	0·672	251·4	35·8	− 7·2	0	15	
		4609	0·661	247·6	34·1	− 9·3	0	2	
		4609	0·655	247·4	33·6	− 9·3	0	8	
		4610	0·833	97·9	300·5	− 2·8	3	15	1418
			0·901	68·6	291·3	+22·2			287
Aug. 14		Centre			(356·0)	(+6·7)	(155)	(897)	(2614)
226·188	AW, CL		0·948	257·3	56·2	− 9·8			265
			0·854	247·0	41·1	−15·6			100
M.		4605*a*	0·992	263·4	68·4	− 5·6	38	618	1085*f*
		4609*a*	0·831	255·4	40·7	− 8·1	21	94	
		4609	0·816	255·8	39·3	− 7·4	0	16	
		4609	0·803	254·0	37·7	− 8·5	0	2	
		4609	0·799	254·9	37·5	− 7·7	1	3	} 254*c*
		4609	0·788	255·0	36·5	− 7·4	0	11	
		4609	0·785	255·6	36·4	− 6·9	0	11	

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Group 4609, August 12–16. A number of spots, many of considerable size, arranged in two parallel rows, inclined to the equator: *a*, the leader, has formed by August 13, and has greatly increased by the next day, but subsequently diminishes.
Group 4610, August 14. A 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 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).
1897.				°	°	°			
226·188	AW, CL		0·827	68·9	291·0	+21·2			141
M.		Centre			(346·6)	(+6·8)	(60)	(755)	(1845)
Aug. 15									
227·418	AW, JW	4609*a*	0·952	258·8	40·9	− 8·4	13	67	
		4609	0·949	257·8	40·2	− 9·3	2	16	667*c*
		4609	0·945	259·0	39·7	− 8·1	4	19	
		4611*a*	0·959	100·4	258·4	− 8·0	20	138	499*c*
			0·850	108·8	275·2	−12·0			317
Aug. 16		Centre			(330·4)	(+6·8)	(39)	(240)	(1483)
228·205	AW, CL		0·986	259·6	38·9	− 9·0			547
		4611*a*	0·899	102·3	257·7	− 7·9	16	129	557*sf*
M.			0·943	75·6	248·6	+15·9			188
Aug. 17		Centre			(320·0)	(+6·9)	(16)	(129)	(1292)
229·430	CL, JW		0·901	259·9	6·7	− 6·0			290
		4611*a*	0·740	106·5	258·3	− 7·3	20	130	718*f*
			0·773	119·6	259·1	−17·5			126
			0·872	74·9	242·6	+16·5			264
Aug. 18		Centre			(303·8)	(+6·9)	(20)	(130)	(1398)
230·523	CL, JW		0·967	261·6	3·4	− 6·3			190
			0·765	289·5	339·0	+19·3			121
		4611*a*	0·561	114·0	258·4	− 7·3	21	130	339*f*
			0·798	74·3	236·3	+16·7			150
Aug. 19		Centre			(289·4)	(+6·9)	(21)	(130)	(800)
231·199	AW, CL	4611*a*	0·443	122·4	258·3	− 7·3	23	123	
M.			0·837	291·0	337·2	+21·4			145
Aug. 20		Centre			(280·4)	(+7·0)	(23)	(123)	(145)
232·440	AW, JW		0·939	296·2	334·7	+27·0			194
			0·925	290·2	332·5	−21·4			163
		4611	0·239	163·3	260·1	− 6·2	0	2	
		4611	0·288	162·8	259·1	− 8·9	1	9	
		4611*a*	0·259	159·3	258·7	− 7·0	18	133	
			0·876	83·6	202·4	+ 9·0			161
Aug. 21		Centre			(264·0)	(+7·0)	(19)	(144)	(518)
1897.				°	°	°			
233·260	CL, AW	4611*a*	0·265	202·3	258·9	− 7·1	21	117	
		4611	0·247	199·0	257·7	− 6·5	0	3	
M.		4612	0·454	148·4	238·8	−15·9	1	6	
		4612	0·451	147·8	238·7	−15·6	0	2	
		4612	0·455	146·8	238·2	−15·5	0	2	
		4612	0·450	144·6	237·5	−14·7	0	1	
		4612	0·472	143·4	236·2	−15·5	0	1	
		4612	0·472	142·2	235·7	−15·1	4	11	
Aug. 22		Centre			(253·1)	(+7·0)	(26)	(143)	(0)
234·535	CL, AW	4611*a*	0·450	238·5	258·9	− 7·0	18	109	
		4612	0·373	180·7	236·6	−14·7	0	2	
		4612	0·370	178·5	235·7	−14·6	2	7	
			0·930	83·7	167·4	+ 8·5			224
Aug. 23		Centre			(236·3)	(+7·1)	(20)	(118)	(224)
235·199	AW, CL		0·899	292·7	292·1	+23·5			93
		4611	0·576	248·1	260·0	− 6·4	0	4	
M.		4611*a*	0·573	246·6	259·5	− 7·1	16	107	
		4613	0·103	76·4	221·8	+ 8·5	3	15	
		4613	0·128	75·8	220·4	+ 8·9	1	13	
Aug. 24		Centre			(227·6)	(+7·1)	(20)	(139)	(93)
236·186	AW, CL		0·943	257·2	283·1	− 9·5			196
			0·902	250·1	275·5	−14·5			133
M.		4611*a*	0·729	253·2	259·0	− 7·1	27	101	
		4613	0·140	281·7	222·4	+ 8·6	3	17	
		4613	0·100	285·1	220·1	+ 8·6	3	11	
Aug. 25		Centre			(214·5)	(+7·1)	(33)	(129)	(329)
237·394	CL, AW		0·885	247·3	256·7	−16·3			155
		4611*a*	0·888	258·3	259·6	− 7·0	13	74	380*f*
			0·953	107·2	129·1	−14·0			118
			0·935	77·9	128·6	+13·8			65
			0·953	101·6	128·0	− 8·8			135
Aug. 26		Centre			(198·6)	(+7·1)	(13)	(74)	(853)

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Group 4611, August 16–27. A large regular spot *a*, with occasionally a small companion.
Group 4612, August 22–23. Several small spots, *s f* Group 4611; on August 23 two small spots only.
Group 4613, August 24–25. A pair of 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 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).
1897.				°	°	°			
238·397	AW, JW		0·938	255·6	252·8	−10·8			266
			0·846	244·9	238·3	−16·8			131
		4611*a*	0·968	261·0	259·5	− 6·8	9	79	221*f*
		4614	0·151	283·2	193·9	+ 9·1	1	5	
		4614	0·142	300·0	192·6	+11·2	0	7	
		4614	0·133	298·8	192·2	+10·8	0	3	
		4614*a*	0·121	294·5	191·8	+10·1	2	6	
			0·870	112·1	128·9	−15·2			115
			0·878	103·9	126·1	− 8·6			167
Aug. 27		Centre			(185·4)	(+7·2)	(12)	(100)	(900)
239·443	CL, AW		0·949	249·2	239·4	−17·1			
			0·899	285·8	236·2	+17·3			130
			0·899	277·7	236·0	+10·0			188
		4614	0·411	275·4	195·8	+ 8·8	2	10	88
		4614*a*	0·337	279·3	191·1	+ 9·9	6	18	
			0·828	106·4	118·1	− 9·2			92
Aug. 28		Centre			(171·5)	(+7·2)	(8)	(28)	(498)
240·289	CL, AW	4614*a*	0·523	276·1	192·1	+ 9·3	2	9	
I.		4614*a*	0·511	276·1	191·2	+ 9·3	3	17	
			0·956	102·0	89·3	− 9·2			150
Aug. 29		Centre			(160·4)	(+7·2)	(5)	(26)	(150)
241·468	AW, JW		0·923	252·0	209·1	−13·6			127
		4615	0·958	96·2	72·3	− 3·9	0	41	
		4615	0·959	95·3	72·1	− 3·0	7	51	
		4615*a*	0·963	97·7	71·6	− 5·4	36	212	956*c*
		4615	0·967	95·9	70·4	− 3·9	4	38	
Aug. 30		Centre			(144·8)	(+7·2)	(47)	(342)	(1083)
242·455	FT, JW		0·875	278·2	193·3	+10·7			341
		4616	0·229	263·1	144·8	+ 5·5	0	3	
		4616	0·227	259·9	144·6	+ 4·8	0	3	
		4616	0·217	260·3	144·0	+ 5·0	1	7	
1897.				°	°	°			
242·455	FT, JW	4615	0·861	99·8	73·6	− 4·7	0	5	
		4615	0·870	98·7	72·4	− 3·9	0	5	
		4615	0·871	97·7	72·1	− 3·1	9	24	
		4615*a*	0·887	100·0	70·6	− 5·5	28	209	1382*c*
		4615	0·901	98·6	68·6	− 4·5	1	39	
		4615	0·905	99·6	68·2	− 5·5	0	3	
		4617	0·992	75·7	47·6	+15·0	0	79	
Aug. 31		Centre			(131·7)	(+7·2)	(39)	(377)	(1723)
243·176	AW, FT		0·946	276·4	193·8	+ 8·4			110
I.		4618	0·639	113·3	85·9	− 8·8	4	16	
		4618	0·655	112·8	84·7	− 9·0	3	12	
		4618	0·676	112·8	83·2	− 9·6	0	3	
		4618	0·679	112·2	82·8	− 9·3	0	4	
		4618	0·687	111·6	82·0	− 9·2	4	15	
		4615	0·760	102·1	74·2	− 4·4	0	3	
		4615	0·776	99·2	72·3	− 2·5	4	13	
		4615*a*	0·797	101·5	70·8	− 4·7	37	176	294*c*
		4615	0·815	99·9	68·8	− 3·8	0	14	
		4617	0·958	76·1	47·8	+15·3	10	63	360
			0·883	107·6	63·1	−11·9			235
			0·879	97·5	61·6	− 3·1			219
			0·966	98·3	48·4	− 6·0			169
Sept. 1		Centre			(122·2)	(+7·2)	(62)	(319)	(1387)
244·448	JW, AW	4618	0·412	132·8	87·6	− 9·4	4	8	
		4618	0·426	132·2	86·8	− 9·8	1	7	
		4618	0·433	131·5	86·3	− 9·9	0	1	
		4618	0·449	129·4	84·9	− 9·8	0	5	
		4618	0·483	128·3	82·8	−10·7	0	2	
		4618	0·491	127·7	82·2	−10·9	0	1	
		4618	0·496	125·6	81·3	−10·2	3	8	
		4615	0·575	108·5	72·4	− 4·4	0	3	
		4615	0·582	106·6	71·6	− 3·6	4	18	
		4615*a*	0·606	108·8	70·4	− 5·4	33	166	
		4615	0·625	105·7	68·5	− 4·0	0	3	
		4617*a*	0·837	77·6	48·1	+14·3	19	97	597*f*
		4619	0·954	104·5	35·2	−11·5	5	53	453*f*
			0·864	102·1	47·4	− 6·6			154
			0·916	107·1	41·9	−12·5			251
			0·949	97·5	34·9	− 4·8			195
Sept. 2		Centre			(105·4)	(+7·2)	(69)	(372)	(1650)

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Group 4614, August 27–29. A few very small spots in an irregular stream. The last spot, *a*, is the most stable. *a* alone remains by August 29, when it has divided to form a close pair.

Group 4615, August 30—September 14. A large regular spot, *a*, with a number of small companions. *a* remains alone by September 4.

Group 4616, August 31. Three very small faint spots.

Group 4617, August 31—September 12. A spot, *a*, which soon becomes large, and which is regular in outline except in the *s f* direction, where the outline is broken, and where it is followed by a short stream of small spots. *a* has broken up into a close irregular cluster by September 9.

Group 4618, September 1–3. A number of small spots in a straight stream. The centre spots of the group have disappeared by September 3.

Group 4619, September 2–13. A number of spots in a fine stream. *a* and *b*, near the beginning and end of the group, are large composite spots, *a* being much the larger of the two. *a* has broken up by September 10 into a pair of parallel straight streams of spots. The spots composing these two streams enter into fresh combinations with each other on the succeeding days. Three of the principal spots broken off from *a* are lettered *c*, *d*, and *e*.

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).
1897.				°	°	°			
245·516	CL, AW	4618	0·282	173·4	89·4	− 9·1	1	4	
		4618	0·290	171·7	88·9	− 9·4	1	9	
		4618	0·342	151·5	81·8	−10·3	1	4	
		4620	0·238	143·9	83·3	− 3·9	1	5	
		4620	0·246	141·0	82·4	− 3·9	5	13	
		4620	0·251	138·2	81·7	− 3·7	0	2	
		4620	0·270	132·2	79·8	− 3·3	0	3	
		4620	0·291	129·8	78·4	− 3·7	8	38	
		4615	0·365	120·4	73·0	− 3·8	0	3	
		4615*a*	0·404	121·1	71·1	− 5·2	29	171	
		4617*a*	0·672	76·2	49·1	+14·6	26	130	
		4617	0·683	78·8	48·1	+12·9	0	4	
		4617	0·686	78·1	47·8	+13·4	0	10	
		4617	0·700	79·9	46·6	+12·2	0	5	
		4617	0·704	79·3	46·3	+12·6	0	1	
		4619	0·847	108·8	36·5	−11·7	10	92	
		4619*a*	0·868	106·5	33·7	−10·4	38	242	
		4619	0·880	107·9	32·6	−12·0	2	12	
		4619	0·891	105·7	30·8	−10·5	0	8	
		4619	0·897	105·9	30·1	−10·8	0	2	1040*c*
		4619	0·901	106·6	29·7	−11·6	1	14	
		4619*b*	0·915	105·4	27·5	−11·0	37	168	
		4619	0·924	107·1	26·6	−12·8	0	13	
		4619	0·925	106·2	26·3	−12·0	0	4	
		4621	0·922	99·9	25·5	− 6·2	0	3	348*c*
		4621	0·946	101·0	21·9	− 8·0	0	2	
			0·813	76·7	36·5	+15·0			279
			0·841	100·6	35·4	− 4·9			124
			0·961	79·8	16·4	+11·8			185
Sept. 3		Centre			(91·3)	(+7·2)	(160)	(962)	(1976)
246·296	CL, AW	4620*a*	0·192	191·2	83·1	− 3·5	7	64	
		4620	0·203	180·3	81·1	− 4·4	0	1	
I.		4620*b*	0·173	178·4	80·7	− 2·7	15	72	
		4620	0·193	173·1	79·7	− 3·7	0	3	
		4620*c*	0·195	165·4	78·2	− 3·5	22	105	
		4615*a*	0·274	139·4	70·7	− 4·8	40	191	
		4617*a*	0·527	72·4	49·7	+15·4	23	103	
		4617	0·538	73·4	48·9	+15·0	5	22	
		4617	0·536	75·3	48·8	+14·0	2	21	
		4617	0·550	75·6	47·9	+14·0	5	23	
1897.				°	°	°			
246·296	CL, AW	4619*a*	0·752	110·6	35·5	−10·3	98	448	
		4619	0·775	110·0	33·4	−10·4	4	22	
I.		4619	0·781	108·7	32·6	− 9·7	0	9	
		4619	0·794	110·1	31·7	−11·1	5	18	
		4619	0·800	107·3	30·5	− 9·1	12	94	589*c*
		4619	0·810	105·1	29·1	− 7·7	4	14	
		4619*b*	0·844	107·1	26·1	−10·2	65	351	
		4619	0·853	109·1	25·7	−12·1	0	19	
			0·903	101·9	18·2	− 7·4			488
			0·928	79·8	12·1	+12·2			288
Sept. 4		Centre			(81·0)	(+7·3)	(307)	(1580)	(1365)
247·131	AW, FT	4620*a*	0·312	234·5	84·7	− 3·3	33	130	
		4620	0·306	231·6	83·8	− 3·9	0	6	
I.		4620*b*	0·285	229·7	82·5	− 3·5	11	60	
		4620	0·256	226·9	80·7	− 2·9	0	3	
		4620*c*	0·235	217·1	78·1	− 3·5	30	143	
		4615*a*	0·216	183·8	70·8	− 5·1	34	176	
		4622	0·257	168·1	67·0	− 7·2	0	12	
		4622	0·249	157·7	64·6	− 6·0	2	12	
		4622	0·280	159·5	64·3	− 7·9	0	3	
		4617*a*	0·353	66·0	50·6	+15·1	24	125	
		4617	0·368	70·0	49·2	+14·0	0	8	
		4617	0·373	67·6	49·2	+15·0	0	5	
		4617	0·367	71·8	49·1	+13·4	1	17	
		4617	0·418	74·4	45·7	+13·1	0	2	
		4617	0·426	72·7	45·3	+13·9	0	14	
		4619*a*	0·611	118·1	37·0	−10·0	102	451	
		4619	0·659	113·7	32·4	− 9·6	4	18	
		4619	0·681	114·8	31·1	−10·9	0	11	
		4619	0·674	112·5	31·0	− 9·3	8	68	
		4619	0·686	114·0	30·6	−10·6	0	7	
		4619	0·689	112·1	29·8	− 9·5	1	6	276*c*
		4619	0·685	109·5	29·5	− 7·7	2	8	
		4619	0·729	113·4	27·1	−11·5	0	16	
		4619*b*	0·735	111·0	26·0	−10·0	57	312	
		4619	0·744	113·8	26·0	−12·3	0	8	
		4621	0·803	102·6	18·2	− 5·6	0	10	
		4621	0·829	103·3	15·9	− 6·8	0	2	176*p*
		4621	0·844	103·2	14·3	− 7·0	0	9	
Sept. 5		Centre			(70·0)	(+7·3)	(309)	(1642)	(452)
248·603	AW, JW	4620*a*	0·600	254·9	85·9	− 3·1	33	168	
		4620*b*	0·580	254·5	84·5	− 2·8	11	36	

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n*, *s*, *p*, *f*, *c*, denoting respectively north, south, preceding, following, concentric. The 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 4620, September 3–9. A number of spots in a straight stream, forming *p* Group 4615, and in the same straight line with it. Of the three principal spots, *a*, *b*, and *c*, *b* has become merged into *a* by September 8.
Group 4621, September 3–14. A pair of very small spots on September 3. The group is not seen on September 4, but a fresh outbreak, some distance *f* the first, has occurred by September 5, and the group soon consists of a straight but sparse stream. The spots in the centre of the group diminish, and the group consists, by September 10, chiefly of two widely separated spots *a* and *b*.
Group 4622, September 5–7. A few small unstable 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).
1897.				°	°	°			
248·603	AW, JW	4620	0·572	255·9	84·2	− 2·0	0	3	
		4620	0·573	253·7	83·9	− 3·2	0	4	
		4620	0·556	253·5	82·7	− 2·9	0	2	
		4620	0·537	251·6	81·2	− 3·5	0	3	
		4620	0·530	251·0	80·6	− 3·6	0	2	
		4620	0·516	252·8	80·0	− 2·4	0	4	
		4620*c*	0·496	248·8	78·1	− 3·8	21	104	
		4615*a*	0·409	238·9	71·1	− 5·4	34	164	
		4622	0·428	225·2	68·5	−10·6	0	6	
		4622	0·390	229·5	67·9	− 7·7	2	9	
		4622	0·374	218·8	64·3	− 9·8	1	3	
		4617*a*	0·134	356·3	51·1	+15·0	30	155	
		4617	0·090	7·7	49·9	+12·4	0	1	
		4617	0·120	7·3	49·7	+14·1	2	10	
		4617	0·132	11·1	49·1	+14·7	0	3	
		4617	0·139	20·2	47·8	+14·8	0	1	
		4617	0·143	37·6	45·5	+13·8	0	3	
		4617	0·140	43·5	44·9	+13·1	0	6	
		4617	0·150	50·2	43·8	+12·8	0	2	
		4619	0·334	149·7	40·8	− 9·5	2	39	
		4619	0·376	151·8	40·2	−12·1	1	8	
		4619	0·319	144·9	40·0	− 7·9	0	5	
		4619*a*	0·373	146·3	38·5	−10·9	123	517	
		4619	0·371	141·0	37·0	− 9·6	0	4	
		4619	0·388	140·1	36·0	−10·2	0	2	
		4619	0·397	140·8	35·9	−10·8	0	5	
		4619	0·394	137·9	35·1	− 9·9	0	2	
		4619	0·411	138·9	34·7	−11·0	0	4	
		4619	0·422	133·8	32·7	−10·0	5	29	
		4619	0·430	129·8	31·1	− 9·1	0	2	
		4619	0·456	133·0	30·8	−11·2	3	20	
		4619	0·443	129·7	30·5	− 9·6	1	7	
		4619	0·454	130·8	30·2	−10·4	0	4	
		4619	0·510	130·9	27·4	−12·8	1	15	
		4619	0·487	124·9	26·8	− 9·5	0	4	
		4619	0·517	128·6	26·3	−12·1	0	14	
		4619*b*	0·514	125·8	25·6	−10·9	52	257	
		4621	0·529	118·1	22·6	− 8·0	0	2	
		4621	0·544	113·2	20·5	− 6·0	9	24	
		4621	0·561	113·5	19·5	− 6·7	12	28	
		4621	0·607	111·7	16·1	− 7·0	5	33	
		4621	0·623	112·8	15·3	− 8·0	0	9	
Sept. 6		Centre			(50·6)	(+7·3)	(348)	(1723)	(0)
1897.				°	°	°			
249·285	CL, AW	4620*a*	0·719	257·7	86·1	− 3·6	36	158	
I.		4620*b*	0·704	257·3	84·8	− 3·6	4	24	
		4620	0·700	258·4	84·7	− 2·8	0	13	
		4620*c*	0·624	253·0	78·1	− 4·6	29	97	
		4615*a*	0·535	246·4	70·9	− 6·0	36	172	
		4622	0·509	239·7	67·8	− 8·3	0	1	
		4617*a*	0·216	309·1	51·5	+15·0	31	130	
		4617	0·190	310·7	50·0	+14·3	0	5	
		4619	0·280	170·4	38·8	− 8·7	0	5	
		4619*a*	0·313	171·1	38·7	−10·6	112	460	
		4619	0·345	171·8	38·6	−12·6	0	8	
		4619	0·325	163·6	36·2	−10·9	4	53	
		4619	0·319	161·0	35·5	−10·3	0	5	
		4619	0·333	157·6	34·1	−10·6	0	4	
		4619	0·333	152·5	32·6	− 9·9	0	4	
		4619	0·340	150·7	31·8	−10·0	1	10	
		4619*b*	0·412	137·5	25·1	−10·6	42	281	
		4621	0·410	121·7	21·1	− 5·6	7	31	
		4621	0·429	122·3	20·2	− 6·4	0	4	
		4621	0·424	120·6	20·1	− 5·6	4	8	
		4621	0·431	119·8	19·5	− 5·6	0	3	
		4621	0·460	120·3	18·0	− 6·7	0	9	
		4621	0·466	118·4	17·3	− 6·1	0	3	
		4621	0·484	119·1	16·4	− 7·0	0	11	
		4621	0·486	116·6	15·7	− 6·0	0	5	
		4621	0·498	118·8	15·5	− 7·3	3	15	
			0·970	97·2	326·6	− 5·2			449
Sept. 7		Centre			(41·5)	(+7·3)	(309)	(1519)	(449)
250·277	CL, AW		0·887	252·6	88·1	−11·8			251
I.		4620*a*	0·854	260·9	85·9	− 3·9	46	189	
		4620	0·841	262·2	84·7	− 2·5	0	2	468*c*
		4620*c*	0·780	257·7	78·1	− 4·8	15	85	
		4615*a*	0·702	253·2	70·8	− 6·3	36	161	
		4615	0·678	254·1	69·1	− 5·2	0	3	124*c*
		4617*a*	0·414	289·9	52·0	+14·8	27	126	
		4617	0·420	294·3	51·8	+16·6	0	5	
		4617	0·395	295·0	50·2	+16·4	0	2	
		4617	0·384	289·7	50·2	+14·2	0	2	
		4619*a*	0·352	209·6	38·5	−10·6	108	556	
		4619	0·325	202·7	35·7	−10·2	0	5	
		4619	0·307	202·4	35·3	− 9·2	0	2	
		4619	0·327	200·8	35·2	−10·4	0	1	

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 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).
1897.				°	°	°			
250·277	CL, AW	4619	0·314	201·0	34·9	− 9·8	1	5	
		4619	0·289	198·2	33·6	− 8·6	0	5	
I.		4619	0·306	194·8	32·9	− 9·9	0	5	
		4619	0·306	191·1	31·8	−10·2	0	6	
		4619	0·317	176·8	27·4	−11·1	0	4	
		4619	0·299	173·7	26·5	−10·0	3	13	
		4619*b*	0·318	169·6	25·1	−10·9	35	176	
		4621	0·251	158·4	23·1	− 6·2	1	5	
		4621	0·262	157·7	22·7	− 6·5	0	3	
		4621	0·283	157·5	22·2	− 7·8	0	9	
		4621	0·257	155·4	22·2	− 6·2	5	17	
		4621	0·264	152·0	21·3	− 6·2	15	68	
		4621	0·261	147·2	20·3	− 5·4	0	3	
		4621	0·279	146·3	19·5	− 6·2	3	10	
		4621	0·268	143·5	19·2	− 5·3	0	5	
		4621	0·294	144·2	18·5	− 6·6	0	2	
		4621	0·332	145·1	17·4	− 8·6	0	5	
		4621	0·338	141·2	16·1	− 8·1	17	81	
			0·912	99·1	323·9	− 5·2			523
Sept. 8		Centre			(28·4)	(+7·3)	(312)	(1561)	(1366)
251·219	AW, FT		0·935	254·2	82·7	−12·0			178
		4620*a*	0·948	263·5	86·5	− 3·8	14	193	} 623*c*
I.		4620*c*	0·893	261·2	78·1	− 4·5	6	53	
		4615*a*	0·837	257·2	71·0	− 6·6	33	151	409*sf*
		4617*a*	0·607	285·1	53·2	+14·9	17	106	
		4617	0·604	288·2	52·6	+16·7	4	29	
		4617	0·589	287·0	51·7	+15·8	0	16	
		4617	0·580	284·5	51·3	+14·3	1	11	
		4617	0·572	288·5	50·3	+16·4	6	42	
		4617	0·559	287·5	49·5	+15·7	0	9	
		4619*a*	0·494	234·4	40·0	−10·1	101	380	
		4619	0·461	235·9	39·1	−14·1	0	4	
		4619	0·498	229·3	38·6	−12·3	0	4	
		4619	0·457	234·1	37·9	− 8·8	0	9	
		4619*c*	0·469	229·4	37·2	−11·0	14	125	
		4619	0·435	232·3	36·3	− 8·6	0	7	
		4619	0·454	228·7	36·2	−10·6	0	6	
		4619	0·437	230·2	35·8	− 9·5	0	5	
		4619	0·428	230·3	35·4	− 9·1	0	4	
		4619	0·432	226·1	34·4	−10·6	0	5	
		4619	0·411	225·8	33·3	− 9·8	0	5	
		4619	0·397	211·9	28·4	−12·6	0	9	
1897.				°	°	°			
251·219	AW, FT	4619	0·383	213·1	28·3	−11·6	0	4	
		4619	0·367	214·8	28·2	−10·4	1	16	
I.		4619	0·372	212·0	27·5	−11·3	0	19	
		4619	0·371	209·8	26·8	−11·7	0	5	
		4619	0·352	211·7	26·8	−10·3	0	10	
		4619*b*	0·349	206·4	25·1	−11·0	23	126	
		4621	0·276	212·1	24·4	− 6·3	2	39	
		4621	0·284	209·3	24·0	− 7·2	0	3	
		4621	0·278	208·2	23·6	− 7·0	0	3	
		4621	0·268	207·2	23·1	− 6·6	9	42	
		4621	0·290	204·7	23·0	− 8·1	0	3	
		4621	0·277	204·9	22·7	− 7·3	0	5	
		4621	0·296	202·6	22·6	− 8·6	0	1	
		4621	0·254	201·0	21·2	− 6·5	0	4	
		4621	0·242	200·9	21·0	− 5·8	0	7	
		4621	0·242	196·4	19·9	− 6·2	1	6	
		4621	0·267	183·0	16·8	− 8·2	3	26	
		4621	0·279	180·2	16·1	− 9·0	12	58	
			0·780	102·6	326·4	− 5·1			320
			0·902	96·1	312·4	− 2·3			122
Sept. 9		Centre			(16·0)	(+7·2)	(247)	(1550)	(1652)
252·445	AW, JW		0·982	264·7	78·1	− 3·8			358
			0·910	270·8	65·0	+ 3·7			196
			0·769	257·8	48·6	− 4·7			96
		4615*a*	0·954	261·4	71·1	− 5·9	32	162	684*sf*
		4617	0·807	285·9	53·9	+17·1	0	6	
		4617	0·802	283·5	53·5	+15·1	20	92	
		4617	0·795	285·9	52·7	+17·0	5	17	
		4617	0·788	285·4	52·0	+16·6	0	4	
		4617	0·787	282·7	52·0	+14·4	2	8	
		4617	0·773	280·9	50·8	+13·0	3	7	} 471*c*
		4617	0·773	285·6	50·6	+16·6	0	10	
		4617	0·771	283·5	50·5	+15·0	0	2	
		4617	0·764	284·7	49·8	+15·9	4	15	
		4617	0·764	285·5	49·7	+16·5	2	6	
		4619*a*	0·698	248·1	40·7	− 9·6	78	346	
		4619	0·679	249·9	39·7	− 8·0	0	1	
		4619	0·672	249·6	39·1	− 8·0	1	6	
		4619	0·668	249·1	38·7	− 8·2	4	12	
		4619	0·664	250·0	38·6	− 7·5	0	2	
		4619	0·665	246·2	37·8	− 9·9	1	5	} 262*c*

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n*, *s*, *p*, *f*, *c*, denoting respectively north, south, preceding, following, concentric. The 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 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).
1897.				°	°	°			
252·445	AW, JW	4619	0·658	247·9	37·7	− 8·6	9	61	
		4619c	0·662	244·4	37·1	−10·9	23	135	
		4619	0·639	245·2	35·7	− 9·7	7	61	
		4619	0·621	243·9	34·1	− 9·9	0	3	
		4619	0·578	237·7	29·6	−11·7	0	1	
		4619	0·561	236·6	28·2	−11·6	0	2	
		4619	0·549	238·9	28·2	−10·1	0	2	
		4619	0·540	235·5	26·7	−11·3	0	1	
		4619	0·536	236·4	26·7	−10·8	0	4	
		4619	0·525	236·8	26·2	−10·2	0	1	
		4619b	0·527	234·6	25·7	−11·3	12	57	
		4619	0·517	236·1	25·6	−10·3	0	2	
		4621	0·519	245·7	28·1	− 6·0	0	2	
		4621a	0·501	244·2	26·7	− 6·2	17	84	
		4621	0·487	242·3	25·4	− 6·6	0	1	
		4621	0·471	240·4	24·1	− 6·9	0	2	
		4621	0·438	237·2	21·5	− 7·0	1	5	
		4621	0·398	230·3	17·7	− 7·8	0	6	
		4621	0·396	228·7	17·2	− 8·2	1	6	
		4621b	0·397	226·7	16·7	− 8·9	10	64	
			0·927	7·3	335·3	+73·5			122
Sept. 10		Centre			(359·8)	(+7·2)	(232)	(1201)	(2189)
253·382	CL, JW		0·911	288·8	53·8	+20·1			43
			0·901	260·9	50·4	− 5·0			158
			0·880	278·0	49·6	+10·4			80
			0·852	287·4	46·2	+18·6			63
			0·812	282·4	42·1	+14·3			131
		4615a	0·994	263·4	70·1	− 5·7	0	108	394f
		4617	0·908	283·1	53·4	+14·9	13	70	
		4617	0·903	285·3	52·7	+16·9	0	6	308c
		4617	0·884	284·7	50·1	+16·3	3	12	
		4619a	0·833	253·7	41·3	− 9·3	52	314	
		4619	0·816	253·0	39·5	− 9·4	4	12	
		4619d	0·804	254·0	38·6	− 8·3	9	102	
		4619	0·808	252·2	38·5	− 9·8	10	26	
		4619c	0·797	250·4	37·1	−10·9	19	128	499c
		4619	0·785	252·1	36·4	− 9·3	0	4	
		4619	0·780	251·5	35·8	− 9·6	2	15	
		4619	0·773	252·2	35·4	− 8·9	0	10	
		4619	0·769	251·2	34·8	− 9·5	10	21	
		4619	0·710	248·9	29·4	− 9·5	0	3	
		4619b	0·676	244·8	25·8	−11·1	8	45	
1897.				°	°	°			
253·382	CL, JW	4621a	0·677	253·2	27·9	− 5·8	17	77	
		4621	0·665	254·9	27·3	− 4·4	0	2	
		4621	0·664	251·9	26·7	− 6·3	0	1	200c
		4621	0·651	254·2	26·2	− 4·6	0	4	
		4621b	0·552	242·7	17·0	− 8·4	6	25	
			0·945	106·1	279·1	−12·6			124
Sept. 11		Centre			(347·4)	(+7·2)	(153)	(985)	(2000)
254·260	AW, FT		0·823	248·6	27·5	−13·0			328
		4617	0·973	282·3	53·6	+13·6	9	73	321sf
I.		4619a	0·928	255·7	41·8	−10·4	64	291	
		4619d	0·912	256·4	39·6	− 9·3	9	93	
		4619e	0·907	254·3	38·5	−11·0	8	23	
		4619c	0·899	252·9	37·1	−12·0	9	95	576c
		4619	0·893	254·6	36·7	−10·3	0	11	
		4619	0·882	254·6	35·4	− 9·9	3	41	
		4623	0·862	281·0	36·0	+13·1	0	9	
		4623	0·839	280·5	33·4	+12·7	2	14	99c
		4621	0·829	257·7	30·2	− 6·0	0	8	
		4621	0·814	256·2	28·5	− 6·9	19	63	236c
		4621	0·796	257·1	27·0	− 5·8	5	23	
		4621	0·699	248·7	17·0	− 9·3	0	6	
		4621	0·697	248·2	16·8	− 9·6	1	6	85c
			0·954	73·4	262·2	+18·0			118
Sept. 12		Centre			(335·9)	(+7·2)	(129)	(756)	(1763)
255·323	AW, FT		0·851	278·9	20·6	+11·3			63
			0·946	344·5	11·6	+70·7			59
I.			0·934	358·3	328·3	+75·9			366
		4619a	0·988	258·4	41·1	−10·2	69	360	
		4619	0·982	256·9	38·9	−11·4	0	43	
		4619c	0·976	256·0	37·0	−11·9	20	122	1305sf
		4619	0·972	257·3	36·2	−10·5	0	5	
		4623	0·943	280·2	33·1	+12·0	0	5	
		4623	0·931	280·5	31·1	+12·4	9	30	322nv
		4621	0·927	259·3	28·2	− 7·0	26	81	
		4621	0·921	260·0	27·4	− 6·3	6	24	422sf
		4624	0·850	73·9	263·2	+17·4	0	6	
		4624	0·869	73·1	261·0	+18·2	2	13	193c
			0·860	83·1	262·1	+ 9·6			32
			0·929	110·6	257·1	−16·1			500

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 4623, September 12–13. Two small spots.
Group 4624, September 13–14. A few small faint unstable spots, irregularly arranged.

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).
1897.				°	°	°			
255·323	AW, FT		0·929	99·1	254·8	− 5·7			470
I.			0·947	70·0	249·4	+21·2			102
Sept. 13		Centre			(321·8)	(+7·2)	(132)	(689)	(3834)
256·436	CL, JW	4621	0·956	258·4	18·3	− 8·9	3	10	503*c*
		4625	0·301	145·8	297·3	− 7·3	0	1	
		4625	0·316	146·3	296·9	− 8·1	0	1	
		4625	0·333	140·9	294·9	− 7·9	4	15	
		4624	0·687	71·5	264·1	+17·9	4	16	
		4624	0·715	72·3	261·7	+17·7	0	5	123*c*
		4624	0·728	72·6	261·5	+17·5	2	12	
			0·783	103·3	257·3	− 5·8			275
			0·910	74·1	240·8	+17·4			110
Sept. 14		Centre			(307·1)	(+7·2)	(13)	(60)	(1011)
257·289	AW, CL	4626*a*	0·978	80·8	217·1	+10·5	26	196	818*c*
I.									
Sept. 15		Centre			(295·9)	(+7·2)	(26)	(196)	(818)
258·185	AW, CL	4626*a*	0·909	81·7	218·2	+10·6	25	117	737*sf*
I.			0·947	94·0	213·5	− 1·4			290
Sept. 16		Centre			(284·1)	(+7·2)	(25)	(117)	(1027)
259·447	CL, FT		0·916	254·3	331·3	−11·3			70
			0·878	261·1	327·6	− 4·3			138
		4626*a*	0·755	82·7	218·1	+10·2	11	85	576*f*
			0·822	99·0	213·2	− 3·2			322
			0·926	84·5	199·2	+ 7·8			94
Sept. 17		Centre			(267·4)	(+7·1)	(11)	(85)	(1200)
260·447	AW, JW		0·966	263·6	328·3	− 4·3			166
		4627	0·589	240·6	285·6	−10·7	0	2	
		4627	0·599	237·2	285·2	−12·8	2	8	
		4627	0·600	236·2	284·9	−13·4	2	6	
		4627	0·586	237·1	284·3	−12·4	0	1	
		4627	0·575	234·4	282·8	−13·3	0	6	
		4628	0·500	143·3	236·1	−16·8	2	6	
		4628	0·513	140·4	234·3	−16·6	0	3	
		4626*a*	0·590	82·6	217·9	+10·1	14	57	
Sept. 18		Centre			(254·2)	(+7·1)	(20)	(89)	(166)
1897.				°	°	°			
261·485	CL, AW		0·855	256·0	297·2	− 8·1			177
		4627	0·762	249·8	287·0	−10·4	2	8	
		4627	0·753	249·5	286·1	−10·3	0	3	
		4628	0·400	173·7	237·9	−16·3	5	11	
		4628	0·390	171·7	237·2	−15·5	0	3	
		4628	0·408	166·8	235·0	−16·3	0	4	
		4629	0·059	134·5	238·1	+ 4·7	0	2	
		4629	0·080	114·3	236·3	+ 5·2	0	2	
		4629	0·108	132·7	236·0	+ 2·9	0	1	
		4629	0·110	125·8	235·4	+ 3·4	0	2	
		4626*a*	0·382	80·3	218·1	+10·3	5	21	
Sept. 19		Centre			(240·5)	(+7·1)	(12)	(57)	(177)
262·599	CL, JW		0·962	260·1	298·5	− 7·5			167
			0·902	253·9	287·7	−11·3			384
		4628	0·454	210·1	239·5	−16·2	7	32	
		4628	0·426	204·2	236·2	−15·9	4	10	
		4626	0·132	60·8	219·1	+10·7	3	13	
		4626	0·133	65·4	218·8	+10·2	6	15	
		4630*a*	0·665	111·2	187·1	− 8·5	30	186	
		4630	0·689	110·6	185·2	− 8·7	0	4	
		4630	0·686	108·1	184·9	− 7·0	0	3	
		4630	0·705	110·1	183·9	− 8·8	9	37	
		4630	0·698	107·4	183·8	− 6·9	0	3	
		4630	0·714	107·9	182·7	− 7·5	0	3	
		4630	0·719	108·5	182·4	− 8·1	7	33	
			0·978	93·5	148·4	− 1·9			254
Sept. 20		Centre			(225·8)	(+7·0)	(66)	(339)	(805)
263·513	CL, AW		0·962	256·1	285·7	−11·3			333
		4628	0·586	228·8	241·0	−16·5	0	2	
		4628	0·580	228·4	240·5	−16·4	3	11	
		4628	0·529	223·1	235·7	−16·2	3	8	
		4626	0·105	301·0	218·9	+10·0	5	24	
		4626	0·091	286·6	218·7	+ 8·5	0	1	
		4626	0·106	310·3	218·4	+10·9	0	3	
		4626	0·103	314·2	218·0	+11·1	0	2	
		4626	0·100	318·9	217·5	+11·3	0	9	
		4626	0·029	315·1	214·9	+ 8·2	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 4625, September 14. A small dark spot, with two very small companions.
Group 4626, September 15–23. A large spot, *a*, which rapidly diminishes from day to day, and which has broken up by September 20.
Group 4627, September 18–19. A few small faint unstable spots.
Group 4628, September 18–21. A few small faint unstable spots.
Group 4629, September 19. A few very small faint spots.
Group 4630, September 20–29. A stream of spots appearing suddenly. *a*, the leader, is the largest, and soon becomes regular in shape. The following spots have disappeared by September 25. *a* has divided into two parts by September 29.

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).
1897.				°	°	°			
263·513	CL, AW	4630*a*	0·505	120·4	187·7	− 8·5	24	152	
		4630	0·511	118·1	186·8	− 7·7	1	4	
		4630	0·561	116·9	183·4	− 8·6	0	3	
		4630	0·563	114·6	182·7	− 7·5	0	2	220*c*
		4630	0·572	115·9	182·5	− 8·5	5	16	
		4630	0·580	114·4	181·6	− 8·0	10	52	
		4631*a*	0·934	78·9	143·9	+12·8	7	108	
		4631	0·972	80·9	136·6	+10·4	0	39	397*c*
		4631	0·972	79·8	136·4	+11·6	0	32	
		4632*a*	0·949	85·6	141·8	+ 6·4	18	80	
		4632	0·956	85·8	140·5	+ 6·0	0	6	391*c*
		4632	0·976	85·3	135·9	+ 6·1	0	42	
			0·915	95·7	148·3	− 2·3			139
Sept. 21		Centre			(213·7)	(+7·0)	(76)	(601)	(1480)
264·300	AW, CL		0·835	254·7	257·7	− 8·7			164
I.		4626	0·274	280·3	219·1	+ 9·5	0	14	
		4626	0·273	283·2	218·9	+10·3	0	3	
		4626	0·257	286·4	217·8	+11·0	0	9	
		4630*a*	0·374	133·7	187·5	− 8·2	24	143	
		4630	0·390	126·9	185·1	− 6·9	0	5	
		4630	0·399	126·2	184·5	− 7·0	0	4	
		4630	0·418	123·8	182·9	− 6·9	3	10	
		4630	0·443	123·8	181·6	− 7·8	3	12	
		4630	0·450	122·9	181·0	− 7·7	3	16	
		4631*a*	0·856	78·1	144·0	+13·8	13	72	
		4631	0·919	80·2	135·9	+11·8	0	28	588*c*
		4632*a*	0·870	85·8	142·6	+ 7·1	21	82	
		4632	0·891	86·8	140·1	+ 6·0	0	54	631*c*
		4632	0·924	85·6	135·5	+ 6·7	0	14	
			0·819	97·3	149·2	− 1·9			91
Sept. 22		Centre			(203·3)	(+7·0)	(67)	(466)	(1474)
265·396	AW, JW		0·923	249·3	252·6	−16·0			145
		4626	0·509	279·0	219·5	+10·6	0	8	
		4626	0·502	280·4	219·0	+11·3	0	4	
		4633	0·286	271·5	205·6	+ 7·1	1	11	
		4633	0·265	272·7	204·3	+ 7·5	1	13	
		4630*a*	0·261	177·6	188·3	− 8·1	22	145	
		4630	0·247	168·5	186·1	− 7·0	0	5	
		4630	0·247	160·4	184·1	− 6·5	0	3	
		4630	0·261	159·6	183·7	− 7·1	3	15	
		4630	0·269	157·7	183·0	− 7·4	0	2	
1897.				°	°	°			
265·396	AW, JW	4630	0·265	155·2	182·5	− 6·9	0	2	
		4630	0·286	155·1	181·9	− 8·0	2	9	
		4630	0·294	153·2	181·2	− 8·2	1	6	
		4631*a*	0·699	78·5	144·4	+13·0	18	74	
		4631	0·753	78·4	139·8	+13·4	0	4	330*c*
		4631	0·786	81·4	136·7	+11·1	2	9	
		4632	0·700	87·9	144·3	+ 6·5	17	92	
		4632	0·717	89·2	143·0	+ 5·5	9	71	
		4632	0·741	89·0	141·0	+ 5·5	15	81	
		4632	0·752	88·9	140·0	+ 5·5	2	6	
		4632	0·788	87·7	136·8	+ 6·1	5	53	413*c*
Sept. 23		Centre			(188·9)	(+7·0)	(98)	(613)	(888)
266·683	CL, JW		0·930	250·3	236·9	−15·4			172
		4630*a*	0·378	228·0	188·3	− 8·0	21	118	
		4630	0·311	215·5	182·4	− 7·8	1	8	
		4631*a*	0·466	76·7	144·4	+12·3	23	85	
		4631	0·497	72·9	142·8	+14·4	0	4	
		4631	0·519	75·4	141·0	+13·4	4	13	
		4632*a*	0·452	91·3	145·0	+ 5·6	6	72	
		4632	0·469	92·2	144·0	+ 5·1	5	45	
		4632	0·480	90·2	143·2	+ 6·0	16	45	
		4632	0·498	91·9	142·0	+ 5·1	7	26	
		4632	0·514	90·2	140·9	+ 5·8	0	4	
		4632	0·515	87·7	140·8	+ 7·1	1	11	
		4632	0·526	92·1	140·2	+ 4·8	17	74	
		4632	0·580	90·2	136·4	+ 5·5	6	28	
Sept. 24		Centre			(171·9)	(+6·9)	(107)	(533)	(172)
267·491	CL, FT		0·839	278·6	218·7	+11·0			421
		4630*a*	0·514	242·3	188·4	− 7·7	23	115	
		4631*a*	0·301	70·5	144·4	+12·4	22	105	
		4631	0·330	64·2	143·4	+14·8	2	10	
		4631	0·360	69·1	141·0	+13·8	0	6	
		4632*a*	0·271	94·0	145·5	+ 5·6	11	76	
		4632	0·281	99·0	145·1	+ 4·2	0	1	
		4632	0·284	97·4	144·9	+ 4·6	0	5	
		4632	0·291	95·2	144·4	+ 5·1	0	10	
		4632	0·299	92·7	143·8	+ 5·8	6	37	
		4632	0·316	96·2	142·9	+ 4·6	2	10	

The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n*, *s*, *p*, *f*, *c*, denoting respectively north, south, preceding, following, concentric. The 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 4631, September 21–29. A straggling stream. The leader, *a*, is a well-defined spot. The others are unstable and faint, and undergo constant change.
Group 4632, September 21–October 1. An irregular stream. The leader, *a*, is a well-defined spot; the rest of the group undergo much change.
Group 4633, September 23. A pair of 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).
1897.				°	°	°			
267·491	CL, FT	4632	0·322	92·1	142·4	+ 5·9	0	6	
		4632	0·343	86·6	141·1	+ 7·7	0	4	
		4632	0·361	94·4	140·1	+ 4·9	4	24	
		4632	0·366	93·2	139·8	+ 5·3	0	9	
		4632	0·370	91·4	139·5	+ 5·9	0	8	
		4632	0·384	91·2	138·6	+ 5·9	0	1	
			0·943	2·4	151·2	+76·9			122
			0·905	104·1	98·5	− 9·6			149
			0·951	96·9	90·2	− 4·3			408
			0·947	85·2	89·6	+ 6·8			213
			0·966	107·3	88·9	−14·7			78
Sept. 25		Centre			(161·2)	(+6·9)	(70)	(427)	(1391)
268·517	AW, JW		0·930	278·7	216·7	+10·6			729
			0·924	263·7	214·4	− 3·2			226
		4630*a*	0·686	250·9	188·4	− 7·8	22	150	
		4631*a*	0·108	30·9	144·5	+12·1	20	104	
		4631	0·169	40·1	141·3	+14·2	2	26	
		4632*a*	0·031	131·8	146·4	+ 5·6	13	60	
		4632	0·044	124·1	145·6	+ 5·4	0	3	
		4632	0·058	132·3	145·2	+ 4·6	0	1	
		4632	0·053	118·7	145·0	+ 5·4	4	13	
		4632	0·060	124·3	144·9	+ 4·9	1	4	
		4632	0·062	107·0	144·3	+ 5·8	0	1	
		4632	0·077	107·7	143·5	+ 5·5	0	1	
		4632	0·081	114·1	143·5	+ 4·9	0	2	
		4632	0·084	117·8	143·4	+ 4·6	0	1	
		4632	0·085	123·7	143·3	+ 4·1	1	5	
		4632	0·101	116·8	142·5	+ 4·2	0	2	
		4632	0·094	101·4	142·4	+ 5·8	0	1	
		4632	0·098	106·5	142·3	+ 5·2	0	1	
		4632	0·102	104·2	142·0	+ 5·4	0	2	
		4632	0·102	97·5	141·9	+ 6·0	1	5	
		4632	0·137	103·2	140·0	+ 5·0	2	9	
		4632	0·140	95·0	139·7	+ 6·0	2	14	
		4632	0·143	100·3	139·6	+ 5·3	0	10	
		4632	0·215	79·9	135·4	+ 8·8	0	2	
		4634*a*	0·973	98·3	72·3	− 6·4	35	158	526*c*
			0·818	107·2	95·4	− 9·9			124
			0·850	97·4	90·4	− 2·6			611
Sept. 26		Centre			(147·7)	(+6·8)	(103)	(575)	(2216)
1897.				°	°	°			
269·595	CL, JW		0·967	278·0	209·3	+ 9·5			255
		4630	0·839	254·9	188·2	− 8·8	2	20	} 267*c*
		4630*a*	0·837	256·0	188·2	− 7·8	29	115	
		4631*a*	0·214	294·4	144·8	+11·7	13	70	
		4631	0·194	310·7	142·1	+14·0	0	2	
		4632*a*	0·230	265·4	146·7	+ 5·6	10	49	
		4632	0·221	263·5	146·1	+ 5·2	1	6	
		4632	0·214	262·2	145·6	+ 5·0	0	1	
		4632	0·215	258·6	145·5	+ 4·3	0	2	
		4632	0·211	263·5	145·6	+ 5·3	0	3	
		4632	0·203	265·7	145·1	+ 5·8	0	1	
		4632	0·182	269·1	143·9	+ 6·6	0	2	
		4632	0·157	263·0	142·4	+ 5·6	2	10	
		4632	0·137	266·4	141·3	+ 6·2	0	2	
		4632	0·128	263·1	140·7	+ 5·9	0	3	
		4632	0·117	263·5	140·1	+ 6·0	1	5	
		4632	0·114	257·4	139·8	+ 5·4	0	3	
		4632	0·105	257·4	139·3	+ 5·5	0	3	
		4632	0·104	245·6	138·8	+ 4·3	0	1	
		4632	0·098	254·9	138·8	+ 5·4	0	1	
		4634*a*	0·887	101·0	72·4	− 6·5	21	138	879*f*
		4635*a*	0·946	82·1	61·7	+ 9·7	33	203	549*c*
			0·893	88·2	70·0	+ 4·7			145
			0·942	110·7	66·6	−16·9			135
			0·967	73·2	56·9	+18·0			196
Sept. 27		Centre			(133·4)	(+6·8)	(112)	(640)	(2426)
270·273	CL, AW		0·939	274·5	194·7	+ 6·6			150
I.		4630*a*	0·909	257·2	188·0	− 8·7	12	115	338*c*
		4631*a*	0·358	284·0	145·2	+11·3	8	29	
		4632*a*	0·380	266·9	146·8	+ 5·1	12	46	
		4632	0·371	266·1	146·2	+ 4·8	0	4	
		4632	0·365	266·8	145·9	+ 5·1	0	1	
		4632	0·355	265·9	145·2	+ 4·8	0	1	
		4632	0·308	266·5	142·4	+ 5·3	0	1	
		4634*a*	0·809	102·0	72·0	− 5·6	22	119	} 357*f*
		4634	0·828	101·9	70·2	− 5·9	0	4	
		4635*a*	0·883	81·6	62·0	+10·6	44	203	263*c*
			0·834	91·0	68·1	− 2·9			119
			0·927	109·7	59·8	−15·4			145
			0·961	97·9	51·7	− 5·6			216
			0·952	74·4	51·4	+16·9			302
Sept. 28		Centre			(124·5)	(+6·7)	(98)	(523)	(1890)

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 4634, September 26–October 7. A large regular spot, *a*, with occasionally one or two small companions.
Group 4635, September 27–October 8. A large regular spot, *a*, with occasionally one or two 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 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).
1897.				°	°	°			
271·173	AW, CL	4630*a*	0·977	258·7	188·7	− 9·5	0	33	} 412*f*
		4630*a*	0·974	259·4	187·9	− 8·7	6	43	
I.		4631*a*	0·544	279·7	145·6	+10·9	3	23	
		4632*a*	0·565	268·6	147·0	+ 4·7	10	33	
		4632	0·558	268·1	146·5	+ 4·6	0	5	
		4632	0·515	268·3	143·6	+ 4·9	0	2	
		4634*a*	0·672	106·3	72·4	− 5·8	22	113	
		4635*a*	0·764	81·9	62·5	+10·6	40	201	232*c*
		4636	0·931	101·8	45·7	− 8·4	0	8	966*sf*
			0·805	105·1	61·1	− 8·0			171
			0·845	73·7	57·4	+ 9·9			128
			0·938	82·0	42·3	+ 9·8			118
			0·939	75·5	41·9	+15·9			537
			0·968	96·5	41·9	+ 8·0			215
Sept. 29		Centre			(112·6)	(+6·7)	(81)	(461)	(2779)
272·228	AW, CL	4632*a*	0·751	270·1	147·4	+ 4·4	8	33	
		4634*a*	0·484	114·8	72·6	− 5·8	21	118	
I.		4634	0·522	113·2	70·0	− 6·0	0	3	
		4634	0·546	113·3	68·5	− 6·8	3	16	
		4635*a*	0·587	81·4	62·7	+10·4	33	186	
		4637*a*	0·874	77·2	37·3	+14·4	4	20	432*n*
			0·843	107·5	44·0	−10·9			377
			0·888	96·4	36·9	− 2·6			148
			0·951	105·1	29·0	−12·1			1290
Sept. 30		Centre			(98·7)	(+6·6)	(69)	(376)	(2247)
273·277	AW, CL		0·835	279·3	141·8	+11·4			244
		4632*a*	0·886	271·5	147·3	+ 4·4	2	13	189*sf*
I.		4634*a*	0·299	135·8	72·8	− 5·9	23	115	
		4634	0·352	129·8	69·1	− 6·6	0	1	
		4635*a*	0·382	79·4	62·5	+10·2	31	175	
		4637*a*	0·735	76·8	37·4	+14·1	4	18	} 223*c*
		4637	0·795	75·9	32·0	+15·2	0	3	
			0·723	114·2	42·5	−12·3			120
			0·808	104·0	32·8	− 7·3			414
Oct. 1		Centre			(84·8)	(+6·6)	(60)	(325)	(1190)
274·504	CL, AW		0·948	277·1	140·5	+ 8·8			331
		4634*a*	0·237	201·7	73·6	− 6·2	22	120	
		4635*a*	0·113	61·5	62·8	+ 9·6	32	169	
1897.				°	°	°			
274·504	CL, AW	4635	0·128	51·7	62·8	+11·0	0	7	
		4635	0·157	48·8	61·7	+12·4	0	4	
		4635	0·153	54·8	61·3	+11·5	0	4	
		4637*a*	0·518	74·5	37·8	+13·6	5	14	
			0·950	103·7	358·8	−10·8			192
Oct. 2		Centre			(68·6)	(+6·5)	(59)	(318)	(523)
275·481	AW, JW		0·987	276·0	136·9	+ 7·0			338
		4634*a*	0·377	234·6	73·6	− 6·4	25	119	
		4635*a*	0·131	293·4	62·7	+ 9·4	27	162	
		4637*a*	0·320	65·9	38·3	+13·7	1	6	
			0·848	107·2	0·3	−10·9			411
Oct. 3		Centre			(55·7)	(+6·5)	(53)	(287)	(749)
276·152	AW, CL	4634	0·496	243·9	73·4	− 6·9	23	108	
		4635*a*	0·274	281·2	62·6	+ 9·2	29	149	
I.		4637*a*	0·190	47·0	38·7	+13·7	1	12	
		4637	0·246	53·0	35·2	+14·8	0	5	
		4637	0·261	52·8	34·5	+15·3	0	3	
Oct. 4		Centre			(46·9)	(+6·4)	(53)	(277)	(0)
277·600	AW, CL		0·934	266·7	96·4	− 0·8			169
			0·920	272·7	94·9	+ 5·0			110
			0·900	258·3	90·4	− 7·6			341
		4634*a*	0·740	255·6	73·7	− 6·2	18	116	
		4635*a*	0·570	277·7	62·6	+ 9·7	30	147	
		4635	0·571	266·5	62·5	+ 3·3	0	4	
		4638	0·261	257·8	42·5	+ 3·1	0	2	
		4638	0·263	252·8	42·3	+ 1·8	0	1	
		4638	0·256	252·5	41·9	+ 1·9	0	1	
		4638	0·203	256·8	39·2	+ 3·6	0	3	
		4638	0·189	257·9	38·4	+ 4·1	0	2	
		4637*a*	0·238	304·4	39·4	+14·0	0	2	
		4639	0·263	228·7	39·2	− 3·7	0	2	
		4639	0·253	225·9	38·2	− 3·8	0	8	
		4639	0·237	227·2	37·8	− 2·9	0	5	
		4639	0·234	220·8	36·6	− 3·9	0	3	
		4640	0·864	92·7	328·3	+ 1·0	1	6	363*f*
Oct. 5		Centre			(27·8)	(+6·4)	(49)	(302)	(983)

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 4636. September 29. A very small spot.
Group 4637, September 30–October 5. A small spot, *a*, with occasionally one or two very small companions.
Group 4638, October 5. Several very small faint spots, irregularly arranged.
Group 4639, October 5. Several very small faint spots, irregularly arranged.
Group 4640, October 5–9. A very small spot, on October 5 and 6. The group is not seen on October 7 and 8, but three very small spots are seen near its place on October 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 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).
1897.				°	°	°			
278·627	CL, JW		0·968	272·0	89·8	+ 3·6			209
			0·969	263·1	88·9	− 5·1			394
			0·949	278·8	86·4	+10·3			103
			0·848	252·3	69·5	−11·4			220
			0·801	261·0	66·4	− 3·3			97
		4634*a*	0·876	259·3	73·9	− 6·2	17	98	281*c*
		4635*a*	0·746	277·1	62·6	+ 9·5	27	146	119*c*
		4641*a*	0·166	192·1	16·2	− 3·1	0	4	
		4641*b*	0·146	177·7	13·9	− 2·0	3	11	
		4640	0·716	95·6	328·9	+ 0·5	0	5	254*np*
Oct. 6		Centre			(14·2)	(+6·3)	(47)	(264)	(1677)
279·631	AW, JW		0·925	268·8	68·4	+ 1·3			133
			0·738	249·1	45·4	−10·8			285
		4634*a*	0·960	261·7	73·6	− 6·2	14	120	291*sp*
		4635*a*	0·876	277·3	62·5	+ 9·4	27	150	147*c*
		4641*a*	0·327	240·7	17·5	− 3·1	1	5	
		4641*b*	0·268	238·6	14·2	− 1·9	5	11	
			0·914	78·7	294·4	+12·9			105
Oct. 7		Centre			(1·0)	(+6·3)	(47)	(286)	(961)
280·621	CL, AW		0·920	263·7	54·0	− 3·3			97
			0·857	253·4	44·4	−10·8			461
			0·815	282·2	42·7	+13·6			191
			0·750	245·9	32·5	−13·4			138
		4635*a*	0·961	277·8	62·4	+ 9·2	33	101	
		4641*a*	0·463	253·2	14·1	− 2·1	0	7	
Oct. 8		Centre			(347·9)	(+6·2)	(33)	(108)	(887)
281·529	AW, JW		0·972	264·8	51·6	− 3·6			149
			0·950	255·9	45·7	−11·3			400
			0·899	284·6	40·4	+15·8			339
			0·871	258·8	35·0	− 6·6			381
			0·856	247·3	30·9	−15·9			201
		4640	0·136	130·4	330·0	+ 1·1	0	3	
		4640	0·127	124·5	329·9	+ 2·0	0	1	
		4640	0·175	126·2	327·8	+ 0·2	0	3	
Oct. 9		Centre			(335·9)	(+6·1)	(0)	(7)	(1470)
1897.				°	°	°			
282·246	AW, CL		0·985	254·5	44·4	−14·1			339
			0·946	283·1	38·2	+14·4			440
I.			0·936	258·7	34·3	− 8·3			635
			0·907	249·2	28·2	−16·0			379
			0·772	259·9	15·9	− 3·8			103
		4642*a*	0·975	78·1	248·5	+13·0	0	26	201*f*
			0·889	110·9	267·2	−15·4			130
Oct. 10		Centre			(326·5)	(+6·1)	(0)	(26)	(2227)
283·191	AW, CL		0·960	256·0	25·9	−11·6			259
			0·891	262·2	16·2	− 4·2			131
I.			0·848	255·9	10·2	− 8·6			72
			0·767	246·6	0·3	−13·6			97
		4642*a*	0·909	78·8	248·3	+12·7	7	42	181*c*
		4642*b*	0·933	78·0	244·6	+13·4	3	27	
Oct. 11		Centre			(314·1)	(+6·0)	(10)	(69)	(740)
284·591	AW, JW		0·953	260·2	6·6	− 7·4			108
			0·904	251·7	357·5	−13·8			194
		4642	0·733	80·0	248·4	+11·3	0	4	226*c*
		4642	0·740	79·5	247·8	+11·7	0	6	
		4642	0·767	80·3	245·4	+11·2	0	9	
		4642	0·774	79·3	244·8	+12·0	0	6	
		4643*a*	0·874	82·8	234·4	+ 9·2	0	10	186*f*
Oct. 12		Centre			(295·6)	(+5·9)	(0)	(35)	(714)
285·178	AW, CL		0·956	255·5	358·8	−12·0			385
		4643*a*	0·808	82·3	233·8	+ 9·6	1	9	209*c*
I.		4643*b*	0·844	81·9	230·1	+10·0	0	6	
			0·943	79·0	216·8	+12·3			275
Oct. 13		Centre			(287·9)	(+5·8)	(1)	(15)	(869)
286·246	AW, CL		0·805	267·4	327·0	− 1·4			197
I.			0·825	77·3	218·0	+13·7			115
			0·934	81·1	204·2	+10·4			189
Oct. 14		Centre			(273·7)	(+5·8)	(0)	(0)	(501)
287·439	AW, JW		0·929	269·5	326·1	+ 1·7			323
		4644	0·769	82·1	207·6	+ 9·8	0	4	

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 4641, October 6–8. Two small spots, *a* and *b*. Only *b* remains by October 8.
Group 4642, October 10–12. A pair of spots, *a* and *b*, on October 11; *a* alone is seen on October 10. The group has broken up by October 12.
Group 4643, October 12–13. A small spot, *a*, on October 12. A second, *b*, follows it on October 13.
Group 4644, October 15–19. A few very small unstable spots in an irregular 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).
1897.				°	°	°			
287·439	AW, JW	4644	0·771	82·9	207·4	+ 9·2	0	7	} 204c
		4644	0·794	81·6	205·3	+10·2	0	6	
			0·935	106·3	191·1	−13·0			105
Oct. 15		Centre			(258·0)	(+5·7)	(0)	(17)	(632)
288·411	AW, JW		0·750	277·0	293·9	+ 9·0			219
		4644	0·588	81·7	209·2	+ 9·4	1	6	
		4644	0·602	79·7	208·3	+10·7	0	1	
		4644	0·626	80·5	206·5	+10·3	0	6	
		4644	0·654	80·1	204·4	+10·7	2	7	
		4644	0·667	79·1	203·4	+11·4	4	17	
Oct. 16		Centre			(245·2)	(+5·6)	(7)	(37)	(219)
289·508	CL, AW		0·925	279·8	298·7	+11·1			308
			0·912	273·7	296·6	+ 5·6			152
		4644	0·352	76·3	210·5	+10·0	1	4	
		4644	0·363	77·2	209·7	+ 9·8	0	6	
		4644	0·367	79·5	209·4	+ 8·9	1	5	
		4644	0·381	78·7	208·5	+ 9·4	0	9	
		4644	0·407	79·1	206·9	+ 9·5	0	3	
		4644	0·432	75·5	205·6	+11·2	0	6	
		4644	0·446	75·0	204·7	+11·6	0	6	
		4644	0·465	75·2	203·5	+11·7	0	15	
			0·947	86·4	159·3	+ 5·2			155
Oct. 17		Centre			(230·7)	(+5·5)	(2)	(54)	(615)
290·495	AW, CL		0·969	278·8	293·9	+ 9·9			241
		4644	0·151	51·9	210·8	+10·7	0	3	
		4644	0·152	61·6	209·9	+ 9·5	0	2	
		4644	0·163	67·0	209·0	+ 9·0	0	5	
			0·843	101·6	161·7	− 6·7			140
			0·938	77·8	147·5	+13·3			194
			0·941	85·4	147·3	+ 6·2			429
Oct. 18		Centre			(217·7)	(+5·4)	(0)	(10)	(1004)
291·461	AW, CL	4644	0·145	308·2	211·6	+10·5	0	3	
		4644	0·134	309·9	211·0	+10·3	0	5	
		4644	0·096	317·8	208·7	+ 9·5	1	4	
			0·858	85·6	145·8	+ 6·6			297
			0·860	76·8	145·5	+14·1			260
Oct. 19		Centre			(205·0)	(+5·4)	(1)	(12)	(557)
1897.				°	°	°			
292·615	CL, AW	4645	0·168	91·2	180·1	+ 5·1	0	4	
		4645	0·205	99·1	178·2	+ 3·3	3	9	
		4645	0·228	90·7	176·6	+ 5·0	3	10	
		4646	0·821	86·0	134·5	+ 6·3	3	15	187c
Oct. 20		Centre			(189·8)	(+5·3)	(9)	(38)	(187)
293·446	CL, AW		0·923	279·3	246·5	+10·6			65
			0·783	275·5	230·4	+ 7·6			93
		4645	0·043	105·0	176·4	+ 4·6	0	1	
		4645	0·044	90·3	176·3	+ 5·2	1	5	
		4646	0·685	86·4	135·5	+ 6·3	0	6	
		4646	0·692	86·2	135·0	+ 6·5	0	5	
		4646	0·712	85·3	133·4	+ 7·0	1	8	
Oct. 21		Centre			(178·8)	(+5·2)	(2)	(25)	(158)
294·156	AW, CL	4646	0·551	85·1	136·0	+ 7·0	0	2	
		4646	0·555	85·5	135·7	+ 6·7	0	7	
I.		4646	0·561	85·9	135·3	+ 6·6	0	5	
			0·936	96·8	100·8	− 4·7			230
			0·946	105·0	100·3	−12·4			191
Oct. 22		Centre			(169·4)	(+5·1)	(0)	(14)	(421)
295·528	AW, CL		0·898	278·7	215·4	+10·0			148
			0·788	281·6	203·3	+12·2			138
		4646	0·242	83·2	137·4	+ 6·5	0	3	
			0·820	91·6	96·4	+ 1·6			118
			0·844	101·5	95·1	− 6·9			158
			0·869	112·1	94·4	−16·4			286
			0·969	96·1	76·4	− 4·6			150
Oct. 23		Centre			(151·3)	(+5·0)	(0)	(3)	(998)
296·264	AW, CL		0·946	277·9	213·0	+ 9·1			166
			0·883	283·1	203·7	+13·8			179
I.			0·929	94·5	73·8	− 2·3			146
			0·930	87·0	73·2	+ 4·6			169
			0·934	103·0	70·7	−10·3			264
			0·971	79·9	65·0	+11·0			123
Oct. 24		Centre			(141·6)	(+4·9)	(0)	(0)	(1047)

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 4645, October 20–21. Two or three small faint unstable spots.
Group 4646, October 20–23. A few small unstable 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).
1897.				°	°	°			
297·464	CL, AW		0·971	282·4	202·4	+13·2			207
			0·868	80·5	65·5	+10·6			80
			0·939	82·7	55·7	+ 8·5			58
			0·972	107·3	51·6	−15·6			147
			0·972	74·3	48·8	+16·4			116
Oct. 25		Centre			(125·8)	(+4·8)	(0)	(0)	(608)
298·155	AW, CL		0·912	81·9	50·8	+ 9·3			138
			0·947	108·9	48·1	−16·2			385
I.			0·953	102·0	45·8	− 9·9			151
			0·945	73·0	45·5	+17·6			247
			0·964	95·5	42·8	− 4·0			313
Oct. 26		Centre			(116·7)	(+4·7)	(0)	(0)	(1234)
299·194	AW, CL		0·900	260·5	166·0	− 6·5			81
			0·843	111·5	48·7	−15·3			268
I.			0·862	73·4	43·6	+16·6			193
			0·906	100·1	39·1	− 7·1			625
			0·955	110·5	33·0	−18·0			127
Oct. 27		Centre			(102·9)	(+4·6)	(0)	(0)	(1294)
300·161	AW, C		0·970	261·8	165·3	− 6·9			176
			0·879	276·3	151·8	+ 7·7			114
I.			0·853	283·3	148·7	+13·7			47
			0·757	99·9	42·0	− 4·5			166
			0·804	73·7	37·1	+15·7			165
			0·837	105·7	35·4	−10·5			351
			0·876	112·6	32·5	−17·3			326
			0·955	94·2	18·0	− 2·7			181
Oct. 28		Centre			(90·2)	(+4·5)	(0)	(0)	(1526)
301·418	CL, AW		0·928	275·8	141·7	+ 6·5			227
			0·902	283·5	138·1	+14·1			81
			0·873	97·7	13·6	− 4·5			102
			0·932	105·8	6·8	−13·0			192
Oct. 29		Centre			(73·6)	(+4·4)	(0)	(0)	(602)
302·431	AW, CL		0·848	109·3	5·3	−13·8			260
			0·919	103·6	355·2	−10·7			146
Oct. 30		Centre			(60·3)	(+4·3)	(0)	(0)	(406)
1897.				°	°	°			
303·507	CL, AW		0·858	256·5	103·6	− 9·3			137
		4647	0·631	253·4	83·5	− 7·0	5	14	126*c*
		4647	0·598	255·0	81·4	− 5·5	0	3	
		4647	0·591	254·4	80·9	− 5·7	2	11	
		4647	0·579	256·5	80·3	− 4·3	0	6	
Oct. 31		Centre			(46·1)	(+4·2)	(7)	(34)	(263)
304·537	CL, AW		0·929	268·9	102·2	− 8·7			147
			0·961	237·8	101·2	−29·4			125
			0·929	260·1	99·7	− 7·6			295
			0·910	252·7	95·8	−13·9			126
			0·937	359·1	35·4	+73·3			121
		4647	0·813	257·3	85·5	− 7·8	2	5	94*c*
		4648	0·611	111·8	357·5	− 9·7	0	1	38*c*
		4648	0·622	111·7	356·7	−10·0	1	5	
Nov. 1		Centre			(32·5)	(+4·1)	(3)	(11)	(946)
305·535	CL, AW	4647	0·918	260·1	84·8	− 7·4	0	38	157*c*
		4648	0·418	123·1	358·6	− 9·5	2	9	
		4648	0·449	121·0	356·4	− 9·7	0	2	
		4648	0·494	122·1	354·1	−11·6	0	10	
		4649*a*	0·969	102·9	305·0	−11·4	0	46	738*f*
Nov. 2		Centre			(19·3)	(+4·0)	(2)	(105)	(895)
306·444	AW, CL		0·944	264·4	77·4	− 4·0			174
			0·921	255·0	72·6	−12·1			192
			0·891	279·4	70·3	+10·2			171
		4650	0·291	212·5	16·4	−10·3	0	1	
		4650	0·286	208·9	15·3	−10·6	0	5	
		4649*a*	0·899	104·8	305·0	−11·5	6	29	596*c*
Nov. 3		Centre			(7·3)	(+3·9)	(6)	(35)	(1133)
307·237	AW, C		0·944	277·9	67·7	+ 8·7			145
			0·878	251·3	55·8	−14·4			184
I.			0·820	244·5	47·9	−18·3			122
			0·739	252·3	42·4	−10·3			144
		4649*a*	0·812	106·5	304·6	−11·0	5	24	591*f*
Nov. 4		Centre			(356·9)	(+3·8)	(5)	(24)	(1186)

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 4647, October 31–November 2. A few small unstable spots.
Group 4648, November 1–2. A few small unstable spots.
Group 4649, November 2–9. A small regular spot, *a*, with one or two very small companions on and after November 5.
Group 4650, November 3. Two 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 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).
1897.				°	°	°			
308·187	CL, AW		0·949	276·0	56·1	+ 6·9			177
			0·901	286·4	48·4	+16·3			173
I.			0·900	251·0	46·1	−15·3			625
			0·902	242·9	44·5	−22·4			87
			0·873	258·8	44·0	− 7·9			230
			0·802	239·8	32·3	−21·3			162
			0·775	247·7	32·0	−14·6			145
		4649	0·656	109·3	305·7	− 9·6	0	3	
		4649*a*	0·673	111·0	304·7	−11·1	9	27	257*f*
		4649	0·721	110·0	300·8	−11·6	0	2	
Nov. 5		Centre			(344·4)	(+3·7)	(9)	(32)	(1856)
309·177	AW, CL		0·973	245·1	44·9	−23·2			172
			0·959	260·3	43·9	− 8·2			281
I.			0·934	282·1	40·5	+12·6			277
			0·924	250·6	36·5	−16·4			202
			0·894	261·2	33·9	− 6·2			114
			0·877	243·4	28·4	−21·2			106
		4649	0·483	118·0	305·9	− 9·8	0	1	
		4649*a*	0·508	120·0	304·8	−11·4	9	20	
Nov. 6		Centre			(331·4)	(+3·6)	(9)	(21)	(1152)
310·205	AW, CL		0·954	260·2	29·3	− 8·2			169
			0·943	250·9	26·0	−16·7			200
I.		4649	0·314	140·7	306·2	−10·6	0	4	
		4649*a*	0·347	140·2	304·7	−12·0	7	19	
Nov. 7		Centre			(317·8)	(+3·5)	(7)	(23)	(369)
311·185	AW, C		0·930	254·4	11·6	−13·1			204
			0·838	252·4	359·6	−12·7			167
I.		4649	0·245	184·0	305·9	−10·7	0	2	
		4649*a*	0·269	180·9	305·2	−12·1	5	13	
		4649	0·300	173·8	303·0	−13·8	0	3	
Nov. 8		Centre			(304·9)	(+3·4)	(5)	(18)	(371)
312·186	AW, C		0·926	254·1	357·6	−13·4			226
I.		4649*a*	0·356	220·2	305·2	−12·5	0	6	
			0·934	74·5	222·7	+15·7			209
Nov. 9		Centre			(291·6)	(+3·3)	(0)	(6)	(435)
1897.				°	°	°			
313·471	AW, JW		0·910	76·8	209·5	+13·3			238
Nov. 10		Centre			(274·8)	(+3·1)	(0)	(0)	(238)
314·189	CL, C		0·949	264·6	336·4	− 4·2			236
I.			0·966	99·7	191·2	− 8·5			658
Nov. 11		Centre			(265·3)	(+3·0)	(0)	(0)	(894)
315·203	AW, CL		0·858	254·7	309·3	−11·6			308
			0·760	246·4	298·0	−15·7			227
I.		4651	0·865	101·3	193·1	− 8·2	2	19	459*c*
			0·936	104·2	184·0	−12·2			242
Nov. 12		Centre			(251·9)	(+2·9)	(2)	(19)	(1236)
316·173	AW, CL		0·947	258·6	309·3	− 9·9			381
			0·893	250·8	300·1	−15·7			339
		4651	0·713	103·3	194·9	− 7·4	2	18	
I.		4651	0·712	102·5	194·8	− 6·9	0	3	
		4651	0·715	102·0	194·5	− 6·6	0	3	158*c*
		4651	0·725	103·0	193·9	− 7·4	0	4	
		4651	0·750	104·6	192·0	− 9·0	0	9	
			0·825	106·0	185·3	−11·5			162
Nov. 13		Centre			(239·1)	(+2·8)	(2)	(37)	(1040)
317·204	AW, CL		0·962	253·7	298·1	−14·9			340
		4651	0·524	109·0	195·6	− 7·5	4	17	
I.		4651	0·527	108·4	195·4	− 7·3	0	5	
		4651	0·541	108·9	194·6	− 7·7	0	1	
		4651	0·541	108·3	194·4	− 7·4	0	1	
		4651	0·561	108·7	193·2	− 8·1	0	1	
			0·882	84·1	163·7	+ 6·5			193
			0·913	99·1	160·4	− 7·2			105
Nov. 14		Centre			(225·5)	(+2·7)	(4)	(25)	(638)
318·309	AW, CL		0·957	273·7	283·9	+ 4·3			284
		4651	0·304	128·1	197·0	− 8·4	1	2	
I.		4651	0·321	126·3	195·8	− 8·5	0	1	
		4651	0·343	123·8	194·2	− 8·6	0	1	
			0·907	83·2	145·9	+ 7·3			171
Nov. 15		Centre			(210·9)	(+2·5)	(1)	(4)	(455)

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

Group 4651, November 12–16. A few small unstable 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).
1897.				°	°	°			
319·193	AW, CL	4651	0·185	159·0	195·6	− 7·5	0	4	
I.			0·779	84·6	148·4	+ 5·7			129
Nov. 16		Centre			(199·4)	(+2·4)	(0)	(4)	(129)
320·259	AW, CL		0·960	100·2	112·4	− 9·2			152
I.									
Nov. 17		Centre			(185·3)	(+2·3)	(0)	(0)	(152)
321·223	AW, CL	4652	0·100	303·8	177·4	+ 5·4	2	11	
			0·904	94·8	108·4	− 3·3			220
I.			0·943	85·6	102·2	+ 4·9			240
Nov. 18		Centre			(172·6)	(+2·2)	(2)	(11)	(460)
322·471	CL, AW		0·897	99·2	93·1	− 7·3			84
Nov. 19		Centre			(156·1)	(+2·1)	(0)	(0)	(84)
323·199	AW, M		0·777	256·0	196·1	− 9·5			161
		4653	0·927	272·1	214·3	+ 2·7	10	31	} 264*c*
I.		4653	0·903	274·1	210·9	+ 4·6	0	4	
		4654	0·933	252·9	213·8	−15·1	2	10	214*np*
			0·965	80·4	71·8	+ 9·8			120
			0·971	74·4	70·6	+15·6			176
Nov. 20		Centre			(146·5)	(+2·0)	(12)	(45)	(935)
324·216	CL, M		0·992	254·2	215·0	−15·4			90
			0·908	257·7	197·4	−10·4			220
I.			0·845	251·7	188·9	−14·4			119
		4653	0·980	274·1	211·6	+ 4·4	3	26	429*s*
		4652	0·756	271·0	182·1	+ 2·0	0	5	
		4652	0·750	274·5	181·6	+ 4·6	0	4	
		4652	0·711	274·4	178·3	+ 4·4	0	12	
		4652	0·703	275·2	177·7	+ 4·9	6	17	
			0·924	77·8	66·0	+12·0			117
			0·944	98·9	63·2	− 7·8			128
Nov. 21		Centre			(133·2)	(+1·8)	(9)	(64)	(1103)
325·299	AW, M		0·972	261·0	194·7	− 8·4			257
			0·951	281·7	190·6	+11·6			136
I.			0·950	254·5	189·4	−14·1			237
1897.				°	°	°			
325·299	AW, M	4652	0·858	273·7	177·8	+ 4·0	0	7	} 218*c*
I.		4652	0·852	274·4	177·2	+ 4·7	1	4	
			0·866	104·3	60·2	−11·4			95
			0·941	108·8	50·4	−17·1			171
			0·938	92·1	49·5	− 1·4			120
			0·956	99·9	46·7	− 8·9			171
Nov. 22		Centre			(118·9)	(+1·7)	(1)	(11)	(1405)
326·236	AW, M		0·989	281·3	187·9	+11·4			144
			0·951	274·1	178·3	+ 4·4			341
I.			0·923	104·1	40·4	−12·3			96
Nov. 23		Centre			(106·5)	(+1·6)	(0)	(0)	(581)
327·301	CL, M		0·942	277·0	162·6	+ 7·1			79
			0·824	275·8	147·7	+ 5·6			56
I.			0·806	119·8	43·3	−22·6			81
			0·865	105·3	33·9	−12·5			81
			0·912	111·8	28·9	−19·2			116
Nov. 24		Centre			(92·4)	(1·4)	(0)	(0)	(413)
328·470	AW, CL	4655	0·135	187·4	78·0	− 6·4	0	2	
		4655*a*	0·188	170·1	75·1	− 9·3	3	12	
		4655	0·196	167·8	74·6	− 9·8	0	6	
		4655	0·194	158·0	72·8	− 9·1	0	3	
			0·923	99·1	10·3	− 7·9			267
Nov. 25		Centre			(77·0)	(+1·3)	(3)	(23)	(267)
329·182	AW, CL	4655*a*	0·228	219·0	75·9	− 9·0	3	12	
		4655	0·226	213·9	74·9	− 9·6	0	5	
I.		4655	0·227	211·9	74·6	− 9·9	0	2	
		4655	0·196	208·5	73·0	− 8·6	0	2	
		4655	0·203	204·1	72·4	− 9·5	0	3	
			0·849	96·6	10·6	− 5·0			166
Nov. 26		Centre			(67·6)	(+1·2)	(3)	(24)	(166)
330·176	CL, AW	4656	0·948	81·3	343·4	+ 8·6	7	65	} 376*c*
I.		4656	0·974	81·6	337·9	+ 8·4	4	21	
Nov. 27		Centre			(54·6)	(+1·1)	(11)	(86)	(376)

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

Group 4652, November 18–22. A small spot on November 18. The group is not seen on November 19 and 20, but has revived by November 21 as a straggling stream of small spots.
Group 4653, November 20–21. Two small spots on November 20. Only one remains by November 21.
Group 4654, November 20. A small spot.
Group 4655, November 25–26. A few very small spots, *a*, the leader on November 26 is the largest and best defined.
Group 4656, November 27–December 8. A group which undergoes constant change. A pair of spots on November 27 and 28; it has become a long straight stream of small spots by November 30. The group then becomes broad and straggling, but by December 3 has again become a straight stream. The small spots of which it is composed then begin to coalesce, and by December 5 it consists chiefly of three large spots, *a*, *b*, and *c*. of which *c* immediately breaks up. *a* is a notch on the limb on December 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 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).
1897.				°	°	°			
331·185	AW, CL		0·922	265·6	108·1	− 3·7			
			0·924	258·6	108·0	−10·1			116
I.		4656	0·843	80·9	344·3	+ 8·2	10	63	200
		4656	0·897	81·0	337·9	+ 8·5	11	70	40c
Nov. 28		Centre			(41·3)	(+1·0)	(21)	(133)	~~(756)~~
332·515	AW, CL		0·933	278·7	92·3	+ 8·4			95
		4656	0·617	79·0	346·2	+ 7·4	12	47	
		4656	0·688	77·8	341·0	+ 8·9	0	5	
		4656	0·700	78·8	339·9	+ 8·4	5	22	
		4656	0·714	79·5	338·7	+ 8·1	1	18	
		4657	0·777	101·2	333·6	− 8·1	2	19	107f
		4658a	0·933	101·3	315·5	−10·3	0	14	232f
Nov. 29		Centre			(23·7)	(+0·8)	(20)	(125)	(434)
333·384	AW, M		0·880	259·5	73·1	− 8·9			167
I.		4656	0·439	73·3	347·2	+ 7·9	8	41	
		4656	0·486	74·8	344·1	+ 8·0	2	10	
		4656	0·501	74·2	343·2	+ 8·5	0	2	
		4656	0·507	75·7	342·6	+ 7·8	4	16	
		4656	0·542	73·1	340·6	+ 9·6	0	4	
		4656	0·544	75·7	340·1	+ 8·3	2	8	
		4656	0·555	76·2	339·3	+ 8·2	3	11	
		4656	0·560	73·4	339·3	+ 9·8	7	26	
		4656	0·560	74·6	339·2	+ 9·1	0	1	
		4658a	0·836	102·4	316·4	− 9·9	3	16	
		4658	0·887	101·4	310·5	− 9·8	0	6	329c
			0·943	103·5	302·6	−12·5			152
Nov. 30		Centre			(12·2)	(+0·7)	(29)	(141)	(648)
334·444	AW, CL	4656	0·202	53·0	349·0	+ 7·5	0	2	
		4656	0·211	51·2	348·8	+ 8·2	1	7	
		4656	0·219	53·3	348·1	+ 8·1	3	13	
		4656	0·250	60·8	345·6	+ 7·5	0	3	
		4656	0·252	64·0	345·2	+ 6·9	3	12	
		4656	0·268	66·6	344·0	+ 6·7	1	9	
		4656	0·265	69·6	343·9	+ 5·9	0	15	
		4656	0·308	64·5	342·1	+ 8·2	0	2	
		4656	0·304	70·5	341·6	+ 6·4	1	7	
		4656	0·332	63·9	340·8	+ 8·9	0	4	
		4656	0·327	67·6	340·6	+ 7·7	0	8	
1897.				°	°	°			
334·444	AW, CL	4656	0·350	63·1	339·9	+ 9·7	5	12	
		4658a	0·666	107·2	318·1	−10·9	1	8	
		4658	0·693	105·3	315·7	−10·0	0	4	
			0·905	91·8	293·7	− 1·4			259
Dec. 1		Centre			(358·3)	(+0·6)	(15)	(106)	(259)
335·446	CL, AW		0·912	262·6	50·5	− 6·6			167
			0·915	253·1	50·0	−15·3			121
		4656	0·164	327·8	350·1	+ 8·4	0	8	
		4656	0·129	346·5	346·8	+ 7·6	0	4	
		4656	0·122	349·9	346·3	+ 7·3	0	3	
		4656	0·113	357·2	345·4	+ 6·9	0	2	
		4656	0·099	358·8	345·2	+ 6·1	2	21	
		4656	0·116	5·5	344·5	+ 7·0	0	8	
		4656	0·098	24·1	342·8	+ 5·5	0	3	
		4656	0·137	19·9	342·4	+ 7·8	1	6	
		4656	0·110	34·0	341·6	+ 5·6	7	21	
		4656	0·120	33·9	341·3	+ 6·1	0	4	
		4656	0·180	22·8	341·1	+ 9·9	0	5	
		4656	0·183	25·8	340·5	+ 9·9	0	12	
			0·796	92·5	292·6	− 1·8			138
			0·963	106·2	271·7	−15·4			207
Dec. 2		Centre			(345·1)	(+0·4)	(10)	(97)	(633)
336·289	AW, M	4656	0·315	296·0	350·6	+ 8·2	3	15	
I.		4656	0·251	297·4	346·9	+ 6·9	5	12	
		4656	0·300	313·4	346·8	+12·1	0	4	
		4656	0·239	296·3	346·4	+ 6·3	2	11	
		4656	0·230	294·0	346·1	+ 5·6	3	7	
		4656	0·221	290·6	345·9	+ 4·7	0	3	
		4656	0·242	303·1	345·8	+ 7·9	0	3	
		4656	0·229	298·8	345·6	+ 6·6	0	7	
		4656	0·194	297·2	343·9	+ 5·4	3	14	
		4656	0·204	309·5	343·1	+ 7·7	0	7	
		4656	0·177	297·1	343·1	+ 4·9	3	11	
		4656	0·160	305·1	341·5	+ 5·6	12	51	
		4656	0·167	311·0	341·3	+ 6·6	0	1	
		4659a	0·876	106·5	274·2	−14·2	6	41	
		4659	0·885	106·7	273·0	−14·6	0	8	
		4659	0·893	105·9	271·9	−14·0	0	4	375c
		4659b	0·916	105·9	268·8	−14·4	5	29	
Dec. 3		Centre			(334·0)	(+0·3)	(42)	(228)	(375)

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

Group 4657, November 29. A small spot.
Group 4658, November 29–December 1. A small spot, *a*, with small distant companions on November 30 and December 1.
Group 4659, December 3–12. A few spots in a straight stream. *a* and *b*, the first and last are the largest. *a* and *b* increase in size up to December 5, when both *a* and *b* are large, *a* being a composite spot and measured in two parts. The group diminishes after this, and *a*, with a few very small companions, alone remains by December 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 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).
1897.				°	°	°			
337·213	AW, CL		0·837	261·1	18·0	− 7·3			165
		4656	0·512	286·6	351·4	+ 8·6	0	4	
I.		4656	0·464	283·3	348·7	+ 6·3	28	74	
		4656	0·466	285·9	348·6	+ 7·5	0	2	
		4656	0·453	287·5	347·6	+ 8·0	0	2	
		4656	0·441	283·1	347·3	+ 5·9	0	5	
		4656	0·442	285·0	347·1	+ 6·7	22	101	
		4656	0·438	289·0	346·4	+ 8·4	0	5	
		4656	0·420	283·9	345·9	+ 6·0	0	2	
		4656	0·427	289·3	345·7	+ 8·3	2	5	
		4656	0·406	282·3	345·2	+ 5·1	5	28	
		4656	0·415	289·6	345·0	+ 8·2	0	5	
		4656	0·406	284·5	345·0	+ 6·0	0	9	
		4656	0·392	282·0	344·3	+ 4·8	0	6	
		4656	0·393	290·2	343·6	+ 8·0	6	23	
		4656	0·375	280·8	343·4	+ 4·2	0	6	
		4656	0·378	291·0	342·6	+ 8·0	0	9	
		4656	0·366	287·0	342·3	+ 6·3	4	31	
		4556	0·356	282·3	342·1	+ 4·6	0	3	
		4656	0·351	285·1	341·6	+ 5·4	12	72	
		4659*a*	0·753	110·0	274·9	−14·8	12	79	
		4659	0·765	109·2	273·7	−14·4	0	8	
		4659	0·775	109·0	272·8	−14·5	7	43	
		4659	0·800	109·0	270·4	−15·0	0	4	} 393*c*
		4659*b*	0·807	108·6	269·7	−14·8	5	32	
		4659	0·819	107·8	268·4	−14·4	1	9	
		4659	0·819	107·0	268·3	−13·7	0	3	
		4660	0·900	79·7	258·2	+ 9·4	0	7	135*f*
			0·958	107·7	249·5	−16·9			230
Dec. 4		Centre			(321·8)	(+0·2)	(104)	(577)	(923)
338·168	AW, M		0·947	262·0	20·0	− 7·5			214
		4656*a*	0·660	279·9	349·9	+ 6·6	101	323	
I.		4656	0·635	279·8	348·0	+ 6·3	6	26	
		4656	0·628	281·3	347·4	+ 7·1	0	4	
		4656	0·627	283·8	347·1	+ 8·6	0	5	
		4656	0·623	280·5	347·1	+ 6·6	0	7	
		4656	0·618	279·2	346·9	+ 5·7	5	35	
		4656	0·596	279·9	345·2	+ 5·9	0	7	
		4656*b*	0·599	283·0	345·1	+ 7·8	21	170	
		4656	0·584	280·3	344·3	+ 6·0	0	5	
		4656	0·564	283·7	342·6	+ 7·7	1	12	
		4656	0·552	277·4	342·4	+ 4·2	1	5	
1897.				°	°	°			
338·168	AW, M	4656	0·555	283·2	342·1	+ 7·3	0	3	
I.		4656*c*	0·547	279·8	341·8	+ 5·4	33	174	
		4659*a*	0·589	115·6	276·0	−14·7	13	61	
		4659*a*	0·605	116·5	275·2	−15·6	9	58	
		4659	0·638	114·6	272·4	−15·3	0	1	
		4659	0·636	113·1	272·2	−14·4	0	2	
		4659	0·653	113·8	271·1	−15·2	0	3	
		4659	0·677	113·4	269·2	−15·5	0	14	
		4659*b*	0·676	112·2	269·0	−14·7	14	97	
		4661*a*	0·959	80·7	236·1	+ 9·0	0	24	335*f*
			0·873	109·2	250·1	−16·6			190
Dec. 5		Centre			(309·2)	(+0·1)	(204)	(1036)	(739)
339·305	CL, AW	4656*a*	0·843	278·2	351·3	+ 7·0	85	418	
		4656	0·818	277·6	348·8	+ 6·3	6	37	
I.		4656	0·814	279·1	348·2	+ 7·4	0	1	
		4656*b*	0·774	279·6	344·4	+ 7·5	32	183	} 655*c*
		4656	0·768	278·1	344·0	+ 6·3	0	3	
		4656*c*	0·746	277·1	342·1	+ 5·4	4	75	
		4656	0·742	278·6	341·7	+ 6·5	0	10	
		4656	0·741	279·5	341·5	+ 7·1	0	3	
		4659*a*	0·390	131·5	276·8	−14·8	21	124	
		4659	0·478	122·3	269·7	−14·6	1	3	
		4659*b*	0·497	121·7	268·5	−15·0	10	82	
		4659	0·510	122·8	268·0	−15·9	0	6	
		4662	0·592	91·9	258·2	− 1·1	0	3	
		4662	0·622	90·7	256·0	− 0·4	0	1	
		4661*a*	0·851	79·2	236·7	+ 9·1	14	45	
		4661	0·861	79·0	235·6	+ 9·5	1	8	} 387*f*
		4661	0·870	78·5	234·6	+10·0	0	10	
		4663*a*	0·995	79·9	210·6	+10·0	0	471	
			0·934	104·0	226·1	−13·0			192
			0·959	85·9	221·0	+ 4·0			205
Dec. 6		Centre			(294·3)	(−0·1)	(174)	(1483)	(1439)
340·314	AW, M	4656*a*	0·945	277·2	351·5	+ 6·7	116	418	
		4656	0·903	276·2	345·2	+ 5·5	0	21	
I.		4656*b*	0·899	277·9	344·6	+ 7·0	17	165	} 1135*c*
		4656	0·892	275·7	343·8	+ 5·0	0	15	
		4656	0·881	276·2	342·4	+ 5·4	1	17	
		4664	0·398	308·1	299·7	+14·0	0	3	
		4659*a*	0·275	168·5	277·8	−15·7	13	82	

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 4660, December 4. A very small spot.
Group 4661, December 5–9. A small spot, *a*, followed by a pair of small companions on December 6. *a* has disappeared by December 9, but several very small spots are seen *f* its place.
Group 4662, December 6–7. Two very small spots on December 6, one on December 7.
Group 4663, December 6–18. A fine large composite spot. *a*, usually with some small companions, *p* Group 4665.
Group 4664, December 7–9. A very small spot on December 7. A few small spots in a short stream on December 8 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 term 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).
1897.				°	°	°			
340·314	AW, M	4659	0·278	161·0	275·6	−15·4	0	6	
I.		4659	0·321	138·5	268·4	−14·0	0	2	
		4659*b*	0·341	141·4	268·3	−15·6	3	27	
		4662	0·425	92·1	256·0	− 1·1	1	2	
		4661*a*	0·698	77·7	237·6	+ 8·4	4	31	188*c*
		4663*a*	0·947	79·3	210·3	+10·1	117	451	
		4665	0·977	79·6	203·8	+10·1	0	22	
		4665	0·990	75·2	199·8	+14·6	0	88	
		4665	0·993	80·3	198·3	+ 9·6	0	379	847*c*
		4665	0·994	74·4	197·7	+15·5	0	84	
		4665	0·996	75·8	196·6	+14·1	0	114	
			0·912	85·3	215·5	+ 4·3			213
Dec. 7		Centre			(281·0)	(−0·2)	(272)	(1927)	(2383)
341·332	CL, AW	4656*a*	0·995	276·6	351·6	+ 6·7	0	409	
I.		4656*b*	0·977	277·5	344·8	+ 7·2	25	138	795*c*
		4664	0·610	292·1	302·8	+12·9	0	12	
		4664	0·595	295·0	301·2	+14·2	0	3	
		4664	0·585	295·9	300·3	+14·4	1	4	
		4659*a*	0·323	214·4	278·4	−15·8	7	53	
		4659	0·323	212·1	277·8	−16·2	1	8	
		4659	0·300	208·8	276·1	−15·6	0	7	
		4659	0·293	209·2	276·0	−15·2	0	3	
		4661*a*	0·513	72·6	238·0	+ 8·5	0	17	
		4663*a*	0·848	77·5	210·4	+10·3	109	424	
		4665	0·902	78·1	203·9	+10·6	11	51	
		4665	0·921	76·4	201·4	+12·3	4	31	
		4665	0·928	73·9	200·5	+14·7	40	153	
		4665	0·927	77·9	200·3	+11·0	16	71	1886*c*
		4665	0·931	79·6	199·6	+ 9·5	61	336	
		4665	0·933	75·1	199·6	+13·7	10	53	
		4665	0·949	74·0	196·9	+15·0	54	352	
		4666	0·980	70·9	190·0	+18·6	0	21	
			0·927	99·3	200·0	− 8·8			353
Dec. 8		Centre			(267·5)	(−0·4)	(339)	(2146)	(3034)
342·173	AW, CL		0·861	256·7	315·0	−11·7			261
		4664	0·753	286·3	303·8	+11·9	0	5	
I.		4664	0·746	286·9	303·1	+12·1	0	1	
		4664	0·719	288·6	300·6	+12·9	0	2	
		4664	0·708	288·9	299·6	+12·9	0	6	
		4659*a*	0·458	233·4	278·8	−16·3	11	51	

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).
1897.				°	°	°			
342·173	AW, CL	4659	0·429	231·4	276·7	−16·0	1	8	
		4661	0·372	65·7	236·5	+ 8·3	0	3	
		4661	0·407	66·2	234·3	+ 9·0	1	6	
		4661	0·417	65·8	233·8	+ 9·3	1	4	
		4661	0·430	66·6	232·9	+ 9·3	0	1	
		4663*a*	0·732	75·7	210·5	+10·0	91	403	
		4665	0·803	76·6	204·0	+10·4	7	45	
		4665	0·816	72·6	203·3	+13·8	0	7	
I.		4665	0·821	73·5	202·7	+13·2	1	7	
		4665	0·824	78·3	201·8	+ 9·3	0	11	
		4665	0·825	77·4	201·7	+10·1	0	8	
		4665	0·834	72·4	201·5	+14·3	27	150	
		4665	0·834	74·9	201·1	+12·3	0	24	
		4665	0·831	79·8	200·9	+ 8·2	0	7	
		4665	0·842	73·8	200·5	+13·3	0	10	
		4665	0·847	72·8	200·0	+14·2	4	22	
		4665	0·844	78·4	199·7	+ 9·5	50	346	
		4665	0·865	74·4	197·8	+13·2	2	12	
		4665	0·870	72·6	197·4	+14·9	33	207	
		4665	0·886	73·9	195·3	+14·0	0	33	
		4665	0·896	72·6	194·2	+15·3	0	5	
		4665	0·896	73·3	194·1	+14·7	0	7	
		4665	0·907	73·2	192·6	+15·0	0	8	
		4666	0·919	69·4	191·4	+18·7	1	12	
		4666	0·921	70·5	190·9	+17·7	0	2	
		4666	0·935	70·5	188·7	+18·0	0	7	842*nf*
			0·839	99·5	199·9	− 8·2			332
			0·956	79·9	184·0	+ 9·5			431
			0·957	98·4	183·6	− 8·2			182
Dec. 9		Centre			(256·4)	(−0·5)	(230)	(1420)	(2048)
343·193	AW, M		0·956	257·4	315·4	−12·2			206
			0·863	285·3	301·4	+12·8			163
I.		4659*a*	0·633	244·7	279·4	−16·2	11	34	
		4659	0·624	243·8	278·6	−16·4	0	1	
		4659	0·623	242·6	278·2	−17·1	0	2	
		4663*a*	0·560	71·4	210·5	+ 9·8	87	380	
		4663	0·614	68·2	207·4	+12·7	1	11	
		4665	0·647	73·2	204·1	+10·3	6	30	
		4665	0·655	74·7	203·3	+ 9·5	0	1	
		4665	0·668	72·7	202·7	+11·0	1	12	
		4665	0·672	74·3	202·1	+10·0	0	10	
		4665	0·693	70·0	201·2	+13·2	76	364	

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 4665, December 7–19. A very large group of unusual breadth and very complicated structure. At first it appears like two straight streams, intersecting each other so as to form a St Andrew's cross, but the group undergoes continual change, and tends to become more condensed.
Group 4666, December 8–10. A few small unstable spots, *nf* Group 4665.

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).
1897.				°	°	°			
343·193	AW, M	4665	0·687	75·4	200·8	+ 9·5	0	9	
		4665	0·696	73·5	200·4	+10·9	11	54	
I.		4665	0·708	76·3	199·0	+ 9·2	38	211	
		4665	0·725	70·3	198·6	+13·7	32	92	
		4665	0·727	71·6	198·2	+12·8	0	5	
		4665	0·737	68·7	197·8	+15·1	5	55	
		4665	0·738	69·6	197·6	+14·4	0	5	
		4665	0·743	71·8	196·8	+13·0	0	16	
		4665	0·748	72·7	196·2	+12·4	0	2	
		4665	0·755	71·4	195·8	+13·5	0	6	
		4665	0·775	69·6	194·4	+15·2	1	10	
		4665	0·780	70·7	193·7	+14·5	0	3	
		4665	0·793	69·8	192·6	+15·5	0	1	
		4666	0·807	65·3	192·2	+19·3	0	1	
		4666	0·813	66·5	191·4	+18·5	1	3	
		4667	0·815	69·7	190·5	+16·0	0	1	
		4667	0·829	70·7	188·9	+15·5	0	8	592*nf*
			0·863	79·1	184·1	+ 9·1			221
Dec. 10		Centre			(243·0)	(−0·6)	(270)	(1327)	(1182)
344·532	AW, M		0·942	268·8	295·6	− 1·4			189
			0·716	248·0	268·9	−16·0			126
		4659*a*	0·830	252·1	280·1	−15·1	6	24	230*f*
		4668*a*	0·143	43·1	219·8	+ 5·3	8	44	
		4668	0·161	50·1	218·3	+ 5·2	0	2	
		4668	0·168	52·8	217·7	+ 5·1	0	3	
		4668	0·174	55·4	217·2	+ 5·0	0	6	
		4668	0·177	61·7	216·4	+ 4·2	0	7	
		4668	0·185	59·9	216·2	+ 4·6	0	5	
		4663*a*	0·307	55·3	210·7	+ 9·3	72	357	
		4663	0·370	52·7	208·0	+ 9·6	0	12	
		4663	0·346	62·7	207·4	+ 8·5	0	5	
		4665	0·395	59·5	205·2	+10·9	0	6	
		4665	0·394	62·5	204·7	+ 9·8	5	21	
		4665	0·418	64·5	203·0	+ 9·7	0	7	
		4665	0·411	70·5	202·5	+ 7·3	2	19	
		4665	0·449	59·8	202·1	+12·4	40	374	
		4665	0·436	68·6	201·3	+ 8·5	0	68	
		4665	0·455	66·9	200·4	+ 9·6	14	120	
		4665	0·442	73·1	200·3	+ 6·7	0	9	
		4665	0·497	57·1	199·9	+15·0	5	46	
		4665	0·485	60·4	199·8	+13·2	32	114	
		4665	0·467	70·7	199·1	+ 8·2	9	59	
1897.				°	°	°			
344·532	AW, M	4665	0·506	59·0	198·9	+14·4	3	60	
		4665	0·505	64·3	197·8	+12·0	2	20	
		4665	0·534	64·0	196·0	+12·9	0	8	
		4665	0·567	62·2	194·3	+14·7	17	106	
		4667	0·638	65·5	188·6	+14·8	0	14	
Dec. 11		Centre			(225·4)	(−0·7)	(215)	(1516)	(545)
345·307	AW, CL		0·814	248·8	267·7	−17·7			169
		4659*a*	0·915	252·7	280·3	−16·2	5	13	224*f*
I.		4668*a*	0·125	320·5	219·7	+ 4·6	4	20	
		4668	0·105	332·2	217·9	+ 4·4	0	1	
		4663	0·158	17·1	212·4	+ 7·7	0	4	
		4663*a*	0·192	22·0	210·9	+ 9·3	60	343	
		4663	0·225	21·7	210·3	+11·1	0	3	
		4663	0·189	30·6	209·5	+ 8·5	0	7	
		4663	0·205	32·9	208·7	+ 9·0	1	7	
		4663	0·210	37·8	207·7	+ 8·6	1	3	
		4665	0·296	24·6	207·8	+14·7	0	4	
		4665	0·256	36·8	206·2	+10·9	0	3	
		4665	0·285	33·5	205·9	+12·8	0	2	
		4665	0·254	42·7	205·1	+ 9·9	3	18	
		4665	0·275	41·9	204·4	+10·9	0	4	
		4665	0·253	53·4	203·3	+ 7·8	1	7	
		4665	0·311	41·7	202·9	+12·5	45	273	
		4665	0·298	46·9	202·4	+10·9	0	53	
		4665	0·282	53·0	202·0	+ 8·9	3	35	
		4665	0·294	50·7	201·8	+ 9·8	0	3	
		4665	0·273	62·6	201·1	+ 6·3	0	3	
		4665	0·311	50·4	201·1	+10·5	12	52	
		4665	0·283	59·4	200·9	+ 7·4	0	1	
		4665	0·355	44·3	200·4	+13·8	61	320	
		4665	0·296	60·2	200·2	+ 7·5	0	2	
		4665	0·311	56·0	200·0	+ 9·1	34	105	
		4665	0·381	41·4	200·0	+15·7	2	19	
		4665	0·362	51·0	198·4	+12·3	0	2	
		4665	0·326	61·9	198·3	+ 8·0	0	1	
		4665	0·377	49·6	198·0	+13·2	0	5	
		4665	0·383	51·7	197·2	+12·8	0	3	
		4665	0·395	52·7	196·4	+13·0	0	1	
		4665	0·415	52·9	195·3	+13·6	0	2	
		4665	0·430	50·9	195·0	+14·9	0	7	
		4665	0·442	49·4	194·8	+15·8	4	35	
		4665	0·452	51·8	193·6	+15·3	4	27	

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 4667, December 10–17. A few small unstable spots, *f* Group 4665. The group is not seen on December 12 and 16.
Group 4668, December 11–13. A few small spots in a straight stream, *sp* Group 4665. *a*, the leader, is the largest, but diminishes very quickly.

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).
1897.				°	°	°			
345·307	AW, CL	4665	0·470	49·8	193·2	+16·8	0	2	
		4665	0·472	51·7	192·5	+16·1	0	1	
I.		4665	0·467	53·5	192·3	+15·3	0	4	
			0·902	99·2	151·1	− 8·7			98
Dec. 12		Centre			(215·1)	(−0·9)	(240)	(1395)	(491)
346·334	AW, M		0·936	251·9	269·5	+16·5			480
		4668*a*	0·326	287·3	219·7	+ 4·6	0	3	
I.		4668	0·291	288·8	217·6	+ 4·4	0	5	
		4663*a*	0·244	318·2	211·0	+ 9·5	63	331	
		4663	0·215	320·2	209·6	+ 8·5	1	14	
		4663	0·207	322·1	209·0	+ 8·4	0	4	
		4663	0·217	326·9	208·5	+ 9·5	0	1	
		4663	0·221	333·5	207·3	+10·4	0	7	
		4665	0·219	344·0	205·1	+11·1	0	3	
		4665	0·241	349·4	204·2	+12·7	43	227	
		4665	0·207	351·6	203·4	+10·8	0	19	
		4665	0·163	349·7	203·3	+ 8·2	0	5	
		4665	0·144	354·7	202·4	+ 7·3	0	6	
		4665	0·214	358·1	202·0	+11·3	0	32	
		4665	0·164	359·3	201·7	+ 8·4	6	56	
		4665	0·241	359·9	201·7	+12·9	48	193	
		4665	0·155	6·2	200·6	+ 7·8	0	5	
		4665	0·185	5·8	200·5	+ 9·6	33	173	
		4665	0·266	4·1	200·5	+14·3	10	102	
		4665	0·239	7·0	199·9	+12·7	3	34	
		4665	0·256	15·3	197·6	+13·3	0	27	
		4665	0·274	16·7	197·0	+14·1	0	4	
		4665	0·297	2·4	194·2	+16·2	0	5	
		4665	0·313	23·6	194·2	+15·6	4	26	
		4667	0·394	41·2	186·0	+16·2	0	5	
Dec. 13		Centre			(201·6)	(−1·0)	(211)	(1287)	(480)
347·487	CL, AW	4663*a*	0·454	294·6	211·2	+ 9·9	61	344	
		4665	0·370	301·6	205·1	+10·1	0	6	
		4665	0·367	302·9	204·7	+10·4	0	5	
		4665	0·386	307·8	204·6	+12·6	33	186	
		4665	0·346	298·0	204·4	+ 8·3	1	6	
		4665	0·350	300·9	204·1	+ 9·3	0	5	
		4665	0·360	306·8	203·5	+11·4	0	8	
		4665	0·345	305·6	203·0	+10·5	0	64	
		4665	0·362	311·8	202·5	+12·8	36	125	
1897.				°	°	°			
347·487	CL, AW	4665	0·326	303·6	202·4	+ 9·3	9	52	
		4665	0·369	315·2	202·0	+14·1	0	12	
		4665	0·335	310·1	201·6	+11·4	5	71	
		4665	0·322	307·2	201·5	+10·2	1	8	
		4665	0·314	305·0	201·5	+ 9·3	4	14	
		4665	0·304	303·1	201·4	+ 8·5	0	10	
		4665	0·352	314·5	201·4	+13·2	0	4	
		4665	0·382	319·7	201·3	+15·8	0	6	
		4665	0·356	317·5	200·8	+14·1	10	72	
		4665	0·300	307·5	200·4	+ 9·5	17	118	
		4665	0·337	315·8	200·4	+12·9	4	39	
		4665	0·319	317·6	199·2	+12·6	0	3	
		4665	0·319	323·1	197·8	+13·7	1	8	
		4665	0·273	319·4	196·9	+10·9	0	4	
		4665	0·316	326·6	196·8	+14·2	0	14	
		4665	0·320	328·3	196·5	+14·7	1	4	
		4665	0·351	335·9	195·1	+17·5	0	5	
		4667	0·301	344·0	191·4	+15·7	0	3	
		4667	0·288	355·0	188·0	+15·6	0	2	
		4669	0·120	23·9	183·7	+ 5·2	0	4	
		4669	0·141	34·2	182·0	+ 5·6	4	14	
			0·931	98·6	118·2	− 8·4			154
Dec. 14		Centre			(186·5)	(−1·1)	(187)	(1216)	(154)
348·448	CL, M		0·899	279·9	237·1	+ 8·4			301
			0·720	275·6	219·5	+ 3·2			153
		4663*a*	0·630	287·2	211·3	+ 9·8	62	343	
		4663	0·597	286·4	209·1	+ 8·7	0	5	
		4665	0·541	287·7	205·1	+ 8·4	1	3	
		4665	0·558	294·3	205·0	+12·3	42	212	
		4665	0·511	288·2	203·6	+13·6	0	10	
		4665	0·530	296·5	203·5	+12·6	46	188	
		4665	0·518	291·6	202·9	+ 9·9	5	97	
		4665	0·522	294·7	202·6	+11·5	2	10	
		4665	0·503	287·5	202·6	+ 7·7	0	7	
		4665	0·534	298·4	202·6	+13·6	0	21	
		4665	0·513	293·0	202·4	+10·5	0	3	
		4665	0·537	301·3	202·1	+15·1	2	9	
		4665	0·507	294·6	201·7	+11·1	6	74	
		4665	0·482	285·2	201·6	+ 6·2	0	9	
		4665	0·483	287·6	201·3	+ 7·3	0	3	
		4665	0·517	299·7	201·2	+13·7	16	92	
		4665	0·480	288·8	201·0	+ 7·8	5	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 4669, December 14–18. A few very small unstable spots, *sf* Group 4665. The group is not seen on December 17.
Groups 4663, 4665, 4666, 4667, 4668 and 4669 make up one grand irregular 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).
1897.				°	°	°			
348·448	CL, M	4665	0·481	291·4	200·7	+ 9·1	37	182	
		4665	0·473	288·3	200·6	+ 7·5	3	8	
		4665	0·501	298·6	200·5	+12·8	5	26	
		4665	0·492	300·1	199·6	+13·2	0	7	
		4665	0·484	302·5	198·6	+14·0	1	7	
		4665	0·487	303·8	198·4	+14·6	0	4	
		4667	0·455	314·3	193·7	+17·3	0	3	
		4667	0·430	312·6	192·9	+15·7	0	5	
		4667	0·420	312·9	192·3	+15·4	0	2	
		4667	0·390	315·4	190·2	+15·0	0	4	
		4667	0·381	318·7	188·9	+15·4	0	5	
		4669	0·229	300·1	185·2	+ 5·4	0	4	
		4669	0·193	308·9	182·4	+ 5·8	0	4	
		4669	0·184	306·1	182·3	+ 5·0	0	3	
		4670*a*	0·966	86·9	99·0	+ 2·7	23	71	304*c*
			0·882	99·3	112·3	− 8·8			146
			0·939	79·1	104·7	+ 9·8			368
			0·942	104·3	104·0	−13·8			123
Dec. 15		Centre			(173·8)	(−1·2)	(256)	(1436)	(1395)
349·259	AW, CL		0·960	277·5	236·3	+ 6·8			244
			0·848	273·7	220·8	+ 2·4			231
I.		4663*a*	0·759	283·2	211·4	+ 9·1	56	322	
		4665	0·690	288·2	204·9	+11·4	93	301	
		4665	0·683	284·7	204·9	+ 8·9	0	1	
		4665	0·672	287·0	203·7	+10·3	1	5	
		4665	0·665	287·5	203·1	+10·4	1	4	
		4665	0·657	285·0	202·9	+ 8·7	6	64	
		4665	0·654	282·6	202·9	+ 7·1	0	1	
		4665	0·658	289·8	202·2	+11·8	20	268	
		4665	0·648	286·0	202·1	+ 9·2	0	2	
		4665	0·649	286·7	202·0	+ 9·6	0	27	
		4665	0·638	281·4	201·9	+ 6·2	0	6	
		4665	0·639	285·7	201·4	+ 8·8	1	6	
		4665	0·624	282·5	200·8	+ 6·7	0	5	
		4665	0·626	285·0	200·6	+ 8·2	32	156	
		4669	0·397	284·7	185·7	+ 4·5	0	3	
		4669	0·385	286·2	184·8	+ 4·8	0	3	
		4669	0·364	287·2	183·4	+ 4·8	0	6	
		4669	0·355	285·9	183·0	+ 4·3	1	6	
		4670*a*	0·904	85·0	98·8	+ 3·9	13	55	359*f*
			0·872	77·1	103·5	+10·5			195

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).
1897.				°	°	°			
349·259	AW, CL		0·942	103·9	93·2	−13·6			55
I.									
Dec. 16		Centre			(163·1)	(−1·4)	(224)	(1241)	(1075)
350·523	AW, M		0·946	275·9	217·0	+ 5·1			84
			0·837	257·9	202·6	−10·9			246
		4663*a*	0·909	281·9	210·8	+10·2	51	304	
		4665	0·866	284·9	205·0	+12·1	45	337	
		4665	0·851	285·7	203·2	+12·5	1	16	
		4665	0·842	280·2	202·9	+ 7·8	0	7	
		4665	0·842	282·3	202·7	+ 9·5	0	8	
		4665	0·844	284·9	202·6	+11·7	0	58	
		4665	0·844	286·8	202·3	+13·3	4	73	
		4665	0·834	283·5	201·7	+10·3	0	7	
		4665	0·831	284·4	201·3	+11·0	0	23	
		4665	0·826	285·7	200·6	+12·0	0	29	
		4665	0·818	281·8	200·3	+ 8·8	19	196	
		4665	0·813	279·5	200·1	+ 6·9	0	9	
		4665	0·814	286·9	199·2	+12·8	0	3	
		4665	0·793	284·1	197·6	+10·2	1	6	944*c*
		4665	0·787	283·1	197·1	+ 9·3	0	3	
		4667	0·771	292·5	194·1	+16·1	5	28	296*f*
		4670*a*	0·728	84·2	100·1	+ 3·2	7	47	
Dec. 17		Centre			(146·4)	(−1·5)	(133)	(1154)	(1570)
351·214	AW CL		0·917	261·4	203·6	− 8·5			225
		4663*a*	0·963	280·1	211·0	+ 9·3	57	298	
		4665	0·936	283·3	205·7	+11·9	42	201	
		4665	0·927	281·6	204·4	+10·1	28	142	
I.		4665	0·923	279·0	204·1	+ 7·7	0	4	
		4665	0·923	283·4	203·6	+11·7	0	5	
		4665	0·918	278·3	203·4	+ 7·0	0	2	
		4665	0·921	283·1	203·4	+11·4	0	16	964*c*
		4665	0·917	284·2	202·7	+12·4	7	72	
		4665	0·914	282·4	202·4	+10·7	0	42	
		4665	0·909	281·0	201·9	+ 9·3	12	44	
		4665	0·908	278·5	201·9	+ 7·0	0	10	
		4665	0·904	283·3	201·0	+11·3	0	9	
		4665	0·899	279·6	200·7	+ 8·0	47	247	
		4665	0·898	281·1	200·4	+ 9·2	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 4670, December 15–24. A regular spot, *a*, with a very small companion on December 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).
1897.				°	°	°			
351·214	AW, CL	4665	0·868	290·3	195·4	+16·6	0	7	
I.		4665	0·864	288·9	195·1	+15·4	6	43	673*c*
		4665	0·838	290·1	192·1	+15·8	6	39	
		4669	0·766	276·9	186·9	+ 4·3	0	7	
		4669	0·762	277·7	186·5	+ 4·8	0	6	139*c*
		4669	0·737	277·7	184·3	+ 4·6	0	1	
		4670*a*	0·609	81·8	100·4	+ 3·7	15	53	
			0·961	80·1	64·1	+ 9·1			149
Dec. 18		Centre			(137·4)	(−1·6)	(220)	(1255)	(2150)
352·298	AW, CL		0·960	269·8	196·6	− 0·7			113
I.			0·949	258·3	194·4	−11·6			193
			0·932	295·7	188·8	+23·1			168
			0·880	277·7	184·2	+ 6·0			329
		4665	0·993	281·2	205·5	+10·9	0	148	
		4665	0·989	277·5	204·0	+ 7·1	0	30	
		4665	0·993	280·0	203·1	+ 9·7	0	87	767*c*
		4665	0·980	278·5	201·0	+ 8·0	60	289	
		4665	0·977	277·0	200·3	+ 6·5	0	30	
		4665	0·962	285·6	196·0	+14·5	29	100	
		4665	0·946	285·2	192·9	+13·8	0	10	792*n*
		4665	0·941	287·7	191·7	+16·0	0	5	
		4670*a*	0·388	77·3	100·9	+ 3·3	8	47	
			0·870	78·9	63·6	+ 8·8			129
			0·938	71·6	55·1	+16·6			58
			0·960	99·9	49·6	−10·0			66
Dec. 19		Centre			(123·1)	(−1·7	(97)	(746)	(2615)
353·200	AW, CL		0·983	286·8	189·5	+16·2			497
I.			0·971	294·0	185·0	+22·7			165
			0·956	277·2	183·6	+ 6·4			296
		4670*a*	0·197	63·3	101·1	+ 3·3	11	50	
		4670	0·211	64·8	100·2	+ 3·3	0	2	
			0·881	99·2	61·6	− 8·9			174
			0·916	113·4	58·2	−22·1			132
Dec. 20		Centre			(111·2)	(−1·8)	(11)	(52)	(1264)
354·252	AW, CL		0·847	280·5	154·3	+ 7·8			140
I.		4670*a*	0·113	317·3	101·7	+ 2·8	15	55	
Dec. 21		Centre			(97·3)	(−2·0)	(15)	(55)	(140)
1897.				°	°	°			
355·535	AW, M	4670*a*	0·375	282·2	101·8	+ 2·6	4	22	
Dec. 22		Centre			(80·4)	(−2·1)	(4)	(22)	(0)
356·192	CL, AW	4670*a*	0·513	277·5	102·3	+ 2·0	3	18	
I.			0·950	96·4	0·1	+ 6·8			184
			0·955	78·4	0·0	+10·4			378
Dec. 23		Centre			(71·8)	(−2·2)	(3)	(18)	(562)
357·193	AW, CL	4670*a*	0·699	274·8	102·5	+ 1·7	0	7	
I.			0·892	94·0	355·5	− 4·6			133
			0·906	72·0	355·5	+15·2			210
			0·896	101·5	355·4	+10·7			153
			0·923	81·3	351·9	+ 7·1			993
Dec. 24		Centre			(58·5)	(−2·3)	(0)	(7)	(1489)
358·289	AW, M		0·940	263·2	114·1	− 7·3			138
I.			0·833	276·2	100·1	+ 3·8			114
			0·771	74·7	355·3	+10·1			215
			0·853	81·6	346·4	+ 5·8			222
			0·889	72·6	343·3	+14·2			160
Dec. 25		Centre			(44·2)	(−2·5)	(0)	(0)	(849)
359·298	AW, CL		0·954	281·9	102·2	+10·5			183
I.			0·941	274·4	100·6	+ 3·2			255
		4671*a*	0·992	74·2	309·2	+15·3	55	226	626*f*
			0·949	99·7	319·3	−10·0			174
Dec. 26		Centre			(30·8)	(−2·6)	(55)	(226)	(1238)
360·332	AW, M		0·906	264·2	312·3	− 6·4			210
I.		4671*a*	0·926	72·8	311·2	+14·8	33	172	774*f*
Dec. 27		Centre			(17·2)	(−2·7)	(33)	(172)	(984)
361·330	CL, M	4671*a*	0·817	70·1	311·8	+14·4	21	151	
I.		4671	0·850	71·1	308·2	+14·4	3	22	
		4671	0·897	70·4	302·7	+16·2	4	15	533*c*
Dec. 28		Centre			(4·1)	(−2·8)	(28)	(188)	(533)

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

Group 4671, 1897 December 26–1898 January 7. A large regular spot, *a*, with occasionally one or two followers.

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).
1897.				°	°	°			
362·200	AW, M		0·899	274·6	56·3	+ 2·9			143
		4671*a*	0·692	66·3	312·1	+13·9	22	153	
I.		4671	0·707	66·4	310·9	+14·3	0	3	494*c*
		4671	0·727	67·1	309·2	+14·3	0	4	
		4671	0·803	67·7	302·3	+15·9	0	11	
			0·961	104·6	278·7	−14·9			222
Dec. 29		Centre			(352·7)	(−2·9)	(22)	(171)	(859)
363·197	AW, CL		0·973	273·4	55·7	+ 2·6			180
		4672	0·517	257·3	10·1	− 9·2	2	7	
I.		4672	0·504	256·6	9·2	− 9·4	0	4	
		4672	0·477	256·0	7·4	− 9·4	0	2	
		4672	0·475	256·4	7·3	− 9·2	0	3	
		4672	0·456	257·1	6·1	− 8·6	0	1	
		4671*a*	0·553	57·4	312·1	+13·9	24	141	
		4671	0·577	59·7	308·7	+14·3	0	1	
		4671	0·586	58·1	308·6	+15·3	0	2	
		4671	0·623	57·1	306·4	+17·2	0	2	
1897.				°	°	°			
363·197	AW, CL	4673*a*	0·947	80·7	269·1	+ 7·8	42	156	
I.		4673	0·955	81·1	267·7	+ 7·5	0	16	480*c*
		4673	0·957	80·7	267·2	+ 8·0	0	18	
			0·873	105·4	279·1	−15·0			161
Dec. 30		Centre			(339·5)	(−3·1)	(68)	(353)	(821)
364·196	AW, M	4672	0·710	260·5	11·4	− 9·0	4	13	
		4672	0·702	260·6	10·7	− 8·9	4	14	
I.		4672	0·693	259·6	9·9	− 9·5	0	1	
		6472	0·674	259·8	8·4	− 9·2	0	6	
		4672	0·670	258·2	8·0	−10·3	1	9	
		4671*a*	0·374	39·9	312·2	+13·5	29	164	
		4671	0·433	42·3	308·9	+15·6	0	2	
		4673*a*	0·854	79·2	268·8	+ 7·5	46	174	644*f*
		4673	0·866	79·6	267·4	+ 7·4	0	18	
			0·762	108·8	277·9	−16·3			139
			0·853	104·7	268·3	−14·2			141
Dec. 31		Centre			(326·4)	(−3·2)	(84)	(401)	(924)

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 4672, 1897 December 30–1898 January 1. A few very small spots in a straight stream.
Group 4673, 1897 December 30–1898 January 10. A large regular spot, *a*, with occasionally a small companion.

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

1897.

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 1897.

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.

Group 4489.

A few small spots in a straight stream *f* Group 4486 on December 25. The group increases on the succeeding days, and consists chiefly, on December 27 and 28, of two large composite spots, *a* and *b*, and a few small spots between them. *a* is measured in two parts on December 29. The group undergoes continual change.

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
1896. d					°	°	°
Dec. 25·270	2	34	1	21	160·1	−14·5	−21·8
26·194	17	106	9	54	162·4	−14·6	− 7·3
27·170	127	573	65	293	163·1	−15·0	+ 6·2
28·208	77	509	43	279	163·8	−14·7	+20·6
29·538	71	321	47	213	165·2	−14·5	+39·5
30·224	29	236	23	187	166·1	−14·1	+49·5
31·435	19	148	23	180	166·4	−14·5	+65·7
1897.							
Jan. 1·502	0	38	0	121	167·9	−13·7	+81·2
Means ...	...	...	26	169	164·38	−14·45	...

Group 4491.

A large regular spot, *a*, usually followed by a few small companions in a straight stream.

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
1896.							
Dec. 29·538	15	72	31	150	49·2	−13·0	−76·5
30·224	23	107	30	140	48·9	−13·0	−67·7
31·435	38	208	32	173	48·0	−13·1	−52·7
1897.							
Jan. 1·502	49	269	32	175	47·9	−12·9	−38·8
2·239	46	299	27	174	47·9	−13·2	−29·0
3·134	58	297	30	157	48·2	−12·8	−17·0
4·204	48	312	25	159	48·5	−13·1	− 2·6
5·326	44	268	23	139	49·1	−12·8	+12·8
6·466	36	199	21	115	49·8	−12·6	+28·5
7·479	19	120	13	82	49·9	−13·0	+41·9
8·277	27	124	22	102	50·1	−13·1	+52·7
9·228	13	82	15	96	50·0	−13·2	+65·0
10·204	0	32	0	70	49·7	−12·6	+77·6
Means ...	...	...	23	133	49·02	−12·95	...

Group. 4492.

A few small unstable spots irregularly scattered. The group is not seen on January 2, 3, or 4.

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
1896. d					°	°	°
Dec. 30·224	6	31	3	17	94·6	−19·7	−22·0
31·435	9	35	5	19	96·5	−19·5	− 4·2
1897.							
Jan. 1·502	7	37	4	20	96·0	−18·8	+9·3
2·239	0	0	0	0	...	...	...
3·134	0	0	0	0	...	...	...
4·204	0	0	0	0	...	...	...
5·326	6	98	6	98	95·6	−19·3	+59·3
6·466	2	29	4	52	95·6	−18·9	+74·3
Means ...	...	...	3	26	95·66	−19·24	...

Group 4493.

A regular spot, *a*, which is broken up into several very small fragments by January 6.

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
1896.							
Dec. 31·435	0	35	0	89	21·8	− 7·8	−78·9
1897.							
Jan. 1·502	14	83	17	100	21·1	− 7·4	−65·6
2·239	27	109	24	96	21·2	− 7·1	−55·7
3·134	31	128	21	89	21·3	− 6·6	−43·9
4·204	17	99	10	57	21·8	− 6·6	−29·3
5·326	17	81	9	42	22·9	− 6·7	−13·4
6·466	6	29	3	14	23·5	− 6·5	+ 2·2
7·479	4	59	2	30	24·8	− 6·3	+16·8
Means ...	...	...	11	65	22·30	− 6·88	...

Group 4494.

Four very small spots.

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
Jan. 1·502	0	27	0	14	111·9	−12·5	+25·2
Means ...	...	...	0	14	111·9	−12·5	...

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

Group 4495.

One very small spot.

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
1897. d					°	°	°
Jan. 1·502	0	7	0	3	95·9	−11·8	+ 9·2
Means ...	...	...	0	3	95·9	−11·8	...

Group 4496.

Two very small spots.

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
Jan. 1·502	1	11	1	7	50·1	− 0·2	−36·6
Means ...	...	...	1	7	50·1	− 0·2	...

Group 4497.

A fine group. The leader, *a*, which has alone appeared by the first day, is a moderately large detached spot *sp* the group; *b* is a very large stable spot at the head of the remainder of the group. Its shape is at first regular, but before it reaches the central meridian, it has developed a marked indentation in its *sf* boundary. It is followed by an irregular swarm of spots, and the group is usually brought up by some spots of considerable size, though, with the exception of *c* from January 4 to 6, and *d* from January 5 to 12, it is impossible to follow any. The central part of the stream is very unstable, and the whole of the following portions of the group has disappeared before the large spot, *b*, has passed behind the western limb.

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
Jan. 3·134	26	130	50	255	349·6	− 8·6	−75·6
4·204	132	1122	189	1652	340·8	− 7·5	−70·3
5·326	313	2585	280	2309	340·3	− 7·4	−56·0
6·466	593	3786	393	2527	340·0	− 7·4	−41·3
7·479	743	4455	416	2516	341·0	− 7·4	−27·0
8·277	1129	5239	589	2743	341·2	− 6·6	−16·2
9·228	847	4656	430	2345	342·4	− 6·6	− 2·6
10·204	674	4408	348	2257	343·4	− 6·7	+11·3
11·190	680	4587	376	2536	343·6	− 6·5	+24·5
12·247	650	3962	419	2542	343·8	− 6·7	+38·6
13·298	474	2795	396	2309	344·1	− 6·3	+52·8
14·227	247	1642	289	1883	343·5	− 5·9	+64·4
15·469	91	662	255	1841	342·7	− 5·9	+80·0
Means ...	...	...	341	2132	342·80	− 6·88	...

Group 4498.

Three small spots.

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
Jan. 11·190	6	35	3	18	324·2	+ 6·3	+ 5·1
Means ...	...	...	3	18	324·2	+ 6·3	...

Group 4499.

A large composite spot, *a*, with several smaller spots, usually *s* or *f*. On January 20 to 22 the companions form a sparse but moderately long stream. On January 23 the group has diminished, and on January 24 one small spot alone remains.

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
1897. d					°	°	°
Jan. 13·298	34	228	91	619	211·0	−19·0	−80·3
14·227	44	330	55	418	212·3	−19·6	−66·8
15·469	78	505	63	410	211·6	−19·4	−51·1
16·212	54	656	37	447	211·7	−19·0	−41·3
17·206	102	576	60	336	211·7	−18·9	−28·2
18·214	99	535	53	284	211·3	−19·1	−15·3
19·188	63	450	32	231	211·1	−19·1	− 2·2
20·198	43	448	23	234	211·2	−18·9	+10·7
21·182	33	418	19	234	210·5	−18·8	+22·9
22·186	34	263	22	165	210·5	−18·5	+36·2
23·213	9	95	7	75	211·6	−18·8	+50·8
24·346	1	9	1	11	212·6	−19·2	+66·8
Means ...	...	...	39	289	211·43	−19·03	...

Group 4500.

A composite spot measured in two parts on January 18.

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
Jan. 14·227	10	53	17	87	206·5	− 8·4	−72·6
15·469	19	89	17	80	206·2	− 8·3	−56·5
16·212	22	118	16	87	206·1	− 7·8	−46·9
17·206	35	142	21	85	206·4	− 7·8	−33·5
18·214	28	100	15	54	206·3	− 8·0	−20·3
19·188	21	72	10	36	206·2	− 8·7	− 7·1
20·198	31	98	16	49	206·4	− 8·6	+ 5·9
21·182	26	70	13	37	206·6	− 8·8	+19·0
22·186	14	48	8	28	206·5	− 8·8	+32·2
23·213	15	37	11	27	206·7	− 8·8	+45·9
24·346	0	14	0	14	207·1	− 8·6	+61·3
Means ...	...	...	131	53	206·45	− 8·42	...

Group 4501.

A few small unstable spots.

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
Jan. 15·469	7	37	4	19	266·5	−11·8	+ 3·8
16·212	15	79	8	41	267·3	−12·2	+14·3
17·206	0	12	0	7	268·6	−12·6	+28·7
18·214	3	23	2	16	267·2	−13·5	+40·6
19·188	12	89	10	74	266·1	−13·0	+52·8
20·198	0	6	0	8	266·1	−13·2	+65·6
Means ...	...	...	4	28	266·97	−12·72	...

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

Group 4502.

A spot, *a*, with a small companion, on January 15, *f* Group 4500. It has considerably diminished by the last day.

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian
1897. d					°	°	°
Jan. 15·469	3	30	4	39	195·1	−10·7	−67·6
16·212	5	26	5	25	194·0	− 9·3	−59·0
17·206	4	28	3	20	194·3	− 9·6	−45·6
18·214	0	9	0	5	194·5	−10·0	−32·1
Means ...	...	...	3	22	194·48	− 9·90	...

Group 4503.

Two very small spots *f* Group 4499.

Jan. 16·212	0	15	0	13	199·0	−18·3	−54·0
Means ...	...	...	0	13	199·0	−18·3	...

Group 4504.

A small spot.

Jan. 17·206	2	14	2	11	290·7	+ 9·5	+50·8
Means ...	...	...	2	11	290·7	+ 9·5	...

Group 4505.

A cluster of small spots that appears suddenly a little north of the centre of the sun's disc. On January 21 *a* has formed at the head of the group, and by the next day *b* at the tail. Both *a* and *b* increase rapidly. On January 26 the whole group, except *b*, has passed round the limb.

Jan. 20·198	19	101	9	51	197·8	+ 8·2	− 2·7
21·182	83	455	44	238	199·4	+ 7·4	+11·8
22·186	131	577	76	330	200·2	+ 6·7	+25·9
23·213	219	1123	146	753	200·4	+ 6·5	+39·6
24·346	153	796	141	725	201·0	+ 6·4	+55·2
25·500	60	522	95	820	201·1	+ 6·9	+70·4
26·476	19	122	43	281	194·3	+ 7·7	+76·5
Means ...	...	...	79	457	199·17	+ 7·11	...

Group 4506.

A small spot.

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
1897. d					°	°	°
Jan. 21·182	5	22	3	12	173·0	−15·3	−14·6
Means ...	...	...	3	12	173·0	−15·3	...

Group 4507.

A few small unstable spots *f* Group 4505.

Jan. 23·213	20	75	11	42	184·9	+ 7·1	+24·1
24·346	0	9	0	6	186·3	+ 7·1	+40·5
25·500	2	8	2	8	189·3	+ 6·5	+58·6
Means ...	...	...	4	19	186·83	+ 6·90	...

Group 4508.

A few small unstable spots *nf* Group 4507.

Jan. 24·346	14	47	8	28	170·6	+12·1	+24·8
25·500	2	8	1	6	168·8	+12·7	+38·1
Means ...	...	...	5	17	169·70	+12·40	...

Group 4509.

Two small spots.

Jan. 25·500	0	12	0	12	80·0	+26·5	−50·7
Means ...	...	...	0	12	80·0	+26·5	...

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

Group 4510.

A large oval-shaped stable spot, *a*, the elongation being perpendicular to the equator, with a few small companions.

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
1897. d					°	°	°
Jan. 25·500	31	182	57	338	57·1	+ 5·5	−73·6
26·476	55	328	57	342	57·4	+ 5·3	−60·4
27·183	57	398	47	323	57·9	+ 5·1	−50·6
28·344	105	540	67	342	57·6	+ 6·1	−35·6
29·213	115	518	65	291	57·9	+ 6·3	−23·9
30·209	90	526	47	273	57·7	+ 5·9	−10·9
31·184	93	541	47	276	57·9	+ 6·0	+ 2·1
Feb. 1·250	70	462	37	246	58·8	+ 5·5	+17·0
2·250	66	418	39	248	58·7	+ 5·9	+30·0
3·298	52	298	38	217	59·5	+ 5·9	+44·6
4·196	30	251	28	238	60·0	+ 5·3	+56·9
Means ...	...	...	48	285	58·23	+ 5·71	...

Group 4511.

Two small spots.

Jan. 26·476	0	21	0	12	90·4	−17·4	−27·4
Means ...	...	...	0	12	90·4	−17·4	...

Group 4512.

Two very small spots.

Jan. 28·344	0	8	0	4	119·3	− 2·5	+26·1
Means ...	...	...	0	4	119·3	− 2·5	...

Group 4513.

A few small spots.

Jan. 28·344	0	13	0	7	83·9	+18·6	− 9·3
29·213	10	62	6	34	86·1	+18·9	+ 4·3
Means ...	...	...	3	22	85·0	+18·75	...

Group 4514.

Three small spots *f* Group 4513.

1897. d					°	°	°
Jan. 28·344	0	22	0	12	76·7	+16·5	−16·5
Means ...	...	...	0	12	76·7	+16·5	...

Group 4515.

Two very small spots.

Jan. 28·344	0	13	0	8	77·5	+24·2	−15·7
Means ...	...	...	0	8	77·5	+24·2	...

Group 4516.

A small spot.

Jan. 28·344	0	10	0	8	43·8	+14·4	−49·4
Means ...	...	...	0	8	43·8	+14·4	...

Group 4517.

When first seen, the group consists of a single very small spot, but it rapidly increases, and by February 1 a large regular spot, *a*, has formed at the head of the group. *a* is followed by an irregular stream of small unstable spots. From February 4 the head and tail of the group are separated by an interval from which the intervening spots have disappeared. The whole group has a forward movement in longitude.

Jan. 28·344	1	7	2	14	17·0	− 3·7	−76·2
29·213	1	7	1	8	18·2	− 3·1	−63·6
30·209	7	41	6	32	17·8	− 3·2	−50·8
31·184	23	153	14	95	18·6	− 3·0	−37·2
Feb. 1·250	81	358	44	188	22·1	− 2·2	−19·7
2·250	101	698	51	350	23·7	− 2·1	− 5·0
3·298	133	718	68	364	24·6	− 2·1	+ 9·7
4·196	104	672	57	369	26·4	− 2·2	+23·3
5·		No	photo	graph			
6·185	74	509	59	407	27·8	− 1·4	+50·9
7·495	39	293	55	411	28·5	− 1·0	+68·9
8·184	21	192	51	466	28·8	− 1·6	+78·2
Means ...	...	...	34	246	23·05	− 2·33	...

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

Group 4518.

A very large spot, *a*, on January 30. By the next day another large spot, *b*, has appeared *sf* spot *a*. On February 1 a third large spot, *c*, is seen to the north of *b*. There are usually a few small companions. *b* has a forward motion in longitude, and on February 11 is the leader of the group.

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
1897. d					°	°	°
Jan. 30·209	38	207	96	521	349·5	− 5·0	−79·1
31·184	107	715	148	975	346·8	− 4·9	−69·0
Feb. 1·250	259	1184	225	1032	346·4	− 4·3	−55·4
2·250	298	1496	198	998	346·7	− 4·9	−42·0
3·298	402	1748	229	992	347·0	− 5·1	−27·9
4·196	375	1711	194	886	347·1	− 5·0	−16·0
5·		No	photo	graph			
6·185	371	1788	191	916	346·9	− 5·1	+10·0
7·495	309	1577	177	899	347·2	− 5·5	+27·6
8·184	291	1308	182	814	347·4	− 6·1	+36·8
9·184	282	1057	220	823	347·8	− 6·1	+50·4
10·203	158	671	177	749	347·8	− 6·1	+63·9
11·204	68	330	135	651	346·6	− 6·2	+75·8
Means ...	...	...	181	855	347·27	− 5·36	...

Group 4519.

A small spot.

Jan. 31·184	15	37	8	19	41·1	+ 4·3	−14·7
Feb. 1·250	9	33	5	17	43·0	+ 4·2	+ 1·2
Means ...	...	...	7	18	42·05	+ 4·25	...

Group 4520.

A triangle of small faint spots, closely following Group 4519.

Jan. 31·184	5	89	3	47	38·3	+ 3·9	− 17·5
Means ...	...	...	3	47	38·3	+ 3·9	...

Group 4521.

A small spot, *a*, which breaks up on February 2 into *b* and *c*.

1897. d					°	°	°
Jan. 31·184	4	21	3	16	4·1	−12·8	−51·7
Feb. 1·250	4	26	3	16	4·6	−12·4	−37·2
2·250	9	45	5	25	3·4	−12·4	−25·3
3·298	4	22	2	12	4·1	−13·0	−10·8
Means ...	...	...	3	17	4·05	−12·65	...

Group 4522.

A small spot *p* Group 4510 on February 1; two small spots on February 2; of which only one remains by February 3.

Feb. 1·250	0	17	0	10	67·0	+ 3·9	+25·2
2·250	2	56	1	36	67·3	+ 3·0	+38·6
3·298	2	9	2	7	66·1	+ 2·2	+51·2
Means ...	...	...	1	18	66·80	+ 3·03	...

Group 4523.

Five small spots in two rows parallel to the equator. By February 3 the group has much increased, and *a*, *b* have formed *np*, *sf* of the group respectively. *a* has greatly increased by the next day, and on February 6 *a* and *b* alone remain. By February 7 *b* has broken up into two parts and considerably diminished. *a* has throughout a forward motion in longitude, while *b* is nearly stationary.

Feb. 2·250	4	79	2	43	35·0	+12·7	+ 6·3
3·298	130	486	74	278	36·7	+13·2	+21·8
4·196	135	652	88	428	38·3	+13·1	+35·2
5·		No	photo	graph			
6·185	37	266	44	319	39·3	+13·8	+62·4
7·495	2	47	4	189	40·6	+13·5	+81·0
Means ...	...	...	42	251	37·98	+13·26	...

Group 4524.

A few straggling spots that appear suddenly considerably west of the central meridian. *a*, the leader, is fairly steady in place and size. *b*, at the tail of the group, is larger than *a* on the first day, but is not seen again.

Feb. 6·185	28	149	18	97	16·4	−10·1	+39·5
7·495	11	61	11	57	18·0	−10·9	+58·4
8·184	4	27	6	35	19·0	−11·8	+68·4
Means ...	...	...	12	63	17·80	−10·93	...

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 4525. A small spot.							
1897. d Feb. 10·203	1	7	1	7	345·3°	−15·2°	+61·4°
Means ...	...	...	1	7	345·3	−15·2	...
Group 4526. A large regular spot, *a*, steady in size, shape, and position. There are usually a few small companions, but they are insignificant except on February 17.							
Feb. 10·203	43	202	77	364	211·1	+ 7·0	−72·8
11·204	50	360	51	371	211·4	+ 6·7	−59·4
12·199	86	467	65	353	210·9	+ 6·9	−46·8
13·192	122	572	75	352	211·1	+ 7·0	−33·5
14·140	122	589	67	324	211·4	+ 7·0	−20·7
15·178	126	685	66	357	211·5	+ 6·6	− 6·9
16·179	137	582	72	303	212·0	+ 6·6	+ 6·8
17·180	137	668	74	366	212·1	+ 6·4	+20·1
18·417	96	488	63	316	212·4	+ 5·9	+36·6
19·179	77	383	59	291	213·0	+ 5·8	+47·3
20·275	62	273	70	305	213·5	+ 6·0	+62·2
21·484	12	100	30	251	213·1	+ 6·2	+77·7
Means ...	...	...	64	329	211·96	+ 6·51	...
Group 4527. Four small spots.							
Feb. 12·199	4	26	4	24	314·1	+ 4·6	+56·4
Means ...	...	...	4	24	314·1	+ 4·6	...
Group 4528. Four small spots.							
Feb. 14·140	6	33	3	19	244·3	+15·9	+12·2
Means ...	...	...	3	19	244·3	+15·9	...
Group 4529. Two small spots.							
1897. d Feb. 16·179	0	13	0	6	202·2°	− 9·4°	− 3·0°
Means ...	...	...	0	6	202·2	− 9·4	...
Group 4530. One small spot.							
Feb. 19·179	0	3	0	2	182·7	−21·2	+17·0
Means ...	...	...	0	2	182·7	−21·2	...
Group 4531. A large double spot, *a*. Two companions, *b* and *c*, appear on February 25, and can be followed for two and three days respectively. *d*, on February 27, is probably a fragment broken off from *a*. On February 28 a cluster of small spots appear *s* of *a*. On subsequent days *a* is seen alone, or with quite insignificant companions.							
Feb. 22·238	31	156	98	492	46·5	+12·3	−79·0
23·475	80	358	96	434	46·0	+12·1	−63·1
24·288	112	574	100	511	45·7	+12·4	−52·8
25·276	177	946	123	658	45·3	+11·9	−40·1
26·516	163	1019	96	594	45·6	+12·0	−23·5
27·432	183	997	99	541	45·4	+11·8	−11·7
28·197	194	972	103	512	45·9	+12·0	− 1·1
Mar. 1·406	95	742	52	410	45·8	+12·1	+14·8
2·412	96	597	58	363	46·0	+12·2	+28·2
3·118	129	565	87	380	46·1	+12·1	+37·6
4·487	70	354	67	340	46·2	+11·9	+55·7
5·420	33	214	48	308	45·5	+12·3	+67·4
6·171	27	111	82	334	46·8	+12·0	+78·6
Means ...	...	...	85	452	45·91	+12·08	...

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

Group 4532.

A large regular spot, *a*, with occasionally a few companions, and a forward motion in longitude. On March 5 Group 4533 passes into this group, and spots, *a*, *b*, of Group 4533 are henceforth lettered *b*, *c* in Group 4532.

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
1897. d					°	°	°
Feb. 23·475	24	102	46	198	34·2	− 0·1	−74·9
24·288	37	190	43	224	33·9	+ 0·2	−64·6
25·276	60	298	48	239	34·3	0·0	−51·1
26·516	70	373	43	230	34·3	− 0·1	−34·8
27·432	72	430	39	235	34·8	− 0·4	−22·3
28·197	106	477	54	245	35·1	− 0·3	−11·9
Mar. 1·406	73	410	37	208	35·2	− 0·4	+ 4·2
2·412	49	399	26	211	35·4	− 0·8	+17·6
3·118	59	322	34	182	35·8	− 0·8	+27·3
4·487	34	264	25	191	36·5	− 0·9	+46·0
5·420	103	593	89	515	32·9	− 2·0	+54·8
6·171	91	457	112	551	33·9	− 2·4	+65·7
7·149	23	174	74	518	36·0	− 2·2	+80·6
Means ...	...	...	52	288	34·79	− 0·78	...

Group 4533.

A cluster of unstable spots *sf* Group 4532 constantly changing in number and position. *a*, the largest, on February 27 rapidly increases, and has a quick motion forward in longitude, and a perceptible motion northwards in latitude. *b* is formed at the tail on March 3. On March 5 the group is merged into Group 4532.

Feb. 24·288	0	10	0	23	20·5	− 4·5	−78·0
25·276	4	26	5	31	20·2	− 4·7	−65·2
26·516	13	78	10	57	21·5	− 6·2	−47·6
27·432	4	38	3	23	24·8	− 5·4	−32·3
28·197	8	60	5	33	24·5	− 5·2	−22·5
Mar. 1·406	8	89	4	45	25·3	− 4·9	− 5·7
2·412	29	261	16	133	25·9	− 4·4	+ 8·1
3·118	101	492	53	262	28·0	− 3·6	+19·5
4·487	58	464	38	305	31·0	− 2·9	+40·5
Means ...	...	...	15	101	24·63	− 4·64	...

Group 4534.

Two very small spots *sf* Group 4533.

Feb. 26·516	0	14	0	12	14·7	− 9·4	−54·4
Means ...	...	...	0	12	14·7	− 9·4	...

Group 4535.

A large regular spot, *a*, occasionally with small companions. *b*, a very small spot, is seen on March 5 and 6 *s* of *a*.

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
1897. d					°	°	°
Feb. 26·516	18	119	56	377	347·6	− 6·7	−81·5
27·432	49	279	66	377	348·1	− 7·4	−69·0
28·197	93	427	90	414	347·6	− 7·0	−59·4
Mar. 1·406	78	508	53	350	347·6	− 7·6	−43·4
2·412	103	472	60	273	347·5	− 7·7	−30·3
3·118	112	537	60	285	347·8	− 7·7	−20·7
4·487	94	481	47	238	348·0	− 8·1	− 2·5
5·420	87	476	44	241	347·6	− 7·8	+ 9·5
6·171	94	469	50	246	347·7	− 8·1	+19·5
7·149	76	393	45	232	347·8	− 8·3	+32·4
8·488	48	291	37	225	347·7	− 8·3	+49·9
9·181	40	181	39	178	348·4	− 8·8	+59·8
10·411	14	103	26	191	347·6	− 8·5	+75·2
Means ...	...	...	52	279	347·77	− 7·85	...

Group 4536.

A large spot, *a*, composite till March 2, subsequently regular, measured in two parts on February 28, with small companions, one of which, *b*, is seen from March 4 to March 9 following and gradually catching up *a*.

Feb. 27·432	15	119	22	174	347·7	+ 2·9	−69·4
28·197	35	166	33	162	348·7	+ 3·5	−58·3
Mar. 1·406	40	245	27	166	350·1	+ 2·9	−40·9
2·412	52	301	29	172	351·5	+ 2·7	−26·3
3·118	60	306	32	161	352·4	+ 2·5	−16·1
4·487	63	376	33	190	353·0	+ 2·4	+ 2·5
5·420	63	304	34	158	353·1	+ 2·2	+15·0
6·171	49	236	27	132	354·0	+ 1·5	+25·8
7·149	42	179	27	116	354·5	+ 1·6	+39·1
8·488	30	124	28	114	354·3	+ 1·7	+56·5
9·181	20	93	25	118	354·9	+ 1·4	+66·3
10·411	5	26	17	90	353·7	+ 1·2	+81·3
Means ...	...	...	28	146	352·33	+ 2·21	...

Group 4537.

A very small spot.

Mar. 3·118	1	4	1	2	355·5	+18·6	−13·0
Means ...	...	...	1	2	355·5	+18·6	...

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

Group 4538.

A small spot.

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
1897. d					°	°	°
Mar. 3·118	0	17	0	9	346·3	−14·8	−22·2
Means ...	...	...	0	9	346·3	−14·8	...

Group 4539.

Two small spots, *a*, *b*. *a* is the leader. *b* has increased by March 6, but is not seen again.

Mar. 5·420	4	31	2	16	335·9	−13·0	− 2·2
6·171	9	51	5	25	336·2	−13·3	+ 8·0
7·149	0	18	0	10	338·2	−13·7	+22·8
Means ...	...	...	2	17	336·77	−13·33	...

Group 4540.

Four very small spots on March 8. One very small spot on March 10. The group is not seen on March 9.

Mar. 8·488	1	27	1	13	295·0	− 2·7	− 2·8
9·181	0	0	0	0	...	...	...
10·411	0	6	0	3	295·7	− 2·4	+23·3
Means ...	...	...	1	5	295·35	− 2·55	...

Group 4541.

Three spots, *a*, *b*, *c*, of which *c*, the last and most northerly, is the largest. *b* has diminished by March 9, and has disappeared by March 10. *a* has diminished by the next day, and from March 12 to 14 *c* remains alone. By March 15 the group has broken up. *d*, from March 15 to 19, is seen *s* of *c*; *e*, from March 15 to 20, *f* of *c*. On March 16 *f* and *g* appear at the head of the group, and last for three and two days respectively. From March 18 *h* is the leader. *c* is the largest spot throughout; it is composite till March 15, and subsequently regular.

Mar. 8·488	21	119	56	319	219·3	+ 5·0	−78·5
9·181	37	223	57	348	218·4	+ 5·3	−70·2
10·411	56	276	49	249	217·6	+ 5·2	−54·8
11·481	54	282	36	194	216·8	+ 5·3	−41·5
12·477	57	310	34	183	216·1	+ 5·3	−29·0
13·196	63	353	35	193	216·3	+ 5·2	−19·4
14·170	74	340	38	175	216·1	+ 5·3	− 6·7
15·590	180	886	93	459	215·7	+ 3·6	+11·6
16·541	167	835	93	470	215·1	+ 3·8	+23·5
17·411	132	700	85	450	217·0	+ 4·3	+36·9
18·474	95	542	80	451	218·0	+ 4·3	+52·0
19·388	45	352	54	423	218·5	+ 4·4	+64·4
20·181	17	143	30	300	219·1	+ 4·3	+75·5
Means ...	...	...	57	324	217·23	+ 4·72	...

Group 4542.

A cluster of small spots. The leader, *a*, is seen alone on March 11. On March 12 to 13 *b* is seen at the end of the group. *a* has greatly increased on the last day. The photosphere appears disturbed on March 8.

1897. d					°	°	°
Mar. 9·181	19	77	10	43	304·9	+ 4·7	+16·3
10·411	19	86	12	54	306·5	+ 5·1	+34·1
11·481	2	27	2	21	307·8	+ 5·1	+49·5
12·477	9	50	10	56	307·4	+ 4·9	+62·3
13·196	12	55	23	101	309·3	+ 4·9	+73·6
Means ...	...	...	11	55	307·18	+ 4·94	...

Group 4543.

A few unstable small spots. The group is not seen on March 11, 12, and 14.

Mar. 9·181	4	19	2	12	259·0	+ 3·7	−29·6
10·411	5	27	2	15	258·7	+ 3·7	−13·7
11·481	0	0	0	0	...	...	...
12·477	0	0	0	0	...	...	...
13·196	0	32	0	18	261·2	+ 3·9	+25·5
14·170	0	0	0	0	...	...	...
15·590	1	28	1	28	262·8	+ 3·5	+58·7
16·541	0	18	0	27	261·6	+ 4·3	+70·0
Means ...	...	...	1	12	260·66	+ 3·82	...

Group 4544.

Two very small spots.

Mar. 10·411	0	11	0	5	281·0	−13·1	+ 8·6
Means ...	...	...	0	5	281·0	−13·1	...

Group 4545.

A very small spot.

Mar. 13·196	0	8	0	7	294·1	− 5·6	+58·4
Means ...	...	...	0	7	294·1	− 5·6	...

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 4546. A very small spot.							
1897. d Mar. 16·541	0	5	0	3	° 203·8	° + 9·4	° +12·2
Means ...	...	...	0	3	203·8	+ 9·4	...
Group 4547. A spot with a small companion that appears suddenly close to the west limb.							
Mar. 17·411	6	43	11	74	253·8	− 4·4	+73·7
Means ...	...	...	11	74	253·8	− 4·4	...
Group 4548. Two very small spots.							
Mar. 17·411	4	18	2	10	168·4	+11·7	−11·7
Means ...	...	...	2	10	168·4	+11·7	...
Group 4549. A large regular spot, *a*, with occasionally a few small companions. *a* diminishes in size and has a forward motion in longitude.							
Mar. 22·227	10	55	22	124	39·2	− 2·4	−77·4
23·467	18	97	18	99	39·6	− 2·6	−60·6
24·435	23	125	17	92	40·0	− 2·3	−47·5
25·430	23	138	14	85	40·2	− 2·1	−34·1
26·654	40	163	21	86	40·6	− 2·1	−17·7
27·528	26	103	13	52	41·3	− 1·8	− 5·4
28·545	33	106	17	54	41·4	− 1·7	+ 8·1
29·193	22	152	11	80	41·4	− 2·1	+16·7
30·469	25	133	16	81	42·7	− 2·0	+34·8
31·185	17	84	12	58	43·2	− 2·0	+44·8
Apr. 1·189	6	29	5	27	43·6	− 2·3	+58·4
Means ...	...	...	15	76	41·20	− 2·13	...

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 4550. A very small spot.							
1897. d Mar. 23·467	0	5	0	6	° 37·5	° +13·7	° −62·7
Means ...	...	...	0	6	37·5	+13·7	...
Group 4551. Several small unstable spots.							
Mar. 24·435	5	59	4	44	43·3	+13·3	−44·2
25·430	8	57	6	35	43·6	+12·6	−30·7
26·654	0	10	0	5	43·2	+11·0	−15·1
Means ...	...	...	3	28	43·37	+12·30	...
Group 4552. A very small spot in a high south latitude.							
Mar. 25·430	0	5	0	3	85·0	−38·4	+10·7
Means ...	...	...	0	3	85·0	−38·4	...
Group 4553. A regular spot, *a*, that diminishes rapidly from April 1, and is not seen on the last day. From April 2 the group consists of a dense cluster of spots, chiefly very small.							
Mar. 26·654	12	72	27	163	340·0	−13·3	−78·3
27·528	27	136	33	166	340·1	−12·8	−66·6
28·545	36	194	29	160	339·9	−12·9	−53·4
29·193	42	191	29	133	339·9	−12·7	−44·8
30·469	39	181	22	102	340·6	−12·6	−27·3
31·185	35	190	19	100	340·5	−12·6	−17·9
Apr. 1·189	33	155	17	79	340·9	−12·5	− 4·3
2·418	54	258	29	133	342·2	−13·1	+13·2
3·202	20	116	12	61	342·5	−12·6	+23·9
4·493	21	81	14	53	341·1	−13·6	+39·5
5·400	2	16	1	13	340·3	−14·0	+50·7
Means ...	...	...	21	106	340·73	−12·97	...

AREAS AND HELIOGRAPHIC POSITIONS OF GROUPS OF SUN SPOTS—*continued.*

Group 4554.

A large stable and regular spot, *a*, occasionally accompanied by a few small companions.

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
1897. d					°	°	°
Mar. 28·545	10	64	22	136	317·5	+ 3·9	−75·8
29·193	22	116	30	158	316·9	+ 4·3	−67·8
30·469	30	171	24	137	317·4	+ 4·5	−50·5
31·185	39	207	26	140	317·3	+ 4·4	−41·1
Apr. 1·189	47	246	27	142	317·7	+ 4·4	−27·5
2·418	49	262	25	135	317·8	+ 4·4	−11·2
3·202	46	253	24	130	318·3	+ 4·2	− 0·3
4·493	35	234	18	125	318·5	+ 3·9	+16·9
5·400	32	204	18	119	319·0	+ 3·9	+29·4
6·449	37	164	26	114	319·1	+ 4·0	+43·3
7·291	26	138	23	121	319·3	+ 3·5	+54·7
8·207	26	110	35	145	319·8	+ 3·7	+67·2
9·406	4	26	16	98	318·8	+ 4·0	+82·1
Means ...	...	...	24	131	318·26	+ 4·08	...

Group 4555.

A number of small unstable spots. On April 1 a spot is seen at some distance *f* the group. After crossing the central meridian, the group begins to spread forward in longitude, and when last seen, is increasing rapidly.

Mar. 31·185	4	22	6	39	283·7	−11·0	−74·7
Apr. 1·189	7	50	7	47	286·6	−11·4	−58·6
2·418	6	43	3	28	288·1	−12·0	−40·9
3·202	2	20	2	11	288·5	−11·7	−30·1
4·493	0	28	0	14	288·4	−11·5	−13·2
5·400	5	29	3	16	286·7	−11·9	− 2·9
6·449	8	39	4	20	288·6	−11·9	+12·8
7·291	4	50	2	29	290·4	−12·1	+25·8
8·207	31	117	21	74	291·1	−11·5	+38·5
9·406	19	101	18	90	293·1	−11·2	+56·4
10·539	14	87	21	142	294·6	−11·3	+72·8
Means ...	...	...	8	46	289·07	−11·59	...

Group 4556.

A large spot, *a*, at first composite, but subsequently regular, occasionally with small companions. *a* has a forward motion in longitude.

Apr. 1·189	0	47	0	193	262·0	− 2·8	−83·2
2·418	13	86	17	110	262·1	− 3·1	−66·9
3·202	31	121	28	110	261·9	− 2·8	−56·7
4·493	32	204	21	132	261·9	− 3·3	−39·7
5·400	29	216	16	122	261·9	− 3·5	−27·7

Group 4556—*continued.*

1897. d					°	°	°
Apr. 6·449	53	231	27	118	262·0	− 3·4	−13·8
7·291	51	244	26	123	262·2	− 3·4	− 2·4
8·207	50	229	26	118	262·6	− 3·1	+10·0
9·406	47	217	26	122	262·6	− 3·3	+25·9
10·539	29	165	19	109	262·6	− 3·3	+40·8
11·558	20	100	18	86	262·9	− 3·1	+54·6
12·234	24	102	27	114	263·1	− 3·5	+63·7
13·266	9	57	21	135	263·8	− 3·6	+78·0
Means ...	...	...	21	122	262·43	− 3·25	...

Group 4557.

A few small spots. The group has considerably increased in size on April 5 and 7.

Apr. 2·418	0	8	0	4	334·3	+ 1·8	+ 5·3
3·202	2	19	1	10	334·4	+ 1·9	+15·8
4·493	6	29	4	19	337·2	+ 1·9	+35·6
5·400	18	62	14	46	336·1	+ 1·8	+46·5
6·449	0	17	0	19	338·9	+ 1·7	+63·1
7·291	10	32	16	55	337·6	+ 1·2	+73·0
Means ...	...	...	6	26	336·42	+ 1·72	...

Group 4558.

A very small spot *n* Group 4557.

Apr. 4·493	0	4	0	2	333·7	+13·8	+32·1
5·400	0	5	0	4	333·7	+14·3	+44·1
Means ...	...	...	0	3	333·70	+14·05	...

Group 4559.

A regular spot, *a*, until April 8. On April 9 it shows signs of breaking up. The group henceforth consists of a fragment of *a*, accompanied on April 10–11 by several, and on other days by one or two, small spots.

Apr. 4·493	4	44	7	73	229·8	+ 4·7	−71·8
5·400	11	82	11	82	230·2	+ 4·5	−59·4
6·449	13	86	10	62	230·6	+ 4·7	−45·2
7·291	22	119	14	73	231·3	+ 5·0	−33·3
8·207	23	154	12	84	232·2	+ 5·6	−20·4
9·406	22	127	12	66	233·2	+ 5·8	− 3·5
10·539	20	86	10	44	233·4	+ 5·3	+11·6
11·558	5	40	3	24	233·9	+ 5·7	+25·6
12·234	9	36	5	23	233·8	+ 6·4	+34·4
13·266	3	17	3	13	234·8	+ 5·5	+49·0
14·607	0	5	0	7	234·7	+ 6·8	+66·6
Means ...	...	...	8	50	232·54	+ 5·45	...

AREAS AND HELIOGRAPHIC POSITIONS OF GROUPS OF SUN SPOTS—*continued.*

Group 4560.

The group consists of one or two very small spots on April 4 and 5. On April 6 a pair of spots, *a*, *b*, are seen. By April 7 there has been a complete transformation, and the group consists of a large spot, *c*, with *d* following, and three other considerable spots, *e*, *f*, *g*, to the north, *f* being the most northerly. By the next day *d* has disappeared and *f* has absorbed *e* and *g*. *f* diminishes rapidly, and has broken up by April 11. The fragments have disappeared by April 14, leaving *c* alone, except for a small companion on April 15. *c* is a large regular spot with a progressive motion in longitude.

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
1897. d					°	°	°
Apr. 4·493	0	8	0	26	221·5	+ 6·4	−80·1
5·400	0	6	0	8	222·9	+ 5·9	−66·7
6·449	28	100	24	89	220·2	+ 3·0	−55·6
7·291	156	756	111	541	220·2	+ 3·6	−44·4
8·207	188	938	112	561	220·8	+ 4·4	−31·8
9·406	201	932	106	488	222·8	+ 2·8	−13·9
10·539	133	872	68	446	224·4	+ 2·4	+ 2·6
11·558	147	763	78	405	225·9	+ 2·7	+17·6
12·234	161	693	92	393	226·7	+ 2·1	+27·3
13·266	143	627	96	423	227·3	+ 2·0	+41·5
14·607	82	409	82	413	227·8	+ 2·4	+59·7
15·428	50	268	76	406	227·6	+ 2·7	+70·4
16·203	42	170	132	534	227·5	+ 2·5	+80·5
Means ...	...	...	75	364	224·28	+ 3·30	...

Group 4561.

A pair of composite spots, *a* and *b*. Both spots have largely increased by April 7, and diminished by April 9. Their distance apart increases rapidly till April 8. Some small spots are seen between *a* and *b* on April 6 and 8.

Apr. 6·449	54	163	33	98	311·1	− 7·1	+35·3
7·291	44	244	32	180	311·9	− 7·6	+47·3
8·207	40	177	37	172	311·9	− 7·5	+59·3
9·406	5	28	8	45	309·6	− 7·5	+72·9
Means ...	...	...	28	124	311·13	− 7·43	...

Group 4562.

A few small unstable spots.

Apr. 8·207	0	9	0	6	212·2	− 4·8	−40·4
9·406	5	34	3	20	211·4	− 5·1	−25·3
10·539	2	16	1	8	212·0	− 5·8	− 9·8
11·558	6	16	3	8	214·4	− 5·4	+ 6·1
12·234	0	19	0	10	212·4	− 5·2	+13·0
Means ...	...	...	1	10	212·48	− 5·26	...

Group 4563.

Several small unstable spots *f* Group 4562.

1897. d					°	°	°
Apr. 9·406	6	36	4	23	198·0	− 7·4	−38·7
10·539	17	83	9	46	197·7	− 7·5	−24·1
11·558	5	58	3	30	198·3	− 6·7	−10·0
12·234	0	24	0	12	198·8	− 6·3	− 0·6
13·266	2	43	1	21	198·7	− 6·5	+12·9
14·607	6	33	3	19	199·2	− 6·1	+31·1
15·428	2	39	2	26	199·4	− 6·1	+42·2
16·203	0	16	0	14	199·6	− 6·5	+52·6
Means ...	...	...	3	24	198·71	− 6·64	...

Group 4564.

Two or three small spots.

Apr. 9·406	0	9	0	16	162·9	− 8·4	−73·8
10·539	3	23	3	23	162·2	− 8·3	−59·6
Means ...	...	...	2	20	162·55	− 8·35	...

Group 4565.

A few small spots *f* Group 4563.

Apr. 10·539	1	9	1	6	181·9	− 4·3	−39·9
11·558	5	27	3	15	183·3	− 4·2	−25·0
12·234	11	48	5	26	184·4	− 4·5	−15·0
13·266	0	11	0	6	185·9	− 5·3	+ 0·1
14·607	2	19	1	10	182·5	− 5·1	+14·4
Means ...	...	...	2	13	183·60	− 4·68	...

Group 4566.

Two or three small spots.

Apr. 17·130	8	44	4	24	155·7	+ 2·3	+20·9
18·222	3	33	2	21	155·8	+ 2·4	+35·4
Means ...	...	...	3	23	155·75	+ 2·35	...

AREAS AND HELIOGRAPHIC POSITIONS OF GROUPS OF SUN SPOTS—*continued.*

Group 4567.

A number of spots, mostly small, in a straight stream; *a*, the leader, increases, and is a large spot by April 21; *b*, the last spot on April 20, has disappeared by April 21.

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
1897. d					°	°	°
Apr. 19·493	31	167	20	110	142·8	+ 6·0	+39·2
20·611	24	158	22	150	145·7	+ 5·6	+56·9
21·368	12	124	18	179	147·8	+ 5·6	+69·0
22·435	6	35	30	171	148·4	+ 5·3	+83·6
Means ...	...	...	23	153	146·18	+ 5·63	...

Group 4568.

A few small spots.

Apr. 19·493	3	7	2	4	110·2	+ 3·1	+ 6·6
20·611	4	35	2	20	109·8	+ 3·5	+21·0
21·368	2	12	1	7	111·0	+ 3·1	+32·2
Means ...	...	...	2	10	110·33	+ 3·23	...

Group 4569.

A faint irregular spot. The group is not seen on April 26 and 27, but it reappears on April 28 as a considerable number of small spots, which rapidly diminish on subsequent days.

Apr. 25·552	0	26	0	19	337·6	+ 5·8	−45·9
26·472	0	0	0	0	...	...	...
27·262	0	0	0	0	...	...	...
28·643	20	83	12	42	332·8	+ 7·5	− 9·9
29·442	9	40	4	20	334·2	+ 7·5	+ 2·0
30·203	2	17	1	9	336·9	+ 7·0	+14·9
Means ...	...	...	3	15	335·38	+ 6·95	...

Group 4570.

A few small spots *f* Group 4569. The group is not seen on April 27.

Apr. 25·552	2	12	2	14	319·9	+ 5·0	−63·6
26·472	3	34	2	28	319·6	+ 4·9	−51·8
27·262	0	0	0	0	...	...	...
28·643	2	10	1	5	319·8	+ 4·8	−22·9
Means ...	...	...	1	12	319·77	+ 4·90	...

Group 4571.

A single spot.

1897. d					°	°	°
Apr. 27·262	3	22	3	22	60·5	+ 3·7	+59·6
Means ...	...	...	3	22	60·5	+ 3·7	...

Group 4572.

A very large irregular composite spot, *a*, increasing rapidly in size till May 4, followed by a swarm of smaller spots variable in size, shape, and position, of which *b* alone can be followed from May 4 to 8.

Apr. 28·643	6	66	22	237	259·9	−13·4	−82·8
29·442	21	172	34	297	258·6	−13·7	−73·6
30·203	50	284	53	302	259·8	−12·9	−62·2
May 1·450	69	414	50	302	259·7	−13·1	−45·9
2·580	114	869	69	517	259·6	−12·9	−31·1
3·482	188	1263	102	684	259·2	−12·7	−19·5
4·432	284	1572	146	806	259·3	−12·4	− 6·9
5·193	265	1591	134	807	259·4	−12·0	+ 3·4
6·514	224	1544	120	834	259·4	−11·5	+20·8
7·225	174	1228	102	718	259·5	−11·6	+30·3
8·143	148	974	102	669	260·3	−11·6	+43·2
9·458	101	625	105	646	260·8	−11·1	+61·1
10·096	62	389	89	561	261·3	−10·9	+70·1
Means ...	...	...	87	568	259·75	−12·29	...

Group 4573.

A large regular spot, *a*, slowly decreasing in size, generally with a few very small companions, and with a fairly steady forward motion in longitude and a slight drift northward.

May 1·450	15	118	30	227	231·1	+ 3·1	−74·5
2·580	31	180	31	181	231·2	+ 3·3	−59·5
3·482	33	245	25	183	231·4	+ 3·3	−47·3
4·432	52	267	32	164	231·7	+ 3·3	−34·5
5·193	58	306	32	169	231·9	+ 3·6	−24·1
6·514	56	302	29	154	232·4	+ 3·7	− 6·2
7·225	50	295	25	149	233·0	+ 3·5	+ 3·8
8·143	40	283	21	149	233·4	+ 3·6	+16·3
9·458	39	245	24	150	233·9	+ 3·9	+34·2
10·096	28	157	19	108	234·4	+ 3·8	+43·2
11·414	10	67	11	71	234·9	+ 4·6	+61·1
12·087	6	44	9	66	235·3	+ 4·2	+70·4
Means ...	...	...	24	148	232·88	+ 3·66	...

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

Group 4574.

A small spot with a rapid forward motion in longitude *s* Group 4573. It has broken up by May 5.

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
1897. d					°	°	°
May 1·450	0	6	0	11	230·2	− 6·0	−75·4
2·580	3	7	3	7	231·6	− 5·8	−59·1
3·482	8	28	6	20	233·0	− 5·9	−45·7
4·432	5	18	3	10	234·0	− 6·2	−32·2
5·193	4	20	2	10	233·9	− 5·7	−22·1
Means ...	...	...	3	12	232·54	− 5·92	...

Group 4575.

A very small spot *nf* Group 4573.

May 4·432	1	5	1	4	217·6	+ 7·0	−48·6
Means ...	...	...	1	4	217·6	+ 7·0	...

Group 4576.

Four spots on May 20, greatly increased in number by the next day. By May 22 an irregular spot, *a*, has formed near the head of the group with a rapid forward motion. On May 24 *a* is seen alone, considerably diminished in size. On May 25 there is a fresh outburst. *a* has continued to diminish, and *b*, just formed near the end of the group, is now the largest spot.

May 20·390	15	70	14	62	359·5	+ 1·6	−55·7
21·405	26	151	17	100	0·0	+ 1·0	−41·6
22·385	37	240	22	136	1·4	+ 1·6	−27·3
23·239	36	222	19	115	2·6	+ 1·9	−14·8
24·536	9	92	5	46	3·9	+ 2·1	+ 3·7
25·450	12	111	7	56	1·8	+ 1·9	+13·6
26·187	6	95	4	52	1·2	+ 1·3	+22·8
27·458	0	4	0	3	5·0	+ 2·0	+43·5
Means ...	...	...	11	71	1·93	+ 1·68	...

Group 4577.

Two spots on May 21, the leader being the largest and composite. On May 22 one spot alone remains. The group is not seen on May 23 and 24, but two small spots have appeared by May 25.

May 21·405	14	50	7	26	24·3	− 0·6	−17·3
22·385	3	19	2	9	26·7	− 1·1	− 2·0
23·239	0	0	0	0	...	...	...
24·536	0	0	0	0	...	...	...
25·450	2	17	1	11	22·4	− 2·5	+34·2
Means ...	...	...	2	9	24·47	− 1·40	...

Group 4578.

A small spot with a very small companion.

1897. d					°	°	°
May 24·536	0	47	0	32	37·6	−22·2	+37·4
Means ...	...	...	0	32	37·6	−22·2	...

Group 4579.

A large regular spot, *a*, generally with a number of small companions, varying from day to day in size and position.

May 25·450	45	187	100	417	271·2	− 9·3	−77·0
26·187	72	311	98	425	269·9	− 9·3	−68·5
27·458	112	487	91	395	270·2	− 9·5	−51·3
28·416	141	715	91	465	270·2	− 9·4	−38·7
29·185	183	676	105	388	270·1	− 9·1	−28·6
30·522	166	848	85	438	270·3	− 9·0	−10·7
31·469	166	858	84	434	270·2	− 9·1	+ 1·7
June 1·172	184	789	94	407	269·9	− 9·0	+10·7
2·223	146	675	81	376	270·1	− 9·1	+24·9
3·258	120	548	78	356	270·6	− 9·1	+39·0
4·630	99	512	93	483	270·9	− 8·6	+57·4
5·707	52	217	82	340	270·3	− 8·7	+71·1
6·202	34	158	86	399	271·1	− 9·1	+78·5
Means ...	...	...	90	409	270·38	− 9·10	...

Group 4580.

A single spot, *a*, diminishing after May 31.

May 27·458	4	19	14	68	239·5	−16·5	−82·0
28·416	7	50	11	76	238·8	−16·5	−70·1
29·185	15	66	15	68	238·4	−16·4	−60·3
30·522	20	108	14	76	238·3	−16·9	−42·7
31·469	17	109	10	66	238·0	−17·1	−30·5
June 1·172	23	98	13	55	237·9	−16·9	−21·3
2·223	16	68	8	36	238·0	−17·2	− 7·2
3·258	18	50	10	26	238·3	−17·0	+ 6·7
4·630	9	31	5	18	238·5	−16·7	+25·0
Means ...	...	...	11	54	238·41	−16·80	...

Group 4581.

A very small spot.

May 31·469	0	6	0	5	218·7	+10·0	−49·8
Means ...	...	...	0	5	218·7	+10·0	...

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 4582. A very small spot.							
1897. d June 9·092	3	11	2	6	° 146·2	° −28·3	° − 88·2
Means ...	...	...	2	6	146·2	−28·3	...
Group 4583. Several irregular spots. *a*, the leader, is the largest, and has a forward motion in longitude. *b* and *c* follow *a*, from which they are separated by a short thin stream of small spots. *b* decreases, and is not seen after June 14. *c* has greatly increased by June 14, but subsequently diminishes. *d* is seen *f a* on June 14 and 15. On June 16 the group consists of *a* and *c* with a large new spot, *e*, between them.							
June 13·447	59	442	39	291	134·2	−16·0	+337·5
14·669	77	426	68	378	134·4	−16·2	+523·8
15·502	39	250	52	331	136·2	−16·3	+666·6
16·474	3	79	6	277	137·8	−15·7	+811·2
Means ...	...	...	41	319	135·65	−16·05	....
Group 4584. A very small spot.							
June 18·123	0	9	0	5	52·0	− 2·5	+17·2
Means ...	...	...	0	5	52·0	− 2·5	....
Group 4585. A very small spot.							
June 20·312	0	6	0	3	4·5	+12·1	− 11·4
Means ...	...	...	0	3	4·5	+12·1	....
Group 4586. A very small spot.							
June 21·466	0	3	0	2	294·2	− 5·4	−56·3
Means ...	...	...	0	2	294·2	− 5·4	...
Group 4587. Two very small spots.							
1897. d June 21·466	2	8	2	9	° 289·8	° −11·9	° −60·7
Means ...	...	...	2	9	289·8	−11·9	...
Group 4588. A large regular spot, *a*, with a small companion, on June 24 and 27.							
June 21·466	12	62	32	169	271·4	− 8·6	−79·1
22·648	34	189	39	219	271·3	− 8·8	−63·7
23·443	36	224	31	192	270·8	− 8·5	−53·6
24·439	57	284	38	189	270·9	− 8·6	−40·3
25·246	61	327	36	193	270·9	− 8·4	−29·6
26·474	44	314	23	163	271·2	− 8·8	−13·0
27·249	52	306	27	156	271·5	− 8·8	− 2·5
28·538	43	281	23	147	271·7	− 8·9	+14·7
29·702	33	224	19	132	271·5	− 8·6	+30·0
30·482	36	193	24	130	271·7	− 8·5	+40·5
July 1·480	23	147	20	127	271·8	− 8·5	+53·7
2·248	18	111	21	131	271·7	− 8·8	+63·8
3·319	9	56	24	147	272·2	− 8·9	+78·5
Means ...	...	...	27	161	271·43	− 8·67	...
Group 4589. A few small unstable spots.							
June 22·648	0	41	0	20	344·5	+ 8·8	+ 9·5
23·443	12	60	6	32	345·4	+ 9·2	+21·0
24·439	1	21	1	13	345·8	+ 9·2	+34·6
25·246	3	20	3	14	348·2	+ 9·2	+47·7
26·474	0	25	0	28	347·9	+ 9·3	+63·7
27·249	0	2	0	5	351·8	+ 9·2	+77·8
Means ...	...	...	2	19	347·27	+ 9·15	...
Group 4590. A large irregular spot, *a*. On June 29 three nearly equal smaller spots, *b*, *c*, and *d*, are seen following *a*. *b* is not seen again. *c* has broken into two parts by July 1, and then disappears. *d* has broken into two parts by the next day, after which *a* remains alone or with small companions only. On July 7 *a* appears composite, and subsequently diminishes rapidly.							
June 28·538	4	104	11	267	178·3	− 3·5	−78·7
29·702	36	255	41	293	177·4	− 3·4	−64·1
30·482	59	405	52	350	176·9	− 3·3	−54·3

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

Group 4590—*continued.*

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
1897. d					°	°	°
July 1·480	68	405	45	267	177·6	− 3·3	−40·5
2·248	79	482	45	283	177·7	− 2·9	−30·2
3·319	67	422	35	220	178·2	− 3·3	−15·5
4·495	63	370	32	186	179·4	− 4·1	+ 1·2
5·212	60	326	31	169	180·3	− 4·3	+11·7
6·522	37	260	21	151	180·3	− 4·4	+29·0
7·395	29	186	20	123	180·5	− 4·0	+40·7
8·413	21	116	19	102	181·2	− 3·9	+54·9
9·628	11	55	16	84	181·1	− 3·8	+70·9
10·391	0	14	0	47	181·0	− 3·6	+80·9
Means ...	...	...	28	196	179·22	− 3·68	...

Group 4591.

Two small spots.

June 30·482	0	26	0	14	216·9	− 0·9	−14·3
Means ...	...	...	0	14	216·9	− 0·9	...

Group 4592.

A large regular spot, *a*, with a small companion on July 8.

July 3·319	9	44	24	117	115·3	−10·3	−78·4
4·495	19	110	21	124	115·8	−10·9	−62·4
5·212	26	144	22	124	116·2	−11·0	−52·4
6·522	25	190	16	121	115·5	−10·9	−35·8
7·395	33	185	19	105	115·7	−10·9	−24·1
8·413	29	194	15	101	116·2	−10·8	−10·1
9·628	29	208	15	108	116·1	−10·8	+ 5·9
10·391	32	207	17	111	116·2	−11·0	+16·1
11·450	19	208	11	126	116·1	−11·1	+30·0
12·250	16	140	11	96	116·2	−11·3	+40·7
13·398	14	81	13	75	116·1	−11·3	+55·8
14·415	11	29	16	44	115·7	−11·3	+68·9
Means ...	...	...	17	104	115·93	−10·97	...

Group 4593.

Two very small spots on July 7. By July 8 the group has considerably increased, and consists principally of two pairs of spots. By July 9 the leading pair have coalesced, and the hinder spots have broken up. There is a further diminution by July 10.

July 7·395	5	18	3	10	155·7	−13·2	+15·9
8·413	22	154	14	94	156·3	−12·9	+30·0
9·628	12	67	10	51	157·4	−12·7	+47·2
10·391	4	17	4	18	159·8	−12·4	+59·7
Means ...	...	...	8	43	157·30	−12·80	...

Group 4594.

A large irregular spot, *a*, breaking up into *b* and *c* by July 9. *b*, the larger and following fragment, is composite. By July 15 *c* alone is left. The group diminishes throughout.

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
1897. d					°	°	°
July 7·395	17	111	32	211	65·5	− 5·6	−74·3
8·413	27	171	28	176	66·0	− 5·6	−60·3
9·628	44	252	32	179	66·1	− 5·8	−44·1
10·391	55	243	33	148	66·2	− 5·7	−33·9
11·450	55	213	29	115	66·1	− 5·4	−20·0
12·250	42	180	22	94	66·3	− 5·8	− 9·2
13·398	35	141	18	72	67·0	− 5·5	+ 6·7
14·415	32	120	17	65	67·3	− 5·6	+20·5
15·399	19	95	12	58	67·5	− 5·5	+33·7
16·398	5	47	4	36	67·8	− 5·6	+47·2
17·226	0	7	0	6	67·3	− 6·2	+57·7
Means ...	...	...	21	105	66·65	− 5·66	...

Group 4595.

Two very small spots on July 13. The group has largely increased by the next day, *a* being formed near the head of the group. *a* has largely increased by July 15.

July 13·398	1	6	1	4	98·7	−11·8	+38·4
14·415	25	88	21	75	98·6	−11·3	+51·8
15·399	17	136	23	188	101·2	−11·0	+67·4
Means ...	...	...	15	89	99·50	−11·37	...

Group 4596.

A few small spots. The group is not seen on July 14.

July 13·398	4	24	3	13	88·4	+ 7·6	+28·1
14·415	0	0	0	0	...	...	...
15·399	5	38	4	30	85·6	+ 7·9	+51·8
16·398	0	13	0	17	89·7	+ 7·9	+69·1
Means ...	...	...	2	15	87·90	+ 7·80	...

Group 4597.

A very small spot.

July 13·398	1	9	1	5	57·3	− 5·1	− 3·0
Means ...	...	...	1	5	57·3	− 5·1	...

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

Group 4598.

A few unstable small spots.

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
1897. d					°	°	°
July 13·398	0	2	0	2	5·0	− 5·3	−55·3
14·415	7	52	5	36	4·2	− 5·2	−42·6
15·399	5	40	3	23	5·6	− 5·1	−28·2
16·398	0	23	0	12	4·0	− 5·1	−16·6
17·226	12	77	6	40	5·2	− 5·2	− 4·4
18·511	22	110	11	58	7·9	− 5·2	+15·2
19·128	15	70	9	40	8·1	− 5·7	+23·6
Means ...	...	...	5	30	5·71	− 5·26	...

Group 4599.

A single spot, *a*, rapidly diminishing in size.

July 18·511	0	23	0	83	271·5	− 9·4	−81·2
19·128	8	36	14	66	271·4	− 9·1	−73·1
20·417	6	40	6	36	272·2	− 9·7	−55·2
21·141	4	25	3	19	271·7	− 9·2	−46·1
Means ...	...	...	6	51	271·70	− 9·35	...

Group 4600.

A large spot, *a*, without companions until July 27, after which it begins to break up.

July 20·417	12	100	28	245	248·2	+14·3	−79·2
21·141	23	147	32	207	247·9	+14·5	−69·9
22·218	45	224	40	198	247·7	+14·4	−55·9
23·443	69	257	33	167	247·6	+13·8	−39·8
24·460	47	273	27	153	247·6	+13·7	−26·3
25·462	48	278	25	143	247·6	+13·7	−13·1
26·328	40	313	20	158	247·9	+13·7	− 1·4
27·648	42	218	22	113	247·9	+13·9	+16·1
28·248	46	213	26	118	248·1	+13·7	+24·3
29·187	44	221	27	139	248·2	+13·3	+36·8
30·432	38	141	32	147	248·4	+13·7	+53·4
31·423	13	63	15	76	248·2	+14·3	+66·3
Aug. 1·500	4	25	11	65	247·6	+14·3	+80·0
Means ...	...	...	27	146	247·92	+13·95	...

Group 4601.

Two large spots, *a* and *b*, *a* being the leader. On July 23 *c* appears *f* *a*, and *d* *s* of *b*. *c* and *d* increase in size, and by July 26 *c* has coalesced with *a*. *d* is not seen after this date, nor *b* after July 28. All the spots are irregular at first, but latterly *a* tends to assume a more regular shape.

1897. d					°	°	°
July 21·141	2	29	3	36	253·0	− 8·1	−64·8
22·218	99	438	82	356	253·0	− 7·6	−50·6
23·443	117	752	80	473	252·6	− 8·1	−34·8
24·460	143	739	79	409	252·4	− 8·0	−21·5
25·462	174	1048	90	541	253·3	− 8·4	− 7·4
26·328	102	1099	52	572	253·9	− 8·7	+ 4·6
27·648	99	642	56	363	255·8	− 8·8	+24·0
28·248	105	601	64	370	256·6	− 9·3	+32·8
29·187	70	417	54	319	258·0	− 9·8	+46·6
30·432	43	273	51	322	258·4	− 9·5	+63·4
31·423	27	109	63	250	258·1	− 9·7	+76·2
Means ...	...	...	61	365	255·01	− 8·73	...

Group 4602.

A very small spot.

July 24·460	0	1	0	1	205·9	+ 7·8	−68·0
Means ...	...	...	0	1	205·9	+ 7·8	...

Group 4603.

A few small spots.

July 29·187	0	32	0	17	198·9	+ 8·5	−12·5
30·432	9	47	4	24	202·0	+ 8·1	+ 7·0
31·423	5	45	3	24	201·7	+ 8·0	+19·8
Means ...	...	...	2	22	200·87	+ 8·20	...

Group 4604.

A small spot on July 31. Two considerable spots on August 1, of which the leader alone remains by the next day. A few small spots on August 3.

July 31·423	4	14	4	15	119·5	− 9·0	−62·4
Aug. 1·500	29	155	23	121	119·3	− 8·9	−48·3
2·455	18	126	11	78	122·2	− 8·8	−32·8
3·452	6	39	3	21	122·4	− 8·4	−19·4
Means ...	...	...	10	59	120·85	− 8·78	...

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

Group 4605.

A very large but somewhat irregular spot, *a*, accompanied and followed by a large number of small companions. The group, which is of considerable length, is brought up by three considerable spots, *b*, *c*, and *d*. *d* diminishes rapidly, and is not seen after August 5. *b* has broken into two on August 7, of which only one portion is seen again and that but once. *c* lasts until August 9. Subsequently the group contracts rapidly in length, and as the west limb is approached, the leader, *a*, is seen alone.

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
1897. d					°	°	°
Aug. 2·455	9	107	43	512	71·6	− 5·8	−83·4
3·452	74	550	159	1201	65·9	− 5·9	−75·9
4·406	139	939	149	1049	67·0	− 5·7	−62·2
5·400	181	1383	140	1081	67·4	− 5·6	−48·6
6·416	217	1557	137	982	67·6	− 5·7	−35·0
7·429	268	1815	149	998	67·9	− 5·5	−21·3
8·641	238	1674	122	861	68·2	− 5·3	− 5·1
9·464	232	1434	119	738	68·4	− 5·3	+ 6·1
10·472	198	1188	108	647	69·0	− 5·1	+20·0
11·672	141	1064	90	679	68·8	− 5·3	+35·7
12·428	131	1007	98	749	68·8	− 5·7	+45·7
13·200	109	763	101	709	68·9	− 5·7	+56·0
14·478	63	348	111	610	68·4	− 5·6	+72·4
15·188	10	162	38	618	68·4	− 5·6	+81·8
Means ...	...	...	112	817	68·31	− 5·56	...

Group 4606.

A spot, *a*, at first large, but diminishing steadily throughout. A small companion is seen near *a* on August 6 and 8.

Aug. 5·400	9	54	19	110	42·5	−14·8	−73·5
6·416	9	71	10	79	42·6	−14·9	−60·0
7·429	11	98	9	78	42·4	−15·1	−46·8
8·641	14	96	9	61	41·6	−15·2	−31·7
9·464	20	64	11	37	41·9	−15·4	−20·4
10·472	17	51	9	28	42·1	−15·3	− 6·9
11·672	5	24	3	13	42·1	−15·3	+ 9·0
12·428	5	22	3	13	42·2	−15·3	+19·1
Means ...	...	...	9	52	42·18	−15·16	...

Group 4607.

A few small spots *f* Group 4605.

Aug. 6·416	1	10	1	8	55·2	− 9·5	−47·4
7·429	5	59	3	36	56·9	− 9·7	−32·3
8·641	13	34	7	19	59·0	− 9·5	−14·3
9·464	0	20	0	11	57·9	− 9·6	− 4·4
10·472	0	6	0	3	53·4	− 8·1	+ 4·4
11·672	1	12	1	9	56·6	− 8·9	+23·5
Means ...	...	...	2	14	56·50	− 9·22	...

Group 4608.

One or two small spots.

1897. d					°	°	°
Aug. 10·472	0	10	0	14	338·3	+20·2	−70·7
11·672	2	18	2	16	336·6	+20·7	−56·5
Means ...	...	...	1	15	337·45	+20·45	...

Group 4609.

A number of spots, many of considerable size, arranged in two parallel rows inclined to the equator. *a*, the leader, is formed by August 13, and has greatly increased by the next day, but subsequently diminishes.

Aug. 12·428	34	150	19	81	37·3	− 8·6	+14·2
13·200	49	251	28	144	37·8	− 8·1	+24·9
14·478	57	380	41	272	39·0	− 7·8	+43·0
15·188	24	156	22	137	39·7	− 7·9	+53·1
16·418	12	64	19	102	40·6	− 8·5	+70·2
Means ...	...	...	26	147	38·88	− 8·18	...

Group 4610.

A small spot.

Aug. 14·478	3	17	3	15	300·5	− 2·8	−55·5
Means ...	...	...	3	15	300·5	− 2·8	...

Group 4611.

A large regular spot, *a*, with occasionally a small companion.

Aug. 16·418	11	79	20	138	258·4	− 8·0	−72·0
17·205	14	114	16	129	257·7	− 7·9	−62·3
18·430	27	177	20	130	258·3	− 7·3	−45·5
19·523	35	216	21	130	258·4	− 7·3	−31·0
20·199	41	220	23	123	258·3	− 7·3	−22·1
21·440	37	278	19	144	258·7	− 7·1	− 5·3
22·260	41	232	21	120	258·9	− 7·1	+ 5·8
23·535	32	194	18	109	258·9	− 7·0	+22·6
24·199	26	182	16	111	259·5	− 7·1	+31·9
25·186	36	138	27	101	259·0	− 7·1	+44·5
26·394	12	68	13	74	259·6	− 7·0	+61·0
27·397	5	40	9	79	259·5	− 6·8	+74·1
Means ...	...	...	19	116	258·77	− 7·25	...

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

Group 4612.

Several small spots *sf* Group 4611. On August 23 two small spots only.

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
1897. d					°	°	°
Aug. 22·260	9	39	5	23	237·1	−15·4	−16·0
23·535	3	17	2	9	235·9	−14·6	− 0·4
Means ...	...	...	2	16	236·50	−15·00	...

Group 4613.

A pair of small spots.

Aug. 24·199	8	56	4	28	221·2	+ 8·7	− 6·4
25·186	11	55	6	28	221·5	+ 8·6	+ 7·0
Means ...	...	...	5	28	221·35	+ 8·65	...

Group 4614.

A few very small spots in an irregular stream. The last spot, *a*, is the most stable. *a* alone remains, by August 29, when it has divided to form a close pair.

Aug. 27·397	6	40	3	21	192·6	+10·3	+ 7·2
28·443	14	52	8	28	192·8	+ 9·5	+21·3
29·289	9	43	5	26	191·5	+ 9·3	+31·1
Means ...	...	...	5	25	192·30	+9·70	...

Group 4615.

A large regular spot, *a*, with a number of small companions. *a* remains alone by September 4.

Aug. 30·468	26	188	47	342	71·6	− 6·1	−73·2
31·455	36	265	38	285	70·5	− 5·1	−61·2
Sept. 1·176	50	251	41	206	70·8	− 4·9	−51·4
2·448	57	304	37	190	70·5	− 5·2	−34·9
3·516	54	317	29	174	71·1	− 5·2	−20·2
4·296	77	366	40	191	70·7	− 4·8	−10·3
5·131	67	342	34	176	70·8	− 5·1	+ 0·8
6·603	62	299	34	164	71·1	− 5·4	+20·5
7·285	60	289	36	172	70·9	− 6·0	+29·4
8·277	51	235	36	164	70·8	− 6·3	+42·4
9·219	37	167	33	151	71·0	− 6·6	+55·0
10·445	20	99	32	162	71·1	− 5·9	+71·3
11·382	0	25	0	108	70·1	− 5·7	+82·7
Means ...	...	...	34	191	70·85	− 5·56	...

Group 4616.

Three very small faint spots.

1897. d					°	°	°
Aug. 31·455	1	24	1	13	144·3	+ 5·1	+12·6
Means ...	...	...	1	13	144·3	+ 5·1	...

Group 4617.

A spot, *a*, which soon becomes large, and which is regular in outline except in the *sf* direction, where the outline is broken, and where it is followed by a short stream of small spots. *a* has broken up into a close irregular cluster by September 9.

Aug. 31·455	0	21	0	79	47·6	+15·0	−84·1
Sept. 1·176	6	37	10	63	47·8	+15·3	−74·4
2·448	21	106	19	97	48·1	+14·3	−57·3
3·516	38	220	26	150	48·9	+14·4	−42·4
4·296	59	285	35	169	49·2	+15·0	−31·8
5·131	47	321	25	171	49·8	+14·8	−20·2
6·603	64	361	32	181	50·6	+14·8	0·0
7·285	60	263	31	135	51·4	+15·0	+ 9·9
8·277	49	246	27	135	51·9	+14·9	+23·5
9·219	46	340	28	213	52·2	+15·5	+36·2
10·445	43	208	36	167	52·5	+15·5	+52·7
11·382	14	75	16	88	52·9	+15·2	+65·5
12·260	4	34	9	73	53·6	+13·6	+77·7
Means ...	...	...	22	132	50·50	+14·87	...

Group 4618.

A number of small spots in a straight stream. The centre spots of the group have disappeared by September 3.

Sept. 1·176	15	75	11	50	84·0	− 9·1	−38·2
2·448	15	59	8	32	84·9	− 9·9	−20·5
3·516	7	34	3	17	87·3	− 9·5	− 4·0
Means ...	...	...	7	33	85·40	− 9·50	...

Group 4619.

A number of spots in a fine stream, *a* and *b*, near the beginning and end of the group are large composite spots, *a* being much the larger of the two. *a* has broken up by September 10 into a pair of parallel straight streams of spots. The spots composing these two streams enter into fresh combinations with each other on the succeeding days. Three of the principal spots broken off from *a* are lettered *c*, *d*, and *e*.

Sept. 2·448	3	32	5	53	35·2	−11·5	−70·2
3·516	81	520	88	555	31·9	−10·9	−59·4
4·296	228	1179	188	975	31·2	−10·2	−49·8

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

Group 4619—*continued.*

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
1897. d					°	°	°
Sept. 5·131	258	1338	174	905	32·2	−10·0	−37·8
6·603	342	1705	188	938	34·2	−10·8	−16·4
7·285	297	1542	159	830	33·8	−10·6	− 7·7
8·277	276	1454	147	778	35·0	−10·6	+ 6·6
9·219	244	1319	139	743	35·7	−10·5	+19·7
10·445	201	1052	135	702	38·8	− 9·9	+39·0
11·382	134	807	114	680	38·4	− 9·6	+51·0
12·260	74	450	93	554	39·9	−10·5	+64·0
13·323	31	211	89	530	39·9	−10·7	+78·1
Means ...	...	...	127	687	35·52	−10·48	...

Group 4620.

A number of spots in a straight stream forming *p* Group 4615, and in the same straight line with it. Of the three principal spots, *a*, *b*, and *c*, *b* has become merged into *a* by September 8.

Sept. 3·516	25	118	14	61	79·8	− 3·7	−11·5
4·296	84	480	44	245	80·2	− 3·7	− 0·8
5·131	143	653	74	342	81·5	− 3·4	+11·5
6·603	108	541	65	326	83·0	− 3·3	+32·4
7·285	101	424	69	292	83·3	− 3·9	+41·8
8·277	67	306	61	276	83·5	− 4·2	+55·1
9·219	14	172	20	246	84·7	− 4·0	+68·7
Means ...	...	...	50	255	82·29	− 3·74	...

Group 4621.

A pair of very small spots on September 3. The group is not seen on September 4, but a fresh outbreak some distance *f* the first has occurred by September 5, and the group soon consists of a straight but sparse stream. The spots in the centre of the group diminish, and the group consists by September 10 chiefly of two widely separated spots, *a* and *b*.

Sept. 3·516	0	4	0	5	24·1	− 6·9	−67·2
4·296	0	0	0	0	...	...	...
5·131	0	24	0	21	16·3	− 6·3	−53·7
6·603	42	157	26	96	18·3	− 6·8	−32·3
7·285	26	157	14	89	18·6	− 6·2	−22·9
8·277	76	395	41	208	19·2	− 7·0	− 9·2
9·219	52	375	27	197	20·3	− 7·5	+ 4·3
10·445	53	302	29	170	22·1	− 7·3	+22·3
11·382	36	166	23	109	25·3	− 6·3	+37·9
12·260	29	127	25	106	27·0	− 6·9	+51·1
13·323	24	81	32	105	28·0	− 6·8	+66·2
14·436	2	6	3	10	18·3	− 8·9	+71·2
Means ...	...	...	18	93	21·59	− 6·99	...

Group 4622.

A few small unstable spots.

1897. d					°	°	°
Sept. 5·131	3	51	2	27	65·6	− 6·7	− 4·4
6·603	5	33	3	18	67·5	− 9·0	+16·9
7·285	0	2	0	1	67·8	− 8·3	+26·3
Means ...	...	...	2	15	66·97	− 8·00	...

Group 4623.

Two small spots.

Sept. 12·260	2	24	2	23	34·4	+12·9	+58·5
13·323	7	25	9	35	31·4	+12·3	+69·6
Means ...	...	...	6	29	32·9	+12·6	...

Group 4624.

A few small faint unstable spots irregularly arranged.

Sept. 13·323	2	20	2	19	261·7	+17·9	−60·1
14·436	8	47	6	33	262·8	+17·7	−44·3
Means ...	...	...	4	26	262·25	+17·80	...

Group 4625.

A small dark spot with two very small companions.

Sept. 14·436	7	34	4	17	295·2	− 7·9	−11·9
Means ...	...	...	4	17	295·2	− 7·9	...

Group 4626.

A large spot, *a*, which rapidly diminishes from day to day, and which has broken up by September 20.

Sept. 15·289	11	83	26	196	217·1	+10·5	−78·8
16·185	21	98	25	117	218·2	+10·6	−65·9
17·447	14	113	11	85	218·1	+10·2	−49·3
18·447	23	92	14	57	217·9	+10·1	−36·3
19·485	9	39	5	21	218·1	+10·3	−22·4
20·599	17	55	9	28	218·9	+10·4	− 6·9
21·513	10	87	5	44	218·1	+10·1	+ 4·4
22·300	0	50	0	26	218·6	+10·1	+15·3
23·396	0	22	0	12	219·3	+10·8	+30·4
Means ...	...	...	11	65	218·26	+10·44	...

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

Group 4627.

A few small faint unstable spots.

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
1897. d					°	°	°
Sept. 18·447	6	36	4	23	284·5	−12·9	+30·3
19·485	3	14	2	11	286·8	−10·4	+46·3
Means ...	...	...	3	17	285·65	−11·65	...

Group 4628.

A few small faint unstable spots.

Sept. 18·447	3	17	2	9	235·5	−16·7	−18·7
19·485	9	33	5	18	237·1	−16·2	− 3·4
20·599	19	74	11	42	238·7	−16·1	+12·9
21·513	9	35	6	21	238·7	−16·2	+25·0
Means ...	...	...	6	23	237·50	−16·30	...

Group 4629.

A few very small faint spots.

Sept. 19·485	0	14	0	7	236·5	+ 4·2	− 4·0
Means ...	...	...	0	7	236·5	+ 4·2	...

Group 4630.

A stream of spots appearing suddenly. *a*, the leader, is the largest, and soon becomes regular in shape. The following spots have disappeared by September 25. *a* has divided into two parts by September 29.

Sept. 20·599	68	396	46	269	186·0	− 8·4	−39·8
21·513	66	390	40	229	185·8	− 8·4	−27·9
22·300	60	349	33	190	186·2	− 8·0	−17·1
23·396	54	362	28	187	187·2	− 7·9	− 1·7
24·683	40	231	22	126	187·9	− 8·0	+16·0
25·491	40	198	23	115	188·4	− 7·7	+27·2
26·517	33	219	22	150	188·4	− 7·8	+40·7
27·595	35	149	31	135	188·2	− 7·9	+54·8
28·273	10	97	12	115	188·0	− 8·7	+63·5
29·173	3	34	6	76	188·2	− 9·0	+75·6
Means ...	...	...	26	159	187·43	−8·18	...

Group 4631.

A straggling stream. The leader, *a*, is a well-defined spot. The others are unstable and faint, and undergo constant change.

1897. d					°	°	°
Sept. 21·513	5	112	7	179	141·0	+12·1	−72·7
22·300	13	97	13	100	141·7	+13·2	−61·6
23·396	28	123	20	87	143·4	+12·8	−45·5
24·683	48	179	27	102	143·9	+12·5	−28·0
25·491	45	231	24	121	144·1	+12·7	−17·1
26·517	43	257	22	130	143·9	+12·5	− 3·8
27·595	26	141	13	72	144·7	+11·8	+11·3
28·273	14	54	8	29	145·2	+11·3	+20·7
29·173	6	39	3	23	145·6	+10·9	+33·0
Means ...	...	...	15	94	143·72	+12·20	...

Group 4632.

An irregular stream. The leader, *a*, is a well-defined spot. The rest of the group undergo much change.

Sept. 21·513	11	73	18	228	140·7	+ 6·3	−73·0
22·300	21	143	21	150	141·0	+ 6·7	−62·3
23·396	66	413	48	303	141·7	+ 5·9	−47·2
24·683	99	527	58	305	142·2	+ 5·4	−29·7
25·491	45	364	23	191	143·5	+ 5·5	−17·7
26·517	47	274	24	137	143·9	+ 5·5	− 3·8
27·595	27	179	14	92	144·7	+ 5·6	+11·3
28·273	23	100	12	53	146·6	+ 5·1	+22·1
29·173	17	67	10	40	146·8	+ 4·7	+34·2
30·228	11	44	8	33	147·4	+ 4·4	+48·7
Oct. 1·277	2	12	2	13	147·3	+ 4·4	+62·5
Means ...	...	...	22	140	144·16	+ 5·41	...

Group 4633.

A pair of small faint spots.

Sept. 23·396	4	46	2	24	204·9	+ 7·3	+16·0
Means ...	...	...	2	24	204·9	+ 7·3	...

Group 4634.

A large regular spot, *a*, with occasionally one or two small companions.

Sept. 26·517	16	73	35	158	72·3	− 6·4	−75·4
27·595	19	130	21	138	72·4	− 6·5	−61·0
28·273	26	144	22	123	71·9	− 5·6	−52·6

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

Group 4634—*continued.*

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
1897. d					°	°	°
Sept. 29·173	33	167	22	113	72·4	− 5·8	−40·2
30·228	41	238	24	137	72·1	− 5·9	−26·6
Oct. 1·277	44	222	23	116	72·8	− 5·9	−12·0
2·504	43	231	22	120	73·6	− 6·2	+ 5·0
3·481	46	219	25	119	73·6	− 6·4	+17·9
4·152	40	187	23	108	73·4	− 6·9	+26·5
5·600	24	156	18	116	73·7	− 6·2	+45·9
6·627	16	95	17	98	73·9	− 6·2	+59·7
7·631	8	68	14	120	73·6	− 6·2	+72·6
Means ...	...	...	22	122	72·97	− 6·18	...

Group 4635.

A large regular spot, *a*, with occasionally one or two small companions.

Sept. 27·595	21	134	33	203	61·7	+ 9·7	−71·7
28·273	42	191	44	203	62·0	+10·6	−62·5
29·173	52	260	40	201	62·5	+10·6	−50·1
30·228	54	301	33	186	62·7	+10·4	−36·0
Oct. 1·277	57	323	31	175	62·5	+10·2	−22·3
2·504	64	364	32	184	62·7	+ 9·8	− 5·9
3·481	53	319	27	162	62·7	+ 9·4	+ 7·0
4·152	55	287	29	149	62·6	+ 9·2	+15·7
5·600	49	247	30	151	62·6	+ 9·5	+34·8
6·627	37	195	27	146	62·6	+ 9·5	+48·4
7·631	26	146	27	150	62·5	+ 9·4	+61·5
8·621	18	57	33	101	62·4	+ 9·2	+74·5
Means ...	...	...	32	168	62·46	+ 9·79	...

Group 4636.

A very small spot.

Sept. 29·173	0	6	0	8	45·7	− 8·4	−66·9
Means ...	...	...	0	8	45·7	− 8·4	...

Group 4637.

A small spot, *a*, with occasionally one or two very small companions.

Sept. 30·228	4	20	4	20	37·3	+14·4	−61·4
Oct. 1·277	6	28	4	21	36·6	+14·3	−48·2

Group 4637—*continued.*

1897. d					°	°	°
Oct. 2·504	8	24	5	14	37·8	+13·6	−30·8
3·481	2	12	1	6	38·3	+13·7	−17·4
4·152	2	39	1	20	37·2	+14·2	− 9·7
5·600	0	5	0	2	39·4	+14·0	+11·6
Means ...	...	...	3	14	37·77	+14·03	...

Group 4638.

Several very small faint spots irregularly arranged.

Oct. 5·600	0	19	0	9	40·4	+ 3·2	+12·6
Means ...	...	...	0	9	40·4	+ 3·2	...

Group 4639.

Several very small faint spots irregularly arranged.

Oct. 5·600	0	34	0	18	37·9	− 3·6	+10·1
Means ...	...	...	0	18	37·9	− 3·6	...

Group 4640.

A very small spot on October 5 and 6. The group is not seen on October 7 and 8, but three very small spots are seen near its place on October 9.

Oct. 5·600	1	6	1	6	328·3	+ 1·0	−59·5
6·627	0	7	0	5	328·9	+ 0·5	−45·3
7·631	0	0	0	0	...	...	...
8·621	0	0	0	0	...	...	...
9·529	0	14	0	7	329·0	+ 0·8	− 6·9
Means ...	...	...	0	4	328·73	+ 0·77	...

Group 4641.

Two small spots, *a* and *b*. Only *b* remains by October 8.

Oct. 6·627	6	29	3	15	14·5	− 2·3	+ 0·3
7·631	10	31	6	16	15·2	− 2·3	+14·2
8·621	0	12	0	7	14·1	− 2·1	+26·2
Means ...	...	...	3	13	14·60	− 2·23	...

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

Group 4642.

A pair of spots, *a* and *b*, on October 11. *a* alone is seen on October 10. The group has broken up by October 12.

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
1897. d					°	°	°
Oct. 10·246	0	12	0	26	248·5	+13·0	−78·0
11·191	8	55	10	69	246·9	+13·0	−67·2
12·591	0	32	0	25	246·3	+11·5	−49·3
Means ...	...	...	3	40	247·23	+12·50	...

Group 4643.

A small spot, *a*, on October 12. A second, *b*, follows it on October 13.

Oct. 12·591	0	10	0	10	234·4	+ 9·2	−61·2
13·178	1	18	1	15	232·3	+ 9·8	−55·6
Means ...	...	...	1	13	233·35	+ 9·50	...

Group 4644.

A few very small unstable spots in an irregular stream.

Oct. 15·439	0	22	0	17	206·7	+ 9·7	−51·3
16·411	10	57	7	37	205·2	+10·7	−40·0
17·508	4	101	2	54	206·6	+10·5	−24·1
18·495	0	20	0	10	209·7	+ 9·6	− 8·0
19·461	1	23	1	12	210·4	+10·1	+ 5·4
Means ...	...	...	2	26	207·72	+10·12	...

Group 4645.

Two or three small faint unstable spots.

Oct. 20·615	12	45	6	23	177·8	+ 4·4	−12·0
21·446	2	12	1	6	176·3	+ 5·1	− 2·5
Means ...	...	...	4	15	177·05	+ 4·75	...

Group 4646.

A few small unstable spots.

1897. d					°	°	°
Oct. 20·615	3	17	3	15	134·5	+ 6·3	−55·3
21·446	2	27	1	19	134·5	+ 6·6	−44·3
22·156	0	22	0	14	135·6	+ 6·7	−33·8
23·528	0	6	0	3	137·4	+ 6·5	−13·9
Means ...	...	....	1	13	135·50	+ 6·53	...

Group 4647.

A few small unstable spots.

Oct. 31·507	11	52	7	34	81·9	− 6·0	+35·8
Nov. 1·537	2	6	2	5	85·5	− 7·8	+53·0
2·535	0	30	0	38	84·8	− 7·4	+65·5
Means ...	...	...	3	26	84·07	− 7·07	...

Group 4648.

A few small unstable spots.

Nov. 1·537	2	10	1	6	356·8	− 9·9	−35·7
2·535	4	38	2	21	356·2	−10·5	−23·1
Means ...	...	...	2	14	356·50	−10·20	...

Group 4649.

A small regular spot, *a*, with one or two very small companions on and after November 5.

Nov. 2·535	0	23	0	46	305·0	−11·4	−74·3
3·444	5	25	6	29	305·0	−11·5	−62·3
4·237	5	28	5	24	304·6	−11·0	−52·3
5·187	13	48	9	32	304·5	−11·0	−39·9
6·177	15	37	9	21	304·9	−11·3	−26·5
7·205	13	43	7	23	305·0	−11·8	−12·8
8·185	9	35	5	18	304·9	−12·2	0·0
9·186	0	12	0	6	305·2	−12·5	+13·6
Means ...	...	...	5	25	304·89	−11·59	...

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

Group 4650.

Two very small faint spots.

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
1897. d Nov. 3·444	0	12	0	6	° 15·5	° −10·5	° + 8·2
Means ...	...	...	0	6	15·5	−10·5	...

Group 4651.

A few small unstable spots.

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
Nov. 12·203	2	19	2	19	193·1	− 8·2	−58·8
13·173	3	51	2	37	194·0	− 7·7	−45·1
14·204	8	44	4	25	195·4	− 7·5	−30·1
15·309	1	10	1	4	196·0	− 8·5	−14·9
16·193	0	9	0	4	195·6	− 7·5	− 3·8
Means ...	...	...	2	18	194·82	− 7·88	...

Group 4652.

A small spot on November 18. The group is not seen on November 19 and 20, but has revived by November 21 as a straggling stream of small spots.

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
Nov. 18·223	3	22	2	11	177·4	+ 5·4	+ 4·8
19·471	0	0	0	0	...	...	...
20·199	0	0	0	0	...	...	...
21·216	9	54	6	38	178·9	+ 4·3	+45·7
22·299	1	11	1	11	177·6	+ 4·3	+58·7
Means ...	...	...	2	12	177·97	+ 4·67	...

Group 4653.

Two small spots on November 20. Only one remains by November 21.

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
Nov. 20·199	7	27	10	35	213·9	+ 2·9	+67·4
21·216	1	11	3	26	211·6	+ 4·4	+78·4
Means ...	...	...	7	31	212·75	+ 3·65	...

Group 4654.

A small spot.

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
1897. d Nov. 20·199	1	7	2	10	° 213·8	° −15·1	° +67·3
Means ...	...	...	2	10	213·8	−15·1	...

Group 4655.

A few very small spots. *a*, the leader, on November 26, is the largest and best defined.

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
Nov. 25·470	6	45	3	23	74·9	− 9·2	− 2·1
26·182	5	46	3	24	74·9	− 9·2	+ 7·3
Means ..	...	...	3	24	74·90	− 9·20	...

Group 4656.

A group which undergoes constant change. A pair of spots on November 27 and 28. It has become a long straight stream of small spots by November 30. The group then becomes broad and straggling, but by December 3 has again become a straight stream. The small spots of which it is composed then begin to coalesce, and by December 5 it consists chiefly of three large spots, *a*, *b*, and *c*, of which *c* immediately breaks up. *a* is a notch on the limb on December 8.

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
Nov. 27·176	6	51	11	86	342·1	+ 8·6	−72·5
28·185	20	131	21	133	340·9	+ 8·4	−60·4
29·515	28	138	18	92	342·9	+ 7·9	−40·8
30·384	43	205	26	119	343·0	+ 8·4	−29·2
Dec. 1·444	26	182	14	94	344·1	+ 7·5	−14·2
2·446	22	192	10	97	343·7	+ 7·1	− 1·4
3·289	58	290	31	146	344·4	+ 6·3	+10·4
4·213	143	714	79	392	345·4	+ 6·3	+23·6
5·168	262	1221	168	776	346·5	+ 6·5	+37·3
6·305	144	847	127	730	348·3	+ 6·9	+54·0
7·314	94	469	134	636	349·1	+ 6·7	+68·1
8·332	11	145	25	547	349·9	+ 6·8	+82·4
Means ...	...	...	55	321	345·03	+ 7·28	...

Group 4657.

A small spot.

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
Nov. 29·515	2	24	2	19	333·6	− 8·1	−50·1
Means ...	...	...	2	19	333·6	− 8·1	...

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

Group 4658.

A small spot, *a*, with small distant companions on November 30 and December 1.

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
1897. d					°	°	°
Nov. 29·515	0	10	0	14	315·5	−10·3	−68·2
30·384	3	22	3	22	314·8	− 9·9	−57·4
Dec. 1·444	2	18	1	12	317·3	−10·6	−41·0
Means ...	...	...	1	16	315·87	−10·27	...

Group 4659.

A few spots in a straight stream. *a* and *b*, the first and last, are the largest. *a* and *b* increase in size up to December 5, when both *a* and *b* are large, *a* being a composite spot and measured in two parts. The group diminishes after this, and *a*, with a few very small companions, alone remains by December 8.

Dec. 3·289	9	73	11	82	272·1	−14·3	−61·9
4·213	32	224	25	178	272·9	−14·7	−48·9
5·168	54	363	36	236	272·4	−15·0	−36·8
6·305	57	389	32	215	273·3	−14·9	−21·0
7·314	32	223	16	117	275·3	−15·6	− 5·7
8·332	15	132	8	71	278·0	−15·8	+10·5
9·173	21	105	12	59	278·5	−16·3	+22·1
10·193	18	58	11	37	279·3	−16·3	+36·3
11·532	7	27	6	24	280·1	−15·1	+54·7
12·307	4	11	5	13	280·3	−16·2	+65·2
Means ...	...	...	16	103	276·22	−15·42	...

Group 4660.

A very small spot.

Dec. 4·213	0	6	0	7	258·2	+ 9·4	−63·6
Means ...	...	...	0	7	258·2	+ 9·4	...

Group 4661.

A small spot, *a*, followed by a pair of small companions on December 6. *a* has disappeared by December 9, but several very small spots are seen *f* its place.

Dec. 5·168	0	14	0	24	236·1	+ 9·0	−73·1
6·305	16	65	15	63	236·2	+ 9·3	−58·1
7·314	6	44	4	31	237·6	+ 8·4	−43·4
8·332	0	29	0	17	238·0	+ 8·5	−29·5
9·173	3	26	2	14	234·5	+ 9·0	−21·9
Means ...	...	...	4	30	236·48	+ 8·84	...

Group 4662.

Two very small spots on December 6, one on December 7.

1897. d					°	°	°
Dec. 6·305	0	7	0	4	257·6	− 0·9	−36·7
7·314	1	4	1	2	256·0	− 1·1	−25·0
Means ...	...	...	1	3	256·80	− 1·00	...

Group 4663.

A fine large composite spot, *a*, usually with some small companions, *p* Group 4665.

Dec. 6·305	0	98	0	471	210·6	+10·0	−83·7
7·314	76	292	117	451	210·3	+10·1	−70·7
8·332	115	449	109	424	210·4	+10·3	−57·1
9·173	124	546	91	403	210·5	+10·0	−45·9
10·193	144	644	88	391	210·4	+ 9·9	−32·6
11·532	139	718	72	374	210·6	+ 9·3	−14·8
12·307	122	717	62	367	210·8	+ 9·3	− 4·3
13·334	124	690	64	357	210·8	+ 9·5	+ 9·2
14·487	108	611	61	344	211·2	+ 9·9	+24·7
15·448	97	540	62	348	211·3	+ 9·8	+37·5
16·259	72	419	56	322	211·4	+ 9·1	+48·3
17·523	43	256	51	304	210·8	+10·2	+64·4
18·214	31	163	57	298	211·0	+ 9·3	+73·6
Means ...	...	...	68	373	210·78	+ 9·75	...

Group 4664.

A very small spot on December 7. A few small spots in a short stream on December 8 and 9.

Dec. 7·314	0	6	0	3	299·7	+14·0	+18·7
8·332	1	31	1	19	302·0	+13·4	+34·5
9·173	0	18	0	14	301·5	+12·5	+45·1
Means ...	...	...	1	12	301·07	+13·30	...

Group 4665.

A very large group of unusual breadth and very complicated structure. At first it appears like two straight streams intersecting each other so as to form a St Andrew's cross, but the group undergoes continual change, and tends to become more condensed.

Dec. 7·314	0	168	0	687	198·3	+11·7	−82·7
8·332	140	747	196	1047	199·1	+12·6	−68·4
9·173	133	964	124	909	199·5	+12·2	−56·9
10·193	241	1258	170	886	200·0	+12·1	−43·0
11·532	226	1831	129	1037	200·3	+11·9	−25·1

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

Group 4665—*continued.*

Date. Greenwich Civil Time.	Projected Area of Umbra.	Projected Area of Whole Spot.	Area for Group. Umbra.	Area for Group. Whole Spot.	Mean Longitude of Group.	Mean Latitude of Group.	Longitude from Central Meridian.
1897. d					°	°	°
Dec. 12·307	316	1872	169	994	200·9	+12·3	−14·2
13·334	288	1785	147	917	201·6	+12·0	0·0
14·487	227	1593	122	849	202·1	+11·8	+15·6
15·448	292	1680	171	987	202·6	+11·4	+28·8
16·259	226	1266	154	846	202·9	+10·6	+39·8
17·523	73	830	70	775	202·8	+11·2	+56·4
18·214	121	734	148	890	202·1	+10·6	+64·7
19·298	40	262	89	699	201·4	+ 9·8	+78·3
Means ...	...	...	130	886	201·05	+11·55	...

Group 4666.

A few small unstable spots, *nf* Group 4665.

Dec. 8·332	0	9	0	21	190·0	+18·6	−77·5
9·173	1	17	1	21	190·5	+18·4	−65·9
10·193	1	5	1	4	191·6	+18·7	−51·4
Means ...	...	...	1	15	190·70	+18·57	...

Group 4667.

A few small unstable spots, *f* Group 4665. The group is not seen on December 12 and 16.

Dec. 10·193	0	10	0	9	189·1	+15·6	−53·9
11·532	0	22	0	14	188·6	+14·8	−36·8
12·307	0	0	0	0	...	...	...
13·334	0	10	0	5	186·0	+16·2	−15·6
14·487	0	8	0	5	190·0	+15·7	+ 3·5
15·448	0	34	0	19	191·3	+15·7	+17·5
16·259	0	0	0	0	...	...	...
17·523	6	35	5	28	194·1	+16·1	+47·7
Means ...	...	...	1	10	189·85	+15·68	...

Group 4668.

A few small spots in a straight stream, *sp* Group 4665. *a*, the leader is the largest, but diminishes very quickly.

Dec. 11·532	15	130	8	67	218·8	+ 5·1	− 6·6
12·307	9	43	4	21	219·6	+ 4·6	+ 4·5
13·334	0	14	0	8	218·4	+ 4·5	+16·8
Means ...	...	...	4	32	218·93	+ 4·73	...

Group 4669.

A few very small unstable spots, *sf* Group 4665. The group is not seen on December 17.

1897. d					°	°	°
Dec. 14·487	8	34	4	18	182·4	+ 5·5	− 4·1
15·448	0	22	0	11	183·4	+ 5·4	+ 9·6
16·259	1	34	1	18	183·9	+ 4·6	+20·8
17·523	0	0	0	0	...	...	...
18·214	0	19	0	14	186·5	+ 4·5	+49·1
Means ...	...	...	1	12	184·05	+ 5·00	...

Group 4670.

A regular spot, *a*, with a very small companion on December 20.

Dec. 15·448	12	37	23	71	99·0	+ 2·7	−74·8
16·259	11	47	13	55	98·8	+ 3·9	−64·3
17·523	10	64	7	47	100·1	+ 3·2	−46·3
18·214	24	84	15	53	100·4	+ 3·7	−37·0
19·298	15	87	8	47	100·9	+ 3·3	−22·2
20·200	21	102	11	52	101·1	+ 3·3	−10·1
21·252	30	110	15	55	101·7	+ 2·8	+ 4·4
22·535	8	41	4	22	101·8	+ 2·6	+21·4
23·192	5	31	3	18	102·3	+ 2·0	+30·5
24·193	0	11	0	7	102·5	+ 1·7	+44·0
Means ...	...	...	10	43	100·86	+ 2·92	...

Group 4671.

A large regular spot, *a*, with occasionally one or two followers.

1897.							
Dec. 26·298	14	59	55	226	309·2	+15·3	−81·6
27·332	25	131	33	172	311·2	+14·8	−66·0
28·330	31	213	28	188	310·6	+14·5	−53·5
29·200	32	246	22	171	311·4	+14·0	−41·3
30·197	41	248	24	146	312·0	+14·0	−27·5
31·196	53	307	29	166	312·2	+13·5	−14·2
1898.							
Jan. 1·243	53	254	28	132	312·0	+13·1	− 0·6
2·242	41	206	22	110	311·8	+13·7	+12·4
3·193	36	196	21	114	312·4	+13·1	+25·5
4·186	33	173	22	117	312·5	+13·2	+38·8
5·196	23	141	20	122	312·8	+13·1	+52·3
6·518	11	62	16	94	312·0	+14·1	+68·9
7·182	6	40	16	102	311·6	+13·1	+77·3
Means ...	...	...	26	143	311·67	+13·81	...

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 4672. A few very small spots in a straight stream.							
1897. d					°	°	°
Dec. 30·197	4	31	2	17	8·8	− 9·2	+29·3
31·196	12	62	9	43	10·0	− 9·3	+43·6
1898.							
Jan. 1·243	3	38	3	36	10·5	−10·1	+57·9
Means ...	...	...	5	32	9·77	− 9·53	...
Group 4673. A large regular spot, *a*, with occasionally a small companion.							
1897.							
Dec. 30·197	28	122	42	190	268·8	+ 7·8	−70·7
31·196	49	200	46	192	268·6	+ 7·5	−57·8
Group 4673—*continued.*							
1898. d					°	°	°
Jan. 1·243	45	215	32	152	268·8	+ 7·2	−43·8
2·242	41	206	24	121	269·0	+ 6·4	−30·4
3·193	39	228	21	123	269·0	+ 6·6	−17·9
4·186	42	215	21	110	268·9	+ 6·4	− 4·8
5·196	39	191	20	98	269·3	+ 6·2	+ 8·8
6·518	37	182	21	104	269·3	+ 6·7	+26·2
7·182	39	189	25	118	269·5	+ 6·0	+35·2
8·489	19	145	16	121	269·7	+ 6·9	+52·5
9·184	20	88	22	95	269·7	+ 6·0	+61·7
10·245	9	40	19	90	270·4	+ 6·1	+76·4
Means ...	...	...	26	126	269·25	+ 6·65	...

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

1897.

TOTAL PROJECTED AREAS of SUN SPOTS and FACULÆ for EACH DAY in the Year 1897.

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.
1897	d			
Jan.	1·5	72	472	118
	2·2	73	408	174
	3·1	114	555	463
	4·2	198	1534	650
	5·3	380	3032	1420
	6·5	637	4042	1054
	7·5	766	4634	3477
	8·3	1156	5362	3471
	9·2	859	4739	2130
	10·2	674	4440	707
	11·2	687	4622	841
	12·2	650	3962	527
	13·3	508	3023	2066
	14·2	301	2025	4295
	15·5	199	1323	3315
	16·2	97	894	3376
	17·2	144	772	3530
	18·2	130	667	1209
	19·2	95	611	261
	20·2	93	653	176
	21·2	147	965	298
	22·2	178	889	394
	23·2	263	1330	1816
	24·3	168	875	2800
	25·5	95	733	2724
	26·5	73	471	916
	27·2	57	398	605
	28·3	107	613	1118
	29·2	126	587	1102
	30·2	135	775	865
	31·2	247	1555	1051
Feb.	1·3	423	2080	3552
	2·3	480	2791	319
	3·3	723	3281	990
	4·2	644	3286	1763
	5	No	photo	graph.
	6·2	510	2711	1787
	7·5	361	1977	1079
	8·2	317	1527	1209
	9·2	282	1057	2301
	10·2	202	881	2675
	11·2	118	690	1884
	12·2	90	492	2611
	13·2	122	572	1311
	14·1	128	621	835
	15·2	126	685	210
	16·2	137	595	376
	17·2	137	668	366
	18·4	96	488	423
	19·2	77	387	941
	20·3	62	273	2503

Greenwich Civil Time.		Projected Area.		
		Umbræ.	Whole Spots.	Faculæ.
1897	d			
Feb.	21·5	12	100	2040
	22·2	31	156	914
	23·5	103	461	1597
	24·3	149	774	1685
	25·3	241	1270	3683
	26·5	263	1604	1099
	27·4	322	1863	1184
	28·2	436	2103	2205
March	1·4	293	1995	1567
	2·4	329	2030	318
	3·1	463	2244	805
	4·5	319	1938	1400
	5·4	290	1618	1370
	6·2	271	1323	2034
	7·1	141	764	890
	8·5	100	561	875
	9·2	120	593	2034
	10·4	98	535	2498
	11·5	56	309	1455
	12·5	66	360	1115
	13·2	75	447	567
	14·2	74	340	0
	15·6	182	914	457
	16·5	167	858	548
	17·4	141	761	241
	18·5	95	542	1015
	19·4	45	352	1191
	20·2	17	143	1071
	21·6	0	0	1734
	22·2	10	55	931
	23·5	18	103	1116
	24·4	28	184	2055
	25·4	31	200	515
	26·7	52	246	797
	27·5	54	239	1142
	28·5	79	363	1193
	29·2	85	458	460
	30·5	94	484	599
	31·2	94	503	1452
April	1·2	93	526	1700
	2·4	122	658	1309
	3·2	102	528	1474
	4·5	98	632	1391
	5·4	96	620	1698
	6·4	193	799	1719
	7·3	314	1582	2277
	8·2	358	1735	1760
	9·4	310	1509	1046
	10·5	219	1342	938

Greenwich Civil Time.		Projected Area.		
		Umbræ.	Whole Spots.	Faculæ.
1897	d			
April	11·6	189	1004	847
	12·2	205	923	641
	13·3	158	756	508
	14·6	89	466	1683
	15·4	53	307	1043
	16·2	42	186	1193
	17·1	8	44	1116
	18·2	3	33	906
	19·5	34	174	825
	20·6	28	194	415
	21·4	14	136	365
	22·4	6	35	769
	23·5	0	0	1630
	24·4	0	0	2286
	25·6	2	38	318
	26·5	3	34	587
	27·3	3	22	1354
	28·6	28	159	1591
	29·4	29	212	1555
	30·2	52	301	998
May	1·5	84	539	1082
	2·6	147	1056	2266
	3·5	230	1536	2297
	4·4	342	1862	900
	5·2	328	1916	663
	6·5	279	1846	673
	7·2	224	1523	524
	8·1	188	1257	786
	9·5	141	870	895
	10·1	90	546	874
	11·4	10	67	823
	12·1	6	44	386
	13·2	0	0	308
	14·1	0	0	560
	15·4	0	0	723
	16·4	0	0	640
	17·5	0	0	338
	18·4	0	0	307
	19·4	0	0	858
	20·4	15	70	764
	21·4	39	201	0
	22·4	41	259	286
	23·2	36	222	343
	24·5	9	138	307
	25·5	59	316	780
	26·2	79	406	706
	27·5	115	511	1249
	28·4	148	764	2858
	29·2	198	742	1136
	30·5	186	955	1139
	31·5	183	972	287

Greenwich Civil Time.		Projected Area.		
		Umbræ.	Whole Spots.	Faculæ.
1897	d			
June	1·2	206	888	0
	2·2	162	742	119
	3·3	138	598	107
	4·6	109	543	920
	5·7	52	217	1024
	6·2	34	158	772
	7·2	0	0	1028
	8·1	0	0	384
	9·1	3	11	153
	10·5	0	0	867
	11·4	0	0	590
	12·4	0	0	179
	13·4	59	442	436
	14·7	77	426	662
	15·5	39	250	987
	16·5	3	79	273
	17·4	0	0	219
	18·1	0	9	165
	19·4	0	0	620
	20·3	0	6	420
	21·5	13	73	835
	22·6	34	230	588
	23·4	47	284	982
	24·4	57	304	1444
	25·2	65	347	170
	26·5	44	339	210
	27·2	52	309	170
	28·5	47	385	289
	29·7	68	479	494
	30·5	95	624	1108
July	1·5	91	552	1208
	2·2	97	593	1010
	3·3	85	522	1161
	4·5	81	479	830
	5·2	85	471	533
	6·5	62	450	1061
	7·4	85	500	567
	8·4	100	635	1276
	9·6	96	582	2273
	10·4	90	480	677
	11·5	74	421	656
	12·3	58	320	444
	13·4	54	262	924
	14·4	75	289	620
	15·4	45	308	662
	16·4	5	83	106
	17·2	12	83	655
	18·5	22	133	746
	19·1	23	107	477
	20·4	18	140	152
	21·1	29	201	1141

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.
1897	d				1897	d				1897	d				1897	d			
July	22·2	145	662	1712	Sept.	1·2	70	363	1132	Oct.	12·6	0	42	687	Nov.	22·3	1	11	983
	23·4	177	1009	794		2·4	96	501	1267		13·2	1	18	652		23·2	0	0	333
	24·5	190	1013	100		3·5	206	1213	1772		14·2	0	0	504		24·3	0	0	392
	25·5	223	1327	284		4·3	447	2310	1349		15·4	0	22	576		25·5	6	45	208
	26·3	141	1413	130		5·1	517	2729	622		16·4	10	57	293		26·2	5	46	177
	27·6	141	860	236		6·6	623	3095	0		17·5	4	101	465		27·2	6	51	214
	28·2	151	815	339		7·3	544	2676	222		18·5	0	20	702		28·2	20	131	690
	29·2	114	671	384		8·3	519	2636	1376		19·5	1	23	576		29·5	30	171	347
	30·4	90	461	877		9·2	394	2373	2325		20·6	15	62	216		30·4	46	228	595
	31·4	49	231	1439		10·4	316	1662	2065		21·4	4	39	166					
						11·4	184	1074	1907		22·2	0	22	289					
						12·3	109	636	1658		23·5	0	6	970	Dec.	1·4	28	200	223
Aug.	1·5	34	181	1491		13·3	64	337	2818		24·3	0	0	763		2·4	22	192	520
	2·5	27	233	1218		14·4	17	87	923		25·5	0	0	347		3·3	67	363	330
	3·5	80	589	1505		15·3	11	83	316		26·2	0	0	790		4·2	175	944	916
	4·4	139	939	2388		16·2	21	98	733		27·2	0	0	1161		5·2	316	1598	485
	5·4	191	1438	2356		17·4	14	113	1317		28·2	0	0	1465		6·3	217	1406	1416
	6·4	227	1638	1458		18·4	31	145	87		29·4	0	0	482		7·3	209	1206	1816
	7·4	285	1972	941		19·5	22	100	185		30·4	0	0	392		8·3	282	1541	2151
	8·6	265	1804	596		20·6	105	525	533		31·5	11	52	340		9·2	282	1676	1805
	9·5	252	1518	541		21·5	102	697	1138							10·2	405	1975	1193
	10·5	214	1256	695		22·3	94	638	1387							11·5	386	2727	579
	11·7	151	1118	764		23·4	152	965	1097	Nov.	1·5	4	15	760		12·3	451	2643	490
	12·4	170	1178	1508		24·7	187	936	128		2·5	4	91	440		13·3	411	2498	341
	13·2	158	1015	1331		25·5	130	793	1102		3·4	5	37	925		14·5	343	2246	113
	14·5	124	745	2465		26·5	137	824	1744		4·2	5	28	1258		15·4	400	2313	1104
	15·2	34	317	1265		27·6	128	732	1816		5·2	13	48	1852		16·3	310	1766	879
	16·4	24	144	1040		28·3	116	586	1579		6·2	15	37	805		17·5	132	1186	1714
	17·2	14	114	776		29·2	110	572	2035		7·2	13	43	238		18·2	177	1001	1936
	18·4	27	177	1570		30·2	110	603	1793		8·2	9	35	335		19·3	55	349	1681
	19·5	35	216	983							9·2	0	12	324		20·2	21	102	714
	20·2	41	220	160							10·5	0	0	199		21·3	30	110	149
	21·4	37	278	416	Oct.	1·3	111	585	1414		11·2	0	0	497		22·5	8	41	0
	22·3	50	271	0		2·5	115	620	335		12·2	2	19	1247		23·2	5	31	345
	23·5	35	211	166		3·5	100	550	548		13·2	3	51	951		24·2	0	11	1214
	24·2	34	238	83		4·2	97	514	0		14·2	8	44	457		25·3	0	0	880
	25·2	46	193	248		5·6	74	467	853		15·3	1	10	312		26·3	14	59	541
	26·4	12	68	750		6·6	59	327	1487		16·2	0	9	161		27·3	25	131	652
	27·4	11	81	745		7·6	45	246	934		17·3	0	0	86		28·3	31	213	551
	28·4	14	52	430		8·6	18	69	959		18·2	3	22	349		29·2	32	246	899
	29·3	9	43	89		9·5	0	14	1213		19·5	0	0	75		30·2	73	400	551
	30·5	26	188	875		10·2	0	12	1522		20·2	9	35	712		31·2	114	570	933
	31·5	37	310	1656		11·2	8	55	613		21·2	10	64	667					

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 1897 January 7 to December 28.

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 1873–1896 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							
579	1897	January	8·08	28	338	1919	1651	230	1335	1888
580		February	4·43	26	208	1086	1446	154	817	1694
581		March	3·77	27	100	544	1085	82	455	1293
582		March	31·07	28	101	528	1188	74	391	1358
583		April	27·33	27	86	542	805	57	364	972
584		May	24·55	27	69	335	670	54	268	798
585		June	20·76	27	64	385	776	47	289	898
586		July	17·96	27	137	886	948	98	647	1092
587		August	14·18	27	109	806	881	100	565	972
588		September	10·43	28	99	554	1140	74	423	1358
589		October	7·71	27	3	28	677	3	24	820
590		November	4·00	27	8	42	536	6	32	658
591		December	1·32	28	172	1019	884	128	798	1091

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 1897.

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.
1897	364	122	695	977	88	514	1149

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 1897 January 7 to December 28.

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			°		°	°	°
579	1897 Jan. 8·08	28	265	7·06	1070	7·67	− 4·74	7·55
580	Feb. 4·43	26	412	8·85	406	4·80	+ 2·07	6·84
581	Mar. 3·77	27	260	5·20	195	5·57	+ 0·59	5·36
582	Mar. 31·07	28	267	3·46	124	6·57	+ 0·28	4·44
583	Apr. 27·33	27	86	3·34	278	12·09	− 8·45	10·03
584	May 24·55	27	4	2·10	263	10·83	− 10·59	10·66
585	June 20·76	27	6	8·60	283	7·00	− 6·70	7·03
586	July 17·96	27	222	10·44	425	6·21	− 0·49	7·66
587	Aug. 14·18	27	57	14·36	508	7·83	− 5·59	8·49
588	Sept. 10·43	28	191	9·70	232	8·41	− 0·23	8·99
589	Oct. 7·71	27	17	9·77	7	8·99	+ 4·27	9·54
590	Nov. 4·00	27	20	7·18	12	9·85	+ 0·87	8·17
591	Dec. 1·32	28	760	10·29	38	15·03	+ 9·09	10·51

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 1897.

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.		
			°		°	°	°
1897	364	196	8·32	318	7·73	−1·62	7·96

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 1897, and in corresponding Tables for the years 1886 to 1896.