

RESULTS OF MEASURES

MADE AT THE

ROYAL OBSERVATORY, GREENWICH,

UNDER THE DIRECTION OF

F. W. DYSON, M.A., LL.D., F.R.S.,
ASTRONOMER ROYAL,

OF

PHOTOGRAPHS OF THE SUN

TAKEN

AT GREENWICH, AT THE CAPE, AND IN INDIA,

IN THE YEAR

1913.

PUBLISHED BY ORDER OF THE BOARD OF ADMIRALTY, IN OBEDIENCE TO
HIS MAJESTY'S COMMAND.



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GREENWICH PHOTO-HELIOGRAPHIC RESULTS, 1913.

INTRODUCTION.

§ 1. *Measures of Positions and Areas of Sun Spots and Faculae on Photographs taken at the Royal Observatories of Greenwich, and of the Cape, and in India, at Kodaikánal and at Dehra Dún, in the year 1913; with the deduced Heliographic Longitudes and Latitudes.*

The photographs from which these measures were made were taken at the Royal Observatories of Greenwich or of the Cape; at the Kodaikánal Observatory, Southern India, or at Dehra Dún, North-West Provinces, India.

The photographs of the Sun, obtained at Greenwich, were taken with the Dallmeyer Photoheliograph, of 4 inches aperture, usually stopped down to 2.9 inches. The instrument was used in the Transit of Venus expedition to New Zealand in 1874, and, as now adapted, gives a solar image of about 10 centimetres radius on the photographic plate.

The photographs have been taken throughout the year on gelatine dry plates, "Lantern" plates supplied by R. W. Thomas & Co., or "Fine grain, ordinary," "Process," or "Lantern," supplied by the Imperial Dry Plate Company, being used, with hydroquinone development.

The photographs from the Cape Observatory were taken under the superintendence of Mr S. S. Hough, His Majesty's Astronomer at the Cape; and those from Kodaikánal under the superintendence of Mr John Evershed, Director of that Observatory. The photographs from Dehra Dún, which have been forwarded by the Solar Physics Committee to fill the gaps in the combined series, were taken under the superintendence of the Deputy Surveyor-General, Trigonometrical Survey of India. At each observatory the instrument employed was a Dallmeyer Photoheliograph giving an image of the Sun about 10 centimetres in radius. The plates and development used have been much the same at each of the four collaborating observatories.

D iv INTRODUCTION TO GREENWICH PHOTO-HELIOGRAPHIC RESULTS, 1913.

Photographs of the Sun were available for measurement upon each day in 1913, those finally selected for measurement being supplied by the different observatories as under:—

Greenwich	252
Cape	95
Kodaikānal	13
Dehra Dūn	5
Total	365

The measures were made in the manner described in the *Introduction to the Greenwich Photo-Heliographic Results* for 1909, and the results of the measures are printed upon the same plan, the following being the signatures of those persons who measured the photographs for the year 1913:—

E. W. Maunder	-	-	M	A. W. Berry	-	-	AB
D. J. R. Edney	-	-	DE				
A. H. Smith	-	-	AS	J. S. Smith	-	-	JS

The method of determining the zero of position-angles for the Dallmeyer Photo-heliograph at the Royal Observatory, Greenwich, was the same as that used for the Thompson Photoheliograph, as described in 1909, with the modification that the two wires were arranged, not parallel and at right angles to the equator, but nearly at an angle of 45° to it. In the reduction of the measures of the photographs the wires were assumed to be in the zero position when inclined precisely 45° to the equator, and the correction to this zero of position was determined by the measurement of a photograph which had been exposed twice to the Sun's rays, with an interval of about 100 seconds between the two exposures, the instrument being firmly clamped throughout.

The determinations obtained were the following:—

DALLMEYER PHOTOHELIOGRAPH, GREENWICH.

Date, Greenwich Civil Time.			Correction for Zero.	Date, Greenwich Civil Time.			Correction for Zero.
1912	December	^d 30. ^h 12	+ 2. 58	1913	October	^d 1. ^h 12	+ 2. 22
		30. 12	+ 2. 55			29. 12	+ 2. 5
1913	January	31. 12	+ 2. 59			29. 12	+ 2. 12
	March	6. 12	+ 2. 23		November	19. 10	+ 2. 20
		6. 12	+ 2. 22			19. 12	+ 2. 19
	July	29. 12	+ 3. 7			19. 12	+ 2. 13
		29. 12	+ 3. 12			19. 14	+ 2. 11
	September	8. 12	+ 2. 55		December	16. 12	+ 2. 42
		8. 12	+ 2. 58			16. 12	+ 2. 24
	October	1. 12	+ 2. 26	1914	January	14. 12	+ 2. 20

MEASURES OF PHOTOGRAPHS OF THE SUN.

D. v

Transits of the Sun were also taken over the two wires; the times of contact of the first and second limbs of the Sun with the two wires being noted. The ratio of the time taken by the Sun to pass over the NE-SW wire to that taken to pass over the SE-NW wire gives the tangent of the angle made by the Sun's path to the latter wire; the wires being assumed to be exactly at right-angles to each other from this angle, when corrected for the Sun's motion in declination, the correction for the zero of position of the wires can be inferred.

TRANSITS OF THE SUN.

Date.		Correction for Zero.	Date.		Correction for Zero.
1912	December 30	+ 3. 0'3	1913	August 6	+ 3. 17'1
1913	January 31	+ 3. 5'1		September 10	+ 3. 0'3
	February 27	+ 2. 15'8		30	+ 2. 38'7
	March 12	+ 2. 20'2		October 1	+ 2. 35'8
	April 3	+ 2. 33'8		18	+ 3. 56'5
	May 21	+ 3. 15'3		November 15	+ 2. 36'0
	June 16	+ 2. 55'6		19	+ 2. 35'1
	July 24	+ 3. 31'0			

The zero-corrections used in the reduction of the photographs taken at Greenwich with the Dallmeyer Photoheliograph were as follows:—

Date.		Correction for Zero.	Date.		Correction for Zero.
From 1913	January 1 to January 31	+ 3'0	From 1913	May 21 to June 10	+ 3'1
" "	February 1 " February 27	+ 2'7	" "	June 11 " August 3	+ 3'2
" "	February 28 " March 30	+ 2'4	" "	August 4 " September 27	+ 2'8
" "	March 31 " May 20	+ 2'9	" "	September 28 " December 31	+ 2'5

The same method, without the modification, was employed with the Dallmeyer Photoheliograph, at the Royal Observatory, Cape of Good Hope, and the following determinations were obtained:—

DALLMEYER PHOTOHELIOGRAPH, CAPE OF GOOD HOPE.

Date, Greenwich Civil Time.			Correction for Zero.	Date, Greenwich Civil Time.			Correction for Zero.
1912	December	^{a h} 23. 10	- 0. 10	1913	July	^{a h} 12. 10	+ 0. 8
1913	January	13. 10	+ 0. 8		August	4. 9	+ 0. 6
	February	31. 10	+ 0. 3		September	1. 10	+ 0. 6
		14. 8	- 0. 5		October	1. 9	+ 0. 2
	March	15. 9	- 0. 4		November	24. 10	- 0. 3
		1. 9	+ 0. 2		December	28. 8	- 0. 10
		27. 9	+ 0. 6			9. 9	- 0. 9
	April	14. 10	+ 0. 10		1914	January	27. 8
	May	21. 12	+ 0. 4			9. 8	+ 0. 7
	June	11. 10	+ 0. 9				

A correction of $+0^{\circ}.1$ for zero of position has been applied to all photographs taken with the Cape Photoheliograph up to 1913 September 30. No correction has been applied to the photographs for October, but for those taken in November and December a correction of $-0^{\circ}.1$ has been applied.

As regards photographs from Kodaikānal, sufficient zero-pictures were received to determine the correction required in the same way as for the Greenwich and Cape photographs. The value adopted for 1913 was $+0^{\circ}.2$.

In the use of the photoheliograph at Dehra Dūn the position-circle has 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. The practice has also been adopted of stopping the driving-clock after the exposure of the plate has been made, and making a second exposure about two minutes later, thus affording a further means for determining the true west point of the plate. No correction for zero of position of the wires has been applied for the reduction of the photographs taken at Dehra Dūn during the year 1913.

The method of reduction of the measures of the photographs is the same as that described in the *Introduction to the Greenwich Photo-Heliographic Results* for 1909. The inclination of the Sun's axis to the ecliptic is assumed to be $82^{\circ} 45'$, the longitude of the ascending node for 1913.0 to be $74^{\circ} 32'.7$, and the period of the Sun's sidereal rotation to be 25.38 days; the meridian which passed through the ascending node 1854 January 1, Greenwich Mean Noon, being taken as the zero meridian.

§ 2. *Ledgers of Areas and Heliographic Positions of Groups of Sun Spots deduced from the measurement of the Solar photographs for each day in the year 1913.*

§ 3. *Total Areas of Sun Spots and Faculae for each day, and Mean Areas and Mean Heliographic Latitude of Sun Spots and Faculae for each Rotation of the Sun, and for the year 1913.*

These two sections are similar in all respects to the corresponding sections for 1912, but there is no Catalogue of Recurrent Groups for 1913, none such having been observed during the year.

F. W. DYSON.

*Royal Observatory, Greenwich,
1914 November.*

ROYAL OBSERVATORY, GREENWICH.

MEASURES OF POSITIONS AND AREAS

OF

SUN SPOTS AND FACULÆ

ON

PHOTOGRAPHS

TAKEN WITH THE

PHOTOHELIOGRAPHS

AT GREENWICH, AT THE CAPE, AND IN INDIA,

WITH THE DEDUCED

HELIOGRAPHIC LONGITUDES AND LATITUDES.

1913.

MEASURES of POSITIONS and AREAS of SUN SPOTS and FACULÆ on PHOTOGRAPHS taken at the ROYAL OBSERVATORIES of GREENWICH and of the CAPE, and in INDIA, at KODAIKĀNAL and at DEHRA DŪN, in the Year 1913.

NOTE.—The Greenwich Civil Time at which the Photograph was taken is expressed by the Day of the Year and decimals of a day, reckoning from Midnight, January 1^d 0^h. For convenience of reference, the Month and Day of the Month (Civil Reckoning) are added. The letter G. signifies that the photograph was taken at Greenwich; the letter C. that it was taken at the Cape; the letter K. that it was taken at Kodaikānal; the letter D. that it was taken at Dehra Dūn; the time given is Greenwich Civil Time. The position-angles are reckoned from the North Pole of the Sun's Axis in the direction N., E., S., W., N. The Groups of Spots are numbered in the order of their appearance. When there is no number in the third column, it is to be understood that there is a Facula unaccompanied by a Spot. The positions of Faculæ relative to the Spots with which they are associated are indicated by the letters *n*, *s*, *p*, *f*, *c*, denoting respectively north, south, preceding, following, concentric. The Areas of Spots and Faculæ are expressed in millionths of the Sun's visible Hemisphere. In the line immediately below the results for each day are given in brackets:—1. The Position Angle of the Sun's Axis (from the North point); 2. The Heliographic Longitude and Latitude of the Centre of the Disc; 3. The total areas for each day of Spots and Faculæ.

Greenwich Civil Time.	Measures.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	HELIOGRAPHIC		SPOTS.		FACULÆ.	Greenwich Civil Time.	Measures.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	HELIOGRAPHIC		SPOTS.		FACULÆ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).						Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1913. 0'374 C.	AB, AS	7008 7008	0'822 0'802 0'861	304'6 306'9 104'9 (+2'1)	56'4 53'5 308'9 (7'9)	+25'7 +26'5 -14'5 (-3'2)	2 14	22 46	189c	1913. 7'598 G.	AB, AS	7009	0'882	89'9	211'0	-1'7			374
Jan. 1							(16)	(68)	(302)	Jan. 8				(-1'4)	(272'7)	(-3'9)	(0)	(0)	(374)
1'429 G.	AB, AS	7008 7008	0'921 0'899	299'5 302'2 (+1'5)	56'4 52'4 (354'0)	+25'4 +26'9 (-3'3)	0 31	38 100	362c	Jan. 9				(-1'8)	(261'7)	(-4'0)	(0)	(0)	(243)
Jan. 2							(31)	(138)	(362)	8'433 G.	AB, AS	7009	0'796	89'5	209'1	-2'0			243
2'489 G.	AB, AS		0'979 0'857	298'1 87'8 (+1'0)	54'8 281'3 (340'0)	+26'6 +0'1 (-3'4)	(0)	(0)	(374)	Jan. 10				(-2'4)	(248'1)	(-4'2)	(0)	(0)	(109)
Jan. 3										9'470 C.	AB, AS	7009	0'696	85'4	204'3	+0'1			109
3'305 C.	AB, AS		0'862	291'2 (+0'6)	25'9 (329'3)	+16'2 (-3'5)	(0)	(0)	(123)	Jan. 11 and Jan. 12				No Spots or Faculæ.					
Jan. 4										12'412 C.	AB, AS	7009	0'797	257'4	262'0	-12'8	1	3	127c
Jan. 5			No Spots or Faculæ.							7009	0'794	255'4	261'6	-14'3	6	24			
										7009	0'762	254'3	258'5	-14'9	0	18			
5'472 G.	AB, AS		0'782	56'1 (-0'4)	255'9 (300'7)	+23'2 (-3'7)	(0)	(0)	(103)	Jan. 13				(-3'8)	(209'3)	(-4'5)	(7)	(45)	(127)
Jan. 6										13'521 G.	AB, AS	7009	0'924	256'9	262'4	-13'8	5	51	180c
										7009	0'897	256'6	258'6	-14'1	7	44			
6'444 G.	AB, AS		0'890 0'967	60'0 93'6 (-0'9)	230'3 212'7 (287'9)	+24'4 -4'5 (-3'8)	(0)	(0)	(340)	Jan. 14				(-4'3)	(194'7)	(-4'6)	(12)	(95)	(180)
Jan. 7										14'462 G.	AB, AS	7009	0'980	256'8	261'4	-13'9	0	22	295c
										Jan. 15				(-4'7)	(182'3)	(-4'7)	(0)	(22)	(295)

Group 7008, 1912 December 29-1913 January 2. A short stream of spots.
Group 7009, January 13-15. A cluster of small unstable spots.

Measures of Positions and Areas of Sun Spots and Faculae on Photographs—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	HELIOGRAPHIC		SPOTS.		FACULÆ.	Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	HELIOGRAPHIC		SPOTS.		FACULÆ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).							Area for each Group (and for Day).	Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	
1913. 15 ^h 43 ^m C. Jan. 16	AB, AS	7010	0 ^o 707 0 ^o 889	268 ^o 4 69 ^o 0 (-5 ^o 2)	214 ^o 6 110 ^o 0 (169 ^o 6)	- 4 ^o 6 +16 ^o 2 (-4 ^o 8)	0 (0)	20 (20)	126 93 ^f (219)	1913. 26 ^h 42 ^m G. Jan. 27	AB, AS	7011	0 ^o 221 0 ^o 823	112 ^o 6 66 ^o 7 (-10 ^o 1)	12 ^o 9 333 ^o 3 (24 ^o 8)	-10 ^o 4 +15 ^o 4 (-5 ^o 7)	1 (1)	6 (6)	173 (173)
16 ^h 50 ^m G. Jan. 17	AB, AS	7010	0 ^o 854 0 ^o 776	268 ^o 2 63 ^o 1 (-5 ^o 7)	214 ^o 0 109 ^o 1 (155 ^o 4)	- 4 ^o 2 +17 ^o 2 (-4 ^o 9)	0 (0)	14 (14)	207 46 ^s (253)	27 ^h 55 ^m C. Jan. 28	AB, AS		0 ^o 870 0 ^o 804	302 ^o 9 318 ^o 9 (-10 ^o 6)	63 ^o 4 48 ^o 8 (10 ^o 0)	+24 ^o 8 +32 ^o 8 (-5 ^o 8)	0 (0)	0 (0)	148 158 (306)
17 ^h 46 ^m G. Jan. 18	AB, AS	7010	0 ^o 881 0 ^o 628	267 ^o 8 52 ^o 8 (-6 ^o 1)	204 ^o 7 111 ^o 3 (142 ^o 9)	- 4 ^o 4 +18 ^o 0 (-5 ^o 0)	0 (0)	18 (18)	311 128 ^{sp} (439)	28 ^h 42 ^m C. Jan. 29	AB, AS		0 ^o 880 0 ^o 848	308 ^o 6 326 ^o 3 (-11 ^o 0)	50 ^o 8 36 ^o 4 (358 ^o 5)	+29 ^o 8 +40 ^o 2 (-5 ^o 9)	0 (0)	0 (0)	143 257 (400)
18 ^h 39 ^m C. Jan. 19	AB, AS		0 ^o 941 0 ^o 965	269 ^o 0 62 ^o 4 (-6 ^o 6)	200 ^o 7 60 ^o 1 (130 ^o 6)	- 2 ^o 7 +25 ^o 0 (-5 ^o 0)	0 (0)	0 (0)	215 158 (373)	29 ^h 32 ^m C. Jan. 30	AB, AS		0 ^o 969 0 ^o 891 0 ^o 831	298 ^o 8 314 ^o 2 96 ^o 1 (-11 ^o 4)	57 ^o 4 37 ^o 6 290 ^o 3 (346 ^o 7)	+26 ^o 0 +34 ^o 8 - 8 ^o 4 (-5 ^o 9)	0 (0)	0 (0)	210 138 150 (498)
19 ^h 51 ^m G. Jan. 20	AB, AS		0 ^o 878	56 ^o 7 (-7 ^o 1)	61 ^o 5 (115 ^o 9)	+25 ^o 8 (-5 ^o 2)	0 (0)	0 (0)	173 (173)	30 ^h 44 ^m G. Jan. 31	AB, AS		0 ^o 851 0 ^o 844 0 ^o 858	286 ^o 1 82 ^o 7 102 ^o 3 (-11 ^o 9)	27 ^o 9 275 ^o 1 272 ^o 5 (331 ^o 9)	+10 ^o 3 + 2 ^o 9 -13 ^o 6 (-6 ^o 0)	0 (0)	0 (0)	113 174 211 (498)
21 ^h 35 ^m C. Jan. 22	AB, AS		0 ^o 862	45 ^o 4 (-7 ^o 9)	44 ^o 2 (91 ^o 6)	+33 ^o 7 (-5 ^o 3)	0 (0)	0 (0)	205 (205)	31 ^h 40 ^m C. Feb. 1	AB, AS		0 ^o 832 0 ^o 929	263 ^o 8 71 ^o 8 (-12 ^o 2)	15 ^o 8 253 ^o 8 (319 ^o 3)	- 8 ^o 5 +14 ^o 4 (-6 ^o 1)	0 (0)	0 (0)	95 85 (180)
22 ^h 38 ^m C. Jan. 23	AB, AS		0 ^o 762	36 ^o 8 (-8 ^o 4)	45 ^o 2 (78 ^o 1)	+33 ^o 0 (-5 ^o 4)	0 (0)	0 (0)	121 (121)	32 ^h 47 ^m C. Feb. 2	AB, AS		0 ^o 930 0 ^o 853	258 ^o 6 63 ^o 2 (-12 ^o 7)	14 ^o 1 251 ^o 7 (305 ^o 2)	-12 ^o 8 +19 ^o 0 (-6 ^o 2)	0 (0)	0 (0)	114 80 (194)
Jan. 24				No Spots or Faculae.						33 ^h 41 ^m C. Feb. 3	AB, AS		0 ^o 935	91 ^o 5 (-13 ^o 1)	223 ^o 5 (292 ^o 8)	- 3 ^o 6 (-6 ^o 2)	0 (0)	0 (0)	221 (221)
24 ^h 43 ^m C. Jan. 25	AB, AS	7011 7011	0 ^o 866 0 ^o 675 0 ^o 726 0 ^o 827	295 ^o 3 97 ^o 7 96 ^o 5 85 ^o 5 (-9 ^o 3)	106 ^o 6 8 ^o 6 4 ^o 5 355 ^o 8 (51 ^o 1)	+18 ^o 6 - 9 ^o 3 - 8 ^o 6 + 0 ^o 5 (-5 ^o 6)	0 0 (0)	3 5 (8)	125 37 ^c 130 (292)	34 ^h 48 ^m G. Feb. 4	AB, AS		0 ^o 873	90 ^o 4 (-13 ^o 5)	217 ^o 9 (278 ^o 7)	- 4 ^o 0 (-6 ^o 3)	0 (0)	0 (0)	161 (161)
25 ^h 51 ^m G. Jan. 26	AB, AS	7011 7011	0 ^o 422 0 ^o 475	103 ^o 0 101 ^o 6 (-9 ^o 8)	12 ^o 2 8 ^o 7 (36 ^o 8)	-10 ^o 6 -10 ^o 6 (-5 ^o 7)	2 3 (5)	13 11 (24)		Feb. 5 to Feb. 9			No Spots or Faculae.						

.Group 7010, January 16-18. A very faint cluster.
Group 7011, January 25-27. A pair of small spots.

MEASURES OF POSITIONS AND AREAS OF SUN SPOTS AND FACULÆ ON PHOTOGRAPHS

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—continued.

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	HELIOGRAPHIC		SPOTS.		FACULÆ.	Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	HELIOGRAPHIC		SPOTS.		FACULÆ.	
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).						Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).	
1913. 40°605 G. Feb. 10	AB, AS		0·878	103·9	136·2	-15·4			124	1913. 52°382 C. Feb. 22	AB, AS	7012 7012 7012 7013	0·662 0·666 0·679 0·744	21·5 23·5 25·5 32·6	26·6 25·1 23·1 14·7	+31·1 +30·8 +31·0 +32·5	13 0 4 3	70 4 29 17	124 (124)	182c (182)
Feb. 11 and Feb. 12			No Spots or Faculæ.																	
43°384 C Feb. 13	AB, AS		0·886	265·3	224·2	-7·3			102	53°497 G. Feb. 23	AB, AS	7012 7012 7012 7013	0·627 0·614 0·615 0·643 0·665	1·5 3·5 6·5 14·9 16·9	27·2 25·8 23·7 17·2 15·1	+31·6 +30·5 +30·4 +31·3 +32·4	14 0 0 0 4	59 9 7 4 19	102 (102)	92c (92)
44°307 C Feb. 14	AB, AS		0·921	268·0	216·6	-4·6			162											
45°373 C Feb. 15	AB, AS		0·863	255·7	195·4	-15·8			125	54°465 G. Feb. 24	AB, AS	7012 7012 7013	0·646 0·628 0·620	345·5 346·6 0·6	26·5 25·3 15·2	+31·6 +30·5 +31·1	12 2 0	43 10 8	125 (125)	(14) (61) (0)
Feb. 16			No Spots or Faculæ.																	
47°321 C Feb. 17	AB, AS		0·869	54·7	57·8	+25·9			148	55°392 C. Feb. 25	AB, AS	7012 7012 7013	0·899 0·702 0·687 0·660	305·0 331·7 332·3 338·8	59·1 26·3 25·1 19·5	+27·1 +31·4 +30·7 +30·9	9 3 0 3	38 9 3 3	148 (148)	157 102c (259)
48°443 G. Feb. 18	AB, AS		0·989	56·6	19·6	+31·4			180											
49°441 G. Feb. 19	AB, AS	7012	0·922 0·848	51·7 45·1	24·2 36·9	+31·2 +31·9	8 (8)	36 (36)	142f 103 (245)	56°456 G. Feb. 26	AB, AS	7012	0·903 0·785	308·3 319·8	44·1 25·5	+30·0 +31·0 (-7·2)	9 (9)	25 (25)	79 162mf (241)	
50°635 G. Feb. 20	AB, AS	7012 7012 7013	0·820 0·838 0·869	43·5 44·1 45·7	24·8 22·7 18·6	+31·2 +31·9 +32·6	16 2 4	64 18 22	185c (185)	57°456 G. Feb. 27	AB, AS	7012	0·868 0·806	312·0 98·1	24·7 282·1	+30·8 -10·8 (-7·2)	7 (7)	32 (32)	187mf 92 (279)	
51°521 G. Feb. 21	AB, AS	7012 7012 7013 7013	0·731 0·748 0·784 0·809	33·6 35·0 39·9 40·1	26·3 24·3 18·5 16·3	+31·1 +31·6 +31·2 +32·6	13 3 0 7	67 17 10 31	188c (188)	58°469 G. Feb. 28	AB, AS		0·881	312·6	12·6	+32·0 (-7·2)	(0)	(0)	284 (284)	
										59°365 C. Mar. 1	AB, AS		0·940	309·5	11·1	+33·3 (-7·2)	(0)	(0)	339 (339)	

Group 7012, February 19-27. A regular spot with train in high latitude.
 Group 7013, February 20-25. Some small spots in high latitude. This group, together with Group 7012, may be considered as forming a single sparse and broken stream, but there is a clear gap between the two.

Measures of Positions and Areas of Sun Spots and Faculae on Photographs—continued.

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	HELIOGRAPHIC		SPOTS.		FACULÆ.	Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	HELIOGRAPHIC		SPOTS.		FACULÆ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).							Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	
1913. 60°53' G.	AB, AS		0°973 0°866 0°874	307°5 85°1 116°7	3°7 236°0 234°6	+33°9 +0°6 -26°8	(o)	(o)	160 159 102 (421)	1913. 75°48' G.	AB, AS		0°832	125°4	44°8	-33°1	(o)	(o)	145 (145)
Mar. 2				(-21°9)	(295°4)	(-7°2)				Mar. 17				(-24°9)	(98°6)	(-7°1)			
61°414 C.	AB, AS		0°837	90°1	227°3	-4°0	(o)	(o)	116 (116)	76°526 G.	AB, AS		0°920	49°8	28°5	+32°6	(o)	(o)	141 (141)
Mar. 3				(-22°1)	(284°1)	(-7°2)				Mar. 18				(-25°0)	(84°9)	(-7°1)			
Mar. 4			No Spots or Faculae.							77°491 G.	AB, AS		0°926	50°7	14°3	+32°4	(o)	(o)	186 (186)
63°422 G.	AB, AS		0°902	85°2	193°8	+1°2	(o)	(o)	127 (127)	Mar. 19				(-25°1)	(72°2)	(-7°0)			
Mar. 5				(-22°6)	(257°6)	(-7°2)				78°438 G.	AB, AS		0°893	47°4	8°2	+33°0	(o)	(o)	290 (290)
Mar. 6 to Mar. 10			No Spots or Faculae.							Mar. 20				(-25°3)	(59°7)	(-7°0)			
69°604 G.	AB, AS		0°846 0°864	265°3 116°0	234°3 116°6	-7°8 -26°1	(o)	(o)	103 100 (203)	Mar. 21			0°885 0°811 0°871	313°6 41°1 67°0	95°6 6°9 349°4	+33°2 +32°2 +16°1	(o)	(o)	108 129 103 (340)
Mar. 11				(-23°9)	(176°2)	(-7°2)				80°468 G.	AB, AS		0°789 0°892	42°5 75°3	355°0 332°0	+30°1 +9°8	(o)	(o)	140 145 (285)
Mar. 12			No Spots or Faculae.							Mar. 22				(-25°5)	(32°9)	(-6°9)			
71°609 G.	AB, AS	7014	0°939	125°0	79°5	-35°3	3	17	96s (96)	Mar. 23 to Mar. 26			No Spots or Faculae.						
Mar. 13				(-24°2)	(149°7)	(-7°2)	(3)	(17)		85°530 G.	AB, AS		0°782	322°4	0°6	+32°7	(o)	(o)	130 (130)
72°349 C.	AB, AS	7014	0°879	126°2	80°2	-35°0	(o)	8	115c (115)	Mar. 27				(-26°0)	(326°2)	(-6°7)			
Mar. 14				(-24°4)	(140°0)	(-7°2)				86°648 G.	AB, AS		0°875	223°3	7°0	-43°5	(o)	(o)	157 (157)
73°424 G.	AB, AS		0°673 0°768	146°0 132°4	96°4 81°2	-40°1 -36°3	(o)	(o)	75 157 (232)	Mar. 28				(-26°1)	(311°4)	(-6°7)			
Mar. 15				(-24°6)	(125°8)	(-7°1)				87°654 G.	AB, AS		0°929 0°957	307°6 60°5	357°5 230°8	+31°3 +25°7	(o)	(o)	136 104 (240)
Mar. 16			No Spots or Faculae.							Mar. 29				(-26°1)	(298°2)	(-6°6)			

Group 7014, March 13-14. A small spot in high latitude.

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	HELIOGRAPHIC		SPOTS.		FACULÆ.	Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	HELIOGRAPHIC		SPOTS.		FACULÆ.	
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).						Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).	
1913. 88·565 G. Mar. 30	AB, AS		0·880	58·7	231·2	+23·5			95	1913. Apr. 12 and Apr. 13										
				(-26·2)	(286·1)	(-6·6)	(0)	(0)	(95)				No Spots or Faculæ.							
89·382 C. Mar. 31	AB, AS		0·811	53·6	229·9	+24·2			111	103·395 C. Apr. 14	AB, AS	0·901	188·7	111·8	-68·1					125
				(-26·3)	(275·4)	(-6·5)	(0)	(0)	(111)				(-26·2)	(90·4)	(-5·6)	(0)	(0)	(125)		
Apr. 1 to Apr. 4			No Spots or Faculæ.							Apr. 15		No Spots or Faculæ.								
94·497 G. Apr. 5	AB, AS	7015	0·398	281·6	230·7	-1·2	0	4		105·603 G. Apr. 16	AB, AS	0·893	72·8	0·5	+12·7					113
		7015	0·395	279·9	230·7	-1·9	6	21					(-26·1)	(61·3)	(-5·4)	(0)	(0)	(113)		
		7015	0·369	280·5	229·1	-1·9	0	8												
		7015	0·354	278·9	228·3	-2·7	2	9												
			0·873	56·1	154·7	+25·5			135	106·367 G. Apr. 17	AB, AS	0·870	81·1	351·8	+5·0					124
				(-26·4)	(207·9)	(-6·2)	(8)	(42)	(135)				(-26·0)	(51·2)	(-5·4)	(0)	(0)	(124)		
95·415 G. Apr. 6	AB, AS	7015	0·580	276·0	229·8	-1·6	4	20		Apr. 18 and Apr. 19		No Spots or Faculæ.								
		7015	0·550	276·1	227·7	-1·9	1	7												
		7015	0·536	275·0	226·9	-2·6	2	17												
				(-26·4)	(194·7)	(-6·2)	(7)	(44)	(0)											
96·441 G. Apr. 7	AB, AS	7015	0·758	273·1	231·2	-1·7	3	12	1020	109·490 G. Apr. 20	AB, AS	0·900	342·6	37·5	+54·6					129
				(-26·4)	(182·2)	(-6·1)	(3)	(12)	(102)				0·863	94·9	310·1	-6·8			121	
													(-25·8)	(9·9)	(-5·1)	(0)	(0)	(250)		
97·377 G. Apr. 8	AB, AS		0·870	271·4	230·2	-1·8			155	110·479 G. Apr. 21	AB, AS	0·895	270·7	60·2	-1·6					126
				(-26·4)	(169·9)	(-6·0)	(0)	(0)	(155)				(-25·7)	(356·9)	(-5·0)	(0)	(0)	(126)		
98·357 C. Apr. 9	AB, AS		0·952	266·6	229·2	-5·1			246	111·444 G. Apr. 22	AB, AS	0·944	67·1	276·9	+19·7					155
				(-26·4)	(156·9)	(-6·0)	(0)	(0)	(246)				(-25·6)	(344·1)	(-4·9)	(0)	(0)	(155)		
99·436 C. Apr. 10	AB, AS		0·895	171·8	123·1	-67·7			157	112·344 G. Apr. 23	AB, AS	0·875	65·0	275·3	+19·1					117
				(-26·4)	(142·7)	(-5·9)	(0)	(0)	(157)				(-25·5)	(332·2)	(-4·8)	(0)	(0)	(117)		
100·356 C. Apr. 11	AB, AS		0·913	173·6	112·7	-70·6			133	113·412 G. Apr. 24	AB, AS	0·770	60·2	273·3	+19·1					81
				(-26·4)	(130·5)	(-5·8)	(0)	(0)	(133)				(-25·3)	(318·1)	(-4·7)	(0)	(0)	(81)		

Group 7015, April 5-7. A short stream.

MEASURES OF POSITIONS AND AREAS OF SUN SPOTS AND FACULÆ ON PHOTOGRAPHS

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—continued.

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	HELIOGRAPHIC.		SPOTS.		FACULÆ.	Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	HELIOGRAPHIC.		SPOTS.		FACULÆ.	
					Longitude.	Latitude.	Area of UMBERA 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 UMBERA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).	
1911. 157.482 G. June 7	AB, AS		0.856	255.2	153.0	-12.5	(-13.2)	(95.3)	(+0.2)	(0)	(0)	122								
June 8			No Spots or Faculæ.																	
159.346 G. June 9	AB, AS		0.842	56.8	18.1	+27.7	(-12.4)	(70.6)	(+0.4)	(0)	(0)	116								
160.520 G. June 10	AB, AS		0.747	51.2	13.8	+28.3	(-12.0)	(55.0)	(+0.6)	(0)	(0)	103								
June 11 to June 16			No Spots or Faculæ.																	
167.357 G. June 17	AB, AS		0.874 0.861	263.4 155.8	24.9 291.0	-5.1 -50.4	(-9.0)	(324.5)	(+1.4)	(0)	(0)	140 113 (253)								
68.397 G. June 18	AB, AS		0.871 0.869	303.2 64.5	7.3 252.8	+29.3 +22.7	(-8.6)	(310.8)	(+1.5)	(0)	(0)	107 95 (202)								
69.309 G. June 19	AB, AS		0.847	251.8	354.7	-14.4	(-8.2)	(298.7)	(+1.6)	(0)	(0)	118								
70.476 G. June 20	AB, AS		0.886	83.7	221.1	+6.4	(-7.7)	(283.3)	(+1.7)	(0)	(0)	113								
71.319 G. June 21	AB, AS		0.832	93.4	216.1	-1.8	(-7.3)	(272.1)	(+1.8)	(0)	(0)	113								
June 22 to June 24			No Spots or Faculæ.																	
175.507 G. June 25	AB, AS		0.885	128.4	162.0	-32.0	(-5.4)	(216.7)	(+2.3)	(0)	(0)	90								
176.299 G. June 26	AB, AS		0.853	130.7	156.5	-32.2	(-5.1)	(206.2)	(+2.4)	(0)	(0)	111								
June 27 and June 28			No Spots or Faculæ.																	
179.445 G. June 29	AB, AS		0.912	268.4	230.0	-0.3	(-3.6)	(164.5)	(+2.8)	(0)	(0)	102								
June 30 to July 6			No Spots or Faculæ.																	
187.385 G. July 7	AB, AS		0.885 0.918	78.7 60.2	357.2 354.5	+11.7 +28.6	(-0.1)	(59.4)	(+3.6)	(0)	(0)	113 119 (232)								
July 8			No Spots or Faculæ.																	
189.329 G. July 9	AB, AS	7016	0.683	51.4	356.6	+28.2	(+0.8)	(33.7)	(+3.8)	(1)	(6)	66f (66)								
190.484 G. July 10	AB, AS	7016	0.524 0.557	35.8 40.6	358.0 354.1	+28.7 +28.5	(+1.4)	(18.4)	(+3.9)	9 1	33 12 (45)									
191.404 G. July 11	AB, AS	7016	0.438 0.433 0.444 0.456 0.465	15.7 18.4 22.3 24.4 26.0	358.6 357.4 355.3 354.0 352.9	+28.8 +28.1 +28.1 +28.4 +28.5	(+1.8)	(6.3)	(+4.0)	15 0 2 4 0	33 4 6 11 12 (66)									

Group 7016, July 9-14. A small spot on July 9, expanding into a short stream; only one spot remains on July 14.

Measures of Positions and Areas of Sun Spots and Faculae on Photographs—continued.

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	HELIOGRAPHIC		SPOTS.		FACULÆ.	Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	HELIOGRAPHIC		SPOTS.		FACULÆ.	
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).						Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).	
1913. 192'319	AB, AS	7016	0'429	351'2	358'4	+29'1	5	15		1913. 204'419	AB, AS		0'873	271'6	254'8	+4'0			107	
		7016	0'412	353'3	357'2	+28'1	2	7				G.	0'784	229'2	235'6	-26'9			76	
		7016	0'417	359'7	354'3	+28'6	2	9				July 24	0'918	28'5	140'8	+56'9			118	
		7016	0'415	2'5	352'9	+28'5	4	22						(+7'5)	(194'0)	(+5'2)	(0)	(0)	(301)	
July 12				(+2'2)	(354'1)	(+4'1)	(13)	(53)	(0)				205'471	0'910	261'0	244'5	-5'9			139
												G.			(+8'0)	(180'1)	(+5'3)	(0)	(0)	(139)
193'551	AB, AS	7016	0'479	331'1	353'2	+28'8	3	19		July 25										
		7016	0'455	336'0	350'0	+28'6	0	14												
			0'929	105'8	271'5	-13'0			183	July 26										
July 13				(+2'7)	(337'9)	(+4'2)	(3)	(33)	(183)	to										
										July 28										
194'320	AB, AS	7016	0'560	318'7	352'5	+28'7	2	7		209'412	AB, AS		0'938	290'8	198'1	+21'4			90	
			0'877	108'9	269'0	-14'3			164	G.			0'926	104'4	62'2	-11'1			138	
July 14				(+3'1)	(327'7)	(+4'3)	(2)	(7)	(164)	July 29				(+9'6)	(128'0)	(+5'6)	(0)	(0)	(228)	
195'392	JS, AB		0'717	307'1	354'2	+29'0			160	July 30										
				(+3'6)	(313'5)	(+4'4)	(0)	(0)	(160)	to										
July 15										Aug. 2										
196'330	AB, AS		0'823	302'7	353'4	+29'2			194	214'434	AB, AS		0'950	58'2	349'6	+32'0			116	
				(+4'0)	(301'1)	(+4'5)	(0)	(0)	(194)	G.				(+11'6)	(61'6)	(+6'0)	(0)	(0)	(116)	
July 16										Aug. 3										
197'629	AB, AS		0'932	299'2	351'8	+28'8			187	215'389	JS, AB		0'890	59'1	347'1	+30'2			182	
			0'834	288'6	339'9	+18'0			86	G.				(+12'0)	(49'0)	(+6'1)	(0)	(0)	(182)	
July 17				(+4'6)	(283'9)	(+4'6)	(0)	(0)	(273)	Aug. 4										
198'464	JS, AB		0'942	292'1	343'4	+22'4			164	Aug. 5										
				(+4'9)	(272'9)	(+4'7)	(0)	(0)	(164)	to										
July 18										Aug. 17										
July 19																				
to																				
July 22																				
203'434	JS, AB		0'925	292'5	274'6	+22'7			204	229'456	AB, AS		0'950	96'4	152'1	-3'9			148	
			0'926	126'9	147'1	-31'3			147	G.				(+17'1)	(223'0)	(+6'8)	(0)	(0)	(148)	
July 23				(+7'1)	(207'0)	(+5'1)	(0)	(0)	(351)	Aug. 18										
										Aug. 19										
										and										
										Aug. 20										

MEASURES OF POSITIONS AND AREAS OF SUN SPOTS AND FACULÆ ON PHOTOGRAPHS

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—continued.

Greenwich Civil Time.	Measures.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	HELIOGRAPHIC		SPOTS.		FACULÆ.	Greenwich Civil Time.	Measures.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	HELIOGRAPHIC		SPOTS.		FACULÆ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).						Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1913. 232°307 G. Aug. 21	AB, AS		0°901	5°6	170°3	+70°2			143	1913. Sept. 11 to Sept. 24									
				(+18°0)	(185°3)	(+6°9)	(0)	(0)	(143)				No Spots or Faculæ.						
Aug. 22 to Aug. 27			No Spots or Faculæ.							267°387 G. Sept. 25	JS, AB	0°947	84°4	10°5	+7°5				205
													(+25°6)	(82°1)	(+6°9)	(0)	(0)	(205)	
239°422 G. Aug. 28	AB, AS		0°907 0°954	269°8 56°5	156°3 17°7	+2°9 +34°1			68 137 (205)	268°492 G. Sept. 26	JS, AB	0°882	87°3	5°4	+5°6				238
				(+20°1)	(91°3)	(+7°1)	(0)	(0)	(205)					(+25°7)	(67°5)	(+6°9)	(0)	(0)	(238)
Aug. 29 to Sept. 5			No Spots or Faculæ.							269°356 G. Sept. 27	JS, AB	0°766	88°0	6°0	+5°9				103
														(+25°8)	(56°1)	(+6°8)	(0)	(0)	(103)
248°450 C. Sept. 6	JS, AB		0°941	11°4	292°4	+73°1			225	Sept. 28 to Oct. 3									
				(+22°4)	(332°1)	(+7°2)	(0)	(0)	(225)				No Spots or Faculæ.						
249°352 G. Sept. 7	JS, AB	7017 7017 7017	0°627 0°624 0°608 0°852	269°9 266°5 267°6 101°4	359°1 358°6 357°6 263°3	+5°6 +3°5 +4°3 -5°8			5 3 1 118	276°502 G. Oct. 4	JS, AB	0°894	264°9	24°6	-1°6				124
				(+22°6)	(320°2)	(+7°2)	(9)	(32)	(178)					(+26°3)	(321°8)	(+6°5)	(0)	(0)	(124)
										277°167 K. Oct. 5	JS, AB	0°915	343°3	353°6	+66°2				73
														(+26°3)	(313°0)	(+6°5)	(0)	(0)	(73)
250°364 G. Sept. 8	JS, AB	7017 7017 7017	0°813 0°812 0°778 0°918	270°8 270°8 269°6 93°7	1°3 1°3 357°9 240°7	+4°9 +5°0 +4°3 -0°5			7 6 4 65	278°382 G. Oct. 6	JS, AB	7018 7018 7018	0°333 0°368 0°955	46°3 47°1 127°9	282°3 280°3 232°9	+19°5 +20°6 -33°2			8 8 186
				(+22°8)	(306°8)	(+7°3)	(17)	(45)	(354)					(+26°3)	(297°0)	(+6°4)	(16)	(35)	(186)
										279°587 G. Oct. 7	JS, AB	7018 7018	0°235 0°275	359°5 2°4	283°5 282°7	+19°9 +22°3			6 0
				(+23°0)	(293°0)	(+7°2)	(0)	(31)	(361)					(+26°4)	(283°4)	(+6°3)	(6)	(22)	(0)
52°378 G. Sept. 10	JS, AB		0°972	272°3	356°8	+4°0			173	280°403 G. Oct. 8	JS, AB	7018	0°315	318°2	283°1	+19°7			3 12
				(+23°2)	(280°2)	(+7°2)	(0)	(0)	(173)					(+26°4)	(270°3)	(+6°3)	(3)	(12)	(0)

Group 7017, September 7-9. A cluster of small spots.
Group 7018, October 6-8. A pair of very small clusters.

Measures of Positions and Areas of Sun Spots and Faculae on Photographs—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	HELIOGRAPHIC			SPOTS.		FACULÆ.	Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	HELIOGRAPHIC			SPOTS.		FACULÆ.
				Position Angle from Sun's Axis.	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).					Position Angle from Sun's Axis.	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).
1913. Oct. 9			No Spots or Faculae.							1913. Oct. 23			No Spots or Faculae.						
282.433 G.	JS, AB		0.913	166.5	220.6	-56.8		99		296.457 G.	JS, AB	0.939	71.5	348.5	+19.0			219	
Oct. 10			(+26.4)	(243.5)	(+6.1)	(o)	(o)	(99)		Oct. 24			(+25.7)	(58.6)	(+5.0)	(o)	(o)	(219)	
Oct. 11			No Spots or Faculae.							297.445 G.	JS, AB	7019	0.934	69.7	336.3	+20.7	3	14	} 234c
284.480 G.	JS, AB		0.904	289.0	281.5	+19.7		118		Oct. 25		7019	0.989	71.5	323.1	+19.0	20	73	
Oct. 12			(+26.4)	(216.5)	(+6.0)	(o)	(o)	(118)					(+25.6)	(45.5)	(+4.9)	(23)	(87)	(234)	
285.461 G.	JS, AB		0.909	293.8	268.9	+24.0		121		298.441 C.	AB, DE	7019	0.771	71.5	342.6	+17.4	7	28	} 128c
Oct. 13			(+26.4)	(203.6)	(+5.9)	(o)	(o)	(121)		Oct. 26		7019	0.827	69.8	337.2	+19.4	8	27	
Oct. 14 and Oct. 15			No Spots or Faculae.										(+25.5)	(32.4)	(+4.9)	(15)	(55)	(128)	
288.471 G.	JS, AB		0.824	272.7	219.5	+5.5		116		299.451 G.	JS, AB	7019	0.930	253.7	85.4	-13.3			163
Oct. 16			(+26.3)	(163.9)	(+5.7)	(o)	(o)	(116)				7019	0.610	66.7	343.2	+17.8	4	16	
289.435 G.	JS, AB		0.922	274.2	218.5	+6.0		156		300.423 G.	JS, AB	7019	0.481	58.0	340.9	+19.0	5	12	
Oct. 17			(+26.3)	(151.2)	(+5.6)	(o)	(o)	(156)		Oct. 28		7019	0.533	58.8	337.4	+20.1	7	42	
Oct. 18			No Spots or Faculae.										(+25.2)	(6.3)	(+4.7)	(12)	(54)	(o)	
291.509 G.	JS, AB		0.937	50.8	55.9	+38.5		115		301.425 G.	JS, AB	7019	0.280	36.3	343.0	+17.5	2	15	
Oct. 19			(+26.1)	(123.8)	(+5.5)	(o)	(o)	(115)		Oct. 29		7019	0.319	43.5	339.7	+17.8	0	12	
Oct. 20 and Oct. 21			No Spots or Faculae.									7019	0.361	44.1	337.6	+19.4	4	34	
294.421 G.	JS, AB		0.914	259.0	150.1	-7.8		124					(+25.1)	(353.0)	(+4.6)	(6)	(61)	(o)	
Oct. 22			(+25.9)	(85.4)	(+5.2)	(o)	(o)	(124)		302.428 G.	JS, AB	7019	0.165	339.7	343.2	+13.4	0	9	
										Oct. 30		7019	0.225	359.0	340.0	+17.4	1	18	
												7019	0.264	7.3	337.8	+19.7	3	21	
													(+24.9)	(339.8)	(+4.5)	(4)	(48)	(o)	
										303.404 G.	JS, AB	7019	0.314	325.4	337.7	+19.3	4	16	
										Oct. 31				(+24.8)	(326.9)	(+4.4)	(4)	(16)	(o)
										Nov. 1			No Spots or Faculae.						

Group 7019, October 25-31. A small unstable group.

MEASURES OF POSITIONS AND AREAS OF SUN SPOTS AND FACULÆ ON PHOTOGRAPHS

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—continued.

Greenwich Civil Time.	Measures.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	HELIOGRAPHIC		SPOTS.		FACULÆ.	Greenwich Civil Time.	Measures.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	HELIOGRAPHIC		SPOTS.		FACULÆ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).						Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1913. 305°542 G. Nov. 2	JS, AB		0°08	273°1	4°0	+ 4°6	(o)	(o)	190	1913. 323°442 C. Nov. 20	JS, AB		0°58	72°2	349°8	+17°7	(o)	(o)	145
				(+24°4)	(298°8)	(+4°2)			(190)					(+20°0)	(62°8)	(+2°1)			(145)
306°451 G. Nov. 3	JS, AB		0°817	292°1	340°4	+20°3	(o)	(o)	244	324°200 D. Nov. 21	AB, DE		0°927	69°2	345°8	+20°0	(o)	(o)	76
				(+24°3)	(286°8)	(+4°1)			(244)					(+19°8)	(52°8)	(+2°0)			(76)
307°440 G. Nov. 4	JS, AB		0°916	289°1	339°7	+19°0	(o)	(o)	174	325°499 G. Nov. 22	JS, AB		0°907	293°8	99°3	+22°3	(o)	(o)	71
				(+24°1)	273°7	(+4°0)			(174)				0°870	66°0	337°1	+21°7	(o)	(o)	60
														(+19°4)	(35°7)	(+1°9)			(131)
308°502 G. Nov. 5	JS, AB		0°963	289°7	334°2	+20°0	(o)	(o)	110	326°439 C. Nov. 23	JS, AB		0°893	215°7	70°9	-45°2	(o)	(o)	117
				(+23°9)	(259°7)	(+3°8)			(110)					(+19°1)	(23°3)	(+1°7)			(117)
Nov. 6 to Nov. 10			No Spots or Faculæ.							327°539 C. Nov. 24	JS, AB	7020	0°885	237°9	66°0	-27°1	0	18	} 1410
											7020	0°867	236°3	63°3	-27°8	8	42	(141)	
														(+18°7)	(8°8)	(+1°6)	(8)	(60)	
314°471 G. Nov. 11	JS, AB		0°908	242°3	242°1	-23°4	(o)	(o)	119	328°546 C. Nov. 25	JS, AB	7020	0°974	241°7	69°7	-27°1	0	46	} 2000
				(+22°5)	(181°0)	(+3°2)			(119)			7020	0°944	239°7	62°4	-27°8	10	51		(298)
													0°904	65°3	292°7	+22°8	(10)	(97)	
														(+18°3)	(355°5)	(+1°5)			
Nov. 12 and Nov. 13			No Spots or Faculæ.							Nov. 26 to Nov. 28			No Spots or Faculæ.						
317°474 G. Nov. 14	JS, AB		0°917	233°8	201°2	-31°3	(o)	(o)	100	332°458 G. Nov. 29	JS, AB		0°910	242°5	6°1	-24°3	(o)	(o)	119
				(+21°8)	(141°4)	(+2°8)			(100)					(+16°9)	(304°0)	(+1°0)			(119)
318°418 G. Nov. 15	JS, AB		0°928	265°5	196°7	- 3°2	(o)	(o)	106	Nov. 30			No Spots or Faculæ.						
			0°916	288°6	194°7	+18°1			111										
			0°933	62°2	61°6	+26°8			110										
				(+21°5)	(129°0)	(+2°7)			(327)	334°356 C. Dec. 1	JS, AB		0°898	295°5	340°5	+23°1	(o)	(o)	190
Nov. 16 to Nov. 19			No Spots or Faculæ.							Dec. 2				(+16°2)	(278°9)	(+0°8)			(190)
														No Spots or Faculæ.					

Group 7020, November 24-25. A pair of small spots.

Measures of Positions and Areas of Sun Spots and Faculae on Photographs—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	HELIOGRAPHIC		SPOTS.		FAULAE.	Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	HELIOGRAPHIC		SPOTS.		FAULAE.	
					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).	
1913. 336.426	JS, AB		0.918	225.8	310.7	+40.0			118	1913. 345.539	AB, DE	7021a	0.572	227.6	158.8	-23.0				
C.			0.921	49.8	190.7	+36.6			135	G.		7021	0.541	219.9	154.0	-25.0	9	44		
Dec. 3			0.901	67.9	189.2	+20.0	(o)	(o)	181	Dec. 12			0.922	122.2	67.9	-29.7	1	14	229	
				(+15.4)	(25.7)	(+0.5)			(434)					(+11.6)	(131.6)	(-0.7)	(10)	(58)	(229)	
Dec. 4			No Spots or Faculae.								346.124	JS, AB	7021b	0.664	235.3	160.1	-22.8	5	23	
										K.		7021a	0.651	233.7	158.6	-23.3	4	18		
338.440	JS, AB		0.927	248.3	291.3	-20.0	(o)	(o)	105	Dec. 13		7021	0.617	228.7	154.5	-24.7	0	10		
G.				(+14.6)	(225.1)	(+0.2)			(105)				0.897	122.7	64.0	-29.4	(9)	(51)	434	
Dec. 5														(+11.3)	(123.9)	(-0.8)			(434)	
339.385	JS, AB		0.897	69.2	150.7	+18.6	(o)	(o)	130	347.503	DE, AB	7021b	0.842	243.6	160.2	-22.5	0	8	3928f	
C.			0.897	87.0	149.2	+2.8	(o)	(o)	130	G.			0.779	126.2	60.5	-28.0	(o)	(8)	205	
Dec. 6				(+14.2)	(212.7)	(+0.1)			(260)	Dec. 14				(+10.7)	(105.7)	(-0.9)			(597)	
Dec. 7 and Dec. 8			No Spots or Faculae.								348.415	JS, AB		0.895	243.3	154.7	-24.2	(o)	(o)	351
										C.			0.927	99.4	26.1	-9.1	(o)	(o)	139	
										Dec. 15				(+10.3)	(93.7)	(-1.0)			(490)	
342.351	JS, AB		0.917	291.9	238.1	+19.8			157	349.455	AB, DE		0.967	244.6	154.0	-24.8	(o)	(o)	154	
C.			0.905	264.5	238.1	-5.1	7	27	147	G.			0.871	238.4	136.7	-27.7	(o)	(o)	70	
Dec. 9		7021a	0.479	146.2	156.7	-23.7	0	7		Dec. 16				(+9.8)	(80.0)	(-1.2)			(224)	
		7021	0.514	145.4	154.9	-25.2	0	7		350.511	JS, AB		0.914	84.2	0.5	+4.8	(o)	(o)	128	
		7021	0.505	143.7	154.5	-24.2	2	15		C.				(+9.3)	(66.1)	(-1.3)	(o)	(o)	(128)	
				(+12.9)	(173.6)	(-0.3)	(9)	(49)	(304)	Dec. 17										
343.328	JS, AB		0.899	227.2	217.0	-37.7			155	Dec. 18			No Spots or Faculae.							
C.		7021a	0.397	173.4	157.9	-23.5	20	97												
		7021	0.393	169.9	156.4	-23.0	2	9		352.346	JS, AB		0.894	109.0	339.6	-17.7	(o)	(o)	151	
		7021	0.430	166.9	154.6	-25.0	6	18		C.				(+8.4)	(41.9)	(-1.5)	(o)	(o)	(151)	
		7021	0.402	166.5	154.6	-23.3	0	7		Dec. 19										
Dec. 10			0.894	52.8	103.4	+32.4	(28)	(131)	93											
				(+12.5)	(160.7)	(-0.4)			(248)	Dec. 20			No Spots or Faculae.							
344.421	JS, AB	7021a	0.441	206.6	158.7	-23.7	20	68												
C.		7021	0.430	203.8	157.2	-23.6	6	24		354.412	JS, AB		0.787	232.5	60.5	-29.8	(o)	(o)	152	
		7021	0.433	198.4	154.9	-24.7	0	16		C.				(+7.5)	(14.7)	(-1.8)	(o)	(o)	(152)	
		7021	0.445	196.2	154.2	-25.7	4	16		Dec. 21										
		7021	0.421	195.6	153.4	-24.3	1	7												
Dec. 11			0.982	120.5	68.8	-30.0	(31)	(131)	462											
				(+12.0)	(146.3)	(-0.5)			(462)											

Group 7021, December 9-14. A fairly stable spot *a*, with several short-lived companions, of which one, *b*, appears in advance of *a* on December 13, and remains alone on December 14.

MEASURES OF POSITIONS AND AREAS OF SUN SPOTS AND FACULÆ ON PHOTOGRAPHS

Measures of Positions and Areas of Sun Spots and Faculæ on Photographs—*continued.*

Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	HELIOGRAPHIC		SPOTS		FACULÆ.	Greenwich Civil Time.	Measurers.	No. of Group, and Letter for Spot.	Distance from Centre in terms of Sun's Radius.	Position Angle from Sun's Axis.	HELIOGRAPHIC		SPOTS.		FACULÆ.
					Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).						Longitude.	Latitude.	Area of UMBRA for each Spot (and for Day).	Area of WHOLE for each Spot (and for Day).	Area for each Group (and for Day).
1913. 355 ³²⁷ C.	JS, AB		0.856	235.8	57.1	-29.8			364	1913. Dec. 26 to Dec. 29									
Dec. 22			(+7.0)	(2.6)	(-1.9)	(o)	(o)	(364)				No	Spots	or	Faculæ.				
356 ⁵²⁷ C.	JS, AB		0.927	238.3	52.2	-30.0			277										
Dec. 23			(+6.5)	(346.8)	(-2.1)	(o)	(o)	(277)											
357 ³⁴⁵ C.	JS, AB		0.969	239.4	50.5	-30.1			251	363 ⁴⁶² G. Dec. 30	JS, AB	7022	0.537	35.4	235.8	+23.1	8	32	} 54 ^f (54)
Dec. 24			(+6.0)	(336.1)	(-2.2)	(o)	(o)	(251)				7022	0.553	39.0	233.4	+22.7	0	19	
												7022	0.556	41.2	232.3	+22.0	5	21	
358 ³⁶⁹ C.	JS, AB		0.887	237.4	21.7	-29.7			90	364 ⁴⁶³ G. Dec. 31	JS, AB	7022	0.443	11.1	237.0	+22.7	6	34	}
Dec. 25			(+5.6)	(322.6)	(-2.3)	(o)	(o)	(90)				7022	0.447	22.9	231.6	+21.3	4	17	
														(+2.6)	(242.3)	(-3.0)	(10)	(51)	(o)

Group 7022, 1913 December 30-1914 January 4. A pair of double spots varying their distance from each other, with occasional different companions.

ROYAL OBSERVATORY, GREENWICH.

LEDGERS

OF

AREAS AND POSITIONS OF GROUPS OF SUN SPOTS

DEDUCED FROM THE MEASUREMENT

OF THE

SOLAR PHOTOGRAPHS

FOR EACH DAY IN THE YEAR

1913.

AREAS and HELIOGRAPHIC POSITIONS of GROUPS of SUN SPOTS DEDUCED FOR EACH DAY from the MEASUREMENTS of the PHOTOGRAPHS taken at the ROYAL OBSERVATORIES of GREENWICH and of THE CAPE, and IN INDIA, at the OBSERVATORY, KODAIKÁNAL, and at DEHRA DŪN, in the YEAR 1913.

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

The place where the photograph was taken is also indicated in the first Column. A photograph taken at Greenwich is indicated by the letter G, one taken at the Cape by the letter C, one taken at Kodaikánal by the letter K, and one taken at Dehra Dún by the letter D.

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

The Columns "Mean Longitude of Group" give the Mean heliographic longitude of the group as computed upon two different systems. In System I. the daily sidereal motion due to the Sun's rotation is assumed to be $851'07$ for all spots, whatever their latitude; this corresponds to Carrington's assumed rotation period of 25.38 days. In System II. the daily sidereal motion is assumed to vary with the latitude in accordance with the formula

$$866'6 - 128' \sin^2 l.$$

In both systems the longitude of the centre of the Sun's disk is adopted as $12^{\circ}78$ for 1913 Jan. 1st; the longitudes given under System I. being thus rendered uniform with those given in preceding volumes of the Greenwich Photo-Heliographic Results.

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

Date, Greenwich Civil Time, and Where taken.	Projected Area of		Area Corrected for Fore-shortening of		Mean Longitude of Group.		Mean Latitude of Group.	Longitude from Central Meridian.	Date, Greenwich Civil Time, and Where taken.	Projected Area of		Area Corrected for Fore-shortening of		Mean Longitude of Group.		Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.	System I.	System II.				Umbra.	Whole Spot.	Umbra.	Whole Spot.	System I.	System II.		
Group 7008. 1912 December 29-1913 January 2. A short stream of spots.									Group 7010. January 16-18. A very faint cluster.								
1912. 363.508 G	10	62	6	37	56.8	56.4	+26.2	+11.2	1913. 15.433 C	0	19	0	20	110.0	108.9	+16.2	-59.6
364.448 G	9	50	5	31	55.9	55.7	+26.3	+22.7	16.504 G	0	18	0	14	109.1	107.9	+17.2	-46.3
365.521 G	12	60	9	43	56.8	56.7	+25.7	+37.7	17.461 G	0	29	0	18	111.3	110.0	+18.0	-31.6
1913. 0.374 C	19	81	16	68	54.4	54.5	+26.2	+46.5	Means ...	...	...	0	17	110.13	108.93	+17.13	...
1.429 G	28	119	31	138	53.5	53.7	+26.5	+59.5	Group 7011. January 25-27. A pair of small spots.								
Means ...	...	...	13	63	55.48	55.40	+26.18	...	24.431 C	0	11	0	8	6.0	1.2	-8.9	-45.1
The discordance between the values in column 7 for the above group and those given in the 1912 volume for the same group, is due to the necessity for making the systems agree on Jan. 1 st , and keeping System I. continuous.									25.518 G	9	43	5	24	10.6	5.6	-10.6	-26.2
Group 7009. January 13-15. A cluster of small unstable spots.									26.427 G	2	12	1	6	12.9	7.7	-10.4	-11.9
12.412 C	8	57	7	45	260.4	258.7	-14.4	+51.1	Means ...	...	...	2	13	9.83	4.83	-9.97	...
13.521 G	10	79	12	95	260.6	258.8	-13.9	+65.9	Group 7012. February 19-27. A regular spot with train in high latitude.								
14.462 G	0	9	0	22	261.4	259.5	-13.9	+79.1	49.441 G	6	28	8	36	24.2	39.7	+31.2	-57.6
Means ...	...	...	6	54	260.80	259.00	-14.07	...	50.635 G	20	94	18	82	24.3	40.2	+31.4	-41.7

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

Date, Greenwich Civil Time, and Where taken.	Projected Area of		Area Corrected for Fore-shortening of		Mean Longitude of Group.		Mean Latitude of Group.	Longitude from Central Meridian.	Date, Greenwich Civil Time, and Where taken.	Projected Area of		Area Corrected for Fore-shortening of		Mean Longitude of Group.		Mean Latitude of Group.	Longitude from Central Meridian.
	Umbra.	Whole Spot.	Umbra.	Whole Spot.	System I.	System II.				Umbra.	Whole Spot.	Umbra.	Whole Spot.	System I.	System II.		
Group 7012—continued.									Group 7016—continued.								
1913. a									1913. a								
51.521 G	22	114	16	84	25.9	42.0	+31.2	-28.5	191.404 G	38	117	21	66	356.4	40.2	+28.6	-9.9
52.382 C	25	155	17	103	25.6	42.0	+31.1	-17.4	192.319 G	22	97	13	53	355.3	39.3	+28.6	+1.2
53.497 G	22	118	14	75	26.7	43.5	+31.4	-1.6	193.551 G	5	59	3	33	351.8	36.1	+28.7	+13.9
54.465 G	21	81	14	53	26.3	43.4	+31.4	+10.7	194.320 G	3	12	2	7	352.5	37.0	+28.7	+24.8
55.392 C	17	69	12	47	26.1	43.4	+31.3	+22.7	Means ...	...	...	...	...	354.93	38.87	+28.57	...
56.456 G	11	31	9	25	25.5	43.2	+31.0	+36.1									
57.456 G	7	32	7	32	24.7	42.7	+30.8	+48.5									
Means ...	...	...	13	60	25.48	42.23	+31.20	...									
Group 7013. February 20-25. Some small spots in high latitude. This group, together with Group 7012, may be considered as forming a single sparse and broken stream, but there is a clear gap between the two.									Group 7017. 802 September 7-9. A cluster of small spots. 801 Nov 5								
50.635 G	4	22	4	22	18.6	35.7	+32.6	-47.4	249.352 G	14	50	9	32	358.6	297.5	+4.6	+38.4
51.521 G	8	48	7	41	16.7	34.1	+32.4	-37.7	250.364 G	21	54	17	45	0.3	299.0	+4.8	+53.5
52.382 C	4	23	3	17	14.7	32.4	+32.5	-28.3	251.409 G	0	27	0	31	357.5	295.9	+4.4	+64.5
53.497 G	6	34	4	23	15.5	33.6	+32.2	-12.8	Means ...	...	...	...	...	358.80	297.47	+4.60	...
54.465 G	0	13	0	8	15.2	33.6	+31.1	-0.4									
55.392 C	0	4	0	3	19.5	38.2	+30.9	+16.1									
Means ...	...	...	3	19	16.70	34.60	+31.95	...									
Group 7014. 795 March 13-14. A small spot in high latitude.									Group 7018. 803 October 6-8. A pair of very small clusters.								
71.609 G	2	12	3	17	79.5	111.6	-35.3	-70.2	278.382 G	28	65	16	35	281.1	280.0	+20.2	-15.9
72.349 C	0	8	0	8	80.2	112.6	-35.0	-59.8	279.587 G	12	43	6	22	283.2	282.1	+20.8	-0.2
Means ...	...	...	2	13	79.85	112.10	-35.15	...	280.403 G	6	22	3	12	283.1	282.0	+19.7	+12.8
									Means ...	...	...	...	...	282.47	281.37	+20.23	...
Group 7015. 796 April 5-7. A short stream.									Group 7019. October 25-31. A small unstable group. 8								
94.497 G	14	77	8	42	229.9	205.6	-2.0	+22.0	297.445 G	8	32	23	87	325.2	315.4	+19.3	-80.3
95.415 G	11	72	7	44	228.3	203.8	-2.0	+33.6	298.441 C	17	66	15	55	340.0	330.1	+18.4	-52.4
96.441 G	4	16	3	12	231.2	206.4	-1.7	+49.0	299.451 G	33	108	18	70	339.4	329.5	+19.8	-39.7
Means ...	...	...	6	33	229.80	205.27	-1.90	...	300.423 G	20	90	12	54	338.2	328.3	+19.9	-28.1
									301.425 G	11	115	6	61	339.3	329.3	+18.6	-13.7
									302.428 G	8	93	4	48	339.6	329.6	+17.7	-0.2
									303.404 G	8	30	4	16	337.7	327.7	+19.3	+10.8
									Means ...	...	...	...	...	337.06	327.13	+19.00	...
Group 7016. 797, 798, Nov 5-7. 799									Group 7020. November 24-25. A pair of small spots.								
189.329 G	2	8	1	6	356.6	40.0	+28.2	-37.1	327.539 C	8	59	8	60	64.1	128.6	-27.6	+55.3
190.484 G	17	76	10	45	357.0	40.6	+28.6	-21.4	328.546 C	6	55	10	97	65.9	130.6	-27.5	+70.4
Means ...	...	...	...	...	...	...	...	...	Means ...	...	...	...	...	65.00	129.60	-27.55	...

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

Date. Greenwich Civil Time, and Where taken.	Projected Area of		Area Corrected for Fore-shortening of		Mean Longitude of Group.		Mean Latitude of Group.	Longitude from Central Meridian.	Date. Greenwich Civil Time, and Where taken.	Projected Area of		Area Corrected for Fore-shortening of		Mean Longitude of Group.		Mean Latitude of Group.	Longitude from Central Meridian.
	Umbr.	Whole Spot.	Umbr.	Whole Spot.	System I.	System II.				Umbr.	Whole Spot.	Umbr.	Whole Spot.	System I.	System II.		
Group 7021.									Group 7022.								
December 9-14. A fairly stable spot, <i>a</i> , with several short-lived companions, of which one, <i>b</i> , appears in advance of <i>a</i> on December 13, and remains alone on December 14.									1913 December 30-1914 January 4. A pair of double spots varying their distance from each other, with occasional different companions.								
1913. <i>a</i>									1913. <i>a</i>								
342'351 C	17	84	9	49	155'8	183'5	-24'1	-17'8	363'462 G	22	119	13	72	234'1	251'9	+22'7	-21'4
343'328 C	51	237	28	131	157'2	185'0	-23'7	-3'5	364'463 G	18	90	10	51	235'2	253'1	+22'2	-7'1
344'421 C	57	238	31	131	157'1	185'0	-24'1	+10'8	0'446 C	26	96	14	54	237'1	255'0	+22'5	+7'7
345'539 G	17	95	10	58	157'6	185'6	-23'5	+26'0	1'509 C	44	130	27	79	238'7	256'7	+22'5	+23'3
346'124 K	13	77	9	51	158'5	186'5	-23'3	+34'6	2'517 G	16	56	11	39	239'6	257'6	+22'0	+37'5
347'503 G	0	9	0	8	160'2	188'4	-22'5	+54'5	3'429 C	0	9	0	8	240'1	258'2	+22'1	+50'0
Means	15	71	157'73	185'67	-23'53	...	Means	13	51	237'47	255'42	+22'33	...

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ROYAL OBSERVATORY, GREENWICH.

TOTAL AREAS OF SUN SPOTS AND FACULÆ

PROJECTED AND CORRECTED FOR FORESHORTENING

FOR EACH DAY,

AND

MEAN AREAS AND MEAN HELIOGRAPHIC LATITUDE

OF

SUN SPOTS AND FACULÆ

FOR EACH ROTATION OF THE SUN

AND FOR THE YEAR

1913.

TOTAL AREAS OF SUN SPOTS AND FACULÆ FOR EACH DAY IN THE YEAR 1913.

TOTAL AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1913.

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

The place where the photograph was taken is indicated in the second Column. A photograph taken at Greenwich is indicated by the letter G, one taken at the Cape by the letter C, one taken at Kodaikanal by the letter K, and one taken at Dehra Dûn by the letter D.

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

The Area Corrected for the effect of Foreshortening is expressed in millionths of the Sun's visible hemisphere.

Greenwich Civil Time.	Where taken.	Projected Area.			Area Corrected for Foreshortening.			Greenwich Civil Time.	Where taken.	Projected Area.			Area Corrected for Foreshortening.		
		Umbra.	Whole Spots.	Facula.	Umbra.	Whole Spots.	Facula.			Umbra.	Whole Spots.	Facula.	Umbra.	Whole Spots.	Facula.
1913.	d							1913.	d						
January 1'374	C	19	81	334	16	68	302	February 14'307	C	0	0	127	0	0	162
2'429	G	28	119	296	31	138	362	15'373	C	0	0	127	0	0	125
3'489	G	0	0	227	0	0	374	16'453	G	0	0	0	0	0	0
4'305	C	0	0	125	0	0	123	17'321	C	0	0	148	0	0	148
5'394	C	0	0	0	0	0	0	18'443	G	0	0	55	0	0	180
6'472	G	0	0	128	0	0	103	19'441	G	6	28	209	8	36	245
7'444	G	0	0	236	0	0	340	20'635	G	24	115	199	22	104	185
8'598	G	0	0	355	0	0	374	21'521	G	30	162	240	23	125	188
9'433	G	0	0	296	0	0	243	22'382	C	30	178	254	20	120	182
10'470	C	0	0	157	0	0	109	23'497	G	28	152	140	18	98	92
11'383	C	0	0	0	0	0	0	24'465	G	21	94	0	14	61	0
12'421	G	0	0	0	0	0	0	25'392	C	17	73	288	12	50	259
13'412	C	8	57	158	7	45	127	26'456	G	11	31	330	9	25	241
14'521	G	10	79	148	12	95	180	27'456	G	7	32	320	7	32	279
15'462	G	0	9	128	0	22	295	28'469	G	0	0	270	0	0	284
16'433	C	0	19	263	0	20	219								
17'504	G	0	18	276	0	14	253	March 1'365	C	0	0	234	0	0	339
18'461	G	0	29	493	0	18	439	2'553	C	0	0	335	0	0	421
19'391	G	0	0	231	0	0	373	3'414	G	0	0	128	0	0	116
20'510	C	0	0	167	0	0	173	4'366	C	0	0	0	0	0	0
21'427	C	0	0	0	0	0	0	5'422	G	0	0	111	0	0	127
22'352	C	0	0	210	0	0	205	6'435	G	0	0	0	0	0	0
23'380	C	0	0	158	0	0	121	7'450	G	0	0	0	0	0	0
24'369	C	0	0	0	0	0	0	8'417	G	0	0	0	0	0	0
25'431	C	0	11	326	0	8	292	9'105	K	0	0	0	0	0	0
26'518	G	9	43	0	5	24	0	10'376	C	0	0	0	0	0	0
27'427	G	2	12	198	1	6	173	11'604	G	0	0	211	0	0	203
28'552	C	0	0	336	0	0	306	12'420	G	0	0	0	0	0	0
29'423	C	0	0	410	0	0	400	13'609	G	2	12	80	3	17	96
30'325	C	0	0	399	0	0	498	14'349	C	0	8	107	0	8	115
31'447	G	0	0	525	0	0	498	15'424	G	0	0	313	0	0	232
February 1'403	C	0	0	168	0	0	180	16'523	G	0	0	0	0	0	0
2'475	C	0	0	168	0	0	194	17'487	G	0	0	162	0	0	145
3'414	C	0	0	158	0	0	221	18'526	G	0	0	111	0	0	141
4'484	G	0	0	158	0	0	161	19'491	G	0	0	141	0	0	186
5'128	K	0	0	0	0	0	0	20'438	G	0	0	263	0	0	290
6'534	G	0	0	0	0	0	0	21'490	G	0	0	354	0	0	340
7'503	C	0	0	0	0	0	0	22'468	G	0	0	305	0	0	285
8'477	G	0	0	0	0	0	0	23'640	G	0	0	0	0	0	0
9'130	K	0	0	0	0	0	0	24'456	C	0	0	0	0	0	0
10'605	G	0	0	119	0	0	124	25'475	G	0	0	0	0	0	0
11'500	G	0	0	0	0	0	0	26'481	G	0	0	0	0	0	0
12'395	C	0	0	0	0	0	0	27'530	G	0	0	162	0	0	130
13'384	C	0	0	95	0	0	102	28'648	G	0	0	152	0	0	157

TOTAL AREAS of SUN SPOTS and FACULÆ—continued.

Greenwich Civil Time.	Where taken.	Projected Area.			Area Corrected for Foreshortening.			Greenwich Civil Time.	Where taken.	Projected Area.			Area Corrected for Foreshortening.		
		Umbrae.	Whole Spots.	Faculae.	Umbrae.	Whole Spots.	Faculae.			Umbrae.	Whole Spots.	Faculae.	Umbrae.	Whole Spots.	Faculae.
1913. d								1913. d							
March 29 654	G	0	0	162	0	0	240	May 25 483	G	0	0	0	0	0	
30 565	G	0	0	91	0	0	95	26 306	G	0	0	126	0	0	
31 382	C	0	0	130	0	0	111	27 313	G	0	0	0	0	139	
								28 313	G	0	0	0	0	0	
April 1 615	G	0	0	0	0	0	0	29 338	G	0	0	178	0	200	
2 517	G	0	0	0	0	0	0	30 448	G	0	0	263	0	293	
3 369	G	0	0	0	0	0	0	31 382	C	0	0	0	0	0	
4 402	C	0	0	0	0	0	0								
5 497	G	14	77	133	8	42	135	June 1 359	C	0	0	0	0	0	
6 415	G	11	72	0	7	44	0	2 308	G	0	0	221	0	207	
7 441	G	4	16	133	3	12	102	3 301	G	0	0	0	0	0	
8 377	G	0	0	154	0	0	155	4 662	G	0	0	0	0	0	
9 357	C	0	0	153	0	0	246	5 303	G	0	0	0	0	0	
10 436	C	0	0	142	0	0	157	6 490	G	0	0	0	0	0	
11 356	C	0	0	109	0	0	133	7 482	G	0	0	126	0	122	
12 375	C	0	0	0	0	0	0	8 111	K	0	0	0	0	0	
13 350	G	0	0	0	0	0	0	9 346	G	0	0	126	0	116	
14 395	C	0	0	109	0	0	125	10 520	G	0	0	137	0	103	
15 110	K	0	0	0	0	0	0	11 298	G	0	0	0	0	0	
16 603	G	0	0	103	0	0	113	12 357	G	0	0	0	0	0	
17 367	G	0	0	123	0	0	124	13 358	C	0	0	0	0	0	
18 441	C	0	0	0	0	0	0	14 520	G	0	0	0	0	0	
19 386	C	0	0	0	0	0	0	15 506	G	0	0	0	0	0	
20 490	G	0	0	236	0	0	250	16 350	G	0	0	0	0	0	
21 479	G	0	0	113	0	0	126	17 357	G	0	0	252	0	253	
22 444	G	0	0	103	0	0	155	18 397	G	0	0	200	0	202	
23 344	G	0	0	113	0	0	117	19 309	G	0	0	126	0	118	
24 412	G	0	0	103	0	0	81	20 476	G	0	0	105	0	113	
25 429	G	0	0	103	0	0	119	21 319	G	0	0	127	0	113	
26 384	G	0	0	124	0	0	109	22 397	G	0	0	0	0	0	
27 363	C	0	0	110	0	0	123	23 414	C	0	0	0	0	0	
28 673	G	0	0	0	0	0	0	24 440	C	0	0	0	0	0	
29 370	G	0	0	0	0	0	0	25 507	G	0	0	84	0	90	
30 356	G	0	0	0	0	0	0	26 299	G	0	0	116	0	111	
								27 482	G	0	0	0	0	0	
May 1 514	G	0	0	0	0	0	0	28 488	G	0	0	0	0	0	
2 415	G	0	0	0	0	0	0	29 445	G	0	0	84	0	102	
3 349	G	0	0	0	0	0	0	30 441	G	0	0	0	0	0	
4 623	G	0	0	124	0	0	137								
5 488	G	0	0	135	0	0	167	July 1 519	G	0	0	0	0	0	
6 467	G	0	0	114	0	0	129	2 447	G	0	0	0	0	0	
7 318	G	0	0	0	0	0	0	3 601	G	0	0	0	0	0	
8 495	C	0	0	0	0	0	0	4 510	C	0	0	0	0	0	
9 450	C	0	0	0	0	0	0	5 454	C	0	0	0	0	0	
10 320	G	0	0	0	0	0	0	6 352	C	0	0	0	0	0	
11 326	G	0	0	0	0	0	0	7 385	G	0	0	200	0	232	
12 113	K	0	0	0	0	0	0	8 375	G	0	0	0	0	0	
13 473	G	0	0	0	0	0	0	9 329	G	2	8	95	1	66	
14 363	G	0	0	0	0	0	0	10 484	G	17	76	0	10	45	
15 428	G	0	0	0	0	0	0	11 404	G	38	117	0	21	66	
16 434	G	0	0	0	0	0	0	12 319	G	22	97	0	13	53	
17 324	G	0	0	0	0	0	0	13 551	G	5	59	137	3	33	
18 501	G	0	0	115	0	0	123	14 320	C	3	12	158	2	7	
19 326	G	0	0	94	0	0	73	15 392	G	0	0	224	0	160	
20 628	G	0	0	188	0	0	180	16 330	G	0	0	221	0	194	
21 366	G	0	0	78	0	0	89	17 629	G	0	0	231	0	273	
22 306	G	0	0	94	0	0	95	18 404	C	0	0	112	0	164	
23 468	G	0	0	0	0	0	0	19 429	C	0	0	0	0	0	
24 316	G	0	0	0	0	0	0	20 526	G	0	0	0	0	0	

TOTAL AREAS OF SUN SPOTS AND FACULAE FOR EACH DAY IN THE YEAR 1913.

TOTAL AREAS of SUN SPOTS and FACULAE—continued.

Greenwich Civil Time.	Where taken.	Projected Area.			Area Corrected for Foreshortening.			Greenwich Civil Time.	Where taken.	Projected Area.			Area Corrected for Foreshortening.		
		Umbra.	Whole Spots.	Faculae.	Umbra.	Whole Spots.	Faculae.			Umbra.	Whole Spots.	Faculae.	Umbra.	Whole Spots.	Faculae.
1913. July	a							1913. September	a						
21'455	G	0	0	0	0	0	16'375	G	0	0	0	0	0	0	
22'505	G	0	0	0	0	0	17'429	G	0	0	0	0	0	0	
23'434	C	0	0	270	0	0	18'535	G	0	0	0	0	0	0	
24'419	G	0	0	294	0	0	19'389	G	0	0	0	0	0	0	
25'471	G	0	0	116	0	0	20'366	C	0	0	0	0	0	0	
26'638	G	0	0	0	0	0	21'111	K	0	0	0	0	0	0	
27'115	K	0	0	0	0	0	22'397	G	0	0	0	0	0	0	
28'419	G	0	0	0	0	0	23'520	C	0	0	0	0	0	0	
29'412	G	0	0	168	0	0	24'379	G	0	0	0	0	0	0	
30'336	C	0	0	0	0	0	25'387	G	0	0	0	0	0	0	
31'425	G	0	0	0	0	0	26'492	G	0	0	133	0	0	205	
August							27'356	G	0	0	226	0	0	238	
1'537	G	0	0	0	0	0	28'480	G	0	0	133	0	0	103	
2'524	G	0	0	0	0	0	29'391	G	0	0	0	0	0	0	
3'434	G	0	0	0	0	0	30'401	G	0	0	0	0	0	0	
4'389	C	0	0	74	0	0	October	1'453	G	0	0	0	0	0	
5'360	C	0	0	168	0	116	2'408	G	0	0	0	0	0		
6'350	G	0	0	0	0	0	3'467	G	0	0	0	0	0		
7'421	G	0	0	0	0	0	4'502	G	0	0	112	0	124		
8'455	G	0	0	0	0	0	5'167	K	0	0	59	0	73		
9'504	G	0	0	0	0	0	6'382	G	28	65	112	16	35		
10'422	G	0	0	0	0	0	7'587	G	12	43	0	6	22		
11'639	G	0	0	0	0	0	8'403	G	6	22	0	3	12		
12'463	G	0	0	0	0	0	9'407	G	0	0	0	0	0		
13'496	G	0	0	0	0	0	10'433	G	0	0	81	0	99		
14'330	G	0	0	0	0	0	11'402	C	0	0	0	0	0		
15'662	G	0	0	0	0	0	12'480	G	0	0	102	0	118		
16'333	G	0	0	0	0	0	13'461	G	0	0	102	0	121		
17'524	G	0	0	0	0	0	14'497	G	0	0	0	0	0		
18'456	G	0	0	94	0	148	15'420	G	0	0	0	0	0		
19'167	K	0	0	0	0	0	16'471	G	0	0	131	0	116		
20'470	G	0	0	0	0	0	17'435	G	0	0	121	0	156		
21'307	G	0	0	0	0	0	18'433	G	0	0	0	0	0		
22'488	G	0	0	125	0	143	19'509	G	0	0	81	0	115		
23'607	G	0	0	0	0	0	20'381	C	0	0	0	0	0		
24'450	G	0	0	0	0	0	21'167	K	0	0	0	0	0		
25'311	G	0	0	0	0	0	22'421	G	0	0	101	0	124		
26'416	G	0	0	0	0	0	23'511	G	0	0	0	0	0		
27'503	G	0	0	0	0	0	24'457	G	8	0	152	0	219		
28'422	G	0	0	0	0	0	25'445	C	8	32	192	23	87		
29'441	C	0	0	140	0	205	26'441	G	17	66	155	15	55		
30'437	G	0	0	0	0	0	27'451	G	33	108	121	18	70		
31'407	C	0	0	0	0	0	28'423	G	20	90	0	12	54		
September							29'425	G	11	115	0	6	61		
1'391	C	0	0	0	0	0	30'428	G	8	93	0	4	48		
2'395	C	0	0	0	0	0	31'404	G	8	30	0	4	16		
3'598	G	0	0	0	0	0	November	1'265	D	0	0	0	0	0	
4'499	G	0	0	0	0	0	2'542	G	0	0	161	0	190		
5'446	G	0	0	0	0	0	3'451	G	0	0	281	0	244		
6'450	C	0	0	0	0	0	4'440	G	0	0	141	0	174		
7'352	G	14	50	217	9	32	5'502	G	0	0	60	0	110		
8'364	G	21	54	404	17	45	6'522	G	0	0	0	0	0		
9'409	G	0	27	300	0	31	7'478	G	0	0	0	0	0		
10'378	G	0	0	83	0	173	8'495	G	0	0	0	0	0		
11'364	G	0	0	0	0	0	9'486	G	0	0	0	0	0		
12'386	G	0	0	0	0	0	10'260	D	0	0	0	0	0		
13'355	G	0	0	0	0	0	11'471	G	0	0	100	0	119		
14'476	G	0	0	0	0	0									
15'349	G	0	0	0	0	0									

TOTAL AREAS of SUN SPOTS and FACULÆ—*continued.*

Greenwich Civil Time.	Where taken.	Projected Area.			Area Corrected for Foreshortening.			Greenwich Civil Time.	Where taken.	Projected Area.			Area Corrected for Foreshortening.		
		Umbra.	Whole Spots.	Facula.	Umbra.	Whole Spots.	Facula.			Umbra.	Whole Spots.	Facula.	Umbra.	Whole Spots.	Facula.
1913. ^d								1913. ^d							
November 12:427	C	0	0	0	0	0	0	December 6:385	G	0	0	231	0	0	260
13:363	C	0	0	0	0	0	0	7:181	D	0	0	0	0	0	0
14:474	G	0	0	80	0	0	100	8:457	G	0	0	0	0	0	0
15:418	G	0	0	250	0	0	327	9:351	C	17	84	252	9	49	304
16:367	C	0	0	0	0	0	0	10:328	C	51	237	221	28	131	248
17:587	G	0	0	0	0	0	0	11:421	C	57	238	179	31	131	402
18:469	G	0	0	0	0	0	0	12:539	G	17	95	179	10	58	229
19:416	C	0	0	0	0	0	0	13:124	K	13	77	386	9	51	434
20:442	C	0	0	84	0	0	145	14:503	G	0	9	726	0	8	597
21:200	D	0	0	59	0	0	76	15:415	C	0	0	420	0	0	490
22:499	G	0	0	120	0	0	131	16:455	G	0	0	149	0	0	224
23:439	C	0	0	106	0	0	117	17:511	C	0	0	105	0	0	128
24:539	C	8	59	137	8	60	141	18:521	C	0	0	0	0	0	0
25:546	C	6	55	211	10	97	298	19:346	C	0	0	137	0	0	151
26:174	D	0	0	0	0	0	0	20:466	G	0	0	0	0	0	0
27:345	C	0	0	0	0	0	0	21:412	C	0	0	189	0	0	152
28:313	C	0	0	0	0	0	0	22:327	C	0	0	378	0	0	364
29:458	G	0	0	100	0	0	119	23:527	C	0	0	210	0	0	277
30:454	C	0	0	0	0	0	0	24:345	C	0	0	126	0	0	251
December 1:356	C	0	0	169	0	0	190	25:369	C	0	0	84	0	0	90
2:200	K	0	0	0	0	0	0	26:358	C	0	0	0	0	0	0
3:426	C	0	0	357	0	0	434	27:460	G	0	0	0	0	0	0
4:428	G	0	0	0	0	0	0	28:451	C	0	0	0	0	0	0
5:440	G	0	0	80	0	0	105	29:356	C	0	0	0	0	0	0
								30:462	G	22	119	90	13	72	54
								31:463	G	18	90	0	10	51	0

MEAN AREAS of SUN SPOTS and FACULÆ, as measured on PHOTOGRAPHS taken at the ROYAL OBSERVATORIES of GREENWICH and of the CAPE, and in INDIA, for each ROTATION of the SUN, from 1913 January 2 to 1913 December 23.

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

The Rotations adopted in the following table (which is in continuation of those for the years 1873-1912 printed in the Greenwich Observations for 1884 and succeeding years) correspond to the synodic rotation of the Sun, and the commencement of each is defined by the coincidence of the assumed prime meridian with the central meridian, the assumed prime meridian being that meridian which passed through the ascending node at mean noon on January 1, 1854, and the assumed period of the Sun's sidereal rotation being 25.38 days. The numeration of the rotations is in continuation of Carrington's series (*Observations of Solar Spots made at Redhill* by R. C. Carrington, F.R.S.), No. 1 being the rotation commencing 1853 November 9. The dates of commencement of the rotations are given in GREENWICH CIVIL TIME, reckoning from midnight.

No. of Rotation.	Date of Commencement of each Rotation.	No. of Days on which Photographs were taken.	Mean of Daily Areas.					
			Projected.			Corrected for Foreshortening.		
			Umbrae.	Whole Spots.	Faculae.	Umbrae.	Whole Spots.	Faculae.
793	1913 January 1.97	27	2	15	182	2	14	192
794	January 29.31	28	6	29	142	4	21	148
795	February 25.65	27	1	3	140	1	3	142
796	March 24.97	27	1	6	77	1	4	84
797	April 21.24	27	0	0	42	0	0	47
798	May 18.48	28	0	0	62	0	0	62
799	June 14.68	27	2	7	51	1	4	52
800	July 11.88	27	1	6	81	1	3	91
801	August 8.09	27	0	0	13	0	0	18
802	September 4.33	28	1	5	59	1	4	66
803	October 1.61	27	5	16	60	3	12	73
804	October 28.90	27	1	11	58	1	7	69
805	November 25.21	28	6	28	160	3	19	184

MEAN AREAS of SUN SPOTS and FACULÆ, as measured on PHOTOGRAPHS taken at the ROYAL OBSERVATORIES of GREENWICH and of the CAPE, and in INDIA, for the YEAR 1913.

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

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

YEAR.	No. of Days on which Photographs were taken.	Mean of Daily Areas.					
		Projected.			Corrected for Foreshortening.		
		Umbrae.	Whole Spots.	Faculae.	Umbrae.	Whole Spots.	Faculae.
1913	365	2	10	87	1	7	95

MEAN HELIOGRAPHIC LATITUDE of SUN SPOTS, as measured on PHOTOGRAPHS taken at the ROYAL OBSERVATORIES of GREENWICH and of the CAPE, and in INDIA, for each ROTATION of the SUN, from 1913 January 2 to 1913 December 23.

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

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

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

No. of Rotation.	Date of Commencement of each Rotation.	No. of Days on which Photographs were taken.	Spots NORTH of the Equator.		Spots SOUTH of the Equator.		Mean Heliographic Latitude of entire Spotted Area.	Mean Distance from Equator of all Spots.
			Mean of Daily Areas.	Mean Heliographic Latitude.	Mean of Daily Areas.	Mean Heliographic Latitude.		
793	1913 Jan. 1 ^d 97	27	7.0	23.93	7.4	13.31	+ 4.83	18.48
794	Jan. 29.31	28	21.2	31.47	0	...	+ 31.47	31.47
795	Feb. 25.65	27	2.1	30.89	0.9	35.20	+ 10.74	32.20
796	Mar. 24.97	27	0	...	3.6	1.96	- 1.96	1.96
797	Apr. 21.24	27	0	...	0	...	...	...
798	May 18.48	28	0	...	0	...	...	...
799	June 14.68	27	4.3	28.58	0	...	+ 28.58	28.58
800	July 11.88	27	3.4	28.64	0	...	+ 28.64	28.64
801	Aug. 8.09	27	0	...	0	...	...	...
802	Sept. 4.33	28	3.9	4.63	0	...	+ 4.63	4.63
803	Oct. 1.61	27	12.4	19.56	0	...	+ 19.56	19.56
804	Oct. 28.90	27	4.6	18.34	2.2	27.60	+ 3.44	21.35
805	Nov. 25.21	28	0	...	18.8	24.46	- 24.46	24.46

MEAN HELIOGRAPHIC LATITUDE of SUN SPOTS, as measured on PHOTOGRAPHS taken at the ROYAL OBSERVATORIES of GREENWICH and of the CAPE, and in INDIA, for the YEAR 1913.

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.		
1913	365	5.0	24.81	2.5	20.08	+ 9.81	23.23