GREENWICH
SPECTROSCOPIC AND PHOTOGRAPHIC RESULTS.

1882.

SPECTROSCOPIC AND PHOTOGRAPHIC OBSERVATIONS

MADE AT THE

ROYAL OBSERVATORY, GREENWICH,

1882.

(EXTRACTED FROM THE GREENWICH OBSERVATIONS, 1882.)

GREENWICH SPECTROSCOPIC AND PHOTOGRAPHIC RESULTS, 1882.

INTRODUCTION.

Spectroscopic Observations in the Year 1882.

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

The direct-vision "half-prism" spectroscope, constructed by Mr. Hilger, has been used regularly since July 1877. In this form of spectroscope, either great dispersion or great purity of spectrum is obtained by the use of "half-prisms,"* according as the incident pencil falls first on the perpendicular or on the oblique face. Either one, two, or three "half-prisms" can be used at pleasure, according to the dispersion required, and each "half-prism" is compound, being composed of a flint "half-prism" and a crown prism cemented on the oblique face so as to form the half of a direct-vision prism, as cut by a plane perpendicular to the base. With one "half-prism" a dispersion of about 20° from A to H, equivalent to that given by four flint prisms of 60°, is obtained, with two "half-prisms" a dispersion of about 75° from A to H, equivalent to that given by fifteen flint prisms of 60°, with three "half-prisms" a dispersion of about 300°, equivalent to that given by about sixty flint prisms of 60°, the pencil in each case being incident on the perpendicular face of each "half-prism" and emerging at the oblique face. For observations of the Solar prominences, where great purity of spectrum is desired, the slit and eye-piece are interchanged, so that the pencil is incident on the oblique face and emerges at the perpendicular face of each prism. The cross section of the first prism is 2 inches in height by 2 inches in breadth, of the second prism 2 inches in height by 0·6 inch in breadth, and of the third prism 1 inch in height by 0·4 inch in breadth, the pencil being made narrower

* A "half-prism" is the half of an isosceles prism cut by a plane perpendicular to the base, so that the rays fall perpendicularly on the face so formed. The general theory of this form of spectroscope is given in the *Proceedings of the Royal Society*, vol. xxvi., page 8.

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by the oblique emergence at each prism. The collimator and viewing telescopes have focal lengths of about 23·2 and 11·6 inches respectively with apertures of 2½ inches. Different parts of the spectrum are brought into the field by turning the "half-prisms," each through the same angle, about fixed centres, by means of a micrometer screw acting on a lever. For delicate measures a micrometer eye-piece is used.

The spectroscope is carried by two rods, which are fixed to two collar-bearings on the eye-end of the telescope, giving the means of rotation round the axis, and carrying a position-circle. The spectroscope is held by two collars with lugs on the collimator and viewing telescope, which are fixed by clamping nuts on four strong elevator-screws fixed to the two rods and passing through slots in the lugs of the two collars; and an excentricity, either radial or tangential, can be given by altering the height of the nuts or by displacing the spectroscope laterally. The slit can thus be carried round the Sun's limb radially or tangentially, as may be desired.

Occasionally for faint objects another spectroscope of smaller dispersive power is used. This spectroscope has a single prism of flint glass, with a collimator of about 20 inches focal length and a viewing telescope of about 10 inches.

This section contains:—Observations of Solar Prominences; Observation of a Solar Storm; Observations of Spectra of Sun Spots; Measures of Displacement of Lines in the Spectra of Stars and Concluded Motions in the Line of Sight; and Observations of the Spectra of Uranus, of Sundry Stars, of Comets *a* and *b* 1882, and of the Aurora of 1882 November 17.

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

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

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

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

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

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

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

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

With regard to the other observations contained in this section, it is sufficient to remark that curves have been laid down in the usual manner, connecting scale or micrometer readings and wave-lengths, and that for each series of observations a correction for index-error has been deduced from observations of comparison-lines and applied to the observed readings, to reduce them to the standard curve, from

which the corresponding wave-lengths have been read off. The tabular wave-lengths of comparison-lines have been taken from Ångström's *Spectre Normal du Soleil*, or in the case of the spectra of carbon compounds, from Ångström and Thalén's *Récherches sur les Spectres des Métalloides*.

Measures of Positions and Areas of Spots and Faculæ upon the Sun's Disk on Photographs taken at the Royal Observatory, Greenwich, and at Dehra Dûn in India in the year 1882 *; with the deduced Heliographic Longitudes and Latitudes.*

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

The photographs of the Greenwich series were taken with the Dallmeyer Photoheliograph returned from the Transit of Venus expedition to New Zealand.

This instrument has an object-glass of 4 inches aperture and 5 feet focal length, forming an image of the Sun about half an inch in diameter; this image is enlarged by a secondary magnifier to 4 inches on the camera screen, where the sensitive plate is inserted, the whole length of the instrument being about 8 feet. The exposure is given by a shutter, having a slit of adjustible width, which is carried by a spring across the primary image. At the principal focus cross-wires are placed, which give facilities for determining the position-angles of spots on the photographs. The instrument is equatoreally mounted, though this is not absolutely necessary to its efficient action, as the exposure is practically instantaneous, amounting only to a few thousandths of a second in ordinary cases.

In the process adopted up to 1882 November 28 iodized cadmium collodion was used in connexion with the pyro-gallic acid development. Since that date bromo-iodized gelatine dry plates with alkaline development have been regularly used.

The Indian photographs, which were used to fill the gaps in the Greenwich series, were taken under the superintendence of J. B. N. Hennessey, F.R.S., Deputy Superintendent, Trigonometrical Survey of India, with a Dallmeyer photoheliograph giving an image of the Sun 4 inches in diameter, except for the period from 1882 November 7 to December 8, when another secondary magnifier, giving an image of the Sun 8 inches in diameter, was adapted to the photoheliograph under the auspices of the Solar Physics Committee. In the process adopted at Dehra Dûn bromo-iodized collodion has been used in connexion with iron development.

Photographs of the Sun were taken at Greenwich on 221 days, and Indian photographs on 142 days were used to complete the total of 343 days for which there are either Greenwich or Indian photographs of the Sun available in 1882.

The *first* column on each page contains the Greenwich Mean Solar Time at which each photograph was taken, expressed by the day of the year and decimals

of a day, reckoning from Greenwich mean noon of January 1, 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.

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 1882:—

E. W. Maunder - -	M	J. Knowles - - -	K
H. P. Hollis - -	H	F. Finch - - -	F
J. Power - - -	JP	J. Hawton - - -	JH
H. T. James - -	J		

The *third* column gives the No. of the group. The groups are numbered in the order of their appearance.

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

The measures of the four-inch photographs were made with a large position-micrometer, specially constructed by Mr. Simms. The photograph is held with the collodion-side uppermost, on two cross-slides, which give the means of accurately centering it on the large position-circle, which rotates with it. A positive eye-piece, having at its focus a glass diaphragm, ruled into squares, with sides of one-hundredth of an inch (for measurement of areas), is carried by a micrometer-screw diametrically across the photograph, the diaphragm being nearly in contact with the photographic film, so that parallax is avoided.

For the measurement of the eight-inch photographs a larger position-micrometer, constructed by Messrs. Troughton and Simms on the same principle but with some improvements, has been used. In this instrument the distance of a spot or facula from the Sun's centre is read off to 1-250th of an inch by means of a scale and vernier instead of a long micrometer-screw.

The following is the process of measurement of a photograph:—

By means of the cross-slides mounted on the position-circle, 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 micrometer-readings taken for the two limbs. The mean difference of the readings for the two limbs is taken

as the Sun's mean diameter on the photograph, and the mean of the half-sum as the reading for the Sun's centre.

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

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

Date.	Corrected Zero of Position-Circle from transit.		Zero of Position-Circle obtained when using R. A. Slow Motion.	
	Wire *a*.	Wire *b*.	Wire *a*.	Wire *b*.
	° ′	° ′	° ′	° ′
1881, December 23	354. 0	83. 54	354. 0	83. 54
1882, January 7	354. 7	84. 1	354. 6	84. 0
March 14	354. 5	84. 4	353. 57	83. 58
March 25	353. 16	..	353. 10	..
April 21	353. 36	263. 36	353. 36	263. 33
May 10	353. 9	..	353. 6	..
May 10	353. 27	83. 30	353. 24	83. 27
June 17	353. 12	83. 10	353. 12	83. 10
July 26	353. 16	83. 10	353. 18	83. 12
August 24	353. 18	83. 12	353. 15	83. 9
August 24	353. 48	83. 42	353. 48	83. 42
September 15	353. 16	83. 6	353. 10	83. 0
October 20	353. 5	82. 59	353. 8	83. 2
November 18	353. 13	83. 13	353. 18	83. 6
December 13	353. 6	83. 6	353. 9	83. 5
1883, January 2	353. 7	83. 6	353. 8	83. 4

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 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. This latter 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 Photoheliograph at Dehra Dûn the position-circle has always been set to the zero as determined by allowing the diurnal motion to carry a spot or the Sun's limb along the horizontal wire, and the accuracy of the adjustment has

been tested at short intervals. No correction for zero of the photoheliograph has therefore been required for the reduction of the photographs taken in India.

The uncorrected distance from the Sun's centre for the four-inch images of the Sun is given by the difference between the micrometer-readings for spots and faculæ, and the centre-reading. In the new micrometer used for the measurement of the eight-inch photographs the zero of the scale is adjusted to coincide with the centre, and the distance from the centre is given directly.

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. The Greenwich photographs have been usually measured by Mr. Maunder and one of his assistants, the Indian photographs by Mr. Hollis and Mr. Power.

Corrections are then applied for optical distortion of the photoheliographs and for refraction. The distortion has been determined for the Dallmeyer photoheliographs used in the Transit of Venus 1874 from measures of photographs of a scale of equal parts, 16 feet long, constructed by Mr. De La Rue, and lent by him for this purpose. The scale has eight plates of iron with edges carefully planed, the plates being each exactly one foot in breadth, and attached to a braced iron framework so as to leave equidistant spaces of exactly one foot between the plates. The scale was photographed at a distance of about 1,200 feet, and extended completely across the field of view.

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

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

$1^r = 0^{in}\cdot 10$, corresponding to $49''\cdot 3$.

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

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

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

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

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

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

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

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

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

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

$c \tan^2 z$.

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

Factors for Refraction.

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

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

The distance from centre in terms of the Sun's radius given in the *fourth* column is then readily found by dividing the measured distance r_0, as corrected for distortion

and refraction, by the measured mean radius of the Sun, R; and the Position-Angle from the Sun's Axis given in the *fifth* column is obtained by applying to then Corrected Position-Angle (from the N. point) the Position-Angle of the Sun's Axis derived from Warren De La Rue's Auxiliary Tables referred to in the preceding section.

The *sixth* and *seventh* columns give the Heliographic Longitude and Latitude computed by the formulæ $\sin \lambda = \cos \rho \,.\, \sin D + \sin \rho \,.\, \cos D \,.\, \cos \chi$; $\sin (L - l) = \sin \chi \,.\, \sin \rho \,.\, \sec \lambda$; where L, l are the Heliographic Longitudes from the ascending node, and D, λ the Heliographic Latitudes of the Earth and the Spot respectively, referred to the Sun's Equator, ρ the True Angular Distance from centre, and χ the Position-Angle from the Sun's Axis. The quantities L and D are derived from Warren De La Rue's Auxiliary Tables previously referred to, and log sin ρ and log cos ρ are taken from "Tables for the Reduction of Solar Observations, No. 2" by Warren De La Rue, F.R.S.

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

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

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

The Mean Areas of Spots and Faculæ and the mean Heliographic Latitude of Spots for each Rotation of the Sun, and for the year 1882, are given at the end of this section, and require no further explanation.

W. H. M. CHRISTIE.

1884 *February* 9.

ROYAL OBSERVATORY, GREENWICH.

SPECTROSCOPIC OBSERVATIONS

MADE AT THE

ROYAL OBSERVATORY, GREENWICH,

1882.

POSITION-ANGLES and HEIGHTS of SOLAR PROMINENCES, observed with the SPECTROSCOPE, and OBSERVATIONS of BRIGHT LINES in their SPECTRA, made at the ROYAL OBSERVATORY, GREENWICH, in the Year 1882.

Note.—The position-angles reckoned from the north pole of the Sun's axis in the direction N., E., S., W., N., are given for the two extremities of the prominence. The extreme height in seconds of arc is given for each prominence. Where the estimated brightness of any of the bright lines seen is given, the *average* brightness of the line has been estimated in terms of the brightness of the corresponding part of the solar spectrum. The lines are usually fainter at the extremity than at the base. Where the estimated breadth is given, the *average* breadth of the line has been estimated in terms of the breadth of the corresponding dark line in the solar spectrum, except in the case of the bright line D_3, the breadth of which is estimated in terms of the dark line C. The bright lines are usually narrower at the extremity than at the base.

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

Observer, M.

Greenwich Mean Solar Time, 1882.	Position-Angle from Sun's Axis.	Height in Seconds of arc on the C Line.	REMARKS.
d h m	° ′ ° ′	″	
Mar. 1. 23. 33	24. 34 — 25. 34	24	Faint jet. Not seen in the first search.
22. 51	39. 4 — 44. 34	72	Fine bright prominence; much detail.
23. 32	76. 34 — 81. 34	36	Partly detached.
23. 31	102. 34 — 104. 14	29	Bright straight jet.
22. 42	104. 44 — 108. 54	48	Forked jet.
23. 0	217. 54 — 220. 4	29	Straight jet.
23. 3	225. 54 — 231. 34	43	Forked prominence.
23. 2	241. 34 — 242. 14	22	Straight jet.
22. 58	249. 4 — 249. 14	17	Two small but bright elevations of the chromosphere.
22. 58	250. 34 — 252. 4	17	
22. 58	252. 14 — 255. 4	29	Straight faint jet.
22. 57	264. 34 — 267. 54	24	Straight jet.
22. 56	274. 14 — 280. 14	19	Low bank; irregular upper edge.
22. 55	282. 34 — 286. 14	19	Small faint prominence.
22. 52	339. 24 — 340. 4	43	Very narrow jet.
			The chromosphere averaged 8″ in height. Definition variable; wind high; observation frequently interrupted by cloud.
			The entire limb of the Sun was examined twice with the slit radial on the C line only.
Mar. 3. 0. 33	34. 8 — 40. 18	55	Fine bright prominence.
0. 35	63. 28 — 67. 48	77	Fine bright prominence; portions detached; much detail.
0. 38	75. 48 — 78. 38	29	Faint; partly detached.
0. 39	81. 18 — 83. 28	29	Bright; partly detached.
0. 41	86. 48 — 87. 38	19	Straight jet.
0. 45	121. 48 — 124. 8	17	Partly detached; faint.
0. 43	130. 58 — 134. 3	22	Low bank.
0. 47	149. 43 — 150. 18	19	Partly detached.
0. 50	157. 42 — 157. 59	19	Straight jet.
0. 52	193. 43	24	
1. 12	220. 58 — 223. 18	58	Fine prominence; partly detached.
1. 11	236. 58 — 238. 8	24	
1. 10	239. 48 — 240. 8	19	
1. 10	241. 3 — 242. 48	26	
1. 9	243. 48 — 245. 8	19	
1. 8	247. 58 — 249. 48	43	Partly detached.
1. 5	298. 4 — 301. 23	26	
1. 4	301. 31 — 305. 18	24	
			Observations frequently interrupted by cloud. Part of the limb of the Sun, viz., from 30° to 194°, and from 221° to 305°, was examined once with the slit radial on the C line only.
Mar. 13. 23. 20	14. 21 — 15. 21	34	Faint.
23. 21	16. 51 — 19. 11	77	Faint.
23. 22	60. 51 — 62. 1	29	Partly detached.
23. 23	124. 1 — 125. 41	19	
23. 27	133. 21 — 134. 11	19	Small straight jet.
23. 27	139. 11 — 142. 51	38	
23. 28	162. 21 — 163. 11	48	Faint straight jet.
23. 29	167. 11 — 168. 41	36	Straight jet.
23. 30	233. 51 — 236. 21	31	
23. 14	301. 51 — 305. 11	29	Long bank with two jets.
23. 18	308. 21 — 320. 31	96	Fine tall prominence; much detail.
			The entire limb of the Sun was examined once with the slit radial on the C line only.

Greenwich Mean Solar Time, 1882.	Position-Angle from Sun's Axis.	Height in Seconds of arc on the C line.	REMARKS.
d h m	° ′ ° ′	″	
Mar. 15. 2. 22	60. 57 — 63. 37	43	Faint.
2. 23	72. 57 — 74. 47	34	
2. 23	76. 37 — 78. 31	34	Bright straight jet.
2. 24	101. 47 — 104. 7	38	Much broken.
2. 24	104. 27 — 108. 57	43	Very brilliant; in rapid motion.
2. 25	112. 27 — 113. 29	29	Very bright.
2. 26	140. 47 — 143. 37	24	Faint.
2. 27	165. 57 — 168. 47	24	Faint; partly detached.
2. 27	222. 17 — 224. 7	38	Straight jet.
2. 28	274. 47 — 279. 17	38	
2. 8	302. 37 — 306. 37	36	Faint.
2. 3	312. 57 — 321. 57	106	Fine bright prominence; much detail.
			The entire limb of the Sun was examined once with the slit radial on the C line only.
Mar. 15. 22. 13	69. 31 — 72. 21	48	Bright prominence.
22. 15	130. 21 — 132. 1	36	Straight jet.
22. 16	166. 21 — 167. 21	34	Faint straight jet.
22. 20	220. 41 — 223. 51	41	Bright straight jet.
22. 21	245. 51 — 247. 1	22	Small jet.
22. 5	270. 41 — 290. 51	67	Fine bright prominence; partly detached; many jets.
22. 6	313. 41 — 321. 1	180	Very fine prominence; great detail; bright.
			The entire limb of the Sun was examined once with the slit radial on the C line only.
Mar. 18. 1. 5	103. 25 — 109. 55	17	Low bank.
1. 3	117. 55 — 119. 25	19	A little tuft.
1. 1	123. 55 — 127. 15	31	
0. 59	129. 15 — 132. 35	48	Much broken.
0. 58	132. 45 — 135. 5	41	Partly detached.
0. 57	160. 25 — 162. 35	48	Very faint.
0. 57	210. 45 — 212. 25	41	Faint; partly detached.
0. 55	280. 25 — 282. 55	22	
0. 55	286. 15 — 295. 55	65	Height of greater part of prominence 29″, but a jet at N. part rose to 65″.
0. 52	320. 25 — 323. 45	29	Faint, but showing considerable detail.
			The entire limb of the Sun was examined once with the slit radial on the C line only.
Mar. 19. 23. 5	2. 49 — 4. 19	24	
23. 6	22. 14 — 24. 49	19	Faint.
23. 7	25. 59 — 26. 39	24	
23. 8	54. 59 — 56. 49	24	Bright.
23. 8	57. 39 — 61. 19	65	Much detail.
23. 9	68. 9 — 69. 59	19	Bright; partly detached.
23. 10	72. 19 — 73. 9	19	
23. 11	98. 49 — 100. 9	29	Bright; bending over to N.
23. 12	106. 39 — 109. 39	19	
23. 13	110. 39 — 111. 59	48	Much broken; faint.
23. 15	211. 19 — 212. 29	43	Much broken; faint.
23. 17	267. 39 — 268. 49	24	
23. 18	292. 19 — 293. 49	19	
23. 0	295. 39 — 297. 19	24	
23. 1	312. 39 — 314. 49	24	
			The entire limb of the Sun was examined once with the slit radial on the C line only.
Mar. 21. 0. 5	25. 13 — 26. 13	34	Very faint.
0. 7	51. 53 — 53. 13	34	Straight jet.
0. 8	72. 53 — 74. 3	29	Partly detached.
0. 10	138. 13 — 139. 18	29	Bright straight jet.
0. 11	158. 23 — 162. 53	46	Very faint.
0. 16	241. 13 — 242. 33	24	
			The entire limb of the Sun was examined once with the slit radial on the C line only.
Apr. 1. 1. 26	19. 14 — 21. 34	41	Faint prominence.
1. 25	35. 34 — 40. 4	67	Fine bright prominence.
1. 21	67. 4 — 69. 14	24	Short bright jet.
1. 20	96. 34 — 98. 34	41	Faint.
1. 32	138. 4 — 139. 54	24	
1. 31	199. 44 — 202. 44	36	Faint.
1. 29	224. 34 — 226. 4	26	
1. 29	231. 34 — 249. 44	67	Very large, beautiful, and regular prominence.
			The entire limb of the Sun was examined once with the slit radial on the C line only.

Greenwich Mean Solar Time, 1882.	Position-Angle from Sun's Axis.	Height in Seconds of arc on the C line.	REMARKS.
d h m	° ′ ° ′	″	
Apr. 4. 0.22	39. 5 — 41. 5	41	Bright; partly detached.
0.24	43. 5 — 44.25	55	Bright; partly detached.
0.25	104.45 — 106. 5	26	
0.30	272.45 — 273.45	22	
0.20	331.45 — 332.15	17	
0.21	336.45 — 338.25	22	
			The entire limb of the Sun was examined once with the slit radial on the C line only.
Apr. 6. 1.46	16.13 — 17.23	24	Faint.
1.40	78.43 — 82. 3	41	Faint cloud; completely detached.
1.43	197.23 — 200. 3	53	Exceedingly faint.
1.44	297.43 — 305.23	48	Brilliant prominence.
1.45	333.43 — 335.33	41	Bright prominence.
			The entire limb of the Sun was examined once with the slit radial on the C line only.
Apr. 7.21.45	16. 6 — 17. 6	26	Straight jet; faint.
21.44	66.56 — 67.36	29	Straight jet; very faint.
21.43	72.46 — 74.36	19	Faint.
21.42	102. 6 — 104. 6	19	
21.58	139.56 — 144.46	55	
21.52	251.36 — 255. 6	34	
21.49	293.26 — 293.36	29	Very narrow prominence. The C line wholly displaced towards the blue.
21.48	302.56 — 305.56	29	
21.48	308.36 — 309.56	19	
21.47	334. 6 — 336.26	29	
			The entire limb of the Sun was examined with the slit radial on the C line only.
May 1. 1.45	22.50 — 24.30	34	Partly detached.
1.44	37.20 — 41.50	36	Bright straight jet; no detail.
1.43	55.50 — 57.30	22	Bright straight jet.
1.41	103.30 — 104.20	34	Straight jet.
1.41	113.50 — 115.50	34	Faint; partly detached.
1.40	118.30 — 120.40	36	Partly detached.
1.38	138. 0 — 142.40	29	Forked prominence; considerable detail.
1.37	163.30 — 166.30	19	
1.35	298. 0 — 299.20	22	
1.46	345.50 — 347.50	77	Fine tall prominence with considerable detail.
			The entire limb of the Sun was examined once with the slit radial on the C line only.
May 5. 0.39	17.52 — 21. 2	31	
0.23	66.22 — 67.12	22	Very faint.
0.24	87.12 — 91.12	29	
0.25	94.12 — 103.42	29	Bending over to the North.
0.26	108.42 — 116.37	24	
0.31	118.12 — 119.22	22	
0.32	161.52 — 162.22	17	
0.33	195.22 — 196.32	19	
0.34	199.52 — 202.12	34	Very faint.
0.35	219.12 — 222.42	43	
0.37	223.12 — 229.32	41	
0.38	304. 2 — 309.12	34	
			The chromosphere was very faint, averaging from 8″ to 10″ in height.
			The entire limb of the Sun was examined with the slit radial on the C line only. Several attempts were made to examine the limb on the other lines, but the Sun was always in a white haze, and no satisfactory results could be obtained.
May 13. 1. 3	71.42 — 76. 2	41	Bright jet.
1. 3	77. 2 — 85.22	60	Faint; considerable detail.
1. 4	89.22 — 92.22	36	Faint.
1. 4	103.12 — 108.12	55	Partly detached; much detail.
1. 5	112.32 — 118.22	19	Long low bank.
1. 6	154.22 — 156.42	50	Faint.
1.10	216.22 — 219.42	36	Very faint.
1.12	246.52 — 249.52	41	Very faint.
1.13	294.32 — 298.22	79	Detached cloud; highest point 79″, lowest 46″.
1.45	310.22 — 313.32	17	Straight jet.
			The entire limb of the Sun was examined with the slit radial on the C line only.

Greenwich Mean Solar Time, 1882.	Position-Angle from Sun's Axis.	Height in Seconds of arc on the C line.	REMARKS.
d h m	° ′ ° ′	″	
May 16. 6. 7	18. 17 — 20. 47	24	Very faint.
6. 8	64. 42 — 67. 47	67	Faint.
6. 10	108. 32 — 114. 37	65	Forked prominence; considerable detail.
6. 12	116. 12 — 119. 37	38	Faint; considerable detail.
6. 13	131. 12 — 132. 27	34	Straight jet.
6. 15	153. 2 — 156. 17	41	Exceedingly faint.
6. 16	245. 32 — 246. 47	29	
6. 17	283. 7 — 287. 2	34	Bright jet.
6. 24	294. 37 — 297. 22	50	Very bright.
6. 2	308. 42 — 312. 37	43	Straight jet.
6. 5	325. 22 — 326. 52	22	Small jet.
			The entire limb of the Sun was examined with the slit radial on the C line only.
May 16. 6. 26	66. 2 — 69. 2	74	
6. 27	109. 22 — 117. 12	43	
6. 28	119. 27 — 123. 17	34	
6. 30	249. 42 — 250. 42	17	
6. 31	285. 17 — 288. 57	41	
6. 32	295. 52 — 298. 22	50	Intensely bright.
6. 18	306. 17 — 308. 7	24	
6. 24	310. 7 — 314. 42	43	
6. 25	326. 42 — 328. 2	29	
			The entire limb of the Sun was examined with the slit radial on the C line only.
May 16. 6. 38	67. 52 — 70. 12	74	
6. 39	109. 42 — 117. 12	48	
6. 40	119. 52 — 123. 7	29	
6. 41	134. 42 — 135. 42	29	
6. 42	283. 12 — 287. 32	43	
6. 35	296. 12 — 298. 42	34	
6. 36	311. 22 — 316. 32	43	
6. 37	328. 42 — 329. 52	22	
			The entire limb of the Sun was examined with the slit radial on the C line only.
May 16. 20. 26	64. 5 — 67. 5	84	Bright jet.
20. 25	79. 35 — 80. 55	19	
20. 25	107. 55 — 114. 25	46	Bright prominence; considerable detail.
20. 24	117. 0 — 121. 15	41	Fairly bright; considerable detail.
20. 32	247. 45 — 249. 5	19	
20. 31	260. 5 — 264. 5	19	
20. 31	279. 35 — 282. 5	24	Small straight jet.
20. 30	306. 25 — 308. 35	31	Bright jet.
20. 29	321. 25 — 323. 25	26	
			The entire limb of the Sun was examined with the slit radial on the C line only.
May 16. 20. 43	63. 55 — 66. 35	72	
20. 45	78. 45 — 80. 15	17	
20. 47	105. 55 — 114. 45	48	
20. 48	115. 5 — 120. 5	41	
20. 37	249. 55 — 251. 15	19	
20. 38	262. 5 — 264. 45	22	
20. 38	280. 55 — 283. 45	29	
20. 40	308. 15 — 310. 55	36	
20. 41	323. 15 — 325. 45	22	
			The entire limb of the Sun was examined with the slit radial on the C line only.
May 16. 22. 8	18. 55 — 21. 10	29	
22. 10	63. 35 — 67. 25	84	
22. 11	107. 25 — 115. 15	43	
22. 12	115. 10 — 121. 5	34	
22. 14	154. 5 — 158. 25	29	
22. 15	249. 45 — 251. 35	17	
22. 16	252. 0 — 253. 35	17	
22. 4	281. 5 — 283. 15	24	
22. 5	306. 55 — 309. 45	29	
22. 6	322. 5 — 324. 25	24	
22. 7	336. 15 — 338. 5	38	Faint.
			The entire limb of the Sun was examined with the slit radial on the C line only.

Greenwich Mean Solar Time, 1882.	Position-Angle from Sun's Axis.	Height in Seconds of arc on the C Line.	REMARKS.
d h m	° ′ ° ′	″	
May 17. 23. 59	13. 58 — 15. 48	29	
18. 0. 0	17. 48 — 20. 8	48	Fine arched prominence.
0. 1	29. 18 — 30. 8	17	Small straight jet.
0. 4	58. 3 — 59. 28	17	Partly detached.
0. 5	60. 33 — 64. 23	55	Fine bright prominence.
0. 6	75. 28 — 82. 13	24	Two jets bending over to the North.
0. 8	89. 58 — 92. 58	38	
0. 9	96. 48 — 100. 3	36	Bending over to the South.
0. 9	111. 8 — 112. 28	14	Small jet.
0. 10	134. 18 — 136. 33	22	Straight jet.
0. 11	151. 33 — 153. 18	19	
0. 12	193. 18 — 195. 8	19	
0. 13	194. 58 — 196. 48	22	
17. 23. 46	213. 48 — 217. 48	31	Partly detached.
23. 47	253. 48 — 256. 8	22	
23. 48	257. 28 — 260. 28	24	
23. 49	265. 58 — 267. 28	24	
23. 50	268. 38 — 275. 38	31	
23. 50	276. 28 — 277. 38	19	Small straight jet.
23. 51	290. 48 — 292. 38	22	Small straight jet.
23. 58	338. 58	19	Exceedingly narrow faint prominence.
			The entire limb of the Sun was examined once with the slit radial on the C line only.
May 20. 2. 1	19. 0 — 24. 0	43	Very fine forked prominence.
2. 0	50. 30 — 53. 20	53	
1. 58	53. 30 — 53. 50	22	Bright arched prominence; much detail.
1. 57	70. 0 — 71. 20	19	Bright straight jet.
1. 55	118. 30 — 120. 50	29	Straight jet.
2. 8	124. 30 — 126. 30	43	Bending over to the South.
2. 6	194. 50 — 196. 50	17	
2. 5	212. 0 — 217. 20	62	Fine bright forked jet.
2. 3	308. 30 — 309. 50	14	
2. 2	345. 50 — 347. 30	17	
			The entire limb of the Sun was examined once with the slit radial on the C line only.
July 30. 23. 30	126. 21 — 131. 51	22	Faint.
23. 33	147. 31 — 149. 31	36	Partly detached.
23. 35	249. 41 — 251. 31	22	
23. 36	275. 31 — 280. 21	14	
23. 30	341. 31 — 344. 31	29	Bright arched prominence.
23. 30	357. 31 — 358. 51	22	Faint.
			The entire limb of the Sun was examined on C, D_3, and also on D_1, D_2, b_1, b_2, b_4, E, and 1474 K. The latter seven lines showed nothing.

Greenwich Mean Solar Time, 1882.	Position-Angle from Sun's Axis.	Height in Seconds of arc.				Brightness.				Breadth.				REMARKS.
		C	D_3	1474 K	F	C	D_3	1474 K	F	C	D_3	1474 K	F	
d h m	° ′	″	″	″	″									
Sept. 7. 22. 37	14. 15	29	31	2?		$\frac{1}{3}$	$\frac{1}{3}$			$\frac{1}{2}$	$\frac{1}{4}$			Faint straight jet.
	16. 45													
22. 36	47. 45	29	34	5?	24	$\frac{3}{4}$	$\frac{3}{4}$		$\frac{1}{3}$	$\frac{3}{4}$	$\frac{1}{2}$		$\frac{2}{3}$	Straight jet.
	49. 15													
22. 35	60. 5	19	19		12	$\frac{3}{4}$	$\frac{1}{2}$		$\frac{1}{5}$	$\frac{3}{4}$	$\frac{1}{2}$		1	A low bank, arched at its northern end.
	70. 5													
23. 18	71. 5	19	19			$\frac{1}{3}$	$\frac{1}{5}$			$\frac{1}{3}$	$\frac{1}{5}$			Faint short straight jet.
	72. 45													
23. 17	78. 0	17	17		17	1	1		$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$		$\frac{2}{3}$	Short straight jet.
	80. 25													
23. 15	130. 5	34	34		34	1	1		$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$		$\frac{2}{3}$	Bright straight jet.
	133. 25													
23. 10	243. 45	24	22		14	$\frac{3}{4}$	1		$\frac{1}{3}$	$\frac{3}{4}$	$\frac{2}{3}$		1	Faint short jet.
	244. 15													

Greenwich Mean Solar Time, 1882.	Position Angle from Sun's Axis.	Height in Seconds of arc.				Brightness.				Breadth.				REMARKS.
		C	D_3	1474 K	F	C	D_3	1474 K	F	C	D_3	1474 K	F	
d h m	° ′	″	″	″										
Sept. 7. 23. 2	263. 45 267. 55	72	72		72	$\frac{1}{2}$	$\frac{1}{4}$		$\frac{1}{10}$	$\frac{1}{2}$	$\frac{1}{3}$		?	Tall broken prominence.
22. 41	283. 15 286. 25	31	31	5	19	1	$\frac{2}{3}$	$\frac{2}{3}$	$\frac{1}{3}$	1	$\frac{2}{3}$	1	1	Broken jet. Whilst being watched at about 23h. 0m., on the C line, a filament rose from the prominence to the height of 41″. The C line on the southern edge of the prominence was displaced towards the red by 0·5 tenth-metre, corresponding to a motion of recession of 14 miles per second. At 23h. 30m. it was very faint, and only 14″ in height.
22. 40	297. 45 302. 45	55	55		55	1	1		$\frac{1}{3}$	$\frac{2}{3}$	$\frac{1}{2}$		1	Fine bright tree-like prominence. The entire limb of the Sun was examined once with the slit radial on the C, D_1, D_2, D_3, E, b_1, b_2, b_3, b_4, 1474 K, and F lines.
Nov. 7. 23. 42	12. 14 14. 4	29	31			$\frac{1}{4}$	$\frac{1}{7}$			1	$\frac{2}{3}$			Faint; seen only on the C and D_3 lines.
23. 58	64. 54 66. 29	17	17		17	1	$\frac{2}{3}$		1	1	$\frac{2}{3}$		1½	The C line on the northern edge of the prominence was displaced towards the red by 1·0 tenth-metre, on the southern towards the blue by about ½ tenth-metre, corresponding respectively to a motion of recession of 28 miles per second, and to a motion of approach of 9 miles. The F line appeared most unusually bright. The 1474 K line, the b, D, and E lines, and several others near E, were fuzzy and ill-defined near the limb, but the limb boiled too violently for any short bright lines to be certainly made out.
8. 0. 4	,,	22												No displacement was now detected on the C line, but the prominence was slowly increasing in height, and the upper portion seemed to be becoming detached from the lower.
0. 9	85. 34 94. 54	17	17			$\frac{1}{2}$	$\frac{1}{10}$			$\frac{2}{3}$	$\frac{1}{3}$			Long low prominence; no detail; seen only on C and D_3.
0. 12	161. 54 163. 49	29	29			$\frac{1}{4}$	$\frac{1}{10}$			$\frac{1}{2}$	$\frac{1}{4}$			Faint; seen only on C and D_3.
0. 15	225. 49 228. 49	26	29		29	1	1		$\frac{2}{3}$	$\frac{3}{4}$	$\frac{1}{2}$		1	Bright straight jet. The F line was displaced 0·2 tenth-metre towards the blue, corresponding to a motion of approach of 8 miles per second.
0. 21	298. 34 301. 24	19	19			$\frac{2}{3}$	$\frac{1}{2}$			$\frac{2}{3}$	$\frac{1}{2}$			Small prominence; seen only on the C and D_3 lines. The entire limb of the Sun was examined twice with the slit radial on all the lines from B to F.

OBSERVATION of a SOLAR STORM at POSITION-ANGLE (from SUN'S AXIS) 296° 20′ on 1882 May 13.

A very remarkable storm took place at the above position-angle from 1h. 12m. to 1h. 15m., and had evidently been in progress for some time previously. Whilst the spectroscope was being centred on the Sun, about 0h. 45m. a short straight jet had been noticed here, some 26″ in height. At 1h. 13m. there was a prominence divided into three parts, and extending from 294° 32′ to 298° 22′. The uppermost part was completely detached, its highest point being 79″ from the limb, its lowest 46″, its average distance 65″. It showed a displacement on the C line of 1·5 tenth-metres towards the red, corresponding to a motion of recession of 43 miles per second. The middle part was also completely detached; its upper surface being 38″, its lower surface 22″ from the limb. The lowest portion was a short straight jet, from 14″ to 17″ in height, and extending from about 296° 22′ to 298° 22′. The uppermost portion as seen on the C line in the two minutes between 1h. 13m. and 1h. 15m. developed in the most extraordinary manner, moving in a diagonal direction along the spectrum, so that it was at the same time travelling rapidly towards the red end of the spectrum and away from the Sun's limb, growing fainter and spreading out meanwhile, and becoming diffused at its edges as it extended itself, until at last it reached the line λ 6573·5, a displacement of 11·4 tenth-metres, and attained a distance from the limb of 96″, having moved through 18″ in 2 minutes. By 1h. 15m. the entire prominence had disappeared. The uppermost part when first seen at 1h. 12m. was very bright, and extended from about 58″ to 72″, but it had spread out to the limits given above before any exact determinations could be obtained. On turning to the F line the fading fragments were just caught sight of before all had disappeared. The maximum displacement observed would correspond to a motion of recession of 325 miles per second, and the motion from the limb would be at the rate of about 68 miles per second.

OBSERVATIONS of SPECTRA of SUN SPOTS made at the ROYAL OBSERVATORY, GREENWICH, in the Year 1882.

The numeration of the spots is taken from the Photographic Results.

The observations were made by Mr. Maunder with the Half-prism Spectroscope mounted on the South-East Equatoreal. With the spectroscope in the direct position, one "half-prism" gives a dispersion of about 18½° from A to H, and two "half-prisms" a dispersion of about 80°. Occasionally the spectroscope was reversed end for end, the slit and eye-piece being interchanged. The spectroscope in this position gives great purity of spectrum. The wave-lengths of the lines observed and the corresponding elements are taken from Angström's *Spectre Normal du Soleil.* The wave-lengths of lines not given in Ångström's map are inferred from the wave-lengths of the neighbouring lines. Lines not given by Ångström are distinguished by an asterisk. The amount of broadening is expressed in terms of the normal breadth of the line.

SPOT No. 718.

1882 April 4.

The spectrum showed but little absorption, either general or selective. Not many lines were broadened, and these as a rule but to a slight extent. The "bands" first seen on 1880 November 27 were visible, but were faint. Definition poor. One-prism train direct. Magnifying power 28.

The following lines between *b* and F were observed to be changed over the spot. The C and D lines were also examined.

Wave-length.	Element.	Amount of Broadening.	Remarks.
Tenth-metres.			
6562·1	Hydrogen	..	C. Not perceptibly broadened. The edges of the line were a little fuzzy over the spot.
5895·1	Sodium	⅛	The D lines.
5889·1	Sodium	⅛	
5183·1	Magnesium	⅛	The *b* lines. These were very little affected. The edges of the lines were a little fuzzy over the spot.
5172·2	Magnesium	⅛	
5166·9	Iron and magnesium.	⅛	
5161·8	Iron	1	Displaced towards the red.
5158·6	Iron	1	Displaced towards the red.
5156·2*	..	..	One of the "bands" of 1880 November 27. Breadth 0·7 tenth-metre.
5155·2	Nickel	⅛	
5154·7	Sodium	⅛	
5153·2	..	⅛	
5152·7	Sodium and copper	⅛	
5151·4	Iron	⅛	
5150·3	Iron	⅛	
5149·0*	..	..	Greatly broadened. About 0·3 tenth-metre in breadth over the spot.
5147·6	Iron	⅛	
5145·9	Iron and nickel	⅛	
5144·6	..	⅛	
5138·8	Iron	⅛	
5138·3*	..	..	Line about 0·2 tenth-metre in breadth, seen only over the spot.
5136·9	Iron and nickel	⅛	
5136·4*	..	..	Line about 0·2 tenth-metre in breadth, seen only over the spot.
5133·1	Iron	Very slightly broadened.	
5131·0	Iron		
5128·7	Titanium		
5126·8	Iron		
5125·6	..		
5124·5	Iron		
5123·3	Iron		
5121·2	Iron		
5120·1	Titanium	..	A "band," 1·0 tenth-metre in breadth, seen only over the spot, lies on the more refrangible side of this line. The line seems to coincide exactly with one edge of the "band." If, therefore, the "band" is only the line greatly broadened, it is displaced towards the blue by 0·5 tenth-metre.
5117·8*	..	..	Two "bands," each 1·0 tenth-metre in breadth, seen only over the spot.
5116·0*	..	..	
5115·0	Nickel	..	Not seen at all over the spot.
5112·5*	..	..	Greatly broadened; 1·0 tenth-metre in breadth over the spot.
5110·9*	..	..	Greatly broadened; about 0·2 tenth-metre in breadth over the spot.
5109·9	Iron	⅛	
5109·0	..	⅛	
5107·2	Iron	⅛	
5105·1	Copper	⅛	
5103·8	..	⅛	
5102·3	..	⅛	
5101·0*	..	..	Greatly broadened; about 0·2 tenth-metre in breadth over the spot.
5099·2	Nickel	⅛	
5098·3	Iron	Slightly	
5096·0*			A broad band or cluster of lines, seen only over the spot.
5093·5*			
5092·0*	..	..	A "band," 1·0 tenth-metre in breadth, seen only over the spot.
5090·5	Iron	⅛	
5089·5*	..	..	Three "bands," each 1·0 tenth-metre in breadth, seen only over the spot.
5087·5*	..	..	
5085·5*	..	..	

Wave-length.	Element.	Amount of Broadening.	Remarks.
Tenth-metres.			
5083·7	..	Slightly	
5082·6	Iron	Slightly	
5081·9	..	1	
5076·0	Iron	½	
5074·2	Iron	?	
5071·8	Iron	¼	
5070·0*			Four lines, each very faint and narrow on the general disk, but 0·2 tenth-metre in breadth over the spot.
5065·0*			
5062·6*			
5061·0*			
5059·9	Iron	¼	From this line to λ 5055·4 there extends in the spot-spectrum a broad band, apparently made up of a number of fine lines, but which the dispersion employed could not satisfactorily resolve.
5055·4*			
5054·8*			Another broad band, also apparently made up of a number of fine lines, which could not be satisfactorily isolated.
5051·6			
5049·5	Iron	¼	
5048·3	..	¼	
5047·9	Iron	¼	
5043·5	Iron	¼	
5041·3	Iron and calcium	½	
5040·3	Iron	½	
5037·7	Titanium	¼	
5035·9	Titanium	¼	
5035·5	Titanium	¼	
5035·0	Nickel	¼	
5032·3*	..	..	A line 0·6 tenth-metre in breadth, seen only over the spot.
5030·3	..	½	
5029·1	..	1	
5027·4	Iron	¼	
5026·5	Iron	¼	
5024·2*	..	⅕	
5023·8*	..	⅕	
5021·9	..	⅓	
5021·3	Iron	⅕	
5019·5	Iron and titanium	Slightly	
5017·8	..	?	
5016·8	Nickel	⅓	
5015·6*	..	⅓	
5014·4	Iron	⅕	
5013·3	Titanium	⅕	
5009·0*	..	..	Very greatly broadened over the spot.
5006·7	Iron and titanium	Slightly	
5003·2	Iron	⅛	
5002·1	Iron	⅕	
4998·9	Titanium	⅕	
4997·5	..	⅕	
4996·1	..	⅕	
4993·4	Iron	⅓	
4990·5	Iron and titanium	¼	
4988·5	Iron	¼	
4984·8	Iron	¼	
4979·8	Nickel and titanium.	Slightly	
4977·9	Iron	¼	
4975·9	..	⅛	
4975·2	..	⅕	
4965·5	Iron	?	
4964·8	..	⅕	
4961·8	Iron	⅕	
4956·9	Iron	¼	
4954·4	Iron	?	
4952·2	Iron	½	
4952·0	..	3/10	
4949·5	Iron	Slightly	
4947·5*	..	½	
4939·0	..	¼	
4938·4	Iron	¼	
4938·0	Iron	¼	
4937·4	..	⅕	
4936·5	..	?	
4935·2	Nickel	⅕	
4933·6	Barium	Slightly	
4932·9	Iron	Slightly	
4931·3	..	1	
4929·6	Iron	⅕	
4927·0	..	1	
4926·7	Iron	1	
4919·9	Iron	¼	
4918·3	Iron	¼	
4913·4	..	3/10	
4911·3	..	⅕	
4904·1	Nickel	¼	
4902·6	Iron	⅕	
4899·5	Barium	½	
4896·0	..	?	
4892·3	..	?	
4891·0	Iron	⅖	
4890·2	Iron	⅖	
4884·4	..	¼	
4888·1	Iron	¼	
4886·8	Iron	?	
4886·0	Iron	⅕	
4884·7	Iron and titanium	?	
4881·1	Iron	¼	
4879·2*	..	¼	Not shown in Fievez's map.
4877·6	Iron and calcium	Slightly	
4875·5	Iron	1	
4872·7*	..	⅓	
4871·4	Iron	¼	
4870·6	Iron	¼	
4869·1*	..	¼	
4867·7	Cobalt	½	
4865·4	Nickel	⅕	
4864·2*	..	¼	
4863·7	Iron	⅕	
4860·7	Hydrogen	..	F. Not perceptibly broadened. The edges of the line were a little fuzzy over the spot.

NOTE.—Ångström's map shows only two of the four lines between λ 5138·8 and λ 5136·4, but Fievez's *Spectre Solaire* shows all four. Only the two lines given by Ångström, viz., λ 5138·8 and λ 5136·9, could be seen on the general disk, but all four were seen distinctly over the spot, although the dispersion employed was much less than that employed by M. Fievez. This observation was repeated on May 20.

SPOT No. 729.

1882 April 14.

The greater part of the spot showed scarcely any trace of absorption either general or selective, and it was only over the darkest part of the various nuclei that any marked difference in the spectrum could be perceived.

The wind was so high and the interval of sunshine was so short that but little could be made out. The spectrum, however, did not differ greatly from that ordinarily shown by Sun-spots. The "bands" were seen to be fairly distinct, and two or three fresh bands near b on the red side were noticed. The spectrum of the largest nucleus gave evidence of an absorption both general and selective rather beyond the average. Most of the lines usually broadened between C and F were affected to a considerable extent. C, F, and the two D lines were broadened by about one-half. All four lines were very diffused at their edges over the spot. The b lines were in a part of the spectrum which was very dark over the spot, and appeared enormously broadened, an appearance probably due not so much to any change in the lines themselves as to the broadening and deepening of many of the fine faint lines in their immediate neighbourhood.

The wave-lengths of the "bands" referred to above, and on April 21, are as follows:—

Group I.—5120·1, 5117·8, 5116·0.
Group II.—5096·4, 5095·3, 5094·2.
Group III.—5092·8, 5092·1.
Group IV.—5089·5, 5087·5, 5085·5.
Group V.—5058·3, 5055·8, 5053·8, 5052·5.

SPOT No. 729.

1882 April 21.

The two principal nuclei of the spot were examined and their spectra showed much general absorption, but the selective absorption was not at all unusual in character or amount. A large number of lines were broadened, but none to any great extent. The D and b lines were broadened by about one-half, C and F by about one-third, and the E lines by about one-quarter. All these lines had very ill-defined edges over the spot. 1474 K was a little broader and darker, but as sharp as usual. The "bands" could just be detected. No difference was perceived between the two nuclei. The definition was very bad, the Sun being in white haze. One-prism train direct. Magnifying power 28. Position angle of slit 5°.

SPOT No. 726.

1882 April 21.

The general absorption was not so marked as for Spot No. 729; the selective absorption was therefore easier to observe. C and F were about half as broad again as usual; b_1 and b_2 were broader by about one-fourth; b_3 and b_4 were scarcely affected; the D lines were doubled. All these lines were much sharper than in the spectrum of Spot No. 729; whilst the E lines and 1474 K showed much the same appearance as over that spot. The "bands," though not prominent, were more easily seen over the present spot than over Spot No. 729. No displacements were noticed, nor was any difference detected between the spectra of the East and West nuclei. One-prism train direct. Magnifying power 28. Position angle of slit 348°.

SPOT No. 759.

1882 May 20.

Early in the morning it was believed that the spot spectrum showed several marked cases of twisting or displacement; but a more careful examination later on, made under more favourable circumstances, showed that this appearance was entirely due to fresh lines, of which a large number were seen over the spot, which were not distinguishable on the Sun. The "bands" were also strongly marked, and in some instances were traceable to a great distance from the spot. The definition was very variable, usually very bad.

The following lines between b and λ 5043 were observed to be changed over the spot. The C and D lines were also examined. Nothing remarkable either as to displacement or great broadening of the lines of the spectrum or as to the appearance of new lines was noticed in the spectrum from λ 5043 to F.

Wave-length.	Element.	Amount of Broadening.	Remarks.
Tenth-metres.			
6562·1	Hydrogen	½	C.
5895·1	Sodium	1	D_1.
5889·1	Sodium	1½	D_2. The extension towards the blue appeared to be twice as great as that towards the red.
5183·1	Magnesium	¼	b_1. Very ill-defined over the spot.
5172·2	Magnesium	¼	b_2. Very ill-defined over the spot.
5171·2	Iron	..	Very much broadened, 0·3 tenth-metre over the spot.
5168·5	Iron and nickel	¼	b_3. Very ill-defined over the spot.
5166·9	Iron and magnesium.	¼	b_4. Very ill-defined over the spot.
5164·7	Iron	⅓	
5164·2	..	⅓	
5162·3*	..	..	A "band," 0·8 tenth-metre in breadth, seen only over the spot.
5161·8	Iron	⅕	
5159·6*	..	..	A "band," 0·6 tenth-metre in breadth, seen only over the spot.
5156·2*	..	..	A "band," 0·7 tenth-metre in breadth, seen only over the spot.
5153·2	..	Slightly	
5152·7	Sodium and copper	1/10	
5151·4	Iron	⅓	
5150·3	Iron	⅕	
5190·2*	..	..	A "band," 1·0 tenth-metre in breadth, seen only over the spot.
5147·6	Iron	¼	
5145·9	Iron and nickel	¼	
5144·6	..	¼	
5142·2	..	⅕	
5141·8	Iron	⅕	
5141·4	..	⅕	
5138·8	Iron	¼	
5138·3*	..	..	Line about 0·3 tenth-metre in breadth, seen only over the spot.
5136·9	Iron and nickel	⅕	
5136·4*	..	..	Line about 0·3 tenth-metre in breadth, seen only over the spot.
5133·7*	..	..	Line about 0·1 tenth-metre in breadth, seen only over the spot.
5133·1	Iron	1/10	
5131·0	Iron	1/10	
5129·4*	..	..	Line about 0·2 tenth-metre in breadth, seen only over the spot.
5128·7	Titanium	1	
5126·8	Iron	¼	
5125·6	..	¼	
5124·5	Iron	Slightly	
Tenth-metres.			
5123·3	Iron	⅕	
5121·2	Iron	⅓	
5120·1	Titanium	..	A "band," 0·8 tenth-metre in breadth, seen only over the spot, lies on the more refrangible side of this line. The line seems to coincide exactly with one edge of the "band." If, therefore, the "band" is really only the line greatly broadened, it is displaced towards the blue by 0·4 tenth-metre.
5117·8*			Two "bands," each 0·8 tenth-metre in breadth, seen only over the spot.
5116·0*			
5115·0	Nickel	..	Not visible over the spot.
5113·8*	..	..	A "band," 0·8 tenth-metre in breadth, seen only over the spot.
5109·9	Iron	Slightly	
5109·0	..	Slightly	
5101·0*	..	..	Greatly broadened; about 0·2 tenth-metre in breadth over the spot.
5098·3	Iron	½	
5096·5*			A broad "band" formed of three lines, connected by a dark haze, seen only over the spot. The centres of the lines have wave-lengths 5096·4, 5095·3, and 5094·2 respectively.
5094·0*			
5092·8*			Two "bands," each 0·6 tenth-metres in breadth, seen only over the spot.
5092·1*			
5090·5	Iron	¼	
5089·5*			Three "bands," each 1·0 tenth-metre in breadth, seen on the Sun as well as over the spot, but much less distinctly.
5087·5*			
5085·5*			
5083·7	..	Slightly	
5082·6	Iron	Slightly	
5081·9	..	1	
5078·0	Iron	1/10	
5076·4*	..	..	Not shown in Fievez's map. Seen only over the spot, 0·2 tenth-metre in breadth.
5076·0	Iron	1/10	
5074·2	Iron	1/10	
5071·8	Iron	..	Very greatly broadened; 0·6 tenth-metre in breadth over the spot.
5068·3	Iron	⅕	Displaced slightly towards the red. Diffused at the edges.
5066·5	Iron	½	

Wave-length.	Element.	Amount of Broadening.	Remarks.
Tenth-metres.			
5064·5	Iron and titanium	$\frac{1}{5}$	Double line. The two components were not separated by the dispersion employed.
5063·2*	..	..	Line about 0·2 tenth-metre in breadth, seen only over the spot.
5061·4*	..	..	A "band," 0·7 tenth-metre in breadth, seen only over the spot.
5059·9	Iron	$\frac{1}{2}$	
5058·3*	..	..	A "band," 0·7 tenth-metre in breadth, seen only over the spot.
5055·8*	..	..	A "band," 0·7 tenth-metre in breadth, seen only over the spot.
5053·8*	..	..	Line about 0·4 tenth-metre in breadth, seen only over the spot.
5052·5*	..	..	Line about 0·2 tenth-metre in breadth, seen only over the spot.
5051·1	Iron	$\frac{1}{3}$	
5049·5	Iron	$\frac{3}{10}$	
5048·3	..	$\frac{1}{4}$	
5047·9	Iron	$\frac{1}{4}$	
5047·0*	..	..	Line about 0·2 tenth-metre in breadth, seen only over the spot.
5046·0*	..	..	Line about 0·1 tenth-metre in breadth, seen only over the spot.
5044·5*	..	Slightly	
5043·5	Iron	1	
4860·7	Hydrogen	$\frac{1}{4}$	F.

Spot No. 876.

1882 November 8. 22h.

The spectrum of this spot was examined in a brief interval of sunlight, but only one or two lines could be observed. The D lines were doubled in breadth, the *b* lines were broader by one-half, whilst the F line was hardly, if at all, affected. One-prism train direct. Magnifying power 28. Position angle of slit 315°.

1882 November 9d. 23h. to 10d. 1h.

The group was broken up into a great number of small spots, which proved very difficult to observe on account of their small size. The spectrum could only be mapped from about F to C. One-prism train direct. Magnifying power 28. Position angle of slit 95°.

The following lines between λ 4854·9 and λ 4919·9 were observed to be changed over the spot:—

Wave-length.	Element.	Amount of Broadening.	Remarks.
Tenth-metres.			
4854·9	Iron and nickel	$\frac{2}{5}$	
4859·3	Iron	$\frac{1}{4}$	
4860·7	Hydrogen	?	
4863·7	Iron	Slightly	
4865·4	Nickel	Slightly	
4867·7	Cobalt	$\frac{1}{4}$	
4870·6	Iron	$\frac{1}{4}$	
4871·4	Iron	$\frac{1}{4}$	
4877·6	Iron and calcium	$\frac{2}{5}$	
4879·0*	..	$\frac{1}{5}$	Not shown in Fievez's map.
4881·1	Iron	Slightly	
4883·0	..	$\frac{1}{4}$	
4884·7	Iron and titanium	Slightly	
4888·1	Iron	$\frac{1}{4}$	
4890·2	Iron	$\frac{1}{2}$	
4891·0	Iron	$\frac{1}{2}$	
4899·5	Barium	$\frac{2}{5}$	
4902·6	Iron	$\frac{1}{5}$	
4904·1	Nickel	$\frac{1}{5}$	
4907·1	Iron	$\frac{1}{3}$	
4913·4	..	$\frac{1}{4}$	
4916·6	..	$\frac{1}{5}$	
4918·3	Iron	$\frac{1}{2}$	
4919·9	Iron	$\frac{1}{2}$	

Spot No. 885.

1882 November 17d. 23h. to 18d. 1h.

The following lines were observed to be reversed, *i.e.*, bright instead of dark, over the principal nucleus of the spot:—C, D_1, D_2, D_3, and F. Of these, C and F were exceedingly bright, particularly F; and this, notwithstanding that the mist enfeebled the blue and violet portions of the spectrum. D_3 was only perceived for a short time, apparently when the mist was lightest, about 23h 50m. D_1 and D_2 were not only reversed but extravagantly broadened, each line forming a very broad and ill-defined dark band, quite six tenth-metres in breadth, with a sharp, narrow, bright line in the centre, apparently at the normal place of the line. This appearance and the reversal of D_3 were noticed whenever the definition and light were a little better than usual. The reversal of C and F took place over the bright tongue, which all but divided the largest nucleus of the spot into two nearly equal portions. The reversal of the sodium lines was not noticed at the point where C and F were brightest.

The third and fourth lines of hydrogen could not be detected, but the mist made it impossible to observe the extreme ends of the spectrum.

The *b* lines and 1474 K showed no appreciable change. The strong calcium lines between C and D were doubled in breadth. The E lines were less strongly affected, and were, perhaps, one-third as broad again as usual.

The *general* absorption of the spot was small, that is, the continuous spectrum was not so much fainter than that of the general disk as might have been expected.

The Sun was not well seen, the day being misty and cloudy. Two-prism train reversed. Magnifying power 28.

1882 November $19^d.\ 23^h.$ to $20^d.\ 0^h.$

The spectrum of the principal nucleus was again examined. The *general* absorption was more marked than on November 18, and more lines were noticed to be broadened. The general absorption was not, however, uniform; here and there, there were broad ill-defined patches, noticeably darker than the rest of the spectrum. The district lying between λ 4900 and λ 4830 was one of the most marked of these.

The C line was seen reversed right across the great nucleus. D_3 and F were suspected to be reversed, but, owing to the mist, could not be clearly seen as bright lines. D_1 and D_2 also could not be seen as bright lines, but they presented exactly the same appearance as on November 18 at those times when the mist was too dense to permit the reversal to be clearly seen; that is, they were very much broadened, were very ill-defined, and much fainter than usual in the middle. Several other lines, amongst them λ 4957, λ 4920, and λ 4918, closely resembled the D lines. The 1474 K line did not appear to be affected, but one near it, either λ 5301 or λ 5307,—there was not time to properly identify the line, but it was believed to be λ 5307,— vanished over the spot.

The calcium and iron lines between C and D were much broadened, and also those near λ 5600 and λ 5856. These were broader by about two-thirds; the E lines were broader by about one-half; the *b* lines by one-quarter. All these lines were, as a rule, well-defined, that is to say, they did not show the "smudged" appearance seen in the D lines and the three iron lines near F, mentioned above. Two-prism train reversed. Magnifying power 28.

The spectroscope was afterwards placed in the direct position, as used for observation of stellar spectra, and only one "half-prism" was employed. With this dispersion, a remarkable reversion of the F line was noticed. At the preceding edge of the great nucleus there was a broad bright flame, which, touching the F line at the extreme preceding edge of the nucleus, sloped away from the nucleus in the preceding direction, and from the F line towards the blue. It was inclined to the F line at an angle of about 40°, was 1, or, perhaps, $1\frac{1}{4}$ tenth-metre in average breadth, and extended to a distance from the F line of 3 or, perhaps, $3\frac{1}{2}$ tenth-metres. It was pointed at each end, and was nearly but not quite straight, being a little twisted near its centre. A displacement of $3\frac{1}{2}$ tenth-metres towards the blue would correspond to a motion of approach of 134 miles per second. Time of observation, November $19^d.\ 23^h.\ 20^m.$

The Sun was not well seen, the day being misty.

November 21.

The Sun was only seen through fog and was very faint. The spot-spectrum was therefore a dense black band, in which it was very difficult to perceive any details. The C and F lines were reversed over the greater portion of the area of the spot, not, however, over the very darkest part of the principal nucleus, but over all its fainter portions. D_3 and, perhaps, 1474 K seemed to be reversed over the same region. The latter line seemed to be displaced nearly 1 tenth-metre towards the red. The D lines together covered quite 10 tenth-metres, and ran one into the other; they were very ill-defined, and appeared exactly as on November 20. They extended further towards the blue than towards the red; in fact, the broadening seemed traceable twice as far in the first direction as in the second. A very large percentage of the lines between D and F had a similar appearance to that shown by the D lines and the iron lines near F on November 20, *i.e.*, they were very much broader than on the general disk, were very ill-defined, and were much fainter than the corresponding lines on the Sun, especially about their centres. It is therefore probable that a clearer day would have shown them as distinctly reversed, especially as the F line showed precisely the same "smudged" appearance whenever the fog became too thick for it to be seen as a bright line.

Group α and the lines at λ 6200 were very much broadened, principally on the side nearer the blue.

A momentary gleam of clearer sunlight showed F reversed in the most intricate and beautiful manner right across the great nucleus, not over its entire area, but at short intervals from one side to the other, even over its blackest portion. These stars of brilliant blue light were on the average about twice as broad as the dark F line on the general disk, sometimes four times as broad, and were but little, if at all, displaced.

The Sun was in a yellow fog during the whole time of examination. Two-prism train reversed. Magnifying power 28.

MEASURES of DISPLACEMENT of LINES in the SPECTRA of STARS, as compared with those of ROYAL OBSERVATORY, GREENWICH,

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

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

Date, 1882, Greenwich Sidereal Time.	Observer.	Number of Half-Prisms.	Reading of Position Circle.	Objects compared.	Micrometer Readings.	Displacement. Measured.	Displacement. Estimated in Terms of the Breadth of the Comparison Line.	Width of Slit.
d h m			°		r	r		r
Feb. 10. 5. 0	M	1	6	γ Orionis F	0·411			
				H β	0·309	+ 0·102	$\frac{1}{2}$ towards red	0·165
5. 35	,,	,,	,,	γ Orionis F	0·379			
				H β	0·293	+ 0·086	$\frac{2}{5}$ towards red	0·165
6. 0	,,	,,	,,	γ Orionis F	0·335			
				H β	0·285	+ 0·050	$\frac{1}{4}$ towards red	0·165
Feb. 10. 6. 10	M	1	6	β Tauri F	0·298			
				H β	0·358	− 0·060	$\frac{3}{10}$ towards blue	0·165
6. 25	,,	,,	,,	β Tauri F	0·268			
				H β	0·353	− 0·085	$\frac{2}{5}$ towards blue	0·165
6. 40	,,	,,	,,	β Tauri F	0·346			
				H β	0·372	− 0·026	$\frac{1}{10}$ towards blue	0·165
Feb. 10. 7. 0	M	1	6	Sirius F.....	0·234			
				H β	0·225	+ 0·009	$\frac{1}{10}$ towards red	0·165
	,,	,,	,,	Sirius F.....	0·293			
				H β	0·235	+ 0·058	$\frac{1}{4}$ towards red	0·165
	,,	,,	,,	Sirius F.....	0·296			
				H β	0·254	+ 0·042	$\frac{1}{5}$ towards red	0·165
	,,	,,	,,	Sirius F.....	0·298			
				H β	0·272	+ 0·026	$\frac{1}{10}$ towards red	0·165
	,,	,,	,,	Sirius F.....	0·300			
				H β	0·254	+ 0·046	$\frac{1}{5}$ towards red	0·165
8. 0	,,	,,	,,	Sirius F.....	0·298			
				H β	0·332	− 0·034	$\frac{1}{5}$ towards blue	0·165
Feb. 10. 8. 50	M	1	6	Procyon F	0·568			
				H β	0·429	+ 0·139	$\frac{2}{3}$ towards red	0·165
9. 0	,,	,,	,,	Procyon F	0·525			
				H β	0·430	+ 0·095	$\frac{1}{2}$ towards red	0·165
Feb. 10. 9. 20	M	1	6	Castor F	0·263			
				H β	0·246	+ 0·017	$\frac{1}{10}$ towards red	0·165
	,,	,,	,,	Castor F	0·397			
				H β	0·253	+ 0·144	$\frac{2}{3}$ towards red	0·165
	,,	,,	,,	Castor F	0·412			
				H β	0·272	+ 0·140	$\frac{2}{3}$ towards red	0·165
9. 45	,,	,,	,,	Castor F	0·364			
				H β	0·273	+ 0·091	$\frac{2}{5}$ towards red	0·165

TERRESTRIAL ELEMENTS, and CONCLUDED MOTIONS in the LINE of SIGHT, from OBSERVATIONS at the in the Year 1882.

1rev. of the micrometer corresponds, with one "half-prism" to 10·3 tenth-metres or 372 miles per second for the *b* lines, and to 7·99 tenth-metres or 307 miles per second for the F line; and with two "half-prisms" to 2·0 tenth-metres or 73 miles per second for *b* and to 1·67 tenth-metres or 64 miles per second for F.

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

The slit lies north and south when the reading of the Position-Circle is 6°.

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

Earth's Motion in Miles per Second.	Concluded Motion of Star in Miles per Second.		REMARKS.
	Measured.	Estimated.	
+16·0	+ 15·4	+ 11·9	Star-line and spectrum faint. Light cloud interfered with the observations. Hence the measures were made with great difficulty.
+16·0	+ 10·5	+ 6·3	
+16·0	− 0·6	− 2·1	
+16·4	− 34·9	− 33·1	Definition good. Direct comparison showed an unmistakeable but small displacement towards the blue.
+16·4	− 42·6	− 38·7	
+16·4	− 24·4	− 22·0	
+ 9·3	− 6·6	− 3·8	Repeated and careful direct comparisons failed to show any decided displacement at all. If there was any it was towards the red, in accordance with the measures. Direct comparison is, however, difficult when the amount of displacement is small. The clock drove badly at the time of the last measure, rendering it doubtful. The second and three following measures seemed good.
+ 9·3	+ 8·6	+ 4·6	
+ 9·3	+ 3·6	+ 1·9	
+ 9·3	− 1·3	− 3·8	
+ 9·3	+ 4·9	+ 1·9	
+ 9·3	− 19·8	− 20·5	
+ 8·5	+ 34·3	+ 28·7	Definition good.
+ 8·5	+ 20·8	+ 19·4	
+10·3	− 5·0	− 4·7	Star-line broad and ill-defined. Spectrum faint. Definition good for last measure.
+10·3	+ 34·1	+ 26·9	
+10·3	+ 32·9	+ 26·9	
+10·3	+ 17·8	+ 12·0	

Date, 1882, Greenwich Sidereal Time.	Observer.	Number of Half-Prisms.	Reading of Position Circle.	Objects compared.	Micrometer Readings.	Displacement.		Width of Slit.
						Measured.	Estimated in Terms of the Breadth of the Comparison Line.	
d h m			°		r	r		r
Feb. 10. 9. 55	M	1	6	Pollux F	0·188			
				H β	0·242	− 0·054	⅕ towards blue	0·165
	,,	,,	,,	Pollux F	0·226			
				H β	0·238	− 0·012	Coincident	0·165
	,,	,,	,,	Pollux F	0·268			
				H β	0·240	+ 0·028	$\frac{1}{10}$ towards red	0·165
10. 10	,,	,,	,,	Pollux F	0·166			
				H β	0·194	− 0·028	$\frac{1}{10}$ towards blue	0·165
Feb. 11. 0. 0	M	1	6	Sky F	0·398			
				H β	0·372	+ 0·026		0·165
	,,	,,	,,	Sky F	0·381			
				H β	0·371	+ 0·010		0·165
	,,	,,	,,	Sky F	0·348			
				H β	0·368	− 0·020		0·165
	,,	,,	,,	Sky F	0·384			
				H β	0·388	− 0·004		0·165
	,,	,,	,,	Sky F	0·378			
				H β	0·370	+ 0·008		0·165
Mar. 14. 0. 0	M	1	5	Sky F	0·763			
				H β	0·762	+ 0·001	Coincident	0·144
	,,	,,	,,	Sky F	0·796			
				H β	0·766	+ 0·030	Coincident	0·144
	,,	,,	,,	Sky F	0·778			
				H β	0·768	+ 0·010	Coincident	0·144
	,,	,,	,,	Sky F	0·790			
				H β	0·793	− 0·003	Coincident	0·144
	,,	,,	,,	Sky F	0·775			
				H β	0·769	+ 0·006	Coincident	0·144
Mar. 14. 7. 30	M	1	5	Sirius F	0·621			
				H β	0·562	+ 0·059	⅛ towards red	0·144
7. 45	,,	,,	,,	Sirius F	0·596			
				H β	0·543	+ 0·053	⅛ towards red	0·144
7. 55	,,	,,	,,	Sirius F	0·598			
				H β	0·536	+ 0·062	⅛ towards red	0·144
8. 5	,,	,,	,,	Sirius F	0·582			
				H β	0·548	+ 0·034	⅕ towards red	0·144
8. 15	,,	,,	,,	Sirius F	0·531			
				H β	0·506	+ 0·025	⅐ towards red	0·144
Mar. 14. 8. 35	M	1	5	γ Geminorum F	0·398			
				H β	0·436	− 0·038	⅕ towards blue	0·144
8. 45	,,	,,	,,	γ Geminorum F	0·488			
				H β	0·452	+ 0·036	⅐ towards red	0·144
9. 0	,,	,,	,,	γ Geminorum F	0·373			
				H β	0·443	− 0·070	¼ towards blue	0·144
9. 10	,,	,,	,,	γ Geminorum F	0·378			
				H β	0·415	− 0·037	⅛ towards blue	0·144
Mar. 14. 9. 20	M	1	5	Procyon F	0·696			
				H β	0·648	+ 0·048	¼ towards red	0·144
9. 25	,,	,,	,,	Procyon F	0·782			
				H β	0·686	+ 0·096	½ towards red	0·144
9. 35	,,	,,	,,	Procyon F	0·718			
				H β	0·663	+ 0·055	⅛ towards red	0·144
9. 45	,,	,,	,,	Procyon F	0·698			
				H β	0·654	+ 0·044	¼ towards red	0·144

Earth's Motion in Miles per Second.	Concluded Motion of Star in Miles per Second.		REMARKS.
	Measured.	Estimated.	
+ 9·3	− 26·0	− 20·5	Definition good but spectrum and lines faint.
+ 9·3	− 13·0	− 9·3	
+ 9·3	− 0·7	− 3·7	
+ 9·3	− 17·9	− 14·9	
	+ 8·0		The faintness of the hydrogen spectrum rendered direct comparison absolutely impossible and made fair and trustworthy measures difficult. There was, however, no sign of any displacement. The hydrogen spectrum was very well defined though faint.
	+ 3·1		
	− 6·2		
	− 1·2		
	+ 2·5		
	+ 0·3		
	+ 9·2		
	+ 3·1		
	− 0·9		
	+ 1·8		
+ 13·6	+ 4·5	+ 11·2	Line well seen though the spectrum was tremulous. Direct comparison showed a small but distinct displacement towards the red.
+ 13·6	+ 2·7	+ 11·2	
+ 13·6	+ 5·4	+ 11·2	
+ 13·6	− 3·2	+ 1·3	
+ 13·6	− 5·9	− 3·0	
+ 18·0	− 29·7	− 32·9	
+ 18·0	− 6·9	− 7·4	
+ 18·0	− 39·5	− 36·6	
+ 18·0	− 29·4	− 32·9	
+ 15·5	− 0·8	+ 3·1	Definition fair.
+ 15·5	+ 14·0	+ 21·7	
+ 15·5	+ 1·4	+ 9·3	
+ 15·5	− 2·0	+ 3·1	

Date, 1882, Greenwich Sidereal Time.	Observer.	Number of Half-Prisms.	Reading of Position Circle.	Objects compared.	Micrometer Readings.	Displacement.		Width of Slit.
						Measured.	Estimated in Terms of the Breadth of the Comparison Line.	
d h m			°		r	r		r
Mar. 14. 10. 0	M	1	5	Castor F	0·525			
				H β	0·413	+ 0·112	$\frac{3}{5}$ towards red	0·144
10. 10	,,	,,	,,	Castor F	0·512			
				H β	0·416	+ 0·096	$\frac{3}{5}$ towards red	0·144
10. 25	,,	,,	,,	Castor F	0·436			
				H β	0·398	+ 0·038	$\frac{1}{3}$ towards red	0·144
Mar. 14. 10. 40	M	1	5	Pollux F	0·343			
				H β	0·415	− 0·072	$\frac{1}{3}$ towards blue	0·144
10. 55	,,	,,	,,	Pollux F	0·324			
				H β	0·408	− 0·084	$\frac{2}{5}$ towards blue	0·144
Apr. 5. 9. 55	M	1	6	Sirius F	0·942			
				H β	0·825	+ 0·117	$\frac{3}{5}$ towards red	0·159
10. 10	,,	,,	,,	Sirius F	0·898			
				H β	0·821	+ 0·077	$\frac{2}{5}$ towards red	0·159
10. 20	,,	,,	,,	Sirius F	0·848			
				H β	0·798	+ 0·050	$\frac{1}{4}$ towards red	0·159
Apr. 5. 10. 35	M	1	6	Procyon F	0·955			
				H β	0·825	+ 0·130	$\frac{3}{5}$ towards red	0·159
10. 50	,,	,,	,,	Procyon F	0·922			
				H β	0·816	+ 0·106	$\frac{1}{2}$ towards red	0·159
Apr. 5. 11. 0	M	1	6	Castor F	0·906			
				H β	0·776	+ 0·130	$\frac{3}{5}$ towards red	0·159
11. 15	,,	,,	,,	Castor F	0·943			
				H β	0·809	+ 0·134	$\frac{3}{5}$ towards red	0·159
Apr. 6. 0. 0	M	1	6	Sky F	0·453			
				H β	0·572	− 0·119		0·159
	,,	,,	,,	Sky F	0·429			
				H β	0·484	− 0·055		0·159
	,,	,,	,,	Sky F	0·548			
				H β	0·500	+ 0·048		0·159
	,,	,,	,,	Sky F	0·508			
				H β	0·443	+ 0·065		0·159
	,,	,,	,,	Sky F	0·448			
				H β	0·450	− 0·002		0·159
Apr. 8. 9. 30	M	1	6	Sirius F	0·249			
				H β	0·188	+ 0·061	$\frac{1}{4}$ towards red	0·210
9. 40	,,	,,	,,	Sirius F	0·251			
				H β	0·187	+ 0·064	$\frac{3}{10}$ towards red	0·210
9. 45	,,	,,	,,	Sirius F	0·219			
				H β	0·177	+ 0·042	$\frac{1}{7}$ towards red	0·210
9. 55	,,	,,	,,	Sirius F	0·329			
				H β	0·172	+ 0·157	$\frac{3}{5}$ towards red	0·210
10. 5	,,	,,	,,	Sirius F	0·242			
				H β	0·187	+ 0·055	$\frac{1}{4}$ towards red	0·210
10. 15	,,	,,	,,	Sirius F	0·243			
				H β	0·187	+ 0·056	$\frac{3}{10}$ towards red	0·210
Apr. 8. 10. 35	M	1	6	θ Leonis F	0·828			
				H β	0·810	+ 0·018	Coincident.	0·210
10. 45	,,	,,	,,	θ Leonis F	0·838			
				H β	0·814	+ 0·024	$\frac{1}{10}$ towards red	0·210
10. 55	,,	,,	,,	θ Leonis F	0·908			
				H β	0·788	+ 0·120	$\frac{1}{2}$ towards red	0·210

Earth's Motion in Miles per Second.	Concluded Motion of Star in Miles per Second.		REMARKS.
	Measured.	Estimated.	
			Definition fair.
+ 16·7	+ 17·7	+ 27·9	
+ 16·7	+ 12·8	+ 27·9	
+ 16·7	− 5·0	− 1·8	
+ 16·3	− 38·4	− 41·1	
+ 16·3	− 42·1	− 46·0	
			Spectrum very tremulous. Direct comparison showed little or no displacement.
+ 14·1	+ 21·8	+ 28·3	
+ 14·1	+ 9·6	+ 14·2	
+ 14·1	+ 1·3	+ 3·6	
			Spectrum fairly steady but faint for a star of this magnitude.
+ 17·4	+ 22·5	+ 25·0	
+ 17·4	+ 15·2	+ 17·9	
			Spectrum rather faint but steady, and definition fair.
+ 18·0	+ 21·9	+ 24·4	
+ 18·0	+ 23·2	+ 24·4	
	− 36·6		
	− 16·9		
	+ 14·7		
	+ 20·0		
	− 0·6		
			Spectrum very tremulous but star-line very distinctly seen and easy to bisect. Direct comparison showed a small displacement towards the red, just enough to be clearly made out. The last two measures were not made under such good circumstances as the first four.
+ 14·0	+ 4·7	+ 4·7	
+ 14·0	+ 5·7	+ 8·4	
+ 14·0	− 1·8	− 4·0	
+ 14·0	+ 34·2	+ 30·8	
+ 14·0	+ 2·9	+ 4·7	
+ 14·0	+ 3·2	+ 8·0	
			Spectrum faint. Star-line broad but faint.
+ 10·9	− 5·4	− 10·9	
+ 10·9	− 3·5	− 3·5	
+ 10·9	+ 26·0	+ 26·4	

Date, 1882, Greenwich Sidereal Time.	Observer.	Number of Half-Prisms.	Reading of Position Circle.	Objects compared.	Micrometer Readings.	Displacement.		Width of Slit.
						Measured.	Estimated in Terms of the Breadth of the Comparison Line.	
d h m			°		r	r		r
Apr. 8. 11. 20	M	1	6	δ Leonis F	0·376			
				H β	0·468	− 0·092	$\frac{2}{3}$ towards blue	0·210
11. 30	,,	,,	,,	δ Leonis F	0·422			
				H β	0·485	− 0·063	$\frac{1}{4}$ towards blue	0·210
Apr. 8. 11. 45	M	1	6	Spica F	1·108			
				H β	1·099	+ 0·009	Coincident.	0·210
11. 55	,,	,,	,,	Spica F	0·993			
				H β	1·068	− 0·075	$\frac{3}{10}$ towards blue	0·210
12. 5	,,	,,	,,	Spica F	0·978			
				H β	1·078	− 0·110	$\frac{2}{3}$ towards blue	0·210
12. 15	,,	,,	,,	Spica F	0·952			
				H β	1·063	− 0·111	$\frac{1}{2}$ towards blue	0·210
Apr. 8. 12. 30	M	1	6	α Coronæ F	0·861			
				H β	0·826	+ 0·035	$\frac{1}{5}$ towards red	0·210
12. 40	,,	,,	,,	α Coronæ F	0·927			
				H β	0·871	+ 0·056	$\frac{1}{4}$ towards red	0·210
June 12. 15. 50	M	1	2	Arcturus F	0·546			
				H β	0·598	− 0·052	$\frac{1}{4}$ towards blue	0·200
16. 10	,,	,,	,,	Arcturus F	0·548			
				H β	0·608	− 0·060	$\frac{1}{4}$ towards blue	0·200
June 12. 16. 35	M	1	2	β Libræ F	0·334			
				H β	0·456	− 0·122	$\frac{3}{5}$ towards blue	0·200
17. 0	,,	,,	,,	β Libræ F	0·434			
				H β	0·492	− 0·058	$\frac{1}{3}$ towards blue	0·200
June 14. 16. 15	M	1	2	α Coronæ F	0·882			
				H β	0·668	+ 0·214	1 towards red	0·200
16. 20	,,	,,	,,	α Coronæ F	0·908			
				H β	0·676	+ 0·232	1 towards red	0·200
16. 30	,,	,,	,,	α Coronæ F	0·705			
				H β	0·663	+ 0·042	$\frac{1}{5}$ towards red	0·200
16. 35	,,	,,	,,	α Coronæ F	0·814			
				H β	0·652	+ 0·162	$\frac{2}{3}$ towards red	0·200
June 14. 16. 50	M	1	2	α Ophiuchi F	0·845			
				H β	0·732	+ 0·113	$\frac{1}{2}$ towards red	0·200
16. 55	,,	,,	,,	α Ophiuchi F	0·963			
				H β	0·821	+ 0·142	$\frac{2}{3}$ towards red	0·200
17. 0	,,	,,	,,	α Ophiuchi F	0·908			
				H β	0·795	+ 0·113	$\frac{1}{2}$ towards red	0·200
17. 10	,,	,,	,,	α Ophiuchi F	0·769			
				H β	0·735	+ 0·034	$\frac{1}{7}$ towards red	0·200
June 14. 17. 25	M	1	2	α Lyræ F	0·552			
				H β	0·617	− 0·065	$\frac{1}{3}$ towards blue	0·200
17. 35	,,	,,	,,	α Lyræ F	0·453			
				H β	0·581	− 0·128	$\frac{2}{3}$ towards blue	0·200
June 14. 17. 50	M	1	2	α Aquilæ F	0·488			
				H β	0·536	− 0·048	$\frac{1}{5}$ towards blue	0·200
18. 0	,,	,,	,,	α Aquilæ F	0·468			
				H β	0·552	− 0·084	$\frac{1}{3}$ towards blue	0·200
18. 15	,,	,,	,,	α Aquilæ F	0·477			
				H β	0·542	− 0·065	$\frac{1}{4}$ towards blue	0·200
18. 30	,,	,,	,,	α Aquilæ F	0·348			
				H β	0·560	− 0·212	1 towards blue	0·200

Earth's Motion in Miles per Second.	Concluded Motion of Star in Miles per Second.		REMARKS.
	Measured.	Estimated.	
+11·2	− 39·5	− 41·1	Spectrum fairly well defined and steady.
+11·2	− 30·6	− 29·9	
− 0·1	+ 2·9	+ 0·1	Spectrum bright but somewhat tremulous. Star-line faint and not well defined.
− 0·1	− 22·9	− 22·3	
− 0·1	− 30·6	− 29·8	
− 0·1	− 34·0	− 37·2	
− 4·8	+ 15·6	+ 19·7	Star-line dark. Spectrum faint. Definition poor.
− 4·8	+ 22·0	+ 23·5	
+13·2	− 29·1	− 28·6	Star-line somewhat faint but sharp and well defined.
+13·2	− 31·6	− 28·6	
+ 9·9	− 47·3	− 46·9	Star-line broad. Spectrum very faint.
+ 9·9	− 27·7	− 30·5	
+ 8·7	+ 57·0	+ 53·0	Definition good.
+ 8·7	+ 62·5	+ 53·0	
+ 8·7	+ 4·2	+ 3·6	
+ 8·7	+ 41·0	+ 32·4	
− 0·8	+ 35·5	+ 31·6	Definition fair. Star-line broad and nebulous.
− 0·8	+ 44·4	+ 41·9	
− 0·8	+ 35·5	+ 31·6	
− 0·8	+ 11·2	+ 9·6	
− 2·9	− 17·0	− 17·6	The position for observing was very uncomfortable. The measures would otherwise have been much easier to make and probably more accordant. Definition good.
− 2·9	− 36·3	− 38·2	
− 9·2	− 5·5	− 3·1	Definition very good. Last measure rough, being made rather hastily.
− 9·2	− 16·6	− 11·3	*Note.*—The spectrum of hydrogen was compared with the sky spectrum on June 16, and the H β line seemed to be perfectly coincident with the F line of the sky spectrum. The adjustments of the spectroscope had remained unchanged from June 12.
− 9·2	− 10·7	− 6·2	
− 9·2	− 55·8	− 52·5	

Date, 1882, Greenwich Sidereal Time.	Observer.	Number of Half-Prisms.	Reading of Position Circle.	Objects compared.	Micrometer Readings.	Displacement.		Width of Slit.
						Measured.	Estimated in Terms of the Breadth of the Comparison Line.	
d h m			°		r	r		r
July 10. 18. 0	M	1	9	α Ophiuchi F	0·920			
				H β	1·021	− 0·101	½ towards blue	0·289
18. 20	,,	,,	,,	α Ophiuchi F	0·918			
				H β	1·042	− 0·124	⅔ towards blue	0·289
July 12. 17. 15	M	1	9	α Aquilæ F	0·923			
				H β	1·019	− 0·096	⅛ towards blue	0·289
17. 30	,,	,,	,,	α Aquilæ F	0·889			
				H β	1·027	− 1·038	½ towards blue	0·289
July 15. 18. 25	M	1	9	α Cygni F	0·380			
				H β	0·536	− 0·156	⅛ towards blue	0·289
18. 55	,,	,,	,,	α Cygni F	0·492			
				H β	0·558	− 0·066	⅛ towards blue	0·289
July 24. 19. 25	M	1	9	β Cassiopeiæ F	0·673			
				H β	0·648	+ 0·025	$\frac{1}{10}$ towards red	0·289
19. 40	,,	,,	,,	β Cassiopeiæ F	0·736			
				H β	0·612	+ 0·124	⅛ towards red	0·289
July 24. 20. 0	M	1	9	α Pegasi F	0·187			
				H β	0·324	− 0·137	½ towards blue	0·289
20. 15	,,	,,	,,	α Pegasi F	0·337			
				H β	0·370	− 0·033	$\frac{1}{10}$ towards blue	0·289
July 29. 18. 30	M	1	5	α Lyræ F	0·572			
				H β	0·698	− 0·126	½ towards blue	0·227
18. 45	,,	,,	,,	α Lyræ F	0·566			
				H β	0·692	− 0·126	½ towards blue	0·227
July 29. 19. 0	M	1	5	Moon F	0·253			
				H β	0·256	− 0·003		0·227
19. 5	,,	,,	,,	Moon F	0·269			
				H β	0·264	+ 0·005		0·227
19. 10	,,	,,	,,	Moon F	0·216			
				H β	0·254	− 0·038		0·227
19. 15	,,	,,	,,	Moon F	0·898			
				H β	0·912	− 0·014		0·227
19. 20	,,	,	,,	Moon F	0·908			
				H β	0·906	+ 0·002		0·227
Aug. 2. 19. 0	M	1	5	α Aquilæ F	0·549			
				H β	0·476	+ 0·073	⅜ towards red	0·119
19. 15	,,	,,	,,	α Aquilæ F	0·498			
				H β	0·467	+ 0·031	⅛ towards red	0·119
Aug. 2. 20. 15	M	1	5	ζ Aquilæ F	0·258			
				H β	0·338	− 0·080	⅘ towards blue	0·119
20. 40	,,	,,	,,	ζ Aquilæ F	0·388			
				H β	0·373	+ 0·015	$\frac{1}{10}$ towards red	0·119
Aug. 2. 21. 15	M	1	5	α Delphini F	0·142			
				H β	0·224	− 0·082	⅘ towards blue	0·119
21. 35	,,	,,	,,	α Delphini F	0·235			
				H β	0·233	+ 0·002	Coincident	0·119
Aug. 2. 21. 50	M	1	5	α Pegasi F	0·719			
				H β	0·822	− 0·103	½ towards blue	0·119
22. 0	,,	,,	,,	α Pegasi F	0·828			
				H β	0·855	− 0·027	⅓ towards blue	0·119

Earth's Motion in Miles per Second.	Concluded Motion of Star in Miles per Second.		REMARKS.
	Measured.	Estimated.	
+ 6·7	− 37·7	− 41·7	Definition good but spectrum faint.
+ 6·7	− 44·8	− 48·6	
− 2·6	− 26·9	− 32·4	Spectrum faint. Clouds forming. Line not so well seen in the second as in the first observation.
− 2·6	− 39·8	− 49·9	
− 5·8	− 42·0	− 46·7	Definition variable. Spectrum bright.
− 5·8	− 14·4	− 15·2	
− 11·2	+ 18·9	+ 21·7	Cloud passing. Observation difficult and unsatisfactory.
− 11·2	+ 49·3	+ 46·2	
− 12·8	− 29·4	− 39·7	Cloud passing. Observation difficult and unsatisfactory. *Note.*—The spectrum of hydrogen was compared with the sky spectrum on July 27; the H β line seemed to be perfectly coincident with the F line of the sky spectrum. The adjustments of the spectroscope had remained unchanged from July 10.
− 12·8	+ 2·7	+ 2·3	
+ 3·3	− 42·0	− 45·0	Spectrum faint for so bright a star, but fairly steady.
+ 3·3	− 42·0	− 45·0	
	− 0·9		Coincidence appeared perfect. Moon spectrum faint. Definition fair.
	+ 1·5		
	− 11·7		
	− 4·3		
	+ 0·6		
+ 2·8	+ 19·6	+ 23·2	Definition good.
+ 2·8	+ 6·7	+ 10·2	Definition good.
+ 5·5	− 30·0	− 31·5	Spectrum so faint that bisection of the line was all but impossible. The definition of the star-line was, however, good and the spectrum steady.
+ 5·5	− 0·9	+ 1·0	
− 1·4	− 23·8	− 24·6	Spectrum so faint that bisection of the line was almost impossible. The definition of the star-line was, however, good and the spectrum steady.
− 1·4	+ 2·0	+ 1·4	
− 11·1	− 20·5	− 21·4	Definition good. Spectrum steady and not too faint for work.
− 11·1	+ 2·8	+ 1·8	

Date, 1882, Greenwich Sidereal Time.	Observer.	Number of Half-Prisms.	Reading of Position Circle.	Objects compared.	Micrometer Readings.	Displacement.		Width of Slit.
						Measured.	Estimated in Terms of the Breadth of the Comparison Line.	
d h m			°		r	r		r
Aug. 2. 22. 10	M	1	5	Moon F	0·938			
				H β	0·904	+ 0·034		0·119
	,,	,,	,,	Moon F	0·867			
				H β	0·888	− 0·021		0·119
	,,	,,	,,	Moon F	0·877			
				H β	0·890	− 0·013		0·119
	,,	,,	,,	Moon F	0·900			
				H β	0·888	+ 0·012		0·119
22. 30	,,	,,	,,	Moon F	0·962			
				H β	0·932	+ 0·030		0·119
Aug. 4. 21. 50	M	1	5	α Lyræ F	0·513			
				H β	0·599	− 0·086	$\frac{2}{3}$ towards blue	0·133
21. 55	,,	,,	,,	α Lyræ F	0·456			
				H β	0·568	− 0·112	$\frac{1}{2}$ towards blue	0·133
Aug. 4. 22. 25	M	1	5	α Cygni F	0·787			
				H β	0·882	− 0·095	$\frac{1}{2}$ towards blue	0·133
22. 30	,,	,,	,,	α Cygni F	0·865			
				H β	0·902	− 0·037	$\frac{1}{4}$ towards blue	0·133
Aug. 4. 22. 40	N	1	5	α Cygni F	0·817			
				H β	0·896	− 0·079	$\frac{1}{2}$ towards blue	0·133
22. 50	,,	,,	,,	α Cygni F	0·839			
				H β	0·889	− 0·050	$\frac{1}{3}$ towards blue	0·133
Aug. 8. 19. 30	M	1	5	Arcturus b_1	0·115			
				Mg_1	0·300	− 0·185	$\frac{1}{3}$ towards blue	0·171
19. 45	,,	,,	,,	Arcturus b_1	0·250			
				Mg_1	0·284	− 0·034	$\frac{1}{3}$ towards blue	0·171
Aug. 8. 20. 0	N	1	5	Arcturus b_1	0·172			
				Mg_1	0·279	− 0·107	$\frac{1}{3}$ towards blue	0·171
Aug. 8. 20. 20	M	1	5	γ Aquilæ b_1	0·844			
				Mg_1	0·891	− 0·047	$\frac{1}{10}$ towards blue	0·171
20. 30	,,	,,	,,	γ Aquilæ b_1	0·881			
				Mg_1	0·927	− 0·046	$\frac{1}{10}$ towards blue	0·171
Aug. 8. 20. 50	N	1	5	γ Aquilæ b_1	0·967			
				Mg_1	0·998	− 0·031	Coincident	0·171
Aug. 8. 21. 15	N	1	5	η Pegasi b_1	0·089			
				Mg_1	0·118	− 0·029	$\frac{1}{10}$ towards blue	0·171
22. 25	,,	,,	,,	η Pegasi b_1	0·361			
				Mg_1	0·374	− 0·013	Coincident	0·171
Aug. 8. 21. 45	M	1	5	η Pegasi b_1	0·828			
				Mg_1	0·814	+ 0·014	Coincident	0·171
22. 0	,,	,,	,,	η Pegasi b_1	0·799			
				Mg_1	0·810	− 0·011	Coincident	0·171
Aug. 21. 20. 0	M	1	5	γ Draconis b_1	0·681			
				Mg_1	0·682	− 0·011	Coincident	0·150
20. 15	,,	,,	,,	γ Draconis b_1	0·661			
				Mg_1	0·686	− 0·025	$\frac{1}{10}$ towards blue	0·150
Aug. 21. 20. 45	M	1	5	β Cygni b_1	0·684			
				Mg_1	0·600	+ 0·084	$\frac{2}{3}$ towards red	0·150
21. 0	,,	,,	,,	β Cygni b_1	0·504			
				Mg_1	0·591	− 0·087	$\frac{1}{4}$ towards blue	0·150
21. 20	,,	,,	,,	β Cygni b_1	0·461			
				Mg_1	0·579	− 0·118	$\frac{1}{2}$ towards blue	0·150
21. 35	,,	,,	,,	β Cygni b_1	0·448			
				Mg_1	0·568	− 0·120	$\frac{3}{8}$ towards blue	0·150

Earth's Motion in Miles per Second.	Concluded Motion of Star in Miles per Second.		REMARKS.
	Measured.	Estimated.	
	+ 10·4		Coincidence appeared perfect.
	− 6·5		
	− 4·0		
	+ 3·7		
	+ 9·2		
+ 4·1	− 30·5	− 26·1	Spectrum steady and bright. Definition very satisfactory.
+ 4·1	− 38·5	− 31·6	
− 3·2	− 25·9	− 24·3	Spectrum steady and bright. Definition very satisfactory.
− 3·2	− 8·1	− 10·5	
− 3·2	− 21·0	− 24·3	
− 3·2	− 12·2	− 7·8	
+ 14·1	− 82·9	− 69·1	Definition poor. Spectrum very tremulous. Measures rough.
+ 14·1	− 26·7	− 69·1	
+ 14·1	− 53·9	− 69·1	
+ 4·5	− 22·0	− 20·9	Definition good. Spectrum steady but faint. Star-line exceedingly faint.
+ 4·5	− 21·6	− 20·9	
+ 4·5	− 16·0	− 4·5	
− 9·0	− 1·8	− 7·4	Definition fair. Spectrum fairly bright but somewhat tremulous.
− 9·0	+ 4·2	+ 9·0	
− 9·0	+ 14·2	+ 9·0	
− 9·0	+ 4·9	+ 9·0	
+ 4·2	− 4·6	− 4·2	Wind high; spectrum somewhat tremulous and lines rather faint and ill-defined for this star, which usually shows them very distinctly.
+ 4·2	− 13·5	− 16·2	
+ 5·8	+ 25·4	+ 42·1	Definition poor. Wind high, spectrum tremulous. The star-line was decidedly better seen in the three later observations than in the first.
+ 5·8	− 38·1	− 35·7	
+ 5·8	− 49·6	− 65·7	
+ 5·8	− 50·4	− 77·6	

Date, 1882, Greenwich Sidereal Time.	Observer.	Number of Half-Prisms.	Reading of Position Circle.	Objects compared.	Micrometer Readings.	Displacement.		Width of Slit.
						Measured.	Estimated in Terms of the Breadth of the Comparison Line.	
d h m			°		r	r		r
Aug. 21. 22. 15	M	1	5	γ Cygni b_1	0·662			
				Mg_1	0·662	— 0·000	Coincident	0·150
22. 30	,,	,,	,,	γ Cygni b_1	0·610			
				Mg_1	0·691	— 0·081	$\frac{1}{3}$ towards blue	0·150
Aug. 21. 22. 50	M	1	5	α Cygni b_1	0·623			
				Mg_1	0·689	— 0·066	$\frac{1}{3}$ towards blue	0·150
23. 0	,,	,,	,,	α Cygni b_1	0·576			
				Mg_1	0·681	— 0·105	$\frac{1}{2}$ towards blue	0·150
Aug. 21. 23. 30	M	1	5	ζ Cygni b_1	0·656			
				Mg_1	0·644	+ 0·012	$\frac{1}{10}$ towards red	0·150
23. 45	,,	,,	,,	ζ Cygni b_1	0·631			
				Mg_1	0·642	— 0·011	$\frac{1}{10}$ towards blue	0·150
Oct. 8. 22. 35	M	1	5	α Cygni b_1	0·692			
				Mg_1	0·611	— 0·081	$\frac{3}{10}$ towards blue	0·190
22. 50	,,	,,	,,	α Cygni b_1	0·722			
				Mg_1	0·608	— 0·114	$\frac{2}{5}$ towards blue	0·190
Nov. 8. 23. 23	N	1	5	α Lyræ F	0·560			
				H β	0·720	— 0·160	$\frac{3}{4}$ towards blue	0·144
	,,	,,	,,	α Lyræ F	0·294			
				H β	0·360	— 0·066	$\frac{1}{2}$ towards blue	0·144
0. 4	,,	,,	,,	α Lyræ F	0·178			
				H β	0·313	— 0·135	$\frac{1}{2}$ towards blue	0·144
	,,	,,	,,	α Lyræ F	0·087			
				H β	0·221	— 0·134	$\frac{1}{2}$ towards blue	0·144
Nov. 8. 1. 10	N	1	5	α Persei F	0·229			
				H β	0·341	— 0·112	$\frac{1}{2}$ towards blue	0·144
Nov. 9. 0. 10	M	1	5	α Pegasi F	0·889			
				H β	0·907	— 0·018	$\frac{1}{10}$ towards blue	0·232
0. 30	,,	,,	,,	α Pegasi F	0·734			
				H β	0·878	— 0·144	$\frac{1}{2}$ towards blue	0·232
0. 45	,,	,,	,,	α Pegasi F	0·752			
				H β	0·862	— 0·110	$\frac{2}{5}$ towards blue	0·232
1. 0	,,	,,	,,	α Pegasi F	0·722			
				H β	0·868	— 0·146	$\frac{1}{2}$ towards blue	0·232
Nov. 9. 1. 30	M	1	5	γ Pegasi F	0·876			
				H β	0·958	— 0·082	$\frac{1}{3}$ towards blue	0·232
1. 45	,,	,,	,,	γ Pegasi F	0·853			
				H β	0·962	— 0·109	$\frac{2}{5}$ towards blue	0·232
Nov. 9. 2. 0	M	1	5	β Persei F	0·618			
				H β	0·518	+ 0·100	$\frac{2}{5}$ towards red	0·232
2. 10	,,	,,	,,	β Persei F	0·478			
				H β	0·482	— 0·004	Coincident	0·232
Nov. 9. 2. 30	M	1	5	Capella F	0·999			
				H β	0·933	+ 0·066	$\frac{1}{4}$ towards red	0·232
3. 5	,,	,,	,,	Capella F	0·875			
				H β	0·855	+ 0·020	$\frac{1}{10}$ towards red	0·232
Nov. 10. 0. 55	N	1	5	Capella F	0·343			
				H β	0·311	+ 0·032	$\frac{1}{4}$ towards red	0·097
1. 3	,,	,,	,,	Capella F	0·339			
				H β	0·301	+ 0·038	$\frac{1}{4}$ towards red	0·097

Earth's Motion in Miles per Second.	Concluded Motion of Star in Miles per Second.		REMARKS.
	Measured.	Estimated.	
+ 1·0	− 1·0	− 1·0	Definition poor. The first measure appeared the better.
+ 1·0	− 31·1	− 40·9	
− 0·8	− 23·7	− 39·1	Definition fair. Wind still high and spectrum unsteady but bright.
− 0·8	− 38·2	− 59·1	
− 0·6	+ 5·1	+ 12·6	Definition poor. Spectrum faint and unsteady.
− 0·6	− 3·5	− 11·4	
+ 6·0	− 36·1	− 47·0	Spectrum faint for so bright a star. Thin cloud or light mist. Spectrum rather too narrow. Lines steady but faint. Definition fair.
+ 6·0	− 48·4	− 60·7	
+ 7·5	− 56·6	− 59·3	Star spectrum very bright.
+ 7·5	− 27·7	− 42·0	
+ 7·5	− 48·9	− 42·0	Satisfactory observation.
+ 7·5	− 48·6	− 42·0	
− 4·2	− 30·2	− 30.3	Considered good. The sky clouded up suddenly before another measure could be obtained.
+14·6	− 20·1	− 22·2	Star spectrum faint. Star-line ill-defined. Definition poor.
+14·6	− 58·8	− 52·5	
+14·6	− 48·4	− 44·9	
+14·6	− 59·4	− 52·5	
+11·8	− 37·0	− 37·1	Definition poor. Spectrum faint.
+11·8	− 45·2	− 42·1	
− 2·1	+ 32·8	+ 32·4	Definition fair. Spectrum bright.
− 2·1	+ 0·9	+ 2·1	
− 9·3	+ 29·5	+ 28·3	Spectrum faint, but definition fair. Sky clouding over.
− 9·3	+ 15·4	+ 16·9	Last measure bad. Interrupted by cloud.
− 9·1	+ 18·9	+ 24·8	A good measure.
− 9·1	+ 20·8	+ 24·8	Tolerably good. Line fairly distinct.

COLLECTED RESULTS for MOTIONS of STARS in the line of Sight, from SPECTROSCOPIC OBSERVATIONS made at the ROYAL OBSERVATORY, GREENWICH, in the Year 1882.

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

(+ denotes Recession; − Approach.)

Date, 1882.	Observer.	Number of Measures.	Number of Prisms.	Position Circle.	Width of Slit.	Line.	Earth's Motion in Miles per Second.	Concluded Motion of Star in Miles per Second.	
								Measured.	Estimated.
β CASSIOPEIÆ.									
July 24	M	2	1	° 9	r 0·289	F	− 11·2	+ 34·1	+ 33·9
γ PEGASI.									
November 9	M	2	1	5	0·232	F	+ 11·8	− 41·1	− 39·6
β PERSEI.									
November 9	M	2	1	5	0·232	F	− 2·1	+ 16·8	+ 17·3
α PERSEI.									
November 8	N	1	1	5	0·144	F	− 4·2	− 30·2	− 30·3
α AURIGÆ (*Capella*).									
November 9	M	2	1	5	0·232	F	− 9·3	+ 22·5	+ 22·6
10	N	2	1	5	0·097	F	− 9·1	+ 19·9	+ 24·8
γ ORIONIS.									
February 10	M	3	1	6	0·165	F	+ 16·0	± 8·5	+ 5·4
β TAURI.									
February 10	M	3	1	6	0·165	F	+ 16·4	− 34·0	− 31·3

Date, 1882.	Observer.	Number of Measures.	Number of Prisms.	Position Circle.	Width of Slit.	Line.	Earth's Motion in Miles per Second.	Concluded Motion of Star in Miles per Second.	
								Measured.	Estimated.
γ Geminorum.									
March 14	M	4	1	° 5	″ 0·144	F	+ 18·0	− 26·4	− 27·4
α Canis Majoris (*Sirius*).									
February 10	M	6	1	6	0·165	F	+ 9·3	− 1·7	− 3·3
March 14	M	5	1	5	0·144	F	+ 13·6	+ 0·7	+ 6·4
April 5	M	3	1	6	0·159	F	+ 14·1	+ 10·9	+ 15·4
8	M	6	1	6	0·210	F	+ 14·0	+ 8·2	+ 8·9
α Geminorum (*Castor*).									
February 10	M	4	1	6	0·165	F	+ 10·3	+ 19·9	+ 15·3
March 14	M	3	1	5	0·144	F	+ 16·7	+ 8·5	+ 18·0
April 5	M	2	1	6	0·159	F	+ 18·0	+ 22·5	+ 24·4
α Canis Minoris (*Procyon*).									
February 10	M	2	1	6	0·165	F	+ 8·5	+ 27·6	+ 24·1
March 14	M	4	1	5	0·144	F	+ 15·5	+ 3·2	+ 9·3
April 5	M	2	1	6	0·159	F	+ 17·4	+ 18·8	+ 21·5
α Geminorum (*Pollux*).									
February 10	M	4	1	6	0·165	F	+ 9·3	− 14·4	− 12·1
March 14	M	2	1	5	0·144	F	+ 16·3	− 40·3	− 43·6
δ Leonis.									
April 8	M	2	1	6	0·210	F	+ 11·2	− 35·0	− 35·5
θ Leonis.									
April 8	M	3	1		0·210	F	+ 10·9	+ 5·7	+ 4·0

Date, 1882		Observer.	Number of Measures.	Number of Prisms.	Position Circle.	Width of Slit.	Line.	Earth's Motion in Miles per Second.	Concluded Motion of Star in Miles per Second.	
									Measured.	Estimated.
α VIRGINIS (*Spica*).										
April	8	M	4	1	° 6	r 0·210	F	− 0·1	− 21·2	− 22·3
α BOOTIS (*Arcturus*).										
June	12	M	2	1	2	0·200	F	+ 13·2	− 30·4	− 28·6
August	8	M	2	1	5	0·171	b_1	+ 14·1	− 54·8	− 69·1
		N	1	1	5	0·171	b_1	+ 14·1	− 53·9	− 69·1
β LIBRÆ.										
June	12	M	2	1	2	0·200	F	+ 9·9	− 37·5	− 38·7
α CORONÆ.										
April	8	M	2	1	6	0·210	F	− 4·8	+ 18·8	+ 21·6
June	14	M	4	1	2	0·200	F	+ 8·7	+ 41·2	+ 35·5
α OPHIUCHI.										
June	14	M	4	1	2	0·200	F	− 0·8	+ 31·6	+ 28·7
July	10	M	2	1	9	0·289	F	+ 6·7	− 41·2	− 45·2
γ DRACONIS.										
August	21	M	2	1	5	0·150	b_1	+ 4·2	− 9·0	− 10·2
α LYRÆ (*Vega*).										
June	14	M	2	1	2	0·200	F	− 2·9	− 26·7	− 27·9
July	29	M	2	1	5	0·227	F	+ 3·3	− 42·0	− 45·0
August	4	M	2	1	5	0·133	F	+ 4·1	− 34·5	− 28·8
November	8		4	1	5	0·144	F	+ 7·5	− 45·5	− 46·4
ζ AQUILÆ.										
August	2	M	2	1	5	0·119	F	+ 5·5	− 15·5	− 15·3

Date, 1882.	Observer.	Number of Measures.	Number of Prisms.	Position Circle.	Width of Slit.	Line.	Earth's Motion in Miles per Second.	Concluded Motion of Star in Miles per Second.	
								Measured.	Estimated.
β Cygni.									
August 21	M	4	1	° 5	r 0·150	b_1	+ 5·8	− 28·2	− 34·2
γ Aquilæ.									
August 8	M	2	1	5	0·171	b_1	+ 4·5	− 21·8	− 20·9
	N	1	1	5	0·171	b_1	+ 4·5	− 16·0	− 4·5
α Aquilæ (*Altair*).									
June 14	M	4	1	2	0·200	F	− 9·2	− 22·2	− 18·3
July 12	M	2	1	9	0·289	F	− 2·6	− 33·3	− 41·1
August 2	M	2	1	5	0·119	F	+ 2·8	+ 13·1	+ 16·7
γ Cygni.									
August 21	M	2	1	5	0·150	b_1	+ 1·0	− 16·1	− 21·0
α Delphini.									
August 2	M	2	1	5	0·119	F	− 1·4	− 10·9	− 11·6
α Cygni.									
July 15	M	2	1	9	0·289	F	− 5·8	− 28·2	− 30·9
August 4	M	2	1	5	0·133	F	− 3·2	− 17·0	− 17·4
	N	2	1	5	0·133	F	− 3·2	− 16·6	− 16·0
August 21	M	2	1	5	0·150	b_1	− 0·8	− 31·0	− 49·1
October 7	M	2	1	5	0·190	b_1	+ 6·0	− 42·2	− 53·9
ζ Cygni.									
August 21	M	2	1	5	0·150	b_1	− 0·6	+ 0·8	+ 0·6
η Pegasi.									
August 8	N	2	1	5	0·171	b_1	− 9·0	+ 1·2	+ 0·8
	M	2	1	5	0·171	b_1	− 9·0	+ 9·5	+ 9·0

Date, 1882.	Observer.	Number of Measures.	Number of Prisms.	Position Circle.	Width of Slit.	Line.	Earth's Motion in Miles per Second.	Concluded Motion of Star in Miles per Second.	
								Measured.	Estimated.
α PEGASI.									
				°	r				
July 24	M	2	1	9	0·289	F	− 12·8	− 13·3	− 18·7
August 2	M	2	1	5	0·119	F	− 11·1	− 8·9	− 9·8
November 9	M	4	1	5	0·232	F	+ 14·6	− 46·7	− 43·0
MOON.									
July 29	M	5	1	5	0·227	F	..	− 3·0	..
August 2	M	5	1	5	0·119	F	..	+ 2·6	..
SKY SPECTRUM.									
February 11	M	5	1	6	0·165	F	..	+ 1·2	..
March 14	M	5	1	5	0·144	F	..	+ 2·7	..
April 6	M	5	1	6	0·159	F	..	− 3·9	..

OBSERVATIONS of the SPECTRA of URANUS, of sundry STARS, of COMETS *a* and *b* 1882, and of an AURORA, made at the ROYAL OBSERVATORY, GREENWICH, in the YEAR 1882.

URANUS.

1882, March 16^{d}. 7$\frac{1}{2}^{h}$.

Single-prism Spectroscope. Micrometer B.

Observer, M.

The spectrum showed four broad *dark* bands, and two or three very faint lines. The bands seemed to be shaded at the edges on both sides. The measures of the positions of the faint lines are very rough. The following wave-lengths for the bands and lines were inferred from a curve formed from measures of the lines in the solar spectrum; the index error for the time of observation being determined by measures of the positions of the D lines of sodium and of the sharp edges of the principal bright bands in the spectrum of a Bunsen flame.

Band or Line.	Wave-length.
	tenth-metres.
Spectrum begins about	5960
Band I. Diffused, broad and dark band	5714
Band II.	5430
Faint line	5232
Faint line	5039
Faint line	4906
Band III., probably F.	4857
Band IV.	4593
Spectrum ends about	4450

TYPES OF STARS.

1882, March 16.

Single-prism Spectroscope.

Observer, M.

The spectra of the four following stars, of which the three last are not in Secchi's *Catalogo delle Stelle di cui si è determinato lo Spettro luminoso*, were examined to determine the type to which they belong.

δ Leonis. Type I. F and *g* strongly marked. F broad and diffused.

θ Leonis. Type I. F and *g* strongly marked. F narrow, darker, and more condensed in the centre than in δ Leonis.

μ Ursæ Majoris. Type II. A fine example. The *b* lines very strong, and the E group distinct.

ψ Ursæ Majoris. Type I. apparently. The F line very faint and diffused. The lines in the spectrum seen with great difficulty.

COMET *a* 1882 (WELLS).

1882, April 22.

Single-prism Spectroscope.
Position Circle, 348°.

Observer, M.

Only a continuous spectrum could be detected. This was very fairly bright from the star-like nucleus, and a faint spectrum could also be traced for some distance down the tail. With a fairly narrow slit the spectrum could be traced from a little below D to a little below F, say from λ 5900 to λ 4900. The sky clouded before any more definite observations could be secured.

1882, April 24.

Single-prism Spectroscope.
Position Circle, 348°.
Width of Slit, $0^{in}\cdot03$ and $0^{in}\cdot09$.

Observer, M.

Only a continuous spectrum could be detected. This was not equally bright throughout, there being two ill-defined maxima in the green and greenish-blue. The spectrum was traceable from about λ 6000 to λ 4400.

1882, May 11.

Half-prism Spectroscope. One "half-prism" reversed.
Magnifying power, 28. Position Circle, 270°.

Observer, M.

The Comet gave simply a continuous spectrum, which was easily traceable from about λ 6100 to about λ 4700. No bright bands or break of continuity was detected either with a wide or narrow slit. The continuous spectrum seemed remarkably bright from the nucleus, considering the comparative faintness of the Comet, and the high dispersion, 5° from A to H, employed.

1882, May 13.

Half-prism Spectroscope. One "half-prism" reversed.
Magnifying power, 15. Position Circle, 270°.

Observer, M.

Very careful and repeated examination failed to show any definite bands. Once or twice an ill-defined maximum was suspected, a little to the red of the green band of the Bunsen-flame spectrum, in other words near E; but as the spectrum is naturally brightest about this point, but little weight can attach to the suspicion.

The spectrum was traced for a distance from the centre of the nucleus of nearly one minute in each direction, and from about λ 6150 to about λ 4300.

1882, May 20.

Half-prism Spectroscope. One "half-prism" reversed.
Magnifying powers 15 and 28. Position Circle, 270°.
also Single-prism Spectroscope.
also Eyepiece-prism.

Observer, M.

With none of these dispersions could any bright bands, properly so called, be distinguished; but two faint broad *dark* bands, or what gave that impression, crossed the spectrum. Practically the same observation as on April 24, when two maxima of light were noticed, the maxima observed on that occasion lying respectively between and on the blue side of the two minima observed now.

A third dark band was suspected near D on the blue side of that line.

These dark bands seemed to be sharp at the edges, but were all exceedingly faint, the most refrangible least so, the middle one much fainter, the third by far the faintest of the three.

The spectrum described above was that from the nucleus and head. The tail showed a very short continuous spectrum visible only in the green. At least it gave that impression. It might be mistaken for the bright green band of carbon, but it seemed too regular for this to be the case, there being no trace of a sharp edge towards the red to be detected. It also extended too far towards the red. The spectrum from the nucleus was traced from about λ 6150 to λ 4300.

The following measures were obtained with the Single-prism spectroscope of two of the dark bands, as compared with the sharp edges of the bright bands in the blue and green of the spectrum of a Bunsen-flame, the wave-lengths being inferred by means of a curve formed from measures of the lines in the solar spectrum.

	tenth-metres.	
Band in the blue.....	4818	4811 and 4855.
Band in the green.....		5493.

1882, May 22. 9^h. to $10\frac{1}{2}^h$.

Single-prism Spectroscope.

Observer, M.

The continuous spectrum alone was visible, but the sky spectrum in its neighbourhood was so strong that no bright bands could possibly have been seen unless they had been exceedingly bright. Only the spectrum from the central nucleus could be examined, and this was too narrow to show dark bands. The sky clouded over at half-past ten.

1882, May 31.

Single-prism Spectroscope. Micrometer B.

Observer, M.

The hindrances to observation were very great, the Comet being in a very awkward position. It was also very difficult to keep it on the slit.

The spectrum from the nucleus was a bright but very narrow ribbon of light of irregular intensity.

The spectrum of the Comet was compared with those of sodium and of a Bunsen-flame.

Nature of Object.	Wave-length.
	tenth-metres.
A bright point near D	5902·7
A dark space about 120 tenth-metres in breadth follows	...
An irregular bright streak not nearly so distinct as that near D	5328
Another streak somewhat better defined	5146
A dark space near F	4862
Another dark space a little further towards the blue, not measured	...

The above measures are exceedingly rough.

These irregularities were only seen at times. At times, however, the whole spectrum seemed full of bright lines, but the hindrances to observation were so great that no continued view could be obtained of them.

The general appearance of the spectrum was not altered from May 20, except that its greatly increased brilliancy allowed the details to be better seen.

1882, June 7.

Half-prism Spectroscope. One "half-prism" direct.
Magnifying power, 14. Position Circle, 92°.

Observer, M.

The moment the Comet came on the slit the exceeding brilliance of the line in the yellow was remarked. There was also a continuous spectrum, but no lines either bright or dark were noted in it. The yellow line was, however, so exceedingly brilliant, and so far outshone the rest of the spectrum, that it would be scarcely an exaggeration to say that the Comet shone by monochromatic light. The Comet rose in cloud, and was not seen in the spectroscope until $15^h.\ 30^m.$; it was clearly seen in the 3^{in} finder, as a planetary disk of very nearly the same colour as Mars, until $15^h.\ 50^m.$ four minutes after sunrise, when it was accidentally lost, and the sky clouded over before it could be picked up again. The tail was masked by the daylight.

A very rough measure of the position of the bright line gave its wave-length as 5894·5 tenth-metres, or 2·5 tenth-metres to the red of the D lines, a displacement which, assuming its identity with the pair of yellow sodium lines, would correspond to a receding motion of 79 miles per second. The actual movement of recession of the Comet at the time was 18·5 miles per second.

1882, June 10, 18^h–22^h.

Observer, M.

The Comet was seen in full daylight just after perihelion passage at 20^h, with the $12\frac{3}{4}$ inch equatoreal, using negative eye-pieces with powers of 60, 130, 220, and 310. With the lowest power, a light red glass was necessary, but with the powers 220 and 310 the light of the sky was not too strong for the eye, and the Comet could be easily seen as a dull yellow stellar point of light, the disk being no larger than that of a star. It was judged to be not so bright as Capella, which had been seen previously, making every allowance for the much brighter background on which the Comet was seen. On putting in the transit micrometer (which has a much larger field) to determine its place, the Comet was lost, after having been seen distinctly for a quarter of an hour, and it was not picked up again afterwards. A white haze had gradually formed round the Sun, and the sky became overcast about noon.

COMET *b* 1882.

1882, October 25, 15^h–18^h.

Half-prism Spectroscope. One "half-prism" direct.

Width of Slit, $0^r{\cdot}732$.

Observer, M.

The Moon was so bright, and there was so much mist, that the Comet was not seen until 17^h. At 18^h. it was lost in daylight.

The spectrum showed the usual three bands, but no sodium lines. The bands, which were, as usual, sharp and very bright at their less refrangible edge, and gradually faded away towards the blue end of the spectrum, each extended so far in that direction as almost to touch the next band, and rendered it very difficult to ascertain whether there was a continuous spectrum or not. It was believed that there was one, but that it was faint.

Direct comparison showed that the three bands were generally coincident with the three principal bands given by a Bunsen-flame. But a small displacement towards the red was noticed in the case of the green band. It was also suspected that different parts of the nucleus showed very considerable displacements *inter se*, but the faintness of the spectrum and the short time available for observation prevented the suspicion from being verified as thoroughly as could have been wished. The cometary band was very sharp at the less refrangible edge, most unusually so for a comet, and was much better defined than the band of the flame spectrum, and the individual measures each seemed very satisfactory, but, as will be remarked, they gave widely differing results. It was also noticed that when the telescope was moved by means of the slow-motion rods the edge of the band would seem to shift its position with regard to the occulting bar, by an extreme amount of $0^r{\cdot}1$, or perhaps even $0^r{\cdot}2$ in one or two instances.

Measures of the Green Band.

Objects compared.	Micrometer Readings.	Displacement.		Inferred Wave-length of Comet Band.	Motion in Miles per Second corresponding to observed Displacement.
		In Revolutions.	In Wave-length.		
	r	r	tenth-metres.	tenth-metres.	
Comet	1·000				
Bunsen-flame	1·052	− 0·052	− 0·54	5163·5	− 19·5
Comet	1·098				
Bunsen-flame	0·918	+ 0·180	+ 1·85	5165·9	+ 66·8
Comet	0·942				
Bunsen-flame	0·922	+ 0·020	+ 0·21	5164·2	+ 7·6
Comet	0·862				
Bunsen-flame	1·012	− 0·150	− 1·55	5162·5	− 56·0
Comet	0·961				
Bunsen-flame	1·013	− 0·052	− 0·54	5163·5	− 19·5
Comet	0·383				
Bunsen-flame	0·380	+ 0·003	+ 0·03	5164·0	+ 1·1
Comet	0·339				
Bunsen-flame	0·432	− 0·093	− 0·96	5163·0	− 34·7
Comet	0·552				
Bunsen-flame	0·369	+ 0·183	+ 1·88	5165·9	+ 67·9
Comet	0·509				
Bunsen-flame	0·519	− 0·010	− 0·10	5163·9	− 3·6
Comet	0·570				
Bunsen-flame	0·532	+ 0·038	+ 0·39	5164·4	+ 9·0
Means		+ 0·007	+ 0·69	5164·1 ± 0·22	+ 2·5

1882, October 30, $15\frac{1}{2}^h$. to $18^h\frac{1}{2}$.

Half-prism Spectroscope. One "half-prism" direct.

Width of Slit, $1^r{\cdot}183$.

Observer, M.

The usual three cometary bands were seen, and a faint continuous spectrum, but nothing further could be made out. The blue and yellow bands were too faint for measurement, but closely coincided in position with the corresponding bands of the spectrum of the Bunsen-flame. No displacement of the green band could be detected with any degree of certainty; nor could any bright lines be detected upon it.

Measures of the Green Band.

Objects compared.	Micrometer Readings.	Displacement. In Revolutions.	Displacement. In Wave-length.	Inferred Wave-length of Comet Band.	Motion in Miles per Second corresponding to observed Displacement.
	r	r	tenth-metres.	tenth-metres.	
Comet	0·419				
Bunsen-flame	0·372	+ 0·047	+ 0·48	5164·5	+ 17·3
Comet	0·353				
Bunsen-flame	0·334	+ 0·019	+ 0·20	5164·2	+ 7·2
Comet	0·210				
Bunsen-flame	0·254	− 0·044	− 0·45	5163·5	− 16·2
Comet	0·218				
Bunsen-flame	0·214	+ 0·004	+ 0·04	5164·0	+ 1·4
Comet	0·188				
Bunsen-flame	0·168	+ 0·020	+ 0·21	5164·2	+ 7·6
Comet	0·320				
Bunsen-flame	0·278	+ 0·042	+ 0·43	5164·4	+ 15·5
Comet	0·302				
Bunsen-flame	0·322	− 0·020	− 0·21	5163·8	− 7·6
Comet	0·288				
Bunsen-flame	0·322	− 0·034	− 0·35	5163·6	− 12·6
Comet	0·271				
Bunsen-flame	0·335	− 0·064	− 0·66	5163·3	− 23·8
Comet	0·306				
Bunsen-flame	0·288	+ 0·018	+ 0·19	5164·2	+ 6·9
Means		− 0·001	− 0·12	5164·0 ± 0·09	− 0·4

1882, November 10, 17h.

Half-prism Spectroscope. One "half-prism" reversed.

Observer, M.

The blue band was no longer visible, the yellow band was exceedingly faint, and even the green band was too faint for measurement. The latter showed a very sharp edge on its less refrangible side, a circumstance noticed on both the former occasions when the spectrum of the Comet was observed, and the more remarkable that the bands in the spectra of comets are generally somewhat diffused. It is probable, therefore, that on a better view the band might have been resolved into fine lines.

The mean of all the measures of the less refrangible edge of the Green Band in the Comet's spectrum gives the following result for its wave-length.

5164·0 ± 0·1 tenth-metres.

Thalén's wave-lengths for the less refrangible edges of the bands in the spectrum of the Bunsen-flame have been assumed throughout, as follows:—

Band.	Wave-length.
	tenth-metres.
Yellow band	5633·0
Green band	5164·0
Blue band	4736·0

AURORA.

1882, November 17, 5^h. 20^m. to 9^h. 0^m.

Hand Spectroscope ("half-prism"). One "half-prism."

Observer, M.

The Aurora at the commencement of the observation was a red one, of no particular shape, a ruddy glow extending all over the N.W. About 5^h. 30^m. a brilliant arm shot up from the N. horizon to the zenith, principally red but with a green vein in it. The rosy colour disappeared soon after this. The principal red display lay between Vega and ϵ and η Ursæ Majoris, a broad band of light. A fainter band, at right angles to the first, went down to Boötes,—α Coronæ Borealis shining in the centre of it,—and up toward and nearly to the zenith.

The green Aurora during the time of observation consisted, with one remarkable exception, of little else than a pale green light fringing the upper edge of the London smoke cloud. The exception was the sudden appearance of a magnificent streak of light, much more brilliant than the great Comet, and about one-quarter as long again. When first seen it had already risen some 20°, and just at that moment it bore a great resemblance to the Comet in general outline. Rising in the E.N.E., and slowing mounting, it seemed nearly to follow a parallel of declination, passed just above the Moon, and sank with an even regular motion down to the W. It faded somewhat after passing the meridian, and disappeared at about 6^h. 5^m. 59^s. G. M. T. It took about two minutes to cross the sky. It slowly increased in length up to meridian passage and decreased after it, its greatest length being perhaps about 30°.

No view was obtained of the spectrum of the red Aurora, nor of this great bright cloud.

The single-prism Spectroscope, when pointed to the pale green light in the north, showed the green Auroral line very brilliantly, and also a great number of faint lines further to the blue. But it was quite impossible to see the pointer, and no measures could be made.

The Hand "half-prism" Spectroscope showed only the green line, and the following determinations were obtained of its position as compared with that of the D lines given by a sodium-flame, the wave-length being inferred by means of a curve formed from measures of lines in the solar spectrum between D and *b* :—

Auroral Line Centre.	D Lines Centre.	Wave-length of Auroral Line inferred.
r	r	tenth-metres.
0·810	1·532	5531
0·599	1·338	5524

Auroral Line.			D Lines.			Wave-length of Auroral Line inferred.
Blue Edge.	Red Edge.	Inferred Reading for Centre.	Blue Edge.	Red Edge.	Inferred Reading for Centre.	
r	r	r	r	r	r	tenth-metres.
0·565	0·603	0·584	1·177	1·464	1·321	5525
0·535	0·715	0·625	1·203	1·432	1·318	5542
0·444	0·755	0·600	1·172	1·322	1·247	5561

Mean wave-length of Auroral line.....5537 ± 4·5 tenth-metres.

ROYAL OBSERVATORY, GREENWICH.

MEASURES OF POSITIONS AND AREAS

OF

SPOTS AND FACULÆ

UPON THE SUN'S DISK

ON

PHOTOGRAPHS

TAKEN WITH THE

PHOTOHELIOGRAPHS

AT GREENWICH AND IN INDIA;

WITH THE DEDUCED

HELIOGRAPHIC LONGITUDES AND LATITUDES.

1882.

MEASURES of POSITIONS and AREAS of SPOTS and FACULÆ upon the SUN'S DISK on PHOTOGRAPHS taken at the ROYAL OBSERVATORY, GREENWICH in the Year 1882, and at DEHRA DUN in INDIA from 1881 Dec. 22 to the End of the Year 1882.

NOTE.—The Greenwich Mean Solar Time at which the photograph was taken is expressed by the Day of the Year and decimals of a day, reckoning from Greenwich Mean Noon of January 1.

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 time given is Greenwich Mean Solar Time.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1881.				°	°	°			
354d·778	H, M	627	0·950	300·7	245·4	+28·2	55	377	
		628	0·893	289·3	238·8	+16·1	0	16	363 *f*
I.		631	0·412	207·8	189·7	−23·3	0	12	
		631	0·436	198·1	186·4	−26·5	2	19	
		632	0·512	50·4	153·4	+17·1	2	9	
		632	0·547	55·4	149·9	+16·7	1	7	
		630	0·703	118·4	136·4	−21·1	1	9	
		630	0·774	113·9	129·2	−19·6	0	13	237 *nf*
Dec. 22							(61)	(462)	(600)
			0·910	287·0					1145
355·686	H, M	627	0·988	299·5	244·1	+28·7	10	365	547 *f*
I.		631	0·533	226·8	190·6	−23·3	0	3	
		631	0·521	215·1	185·3	−27·2	2	6	
		632	0·392	36·9	151·6	+16·1	0	8	
		633	0·368	51·0	148·8	+11·2	4	29	
Dec. 23							(16)	(411)	(1692)
			0·953	283·5					711
356·767	H, M		0·989	69·8					253
I.			0·992	109·4					354
Dec. 24							(0)	(0)	(1318)
			0·964	283·4					286
357·684	H, M	631	0·804	242·1	189·9	−23·6	6	38	258 *c*
I.		631	0·767	237·4	185·1	−26·1	1	7	121 *c*
			0·931	64·2					457
			0·975	112·1					689
Dec. 25							(7)	(45)	(1811)
358·700	H, M	631	0·904	244·8	189·1	−23·8	0	43	407 *c*
		631	0·881	241·6	185·4	−26·0	0	29	204 *c*
I.		634	0·490	147·6	109·0	−26·8	11	26	
		634	0·527	144·6	105·9	−27·7	7	15	
			0·863	63·3					236
			0·915	113·6					569
Dec. 26							(18)	(113)	(1416)
1881.				°	°	°			
359d·690	H, M		0·964	245·9					815
			0·920	288·9					105
I		634	0·406	172·3	109·5	−26·3	18	93	
		634	0·448	165·1	105·5	−28·2	19	73	
			0·784	58·9					144
Dec. 27							(37)	(166)	(1064)
			0·817	292·0					220
360·705	H, M	635	0·986	287·9	178·4	+17·1	0	31	187 *s*
I.		634	0·419	202·5	109·8	−25·4	16	97	108 *c*
		634	0·436	189·2	104·1	−28·2	8	81	
			0·773	118·0					672
			0·968	61·7					974
Dec. 28							(24)	(209)	(2161)
			0·873	249·3					700
362·666	H, M	634	0·663	233·7	109·9	−25·5	17	103	
I.		634	0·610	224·9	103·0	−28·2	13	25	
		636	0·850	57·3	21·6	+25·5	0	11	1163 *f*
Dec. 30							(30)	(139)	(1863)
363·762	H, M	634	0·803	24c·2	109·6	−25·4	10	103	788 *np*
		634	0·738	234·9	102·0	−27·4	0	14	
I.		637	0·582	324·3	82·2	+25·2	3	14	
		638	0·691	63·1	19·6	+15·8	0	87	105 *c*
			0·821	52·6					727
			0·923	73·9					377
			0·987	119·4					94
Dec. 31							(13)	(218)	(2091)
			0·918	290·5					255
364·672	M, H	634	0·901	243·2	110·0	−25·5	11	63	410 *np*
I.		637	0·712	310·0	84·0	+24·5	0	9	
		637	0·671	315·8	78·5	+25·9	0	6	
		638	0·506	52·3	22·9	+15·0	2	8	
		638	0·532	51·5	21·7	+16·3	8	33	
		638	0·566	55·7	18·4	+15·6	8	32	
		638	0·577	53·5	18·4	+17·1	7	17	

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

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

Group 627. Regular spot with several small markings north of it.

Group 628. Small spot.

Group 630. Two small spots.

Group 631. A number of small faint spots. These spots undergo great changes, and are not seen on the photograph on December 24, but are seen again on December 25 and 26.

Group 632. Several small faint spots in a straight line.

Group 633. Several small scattered spots.

Group 634. Two spots. The following spot breaks up into two on December 27, the lower portion of which disappears before December 31, and the upper before January 1.

Group 635. A small faint spot, seen only as it passes off the Sun at the West limb.

Group 636. Small faint spot, seen only on one day.

Group 637. Two small spots with two or three very small markings near them.

Group 638. An irregular cluster of many very small spots on December 31. These increase somewhat in size until January 5 and 6, after which they rapidly decrease, and the group has nearly disappeared before it reaches the W. limb.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.	Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).						Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1881.				°	°	°				1882.				°	°	°			
364d·672	M, H	639	0·928	119·3	340·7	−28·3	0	18	153 *f*	4d·666	M, H	644	0·390	231·1	0·1	−17·7	1	11	
I.			0·843	45·8					243			643	0·532	46·3	317·8	+18·0	9	24	
1882.			0·877	73·2					132			643	0·572	49·6	314·4	+18·3	0	4	
Jan. 1							(36)	(186)	(1193)				0·907	61·3					209
													0·935	107·4					32
													0·949	118·7					142
0·690	J, H	634	0·971	244·6	109·9	−25·4	37	84	214 *sf*	Jan. 6							(150)	(467)	(859)
		638	0·357	28·6	23·9	+14·9	6	17											
I.		638	0·387	29·9	22·5	+16·2	14	64											
		638	0·422	37·9	18·4	+16·1	16	70		5·941	J, M		0·878	305·0					392
		639	0·819	122·3	342·5	−28·1	0	12	65 *f*			638	0·855	290·2	20·7	+15·0	14	193	
		639	0·878	122·3	335·5	−29·8	0	8				642	0·783	295·5	12·2	+16·9	76	310	
			0·954	72·2					203			642	0·726	297·4	6·9	+16·5	7	61	399 *c*
Jan. 2							(73)	(255)	(482)			643	0·396	18·2	317·4	+18·1	0	22	
													0·857	54·9					337
													0·884	121·8					159
2·012	J, M		0·874	298·4					303				0·980	75·5					130
			0·763	237·1					272	Jan. 7							(97)	(586)	(1417)
		638	0·341	336·4	24·6	+14·7	10	17											
		638	0·341	345·1	21·7	+15·7	20	153											
		638	0·348	354·3	18·6	+16·7	7	62		6·709	J, H		0·903	304·5					392
		639	0·646	130·3	342·9	−27·6	4	9				638	0·936	287·6	21·9	+14·9	0	116	
		639	0·710	128·2	337·2	−28·7	0	8	115 *f*	I.		642	0·877	292·2	12·7	+17·2	38	250	
			0·867	69·1					284			642	0·832	292·9	7·5	+16·5	2	15	56 *c*
Jan. 3							(41)	(249)	(974)			645	0·989	60·3	237·1	+28·5	8	38	165 *c*
													0·894	53·4					86
													0·954	72·0					330
2·669	M, H		0·929	296·3					289										
			0·868	243·9					618	Jan. 8							(48)	(419)	(1029)
I.		638	0·407	323·5	22·4	+15·6	16	62											
		638	0·386	329·0	19·8	+15·7	6	36		7·939	M, H		0·945	299·0					280
		638	0·399	334·7	18·2	+17·5	0	5					0·903	252·6					98
		640	0·818	103·8	313·4	−13·3	0	7		I.			0·871	293·9					98
			0·861	63·7					132				0·865	273·9					34
Jan. 4							(22)	(110)	(1039)				0·715	235·1					63
												642	0·975	288·7	13·4	+17·1	20	94	395 *c*
												646	0·869	239·5	356·6	−28·4	5	26	
3·717	J, H	641	0·843	247·6	50·3	−20·8	5	24	716 *sp*			646	0·843	239·1	353·4	−28·1	0	11	212 *c*
		638	0·555	304·9	22·0	+15·2	22	108				645	0·914	58·2	238·3	+26·7	0	15	
I.		638	0·526	309·0	19·0	+15·9	29	100				645	0·929	57·2	236·2	+28·3	11	44	126 *s*
		642	0·422	325·3	8·5	+16·6	9	23		Jan. 9							(36)	(190)	(1306)
		643	0·674	57·1	317·6	+18·4	5	34											
		643	0·709	58·8	314·4	+18·6	0	17											377
			0·912	61·7					75	11·993	J, M		0·914	288·3					
Jan. 5							(70)	(306)	(791)			647	0·765	305·2	287·5	+22·7	14	86	109 *c*
												648	0·358	21·1	237·4	+14·9	21	85	
4·666	M, H	641	0·930	249·4	49·7	−20·6	15	30	476 *sp*			648	0·411	31·9	232·0	+15·9	4	19	
		638	0·679	297·1	20·2	+15·0	94	211				649	0·572	16·5	234·4	+28·6	4	20	
I.		642	0·586	306·0	11·2	+16·8	31	163				650	0·881	69·4	186·3	+15·7	44	382	445 *f*
		642	0·531	309·7	6·7	+16·3	0	24					0·879	119·7					203
										Jan. 13							(87)	(592)	(1134)

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

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

Group 634. Two spots. The following spot breaks up into two on December 27, the lower portion of which disappears before December 31, and the upper before January 1.
Group 638. An irregular cluster of many very small spots on December 31. These increase somewhat in size until January 5 and 6, after which they rapidly decrease, and the group has nearly disappeared before it reaches the W. limb.
Group 639. One faint spot when first seen on January 1. A second smaller and fainter appears behind it on January 2. Both disappear before January 4.
Group 640. Small faint spot.
Group 641. Small spot.
Group 642. Several small spots in a straight line. The preceding spot rapidly increases in size until January 8. The rest of the group gradually disappears.
Group 643. Two spots. These both diminish in size on the following days, the following spot disappearing before January 7, the preceding before January 8.
Group 644. A single spot.
Group 645. Small spot on January 8. A smaller one appears close to it on January 9.
Group 646. Two small faint spots.
Group 647. A cluster of several irregular spots. The group changes very much on the following days.
Group 648. A dark spot with several faint spots following. The spot undergoes very great changes, diminishing in size to January 15, and then increasing again; the leading spot divides into two portions on January 18, and one of the smaller fragments greatly increases in size on January 19.
Group 649. Small faint spot, probably the same group as Group 645.
Group 650. Irregular spot, breaking up into three on January 16. The following portions are much smaller than the preceding, and disappear before January 20.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	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).
1882.				°	°	°			
12d·687	J, H		0·962	294·7					90
			0·950	286·4					262
I.		647	0·857	299·7	289·3	+22·4	9	31	
		647	0·851	301·4	288·1	+23·5	0	7	257 *nf*
		648	0·336	352·6	238·5	+14·8	16	54	
		648	0·338	5·9	233·8	+15·0	2	10	
		648	0·376	11·0	231·6	+17·0	0	5	
		649	0·554	1·6	234·9	+28·9	0	19	
		650	0·793	66·4	187·1	+15·5	37	202	
		650	0·843	68·6	181·7	+15·3	0	29	718 *f*
			0·822	121·3					165
Jan. 14							(64)	(357)	(1492)
13·701	M, JP		0·848	306·4					185
		647	0·927	295·1	286·5	+21·1	0	5	
I.		647	0·913	299·3	283·2	+24·2	2	18	502 *p*
		648	0·424	321·0	238·5	+14·6	5	34	
		648	0·381	324·1	235·8	+13·3	3	10	
		648	0·383	330·7	233·7	+14·7	2	8	
		649	0·585	342·5	234·2	+29·1	2	6	
		650	0·637	58·6	188·4	+15·4	19	87	
		650	0·674	59·5	185·7	+16·1	20	69	292 *c*
			0·987	110·2					159
Jan. 15							(53)	(237)	(1138)
14·666	J, H	647	0·972	295·9	282·5	+23·8	0	61	883 *p*
		648	0·571	304·3	238·9	+14·5	14	45	
I.		648	0·536	303·4	237·1	+12·8	3	78	
		648	0·507	310·2	233·4	+14·7	0	11	
		650	0·497	46·3	188·1	+15·6	19	124	
		650	0·527	47·9	186·0	+16·3	7	19	
		650	0·557	46·6	184·8	+18·1	0	6	322 *f*
			0·871	73·2					246
			0·935	106·4					86
Jan. 16							(43)	(344)	(1537)
15·658	H, JP		0·957	304·0					367
		648	0·734	297·6	239·4	+16·3	0	3	648 *nf*
I.		648	0·720	295·8	238·8	+14·6	13	98	
		648	0·700	295·1	237·4	+13·5	3	16	
		648	0·675	298·3	234·7	+14·8	2	6	
		650	0·370	22·9	188·4	+15·0	14	87	92 *c*
		650	0·406	26·9	185·9	+16·3	5	8	
		650	0·443	26·3	185·0	+18·5	0	3	
			0·879	113·7					293
Jan. 17							(37)	(221)	(1400)
1882.				°	°	°			
16d·663	H, JP	648	0·853	290·7	239·0	+14·7	16	92	1143 *n*
		648	0·850	289·1	239·0	+13·3	0	25	
I.		648	0·819	290·9	235·4	+13·9	0	2	
		650	0·353	347·0	188·3	+15·0	9	73	
		650	0·373	353·4	186·2	+16·6	3	5	
		651	0·356	31·2	165·4	+23·5	5	9	
		651	0·582	34·9	162·3	+23·8	2	7	
			0·868	116·1					881
Jan. 18							(35)	(213)	(2024)
17·788	H, JP	648	0·961	286·1	240·6	+13·9	18	158	1966 *n*
		648	0·958	287·3	239·8	+14·9	11	84	
I.		648	0·932	287·1	235·2	+13·9	0	65	
		650	0·469	316·8	188·1	+15·1	9	81	
		650	0·469	321·8	186·4	+16·8	0	9	
		652	0·279	190·3	171·8	−20·9	0	2	
		652	0·276	184·4	170·1	−21·0	0	4	
		651	0·500	6·1	165·5	+24·6	0	16	
		653	0·946	106·5	97·4	−17·2	14	145	194 *f*
			0·918	120·4					222
Jan. 19							(52)	(564)	(2382)
18·662	H, JP	648	0·995	285·6	239·7	+14·9	30	224	2042 *nf*
		648	0·987	284·6	236·2	+13·5	41	249	
I.		650	0·600	303·9	188·2	+15·0	16	85	
		652	0·356	224·3	172·6	−19·8	0	7	
		652	0·338	217·5	169·9	−20·6	0	9	
		651	0·512	345·6	165·3	+24·5	5	6	
		653	0·866	107·2	97·4	−17·5	19	198	425 *f*
			0·932	123·5					288
Jan. 20							(111)	(778)	(2755)
19·970	J, M	650	0·791	293·6	188·5	+14·9	33	92	412 *nf*
		651	0·617	321·9	164·7	+24·2	5	10	
		653	0·694	109·3	97·0	−17·2	61	252	215 *f*
		654	0·762	122·3	93·6	−26·7	19	50	143 *sf*
			0·961	97·6					102
Jan. 21							(118)	(404)	(872)
20·896	H, JP		0·857	239·4					282
		650	0·901	290·1	189·1	+15·5	12	56	991 *nf*
I.		655	0·451	322·5	144·4	+15·7	7	11	
		655	0·432	328·1	141·6	+16·2	0	9	
		653	0·532	114·2	97·5	−17·2	16	162	253 *c*
		654	0·599	130·3	97·1	−27·4	4	22	56 *c*
		654	0·665	128·5	91·6	−28·8	2	33	78 *c*
			0·881	97·1					209

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

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

Group 647. A cluster of several irregular spots. The group changes very much on the following days.

Group 648. A dark spot with several faint spots following. The spot undergoes very great changes, diminishing in size to January 15, and then increasing again; the leading spot divides into two portions, and one of the smaller fragments greatly increases in size on January 19.

Group 649. Small faint spot, probably the same group as Group 645.

Group 650. Irregular spot, breaking up into three on January 16. The following portions are much smaller than the preceding, and disappear before January 20.

Group 651. Two small spots, of which the following is only seen on January 18.

Group 652. Two very faint small spots: each divides into two parts on January 19.

Group 653. Small regular spot.

Group 654. Two small spots. They break up into several small fragments on January 23, but the parts of the preceding spot coalesce on January 24, and the following spot remains divided into two small portions.

Group 655. Several very small spots. Only one fragment is left on January 23.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	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).
1882.				°	°	°			
20d·896	H, JP		0·838	58·4					345
I.			0·891	114·8					320
			0·933	73·5					343
Jan. 22							(41)	(293)	(2877)
21·767	H, JP		0·948	246·5					448
		650	0·963	288·0	188·2	+15·7	0	28	845 *nf*
I.		655	0·584	307·3	145·2	+15·9	0	6	
		653	0·370	124·4	97·8	−17·2	19	164	72 *c*
		654	0·476	141·8	97·2	−27·1	8	29	
		654	0·535	138·5	92·7	−28·5	6	32	
			0·783	97·9					156
			0·807	57·4					56
			0·854	72·4					134
			0·937	116·3					473
Jan. 23							(33)	(259)	(2184)
23·092	J, M		0·858	303·4					63
		653	0·204	175·3	97·9	−17·3	62	181	
		654	0·358	178·6	98·3	−26·5	28	51	
		654	0·404	163·2	91·3	−28·2	5	19	
		656	0·877	115·8	38·4	−25·2	20	68	316 *sp*
			0·939	72·9					118
Jan. 24							(115)	(319)	(497)
23·758	H, JP	654	0·426	214·1	105·5	−26·0	0	7	
		654	0·383	199·8	98·5	−26·6	0	42	
I.		654	0·366	189·2	93·9	−26·7	0	11	
		653	0·248	212·6	98·2	−17·6	22	86	
		656	0·800	117·7	38·8	−25·4	5	38	
		656	0·845	118·3	34·0	−26·8	3	20	63 *c*
		657	0·943	69·8	22·8	+16·9	0	27	
		658	0·964	71·9	17·2	+15·8	0	180	150 *c*
Jan. 25							(30)	(411)	(213)
24·784	H, JP		0·855	247·5					105
			0·803	239·6					42
I.		653	0·408	238·6	98·0	−17·6	12	141	124 *c*
		654	0·485	222·3	97·9	−26·2	2	12	18 *c*
		654	0·442	217·1	93·9	−26·0	0	4	
		654	0·456	211·1	92·2	−28·4	0	7	
		656	0·665	122·5	38·5	−25·4	3	18	
		656	0·715	121·2	34·0	−25·9	0	9	
		656	0·725	121·7	33·3	−26·6	6	11	
		657	0·835	64·7	24·6	+17·4	4	18	
		658	0·878	68·7	18·8	+15·6	21	206	163 *n*
Jan. 26							(48)	(426)	(452)
1882.				°	°	°			
25d·662	H, JP		0·889	247·1					1166
		653	0·563	247·3	98·0	−17·4	16	127	82 *c*
I.		659	0·291	17·3	60·2	+10·3	2	4	
		659	0·291	20·9	59·2	+ 9·9	0	2	28 *c*
		659	0·325	26·5	56·7	+11·1	3	12	
		656	0·533	130·4	38·6	−25·4	2	8	49 *c*
		657	0·721	59·1	25·0	+17·3	7	20	
		658	0·740	62·8	22·3	+15·6	0	4	
		658	0·777	64·0	18·8	+15·9	28	227	963 *c*
		658	0·824	65·2	14·1	+16·6	0	4	
		658	0·838	62·4	13·5	+19·3	0	16	
			0·931	101·1					551
			0·941	109·3					46
Jan. 27							(58)	(424)	(2885)
26·932	J, M		0·872	244·1					288
		653	0·766	251·4	98·0	−18·0	40	181	
		659	0·323	325·9	59·0	+ 9·7	17	114	
		656	0·436	144·0	32·0	−26·2	1	6	
		657	0·539	44·7	25·2	+17·1	6	13	
		658	0·603	53·1	18·5	+16·1	42	239	
		658	0·674	53·2	13·9	+18·9	5	16	
Jan. 28							(111)	(569)	(288)
27·679	H, JP	653	0·860	253·5	98·0	−17·2	14	71	779 *c*
		660	0·718	247·8	83·4	−20·0	2	15	
I.		660	0·702	246·7	81·9	−20·4	0	12	130 *c*
		660	0·665	243·8	78·4	−21·6	0	3	
		659	0·476	302·9	62·5	+ 9·4	13	44	55 *c*
		659	0·415	312·6	56·6	+10·6	3	25	
		657	0·448	28·6	25·7	+17·4	1	9	
		658	0·495	41·6	18·7	+16·2	26	222	157 *c*
		658	0·570	44·4	13·8	+18·6	4	15	52 *c*
			0·889	52·2					270
			0·933	72·0					166
Jan. 29							(63)	(416)	(1609)
30·944	J, M		0·996	248·6					216
			0·954	260·7					94
		659	0·939	282·6	63·7	+ 9·5	20	88	483 *f*
		658	0·530	314·8	18·6	+16·2	52	272	
		661	0·194	253·7	6·4	− 9·2	0	16	
		662	0·799	60·3	308·5	+19·2	26	94	
		662	0·834	61·2	304·8	+19·8	0	12	629 *f*
			0·965	101·6					137
Feb. 1							(98)	(482)	(1559)

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

Group 650. Irregular spot, breaking up into three on January 16. The following portions are much smaller than the preceding, and disappear before January 20.

Group 653. Small regular spot.

Group 654. Two small spots. They break up into several small fragments on January 23, but the parts of the preceding spot coalesce on January 24, and the following spot remains divided into two small portions.

Group 655. Several very small spots. Only one fragment is left on January 23.

Group 656. Two small spots; both gradually diminish in size, and the following spot disappears before January 27.

Group 657. Small spot.

Group 658. Regular spot. Several small spots break out in its neighbourhood on January 27.

Group 659. Three or four very small spots, arranged in a straight line.

Group 660. Several very small spots, arranged in three close and small clusters.

Group 661. Two small spots.

Group 662. A small spot, with a very small one near it on February 1 and 2.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1882.				°	°	°			
31d·662	H, JP		0·925	327·8					245
			0·862	244·0					642
I.		659	0·983	281·5	64·1	+10·1	0	83	605 *f*
		658	0·646	302·1	20·6	+14·9	3	56	
		658	0·637	304·8	19·1	+16·1	45	331	194 *c*
		661	0·386	262·4	8·9	− 8·7	0	10	
		661	0·341	258·9	5·9	− 9·6	0	4	
		662	0·701	54·5	309·2	+19·0	13	43	
		662	0·739	55·9	305·8	+19·8	1	5	1069 *f*
		663	0·774	68·2	299·0	+12·5	0	2	
		664	0·888	101·9	283·1	−13·4	0	13	176 *sf*
			0·903	127·3					86
Feb. 2							(62)	(547)	(3013)
32·987	J, M		0·923	245·2					273
		658	0·819	294·9	19·2	+16·2	79	409	944 *c*
		665	0·404	237·8	349·7	−18·3	8	17	
		662	0·529	37·3	309·0	+18·9	5	33	
		664	0·735	102·4	281·3	−13·4	12	67	215 *c*
			0·796	51·3					460
			0·969	73·2					446
Feb. 3							(104)	(526)	(2338)
33·691	H, JP		0·964	284·6					266
			0·957	244·7					359
I.			0·858	301·2					418
		658	0·895	291·8	19·1	+16·3	50	364	393 *c*
		665	0·540	247·3	350·7	−17·5	3	18	
		662	0·451	21·9	309·2	+18·3	2	14	
		664	0·560	104·3	285·7	−13·3	2	13	
		664	0·581	104·2	284·2	−13·4	4	9	
		664	0·604	104·0	282·5	−13·6	1	186	122 *c*
		664	0·643	108·8	280·1	−16·9	0	4	
		664	0·640	103·3	279·8	−13·4	12	77	
		664	0·657	106·2	278·7	−15·4	0	4	
		666	0·944	74·2	251·1	+12·6	0	44	
		667	0·986	74·6	241·3	+14·0	0	84	970 *c*
			0·786	47·0					336
			0·854	56·6					238
Feb. 4							(74)	(817)	(3102)
34·688	H, JP		0·951	297·6					706
		658	0·968	288·2	18·8	+15·8	20	199	585 *c*
I.		665	0·716	252·2	351·5	−17·2	0	16	
		662	0·429	353·2	309·3	+18·7	0	6	
		664	0·337	110·6	287·4	−12·8	10	57	129 *c*
		664	0·380	107·9	284·5	−12·7	6	41	
		664	0·408	111·5	283·2	−14·5	0	2	
		664	0·435	108·7	281·2	−13·8	6	19	180 *c*

Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1882.				°	°	°			
34d·688	H, JP	664	0·463	106·9	279·2	−13·4	6	78	
		664	0·476	110·1	278·7	−15·1	0	12	
I.		666	0·815	68·7	255·1	+13·2	0	7	
		666	0·850	70·1	251·2	+13·2	6	10	
		667	0·895	72·1	245·5	+12·9	0	7	
		667	0·925	71·6	241·5	+14·3	6	20	897 *c*
		668	0·952	78·5	235·7	+ 8·8	11	49	
		668	0·974	78·8	230·9	+ 9·3	0	52	348 *c*
Feb. 5							(71)	(575)	(2845)
35·658	H, JP		0·962	297·0					606
		665	0·913	256·9	0·0	−14·6	0	22	
I.		665	0·856	254·4	352·7	−16·7	2	14	339 *np*
		664	0·145	145·3	288·7	−13·3	11	69	51 *c*
		664	0·171	131·4	286·0	−13·0	5	53	
		664	0·249	124·0	281·3	−14·4	8	48	
		664	0·276	117·3	279·0	−13·6	3	43	
		664	0·287	122·0	279·0	−15·0	0	9	
		666	0·680	61·8	255·6	+13·6	9	25	210 *c*
		666	0·723	65·1	251·4	+12·9	3	7	
		666	0·635	62·4	248·6	+11·7	22	46	
		667	0·826	67·7	241·8	+14·3	3	9	653 *nf*
		668	0·854	76·3	236·8	+ 8·1	6	84	
		668	0·878	78·0	233·8	+ 7·3	0	3	
		668	0·903	76·4	230·9	+ 9·3	0	52	398 *c*
Feb. 6							(72)	(484)	(2257)
36·793	H, JP		0·958	256·1					355
			0·950	304·4					154
I.		664	0·227	237·7	289·9	−13·3	3	18	
		664	0·209	233·5	288·5	−13·6	8	65	
		664	0·172	230·2	286·4	−12·8	10	64	
		664	0·132	221·2	283·7	−13·7	1	45	
		664	0·130	183·4	282·1	−13·9	0	29	
		664	0·138	200·0	281·4	−13·9	17	173	
		666	0·437	46·7	259·8	+11·3	8	47	91 *c*
		666	0·515	48·6	255·2	+13·9	0	7	
		667	0·678	60·3	241·3	+14·5	0	11	
		668	0·692	71·7	237·2	+ 7·7	13	83	
		668	0·769	72·7	230·8	+ 8·9	9	121	79 *c*
Feb. 7							(69)	(663)	(679)
37·835	H, JP		0·991	253·0					268
			0·949	262·9					93
I.			0·941	291·5					68
			0·784	302·5					94
		664	0·429	252·2	289·5	−13·6	51	343	
		664	0·315	252·2	282·6	−11·8	2	66	119 *c*

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

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

Group 658. Regular spot. Several small spots break out in its neighbourhood on January 27.

Group 659. Three or four very small spots, arranged in a straight line.

Group 661. Two small spots.

Group 662. A small spot, with a very small one near it on February 1 and 2.

Group 663. A small spot.

Group 664. One very small faint spot when first seen on the E. limb on February 2. The group rapidly increases in size, expanding into a long line of spots, of which the preceding one is the largest. The group undergoes constant change, and is largest shortly after passing the central meridian.

Group 665. A close cluster of very small spots, which gradually diminishes in size.

Group 666. A small spot on February 4. The spot somewhat increases in size on February 5 and 6, and several small spots form behind it. The group undergoes constant change, and is largest shortly after passing the central meridian.

Group 667. One spot, which slowly diminishes until its disappearance on February 10.

Group 668. Three spots. The middle spot disappears before February 7, and the other spots increase somewhat in size, the preceding spot becoming eventually the larger.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	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).
1882.				°	°	°			
37^{d}·835	H, JP	664	0·304	244·3	281·1	−13·9	22	159	
		664	0·270	240·5	278·8	−14·0	0	19	
I.		666	0·311	13·9	260·5	+11·0	9	28	
		666	0·340	17·1	259·0	+12·3	2	28	
		666	0·380	20·5	256·9	+14·3	0	25	
		669	0·333	140·5	251·7	−21·2	0	5	
		669	0·376	138·8	249·3	−22·8	0	5	
		667	0·521	48·0	241·3	+14·3	0	4	
		668	0·502	63·4	238·0	+ 7·0	14	81	99 *c*
		668	0·608	66·2	230·7	+ 8·8	14	61	78 *c*
			0·940	49·7					305
Feb. 8							(114)	(824)	(1124)
39·974	J, M		0·888	297·5					587
		664	0·814	256·8	291·5	−14·6	57	393	
		664	0·742	258·3	284·8	−13·2	8	30	
		664	0·711	259·9	282·2	−11·9	6	32	
		664	0·687	258·4	280·2	−12·8	8	44	
		664	0·684	256·0	279·8	−14·4	0	34	
		666	0·513	307·9	261·1	+12·3	8	77	
		666	0·474	315·6	256·5	+13·4	0	47	
		667	0·369	344·6	242·5	+14·1	0	4	
		668	0·250	351·6	238·8	+ 7·6	25	143	
		668	0·281	21·2	230·8	+ 8·5	22	80	
		670	0·905	73·9	174·4	+11·5	38	214	
		670	0·950	76·1	167·0	+10·9	24	330	520 *c*
			0·831	57·6					243
			0·888	64·7					180
Feb. 10							(196)	(1428)	(1530)
40·974	J, M		0·923	298·2					509
		664	0·933	257·3	293·2	−14·3	80	416	
		664	0·859	258·7	283·3	−13·2	0	83	1074 *c*
		666	0·677	297·1	261·6	+12·6	9	34	
		666	0·623	302·6	256·2	+13·8	2	18	
		668	0·360	313·0	238·9	+ 7·6	27	129	
		668	0·289	333·2	231·1	+ 8·2	17	50	
		671	0·322	126·8	208·0	−17·7	4	9	
		671	0·355	122·7	205·4	−17·5	0	4	
		670	0·797	70·8	173·8	+10·8	73	205	
		670	0·821	73·1	170·9	+ 9·7	16	60	
		670	0·868	73·3	166·0	+10·9	45	348	445 *c*
			0·897	60·8					278
Feb. 11							(273)	(1356)	(2306)
42·015	J, M		0·934	301·9					230
		664	0·996	256·8	296·0	−13·7	0	497	1051 *f*
		666	0·845	295·6	262·6	+17·4	35	199	333 *n*
42^{d}·015	J, M	666	0·814	289·4	261·2	+11·5	0	14	
		668	0·442	305·2	231·1	+ 8·4	2	9	
		671	0·195	179·3	209·7	−18·0	11	67	
		671	0·191	167·3	207·3	−17·5	3	17	
		671	0·199	156·4	205·0	−17·2	24	58	
		670	0·637	64·0	174·3	+10·6	71	204	
		670	0·668	66·8	171·4	+ 9·9	5	17	
		670	0·727	67·9	166·7	+10·9	79	350	
		672	0·952	106·8	136·6	−18·1	39	190	
		672	0·959	108·9	135·2	−20·0	0	60	
		672	0·981	109·3	129·4	−20·3	0	174	483 *c*
			0·889	58·5					312
Feb. 12							(269)	(1856)	(2409)
42·643	H, JP		0·982	256·5					1263
			0·951	301·9					387
I.			0·817	293·7					734
		668	0·680	293·0	240·8	+10·2	0	5	
		668	0·652	290·3	239·4	+ 7·7	7	72	
		673	0·641	305·1	234·4	+15·9	0	7	
		671	0·245	216·6	210·3	−18·0	8	26	
		671	0·218	211·6	208·3	−17·5	5	144	
		671	0·190	197·2	204·9	−17·2	8	106	156 *c*
		674	0·212	11·3	199·1	+ 5·2	2	5	
		674	0·209	12·5	198·9	+ 5·0	0	4	
		670	0·526	56·8	175·0	+10·6	21	120	14 *c*
		670	0·588	61·5	169·9	+10·5	10	71	65 *c*
		670	0·635	60·8	167·1	+12·4	10	68	
		670	0·640	64·5	165·7	+10·5	18	134	223 *c*
		675	0·782	54·6	158·2	+22·0	0	12	
		675	0·806	53·4	156·6	+24·0	0	10	
		675	0·812	54·9	155·4	+23·2	0	7	224 *f*
		672	0·896	107·4	137·3	−18·6	18	87	
		672	0·910	109·3	135·4	−20·4	3	32	
		672	0·945	109·8	129·7	−20·9	8	132	745 *s*
Feb. 13							(118)	(1042)	(3811)
43·952	J, M	668	0·842	283·4	239·8	+ 7·4	19	113	1195 *n*
		676	0·507	285·9	213·4	+ 1·9	10	32	
		676	0·444	288·0	209·2	+ 1·6	7	12	
		671	0·468	244·2	210·5	−17·9	0	20	
		671	0·378	241·0	204·4	−17·0	14	51	
		670	0·336	27·9	175·2	+10·4	57	200	
		670	0·383	39·5	170·0	+10·4	9	28	
		670	0·438	45·5	165·8	+11·3	51	225	
		675	0·621	41·4	158·8	+21·5	0	7	
		675	0·673	41·4	155·8	+24·2	0	14	
		672	0·736	109·0	137·2	−18·6	36	164	

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

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

Group 664. One very small faint spot when first seen on the E. limb on February 2. The group rapidly increases in size, expanding into a long line of spots, of which the preceding one is the largest. The group undergoes constant change, and is largest shortly after passing the central meridian.

Group 666. A small spot on February 4. The spot somewhat increases in size on February 5 and 6, and several small spots form behind it. The group undergoes constant change, and is largest shortly after passing the central meridian.

Group 667. One spot, which slowly diminishes until its disappearance on February 10.

Group 668. Three spots. The middle spot disappears before February 7, and the other spots increase somewhat in size, the preceding spot becoming eventually the larger.

Group 669. Two very small spots.

Group 670. A fine group, consisting of a number of spots arranged in three clusters in a straight line. The middle portion disappears before February 15. The group decreases after passing the central meridian, the preceding spot less rapidly than the others.

Group 671. Two small spots. Some very small spots appear between them on February 12. The members of the group increase in size until the central meridian is passed, and then diminish rapidly.

Group 672. A small regular spot, followed by a number of small spots, which, however, disappear soon after the central meridian is passed.

Group 673. Small spot.

Group 674. Two small spots.

Group 675. A cluster of very small spots.

Group 676. Two small spots. Several small spots form round the following spot, and the preceding spot increases in size as the group approaches the W. limb.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	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).
1882.				°	°	°			
43d·952	J, M	672	0·761	110·8	135·2	−20·3	6	31	
		672	0·759	106·0	134·9	−16·6	0	30	
		672	0·805	109·6	130·8	−19·8	9	97	
Feb. 14							(218)	(1024)	(1195)
44·997	J, M	668	0·942	280·1	239·4	+ 7·1	12	74	621 *n*
		676	0·714	280·0	215·1	+ 2·3	24	151	
		676	0·652	281·0	210·2	+ 1·9	12	60	
		671	0·561	249·2	203·7	−17·3	10	54	
		670	0·312	344·2	175·4	+10·6	39	208	
		670	0·294	353·8	172·3	+10·0	0	5	
		670	0·323	13·3	166·2	+11·4	23	159	
		675	0·526	22·0	158·2	+22·4	0	6	
		672	0·561	113·7	137·8	−18·9	49	170	
		672	0·596	110·5	134·8	−17·7	20	114	
		672	0·597	115·2	135·5	−20·4	0	8	
		672	0·661	114·0	130·4	−20·9	6	37	
		677	0·911	107·0	104·2	−18·3	19	54	
		678	0·956	108·9	96·4	−20·1	2	15	451 *c*
Feb. 15							(216)	(1115)	(1072)
45·940	J, M		0·954	287·9					523
		676	0·852	277·0	215·7	+ 2·3	38	281	
		676	0·798	277·8	210·2	+ 1·9	0	44	304 *c*
		679	0·735	307·1	196·8	+20·9	0	17	127 *n f*
		671	0·716	252·9	203·6	−17·1	16	35	174 *s p*
		670	0·418	314·5	175·7	+10·3	38	170	
		670	0·343	336·4	166·1	+11·3	18	110	
		675	0·483	358·4	159·3	+21·7	0	3	
		672	0·368	119·8	138·7	−17·1	1	8	
		672	0·392	123·1	137·9	−18·9	47	187	
		672	0·428	116·7	134·6	−17·5	4	23	
		672	0·524	119·7	129·0	−21·2	1	8	
		677	0·801	107·9	104·8	−18·5	18	68	
		677	0·832	106·9	101·5	−18·0	3	14	
		678	0·888	109·9	95·0	−20·9	9	46	646 *c*
Feb. 16							(193)	(1014)	(1774)
47·083	J, M		0·868	280·8					130
		676	0·965	274·6	217·1	+ 2·6	84	210	
		676	0·929	274·0	210·7	+ 1·1	11	53	347 *c*
		671	0·868	254·5	203·7	−16·9	0	10	190 *s p*
		670	0·606	297·3	176·0	+10·3	37	141	
		670	0·499	308·7	166·3	+11·7	17	49	
		675	0·542	336·9	156·3	+23·0	1	24	
		672	0·223	157·6	137·9	−18·9	65	238	
		672	0·225	142·8	134·9	−17·2	0	9	
1882.				°	°	°			
47d·083	J, M	677	0·632	110·9	104·6	−18·6	7	27	
		677	0·676	108·5	100·9	−17·6	14	41	
		678	0·719	109·8	97·5	−19·0	1	13	
		678	0·754	111·8	94·7	−20·9	2	23	280 *c*
			0·903	120·8					187
Feb. 17							(239)	(838)	(1134)
47·993	J, M		0·965	253·7					304
			0·954	278·8					107
		676	0·985	272·4	210·7	+ 1·1	30	94	586 *n p*
		680	0·844	293·9	184·3	+15·9	1	8	
		670	0·747	290·5	176·3	+10·3	25	118	
		670	0·644	297·7	166·6	+11·7	12	41	956 *c*
		681	0·557	251·8	164·3	−15·9	2	10	
		675	0·628	319·5	157·1	+22·2	7	45	
		672	0·237	218·6	140·0	−17·5	0	5	
		672	0·233	208·8	137·9	−18·7	47	233	
		677	0·475	116·2	104·5	−18·3	0	8	
		677	0·511	112·2	101·5	−17·2	17	75	
		678	0·564	112·3	97·9	−18·3	2	9	
		678	0·610	116·3	95·3	−21·4	2	7	
		682	0·918	63·6	69·7	+20·8	0	10	104 *f*
		683	0·982	102·3	51·0	−13·4	0	32	378 *c*
			0·809	122·8					268
			0·894	107·9					108
			0·944	71·7					207
Feb. 18							(145)	(695)	(3018)
49·078	J, M		0·762	309·2					110
		670	0·887	285·8	176·8	+10·4	17	71	288 *n f*
		672	0·402	238·1	137·9	−18·9	38	191	
		677	0·303	128·3	102·4	−17·7	18	46	
		678	0·386	124·7	97·2	−19·3	0	27	
			0·886	67·7					70
			0·934	102·7					429
Feb. 19							(73)	(335)	(897)
49·764	H, JP	670	0·942	283·8	176·0	+10·4	9	74	998 *n f*
		672	0·512	245·0	137·0	−18·7	19	164	
I.		672	0·408	237·4	129·1	−19·3	0	11	
		677	0·213	150·8	101·6	−17·8	7	61	40 *c*
		677	0·187	144·3	101·3	−15·7	0	20	
		678	0·250	138·9	97·9	−17·8	0	11	
		678	0·302	139·1	95·7	−20·1	0	16	
		683	0·841	101·6	50·1	−13·6	0	39	628 *c*
			0·919	52·3					117
Feb. 20							(35)	(396)	(1783)

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

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

Group 668. Three spots. The middle spot disappears before February 7, and the other spots increase somewhat in size, the preceding spot becoming eventually the larger.

Group 670. A fine group, consisting of a number of spots arranged in three clusters in a straight line. The middle portion disappears before February 15. The group decreases after passing the central meridian, the preceding spot less rapidly than the others.

Group 671. Two small spots. Some very small spots appear between them on February 12. The members of the group increase in size until the central meridian is passed, and then diminish rapidly.

Group 672. A small regular spot, followed by a number of small spots, which, however, disappear soon after the central meridian is passed.

Group 675. A cluster of very small spots.

Group 676. Two small spots. Several small spots form round the following spot, and the preceding spot increases in size as the group approaches the W. limb.

Group 677. An irregular spot, with several small spots near it. Group 678. Two small spots. Group 679. A small spot.

Group 680. A small spot. Group 681. Two small spots. Group 682. A small spot. Group 683. Several small spots. The group is not seen on February 19.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.	Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).						Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1882.				°	°	°				1882.				°	°	°			
51d·912	J, M		0·982	296·4					180	56d·933	J, M	685	0·159	131·1	6·3	−13·1	11	45	
		672	0·857	253·1	138·8	−18·1	43	195	299 *c*			687	0·983	102·9	292·6	−14·0	65	207	228 *c*
		677	0·418	242·4	102·2	−17·7	45	147					0·933	64·5					274
		678	0·384	233·4	98·5	−19·9	14	50		Feb. 27							(76)	(259)	(1236)
		683	0·481	105·3	51·0	−13·6	8	32											
		684	0·877	103·1	17·5	−14·9	10	27	467 *c*	57·773	H, JP		0·945	236·2					63
		685	0·958	101·4	5·1	−13·0	28	86					0·911	251·4					132
			0·909	65·9					731	I.			0·764	259·1					146
Feb. 22							(148)	(537)	(1677)			685	0·131	215·8	6·8	−13·2	10	21	
												688	0·242	142·9	353·5	−18·3	0	13	
52·787	H, JP	672	0·936	252·9	138·3	−18·6	28	144	724 *c*			687	0·930	101·9	293·1	−13·7	53	154	558 *s f*
		677	0·560	249·0	101·0	−17·6	4	100					0·949	59·5					603
I.		678	0·537	243·7	98·6	−20·0	6	53		Feb. 28							(63)	(188)	(1502)
		683	0·275	114·8	53·1	−13·6	2	21											
		684	0·759	103·4	18·3	−14·9	0	8	87 *c*	58·944	J, M		0·983	251·7					262
		685	0·874	100·2	6·4	−12·4	19	44	480 *s f*				0·964	296·2					68
			0·907	60·4					524				0·892	258·4					369
Feb. 23							(59)	(370)	(1815)			687	0·803	101·5	293·0	−13·5	46	227	479 *s f*
													0·883	60·4					451
53·675	H, JP	672	0·985	252·2	137·9	−18·7	36	109	675 *c*	Mar. 1							(46)	(227)	(1629)
		677	0·717	252·0	101·8	−17·9	9	86											
I.		678	0·671	247·8	97·4	−20·1	4	41	849 *c*	59·897	J, M		0·952	256·2					363
		683	0·096	156·9	54·0	−12·3	0	7					0·795	297·8					448
		683	0·125	152·6	52·8	−13·6	2	12				687	0·612	99·1	296·4	−11·3	3	23	
		683	0·107	172·4	47·9	−13·3	6	19				687	0·650	98·8	293·6	−11·2	17	72	
		684	0·616	104·9	18·3	−14·9	0	6	42 *c*			687	0·656	102·1	293·2	−13·4	44	233	
		685	0·765	100·1	6·0	−12·4	11	66	660 *f*				0·799	53·0					285
			0·886	57·0					801				0·941	72·6					420
Feb. 24							(68)	(346)	(3027)				0·953	58·6					372
										Mar. 2							(64)	(328)	(1888)
54·711	H, JP	677	0·856	253·0	101·9	−18·3	8	55											
		678	0·819	249·8	97·5	−20·6	0	8	499 *p*	61·110	J, M		0·898	300·1					661
I.		683	0·233	247·4	55·3	−12·1	2	15					0·857	255·7					202
		683	0·235	239·4	54·6	−13·9	0	7				689	0·410	50·5	299·8	+ 8·3	0	36	
		683	0·206	240·2	53·1	−12·9	0	18				687	0·359	104·7	297·7	−12·0	15	82	
		684	0·419	110·0	18·7	−14·8	0	6				687	0·420	101·6	295·1	−13·5	36	175	
		685	0·597	101·2	5·9	−12·5	8	65	88 *c*			687	0·432	106·5	293·3	−13·6	47	215	
			0·936	51·3					117				0·854	47·2					122
Feb. 25							(18)	(174)	(704)				0·879	68·4					547
													0·881	59·4					228
56·022	J, M		0·945	251·0					986	Mar. 3							(98)	(508)	(1760)
		684	0·177	137·7	18·3	−14·6	2	3											
		685	0·342	107·4	5·8	−12·7	10	69		62·044	J, M		0·919	300·3					597
Feb. 26							(12)	(72)	(986)				0·862	256·5					334
												689*	0·648	263·3	346·6	− 9·9	2	12	
56·933	J, M		0·986	247·9					430			689	0·286	21·2	300·0	+ 8·1	12	41	
			0·852	252·7					199			687	0·146	124·5	299·0	−12·0	26	92	
		686	0·784	305·4	56·6	+21·8	0	7	105 *c*			687	0·206	110·3	294·7	−11·3	36	204	

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

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

Group 672. A small regular spot, followed by a number of small ones, which, however, disappear soon after the central meridian is passed.
Group 677. An irregular spot, with several small ones near it.
Group 678. Two small spots.
Group 683. Several small spots. The group is not seen on February 19.
Group 684. A small spot.
Group 685. A spot which slowly divides into two portions about February 27.
Group 686. Two very small spots.
Group 687. A regular spot. Another spot breaks out to the north of it, and some small spots appear before it on March 2. The group undergoes several changes during its course.
Group 688. Two small spots.
Group 689. Two small spots.
Group 689*. A small spot.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	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).
1882.				°	°	°			
62d·044	J, M	687	0·245	118·2	293·2	−13·7	60	205	
			0·781	45·3					202
			0·898	66·2					425
Mar. 4							(136)	(554)	(1558)
62·711	H, JP		0·949	297·0					215
			0·947	258·3					85
I.		689	0·288	348·4	300·6	+ 9·1	0	54	
		687	0·120	227·2	302·4	−11·9	0	5	
		687	0·091	210·0	300·0	−11·7	16	61	83 *c*
		687	0·083	147·2	294·7	−11·2	15	87	120 *c*
		687	0·134	150·3	293·4	−13·8	22	157	339 *c*
		690	0·887	63·3	240·2	+19·7	0	14	676 *c*
		691	0·976	88·2	220·2	+ 0·1	89	182	378 *c*
Mar. 5							(142)	(560)	(1896)
63·701	H, JP	687	0·321	254·8	302·6	−11·7	8	62	69 *c*
		687	0·190	249·0	294·6	−11·0	15	142	92 *c*
I.		687	0·193	232·0	293·2	−13·9	20	161	113 *c*
		690	0·777	57·1	240·5	+19·8	0	9	24 *c*
		691	0·893	86·7	221·4	− 0·4	41	226	399 *c*
			0·820	61·2					151
Mar. 6							(84)	(600)	(848)
64·791	H, JP		0·977	260·7					94
		687	0·568	259·0	304·4	−12·1	14	67	
I.		687	0·420	259·5	294·6	−11·0	12	115	72 *c*
		687	0·412	251·3	293·4	−14·2	21	165	104 *c*
		691	0·755	84·3	221·3	− 0·5	42	290	485 *f*
Mar. 7							(89)	(637)	(755)
65·687	H, JP		0·757	317·2					129
		687	0·717	260·0	304·1	−12·2	11	85	
I.		687	0·589	261·3	294·2	−11·0	20	205	
		687	0·582	256·3	293·4	−13·8	19	133	223 *c*
		692	0·378	249·5	279·3	−14·3	4	8	
		692	0·349	243·8	276·9	−15·7	17	17	
		693	0·539	340·8	269·1	+23·4	0	21	
		693	0·533	347·1	265·5	+24·0	5	7	
		691	0·610	81·9	221·0	− 0·9	47	285	134 *c*
		694	0·924	103·0	189·7	−14·7	0	18	425 *f*
		695	0·985	80·0	179·4	+ 8·5	0	20	854 *n*
Mar. 8							(123)	(799)	(1765)
66·805	H, JP		0·949	294·2					62
			0·872	305·7					707
I.		687	0·883	258·6	305·9	−13·4	7	22	
		687	0·805	260·7	297·3	−11·8	24	155	1097 *c*
		687	0·767	258·0	293·7	−13·8	14	104	
		687	0·767	261·0	293·7	−11·6	31	122	
1882.									
66d·805	H, JP	692	0·610	254·3	280·6	−15·3	4	29	
		692	0·550	254·0	276·3	−14·8	7	20	
I.		696	0·456	262·6	270·5	− 9·8	0	9	
		693	0·642	320·6	269·5	+23·2	12	42	
		693	0·614	324·6	266·0	+23·3	6	33	
		691	0·385	73·5	221·7	− 0·5	51	299	171 *c*
		694	0·797	102·4	190·1	−14·2	8	58	146 *c*
		694	0·857	102·6	183·8	−14·5	0	15	395 *c*
		695	0·895	76·1	181·9	+ 9·1	0	33	880 *f*
Mar. 9							(164)	(941)	(3458)
67·697	H, JP		0·904	305·3					849
		687	0·958	257·9	305·8	−13·6	0	15	435
I.		687	0·920	261·1	299·1	−11·0	7	61	
		687	0·875	258·5	293·1	−13·6	22	106	1682 *c*
		687	0·872	261·3	292·7	−11·1	20	101	
		692	0·775	256·1	282·6	−15·3	4	16	237
		692	0·698	256·9	275·9	−14·3	7	33	110 *c*
		693	0·749	310·3	269·8	+23·3	19	56	
		693	0·709	314·0	265·2	+23·5	19	96	305 *c*
		697	0·283	231·6	244·9	−17·1	6	37	
		697	0·248	224·6	242·0	−17·2	8	39	118 *c*
		691	0·211	57·8	221·3	− 0·7	47	276	226 *c*
		698	0·211	97·9	219·3	− 8·8	0	6	
		694	0·668	103·7	190·3	−14·5	16	54	
		694	0·731	103·5	184·4	−14·8	0	20	407 *c*
		695	0·777	72·6	183·1	+ 8·7	1	14	1193 *n f*
			0·117	77·0					95
Mar. 10							(176)	(930)	(5657)
68·672	H, JP		0·965	293·6					688
			0·861	316·2					115
I.			0·798	293·7					149
		687	0·960	257·3	293·5	−14·2	23	161	
		687	0·958	260·1	292·8	−11·5	12	76	949 *c*
		692	0·903	256·4	284·0	−15·3	2	19	
		692	0·868	255·9	279·5	−15·8	0	24	
		692	0·834	257·2	275·7	−14·7	2	23	779 *c*
		693	0·861	302·2	270·9	+23·0	23	112	299 *c*
		693	0·811	305·5	264·4	+23·1	10	52	
		697	0·481	249·8	246·6	−15·9	19	190	
		697	0·417	242·9	241·5	−17·6	16	114	322 *c*
		691	0·126	334·9	221·8	− 0·7	56	266	147 *c*
		694	0·495	105·5	189·4	−13·9	16	46	102 *c*
		694	0·556	104·6	185·2	−14·1	0	9	
		695	0·628	64·2	183·8	+ 9·9	13	51	735 *f*
		699	0·987	106·0	136·5	−16·9	0	179	464 *c*
Mar. 11							(192)	(1322)	(4749)

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

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

Group 687. A regular spot. Another spot breaks out to the north of it, and some small spots appear before it on March 2. The group undergoes several changes during its course.

Group 689. Two small spots.

Group 690. A small spot.

Group 691. A regular spot.

Group 692. A number of small spots. The group undergoes constant change.

Group 693. A number of small spots in a straight line. The preceding spot increases in size.

Group 694. Two small spots. The preceding spot increases in size, and the following spot diminishes.

Group 695. A very small spot. It greatly increases in size, and other small spots appear behind it.

Group 696. Two very small spots.

Group 697. A number of small spots arranged in two straight lines at right angles to the Sun's Equator on March 10. The group alters its shape, forming one straight line nearly parallel to the Sun's Equator on March 11. The first and last spots are then the largest. The intermediate spots disappear on March 12.

Group 698. Two very small spots.

Group 699. A small regular spot, followed by several smaller spots. It becomes a large irregular cluster of many spots on March 17, quite unlike its appearance on March 16.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.	Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).						Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1882.				°	°	°				1882.				°	°	°			
69d·756	H, JP		0·960	254·6					856	73d·071	J, M	699	0·460	116·5	135·1	−18·3	13	134	
			0·779	300·1					200			699	0·527	113·9	130·3	−18·4	6	22	
I.		693	0·955	297·4	271·7	+23·4	17	111	1009 *c*			699	0·576	112·7	126·7	−18·7	0	10	
		693	0·914	299·9	264·1	+23·6	0	40				701	0·684	54·9	124·9	+17·4	3	11	
		697	0·684	256·0	247·6	−14·9	30	252	156 *c*			702	0·991	112·2	76·6	−22·8	75	312	509 *p*
		697	0·611	251·2	241·5	−17·1	14	148	192 *c*	Mar. 15							(203)	(956)	(1192)
		691	0·322	290·0	221·9	− 0·6	49	253	121 *c*										
		694	0·285	116·6	189·2	−14·3	8	62	113 *c*	73·900	J, M		0·823	311·1					98
		695	0·413	46·5	186·8	+ 9·6	16	87				691	0·961	271·8	223·3	− 0·3	55	260	244 *nf*
		695	0·464	55·4	181·8	+ 8·6	2	22				694	0·652	255·5	190·3	−14·8	4	11	
		699	0·924	106·1	136·0	−17·6	18	115	800 *sp*			695	0·683	291·3	189·6	+ 8·9	6	12	
			0·797	68·7					221			695	0·660	294·3	187·2	+10·2	9	84	
			0·885	57·8					92			695	0·630	293·9	185·2	+ 9·0	0	1	
			0·929	65·6					173			699	0·297	138·7	137·7	−19·8	0	6	
Mar. 12							(154)	(1090)	(3933)			699	0·316	129·3	134·8	−18·4	20	108	
												699	0·384	118·2	129·1	−17·1	0	17	
71·051	J, M		0·841	299·8					522			699	0·426	119·3	126·7	−18·6	4	12	
		697	0·868	257·4	248·2	−14·5	68	260				701	0·547	42·1	127·2	+17·3	0	4	
		697	0·812	254·7	242·0	−16·6	21	114	566 *c*			701	0·607	46·9	122·0	+18·2	0	5	
		691	0·582	279·5	222·3	− 0·4	86	296				702	0·953	111·8	76·1	−22·9	89	305	
		694	0·133	193·1	189·2	−14·6	10	69				702	0·975	110·8	71·0	−21·8	0	20	897 *p*
		695	0·284	358·9	187·7	+ 9·2	55	196		Mar. 16							(187)	(844)	(1239)
		695	0·280	22·1	181·3	+ 7·8	4	16											
		700	0·596	59·0	156·1	+11·7	0	8		75·113	J, M	695	0·831	287·1	187·3	+10·0	10	22	
		699	0·790	107·7	135·1	−18·4	50	150				699	0·224	187·5	135·5	−19·8	26	186	
		699	0·826	105·1	131·4	−16·5	0	17	231 *sf*			702	0·846	112·9	76·0	−23·1	66	282	614 *f*
			0·801	59·5					131	Mar. 17							(102)	(490)	(614)
Mar. 13							(294)	(1126)	(1450)										
										75·988	J, M		0·863	286·6					440
71·901	J, M		0·900	289·6					250			699	0·308	225·9	135·7	−19·2	26	165	
		697	0·952	257·2	249·1	−14·3	99	344				702	0·733	115·0	76·2	−23·0	92	288	
		697	0·909	255·3	242·2	−16·3	30	62	450 *c*			702	0·767	114·4	72·9	−23·2	0	54	329 *f*
		691	0·730	276·2	222·4	− 0·4	108	303	259 *c*	Mar. 18							(118)	(507)	(769)
		694	0·260	239·3	189·4	−14·5	10	51											
		695	0·343	325·3	187·5	+ 9·4	50	185		77·017	J, M	699	0·477	242·8	135·2	−18·9	14	129	
		699	0·664	109·3	135·0	−18·1	36	148				703	0·045	309·7	110·6	− 5·4	0	35	
		699	0·715	106·3	130·5	−16·4	0	45				703	0·065	72·8	105·0	− 5·9	10	25	
		699	0·761	107·9	126·7	−18·2	12	25	478 *c*			702	0·582	120·3	75·7	−22·9	68	296	
		701	0·841	63·9	124·0	+17·4	0	25	121 *c*			702	0·617	117·5	72·5	−22·2	3	19	
			0·950	108·3					275	Mar. 19							(95)	(504)	
Mar. 14							(345)	(1188)	(1833)										
										77·900	J, M		0·972	286·6					190
73·071	J, M		0·944	294·4					205			704	0·914	294·3	158·5	+18·9	17	51	
		697	0·985	255·0	242·1	−16·0	0	42	182 *c*			704	0·886	298·5	153·4	+21·2	44	151	
		691	0·886	273·3	222·7	− 0·4	75	317	296 *nf*			699	0·627	248·9	134·9	−18·6	40	185	
		694	0·494	252·6	189·7	−14·7	10	29				703	0·278	275·1	113·1	− 5·4	11	69	
		695	0·542	298·8	189·3	+ 8·9	0	10				703	0·138	275·3	104·9	− 6·2	11	111	
		695	0·523	302·5	187·2	+ 9·9	21	69				702	0·436	130·0	75·9	−22·8	60	296	

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

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

Group 691. A regular spot.

Group 693. A number of small spots in a straight line. The preceding spot increases in size.

Group 694. Two small spots. The preceding spot increases in size, and the following spot diminishes.

Group 695. A very small spot. It greatly increases in size, and other small spots appear behind it.

Group 697. A number of small spots arranged in two straight lines at right angles to the Sun's Equator on March 10. The group alters its shape, forming one straight line nearly parallel to the Sun's Equator on March 11. The first and last spots are then the largest. The intermediate spots disappear on March 12.

Group 699. A small regular spot, followed by several smaller spots. It becomes a large irregular cluster of many spots on March 17, quite unlike its appearance on March 16.

Group 700. A small spot.

Group 701. Two or three very small spots.

Group 702. A large regular spot, with several small spots close behind it. One of these finally becomes nearly as large as the first spot.

Group 703. Two spots. These spots become much larger, and several smaller spots appear between and around them on March 21 and following days.

Group 704. Two spots, and two or three small markings near them.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1882.				°	°	°			
77^{d}·900	J, M	702	0·463	124·4	72·9	−21·5	18	78	
		702	0·508	122·5	69·6	−22·0	8	46	
			0·965	63·6					403
			0·969	108·5					198
			0·988	75·5					273
Mar. 20							(209)	(987)	(1064)
78·976	J, M	704	0·966	294·9	153·3	+21·8	35	174	483 *nf*
		699	0·822	251·6	138·2	−19·0	7	33	
		699	0·770	253·5	133·1	−17·1	10	27	
		699	0·769	250·8	132·8	−19·1	5	53	521 *c*
		703	0·524	271·9	114·4	− 5·0	26	155	
		703	0·452	271·7	109·7	− 5·4	7	30	
		703	0·390	274·8	105·6	− 4·6	6	33	
		703	0·368	269·3	104·4	− 6·2	33	191	
		702	0·301	156·5	75·4	−22·8	68	303	
		702	0·303	148·0	72·9	−21·7	40	158	
		702	0·334	141·7	70·0	−21·9	6	149	
		705	0·987	99·3	1·2	−10·3	60	361	426 *c*
			0·885	108·4					97
			0·911	58·8					777
			0·914	71·5					434
Mar. 21							(303)	(1667)	(2738)
79·916	J, M		0·961	293·9					104
			0·874	296·9					114
		699	0·888	253·7	133·6	−17·7	5	45	534 *c*
		703	0·693	270·2	114·3	− 4·9	72	317	
		703	0·645	270·7	110·6	− 4·8	21	53	
		703	0·631	268·9	109·6	− 6·0	5	29	
		703	0·582	271·7	106·0	− 4·7	1	25	
		703	0·564	268·5	104·8	− 6·1	48	188	
		706	0·163	220·9	76·7	−14·0	0	9	
		702	0·278	195·4	75·0	−22·4	112	456	
		702	0·251	175·6	69·2	−21·3	6	17	
		707	0·532	117·4	40·3	−20·1	3	12	
		705	0·935	98·4	0·6	−10·3	103	615	792 *f*
			0·761	110·0					146
			0·827	62·0					902
			0·989	63·2					286
Mar. 22							(376)	(1766)	(2878)
80·995	J, M		0·968	254·2					518
			0·771	251·6					143
		703	0·852	265·9	114·9	− 7·1	0	25	
		703	0·853	268·7	114·8	− 4·7	83	354	
		703	0·818	268·7	111·2	− 5·1	0	54	
		703	0·744	267·8	104·4	− 6·3	57	224	455 *c*
1882.									
80^{d}·995	J, M	708	0·635	253·6	95·3	−15·7	11	20	
		702	0·411	227·9	75·4	−22·5	69	319	
		702	0·375	227·7	73·4	−21·1	22	112	
		702	0·349	223·6	71·1	−21·3	0	51	
		709	0·353	17·1	50·1	+12·8	7	19	
		707	0·348	134·9	41·0	−20·9	8	33	
		705	0·806	98·2	2·2	−10·7	100	462	608 *f*
			0·734	45·7					304
			0·923	57·3					161
Mar. 23							(357)	(1673)	(2189)
81·851	H, JP	703	0·932	267·4	113·9	− 4·9	29	269	
		703	0·855	266·8	103·9	− 6·3	17	90	1063 *c*
I.		708	0·785	255·6	96·9	−15·5	7	36	
		708	0·722	253·1	91·0	−16·9	4	11	289 *p*
		702	0·547	239·1	75·3	−22·2	40	247	
		702	0·504	239·2	72·5	−20·9	21	155	
		702	0·464	237·5	69·6	−20·6	9	48	260 *c*
		709	0·349	339·4	52·2	+12·3	1	20	126 *c*
		709	0·330	350·2	48·3	+12·1	6	43	
		707	0·245	166·4	41·5	−20·5	0	9	
		705	0·672	97·7	2·6	−10·2	46	364	250 *c*
			0·898	71·2					76
Mar. 24							(180)	(1292)	(2064)
82·918	J, M	703	0·989	265·8	112·6	− 5·2	42	196	
		703	0·959	266·1	104·6	− 5·7	27	104	673 *c*
		708	0·912	257·1	97·3	−14·6	28	55	424 *s*
		702	0·718	245·7	75·5	−22·0	65	323	
		702	0·687	246·8	73·1	−20·8	53	202	
		702	0·662	244·0	70·6	−22·1	15	60	
		702	0·642	247·0	69·5	−19·8	0	10	
		709	0·482	310·7	52·6	+12·0	19	40	
		709	0·430	316·3	48·4	+11·6	21	77	
		707	0·298	216·1	41·6	−20·6	2	9	
		710	0·490	20·6	20·2	+20·6	9	10	
		705	0·471	99·0	2·7	−10·3	84	395	
		705	0·515	102·0	359·9	−12·0	5	20	
		705	0·598	98·7	354·0	−10·7	0	6	
			0·981	102·9					240
Mar. 25							(370)	(1507)	(1337)
83·997	J, M	708	0·985	256·3	97·9	−14·7	14	172	300 *sf*
		702	0·858	248·8	75·7	−21·5	61	305	
		702	0·833	250·2	73·0	−20·2	40	318	
		702	0·814	247·4	70·6	−22·2	0	19	1289 *c*
		709	0·645	296·5	52·5	+11·3	32	187	
		709	0·604	299·6	48·9	+11·7	37	180	

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

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

Group 699. A small regular spot, followed by several smaller spots. It becomes a large irregular cluster of many spots on March 17, quite unlike its appearance on March 16.
Group 700. A small spot.
Group 701. Two or three very small spots.
Group 702. A large regular spot, with several small spots close behind it. One of these finally becomes nearly as large as the first spot.
Group 703. Two spots. These spots become much larger, and several smaller spots appear between and around them on March 21 and following days.
Group 704. Two spots, and two or three small markings near them.
Group 705. A large regular spot, with some small companions.
Group 706. A very small spot.
Group 707. A small spot.
Group 708. A small spot. A second appears on March 24.
Group 709. Two spots, which rapidly increase up to March 25. Other small spots appear near them on March 25 and following days.
Group 710. A small spot, not detected on March 26, 27, and 28.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.	Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).						Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1882.				°	°	°				1881.				°	°	°			
83d·997	J, M	707	0·468	237·6	41·5	−20·6	0	5		87d·886	J, M	705	0·620	262·0	3·8	−10·0	60	319	
		705	0·238	104·7	3·1	−10·0	78	319				705	0·584	257·1	1·0	−12·8	0	11	
		705	0·286	108·1	0·6	−11·6	3	10				714	0·386	352·1	328·5	+15·9	5	43	
		711	0·853	100·6	317·7	−12·5	2	10	744 *f*			711	0·171	138·0	318·7	−13·8	0	34	
Mar. 26							(267)	(1525)	(2333)			713	0·905	58·2	267·4	+25·1	16	91	970 *c*
												715	0·955	103·1	251·8	−14·4	8	38	455 *f*
84·898	J, M	702	0·944	249·7	76·4	−21·4	47	258					0·746	106·6					200
		702	0·926	251·1	73·2	−20·0	33	174		Mar. 30							(94)	(742)	(2656)
		702	0·921	246·6	72·4	−24·2	1	13	1834 *c*										
		709	0·786	289·5	53·5	+10·8	29	177		88·937	J, M		0·718	304·5					228
		709	0·764	291·2	51·1	+11·4	5	24				710	0·967	293·9	22·7	+21·1	0	19	540 *sf*
		709	0·740	292·5	48·8	+11·6	36	199	480 *c*			705	0·846	260·1	9·7	−11·9	30	87	
		712	0·388	319·4	19·5	+10·6	3	10				705	0·788	262·4	3·8	−10·0	81	328	1395 *nf*
		705	0·146	182·3	5·0	−15·0	0	5				714	0·481	317·7	331·0	+14·7	3	8	
		705	0·064	158·7	3·3	−10·1	78	319				714	0·468	322·7	328·6	+15·6	5	9	
		711	0·721	101·4	318·4	−12·8	2	5	51 *c*			714	0·441	326·8	325·9	+15·3	5	27	
			0·849	41·8					78			711	0·206	237·2	321·7	−12·8	4	9	
			0·902	103·1					505			713	0·804	52·2	267·2	+24·9	23	96	1012 *p*
			0·919	77·0					104			715	0·858	102·9	252·0	−14·4	11	42	583 *sf*
			0·985	56·8					188				0·901	69·7					440
Mar. 27							(234)	(1184)	(3240)	Mar. 31							(162)	(625)	(4198)
85·723	H, JP	702	0·985	249·2	75·7	−21·7	18	200		89·910	J, M		0·917	299·4					140
		702	0·979	250·5	73·4	−20·4	13	180	2177 *c*			705	0·950	259·5	11·2	−12·0	16	119	
I.		709	0·888	285·5	54·1	+10·5	21	226				705	0·905	262·1	4·0	− 9·9	76	318	876 *c*
		709	0·844	287·9	48·6	+11·3	21	148	497 *c*			714	0·623	303·8	331·0	+14·9	0	11	
		705	0·178	249·3	3·5	−10·1	38	279	222 *c*			714	0·564	309·6	325·4	+15·3	0	12	
		711	0·555	102·2	320·2	−12·3	0	9				711	0·471	257·6	326·6	−11·5	4	10	
			0·907	103·3					590			711	0·399	254·0	321·7	−12·2	0	6	
			0·948	63·2					492			713	0·694	43·0	267·3	+25·0	18	83	124 *f*
Mar. 28							(111)	(1042)	(3978)			715	0·722	103·7	252·5	−14·3	6	16	520 *f*
												717	0·916	65·9	236·7	+19·0	0	21	848 *c*
86·664	H, JP		0·989	244·5					378			716	0·902	108·8	233·9	−19·7	4	18	87 *c*
		709	0·964	282·6	54·1	+10·3	18	140				718	0·966	88·4	224·0	− 0·1	30	140	173 *c*
I.		709	0·939	283·6	49·3	+10·3	18	166	673 *c*				0·930	95·3					209
		710	0·746	305·0	21·0	+20·3	0	17	69 *s*	Apr. 1							(154)	(754)	(2977)
		705	0·378	259·2	2·6	−10·2	44	292	176 *c*										
		705	0·341	248·3	359·4	−13·5	0	9		91·065	J, M	705	0·984	261·4	3·8	− 9·6	60	234	449 *sf*
		711	0·380	105·9	319·6	−12·1	0	5				714	0·748	297·3	326·9	+15·5	0	21	163 *c*
		713	0·977	62·1	267·7	+25·4	0	77	250 *nf*			711	0·677	260·8	326·1	−10·8	0	40	
			0·894	106·8					463			713	0·581	26·1	267·0	+25·3	26	64	
Mar. 29							(80)	(706)	(2009)			715	0·524	106·9	252·4	−14·2	0	20	
												716	0·791	110·6	231·6	−20·1	0	40	
87·886	J, M		0·904	254·7					156			717	0·800	59·9	236·4	+19·4	0	10	
			0·871	338·6					161			717	0·865	63·2	228·6	+19·4	0	18	448 *c*
		709	0·998	281·9	50·1	+11·3	0	172	185 *c*			718	0·865	86·5	223·9	− 0·2	28	191	435 *sp*
		710	0·891	297·7	22·9	+21·1	0	10	529 *nf*				0·894	72·9					200
		705	0·676	257·5	7·9	−13·3	5	24		Apr. 2							(114)	(638)	(1695)

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

Group 702. A large regular spot, with several small spots close behind it. One of these finally becomes nearly as large as the first spot.

Group 705. A large regular spot, with some small companions.

Group 707. A small spot.

Group 709. Two spots, which rapidly increase up to March 25. Other small spots appear near them on March 25 and following days.

Group 710. A small spot, not detected on March 26, 27, and 28.

Group 711. A very small spot on March 26 and 27. It is not seen on March 28 and 29, but appears again on March 30. The spot shows a large proper motion on the following days, and several smaller spots appear near it.

Group 712. Two or three very small spots.

Group 713. A small regular spot.

Group 714. Several small spots close together.

Group 715. A small regular spot.

Group 716. Two spots. The following and smaller spot disappears before April 8.

Group 717. Two small spots on April 1. Other spots appear on the following days, and the group increases in size and forms a long straight line of spots, of which the preceding spot is the largest.

Group 718. A regular spot.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	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).
1882.				°	°	°			
92d·071	J, M	714	0·895	289·5	330·4	+14·3	19	44	
		714	0·872	290·4	327·4	+14·3	0	13	473 *c*
		711	0·829	261·6	326·4	−10·5	3	13	172 *f*
		713	0·530	5·7	266·8	+25·4	12	54	
		715	0·329	116·5	252·5	−14·4	2	10	
		716	0·621	114·2	233·2	−19·8	19	74	
		717	0·662	51·8	236·9	+18·9	0	11	
		717	0·696	56·3	232·8	+17·7	6	12	
		717	0·750	56·9	228·5	+19·5	10	25	272
		718	0·725	83·8	224·2	+ 0·1	25	139	180 *f*
			0·791	67·4					106
Apr. 3							(96)	(395)	(1203)
92·986	J, M		0·861	297·1					78
			0·763	255·3					529
			0·735	288·8					141
			0·667	320·9					384
		714	0·968	286·6	331·0	+14·3	7	20	415 *f*
		711	0·926	261·2	326·3	−10·5	0	6	130 *f*
		713	0·549	346·0	266·5	+26·0	12	40	
		715	0·172	145·9	252·3	−14·3	0	6	
		716	0·468	121·0	232·9	−19·6	25	57	
		717	0·536	38·9	237·3	+18·8	0	4	
		717	0·553	40·8	235·6	+19·0	8	41	
		717	0·588	43·3	232·7	+19·7	18	93	
		717	0·628	48·4	228·3	+19·2	26	112	469 *c*
		718	0·570	79·9	224·0	+ 0·6	37	181	902 *f*
		719	0·774	76·9	208·9	+ 6·0	1	3	60 *f*
			0·908	109·6					114
			0·940	75·9					260
Apr. 4							(134)	(563)	(3482)
94·062	J, M		0·863	283·2					157
			0·843	258·3					480
			0·789	311·0					278
		713	0·629	326·6	266·3	+25·9	5	17	134 *c*
		717	0·443	14·9	236·9	+19·1	19	116	
		717	0·455	18·7	234·9	+19·3	2	24	
		717	0·489	22·4	232·4	+20·8	10	53	
		717	0·509	29·5	228·4	+20·3	13	80	
		716	0·272	144·1	234·1	−18·8	9	26	
		716	0·298	139·3	232·0	−19·1	0	10	
		718	0·350	69·9	224·7	+ 1·1	41	152	
		720	0·696	98·5	199·6	−10·4	0	12	76 *c*
			0·847	105·2					121
			0·893	68·9					499
Apr. 5							(99)	(490)	(1745)
1882.				°	°	°			
95d·069	J, M		0·957	279·8					185
			0·929	257·8					526
			0·888	309·4					235
			0·734	290·5					126
			0·732	253·4					453
		717	0·433	343·4	238·1	+18·4	16	119	
		717	0·431	348·0	236·0	+18·7	0	9	
		717	0·440	358·3	231·4	+19·8	7	94	
		717	0·449	7·4	227·1	+20·3	12	69	
		716	0·231	193·3	233·8	−19·0	6	19	
		718	0·154	38·8	225·1	+ 0·8	34	171	
		720	0·470	99·1	202·6	− 9·7	5	11	
		720	0·546	102·0	197·7	−11·6	0	5	
		721	0·758	61·7	186·9	+16·6	0	20	1074 *s f*
		722	0·953	66·5	162·3	+20·1	27	192	413 *f*
Apr. 6							(107)	(709)	(3012)
95·836	J, M		0·877	256·5					429
			0·815	302·1					661
		717	0·499	326·1	237·4	+18·6	27	139	
		717	0·477	335·4	232·5	+19·8	7	39	
		717	0·474	343·7	228·6	+21·1	12	34	
		717	0·454	348·6	225·9	+20·4	12	57	
		716	0·311	223·1	233·3	−18·9	5	30	
		718	0·150	327·1	225·1	+ 1·3	37	161	
		723	0·334	122·3	203·4	−16·0	2	8	
		720	0·300	102·0	203·2	− 9·3	5	13	
		720	0·346	100·4	200·3	− 9·2	0	6	
		721	0·619	55·5	188·6	+15·4	15	46	
		721	0·680	56·9	184·0	+16·9	15	38	
		722	0·909	64·2	159·8	+20·4	48	154	436 *f*
Apr. 7							(185)	(725)	(1526)
96·897	J, M		0·921	253·9					326
			0·919	297·4					987
			0·816	15·6					68
			0·762	297·6					174
			0·703	253·0					255
		717	0·639	308·9	237·9	+18·5	26	134	744 *p*
		717	0·596	322·5	229·5	+22·7	0	4	
		717	0·551	321·8	227·6	+20·0	18	53	384 *c*
		716	0·493	241·5	233·5	−18·9	7	17	
		718	0·350	290·8	225·4	+ 1·5	26	156	
		720	0·070	143·4	204·0	− 9·2	5	15	
		723	0·176	170·1	204·6	−16·0	3	14	
		723	0·190	156·1	201·8	−16·0	5	23	
		721	0·448	35·4	190·8	+15·6	15	53	
		721	0·481	40·8	187·4	+15·6	0	7	

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

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

Group 711. A very small spot on March 26 and 27. It is not seen on March 28 and 29, but appears again on March 30. The spot shows a large proper motion on the following days, and several smaller spots appear near it.

Group 713. A small regular spot.

Group 714. Several small spots close together.

Group 715. A small regular spot.

Group 716. Two spots. The following and smaller spot disappears before April 8.

Group 717. Two small spots on April 1. Other spots appear on the following days, and the group increases in size and forms a long straight line of spots, of which the preceding spot is the largest.

Group 718. A regular spot.

Group 719. A very small spot.

Group 720. A small regular spot.

Group 721. Several very small spots in a straight line, of which the preceding spot is the largest. The following spots disappear before April 10.

Group 722. A regular spot.

Group 723. A small spot on April 7. A second is seen near the first on April 8.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	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).
1882.				°	°	°			
96d·897	J, M	721	0·520	42·5	184·9	+16·9	12	22	
		724	0·499	109·8	177·4	−15·0	0	1	
		724	0·531	108·6	175·1	−14·9	2	7	
		722	0·787	57·8	161·2	+20·6	55	191	428 *f*
			0·737	91·9					145
			0·940	105·9					768
			0·979	82·4					192
			0·983	92·3					290
Apr. 8							(174)	(697)	(4761)
			0·819	253·2					225
97·974	J, M	717	0·780	299·0	237·9	+18·1	11	49	1135 *np*
		716	0·673	248·1	233·3	−19·0	0	11	
		718	0·561	281·8	225·4	+ 1·7	25	142	
		720	0·232	254·4	205·2	− 9·3	4	9	
		721	0·371	2·9	191·1	+15·7	7	44	
		721	0·379	12·6	187·3	+15·7	0	5	
		721	0·405	17·2	185·0	+16·8	0	10	
		722	0·649	48·1	161·2	+20·6	45	166	524 *f*
		725	0·944	95·0	121·2	− 6·7	0	28	
		725	0·967	98·8	116·4	−10·0	6	41	1122 *c*
			0·860	63·0					122
			0·898	80·0					278
Apr. 9							(98)	(505)	(3406)
98·646	H, JP	717	0·860	295·4	238·0	+18·3	9	31	1060 *n*
		716	0·774	250·2	233·4	−18·9	3	9	992 *nf*
I.		718	0·678	278·9	225·2	+ 1·7	16	110	105 *c*
		720	0·376	260·6	205·3	− 8·9	0	6	
		721	0·391	339·8	191·3	+16·1	6	20	37 *c*
		722	0·566	38·1	161·4	+20·9	23	161	117 *c*
		725	0·875	93·3	122·1	− 5·7	0	12	
		725	0·912	97·7	117·2	− 9·4	3	46	1458 *c*
		726	0·993	110·8	99·3	−21·3	0	89	393 *p*
Apr. 10							(60)	(484)	(4162)
100·002	J, M		0·927	258·0					466
			0·923	296·6					842
		718	0·870	275·6	225·2	+ 2·0	25	148	251 *f*
		720	0·651	264·1	206·1	− 8·2	9	31	
		721	0·551	309·6	191·4	+15·4	4	11	
		727	0·509	327·5	182·2	+19·8	5	14	
		722	0·456	10·0	160·6	+20·9	38	179	
		728	0·385	127·7	146·7	−19·0	1	5	
		728	0·412	122·9	144·1	−18·3	31	126	
		728	0·435	123·4	142·9	−19·1	0	23	
		728	0·467	120·1	140·3	−18·7	39	140	
		725	0·693	94·4	121·4	− 7·2	8	24	
1882.									
100d·002	J, M	725	0·722	98·0	119·1	− 9·8	14	88	
		725	0·759	96·4	115·9	− 8·6	0	15	
		725	0·786	97·0	113·4	− 9·1	25	86	461 *nf*
		726	0·931	110·9	96·5	−21·5	32	198	
		726	0·960	109·7	90·9	−20·5	0	85	
		726	0·968	108·3	89·1	−19·1	16	134	1048 *c*
Apr. 11								(248)	(1307) (3068)
100·631	H, JP		0·950	252·0					400
		718	0·933	274·6	225·4	+ 2·2	16	94	1716 *n*
I.		720	0·758	264·5	206·5	− 7·9	0	13	
		722	0·453	352·6	160·7	+20·9	26	166	99 *c*
		728	0·286	144·0	146·9	−18·9	19	70	
		728	0·302	134·9	144·2	−17·8	0	45	
		728	0·356	129·6	140·4	−18·6	34	199	
		725	0·567	92·3	122·5	− 6·0	1	8	
		725	0·608	98·7	119·7	− 9·8	0	38	
		725	0·685	97·5	111·9	− 9·3	5	29	360 *p*
		726	0·874	111·8	96·4	−21·8	18	98	
		726	0·923	108·9	89·3	−19·7	11	88	1510 *c*
Apr. 12								(130)	(848) (4085)
101·653	H, JP	718	0·990	273·3	224·9	+ 2·5	6	121	403 *np*
		720	0·892	264·6	206·9	− 7·3	0	79	149 *s*
I.		722	0·523	328·5	160·6	+21·0	20	146	113 *c*
		728	0·238	198·8	148·2	−18·6	19	146	
		728	0·227	164·4	139·9	−18·2	26	247	
		725	0·355	91·4	122·8	− 5·8	0	6	
		725	0·407	100·0	119·8	− 9·2	0	52	
		725	0·493	99·0	114·2	− 9·3	0	47	
		726	0·750	114·7	96·5	−22·0	18	168	
		726	0·817	110·1	89·3	−19·7	7	58	1324 *f*
		729	0·966	117·3	67·8	−27·8	130	1138	1082 *c*
Apr. 13								(226)	(2208) (3071)
102·962	J, M	730	0·849	298·7	178·9	+20·8	0	17	365 *f*
		722	0·680	309·6	160·3	+21·1	46	175	
		728	0·434	237·4	148·9	−18·6	29	149	
		728	0·398	233·9	146·1	−18·7	5	27	
		728	0·314	225·6	139·9	−18·0	48	296	
		725	0·055	88·0	123·1	− 5·4	7	10	
		725	0·115	121·6	120·6	− 8·9	4	30	
		725	0·179	116·1	117·0	− 9·9	4	6	
		725	0·225	107·5	113·8	− 9·2	9	46	
		731	0·416	133·7	107·5	−21·9	5	33	
		726	0·557	122·6	96·0	−22·2	20	121	
		726	0·566	119·2	94·6	−20·7	0	48	
		726	0·629	113·7	88·9	−19·0	16	70	

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

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

Group 716. Two spots. The following and smaller spot disappears before April 8.

Group 717. Two small spots on April 1. Other spots appear on the following days, and the group increases in size and forms a long straight line of spots, of which the preceding spot is the largest.

Group 718. A regular spot.

Group 720. A small regular spot.

Group 721. Several very small spots in a straight line, of which the preceding spot is the largest. The following spots disappear before April 10.

Group 722. A regular spot.

Group 724. A small spot.

Group 725. A somewhat scattered group of small spots.

Group 726. Three small spots when first seen on E. limb. The group undergoes very great and violent changes, and increases in size very rapidly indeed. The most striking changes occur on April 16, 17, 18, and 19.

Group 727. A small spot.

Group 728. A V-shaped group of spots on April 11 and 12. The group changes very rapidly, increasing in size between April 11 and 12. On April 13 it forms a straight line, the first and last spots being the largest.

Group 729. A very large spot, with three or four spots following it. The great spot undergoes constant change, especially after passing the central meridian.

Group 730. A small spot.

Group 731. A disturbed area, in which small spots appear and disappear at irregular intervals. No spots are seen on April 17.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.	Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).						Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1882.				°	°	°				1882.				°	°	°			
102^{d}·962	J, M	726	0·661	118·8	87·5	−22·8	2	16		106^{d}·087	J, M		0·682	253·7					274
		726	0·667	115·9	86·4	−21·2	2	15				722	0·980	292·9	160·3	+21·1	0	285	245 *nf*
		732	0·814	112·4	72·6	−21·4	7	65	275 *nf*			728	0·905	252·3	150·1	−18·3	63	198	
		729	0·875	118·8	66·4	−27·8	276	1823				728	0·883	253·1	147·2	−17·4	29	156	
		729	0·921	119·8	59·8	−29·6	64	300	563 *c*			728	0·859	252·7	144·2	−17·6	0	61	
			0·828	77·1					83			728	0·828	252·0	140·7	−17·8	98	525	594 *c*
			0·925	102·0					369			726	0·341	212·3	96·4	−21·9	18	111	
			0·963	75·0					248			726	0·260	220·4	95·2	−16·6	62	271	
Apr. 14							(544)	(3247)	(1903)			726	0·296	209·8	94·1	−20·1	0	25	
												726	0·268	212·7	93·8	−18·3	4	33	
103·783	H, JP		0·946	289·2					762			726	0·232	200·3	89·9	−17·8	100	344	
			0·892	257·5					159			726	0·254	194·1	88·8	−19·5	15	75	
I.		722	0·781	302·0	160·4	+20·6	21	141	1920 *c*			726	0·303	187·0	87·4	−22·7	5	21	
		728	0·583	245·4	149·4	−18·6	15	127	116 *c*			732	0·356	144·3	72·2	−21·9	8	19	
		728	0·524	241·9	144·6	−18·9	5	84				729	0·492	144·3	66·1	−28·5	345	1764	
		728	0·451	238·9	139·4	−18·4	11	162	106 *c*			729	0·581	137·4	58·2	−30·0	39	199	
		731	0·291	162·1	110·0	−21·4	0	9				733	0·408	111·3	62·2	−13·4	38	112	
		731	0·325	150·0	105·5	−21·6	1	5				733	0·483	110·6	57·4	−14·5	9	65	
		726	0·423	132·4	95·8	−22·4	12	127				734	0·916	75·7	20·6	+10·9	46	200	482 *s*
		726	0·485	119·2	89·1	−18·5	13	61				735	0·985	100·8	4·4	−11·6	0	203	244 *p*
		726	0·530	124·1	87·4	−21·9	0	31					0·832	57·5					133
		732	0·700	115·3	72·9	−21·4	9	40					0·887	67·0					350
		729	0·790	121·7	66·1	−28·1	191	1757	720 *c*	Apr. 17							(879)	(4667)	(2860)
		733	0·828	102·7	59·5	−13·6	6	37	189 *c*										
			0·888	71·3					312	107·042	J, M		0·946	293·2					211
Apr. 15							(284)	(2581)	(4284)				0·860	279·9					156
													0·799	263·0					664
105·046	J, M	722	0·914	295·9	160·5	+21·1	30	178	198 *nf*			728	0·972	253·0	149·6	−17·8	39	402	
		728	0·787	250·9	150·2	−18·3	28	162				728	0·927	253·1	140·6	−17·6	38	393	1194 *c*
		728	0·754	250·6	147·1	−18·1	0	135				731	0·638	243·3	109·8	−20·8	3	22	255 *c*
		728	0·725	250·0	144·5	−18·1	0	53				726	0·481	232·1	96·4	−21·9	9	74	
		728	0·690	249·6	141·5	−17·8	61	419				726	0·438	241·2	96·0	−16·9	91	465	
		731	0·283	219·0	109·8	−17·9	0	5				726	0·436	232·8	94·0	−20·1	8	113	
		726	0·295	171·7	96·3	−22·2	15	64				726	0·355	231·0	89·2	−17·9	136	719	
		726	0·208	156·0	93·9	−16·2	0	26				732	0·288	175·7	71·9	−21·8	0	6	
		726	0·261	148·7	90·7	−18·1	0	37				729	0·412	164·5	65·2	−28·5	447	1882	
		726	0·289	146·0	89·1	−19·1	9	29				729	0·470	152·2	57·9	−29·5	18	149	
		732	0·511	125·6	72·4	−22·0	0	25				733	0·214	132·3	63·1	−13·4	32	117	
		729	0·621	130·9	66·8	−28·4	218	1934				733	0·284	125·5	58·6	−14·6	12	66	
		729	0·706	127·0	58·8	−29·2	21	125				736	0·663	60·1	36·0	+15·1	1	11	326 *f*
		733	0·615	104·1	61·4	−12·8	16	86				734	0·810	72·9	20·6	+10·6	57	323	582 *c*
		733	0·677	103·8	56·6	−13·2	11	40				735	0·917	100·0	5·6	−11·3	47	187	249 *sp*
		734	0·983	78·0	21·0	+10·7	27	186	347 *s*	Apr. 18							(938)	(4929)	(3637)
Apr. 16							(436)	(3504)	(545)										
										107·665	H, JP		0·828	264·1					767
106·087	J, M		0·874	320·7					138			728	0·966	253·7	139·9	−17·1	20	223	677 *c*
			0·785	290·6					306	I.		731	0·746	247·7	111·2	−19·9	2	41	
			0·740	272·2					94			726	0·556	247·1	96·4	−16·8	76	611	

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

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

Group 722. A regular spot.

Group 726. Three small spots when first seen on E. limb. The group undergoes very great and violent changes, and increases in size very rapidly indeed. The most striking changes occur on April 16, 17, 18, and 19.

Group 728. A V-shaped group of spots on April 11 and 12. The group changes very rapidly, increasing in size between April 11 and 12. On April 13 it forms a straight line, the first and last spots being the largest.

Group 729. A very large spot, with three or four small spots following it. The great spot undergoes constant change, especially after passing the central meridian.

Group 731. A disturbed area, in which small spots appear and disappear at irregular intervals. No spots are seen on April 17.

Group 732. A small spot.

Group 733. Two small spots. The group increases in size on April 16, 17, and 18, and forms an irregular group of small spots. On thef ollowing days all but two of these spots disappear.

Group 734. A regular spot, with a small companion.

Group 735. A regular spot.

Group 736. Two or three very small spots, which disappear before April 21.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.	Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).						Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1882.				°	°	°				1882.				°	°	°			
107d·665	H, JP	726	0·580	238·6	96·3	−21·9	8	75		110d·664	H, JP	726	0·948	254·5	96·4	−16·3	105	605	
		726	0·454	239·8	88·4	−17·8	76	521				726	0·908	252·6	89·9	−17·8	97	882	1504 *c*
I.		729	0·396	181·8	65·0	−28·4	138	1890	241 *c*	I.		729	0·701	233·3	64·2	−28·5	271	1346	420 *c*
		729	0·426	166·5	57·7	−29·5	14	98				729	0·618	226·4	55·3	−29·4	3	26	
		733	0·141	174·5	63·4	−13·1	0	59				733	0·612	253·8	62·1	−13·7	5	49	
		733	0·200	152·4	58·7	−15·3	0	15				737	0·421	324·5	39·6	+15·2	0	12	
		736	0·533	52·2	38·5	+14·4	0	27				734	0·282	4·7	23·7	+11·4	21	157	110 *c*
		736	0·591	53·8	34·6	+15·9	0	6				735	0·317	108·4	7·3	−10·4	27	157	107 *c*
		734	0·716	69·3	21·4	+10·9	27	224	242 *c*			738	0·899	80·1	322·1	+ 6·7	4	59	576 *c*
		735	0·846	100·0	6·3	−11·2	31	144	310 *c*				0·958	104·7					644
			0·927	100·7					246	Apr. 22							(533)	(3293)	(3361)
Apr. 19							(392)	(3934)	(2483)										
										112·012	J, M		0·740	289·8					141
108·921	J, M		0·927	263·6					857			726	0·986	252·3	87·9	−18·2	173	1094	831 *s*
		731	0·911	251·6	113·3	−18·8	12	71				729	0·856	239·4	63·5	−28·4	264	1764	998 *c*
		731	0·872	248·7	107·9	−21·0	7	15	348 *c*			729	0·781	236·0	54·4	−29·0	0	7	
		726	0·772	246·1	96·7	−21·5	10	59				733	0·847	257·8	64·7	−12·8	12	16	
		726	0·743	251·5	94·9	−17·1	167	1129				733	0·803	254·9	59·9	−14·9	0	49	256 *c*
		726	0·709	246·1	91·1	−20·3	0	29				737	0·634	300·9	40·9	+15·0	11	26	
		726	0·692	246·7	89·9	−19·6	18	112				737	0·527	308·7	31·9	+14·9	5	18	
		726	0·657	247·9	87·3	−18·1	99	479	1434 *c*			734	0·402	313·8	24·0	+11·6	38	192	
		729	0·482	212·1	64·5	−28·8	319	1835				739	0·318	324·1	17·7	+10·3	0	5	
		729	0·434	198·2	56·5	−29·2	20	73				739	0·313	331·5	15·5	+11·3	1	6	
		733	0·305	242·5	63·6	−12·9	22	70				735	0·100	181·2	6·9	−10·4	32	183	
		733	0·258	232·6	59·7	−13·8	5	57				738	0·723	75·9	322·1	+ 6·8	5	16	273 *c*
		736	0·355	19·7	40·5	+14·4	0	8					0·883	105·5					260
		736	0·403	31·2	35·2	+15·2	0	16					0·987	68·5					256
		734	0·502	58·2	22·0	+10·7	32	189		Apr. 23							(541)	(3376)	(3015)
		735	0·657	101·2	6·7	−11·1	30	172											
			0·831	103·1					310	113·046	J, M	733	0·945	258·2	64·5	−12·8	0	4	749 *sf*
			0·887	66·6					364			729	0·943	241·4	63·4	−28·6	319	1731	2345 *c*
Apr. 20							(741)	(4314)	(3313)			729	0·886	239·2	54·0	−29·5	0	3	
												737	0·790	293·8	41·5	+15·3	0	16	
109·909	J, M	731	0·980	251·9	113·9	−18·7	0	70				737	0·703	297·5	33·3	+15·1	7	17	441 *sp*
		726	0·890	247·8	97·0	−21·9	0	28				734	0·576	298·1	24·3	+11·4	31	149	
		726	0·885	253·7	96·9	−16·7	226	773				739	0·496	299·6	19·0	+ 9·6	8	13	
		726	0·840	251·7	91·4	−18·0	85	946				739	0·470	302·2	16·9	+ 9·9	0	8	
		726	0·796	250·3	86·7	−18·6	125	511	1800 *c*			739	0·437	304·7	14·5	+ 9·7	9	14	
		729	0·602	226·4	64·3	−28·7	404	2030				735	0·254	246·6	6·9	−10·6	32	158	
		729	0·526	216·9	55·8	−29·4	24	79					0·735	108·8					267
		733	0·505	252·8	64·1	−12·8	11	76					0·829	73·1					68
		733	0·479	248·5	61·9	−14·4	0	5					0·932	66·9					371
		733	0·435	247·9	59·0	−13·8	10	44		Apr. 24							(406)	(2113)	(4241)
		734	0·345	35·6	22·8	+11·4	39	227											
		734	0·386	41·7	19·4	+12·0	1	10		113·666	H, JP		0·964	256·2					945
		735	0·475	102·4	6·6	−10·2	54	193					0·944	284·1					268
		738	0·963	81·2	321·3	+ 7·1	20	124	251 *c*	I.		729	0·974	241·7	62·4	−28·6	90	718	1678 *c*
Apr. 21							(999)	(5116)	(2051)			737	0·780	292·9	32·8	+14·6	0	9	

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

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

Group 726. Three small spots when first seen on E. limb. The group undergoes very great and violent changes, and increases in size very rapidly indeed. The most striking changes occur on April 16, 17, 18, and 19.

Group 729. A very large spot, with three or four small spots following it. The great spot undergoes constant change, especially after passing the central meridian.

Group 731. A disturbed area, in which small spots appear and disappear at irregular intervals. No spots are seen on April 17.

Group 733. Two small spots. The group increases in size on April 16, 17, and 18, and forms an irregular group of small spots. On the following days all but two of these spots disappear.

Group 734. A regular spot, with a small companion.

Group 735. A regular spot.

Group 736. Two or three very small spots, which disappear before April 21.

Group 737. Several very small spots, which break out in the same area of disturbance as Group 736.

Group 738. A small regular spot, which rapidly diminishes in size.

Group 739. Several very small spots.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1882.				°	°	°			
113d·666	H, JP	734	0·687	293·0	25·1	+12·1	8	109	117 *c*
		739	0·589	293·8	18·0	+ 9·9	2	20	
I.		735	0·395	254·5	7·7	−10·3	23	141	106 *c*
			0·857	63·6					458
			0·959	108·6					315
			0·967	75·7					204
Apr. 25							(123)	(997)	(4091)
114·853	H, JP		0·926	110·8					602
			0·889	66·6					466
I.		737	0·936	287·5	36·3	+14·6	2	28	
		737	0·907	288·4	31·8	+14·6	20	75	326 *c*
		734	0·844	287·0	24·5	+11·7	20	74	124 *c*
		739	0·798	286·1	20·1	+ 9·9	0	11	
		739	0·743	286·7	15·1	+ 9·2	1	10	
		735	0·615	257·3	6·8	−11·3	20	163	103 *c*
		740	0·416	321·0	344·8	+14·5	0	5	
Apr. 26							(63)	(366)	(1621)
115·661	H, JP		0·916	296·3					295
			0·876	254·5					159
I.		737	0·988	285·6	38·0	+14·7	0	110	
		737	0·966	287·1	31·6	+15·3	35	174	743 *c*
		734	0·928	285·4	24·8	+12·5	5	79	
		734	0·924	283·4	24·5	+10·6	0	55	
		739	0·894	284·3	20·2	+10·7	0	24	709 *c*
		735	0·747	260·4	6·8	−10·1	20	182	170 *c*
		740	0·516	308·5	343·2	+14·7	1	53	
		741	0·787	71·0	270·3	+12·0	0	9	167 *c*
			0·838	53·5					407
			0·930	105·9					480
Apr. 27							(61)	(686)	(3130)
117·050	J, M	735	0·920	260·6	7·3	−10·3	59	225	177 *f*
		740	0·741	294·4	344·3	+14·8	24	104	206 *c*
		742	0·503	36·8	281·6	+19·7	14	56	
		741	0·552	62·7	270·3	+11·0	9	27	
			0·782	112·9					159
			0·871	63·2					393
			0·964	84·5					94
Apr. 28							(106)	(412)	(1029)
119·081	J, M		0·787	283·2					119
		740	0·946	287·8	342·2	+15·4	0	26	174 *nf*
		742	0·436	335·3	284·5	+19·3	11	42	
		743	0·753	66·1	228·1	+14·9	26	58	298 *nf*
			0·743	82·9					154

Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1882.				°	°	°			
119d·081	J, M		0·870	104·9					217
			0·905	70·8					247
Apr. 30							(37)	(126)	(1209)
120·030	J, M		0·992	286·0					194
			0·901	281·1					82
		742	0·545	315·5	284·5	+19·1	4	13	
		743	0·622	59·4	227·3	+15·1	30	99	
		743	0·644	62·8	224·8	+13·8	0	16	
		744	0·999	66·2	175·6	+23·5	292	1184	243 *c*
			0·878	54·7					193
			0·880	71·6					283
			0·975	118·4					187
May 1							(326)	(1312)	(1182)
121·049	J, M		0·956	280·5					263
			0·881	253·0					329
		742	0·732	301·0	288·9	+19·3	6	25	782 *nf*
		743	0·458	44·4	228·1	+15·4	19	83	180 *n*
		743	0·479	50·4	225·1	+14·2	4	36	
		745	0·647	60·6	211·8	+15·4	0	8	343 *nf*
		744	0·957	64·4	177·9	+23·1	101	557	
		746	0·987	66·9	169·3	+22·0	0	77	377 *p*
			0·884	114·0					175
May 2							(130)	(786)	(2449)
122·105	J, M		0·954	255·3					310
		742	0·852	295·3	287·9	+19·2	0	4	534 *c*
		747	0·382	358·5	234·0	+18·7	3	13	
		743	0·344	15·7	227·9	+15·6	5	38	
		748	0·301	58·1	218·6	+ 5·5	4	9	
		744	0·873	60·3	177·8	+23·5	182	543	
		746	0·939	63·2	167·5	+23·5	11	53	596 *c*
		749	0·986	68·6	155·3	+20·4	0	127	141 *n*
			0·798	72·7					88
May 3							(205)	(787)	(1669)
122·814	H, JP		0·919	293·7					607
		747	0·421	334·7	235·2	+18·6	0	4	
I.		743	0·344	345·9	229·0	+15·7	0	4	
		744	0·790	56·8	178·3	+23·0	87	428	211 *c*
		746	0·879	60·2	167·7	+23·8	0	29	218 *c*
		749	0·923	65·2	160·2	+21·2	0	19	
		749	0·944	67·4	156·3	+19·8	21	83	300 *c*
		750	0·967	109·0	148·6	−19·3	0	36	868 *c*
May 4							(108)	(603)	(2204)

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

Group 734. A regular spot, with a small companion.
Group 735. A regular spot.
Group 737. Several very small spots, which break out in the same area of disturbance as Group 736.
Group 739. Several very small spots.
Group 740. Several very small spots. The group shows frequent changes.
Group 741. A small spot.
Group 742. A small spot.
Group 743. An irregular spot, with a small companion.
Group 744. A large regular spot.
Group 745. A small spot.
Group 746. Two or three small spots close together.
Group 747. Two very small faint spots.
Group 748. Two very small faint spots.
Group 749. A regular spot, with several small spots near it. The group undergoes several small changes.
Group 750. A small spot.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	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).
1882.				°	°	°			
124^{d}·049	J, M		0·918	284·2					139
			0·892	305·6					169
			0·844	247·6					87
		751	0·937	254·3	277·2	−16·0	0	15	114 *c*
		743	0·486	311·9	229·7	+15·7	6	17	
		744	0·641	46·6	177·4	+23·0	139	485	
		746	0·748	52·1	167·4	+24·6	21	40	694 *c*
		749	0·811	61·0	158·5	+20·8	15	60	
		749	0·831	62·9	155·9	+20·1	44	139	187 *c*
		750	0·859	110·5	149·4	−19·4	0	12	785 *f*
		752	0·954	93·9	135·2	− 4·8	14	47	240 *f*
May 5							(239)	(815)	(2415)
124·995	J, M		0·985	254·5					181
			0·953	306·1					146
			0·836	244·8					221
			0·818	300·6					351
		744	0·533	32·9	176·9	+23·3	137	494	
		746	0·634	42·7	167·1	+24·7	13	28	
		749	0·666	53·4	160·5	+20·6	13	53	
		749	0·716	56·5	155·7	+20·6	60	251	275 *f*
		752	0·855	93·1	136·5	− 4·4	49	210	
		752	0·905	93·3	130·4	− 4·5	13	44	608 *c*
			0·821	112·0					681
May 6							(285)	(1080)	(2463)
125·951	J, M		0·924	249·4					281
			0·820	298·3					1180
		753	0·306	260·0	200·1	− 6·2	0	5	
		753	0·257	254·2	196·9	− 7·3	0	4	
		744	0·456	12·6	176·3	+23·1	125	506	
		746	0·529	27·9	166·8	+24·6	6	17	
		749	0·528	40·3	161·2	+20·6	12	27	
		749	0·573	42·3	158·0	+22·0	0	10	
		749	0·587	47·3	155·2	+20·4	40	182	
		752	0·705	93·3	137·7	− 4·7	56	202	
		752	0·792	94·2	130·2	− 5·4	21	135	723 *s f*
		754	0·966	75·1	108·9	+13·5	44	178	322 *f*
			0·799	62·6					177
			0·857	112·8					667
May 7							(304)	(1266)	(3350)
126·901	J, M		0·910	299·3					454
			0·876	290·4					294
			0·862	276·0					251
			0·741	287·9					279
			0·725	315·6					123
1882.				°	°	°			
126^{d}·901	J, M	753	0·518	264·3	201·1	− 5·7	0	3	
		753	0·463	260·0	197·3	− 7·5	0	2	
		744	0·455	347·4	176·2	+23·1	113	468	
		746	0·478	8·2	165·7	+24·9	8	25	
		749	0·433	17·1	162·2	+21·2	7	12	
		749	0·478	30·1	155·2	+21·2	43	204	
		752	0·518	93·6	138·9	− 4·6	42	194	
		752	0·642	94·1	130·2	− 5·1	22	82	
		755	0·541	111·4	138·9	−14·1	9	20	
		754	0·885	72·9	109·7	+13·5	25	186	
		754	0·929	73·3	103·6	+14·2	62	239	492 *c*
		756	0·938	103·4	100·4	−13·7	32	73	1495 *s*
			0·766	99·2					271
			0·878	45·9					97
May 8									(3756)
127·613	H, JP		0·946	292·2					538
			0·909	276·2					176
I.		757	0·899	287·5	222·6	+14·2	2	9	
		744	0·504	330·1	176·4	+22·8	73	456	171 *c*
		746	0·475	348·3	166·7	+24·5	0	15	
		749	0·419	354·7	163·0	+21·5	0	14	
		749	0·424	3·3	159·1	+21·9	9	24	
		749	0·422	11·8	155·3	+21·2	14	128	188 *c*
		752	0·351	94·6	140·1	− 4·6	19	176	
		752	0·498	94·8	130·8	− 5·1	3	39	
		755	0·412	118·1	138·7	−14·2	12	35	
		754	0·794	70·3	110·5	+13·6	22	170	249 *c*
		754	0·853	71·0	104·4	+14·4	8	121	408 *c*
		756	0·867	103·8	100·8	−13·5	2	45	123 *c*
			0·953	109·7					2181
May 9							(164)	(1232)	(4034)
128·986	J, M		0·885	251·3					114
			0·840	264·6					110
		757	0·983	287·5	220·2	+16·6	43	216	259 *c*
		758	0·640	247·6	180·3	−16·5	0	16	
		744	0·669	310·4	175·9	+23·2	147	537	
		746	0·591	322·3	165·8	+25·0	5	38	
		749	0·516	323·3	161·7	+21·5	11	33	
		749	0·478	327·8	158·2	+20·9	16	50	
		749	0·467	334·2	155·0	+21·9	28	158	
		752	0·033	141·7	141·2	− 4·5	45	154	
		752	0·190	105·2	131·8	− 5·8	0	15	
		755	0·218	160·3	138·1	−14·8	10	27	
		754	0·588	62·6	110·1	+13·1	39	167	
		754	0·669	64·3	104·0	+14·5	21	140	512 *c*

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

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

Group 743. An irregular spot, with a small companion.
Group 744. A large regular spot.
Group 746. Two or three small spots close together.
Group 749. A regular spot, with several small spots near it. The group undergoes several small changes.
Group 750. A small spot.
Group 751. A small spot.
Group 752. A regular spot, with some smaller spots following it.
Group 753. Two very small spots close together, and a third at a little distance.
Group 754. A regular spot, followed by a close cluster of small spots. The latter disappear before May 13.
Group 755. Two very small spots.
Group 756. A small regular spot.
Group 757. A small spot on May 9, but much larger on May 10. It is partly hidden by the wire on May 9.
Group 758. Three very small spots.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	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).
1882.				°	°	°			
128d·986	J, M	756	0·683	107·5	100·4	−14·0	6	24	2088 *s f*
		759	0·989	117·9	60·6	−28·1	140	560	700 *p*
May 10							(511)	(2135)	(3783)
129·956	J, M		0·968	250·4					84
			0·946	265·3					176
		744	0·790	302·1	176·0	+22·8	130	468	305 *c*
		749	0·652	308·9	162·5	+21·6	6	29	
		749	0·598	311·0	158·3	+20·4	6	37	
		749	0·574	315·8	155·0	+21·5	26	163	
		752	0·227	263·7	142·6	− 4·2	29	147	
		755	0·250	217·4	138·6	−14·3	0	26	
		754	0·422	49·7	110·4	+13·0	25	143	
		754	0·520	54·7	103·7	+14·9	7	77	
		759	0·940	118·6	60·9	−27·9	131	827	
		759	0·977	120·1	52·4	−30·0	125	504	1098 *c*
May 11							(485)	(2421)	(1663)
131·097	J, M		0·928	253·1					68
		744	0·910	297·0	176·1	+23·1	125	462	434 *c*
		749	0·814	300·0	163·9	+22·2	0	17	
		749	0·752	300·5	158·1	+20·4	5	30	
		749	0·727	304·2	154·7	+22·0	28	160	489 *n p*
		752	0·510	265·8	145·0	− 4·5	23	98	
		752	0·431	264·2	139·9	− 5·0	0	50	
		755	0·469	244·9	140·3	−13·9	0	16	
		754	0·288	13·4	110·6	+13·6	25	120	
		754	0·343	27·7	105·0	+15·0	0	46	
		759	0·847	121·6	60·0	−27·9	144	829	
		759	0·908	121·8	51·9	−29·8	222	894	1700 *c*
		760	0·970	79·2	39·5	+ 9·8	17	143	
		760	0·993	79·8	32·1	+ 9·8	0	261	222 *c*
			0·966	73·3					243
May 12							(589)	(3126)	(3156)
131·939	J, M	744	0·968	294·1	176·2	+22·5	0	498	373 *c*
		749	0·855	295·5	158·4	+20·0	6	26	
		749	0·822	298·0	154·2	+20·9	24	93	817 *n p*
		752	0·684	266·1	146·4	− 4·7	30	112	
		752	0·592	266·1	139·6	− 4·5	5	25	
		754	0·304	335·2	110·9	+13·3	26	114	
		754	0·304	348·8	106·9	+14·6	0	4	
		761	0·311	169·2	99·9	−20·4	0	13	
		759	0·751	125·0	59·7	−27·4	135	747	
		759	0·832	124·1	51·3	−29·4	332	873	1670 *c*
		760	0·898	77·0	40·8	+10·4	46	134	
		760	0·930	77·7	36·2	+10·4	35	164	
1882.									
131d·939	J, M	760	0·956	78·1	31·5	+10·6	69	288	
		760	0·971	77·3	28·4	+11·6	18	96	632 *c*
May 13							(726)	(3187)	(3492)
133·028	J, M		0·823	250·1					449
		749	0·926	294·1	153·6	+21·1	10	48	290 *n*
		752	0·855	267·2	147·5	− 3·7	48	145	
		752	0·781	264·9	140·1	− 5·5	0	12	311 *c*
		754	0·458	306·4	111·1	+13·4	24	131	
		759	0·612	134·4	59·5	−27·5	147	946	
		759	0·714	131·0	50·7	−29·8	204	755	
		760	0·761	74·8	40·9	+ 9·9	27	133	
		760	0·801	75·7	37·1	+ 9·9	13	71	
		760	0·854	76·5	31·6	+10·2	51	245	
		760	0·901	76·5	25·9	+11·0	0	107	1500 *c*
		762	0·942	107·5	18·9	−17·4	74	318	
		762	0·966	105·2	13·9	−15·4	45	340	585 *c*
May 14							(643)	(3251)	(3135)
133·941	J, M		0·964	294·0					158
			0·903	249·8					612
		752	0·949	266·9	148·4	− 3·7	27	101	336 *s f*
		754	0·618	296·0	111·6	+13·7	20	96	
		759	0·512	152·4	61·2	−29·2	23	107	
		759	0·508	146·8	58·7	−27·3	96	557	
		759	0·612	140·1	50·0	−30·0	187	776	521 *c*
		760	0·613	70·0	41·2	+10·2	27	118	
		760	0·647	71·6	38·5	+ 9·9	12	54	
		760	0·745	73·6	30·5	+10·5	64	278	
		760	0·795	73·8	26·0	+11·3	16	101	849 *c*
		762	0·859	109·0	18·7	−17·5	98	415	
		762	0·880	105·1	15·8	−14·4	38	204	
		762	0·933	106·2	8·4	−16·0	53	248	1196 *c*
May 15							(661)	(3055)	(3672)
135·025	J, M		0·956	245·7					158
			0·859	263·4					240
			0·662	244·2					1138
		754	0·787	289·5	112·1	+13·7	30	77	260 *n f*
		763	0·366	2·7	61·5	+19·1	7	17	
		759	0·453	176·4	60·6	−29·1	21	93	
		759	0·425	171·3	58·4	−27·0	118	505	
		759	0·509	156·8	49·2	−30·1	277	997	
		760	0·424	59·9	40·7	+10·2	36	152	
		760	0·559	67·1	31·0	+10·6	23	184	
		760	0·626	68·7	26·2	+11·3	13	69	
		762	0·714	112·5	18·9	−17·5	98	367	

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

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

Group 744. A large regular spot.
Group 749. A regular spot, with several small spots near it. The group undergoes several small changes.
Group 752. A regular spot, with some smaller spots following it.
Group 754. A regular spot, followed by a close cluster of small spots. The latter disappear before May 13.
Group 755. Two very small spots.
Group 756. A small regular spot.
Group 759. Two very large spots of irregular outline. The preceding spot breaks up into a number of fragments after passing the central meridian.
Group 760. A number of spots in a straight line. The group gradually diminishes, and only the preceding spot is left on May 22.
Group 761. A small faint spot.
Group 762. Two large regular spots, with a number of small spots between and around them.
Group 763. Two very small faint spots.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	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).
1882.				°	°	°			
135d·025	J, M	762	0·772	107·1	13·0	−14·6	114	462	
		762	0·860	110·3	4·4	−18·6	10	61	1278 *c*
			0·829	59·2					148
May 16							(747)	(2984)	(3222)
			0·667	242·5					2860
136·069	J, M	754	0·910	286·1	112·6	+13·7	0	54	380 *n f*
		763	0·444	327·4	63·4	+19·8	0	10	
		759	0·481	201·5	60·2	−28·6	25	99	
		759	0·445	199·6	58·3	−26·8	43	281	
		759	0·466	180·0	48·7	−29·9	188	1005	
		760	0·262	31·7	40·7	+10·7	35	142	
		760	0·369	53·3	31·3	+10·6	29	133	
		760	0·440	58·1	26·4	+11·3	14	56	
		762	0·540	119·3	19·3	−17·2	83	428	
		762	0·600	111·2	13·6	−14·3	144	634	
		762	0·719	113·5	4·9	−18·3	0	24	1295 *c*
May 17							(561)	(2866)	(4535)
136·928	J, M		0·934	287·2					271
			0·820	248·4					1929
		763	0·553	311·4	63·4	+19·5	0	10	
		763	0·500	314·5	59·4	+18·5	0	17	
		759	0·538	217·0	58·7	−27·3	56	319	
		759	0·498	199·6	48·5	−30·0	212	1114	
		760	0·226	340·1	41·9	+10·1	25	116	
		760	0·264	22·1	31·6	+12·0	16	58	
		760	0·291	38·9	26·7	+11·0	8	25	
		762	0·394	130·8	19·3	−16·9	79	414	
		762	0·452	119·1	13·4	−14·6	93	747	
		762	0·574	126·1	7·6	−21·5	0	57	
			0·813	71·6					131
			0·857	56·4					74
			0·418	81·8					56
May 18							(489)	(2877)	(2461)
			0·911	249·1					1339
138·072	J, M	759	0·686	230·9	58·9	−27·1	16	172	
		759	0·600	217·6	47·2	−30·0	127	744	
		760	0·402	301·8	42·5	+10·4	16	71	
		760	0·303	324·7	32·6	+12·4	0	13	
		760	0·243	339·0	27·4	+11·2	3	7	
		762	0·256	171·4	20·0	−16·5	77	405	
		762	0·258	146·5	13·9	−14·3	85	679	
			0·925	105·2					155
May 19							(324)	(2091)	(1494)
138d·902	J, M		0·951	247·7					632
		759	0·796	236·4	59·2	−27·3	15	106	
		759	0·699	227·2	47·3	−29·8	106	649	902 *c*
		760	0·562	291·6	43·2	+10·4	11	49	
		762	0·296	210·3	20·0	−13·0	74	399	
		762	0·220	191·5	13·8	−14·3	65	609	
		764	0·292	38·7	0·5	+11·4	0	6	
			0·893	108·6					141
May 20							(271)	(1818)	(1675)
140·010	J, M	759	0·907	240·2	59·1	−27·6	17	75	
		759	0·824	234·4	46·9	−29·7	189	536	1857 *c*
		760	0·753	285·2	44·0	+10·2	0	16	562 *n*
		762	0·464	236·2	20·2	−16·5	108	438	
		762	0·361	234·0	14·0	−13·8	87	537	
			0·925	65·1					200
May 21							(401)	(1602)	(2619)
140·618	H, JP	759	0·951	241·2	58·8	−27·8	4	45	
		759	0·909	239·3	51·0	−28·4	0	19	
I.		759	0·880	236·4	46·2	−30·0	43	291	3012 *c*
		760	0·838	285·2	44·1	+11·8	0	9	353 *n*
		762	0·576	242·9	20·8	−16·5	34	333	120 *c*
		762	0·536	242·6	18·1	−15·7	11	50	
		762	0·474	243·2	14·3	−13·8	49	405	179 *c*
			0·907	118·1					135
			0·912	66·4					551
			0·930	106·4					182
			0·970	290·2					249
May 22							(141)	(1152)	(4781)
141·592	H, JP		0·887	284·4					900
		759	0·952	239·0	45·6	−29·8	43	211	1542 *c*
I.		762	0·731	249·1	20·8	−16·2	40	353	185 *c*
		762	0·645	250·7	14·3	−13·4	27	339	137 *c*
			0·858	59·0					246
			0·933	283·4					1158
May 23							(110)	(903)	(4168)
142·600	H, JP	759	0·993	239·8	44·9	−30·1	60	281	1391 *s*
		762	0·861	252·1	20·7	−16·1	31	314	810 *c s*
I.		762	0·794	253·9	13·9	−13·6	29	356	
			0·987	54·2					322
May 24							(120)	(951)	(2523)
143·598	H, JP		0·975	283·3					1166
		762	0·954	253·8	21·1	−15·9	16	206	
I.		762	0·911	255·7	14·1	−13·6	31	343	1828 *s*

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

Group 754. A regular spot, followed by a close cluster of small spots. The latter disappear before May 13.
Group 759. Two very large spots of irregular outline. The preceding spot breaks up into a number of fragments after passing the central meridian.
Group 760. A number of spots in a straight line. The group gradually diminishes, and only the preceding spot is left on May 22.
Group 762. Two large regular spots, with a number of small spots between and around them.
Group 763. Two very small faint spots.
Group 764. A small spot.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	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).
1882.				°	°	°			
143d·598	H, JP	765	0·985	75·8	230·0	+13·7	23	201	172 *c*
			0·892	102·0					117
I.			0·958	63·4					648
May 25							(70)	(750)	(3931)
144·980	J, M	762	0·995	255·8	14·9	−14·3	41	252	1048 *s f*
		765	0·886	73·8	229·9	+13·8	73	213	
		765	0·939	75·7	222·0	+13·0	0	29	573 *f*
			0·858	59·1					292
May 26							(114)	(494)	(1913)
145·903	J, M	765	0·772	71·1	230·1	+13·8	57	224	
		765	0·843	73·8	222·6	+13·0	0	6	524 *f*
			0·754	54·1					197
May 27							(57)	(230)	(721)
146·612	H, JP		0·766	250·9					51
		765	0·658	67·8	230·6	+13·7	34	190	163 *c*
I.		765	0·743	71·6	223·2	+12·9	0	8	297 *f*
			0·900	120·3					214
			0·937	94·6					116
			0·947	53·4					202
May 28							(34)	(198)	(1043)
147·974	J, M		0·939	288·6					74
			0·900	251·9					108
			0·756	302·5					207
		765	0·430	54·1	230·3	+13·8	45	212	
		766	0·866	106·5	192·3	−14·6	0	10	102 *f*
		767	0·993	68·3	169·2	+21·4	70	356	
			0·632	68·1					555
May 29							(115)	(578)	(1046)
148·897	J, M		0·835	297·9					156
		765	0·293	30·7	230·3	+13·8	38	206	
		766	0·737	109·1	193·3	−14·4	0	11	80 *f*
		767	0·949	67·0	169·5	+21·5	81	324	131 *c*
May 30							(119)	(541)	(367)
149·902	J, M		0·914	295·6					242
		765	0·264	342·7	230·3	+14·1	49	210	
		766	0·565	114·8	193·9	−14·1	0	9	
		767	0·863	64·5	169·1	+21·5	83	290	334 *s p*
			0·963	92·6					126
May 31							(132)	(509)	(702)

Greenwich Mean Solar Time.	Measurers.	No. of Group.	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).
1882.				°	°	°			
150d·791	H, JP	768	0·919	298·6	332·6	+25·7	0	14	226 *n p*
		765	0·373	312·6	230·4	+14·2	34	172	
I.		766	0·407	120·5	193·1	−12·3	3	5	
		767	0·754	60·4	169·4	+21·5	42	253	374 *n f*
			0·656	165·1					70
			0·889	93·0					271
			0·941	114·5					294
June 1							(79)	(444)	(1235)
151·784	M, JP		0·983	295·6					120
			0·918	258·9					504
I.		765	0·541	297·9	230·2	+14·4	29	159	97 *c*
		767	0·618	53·1	168·9	+21·5	47	285	
			0·858	117·8					202
			0·970	72·3					307
			0·980	102·8					202
June 2							(76)	(444)	(1432)
152·916	J, M		0·913	245·4					74
			0·828	303·7					368
		765	0·730	290·9	230·5	+15·0	47	187	188 *c*
		769	0·291	192·5	189·6	−16·6	0	6	
		767	0·466	37·6	168·1	+21·4	61	208	
		770	0·849	70·1	129·6	+16·6	4	15	
		771	0·925	72·3	119·4	+16·3	0	26	
		772	0·939	74·1	116·9	+14·9	0	10	374 *c*
			0·693	42·0					117
			0·762	120·9					339
			0·863	98·7					115
			0·915	104·9					159
June 3							(112)	(452)	(1734)
154·013	J, M	765	0·874	287·7	230·8	+15·4	30	165	463 *n*
		767	0·370	8·3	168·0	+21·4	47	218	
		770	0·685	65·3	131·0	+16·6	5	10	
		773	0·752	66·9	125·1	+17·1	0	2	
		771	0·805	69·8	119·6	+16·1	2	7	393 *c*
			0·757	125·8					309
			0·927	109·7					524
June 4							(84)	(402)	(1689)
154·995	J, M	765	0·956	285·6	230·5	+14·9	36	131	282 *n f*
		767	0·391	335·2	168·5	+20·8	40	202	
			0·717	65·7					136
			0·863	114·3					425
June 5							(76)	(333)	(843)

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

Group 762. Two large regular spots, with a number of small spots between and around them.
Group 765. A regular spot, with a small companion.
Group 768. Two very small faint spots.
Group 771. A very small spot.
Group 766. A very small spot.
Group 769. A very small faint spot.
Group 772. Two small spots.
Group 767. A regular spot.
Group 770. A small spot.
Group 773. A small faint spot.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1882.				°	°	°			
155d·622	M, JP	765	0·986	285·4	230·0	+15·3	22	129	842 *nf*
I.		767	0·458	321·2	167·9	+21·1	37	199	
			0·849	114·0					765
June 6							(59)	(328)	(1607)
156·951	J, M		0·952	286·7					76
			0·878	252·5					99
		767	0·646	303·4	167·5	+21·0	25	145	
		774	0·375	245·5	152·5	− 8·6	0	11	
		775	0·265	150·1	124·6	−13·0	0	7	
		776	0·665	115·5	93·9	−16·3	2	6	199 *s*
			0·898	118·5					701
			0·913	69·8					53
June 7							(27)	(169)	(1128)
157·630	M, JP		0·924	250·9					181
		767	0·738	297·9	167·4	+20·4	24	102	128 *c*
I.		774	0·541	254·9	155·2	− 7·7	0	9	
			0·907	120·4					411
			0·978	72·8					203
June 8							(24)	(111)	(923)
158·970	J, M		0·835	306·1					273
		767	0·895	293·1	167·2	+20·8	16	45	181 *c*
		774	0·789	260·4	157·1	− 7·2	1	6	347 *f*
		777	0·932	103·7	37·9	−12·5	71	322	
		777	0·963	104·5	32·2	−13·8	21	117	466 *c*
			0·855	124·6					1075
			0·909	77·1					700
June 9							(109)	(490)	(3042)
159·700	M, JP		0·939	299·1					197
			0·841	263·8					309
I.		778	0·472	24·1	83·7	+26·0	0	12	
		777	0·852	104·6	38·8	−12·0	51	231	394 *c*
		777	0·899	105·0	33·1	−13·1	7	56	
			0·859	66·1					60
			0·927	125·7					292
June 10							(58)	(299)	(1252)
160·929	J, M		0·968	301·7					68
			0·953	260·4					252
			0·895	242·4					163
			0·767	292·4					141
		778	0·432	352·7	83·3	+26·1	6	18	
		777	0·691	108·6	37·9	−12·1	57	389	
		777	0·753	109·3	32·9	−13·8	13	75	557 *c*
		779	0·905	105·0	16·2	−13·2	12	47	668 *s*
1882.				°	°	°			
160d·929	J, M		0·852	133·3					369
			0·975	142·7					153
June 11							(88)	(529)	(2371)
161·911	J, M		0·815	291·8					578
			0·766	245·9					753
			0·735	279·0					70
		778	0·496	326·7	84·3	+25·3	0	5	
		777	0·523	115·3	38·0	−12·1	86	436	
		777	0·598	114·7	32·9	−13·7	10	51	345 *c*
		779	0·781	108·0	17·2	−13·4	39	92	753 *sf*
			0·763	129·5					433
June 12							(135)	(584)	(2933)
162·794	H, JP		0·939	285·7					238
		777	0·375	125·9	37·1	−11·7	36	357	
I.		777	0·414	132·8	36·8	−15·3	8	54	
		777	0·427	124·8	34·1	−13·1	9	82	
		779	0·647	111·5	17·3	−11·7	2	27	766 *f*
June 13							(55)	(520)	(1004)
164·012	J, M		0·927	289·9					257
			0·856	245·5					913
		777	0·277	181·5	39·4	−14·9	35	225	
		777	0·229	175·0	37·8	−12·0	60	357	
		777	0·268	165·7	35·1	−13·8	29	184	
		780	0·897	66·7	337·0	+21·3	21	53	
		780	0·956	66·9	327·2	+22·4	0	9	351 *c*
			0·706	125·5					280
June 14							(145)	(828)	(1801)
165·038	J, M		0·923	253·6					178
			0·870	301·5					143
			0·838	238·7					641
		777	0·368	225·2	40·9	−13·7	33	223	
		777	0·311	223·3	37·9	−11·7	89	361	
		777	0·316	210·5	34·9	−14·4	18	186	
		780	0·789	63·8	336·2	+21·2	14	69	
		780	0·881	63·9	326·0	+23·5	0	17	469 *c*
			0·786	81·3					24
			0·893	106·7					105
June 15							(154)	(856)	(1560)
165·899	J, M		0·974	254·4					84
			0·939	299·1					136
			0·775	234·1					1360
			0·566	299·8					157

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

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

Group 765. A regular spot, with a small companion.
Group 767. A regular spot.
Group 774. A small spot.
Group 775. A very small faint spot.
Group 776. A very small faint spot.
Group 777. A large spot, with several small spots following it. The group undergoes great and frequent changes.
Group 778. Two small spots.
Group 779. Two or three small spots.
Group 780. A number of spots arranged in a straight line. The group undergoes great and frequent changes.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	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).
1882.				°	°	°			
165d·899	J, M	777	0·516	241·5	41·6	−13·0	66	277	
		777	0·456	240·6	37·8	−11·6	68	423	
		777	0·436	231·3	34·5	−14·4	33	201	
		780	0·670	59·2	336·1	+21·1	23	103	
		780	0·737	59·3	330·6	+23·1	2	11	418 *f*
			0·841	109·8					238
June 16							(192)	(1015)	(2393)
166·989	J, M		0·780	229·1					1546
			0·757	291·3					378
		777	0·710	250·7	42·7	−12·4	73	303	
		777	0·673	246·5	38·9	−14·4	8	40	
		777	0·645	250·2	37·6	−11·4	74	377	
		777	0·611	243·9	33·8	−14·3	31	153	1513 *c*
		780	0·502	47·6	336·2	+21·1	27	97	
		780	0·541	49·9	333·2	+21·7	7	47	
		780	0·585	51·5	329·9	+22·6	39	88	
		780	0·634	52·5	326·3	+23·9	23	95	277 *c*
			0·953	70·4					336
June 17							(282)	(1200)	(4050)
169·933	J, M		0·940	232·5					413
			0·930	281·1					290
		777	0·994	255·7	43·3	−14·0	0	57	
		777	0·986	258·5	40·1	−11·0	33	126	952 *s f*
		780	0·435	320·4	337·8	+21·4	2	24	
		780	0·402	327·5	334·0	+21·5	11	64	
		780	0·393	337·5	330·0	+23·1	33	256	
		780	0·405	351·8	324·3	+25·4	0	34	
		781	0·516	62·0	292·5	+15·6	25	125	312 *f*
			0·880	63·8					248
			0·967	86·3					100
June 20							(104)	(686)	(2315)
170·791	H, JP		0·925	248·2					1107
		780	0·518	305·4	335·6	+19·2	0	92	
I.		780	0·486	317·7	329·9	+22·9	14	214	
		781	0·360	49·7	292·7	+15·4	7	49	96 *c*
June 21							(21)	(355)	(1203)
171·685	H, JP		0·929	247·7					539
		780	0·656	299·4	334·8	+20·4	4	50	131 *c*
I.		780	0·614	306·2	329·8	+23·0	20	183	81 *c*
		781	0·237	17·8	293·1	+15·1	10	91	
		781	0·273	27·2	290·0	+16·1	0	15	
			0·916	64·3					403
June 22							(34)	(339)	(1154)
1882.				°	°	°			
172d·902	J, M		0·970	245·6					174
			0·826	251·6					34
		780	0·828	292·9	335·4	+20·1	2	20	
		780	0·784	298·1	329·9	+23·1	28	139	729 *c*
		781	0·295	321·2	292·3	+15·4	26	133	
		782	0·793	74·0	229·7	+14·0	0	11	97 *c*
		783	0·944	75·3	210·9	+14·6	19	84	697 *n p*
			0·829	53·7					230
June 23							(75)	(387)	(1961)
173·908	J, M		0·933	255·1					65
		780	0·895	292·8	330·2	+21·4	0	7	
		780	0·889	295·4	328·9	+23·5	0	10	1124 *c*
		781	0·465	299·0	292·8	+15·1	19	90	
		782	0·640	69·8	229·8	+14·6	0	8	48 *c*
		783	0·854	73·7	210·1	+15·1	23	91	
		784	0·919	73·4	201·8	+16·2	0	14	495 *c*
June 24							(42)	(220)	(1732)
175·029	J, M		0·961	295·8					724
			0·806	255·0					116
		781	0·658	290·9	292·7	+15·5	5	43	
		786	0·385	6·7	250·4	+24·9	1	3	
		787	0·372	170·5	249·5	−18·9	5	18	
		787	0·393	162·7	246·1	−19·5	9	27	
		783	0·683	71·2	211·5	+14·6	11	69	737 *f*
		785	0·877	79·3	192·2	+10·6	0	8	382 *s f*
			0·935	113·4					180
June 25							(31)	(168)	(2139)
175·917	J, M		0·989	297·7					241
		781	0·793	286·6	293·0	+14·7	10	48	
		781	0·770	288·6	290·6	+15·9	5	10	311 *c*
		786	0·411	333·7	250·4	+24·1	0	11	
		787	0·374	191·9	246·1	−18·8	2	11	
		783	0·527	66·0	211·7	+14·6	13	61	
		785	0·752	78·2	193·1	+10·6	8	20	
		788	0·967	106·4	167·7	−15·1	0	67	338 *s f*
			0·893	114·7					295
June 26							(38)	(228)	(1185)
177·027	J, M		0·912	288·6					676
			0·806	301·9					363
			0·517	319·8					60
		786	0·527	313·2	251·4	+23·5	7	20	
		787	0·501	224·5	248·3	−18·4	22	59	

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

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

Group 777. A large spot, with several small spots following it. The group undergoes great and frequent changes.
Group 780. A number of spots arranged in a straight line. The group undergoes great and frequent changes.
Group 781. A small regular spot, followed by some smaller spots.
Group 782. A small spot.
Group 783. A small regular spot.
Group 784. A small spot.
Group 785. A small spot when first seen on the E. limb. The group increases in size, and becomes a long line of spots, of which the first spot is the largest.
Group 786. A very small faint spot.
Group 787. Two very small close clusters of spots when first seen. The group developes into a line of spots, the middle spots of which soon disappear, whilst the first and last increase in size.
Group 788. Two irregular spots, and two or three very small spots close to them.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1882.				°	°	°			
177d·027	J, M	787	0·481	217·4	244·7	−19·8	51	140	
		783	0·325	49·1	212·0	+14·9	13	59	
		785	0·527	74·5	195·7	+10·4	24	83	
		785	0·576	73·4	192·5	+11·7	20	47	
		788	0·835	110·6	172·7	−15·5	0	12	
		788	0·874	109·0	168·0	−15·1	39	131	
		788	0·909	109·7	163·7	−16·6	0	52	1670 *c*
			0·915	66·6					127
			0·952	118·7					181
June 27							(176)	(603)	(3077)
177·873	H, JP	786	0·659	303·0	252·2	+23·2	0	12	
		789	0·636	236·2	249·1	−18·3	24	133	
I.		787	0·584	229·6	243·5	−19·7	26	333	
		783	0·214	14·9	212·2	+14·7	15	45	
		785	0·335	66·5	197·3	+10·3	21	188	143 *c*
		785	0·430	67·6	191·5	+12·0	8	74	46 *c*
		788	0·723	114·0	172·4	−15·0	0	19	
		788	0·771	112·2	167·9	−15·0	14	176	278 *c*
		788	0·837	111·6	161·4	−16·3	0	17	223 *s*
June 28							(108)	(997)	(690)
178·745	H, JP	787	0·774	243·6	250·6	−18·1	13	143	115 *c*
		787	0·701	238·0	242·9	−19·5	45	339	128 *c*
I.		783	0·246	326·1	212·0	+14·6	6	48	
		785	0·156	37·2	198·4	+10·0	14	105	
		785	0·263	53·2	191·5	+11·9	12	31	
		788	0·591	120·8	172·3	−15·1	2	32	
		788	0·643	118·2	168·1	−15·1	12	183	110 *c*
		788	0·721	115·5	161·5	−15·8	0	4	
		789	0·901	96·6	140·2	− 4·7	3	42	237 *f*
		790	0·928	74·9	136·1	+15·0	0	13	676 *f*
June 29							(107)	(940)	(1266)
179·843	H, JP		0·903	294·7					454
		787	0·910	248·3	252·3	−18·3	14	161	348 *c*
I.		787	0·837	244·1	242·5	−19·6	23	356	151 *c*
		783	0·423	300·1	211·8	+15·0	8	35	
		785	0·209	304·7	199·6	+ 9·8	19	145	
		785	0·175	335·9	193·8	+12·2	0	18	
		785	0·159	348·6	191·4	+12·0	8	29	
		788	0·385	139·0	174·6	−14·0	3	44	
		788	0·469	131·7	168·4	−15·3	13	168	
		789	0·748	98·9	141·9	− 4·6	4	41	275 *f*
		790	0·803	73·4	137·0	+15·0	0	15	770 *f*
		791	0·969	114·4	116·8	−22·7	0	35	201 *c*
June 30							(92)	(1047)	(2199)
180d·943	J, M		0·820	257·3					
			0·760	300·0					
		787	0·984	250·9	252·7	−18·1	0	224	
		787	0·939	248·0	242·1	−19·4	62	329	511 *c*
		783	0·630	288·8	212·7	+14·1	6	61	182 *c*
		785	0·425	287·2	199·1	+10·0	48	183	
		785	0·345	297·0	193·1	+12·0	19	106	
		788	0·289	181·7	175·4	−13·6	8	32	
		788	0·336	161·0	168·4	−15·4	48	190	
		789	0·518	104·1	144·8	− 4·6	11	37	
		792	0·604	103·4	138·9	− 5·5	1	7	241 *f*
		790	0·634	70·0	137·0	+15·0	2	14	
		793	0·751	68·5	127·8	+18·1	8	40	1114 *c*
		791	0·891	118·1	116·3	−23·2	12	46	523 *n*
July 1							(225)	(1269)	(4250)
181·963	J, M		0·936	260·6					206
		787	0·996	249·5	244·5	−20·1	0	207	
		783	0·794	284·9	213·3	+13·7	0	23	1416 *n*
		785	0·628	281·5	199·8	+ 9·8	45	202	
		785	0·536	286·9	192·7	+11·7	18	53	532 *c*
		788	0·394	221·3	176·8	−14·1	4	18	
		788	0·339	201·4	168·6	−15·1	39	145	
		789	0·303	116·3	145·6	− 4·6	7	25	
		792	0·402	111·7	139·4	− 5·6	0	8	
		790	0·457	65·2	136·1	+14·0	0	1	
		791	0·780	123·5	116·4	−23·2	9	40	955 *n f*
			0·581	63·1					265
July 2							(122)	(722)	(3374)
182·957	J, M		0·870	289·2					704
		785	0·781	279·3	199·4	+ 9·3	46	208	
		785	0·711	283·3	193·0	+11·8	0	14	347 *c*
		788	0·560	236·2	176·9	−15·2	0	15	
		788	0·482	232·0	171·2	−14·1	9	40	
		788	0·455	226·8	168·2	−15·0	49	122	
		789	0·144	161·9	145·6	− 4·6	4	12	
		792	0·200	132·9	139·8	− 4·6	15	86	
		790	0·286	43·4	136·5	+15·2	0	8	
		793	0·438	55·0	126·2	+17·6	0	8	
		791	0·665	131·0	115·3	−23·0	2	9	
			0·803	118·3					1009
July 3							(125)	(522)	(2060)
184·974	J, M		0·688	293·9					237
		785	0·981	278·9	200·5	+ 9·4	4	24	422 *c*
		788	0·838	251·8	176·1	−13·1	13	48	
		788	0·792	250·3	171·3	−13·2	15	70	

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

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

Group 783. A small regular spot.

Group 785. A small spot when first seen on the E. limb. The group increases in size, and becomes a long line of spots, of which the first spot is the largest.

Group 786. A very small faint spot.

Group 787. Two very small close clusters of spots when first seen. The group developes into a line of spots, the middle spots of which soon disappear, whilst the first and last increase in size.

Group 788. Two irregular spots, and two or three very small spots close to them.

Group 789. A small spot.

Group 790. A very small spot.

Group 791. A small spot.

Group 792. A very small faint spot. The group increases as it approaches the central meridian, and forms three or four spots.

Group 793. A small spot, not seen on July 2.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.	Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).						Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1882.				°	°	°				1882.				°	°	°			
184d·974	J, M	788	0·772	247·4	168·8	−14·9	22	102	760 *c*	189d·938	J, M		0·907	84·4					66
		789	0·447	253·3	146·8	− 4·2	1	8					0·978	68·2					102
		789	0·393	251·9	143·4	− 3·7	4	26		July 10							(13)	(47)	(2623)
		792	0·345	245·0	139·7	− 5·1	34	98											
			0·815	127·6					411	190·794	H, JP		0·942	287·3					195
			0·923	118·1					400				0·888	244·9					1010
			0·943	72·4					448	I.		794	0·267	319·9	54·8	+15·8	6	33	
			0·970	105·0					479			794	0·246	323·0	53·3	+15·3	4	316	
July 5							(93)	(376)	(3157)			794	0·244	339·0	49·7	+17·2	10	48	
													0·799	143·2					659
186·916	H, JP		0·953	250·8					898				0·950	68·9					799
			0·901	292·5					223	July 11							(20)	(397)	(2663)
I.		789	0·770	260·7	145·3	− 4·8	10	19	101 *c*										
		792	0·702	258·6	139·4	− 5·3	16	82	177 *c*	191·972	J, M		0·910	244·4					319
			0·845	80·0					459				0·769	234·4					74
			0·898	110·2					952			794	0·460	296·0	54·2	+15·4	39	222	
			0·947	122·1					178			794	0·453	302·2	52·5	+17·8	13	28	
			0·948	132·4					516			794	0·404	303·0	49·5	+16·6	10	31	
July 7							(26)	(101)	(3504)			795	0·803	79·1	335·6	+11·3	0	14	74 *f*
													0·772	156·6					291
187·606	H, JP		0·978	252·1					388				0·867	64·7					482
			0·951	292·4					284	July 12							(62)	(295)	(1240)
I.			0·872	233·2					59										
			0·776	287·6					199	192·749	H, JP		0·953	247·0					635
		789	0·869	262·5	146·3	− 4·6	6	12				794	0·600	290·2	54·2	+15·4	24	253	
		792	0·804	260·3	139·3	− 5·5	10	49	484 *c*	I.		794	0·558	295·2	50·4	+17·4	10	25	
			0·848	110·2					618				0·830	60·4					601
			0·913	134·5					531				0·974	70·4					144
			0·991	125·5					990	July 13							(34)	(278)	(1380)
July 8							(16)	(61)	(3553)										
										193·976	J, M		0·824	242·4					440
189·076	J, M		0·976	238·6					68				0·767	216·8					121
			0·972	264·6					459				0·746	202·4					226
			0·900	288·4					501			794	0·795	286·2	54·5	+15·6	45	231	
			0·760	237·0					311			794	0·740	288·1	49·2	+16·3	12	34	357 *c*
			0·806	118·0					417			796	0·142	305·7	9·0	+ 9·1	14	26	
			0·842	142·5					175			796	0·094	314·9	6·1	+ 8·2	8	18	
			0·895	132·0					403			797	0·948	76·6	290·6	+14·1	77	446	
July 9							(0)	(0)	(2334)			797	0·968	79·2	286·4	+11·6	7	49	
												797	0·974	75·0	284·9	+15·6	6	73	735 *c*
189·938	J, M		0·957	288·6					511				0·756	54·6					164
			0·821	241·1					752	July 14							(169)	(877)	(2043)
		794	0·210	0·0	55·8	+16·1	11	34											
		794	0·208	9·0	53·9	+15·8	0	6		195·057	J, M		0·859	249·8					390
		794	0·236	14·7	52·2	+17·2	2	7					0·835	217·1					281
			0·743	152·3					337			794	0·920	285·3	55·1	+15·9	31	496	
			0·837	139·1					432			794	0·870	287·1	48·3	+17·1	0	7	425 *c*
			0·859	120·4					423			796	0·384	283·8	10·2	+ 9·5	5	37	

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

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

Group 788. Two irregular spots, and two or three very small spots close to them.

Group 789. A small spot.

Group 792. A very small faint spot. The group increases as it approaches the central meridian, and forms three or four spots.

Group 794. A number of small spots. Before disappearing at the W. limb they have almost all coalesced to form one large spot.

Group 795. Two very small spots, not seen on July 13 and 14.

Group 796. Two close pairs of very small spots.

Group 797. A large regular spot, with several small spots following it. These smaller spots disappear before July 22.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1882.				°	°	°			
195d·057	J, M	796	0·320	282·5	6·4	+ 8·2	7	26	
		795	0·254	62·5	334·9	+11·1	0	24	
		797	0·834	76·3	291·7	+13·9	109	462	
		797	0·871	79·4	287·5	+11·4	17	44	
		797	0·884	74·6	286·0	+15·7	12	102	
		798	0·943	71·8	277·4	+18·6	6	50	1130 *c*
July 15							(187)	(1248)	(2226)
196·018	J, M		0·885	248·9					751
			0·859	222·5					440
		794	0·985	285·8	56·1	+16·3	34	117	870 *f*
		796	0·524	277·9	6·9	+ 8·1	2	6	
		796	0·483	280·6	4·0	+ 9·1	0	2	
		795	0·119	338·2	338·0	+11·0	2	5	
		795	0·124	14·5	333·6	+11·5	0	20	
		797	0·696	74·5	291·8	+14·1	60	475	
		797	0·744	78·7	287·5	+11·5	0	26	
		797	0·755	73·2	287·0	+15·7	6	144	
		798	0·836	69·7	279·4	+19·4	2	10	2347 *f*
			0·968	84·9					68
			0·982	106·7					379
July 16							(106)	(805)	(4855)
196·940	J, M		0·933	292·2					183
			0·931	281·4					222
			0·917	248·5					380
			0·859	223·2					511
		796	0·697	276·8	7·4	+ 8·1	0	7	159 *c*
		795	0·296	294·2	339·1	+11·4	0	5	
		795	0·216	304·2	333·7	+11·6	0	6	
		797	0·530	69·9	292·4	+14·6	68	419	
		797	0·601	73·8	286·9	+13·5	0	2	
		797	0·611	70·3	286·7	+15·7	13	88	
		798	0·701	67·1	280·2	+19·3	0	8	1272 *f*
		799	0·685	111·7	282·9	−11·1	0	6	55 *f*
		800	0·898	105·6	261·3	−11·8	0	20	426 *s f*
			0·899	86·0					44
July 17							(81)	(561)	(3252)
197·952	J, M		0·987	283·9					144
			0·926	229·0					1074
			0·863	278·0					208
			0·773	232·7					424
		801	0·949	246·7	17·8	−20·3	0	11	664 *n*
		797	0·332	57·0	293·0	+15·0	84	393	
		797	0·330	65·6	291·9	+12·4	10	29	
		797	0·369	62·4	290·1	+14·4	5	6	
		797	0·428	63·4	286·4	+15·4	10	99	

Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1882.				°	°	°			
197d·952	J, M	798	0·528	60·9	280·6	+19·0	0	5	
		798	0·577	62·4	277·0	+19·5	0	32	
		800	0·765	109·9	262·6	−11·9	10	19	
		800	0·796	107·8	259·3	−11·0	9	21	
		800	0·819	108·4	257·3	−12·1	0	9	189 *c*
		802	0·865	115·4	254·1	−19·1	0	17	
		802	0·892	113·9	250·5	−18·7	0	12	731 *c*
		803	0·983	108·9	232·7	−17·5	0	41	172 *f*
			0·946	75·2					138
			0·971	67·0					115
July 18							(128)	(694)	(3859)
199·006	J, M		0·937	278·2					122
			0·927	237·1					376
			0·645	225·8					62
		797	0·181	12·5	293·5	+15·0	105	403	
		797	0·256	37·3	286·5	+16·6	9	49	
		798	0·403	52·5	276·2	+18·7	8	42	
		800	0·601	117·3	262·9	−11·9	4	11	
		800	0·642	113·7	259·2	−11·0	0	6	
		800	0·674	114·2	257·1	−12·2	2	12	65 *f*
		802	0·737	122·7	254·7	−19·7	6	32	
		802	0·780	119·3	250·0	−19·0	0	7	814 *f*
		803	0·927	112·0	231·2	−18·3	0	33	442 *f*
			0·890	62·6					103
			0·976	73·9					252
July 19							(134)	(595)	(2236)
200·032	J, M		0·941	239·6					195
			0·807	288·9					382
		797	0·263	310·9	294·0	+14·8	71	327	
		797	0·224	321·8	290·4	+15·1	4	19	
		797	0·197	334·7	287·2	+14·9	6	61	
		798	0·259	16·4	277·8	+19·3	4	35	
		802	0·582	134·3	256·1	−19·4	17	59	
		802	0·633	129·5	251·1	−19·4	0	21	426 *f*
		803	0·827	115·6	230·8	−17·8	15	33	342 *f*
		804	0·914	72·1	216·0	+18·4	0	18	539 *s f*
			0·878	56·9					318
July 20							(117)	(573)	(2202)
201·033	J, M		0·931	279·9					152
			0·895	293·6					422
			0·843	254·9					227
			0·790	303·2					298
		797	0·447	292·7	294·1	+14·6	74	359	
		797	0·380	300·6	288·8	+15·9	0	33	
		797	0·314	308·0	283·9	+16·1	0	7	

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

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

Group 794. A number of small spots. Before disappearing at the W. limb they have almost all coalesced to form one large spot.

Group 795. Two very small spots, not seen on July 13 and 14.

Group 796. Two close pairs of very small spots.

Group 797. A large regular spot, with several small spots following it. These smaller spots disappear before July 22.

Group 798. A close cluster of very small faint spots.

Group 799. A small spot.

Group 800. Three small spots.

Group 801. A very small faint spot.

Group 802. Two small spots. Other small spots appear and form a V-shaped group, the preceding spot, which is also the largest, forming the angle of the V.

Group 803. A small spot.

Group 804. Three or four small spots.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1882.				°	°	°			
201d·033	J, M	798	0·284	327·5	278·2	+18·9	2	22	
		805	0·126	69·2	262·2	+ 7·6	0	9	
		802	0·425	153·1	257·4	−17·2	0	13	
		802	0·463	154·4	256·8	−19·6	14	75	
		802	0·515	146·6	251·4	−20·6	12	63	
		803	0·704	122·3	230·4	−18·1	8	21	238 *f*
		804	0·811	69·8	215·5	+19·3	7	41	153 *s*
		806	0·942	81·4	198·3	+ 9·8	0	23	
		806	0·974	79·6	191·6	+11·3	0	36	1740 *c*
			0·792	53·8					239
July 21							(117)	(702)	(3469)
201·606	H, JP		0·924	293·1					968
		797	0·554	288·6	294·1	+14·4	52	343	127 *c*
I.		805	0·052	330·1	262·9	+ 7·7	0	19	
		802	0·428	171·4	257·5	−19·9	9	66	92 *c*
		802	0·447	165·0	254·3	−20·4	2	43	
		802	0·465	158·0	250·7	−20·4	14	41	
		803	0·623	128·2	230·5	−18·2	2	13	144 *s f*
		804	0·731	68·0	215·6	+19·5	0	19	97 *c*
		806	0·882	81·6	199·3	+ 9·8	3	34	1676 *n f*
July 22							(82)	(578)	(3104)
203·079	J, M		0·923	303·5					211
		797	0·795	283·5	294·5	+13·9	94	443	308 *c*
		802	0·504	212·6	258·6	−20·0	15	79	
		802	0·482	205·7	254·7	−20·5	7	37	
		802	0·469	200·5	252·0	−20·8	0	16	
		807	0·590	69·6	206·9	+16·2	3	20	
		807	0·622	70·8	204·4	+16·0	0	7	
		807	0·667	70·9	200·9	+16·6	0	17	206 *c*
		806	0·674	80·7	199·7	+10·2	18	64	
		806	0·711	80·2	196·6	+10·7	0	7	
		806	0·765	79·8	191·9	+11·3	0	25	1249 *f*
			0·909	111·6					376
			0·984	69·6					118
July 23							(137)	(715)	(2468)
203·897	J, M		0·971	302·7					195
		797	0·894	282·9	294·7	+13·9	110	466	1762 *s f*
		802	0·609	227·1	259·3	−19·8	17	75	
		802	0·593	223·1	256·7	−20·8	9	49	
		802	0·548	217·1	251·7	−20·9	0	9	246 *c*
		807	0·432	63·8	207·4	+15·8	6	12	
		807	0·483	67·5	203·7	+15·3	0	10	
		807	0·523	67·7	201·0	+16·0	8	25	
		806	0·527	79·1	199·5	+10·3	4	26	
		806	0·632	79·9	192·0	+10·5	0	10	1224 *f*
1882.				°	°	°			
203d·897	J, M		0·844	115·4					388
			0·940	95·1					106
			0·943	67·2					384
July 24							(154)	(682)	(4305)
204·689	H, JP	797	0·958	283·1	294·6	+14·1	60	309	1199 *n f*
		802	0·724	236·2	260·2	−19·6	5	49	42 *c*
I		802	0·706	232·9	257·6	−20·9	6	22	
		802	0·654	227·1	251·6	−21·8	0	3	
		807	0·281	49·1	208·0	+15·8	0	10	
		807	0·366	58·7	201·8	+16·1	0	6	
		806	0·364	75·0	199·9	+10·4	5	18	
			0·891	67·2					416
			0·952	97·2					177
			0·979	75·3					200
July 25							(76)	(417)	(2434)
205·906	J, M		0·948	290·3					1184
			0·849	276·4					106
			0·738	192·0					45
		802	0·869	244·5	260·3	−18·9	19	52	
		802	0·855	241·6	257·9	−20·8	7	12	705 *f*
		807	0·195	341·7	208·1	+16·1	9	14	
		807	0·176	359·7	204·6	+15·6	6	26	
		807	0·188	14·3	201·7	+16·0	10	57	
		806	0·163	41·6	198·2	+12·5	3	16	
		806	0·225	73·7	191·9	+ 9·0	0	8	
			0·684	121·4					221
			0·731	63·6					268
			0·849	100·0					240
			0·924	72·7					233
July 26							(54)	(185)	(3002)
206·906	J, M		0·962	291·6					398
			0·942	277·9					152
			0·730	233·2					160
		802	0·956	248·3	260·9	−18·8	3	20	
		802	0·941	246·3	257·6	−20·1	0	6	661 *s f*
		807	0·340	303·5	208·4	+16·2	3	15	
		807	0·293	306·2	205·4	+15·3	4	11	
		807	0·258	316·4	201·9	+16·2	9	49	
		806	0·161	310·5	198·4	+11·6	4	16	
		806	0·066	345·5	192·3	+ 9·2	0	23	
		808	0·965	103·4	118·3	−11·3	32	113	196 *p*
			0·868	71·3					315
			0·887	177·9					121
			0·915	128·0					80
July 27							(55)	(253)	(2083)

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

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

Group 797. A large regular spot, with several small spots following it. These smaller spots disappear before July 22.

Group 798. A close cluster of very small faint spots.

Group 802. Two small spots. Other small spots appear and form a V-shaped group, the preceding spot, which is also the largest, forming the angle of the V.

Group 803. A small spot.

Group 804. Three or four small spots.

Group 805. A close cluster of small spots.

Group 806. A small spot, with two or three small faint spots near it.

Group 807. Two or three small spots.

Group 808. A close cluster of small faint spots. The group developes into a large V-shaped group, the preceding spot, which is also the largest, forming the angle of the V.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	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).
1882.				°	°	°			
207d·670	H, JP		0·966	249·3					1282
			0·776	236·4					116
I.		807	0·481	291·3	208·7	+15·0	0	5	
		807	0·390	296·1	202·4	+15·1	0	23	
		808	0·907	104·9	118·1	−11·0	0	140	471 *c*
July 28							(0)	(168)	(1869)
208·927	J, M		0·923	244·9					411
			0·907	299·5					326
			0·823	225·8					76
		807	0·693	277·1	208·6	+ 9·1	0	49	
		807	0·663	286·3	205·7	+15·1	0	12	642 *sp*
		808	0·748	109·4	118·9	−10·4	25	233	444 *c*
			0·882	117·7					382
July 29							(25)	(294)	(2281)
211·049	J, M		0·930	301·3					64
			0·881	281·8					960
			0·758	242·8					297
			0·733	258·0					114
		808	0·363	144·3	124·2	−11·3	18	173	
		808	0·417	135·7	119·4	−11·7	8	164	
			0·802	127·9					324
			0·970	74·0					270
July 31							(26)	(337)	(2029)
212·895	J, M		0·934	291·1					143
			0·932	249·1					466
			0·929	280·8					259
			0·808	293·0					54
			0·714	301·4					135
		808	0·400	219·8	127·2	−12·0	80	314	
		808	0·380	211·5	123·8	−13·0	19	139	
		808	0·333	199·7	118·7	−12·2	10	42	
			0·723	141·2					140
			0·797	73·4					348
			0·910	114·8					350
			0·926	80·9					164
Aug. 2							(109)	(495)	(2059)
214·076	J, M		0·867	295·0					310
			0·842	256·2					263
			0·812	273·2					44
			0·752	221·1					104
		808	0·595	239·5	128·0	−12·3	56	281	
		808	0·560	235·2	124·6	−13·3	11	147	
1882.				°	°	°			
214d·076	J, M	808	0·464	230·7	117·9	−11·4	0	15	
		809	0·634	71·0	57·9	+16·6	2	10	432 *c*
			0·808	82·8					328
			0·833	117·8					438
			0·859	64·4					54
Aug. 3							(69)	(453)	(1973)
215·047	J, M		0·945	294·4					148
			0·888	258·2					124
			0·786	287·2					254
		808	0·740	247·2	127·8	−12·3	51	331	
		808	0·714	244·7	125·1	−13·1	11	151	
		808	0·623	243·0	118·0	−11·4	0	7	368 *c*
			0·730	82·1					81
			0·857	117·6					177
Aug. 4							(62)	(489)	(1152)
217·038	J, M		0·923	290·0					121
			0·831	240·1					237
			0·739	219·9					142
		808	0·952	255·0	127·2	−12·2	62	436	630 *f*
			0·700	130·3					131
			0·899	100·9					77
			0·919	128·0					647
			0·952	73·9					69
			0·988	83·4					54
Aug. 6							(62)	(436)	(2108)
219·104	J, M		0·861	303·7					354
			0·852	237·7					722
			0·814	291·3					132
		810	0·969	69·2	313·2	+21·7	0	29	304 *sf*
			0·746	31·5					367
			0·782	85·7					61
			0·853	66·6					256
Aug. 8							(0)	(29)	(2196)
220·125	J, M		0·968	297·1					84
			0·823	231·1					318
			0·720	290·5					123
		811	0·262	19·3	11·2	+20·7	10	40	
		811	0·285	28·6	8·1	+20·8	6	22	
		810	0·885	68·7	314·1	+21·8	6	16	281 *sf*
		812	0·979	75·9	297·2	+15·1	37	154	
			0·835	60·2					81
			0·971	110·6					175
Aug. 9							(59)	(232)	(1062)

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

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

Group 807. Two or three small spots.

Group 808. A close cluster of small faint spots. The group developes into a large V-shaped group, the preceding spot, which is also the largest, forming the angle of the V.

Group 809. A small spot.

Group 810. A small spot.

Group 811. Two spots, which rapidly increase in size on August 10 and 11.

Group 812. A regular spot.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1882.				°	°	°			
220d·878	H, JP		0·954	233·4					54
			0·831	288·3					286
I.		811	0·252	337·7	12·3	+20·0	27	198	118 *c*
		811	0·234	357·1	7·2	+20·0	10	60	87 *c*
		810	0·798	66·8	314·2	+22·4	2	21	318 *f*
		813	0·908	112·7	305·3	−17·4	0	8	524 *nf*
		812	0·932	75·8	297·1	+15·6	18	155	864 *nf*
Aug. 10							(57)	(442)	(2251)
222·116	J, M		0·940	289·9					223
			0·843	241·3					304
			0·774	276·6					235
			0·671	180·6					345
		811	0·430	302·0	12·8	+19·2	61	262	
		811	0·381	305·4	9·3	+18·9	0	18	
		811	0·358	313·0	6·3	+20·4	51	253	
		810	0·613	61·6	314·7	+22·4	0	22	107 *f*
		812	0·800	76·0	296·9	+15·1	48	202	1117 *nf*
			0·829	118·3					323
Aug. 11							(160)	(757)	(2654)
222·899	J, M		0·952	248·5					138
			0·868	278·9					111
			0·771	236·7					127
			0·702	198·0					472
		811	0·566	294·0	12·9	+18·9	52	221	
		811	0·524	297·0	9·5	+19·5	0	10	
		811	0·483	301·6	5·9	+20·6	50	265	321 *c*
		812	0·683	76·2	296·9	+14·2	43	183	1236 *nf*
			0·755	122·6					432
Aug. 12							(145)	(679)	(2837)
225·016	J, M		0·965	246·4					184
			0·834	218·7					200
			0·805	202·8					93
		811	0·871	287·6	12·8	+18·6	33	186	
		811	0·807	290·5	5·4	+20·4	28	116	306 *c*
		812	0·298	57·8	296·8	+15·6	38	166	
		812	0·351	58·3	293·8	+16·9	0	4	
			0·845	116·4					484
Aug. 14							(99)	(472)	(1267)
226·037	J, M		0·863	222·2					344
		811	0·957	287·8	12·5	+18·9	41	193	
		811	0·911	289·4	4·6	+20·4	45	171	274 *c*
		812	0·156	9·7	296·8	+15·5	35	142	
		812	0·194	19·8	294·5	+17·2	0	6	
			0·802	120·2					302
1882.				°	°	°			
226d·037	J, M		0·904	67·0					89
			0·941	100·7					144
Aug. 15							(121)	(512)	(1153)
227·070	J, M		0·751	290·7					232
		811	0·980	289·4	4·6	+20·3	0	69	88 *f*
		812	0·251	307·6	296·6	+15·4	22	125	
			0·763	69·2					82
			0·814	105·7					66
			0·825	59·7					135
			0·948	74·2					73
Aug. 16							(22)	(194)	(676)
227·660	H, JP		0·994	290·7					252
			0·954	233·3					655
I.			0·901	275·1					174
		812	0·361	295·6	296·4	+15·4	9	104	160 *c*
		814	0·699	129·6	241·7	−20·9	0	3	5 *sf*
			0·751	106·1					142
			0·872	122·0					212
			0·915	71·1					747
			0·973	99·3					128
Aug. 17							(9)	(107)	(2475)
228·636	H, JP		0·952	222·3					251
			0·903	293·5					137
I.		812	0·544	287·7	296·4	+15·4	15	99	95 *c*
		814	0·544	146·9	245·6	−20·5	4	166	
		814	0·585	141·8	241·3	−20·9	9	24	
		815	0·886	101·2	203·2	− 6·6	0	4	155 *f*
		816	0·940	77·0	193·1	+14·6	0	15	
		816	0·977	78·3	185·3	+12·9	38	183	1059 *np*
			0·987	113·4					161
Aug. 18							(66)	(491)	(1858)
231·029	J, M		0·931	248·0					191
			0·905	322·5					35
			0·905	303·5					210
		812	0·895	283·9	296·5	+15·5	12	78	1381 *nf*
		817	0·610	221·6	258·0	−20·9	31	128	
		814	0·518	206·8	246·8	−20·8	5	13	
		818	0·459	206·9	244·9	−17·4	0	4	
		815	0·487	119·2	207·1	− 7·5	8	24	
		819	0·475	79·9	204·1	+10·9	2	6	
		820	0·533	78·5	200·3	+12·0	0	4	
		816	0·622	77·5	194·0	+13·1	77	446	
		816	0·657	75·1	191·5	+15·0	0	11	
		816	0·672	77·8	190·1	+13·3	21	84	

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

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

Group 810. A small spot.
Group 811. Two spots, which rapidly increase in size on August 10 and 11.
Group 812. A regular spot.
Group 813. A very small faint spot.
Group 814. Three or four small spots in a straight line.
Group 815. A small spot.
Group 816. Two regular spots, with several small spots between them.
Group 817. A close cluster of three or four spots. Two coalesce and form a large spot before August 21.
Group 818. A small spot.
Group 819. A very small spot.
Group 820. A very small spot.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.	Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).						Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1882.				°	°	°				1882.				°	°	°			
231d·029	J, M	816	0·728	78·9	185·5	+12·8	71	322		233d·954	J, M	816	0·147	38·9	188·4	+13·6	2	7	
		816	0·773	79·4	181·5	+12·6	0	5	1329 *n*			816	0·175	51·4	185·8	+13·2	60	212	
		816	0·825	75·6	176·5	+15·7	0	4	307 *n*			816	0·250	61·2	180·8	+13·7	1	13	
			0·839	61·3					86			822	0·778	81·2	142·4	+11·3	7	12	
			0·852	116·6					304			822	0·815	81·3	138·8	+11·1	14	43	120 *c*
			0·907	99·3					131			821	0·928	104·9	128·0	−11·0	35	139	260 *s*
			0·972	65·9					214				0·760	107·7					124
Aug. 20							(227)	(1129)	(4188)				0·809	142·3					72
													0·822	67·7					231
232·041	J, M		0·968	254·5					84	Aug. 23							(371)	(1726)	(2027)
			0·842	291·4					1338										
		817	0·733	232·4	257·4	−21·1	80	411	543 *c*	235·079	J, M		0·939	245·5					228
		814	0·626	223·5	246·3	−20·8	7	19	246 *s f*			817	0·997	247·3	261·0	−21·9	0	198	306 *c*
		815	0·312	143·7	208·3	− 7·6	4	18				817	0·977	244·4	251·9	−23·0	27	131	
		819	0·250	71·7	205·1	+11·3	0	5				815	0·572	246·7	210·7	− 7·0	2	8	
		820	0·347	74·6	199·1	+11·9	0	10				816	0·283	292·5	194·4	+13·1	62	392	
		816	0·431	72·5	194·1	+13·8	79	355				816	0·268	304·0	192·2	+15·5	0	19	
		816	0·488	74·9	190·1	+13·5	18	72				816	0·227	301·9	190·3	+13·8	3	11	
		816	0·552	76·9	185·6	+13·1	77	250				816	0·197	297·7	189·1	+12·3	0	17	
		816	0·615	76·9	181·1	+13·6	0	3				816	0·200	318·1	186·8	+15·6	3	17	
			0·655	56·6					367			816	0·153	313·5	185·4	+13·1	63	325	
			0·696	73·5					145			822	0·583	80·8	143·1	+11·1	0	9	
			0·697	125·1					154			822	0·641	80·3	138·9	+11·7	4	11	
			0·926	65·1					224			821	0·806	108·9	128·2	−10·6	29	132	284 *s f*
Aug. 21							(265)	(1143)	(3101)				0·899	127·9					92
													0·949	112·9					121
232·891	J, M		0·922	289·6					654				0·992	75·9					213
			0·903	249·7					133	Aug. 24							(193)	(1270)	(1244)
		817	0·855	240·6	260·3	−20·6	131	581											
		817	0·805	234·7	253·1	−22·8	44	233	517 *c*	236·100	J, M		0·841	301·3					137
		814	0·732	232·5	246·1	−21·0	7	14	169 *n*				0·805	287·2					158
		815	0·249	185·7	209·2	− 7·3	5	16				816	0·502	284·0	195·2	+13·1	70	261	
		816	0·269	64·9	193·4	+13·3	72	485				816	0·464	284·4	192·6	+13·0	10	69	
		816	0·303	62·4	191·8	+14·8	3	12				816	0·442	288·7	190·8	+14·6	0	30	
		816	0·317	67·8	190·3	+13·6	14	47				816	0·377	295·8	185·9	+16·1	2	7	
		816	0·385	72·5	185·8	+13·1	59	265				816	0·358	288·7	185·6	+13·2	76	316	
		821	0·992	102·2	126·8	−11·1	0	131	154 *s p*			822	0·424	76·3	140·5	+12·2	0	4	
			0·860	60·5					216			822	0·446	78·6	138·9	+11·4	9	30	
Aug. 22							(335)	(1784)	(1843)			821	0·660	115·6	128·1	−10·9	28	109	230 *c*
													0·814	134·4					33
233·954	J, M		0·951	292·8					347				0·945	75·7					245
		817	0·952	245·6	261·5	−20·6	138	531		Aug. 25							(195)	(826)	(803)
		817	0·905	240·7	252·5	−22·8	27	188	690 *c*										
		814	0·852	240·3	246·0	−20·8	0	17	183 *f*	236·926	J, M		0·827	281·0					280
		815	0·368	230·1	210·3	− 6·9	6	9					0·816	253·3					110
		816	0·116	358·3	194·0	+13·7	71	511					0·694	292·5					139
		816	0·140	14·1	191·8	+14·8	5	27				816	0·665	281·5	196·3	+13·0	63	232	
		816	0·133	25·3	190·5	+13·9	5	17				816	0·624	283·0	193·1	+13·7	4	17	

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

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

Group 814. Three or four small spots in a straight line.
Group 815. A small spot.
Group 816. Two regular spots, with several small spots between them.
Group 817. A close cluster of three or four spots. Two coalesce and form a large spot before August 21.
Group 819. A very small spot.
Group 820. A very small spot.
Group 821. A regular spot.
Group 822. Several small spots irregularly arranged.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	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).
1882.				°	°	°			
236d·926	J, M	816	0·618	285·6	192·4	+15·1	1	7	
		816	0·536	283·4	186·7	+13·2	68	269	881 *c*
		822	0·216	70·9	142·6	+11·0	2	12	
		822	0·268	72·3	139·5	+11·6	7	30	
		821	0·520	125·5	129·0	−11·1	31	124	
			0·787	121·7					217
			0·865	75·5					161
Aug. 26							(176)	(691)	(1788)
237·893	H, JP		0·901	257·7					251
			0·843	325·7					131
I.		816	0·804	280·7	195·6	+12·8	30	219	563 *p*
		816	0·693	281·6	185·7	+13·1	33	245	109 *c*
		822	0·067	337·1	143·2	+10·6	2	15	
		822	0·084	29·6	139·3	+11·3	0	37	
		821	0·381	143·9	128·5	−11·0	20	119	79 *c*
			0·861	24·0					95
Aug. 27							(85)	(635)	(1228)
239·894	J, M		0·939	245·9					197
			0·868	293·9					239
		816	0·983	281·8	195·7	+12·9	43	200	
		816	0·958	281·3	189·5	+12·9	9	53	
		816	0·940	281·7	186·1	+13·4	86	242	850 *c*
		822	0·476	278·3	143·7	+10·3	7	16	
		822	0·427	277·2	140·5	+ 9·6	0	14	
		822	0·417	283·4	139·6	+12·1	6	15	
		821	0·403	216·5	129·3	−11·9	24	100	
		823	0·615	188·7	121·4	−30·1	7	25	
		824	0·295	53·2	100·9	+17·2	0	11	
		824	0·352	63·1	96·2	+15·9	0	10	
			0·786	71·9					131
			0·852	121·8					41
			0·932	112·0					99
			0·942	79·8					88
Aug. 29							(182)	(686)	(1645)
241·050	J, M		0·964	285·5					245
		822	0·710	278·9	145·5	+11·4	0	7	
		822	0·649	280·2	140·6	+12·1	3	28	239 *c*
		821	0·567	237·7	129·1	−11·3	19	99	
		825	0·208	327·1	106·8	+17·2	0	9	
		824	0·174	353·2	101·2	+17·1	3	27	
		824	0·181	19·8	96·3	+16·9	0	26	
		824	0·204	35·3	93·0	+16·7	0	2	
			0·624	71·5					123
			0·774	81·4					124
1882.				°	°	°			
241d·050	J, M		0·835	118·9					205
			0·942	71·7					63
			0·965	109·9					136
Aug. 30							(25)	(198)	(1135)
241·874	H, JP		0·895	258·4					239
			0·867	298·7					243
I.			0·805	278·8					449
		821	0·693	245·4	128·9	−11·2	7	34	46 *c*
		824	0·274	313·2	101·2	+17·8	3	18	
		824	0·220	321·4	97·3	+17·0	3	10	
		826	0·956	104·5	18·5	−11·6	0	14	627 *sp*
		827	0·992	70·1	4·3	+20·6	0	273	391 *c*
			0·717	125·9					209
			0·868	14·3					106
Aug. 31							(13)	(349)	(2310)
242·791	H, JP		0·908	279·0					403
			0·904	298·2					438
I.			0·853	228·4					213
		821	0·821	250·6	129·0	−11·4	8	69	94 *p*
		828	0·724	245·7	119·3	−12·0	4	26	
		828	0·680	243·5	115·3	−12·0	17	20	142 *c*
		824	0·368	298·8	96·6	+17·0	4	7	
		826	0·904	106·2	14·9	−11·3	0	11	595 *sp*
		827	0·953	70·7	3·4	+20·6	17	160	607 *c*
Sept. 1							(50)	(293)	(2492)
243·928	J, M		0·978	280·8					90
			0·929	234·4					137
			0·899	292·2					48
			0·687	287·7					164
		821	0·935	255·0	128·8	−11·3	11	64	
		828	0·878	251·7	120·3	−12·3	60	247	
		828	0·835	250·2	115·3	−12·2	95	335	385 *c*
		830	0·239	348·8	64·8	+20·8	3	16	
		829	0·058	236·4	64·8	+ 5·4	1	9	
		831	0·498	183·9	64·1	−22·5	15	31	
		831	0·520	179·2	61·5	−24·0	3	17	
		834	0·383	152·4	50·2	−12·7	4	10	
		832	0·631	147·2	39·9	−25·2	0	3	
		826	0·764	112·5	16·0	−12·0	0	13	230 *c*
		827	0·855	70·8	2·9	+20·1	80	350	197 *c*
		833	0·921	84·3	354·5	+ 8·1	11	24	
		833	0·953	85·2	349·2	+ 6·8	8	65	384 *c*
			0·659	131·0					105
Sept. 2							(291)	(1184)	(1740)

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

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

Group 816. Two regular spots, with several small spots between them.
Group 821. A regular spot.
Group 822. Several small spots irregularly arranged.
Group 823. Several very small spots.
Group 824. Several small spots in a straight line.
Group 825. A very small faint spot.
Group 826. Two very small faint spots.
Group 827. A regular spot, with some smaller spots close to it.
Group 828. Two regular spots, with a number of very small spots between them.
Group 829. Several very small spots.
Group 830. Two small spots on September 2. These develop before September 4 into two large regular spots, with several very small spots near them.
Group 831. Two small spots. The smaller of the two disappears before September 4.
Group 832. Two very small faint spots.
Group 833. A number of spots, arranged in a straight line.
Group 834. A small spot.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1882.				°	°	°			
245d·100	J, M		0·981	237·2					65
			0·929	245·7					46
			0·816	286·5					265
		828	0·976	255·0	121·5	−12·8	48	219	
		828	0·944	254·4	114·7	−12·1	47	230	500 *c*
		830	0·414	304·5	67·7	+20·3	28	131	
		830	0·370	309·6	64·1	+20·5	25	71	
		829	0·326	268·1	65·5	+ 6·2	2	9	
		831	0·567	212·8	65·7	−21·6	16	26	
		831	0·586	203·9	61·7	−25·4	2	11	
		827	0·707	68·7	2·1	+20·1	63	262	320 *c*
		833	0·784	85·8	354·6	+ 7·8	18	68	
		833	0·837	87·0	349·5	+ 6·5	39	99	288 *p*
			0·893	124·4					179
			0·961	68·6					220
Sept. 3							(288)	(1126)	(1883)
246·041	J, M		0·909	286·0					247
		830	0·601	294·8	69·4	+20·4	79	267	
		830	0·534	298·9	63·9	+21·2	66	254	
		831	0·685	227·4	66·7	−21·5	7	20	138 *c*
		827	0·498	66·9	5·4	+17·6	0	10	
		827	0·557	64·1	1·9	+20·2	53	257	
		833	0·633	87·1	354·6	+ 7·4	15	94	552 *c*
		833	0·708	88·2	348·8	+ 6·4	30	127	
			0·825	128·2					212
			0·896	65·0					104
Sept. 4							(250)	(1029)	(1253)
246·836	J, M		0·943	286·7					159
		830	0·728	291·7	69·6	+20·6	109	516	
		830	0·664	294·0	63·9	+21·2	197	626	391 *c*
		831	0·784	234·7	66·9	−21·7	10	27	153 *s f*
		827	0·417	55·6	2·1	+20·3	67	289	
		833	0·460	88·0	356·0	+ 7·3	45	149	
		833	0·507	86·7	352·9	+ 7·9	0	19	
		833	0·554	89·0	349·8	+ 6·6	72	300	
			0·865	132·6					51
			0·949	172·2					74
			0·955	137·2					57
Sept. 5							(500)	(1926)	(885)
248·012	J, M		0·886	240·0					204
			0·795	263·0					180
			0·775	277·0					203
		830	0·892	289·9	71·9	+21·1	88	408	
		830	0·827	291·1	63·9	+21·5	88	598	791 *c*

Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1882.				°	°	°			
248d·012	J, M	827	0·252	21·6	2·4	+20·8	28	181	
		827	0·257	29·1	0·5	+20·2	10	39	
		833	0·195	86·8	356·8	+ 7·8	12	45	
		833	0·261	86·9	352·9	+ 7·9	25	95	
		833	0·324	91·6	349·2	+ 6·4	39	182	
		833	0·360	84·4	346·9	+ 8·9	0	9	
			0·787	62·7					368
			0·886	142·7					81
			0·935	74·4					372
			0·939	111·8					242
Sept. 6							(290)	(1557)	(2441)
248·898	J, M		0·944	242·9					428
			0·813	230·5					206
		830	0·966	289·7	72·8	+20·9	94	267	
		830	0·911	290·6	62·6	+21·7	155	574	378 *c*
		827	0·310	340·2	2·9	+24·0	0	9	
		827	0·255	337·1	2·4	+20·7	38	147	
		827	0·235	352·0	358·2	+20·6	0	4	
		833	0·025	306·7	357·5	+ 8·1	10	47	
		833	0·047	70·9	353·7	+ 8·1	29	101	
		833	0·129	96·7	348·9	+ 6·3	37	95	
			0·833	71·9					331
			0·885	109·7					122
Sept. 7							(363)	(1244)	(1465)
249·900	J, M		0·908	237·5					95
			0·862	278·4					348
			0·654	239·7					84
		830	0·988	289·5	65·9	+20·3	61	160	229 *c*
		830	0·976	291·5	62·2	+22·5	55	150	
		827	0·377	303·3	2·4	+18·7	0	12	
		827	0·394	308·3	2·3	+20·9	26	128	
		833	0·256	275·6	358·0	+ 8·4	11	52	
		833	0·209	276·7	355·2	+ 8·5	11	46	
		833	0·108	264·4	349·3	+ 6·6	18	65	
			0·823	51·7					107
			0·847	69·5					522
Sept. 8							(182)	(613)	(1385)
251·030	J, M		0·967	240·3					148
			0·824	247·5					386
		827	0·588	292·8	3·1	+19·1	9	27	
		827	0·588	296·3	2·4	+21·1	33	113	
		833	0·443	273·5	354·6	+ 8·0	31	138	
		835	0·963	80·8	253·0	+10·8	17	56	200 *n f*
		836	0·988	71·9	245·5	+18·9	0	27	213 *e*

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

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

Group 827. A regular spot, with some smaller spots close to it.
Group 828. Two regular spots, with a number of very small spots between them.
Group 829. Several very small spots.
Group 830. Two small spots on September 2. These develop before September 4 into two large regular spots, with several very small spots near them.
Group 831. Two small spots. The smaller of the two disappears before September 4.
Group 833. A number of spots arranged in a straight line.
Group 835. A small spot.
Group 836. A small spot.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	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).
1882.				°	°	°			
251^{d}·030	J, M		0·754	69·0					1026
			0·948	114·5					852
Sept. 9							(90)	(361)	(2825)
252·856	H, JP		0·971	255·0					334
			0·933	223·9					44
I.		827	0·847	290·0	2·1	+20·8	6	24	666 *n*
		833	0·788	274·8	356·3	+ 8·2	16	174	196 *c*
		835	0·770	81·4	253·3	+11·2	0	6	77 *c*
			0·848	123·0					1154
			0·901	68·7					575
Sept. 11							(22)	(204)	(3046)
254·044	J, M		0·962	238·8					161
			0·954	253·0					90
			0·953	292·6					562
			0·866	226·9					260
		833	0·944	276·6	359·6	+ 8·6	25	152	
		833	0·897	276·4	352·6	+ 8·9	9	97	946 *c*
		837	0·607	297·5	323·8	+22·2	11	31	192 *c*
			0·731	129·3					833
			0·740	67·2					250
			0·940	76·0					214
Sept. 12							(45)	(280)	(3508)
255·040	J, M		0·967	276·4					623
			0·913	228·0					206
		837	0·757	293·8	323·7	+22·6	14	61	
		837	0·717	296·3	319·7	+23·7	15	46	319 *c*
		838	0·960	80·6	200·8	+11·0	79	471	
		838	0·995	79·1	189·9	+11·6	0	344	564 *c*
			0·838	128·6					69
			0·842	74·9					86
Sept. 13							(108)	(922)	(1867)
256·896	J, M		0·821	292·0					162
		837	0·958	290·7	325·7	+22·0	33	123	475 *n f*
		839	0·808	247·4	300·7	−13·5	6	11	127 *f*
		838	0·756	81·3	201·3	+11·3	69	473	
		838	0·834	81·1	193·8	+11·4	30	114	
		838	0·868	81·1	190·1	+11·3	44	222	768 *c*
			0·681	13·8					346
Sept. 15							(182)	(943)	(1878)
257·729	H, JP		0·909	204·6					130
			0·880	249·4					136
I.			0·822	291·4					383
		837	0·997	290·6	327·1	+21·0	0	262	566 *n*
257^{d}·729	H, JP	840	0·963	289·6	315·4	+20·8	0	13	
		840	0·963	286·9	315·2	+18·1	0	34	154 *c*
I.		838	0·619	80·0	201·3	+11·9	97	330	134 *c*
		838	0·715	79·1	193·8	+12·8	5	120	
		838	0·758	80·0	190·1	+12·3	17	131	354 *c*
			0·715	66·5					93
			0·884	66·5					153
Sept. 16							(119)	(890)	(2105)
259·906	J, M		0·892	248·9					176
			0·870	292·7					256
			0·789	235·7					370
			0·689	279·4					58
		841	0·493	197·3	220·0	−20·9	4	12	
		842	0·510	187·7	215·2	−23·2	9	52	
		838	0·173	63·1	202·0	+11·5	92	373	
		838	0·278	71·5	195·4	+11·9	37	194	
		838	0·356	74·3	190·6	+12·2	36	136	
			0·877	100·3					411
			0·929	63·3					68
Sept. 18							(178)	(767)	(1339)
260·638	H, JP		0·907	307·2					104
			0·906	292·2					518
I.			0·866	240·5					1133
			0·820	280·5					77
		841	0·552	214·8	220·9	−20·2	0	6	
		842	0·546	202·5	214·5	−23·3	8	49	77 *c*
		838	0·072	348·7	200·6	+11·1	48	303	131 *c*
		838	0·109	37·4	197·5	+12·1	13	105	59 *c*
		838	0·153	54·3	194·1	+12·1	0	27	
		838	0·201	65·2	190·7	+11·8	14	86	
			0·801	80·0					154
			0·805	102·5					620
			0·902	57·8					595
			0·959	106·1					396
Sept. 19							(83)	(576)	(3864)
261·911	J, M		0·890	239·8					304
			0·872	290·0					206
		842	0·662	221·9	213·1	−23·2	5	23	
		838	0·307	284·0	202·1	+11·0	74	310	
		838	0·256	291·3	198·6	+12·3	20	82	
		838	0·138	306·2	191·0	+11·7	16	90	
			0·919	108·9					350
			0·956	127·7					36
Sept. 20							(115)	(505)	(896)

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

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

Group 827. A regular spot, with some smaller spots close to it.
Group 833. A number of spots arranged in a straight line.
Group 835. A small spot.
Group 837. A small spot on September 12. Three or four small spots, arranged in a straight line, on September 13.
Group 838. A large regular spot, followed by a number of smaller spots arranged in a straight line.
Group 839. A small spot.
Group 840. Two small faint spots.
Group 841. Two very small spots.
Group 842. A small regular spot.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	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).
1882.				°	°	°			
262d·785	H, JP		0·923	291·5					296
			0·889	239·3					257
I.		838	0·488	279·9	202·2	+11·0	46	307	170 *c*
		838	0·448	283·3	199·4	+12·2	7	46	
		838	0·413	282·9	197·2	+11·7	0	49	
		838	0·320	285·7	191·3	+11·7	7	68	37 *c*
		843	0·349	75·1	152·9	+11·7	0	13	35 *c*
		843	0·386	78·0	150·5	+11·1	0	5	
			0·818	112·5					264
Sept. 21							(60)	(488)	(1059)
264·085	J, K		0·934	242·2					377
		838	0·720	278·1	202·2	+10·7	56	301	
		838	0·687	280·0	199·5	+12·0	16	63	
		838	0·592	279·9	192·3	+11·5	19	60	
		844	0·433	283·2	181·3	+12·0	18	56	873 *c*
		843	0·094	25·8	153·5	+11·9	3	9	
		843	0·129	51·0	150·1	+11·6	8	30	
			0·869	73·2					134
			0·980	87·2					556
Sept. 22							(120)	(519)	(1940)
264·700	H, JP		0·948	242·0					219
			0·855	286·2					308
I.		838	0·809	278·1	202·2	+10·7	39	313	
		838	0·781	279·7	199·5	+11·9	3	47	216 *c*
		838	0·698	279·3	192·3	+11·5	12	24	
		844	0·579	281·1	183·2	+12·1	3	18	
		844	0·525	282·3	179·3	+12·4	1	10	
		843	0·130	309·6	153·6	+11·7	2	33	
		843	0·089	344·7	149·2	+11·9	10	32	
		845	0·979	69·7	68·1	+21·2	0	60	517 *c*
			0·943	88·0					522
Sept. 23							(70)	(537)	(1782)
265·714	H, JP		0 896	288·5					139
		838	0·920	279·2	202·0	+11·2	51	281	582 *c*
I.		838	0·839	278·7	191·9	+11·1	0	9	
		843	0·346	283·6	154·4	+11·1	12	43	56 *c*
		843	0·268	288·8	149·3	+11·6	11	47	
		845	0·913	70·2	67·9	+20·8	0	19	
			0·844	87·9					305
			0·924	69·4					707
Sept. 24							(74)	(399)	(1789)
267·067	J, K	838	0·989	280·0	198·9	+10·9	14	80	730 *f*
		843	0·639	279·1	156·3	+11·1	14	38	
		843	0·553	279·7	150·1	+11·1	16	57	

Greenwich Mean Solar Time.	Measurers.	No. of Group.	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).
1882.				°	°	°			
267d·067	J, K	845	0·761	68·0	67·6	+21·1	0	24	568 *f*
		846	0·943	115·7	50·9	−21·4	177	1029	
		847	0·967	72·7	40·1	+18·4	49	365	291 *c*
		848	0·993	114·5	37·2	−23·2	164	1057	867 *c*
Sept. 25							(434)	(2650)	(2456)
267·947	J, M		0·962	282·0					166
			0·753	259·0					396
		843	0·721	279·0	151·3	+11·2	25	111	316 *c*
		845	0·634	64·7	67·2	+21·1	0	17	377 *f*
		846	0·866	118·9	50·9	−20·8	208	936	
		847	0·890	72·5	41·5	+18·6	62	226	572 *f*
		848	0·955	116·2	37·1	−22·5	209	591	1238 *c*
Sept. 26							(504)	(1881)	(3065)
268·910	J, K		0·947	291·2					115
			0·905	305·7					254
			0·898	258·8					543
			0·749	245·8					85
		843	0·844	279·3	150·1	+11·5	14	66	581 *p*
		845	0·482	53·4	67·4	+22·8	0	4	
		845	0·472	57·0	67·1	+21·1	2	7	
		846	0·758	126·2	51·2	−21·4	198	923	
		847	0·777	71·4	41·3	+18·7	33	176	326 *s f*
		848	0·882	120·3	36·7	−22·7	159	595	1074 *c*
		849	0·867	86·2	31·8	+ 6·7	38	190	
		849	0·902	85·1	27·4	+ 7·4	0	13	329 *c*
Sept. 27							(444)	(1974)	(3307)
269·910	J, M		0·962	261·1					423
			0·959	279·8					587
			0·915	293·1					113
			0·809	249·9					156
		845	0·298	29·3	70·0	+21·7	8	20	
		845	0·324	36·6	67·1	+21·7	16	39	
		846	0·640	136·6	50·9	−21·7	233	949	272 *c*
		847	0·628	68·2	41·1	+18·9	37	121	162 *s f*
		848	0·774	129·4	38·2	−24·3	45	138	
		848	0·791	124·9	34·8	−22·0	78	369	737 *c*
		849	0·732	87·4	31·8	+ 6·6	89	291	
		849	0·772	85·6	28·2	+ 7·8	31	81	216 *c*
			0·759	54·1					288
			0·864	111·5					182
			0·941	69·9					171
			0·961	85·0					335
Sept. 28							(537)	(2008)	(3642)

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

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

Group 838. A large regular spot, followed by a number of smaller spots arranged in a straight line.
Group 843. Several small spots, in a straight line.
Group 844. Three or four small spots, in the same straight line as 838.
Group 845. A small spot.
Group 846. A very fine large regular spot.
Group 847. Two small spots.
Group 848. A fine group of very irregular shape. The preceding spot is regular, but the following spots undergo constant change.
Group 849. An irregular spot, with several small spots close to it.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	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).
1882.				°	°	°			
270d·668	H, JP		0·992	281·1					798
			0·893	252·3					261
I.			0·881	302·1					101
		845	0·258	350·5	71·6	+21·4	3	9	
		845	0·262	8·7	66·6	+21·7	10	38	
		846	0·555	148·0	50·6	−21·7	165	928	169 *c*
		847	0·501	62·8	41·0	+19·2	18	115	56 *c*
		848	0·690	136·7	37·8	−24·3	30	166	75 *c*
		848	0·705	130·6	33·9	−21·8	38	308	142 *c*
		849	0·599	87·7	32·1	+ 6·8	47	326	200 *c*
		849	0·652	86·0	28·2	+ 7·7	15	72	48 *c*
			0·897	68·4					243
			0·915	84·1					525
Sept. 29							(326)	(1962)	(2618)
271·905	J, M		0·962	255·1					242
		845	0·339	318·6	66·5	+21·2	6	29	
		845	0·352	322·1	66·2	+22·6	0	10	
		846	0·479	175·6	50·5	−21·7	198	1002	
		847	0·298	41·3	40·7	+19·4	19	101	
		848	0·566	155·4	37·8	−24·3	40	159	
		848	0·564	147·5	33·7	−22·0	93	395	
		849	0·345	88·0	32·5	+ 7·0	75	355	
		849	0·413	86·4	28·2	+ 7·6	10	31	
		850	0·931	85·6	343·8	+ 6·6	6	44	748 *p*
			0·801	65·0					84
Sept. 30							(447)	(2126)	(1074)
272·991	J, M		0·844	286·7					186
		845	0·517	300·3	66·8	+20·9	14	43	
		846	0·513	202·4	50·5	−21·7	239	993	
		847	0·233	350·4	40·8	+19·8	15	93	
		848	0·515	178·9	37·8	−24·2	37	163	
		848	0·489	171·4	33·9	−22·2	103	434	
		849	0·099	81·2	32·7	+ 7·4	109	472	
		850	0·770	86·8	347·9	+ 6·7	3	16	634 *c*
			0·962	67·6					317
Oct. 1							(520)	(2214)	(1137)
274·060	J, M		0·812	269·8					293
		845	0·687	293·8	66·3	+21·0	2	11	431 *c*
		846	0·617	221·1	50·0	−21·7	273	1046	583 *c*
		847	0·356	312·5	40·4	+20·3	17	64	
		848	0·551	202·0	37·2	−24·2	42	163	
		848	0·508	197·1	33·5	−22·4	75	371	
		849	0·149	279·9	32·7	+ 8·0	89	418	
1882.				°	°	°			
274d·060	J, M	850	0·585	87·8	348·3	+ 6·6	10	28	274 *f*
			0·887	67·6					356
Oct. 2							(508)	(2101)	(1937)
274·899	J, M		0·925	271·5					245
			0·778	292·2					398
		846	0·716	230·7	49·7	−21·7	290	972	
		847	0·495	300·2	40·2	+20·2	16	40	
		848	0·622	216·8	37·1	−23·8	48	160	
		848	0·573	214·1	33·4	−22·2	110	377	549 *c*
		849	0·331	274·7	32·6	+ 7·7	88	384	
		850	0·404	88·2	349·3	+ 6·7	11	39	
		851	0·779	65·9	323·0	+22·7	3	23	232 *c*
			0·869	76·8					139
			0·940	114·7					575
			0·955	64·8					626
Oct. 3							(566)	(1995)	(2764)
275·645	H, JP		0·969	272·3					256
			0·874	290·7					468
I.			0·822	252·2					63
		846	0·807	240·8	51·2	−18·9	5	56	
		846	0·801	236·3	49·0	−21·9	200	967	354 *c*
		847	0·619	294·3	40·0	+20·0	5	18	
		848	0·704	225·7	36·6	−24·0	24	149	
		848	0·658	224·2	32·9	−22·4	39	340	96 *c*
		849	0·483	274·0	32·2	+ 7·6	48	318	113 *c*
		852	0·422	198·4	11·3	−17·1	0	10	
		852	0·419	191·0	8·1	−17·7	0	8	
		850	0·234	88·6	349·7	+ 6·7	7	15	
		853	0·408	86·5	339·2	+ 7·4	2	14	
		851	0·670	63·0	323·2	+22·7	2	8	
			0·875	115·3					82
			0·924	66·9					203
			0·931	147·1					87
			0·982	81·5					146
Oct. 4							(332)	(1903)	(1868)
276·785	H, JP		0·942	292·7					583
		846	0·915	242·3	49·0	−22·2	201	1015	492 *c*
I.		847	0·789	290·2	39·9	+19·8	4	16	
		848	0·831	235·2	36·4	−24·1	27	168	433 *c*
		848	0·794	235·4	33·0	−22·3	28	230	
		849	0·693	273·5	32·2	+ 7·1	29	222	
		852	0·561	224·1	12·3	−17·9	1	17	
		852	0·523	218·4	8·1	−18·1	0	9	
		850	0·033	270·0	350·1	+ 6·4	5	12	

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

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

Group 845. A small spot.
Group 846. A very fine large regular spot.
Group 847. Two small spots.
Group 848. A fine group of very irregular shape. The preceding spot is regular, but the following spots undergo constant change.
Group 849. An irregular spot, with several small spots close to it.
Group 850. A small spot.
Group 851. A very small faint spot.
Group 852. Two small spots.
Group 853. A small spot. Other spots appear on October 5, forming a group of small spots, arranged in a straight line.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1882.				°	°	°			
276d·785	H, JP	853	0·108	86·0	342·0	+ 6·8	0	15	
		853	0·168	83·9	338·5	+ 7·4	7	31	
I.		851	0·491	56·8	322·1	+21·3	0	6	
		854	0·885	83·9	285·6	+ 8·4	0	10	182 *f*
			0·868	65·8					112
			0·903	106·3					111
Oct. 5							(302)	(1751)	(1913)
277·646	H, JP		0·986	294·1					411
			0·872	287·0					245
I.		846	0·971	245·3	48·9	−22·1	307	990	718 *c*
		848	0·891	240·2	33·7	−22·8	50	312	687 *c*
		849	0·826	274·0	32·8	+ 6·9	10	103	275 *c*
		850	0·238	270·8	350·7	+ 6·4	7	23	
		853	0·099	276·0	342·6	+ 7·0	0	27	
		853	0·037	312·1	338·5	+ 7·8	20	54	
		851	0·349	41·8	322·5	+21·2	0	5	
		854	0·770	84·5	286·7	+ 5·7	0	8	71 *f*
			0·783	65·0					64
			0·924	109·8					135
Oct. 6							(394)	(1522)	(2606)
279·037	J, K	848	0·990	244·3	36·5	−24·3	0	166	
		848	0·981	246·8	33·7	−21·2	0	61	495 *f*
		849	0·965	274·9	33·7	+ 6·4	27	118	399 *f*
		850	0·538	272·1	351·2	+ 6·5	4	14	
		853	0·429	273·3	344·1	+ 7·1	0	4	
		853	0·335	276·3	338·2	+ 8·0	12	55	
			0·833	242·7					105
			0·872	119·0					323
			0·973	287·6					196
Oct. 7							(43)	(418)	(1518)
279·964	J, K		0·922	247·4					230
			0·867	292·5					221
			0·834	276·8					445
		853	0·527	275·7	338·2	+ 8·3	16	50	129 *c*
			0·765	61·8					162
			0·846	122·5					898
			0·893	69·2					157
Oct. 8							(16)	(50)	(2242)
280·898	J, M		0·976	248·6					243
			0·940	292·8					210
			0·893	276·7					639
			0·828	236·2					92

Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1882.				°	°	°			
280d·898	J, M		0·824	299·3					120
		853	0·685	275·2	337·4	+ 8·1	5	26	88 *c*
			0·807	68·0					171
			0·880	121·9					346
			0·949	76·6					163
Oct. 9							(5)	(26)	(2072)
281·671	H, JP		0·943	276·2					590
			0·939	295·8					257
I.		855	0·584	291·0	318·4	+17·1	0	11	
		856	0·983	78·4	203·6	+12·5	45	261	434 *c*
			0·885	76·7					411
			0·755	134·9					91
			0·925	121·4					73
Oct. 10							(45)	(272)	(1856)
282·657	H, JP		0·966	243·4					63
			0·939	275·7					239
I.		855	0·762	286·2	320·3	+16·2	0	7	185 *n*
		856	0·916	79·1	204·1	+12·4	27	169	725 *n f*
			0·874	59·3					45
Oct. 11							(27)	(176)	(1257)
283·652	H, JP		0·986	276·5					162
		855	0·895	284·5	321·4	+15·6	0	9	
I.		855	0·860	286·6	317·1	+17·3	3	9	710 *n*
		856	0·807	78·9	203·6	+12·4	26	204	251 *c*
			0·874	76·9					488
			0·977	62·5					220
Oct. 12							(29)	(222)	(1831)
284·924	K, M		0·978	285·7					186
			0·833	242·2					149
			0·789	292·8					319
		856	0·609	77·0	203·6	+12·6	60	201	110 *c*
		857	0·960	75·0	166·4	+16·0	0	123	627 *c*
		857	0·983	75·0	160·5	+15·8	0	122	
		857	0·986	71·6	159·3	+19·1	56	242	
			0·757	76·1					300
			0·887	61·6					129
Oct. 13							(116)	(688)	(1820)
285·785	H, JP		0·946	244·4					109
			0·929	256·5					85
I.			0·881	295·7					509
			0·831	278·8					64
		856	0·463	74·0	202·6	+12·5	26	189	117 *c*

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

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

Group 846. A very fine large regular spot.

Group 848. A fine group of very irregular shape. The preceding spot is regular, but the following spots undergo constant change.

Group 849. An irregular spot, with several small spots close to it.

Group 850. A small spot.

Group 851. A very small faint spot.

Group 853. A small spot. Other spots appear on October 5, forming a group of small spots, arranged in a straight line.

Group 854. A very small spot.

Group 855. One or two small faint spots.

Group 856. A regular spot.

Group 857. A very fine extensive group, composed of a great number of small spots. The group undergoes great and frequent changes.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1882.				°	°	°			
285d·785	H, JP	857	0·898	75·3	165·4	+15·7	9	64	
		857	0·933	74·8	160·2	+16·3	13	84	
I.		857	0·939	71·5	159·2	+19·3	41	471	1263 *c*
			0·814	61·6					211
			0·942	100·1					240
Oct. 14							(89)	(808)	(2598)
286·717	F, JP		0·913	258·2					135
			0·907	297·4					300
I.			0·887	239·9					231
		856	0·264	63·1	203·4	+12·4	31	173	
		857	0·778	75·0	166·3	+15·3	21	69	
		857	0·798	70·7	164·8	+18·8	27	112	
		857	0·828	73·6	161·5	+16·8	0	81	
		857	0·861	70·6	158·0	+19·6	11	195	1389 *c*
Oct. 15							(90)	(630)	(2055)
287·691	F, JP		0·976	259·6					197
			0·937	250·8					283
I.			0·867	296·9					254
			0·852	235·8					257
		856	0·119	10·5	203·0	+12·4	27	180	
		858	0·203	56·1	194·4	+12·1	0	55	
		859	0·218	43·4	195·4	+14·7	0	16	
		859	0·259	48·6	192·7	+15·4	0	34	
		857	0·627	72·7	166·1	+15·3	10	37	
		857	0·655	67·3	164·7	+19·0	23	89	
		857	0·678	71·5	162·3	+16·6	2	86	
		857	0·720	68·2	159·3	+19·5	5	143	
		857	0·718	70·7	159·1	+17·7	0	40	
		857	0·762	68·3	155·6	+20·1	2	47	1096 *c*
			0·934	85·6					220
Oct. 16							(69)	(727)	(2307)
288·823	F, JP		0·928	241·6					307
		856	0·257	297·6	202·9	+12·3	31	169	82 *c*
I.		858	0·157	311·0	196·4	+11·4	1	5	
		858	0·135	328·8	193·6	+12·2	8	14	
		859	0·200	327·1	195·9	+15·2	8	56	
		859	0·166	343·8	192·2	+14·7	0	11	
		857	0·423	65·1	166·2	+15·4	7	30	31 *c*
		857	0·449	57·3	166·0	+19·1	29	98	53 *c*
		857	0·475	65·8	162·8	+16·2	20	78	
		857	0·543	63·0	158·9	+19·0	35	203	
			0·887	57·4					111
			0·909	71·8					85
Oct. 17							(139)	(664)	(669)

Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1882.				°	°	°			
289d·836	H, JP		0·949	214·9					63
			0·927	292·8					110
I.			0·924	246·3					268
			0·922	236·2					112
		860	0·701	231·3	212·0	−21·5	0	13	39 *c*
		856	0·458	287·1	202·6	+12·6	29	160	
		861	0·439	294·2	200·5	+15·3	14	77	
		858	0·318	291·9	193·6	+12·1	0	3	
		859	0·339	299·9	194·3	+15·0	18	37	
		857	0·267	29·4	168·2	+18·9	24	173	
		857	0·317	35·8	164·8	+20·3	16	91	
		857	0·267	47·2	164·4	+15·8	15	95	
		857	0·371	50·0	158·7	+19·0	30	314	
			0·827	54·8					106
Oct. 18							(146)	(963)	(698)
290·809	H, JP		0·974	247·4					120
			0·967	238·6					154
I.			0·883	285·1					109
		860	0·843	239·6	214·7	−21·9	0	6	230 *f*
		856	0·640	283·1	202·8	+12·6	24	168	83 *c*
		861	0·624	288·0	201·1	+15·4	20	138	102 *c*
		859	0·577	291·0	197·3	+16·4	4	15	
		859	0·521	290·8	193·5	+15·3	4	31	
		862	0·119	324·2	167·3	+10·9	8	30	
		857	0·246	337·1	169·1	+18·4	24	154	
		857	0·262	351·5	165·7	+20·4	18	175	
		857	0·184	352·8	164·7	+15·9	12	41	
		857	0·246	18·4	158·6	+18·8	31	266	
		863	0·601	155·7	147·1	−27·9	2	7	
			0·948	63·2					123
			0·964	84·6					176
Oct. 19							(147)	(1031)	(1097)
291·991	K, M		0·921	245·5					159
			0·919	227·6					114
		856	0·826	281·2	202·4	+12·3	49	183	
		861	0·821	284·6	201·7	+15·0	62	243	
		859	0·748	286·1	194·7	+15·6	6	56	806 *c*
		862	0·420	284·7	170·9	+11·1	27	83	
		862	0·375	286·8	168·0	+11·2	9	54	
		862	0·316	286·4	164·5	+10·2	40	184	
		857	0·434	303·1	169·1	+18·7	36	169	
		857	0·395	300·4	167·3	+16·6	0	10	
		857	0·354	302·0	164·7	+15·9	21	43	
		857	0·370	313·7	163·1	+20·0	15	48	
		857	0·317	310·6	161·1	+17·1	0	12	

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

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

Group 856. A regular spot.

Group 857. A very fine extensive group, composed of a great number of small spots. The group undergoes great and frequent changes.

Group 858. Two small spots.

Group 859. Four or five small spots, arranged in a straight line.

Group 860. A very small spot.

Group 861. An irregular spot, with two or three small spots close to it.

Group 862. An irregular group, undergoing several changes. On October 21 it consists of two principal spots and a number of small spots arranged in a straight line. The small spots disappear before October 22.

Group 863. Two very small spots.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.	Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).						Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1882.				°	°	°				1882.				°	°	°			
291d·991	K, M	857	0·330	322·6	158·9	+20·4	43	181		294d·135	K, M	866	0·281	300·9	133·7	+13·2	0	8	
		857	0·340	330·5	157·0	+22·5	0	20				864	0·265	343·1	124·1	+19·7	65	402	
		857	0·267	321·6	156·6	+17·4	15	30				867	0·742	69·0	72·5	+18·9	0	6	
		863	0·550	175·3	144·9	−27·7	0	8				868	0·982	114·0	43·6	−22·4	389	1318	925 *p*
		864	0·493	56·9	120·6	+20·4	3	20					0·880	62·7					307
			0·845	62·8					123	Oct. 22							(528)	(2679)	(3121)
			0·879	87·6					112										
			0·960	73·7					117										
Oct. 20							(326)	(1344)	(1431)	295·025	K, M		0·786	257·9					190
												862	0·910	280·1	173·5	+11·3	18	50	
												862	0·860	279·3	167·2	+10·6	15	69	
292·696	M, JH		0·967	245·4					439			857	0·890	288·5	170·5	+18·7	77	210	
			0·913	252·7					66			857	0·850	285·9	165·8	+16·1	7	16	1702 *n f*
I.		861	0·904	284·1	203·3	+15·0	38	183				866	0·469	288·0	134·8	+12·8	19	70	
		861	0·883	284·0	200·6	+14·8	0	5				865	0·495	243·4	134·2	− 8·3	0	4	
		856	0·902	281·1	203·1	+12·3	36	145				865	0·453	247·3	132·4	− 5·5	0	5	
		859	0·497	283·3	197·9	+11·1	0	10	} 786 *c*			864	0·414	310·4	127·2	+20·2	125	490	
		859	0·850	283·6	196·7	+14·3	0	8				864	0·352	318·2	122·1	+20·0	84	396	
		859	0·838	286·0	195·2	+16·2	0	7				868	0·929	116·7	44·0	−22·5	319	1204	962 *c*
		862	0·551	281·2	171·6	+10·5	20	99					0·802	60·0					266
		862	0·534	284·7	170·2	+12·2	2	5					0·937	84·4					89
		862	0·463	281·5	165·7	+ 9·9	47	214		Oct. 23							(664)	(2514)	(3209)
		862	0·429	288·5	162·9	+12·6	0	4											
		857	0·557	296·1	170·1	+18·6	26	151		295·657	H, JH		0·872	259·9					274
		857	0·535	292·8	169·2	+16·5	0	12				862	0·954	279·8	172·3	+10·9	8	43	} 2006 *c*
		857	0·553	306·5	167·3	+23·7	1	8		I.		862	0·920	279·2	166·6	+10·4	0	30	
		857	0·482	293·8	165·6	+15·9	9	19				857	0·941	287·8	169·9	+18·4	30	153	
		857	0·482	299·0	164·6	+18·1	0	10				857	0·915	289·7	165·7	+20·1	12	57	
		857	0·442	297·0	162·5	+16·3	0	5				857	0·912	285·5	165·4	+16·2	9	15	
		857	0·428	308·0	159·3	+20·1	15	101				866	0·605	282·6	136·4	+11·6	11	18	
		857	0·431	313·4	158·1	+22·1	2	21				866	0·565	286·4	133·1	+13·3	8	18	
		857	0·377	303·3	157·5	+16·8	3	18				864	0·523	301·6	127·6	+20·3	48	362	198 *c*
		857	0·386	317·8	154·5	+21·6	0	9				864	0·465	302·1	123·9	+18·8	27	193	
		864	0·364	45·4	122·5	+19·7	32	137				864	0·437	308·3	120·8	+20·3	17	210	
			0·738	59·1					53			864	0·427	313·9	118·7	+21·9	3	27	289 *c*
			0·950	68·2					605			868	0·871	118·9	44·3	−22·0	156	1012	1474 *c*
Oct. 21							(231)	(1171)	(1949)				0·792	58·3					81
													0·881	69·5					119
294·135	K, M		0·974	255·1					36				0·885	85·0					263
		861	0·997	284·3	205·7	+14·6	0	303					0·973	119·4					744
		856	0·994	282·2	203·9	+12·7	0	214		Oct. 24							(329)	(2138)	(5448)
		859	0·961	278·6	193·8	+ 9·7	4	43	900 *f*										
		862	0·804	280·2	173·0	+11·2	13	60		296·991	K, M		0·967	290·6					568
		862	0·732	279·7	166·4	+10·6	15	95					0·841	267·7					21
		857	0·784	290·2	170·3	+18·9	29	164				866	0·830	278·6	137·9	+ 9·8	5	27	173 *c*
		857	0·731	287·3	165·8	+16·1	7	15				865	0·829	255·9	135·9	− 8·9	0	40	233 *f*
		857	0·700	293·0	162·4	+19·7	6	46	953 *c*			864	0·739	292·3	128·1	+19·7	80	327	
		865	0·338	229·8	134·4	− 7·6	0	5				864	0·620	294·1	118·2	+18·5	113	667	

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

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

Group 856. A regular spot.

Group 857. A very fine extensive group, composed of a great number of small spots. The group undergoes great and frequent changes.

Group 859. Four or five small spots, arranged in a straight line.

Group 861. An irregular spot, with two or three small spots close to it.

Group 862. An irregular group, undergoing several changes. On October 21 it consists of two principal spots and a number of small spots, arranged in a straight line. The small spots disappear before October 22.

Group 863. Two very small spots.

Group 864. A rectangular group of small spots on October 22. The group greatly increases in size on the following days, and on October 25 and 26 consists almost entirely of two large spots.

Group 865. A small spot.

Group 866. Two very small spots.

Group 867. A very small faint spot.

Group 868. A very fine large regular spot.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1882.				°	°	°			
96·991	K, M	868	0·725	127·5	43·4	−22·4	216	1071	845 *f*
			0·939	82·6					131
			0·982	104·5					167
Oct. 25							(414)	(2132)	(2138)
298·035	K, M		0·926	251·7					71
			0·728	338·7					75
		866	0·948	279·0	139·7	+10·0	0	13	109 *nf*
		865	0·948	259·2	138·2	− 8·7	0	25	294 *f*
		864	0·840	290·3	124·5	+19·6	269	1101	680 *c*
		869	0·676	286·4	109·9	+14·6	9	46	53 *c*
		868	0·593	139·4	43·4	−22·4	218	1013	552 *f*
			0·836	82·6					150
			0·920	67·2					100
			0·923	108·8					225
Oct. 26							(496)	(2198)	(2309)
298·807	H, JH		0·980	281·9					388
		865	0·967	260·2	131·9	− 8·2	2	29	710 *sp*
I.		864	0·940	289·3	128·0	+19·7	62	426	
		864	0·901	289·4	121·9	+19·5	86	414	1305 *c*
		869	0·825	283·6	113·3	+13·9	12	24	97 *c*
		869	0·768	284·8	107·7	+14·4	6	10	
		868	0·506	153·4	43·7	−22·2	173	999	367 *c*
		870	0·992	74·2	334·2	+16·3	39	403	482 *c*
			0·680	143·4					343
			0·832	112·2					402
			0·963	105·9					94
Oct. 27							(380)	(2305)	(4188)
299·671	H, JH	864	0·989	289·3	128·8	+19·8	70	477	
		864	0·968	288·6	122·3	+19·1	65	551	1577 *c*
I.		869	0·874	283·6	107·3	+14·1	0	14	
		868	0·456	172·7	42·8	−22·2	155	948	311 *c*
		870	0·946	74·6	335·1	+16·0	46	311	1343 *c*
		870	0·970	76·1	330·0	+14·6	22	277	
		870	0·990	73·3	323·8	+17·2	0	211	
			0·896	123·1					75
			0·897	108·1					93
Oct. 28							(358)	(2789)	(3399)
301·058	K, M		0·856	271·9					59
		868	0·508	207·6	42·8	−22·3	247	1131	
		871	0·454	132·5	8·0	−13·6	6	33	
		870	0·801	73·3	335·3	+16·0	126	372	
		870	0·849	75·7	330·1	+14·6	89	400	
		870	0·896	73·7	324·5	+16·6	69	308	517 *c*
Oct. 29							(537)	(2244)	(576)
1882.									
301^{d}·654	M, JH		0·931	272·6	*				64
		868	0·568	218·5	42·6	−22·2	186	1005	
I.		871	0·364	150·5	9·6	−14·1	3	8	
		872	0·480	149·3	5·1	−20·1	1	4	
		870	0·716	72·1	335·3	+15·9	57	297	167 *c*
		870	0·777	73·8	329·7	+15·4	27	221	207 *c*
		870	0·827	72·8	324·9	+16·6	26	169	683 *f*
Oct. 30							(300)	(1704)	(1121)
302·902	K, M		0·869	296·3					239
		868	0·731	233·0	42·9	−22·7	237	1112	1050 *np*
		872	0·411	182·9	5·1	−19·9	5	18	
		873	0·642	131·9	333·0	−21·6	15	48	
		870	0·509	65·5	335·1	+16·0	78	309	
		870	0·582	70·4	329·4	+14·8	34	199	
		870	0·648	69·0	324·8	+16·8	39	142	758 *f*
			0·901	114·8					131
Oct. 31							(408)	(1828)	(2187)
304·123	K, M	868	0·867	240·7	42·6	−22·8	244	954	1267 *sf*
		872	0·525	219·5	8·4	−20·0	9	25	
		872	0·474	213·7	3·8	−19·3	10	63	
		874	0·375	310·8	5·0	+18·0	12	76	
		874	0·337	324·4	359·7	+19·8	19	101	
		873	0·481	153·8	334·6	−21·6	0	11	
		870	0·299	47·1	334·6	+15·6	68	259	
		870	0·342	56·6	330·6	+14·7	8	61	
		870	0·440	58·3	324·8	+17·1	17	55	
			0·816	118·9					200
			0·838	63·3					536
			0·903	100·4					363
Nov. 1							(387)	(1605)	(2366)
304·947	K, M		0·839	279·4					270
		868	0·939	244·3	43·0	−22·4	189	879	1424 *sf*
		871	0·570	239·9	7·2	−13·0	0	12	
		872	0·646	232·1	9·6	−19·8	11	21	
		872	0·581	227·8	3·9	−19·3	13	93	
		874	0·517	299·3	5·1	+18·2	23	125	
		874	0·447	309·2	358·5	+20·2	22	134	
		873	0·433	175·2	334·7	−21·4	0	4	
		870	0·210	12·6	334·2	+15·9	59	242	
		870	0·221	37·6	328·9	+14·1	3	19	
		870	0·307	42·0	324·5	+17·2	16	38	
			0·825	60·9					76
			0·833	101·7					350
Nov. 2							(336)	(1567)	(2120)

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

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

Group 864. A rectangular group of small spots on October 22. The group greatly increases in size on the following days, and on October 25 and 26 consists almost entirely of two large spots.

Group 865. One or two small spots.

Group 866. Two very small spots.

Group 868. A very fine large regular spot.

Group 869. Two small spots.

Group 870. A large regular spot, followed by two clusters of small spots. The small spots disappear before November 4.

Group 871. Three very small spots. Two of these disappear before October 30. The group is not seen on October 31 and November 1.

Group 872. Several small spots in a straight line.

Group 873. A very small spot.

Group 874. A number of spots in a straight line. The middle spots disappear, and the spots at the beginning and end of the line coalesce to form two spots before November 3.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	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).
1882.				°	°	°			
305d·902	K, M		0·818	279·9					135
		868	0·986	246·5	41·9	−22·4	0	741	1234 *s f*
		872	0·736	238·8	5·9	−19·5	30	153	408 *c*
		874	0·684	292·7	5·7	+18·2	49	200	
		874	0·597	299·0	357·8	+20·1	15	152	
		870	0·272	321·5	334·3	+16·1	43	230	
		870	0·197	333·2	329·4	+14·0	2	8	
		870	0·235	358·8	324·5	+17·4	0	5	
Nov. 3							(139)	(1489)	(1777)
306·913	K, M		0·975	239·7					482
			0·908	279·6					107
		872	0·889	245·5	9·9	−19·7	21	124	
		872	0·830	243·7	2·7	−19·2	12	116	399 *c*
		874	0·828	290·2	5·9	+18·8	43	174	
		874	0·742	294·1	356·9	+20·3	16	117	451 *c*
		875	0·589	247·3	344·2	− 9·9	8	37	
		870	0·436	299·8	334·0	+16·0	39	225	
		870	0·295	310·3	324·3	+14·7	0	5	
		876	0·963	111·7	239·2	−19·7	120	630	
		876	0·991	110·2	230·7	−19·4	0	533	459 *n p*
			0·838	122·1					116
			0·993	62·4					110
Nov. 4							(259)	(1961)	(2124)
307·680	M, H		0·935	279·3					187
		872	0·952	248·3	10·1	−19·3	24	83	
I.		872	0·906	246·0	2·2	−19·8	14	125	826 *c*
		874	0·909	288·1	5·9	+18·0	42	190	468 *c*
		874	0·839	291·3	356·8	+19·8	24	71	256 *p*
		875	0·738	252·2	346·2	−10·3	23	136	
		875	0·711	253·4	344·2	− 8·9	0	15	
		875	0·689	251·8	342·2	− 9·6	17	40	263 *c*
		870	0·566	292·8	333·5	+15·9	45	231	243 *c*
		876	0·911	113·8	238·6	−19·8	106	499	702 *c*
		876	0·945	111·7	232·8	−19·0	49	315	
			0·749	126·5					139
			0·950	78·6					274
			0·968	61·4					277
Nov. 5							(344)	(1705)	(3635)
308·912	K, M		0·899	299·3					79
		874	0·990	288·2	6·7	+18·5	0	102	
		874	0·955	289·9	357·2	+20·1	0	23	296 *c*
		872	9·978	248·7	0·1	−20·0	4	48	466 *c*
		875	0·881	257·0	344·8	− 9·6	71	336	311 *c*
		870	0·765	288·4	333·4	+16·3	49	228	379 *c*

Greenwich Mean Solar Time.	Measurers.	No. of Group.	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).
				°	°	°			
1882.									
308d·912	K, M	876	0·780	119·2	238·3	−19·8	98	569	
		876	0·838	116·1	231·8	−19·4	21	293	348 *c*
		877	0·951	116·4	216·2	−23·7	18	120	
		877	0·964	112·8	212·8	−20·8	0	41	161 *c*
		878	0·969	75·3	208·6	+15·1	7	26	414 *p*
			0·894	60·3					177
			0·922	70·2					68
			0·935	104·3					120
Nov. 6							(268)	(1786)	(2819)
309·674	H, JH		0·981	293·7					338
I.		875	0·965	258·5	348·2	−10·2	12	99	
		875	0·933	258·1	342·2	− 9·8	0	102	819 *c*
		870	0·860	286·9	333·3	+16·3	43	209	1453 *c*
		876	0·677	124·7	238·4	−19·8	96	473	
		876	0·712	120·5	234·4	−18·5	6	119	
		876	0·771	119·9	229·3	−20·1	11	61	856 *c*
		877	0·889	118·6	216·5	−23·3	46	250	761 *c*
		877	0·919	115·6	211·5	−21·9	44	153	
		878	0·916	75·1	208·3	+15·1	11	37	1754 *f*
			0·818	57·2					272
			0·913	66·3					153
Nov. 7							(269)	(1503)	(6406)
311·063	K, M		0·988	247·4					116
		870	0·975	285·8	333·6	+16·2	21	200	1187 *f*
		876	0·492	142·9	237·9	−19·8	121	485	
		876	0·472	139·0	237·3	−17·6	47	179	
		876	0·540	135·2	232·5	−19·3	17	66	
		876	0·581	132·5	229·2	−20·0	6	41	
		879	0·455	50·3	234·4	+20·0	1	9	
		879	0·523	52·8	229·7	+21·4	0	4	
		877	0·723	126·9	217·4	−23·0	50	212	3 94 *c*
		877	0·774	121·1	211·1	−21·1	19	149	
		878	0·748	72·5	208·7	+15·3	18	43	878 *f*
			0·927	103·1					70
			0·956	136·9					97
Nov. 8							(300)	(1388)	(2742)
311·898	K, M		0·960	288·7					540
			0·761	254·4					60
		876	0·349	168·8	241·2	−16·9	16	81	
		876	0·412	163·9	238·2	−20·0	96	475	
		876	0·388	158·7	236·7	−17·8	54	274	
		876	0·462	149·1	230·6	−20·1	12	28	
		877	0·619	136·8	217·7	−23·8	43	276	
		877	0·659	127·9	211·5	−21·1	21	109	

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

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

Group 868. A very fine large regular spot.
Group 870. A large regular spot, followed by two clusters of small spots. The small spots disappear before November 4.
Group 872. Several small spots in a straight line.
Group 874. A number of spots in a straight line. The centre spots disappear, and the spots at the beginning and end of the line coalesce to form two spots before November 3.
Group 875. Several small spots on November 4. On November 6 two small regular spots, with several smaller spots between them.
Group 876. A very fine spot, and a number of spots arranged in a straight line above it. These spots undergo several changes, and by November 14 only two regular spots remain. The whole group, therefore, then consists of three regular spots, one of them very large, and another large.
Group 877. A regular spot, followed by several smaller spots. Of these latter, all but one disappear before November 9, and that one disappears before November 14.
Group 878. Several small spots.
Group 879. Two very small faint spots.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	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).
1882.				°	°	°			
311d·898	K, M	878	0·616	69·6	208·6	+15·1	13	31	
		880	0·883	103·5	184·7	−10·3	3	9	216 *f*
			0·731	75·6					476
			0·863	36·6					36
			0·968	72·7					604
			0·990	97·4					620
Nov. 9							(258)	(1283)	(2552)
313·075	K, M		0·850	257·6					275
			0·747	240·7					55
		876	0·407	210·5	242·1	−17·4	44	112	
		876	0·403	198·4	237·4	−19·2	181	419	
		877	0·494	158·9	218·5	−24·2	54	270	
		877	0·489	144·9	212·3	−20·4	4	41	
		878	0·406	58·7	208·7	+15·1	11	26	
		880	0·707	108·1	186·8	−10·3	0	8	53 *f*
			0·904	113·1					71
			0·911	72·3					552
			0·938	97·3					562
Nov. 10							(294)	(876)	(1568)
314·049	K, M		0·908	257·4					63
		881	0·553	306·9	245·3	+22·0	0	4	
		876	0·545	229·9	242·8	−17·8	22	102	
		876	0·505	221·5	237·6	−19·3	212	867	
		883	0·454	205·3	228·9	−21·2	6	22	
		877	0·455	183·4	218·6	−23·9	62	269	
		877	0·403	169·6	212·5	−20·3	5	26	
		878	0·251	34·1	207·8	+15·0	12	31	
		880	0·525	114·5	188·0	− 9·9	8	20	
		882	0·715	67·2	173·1	+18·3	5	20	1080 *f*
		884	0·938	98·6	148·0	− 7·0	25	89	570 *p*
			0·940	79·5					208
Nov. 11							(357)	(1450)	(1921)
314·681	H, F		0·957	297·9					137
			0·951	304·7					99
I.			0·949	258·7					140
		876	0·642	236·7	242·8	−18·1	22	109	59 *c*
		876	0·593	234·1	238·8	−17·7	0	31	198 *c*
		876	0·601	230·3	237·9	−19·9	71	415	
		876	0·561	229·4	235·2	−18·7	29	205	
		883	0·514	218·0	228·3	−21·0	0	6	
		877	0·476	199·2	218·4	−23·7	45	270	106 *c*
		877	0·415	192·0	213·9	−20·9	0	5	
		877	0·396	188·9	212·3	−20·0	0	9	
		878	0·212	359·1	208·8	+15·2	7	15	29 *c*
1882.									
314d·681	H, F	878	0·122	22·1	207·9	+ 9·5	0	4	
		882	0·612	61·6	174·0	+19·3	0	12	
I.		884	0·877	99·1	148·2	− 6·5	8	37	76 *s f*
		885	0·997	69·8	122·6	+20·4	0	500	1256 *c*
			0·809	96·8					270
			0·863	62·2					217
			0·889	78·5					271
			0·957	99·7					91
Nov. 12							(182)	(1618)	(2949)
315·657	H, F		0·939	243·0					111
		876	0·782	244·4	243·3	−17·7	14	105	98 *c*
I.		876	0·735	239·9	237·9	−19·5	74	393	
		876	0·700	240·1	235·2	−18·1	28	209	192 *c*
		877	0·562	219·2	218·3	−23·0	38	229	97 *c*
		877	0·468	215·9	212·5	−19·4	0	9	
		877	0·437	221·5	213·2	−16·3	0	3	
		878	0·304	315·0	208·5	+15·2	3	11	
		878	0·243	316·9	205·5	+13·0	0	6	
		878	0·215	298·9	206·6	+ 8·8	0	6	
		878	0·189	308·2	204·3	+ 9·6	0	4	
		884	0·745	102·1	148·7	− 7·0	11	59	62 *c*
		885	0·961	70·5	121·9	+19·5	422	1433	1318 *c*
			0·762	76·7					136
			0·869	103·2					70
			0·945	105·0					42
Nov. 13							(590)	(2467)	(2126)
316·663	H, F		0·947	298·3					49
			0·944	249·6					106
I.			0·892	293·4					68
			0·792	234·3					84
		876	0·901	248·3	243·9	−18·1	12	75	
		876	0·859	244·8	238·0	−20·0	54	431	
		876	0·831	245·5	235·1	−18·5	11	204	543 *c*
		877	0·698	230·6	218·4	−24·0	43	232	84 *c*
		878	0·480	296·5	208·7	+14·7	2	8	
		886	0·239	305·3	193·8	+10·6	0	2	
		884	0·576	106·6	148·7	− 7·2	9	66	41 *c*
		885	0·880	69·7	121·8	+19·1	468	1761	673 *c*
			0·901	145·2					24
Nov. 14							(599)	(2779)	(1672)
317·655	M, F		0·925	292·0					100
			0·922	236·7					131
I.		876	0·942	247·6	237·9	−20·1	80	335	
		876	0·926	248·9	234·6	−18·4	27	150	1450 *c*

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

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

Group 876. A very fine spot, and a number of spots arranged in a straight line above it. These spots undergo several changes, and by November 14 only two regular spots remain. The whole group, therefore, then consists of three regular spots, one of them very large, and another large.

Group 877. A regular spot, followed by several smaller spots. Of these latter, all but one disappear before November 9, and that one disappears before November 14.

Group 878. Several small spots.

Group 880. A small spot.

Group 881. A very small faint spot.

Group 882. Two small spots. The group is not seen on November 10.

Group 883. A small spot.

Group 884. A small regular spot.

Group 885. A very fine large spot. On November 18 a large portion becomes detached from the principal spot. Smaller portions become detached on the following days.

Group 886. A small faint spot.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	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).
1882.				°	°	°			
317d·655	M, F	877	0·815	237·8	218·2	−24·0	27	188	229 *e*
		887	0·297	342·3	174·8	+18·9	4	23	
I.		887	0·278	346·2	173·3	+18·3	0	5	
		884	0·387	116·4	148·9	− 7·4	10	57	
		885	0·696	77·6	125·7	+10·5	0	5	
		885	0·761	66·8	121·7	+19·2	515	2003	390 *e*
			0·832	60·7					330
			0·923	52·7					50
			0·983	97·3					62
Nov. 15							(663)	(2766)	(2742)
318·647	M, H		0·932	299·3					190
			0·861	243·0					403
I.		876	0·993	249·5	237·9	−20·0	41	238	
		876	0·984	250·9	234·3	−18·3	11	93	576 *s f*
		877	0·912	242·1	218·1	−24·1	28	146	199 *e*
		887	0·419	313·4	175·0	+19·0	4	18	
		884	0·212	145·4	149·4	− 7·5	10	45	
		885	0·613	61·2	121·8	+19·2	497	2249	
		888	0·927	97·6	89·0	− 6·0	10	49	319 *e*
		889	0·959	79·1	82·8	+11·2	27	150	439 *f*
			0·879	81·8					145
Nov. 16							(628)	(2988)	(2271)
319·777	M, H		0·891	284·2					1118
			0·780	294·0					289
I.		877	0·979	244·4	216·9	−24·4	17	100	525 *f*
		887	0·583	300·6	173·3	+19·2	3	35	
		884	0·213	213·6	148·1	− 7·8	10	44	39 *e*
		885	0·450	49·6	120·1	+19·1	404	2352	
		888	0·806	99·7	88·5	− 6·3	11	104	175 *e*
		889	0·867	78·8	81·5	+10·9	18	136	504 *f*
			0·986	109·3					255
Nov. 17							(463)	(2771)	(2905)
320·985	K, M		0·930	286·3					38
			0·691	242·5					168
			0·688	276·7					181
			0·676	256·0					338
		887	0·798	292·5	176·5	+19·1	39	122	
		887	0·753	292·8	172·2	+18·4	15	50	483 *e*
		884	0·437	247·8	149·4	− 7·4	19	57	
		885	0·150	347·4	127·3	+10·6	0	8	
		885	0·295	14·0	121·1	+18·8	733	2417	
		888	0·549	105·5	93·4	− 6·6	19	61	
		888	0·617	102·3	88·3	− 5·8	20	76	
1882.				°	°	°			
320d·985	K, M	889	0·684	76·5	83·0	+10·8	50	146	312 *f*
			0·842	178·0					34
			0·863	44·2					100
			0·888	63·4					438
			0·912	110·3					559
			0·913	28·5					35
Nov. 18							(895)	(2937)	(2686)
322·090	K, M		0·788	260·2					182
		887	0·922	290·0	177·1	+19·2	0	124	581 *s f*
		884	0·648	256·0	150·0	− 7·4	20	38	
		885	0·306	292·2	127·4	+ 8·6	0	16	
		885	0·332	329·4	121·0	+18·6	492	2008	
		885	0·347	343·7	116·8	+21·4	96	377	
		888	0·325	120·9	94·5	− 7·5	14	32	
		888	0·410	111·5	88·3	− 6·7	19	40	
		889	0·487	73·2	82·7	+ 9·9	31	123	
		890	0·964	114·3	38·8	−22·7	135	649	456 *p*
			0·781	60·2					140
Nov. 19							(807)	(3407)	(1359)
322·939	K, M		0·923	248·3					79
			0·884	262·3					276
		887	0·976	289·4	176·9	+19·4	24	99	472 *n f*
		885	0·527	303·1	127·3	+18·4	3	7	
		885	0·450	310·4	120·8	+18·7	309	1673	
		885	0·486	317·9	120·3	+23·0	0	47	
		885	0·440	320·9	117·0	+21·8	33	188	
		885	0·405	319·7	115·8	+19·8	0	19	
		888	0·186	154·8	95·1	− 7·7	0	11	
		888	0·251	127·3	88·2	− 6·7	6	27	
		889	0·321	62·8	82·9	+10·3	23	96	
		890	0·901	116·2	38·9	−22·5	80	517	619 *e*
			0·613	121·4					162
			0·784	171·6					173
			0·845	83·6					83
Nov. 20							(478)	(2684)	(1864)
324·025	K, M	885	0·627	298·6	120·8	+19·0	229	1583	
		885	0·591	306·0	116·3	+21·9	33	136	
		888	0·244	228·0	95·9	− 7·5	0	11	
		888	0·158	199·2	88·4	− 6·6	0	27	
		889	0·157	15·6	82·9	+10·6	14	55	
		890	0·794	120·6	37·9	−22·5	73	308	290 *s f*
			0·975	110·0					340
Nov. 21							(349)	(2120)	(630)

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

Group 876. A very fine spot, and a number of spots arranged in a straight line above it. These spots undergo several changes, and by November 14 only two regular spots remain. The whole group, therefore, then consists of three regular spots, one of them very large, and another large.

Group 877. A regular spot, followed by several smaller spots. Of these latter, all but one disappear before November 9, and that one disappears before November 14.

Group 884. A small regular spot.

Group 885. A very fine large spot. On November 18 a large portion becomes detached from the principal spot. Smaller portions become detached on the following days.

Group 887. Several small faint spots. The preceding spot becomes larger and darker by November 19, and the other spots disappear.

Group 888. Two small spots.

Group 889. A regular spot.

Group 890. Two regular spots close together. The preceding spot shows a tendency to break up, and several small spots form round the group on November 25 and following days. The smaller spots disappear before December 1, leaving only the second of the two original spots.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	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).
1882.				°	°	°			
324d·834	M, H		0·958	298·1					145
			0·948	258·8					233
I.			0·930	283·7					118
		885	0·746	293·5	120·7	+18·5	169	1766	
		885	0·709	299·4	116·2	+21·7	14	133	695 *c*
		888	0·340	231·9	90·4	−10·3	0	18	
		888	0·267	237·3	87·7	− 6·6	0	19	
		889	0·210	317·0	83·0	+10·6	13	85	207 *c*
		890	0·680	125·8	38·4	−21·9	34	229	} 114 *c*
		890	0·723	128·8	36·3	−25·4	0	5	
		890	0·713	124·8	35·5	−22·5	27	161	
		891	0·949	110·9	5·1	−19·2	0	27	1278 *s*
		892	0·961	76·2	1·0	+13·8	10	99	169 *c*
			0·879	126·1					42
			0·923	67·3					150
Nov. 22							(267)	(2542)	(3151)
325·877	M, H	885	0·872	291·6	120·0	+19·5	182	1594	1247 *c*
		885	0·839	295·5	115·5	+22·0	12	129	
I.		888	0·554	248·4	92·3	−10·4	0	4	
		888	0·517	245·2	89·4	−11·1	0	1	
		889	0·405	293·4	83·0	+10·7	9	92	
		893	0·392	351·6	64·5	+24·3	6	25	
		890	0·534	138·1	38·4	−21·9	19	195	
		890	0·597	139·2	37·8	−25·4	0	1	
		890	0·571	135·8	35·4	−22·7	23	150	
		891	0·867	114·7	4·0	−20·3	7	70	757 *c*
		892	0·873	75·2	0·8	+13·7	41	279	137 *n*
		894	0·953	100·7	349·3	− 9·7	0	5	844 *nf*
			0·799	64·9					71
			0·917	64·9					133
			0·972	78·7					267
Nov. 23							(299)	(2545)	(3456)
327·023	K, M	885	0·967	289·6	120·4	+19·3	267	1130	
		885	0·948	288·8	116·5	+18·3	0	96	511 *c*
		888	0·747	254·8	92·7	−10·2	1	12	
		888	0·702	252·5	88·6	−11·0	3	12	100 *p*
		889	0·624	285·6	83·4	+10·9	19	89	
		893	0·508	319·6	66·9	+24·1	0	5	
		890	0·423	163·3	38·3	−22·3	33	128	
		890	0·451	158·1	35·3	−23·2	31	153	
		891	0·703	120·4	5·9	−19·7	17	59	
		891	0·754	121·2	1·9	−21·9	15	39	521 *f*
		892	0·684	72·5	4·0	+13·0	34	110	
		892	0·746	73·2	358·7	+13·5	22	122	153 *c*
		894	0·846	101·9	349·0	− 9·2	19	127	375 *c*
		894	0·878	100·0	345·2	− 8·0	42	177	
1882.				°	°	°			
327d·023	K, M	894	0·885	101·6	344·5	− 9·6	0	16	
		895	0·967	74·4	330·9	+15·5	0	68	615 *s p*
Nov. 24							(503)	(2343)	(2275)
327·931	K, M	885	0·994	288·8	117·6	+18·9	0	320	460 *f*
		888	0·878	257·1	94·2	−10·6	0	12	
		888	0·830	255·7	88·7	−11·0	0	10	225 *c*
		889	0·772	283·0	83·7	+10·9	22	69	215 *nf*
		893	0·627	308·3	66·4	+24·0	17	35	132 *c*
		890	0·406	100·2	38·3	−22·1	24	97	
		890	0·412	186·2	36·7	−22·7	7	26	
		890	0·414	182·5	35·0	−23·1	38	132	
		891	0·561	129·1	6·5	−19·4	8	23	
		891	0·633	127·6	1·4	−21·5	14	41	
		892	0·527	67·4	4·1	+12·9	19	84	
		892	0·563	67·8	1·6	+13·4	0	9	
		892	0·603	68·9	358·7	+13·7	10	72	
		894	0·723	104·0	348·8	− 9·1	87	285	
		894	0·754	100·5	345·8	− 7·0	66	305	483 *c*
		895	0·899	73·1	330·8	+15·8	9	72	484 *c*
Nov. 25							(321)	(1592)	(1999)
328·978	K, M		0·959	259·8					378
		889	0·900	281·6	83·7	+11·0	16	48	291 *nf*
		893	0·780	300·4	67·2	+24·0	5	12	120 *c*
		896	0·733	283·8	66·3	+10·9	7	26	102 *c*
		890	0·489	219·6	39·4	−20·9	3	21	
		890	0·494	214·3	37·5	−22·8	14	75	
		890	0·475	209·4	34·6	−23·2	22	110	
		891	0·416	150·8	7·6	−20·1	0	46	
		891	0·496	143·7	1·6	−22·4	5	12	
		892	0·334	52·8	4·2	+12·8	8	47	
		894	0·524	109·3	350·1	− 8·9	65	292	
		894	0·570	103·9	346·3	− 6·9	39	189	
		897	0·585	76·3	345·0	+ 8·9	20	60	
		897	0·637	74·4	341·5	+10·8	15	51	
		895	0·777	70·6	330·6	+15·7	6	21	635 *nf*
			0·989	107·4					334
Nov. 26							(225)	(1010)	(1860)
330·047	K, M		0·838	245·2					322
		889	0·978	281·3	83·7	+11·3	6	61	272 *nf*
		893	0·899	295·8	67·7	+23·5	6	11	177 *nf*
		896	0·883	282·0	67·4	+11·1	2	21	82 *c*
		890	0·611	228·5	35·6	−22·8	36	178	
		890	0·629	224·1	35·0	−25·8	9	39	
		898	0·449	227·7	26·2	−16·5	14	52	
		898	0·439	220·5	23·4	−18·4	36	62	

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

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

Group 885. A very fine large spot. On November 18 a large portion becomes detached from the principal spot. Smaller portions become detached on the following days.

Group 888. Two small spots.

Group 889. A regular spot.

Group 890. Two regular spots close together. The preceding spot shows a tendency to break up, and several small spots form round the group on November 25 and following days. The smaller spots disappear before December 1, leaving only the second of the two original spots.

Group 891. Three or four small spots. On November 24 two regular spots, of which the following one disappears before November 29.

Group 892. Three or four small faint spots.

Group 893. Three or four small spots. On November 26 only one spot remains.

Group 894. A fine group, composed of a great number of spots very irregularly arranged. The group undergoes constant changes, the preceding portion tending to increase, the following to diminish.

Group 895. A small regular spot.

Group 896. A small spot.

Group 897. Four or five small spots on November 26. The group rapidly increases in size on the following days, and on November 29 forms a long straight line of spots, of which the last is the largest. On December 3 only the last spot remains.

Group 898. Two considerable spots, with several small spots between them

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	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).
1882.				°	°	°			
330d·047	K, M	892	0·206	7·2	4·5	+12·8	10	29	
		891	0·407	169·3	1·4	−21·8	2	8	
		894	0·298	124·9	351·7	− 8·8	48	208	
		894	0·335	118·0	348·7	− 8·0	35	212	
		894	0·383	111·3	345·0	− 6·9	16	64	
		894	0·392	118·7	345·7	− 9·8	1	14	
		897	0·352	67·5	346·9	+ 8·8	13	95	
		897	0·442	66·0	341·8	+11·3	20	116	
		897	0·441	71·3	341·1	+ 9·1	3	10	
		895	0·611	65·1	331·0	+15·7	3	11	
		899	0·898	109·3	304·0	−16·7	0	30	
		899	0·949	109·4	296·0	−18·0	0	19	265 *c*
			0·783	62·5					306
			0·933	98·3					56
Nov. 27							(260)	(1240)	(1480)
			0·967	281·2					141
331·039	K, M		0·959	295·8					182
			0·933	247·7					255
		890	0·743	235·8	34·9	−23·8	50	166	731 *c*
		898	0·638	241·8	28·7	−16·7	78	166	
		898	0·617	238·2	26·2	−18·1	6	30	
		898	0·576	235·6	22·8	−18·1	29	77	499 *c*
		892	0·285	314·8	4·8	+12·6	12	58	
		891	0·409	211·6	6·0	−19·3	0	8	
		891	0·409	207·5	4·5	−20·2	9	16	
		891	0·442	194·1	359·7	−24·3	0	7	
		894	0·169	173·2	351·7	− 8·6	34	176	
		894	0·177	149·7	347·8	− 7·8	32	286	
		897	0·184	36·2	346·6	+ 9·5	27	65	
		897	0·197	50·2	344·1	+ 8·2	4	9	
		897	0·268	48·1	341·2	+11·3	16	143	
		895	0·444	55·5	330·7	+15·4	10	18	
		899	0·779	112·7	304·4	−16·8	18	52	
		899	0·854	111·9	296·7	−18·0	2	37	389 *c*
			0·645	51·0					212
			0·839	98·5					85
			0·941	61·5					101
			0·968	112·4					127
			0·975	84·5					188
Nov. 28							(327)	(1314)	(2910)
			0·992	281·1					86
			0·982	296·2					213
I.			0·926	250·2					378
		890	0·823	238·2	35·0	−25·0	5	28	
		890	0·802	239·8	33·5	−23·2	25	113	
		898	0·743	246·0	29·7	−16·9	41	232	
331d·659	M, F	898	0·671	241·7	22·9	−17·8	22	138	865 *c*
		900	0·747	233·0	26·1	−26·0	2	10	
I.		891	0·488	222·8	5·3	−20·1	5	26	
		892	0·592	302·4	4·5	+12·9	7	27	
		894	0·203	216·1	351·6	− 8·5	19	141	
		894	0·171	206·3	349·1	− 8·0	6	122	
		894	0·142	187·6	345·8	− 7·1	6	66	
		897	0·154	343·9	347·2	+ 9·3	13	44	
		897	0·149	21·9	341·5	+ 8·9	0	5	
		897	0·194	17·9	341·2	+11·5	11	97	
		895	0·350	42·4	330·6	+15·8	7	9	
		899	0·696	115·6	303·9	−16·8	2	12	
		899	0·767	113·8	297·5	−17·4	5	40	760 *c*
			0·898	103·6					380
			0·929	114·1					160
			0·937	81·8					185
			0·942	58·4					186
Nov. 29							(176)	(1110)	(3213)
332·781	H, F		0·953	256·1					357
			0·838	225·8					298
I.		890	0·907	244·0	32·1	−23·0	13	115	1066 *p*
		898	0·882	250·4	30·0	−16·8	23	172	
		898	0·813	246·8	21·6	−18·1	11	87	
		898	0·838	242·2	21·1	−18·3	5	78	738 *c*
		900	0·859	239·4	24·8	−25·4	0	33	
		900	0·832	239·9	21·9	−24·1	6	36	
		892	0·580	291·5	3·5	+12·9	0	9	
		891	0·631	235·2	3·4	−20·4	0	4	
		891	0·629	229·9	1·4	−23·2	0	8	
		894	0·373	245·5	350·0	− 8·1	15	30	
		894	0·290	242·8	345·0	− 6·9	4	58	
		897	0·323	297·1	346·9	+ 9·2	5	16	
		897	0·273	306·6	342·8	+10·1	0	21	
		897	0·256	318·3	340·0	+11·8	5	92	63 *c*
		901	0·189	349·2	332·1	+11·5	0	28	
		899	0·527	124·0	303·0	−16·4	3	10	
		899	0·626	121·2	295·8	−18·2	5	13	
		895	0·259	1·1	329·7	+15·7	3	7	
			0·763	97·9					248
			0·839	117·8					218
	"		0·898	55·2					283
Nov. 30							(98)	(817)	(3271)
333·675	M, H		0·889	235·0					402
			0·840	287·3					141
I.		890	0·972	246·3	32·8	−22·8	17	82	431 *c*
		898	0·966	252·9	32·1	−16·3	34	196	206 *c*

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

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

Group 890. Two regular spots close together. The preceding spot shows a tendency to break up, and several small spots form round the group on November 25 and following days. The smaller spots disappear before December 1, leaving only the second of the two original spots.

Group 891. Three or four small spots. On November 24 two regular spots, of which the following one disappears before November 29.

Group 892. Three or four small faint spots.

Group 894. A fine group, composed of a great number of spots very irregularly arranged. The group undergoes constant changes, the preceding portion tending to increase, the following to diminish.

Group 895. A small regular spot.

Group 897. Four or five small spots on November 26. The group rapidly increases in size on the following days, and on November 29 forms a long straight line of spots, of which the last is the largest. On December 3 only the last spot remains.

Group 898. Two considerable spots, with several small spots between them.

Group 899. Several very small spots in a straight line. Only the first and last remain on November 29, and of these the first disappears before December 1.

Group 900. Six spots in two clusters on November 30. Three spots on December 1.

Group 901. Several very faint small spots.

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

Greenwich Mean Solar Time.	Measurers.	No of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1882.				°	°	°			
333d·675	M, H	898	0·916	249·1	22·6	−18·8	0	14	
		900	0·945	242·1	26·3	−26·1	0	31	
I.		900	0·932	246·3	24·7	−21·7	0	14	755 *c*
		900	0·921	244·3	22·6	−23·3	19	66	
		894	0·575	254·7	352·1	− 8·2	40	369	
		894	0·484	254·8	346·1	− 6·7	0	33	
		897	0·524	285·5	348·8	+ 8·5	3	14	
		897	0·432	296·4	341·4	+11·6	5	115	
		895	0·340	320·7	331·1	+15·8	5	7	
		899	0·473	132·3	296·7	−18·0	2	12	29 *np*
			0·943	107·7					202
			0·996	70·4					91
Dec. 1							(125)	(953)	(2257)
334·752	M, H		0·947	247·5					1599
			0·944	233·0					72
I.			0·882	287·4					413
		894	0·749	258·3	351·6	− 8·4	21	164	
		894	0·678	258·9	345·8	− 7·1	0	21	
		897	0·660	284·3	344·2	+ 9·8	0	2	
		897	0·619	289·2	340·5	+12·1	10	46	
		895	0·504	301·7	330·2	+15·8	0	4	
		899	0·353	158·4	296·1	−18·6	0	8	
		902	0·949	69·1	233·6	+20·0	0	8	78 *c*
			0·936	112·7					425
Dec. 2							(31)	(253)	(2549)
335·680	H, F		0·939	287·9					434
			0·932	245·2					1201
I.		894	0·881	259·9	352·9	− 8·7	0	82	531 *c*
		897	0·773	285·4	341·2	+12·1	3	11	463 *c*
			0·858	66·9					53
			0·933	114·5					630
Dec. 3							(3)	(93)	(3312)
336·937	K, M		0·960	261·3					601
			0·911	277·3					449
			0·864	119·0					364
			0·907	70·9					478
Dec. 4							(0)	(9)	(1892)
337·660	M, H		0·994	262·5					600
			0·968	282·7					418
I.			0·853	293·7					170
		903	0·303	147·6	256·1	−14·7	0	23	
			0·821	115·8					84

Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1882.				°	°	°			
337d·660	M, H		0·826	125·0					89
			0·898	59·0					107
I.			0·938	70·1					415
Dec. 5							(0)	(23)	(1883)
338·668	M, H		0·993	280·6					109
			0·959	291·4					422
I.		903	0·351	216·6	264·9	−16·3	0	5	
		903	0·299	209·2	261·1	−15·1	0	3	
		903	0·272	196·2	256·9	−15·1	0	22	
		904	0·959	70·4	180·1	+18·7	12	54	383 *nf*
			0·964	107·1					172
			0·972	82·7					56
Dec. 6							(12)	(84)	(1142)
339·660	M, H		0·963	293·3					310
			0·895	250·1					552
I.		903	0·507	238·5	265·8	−15·4	3	10	
		903	0·459	235·7	262·3	−15·1	5	21	
		903	0·402	232·8	258·5	−14·1	4	9	
		905	0·435	72·3	214·7	+ 7·5	0	3	
		904	0·878	68·7	181·9	+18·5	8	40	149 *c*
			0·883	109·0					101
			0·936	97·5					161
			0·958	71·3					203
Dec. 7							(20)	(83)	(1476)
340·679	M, JP		0·960	251·0					436
			0·942	231·0					34
I.		903	0·664	247·9	265·2	−14·7	2	16	
		903	0·633	243·9	262·1	−16·3	3	8	
		903	0·592	247·7	260·0	−13·2	0	4	
		903	0·597	243·7	259·5	−15·6	0	1	
		903	0·580	245·3	258·7	−14·2	0	5	
		906	0·179	131·7	218·2	− 7·1	8	31	
		904	0·750	64·8	180·4	+18·4	7	31	126 *c*
		907	0·892	78·4	163·5	+10·2	4	17	117 *c*
			0·874	99·4					99
			0·889	89·7					62
			0·917	67·0					84
			0·960	101·7					47
Dec. 8							(24)	(113)	(1005)
342·002	K, M	903	0·840	254·3	264·4	−13·4	17	233	
		903	0·775	252·0	257·7	−14·1	0	24	402 *c*
		906	0·253	242·8	221·4	− 7·0	18	27	

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

Group 894. A fine group, composed of a great number of spots very irregularly arranged. The group undergoes constant changes, the preceding portion tending to increase, the following to diminish.

Group 895. A small regular spot.

Group 897. Four or five small spots on November 26. The group rapidly increases in size on the following days, and on November 29 forms a long straight line of spots, of which the last is the largest. On December 3 only the last spot remains.

Group 898. Two considerable spots, with several small spots between them.

Group 899. Several very small spots in a straight line. Only the first and last remain on November 29, and of these the first disappears before December 1.

Group 900. Six spots in two clusters on November 30. Three spots on December 1.

Group 902. A very small spot.

Group 903. Several small spots. The group undergoes constant changes.

Group 904. A small regular spot.

Group 905. Two very small spots close together.

Group 906. Two spots. The following spot disappears before December 11.

Group 907. A regular spot, followed by several smaller spots. These latter have all disappeared before December 14.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1882.				°	°	°			
342d·002	K, M	906	0·196	230·5	217·1	− 7·5	0	19	
		904	0·543	54·7	180·8	+17·9	5	11	
		907	0·679	74·2	167·0	+10·3	31	73	
		907	0·731	76·8	162·4	+ 9·3	10	44	184 *c*
			0·871	60·0					275
			0·966	76·9					246
Dec. 9							(81)	(431)	(1107)
342·675	M, JP		0·955	303·4					84
		903	0·933	254·6	267·8	−14·5	28	174	
I.		903	0·890	255·2	261·7	−13·4	16	110	228 *c*
		906	0·390	253·4	221·8	− 6·9	4	20	
		906	0·330	246·9	217·5	− 7·9	0	5	
		904	0·443	43·9	180·9	+18·1	0	3	
		907	0·567	69·5	167·1	+11·0	16	104	
		907	0·621	73·5	162·7	+ 9·8	10	52	
		908	0·989	70·9	119·1	+18·8	42	417	832 *sp*
			0·903	56·7					254
Dec. 10							(116)	(885)	(1398)
343·669	H, JP	903	0·992	255·6	268·8	−14·4	23	287	
		903	0·964	256·4	260·4	−13·3	0	93	620 *c*
I.		906	0·583	259·3	221·5	− 6·7	3	13	
		907	0·396	58·0	166·5	+11·5	16	127	575 *c*
		907	0·442	67·0	162·2	+ 9·4	0	28	
		908	0·872	74·9	126·3	+12·8	0	3	
		908	0·930	70·0	119·7	+18·3	39	301	
		908	0·944	67·9	117·5	+20·6	13	127	1450 *s*
		908	0·950	64·9	116·3	+23·5	0	6	
			0·807	60·1					59
Dec. 11							(93)	(985)	(2704)
344·762	M, JP		0·947	251·0					155
			0·918	282·7					48
I.			0·913	293·0					41
		909	0·828	299·7	223·6	+23·7	0	17	
		909	0·807	303·1	220·4	+25·6	4	21	64 *c*
		906	0·770	261·5	221·9	− 7·0	0	5	
		910	0·170	348·9	173·9	+ 8·8	0	2	
		910	0·163	356·6	172·6	+ 8·5	0	1	
		907	0·232	24·2	166·5	+11·4	17	105	
		907	0·247	34·0	163·9	+11·0	0	2	
		907	0·247	42·4	162·3	+ 9·7	4	37	
		908	0·819	67·5	119·6	+17·8	41	267	751 *sf*
		908	0·847	62·4	117·8	+22·7	5	34	
		908	0·849	64·5	117·0	+21·0	20	127	
			0·937	101·8					102
Dec. 12							(91)	(618)	(1161)
1882.									
345d·933	K, M		0·810	294·2					107
		909	0·917	298·0	219·8	+25·1	0	10	307 *p*
		911	0·830	241·7	209·3	−23·7	0	14	152 *np*
		910	0·358	300·3	174·8	+ 9·5	3	24	
		907	0·269	321·2	166·5	+11·2	8	51	
		907	0·201	333·3	161·8	+ 9·5	0	23	
		908	0·637	58·7	121·7	+18·6	0	20	
		908	0·666	61·2	118·9	+18·0	58	191	
		908	0·695	55·5	118·5	+22·4	0	25	
		908	0·712	58·6	116·1	+21·1	28	130	273 *c*
			0·870	100·6					151
Dec. 13							(97)	(488)	(990)
346·789	H, JP	911	0·920	244·0	210·2	−24·2	0	23	84 *f*
		910	0·548	290·0	176·8	+ 9·9	0	25	
I.		910	0·494	292·2	172·0	+ 9·9	5	29	
		907	0·413	300·4	166·6	+11·1	0	24	
		908	0·432	52·5	124·8	+14·3	0	5	
		908	0·475	50·0	123·2	+16·8	0	44	
		908	0·540	52·6	118·4	+20·0	13	104	
		908	0·601	47·5	116·7	+23·0	0	5	
		908	0·595	51·4	115·7	+20·9	6	115	
Dec. 14							(24)	(374)	(84)
347·773	H, JP		0·965	248·3					509
			0·934	294·1					806
I.		912	0·745	274·6	180·2	+ 2·7	0	3	
		910	0·718	286·3	176·7	+10·7	4	27	
		910	0·664	287·6	172·3	+10·6	5	25	
		910	0·643	285·0	171·1	+ 8·6	0	4	
		907	0·586	291·9	166·0	+11·6	5	24	26 *c*
		908	0·253	18·9	127·6	+12·6	7	31	
		908	0·306	25·4	124·6	+14·8	0	27	
		908	0·357	27·6	122·5	+17·2	0	50	
		908	0·412	35·0	118·0	+18·5	8	190	81 *c*
		908	0·467	37·4	114·8	+20·5	2	35	
			0·904	78·7					66
			0·943	63·8					97
			0·946	109·2					182
Dec. 15							(31)	(416)	(1767)
348·658	H, JP		0·907	293·9					355
			0·857	251·8					286
I.		912	0·851	273·3	178·8	+ 2·1	0	13	150 *c*
		910	0·850	282·6	178·0	+10·0	10	22	
		910	0·802	284·0	172·9	+10·3	0	8	209 *c*
		907	0·739	286·5	166·9	+11·2	3	10	111 *c*
		908	0·313	331·4	129·7	+14·6	0	8	

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

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

Group 903. Several small spots. The group undergoes constant changes.

Group 904. A small regular spot.

Group 906. Two spots. The following spot disappears before December 11.

Group 907. A regular spot, followed by several smaller spots. These latter have all disappeared before December 14.

Group 908. A large spot, with two companions slightly smaller. Other spots appear both preceding and following the large spots on December 13 and following days, and the group forms a very long straight line of spots. The spots in the middle of the line disappear before December 16. The preceding cluster disappears before December 20.

Group 909. Three small spots.

Group 910. Several small spots. The group undergoes frequent changes.

Group 911. A small spot.

Group 912. Two very small faint spots.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	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).
1882.				°	°	°			
348d·658	H, JP	908	0·270	327·8	129·2	+11·9	8	56	46 *c*
		908	0·277	334·2	127·9	+13·1	0	24	
I.		908	0·261	340·4	125·9	+12·9	0	16	21 *s*
		908	0·325	352·3	123·4	+17·5	0	3	
		908	0·316	3·1	121·8	+17·0	0	28	
		908	0·344	5·7	118·7	+18·7	21	192	149 *c*
		908	0·385	11·2	116·2	+20·8	2	8	
		913	0·752	76·0	73·3	+ 9·6	4	14	} 94 *c*
		913	0·791	74·7	69·9	+11·2	0	7	
			0·859	59·2					178
			0·913	136·9					77
			0·915	110·0					319
Dec. 16							(48)	(409)	(1995)
349·691	H, JP		0·968	290·6					166
			0·892	283·7					916
I.			0·871	248·9					39
		912	0·971	271·9	182·9	+ 1·5	0	24	} 209 *c*
		912	0·960	273·8	180·4	+ 3·3	0	8	
		908	0·441	300·1	129·9	+11·4	6	53	45 *c*
		908	0·434	305·1	128·4	+13·1	0	14	
		908	0·386	328·3	119·3	+17·7	0	51	
		908	0·417	333·8	118·4	+20·5	0	6	
		908	0·395	308·7	125·4	+12·8	4	26	
		908	0·389	332·8	117·9	+18·7	8	50	46 *c*
		913	0·585	70·6	73·2	+10·0	5	59	36 *c*
		913	0·607	74·0	71·1	+ 8·5	0	15	
		913	0·631	69·8	70·1	+11·4	3	19	
		913	0·667	71·8	67·1	+10·9	10	62	77 *c*
			0·955	111·5					637
Dec. 17							(36)	(387)	(2171)
350·708	H, JP		0·962	281·0					259
			0·958	228·7					51
I.		908	0·627	290·2	130·5	+11·3	4	50	
		908	0·574	295·3	125·8	+12·9	6	45	40 *c*
		908	0·530	307·5	119·8	+17·4	2	29	} 91 *c*
		908	0·519	311·0	118·1	+18·5	8	78	
		913	0·383	60·1	74·2	+ 9·6	10	75	86 *c*
		913	0·436	61·2	71·0	+10·6	0	30	37 *c*
		913	0·493	64·9	66·9	+10·7	15	100	76 *c*
			0·937	114·6					533
Dec. 18							(45)	(407)	(1173)
351·952	K, M	908	0·815	285·7	130·4	+11·7	8	44	
		908	0·766	289·4	125·1	+13·6	0	16	365 *np*
		908	0·702	298·7	117·6	+18·4	14	45	72 *c*
		913	0·206	22·8	72·7	+ 9·2	23	76	
1882.									
351d·952	K, M	913	0·282	40·5	66·6	+10·6	17	65	
		914	0·965	105·4	2·8	−15·3	0	113	217 *c*
Dec. 19							(62)	(359)	(654)
352·922	K, M	908	0·832	293·2	117·9	+18·0	0	35	930 *p*
		913	0·256	318·8	74·4	+ 9·3	12	68	
		913	0·226	350·9	66·7	+11·0	8	37	
		914	0·885	106·6	3·2	−15·5	20	157	618 *sf*
			0·744	65·9					87
Dec. 20							(40)	(297)	(1635)
354·006	K, M		0·923	293·9					1196
		913	0·437	295·1	73·8	+ 8·9	8	25	
		915	0·537	74·0	19·1	+ 6·9	5	10	
		916	0·689	109·6	8·3	−14·7	0	21	
		914	0·757	108·4	2·4	−15·1	23	103	1041 *f*
			0·870	76·9					311
Dec. 21							(36)	(159)	(2548)
355·008	K, M		0·938	301·0					489
		913	0·622	287·9	73·8	+ 9·3	5	32	
		913	0·588	292·1	70·7	+11·0	0	13	
		916	0·471	117·2	11·6	−14·3	9	22	
		914	0·596	113·0	3·5	−15·2	29	81	
		917	0·622	66·1	1·6	+12·8	1	12	
		917	0·646	68·9	359·2	+11·8	4	28	
			0·790	73·5					587
			0·903	133·7					93
Dec. 22							(48)	(188)	(1169)
356·030	K, M	916	0·279	138·4	12·6	−14·2	4	14	
		914	0·417	123·8	2·6	−15·4	17	52	
Dec. 23							(21)	(66)	(0)
356·683	H, JP		0·846	282·8					516
		916	0·203	170·8	13·1	−13·8	0	18	
I.		914	0·308	137·6	2·6	−15·3	12	35	57 *c*
		918	0·417	68·7	352·1	+ 6·6	0	77	
			0·722	110·1					107
			0·900	61·8					177
			0·928	109·0					229
Dec. 24							(12)	(130)	(1086)
357·658	H, JP		0·924	282·5					742
			0·904	298·1					154
I.			0·884	248·4					406
		914	0·226	183·6	3·0	−15·4	12	43	80 *c*
		918	0·225	40·6	353·7	+ 7·4	2	12	

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

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

Group 908. A large spot, with two companions slightly smaller. Other spots appear both preceding and following the large spots on December 13 and following days, and the group forms a very long straight line of spots. The spots in the middle of the line disappear before December 16. The preceding cluster disappears before December 20.

Group 912. Two very small faint spots.

Group 913. A group of four or five spots irregularly disposed. The group diminishes in size after December 18, and only two small spots remain on December 21.

Group 914. A small regular spot.

Group 915. A very small spot.

Group 916. Two small spots.

Group 917. Two small faint spots.

Group 918. A close cluster of very faint small spots.

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

Greenwich Mean Solar Time.	Measurers.	No. of Group.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	Heliographic		Spots.		Faculæ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1882.				°	°	°			
357d·658	H, JP	918	0·258	47·3	351·2	+ 7·7	5	18	32 *c*
I.			0·800	57·8					239
			0·849	111·1					235
Dec. 25							(19)	(73)	(1888)
358·814	H, JP		0·988	282·4					292
			0·948	245·9					378
I.			0·808	239·3					101
		914	0·360	230·1	3·5	−15·7	2	34	
		919	0·280	235·8	0·5	−11·5	0	12	
		919	0·240	231·6	357·9	−11·0	0	4	
		920	0·978	103·6	268·9	−13·8	89	349	80 *f*
			0·933	118·3					148
Dec. 26							(91)	(399)	(999)
359·662	H, JP		0·821	243·1					799
		914	0·510	242·5	3·7	−15·9	5	16	
I.		920	0·919	103·9	269·4	−13·8	42	230	770 *s p*
		921	0·943	78·3	266·3	+10·2	10	24	306 *n f*
			0·856	119·6					73
			0·872	100·4					67
Dec. 27							(57)	(270)	(2015)
360·678	H, JP		0·907	241·6					909
			0·867	278·1					140
I.		914	0·643	254·6	1·6	−12·0	0	6	
		922	0·202	210·6	328·4	−12·8	4	9	
		920	0·800	105·7	270·0	−14·2	40	285	509 *f*
		921	0·837	75·8	267·1	+10·3	7	18	251 *f*
Dec. 28							(51)	(318)	(1809)
361·802	H, JP		0·925	298·9					187
			0·885	241·6					836
I.		914	0·828	257·5	3·1	−12·0	8	23	691 *c*
		923	0·770	281·5	356·9	+ 7·0	5	15	368 *n*
		920	0·628	109·2	270·0	−14·2	39	237	149 *c*
		921	0·674	71·0	267·5	+10·4	8	10	
			0·893	112·3					255
			0·976	100·2					400
Dec. 29							(60)	(285)	(2886)
1882.				°	°	°			
362d·738	H, JP		0·875	240·5					840
			0·867	285·0					504
I.		914	0·926	259·0	3·0	−11·3	61	152	946 *c*
		923	0·900	280·0	358·4	+ 7·7	0	9	
		924	0·606	246·8	330·6	−16·3	5	15	
		924	0·572	241·2	327·1	−18·5	4	10	
		924	0·570	244·4	327·6	−16·8	0	5	
		925	0·461	163·2	286·6	−29·0	6	16	57 *c*
		925	0·482	156·3	282·6	−29·0	6	28	40 *c*
		920	0·458	116·1	270·3	−14·3	49	265	130 *c*
		921	0·511	64·3	267·5	+10·1	4	6	
		926	0·899	99·1	231·4	− 9·5	0	9	482 *s f*
		927	0·986	108·2	214·8	−18·4	57	167	
			0·872	115·1					121
			0·973	62·9					623
Dec. 30							(192)	(682	(3743)
363·698	H, JP		0·954	282·2					381
			0·916	240·9					820
I.		914	0·973	258·9	359·4	−11·6	8	16	101 *c*
		928	0·883	287·0	342·6	+13·4	0	25	
		928	0·856	288·5	339·2	+14·1	9	49	253 *c*
		924	0·773	251·8	332·2	−15·9	24	101	211 *c*
		924	0·736	249·6	328·6	−17·0	0	14	
		924	0·717	247·9	326·7	−17·9	17	30	133 *c*
		925	0·442	187·8	286·5	−29·0	24	151	56 *c*
		925	0·432	178·4	281·8	−28·6	30	58	64 *c*
		920	0·285	132·6	270·2	−14·1	48	262	177 *c*
		921	0·339	47·4	268·0	+10·2	0	1	
		926	0·796	100·0	230·1	− 9·9	6	54	388 *c*
		927	0·929	108·3	214·7	−18·1	35	227	257 *c*
		929	0·977	110·7	204·8	−20·9	25	159	212 *c*
			0·913	116·3					122
			0·919	60·1					776
Dec. 31							(226)	(1146)	(3951)

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

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

Group 914. A small regular spot.
Group 918. A close cluster of very faint small spots.
Group 919. Three small faint spots.
Group 920. A regular spot.
Group 921. A small regular spot.
Group 922. A small spot.
Group 923. Two very small spots on December 29. Only one remains on December 30.
Group 924. Several very small spots.
Group 925. Two regular spots.
Group 926. A very small spot on December 30. Other spots appear on the following days, and the group forms a straight line.
Group 927. A regular spot.
Group 928. Two small spots.
Group 929. A small regular spot.

MEAN AREAS of UMBRÆ, WHOLE SPOTS, and FACULÆ upon the SUN'S DISK, as measured on PHOTOGRAPHS taken at the ROYAL OBSERVATORY, GREENWICH, and at DEHRA DUN, INDIA, for each ROTATION of the SUN, from 1881 December 8 to 1883 January 18.

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

No. of Rotation.	Date of commencement of each Rotation.	No. of Days on which Photographs were taken.	Mean of Daily Areas.		
			Umbræ.	Whole Spots.	Faculæ.
122	1881 December 7·76	18	79	398	1403
123	1882 January 2·14	22	63	371	1420
124	January 27·52	21	134	810	1893
125	February 21·90	26	125	618	1844
126	March 19·28	25	183	1002	2755
127	April 13·66	25	368	2122	2652
128	May 9·04	25	307	1562	2420
129	June 3·42	24	97	548	1883
130	June 28·80	23	97	572	2885
131	July 24·18	20	64	372	1971
132	August 18·56	22	202	921	2011
133	September 12·94	24	270	1296	2111
134	October 8·32	25	264	1377	2153
135	November 2·70	26	398	2022	2457
136	November 28·08	25	54	400	1702
137	December 23·46	26	148	897	2300

MEAN AREAS of UMBRÆ, WHOLE SPOTS, and FACULÆ upon the SUN'S DISK, as measured on PHOTOGRAPHS taken at the ROYAL OBSERVATORY, GREENWICH, and at DEHRA DUN, INDIA, for the Year 1882.

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

Year.	No. of Days on which Photographs were taken.	Mean of Daily Areas.		
		Umbræ.	Whole Spots.	Faculæ.
1882	343	189	1002	2154

MEAN HELIOGRAPHIC LATITUDE of the SPOTS upon the SUN'S DISK, as measured on the PHOTOGRAPHS taken at the ROYAL OBSERVATORY, GREENWICH, and at DEHRA DUN, INDIA, for each ROTATION of the SUN, from 1881 December 8 to 1883 January 18.

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

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

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

No. of Rotation.	Date of Commencement.	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.		
	1881. d			°		°	°	°
122	Dec. 7·76	17	291	+ 24·08	63	− 25·58	+ 15·31	24·35
	1882.							
123	Jan. 2·14	22	276	16·13	95	19·91	+ 6·89	17·10
124	Jan. 27·52	21	457	11·39	352	16·33	− 0·66	13·54
125	Feb. 21·90	26	69	13·23	549	12·59	− 9·71	12·66
126	Mar. 19·28	25	307	14·19	695	14·74	− 5·89	14·57
127	Apr. 13·66	25	489	18·74	1633	22·65	− 13·11	21·75
128	May 9·04	25	455	16·28	1108	22·80	− 11·43	20·91
129	June 3·42	24	200	18·42	325	13·83	− 1·56	15·57
130	June 28·80	23	403	14·22	169	16·21	+ 5·24	14·81
131	July 24·18	20	219	17·22	153	12·96	+ 4·83	15·47
132	Aug. 18·56	22	696	15·55	225	16·82	+ 7·65	15·86
133	Sept. 12·94	24	509	11·67	786	22·08	− 8·81	17·99
134	Oct. 8·32	25	852	16·92	527	22·18	+ 2·01	18·93
135	Nov. 2·70	26	1155	18·29	867	18·38	+ 2·57	18·33
136	Nov. 28·08	25	223	15·11	177	14·54	+ 1·97	14·86
137	Dec. 23·46	26	253	7·61	640	14·28	− 8·10	12·40

MEAN HELIOGRAPHIC LATITUDE of SPOTS upon the SUN'S DISK, as measured on the PHOTOGRAPHS taken at the ROYAL OBSERVATORY, GREENWICH, and at DEHRA DUN, INDIA, for the YEAR 1882.

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.		
			°		°	°	°
1882	343	443	+ 15·98	558	− 19·26	− 3·66	17·81