GREENWICH
PHOTO-HELIOGRAPHIC RESULTS
1944

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RESULTS OF MEASURES MADE AT THE
ROYAL OBSERVATORY, GREENWICH, OF

PHOTOGRAPHS OF THE SUN

TAKEN AT GREENWICH, THE CAPE
AND KODAIKANAL IN THE YEAR

1944

UNDER THE DIRECTION OF
SIR HAROLD SPENCER JONES, Sc.D., F.R.S.
ASTRONOMER ROYAL

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§1. *Positions and Areas of Sunspots and Faculæ for each Day in the Year* 1944.

The photographs from which these measures were made were taken at the Royal Observatories of Greenwich or of the Cape, and at the Kodaikanal Observatory, Southern India.

The photographs of the Sun obtained at Greenwich were taken with the Dallmeyer Photoheliograph, of which the original 4-inch object-glass had been replaced in 1910 by a Grubb photographic objective. The equivalent focal length of the photoheliograph with its present enlarging system (supplied in 1926 by Ross Ltd.) is 67½ feet, the diameter of the Sun's image at the secondary focus being 7½ inches at the Earth's mean distance.

The photographs from the Cape Observatory were taken under the superintendence of His Majesty's Astronomer at the Cape, Dr. J. Jackson, and those from Kodaikanal under the superintendence of the Director, Dr. A. L. Narayan. At the Cape Observatory the instrument employed was a Dallmeyer photoheliograph giving an image of the Sun about 7½ inches in diameter; at Kodaikanal a Cooke photo-visual object-glass of 6 inches aperture was used, the image of the Sun being on about the same scale.

Photographs of the Sun were available for measurement on 365 days in 1944, those finally selected for measurement being supplied by the three observatories as under:

Greenwich	217
Cape	145
Kodaikanal	3
Total	365

For the one missing day, a copy of an original solar negative was kindly supplied by the U.S. Naval Observatory, Washington, D.C.

The names of the measurers of the photographs for the year 1944 are as follows:

H. Barton — N. S. C. Rhodes
P. S. Laurie — Miss C. Chapman

At the principal focus of the photoheliographs, excepting that at Kodaikanal, two spider-lines are fixed by which the zero of position-angles on the photographs can be determined. These lines are inclined at an angle of 45° to the celestial equator in the Greenwich and Cape photoheliographs; in the Kodaikanal instrument there is one wire fixed parallel to the equator.

The zero of position-angles for the photoheliographs has been determined by the measurement of plates which have been exposed twice, with an interval of about 100 seconds between the two exposures, the instrument being firmly clamped. Two images of the Sun, overlapping each other by about a fifth part of the Sun's diameter, were therefore produced upon the plates, and the exposures having been so given that the line joining the cusps passed approximately through the centre of the plates, the inclination of the wires of the photoheliograph to this line was measured with the position-micrometer, and a small correction for the inclination of the Sun's path was then applied. Two zero photographs were usually taken each month at Greenwich and at the Cape.

At Greenwich and the Cape, 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 at right angles to each other. From this angle, when corrected for the Sun's motion in declination, the correction for the zero position of the wires can be inferred. Transits were taken usually on four or more days during each month.

The following table gives the correction for zero of position thus determined by the two independent methods for the 4-inch Greenwich and Cape photoheliographs.

Determination of Zero of Position-Angles

Month, 1944	Greenwich		Cape	
	Photographic	Visual	Photographic	Visual
	° ′	° ′	° ′	° ′
January ..	...	+ 1 36	+ 1 10	+ 1 11
February ..	...	+ 1 37	+ 1 08	+ 1 12
March.. ..	+ 1 35	+ 1 36	+ 1 06	+ 1 10
April.. ..	+ 1 33	+ 1 44	+ 1 10	+ 1 09
May	+ 1 34	+ 1 35	+ 1 06	+ 1 11
June	+ 1 34	+ 1 35	+ 1 03	+ 1 09
July	+ 1 41 / + 1 19	+ 1 34 / + 1 28	+ 1 14	+ 1 10
August ..	+ 1 23	+ 1 20	+ 1 14	+ 1 08
September ..	+ 1 19	+ 1 22	+ 1 13	+ 1 10
October ..	+ 1 21	+ 1 14	+ 1 02	+ 1 11
November ..	+ 1 16	+ 1 15	+ 1 12	+ 1 09
December ..	+ 1 16	+ 1 13	+ 1 04	+ 1 09

The zero-corrections used during the year 1944 in the reduction of the Greenwich photographs were as follows:-

	° ′
January 1 to July 14	+ 1 36
July 15 to October 31	+ 1 21
November 1 to December 31	+ 1 15

The change of zero on July 15 was probably due to the explosion from an enemy flying-bomb about 200 yards N.E. of the Photoheliograph building.

The zero-corrections used during the year 1944 in the reduction of the Cape photographs were as follows:-

	° ′
January 1 to March 31	+ 1 09
April 1 to June 30	+ 1 06
July 1 to September 30	+ 1 12
October 1 to December 31	+ 1 06

The zero-correction adopted for the Kodaikanal photographs was +0°.3.

The measures of the photographs were made with a large position-micrometer which can be used for photographs of the Sun up to 12 inches in diameter. In this micrometer the photograph is held with its film-side uppermost on three pillars fixed on a circular plate, which can be turned through a small angle, about a pivot in its circumference, by means of a screw and antagonistic spring acting at the opposite extremity of the diameter. The pivot of this plate is mounted on the circumference of another circular plate, which can be turned by screw-action about a pivot in its circumference, 90° distant from that of the upper plate, this pivot being mounted on a circular plate with a position-circle which rotates about its centre. By this means small movements in two directions at right angles to each other can be readily given, and the photograph can be accurately centred with respect to the position-circle. When this has been done, a positive eye-piece, having at its focus a glass diaphragm ruled with cross-lines into squares, with sides of one-hundredth of an inch (for measurement of areas), is moved along a slide diametrically across the photograph, the diaphragm being nearly in contact with the photographic film, so that parallax is negligible. The distance of a spot or facula from the centre of the disk is read off by means of a scale and vernier to 1/250th inch (corresponding to 0.001 of the Sun's radius for photographs having a solar diameter of 8 inches). The position-angle is read off on the large position circle which rotates with the photographic plate. The photograph is illuminated by diffused light reflected from white paper placed at an angle of 45° between the photograph and the plate below.

The majority of the plates for 1944 were measured twice independently, the two measurers taking right and left readings respectively with the micrometer. The remaining plates were measured once, each by an experienced measurer. To the single measures of position, small corrections have been applied equivalent to half the instrumental difference between right and left scale readings applicable to the current adjustment of the position micrometer.

In the case of large or complex groups of spots, the positions of the chief components are measured individually, and also for groups so near the east or west limbs of the Sun that the effects of foreshortening are appreciable. In other cases the position of the centre of a group is estimated in the micrometer. In this respect a difference had been made in the practice during years previous to 1916, where in this section components of groups are given separately and combined into groups in the ledgers.

When required, corrections are applied to the measured distances and position-angles for differential refraction. The formula is given in the *Introduction* for

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1909. It is seldom necessary, however, to apply this correction except to a few photographs taken at Greenwich in mid-winter.

The calculations of heliographic longitude and latitude are made by use of the formulæ given in "Researches on Solar Physics: Heliographical Positions and Areas of Sun Spots observed with the Kew Photoheliograph during the years 1862 and 1863," by W. De La Rue, B. Stewart, and B. Loewy. *Phil. Trans.*, 1869. If r be the measured distance of a spot from the centre of the Sun's apparent disk, R the measured radius of the Sun on the photograph, (R) the tabular semi-diameter of the Sun in arc, and ρ, ρ' the angular distances of a spot from the centre of the apparent disk as viewed from the Sun's centre and from the Earth respectively, ρ is obtained from the equations:

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

If D and ϕ are the heliographic latitudes of the Earth and the spot respectively referred to the Sun's equator, and l the heliographic longitude of the spot from the solar meridian passing through the centre of the disk, longitudes west of the centre being reckoned as positive, and χ the position-angle from the Sun's axis

$$\sin \phi = \cos \rho \sin D + \sin \rho \cos D \cos \chi$$
$$\sin l = - \sin \chi \sin \rho \sec \phi$$

χ is found from the position-angle measured from the north point by subtracting P, the position-angle of the north end of the Sun's axis, measured eastward from the north point of the disk. The heliographic longitude of the spot is l + L, where L is the heliographic longitude of the centre of the disk. The three quantities P, D, and L for the time of the exposure of each photograph are derived from the *Ephemeris for Physical Observations of the Sun* given on p. 390 of the *Nautical Almanac* for 1944.

The inclination of the Sun's axis to the ecliptic is assumed to be 82° 45′, the longitude of the ascending node of the Sun's equator on the ecliptic for 1944.0 to be 74° 58′.7, and the period of the Sun's sidereal rotation to be 25.38 days; the meridian which passed through the ascending node on 1854 January 1, Greenwich mean noon, being taken as the zero meridian.

§2. *General Catalogue of Groups of Sunspots for* 1944.

The catalogue contains every group of spots which lasted for two or more days, and the group numbers are in continuation of those given in 1943, and previous years. Groups seen only once are given with a distinctive numeration in a table which follows the catalogue.

A number of "Revival" groups of spots have been tabulated in series in a table following the catalogue and table of 1-day spots. The respective groups of each series are in the same heliographic position and were seen in consecutive disk passages, partial or complete, but with definite breaks in their history between each passage. The latter feature excludes them from being classed as "Recurrent" groups; they differ from "Intermittent" groups in their being of long-period intermittency. When a recurrent series forms part of a revival series, a reference is made in the last column of the table. Other groups which are given in detail in *Ledger II* are also indicated.

§3. *Ledgers of the Areas and Heliographic Positions of Groups of Sunspots for* 1944.

Ledger I. - Recurrent Groups. - This ledger supersedes the *Catalogue of Recurrent Groups of Sunspots* given in years previous to 1916 of the *Greenwich Photo-Heliographic*

Results, and the reference numbers of the series are in continuation of those given therein. The groups forming this ledger have been abstracted from a general ledger of all spot groups seen throughout the year and were selected upon the following plan, reference being made to the *General Catalogue*:- If any spot group when first seen was 60° or more to the east of the central meridian, then the catalogue, and, if necessary, the daily results also (§1), were searched some fifteen or sixteen days earlier, to ascertain whether a spot group of similar heliographic longitude and latitude was then near the west limb of the Sun. Similarly, if any spot group when last seen was 60° or more to the west of the central meridian, then a search was made to identify with the earlier group, any spot near the Sun's east limb, about a fortnight later. When there appeared to be a case of probable identity between groups in consecutive rotations of the Sun (in some cases, partial transits of the disk), then the character of the group, its area, longitude and latitude, have been carefully compared before accepting its continuity as a recurrent group.

Besides the ledgers of the groups, there have been printed in a similar manner important components of the principal groups. This has been done in all cases where it appeared probable that an individual component lasted to the second or third rotation after its first appearance.

In deriving the proper motions of spots in longitude in both ledgers, the formula adopted as representing the Sun's daily sidereal motion is

$$\xi = 14^\circ.37 - 2^\circ.60 \sin^2 \phi$$

where ϕ is the latitude of the spot. *See Greenwich Photo-Heliographic Results*, 1944 §5.

Ledger II. - Non-Recurrent Groups. - This ledger contains the most important of those groups which do not last to a second rotation. Individual components are also given after their respective groups, where they are large and distinctive.

§4. *Total Areas of Sunspots and Faculæ for each day, and Mean Areas and Mean Heliographic Latitude of Sunspots and Faculæ for each Rotation of the Sun, and for the year* 1944.

Particulars relating to this section are given in the headings on pages C 42 and C 46-47.

§5. *Observations of Solar Flocculi and Solar Flares made with the Spectrohelioscope in the year* 1944, *(including a list of flares* 1930-1945).

This section includes:-

(1) Measures of radial velocity of dark hydrogen flocculi seen on the disk near sunspots. The observations were made at Greenwich with a spectrohelioscope lent by the Mount Wilson Observatory in the autumn of 1929 and set up in the south attic of the Main Building. The observations were made by Mr. Barton and Mr. Laurie.

(2) A list of solar flares (bright chromospheric eruptions) made at the Royal Observatory Greenwich from 1930 to 1945 inclusive. The observations were made by Mr. Newton (up to 1941 June), Mr. Barton (throughout) and Mr. Laurie (from 1937).

The list of flares for the year 1945 supersedes that already published on p. 82 in the *Greenwich Photoheliographic Results*, 1945.

ROYAL OBSERVATORY, GREENWICH.

Positions and Areas of Sunspots and Faculæ

For each Day in the Year

1944

POSITIONS AND AREAS OF SUNSPOTS AND FACULÆ FOR EACH DAY IN THE YEAR 1944.

Col. 1. (1) Time when photograph was taken expressed in days and decimals of a day reckoning from midnight at commencement of year. (2) Place of observation – Greenwich (G), Cape of Good Hope (C), Kodaikanal (K), Washington (W). (3) Date of photograph.

Col. 2. Number of spot group in order of appearance and in continuation of the group-numbers given in previous years. Groups seen on one day only are distinguished by the number of the rotation during which they are observed and by a letter given in the order of their appearance. When there is no number in the second column it is to be understood that there is a facula unaccompanied by a spot.

Col. 3. Distance of spot group or faculæ from Sun's centre in terms of the Sun's radius.

Col. 4. Position angle of spot group or faculæ measured from the north pole of the Sun's axis in the direction N., E., S., W., N.

Col. 5. Heliographic longitude of the spot group derived from the measures.

Col. 6. Heliographic latitude of the spot group similarly derived.

Col. 7. Area of umbræ corrected for foreshortening in millionths of the Sun's visible hemisphere.

Col. 8. Area of whole spots composing the group similarly expressed.

Col. 9. Area of each group of faculæ similarly expressed. 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.

In line with the date of each day is given in brackets for the time of photograph the position angle of the Sun's axis from the north point: the heliographic longitude and latitude of the centre of the disk: the total areas of spots and faculæ for the day.

POSITIONS AND AREAS OF SUNSPOTS AND FACULÆ FOR EACH DAY IN THE YEAR.

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1944			°	°	°			
Jan. 1								
Jan. 2			No spots or faculæ					
Jan. 3								
3.438		.957	279.3					202
G		.956	186.7					12
		.955	182.7					12
		.852	288.5					196
		.910	10.2					13
		.937	178.2					10
Jan. 4			(+0.9)	(290.8)	(-3.4)	(0)	(0)	(445)
4.442		.824	266.7					162
G								
Jan. 5			(+0.4)	(277.6)	(-3.5)	(0)	(0)	(162)
5.266		.892	267.2					297
C								
Jan. 6			(0.0)	(266.7)	(-3.6)	(0)	(0)	(297)
6.289		.958	267.0					501
C								
Jan. 7			(-0.5)	(253.3)	(-3.7)	(0)	(0)	(501)
7.383		.928	351.3					16
C		.910	355.6					7
		.926	160.9					10
		.928	168.6					8
		.947	179.3					12
		.962	161.5					11
Jan. 8			(-1.1)	(238.8)	(-3.8)	(0)	(0)	(64)
8.303		.972	353.4					8
C		.946	336.8					15
		.939	326.0					9
		.975	188.7					13
Jan. 9			(-1.5)	(226.7)	(-3.9)	(0)	(0)	(45)
9.259		.751	113.3					124
C								
Jan. 10			(-2.0)	(214.1)	(-4.0)	(0)	(0)	(124)

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1944			°	°	°			
10.268		.923	275.6					94
C		.919	114.2					340
Jan. 11			(-2.4)	(200.9)	(-4.1)	(0)	(0)	(434)
11.277		.844	178.9					6
C		.873	119.5					255
Jan. 12			(-2.9)	(187.6)	(-4.3)	(0)	(0)	(261)
12.266		.930	188.9					8
C		.785	118.0					250
		.951	173.4					10
		.979	169.8					10
Jan. 13			(-3.4)	(174.5)	(-4.4)	(0)	(0)	(278)
13.465		.818	249.3					215
G								
Jan. 14			(-4.0)	(158.8)	(-4.5)	(0)	(0)	(215)
14.567		.949	67.8					232
G								
Jan. 15			(-4.5)	(144.2)	(-4.6)	(0)	(0)	(232)
15.461		.884	66.1					165
G								
Jan. 16			(-4.9)	(132.5)	(-4.7)	(0)	(0)	(165)
Jan. 17								
Jan. 18			No spots or faculæ					
18.273		.964	188.7					15
C		.927	185.9					11
		.925	196.6					8
		.904	88.3					242
		.968	179.5					8
Jan. 19			(-6.2)	(95.4)	(-4.9)	(0)	(0)	(284)
19.427		.753	241.9					124
G	14188	.886	246.5	142.0	-23.1	0	4	118 c
		.969	74.2					151
		.972	82.6					127
Jan. 20			(-6.8)	(80.2)	(-5.1)	(0)	(4)	(520)

Group 14188. Jan. 20–21. A small spot, probably of the new cycle from its latitude.

POSITIONS AND AREAS OF SUNSPOTS AND FACULÆ FOR EACH DAY IN THE YEAR.

U.T.	Group No.	Measures		Position		Area			U.T.	Group No.	Measures		Position		Area		
		Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ			Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ
1944			°	°	°				1944			°	°	°			
20.435		.828	244.6					241	29.396		.972	267.2					182
G	14188	.958	246.5	140.8	-24.0	0	15	360 *c*	G		.870	263.2					158
		.897	71.7					127		14189	.494	300.6	334.4	+ 9.1	10	32	
Jan. 21			(- 7.2)	(67.0)	(- 5.1)	(0)	(15)	(728)			.956	86.6					212
									Jan. 30			(-11.2)	(309.0)	(- 5.9)	(10)	(32)	(552)
21.279		.931	246.0					197									
C		.918	237.0					196									
		.866	280.5					124	30.441	14189	.672	290.4	334.7	+ 8.9	5	15	
	14189	.993	79.5	333.9	+ 9.7	24	134	159 *p*	G		.876	82.6					264
Jan. 22			(- 7.6)	(55.9)	(- 5.2)	(24)	(134)	(676)	Jan. 31			(-11.6)	(295.2)	(- 6.0)	(5)	(15)	(264)
22.473		.961	238.6					172									
G	14189	.926	77.4	333.9	+ 9.6	29	124	332 *c*	31.277		.970	188.9					16
		.892	94.3					213	C		.950	214.9					9
Jan. 23			(- 8.1)	(40.1)	(- 5.3)	(29)	(124)	(717)			.932	184.4					5
										14189	.796	286.2	334.7	+ 9.0	5	20	189 *c*
											.739	82.6					155
23.273	14189	.843	75.2	334.1	+ 9.4	16	92	261 *c*			.979	179.9					14
C									Feb. 1			(-11.9)	(284.2)	(- 6.0)	(5)	(20)	(388)
Jan. 24			(- 8.5)	(29.6)	(- 5.4)	(16)	(92)	(261)									
									32.277	14189	.912	282.5	335.1	+ 8.7	2	12	271 *c*
24.276		.976	188.7					9	C								
C		.956	210.3					3	Feb. 2			(-12.3)	(271.1)	(- 6.1)	(2)	(12)	(271)
		.944	185.7					12									
	14189	.704	70.8	334.2	+ 9.3	15	101	75 *f*									
		.948	12.9					6									
Jan. 25			(- 8.9)	(16.4)	(- 5.5)	(15)	(101)	(105)	33.434	14189	.990	280.3	336.2	+ 9.2	0	14	247 *c*
									G		.794	80.1					128
											.889	95.0					176
25.277		.895	305.2					279	Feb. 3			(-12.8)	(255.8)	(- 6.2)	(0)	(14)	(551)
C	14189	.540	62.6	334.2	+ 9.4	14	86										
		.952	93.2					135									
Jan. 26			(- 9.4)	(3.2)	(- 5.6)	(14)	(86)	(414)	Feb. 4				No spots or faculæ				
26.282	14189	.365	46.8	334.4	+ 8.9	16	85		35.446		.848	94.4					214
C		.892	91.2					161	G								
Jan. 27			(- 9.8)	(350.0)	(- 5.7)	(16)	(85)	(161)	Feb. 5			(-13.6)	(229.3)	(- 6.3)	(0)	(0)	(214)
27.280	14189	.266	9.1	334.5	+ 9.4	11	49		36.306		.941	287.6					305
C									C		.938	296.6					149
Jan. 28			(-10.3)	(336.9)	(- 5.7)	(11)	(49)	(0)	Feb. 6			(-13.9)	(218.0)	(- 6.4)	(0)	(0)	(454)
28.475	14189	.348	317.9	334.7	+ 9.3	13	58		37.277		.917	115.0					285
C									C								
Jan. 29			(-10.8)	(321.1)	(- 5.8)	(13)	(58)	(0)	Feb. 7			(-14.3)	(205.2)	(- 6.4)	(0)	(0)	(285)

Group 14189. Jan. 22-Feb. 3. A regular spot which begins to break up on January 27 but lasts to the west limb.

POSITIONS AND AREAS OF SUNSPOTS AND FACULÆ FOR EACH DAY IN THE YEAR.

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1944			°	°	°			
38.433		.777	115.3					205
G		.940	115.8					362
Feb. 8			(-14.8)	(190.0)	(- 6.5)	(0)	(0)	(567)
39.473		.876	275.6					179
G		.843	118.1					196
		.973	49.4					102
Feb. 9			(-15.2)	(176.3)	(- 6.5)	(0)	(0)	(477)
Feb. 10	}	No spots or faculæ						
Feb. 11	}							
42.293		.917	246.5					286
C								
Feb. 12			(-16.2)	(139.2)	(- 6.7)	(0)	(0)	(286)
Feb. 13	}	No spots or faculæ						
Feb. 14	}							
45.297		.955	340.1					7
C		.903	187.5					5
		.919	4.8					10
		.977	14.8					14
Feb. 15			(-17.2)	(99.6)	(- 6.8)	(0)	(0)	(36)
Feb. 16		No spots or faculæ						
47.513		.926	107.4					138
C								
Feb. 17			(-18.0)	(70.4)	(- 6.9)	(0)	(0)	(138)
48.299		.766	294.9					122
C								
Feb. 18			(-18.2)	(60.1)	(- 7.0)	(0)	(0)	(122)
49.302		.839	298.8					96
C		.933	75.5					145
Feb. 19			(-18.6)	(46.9)	(- 7.0)	(0)	(0)	(241)
Feb. 20		No spots or faculæ						
51.304		.974	202.2					17
C		.900	295.7					217
		.912	1.2					13
Feb. 21			(-19.2)	(20.5)	(- 7.0)	(0)	(0)	(247)

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1944			°	°	°			
52.297		.955	291.6					246
C		.940	302.5					306
Feb. 22			(-19.5)	(7.4)	(- 7.1)	(0)	(0)	(552)
53.299		.927	2.0					8
C		.953	31.4					21
Feb. 23			(-19.8)	(354.3)	(- 7.1)	(0)	(0)	(29)
54.378		.893	84.7					168
G		.972	78.2					161
Feb. 24			(-20.1)	(340.0)	(- 7.1)	(0)	(0)	(329)
Feb. 25	}	No spots or faculæ						
Feb. 26	}							
Feb. 27	}							
58.385		.858	332.5					96
G								
Feb. 28			(-21.2)	(287.3)	(- 7.2)	(0)	(0)	(96)
59.439		.940	196.4					10
G		.923	322.7					164
		.920	15.8					5
Feb. 29			(-21.5)	(273.4)	(- 7.2)	(0)	(0)	(179)
Mar. 1	}	No spots or faculæ						
Mar. 2	}							
62.406	*1210a*	.391	259.9	257.2	-10.5	3	12	
G								
Mar. 3			(-22.2)	(234.3)	(- 7.2)	(3)	(12)	(0)
Mar. 4		No spots or faculæ						
64.302		.951	300.6					203
C		.930	289.2					286
Mar. 5			(-22.6)	(209.3)	(- 7.2)	(0)	(0)	(489)
65.614		.835	118.3					162
G								
Mar. 6			(-22.9)	(192.0)	(- 7.2)	(0)	(0)	(162)
66.561		.942	140.1					194
G								
Mar. 7			(-23.1)	(179.6)	(- 7.2)	(0)	(0)	(194)

POSITIONS AND AREAS OF SUNSPOTS AND FACULÆ FOR EACH DAY IN THE YEAR.

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1944			°	°	°			
67.379		.909	190.2					11
G		.924	178.7					9
		.943	163.3					179
Mar. 8			(-23.3)	(168.8)	(- 7.2)	(0)	(0)	(199)
Mar. 9		No spots or faculæ						
69.298		.856	152.4					6
C		.961	172.4					4
		.969	165.6					4
Mar. 10			(-23.7)	(143.5)	(- 7.2)	(0)	(0)	(14)
Mar. 11	}	No spots or faculæ						
Mar. 12	}							
72.575		.981	117.1					232
G								
Mar. 13			(-24.3)	(100.3)	(- 7.2)	(0)	(0)	(232)
73.358	14190	.952	117.1	16.6	-28.0	7	31	225 c
C								
Mar. 14			(-24.4)	(90.0)	(- 7.2)	(7)	(31)	(225)
74.401		.980	351.4					17
G		.971	349.3					14
	14190	.859	117.6	17.5	-27.3	0	11	269 c
		.942	166.1					6
		.952	169.4					6
Mar. 15			(-24.6)	(76.2)	(- 7.1)	(0)	(11)	(312)
75.313	14190	.770	122.3	16.2	-29.1	0	3	175 c
C								
Mar. 16			(-24.7)	(64.2)	(- 7.1)	(0)	(3)	(175)
76.582	14190	.605	127.7	14.9	-27.7	8	53	
G								
Mar. 17			(-24.9)	(47.5)	(- 7.1)	(8)	(53)	(0)
77.449	14190	.492	137.4	14.1	-27.8	14	88	
G	14191	.995	114.8	309.1	-25.3	43	263	127 c
Mar. 18			(-25.0)	(36.1)	(- 7.1)	(57)	(351)	(127)
1944			°	°	°			
78.639		.937	321.0					188
G		.920	331.9					173
	14190	.379	162.4	13.0	-28.0	29	135	
	14191	.944	113.6	308.6	-24.6	85	419	538 c
Mar. 19			(-25.2)	(20.4)	(- 7.0)	(114)	(554)	(899)
79.320	14190	.349	186.3	13.9	-27.2	25	160	
C	14191	.886	114.1	308.9	-24.5	78	402	489 c
		.944	17.6					20
Mar. 20			(-25.3)	(11.4)	(- 7.0)	(103)	(562)	(509)
80.333	14190	.427	213.9	13.5	-27.4	14	76	
C	14191	.776	116.1	308.2	-24.5	69	509	423 c
Mar. 21			(-25.4)	(358.0)	(- 7.0)	(83)	(585)	(423)
81.372		.958	182.4					15
G		.940	357.4					6
		.903	191.8					5
	14190	.575	229.4	13.8	-27.9	11	58	
	14192	.448	61.3	321.1	+ 6.0	5	17	
	14191	.625	120.7	308.4	-24.2	80	463	
Mar. 22			(-25.5)	(344.3)	(- 6.9)	(96)	(538)	(26)
82.401		.944	188.7					6
G		.898	185.6					8
	14190	.731	238.6	15.2	-27.3	5	20	262 c
	14192	.266	35.6	321.9	+ 5.6	11	38	
	14191	.463	131.7	308.6	-24.3	70	384	
		.852	174.9					7
		.960	172.6					7
Mar. 23			(-25.6)	(330.8)	(- 6.9)	(86)	(442)	(290)
83.400		.929	199.8					9
G		.929	182.1					12
		.835	241.4					663
	14192	.219	326.3	324.6	+ 3.6	2	7	
	14191	.334	153.7	308.3	-24.1	71	308	
	14193	.969	96.9	241.4	- 8.3	0	18	529 c
		.947	13.7					11
		.949	174.3					11
Mar. 24			(-25.7)	(317.6)	(- 6.9)	(73)	(333)	(1235)
84.435	14190	.947	244.7	16.1	-26.1	0	11	611 f
G	14191	.312	193.0	308.6	-24.4	69	290	
	14193	.861	94.4	244.2	- 7.2	0	7	403 c
Mar. 25			(-25.8)	(303.9)	(- 6.8)	(69)	(308)	(1014)

Group 14190. Mar. 14-26. Intermittent. A small group of rapidly changing spots with a brief maximum on March 19-20. (A new cycle group.)

Group 14191. Mar. 18-30. A regular spot with a companion directly north of it. From March 24 the spot becomes elongated and rapidly disintegrates.

Group 14192. Mar. 22-24. A pair of spots on March 22-23: a single spot on March 24.

Group 14193. Mar. 24-26. A small spot.

POSITIONS AND AREAS OF SUNSPOTS AND FACULÆ FOR EACH DAY IN THE YEAR.

U.T.	Group No.	MEASURES		POSITION		AREA			U.T.	Group No.	MEASURES		POSITION		AREA		
		Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ			Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ
1944			°	°	°				1944			°	°	°			
85.499	14190	.992	242.4	15.3	-28.2	0	34	224 *c*	95.419		.966	262.2					234
C	14191	.417	223.1	308.0	-24.1	51	295		G								
	14193	.740	94.6	242.0	- 8.0	3	14	325 *sf*	Apr. 5			(-26.4)	(159.0)	(- 6.2)	(0)	(0)	(234)
Mar. 26			(-25.9)	(289.9)	(- 6.8)	(54)	(343)	(549)									
									Apr. 6		No spots or faculæ						
86.483		.977	192.7					9									
G		.934	347.3					6									
		.756	282.6					131	97.565	14194	.909	246.7	196.2	-23.7	0	11	107 *c*
	14191	.577	236.2	308.5	-24.4	38	200		G		.960	173.6					12
		.937	179.0					10	Apr. 7			(-26.4)	(130.7)	(- 6.1)	(0)	(11)	(119)
Mar. 27			(-26.0)	(276.9)	(- 6.7)	(38)	(200)	(156)									
									98.580	14194	.983	247.4	198.0	-23.3	0	11	277 *c*
87.479		.983	194.1					11	G								
G		.933	181.0					5	Apr. 8			(-26.4)	(117.3)	(- 6.0)	(0)	(11)	(277)
		.849	276.6					192									
	14191	.727	242.9	308.8	-24.1	30	108	107 *c*									
		.938	4.1					6	Apr. 9								
		.978	170.8					16									
		.979	13.7					17	Apr. 10		No spots or faculæ						
Mar. 28			(-26.1)	(263.8)	(- 6.7)	(30)	(108)	(354)									
									Apr. 11								
88.318		.958	276.2					186									
C	14191	.847	245.8	310.2	-23.9	12	64	505 *f*	102.130		.825	122.5					247
Mar. 29			(-26.1)	(252.7)	(- 6.6)	(12)	(64)	(691)	K		.942	120.3					382
									Apr. 12			(-26.3)	(70.5)	(- 5.8)	(0)	(0)	(629)
89.391	14191	.946	246.9	310.5	-24.0	0	6	642 *f*									
G		.937	2.8					6	103.321		.854	120.5					289
		.943	9.4					6	C								
Mar. 30			(-26.2)	(238.6)	(- 6.6)	(0)	(6)	(654)	Apr. 13			(-26.2)	(54.7)	(- 5.7)	(0)	(0)	(289)
90.417		.975	245.5					676	104.352		.931	182.9					9
G									G								
Mar. 31			(-26.2)	(225.0)	(- 6.5)	(0)	(0)	(676)	Apr. 14			(-26.2)	(41.4)	(- 5.6)	(0)	(0)	(9)
Apr. 1		No spots or faculæ							Apr. 15		No spots or faculæ						
92.482		.728	85.8					315	106.330		.953	300.5					249
C									C								
Apr. 2			(-26.3)	(197.8)	(- 6.4)	(0)	(0)	(315)	Apr. 16			(-26.1)	(15.0)	(- 5.4)	(0)	(0)	(249)
93.566		.855	263.6					356	107.331		.899	122.6					296
G									C								
Apr. 3			(-26.4)	(183.5)	(- 6.4)	(0)	(0)	(356)	Apr. 17			(-26.0)	(1.8)	(- 5.4)	(0)	(0)	(296)
94.550		.954	191.9					7	108.331		.824	126.0					95
G		.939	263.1					449	G		.971	122.1					148
Apr. 4			(-26.4)	(170.5)	(- 6.3)	(0)	(0)	(456)	Apr. 18			(-25.9)	(348.6)	(- 5.3)	(0)	(0)	(243)

Group 14194. Apr. 7-8. A small spot without a definite nucleus.

POSITIONS AND AREAS OF SUNSPOTS AND FACULÆ FOR EACH DAY IN THE YEAR.

U.T.	Group No.	Measures Dist.	Measures Pos. Angle	Position Long.	Position Lat.	Area Umbræ	Area Whole Spots	Area Faculæ
1944			°	°	°			
109.339		.926	124.0					162
G								
Apr. 19			(-25.8)	(335.3)	(- 5.2)	(0)	(0)	(162)
110.375		.787	237.7					87
G		.840	127.9					73
		.883	111.5					100
		.914	95.7					115
Apr. 20			(-25.7)	(321.6)	(- 5.1)	(0)	(0)	(375)
111.333		.952	249.4					174
G		.860	237.1					306
		.826	95.6					109
Apr. 21			(-25.6)	(308.9)	(- 5.0)	(0)	(0)	(589)
112.316		.969	240.9					279
G		.892	239.9					317
Apr. 22			(-25.5)	(295.9)	(- 4.9)	(0)	(0)	(596)
113.481		.936	237.5					426
G								
Apr. 23			(-25.4)	(280.5)	(- 4.8)	(0)	(0)	(426)
114.167		.956	327.5					158
K								
Apr. 24			(-25.3)	(271.5)	(- 4.8)	(0)	(0)	(158)
Apr. 25		No spots or faculæ						
116.422		.940	193.9					7
G								
Apr. 26			(-25.0)	(241.7)	(- 4.5)	(0)	(0)	(7)
117.391		.939	238.8					351
G								
Apr. 27			(-24.8)	(228.9)	(- 4.5)	(0)	(0)	(351)
Apr. 28		No spots or faculæ						
119.352		.888	184.8					8
G		.791	263.7					164
Apr. 29			(-24.5)	(203.0)	(- 4.3)	(0)	(0)	(172)
Apr. 30		No spots or faculæ						
121.394		.903	184.9					5
C		.896	351.0					8
1944			°	°	°			
122.369		.966	258.4					180
G		.836	138.0					144
May 2			(-24.0)	(163.1)	(- 4.0)	(0)	(0)	(324)
May 3		No spots or faculæ						
May 4								
125.310		.942	300.0					160
G								
May 5			(-23.4)	(124.2)	(- 3.6)	(0)	(0)	(160)
May 6		No spots or faculæ						
May 7								
May 8								
129.352		.966	188.1					10
G								
May 9			(-22.5)	(70.8)	(- 3.2)	(0)	(0)	(10)
130.388		.837	127.2					156
G								
May 10			(-22.3)	(57.1)	(- 3.1)	(0)	(0)	(156)
131.344		.881	124.3					264
G								
May 11			(-22.0)	(44.4)	(- 3.0)	(0)	(0)	(264)
132.357		.874	130.7					128
G								
May 12			(-21.8)	(31.0)	(- 2.9)	(0)	(0)	(128)
May 13		No spots or faculæ						
May 14								
May 15								
May 16								
137.522		.912	101.1					248
G								
May 17			(-20.4)	(322.7)	(- 2.3)	(0)	(0)	(248)

POSITIONS AND AREAS OF SUNSPOTS AND FACULÆ FOR EACH DAY IN THE YEAR.

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1944			°	°	°			
May 18								
May 19								
May 20			No spots or faculæ					
May 21								
May 22								
May 23								
144.306		.936	190.0					7
G		.856	285.0					121
		.954	115.5					105
		.885	7.5					7
		.939	11.1					7
		.956	18.2					8
		.962	3.3					9
		.972	7.8					15
May 24			(-18.2)	(233.0)	(- 1.5)	(0)	(0)	(279)
May 25								
May 26			No spots or faculæ					
May 27								
148.368	14195	.448	143.4	162.5	-22.0	8	29	
G								
May 28			(-16.8)	(179.2)	(- 1.0)	(8)	(29)	(0)
149.354	14196	.470	273.9	194.0	+ 1.0	0	5	
G	14195	.370	172.6	163.3	-22.3	10	35	
May 29			(-16.5)	(166.2)	(- 0.9)	(10)	(40)	(0)
150.307		.933	181.7					7
G	14196	.698	271.9	197.6	+ 0.7	1	6	
	14195	.408	206.9	165.0	-22.0	4	13	
		.926	169.0					9
		.950	171.8					11
		.960	176.6					12
		.966	14.2					17
May 30			(-16.1)	(153.6)	(- 0.8)	(5)	(19)	(56)

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1944			°	°	°			
151.404	14196	.858	271.1	197.9	+ 0.6	40	185	117 c
G								
May 31			(-15.7)	(139.1)	(- 0.7)	(40)	(185)	(117)
152.410	14196	.959	270.6	199.0	+ 0.4	53	332	209 c
G								
June 1			(-15.4)	(125.8)	(- 0.5)	(53)	(332)	(209)
153.304	14196	.990	270.8	195.5	+ 0.7	31	237	239 c
G								
June 2			(-15.0)	(113.9)	(- 0.4)	(31)	(237)	(239)
154.649		.936	65.8					186
G								
June 3			(-14.5)	(96.1)	(- 0.3)	(0)	(0)	(186)
June 4			No spots or faculæ					
156.426	14197	.992	117.8	351.2	-27.5	0	19	354 c
G								
June 5			(-13.8)	(72.6)	(0.0)	(0)	(19)	(354)
157.322		.961	186.2					12
G		.927	190.4					9
	14197	.946	118.9	352.5	-27.1	0	8	604 c
		.944	14.3					11
June 6			(-13.5)	(60.7)	(+ 0.1)	(0)	(8)	(636)
158.353		.933	195.3					10
C		.919	188.1					14
		.886	214.3					7
	14197	.870	122.3	351.3	-27.5	0	13	611 c
		.947	176.8					14
June 7			(-13.1)	(47.1)	(+ 0.2)	(0)	(13)	(656)
159.407		.967	194.6					17
G		.954	198.0					11
		.948	349.7					25
	14197	.726	130.6	354.7	-27.8	5	13	98 *f*
		.866	124.4					352
		.930	17.3					16
		.961	1.5					25
June 8			(-12.6)	(33.1)	(+ 0.3)	(5)	(13)	(544)

Group 14195. May 28 - 30. A few tiny spots.
Group 14196. May 29-June 2. A compact equatorial stream developing where only a dot is seen on May 29 and 30.
Group 14197. June 5 - 16. Intermittent; one or two very small spots not seen on June 9 and 14.

POSITIONS AND AREAS OF SUNSPOTS AND FACULÆ FOR EACH DAY IN THE YEAR.

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1944			°	°	°			
160.351		.764	130.5					137
C								
June 9			(-12.2)	(20.6)	(+ 0.4)	(0)	(0)	(137)
161.317	14197	.499	150.8	352.4	-25.2	3	10	
G								
June 10			(-11.8)	(7.9)	(+ 0.5)	(3)	(10)	(0)
June 11								
June 12				No spots or faculæ				
June 13								
165.330		.762	226.0					97
G								
June 14			(-10.2)	(314.7)	(+ 1.0)	(0)	(0)	(97)
166.348	14197	.823	234.7	350.4	-27.6	0	8	420 *c*
G								
June 15			(- 9.7)	(301.3)	(+ 1.1)	(0)	(8)	(420)
167.392		.785	228.5					106
G	14197	.920	237.1	349.6	-29.3	0	11	679 *p*
	14198	.988	88.5	206.5	+ 1.7	16	72	204 *p*
June 16			(- 9.3)	(287.4)	(+ 1.3)	(16)	(83)	(989)
168.322		.959	239.7					421
G	*1214a*	.873	233.3	329.3	-30.5	0	16	144 *c*
	14198	.935	88.8	206.1	+ 1.7	19	83	212 *c*
June 17			(- 8.9)	(275.1)	(+ 1.4)	(19)	(99)	(777)
169.299		.968	238.4					318
G	14198	.835	88.8	205.8	+ 1.8	13	75	362 *f*
June 18			(- 8.4)	(262.2)	(+ 1.5)	(13)	(75)	(680)
170.355		.836	270.7					91
C	14198	.678	89.1	205.7	+ 1.8	15	67	
		.790	93.0					109
June 19			(- 8.0)	(248.2)	(+ 1.6)	(15)	(67)	(200)
1944			°	°	°			
171.334	14198	.495	89.7	205.7	+ 1.7	16	76	
G								
June 20			(- 7.5)	(235.3)	(+ 1.7)	(16)	(76)	(0)
172.547	14198	.233	91.9	205.8	+ 1.4	12	72	
G								
June 21			(- 7.0)	(219.2)	(+ 1.9)	(12)	(72)	(0)
173.339	14198	.049	100.6	206.0	+ 1.5	18	78	
G								
June 22			(- 6.7)	(208.7)	(+ 2.0)	(18)	(78)	(0)
174.391	14198	.202	267.9	206.4	+ 1.7	14	74	
C								
June 23			(- 6.2)	(194.8)	(+ 2.1)	(14)	(74)	(0)
175.330	14198	.415	269.2	206.8	+ 1.7	13	76	
G								
June 24			(- 5.8)	(182.4)	(+ 2.2)	(13)	(76)	(0)
176.325	14198	.613	269.8	206.9	+ 1.7	11	61	
G		.930	176.9					22
		.969	17.9					32
June 25			(- 5.3)	(169.2)	(+ 2.3)	(11)	(61)	(54)
177.354		.962	237.3					121
C		.934	254.0					155
	14198	.784	270.5	207.1	+ 1.9	20	75	127 *f*
June 26			(- 4.9)	(155.6)	(+ 2.4)	(20)	(75)	(403)
178.310	14198	.900	270.6	206.9	+ 1.6	10	48	361 *f*
G								
June 27			(- 4.4)	(142.9)	(+ 2.5)	(10)	(48)	(361)
179.586	14198	.989	271.5	207.3	+ 1.9	16	46	245 *f*
G		.946	5.6					21
June 28			(- 3.8)	(126.0)	(+ 2.7)	(16)	(46)	(266)
180.415		.983	184.4					53
C		.965	189.6					38
June 29			(- 3.5)	(115.1)	(+ 2.8)	(0)	(0)	(91)

Group 14198. June 16-28. Return of Group 14196. A small but very stable regular spot.

POSITIONS AND AREAS OF SUNSPOTS AND FACULÆ FOR EACH DAY IN THE YEAR.

U.T.	Group No.	Measures Dist.	Measures Pos. Angle	Position Long.	Position Lat.	Area Umbræ	Area Whole Spots	Area Faculæ
1944			°	°	°			
181.525	*1214b*	.888	114.3	41.2	-19.9	0	5	73 *c*
G								
June 30			(- 3.0)	(100.4)	(+ 2.9)	(0)	(5)	(73)
182.354		.869	235.9					78
C	*1214c*	.754	98.0	41.1	- 4.0	4	36	75 *c*
July 1			(- 2.6)	(89.4)	(+ 3.0)	(4)	(36)	(153)
183.349		.923	238.1					346
C	14199	.501	330.2	92.6	+28.6	9	41	
July 2			(- 2.1)	(76.2)	(+ 3.1)	(9)	(41)	(346)
184.358	14199	.636	315.0	93.8	+29.3	7	35	
C		.947	120.0					223
July 3			(- 1.7)	(62.9)	(+ 3.2)	(7)	(35)	(223)
185.398		.869	246.0					111
G	14199	.786	307.0	95.7	+30.5	7	19	89 *f*
	1214d	.318	230.7	63.4	- 8.3	0	5	
		.935	124.5					321
July 4			(- 1.2)	(· 49.1)	(+ 3.3)	(7)	(24)	(521)
186.341	14199	.884	303.1	95.7	+30.6	10	19	148 *c*
G	14200	.842	127.3	347.2	-28.4	0	13	135 *c*
		.945	124.4					245
		.955	0.5					35
		.971	6.9					33
July 5			(- 0.8)	(36.6)	(+ 3.4)	(10)	(32)	(596)
187.346		.957	358.0					27
G		.954	354.4					15
	14199	.955	300.4	95.1	+30.0	3	20	315 *f*
	14200	.700	135.5	350.0	-26.9	0	5	75 *f*
		.861	128.7					185
		.964	129.3					235
July 6			(- 0.3)	(23.3)	(+ 3.5)	(3)	(25)	(852)
July 7								
July 8		No spots or faculæ						
July 9								

U.T.	Group No.	Measures Dist.	Measures Pos. Angle	Position Long.	Position Lat.	Area Umbræ	Area Whole Spots	Area Faculæ
1944			°	°	°			
191.578	14200*	.282	127.2	310.9	- 5.9	4	18	
G								
July 10			(+ 1.6)	(327.3)	(+ 4.0)	(4)	(18)	(0)
192.338		.828	85.9					150
C	14200*	.176	164.9	314.7	- 5.7	0	9	
July 11			(+ 2.0)	(317.3)	(+ 4.0)	(0)	(9)	(150)
193.573		.813	229.9					216
G								
July 12			(+ 2.5)	(300.9)	(+ 4.2)	(0)	(0)	(216)
194.423		.889	235.6					280
G		.795	228.1					180
		.939	121.4					140
		.984	88.5					126
July 13			(+ 2.9)	(289.7)	(+ 4.2)	(0)	(0)	(726)
195.375		.966	239.6					255
G		.892	230.9					470
		.884	128.2					123
		.937	87.5					261
		.938	99.0					159
July 14			(+ 3.3)	(277.1)	(+ 4.3)	(0)	(0)	(1268)
196.441		.868	229.9					156
C		.860	84.8					97
		.938	54.3					127
		.970	47.3					91
		.979	179.7					17
		.981	152.5					23
July 15			(+ 3.8)	(263.0)	(+ 4.4)	(0)	(0)	(511)
July 16	No spots or faculæ							
198.342		.930	237.0					279
G		.920	113.6					151
		.973	7.5					30
July 17			(+ 4.6)	(237.8)	(+ 4.6)	(0)	(0)	(460)

Group 14199. July 2- 6. A pair of tiny spots on July 2-3: a single spot afterwards.
Group 14200. July 5- 6. A small indefinite spot.
Group 14200*. July 10-11. A small stream on July 10; one or two spots on July 11.

POSITIONS AND AREAS OF SUNSPOTS AND FACULÆ FOR EACH DAY IN THE YEAR.

U.T.	Group No.	Measures Dist.	Measures Pos. Angle	Position Long.	Position Lat.	Area Umbræ	Area Whole Spots	Area Faculæ
1944			°	°	°			
199.384		.973	359.3					45
G		.941	350.2					18
		.899	352.8					26
		.805	119.5					136
		.970	5.8					18
July 18			(+5.1)	(224.0)	(+4.7)	(0)	(0)	(243)
200.504	14201	.962	120.6	140.2	-27.6	7	29	185 *p*
G		.933	84.6					173
July 19			(+5.6)	(209.2)	(+4.8)	(7)	(29)	(358)
201.357	14201	.927	123.2	136.4	-28.2	3	12	168 *p*
G								
July 20			(+6.0)	(197.9)	(+4.9)	(3)	(12)	(168)
202.516		.855	125.7					84
G		.953	122.9					218
July 21			(+6.5)	(182.6)	(+5.0)	(0)	(0)	(302)
203.350		.839	123.6					203
C								
July 22			(+6.8)	(171.6)	(+5.1)	(0)	(0)	(203)
July 23		No spots or faculæ						
205.344		.873	268.4					341
C	*1215a*	.965	120.7	75.7	-27.8	0	13	245 *c*
July 24			(+7.7)	(145.2)	(+5.2)	(0)	(13)	(586)
206.350		.933	123.2					306
C								
July 25			(+8.1)	(131.9)	(+5.3)	(0)	(0)	(306)
207.326		.857	127.8					159
G	*1215b*	.312	42.2	106.2	+18.5	1	6	
July 26			(+8.5)	(118.9)	(+5.4)	(1)	(6)	(159)

U.T.	Group No.	Measures Dist.	Measures Pos. Angle	Position Long.	Position Lat.	Area Umbræ	Area Whole Spots	Area Faculæ
1944			°	°	°			
208.351		.932	352.4					10
G		.916	350.2					15
	14202	.703	221.5	136.8	-27.0	4	6	
		.761	136.9					186
		.923	8.8					12
		.928	2.9					9
July 27			(+8.9)	(105.4)	(+5.5)	(4)	(6)	(232)
209.426	14202	.824	231.4	137.3	-27.0	56	160	133 *c*
G								
July 28			(+9.4)	(91.2)	(+5.6)	(56)	(160)	(133)
210.597		.936	275.9					176
G	14202	.937	237.6	138.8	-27.6	32	164	289 *c*
		.870	99.9					98
July 29			(+9.9)	(75.7)	(+5.7)	(32)	(164)	(563)
211.370		.963	239.9					463
G	14202	.981	240.5	139.5	-27.4	35	168	
July 30			(+10.2)	(65.5)	(+5.7)	(35)	(168)	(463)
212.577		.814	287.3					163
G								
July 31			(+10.7)	(49.5)	(+5.8)	(0)	(0)	(163)
213.351		.736	221.2					82
C		.939	127.4					176
Aug. 1			(+11.0)	(39.3)	(+5.9)	(0)	(0)	(258)
214.551		.887	293.2					54
G		.803	229.3					124
		.863	135.6					108
		.976	118.7					207
Aug. 2			(+11.4)	(23.4)	(+5.9)	(0)	(0)	(493)
215.531		.895	233.0					292
G		.763	223.8					79
		.866	131.6					63
		.939	123.8					238
Aug. 3			(+11.8)	(10.4)	(+6.0)	(0)	(0)	(672)

Group 14201. July 19–20. A small spot. Revives as Group 14202.
Group 14202. July 27–30. A short stream of small components forming towards the west limb.

POSITIONS AND AREAS OF SUNSPOTS AND FACULÆ FOR EACH DAY IN THE YEAR.

U.T.	Group No.	MEASURES		POSITION		AREA			U.T.	Group No.	MEASURES		POSITION		AREA		
		Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ			Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ
1944			°	°	°				1944			°	°	°			
216.340		.961	237.3					251	223.385		.947	348.8					25
G		.845	235.3					111	G		.943	356.5					21
		.861	128.7					235			.808	248.8					87
Aug. 4			(+12.1)	(359.7)	(+6.1)	(0)	(0)	(597)		14203	.785	223.7	305.0	-29.5	0	4	446 c
										14205	.583	351.4	273.3	+41.5	4	16	
										14204	.262	175.6	265.4	- 8.6	31	149	
217.393		.938	240.1					180			.886	103.7					142
G	14203	.790	135.3	306.3	-29.5	7	37	139 c			.960	97.3					121
	14204	.993	101.8	264.2	-10.9	0	28	305 *p*	Aug. 11			(+14.8)	(266.6)	(+6.5)	(35)	(169)	(842)
Aug. 5			(+12.5)	(345.8)	(+6.1)	(7)	(65)	(624)									
218.467		.972	248.6					104	224.343	14203	.869	229.9	303.8	-29.9	0	7	538 c
G	14203	.683	146.8	306.3	-29.1	12	67		C	14204	.328	219.8	266.1	- 8.2	16	100	
	14204	.932	103.8	264.9	-10.4	26	113	297 c	Aug. 12			(+15.1)	(253.9)	(+6.5)	(16)	(107)	(538)
		.950	76.6					109									
Aug. 6			(+13.0)	(331.6)	(+6.2)	(38)	(180)	(510)									
									225.166		.933	239.2					260
219.389	14203	.573	161.5	307.7	-26.6	11	35		K	14203	.926	232.4	301.7	-31.1	3	17	279 c
G	14204	.835	106.3	265.2	- 9.8	13	51	232 c		14204	.446	233.8	264.3	- 9.1	14	66	
		.865	75.8					113			.937	116.0					164
Aug. 7			(+13.3)	(319.4)	(+6.3)	(24)	(86)	(345)	Aug. 13			(+15.4)	(243.0)	(+6.6)	(17)	(83)	(703)
220.333		.984	355.7					19									
G		.944	340.7					27									
		.918	355.4					11	226.330	*1216a*	.983	233.6	299.7	-33.8	0	13	249 c
		.883	338.5					15	G	14205	.773	321.0	268.3	+41.9	4	14	176 c
	14203	.565	178.8	306.1	-27.9	14	47			14204	.655	248.1	265.4	- 8.9	11	27	
	14204	.712	110.1	264.4	- 9.5	36	101	194 c		14206	.949	83.8	155.6	+ 8.0	0	16	280 c
Aug. 8			(+13.7)	(306.9)	(+6.3)	(50)	(148)	(266)	Aug. 14			(+15.8)	(227.6)	(+6.6)	(15)	(70)	(705)
221.337		.823	221.4					137									
G		.813	208.7					88	227.335	14205	.851	316.2	266.8	+42.2	0	5	142 c
	14203	.609	195.4	304.4	-29.5	10	35		G	14204	.808	253.2	265.8	- 9.3	4	12	155 c
	14204	.532	117.8	265.4	- 8.7	30	135			14206	.847	85.1	156.3	+ 7.7	2	13	200 c
		.971	84.8					164	Aug. 15			(+16.2)	(214.4)	(+6.7)	(6)	(30)	(497)
Aug. 9			(+14.0)	(293.7)	(+6.4)	(40)	(170)	(389)									
222.341		.864	221.1					242	228.315		.929	312.5					153
C	14203	.682	211.3	304.4	-29.7	8	35		G		.906	253.9					315
	14204	.362	134.8	265.4	- 8.5	22	121			14207	.353	224.3	215.8	- 8.1	8	22	
		.921	100.5					127		14206	.679	86.3	158.5	+ 7.4	5	23	140 *f*
		.936	85.0					125			.951	121.5					190
Aug. 10			(+14.4)	(280.4)	(+6.4)	(30)	(156)	(494)	Aug. 16			(+16.5)	(201.4)	(+6.7)	(13)	(45)	(798)

Group 14203. Aug. 5-13. A stream of tiny spots of which only one remains after August 10. The axis of the stream is markedly inclined to the sun's equator.
Group 14204. Aug. 5-16. A stream of small changing spots.
Group 14205. Aug. 11-16. Intermittent. One or more small ephemeral spots in relatively high northern latitude.
Group 14206. Aug. 14-18. One or two small spots.
Group 14207. Aug. 16-19. A small group of weak development.

POSITIONS AND AREAS OF SUNSPOTS AND FACULÆ FOR EACH DAY IN THE YEAR.

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1944			°	°	°			
229.393		.974	256.8					336
G		.973	312.9					121
	14207	.533	242.9	215.7	- 8.0	27	112	
	14208	.174	204.4	191.3	- 2.3	3	7	
	14206	.476	86.8	158.7	+ 7.5	8	36	
		.919	127.2					273
Aug. 17			(+16.8)	(187.2)	(+ 6.8)	(38)	(155)	(730)
230.362		.920	242.6					244
G	14207	.690	250.2	215.2	- 8.3	23	129	
	14208	.302	241.2	189.7	- 1.8	9	39	
	14206	.272	87.4	158.6	+ 7.2	10	34	
		.815	134.2					225
		.922	121.2					87
Aug. 18			(+17.2)	(174.4)	(+ 6.8)	(42)	(202)	(556)
231.391	14207	.829	253.8	214.4	- 9.3	10	49	221 *c*
G								
Aug. 19			(+17.5)	(160.8)	(+ 6.9)	(10)	(49)	(221)
232.517		.948	258.8					222
C	14208	.719	259.9	190.8	- 2.3	13	76	112 *c*
		.965	117.6					517
Aug. 20			(+17.9)	(145.9)	(+ 6.9)	(13)	(76)	(851)
233.344		.978	260.6					155
C	14208	.866	262.8	194.0	- 2.8	4	18	169 *c*
		.829	128.0					88
		.921	121.5					307
Aug. 21			(+18.1)	(134.9)	(+ 6.9)	(4)	(18)	(719)
234.360	14208	.934	265.0	189.8	- 2.1	0	10	149 *c*
C		.826	125.5					350
		.966	116.8					232
Aug. 22			(+18.4)	(121.5)	(+ 7.0)	(0)	(10)	(731)
235.402	14210	.825	273.9	163.6	+ 7.2	4	16	123 *f*
G	14209	.790	135.1	68.5	-28.6	4	9	155 *c*
		.913	120.5					151
Aug. 23			(+18.7)	(107.8)	(+ 7.0)	(8)	(25)	(429)
236.338	14210	.933	275.5	164.7	+ 7.7	0	10	297 *c*
C	14209	.729	143.7	65.7	-29.8	4	18	
		.846	126.0					92
		.966	114.5					125
Aug. 24			(+19.0)	(95.4)	(+ 7.0)	(4)	(28)	(514)
237.333	14210	.989	277.7	164.3	+ 8.6	0	16	285 *c*
G	14211	.696	226.7	115.3	-22.5	3	11	77 *p*
	14212	.687	132.5	49.3	-21.7	35	89	
		.916	117.7					182
Aug. 25			(+19.3)	(82.2)	(+ 7.1)	(38)	(116)	(544)
238.342		.949	231.8					358
G	14211	.829	232.8	115.6	-25.2	2	4	106 *c*
	14212	.575	145.6	48.5	-21.6	24	120	
		.813	121.5					82
		.984	110.7					219
Aug. 26			(+19.6)	(68.9)	(+ 7.1)	(26)	(124)	(765)
239.354		.916	238.1					169
G	14212	.494	166.3	48.3	-21.5	21	84	
		.940	115.0					331
Aug. 27			(+19.9)	(55.5)	(+ 7.1)	(21)	(84)	(500)
240.397		.967	241.6					309
G	14213	.680	206.0	62.0	-30.9	6	27	
	14212	.495	193.2	48.8	-21.6	19	66	
		.858	119.0					247
		.969	100.2					113
Aug. 28			(+20.2)	(41.8)	(+ 7.1)	(25)	(93)	(669)
241.389		.811	231.6					327
C	14213	.756	219.6	62.2	-29.6	7	34	
	14212	.580	215.8	50.0	-21.3	14	78	84 *c*
		.794	123.9					198
		.881	101.8					104
Aug. 29			(+20.5)	(28.7)	(+ 7.2)	(21)	(112)	(713)
242.386		.900	237.8					375
G	14213	.859	229.5	63.8	-29.1	2	7	142 *c*
	14212	.683	228.3	48.5	-20.9	6	23	76 *p*
		.963	120.3					282
Aug. 30			(+20.7)	(15.5)	(+ 7.2)	(8)	(30)	(875)

Group 14208. Aug. 17-22. A few variable spots; none is seen on August 18 and 19.
Group 14209. Aug. 22-24. A tiny spot on August 22-23; a pair on August 24.
Group 14210. Aug. 23-25. A small spot.
Group 14211. Aug. 25-26. One or two tiny spots.
Group 14212. Aug. 25-30. A few spots in stream formation.
Group 14213. Aug. 28-30. Two or three small spots.

POSITIONS AND AREAS OF SUNSPOTS AND FACULAE FOR EACH DAY IN THE YEAR.

U.T.	Group No.	Measures		Position		Area			U.T.	Group No.	Measures		Position		Area		
		Dist.	Pos. Angle	Long.	Lat.	Umbrae	Whole Spots	Faculae			Dist.	Pos. Angle	Long.	Lat.	Umbrae	Whole Spots	Faculae
1944			°	°	°				1944			°	°	°			
243.385		.975	241.2					210	250.338		.969	244.7					197
G		.959	334.8					44	C		.888	243.2					107
		.929	232.8					268			.748	221.2					90
		.812	235.8					289	Sept. 7			(+22.6)	(270.5)	(+7.2)	(0)	(0)	(394)
		.791	75.1					92									
		.869	152.3					14									
		.895	124.0					226	251.337		.962	341.3					25
		.960	82.0					167	G		.935	347.0					15
		.982	129.8					117			.844	229.9					172
Aug. 31			(+21.0)	(2.3)	(+7.2)	(0)	(0)	(1427)		*1217a*	.967	248.9	328.9	-18.2	0	10	159 c
									Sept. 8			(+22.9)	(257.3)	(+7.2)	(0)	(10)	(371)
244.328		.972	234.0					228									
G		.910	241.2					270									
		.871	83.4					119	252.322	*1217b*	.928	236.1	304.7	-27.8	0	12	184 c
		.955	133.7					208	G	14215	.992	115.0	165.6	-23.6	27	157	
Sept. 1			(+21.2)	(349.8)	(+7.2)	(0)	(0)	(825)	Sept. 9			(+23.1)	(244.3)	(+7.2)	(27)	(169)	(184)
245.395		.970	244.9					275									
G	14214	.959	236.8	42.0	-28.9	49	229	210 c	253.339		.971	237.1					129
		.881	140.4					244	G		.876	219.6					116
Sept. 2			(+21.5)	(335.7)	(+7.2)	(49)	(229)	(729)		14215	.951	117.9	164.4	-23.7	33	267	256 c
									Sept. 10			(+23.3)	(230.8)	(+7.2)	(33)	(267)	(501)
246.351		.908	238.4					182									
G	14214	.990	239.5	39.4	-28.7	17	63	250 c									
		.985	61.1					161	254.393		.958	228.3					280
Sept. 3			(+21.7)	(323.1)	(+7.2)	(17)	(63)	(593)	G		.932	359.3					19
											.919	216.2					185
										14215	.879	122.9	161.9	-24.4	63	316	326 c
247.331		.811	155.2					159			.858	85.3					171
C		.941	61.9					145			.955	5.8					33
Sept. 4			(+22.0)	(310.2)	(+7.2)	(0)	(0)	(304)			.969	12.8					18
									Sept. 11			(+23.5)	(216.9)	(+7.2)	(63)	(316)	(1032)
248.321		.967	346.5					17									
G		.951	342.3					22	255.390		.965	222.1					306
		.850	239.2					149	G	14215	.776	129.3	162.8	-24.0	66	374	234 c
		.869	59.0					125	Sept. 12			(+23.7)	(203.8)	(+7.2)	(66)	(374)	(540)
Sept. 5			(+22.2)	(297.1)	(+7.2)	(0)	(0)	(313)									
									256.357	14216	.884	231.1	243.0	-29.4	5	10	106 c
249.382		.930	243.2					246	G	14217	.814	243.6	240.3	-16.6	4	12	123 c
G										14215	.651	140.0	164.0	-23.5	109	463	
Sept. 6			(+22.4)	(283.1)	(+7.2)	(0)	(0)	(246)	Sept. 13			(+23.8)	(191.0)	(+7.2)	(118)	(485)	(229)

Group 14214. Sept. 2- 3. A stream forming near the west limb.

Group 14215. Sept. 9-21. A regular spot followed by a variable cluster of small spots. On September 12 a small companion appears directly in front of the leader and others on its northern edge. From September 18 only the regular spot with its small preceding companion remains.

Group 14216. Sept. 13-15. One or two small spots in relatively high latitude.

Group 14217. Sept. 13-14. A pair of spots on September 13; a single one on September 14.

POSITIONS AND AREAS OF SUNSPOTS AND FACULAE FOR EACH DAY IN THE YEAR.

U.T.	Group No.	Measures		Position		Area			U.T.	Group No.	Measures		Position		Area		
		Dist.	Pos. Angle	Long.	Lat.	Umbrae	Whole Spots	Faculae			Dist.	Pos. Angle	Long.	Lat.	Umbrae	Whole Spots	Faculae
1944			°	°	°				1944			°	°	°			
257.426	14216	.955	233.4	241.1	-31.7	0	7	209 c	265.566	14218	.578	148.9	50.6	-22.9	68	257	
G	14217	.922	246.3	239.6	-18.5	3	9	123 c	G		.797	137.2					110
	14215	.553	157.2	163.4	-23.5	80	448		Sept. 22			(+25.3)	(69.4)	(+ 7.0)	(68)	(257)	(110)
Sept. 14			(+24.0)	(176.9)	(+ 7.2)	(83)	(464)	(332)									
258.361	14216	.994	234.9	241.9	-33.6	0	48	164 c	266.362		.843	220.0					107
C	14215	.517	177.5	163.1	-23.8	52	374		G	14218	.518	166.2	51.2	-23.1	79	340	
Sept. 15			(+24.2)	(164.5)	(+ 7.2)	(52)	(422)	(164)			.934	116.2					130
									Sept. 23			(+25.4)	(58.9)	(+ 7.0)	(79)	(340)	(237)
259.346	14215	.552	200.3	163.6	-24.0	54	264										
G		.967	162.7					21	267.338	14218	.509	189.7	51.3	-23.0	75	401	
Sept. 16			(+24.4)	(151.5)	(+ 7.2)	(54)	(264)	(21)	C								
									Sept. 24			(+25.5)	(46.0)	(+ 7.0)	(75)	(401)	(0)
260.383		.949	355.1					31									
G	14215	.644	218.1	163.5	-23.9	59	282		268.323	*1217c*	.520	276.3	64.4	+ 9.1	3	23	
		.946	121.1					240	C	14218	.564	210.0	50.7	-22.6	72	327	
Sept. 17			(+24.5)	(137.8)	(+ 7.2)	(59)	(282)	(271)	Sept. 25			(+25.6)	(33.0)	(+ 6.9)	(75)	(350)	(0)
261.333	14215	.749	229.2	163.4	-23.7	51	283	182 c	269.365		.889	235.7					164
C									G	14218	.686	226.3	51.6	-22.4	70	387	
Sept. 18			(+24.7)	(125.3)	(+ 7.1)	(51)	(283)	(182)	Sept. 26			(+25.7)	(19.3)	(+ 6.9)	(70)	(387)	(164)
262.330		.963	244.2					220	270.396		.963	240.6					267
C	14215	.857	236.7	163.4	-23.7	59	292	496 c	G	14218	.818	236.5	53.0	-22.3	86	382	188 c
		.934	115.3					150	Sept. 27			(+25.8)	(5.7)	(+ 6.8)	(86)	(382)	(455)
Sept. 19			(+24.8)	(112.1)	(+ 7.1)	(59)	(292)	(866)									
									271.415		.870	262.5					102
263.315	14215	.940	241.4	163.3	-23.8	53	290	531 c	G		.843	223.8					123
C	14218	.873	123.1	45.9	-24.3	2	21	116 c		14218	.917	242.1	53.0	-22.1	61	340	498 c
		.904	135.7					88			.832	57.3					97
		.953	125.6					160	Sept. 28			(+25.9)	(352.2)	(+ 6.8)	(61)	(340)	(820)
Sept. 20			(+25.0)	(99.1)	(+ 7.1)	(55)	(311)	(895)									
									272.487		.946	237.2					85
264.475		.942	249.7					100	G		.897	228.5					125
G	14215	.990	244.7	161.4	-23.7	31	199	240 *sf*		14218	.983	245.8	53.5	-22.2	35	263	270 *sf*
	14218	.710	132.0	49.1	-22.5	30	133	100 *c*		*1218a*	.305	218.3	349.0	- 7.1	1	6	
		.875	129.9					134			.825	134.7					99
Sept. 21			(+25.1)	(83.8)	(+ 7.1)	(61)	(332)	(574)	Sept. 29			(+26.0)	(338.1)	(+ 6.8)	(36)	(269)	(579)

• Group 14218. Sept. 20-29. A group developing from a pair of small spots, in which the leader becomes a regular spot. A few unstable spots form the train.

POSITIONS AND AREAS OF SUNSPOTS AND FACULAE FOR EACH DAY IN THE YEAR.

U.T.	Group No.	MEASURES		POSITION		AREA			U.T.	Group No.	MEASURES		POSITION		AREA		
		Dist.	Pos. Angle	Long.	Lat.	Umbrae	Whole Spots	Faculae			Dist.	Pos. Angle	Long.	Lat.	Umbrae	Whole Spots	Faculae
1944			°	°	°				1944			°	°	°			
273.360		.979	242.2					259	279.384		.854	231.1					89
G		.931	233.7					151	G	14219	.993	295.0	332.3	+25.5	0	28	95 *c*
		.907	251.1					145		*1218c*	.623	221.0	273.3	-22.9	4	16	
	14219	.304	333.4	335.0	+22.3	40	207			14222	.615	168.8	239.2	-30.6	17	110	
	1218b	.680	104.5	285.4	- 4.7	3	6			14223	.750	155.0	223.9	-36.8	0	16	
Sept. 30			(+26.0)	(326.6)	(+ 6.7)	(43)	(213)	(555)	Oct. 6			(+26.3)	(247.1)	(+ 6.4)	(21)	(170)	(184)
274.381		.915	342.7					16									
G	14219	.460	306.7	336.5	+22.1	39	206		280.289	14222	.602	185.3	238.8	-30.4	17	97	
	14220	.596	212.7	333.6	-23.7	4	15		C		.958	116.3					205
	14221	.867	123.4	261.7	-24.1	0	4				.977	64.1					198
	14222	.980	124.0	241.3	-31.3	22	111	198 *c*	Oct. 7			(+26.4)	(235.1)	(+ 6.3)	(17)	(97)	(403)
		.935	114.5					171									
Oct. 1			(+26.1)	(313.1)	(+ 6.7)	(65)	(336)	(385)									
									281.349		.959	347.8					26
275.378		.980	291.8					138	C		.956	354.3					10
G	14219	.637	296.1	337.7	+21.5	68	326			14222	.646	203.3	238.2	-30.3	16	91	
	14220	.733	232.9	337.6	-23.8	0	7			14224	.935	63.1	151.6	+27.3	3	13	136 *p*
	14221	.752	130.5	261.3	-24.1	3	10	93 *f*			.861	121.1					126
	14222	.929	127.4	240.5	-31.1	27	114	326 *c*			.898	10.7					11
		.848	118.9					126			.930	7.8					12
Oct. 2			(+26.2)	(299.9)	(+ 6.6)	(98)	(457)	(683)			.941	4.6					28
											.948	121.3					217
											.980	10.1					15
276.365	14219	.785	291.8	338.1	+21.2	63	278	148 *c*	Oct. 8			(+26.4)	(221.1)	(+ 6.3)	(19)	(104)	(581)
G	14220	.846	235.7	336.7	-24.2	13	49	140 *c*									
	14221	.652	139.8	259.6	-24.0	15	44										
	14222	.855	133.0	240.1	-31.2	26	99	176 *f*	282.292		.949	243.5					85
		.942	132.0					237	C		.933	224.9					118
Oct. 3			(+26.2)	(286.9)	(+ 6.6)	(117)	(470)	(701)			.898	345.3					15
											.853	218.3					71
											.840	234.0					138
277.333	14219	.901	290.2	338.7	+21.0	40	263	267 *c*		14225	.819	252.5	261.1	-10,5	21	66	104 *c*
C	14220	.930	241.4	336.9	-23.6	13	57	160 *c*		14222	.722	216.2	238.1	-30.1	14	76	79 *s*
	14221	.554	155.8	259.8	-24.0	8	25			14224	.854	60.7	151.3	+28.1	0	9	208 *p*
	14222	.769	140.5	239.4	-31.0	19	101	105 *f*			.752	125.8					131
		.894	136.7					180			.904	125.2					325
Oct. 4			(+26.3)	(274.1)	(+ 6.5)	(80)	(446)	(712)	Oct. 9			(+26.4)	(208.7)	(+ 6.2)	(35)	(151)	(1274)
278.411	14219	.971	291.1	337.3	+22.0	18	133	148 *c*									
G	14220	.979	242.3	333.3	-25.3	0	22	256 *c*	283.454	14225	.947	256.5	262.7	-10.7	16	104	196 *c*
	14221	.516	186.4	263.5	-24.2	2	8		G	14222	.831	227.1	238.0	-30.1	21	83	117 *c*
	14222	.675	153.6	239.5	-31.0	18	106			14223	.781	207.8	220.9	-38.2	2	13	
Oct. 5			(+26.3)	(259.9)	(+ 6.5)	(38)	(269)	(404)	Oct. 10			(+26.4)	(193.4)	(+ 6.1)	(39)	(200)	(313)

Group 14219. Sept. 30-Oct. 6. A stream of sudden origin near the central meridian. The leader is a fairly stable regular spot; small changing spots represent the follower.

Group 14220. Oct. 1 - 5. One or two small spots.

Group 14221. Oct. 1 - 5. A small variable stream.

Group 14222. Oct. 1 - 12. A small but stable regular spot with a drift equatorwards.

Group 14223. Oct. 6 - 10. Intermittent. One or two small spots in relatively high latitude.

Group 14224. Oct. 8 - 9. A very small spot.

Group 14225. Oct. 9 - 10. A pair of spots developing near the west limb.

POSITIONS AND AREAS OF SUNSPOTS AND FACULÆ FOR EACH DAY IN THE YEAR.

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1944			°	°	°			
284.418		.983	257.6					178
G		.865	220.3					252
	14222	.910	232.9	237.5	-30.1	15	89	147 *c*
Oct. 11			(+26.4)	(180.7)	(+ 6.1)	(15)	(89)	(577)
285.311		.912	224.1					325
C	14222	.964	236.6	236.9	-29.9	7	52	156 *sf*
Oct. 12			(+26.4)	(168.9)	(+ 6.0)	(7)	(52)	(481)
286.361		.950	226.4					414
G								
Oct. 13			(+26.4)	(155.0)	(+ 5.9)	(0)	(0)	(414)
Oct. 14			No spots or faculæ					
288.418	14226	.644	66.7	89.3	+19.3	1	6	
C	14227	.990	114.0	49.6	-22.6	45	278	239 *c*
Oct. 15			(+26.3)	(127.9)	(+ 5.8)	(46)	(284)	(239)
289.385		.925	222.1					138
G	14226	.486	59.3	88.9	+19.4	20	89	
	14227	.947	116.5	48.5	-22.8	42	231	341 *c*
		.942	169.4					13
		.974	167.3					20
Oct. 16			(+26.3)	(115.1)	(+ 5.7)	(62)	(320)	(512)
290.354		.872	234.2					197
G	14226	.323	42.1	89.2	+19.2	19	81	
	14227	.866	120.6	48.6	-22.9	29	207	187 *c*
		.884	112.6					89
		.929	121.2					402
Oct. 17			(+26.2)	(102.4)	(+ 5.6)	(48)	(288)	(875)
291.372		.961	239.7					242
G		.857	298.1					106
	14226	.237	1.4	88.5	+19.3	6	22	
	14227	.759	127.2	48.0	-23.0	24	175	128 *c*
		.852	125.9					231
		.960	174.9					26
Oct. 18			(+26.1)	(88.9)	(+ 5.6)	(30)	(197)	(733)
1944			°	°	°			
292.428		.953	297.2					191
C	14227	.636	137.7	47.4	-23.1	31	161	
		.762	135.3					180
Oct. 19			(+26.1)	(75.0)	(+ 5.5)	(31)	(161)	(371)
293.294	14227	.534	153.4	48.6	-23.1	39	235	
C	14228	.989	69.3	341.1	+21.2	0	20	216 *c*
Oct. 20			(+26.0)	(63.6)	(+ 5.4)	(39)	(255)	(216)
294.307	14227	.482	177.0	48.6	-23.3	54	270	371 *c*
C	14228	.924	68.9	342.5	+21.5	0	8	
		.972	58.6					157
Oct. 21			(+25.9)	(50.2)	(+ 5.3)	(54)	(278)	(528)
295.472	14227	.525	203.4	48.0	-23.6	53	217	
G		.820	65.6					202
		.917	62.2					288
		.949	126.4					416
		.970	74.2					156
Oct. 22			(+25.8)	(34.9)	(+ 5.2)	(53)	(217)	(1062)
296.341	14227	.601	217.9	47.1	-23.6	32	199	
C		.727	63.9					70
		.827	63.7					375
		.900	73.4					109
		.912	131.2					413
Oct. 23			(+25.7)	(23.4)	(+ 5.1)	(32)	(199)	(967)
297.284	14227	.704	228.1	45.8	-23.8	27	170	
C		.833	136.0					326
Oct. 24			(+25.7)	(11.0)	(+ 5.1)	(27)	(170)	(326)
298.601		.798	219.9					95
G		.773	229.7					138
	14227	.862	238.0	46.7	-24.2	29	202	250 *c*
		.768	146.3					181
Oct. 25			(+25.5)	(353.6)	(+ 4.9)	(29)	(202)	(664)
299.286	14227	.911	240.6	44.8	-24.1	28	156	339 *c*
C								
Oct. 26			(+25.4)	(344.6)	(+ 4.9)	(28)	(156)	(339)

Group 14226. Oct. 15-19. A pair of small spots.
Group 14227. Oct. 15-27. Return of Group 14218. A stable regular spot. Small ephemeral companions appear on October 20-25; these might be a subsidiary group.
Group 14228. Oct. 20-21. A small indefinite spot.

POSITIONS AND AREAS OF SUNSPOTS AND FACULÆ FOR EACH DAY IN THE YEAR.

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1944			°	°	°			
300.476		.946	231.9					184
G	14227	.983	244.2	44.7	-24.2	35	122	345 *f*
Oct. 27			(+25.3)	(328.9)	(+ 4.8)	(35)	(122)	(529)
301.460		.981	243.8					139
G		.976	235.9					198
	14228*	.713	67.7	271.8	+19.1	3	21	
	14229	.948	97.3	245.3	- 5.4	11	20	246 *c*
		.828	109.1					101
		.887	121.5					129
Oct. 28			(+25.1)	(315.9)	(+ 4.7)	(14)	(41)	(813)
302.317	14229	.905	99.0	240.8	- 6.1	0	10	372 *c*
C	14230	.986	96.4	225.0	- 5.5	8	55	141 *c*
Oct. 29			(+25.0)	(304.6)	(+ 4.6)	(8)	(65)	(513)
303.449		.786	220.2					169
G		.769	207.9					120
	14228*	.342	46.8	274.6	+17.8	2	14	
	14229	.720	102.3	244.9	- 5.6	3	13	133 *c*
	14230	.902	98.0	226.2	- 5.2	23	101	198 *c*
		.935	127.6					147
Oct. 30			(+24.8)	(289.7)	(+ 4.5)	(28)	(128)	(767)
304.304		.906	292.3					137
C		.864	226.8					210
		.817	295.6					146
		.793	214.7					113
	14229	.573	106.6	245.0	- 5.7	0	7	
	14230	.794	100.3	226.9	- 5.4	13	80	189 *c*
Oct. 31			(+24.7)	(278.4)	(+ 4.4)	(13)	(87)	(795)
305.456		.972	291.1					207
G		.940	233.3					261
		.923	298.9					250
		.888	222.7					214
	14230	.605	106.0	227.6	- 6.1	13	48	
		.921	134.7					145
Nov. 1			(+24.5)	(263.2)	(+ 4.3)	(13)	(48)	(1077)
1944			°	°	°			
306.440		.973	232.3					305
G	14230	.422	114.2	227.5	- 6.1	17	100	
		.878	139.8					206
Nov. 2			(+24.4)	(250.2)	(+ 4.2)	(17)	(100)	(511)
307.273	14230	.269	131.2	227.5	- 6.1	13	72	
C								
Nov. 3			(+24.2)	(239.2)	(+ 4.1)	(13)	(72)	(0)
308.372	14230	.195	208.2	230.1	- 5.9	11	39	
G	14231	.980	69.3	146.0	+21.0	0	22	126 *c*
Nov. 4			(+24.0)	(224.8)	(+ 4.0)	(11)	(61)	(126)
309.340	14231	.925	69.2	144.7	+20.7	0	8	166 *c*
C								
Nov. 5			(+23.8)	(212.0)	(+ 3.9)	(0)	(8)	(166)
310.395	14230	.483	252.0	225.5	- 5.2	2	14	
G	14231	.830	67.2	143.3	+20.9	2	4	138 *c*
Nov. 6			(+23.6)	(198.1)	(+ 3.7)	(4)	(18)	(138)
311.560		.922	261.6					202
C		.918	228.2					145
		.822	259.7					202
Nov. 7			(+23.3)	(182.7)	(+ 3.6)	(0)	(0)	(549)
312.287		.925	236.8					151
C		.908	260.8					236
		.749	258.2					237
Nov. 8			(+23.2)	(173.1)	(+ 3.5)	(0)	(0)	(624)
313.346		.961	230.6					131
C		.938	261.8					166
Nov. 9			(+22.9)	(159.2)	(+ 3.4)	(0)	(0)	(297)
314.287		.977	263.2					170
C								
Nov. 10			(+22.7)	(146.8)	(+ 3.3)	(0)	(0)	(170)

Group 14228*. Oct. 28 - 30. Intermittent. A few variable spots not seen on October 29.
Group 14229. Oct. 28 - 31. A small spot of the old cycle.
Group 14230. Oct. 29-Nov. 6. A stream of small changing spots of the old cycle.
Group 14231. Nov. 4 - 6. A small diminishing spot.

POSITIONS AND AREAS OF SUNSPOTS AND FACULAE FOR EACH DAY IN THE YEAR.

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbrae	AREA Whole Spots	AREA Faculae
1944 Nov. 11				No spots or faculae				
316.320		.927	117.1					209
C	*1219a*	.683	119.1	81.5	-17.0	4	12	
Nov. 12			(+22.2)	(120.0)	(+3.0)	(4)	(12)	(209)
317.288	14232	.936	115.0	41.2	-22.0	3	15	218 *c*
C		.838	120.1					106
Nov. 13			(+22.0)	(107.2)	(+3.0)	(3)	(15)	(324)
318.427		.864	229.0					91
G	14232	.831	119.3	40.9	-22.2	4	10	91 *c*
		.765	136.2					88
		.932	121.5					155
		.934	169.5					12
Nov. 14			(+21.7)	(92.2)	(+2.8)	(4)	(10)	(437)
319.353	*1219b*	.811	120.2	31.0	-22.2	2	14	129 *c*
C								
Nov. 15			(+21.4)	(80.0)	(+2.7)	(2)	(14)	(129)
320.451		.960	289.9					146
G		.940	234.5					133
	14233	.966	69.1	350.7	+20.9	63	348	385 *c*
Nov. 16			(+21.1)	(65.5)	(+2.6)	(63)	(348)	(664)
321.536		.952	211.9					101
C		.905	248.6					109
	14233	.882	67.2	350.7	+21.2	68	353	450 *f*
		.918	130.6					118
Nov. 17			(+20.8)	(51.2)	(+2.5)	(68)	(353)	(778)
322.284		.953	259.5					153
C	14233	.798	65.5	350.5	+20.8	57	330	483 *f*
		.871	133.6					75
Nov. 18			(+20.5)	(41.3)	(+2.4)	(57)	(330)	(711)
323.532		.934	254.5					116
C		.848	248.4					70
	14233	.627	58.4	350.2	+20.9	63	364	153 *f*
		.869	58.0					136
Nov. 19			(+20.2)	(24.9)	(+2.2)	(63)	(364)	(475)
1944 Nov. 20								
324.286		.928	249.0					181
C	14233	.512	50.6	350.1	+20.7	89	394	
Nov. 20			(+19.9)	(15.0)	(+2.1)	(89)	(394)	(181)
325.445		.864	237.5					141
G	14233	.359	26.6	349.9	+20.6	86	377	
		.960	127.2					107
Nov. 21			(+19.6)	(359.7)	(+2.0)	(86)	(377)	(248)
326.285		.887	208.3					202
C	14233	.314	357.2	349.5	+20.1	74	343	
	14234	.579	131.1	320.9	-20.6	4	20	
Nov. 22			(+19.3)	(348.6)	(+1.9)	(78)	(363)	(202)
327.296		.924	241.8					230
C	14233	.391	323.1	349.7	+19.9	72	420	
	14234	.448	146.5	320.1	-20.1	9	54	
Nov. 23			(+19.0)	(335.3)	(+1.8)	(81)	(474)	(230)
328.294		.961	244.7					166
C		.926	238.5					152
	14233	.533	306.1	349.2	+19.7	74	382	
	14234	.372	173.6	319.6	-20.0	6	45	
Nov. 24			(+18.6)	(322.1)	(+1.6)	(80)	(427)	(318)
329.419		.953	234.2					160
G	14233	.707	296.8	349.2	+19.7	79	384	
	14234	.414	205.0	318.0	-20.5	4	14	
Nov. 25			(+18.2)	(307.3)	(+1.5)	(83)	(398)	(160)
330.324		.791	301.6					187
C	14233	.828	293.4	349.2	+20.0	54	352	139 *c*
	14234	.522	223.2	317.8	-21.0	1	11	
		.956	99.4					158
Nov. 26			(+17.9)	(295.4)	(+1.4)	(55)	(363)	(484)
331.502		.906	298.3					216
G	14233	.940	291.0	348.7	+20.1	64	361	197 *c*
	14235	.366	34.1	267.3	+18.7	4	25	
		.924	100.5					84
Nov. 27			(+17.5)	(279.8)	(+1.2)	(68)	(386)	(497)

Group 14232. Nov. 13-14. A very small spot. Return or revival of Group 14227.
Group 14233. Nov. 16-28. A stable regular spot with tiny companions on November 19.
Group 14234. Nov. 22-26. A diminutive stream.
Group 14235. Nov. 27-29. Two or three small spots.

POSITIONS AND AREAS OF SUNSPOTS AND FACULÆ FOR EACH DAY IN THE YEAR.

U.T.	Group No.	Measures		Position		Area			U.T.	Group No.	Measures		Position		Area		
		Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ			Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ
1944			°	°	°				1944			°	°	°			
332.421		.955	296.3					174	341.422		.848	298.8					86
C		.813	240.3					178	G	14237	.476	34.9	132.0	+22.8	8	41	
	14233	.988	290.3	348.3	+20.2	60	343	90 c	Dec. 7			(+13.6)	(149.1)	(- 0.1)	(8)	(41)	(86)
	14235	.298	1.7	267.2	+18.3	7	29										
Nov. 28			(+17.1)	(267.7)	(+ 1.1)	(67)	(372)	(442)									
									342.490	*1220b*	.954	296.2	205.3	+24.8	7	18	124 c
333.452		.942	294.6					144	G	14237	.390	4.7	133.0	+22.6	5	21	
G		.913	245.0					152		14238	.985	112.4	55.9	-22.1	85	550	320 c
	14235	.374	322.6	267.9	+18.2	2	11				.980	86.1					96
Nov. 29			(+16.8)	(254.1)	(+ 1.0)	(2)	(11)	(296)	Dec. 8			(+13.1)	(135.0)	(- 0.2)	(97)	(589)	(540)
334.292		.952	246.5					84	343.463	14237	.435	338.3	132.3	+23.5	10	48	
C	*1220a*	.458	112.8	217.9	- 9.4	1	7		G	14238	.922	113.6	57.0	-21.7	114	886	479 c
		.943	115.8					185	Dec. 9			(+12.7)	(122.2)	(- 0.3)	(124)	(934)	(479)
Nov. 30			(+16.4)	(243.1)	(+ 0.9)	(1)	(7)	(269)									
									344.320	14237	.525	319.9	132.4	+23.2	8	65	
335.287		.883	116.8					333	C	*1220c*	.275	176.5	109.9	-16.3	2	10	
C										14238	.838	116.5	57.1	-22.1	103	832	359 c
Dec. 1			(+16.1)	(230.0)	(+ 0.8)	(0)	(0)	(333)			.955	116.3					780
									Dec. 10			(+12.3)	(110.9)	(- 0.4)	(113)	(907)	(1139)
336.427		.805	293.6					91									
G									345.527	14237	.706	303.7	134.4	+22.6	20	97	
Dec. 2			(+15.6)	(214.9)	(+ 0.6)	(0)	(0)	(91)	G	14238	.673	123.3	57.8	-22.0	185	1004	
										14239	.828	119.5	42.9	-24.3	12	81	260 c
337.333		.945	356.6					12	Dec. 11			(+11.8)	(95.0)	(- 0.5)	(217)	(1182)	(260)
C		.922	292.1					160									
		.946	8.5					20	346.447	14237	.832	297.6	135.4	+22.1	19	102	133 c
Dec. 3			(+15.3)	(203.0)	(+ 0.5)	(0)	(0)	(192)	C	14238	.550	131.9	56.8	-22.1	147	1010	
										14239	.710	127.2	44.1	-25.9	9	45	
											.906	119.2					159
Dec. 4		No spots or faculæ							Dec. 12			(+11.4)	(82.9)	(- 0.7)	(175)	(1157)	(292)
339.469	14236	.918	109.2	109.7	-17.5	5	21	146 c	347.445	14237	.930	294.7	135.7	+22.5	18	88	369 c
G									G	14238	.413	151.0	57.4	-21.9	157	893	
Dec. 5			(+14.4)	(174.8)	(+ 0.2)	(5)	(21)	(146)		14239	.601	134.9	41.7	-25.7	13	70	
										14240	.995	69.0	346.4	+20.8	10	168	
											.787	56.8					84
340.416	14237	.636	50.9	129.9	+23.6	11	50				.788	115.4					87
G	14236	.817	112.0	109.9	-17.7	2	11	82 c			.931	114.2					131
Dec. 6			(+14.0)	(162.4)	(+ 0.1)	(13)	(61)	(82)	Dec. 13			(+11.0)	(69.8)	(- 0.8)	(198)	(1219)	(671)

Group 14236. Dec. 5- 6. A small spot.
Group 14237. Dec. 6-14. A small stream of variable spots; the leader alone remains after December 11.
Group 14238. Dec. 8-21. A closely packed stream of complex spots breaking up after December 16.
Group 14239. Dec. 11-15. A variable cluster of faint spots closely following Group 14238.
Group 14240. Dec. 13-26. Return of Group 14233; 3rd appearance. A stable regular spot.

POSITIONS AND AREAS OF SUNSPOTS AND FACULÆ FOR EACH DAY IN THE YEAR.

U.T.	Group No.	Measures		Position		Area			U.T.	Group No.	Measures		Position		Area		
		Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ			Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ
1944			°	°	°				1944			°	°	°			
348.284		.822	250.7					82	353.446		.826	235.0					342
C	14237	.981	293.1	135.9	+22.4	5	33	242 *f*	G	14238	.908	247.0	54.4	-21.5	38	206	885 *c*
	14238	.358	174.5	56.6	-21.7	125	822			14241	.775	316.5	29.9	+32.8	32	165	
	14239	.471	151.2	44.2	-25.1	10	71			14242	.708	309.4	27.8	+25.3	12	51	
	14240	.966	68.2	345.3	+20.7	48	270	183 *c*		14240	.405	15.5	344.1	+21.2	38	201	
		.983	57.2					112		14243	.652	136.5	319.8	-29.5	26	135	138 *f*
Dec. 14			(+10.6)	(58.7)	(- 0.9)	(188)	(1196)	(619)	Dec. 19			(+ 8.2)	(350.7)	(- 1.6)	(146)	(758)	(1365)
349.286		.893	252.5					114									
C	14238	.386	206.0	55.9	-21.2	117	667		354.310		.895	239.6					531
	14239	.397	179.4	45.2	-24.3	4	42		C	14238	.970	248.1	54.5	-21.6	38	211	420 *c*
	14240	.892	66.0	345.1	+20.7	40	241	180 *c*		14241	.867	310.6	31.0	+33.2	27	135	232 *c*
		.950	54.7					198		14242	.809	303.2	27.5	+25.1	7	33	80 *c*
Dec. 15			(+10.1)	(45.5)	(- 1.0)	(161)	(950)	(492)		14240	.401	349.7	343.7	+21.5	37	232	
										14243	.550	148.0	319.9	-29.3	14	78	
350.315	14238	.526	229.0	57.0	-21.2	74	576			14244	.950	95.8	267.7	- 6.0	0	9	154 *f*
C	14240	.778	61.7	345.0	+20.8	66	243	167 *c*			.972	60.0					173
		.868	49.6					230	Dec. 20			(+ 7.8)	(339.3)	(- 1.7)	(123)	(698)	(1590)
Dec. 16			(+ 9.6)	(31.9)	(- 1.2)	(140)	(819)	(397)									
									355.287		.952	238.5					253
351.333	*1220d*	.734	243.8	62.7	-19.8	3	4	63 *c*	C	14238	.986	245.5	46.2	-24.4	0	44	343 *c*
C	14238	.666	238.2	55.8	-21.5	64	444			14242	.928	296.3	31.3	+23.5	0	13	148 *c*
	14242	.476	336.8	30.3	+24.6	1	5			14241	.938	305.6	30.6	+32.3	13	122	240 *c*
	14241	.576	343.6	29.5	+32.1	2	7			14240	.476	325.1	343.3	+21.2	39	199	
	14240	.643	54.2	344.7	+21.0	45	216			14243	.471	167.8	319.9	-29.1	14	88	
		.795	44.7					77		14244	.856	96.1	267.8	- 6.1	2	6	147 *f*
		.908	123.4					159		14245	.970	63.6	253.2	+25.0	20	147	226 *f*
		.946	92.8					143	Dec. 21			(+ 7.4)	(326.4)	(- 1.8)	(88)	(619)	(1357)
Dec. 17			(+ 9.2)	(18.5)	(- 1.3)	(115)	(676)	(442)									
									356.284		.974	241.4					91
352.461	14238	.814	244.1	55.5	-21.6	65	346	333 *c*	C		.841	278.6					96
G	14241	.665	326.4	29.4	+32.3	21	71			14241	.991	302.9	32.6	+32.2	29	134	306 *f*
	14242	.592	319.9	28.6	+25.5	8	44			14240	.603	310.6	342.6	+21.4	40	192	
	14240	.494	38.7	344.4	+21.3	44	240			14243	.473	194.8	321.2	-28.9	20	78	
	14243	.772	128.0	319.6	-29.3	6	20			14244	.715	96.6	267.9	- 6.0	3	11	122 *f*
		.850	93.5					132		14245	.906	60.6	252.5	+25.5	24	125	415 *c*
Dec. 18			(+ 8.7)	(3.7)	(- 1.4)	(144)	(721)	(465)	Dec. 22			(+ 6.9)	(313.3)	(- 1.9)	(116)	(540)	(1030)

Group 14241. Dec. 17 - 22. Small spots in a stream.
Group 14242. Dec. 17 - 21. One or two small spots.
Group 14243. Dec. 18 - 28. A stream of small variable spots with a brief maximum on December 25.
Group 14244. Dec. 20 - 22. A tiny spot, steady in its position.
Group 14245. Dec. 21-Jan. 1 1945. A cluster on December 21 with another forming behind it on December 24. The stream which is thereby formed soon fades out, and only the leading spot remains on December 31.

POSITIONS AND AREAS OF SUNSPOTS AND FACULÆ FOR EACH DAY IN THE YEAR.

U.T.	Group No.	MEASURES		POSITION		AREA			U.T.	Group No.	MEASURES		POSITION		AREA		
		Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ			Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ
1944			°	°	°				1944			°	°	°			
357.427	14240	.754	301.1	341.9	+21.3	46	210		361.341		.906	266.0					122
G	14243	.593	219.1	323.5	-29.2	16	112		C	14243	.961	240.0	319.5	-29.5	40	217	283 c
	14246	.547	204.9	313.8	-31.7	2	18			14246	.930	235.2	312.1	-33.0	0	8	155 c
	14245	.794	55.7	252.0	+25.1	33	151	422 c		14247	.314	332.2	255.3	+13.6	1	8	
Dec. 23			(+ 6.3)	(298.2)	(- 2.1)	(97)	(491)	(422)		14245	.479	357.3	248.1	+26.0	32	184	
											.777	50,0					213
									Dec. 27			(+ 4.4)	(246.7)	(- 2.5)	(73)	(417)	(773)
358.455	14240	.870	295.7	341.6	+20.9	43	235	97 c									
G	14243	.724	229.6	323.9	-29.6	33	220	181 c	362.285		.973	199.9					17
	14246	.620	215.8	309.9	-32.0	3	14		C		.959	358.6					17
	14245	.663	47.3	252.4	+24.8	26	149				.957	263.5					212
		.973	61.6					253		14243	.987	240.6	314.8	-29.4	13	78	305 c
		.983	120.4					104		14247	.440	309.0	254.8	+13.6	3	20	
Dec. 24			(+ 5.8)	(284.7)	(- 2.2)	(105)	(618)	(635)		14245	.532	335.1	248.7	+26.2	20	119	
									Dec. 28			(+ 4.0)	(234.3)	(- 2.6)	(36)	(217)	(551)
359.605		.935	306.3					203	363.331	14245	.641	318.7	248.5	+26.2	17	81	
C	14240	.965	292.7	342.0	+21.2	55	290	166 c	C								
	14243	.831	235.3	321.2	-29.5	71	430	197 c	Dec. 29			(+ 3.5)	(220.5)	(- 2.8)	(17)	(81)	(0)
	14245	.553	33.8	249.8	+25.1	39	232										
		.907	120.1					221									
		.927	59.1					356	364.289		.864	264.1					113
Dec. 25			(+ 5.3)	(269.6)	(- 2.3)	(165)	(952)	(1143)	C	14245	.758	307.8	249.3	+25.4	8	67	234 c
									Dec. 30			(+ 3.0)	(207.9)	(- 2.9)	(8)	(67)	(347)
360.317		.968	303.9					184									
C	14240	.993	291.3	341.8	+20.8	41	212	155 c	365.471		.940	265.1					235
	14243	.897	237.9	320.9	-29.6	44	298	202 c	G		.909	286.5					226
	14246	.842	231.0	311.7	-33.4	0	6	56 c		14245	.893	300.3	250.5	+25.1	10	35	582 c
	14245	.506	20.7	248.8	+25.8	37	205				.908	60.5					173
		.879	55.2					303			.978	60.6					141
Dec. 26			(+ 4.9)	(260.2)	(- 2.4)	(122)	(721)	(900)	Dec. 31			(+ 2.4)	(192.3)	(- 3.0)	(10)	(35)	(1357)

Group 14246. Dec. 23-27. A small spot not seen on December 25.
Group 14247. Dec. 27-28. A few small spots.

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ROYAL OBSERVATORY, GREENWICH.

General Catalogue of Groups of Sunspots

For the Year

1944

GREENWICH PHOTO-HELIOGRAPHIC RESULTS, 1944

General Catalogue of Groups of Sunspots for the Year 1944.

Groups of sunspots, lasting for two or more days, are numbered in the *first* column in continuation of the group-numbers given in 1943 and the previous years. Groups seen only once are not included in this catalogue but are given with a distinctive numeration in a following table on page C 29.

The *second* column gives the U.T. of the central meridian passage of each group as deduced from its mean longitude (given in the *tenth* column). For those groups which are in existence at the time of the central meridian passage of their longitude, the time is given to $0^d.01$, corresponding to $0^\circ.13$ of solar longitude. In other cases, in which groups disappear before or appear after the central meridian, the deduced time is given to $0^d.1$.

The *third* column gives the duration of each group in days. Intermittent groups, *i.e.*, groups which are not seen upon the photographs of every day between their first and last appearances, are indicated by a fraction, the numerator of which represents the number of days on which they are actually observed, the denominator being the number of days covering the extreme limits of observation.

The *fifth* and *seventh* columns, headed "Longitude from central meridian," give, for the days on which each group was first and last seen respectively, the heliographic longitude from the meridian passing through the centre of the Sun's disk at the time of observation; longitudes west of the centre being reckoned as positive.

The mean areas for umbræ and whole spots entered in the *eighth* and *ninth* columns are corrected for the effect of foreshortening and are expressed in millionths of the Sun's visible hemisphere.

The *tenth* and *eleventh* columns give the mean heliographic position of the group in longitude and latitude respectively.

The *twelfth* column gives reference to all groups contained in *Ledger I* and *Ledger II*; for a group in *Ledger I* both its recurrent series number and its order in the series are also given.

With reference to the identification both of recurrent and revival groups, it should be noted that longitudes are based on the ephemeris given in the *Nautical Almanac*, assuming a solar rotation period, constant at all latitudes. After an interval of one rotation, recurring groups will, therefore, show in general – apart from any proper motion they may have of their own – apparent drifts in longitude varying in amount according to their respective latitudes. The following table derived from the formula $\xi = 14^\circ.37 - 2^\circ.60 \sin^2 \phi$ gives the apparent drift in longitude appropriate to corresponding latitude after an interval of 27 days.

Latitude	Drift. *forwards*	Latitude	Drift. *backwards*
0°	5°	20°	3°
5°	4.5	25°	7.5
10°	3	30°	12.5
15°	0.5	35°	18

GENERAL CATALOGUE OF SUNSPOTS

No. of Group	U.T. of Central Meridian Passage	Duration in Days	First Seen		Last Seen		Mean Area Corrected for Foreshortening		Mean Position of Group		Reference to Ledger
			Date	Longitude from Central Meridian	Date	Longitude from Central Meridian	Umbræ	Whole Spots	Longitude	Latitude	
	1944		1944	°	1944	°			°	°	
14188	Jan. 15.8	2	Jan. 20	+62	Jan. 21	+74	0	10	141.4	-23.6	
89	28.46	13	22	-82	Feb. 3	+80	12	61	334.4	+ 9.2	II
14190	Mar. 20.05	12/13	Mar. 14	-73	Mar. 26	+85	9	54	15.0	-27.6	II
91	25.07	13	18	-87	30	+72	54	287	308.8	-24.3	II
92	24.03	3	22	-23	24	+ 7	6	21	322.5	+ 5.1	
93	30.1	3	24	-76	26	-48	1	13	242.5	- 7.8	
94	Apr. 2.5	2	Apr. 7	+66	Apr. 8	+81	0	11	197.1	-23.5	
14195	May 29.55	3	May 28	-17	May 30	+11	7	26	163.6	-22.1	
96	27.0	5	29	+28	June 2	+82	24	132	197.1	+ 0.7	I 1371 (1)
97	June 11.53	7/12	June 5	-81	16	+62	1	6	351.8	-27.4	II
98	22.52	13	16	-81	28	+81	15	71	206.3	+ 1.7	I 1371 (2)
99	July 1.0	5	July 2	+16	July 6	+72	7	27	94.6	+29.8	
14200	9.0	2	5	-49	6	-33	0	9	348.6	-27.6	
00*	11.7	2	10	-16	11	- 3	2	14	312.8	- 5.8	
01	24.9	2	19	-69	20	-62	5	20	138.3	-27.9	
02	24.9	4	27	+31	30	+74	32	124	138.1	-27.2	
03	Aug. 8.47	9	Aug. 5	-40	Aug. 13	+59	7	32	305.1	-29.2	II
04	11.49	11	5	-82	15	+51	20	88	265.2	- 9.1	II
14205	11.2	3/5	11	+ 7	15	+52	2	7	269.5	+41.9	
06	19.6	5	14	-72	18	-16	5	24	157.5	+ 7.6	
07	15.3	4	16	+14	19	+54	17	78	215.3	- 8.4	
08	17.1	5/6	17	+ 4	22	+68	5	25	191.1	- 2.3	II
09	26.5	2	23	-39	24	-30	4	14	67.1	-29.2	
14210	19.1	3	23	+56	25	+82	2	13	164.2	+ 7.4	
11	22.8	2	25	+33	26	+47	2	8	115.4	-23.8	
12	27.86	6	25	-33	30	+33	20	77	48.9	-21.4	II
13	26.8	3	28	+20	30	+48	5	23	62.7	-29.9	
14	28.5	2	Sept. 2	+66	Sept. 3	+76	33	146	40.7	-28.8	
14215	Sept. 15.45	13	9	-79	21	+78	57	308	163.4	-23.8	II
16	9.5	3	13	+52	15	+77	2	22	242.0	-31.6	I 1372 (1)
17	9.6	2	13	+49	14	+63	4	10	240.0	-17.6	
18	23.96	10	20	-53	29	+75	58	285	51.0	-22.7	I 1373 (1)
19	29.6	7	30	+ 8	Oct. 6	+85	45	236	337.2	+21.7	II
14220	29.7	5	Oct. 1	+20	5	+73	6	30	335.6	-24.1	
21	Oct. 5.4	5	1	-51	5	+ 4	6	18	260.1	-24.1	
22	7.00	12	1	-72	12	+68	18	94	239.0	-30.6	I 1372 (2)
23	8.25	2/5	6	-23	10	+28	0	6	222.4	-37.5	
24	13.6	2	8	-70	9	-57	2	11	151.4	+27.7	
14225	5.3	2	9	+52	10	+69	18	85	261.9	-10.6	
26	18.4	4	15	-39	18	0	12	50	89.0	+19.3	
27	21.52	13	15	-78	27	+76	36	202	47.4	-23.4	I 1373 (2)
28	26.5	2	20	-82	21	-68	0	14	341.8	+21.4	
28*	31.7	2/3	28	-44	30	-15	2	12	273.2	+18.4	
29	Nov. 2.9	4	28	-71	31	-33	4	12	244.0	- 5.7	

GENERAL CATALOGUE OF SUNSPOTS

No. of Group	U.T. of Central Meridian Passage	Duration in Days	First Seen		Last Seen		Mean Area Corrected for Foreshortening		Mean Position of Group		Reference to Ledger
			Date	Longitude from Central Meridian	Date	Longitude from Central Meridian	Umbræ	Whole Spots	Longitude	Latitude	
	1944		1944	°	1944	°			°	°	
14230	Nov. 4.20	8/9	Oct. 29	-80	Nov. 6	+27	11	57	227.0	- 5.7	II
31	10.4	3	Nov. 4	-79	6	-55	1	11	144.7	+20.9	
32	18.3	2	13	-66	14	-51	4	12	41.0	-22.1	I 1373 (3)
33	22.19	13	16	-75	28	+81	70	367	349.8	+20.4	I 1374 (1)
34	24.51	5	22	-28	26	+22	5	29	319.3	-20.4	
14235	28.44	3	27	-12	29	+14	4	22	267.5	+18.4	
36	Dec. 10.4	2	Dec. 5	-65	Dec. 6	-52	4	16	109.8	-17.6	
37	8.61	9	6	-32	14	+77	12	61	133.4	+22.8	II
38	14.47	14	8	-79	21	+80	101	650	56.3	-21.7	II
39	15.4	5	11	-52	15	0	10	62	43.6	-25.1	
14240	19.98	14	13	-83	26	+82	45	231	343.6	+21.1	I 1374 (2)
41	16.4	6	17	+11	22	+79	21	106	30.5	+32.5	II
42	16.5	5	17	+12	21	+65	6	29	29.1	+24.8	
43	21.71	11	18	-44	28	+80	28	168	320.9	-29.4	II
44	25.7	3	20	-72	22	-45	2	9	267.8	- 6.0	
14245	27.07	12	21	-73	1945 Jan. 1	+69	23	126	250.3	+25.4	II
46	22.4	4/5	23	+16	1944 Dec. 27	+65	1	9	311.9	-32.5	
47	26.7	2	27	+ 9	28	+20	2	14	255.0	+13.6	

GENERAL CATALOGUE OF SUNSPOTS

SUNSPOTS SEEN ON ONE DAY ONLY

The groups of sunspots tabulated below were seen on one day only and appear in the *Daily Results* with a distinctive enumeration, comprising the number of the rotation during which each was observed and a letter given in order of appearance. These short-lived groups are usually composed of one or two very small spots. The deduced time of central meridian passage of each spot is given in the fourth column of the table.

No. of Group	Date	Longitude from Central Meridian	U.T. of Central Meridian Passage	Area Corrected for Foreshortening		Position of Group		No. of Group	Date	Longitude from Central Meridian	U.T. of Central Meridian Passage	Area Corrected for Foreshortening		Position of Group	
				Umbræ	Whole Spots	Longitude	Latitude					Umbræ	Whole Spots	Longitude	Latitude
	1944	°	1944			°	°		1944	°	1944			°	°
1210a	Mar. 3	+22.9	Mar. 1.7	3	12	257.2	-10.5	*1217b*	Sept. 9	+60.4	Sept. 4.7	0	12	304.7	-27.8
								c	25	+31.4	22.9	3	23	64.4	+ 9.1
1214a	June 17	+54.2	June 13.2	0	16	329.3	-30.5								
b	30	-59.2	July 5.0	0	5	41.2	-19.9	*1218a*	Sept.29	+10.9	Sept.28.7	1	6	349.0	- 7.1
c	July 1	-48.3	5.0	4	36	41.1	- 4.0	*b*	30	-41.2	Oct. 3.5	3	6	285.4	- 4.7
d	4	+14.3	3.3	0	5	63.4	- 8.3	*c*	Oct. 6	+26.2	4.4	4	16	273.3	-22.9
1215a	July 24	-69.5	July 29.6	0	13	75.7	-27.8	*1219a*	Nov. 12	-38.5	Nov. 15.2	4	12	81.5	-17.0
b	26	-12.7	27.3	1	6	106.2	+18.5	*b*	15	-49.0	19.1	2	14	31.0	-22.2
1216a	Aug. 14	+72.1	Aug. 8.9	0	13	299.7	-33.8	*1220a*	Nov. 30	-25.2	Dec. 2.2	1	7	217.9	- 9.4
								b	Dec. 8	+70.3	3.2	7	18	205.3	+24.8
								c	10	- 1.0	10.4	2	10	109.9	-16.3
1217a	Sept. 8	+71.6	Sept. 2.9	0	10	328.9	-18.2	*d*	17	+44.2	14.0	3	4	62.7	-19.8

REVIVAL GROUPS OF SUNSPOTS

Groups of spots occupying the same heliographic position in consecutive disk passages (partial or complete) but with definite breaks in their history are termed 'Revivals'. Such groups have been abstracted from the preceding catalogue and are grouped in series in the following table. When a 'Recurrent' series i.e. *Ledger I* forms part of a 'Revival' series, a reference is given in the last column of the table. Groups that are given in detail in *Ledger II* are also indicated.

No.	No. of Group	U.T. of Central Meridian Passage	Rotation	Duration in Days	First Seen		Last Seen		Area	Mean Position		Reference to Ledger
					Date	Longitude from Central Meridian	Date	Longitude from Central Meridian		Longitude	Latitude	
		1944			1944	°	1944	°		°	°	
1	14197	June 11.53	1214	7/12	June 5	-81	June 16	+62	6	352	-27	II
	200	July 9.0	1214	2	July 5	-49	July 6	-33	9	349	-28	
2	14212	Aug. 27.86	1216	6	Aug. 25	-33	Aug. 30	+33	77	49	-21	II
	18	Sept.23.96	1217	10	Sept.20	-53	Sept.29	+75	285	51	-23	} I 1373
	27	Oct. 21.52	1218	13	Oct. 15	-78	Oct. 27	+76	202	47	-23	
	32	Nov. 18.3	1219	2	Nov. 13	-66	Nov. 14	-51	12	41	-22	
	39	Dec. 15.4	1220	5	Dec. 11	-52	Dec. 15	0	62	44	-25	
3	14219	Sept.29.6	1218	7	Sept.30	+ 8	Oct. 6	+85	236	337	+22	II
	28	Oct. 26.5	1218	2	Oct. 20	-82	Oct. 21	-68	14	342	+21	
4	14228*	Oct. 31.7	1219	2/3	Oct. 28	-44	Oct. 30	-15	12	273	+18	
	35	Nov. 28.44	1220	3	Nov. 27	-12	Nov. 29	+14	22	267	+18	
5	14231	Nov. 10.4	1219	3	Nov. 4	-79	Nov. 6	-55	11	145	+21	
	37	Dec. 8.61	1220	9	Dec. 6	-32	Dec. 14	+77	61	133	+23	II

Reference No. 1: Group 14200 disappeared before Rotation 1215 began.
Reference No. 3: Group 14228 disappeared before Rotation 1219 began.

ROYAL OBSERVATORY, GREENWICH.

Ledgers of Groups of Sunspots

For the Year

1944

Ledger I.—Recurrent Groups

GREENWICH PHOTO-HELIOGRAPHIC RESULTS, 1944

LEDGER I - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1944.

The time (U.T.) at which the photograph was taken is expressed in the *first* column by the day of the year 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, and those taken at the Cape, Kodaikanal and Washington by the letters C, K and W respectively.

The projected area of the umbræ and whole spots, given in the *second* and *third* columns, 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 foreshortening given in the *fourth* and *fifth* columns is expressed in millionths of the Sun's visible hemisphere.

The longitude given in the *sixth* column is based on the ephemeris given in the *Nautical Almanac*, assuming a daily sidereal motion of $14^{\circ}.18$, due to the Sun's rotation, constant at all latitudes; this corresponds to Carrington's assumed rotation period of 25.38 days.

The proper motion given in the *seventh* column is derived from the difference of longitude thus computed from the measured positions on any given day and the first day on which the group of spots or single spot is visible, after the correction for the motion appropriate to the latitude has been applied according to the formula, $\xi = 14^{\circ}.37 - 2^{\circ}.60 \sin^2 \phi$. A *plus* sign indicates a motion forwards; a *minus* sign a motion backwards relative to the position on the first day.

The remaining columns correspond to those with similar headings in the preceding section.

When a group is 80° or more from the Sun's central meridian, the measures for that day are not included in taking the mean area, longitude and latitude of the group. In such cases of close proximity to the Sun's limb, the addition of brackets denotes that only part of the group is visible.

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR

No. 1371. Latitude +1°.2

Group 14196 in Rotation 1213
" 14198 " " 1214

Group 14196. May 29-June 2. A compact equatorial stream developing where only a dot is seen on May 29 and 30.

Date U.T. Place	Projected Area Umbræ	Projected Area Whole Spots	Corrected Area Umbræ	Corrected Area Whole Spots	Longitude and Proper Motion		Lati-tude	Long. from C.M.
d					°	°	°	°
149.354 G	0	9	0	5	194.0	0.0	+ 1.0	+27.8
150.307 G	2	9	1	6	197.6	+ 3.4	+ 0.7	+44.0
151.404 G	41	190	40	185	197.9	+ 3.5	+ 0.6	+58.8
152.410 G	30	183	53	332	199.0	+ 4.4	+ 0.4	+73.2
153.304 G	9	69	(31	237	195.5	..	+ 0.7)	+81.6
Means	..	..	24	132	197.1	..	+ 0.7	..

Group 14198. June 16-28. A small but very stable regular spot.

167.392 G	5	23	16	72	206.5	..	+ 1.7	-80.9
168.322 G	14	60	19	83	206.1	+ 8.5	+ 1.7	-69.0
169.299 G	14	83	13	75	205.8	+ 8.0	+ 1.8	-56.4
170.355 C	22	98	15	67	205.7	+ 7.7	+ 1.8	-42.5
171.334 G	28	134	16	76	205.7	+ 7.5	+ 1.7	-29.6
172.547 G	23	141	12	72	205.8	+ 7.4	+ 1.4	-13.4
173.339 G	35	157	18	78	206.0	+ 7.5	+ 1.5	- 2.7
174.391 C	27	145	14	74	206.4	+ 7.7	+ 1.7	+11.6
175.330 G	23	139	13	76	206.8	+ 7.9	+ 1.7	+24.4
176.325 G	18	97	11	61	206.9	+ 7.8	+ 1.7	+37.7
177.354 C	25	94	20	75	207.1	+ 7.8	+ 1.9	+51.5
178.310 G	9	42	10	48	206.9	+ 7.4	+ 1.6	+64.0
179.586 G	5	14	16	46	207.3	..	+ 1.9	+81.3
Means	..	..	15	71	206.3	..	+ 1.7	..

No. 1372. Latitude -31°.1

Group 14216 in Rotation 1217
" 14222 " " 1218

Group 14216. Sept. 13-15. One or two small spots in relatively high latitude.

256.357 G	5	9	5	10	243.0	0.0	-29.4	+52.0
257.426 G	0	4	0	7	241.1	- 1.4	-31.7	+64.2
258.361 C	0	11	0	48	241.9	- 0.1	-33.6	+77.4
Means	..	..	2	22	242.0	..	-31.6	..

No. 1372. - *continued*

Group 14222. Oct. 1-12. Possible return of Group 14216. A small but stable regular spot with a drift equatorwards.

d					°	°	°	°
274.381 G	9	45	22	111	241.3	+ 7.4	-31.3	-71.8
275.378 G	20	85	27	114	240.5	+ 7.1	-31.1	-59.4
276.365 G	27	103	26	99	240.1	+ 7.2	-31.2	-46.8
277.333 C	24	130	19	101	239.4	+ 7.0	-31.0	-34.7
278.411 G	27	156	18	106	239.5	+ 7.6	-31.0	-20.4
279.384 G	27	174	17	110	239.2	+ 7.8	-30.6	- 7.9
280.289 C	28	156	17	97	238.8	+ 7.9	-30.4	+ 3.7
281.349 C	24	140	16	91	238.2	+ 7.8	-30.3	+17.1
282.292 C	19	105	14	76	238.1	+ 8.2	-30.1	+29.4
283.454 G	24	93	21	83	238.0	+ 8.6	-30.1	+44.6
284.418 G	13	75	15	89	237.5	+ 8.6	-30.1	+56.8
285.311 C	4	28	7	52	236.9	+ 8.5	-29.9	+68.0
Means	..	..	18	94	239.0	..	-30.6	..

No. 1373. Latitude -22°.8

Group 14218 in Rotation 1217
" 14227 " " 1218
" 14232 " " 1219

Group 14218. Sept. 20-29. A group developing from a pair of small spots, in which the leader, *a*, becomes a regular spot. A few unstable spots form the train.

263.315 C	2	20	2	21	45.9	0.0	-24.3	-53.2
264.475 G	43	187	30	133	49.1	+ 3.4	-22.5	-34.7
265.566 G	110	419	68	257	50.6	+ 5.2	-22.9	-18.8
266.362 G	134	582	79	340	51.2	+ 5.9	-23.1	- 7.7
267.338 C	130	692	75	401	51.3	+ 6.2	-23.0	+ 5.3
268.323 C	117	532	72	327	50.7	+ 5.8	-22.6	+17.7
269.365 G	102	558	70	387	51.6	+ 6.9	-22.4	+32.3
270.396 G	99	437	86	382	53.0	+ 8.5	-22.3	+47.3
271.415 G	49	273	61	340	53.0	+ 8.7	-22.1	+60.8
272.487 G	13	99	35	263	53.5	+ 9.4	-22.2	+75.4
Means	..	..	58	285	51.0	..	-22.7	..

Spot *a*

263.315 C	0	7	0	7	48.0	0.0	-23.1	-51.1
264.475 G	32	124	22	86	50.7	+ 2.9	-22.5	-33.1
265.566 G	72	280	43	168	52.6	+ 5.1	-22.6	-16.8
266.362 G	90	430	52	249	53.7	+ 6.3	-22.9	- 5.2
267.338 C	93	484	54	281	54.4	+ 7.2	-22.5	+ 8.4
268.323 C	87	386	54	239	54.2	+ 7.2	-22.0	+21.2
269.365 G	78	475	55	332	53.7	+ 6.9	-21.9	+34.4
270.396 G	90	399	79	351	53.9	+ 7.3	-22.0	+48.2
271.415 G	45	255	57	321	53.6	+ 7.2	-22.0	+61.4
272.487 G	13	99	35	263	53.5	+ 7.3	-22.2	+75.4

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR

Date U.T. Place	Projected Area Umbræ	Projected Area Whole Spots	Corrected Area Umbræ	Corrected Area Whole Spots	Longitude and Proper Motion	Latitude	Long. from C.M.
No. 1373. - *continued*							
Group 14227. Oct. 15-27. A stable regular spot. Small ephemeral companions appear on October 20-25; these might be a subsidiary group.							
d					°	°	°
288.418 C	13	81	45	278	49.6 + 6.6	-22.6	-78.3
289.385 G	27	150	42	231	48.5 + 5.7	-22.8	-66.6
290.354 G	29	209	29	207	48.6 + 6.0	-22.9	-53.8
291.372 G	31	230	24	175	48.0 + 5.6	-23.0	-40.9
292.428 C	47	247	31	161	47.4 + 5.2	-23.1	-27.6
293.294 C	67	399	39	235	48.6 + 6.6	-23.1	-15.0
294.307 C	94	473	54	270	48.6 + 6.8	-23.3	- 1.6
295.472 G	91	369	53	217	48.0 + 6.4	-23.6	+13.1
296.341 C	50	318	32	199	47.1 + 5.7	-23.6	+23.7
297.284 C	38	243	27	170	45.8 + 4.6	-23.8	+34.8
298.601 G	31	206	29	202	46.7 + 5.8	-24.2	+53.1
299.286 C	23	130	28	156	44.8 + 4.0	-24.1	+60.2
300.476 G	13	46	35	122	44.7 + 4.1	-24.2	+75.8
Means	..	..	36	202	47.4 ..	-23.4	..
Group 14232. Nov. 13-14. A very small spot.							
317.288 C	2	11	3	15	41.2 + 4.0	-22.0	-66.0
318.427 G	4	11	4	10	40.9 + 3.9	-22.2	-51.3
Means	..	..	4	12	41.0 ..	-22.1	..
No. 1374. Latitude +20°.8							
Group 14233 in Rotation 1220 " 14240 " " 1221 " 14253 " " 1222							
Group 14233. Nov. 16-28. A stable regular spot with tiny companions on November 19.							
320.451 G	33	183	63	348	350.7 0.0	+20.9	-74.8
321.536 C	65	336	68	353	350.7 + 0.1	+21.2	-60.5
322.284 C	69	397	57	330	350.5 + 0.1	+20.8	-50.8
323.532 C	99	569	63	364	350.2 - 0.1	+20.9	-34.7
324.286 C	153	680	89	394	350.1 - 0.1	+20.7	-24.9
325.445 G	159	698	86	377	349.9 - 0.1	+20.6	- 9.8
326.285 C	139	647	74	343	349.5 - 0.4	+20.1	+ 0.9

Date U.T. Place	Projected Area Umbræ	Projected Area Whole Spots	Corrected Area Umbræ	Corrected Area Whole Spots	Longitude and Proper Motion	Latitude	Long. from C.M.
No. 1374. Group 14233 - *continued*							
d					° °	°	°
327.296 C	134	678	72	420	349.7 - 0.1	+19.9	+14.4
328.294 C	126	647	74	382	349.2 - 0.4	+19.7	+27.1
329.419 G	113	549	79	384	349.2 - 0.3	+19.7	+41.9
330.324 C	61	395	54	352	349.2 - 0.1	+20.0	+53.8
331.502 G	44	249	64	361	348.7 - 0.5	+20.1	+68.9
332.421 C	19	109	60	343	348.3 ..	+20.2	+80.6
Means	..	..	70	367	349.8 ..	+20.4	..
Group 14240. Dec. 13-26. A stable regular spot.							
347.445 G	2	35	10	168	346.4 ..	+20.8	-83.4
348.284 C	25	142	48	270	345.3 - 1.6	+20.7	-73.4
349.286 C	36	219	40	241	345.1 - 1.6	+20.7	-60.4
350.315 C	84	307	66	243	345.0 - 1.6	+20.8	-46.9
351.333 C	69	333	45	216	344.7 - 1.7	+21.0	-33.8
352.461 G	78	421	44	240	344.4 - 1.9	+21.3	-19.3
353.446 G	69	365	38	201	344.1 - 2.0	+21.2	- 6.6
354.310 C	67	422	37	232	343.7 - 2.3	+21.5	+ 4.4
355.287 C	69	349	39	199	343.3 - 2.6	+21.2	+16.9
356.284 C	64	304	40	192	342.6 - 3.2	+21.4	+29.3
357.427 G	60	276	46	210	341.9 - 3.7	+21.3	+43.7
358.455 G	43	233	43	235	341.6 - 3.9	+20.9	+56.9
359.605 C	29	154	55	290	342.0 - 3.3	+21.2	+72.4
360.317 C	10	52	41	212	341.8 ..	+20.8	+81.6
Means	..	..	45	231	343.6 ..	+21.1	..
Group 14253. 1945 Jan. 10-22. A small stable regular spot.							
9.449 G	0	15	0	80	338.3 ..	+20.8	-82.6
10.459 G	17	78	30	137	337.2 - 5.8	+21.1	-70.4
11.289 C	46	144	52	164	336.7 - 6.2	+21.0	-60.0
12.287 C	35	154	29	126	337.1 - 5.6	+21.2	-46.4
13.459 G	26	147	17	96	336.9 - 5.7	+20.9	-31.2
14.314 C	33	188	19	111	336.5 - 5.9	+20.9	-20.3
15.283 C	29	163	16	91	336.2 - 6.1	+20.7	- 7.9
16.446 G	30	186	17	104	335.9 - 6.2	+20.8	+ 7.1
17.304 C	23	138	14	81	335.5 - 6.5	+21.0	+18.0
18.417 G	22	143	15	94	335.4 - 6.5	+21.0	+32.6
19.430 G	19	110	15	89	335.2 - 6.5	+21.0	+45.7
20.336 C	19	84	20	90	335.0 - 6.6	+21.0	+57.4
21.422 C	8	36	16	71	335.0 - 6.5	+22.0	+71.7
Means	..	..	22	104	336.0 ..	+21.0	..

ROYAL OBSERVATORY, GREENWICH.

Ledgers of Groups of Sunspots

For the Year

1944

Ledger II.—Non-Recurrent Groups

GREENWICH PHOTO-HELIOGRAPHIC RESULTS, 1944

LEDGER II - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1944.

The time (U.T.) at which the photograph was taken is expressed in the *first* column by the day of the year 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, and those taken at the Cape, Kodaikanal and Washington by the letters C, K and W respectively.

The projected area of the umbræ and whole spots, given in the *second* and *third* columns, 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 foreshortening given in the *fourth* and *fifth* columns is expressed in millionths of the Sun's visible hemisphere.

The longitude given in the *sixth* column is based on the ephemeris given in the *Nautical Almanac*, assuming a daily sidereal motion of $14^{\circ}.18$, due to the Sun's rotation, constant at all latitudes; this corresponds to Carrington's assumed rotation period of 25.38 days.

The proper motion given in the *seventh* column is derived from the difference of longitude thus computed from the measured positions on any given day and the first day on which the group of spots or single spot is visible, after the correction for the motion appropriate to the latitude has been applied according to the formula, $\xi = 14^{\circ}.37 - 2^{\circ}.60 \sin^2 \phi$. A *plus* sign indicates a motion forwards, a *minus* sign a motion backwards relative to the position on the first day.

The remaining columns correspond to those with similar headings in the preceding section.

When a group is 80° or more from the Sun's central meridian, the measures for that day are not included in taking the mean area, longitude and latitude of the group. In such cases of close proximity to the Sun's limb, the addition of brackets denotes that only part of the group is visible.

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR

Date U.T. Place	Projected Area		Corrected Area		Longitude and Proper Motion		Lati-tude	Long. from C.M.
	Umbræ	Whole Spots	Umbræ	Whole Spots				
Group 14189								
Jan. 22-Feb. 3. A regular spot which begins to break up on January 27 but lasts to the west limb.								
d					°	°	°	°
21.279 C	6	33	24	134	333.9	..	+ 9.7	-82.0
22.473 G	22	95	29	124	333.9	0.0	+ 9.6	-66.2
23.273 C	17	100	16	92	334.1	+ 0.1	+ 9.4	-55.5
24.276 C	21	144	15	101	334.2	+ 0.1	+ 9.3	-42.2
25.277 C	23	146	14	86	334.2	0.0	+ 9.4	-29.0
26.282 C	29	157	16	85	334.4	0.0	+ 8.9	-15.6
27.280 C	21	94	11	49	334.5	0.0	+ 9.4	- 2.4
28.475 C	25	109	13	58	334.7	+ 0.1	+ 9.3	+13.6
29.396 G	17	56	10	32	334.4	- 0.4	+ 9.1	+25.4
30.441 G	7	22	5	15	334.7	- 0.2	+ 8.9	+39.5
31.277 C	6	25	5	20	334.7	- 0.3	+ 9.0	+50.5
32.277 C	2	10	2	12	335.1	0.0	+ 8.7	+64.0
33.434 G	0	4	0	14	336.2	..	+ 9.2	+80.4
Means	..	..	12	61	334.4	..	+ 9.2	..
Group 14190								
Mar. 14-26. Intermittent. A small group of rapidly changing spots with a brief maximum on March 19-20. (A new cycle group.)								
73.358 C	4	19	7	31	16.6	0.0	-28.0	-73.4
74.401 G	0	11	0	11	17.5	+ 1.3	-27.3	-58.7
75.313 C	0	4	0	3	16.2	+ 0.3	-29.1	-48.0
76.582 G	13	84	8	53	14.9	- 0.5	-27.7	-32.6
77.449 G	24	154	14	88	14.1	- 1.0	-27.8	-22.0
78.639 G	53	252	29	135	13.0	- 1.7	-28.0	- 7.4
79.320 C	47	299	25	160	13.9	- 0.5	-27.2	+ 2.5
80.333 C	26	137	14	76	13.5	- 0.5	-27.4	+15.5
81.372 G	19	96	11	58	13.8	+ 0.1	-27.9	+29.5
82.401 G	7	27	5	20	15.2	+ 1.9	-27.3	+44.4
83.400 G	0	0	0	0	..	..	..	..
84.435 G	0	7	0	11	16.1	+ 3.6	-26.1	+72.2
85.499 C	0	9	0	34	15.3	..	-28.2	+85.4
Means	..	..	9	54	15.0	..	-27.6	..
Group 14191								
Mar. 18-30. A regular spot with a companion directly north of it. From March 24 the spot becomes elongated and rapidly disintegrates.								
77.449 G	9	55	43	263	309.1	..	-25.3	-87.0
78.639 G	57	280	85	419	308.6	0.0	-24.6	-71.8
79.320 C	73	375	78	402	308.9	+ 0.5	-24.5	-62.5
80.333 C	88	645	69	509	308.2	0.0	-24.5	-49.8
81.372 G	126	725	80	463	308.4	+ 0.5	-24.2	-35.9
82.401 G	125	686	70	384	308.6	+ 0.9	-24.3	-22.2
83.400 G	135	584	71	308	308.3	+ 0.9	-24.1	- 9.3
84.435 G	129	547	69	290	308.6	+ 1.4	-24.4	+ 4.7
Group 14191 - *continued*								
d					°	°	°	°
85.499 C	93	538	51	295	308.0	+ 1.1	-24.1	+18.1
86.483 G	62	328	38	200	308.5	+ 1.9	-24.4	+31.6
87.479 G	40	149	30	108	308.8	+ 2.4	-24.1	+45.0
88.318 C	13	69	12	64	310.2	+ 4.0	-23.9	+57.5
89.391 G	0	4	0	6	310.5	+ 4.6	-24.0	+71.9
Means	..	..	54	287	308.8	..	-24.3	..
Group 14197								
June 5-16. Intermittent; one or two very small spots not seen on June 9 and 11-14.								
156.426 G	0	5	0	19	351.2	..	-27.5	-81.4
157.322 G	0	5	0	8	352.5	0.0	-27.1	-68.2
158.353 C	0	13	0	13	351.3	- 0.8	-27.5	-55.8
159.407 G	7	18	5	13	354.7	+ 3.0	-27.8	-38.4
160.351 C	0	0	0	0	..	..	..	..
161.317 G	5	18	3	10	352.4	+ 1.3	-25.2	-15.5
162.416 C	0	0	0	0	..	..	..	..
163.323 G	0	0	0	0	..	..	..	..
164.498 G	0	0	0	0	..	..	..	..
165.330 G	0	0	0	0	..	..	..	..
166.348 G	0	9	0	8	350.4	+ 1.2	-27.6	+49.1
167.392 G	0	9	0	11	349.6	+ 0.7	-29.3	+62.2
Means	..	..	1	6	351.8	..	-27.4	..
Group 14203								
Aug. 5-13. A stream of tiny spots of which only one remains after August 10. The axis of the stream is markedly inclined to the sun's equator.								
217.393 G	9	46	7	37	306.3	0.0	-29.5	-39.5
218.467 G	18	98	12	67	306.3	+ 0.5	-29.1	-25.3
219.389 G	19	57	11	35	307.7	+ 2.3	-26.6	-11.7
220.333 G	24	77	14	47	306.1	+ 1.1	-27.9	- 0.8
221.337 G	16	55	10	35	304.4	- 0.2	-29.5	+10.7
222.341 C	11	51	8	35	304.4	+ 0.2	-29.7	+24.0
223.385 G	0	5	0	4	305.0	+ 1.3	-29.5	+38.4
224.343 C	0	7	0	7	303.8	+ 0.5	-29.9	+49.9
225.166 K	2	13	3	17	301.7	- 1.3	-31.1	+58.7
Means	..	..	7	32	305.1	..	-29.2	..
Group 14204								
Aug. 5-15. A stream of small changing spots.								
217.393 G	0	7	0	28	264.2	..	-10.9	-81.6
218.467 G	19	82	26	113	264.9	0.0	-10.4	-66.7

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR

Date U.T. Place	Projected Area Umbræ	Projected Area Whole Spots	Corrected Area Umbræ	Corrected Area Whole Spots	Longitude and Proper Motion	Lati-tude	Long. from C.M.
Group 14204 - *continued*							
d					° °	°	°
219.389 G	14	55	13	51	265.2 + 0.2	- 9.8	-54.2
220.333 G	50	142	36	101	264.4 - 0.7	- 9.5	-42.5
221.337 G	51	229	30	135	265.4 + 0.1	- 8.7	-28.3
222.341 C	42	226	22	121	265.4 0.0	- 8.5	-15.0
223.385 G	60	287	31	149	265.4 - 0.1	- 8.6	- 1.2
224.343 C	31	189	16	100	266.1 + 0.5	- 8.2	+12.2
225.166 K	25	118	14	66	264.3 - 1.4	- 9.1	+21.3
226.330 G	16	41	11	27	265.4 - 0.5	- 8.9	+37.8
227.335 G	5	14	4	12	265.8 - 0.2	- 9.3	+51.4
Means	..	..	20	88	265.2 ..	- 9.1	..
Group 14208							
Aug. 17-22. A few variable spots; none is seen on August 19.							
229.393 G	5	14	3	7	191.3 0.0	- 2.3	+ 4.1
230.362 G	16	76	9	39	189.7 - 1.8	- 1.8	+15.3
231.391 G	0	0	0	0	.. ..	..	..
232.517 C	18	106	13	76	190.8 - 1.1	- 2.3	+44.9
233.344 C	4	18	4	18	194.0 + 2.0	- 2.8	+59.1
234.360 C	0	7	0	10	189.8 - 2.4	- 2.1	+68.3
Means	..	..	5	25	191.1 ..	- 2.3	..
Group 14212							
Aug. 25-30. A few spots in stream formation.							
237.333 G	50	132	35	89	49.3 0.0	-21.7	-32.9
238.342 G	41	198	24	120	48.5 - 0.6	-21.6	-20.4
239.354 G	36	146	21	84	48.3 - 0.7	-21.5	- 7.2
240.397 G	34	114	19	66	48.8 0.0	-21.6	+ 7.0
241.389 C	24	128	14	78	50.0 + 1.3	-21.3	+21.3
242.386 G	9	34	6	23	48.5 0.0	-20.9	+33.0
Means	..	..	20	77	48.9 ..	-21.4	..
Group 14215							
Sept. 9-21. A regular spot, *a*, followed by a variable cluster of small spots. On September 12, a small companion appears directly in front of *a* and others on its northern edge. From September 18 only *a* with its small preceding companion remains.							
252.322 G	7	41	27	157	165.6 0.0	-23.6	-78.7
253.339 G	20	167	33	267	164.4 - 1.0	-23.7	-66.4
254.393 G	61	302	63	316	161.9 - 3.2	-24.4	-55.0
255.390 G	85	479	66	374	162.8 - 2.1	-24.0	-41.0
256.357 G	164	699	109	463	164.0 - 0.6	-23.5	-27.0
257.426 G	133	749	80	448	163.4 - 1.0	-23.5	-13.5
258.361 C	90	641	52	374	163.1 - 1.1	-23.8	- 1.4

Date U.T. Place	Projected Area Umbræ	Projected Area Whole Spots	Corrected Area Umbræ	Corrected Area Whole Spots	Longitude and Proper Motion	Lati-tude	Long. from C.M.
Group 14215 - *continued*							
d					° °	°	°
259.346 G	92	443	54	264	163.6 - 0.3	-24.0	+12.1
260.383 G	92	434	59	282	163.5 - 0.2	-23.9	+25.7
261.333 C	67	375	51	283	163.4 - 0.1	-23.7	+38.1
262.330 C	61	301	59	292	163.4 + 0.1	-23.7	+51.3
263.315 C	37	197	53	290	163.3 + 0.3	-23.8	+64.2
264.475 G	9	58	31	199	161.4 - 1.3	-23.7	+77.6
Means	..	..	57	308	163.4 ..	-23.8	..
Spot *a*							
252.322 G	7	41	27	157	165.6 0.0	-23.6	-78.7
253.339 G	18	158	28	245	165.0 - 0.4	-23.7	-65.8
254.393 G	45	221	44	217	164.9 - 0.2	-23.8	-52.0
255.390 G	50	341	38	259	164.7 - 0.2	-23.7	-39.1
256.357 G	68	301	45	199	164.1 - 0.5	-23.8	-26.9
257.426 G	63	367	38	220	163.3 - 1.1	-23.8	-13.6
258.361 C	57	484	33	281	162.6 - 1.6	-23.5	- 1.9
259.346 G	63	306	37	181	162.3 - 1.6	-23.8	+10.8
260.383 G	63	315	40	202	162.2 - 1.5	-23.7	+24.4
261.333 C	50	281	37	208	161.9 - 1.6	-23.7	+36.6
262.330 C	48	233	45	219	162.3 - 1.0	-23.7	+50.2
263.315 C	28	140	38	192	162.0 - 1.0	-23.7	+62.9
264.475 G	9	58	31	199	161.4 - 1.3	-23.7	+77.6
Group 14219							
Sept. 30-Oct. 6. A stream of sudden origin near the central meridian. The leader is a fairly stable regular spot, *a*; small changing spots represent the follower.							
273.360 G	78	396	40	207	335.0 0.0	+22.3	+ 8.4
274.381 G	69	364	39	206	336.5 + 1.7	+22.1	+23.4
275.378 G	103	502	68	324	337.7 + 3.0	+21.5	+37.8
276.365 G	77	341	63	278	338.1 + 3.6	+21.2	+51.2
277.333 C	34	224	40	263	338.7 + 4.4	+21.0	+64.6
278.411 G	7	58	18	133	337.3 + 3.1	+22.0	+77.4
279.384 G	0	7	(0	28	332.3 ..	+25.5)	+85.2
Means	..	..	45	236	337.2 ..	+21.7	..
Spot *a*							
273.360 G	47	235	24	122	336.3 0.0	+21.3	+ 9.7
274.381 G	49	239	28	136	338.1 + 2.0	+20.5	+25.0
275.378 G	76	341	50	225	339.5 + 3.5	+21.0	+39.6
276.365 G	62	256	52	215	340.2 + 4.4	+20.8	+53.3
277.333 C	28	188	34	226	340.2 + 4.6	+20.5	+66.1
278.411 G	7	45	18	113	340.0 ..	+21.0	+80.1

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR

Date U.T. Place	Projected Area Umbræ	Projected Area Whole Spots	Corrected Area Umbræ	Corrected Area Whole Spots	Longitude and Proper Motion		Latitude	Long. from C.M.
Group 14230								
Oct. 29–Nov. 6. A stream of small changing spots of the old cycle.								
d					°	°	°	°
302.317 C	2	17	8	55	225.0	0.0	- 5.5	-79.6
303.449 G	20	86	23	101	226.2	+ 1.0	- 5.2	-63.5
304.304 C	16	96	13	80	226.9	+ 1.6	- 5.4	-51.5
305.456 G	20	77	13	48	227.6	+ 2.1	- 6.1	-35.6
306.440 G	31	182	17	100	227.5	+ 1.8	- 6.1	-22.7
307.273 C	24	140	13	72	227.5	+ 1.7	- 6.1	-11.7
308.372 G	20	76	11	39	230.1	+ 4.1	- 5.9	+ 5.3
309.340 C	0	0	0	0	..	..	..	..
310.395 G	4	24	2	14	225.5	- 0.8	- 5.2	+27.4
Means	..	..	11	57	227.0	..	- 5.7	..
Group 14237								
Dec. 6–14. A small stream of variable spots; the leader alone remains after December 11.								
340.416 G	17	78	11	50	129.9	0.0	+23.6	-32.5
341.422 G	15	73	8	41	132.0	+ 2.3	+22.8	-17.1
342.490 G	9	39	5	21	133.0	+ 3.5	+22.6	- 2.0
343.463 G	18	84	10	48	132.3	+ 3.0	+23.5	+10.1
344.320 C	14	111	8	65	132.4	+ 3.3	+23.2	+21.5
345.527 G	28	138	20	97	134.4	+ 5.5	+22.6	+39.4
346.447 C	21	113	19	102	135.4	+ 6.7	+22.1	+52.5
347.445 G	13	65	18	88	135.7	+ 7.2	+22.5	+65.9
348.284 C	2	13	5	33	135.9	+ 7.6	+22.4	+77.2
Means	..	..	12	61	133.4	..	+22.8	..
Group 14238								
Dec. 8–21. A closely packed stream of complex spots breaking up after December 16.								
342.490 G	30	195	85	550	55.9	0.0	-22.1	-79.1
343.463 G	89	691	114	886	57.0	+ 1.3	-21.7	-65.2
344.320 C	113	912	103	832	57.1	+ 1.5	-22.1	-53.8
345.527 G	272	1477	185	1004	57.8	+ 2.4	-22.0	-37.2
346.447 C	244	1685	147	1010	56.8	+ 1.6	-22.1	-26.1
347.445 G	283	1616	157	893	57.4	+ 2.3	-21.9	-12.4
348.284 C	235	1534	125	822	56.6	+ 1.7	-21.7	- 2.1
349.286 C	215	1231	117	667	55.9	+ 1.1	-21.2	+10.4
350.315 C	126	974	74	576	57.0	+ 2.4	-21.2	+25.1
351.333 C	96	664	64	444	55.8	+ 1.4	-21.5	+37.3
352.461 G	75	400	65	346	55.5	+ 1.2	-21.6	+51.8
353.446 G	32	175	38	206	54.4	+ 0.3	-21.5	+63.7
354.310 C	16	85	38	211	54.5	+ 0.6	-21.6	+75.2
355.287 C	0	15	(0	44	46.2	..	-24.4)	+79.8
Means	..	..	101	650	56.3	..	-21.7	..

Date U.T. Place	Projected Area Umbræ	Projected Area Whole Spots	Corrected Area Umbræ	Corrected Area Whole Spots	Longitude and Proper Motion		Latitude	Long. from C.M.
Group 14241								
Dec. 17–22. Small spots in a stream.								
d					°	°	°	°
351.333 C	4	12	2	7	29.5	0.0	+32.1	+11.0
352.461 G	31	106	21	71	29.4	+ 0.5	+32.3	+25.7
353.446 G	39	208	32	165	29.9	+ 1.6	+32.8	+39.2
354.310 C	27	133	27	135	31.0	+ 3.2	+33.2	+51.7
355.287 C	8	81	13	122	30.6	+ 3.3	+32.3	+64.2
356.284 C	8	37	29	134	32.6	+ 5.9	+32.2	+79.3
Means	..	..	21	106	30.5	..	+32.5	...
Group 14243								
Dec. 18–28. A stream of small variable spots with a brief maximum on December 25.								
352.461 G	8	26	6	20	319.6	0.0	-29.3	-44.1
353.446 G	39	205	26	135	319.8	+ 0.6	-29.5	-30.9
354.310 C	23	131	14	78	319.9	+ 1.1	-29.3	-19.4
355.287 C	24	155	14	88	319.9	+ 1.5	-29.1	- 6.5
356.284 C	35	137	20	78	321.2	+ 3.3	-28.9	+ 7.9
357.427 G	26	179	16	112	323.5	+ 6.1	-29.2	+25.3
358.455 G	46	305	33	220	323.9	+ 6.9	-29.6	+39.2
359.605 C	77	472	71	430	321.2	+ 4.7	-29.5	+51.6
360.317 C	39	260	44	298	320.9	+ 4.7	-29.6	+60.7
361.341 C	18	101	40	217	319.5	+ 3.8	-29.5	+72.8
362.285 C	4	25	(13	78	314.8	..	-29.4)	+80.5
Means	..	..	28	168	320.9	..	-29.4	..
Group 14245								
1944 Dec. 21–1945 Jan. 1. A cluster on December 21 with another forming behind it on December 24. The stream which is thereby formed soon fades out and only the leading spot remains on December 31.								
355.287 C	10	73	20	147	253.2	0.0	+25.0	-73.2
356.284 C	21	108	24	125	252.5	- 0.4	+25.5	-60.8
357.427 G	40	182	33	151	252.0	- 0.6	+25.1	-46.2
358.455 G	39	223	26	149	252.4	+ 0.1	+24.8	-32.3
359.605 C	64	386	39	232	249.8	- 2.2	+25.1	-19.8
360.317 C	64	356	37	205	248.8	- 3.0	+25.8	-11.4
361.341 C	56	321	32	184	248.1	- 3.4	+26.0	+ 1.4
362.285 C	34	204	20	119	248.7	- 2.5	+26.2	+14.4
363.331 C	25	125	17	81	248.5	- 2.4	+26.2	+28.0
364.289 C	10	87	8	67	249.3	- 1.3	+25.4	+41.4
365.471 G	9	32	10	35	250.5	+ 0.2	+25.1	+58.2
0.310 C	4	13	7	21	249.9	- 0.1	+24.8	+68.6
Means	..	..	23	126	250.3	..	+25.4	..

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ROYAL OBSERVATORY, GREENWICH.

Total Areas of Sunspots and Faculæ

Projected and Corrected for Foreshortening
for each Day, and

Mean Areas and Mean Heliographic
Latitude of Sunspots and Faculæ

for each Rotation of the Sun
and for the Year

1944

TOTAL AREAS OF SUNSPOTS AND FACULÆ FOR EACH DAY IN THE YEAR 1944

The time (U.T.) at which the photograph was taken is expressed by the month, day of month, 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, and those taken at the Cape, Kodaikanal and Washington by the letters C, K and W respectively.

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 foreshortening is expressed in millionths of the Sun's visible hemisphere.

U.T.		Place	Projected Area			Area Corrected for Foreshortening			U.T.		Place	Projected Area			Area Corrected for Foreshortening		
			Umbræ	Whole Spots	Faculæ	Umbræ	Whole Spots	Faculæ				Umbræ	Whole Spots	Faculæ	Umbræ	Whole Spots	Faculæ
1944	d								1944	d							
January	1.282	C	0	0	0	0	0	0	February	13.289	C	0	0	0	0	0	0
	2.274	C	0	0	0	0	0	0		14.295	C	0	0	0	0	0	0
	3.258	C	0	0	0	0	0	0		15.297	C	0	0	22	0	0	36
	4.438	G	0	0	357	0	0	445		16.296	C	0	0	0	0	0	0
	5.442	G	0	0	184	0	0	162		17.513	C	0	0	105	0	0	138
	6.266	C	0	0	270	0	0	297		18.299	C	0	0	158	0	0	122
	7.289	C	0	0	291	0	0	501		19.302	C	0	0	212	0	0	241
	8.383	C	0	0	46	0	0	64		20.412	G	0	0	0	0	0	0
	9.303	C	0	0	26	0	0	45		21.304	C	0	0	209	0	0	247
	10.259	C	0	0	166	0	0	124		22.297	C	0	0	359	0	0	552
	11.268	C	0	0	343	0	0	434		23.299	C	0	0	19	0	0	29
	12.277	C	0	0	256	0	0	261		24.378	G	0	0	230	0	0	329
	13.266	C	0	0	328	0	0	278		25.294	C	0	0	0	0	0	0
	14.465	G	0	0	250	0	0	215		26.298	C	0	0	0	0	0	0
	15.567	G	0	0	148	0	0	232		27.597	C	0	0	0	0	0	0
	16.461	G	0	0	156	0	0	165		28.385	G	0	0	99	0	0	96
	17.284	C	0	0	0	0	0	0		29.439	G	0	0	138	0	0	179
	18.283	C	0	0	0	0	0	0									
	19.273	C	0	0	235	0	0	284									
	20.427	G	0	4	413	0	4	520	March	1.295	C	0	0	0	0	0	0
	21.435	G	0	9	605	0	15	728		2.394	G	0	0	0	0	0	0
	22.279	C	6	33	491	24	134	676		3.406	G	6	22	0	3	12	0
	23.473	G	22	95	539	29	124	717		4.386	G	0	0	0	0	0	0
	24.273	C	17	100	272	16	92	261		5.302	C	0	0	339	0	0	489
	25.276	C	21	144	122	15	101	105		6.614	G	0	0	180	0	0	162
	26.277	C	23	146	335	14	86	414		7.561	G	0	0	132	0	0	194
	27.282	C	29	157	146	16	85	161		8.379	G	0	0	137	0	0	199
	28.280	C	21	94	0	11	49	0		9.375	C	0	0	0	0	0	0
	29.475	C	25	109	0	13	58	0		10.298	C	0	0	10	0	0	14
	30.396	G	17	56	369	10	32	552		11.298	C	0	0	0	0	0	0
	31.441	G	7	22	256	5	15	264		12.527	C	0	0	0	0	0	0
										13.575	G	0	0	92	0	0	232
										14.358	C	4	19	138	7	31	225
February	1.277	C	6	25	463	5	20	388		15.401	G	0	11	286	0	11	312
	2.277	C	2	10	230	2	12	271		16.313	C	0	4	213	0	3	175
	3.434	G	0	4	417	0	14	551		17.582	G	13	84	0	8	53	0
	4.403	G	0	0	0	0	0	0		18.449	G	33	209	49	57	351	127
	5.446	G	0	0	228	0	0	214		19.639	G	110	532	624	114	554	899
	6.306	C	0	0	313	0	0	454		20.320	C	120	674	462	103	562	509
	7.277	C	0	0	230	0	0	285		21.333	C	114	782	535	83	585	423
	8.433	G	0	0	510	0	0	567		22.372	G	154	852	17	96	538	26
	9.473	G	0	0	435	0	0	477		23.401	G	152	786	371	86	442	290
	10.396	G	0	0	0	0	0	0		24.400	G	139	606	1033	73	333	1235
	11.360	C	0	0	0	0	0	0		25.435	G	129	561	850	69	308	1014
	12.293	C	0	0	231	0	0	286		26.499	C	97	566	535	54	343	549

TOTAL AREAS OF SUNSPOTS AND FACULÆ FOR EACH DAY IN THE YEAR 1944

U.T.		Place	Projected Area			Area Corrected for Foreshortening		
			Umbræ	Whole Spots	Faculæ	Umbræ	Whole Spots	Faculæ
1944	d							
March	27.483	G	62	328	188	38	200	156
	28.479	G	40	149	374	30	108	354
	29.318	C	13	69	702	12	64	691
	30.391	G	0	4	530	0	6	654
	31.417	G	0	0	306	0	0	676
April	1.326	C	0	0	0	0	0	0
	2.482	C	0	0	432	0	0	315
	3.566	G	0	0	375	0	0	356
	4.550	G	0	0	316	0	0	456
	5.419	G	0	0	123	0	0	234
	6.321	C	0	0	0	0	0	0
	7.565	G	0	9	101	0	11	119
	8.580	G	0	4	123	0	11	277
	9.334	G	0	0	0	0	0	0
	10.511	G	0	0	0	0	0	0
	11.530	G	0	0	0	0	0	0
	12.130	K	0	0	541	0	0	629
	13.321	C	0	0	304	0	0	289
	14.352	G	0	0	7	0	0	9
	15.327	C	0	0	0	0	0	0
	16.330	C	0	0	153	0	0	249
	17.331	C	0	0	262	0	0	2 6
	18.331	G	0	0	180	0	0	243
	19.339	G	0	0	124	0	0	162
	20.375	G	0	0	375	0	0	375
	21.333	G	0	0	547	0	0	589
	22.316	G	0	0	428	0	0	596
	23.481	G	0	0	304	0	0	426
	24.167	K	0	0	94	0	0	158
	25.312	G	0	0	0	0	0	0
	26.422	G	0	0	5	0	0	7
	27.391	G	0	0	244	0	0	351
	28.345	C	0	0	0	0	0	0
	29.352	G	0	0	210	0	0	172
	30.309	G	0	0	0	0	0	0
May	1.394	C	0	0	22	0	0	26
	2.369	G	0	0	253	0	0	324
	3.325	G	0	0	0	0	0	0
	4.389	G	0	0	0	0	0	0
	5.310	G	0	0	109	0	0	160
	6.338	G	0	0	0	0	0	0
	7.339	G	0	0	0	0	0	0
	8.333	G	0	0	0	0	0	0
	9.352	G	0	0	5	0	0	10
	10.388	G	0	0	171	0	0	156
	11.344	G	0	0	251	0	0	264
	12.357	G	0	0	125	0	0	128
	13.330	G	0	0	0	0	0	0
	14.408	G	0	0	0	0	0	0
	15.379	G	0	0	0	0	0	0
	16.358	C	0	0	0	0	0	0
	17.522	G	0	0	205	0	0	248
	18.337	G	0	0	0	0	0	0
	19.320	G	0	0	0	0	0	0
	20.351	G	0	0	0	0	0	0
	21.320	G	0	0	0	0	0	0
	22.314	G	0	0	0	0	0	0
May	23.442	G	0	0	0	0	0	0
	24.306	G	0	0	224	0	0	279
	25.389	G	0	0	0	0	0	0
	26.563	G	0	0	0	0	0	0
	27.323	G	0	0	0	0	0	0
	28.368	G	14	52	0	8	29	0
	29.354	G	18	73	0	10	40	0
	30.307	G	9	32	35	5	19	56
	31.404	G	41	190	126	40	185	117
June	1.410	G	30	183	126	53	332	209
	2.304	G	9	69	126	31	237	239
	3.649	G	0	0	133	0	0	186
	4.556	G	0	0	0	0	0	0
	5.426	G	0	5	133	0	19	354
	6.322	G	0	5	389	0	8	636
	7.353	C	0	13	600	0	13	656
	8.407	G	7	18	540	5	13	544
	9.351	C	0	0	178	0	0	137
	10.317	G	5	18	0	3	10	0
	11.416	C	0	0	0	0	0	0
	12.323	G	0	0	0	0	0	0
	13.498	G	0	0	0	0	0	0
	14.330	G	0	0	126	0	0	97
	15.348	G	0	9	483	0	8	420
	16.392	G	5	32	817	16	83	989
	17.322	G	14	76	536	19	99	777
	18.299	G	14	83	497	13	75	680
	19.355	C	22	98	234	15	67	200
	20.334	G	28	134	0	16	76	0
	21.547	G	23	141	0	12	72	0
	22.339	G	35	157	0	18	78	0
	23.391	C	27	145	0	14	74	0
	24.330	G	23	139	0	13	76	0
	25.325	G	18	97	32	11	61	54
	26.354	C	25	94	346	20	75	403
	27.310	G	9	42	365	10	48	361
	28.586	G	5	14	141	16	46	266
	29.415	C	0	0	40	0	0	91
	30.525	G	0	5	65	0	5	73
July	1.354	C	6	47	178	4	36	153
	2.349	C	16	71	268	9	41	346
	3.358	C	11	54	145	7	35	223
	4.398	G	9	32	458	7	24	521
	5.341	G	9	32	499	10	32	596
	6.346	G	2	19	657	3	25	852
	7.656	W	0	0	0	0	0	0
	8.412	G	0	0	0	0	0	0
	9.408	G	0	0	0	0	0	0
	10.578	G	7	35	0	4	18	0
	11.338	C	0	18	168	0	9	150
	12.573	G	0	0	254	0	0	216
	13.423	G	0	0	621	0	0	726
	14.375	G	0	0	973	0	0	1268
	15.441	C	0	0	406	0	0	511
	16.439	G	0	0	0	0	0	0
	17.342	G	0	0	341	0	0	460
	18.384	G	0	0	227	0	0	243

TOTAL AREAS OF SUNSPOTS AND FACULÆ FOR EACH DAY IN THE YEAR 1944

U.T.		Place	Projected Area			Area Corrected for Foreshortening			U.T.		Place	Projected Area			Area Corrected for Foreshortening		
			Umbræ	Whole Spots	Faculæ	Umbræ	Whole Spots	Faculæ				Umbræ	Whole Spots	Faculæ	Umbræ	Whole Spots	Faculæ
1944	d								1944								
July	19.504	G	4	16	252	7	29	358	September	14.426	G	135	760	220	83	464	332
	20.357	G	2	9	150	3	12	168		15.361	C	90	652	54	52	422	164
	21.516	G	0	0	222	0	0	302		16.346	G	92	443	11	54	264	21
	22.350	C	0	0	223	0	0	203		17.383	G	92	434	178	59	282	271
	23.531	C	0	0	0	0	0	0		18.333	C	67	375	240	51	283	182
	24.344	C	0	7	468	0	13	586		19.330	C	61	301	774	59	292	866
	25.350	C	0	0	223	0	0	306		20.315	C	39	217	676	55	311	895
	26.326	G	2	12	166	1	6	159		21.475	G	52	245	450	61	332	574
	27.351	G	5	9	277	4	6	232		22.566	G	110	419	134	68	257	110
	28.426	G	65	183	156	56	160	133		23.362	G	134	582	210	79	340	237
	29.597	G	23	115	425	32	164	563		24.338	C	130	692	0	75	401	0
	30.370	G	14	69	253	35	168	463		25.323	C	123	571	0	75	350	0
	31.577	G	0	0	189	0	0	163		26.365	G	102	558	152	70	387	164
										27.396	G	99	437	370	86	382	455
										28.415	G	49	273	813	61	340	820
August	1.351	C	0	0	233	0	0	258		29.487	G	15	110	426	36	269	579
	2.551	G	0	0	401	0	0	493		30.360	G	82	405	343	43	213	555
	3.531	G	0	0	595	0	0	672									
	4.340	G	0	0	501	0	0	597									
	5.393	G	9	53	504	7	65	624	October	1.381	G	85	437	248	65	336	385
	6.467	G	37	180	325	38	180	510		2.378	G	127	609	525	98	457	683
	7.389	G	33	112	361	24	86	345		3.365	G	139	564	681	117	470	701
	8.333	G	74	219	300	50	148	266		4.333	C	79	436	681	80	446	712
	9.337	G	67	284	339	40	170	389		5.411	G	38	236	223	38	269	404
	10.341	C	53	277	433	30	156	494		6.384	G	34	228	143	21	170	184
	11.385	G	67	319	885	35	169	842		7.289	C	28	156	205	17	97	403
	12.343	C	31	196	555	16	107	538		8.349	C	26	149	443	19	104	581
	13.166	K	31	131	517	17	83	703		9.292	C	43	190	1292	35	151	1274
	14.330	G	21	74	479	15	70	705		10.454	G	37	176	262	39	200	313
	15.335	G	7	33	529	6	30	497		11.418	G	13	75	451	15	89	577
	16.315	G	21	75	684	13	45	798		12.311	C	4	28	366	7	52	481
	17.393	G	64	270	429	38	155	730		13.361	G	0	0	262	0	0	414
	18.362	G	67	327	524	42	202	556		14.376	G	0	0	0	0	0	0
	19.391	G	11	55	251	10	49	221		15.418	C	15	90	139	46	284	239
	20.517	C	18	106	572	13	76	851		16.385	G	63	305	356	62	320	512
	21.344	C	4	18	583	4	18	719		17.354	G	65	362	774	48	288	875
	22.360	C	0	7	619	0	10	731		18.372	G	42	272	671	30	197	733
	23.402	G	10	29	460	8	25	429		19.428	C	47	247	351	31	161	371
	24.338	C	6	31	430	4	28	514		20.294	C	67	405	96	39	255	216
	25.333	G	55	153	429	38	116	544		21.307	C	94	479	331	54	278	528
	26.342	G	43	203	529	26	124	765		22.472	G	91	369	806	53	217	1062
	27.354	G	36	146	365	21	84	500		23.341	C	50	318	959	32	199	967
	28.397	G	43	153	472	25	93	669		24.284	C	38	243	362	27	170	326
	29.389	C	33	172	836	21	112	713		25.601	G	31	206	767	29	202	664
	30.386	G	11	41	733	8	30	875		26.286	C	23	130	234	28	156	339
	31.385	G	0	0	1132	0	0	1427		27.476	G	13	46	341	35	122	529
										28.460	G	11	42	521	14	41	813
										29.317	C	2	26	405	8	65	513
September	1.328	G	0	0	579	0	0	825		30.449	G	28	130	821	28	128	767
	2.395	G	28	129	493	49	229	729		31.304	C	16	107	870	13	87	795
	3.351	G	4	16	284	17	63	593									
	4.331	C	0	0	286	0	0	304									
	5.321	G	0	0	307	0	0	313	November	1.456	G	20	77	785	13	48	1077
	6.382	G	0	0	182	0	0	246		2.440	G	31	182	341	17	100	511
	7.338	C	0	0	318	0	0	394		3.273	C	24	140	0	13	72	0
	8.337	G	0	5	296	0	10	371		4.372	G	20	85	55	11	61	126
	9.322	G	7	50	136	27	169	184		5.340	C	0	6	116	0	8	166
	10.339	G	20	167	330	33	267	501		6.395	G	6	28	150	4	18	138
	11.393	G	61	302	834	63	316	1032		7.560	C	0	0	506	0	0	549
	12.390	G	85	479	445	66	374	540		8.287	C	0	0	632	0	0	624
	13.357	G	173	722	235	118	485	229		9.346	C	0	0	190	0	0	297

TOTAL AREAS OF SUNSPOTS AND FACULÆ FOR EACH DAY IN THE YEAR 1944

U.T.		Place	Projected Area			Area Corrected for Foreshortening			U.T.		Place	Projected Area			Area Corrected for Foreshortening		
			Umbræ	Whole Spots	Faculæ	Umbræ	Whole Spots	Faculæ				Umbræ	Whole Spots	Faculæ	Umbræ	Whole Spots	Faculæ
1944	d								1944	d							
November	10.287	C	0	0	74	0	0	170	December	5.469	G	4	17	119	5	21	146
	11.413	C	0	0	0	0	0	0		6.416	G	19	91	98	13	61	82
	12.320	C	6	17	158	4	12	209		7.422	G	15	73	91	8	41	86
	13.288	C	2	11	264	3	15	324		8.490	G	43	245	271	97	589	540
	14.427	G	4	11	428	4	10	437		9.463	G	107	775	380	124	934	479
	15.353	C	2	17	148	2	14	129		10.320	C	131	1042	888	113	907	1139
	16.451	G	33	183	249	63	348	664		11.527	G	313	1706	292	217	1182	260
	17.536	C	65	336	608	68	353	778		12.447	C	278	1861	293	175	1157	292
	18.284	C	69	397	693	57	330	711		13.445	G	319	1828	622	198	1219	671
	19.532	C	99	569	504	63	364	475		14.284	C	279	1814	386	188	1196	619
	20.286	C	153	680	136	89	394	181		15.286	C	259	1527	396	161	950	492
	21.445	G	159	698	203	86	377	248		16.315	C	210	1281	439	140	819	397
	22.285	C	145	679	189	78	363	202		17.333	C	175	1023	406	115	676	442
	23.296	C	150	775	178	81	474	230		18.461	G	205	1024	518	144	721	465
	24.294	C	138	731	210	80	427	318		19.446	G	196	1026	1275	146	758	1365
	25.419	G	120	575	98	83	398	160		20.310	C	141	816	1196	123	698	1590
	26.324	C	63	413	483	55	363	484		21.287	C	113	689	877	88	619	1357
	27.502	G	51	295	370	68	386	497		22.284	C	132	601	770	116	540	1030
	28.421	C	33	165	347	67	372	442		23.427	G	130	667	464	97	491	422
	29.452	G	4	20	224	2	11	296		24.455	G	132	783	503	105	618	635
	30.292	C	2	13	177	1	7	269		25.605	C	170	1012	936	165	952	1143
										26.317	C	113	674	707	122	721	900
										27.341	C	76	443	676	73	417	773
December	1.287	C	0	0	314	0	0	333		28.285	C	44	264	289	36	217	551
	2.427	G	0	0	108	0	0	91		29.331	C	25	125	0	17	81	0
	3.333	C	0	0	146	0	0	192		30.289	C	10	87	426	8	67	347
	4.417	G	0	0	0	0	0	0		31.471	G	9	32	1153	10	35	1357

MEAN AREAS OF SUNSPOTS AND FACULÆ FOR EACH ROTATION OF THE SUN, FROM 1943 DECEMBER 30 TO 1944 DECEMBER 17.

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 years 1873–1943 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 of the Sun's equator on the ecliptic 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 U.T.

No. of Rotation	Date of Commencement of each Rotation	No. of Days on which Photographs were taken	Mean of Daily Areas					
			Projected			Corrected for Foreshortening		
			Umbræ	Whole Spots	Faculæ	Umbræ	Whole Spots	Faculæ
1208	1943 December 30.18	28	3	19	228	4	20	271
1209	1944 January 26.52	27	4	18	181	2	11	215
1210	February 22.86	27	11	58	117	11	58	154
1211	March 21.18	28	32	168	292	19	105	332
1212	April 17.47	27	0	0	128	0	0	154
1213	May 14.70	27	5	24	104	6	34	136
1214	June 10.91	27	11	56	218	9	42	263
1215	July 8.11	27	5	18	268	5	22	320
1216	August 4.32	28	30	131	528	20	87	627
1217	August 31.56	27	63	317	303	48	247	391
1218	September 27.83	27	51	265	452	41	223	552
1219	October 25.12	27	24	127	370	21	109	444
1220	November 21.42	28	115	667	294	82	488	353

MEAN AREAS OF SUNSPOTS AND FACULÆ FOR THE YEAR.

The mean projected areas are expressed in millionths of the Sun's apparent disk.

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

Year	No. of Days on which Photographs were taken	Mean of Daily Areas					
		Projected			Corrected for Foreshortening		
		Umbræ	Whole Spots	Faculæ	Umbræ	Whole Spots	Faculæ
1944	366	30	160	284	23	126	344

MEAN HELIOGRAPHIC LATITUDE OF SUNSPOTS FOR EACH ROTATION OF THE SUN,
FROM 1943 DECEMBER 30 TO 1944 DECEMBER 17.

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 the mean heliographic latitude of spotted area north of the 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 of 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		
				°		°	°	°
1208	1943 December 30.18	28	19	9.50	1	23.80	+ 8.36	9.99
1209	1944 January 26.52	27	11	9.10	0	..	+ 9.10	9.10
1210	February 22.86	27	0	..	58	25.48	-25.48	25.48
1211	March 21.18	28	2	5.50	103	24.30	-23.67	23.91
1212	April 17.47	27	0	..	0	..	..	..
1213	May 14.70	27	28	0.50	5	24.35	- 3.34	4.19
1214	June 10.91	27	38	5.29	4	18.40	+ 3.23	6.43
1215	July 8.11	27	0.2	18.50	21	26.34	-25.88	26.26
1216	August 4.32	28	7	13.62	80	14.72	-12.40	14.63
1217	August 31.56	27	1	9.10	247	23.72	-23.60	23.67
1218	September 27.83	27	63	21.49	161	24.60	-11.69	23.73
1219	October 25.12	27	69	20.86	40	14.55	+ 7.76	18.53
1220	November 21.42	28	182	20.77	306	21.87	- 5.96	21.46

MEAN HELIOGRAPHIC LATITUDE OF SUNSPOTS FOR THE YEAR.

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		
			°		°	°	°
1944	366	42	19.00	83	22.81	-8.70	21.53

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ROYAL OBSERVATORY, GREENWICH

Observations of Solar Flocculi and Solar Flares

Made with the

Spectrohelioscope

In the Year

1944

(With Collected List of Solar Flares 1930-45)

GREENWICH PHOTO-HELIOGRAPHIC RESULTS, 1944

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OBSERVATIONS OF SOLAR FLOCCULI MADE WITH THE SPECTROHELIOSCOPE IN THE YEAR 1944

The following observations relate to dark filaments or flocculi visible on the Sun's disk in the light of *Hα* in the immediate vicinity of sunspots, the object of the measures being to determine the motion of these hydrogen flocculi in the line of sight.*

The observations were made at the Royal Observatory, Greenwich, with a spectrohelioscope lent by the Mount Wilson Observatory and described by Dr. Hale in the *Astrophysical Journal*, 70, 265-311, 1929. The spectrum is formed by a Rowland grating ruled with 14,438 lines to the inch, the observations being made in the light of *Hα*. The portion of the grating covered by the solar beam contains about 43,000 lines. The first order spectrum was used throughout the year, the scale being 1 mm. = 4.35 A. The width of the second slit was usually 0.1 mm. The diameter of the monochromatic image of the Sun's disk at the second slit is about 50 mm., of which a strip 6 mm. wide and 28 mm. long is rendered visible by the rotating rectangular prisms. The eyepiece used magnifies twice.

Measures of radial velocity are taken with the "line-shifter", whose scale from 0-10 divisions = 0.37 A = 17 km./sec. at *Hα*. The zero of the *Hα* line is determined from measures of the darkest part of the line in an undisturbed portion of the Sun near the centre of the disk. The purpose of the observations being to locate large radial velocities, measured displacements are interpreted as being due to Doppler effects.

The probable error of a single measure of radial velocity, as determined from a number of successive readings, is about 3 km./sec., including the probable error of the zero determination. Three or four measures being generally made on each flocculus, the probable errors of the tabulated values in the third column of the following table do not usually exceed 2 km./sec., except, perhaps in the case of the larger velocities which have accordingly been rounded off to the nearest 5 km./sec. The systematic error for the smallest velocities observed is less than 0.5 km./sec., as is shown by measures of the Sun's equatorial rotation taken at the limbs.

* An analysis of the radial velocities of the dark *Hα* markings near sunspots observed at the Royal Observatory, Greenwich, 1930-33, is given in *Monthly Notices*, 94, 472, 1934. A further paper on the characteristic radial motions of such flocculi associated with solar flares appears in *Monthly Notices*, 102, 2, 1942.

In the following table, the headings of which are self-explanatory, particulars are given of each dark flocculus as follows -

(1) The measured radial velocity in km./sec., + indicating motion away from the observer and - motion towards the observer.

Where two values are given it is to be understood, unless otherwise stated in the footnotes, that different velocities were observed along the length of the flocculus, and that the tabulated values are the extreme velocities measured, which in nearly all cases correspond to the opposite ends of the marking. In those cases in which one end of a flocculus, showing progressive velocities along its length, appeared to touch a sunspot, the radial velocity observed at that extremity of the flocculus is printed in heavy italics.

(2) (a) The apparent length of the flocculus in minutes of arc, read by means of a scale inserted in the field. An asterisk denotes that the marking was small and roughly circular in shape. The diameters of these circular markings are of the order of 10″.

(b) The apparent least distance in minutes of arc from the centre of the nearest sunspot or group of spots. In those cases indicated by dots in the appropriate column it was not possible to obtain a measure.

(c) The position of the flocculus relative to the group of associated sunspots or to a single component of the group. In cases where a sunspot has been designated in the *Ledgers* in the preceding *Results*, the appropriate letter *a* (the leader of the group) or *b* (the follower) has been added. The abbreviations *n, s, f, p, c,* stand respectively for, north, south, following, preceding, central.

(3) Particulars of the associated group of sunspots, abstracted from the *General Catalogue*, including the longitude from the Sun's central meridian at the time of observing the flocculus (deduced from the mean longitude of the sunspots).

Notes have been added of unusual features seen at the time of observation. Flocculi which were apparently descending into sunspots with progressive velocities and which showed a definite curvature of shape are also noted. The intensity scale of associated solar flares is that used in the *"Bulletin for Character Figures of Solar Phenomena"* published from Zurich under the auspices of the International Astronomical Union.

OBSERVATIONS OF SOLAR FLOCCULI MADE WITH THE SPECTROHELIOSCOPE IN THE YEAR

Dark *Hα* Flocculi								Associated Group of Sunspots					
Ref. Number	Date and Time U.T.			Measured Radial Velocity km./sec.	Length	Least Distance from Sunspot	Position relative to Sunspot or Group	Number of Group	Longitude from Central Meridian	Central Meridian Passage		Latitude	Area
		d	h		′	′			°	d		°	
1	Mar.	28	13.5	-30	2.5	0.5	*sf*	14191	+46	Mar.	25.07	-24	287
2		28	13.7	+23	4.0	0.4	*s*	91	+46				
3		28.	13.8	- 9 to +90	2.2	..	*c*	91	+46				
4	May	30	8.3	-25 to +23	0.6	0.2	*c*	96	+44	May	27.0	+ 1	132
5	May	30	13.0	-35 to +57	1.5	..	*c*	14196	+47	May	27.0	+ 1	132
6		30	13.8	+23	0.6	0.2	*c*	96	+47				
7		31	7.9	-103 to +29	1.0	..	*c*	96	+57				
8		31	8.1	- 1	0.4	1.3	*f*	96	+57				
9		31	8.2	+29 to +66	0.5	..	*c*	96	+57				
10	June	1	11.1	- 9	0.6	0.3	*c*	14196	+72	May	27.0	+ 1	132
11	Aug.	8	8.5	-15	1.3	0.7	*f*	204	-41	Aug.	11.49	- 9	88
12		8	8.6	-24	0.5	0.2	*c*	04	-41				
13		8	8.6	-26 to +29	1.0	..	*c*	04	-41				
14		10	13.7	- 4	1.3	0.2	*c*	03	+28		8.47	-29	32
15	Aug.	11	7.4	- 4	0.6	0.3	*p*	14204	- 2	Aug.	11.49	- 9	88
16		11	7.7	-26 to +21	1.2	..	*c*	03	+38		8.47	-29	32
17		16	12.5	+37	0.5	0.2	*c*	07	+16		15.3	- 8	78
18		16	12.5	-12	0.5	0.3	*c*	07	+16				
19		16	12.5	+34 to +58	0.5	..	*c*	07	+16				
20	Aug.	18	8.5	+24	0.4	0.1	*c*	14207	+40	Aug.	15.3	- 8	78
21		18	8.6	+36	0.5	1.0	*p*	08	+17		17.1	- 2	25
22		18	9.0	-37 to +37	0.7	0.3	*s*	08	+17				
23		23	9.9	- 4	1.5	0.4	*c*	09	-41		26.5	-29	14
24		28	10.1	+ 2	0.7	1.3	*s*	12	+ 7		27.86	-21	77
25	Aug.	28	13.6	-42	0.3	0.5	*s*	14212	+ 9	Aug.	27.86	-21	77
26		30	12.9	-12	1.0	1.0	*p*	12	+35				
27	Sept.	11	9.7	+29	0.5	0.2	*n*	15	-53	Sept.	15.45	-24	308
28		11	9.8	-22	1.8	0.3	*f*	15	-53				
29		11	10.0	-25	1.0	0.5	*c*	15	-53				
30	Sept.	11	10.1	+44	0.3	1.4	*n*	14215	-53	Sept.	15.45	-24	308
31		12	8.7	+ 3	1.2	0.4	*c*	15	-41				
32		12	9.7	+25	0.7	1.3	*n*	15	-40				
33		12	9.9	-37	0.3	0.5	*f*	15	-40				
34		12	13.4	+50	1.8	0.7	*f*	15	-38				
35	Sept.	16	8.4	+ 6	0.3	0.2	*c*	14215	+12	Sept.	15.45	-24	308
36		23	9.0	+ 5	0.3	1.2	*c*	18	- 8		23.96	-23	285
37		23	9.1	+ 1	3.4	1.3	*p*	18	- 8				
38		26	10.9	+24	0.5	0.5	*c*	18	+33				
39		26	11.0	-25	0.6	0.3	*p*	18	+33				
40	Sept.	27	10.4	+18	0.4	0.6	*f*	14218	+46	Sept.	23.96	-23	285
41		27	10.5	0	1.3	0.7	*p*	18	+46				
42		30	9.4	-16 to +36	1.0	..	*c*	19	+10		29.6	+22	236
43	Oct.	2	10.1	+28	0.8	0.3	*c*	19	+37				
44		2	10.4	+ 4	0.7	0.5	*p*	22	-60	Oct.	7.00	-31	94
45	Oct.	2	14.1	+16	0.4	1.5	*s*	14219	+39	Sept.	29.6	+22	236
46		3	9.3	+ 4	0.6	0.7	*f*	19	+50				
47		3	9.4	- 4	0.6	0.6	*f*	19	+50				
48		3	9.4	+11	0.7	0.3	*f*	20	+49		29.7	-24	30
49		3	9.6	+31	0.5	0.2	*p*	20	+49				

OBSERVATIONS OF SOLAR FLOCCULI MADE WITH THE SPECTROHELIOSCOPE IN THE YEAR

Dark *Hα* Flocculi								Associated Group of Sunspots					
Ref. Number	Date and Time U.T.			Measured Radial Velocity km./sec.	Length	Least Distance from Sunspot	Position relative to Sunspot or Group	Number of Group	Longitude from Central Meridian	Central Meridian Passage		Latitude	Area
		d	h		′	′			°	d		°	
50	Oct.	6	11.1	- 2	1.2	1.0	*f*	14222	- 7	Oct.	7.00	-31	94
51		16	9.4	+ 2	0.5	0.6	*f*	26	-26		18.4	+19	50
52	Dec.	11	10.8	-51 to +41	1.3	1.5	*f*	38	-40	Dec.	14.47	-22	650
53		11	11.0	+20	0.5	1.5	*f*	38	-40				
54		18	10.5	+17	1.0	0.5	*f*	38	+52				
55	Dec.	18	10.6	-20 to +38	0.5	0.4	*p*	14241	+27	Dec.	16.4	+32	106
56		18	13.6	+21	0.4	0.3	*p*	41	+29		16.4	+32	106

NOTES

Reference Number

4. Further measures were as follows:-
   $8^h.6$ -27 to +16 km./sec.
   9.3 -33 to +31 km./sec.
   9.4 +34 km./sec.
   9.7 +22 " "
   10.7 -12 " "

6. Associated with a minor flare (magnitude = 1); further measures at $13^h.8$ and $14^h.0$ were +43 and +36 km./sec. respectively.

7.–9. Associated with a flare 2+. Further measures of No. 8 at $8^h.2$ gave -41 km./sec. and of No. 9 at $8^h.4$ and $8^h.6$ were, -44 to +36 km./sec. and +11 to +50 km./sec.

Reference Number

13. Flowing clockwise into the follower spot.

15. Another reading at $7^h.5$ gave a velocity of -32 to +43 km./sec.

22. A further measure at $8^h.2$ gave +29 km./sec.

49. A further measure at $10^h.8$ gave +12 to +45 km./sec.

52.–53. Associated with a flare 1.

OBSERVATIONS OF SOLAR FLARES MADE WITH THE SPECTROHELIOSCOPE IN THE YEARS 1930-45

Observations in *Hα*-light of solar flares, otherwise bright chromospheric eruptions, were begun at Greenwich when the spectrohelioscope was installed in 1929. The observed times of flares and their positions have since 1935 been regularly communicated to Meudon for incorporation in the *Quarterly Bulletin on Solar Activity* published from Zurich under the auspices of the International Astronomical Union. Investigations made at Greenwich into the relationships between solar flares and (1) radio fade-outs (2) geomagnetic disturbances are published in *Monthly Notices* **97**, 594, 1937; **103**, 244, 1943 and **104**, 4, 1944.

The included table gives details of flares observed at Greenwich in the years 1930 to 1945. The following is an explanation of the material contained in the various columns:

Column 1. Reference-number of the flare for the particular year.

Columns 2, 3 and 4. Date and approximate times (U.T.) of observation. Times in heavier type denote that the beginning or the end of the flare was actually observed.

Columns 5, 6 and 7. Radial distance (in terms of the Sun's apparent radius), latitude and longitude from the central meridian of the flare when observed.

Column 8. The observer's estimate, when it occurs within the times of observation, of the time of maximum of the flare. In certain cases this time of maximum has been derived from a series of intensity or line-width measurements.

Column 9. Approximate area of the flare, corrected for foreshortening and expressed in millionths of the Sun's hemisphere. Prior to 1939 March an estimate of the area of the flare has been derived from drawings made at the time of observation. From 1939 April a graticule inserted in the field of view has been used for the measurement of area.

Column 10. The magnitude, estimated by the observer, on an arbitrary ascending scale 1-2-3, as used in the *Quarterly Bulletin*.

Columns 11 and 12. The highest measured value of the light-intensity (not necessarily obtained at the time of maximum given in Col.8) emitted by the flare and the time (U.T.) of the observation. The intensity is expressed as a percentage of the local continuum and is corrected for scattered light in the instrument. With a visual wedge photometer a measure is usually taken of the ratio of brightness of the flare to the brightness of the undisturbed disk, at the central wavelength of *Hα*.

The following apparent central intensities (obtained experimentally and uncorrected for instrumental scattering) are assumed at the various parts of the disk in order to obtain the apparent intensity of the flare in terms of the local continuum:

Radial Distance	Apparent Central Intensity of *Ha*
0.00 to 0.28	23
0.29 to 0.50	24
0.51 to 0.66	25
0.67 to 0.77	26
0.78 to 0.86	27
0.87 to 0.95	28
0.96 to 1.00	29

The value for the centre of the Sun's disk indicates the presence of scattered light of about 9 per cent; the intensities given in Column 12 incorporate the appropriate correction according to the procedure given in *Monthly Notices*, 96, 5, 1935. No correction is made for finite slit-width since such correction, for the centre of the *Ha*-line, is not expected to exceed one or two per cent.

In some cases (indicated by italicized figures in Column 12) the measurement of the intensity has been made directly with the local continuum. Prior to 1939 January 1 a lamp photometer was used for this purpose (see *Monthly Notices* 96, 5, 1935) while since that date a secondary "line-shifter" (see *Monthly Notices* 99, 463, 1939) has been used. In the latter case the continuum 15 A.U. from the centre of the *Ha*-line is brought into the lower half of the field to enable the comparison to be made. A correction to allow for the absorption (15 per cent) of the thick line-shifter is made and the correction for scattered light can then be applied, as in the other cases.

Columns 13 and 14. The reference number, in the *General Catalogue*, of the spot group associated with the flare and the position of the flare relative to the group or, in some cases, a principal component *a* or *b*, as designated in the *Ledgers*.

Column 15. The reference number from the preceding table for 1944 and similar tables for the years 1930-43 and 1945 of radial-velocity measures of any absorption filament observed in close association with the flare.

OBSERVATIONS OF SOLAR FLARES MADE WITH THE SPECTROHELIOSCOPE IN THE YEARS 1930-1945.

Ref. No.	U.T. of Observation			Position			U.T. of Max.	Approx. Area of Flare	Mag.	Central Intensity of Hα (cont. = 100)		Associated Spot Group		Reference Number of Associated Dark Hα
	Date	From	To	Radial Dist.	Latitude	Long. from C.M.				U.T.	Int.	Group Number	Relative Position of Flare	
	1930	h m	h m		°	°	h m			h m				1930
1	Aug. 12	10 59	12 00	.09	7 S	3 W			3			11280	*f*	55, 56, 57
2	Oct. 6	09 25	09 59	.84	2 N	56 E			2			11309	*sp a*	99, 100, 101
3	9	11 03	12 42	.35	0	20 E		175	2			11309	*c*	106-109
4	13	10 27	10 35	.64	5 N	40 W			1			11309	*sf a*	
5	28	10 52	11 37	.15	4 S	3 E		100	1			11314	*n*	
6	Nov. 25	10 34	10 58	.14	7 S	0		200	2			11324	*f*	145
	1931													1931
1	Mar. 17	10 55	11 51	.96	4 S	77 W		400	2			11370	*p*	18
2	Apr. 12	12 00	12 53	.87	7 N	58 E		75	1			11382	*f*	31, 32
3	July 12	16 01	16 17	.52	5 N	31 W		200	2			11411	*nf*	65, 66, 67
4	Nov. 6	12 10	12 30	.25	1 N	14 E		100	1			11444	*c*	132, 133
	1932													1932
1	Mar. 2	10 16	11 37	.79	6 N	61 W			1			11469	*nf a*	16
2	2	11 34	...	.78	5 N	60 W			1			11469	*f a*	
3	May 25	10 04	11 00	.19	1 N	11 E			1			11491	*sp*	
4	Oct. 6	10 39	10 56	.16	10 N	8 E		175	1			11513	*f*	142
5	18	12 28	12 48	.99	9 N	80 E		300	2			11517	*sf a*	
6	Dec. 3	12 57	13 17	.28	5 N	16 E		75	1			11524	*sp*	163, 164
	1933													1933
1	Jan. 6	10 06	10 30	.77	10 N	49 E		75	1	10 15	47	11531	*np*	2, 3, 4
2	Feb. 2	09 58	10 25	.94	13 N	68 E		350	2	09 58	58	11537	*np b*	16
3	2	14 55	...	.91	13 N	65 E		200	1	14 58	52	11537	*np b*	18, 19
4	Mar. 10	09 48	09 53	.78	15 N	50 W		100	1			11541	*f*	33, 34
5	27	10 17	10 30	.81	7 N	54 W			1			11544	*p*	43
	1934													1934
1	Feb. 9	10 08	10 20	.97	28 N	81 W			1			11563	*c*	
2	Apr. 20	15 10	15 34	.51	31 S	17 E		75	1	15 14	51	11573	*sf a*	
3	May 17	09 29	10 15	.65	30 S	30 E		200	1			11578	*f a*	43
4	24	10 35	10 48	.35	26 N	16 W		150	1			11579	*sf*	
5	Nov. 11	10 49	11 12	.89	22 N	60 W			1			11601	*f a*	130
	1935													1935
1	Feb. 7	09 44	...	.59	16 S	36 W			1			11624	*c*	6
2	Mar. 1	11 52	...	.46	21 S	25 E			1			11634	*sf*	9
3	May 3	08 38	09 16	.48	23 S	23 E			2	08 52	56	11652	...	41-44
4	6	08 57	...	.55	30 S	21 W			1			11655	*c*	
5	10	08 33	...	.96	30 S	72 W			1			11655	*c*	70, 71, 72
6	10	09 27	11 10	.82	23 N	50 W			2			...	...	
7	June 12	15 23	...	.40	33 S	7 E			1			11670	...	
8	15	10 03	...	.91	15 N	64 E		125	1			11672	*c*	121
9	15	10 57	11 30	.91	15 N	64 E		200	1			11672	*c*	122, 123, 124
10	23	09 20	...	.99	24 S	85 E			1			11677	*f*	
11	26	08 45	...	.78	24 S	47 E		450	2	09 03	123	11677	*c*	149, 150
12	July 2	11 56	12 14	.66	24 S	33 W		75	1			11677	*s*	173, 174
13	15	10 00	10 07	.47	19 S	19 W			1			11682	*p*	207, 209
14	Aug. 20	13 38	14 30	.39	28 N	13 W			1	14 06	48	11697	...	260, 261
15	21	08 29	09 00	.52	28 N	24 W		200	1			11697	*c*	263
16	21	09 33	10 30	.52	28 N	24 W		150	1			11697	*c*	
17	22	08 58	09 15	.62	28 N	34 W	08 58	150	2	14 59	127	11697	*c*	
18	Sept. 23	09 10	09 20	.35	26 N	6 E		75	1			11713	*n*	
19	Oct. 23	14 57	15 16	.58	23 N	32 W		100	1			11734	*f a*	335

OBSERVATIONS OF SOLAR FLARES MADE WITH THE SPECTROHELIOSCOPE IN THE YEARS 1930-1945.

Ref. No.	U.T. of Observation			Position			U.T. of Max.	Approx. Area of Flare	Mag.	Central Intensity of Hα (cont. = 100)		Associated Spot Group		Reference Number of Associated Dark Hα
	Date	From	To	Radial Dist.	Latitude	Long. from C.M.				U.T.	Int.	Group Number	Relative Position of Flare	
	1935	h m	h m		°	°	h m			h m				1935
20	Oct. 23	15 16	15 32	.59	20 N	35 E	15 19		1			11742	*c*	337
21	Nov. 13	12 04	...	.34	21 N	8 E		175	1			11750	*f*	363
22	13	12 05	...	.25	17 N	2 W		175	1			11750	*s a*	
23	13	12 17	...	.35	21 N	10 E	12 17		1			11750	*f*	364
24	13	12 40	12 54	.35	21 N	10 E			1			11750	*f*	366
25	13	12 56	...	.87	30 S	53 W		100	1			11748	*sf*	
26	29	14 31	14 45	.68	28 S	33 E		400	1	14 33	47	11764	*c*	376
27	Dec. 5	10 38	10 45	.76	30 S	43 W		200	1			11764	*c*	
	1936													1936
1	Feb. 6	11 22	11 31	.55	22 N	19 W	11 24	150	1			11808	*p a*	1
2	6	12 00	12 30	.61	32 N	6 W			2	12 05	56	11807	*p*	3,4
3	7	10 29	11 00	.97	29 S	76 E	<10 33	375	1			11815	*sp a*	7
4	7	10 35	11 00	.79	11 N	51 W			1			11814	*c*	9
5	7	11 42	12 15	.97	27 S	75 E		700	2			11815	*p a*	8
6	8	09 42	09 46	.99	33 S	79 E			1			11815	*sf b*	
7	9	14 37	14 41	.95	31 S	63 E		200	1			11815	*s b*	15
8	12	13 08	13 20	.45	27 S	19 E		100	1			11815	*s a*	23
9	13	10 04	10 30	.36	27 S	7 E		250	2			11815	*p&f b*	
10	14	12 39	13 27	.36	27 S	7 W		350	3-	12 43	96	11815	*c*	36
11	Mar. 10	12 45	12 55	.99	19 N	83 W			1			11845	...	
12	10	12 53	...	.99	24 N	85 W			1			11837	...	
13	18	10 31	10 48	.39	17 S	21 W			1			11858	*c*	48
14	21	11 25	12 00	.88	30 S	60 W		175	1			11852	*nf*	52
15	Apr. 22	08 37	08 48	.98	25 S	78 W		400	1			*1105a*	...	
16	23	11 45	...	.25	14 S	11 W			1			11890	*c*	
17	May 14	09 41	11 00	.68	26 S	38 E		150	1			11912	*c*	
18	26	11 30	12 03	.71	10 N	45 W	11 33	300	3	11 33	156	11921	*f*	100, 101
19	June 5	16 01	16 16	.55	16 S	29 W			3			11931	*c*	109
20	8	08 57	09 15	.87	22 S	58 W		450	1	09 00	113	11938	*np*	
21	14	09 40	09 55	.42	23 N	13 E			1			11945	*nf*	
22	17	10 22	10 45	.91	17 N	65 E	10 23		2	10 23	*73*	11948	*s*	124
23	17	11 00	11 20	.89	18 N	63 E	11 02		1	11 11	*88*	11948	*c*	125
24	17	13 22	...	.82	18 N	55 E			1			11948	*s a*	126
25	19	15 23	15 30	.63	21 N	35 E		125	1			11948	*s b*	
26	20	10 48	11 11	.47	21 N	22 E	10 52	125	1			11948	*sp b*	
27	22	10 57	11 30	.38	18 N	16 W	11 02		1			11948	*np a*	
28	22	15 22	15 28	.32	20 N	4 W		75	1			11948	*s b*	133, 134
29	25	10 51	11 40	.80	20 S	62 E			1	11 08	*59*	11960	*np*	
30	July 8	10 12	10 35	.99	22 N	82 E			2			11970	...	
31	12	09 40	10 23	.55	16 S	26 E			1	10 10	47	11973	*c*	150
32	15	13 30	13 40	.40	21 N	17 W	<13 33	100	2	13 33	88	11970	*n a*	153
33	30	09 18	09 50	.82	26 S	48 E			1			11986	...	
34	30	10 41	11 30	.82	26 S	48 E	10 45	200	3	10 45	175	11986	*c*	166, 167
35	Aug. 6	09 25	...	.97	16 S	76 E			1			11993	*p*	
36	15	08 21	08 42	.31	25 N	1 W	08 29		2	08 29	58	11999	*n*	
37	15	10 56	11 06	.81	21 N	55 E			1			12006	...	
38	20	10 26	10 38	.33	22 N	13 W	~10 28		1	10 28	71	*12006*	*np*	175
39	22	10 16	10 30	.65	22 N	39 W	10 18		1	10 18	90	12006	*c*	
40	27	10 24	10 38	.23	8 S	12 W	<10 25		1	10 25	54	12011	*s*	181
41	27	10 40	11 35	.79	26 S	43 E	10 40		2	10 47	81	12016	*c*	186
42	28	10 09	11 30	.67	24 S	30 E	<10 10		3	10 10	138	12016	*n*	188, 189, 190
43	28	14 09	14 16	.67	26 S	28 E	14 12		1	14 12	*131*	12016	*c*	
44	Sept. 2	09 46	09 53	.69	26 S	31 W			1			12016	*f*	
45	23	13 31	13 40	.61	23 S	23 E		175	2	13 36	160	12041	*c*	199
46	29	13 24	13 47	.84	22 S	50 W			1			12041	...	
47	Oct. 16	10 19	10 30	.75	7 S	46 E	10 21	75	1	10 21	44	12075	*n*	227, 228
48	20	11 43	11 47	.54	12 N	32 E			1	11 45	54	12076	...	

OBSERVATIONS OF SOLAR FLARES MADE WITH THE SPECTROHELIOSCOPE IN THE YEARS 1930-1945.

Ref. No.	U.T. of Observation			Position			U.T. of Max.	Approx. Area of Flare	Mag.	Central Intensity of Hα (cont. = 100)		Associated Spot Group		Reference Number of Associated Dark Hα
	Date	From	To	Radial Dist.	Latitude	Long. from C.M.				U.T.	Int.	Group Number	Relative Position of Flare	
	1936	h m	h m		°	°	h m			h m				1936
49	Oct. 25	11 13	11 35	.47	18 N	26 E	11 23	75	1	11 23	58	12080	*f a*	
50	Nov. 6	11 10	11 14	.55	17 S	26 W		50	1			12088	*c*	
51	8	11 23	11 37	.54	16 N	29 E		100	1			12095	*p a*	252
52	9	10 36	11 02	.99	7 S	80 E	10 39		2	10 39	96	12101	*sf b*	
53	9	10 48	11 11	.97	18 S	72 W	10 54		1	10 54	73	12087	*s*	
54	9	11 06	11 25	.70	16 S	42 E						12099	*nf*	255
55	9	11 25	12 00	.97	18 S	72 W			1			12087	*s*	
56	Dec. 3	11 46	12 18	.85	17 N	55 W	12 03	600	2+	12 03	118	12109	*c*	
57	4	11 42	11 52	.72	13 N	45 E			1			12125	...	
58	7	11 38	12 13	.79	12 N	52 W			1	11 49	53	12115	*s c*	
59	16	12 54	13 01	.62	21 S	34 W	12 58		1	12 59	69	12133	*c*	
60	19	11 06	11 23	.96	24 N	70 E	11 12		1	11 12	86	12141	*s*	267
61	19	11 24	11 38	.87	8 N	60 W	11 26	300	1	11 26	79	12139	*c*	265
62	22	09 55	10 28	.57	22 N	27 E	10 16	200	2	10 16	105	12141	*p a*	270
63	27	10 52	...	.66	19 N	37 W			1			12141	...	
64	30	10 30	10 56	.41	21 N	1 E	10 32	250	2	10 32	75	12154	*nf*	
65	30	10 57	12 50	.86	18 N	56 W			3	10 58	121	12146	*p*	
	1937													1937
1	Jan. 5	10 27	10 38	.93	26 S	69 W			1			*1114m*	*c*	2
2	7	10 32	10 55	.62	34 S	25 W	10 34		1	10 34	51	12162	*n*	7
3	7	10 37	...	.71	13 S	47 W			1			12160	*f*	10
4	7	10 52	11 30	.46	23 S	20 E	10 56		1+	10 56	77	12172	*sp*	11
5	9	10 40	10 50	.56	20 S	30 W	10 44		1	10 44	78	12171	*sp b*	13
6	Feb. 1	10 44	11 32	.36	8 S	21 W	10 45		1	10 45	62	12204	*c*	
7	1	11 10	11 35	.99	19 N	85 W			1			12199	...	
8	1	12 46	13 28	.35	8 S	21 W			1	12 47	62	12204	*c*	
9	1	13 21	13 37	.62	24 N	26 W	13 24		2-	13 24	64	12201	*n*	
10	2	09 52	10 10	.60	10 S	37 W		50	1			12204	*n*	
11	4	09 47	10 47	.79	15 S	53 W			1			12204	*sf*	
12	9	09 52	09 56	.59	20 N	24 E		50	1			12230	*c*	23
13	Mar. 2	09 49	10 42	.32	12 N	1 W	09 56	200	2	09 56	69	12254	*n*	
14	2	10 10	10 35	.32	22 S	12 W			1			12255	*n*	
15	Apr. 1	10 31	10 56	.93	23 N	64 E	10 36	350	2	10 36	156	12299	*c*	45
16	21	11 18	11 53	.72	19 N	40 E			2	11 32	101	12320	*c*	48
17	21	14 58	15 51	.70	19 N	38 E	15 01	500	3	15 01	215	12320	*c*	49
18	23	08 49	09 09	.51	20 N	18 E			1			12320	*c*	
19	23	10 15	...	.16	11 S	7 W			1			12315	*c*	
20	23	13 40	14 13	.45	19 N	13 E			1			12320	*c*	
21	25	08 34	11 23	.45	19 N	12 W	08 36	450	3-	08 36	98	12320	*c*	51
22	26	14 03	14 11	.60	17 N	30 W		175	1			12320	*f a*	
23	May 6	09 15	09 27	.22	17 S	5 W			1			12331	*c*	
24	20	08 43	08 48	.25	15 S	6 E			1			12349	*c*	
25	21	13 24	13 44	.28	14 S	12 W			1			12349	*nf*	
26	24	09 50	10 31	.66	15 S	40 W			1			12349	*c b*	
27	25	13 39	14 40	.81	22 N	[illegible] W			2	13 41	151	12350	*n a*	61, 62
28	31	14 31	15 50	.32	15 N	10 W			1+			12367*	*np*	67
29	June 5	15 07	15 14	.28	11 N	12 W			2-			12373	*f*	
30	7	11 37	14 00	.49	11 N	21 E	12 07	550	3	12 07	137	12372	*c*	76, 77, 78
31	9	08 38	08 50	.23	8 N	10 W	08 43	400	2	08 43	93	12372	*sp*	85
32	10	13 56	15 00	.45	8 N	27 W	14 08	50	2-	14 08	74	12372	*sp*	
33	12	09 59	10 08	.70	13 N	43 E			2	10 08	113	12380	*c*	
34	15	12 52	13 15	.53	20 N	27 E		550	2			12392	*c*	90
35	17	15 07	...	.06	13 S	2 W			2			12385	*c*	92
36	22	09 41	09 55	.89	8 N	65 W	09 45		1	09 45	116	12389	...	
37	July 1	13 59	14 15	.22	17 N	0		50	1			12411	*c a*	103
38	8	10 57	11 05	.82	10 N	55 E			1			12424	*s*	
39	8	11 10	11 42	.29	11 N	15 W	11 15		1	11 14	69	12418	*c*	

OBSERVATIONS OF SOLAR FLARES MADE WITH THE SPECTROHELIOSCOPE IN THE YEARS 1930-1945

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	Date	From	To	Radial Dist.	Latitude	Long. from C.M.				U.T.	Int.	Group Number	Relative Position of Flare	
	1937	h m	h m		°	°	h m			h m				1937
40	July 8	13 32	14 45	.37	24 N	10 E	<13 37		1	13 37	69	12423	*c b*	
41	8	14 00	14 50	.29	11 N	16 W	<14 01		1	14 01	82	12418	*c*	
42	14	09 10	09 30	.96	32 S	65 W	09 20		2	09 20	*81*	12437	...	110, 111
43	14	11 23	11 40	.29	13 N	4 W	11 28		1	11 28	*44*	12427	*f*	
44	14	15 27	15 38	.85	12 N	56 E			1			12441	*s*	112
45	15	10 53	11 08	.63	5 N	38 W		250	1+			12431	*s*	
46	16	08 47	09 20	.48	13 S	23 W		175	2-			12430	*c*	
47	16	09 08	09 33	.99	35 S	80 W			1			12439	*s*	
48	16	10 37	10 42	.43	16 S	26 W		125	1			12426	*s*	
49	16	11 01	11 38	1.00	20 N	90 W			?			12423	...	
50	16	15 00	16 14	.66	12 N	40 E		250	2			12445	*c*	114, 115, 116
51	21	09 43	10 12	.55	10 N	34 W			1			12441	*c*	118
52	29	11 43	12 00	.48	35 N	3 W			1+	11 46	109	12455	*p b*	
53	29	15 43	16 00	.46	32 N	11 W	15 49		2-	15 49	56	12455	*p*	129, 130
54	Aug. 4	10 29	10 39	.77	29 S	39 E		75	1			12466	*sp*	
55	7	11 50	12 00	.42	22 N	20 W			2-			12462	*sp*	141
56	10	14 22	14 30	.88	21 S	57 E		1000	2+			12481	*nf*	142
57	12	08 45	08 50	.99	30 S	80 W			1			12474	...	
58	12	13 22	14 20	.43	10 N	26 E	13 33	175	2+	13 33	*90*	12486	*s*	146
59	18	14 34	15 13	.71	10 N	46 W		100	1			12486	*f*	
60	30	10 49	11 33	.75	29 N	46 E			1+			12512	*c*	164
61	31	11 34	11 50	.66	30 N	36 E			1			12512	*c*	
62	31	11 45	11 55	.96	32 N	76 W			1			12498	*p*	
63	Sept. 3	14 32	14 44	.98	21 N	81 W			1			*1123f*	*s*	169, 170
64	6	09 19	10 36	.27	10 N	17 W		125	1			12523	*c*	
65	6	09 30	09 50	.79	21 N	53 W			1			12512	*sp*	173, 174, 175
66	7	09 23	09 40	.47	13 N	28 E		300	2			12521	*np a*	180
67	28	09 28	09 38	.85	20 S	52 E		200	1+			12550	*c*	192
68	29	10 50	11 50	.93	9 N	69 E		300	2			12553	*s*	
69	30	10 28	11 30	.78	10 N	53 E	10 38	700	3+	10 38	*154*	12553	*c*	195
70	Oct. 1	09 28	09 52	.70	8 N	45 E		150	1			12553	*s*	
71	1	11 15	11 55	.68	7 N	44 E			2-			12553	*s*	197
72	1	14 16	14 27	.69	12 N	44 E			1			12553	*n*	
73	2	10 08	10 49	.45	9 N	28 E		225	1+			12553	*c*	
74	4	09 08	11 25	.09	9 N	5 W	09 22		2-			12553	*c*	203
75	8	09 52	10 19	.78	8 N	52 W			2			12553	*f*	
76	9	09 46	10 15	.86	13 N	69 W			1			12553	*n*	209, 210, 211
77	16	10 20	10 50	.76	5 S	48 E			1			12576	*c*	216
78	16	11 55	12 42	.21	13 N	10 E			1			12573	*c*	218
79	21	11 35	11 45	.93	11 N	69 E			1			12585	*f*	226
80	28	09 58	10 25	.55	30 S	23 E			2			12587	*sf b*	233
81	30	10 08	10 42	.22	11 N	11 E			2			12588	*n*	234
82	Nov. 4	12 00	12 07	.99	24 S	87 W			1			12587	...	
83	Dec. 14	10 38	10 55	.99	27 N	85 E			1			12640	...	
84	20	12 52	12 58	.91	10 N	65 W			1			12641	...	
	1938													1938
1	Jan. 17	10 01	10 35	.99	19 N	87 W			1			12666	*p*	
2	17	11 45	12 00	.41	18 N	10 E			1			12673	*c*	3
3	19	10 29	11 00	.43	17 N	15 W			1			12673	*c*	4
4	19	11 25	11 35	.55	18 N	23 W		100	2			12673	*nf a*	
5	19	12 45	...	.51	17 N	22 W		75	1			12673	*p a*	
6	19	15 30	...	.48	17 N	20 W			1+			12673	*f a*	
7	20	12 07	...	.71	15 N	42 W			1+			12673	*p a*	
8	23	09 55	10 50	.95	15 N	69 W			2			12673	*c*	6
9	Feb. 9	11 32	11 49	.33	23 S	10 E		150	2			12703	*f a*	8
10	11	11 17	12 15	.45	23 S	23 W	11 30		2	11 30	71	12703	*c a*	
11	11	12 18	12 30	.74	16 N	43 W		50	1			12707	*c*	15

OBSERVATIONS OF SOLAR FLARES MADE WITH THE SPECTROHELIOSCOPE IN THE YEARS 1930-1945

Ref. No.	U.T. of Observation			Position			U.T. of Max.	Approx. Area of Flare	Mag.	Central Intensity of Hα (cont. = 100)		Associated Spot Group		Reference Number of Associated Dark Hα
	Date	From	To	Radial Dist.	Latitude	Long. from C.M.				U.T.	Int.	Group Number	Relative Position of Flare	
	1938	h m	h m		°	°	h m			h m				1938
12	Feb. 12	09 46	10 13	.55	25 S	29 W	09 54		2	09 54	64	12703	c	16
13	13	10 40	10 58	.70	25 S	43 W			1			12703	c	18
14	14	10 47	11 16	.86	25 S	59 W		175	1+			12703	c	
15	18	14 41	15 00	.80	15 N	55 W			1			12707	c	25
16	23	15 12	15 27	.99	10 S	87 W			1			12712	...	
17	Mar. 8	11 00	11 15	.64	24 N	25 E		75	1			12734	c	43
18	9	14 30	14 45	.70	8 S	45 E			1			12738	c	46, 47
19	14	09 52	10 00	.44	9 S	26 W			1			12738	c a	51
20	14	15 26	15 50	.91	29 S	65 W	≤15 28		1	15 28	52	12733	c	
21	14	15 31	16 00	.49	10 S	30 W	≤15 33		2	15 33	118	12738	c a	
22	15	10 35	10 46	.60	11 S	38 W			1			12738	c	
23	18	12 13	12 37	.79	9 S	54 E	12 17	300	3-	12 17	88	12754	sf	58
24	19	10 00	10 25	.99	10 S	85 E			1			12757	p	
25	19	11 15	11 35	.66	8 S	42 E		50	1	11 15	36	12754	sf	
26	23	11 25	11 38	.99	26 N	85 W			1			12758	p	
27	24	09 48	09 55	.65	9 S	41 E	09 48		1+			12757	n b	
28	31	10 17	11 30	.99	20 S	86 E	≤10 41		2+	10 41	160	12768	f	
29	Apr. 2	10 43	10 58	.81	23 S	55 E	10 47		1			12768	c	88
30	4	09 34	11 15	.56	23 S	29 E	09 40	500	3-	09 40	95	12768	c	90, 91, 92
31	7	10 58	11 10	.99	30 N	85 E			1+			12777	...	
32	7	14 25	15 31	.95	22 S	71 W	≤14 32		3-	14 32	184	12762	c	95
33	11	09 37	09 50	.94	17 S	70 E	09 40	125	1	09 40	67	12778	n	
34	12	09 00	09 14	.62	27 N	20 E		50	1			12777	c a	
35	12	11 02	11 40	.62	26 N	23 E		100	2			12777	c a	
36	12	14 50	15 10	.61	27 N	20 E	≤15 04		2	15 04	102	12777	p a	114, 115
37	13	09 49	11 52	.48	23 N	7 E		900	3	10 33	77	12777	c	116, 117, 118
38	14	09 37	10 05	.42	10 S	25 E			1+			12779	c	
39	14	09 56	10 08	.46	19 S	25 E			1			12778	n	
40	14	10 12	10 39	.56	27 N	4 W	≤10 15		2	10 15	80	12777	c	
41	29	10 51	10 56	.81	23 N	49 E			1			12796	s	124
42	May 4	13 20	13 40	.48	22 N	12 W	13 30		2	13 31	92	12799	sp	133
43	6	14 05	14 13	.61	39 S	13 E			1			12806	f	134
44	8	09 44	10 05	.90	22 S	62 W		125	1			12802	np	
45	11	14 44	...	.56	25 N	18 E			1			12814	c	
46	11	15 20	16 00	.67	22 S	39 E	15 27	250	3-	15 27	93	12817	f	
47	12	12 15	12 35	.87	10 S	60 E			1			12821	c	
48	20	09 49	10 20	.40	14 S	21 E		100	1			12825	c	
49	24	09 13	10 05	.20	8 N	5 W			2			12829	c	158
50	24	16 09	16 20	.27	17 S	4 E			1+			12826	c	161
51	26	08 52	09 02	.67	7 N	42 W			1+			12829	...	162
52	June 9	09 00	09 17	.40	20 S	14 W			1			12848	c	
53	10	11 00	11 08	.25	9 N	11 E			1			12851	sp	167
54	13	08 53	...	.99	9 N	85 E			2-	08 53	69	...	...	
55	13	10 10	...	1.00	22 N	90 W			1+			12853	...	
56	20	08 43	09 25	.34	8 N	28 E		100	1+			12873	n a	
57	29	14 30	14 45	.48	26 N	19 E			1			12885	c	
58	29	14 30	15 03	.67	9 S	41 E			2+			12881	c	
59	29	15 00	15 38	.63	20 S	33 E			2			12886	c	
60	30	09 50	10 00	.92	10 S	67 W?			1+			1134d	...	
61	July 1	08 43	09 07	.42	27 N	7 W			2			12885	p	184
62	1	09 40	09 54	.40	26 N	2 W			1+			12885	f	186
63	2	09 05	09 11	.23	10 S	1 E			2			12881	c	
64	5	09 26	09 33	.99	15 N	82 E			1			12896	f	
65	6	11 02	11 20	.21	12 N	9 E			1			12894	c a	
66	6	11 52	12 03	.89	24 S	58 W	≤12 00	300	2	12 00	132	12886	c	
67	7	10 08	10 24	.75	10 S	46 E			1			12895	c	
68	9	10 25	10 30	.48	12 N	28 W			1			12894	c	
69	13	08 34	09 10	.59	16 S	30 W	<08 55		2	08 55	45	12895	s b	190
70	13	09 06	09 30	.98	10 N	80 W			1			12894	...	

OBSERVATIONS OF SOLAR FLARES MADE WITH THE SPECTROHELIOSCOPE IN THE YEARS 1930-1945

Ref. No.	U.T. of Observation			Position			U.T. of Max.	Approx. Area of Flare	Mag.	Central Intensity of Hα (cont. = 100)		Associated Spot Group		Reference Number of Associated Dark Hα
	Date	From	To	Radial Dist.	Latitude	Long. from C.M.				U.T.	Int.	Group Number	Relative Position of Group	
	1938	h m	h m		°	°	h m			h m				1938
71	July 13	10 36	11 07	.60	17 S	30 W	10 42		2-	10 42	*45*	12895	*s b*	192
72	13	13 43	13 52	.51	13 S	25 E		75	1+			12902	*c*	
73	13	14 55	15 05	.62	16 S	33 W		50	2			12895	*s b*	
74	16	10 19	10 28	.46	17 S	19 W		150	1			12902	*s*	
75	16	11 38	11 49	.45	17 S	18 W			1			12902	...	
76	19	10 01	10 41	.85	16 S	56 W	10 15	350	2			12902	*c*	194
77	27	09 05	09 25	.19	3 N	11 W	<09 12		1+	09 12	68	12927	*f*	
78	Aug. 4	09 13	09 33	.85	5 N	58 W	09 25		1+	09 24	82	12947	*c*	201
79	17	11 32	11 55	.99	16 S	85 W			1			12950	...	
80	24	08 46	08 55	.99	30 N	87 E	08 48		2-			12978	...	
81	30	09 57	10 25	.89	12 S	60 E	10 01		3-	10 01	156	12983	*c*	
82	31	11 14	11 52	.65	18 N	40 E	11 17	550	2	11 17	69	12984	*p*	
83	Sept. 1	08 42	08 56	.49	20 S	14 E	08 45		1			12985	*c*	207
84	20	14 13	...	.93	8 S	67 E			1			13006	...	
85	20	14 38	15 30	1.00	14 S	90 E	14 41		3			13007	*p*	
86	22	13 35	14 12	.68	5 S	42 E			1+			13006	*n*	
87	22	15 11	15 45	.96	8 S	72 E		75	1			13009	*c*	
88	23	10 07	10 45	.89	15 S	60 E			1			13009	*s*	215
89	30	10 05	10 19	.69	8 S	42 E			1			13017	*p*	223
90	Oct. 3	10 00	10 22	.90	16 S	71 W	10 05		1	10 06	79	13009	...	
91	6	12 42	12 58	.25	11 N	13 W		75	1			13022	*c a*	
92	12	10 09	10 29	.18	15 N	3 E			1			13024	*f b*	
93	14	09 54	10 25	.87	28 N	57 E	<09 54		1+	09 58	48	13033	*n*	
94	14	10 01	10 06	.41	17 N	23 W		50	1			13024	*f b*	231
95	17	09 41	10 05	.91	19 N	66 W	09 48	650	2	09 48	104	13024	*n b*	
96	17	10 09	10 25	.82	26 N	55 E			1			13035	...	233
97	17	12 49	13 02	.92	19 N	68 W			2	12 50	*75*	13024	*n b*	
98	17	14 26	14 48	.99	19 N	87 W			1			13024	*p*	
99	21	10 45	12 43	.96	12 S	78 W			2			13036	*c*	
100	26	11 13	11 25	.36	24 N	10 W	<11 13		2-			13038	*c*	236
101	Nov. 1	11 55	12 08	.31	22 N	1 E	11 58		1			13047	*s*	
102	10	13 16	13 28	.21	8 S	3 E			1			13064	*c*	
103	10	15 34	15 40	.15	5 S	1 W			2			13064	*n*	
104	11	09 44	09 58	.24	5 S	11 W			2			13064	*np*	239
105	11	10 05	10 26	.21	7 S	6 W			1			13064	*nf a*	241
106	11	11 26	11 38	.32	12 S	11 W			1			13064	*sp a*	
107	11	11 45	12 03	.32	12 S	11 W	11 53		2	11 53	67	13064	*sp a*	
108	12	11 32	11 42	.41	9 S	22 W			2-			13064	...	245
109	19	11 00	11 13	.76	20 S	45 W	11 07		1	11 08	51	13072	*sf*	248
110	22	12 20	12 30	.99	25 S	85 W			1			13072	*sf*	
111	25	11 50	11 56	.68	15 N	41 E	11 55		2-			13086	*n a*	
112	26	10 28	10 38	.51	15 N	27 E			2-			13086	*nf a*	
113	Dec. 2	09 40	11 00	.78	14 N	50 W			2			13086	*c*	
114	3	10 12	10 18	.86	15 N	56 W			1			13086	*f*	
	1939													1939
1	Feb. 27	12 10	13 00	.41	15 S	24 E	12 25		2	12 25	*113*	13191	*n*	18
2	Mar. 6	09 42	09 57	.98	13 S	80 W		1000	2			13191	*p*	
3	21	15 37	15 49	.99	25 N	85 W	<15 37		1			13207	*p*	
4	22	10 22	12 20	.95	16 S	72 W			2			13204	*c*	23
5	24	10 17	10 35	.55	22 N	15 W			1			13211	*n*	24
6	29	10 35	10 50	.99	12 N	85 E			1			13219	*n*	
7	Apr. 12	14 50	15 31	.84	18 N	52 E	<15 01	500	2	15 01	49	13235	*nf*	
8	13	14 37	15 20	.62	14 N	34 E	14 50		2			13235	*n*	26-29
9	15	10 42	11 00	.32	12 N	6 E			1			13235	*c*	31
10	17	10 11	10 30	.46	11 N	23 W			1			13235	*c*	
11	21	09 03	09 30	.93	28 N	63 E	09 12	500	3	09 12	*223*	13245	*c*	39
12	21	09 59	10 16	.25	17 S	8 W	<10 06		1			13244	*c*	

OBSERVATIONS OF SOLAR FLARES MADE WITH THE SPECTROHELIOSCOPE IN THE YEARS 1930-1945

Ref. No.	U.T. of Observation			Position			U.T. of Max.	Approx. Area of Flare	Mag.	Central Intensity of Hα (cont. = 100)		Associated Spot Group		Reference Number of Associated Dark Hα
	Date	From	To	Radial Dist.	Latitude	Long. from C.M.				U.T.	Int.	Group Number	Relative Position of Flare	
	1939	h m	h m		°	°	h m			h m				1939
13	Apr. 22	11 03	11 06	.87	28 N	51 E			1			13245	c	
14	24	15 07	15 17	.67	28 N	25 E			1			13245	c	
15	24	15 07	15 35	.91	11 S	67 E			1	15 29	62	13252	f	
16	May 4	09 23	09 30	.34	12 N	10 E			1+			13259	c	46
17	4	09 35	12 00	.34	12 N	11 E		1100	3			13259	c	47
18	9	08 40	08 56	.87	20 N	57 W			1			13259	...	53
19	9	15 23	15 36	...	...	...			2-			13259	...	54
20	13	08 45	09 50	.99	10 N	85 W?			?			13265	c	
21	13	11 25	11 50	.33	6 S	19 E			2			13271	c	
22	24	14 16	14 50	.14	10 S	0		130	1			13287	c	
23	29	09 36	10 08	.29	17 S	7 W		180	1+			13290	c	
24	30	11 38	11 44	.71	18 N	43 W			1			13292	s	
25	31	09 03	09 38	.66	9 S	41 E			2-	09 13	44	13302	c	56
26	June 2	08 54	09 20	.45	12 N	25 E			1			13303	c	
27	2	10 55	11 58	.29	7 S	16 E	11 17	130	1+			13302	f	
28	12	10 14	10 34	.58	23 N	28 E	10 20		2	10 21	100	13316	s	63
29	17	09 54	10 06	.19	10 S	1 E			1			13321	nφ	68, 69, 70
30	29	10 14	10 52	.30	13 S	7 E			2	10 22	45	13341	c	
31	July 3	09 21	09 47	.97	4 S	78 E			1			13348	c	
32	3	09 31	09 50	.73	19 S	43 W			1			13341	sf	
33	6	10 55	11 20	.65	7 S	36 E			2			13348	c	
34	7	13 30	14 15	.39	7 S	20 E			2			13348	s	
35	7	14 28	14 45	.57	14 S	28 E			1			13349	c	
36	9	09 03	09 12	.08	1 S	1 E			1			13348	nf	83
37	10	08 38	08 55	.40	4 N	24 W	<08 38		1			13350	sf	
38	11	09 58	12 00	.57	8 S	33 W	10 19	890	2	10 19	68	13348	sf	
39	13	08 46	08 59	.88	17 N	60 E			1			13359	sf	
40	25	09 52	10 04	.54	8 S	30 W			1			13362	φ	
41	Aug. 2	10 20	10 40	.69	13 S	40 E			1			13370	f	
42	9	10 26	10 45	.59	18 N	35 W			1			13371	nφ	92
43	11	11 29	11 40	.59	12 S	32 E			2			13376	φ	
44	11	13 45	13 55	.58	12 S	31 E			1			13376	φ	98
45	12	08 35	09 03	.96	22 S	70 W	08 39	400	2	08 39	70	13378	c	
46	12	10 04	10 17	.47	12 S	22 E		280	2	10 06	56	13376	c	99
47	15	08 43	09 18	.38	24 N	17 E	<08 50		2			1149f	sφ	
48	18	11 35	11 39	.29	7 S	10 E			2			13385	φ	105
49	21	14 30	14 36	.22	13 N	12 E			1			13387	c b	
50	22	13 55	14 13	.10	10 N	5 W			2-			13387	s	
51	22	15 50	15 55	.22	14 N	11 W			1			13387	n a	
52	26	10 53	11 30	.99	18 S	80 E	10 56	1000	3	10 56	146	13394	...	
53	29	08 51	10 10	.65	14 S	35 E	09 20	450	3	09 20	167	13394	c	111, 112, 113
54	Sept. 5	09 38	10 00	.93	15 S	67 E	09 41		1+	09 43	73	13405	c	117, 118, 119
55	5	10 06	10 19	.97	14 S	77 E			1			13405	f	
56	6	09 57	10 10	.98	22 S	77 W			1			13394	s	120
57	8	11 35	12 30	.56	14 S	27 E	11 43	630	3	11 41	168	13405	c	
58	8	14 42	14 47	.53	14 S	25 E	14 45		1			13405	c	
59	11	09 19	09 35	.38	13 S	11 W			1			13405	c	
60	14	10 23	10 25	.87	17 S	56 W			1			13405	s	
61	19	09 20	10 05	.84	21 S	50 W		300	1+			13417	c	
62	26	10 10	10 18	.46	11 S	22 E			1			13427	c	
63	27	09 44	10 01	.35	12 S	8 E	<09 44		1			13427	c	
64	28	15 39	15 52	.28	9 S	6 W			2			13427	n	133
65	Oct. 11	09 15	09 35	.32	6 S	15 E	<09 15		1			13446	f	
66	11	11 24	11 40	.25	5 S	9 E			1			13446	φ	
67	16	09 22	09 38	.41	12 N	24 E	09 28		2	09 28	77	13452	c	138
68	16	13 36	13 48	.38	12 N	22 E			1			13452	c	139
69	30	13 46	14 10	.43	5 N	26 E			2	13 56	51	13462	c	
70	Dec. 2	10 12	10 22	.73	4 S	47 W			1			13482	n	143

OBSERVATIONS OF SOLAR FLARES MADE WITH THE SPECTROHELIOSCOPE IN THE YEARS 1930-1945

Ref. No.	U.T. of Observation			Position			U.T. of Max.	Approx. Area of Flare	Mag.	Central Intensity of Hα (cont. = 100)		Associated Spot Group		Reference Number of Associated Dark Hα
	Date	From	To	Radial Dist.	Latitude	Long. from C.M.				U.T.	Int.	Group Number	Relative Position of Flare	
	1940	h m	h m		°	°	h m			h m				1940
1	Jan. 8	11 43	12 30	.66	10 N	39 W	11 50		1			13502	c	
2	11	12 49	12 58	.99	13 N	85 W			2			13502	np	
3	Mar. 5	10 07	...	.97	5 S	77 E			1			13545	n	
4	20	09 30	13 32	.38	12 S	22 W			1			13552	p	15, 16, 17
5	23	11 30	11 45	.65	12 N	37 E	<11 33	500	3	11 33	109	13555	c	
6	Apr. 19	11 40	11 55	.68	15 N	38 E			1			13582	n	30
7	22	09 32	10 45	.32	14 N	4 W		1000	2+			13584	n	
8	22	13 28	15 29	.33	14 N	5 W		1050	2+	13 34	43	13584	n	
9	25	08 55	09 09	.06	2 S	2 W	<08 55		1			13585	n	
10	May 14	13 47	14 15	.47	10 S	28 W	13 55		1	14 00	64	13596	c	37, 38
11	17	13 40	14 15	.92	12 S	67 W	13 50	610	2	13 55	98	13596	s	41, 42
12	18	09 51	10 05	.21	10 N	2 E			1			13599	p	46, 47, 48
13	20	08 50	10 40	.29	13 N	9 W			2			13600	c	
14	20	13 50	14 10	.35	15 N	13 W			1			13600	p	50, 51
15	21	10 00	10 20	.14	9 S	4 E	<10 00		1+	10 09	*49*	13604	c	53, 54
16	June 8	11 04	11 25	.65	22 S	35 W	11 04	175	2	11 08	45	13615	c	
17	26	09 24	09 56	.78	12 S	50 E		350	2	09 25	44	13635	c	
18	July 8	14 25	14 35	.16	12 N	5 W			1			13648	c	
19	12	09 17	09 35	.39	8 S	19 E	09 28		1			13651	nf	72
20	19	10 23	10 28	.66	10 N	42 W			1			13653	c	
21	Aug. 5	08 30	09 05	.86	11 S	57 E	<08 30		2	08 38	46	13673	c	74
22	9	11 13	11 28	.66	6 N	42 E	<11 13		1			13678	c	
23	15	11 45	12 03	.87	14 S	59 W	<11 45		2			13677	c	79, 80, 81
24	17	10 15	10 27	.94	2 S	70 W	<10 15		1			*1162k*	c	
25	30	08 11	08 28	.45	5 S	25 E	<08 11		1			13692	c	
26	31	08 36	11 24	.27	5 S	12 E	08 36		2			13692	c	83
27	Sept. 18	10 00	10 13	.39	14 N	23 W	10 04		1			13705	s	88
28	20	11 14	11 30	.34	10 S	11 W			1			13706	c	89
29	23	10 00	10 05	.80	12 S	50 W			1			13706	sf a	
30	Oct. 7	13 40	14 45	.95	15 N	72 E	13 45	650	2	13 45	48	13721	c	
31	9	09 50	10 00	.71	15 N	46 E	09 55		1			13721	c	
32	Nov. 15	09 30	10 23	.36	13 S	14 E	<09 30	150	2-			13749	c	90
	1941													1941
1	Mar. 3	08 40	09 10	.85	13 N	54 W	<08 40	1700	3-	08 48	85	13814	c	4
2	May 10	07 35	07 57	.94	25 N	67 E	<07 35	300	2	07 38	64	13854	p	
3	June 11	07 50	08 05	.55	11 N	32 W	07 53		1			13871	c	6
4	16	07 07	07 25	.47	6 N	27 W			1			13876	c	
5	July 8	09 30	10 10	.89	10 N	62 W	09 50	300	2	09 50	101	13886	c	14
6	11	09 30	09 45	.82	12 S	52 E	09 32		1	09 32	76	13895	n	16
7	28	12 30	12 48	.34	4 S	18 W	<12 30		2	12 40	56	13904	c	21
8	Aug. 5	09 55	10 35	.44	1 S	26 W			1+	10 15	62	13908	...	23
9	5	13 36	13 47	.39	14 N	23 E	13 38		1	13 37	58	13911	c	
10	7	08 45	09 05	.27	10 N	16 W			1	08 49	48	13909	c	25
11	Sept. 17	08 38	10 03	.16	7 N	10 W	09 00	350	3	09 00	*145*	13937	s	
12	Oct. 13	08 44	09 05	.35	13 N	19 E	08 46		1			13954	c	35, 36, 37
13	23	09 43	09 54	.41	17 N	23 W	<09 43		1			13957	c	
	1942													1942
1	Feb. 28	14 15	15 05	.25	7 N	6 E			2			14015	c	
2	Mar. 2	13 25	14 05	.58	6 N	33 W	<13 25	200	2-	13 28	67	14015	p	
3	3	11 20	12 00	.69	6 N	42 W	11 28	1350	3	11 28	*295*	14015	p	4
4	24	11 00	12 52	.72	7 N	45 E	11 37		1	11 37	*63*	14030	c	7
5	Apr. 8	07 30	08 10	.24	8 S	14 E	07 40		2-	07 40	76	14040	c	
6	13	11 20	11 38	.81	5 S	56 W	11 29	700	2	11 29	62	14040	p	12
7	16	09 00	09 10	.30	12 N	3 E	09 05		1	09 05	48	14043	p	
8	23	09 50	10 15	.25	9 S	14 W	09 57	330	2-	09 57	64	14047	c	

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Ref. No.	U.T. of Observation			Position			U.T. of Max.	Approx. Area of Flare	Mag.	Central Intensity of Hα (cont. = 100)		Associated Spot Group		Reference Number of Associated Dark Hα
	Date	From	To	Radial Dist.	Latitude	Long. from C.M.				U.T.	Int.	Group Number	Relative Position of Flare	
	1942	h m	h m		°	°	h m			h m				1942
9	Apr. 23	10 30	10 46	.54	17 N	25 E	10 35	250	1	10 35	59	14050	c	
10	24	08 15	08 47	.42	10 S	25 W	⩽08 15		1	08 22	48	14047	c	
11	24	10 16	10 35	.40	16 N	12 E	10 16	230	2-	10 17	75	14050	c	
12	June 20	09 22	09 45	.46	9 N	27 E	⩽09 22	280	1	09 25	58	14068	n	
13	July 7	09 23	10 15	.19	3 S	8 E	09 42	200	2	09 41	70	14074	c	
14	8	12 48	...	.19	3 S	8 W			1+			14074	c	
15	9	10 38	11 24	.36	4 S	19 W	10 46	280	3-	10 46	*136*	14074	c	
16	Aug. 18	09 50	10 10	.78	1 N	62 W			1			...	...	
17	21	08 52	09 15	.68	1 N	44 W			1			14085	c	30
18	Sept. 7	14 55	15 25	.73	9 S	45 W	15 05		1	15 05	62	14091	s	
19	Oct. 12	09 39	10 00	.97	8 S	78 W	09 45		1	09 47	70	14099	p	37
20	Nov. 30	09 30	10 00	.12	6 S	3 W	09 40		1	09 50	51	14118	c	44, 45, 46
21	Dec. 1	10 44	10 54	.30	6 S	17 W			1	10 49	41	14118	c	
	1943													1943
1	Jan. 13	10 55	11 22	.27	6 S	15 W	11 00		1	11 00	46	14126	p	5
2	Feb. 13	10 25	10 45	.38	6 N	18 W	10 30		1	10 30	54	14135	f	11
3	Mar. 1	14 30	14 57	.78	6 N	50 W	14 38		1	14 38	58	14138	c	
4	12	11 03	11 09	.44	1 N	26 W	11 05		1	11 05	45	14142	c	
5	Apr. 18	08 43	...	.69	12 N	40 E			1	08 43	47	14151	c	69
6	19	08 00	08 20	.52	11 N	27 E			1	08 20	36	14151	c	70
7	21	08 01	09 33	.26	10 N	1 W	08 17		1	08 17	38	14151	c	
8	24	14 25	14 42	.70	10 N	43 W			1	14 32	53	14151	e	
9	May 17	07 55	08 15	.24	8 N	10 E			1			14154	...	
10	Sept. 9	08 52	09 04	.68	12 N	43 W	08 56		1	08 56	62	14172	c	101
	1944													1944
1	May 30	13 41	14 14	.70	1 N	45 W	13 55		1	13 55	42	14196	c	6
2	31	07 53	08 35	.84	2 N	57 W	08 00	650	2+	08 01	97	14196	nf	
3	Dec. 11	11 15	11 28	.69	22 S	39 E			1	11 17	47	14238	c	
	1945													1945
1	Mar. 3	09 12	09 32	.44	19 S	25 W			1+	09 13	45	14262	f	10
2	20	09 14	09 30	1.00	34 S	90 E			2	09 19	35	14266	...	
3	24	08 41	09 22	.79	31 S	50 E	08 44		1	08 44	51	14266	s	19, 20
4	27	13 30	15 05	.85	24 S	58 E			1	13 36	49	14267	c	22
5	Apr. 28	09 04	09 26	.74	18 S	47 E			1	09 08	51	14274	s	54, 55
6	Oct. 15	11 05	11 17	.78	21 N	51 E	11 12	320	3	11 16	*116*	14356	c	151
7	23	11 05	11 19	.40	27 N	8 W	11 12		1	11 12	48	14362	c	166
8	27	11 10	11 22	.86	29 N	56 W	11 12	200	2	11 11	100	14362	c	176
9	30	09 29	09 40	.71	18 N	45 W	09 33	20	1	09 33	65	14367	c	178
10	Nov. 24	11 12	11 30	.48	27 N	15 W	11 20	130	1	11 19	54	14383	c	191
11	Dec. 3	10 12	10 35	.28	15 S	5 W	10 18		1	10 16	48	14389	c	

NOTES

Year and Reference Number

1930. 1. This brilliant flare had already begun by $10^h\ 59^m$ when clouds broke, and it was still in progress at 12^h when clouds again intervened. A few flare-points were seen at 14^h. The tabulated position is that of the mean of two elongated patches about 7° apart in longitude, the leading one being near the following part of the associated sunspot. (*See Monthly Notices*, 90, 820, 1930.) This was the first "bright eruption" (solar flare) observed with the spectrohelioscope at Greenwich which was definitely recognized as such. The occurrence of earlier flares is suspected during observations on the following dates, to which a later observation on October 19 is added:

continued

OBSERVATIONS OF SOLAR FLARES MADE WITH THE SPECTROHELIOSCOPE IN THE YEARS 1930-1945

NOTES - *continued*

Year and Reference Number

1930. 1. *continued*

Date		U.T.	Position	
March	3	$15^h\ 45^m$	16°S	45°E
April	30	09 43	9 S	23 W
July	2	08 55	13 N	10 W
July	9	08 30	5 S	61 W
October	19	11 05	11 N	55 W

The second and fifth of these *Hα*-flocculi were noted as "brilliant".

6. For an account of this flare for which the associated dark *Hα* filaments were especially noteworthy see *Monthly Notices*, **91**, 239,1930.

1933. 2. The big group of sunspots in which this flare occurred was under almost continuous observation from $09^h\ 55^m$ to $12^h\ 00^m$.

5. During the eleven months between this flare and that on 1934 February 9 no flare was recorded at Greenwich during the total of 68 hours of observation made on, altogether, 113 days. The epoch of sunspot minimum (1933.8) occurred during this interval.

1934. 4., 5. Between these two flares, an interval of nearly six months, no others were recorded during the 106 hours of observation made on a total of 113 days.

1935. 3., 4., 5., 6. For some details of these four flares see *The Observatory*, **58**, 189, 1935.

6. This flare occurred in a region of faculæ but no sunspot was detected there.

17. Noted as intensely bright though not extensive.

1936. 8. This flare overlapped the penumbra of the sunspot and extended into its umbra.

10. A brilliant flare associated with a disturbance in the ionosphere; *see The Observatory*, **59**, 101, 1936, and *Journal B.A.A.* **46**, 196, 1936.

18. This brilliant flare, associated with a radio fade-out on short-wave communications from $11^h\ 30^m$ to $11^h\ 43^m$, was situated over part of the follower sunspot of Group 11921.

19. A small but brilliant flare.

34. A small but brilliant flare observed also in *Hβ; see The Observatory*, **59**, 295, 1936.

41. The following measurements of intensity, made by the two available methods show a maintenance of brightness for about 15 minutes. (c.f. No. 43).

U.T.	Int.	U.T.	Int.
$10^h\ 41^m$	78	$10^h\ 56^m$	*60*
10 42	76	11 00	*59*
10 44	76	11 02	*45*
10 46	78	11 04	*57*
10 47	81	11 06	*60*
10 48	76	11 10	*57*
10 51	*79*	11 26	*56*
10 52	*72*	11 30	*69*
10 54	*87*	11 35	70

Year and Reference Number

1936. 42. Two fairly large flare patches, seen also in *Hβ*. The beginning of this brilliant flare was observed at Zurich at $09^h\ 20^m$. A small geomagnetic "crochet" ($\Delta H = -10\gamma$) was recorded at Abinger from $09^h\ 24^m$ to $09^h\ 45^m$, with maximum at $0^h\ 30^m$. (*See* lists of "crochets" observed at Abinger, *M.N.R.A.S. Geophysical Supp.* **5**, 200, 1948).

43. The following series of intensity measures suggest that this short-lived flare might be of mag. 2.

U.T.	Int.
$14^h\ 10^m$	*97*
14 12	*131*
14 13	*109*
14 16	*47*
14 17	*45*

56. Flare already in progress at $11^h\ 46^m$; a new outbreak at $11^h\ 57^m$ and probably a further one about $12^h\ 08^m$ (cloud passing). See also *The Observatory*, **60**, 27, 1937.

1937. 7. A prominence jet seen beyond the Sun's limb appeared to proceed from this flare.

11. The flare had gone by $10^h\ 47^m$ when a cloud-break again permitted observation.

17. Three flare patches directly over the large sunspot. The magnitude is re-assessed as 3.

21. This extensive flare was seen also in *Hβ*.

35. Two flare filaments about 2′ in length.

49. An eruptive prominence 3′ in height suggestive of flare activity in Group 12423 which had passed out of sight at the west limb.

56. A pair of curved filaments. The order of size is indicated as 1000 millionths of the Sun's hemisphere but this may have been exaggerated by the drawing.

68. Dark *Hα* markings searched for but none found in connexion with this flare.

69. A geomagnetic "crochet" was recorded at Abinger beginning at $10^h\ 20^m$, reaching a maximum at $10^h\ 30^m$ ($\Delta H = -28\gamma$) and recovering to normal at $10^h\ 52^m$. A spectroheliogram of this intense flare taken at Meudon at $10^h\ 32^m$ shows an unresolved bright patch some 3,500 millionths in arc. The Greenwich drawings, showing three flare filaments (area 700 millionths) represent a later stage of the flare.

70. Dark *Hα* looked for but none found.

80. Observer's note: "Extensive but never brilliant."

82. At $12^h\ 31^m$, a small prominence jet appears where the flare patch had been.

1938. 1. An eruptive prominence arising from a bright patch within the limb; at $10^h\ 06^m$ a jet had risen to about 2′ in height.

4. First seen in *Hβ* at $11^h\ 25^m$; there were two flare patches and a filament. In *Hα* at $11^h\ 35^m$ only one flare patch was seen.

OBSERVATIONS OF SOLAR FLARES MADE WITH THE SPECTROHELIOSCOPE IN THE YEARS 1930-1945

NOTES - *continued*

Year and Reference Number

1938. 24. Eruptive prominence suggestive of flare occurrence.

26. A small eruptive prominence arising with its base within the Sun's west limb.

28. A geomagnetic "crochet" was recorded at Abinger with onset at $10^h\ 31^m$ and maximum at $10^h\ 40^m$ ($\Delta H = -19\gamma$). The visual intensity in *Hα* measured with respect to the continuum at the centre of the disk was 91%.

31. A small eruptive prominence.

37. Two successive flares, the second of much smaller extent, beginning at $10^h\ 54^m$, at a position *sf* spot *b*.

49. Observed also in *Hβ*.

55. An eruptive prominence observed in short breaks in cloud.

59. Observed through cloud. At $15^h\ 13^m$ the flare patch was quite extensive. At $15^h\ 34^m$ the patch was still longer but less bright. Dark *Hα* with radial velocity was seen but could not be measured.

69. Observer's note at $08^h\ 55^m$: "The flare has been appreciably brighter."

71. Extensive rather than bright.

73. A small but brilliant patch.

79. A small prominence projected beyond the limb when the wavelength was changed from that in which the small flare patch was seen.

80. An eruptive prominence arising from a bright patch near the limb.

81. Not extensive but brilliant.

86. An eruptive prominence 4′ in height. The intensity measured with respect to the continuum at the centre of the disk at $14^h\ 41^m$ = 61% (lamp photometer).

96. The dark marking No. 233 is wrongly assigned to Group 13024 on p. C 161 of the *Greenwich Photoheliographic Results*, 1938.

98. The flare patch projected just above the limb.

99. Flare patch near limb (seen also in *Hβ*) from which arose an eruptive prominence 1′ in height.

110. At the time of the flare, Group 13072 had passed round the west limb.

112. Fairly extensive but not brilliant.

113. Seen in *Hβ* at $10^h\ 38^m$.

1939. 2. A flare not far from the west limb. Allowing for foreshortening, the area is of the order of 1000 millionths.

6. An eruptive prominence arising from enhanced emission.

7. Group 13235 was not seen until the next day.

Year and Reference Number

1939. 11. Intensity measures of *Hα* emission were:

U.T.	Int.
$09^h\ 06^m$	*207*
09 12	*223*
09 13	*220*
09 19	*62*
09 25	*39*

17. The area of the brightest part of the flare measured at $10^h\ 26^m$ was 375 millionths of the Sun's hemisphere, the total area of the flare filaments and patches being 1100.

20. An eruptive prominence exceeding 3′ in height probably arising from a bright patch within the limb.

29. No sunspot could be found at the position of this flare which was associated with vigorous absorption markings, but according to Meudon Observatory there was a *plage faculaire*. The nearest spot group was 13321.

30. Three flare patches over the two sunspots.

33., 34. Fairly extensive but not very bright.

38. A geomagnetic "crochet" was recorded at Abinger with onset at $09^h\ 30^m$, maximum at $09^h\ 31^m$ ($\Delta H = -15\gamma$), end at $09^h\ 43^m$.

43. Extensive but not bright.

57. A geomagnetic "crochet" was recorded at Abinger with onset at $11^h\ 36^m$, maximum at $11^h\ 46^m$ ($\Delta H = -27\gamma$) and end at $12^h\ 00^m$.

62. A minor flare over one of the spot umbræ.

1940. 2. Eruptive prominence about 1½′ in height with its base on the disk.

4. A patch of enhanced *Hα* with temporary rise in brightness from $10^h\ 37^m$ to about $11^h\ 00^m$ and again from $13^h\ 18^m$.

5. Cloudy sky. No dark *Hα* observed at $11^h\ 34^m$, but cloud increasing. A geomagnetic "crochet" was recorded at Abinger: onset $11^h\ 07^m$: maximum $11^h\ 12^m$ ($\Delta H = -64\gamma$) and end at $12^h\ 20^m$ U.T.

7., 8. Extensive but not unusually bright. No eruptive dark *Hα* flocculi seen.

10. The eruptive dark markings (Nos.37 and 38) are wrongly ascribed to Group 13597 on p. C 111 of *Greenwich Photoheliographic Results*, 1940.

13. Many points of enhanced emission.

26. New enhancements at $09^h\ 41^m$ and $11^h\ 12^m$.

1941. 11. Two flare patches. Eruptive dark *Hα* filaments looked for but not seen. A geomagnetic "crochet" ($\Delta H = -29\gamma$) was recorded at Abinger with onset at $08^h\ 25^m$, maximum at $08^h\ 34^m$ and end at $08^h\ 42^m$ U.T. A 'great' geomagnetic storm followed on September 18 at 05^h.

OBSERVATIONS OF SOLAR FLARES MADE WITH THE SPECTROHELIOSCOPE IN THE YEARS 1930-1945

NOTES - *continued*

Year and Reference Number	
1942.	1. This observation was at the later stage of an intense flare that, from indications given by ionospheric data, commenced a few minutes before $12^h\ 00^m$ (*see The Observatory* 64, 260, 1942). A geomagnetic "crochet" began at Abinger at $12^h\ 01^m$, reached a maximum 6 minutes later ($\Delta H = -69\gamma$) and ended about $13^h\ 05^m$. A violent geomagnetic storm began 19½ hours after the maximum ultra-violet radiation effect at $12^h\ 07^m$ U.T. At maximum, the flare patch, extending over the sunspot, probably exceeded 2000 millionths of the Sun's hemisphere (*see The Observatory*, loc. cit.).
	3. The area listed was taken from a drawing made of the flare.
	13. No eruptive dark *Hα* seen at $09^h\ 39^m$.
	15. Some eruptive dark *Hα* that could not be measured owing to cloud that was present.
	16. Eruptive dark *Hα* appeared at $09^h\ 53^m$ giving a velocity of -14 km./sec. (omitted in list on p. C 65).
	18. Eruptive dark *Hα* looked for at $15^h\ 17^m$ but none visible.
1943.	3. Eruptive dark *Hα* looked for but none seen.
	5. An isolated observation. Probable end of flare.
1944.	3. The small number of flares observed during 1943 and 1944 is an index of solar minimum conditions (solar min. 1944.2). In 1943 the total number of hours of observation was 100 hours on 171 days; in 1944 the number was 82 hours on 148 days.
1945.	2. Associated with Group 14266, although the latter was not visible until the next day.

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