GREENWICH
PHOTO-HELIOGRAPHIC RESULTS
1947

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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

1947

UNDER THE DIRECTION OF

SIR HAROLD SPENCER JONES, Sc.D., F.R.S.

ASTRONOMER ROYAL

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INTRODUCTION

§1. *Positions and Areas of Sunspots and Faculæ for each Day in the Year* 1947.

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. K. Das. 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 364 days in 1947, those finally selected for measurement being supplied by the different observatories as under:

Greenwich	164
Cape	196
Kodaikanal	4
Total	364

For the one missing day, a copy of an original solar negative was kindly supplied by the Mount Wilson Observatory, California. The names of the measurers of the photographs for the year 1947 are as follows:

H. Barton
P. S. Laurie
N. Rhodes
R. W. Teague
Miss H. Howe

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, 1947.	Greenwich		Cape	
	Photographic	Visual	Photographic	Visual
	° ′	° ′	° ′	° ′
January	+1 18	+1 12	+0 08	+0 11
February	..	..	+0 21	+0 13
March	+1 11	..	+0 23	+0 12
April	+1 14	+1 17	+0 11	+0 10
May	+1 12	+1 17	+0 18	+0 14
June	+1 19	+1 20	+0 15	+0 12
July	+1 23	+1 26	+0 18	+0 14
August	+1 29	+1 26	+0 03	+0 12
September	+1 26	+1 32	+0 23	+0 14
October	..	+1 30	+0 15	+0 10
November	+1 30	+1 28	+0 02	+0 10
December	+1 32	+1 32	+0 16	+0 10

The zero-corrections used during the year 1947 in the reduction of the photographs taken at Greenwich were as follows:

	° ′
January 1 to June 30	+1 15
July 1 to September 30	+1 27
October 1 to December 31	+1 30

On 1947 June 30, the polar axis of the Greenwich photoheliograph was adjusted after a number of observations to determine the error had been made. A displacement of the base of the instrument was probably due to blast from a flying-bomb explosion near the Observatory on 1944 July 15. The differential effect on the zero of position angle is small over the time range for the majority of the Greenwich photographs, but a correction of +3′ to the adopted mean zero of +1° 15′ has been applied to the few photographs taken between 13^h and 16^h during the first half of 1947. This correction has also been applied in 1946 where necessary.

The zero-correction used in the reductions of the photographs taken at the Cape Observatory was +0° 12′.

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

The measures of the photographs were made with a large position-micrometer that 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 eyepiece, 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.

All photographs were measured independently for spot positions by two measurers, but usually only one measure of area was taken except in the case of large groups.

In 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 has 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 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 Sunspots 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:

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

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. 386 of the *Nautical Almanac* for 1947.

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 1947.0 to be 75°01′.2, and the period of the Sun's sidereal rotation to be 25.38 days; the meridian which passed through the ascending node of 1854 January 1, Greenwich mean noon, being taken as the zero meridian.

§2. *General Catalogue of Groups of Sunspots for* 1947.

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 1946, and previous years. The Mount Wilson spot-group numbers will be found in an adjacent column. 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 (or suspected 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* 1947.

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

$$\xi = 14°.37 - 2°.60 \sin^2\phi$$

where ϕ is the latitude of the Spot. *See Greenwich Photo-Heliographic Results*, 1924, §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 Faculae for each day, and Mean Areas and Mean Heliographic Latitude of Sunspots and Faculæ for each Rotation of the Sun, and for the year* 1947.

Particulars relating to this section are given in the headings on pages C 210 and 214-215.

§5. *Observations of Solar Flocculi and Solar Flares made with the Spectrohelioscope in the year* 1947.

This section contains (1) measures of radial velocity of dark hydrogen flocculi seen on the Sun's disk near sunspots and (2) observations of solar flares. 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, Mr. Laurie and Miss C. Chapman.

ROYAL OBSERVATORY, GREENWICH.

Positions and Areas of Sunspots and Faculæ

For each Day in the Year

1947

GREENWICH PHOTO-HELIOGRAPHIC RESULTS, 1947

POSITIONS AND AREAS OF SUNSPOTS AND FACULÆ FOR EACH DAY IN THE YEAR 1947.

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), Mount Wilson (Mt. 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 were 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		POSITION		AREA		
		Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ
1947			°	°	°			
0.476		.916	231.2					293
G		.786	256.4					149
		.778	304.2					133
	14765	.907	251.5	328.5	-18.1	15	61	384 *p*
	14764	.891	289.6	324.5	+15.8	61	349	217 *c*
	14767	.648	246.8	302.3	-17.2	3	14	
	1248b	.299	186.0	265.8	-20.4	2	17	
	14768	.336	8.6	260.9	+16.2	44	223	
	14770	.645	22.1	247.0	+33.6	56	346	
	14772	.993	111.6	180.2	-21.8	37	195	138 *p*
		.825	54.8					129
		.893	65.6					166
		.896	102.6					188
		.949	53.6					176
Jan.1			(+2.2)	(263.9)	(- 3.1)	(218)	(1205)	(1973)
1.474		.925	228.1					191
G		.884	297.3					389
		.871	252.7					360
	14765	.975	252.1	328.2	-18.2	0	20	215 *c*
	14764	.970	287.4	324.9	+16.0	65	372	300 *c*
	14768	.375	332.5	261.1	+16.2	37	196	
	14770	.598	5.1	247.2	+33.2	33	243	
	14772	.952	112.2	179.0	-22.1	60	330	340 *c*
		.858	106.3					94
		.870	64.3					141
		.872	98.5					105
		.877	73.7					173
		.926	49.3					193
		.959	101.9					195
		.967	61.9					216
Jan.2			(+1.7)	(250.8)	(- 3.2)	(195)	(1161)	(2912)
2.403		.974	258.6					273
G		.948	300.1					135
		.944	290.5					358
		.927	251.0					387
		.882	282.4					103
		.835	244.2					157
	14773	.794	293.0	287.9	+15.9	3	14	
1947			°	°	°			
	14774	.720	236.6	280.3	-25.7	5	22	
	14768	.494	310.4	261.5	+15.5	25	163	
	14770	.604	343.0	250.6	+31.9	24	197	
	14772	.876	114.0	178.8	-22.5	44	264	668 *f*
		.896	102.6					291
		.903	43.4					212
		.921	59.5					254
Jan.3			(+1.2)	(238.6)	(- 3.3)	(101)	(660)	(2838)
3.281		.966	290.7					190
C		.961	249.5					177
		.943	283.0					231
		.943	235.8					200
		.891	245.6					164
	14773	.877	291.4	285.4	+16.9	2	12	117 *c*
	14774	.808	240.6	278.0	-25.5	7	41	126 *c*
	14768	.635	299.6	261.8	+15.4	23	134	
	14770	.676	328.4	251.6	+31.9	31	158	
	14772	.771	116.7	179.0	-22.5	26	276	173 *f*
		.755	103.6					150
		.811	35.7					128
		.827	55.1					128
		.890	117.9					227
		.909	104.8					408
		.933	45.3					256
		.968	121.0					184
Jan.4			(+0.8)	(227.0)	(- 3.4)	(89)	(621)	(2859)
4.312		.965	250.7					117
C	14773	.959	287.3	284.9	+15.4	0	7	158 *c*
	14774	.922	243.9	279.5	-25.3	0	13	169 *c*
	14768	.787	292.5	262.1	+15.2	17	192	143 *n*
	14770	.780	317.1	252.1	+32.1	23	149	133 *c*
	14772	.627	122.9	178.8	-22.6	40	325	
	14775	.939	44.9	153.7	+39.9	22	125	212 *f*
		.769	124.7					126
		.821	112.9					208
		.884	74.0					132
		.906	123.7					255
Jan.5			(+0.3)	(213.4)	(- 3.5)	(102)	(811)	(1653)

Group 14772. Jan. 1 - 12. Return of Group 14755. A small regular spot with a double umbra. By January 5, it begins to divide into two, the following part dying out first. There are one or two small companions immediately s on January 7 and 8.

Group 14773. Jan. 3 - 5. A small spot.

Group 14774. Jan. 3 - 6. One or two tiny spots.

Group 14775. Jan. 5 - 9. A small high-latitude spot, becoming a pair on January 6 and 7.

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
1947			°	°	°				1947			°	°	°			
5.288		.942	301.2					128		14779	.981	66.7	98.1	+22.0	93	572	324 *c*
C		.932	250.2					199			.827	32.5					161
		.862	256.4					147			.827	103.4					155
		.794	301.6					120			.945	89.3					258
		.785	327.3					146	Jan.8			(-1.1)	(174.2)	(- 3.9)	(331)	(2383)	(3667)
	14774	.975	245.6	278.0	-24.6	0	4	199 *c*									
	14768	.894	289.8	261.4	+15.9	13	122	216 *c*									
	14770	.884	309.8	253.9	+32.3	8	84	416 *f*	8.449		.960	247.4					285
	14772	.482	133.6	178.5	-22.6	38	244		G		.954	309.5					177
	1248c	.551	139.4	176.8	-27.9	1	6				.926	284.0					141
	14775	.901	41.1	149.6	+40.5	15	86	349 *c*		14772	.446	224.0	178.4	-22.4	27	130	
	14776	.982	109.8	121.2	-20.1	10	65	280 *c*		14778	.250	247.8	172.4	- 9.3	2	16	
	14777	.993	94.9	117.3	- 5.3	49	391	238 *c*		14775	.692	11.6	148.7	+38.5	0	6	
		.835	124.0					168		14777	.677	93.4	116.3	- 5.2	110	481	
Jan.6			(-0.2)	(200.6)	(- 3.6)	(134)	(1002)	(2606)		14776	.736	114.6	113.4	-20.6	90	782	188 *c*
										14779	.917	63.8	96.5	+22.0	120	825	364 *c*
										14780	.994	76.9	76.5	+12.5	0	40	
6.305		.919	237.7					236			.865	88.5					182
C		.874	298.5					159			.868	101.5					227
		.860	321.7					137			.928	114.8					173
		.797	238.9					281	Jan.9			(-1.7)	(158.9)	(- 4.0)	(349)	(2280)	(1737)
	1248d	.973	257.0	264.1	-13.5	9	26	124 *c*									
	14768	.971	286.5	261.5	+15.0	20	137	316 *n*									
	14770	.928	306.5	248.3	+31.7	38	228	564	9.283		.951	288.5					216
	14772	.363	155.9	178.0	-22.9	46	257		C		.923	237.9					209
	14775	.836	34.7	148.6	+40.4	5	49	344 *c*			.894	298.5					196
	14777	.944	94.3	116.4	- 5.3	106	493	693 *s*			.888	309.3					158
	14776	.947	110.5	116.2	-20.5	63	611	459 *c*			.855	282.5					170
Jan.7			(-0.7)	(187.2)	(- 3.7)	(287)	(1801)	(3313)			.825	319.9					128
											.756	291.9					126
										14772	.570	235.1	178.3	-22.5	18	109	
7.287		.936	319.7					132		14777	.524	93.7	116.4	- 5.5	80	464	
C		.935	293.3					246		14776	.640	117.5	110.9	-20.4	107	765	
		.900	244.1					308		14781	.646	101.1	108.1	-10.3	26	150	
		.853	231.3					95		14779	.839	60.3	96.4	+22.0	104	711	612 *c*
		.830	300.1					152		14780	.966	75.7	74.6	+12.7	23	99	282 *c*
		.790	288.9					155		14782	.970	113.3	71.8	-23.6	8	24	125 *c*
	14770	.974	304.1	245.8	+31.9	48	342	531 *f*			.792	101.9					256
	14772	.332	191.3	178.2	-22.8	26	176				.844	40.0					106
	14778	.104	148.9	171.1	- 9.0	0	3				.845	116.5					154
	14775	.751	24.0	150.9	+39.6	3	13	142 *c*			.871	108.1					109
	14777	.844	93.8	116.7	- 5.3	81	482	328 *f*			.924	47.5					214
	14776	.860	111.8	115.8	-20.7	73	767	265 *c*			.974	56.3					145
	1248e	.953	98.1	101.7	- 8.9	7	28	415 *c*	Jan.10			(-2.1)	(148.0)	(- 4.1)	(366)	(2322)	(3206)

Group 14776. Jan. 6 - 18. A long stream consisting of three composite spots. The leader breaks up into a cluster and dies out by January 16. The following spot slowly diminishing disappears on the same day. The surviving central spot is slowly dying out as it passes round the limb.

Group 14777. Jan. 6 - 18. Return of Group 14750. A stable regular spot.

Group 14778. Jan. 8 - 9. A tiny spot.

Group 14779. Jan. 8 - 20. A slowly diminishing regular spot followed by some changing companions.

Group 14780. Jan. 9 - 20. Revival near Group 14754. A small stable regular spot with a following companion on January 19.

Group 14781. Jan. 10 - 19. A stream suddenly appearing closely *sf* Group 14777. The leader soon becomes regular while the follower remains composite.

Group 14782. Jan. 10 - 21. A small slowly diminishing regular spot followed by a distant companion except on January 12 - 16.

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
1947			°	°	°				1947			°	°	°			
10.289		.947	280.0					128		14779	.487	19.6	96.6	+22.9	72	453	
C		.939	292.5					300		14780	.580	60.7	75.7	+12.7	21	127	
		.910	309.1					223		14782	.595	127.8	75.7	-25.1	16	92	
		.866	298.4					134		14783	.860	74.0	49.5	+11.4	76	501	483 *f*
		.860	282.6					117		14784	.981	104.7	27.5	-15.2	77	756	346 *c*
		.842	319.6					105			.849	59.4					133
		.837	257.6					312	Jan.13			(-3.6)	(106.8)	(- 4.4)	(505)	(3430)	(2422)
		.797	305.8					136									
	14772	.720	242.6	178.2	-22.3	22	115										
	14777	.315	94.4	116.4	- 5.4	88	470										
	14776	.478	126.1	110.5	-20.1	92	653		13.424		.961	257.6					258
	14781	.446	104.5	108.8	-10.2	44	329		C		.909	244.4					532
	14779	.723	53.0	96.2	+22.4	115	641	344 *c*			.864	322.5					330
	14780	.884	73.3	74.7	+12.7	18	132	545 *f*			.802	233.7					164
	14782	.883	114.6	73.7	-23.6	11	84	158 *f*		14777	.392	268.1	116.4	- 4.9	91	436	
		.864	42.4					148		14776	.422	229.9	113.4	-19.9	55	380	
		.931	55.0					224		14781	.274	245.1	108.0	-10.9	72	571	
Jan.11			(-2.6)	(134.7)	(- 4.2)	(390)	(2424)	(2874)		14779	.465	354.8	96.0	+23.0	72	389	
										14782	.446	142.7	76.1	-25.0	21	70	
										14780	.414	45.4	75.9	+12.6	17	112	
11.428		.959	259.7					205		14783	.731	68.7	49.4	+12.1	79	478	
G		.955	284.3					222		14785	.737	103.2	46.2	-12.7	3	18	
		.929	313.2					180		14784	.905	104.5	28.5	-15.0	112	692	361 *c*
		.926	295.9					176			.837	65.5					284
		.869	256.3					216			.845	76.9					106
	14772	.862	246.7	178.2	-22.1	9	47	236 *s*			.936	60.1					132
	14777	.062	105.6	116.3	- 5.3	80	434				.940	71.5					287
	14776	.307	153.0	111.2	-20.1	66	526		Jan.14			(-4.1)	(93.4)	(- 4.5)	(522)	(3146)	(2454)
	14781	.213	117.0	108.6	- 9.7	70	600										
	14779	.581	39.7	96.1	+22.5	73	484										
	14782	.737	120.3	75.1	-25.4	14	115	118 *f*	14.289		.956	245.5					472
	14780	.740	68.5	75.0	+12.7	18	112	156 *f*	C		.922	317.9					399
	14783	.953	76.1	49.0	+11.8	85	535	247 *c*			.892	236.7					206
		.925	63.5					162		14777	.573	267.9	116.9	- 5.0	85	437	
		.931	105.3					151		14776	.570	241.8	114.1	-19.4	51	293	
Jan.12			(-3.1)	(119.7)	(- 4.3)	(415)	(2853)	(2069)		14781	.437	254.7	107.3	-10.7	93	748	
										14779	.501	334.1	95.6	+22.1	58	369	
										14786	.260	240.5	95.3	-11.8	3	19	
12.408		.956	294.4					227		14782	.366	165.3	76.1	-25.2	9	26	
G		.946	244.1					412		14780	.309	20.7	75.6	+12.2	19	123	
		.923	256.5					335		14787	.227	120.9	70.6	-11.2	8	25	
		.844	244.6					283		14788	.534	38.5	61.3	+20.3	7	51	
		.811	331.4					203		14783	.593	62.9	49.5	+11.7	71	402	
	14777	.171	264.9	116.6	- 5.2	100	431			14785	.579	105.8	47.3	-12.9	0	2	
	14776	.278	194.2	110.9	-19.9	54	414			14784	.801	105.7	29.2	-15.2	120	646	308 *c*
	14781	.108	189.6	107.8	-10.5	89	656			14789	.866	111.8	22.7	-21.1	8	46	144 *c*

Group 14783. Jan. 12 - 23. Return of Group 14757: third appearance. A slowly diminishing regular spot.
Group 14784. Jan. 13 - 25. A stream in which both leader and follower become regular spots. After January 17, the small spots in between have gone.
Group 14785. Jan. 14 - 15. A tiny spot.
Group 14786. Jan. 15 - 16. Another tiny spot.
Group 14787. Jan. 15 - 21. A few variable spots in the form of a stream.
Group 14788. Jan. 15 - 16. One or two small spots.
Group 14789. Jan. 15 - 22. A stream of small changing spots immediately s Group 14784.

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
1947			°	°	°				1947			°	°	°			
	14790	.964	101.7	7.0	-12.5	68	797	319 *c*		14784	.459	115.2	28.6	-15.5	83	605	
	14791	.994	63.3	1.5	+25.9	26	176	180 *p*		14789	.525	122.1	25.8	-20.4	14	84	
		.754	61.9					111		14790	.723	102.9	8.0	-12.6	84	607	135 *f*
		.848	64.5					244		14791	.874	56.8	359.9	+25.8	53	261	328 *f*
		.925	71.6					283		14792	.880	72.1	354.9	+13.2	53	276	312 *f*
		.947	111.8					249		14793	.966	120.1	338.8	-30.3	25	103	321 *c*
Jan.15			(-4.5)	(82.0)	(- 4.6)	(626)	(4160)	(2915)		14794	.995	124.5	327.8	-34.8	0	62	197 *c*
											.822	117.7					218
											.933	96.9					142
15.393		.957	239.6					252			.952	107.1					238
G		.950	313.6					303	Jan.17			(-5.5)	(54.0)	(- 4.8)	(735)	(4363)	(4038)
		.849	248.6					256									
	14777	.756	267.3	116.6	- 5.1	91	404										
	14776	.731	246.2	112.8	-20.4	18	126	170 *c*	17.460		.937	300.8					300
	14781	.646	257.5	107.4	-11.7	143	849		G		.931	309.4					235
	14786	.494	253.8	96.4	-12.0	0	7				.885	245.6					268
	14779	.609	315.9	94.5	+21.7	55	316				.883	318.5					161
	14782	.379	200.8	76.0	-25.3	5	28				.874	274.1					221
	14780	.318	334.1	75.6	+11.9	14	68				.831	267.1					139
	14787	.187	217.6	74.2	-13.2	17	66			14777	.975	266.2	117.5	- 4.8	102	442	406 *f*
	14788	.421	11.9	62.2	+19.6	7	42			14776	.959	250.4	114.3	-20.2	7	64	569 *c*
	14783	.411	47.6	49.5	+11.5	73	336			14781	.935	260.2	109.8	-10.9	87	598	859 *c*
	14784	.632	108.6	29.3	-15.3	95	608			14779	.873	300.5	95.2	+23.5	38	191	726 *c*
	14789	.697	114.6	25.2	-20.3	12	45			*1248f*	.814	239.2	92.2	-27.6	11	59	181 *c*
	14790	.869	101.7	7.1	-12.5	113	703	313 *c*		14787	.597	254.0	76.3	-13.4	40	235	
	14791	.947	60.7	1.3	+25.7	26	245	355 *c*		14780	.633	295.8	75.8	+11.9	17	69	
	14792	.961	74.5	355.5	+13.5	23	147	181 *c*		14782	.614	233.0	73.2	-25.8	6	27	
		.869	115.5					174		14783	.319	331.0	49.3	+11.3	81	373	
		.962	116.5					149		14784	.269	135.4	29.0	-15.8	93	550	
Jan.16			(-5.0)	(67.5)	(- 4.7)	(692)	(3990)	(2153)		14789	.339	141.6	27.4	-20.1	11	57	
										14790	.544	106.2	8.0	-12.9	92	621	
										14791	.773	50.4	359.0	+25.8	48	220	212 *f*
16.416		.902	312.6					170		14792	.753	67.9	354.7	+13.0	49	268	274 *f*
G		.894	297.9					173		14795	.884	62.1	343.3	+21.8	10	39	283 *c*
		.782	275.1					147		14793	.894	121.6	338.7	-30.3	32	115	260 *c*
	14777	.888	267.1	116.6	- 4.8	103	369	315 *c*		14794	.961	124.6	326.7	-34.5	16	131	320 *p*
	14776	.857	249.3	112.4	-20.1	21	123	564 *c*		14796	.992	73.0	319.5	+16.1	15	50	209 *p*
	14781	.811	259.6	108.2	-11.2	113	941	592 *c*			.766	125.8					92
	14779	.755	306.8	95.0	+23.2	56	237	186 *c*			.857	112.4					183
	14787	.397	246.8	75.9	-13.4	38	213				.908	49.4					179
	14780	.462	308.5	75.6	+12.2	20	77				.918	106.2					218
	14782	.471	220.3	73.6	-25.5	11	43				.945	69.8					269
	14783	.294	15.9	49.3	+11.6	61	362		Jan.18			(-6.0)	(40.3)	(- 4.9)	(755)	(4109)	(6564)

Group 14790. Jan. 15 - 26. A stream consisting of numerous small spots. The leading portion coalesces into a regular spot by January 22 while the following spots undergo slight change and slowly fade out.

Group 14791. Jan. 15 - 26. Return of Group 14763. A regular spot shrinking rapidly after January 22.

Group 14792. Jan. 16 - 27. A regular spot. On January 25, its umbra becomes elongated, and by the next day the whole spot has split latitudinally into two.

Group 14793. Jan. 17 - 23. A short stream of small variable spots; only one remains on January 23.

Group 14794. Jan. 17 - 24. A small regular spot, slowly dying out.

Group 14795. Jan. 18 - 28. A long stream of variable spots with a considerable spread in latitude. By January 22, the leader has become the most stable member.

Group 14796. Jan. 18 - 21. Return of Group 14764. Probably the end of a regular spot.

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
1947			°	°	°				1947			°	°	°			
18.315		.965	270.6					282		14790	.135	172.3	12.7	-12.8	109	537	
C		.947	252.2					545		14797	.213	115.2	2.6	-10.2	8	53	
		.907	261.0					184		14791	.568	24.5	358.7	+26.1	41	211	
		.906	243.8					280		14792	.444	45.9	354.8	+13.1	44	273	
		.895	313.7					166		14795	.646	45.4	344.0	+22.5	66	266	
		.861	306.2					168		14793	.676	130.3	337.4	-30.0	20	69	
	14781	.974	259.8	106.4	-11.1	4	46	312 *c*		14794	.806	130.2	325.4	-34.8	14	89	177 *c*
	14779	.940	297.0	94.5	+23.2	30	157	581 *c*		14796	.852	67.6	319.0	+16.0	4	16	226 *c*
	14787	.743	256.2	76.7	-13.6	42	279				.824	105.5					180
	14780	.750	291.2	74.5	+12.2	6	50	141 *c*			.858	57.6					184
	14782	.739	239.9	73.8	-25.3	4	16				.910	127.1					206
	14783	.438	309.0	49.2	+11.2	65	352				.935	65.3					585
	14789	.248	184.5	30.2	-19.2	11	46				.950	112.3					239
	14784	.194	176.0	28.2	-16.1	62	456		Jan.20			(-6.9)	(13.8)	(- 5.1)	(549)	(2747)	(5355)
	14790	.358	115.0	9.6	-13.4	110	679										
	14791	.677	42.0	358.9	+25.8	34	218										
	14792	.622	61.9	354.9	+12.9	43	261										
	14795	.768	58.5	344.9	+20.0	20	161	322 *c*	20.439		.959	277.9					94
	14793	.806	124.2	338.8	-30.1	21	102	123 *c*	G		.957	267.9					139
	14794	.903	126.4	327.0	-34.8	12	86	188 *c*			.956	303.3					249
		.817	110.4					161			.935	288.5					557
		.871	116.5					152			.885	297.5					190
		.927	68.4					577		14787	.977	258.2	79.3	-12.7	16	109	542 *c*
		.938	105.8					202		14782	.953	245.1	73.7	-25.3	0	15	423 *c*
Jan.19			(-6.4)	(29.0)	(- 5.0)	(464)	(2909)	(4384)		14783	.778	288.9	49.4	+11.1	38	340	172 *f*
										14789	.526	239.7	29.8	-19.9	12	60	
										14784	.487	245.3	28.3	-16.3	57	328	
19.471		.986	257.5					441		14790	.243	237.2	13.0	-12.6	66	427	
G		.972	249.0					190		14797	.105	198.1	2.9	-10.9	2	10	
		.970	310.5					240		14791	.521	4.7	358.3	+26.0	34	190	
		.969	243.1					300		14792	.329	18.5	354.9	+12.9	39	211	
		.966	300.2					238		14798	.350	43.9	346.8	+ 9.5	2	14	
		.894	307.1					155		14795	.524	30.4	344.5	+21.8	37	235	
		.797	290.7					248		14793	.563	140.5	336.6	-30.4	9	36	
	14779	.994	294.1	94.4	+23.2	26	154	770 *c*		14794	.704	136.5	324.9	-34.9	12	66	149 *f*
	1248g	.895	249.8	77.1	-20.3	4	10	132 *c*		14796	.733	61.8	318.8	+16.4	3	7	79 *f*
	14787	.889	257.9	76.7	-13.1	41	180	356 *c*		14799	.965	67.7	289.5	+19.9	38	124	442 *c*
	14780	.893	286.5	74.8	+12.2	4	14	190 *c*			.824	112.9					168
	14782	.874	244.3	73.8	-24.9	4	9	298 *c*			.853	61.8					525
	14783	.634	295.1	49.5	+11.4	70	387				.925	134.9					164
	14789	.360	226.2	29.7	-19.3	32	108				.959	111.8					188
	14784	.302	232.4	28.1	-15.5	62	371		Jan.21			(-7.3)	(1.0)	(- 5.2)	(365)	(2172)	(4081)

Group 14797. Jan. 20 - 23. A few small spots in a stream.
Group 14798. Jan. 21 - 27. One or two small spots not seen on January 25 and 26.
Group 14799. Jan. 21 - 26. A small cluster of variable spots.

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
1947			°	°	°			
21.415		.985	244.0					319
G		.965	285.6					367
		.952	294.6					251
		.887	314.8					116
		.851	295.2					299
	14783	.896	285.1	49.8	+11.0	44	323	278 *c*
	14789	.685	247.1	30.0	-19.3	6	20	
	14784	.654	251.2	28.2	-16.2	63	363	
	14790	.446	252.2	13.9	-12.6	62	436	
	14797	.261	243.5	1.9	-11.8	1	14	
	14791	.543	343.4	358.1	+26.0	23	166	
	14792	.334	339.6	355.0	+12.9	43	235	
	14798	.247	5.5	346.8	+ 8.9	4	35	
	14795	.433	4.2	346.3	+20.2	50	220	
	14793	.454	157.9	336.9	-29.9	7	23	
	14800	.385	122.4	328.4	-16.8	7	30	
	14794	.593	147.9	325.7	-35.0	10	54	
	1249a	.552	43.8	324.5	+18.5	2	8	
	14799	.889	64.6	289.9	+19.6	22	89	198 *c*
	14801	.947	64.6	281.1	+21.9	17	72	423 *c*
		.880	113.3					176
		.949	74.6					96
		.972	54.2					226
Jan.22			(-7.8)	(348.2)	(- 5.3)	(361)	(2088)	(2749)
22.425		.970	251.4					263
G		.934	290.2					420
		.889	255.2					234
		.878	297.0					181
		.877	281.2					111
		.811	246.6					203
	14783	.973	282.5	49.9	+10.8	47	328	341 *c*
	14784	.796	253.3	27.3	-16.4	64	329	123 *c*
	14790	.635	257.2	14.1	-12.2	51	386	
	14797	.445	257.2	1.0	-10.4	1	23	
	14791	.625	325.9	357.8	+26.2	17	81	
	14792	.460	312.9	355.1	+13.2	45	232	
	14798	.342	316.2	348.7	+ 9.1	8	28	
	14795	.464	331.1	348.5	+18.7	69	320	
	14793	.421	184.9	337.3	-30.0	2	16	
	14800	.211	152.1	329.0	-16.0	17	75	
	14794	.523	161.2	323.1	-34.8	5	18	
	14799	.781	59.1	289.6	+19.9	12	66	139 *c*
	14802	.754	112.9	287.2	-20.6	20	125	169 *c*
	14801	.860	61.1	281.1	+21.5	17	80	358 *f*

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1947			°	°	°			
		.904	48.6					176
		.926	111.2					241
		.949	69.3					273
Jan.23			(-8.2)	(334.9)	(- 5.3)	(375)	(2107)	(3232)
23.462		.960	285.5					229
G		.893	292.9					154
		.855	245.8					161
	14784	.917	254.5	28.1	-16.4	48	389	418 *c*
	14790	.788	258.5	13.5	-12.4	76	431	153 *c*
	14791	.735	313.8	357.4	+26.2	11	71	90 *c*
	14792	.621	299.3	354.9	+13.1	44	224	
	14795	.611	308.6	351.2	+17.7	87	387	
	14798	.506	298.5	347.9	+ 9.1	8	38	
	14803	.460	199.0	331.3	-31.0	1	15	
	14800	.221	216.4	329.1	-15.5	64	295	
	14794	.501	181.9	322.5	-35.4	1	3	
	14799	.642	50.6	289.7	+19.4	8	24	
	14802	.597	117.4	287.0	-20.4	99	578	
	14801	.742	54.8	280.9	+21.2	16	92	105 *f*
		.832	63.1					97
		.848	43.5					138
		.910	64.7					231
Jan.24			(-8.7)	(321.3)	(- 5.4)	(463)	(2547)	(1776)
24.511		.950	292.1					171
G		.853	243.4					154
	14784	.982	254.4	27.4	-16.4	67	346	305 *c*
	1249b	.961	250.2	22.0	-20.5	0	11	304 *c*
	14790	.912	259.1	13.5	-12.2	50	349	374 *c*
	14791	.845	305.8	356.9	+26.0	4	30	192 *c*
	14792	.773	292.2	354.6	+13.2	37	239	202 *p*
	14795	.756	298.2	351.3	+16.9	76	497	
	14803	.560	217.6	330.9	-31.3	1	14	
	14800	.398	241.6	328.7	-16.0	69	442	
	14799	.508	36.0	289.1	+18.9	3	15	
	14802	.419	129.1	287.2	-20.4	101	919	
	14801	.593	46.2	280.6	+19.3	11	60	
		.835	60.6					117
		.939	117.2					295
		.949	51.8					407
		.949	62.3					204
		.954	72.5					141
Jan.25			(-9.2)	(307.4)	(- 5.5)	(419)	(2922)	(2866)

Group 14800. Jan. 22 - 29. A stream developing rapidly from a few small spots first seen on January 22. The leader becomes a regular spot and is the most stable component.

Group 14801. Jan. 22 - 27. A few small spots of which only one remains by January 28.

Group 14802. Jan.23-Feb.2. A bi-polar group growing quickly from a few small spots on January 23. The leader is the most stable component.

Group 14803. Jan. 24 - 28. A single small spot on January 24 - 25; a pair on January 28.

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
1947			°	°	°				1947			°	°	°			
25.313		.927	246.1					193			.886	292.8					201
C		.832	312.2					112			.865	234.3					414
		.805	282.6					114			.809	297.8					178
	14790	.977	259.1	15.2	-11.8	54	284	404 *c*		14795	.983	289.1	347.6	+17.5	87	681	568 *f*
	14791	.916	301.5	356.9	+25.8	5	18	209 *c*		14800	.855	254.6	329.7	-16.1	71	361	190 *c*
	14792	.867	288.7	354.2	+13.1	38	245	260 *c*		14802	.371	225.0	287.1	-20.6	111	768	
	14795	.845	294.2	350.3	+17.0	112	806			14804	.738	72.0	225.8	+ 9.1	5	17	
	14800	.555	249.2	329.4	-16.0	64	464				.837	40.1					162
	14803	.650	224.5	329.4	-32.3	4	27				.931	44.2					140
	14799	.443	16.3	289.4	+19.4	1	10				.955	121.1					208
	14802	.297	149.1	287.6	-20.2	111	838		Jan.28			(-10.4)	(270.9)	(- 5.7)	(274)	(1827)	(2928)
	14801	.506	32.6	280.1	+19.8	3	24										
		.877	117.1					162									
		.880	58.4					120									
		.909	46.9					299	28.426		.938	291.3					340
		.933	71.4					158	G		.925	233.5					365
		.942	107.0					138			.857	250.3					145
		.967	52.1					162			.857	239.9					83
Jan.26			(-9.5)	(296.9)	(- 5.6)	(392)	(2716)	(2331)			.857	298.1					249
											.846	225.6					80
										14800	.956	255.1	329.5	-15.9	41	296	383 *c*
										14802	.559	241.7	287.4	-20.3	86	606	
26.606		.962	257.3					274		*1249c*	.638	23.8	238.7	+30.1	1	6	
G		.943	237.7					160		14804	.513	62.9	228.5	+ 8.3	0	3	
		.938	302.9					249		14805	.962	100.8	181.2	-11.9	19	118	264 *c*
		.852	247.8					113			.875	125.0					167
		.793	296.7					178			.960	112.1					151
	14792	.972	284.9	354.2	+12.9	23	171	581 *c*	Jan.29			(-10.9)	(255.9)	(- 5.8)	(147)	(1029)	(2227)
	14795	.953	290.0	349.2	+17.0	105	893										
	14798	.950	280.8	350.3	+ 8.4	6	32	237 *c*									
	14800	.756	253.2	328.7	-16.4	62	526	132 *c*									
	14802	.281	204.3	287.0	-20.4	129	900		29.463		.963	252.2					397
	14801	.434	0.6	279.6	+19.9	1	5		G		.956	241.6					237
	14804	.826	74.9	226.3	+ 9.1	2	10	72 *f*			.954	232.1					426
		.823	38.4					143			.952	293.8					630
		.892	46.7					143			.880	304.3					191
		.970	48.0					131		14802	.718	247.6	287.0	-20.1	82	556	117 *c*
Jan.27			(-10.1)	(279.9)	(- 5.7)	(328)	(2537)	(2413)		14804	.391	40.3	227.3	+11.5	18	58	
										14805	.872	100.5	181.2	-12.1	18	102	252 *c*
										14806	.962	105.3	167.3	-16.3	108	627	691 *c*
											.878	112.4					249
27.290		.977	280.6					216			.920	63.6					164
C		.971	302.2					256			.935	51.9					181
		.970	239.8					210			.959	121.0					378
		.921	249.1					185	Jan.30			(-11.3)	(242.2)	(- 5.9)	(226)	(1343)	(3913)

Group 14804. Jan. 27 - 31. One or two small variable spots.
Group 14805. Jan.29 - Feb.2. A stream of small spots of which only the leader remains on February 2.
Group 14806. Jan.30-Feb.11. A big composite spot with several variable companions that have died out by February 10.

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
1947			°	°	°				1947			°	°	°			
30.505		.969	297.9					195	33.291		.861	315.6					287
G		.907	285.9					153	C	14807	.843	259.0	249.5	-12.6	30	238	272 *c*
		.866	299.6					301		14806	.414	114.0	168.8	-15.3	143	935	
	14802	.851	250.1	286.7	-20.0	53	646	244 *c*		14808	.629	107.7	153.4	-15.8	60	373	
	14804	.308	359.7	228.6	+11.8	2	22			14809	.955	92.4	119.0	- 4.1	38	211	348 *f*
	14805	.725	101.1	182.0	-12.1	12	80				.887	99.3					291
	14806	.869	104.7	167.9	-15.7	152	1122	451 *c*			.907	109.1					210
		.805	116.7					164			.967	103.3					181
		.874	122.5					100			.969	113.4					271
		.939	48.5					94	Feb.3			(-12.9)	(191.8)	(- 6.2)	(271)	(1757)	(1860)
		.943	117.1					289									
Jan.31			(-11.7)	(228.5)	(- 6.0)	(219)	(1870)	(1991)									
									34.300		.925	309.1					299
									C		.858	247.5					203
31.480		.949	295.1					314			.841	292.9					212
G		.944	226.5					189		14807	.958	260.3	252.5	-11.0	30	239	204 *c*
		.927	311.6					149		14810	.385	204.6	188.9	-26.6	10	70	
		.826	297.2					181		14806	.234	133.7	168.5	-15.4	177	1055	
	14802	.940	250.9	286.4	-20.0	69	534	450 *c*		*1249d*	.659	19.7	163.4	+32.3	4	20	
	14807	.563	257.4	249.7	-12.1	2	8			14811	.509	141.5	157.4	-29.1	0	12	
	14805	.529	102.7	184.0	-11.8	12	59			14808	.456	113.7	152.9	-16.1	62	508	
	14806	.739	105.7	168.3	-15.7	184	1207	234 *c*		14809	.854	91.3	119.9	- 4.4	73	328	259 *f*
	14808	.898	105.0	151.4	-16.1	2	19	99 *c*			.818	108.9					252
		.733	120.4					76			.906	101.0					269
		.800	127.1					248			.926	114.9					356
		.875	120.1					268			.966	108.7					317
		.914	114.3					206	Feb.4			(-13.3)	(178.6)	(- 6.2)	(356)	(2232)	(2371)
Feb.1			(-12.1)	(215.7)	(- 6.1)	(269)	(1827)	(2414)									
									35.293		.972	306.1					305
32.308		.915	293.9					193	C		.957	297.9					231
C		.768	322.9					229			.924	312.2					228
	14802	.983	250.7	285.5	-20.1	54	342	462 *c*			.921	288.5					253
	14807	.701	258.5	249.3	-12.4	10	97				.908	246.7					321
	14805	.265	106.6	189.9	-10.2	2	9				.866	323.3					135
	14806	.602	108.1	168.5	-15.7	155	1154			14807	.995	257.7	250.6	-12.8	0	38	279 *c*
	14808	.795	105.7	152.2	-16.1	17	113	102 *c*		14810	.518	224.5	189.5	-27.4	14	63	
		.759	123.7					175		14806	.170	194.7	168.1	-15.7	145	874	
		.915	120.9					205		14811	.413	160.4	156.4	-29.0	0	2	
		.963	100.9					229		14808	.262	132.5	153.9	-16.3	94	376	
		.978	86.1					197		14809	.722	90.1	119.3	- 4.4	47	295	134 *f*
Feb.2			(-12.5)	(204.8)	(- 6.1)	(238)	(1715)	(1792)		14812	.921	55.9	105.9	+28.0	8	24	226 *c*

Group 14807. Feb. 1 - 5. A stream developing. Only a few days' growth of this group, west of the central meridian, is visible.

Group 14808. Feb. 1 - 12. A stream of normal type growing rapidly from tiny spots on February 1. The leader remains a regular spot, the follower being composite.

Group 14809. Feb. 3 - 15. Return of Group 14777: third appearance. A stable equatorial spot.

Group 14810. Feb. 4 - 8. A small stream; only one spot remains after February 8.

Group 14811. Feb. 4 - 5. A small spot.

Group 14812. Feb. 5 - 6. A small 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
1947			°	°	°			
	14813	.958	112.3	91.3	-23.1	10	43	306 *c*
		.828	32.7					65
		.845	115.8					292
		.857	104.1					321
		.916	91.5					103
		.941	41.3					137
		.963	65.5					287
		.988	94.6					198
		.988	106.7					362
Feb.5			(-13.7)	(165.5)	(- 6.3)	(318)	(1715)	(4183)
36.292 C		.960	305.9					239
		.949	242.6					429
		.941	295.3					245
		.916	321.8					207
		.840	305.0					193
	14810	.661	234.2	189.5	-27.8	9	76	
	14806	.304	237.7	167.7	-15.5	139	873	
	14808	.174	189.7	154.0	-16.3	78	477	
	14809	.540	87.9	119.7	- 4.2	53	286	
	14812	.838	50.6	105.4	+27.8	7	29	200 *f*
	14814	.780	116.1	102.3	-24.2	5	23	116 *c*
	14813	.912	111.3	86.1	-22.0	45	266	416 *c*
		.908	60.7					347
		.924	102.1					244
		.939	93.1					484
		.958	68.9					325
Feb.6			(-14.1)	(152.3)	(- 6.4)	(336)	(2030)	(3445)
37.302 C		.898	297.3					237
	14810	.819	239.6	192.2	-28.4	5	35	138 *c*
	14806	.501	250.2	168.1	-15.4	101	668	
	14808	.289	232.3	152.7	-16.4	79	586	
	14809	.332	85.2	119.7	- 4.5	39	285	
	14814	.669	118.4	99.3	-23.5	5	32	
	14813	.798	111.8	86.6	-21.2	86	747	227 *c*
1947			°	°	°			
	14815	.926	90.2	71.3	- 2.6	3	20	203 *np*
		.797	91.2					121
		.861	101.8					174
		.875	122.9					216
		.879	69.7					240
		.909	58.8					212
Feb.7			(-14.4)	(139.0)	(- 6.4)	(318)	(2373)	(1768)
38.294 C		.875	258.3					216
	14810	.915	241.6	192.1	-28.6	2	5	180 *f*
	14806	.666	254.2	167.5	-15.4	105	623	
	14808	.480	247.2	153.4	-16.4	96	473	
	14809	.110	71.2	120.0	- 4.5	60	294	
	14816	.311	136.0	112.8	-19.2	4	14	
	14814	.513	126.8	99.5	-23.6	5	29	
	14813	.670	114.2	85.3	-20.9	242	1856	128 *f*
	14815	.773	88.7	75.5	- 3.2	8	74	168 *c*
	14817	.950	103.0	53.4	-14.4	0	6	17 *c*
	14818	.967	77.4	52.6	+10.4	41	166	358 *c*
		.809	104.4					134
Feb.8			(-14.8)	(126.0)	(- 6.5)	(563)	(3540)	(1354)
39.308 C		.942	257.6					340
		.908	244.8					248
	14806	.824	255.6	168.3	-15.5	120	558	151 *c*
	14808	.639	251.4	151.7	-16.8	63	513	
	14809	.131	285.2	119.9	- 4.5	44	255	
	14816	.235	172.6	110.8	-19.9	5	56	
	14814	.355	143.7	99.5	-22.9	4	14	
	14813	.501	122.1	85.7	-21.2	340	2235	
	14819	.578	74.0	78.9	+ 3.7	8	66	
	14815	.623	87.0	74.2	- 3.3	19	162	
	14818	.888	75.2	52.2	+10.0	39	202	194 *c*
		.955	106.6					174
		.958	64.2					162
Feb.9			(-15.2)	(112.6)	(- 6.5)	(642)	(4061)	(1269)

Group 14813. Feb. 5 - 18. The origin of a great complex group - a single spot on February 5; on the next day other spots appear and grow rapidly, and by February 8 the leading three have coalesced into a large composite structure which undergoes continual change during further growth; after February 10, however, it remains fairly stable almost to the west limb. The rear component of the group remains a stable regular spot throughout.

Group 14814. Feb. 6 - 12. One or two small spots.

Group 14815. Feb. 7 - 14. A single small spot near the equator on February 7; on the next day other spots appear in a long stream, but this dies out before reaching the limb.

Group 14816. Feb. 8 - 12. A pair of small spots; one component remains on February 12.

Group 14817. Feb. 8 - 11. A dot seen only on February 8 and 11.

Group 14818. Feb. 8 - 20. Return of Group 14783: fourth appearance. A small regular spot slowly diminishing.

Group 14819. Feb. 9 - 14. A stream of small changing 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
1947			°	°	°				1947			°	°	°			
40.296		.930	244.6					312	42.294		.973	243.2					337
C		.821	235.3					146	C		.868	235.9					136
	14806	.924	256.3	167.8	-15.1	70	486	322 *c*			.849	259.8					257
	14808	.817	255.4	154.6	-15.7	28	334	139 *c*			.785	247.7					109
	14809	.348	275.0	119.9	- 4.5	64	260			14808	.984	255.2	154.0	-15.7	26	130	334 *c*
	14816	.288	217.4	110.3	-19.6	6	49			14809	.725	270.3	119.7	- 4.4	47	248	
	14814	.300	183.8	100.8	-24.0	6	28			14816	.608	245.3	109.2	-20.1	1	8	
	14813	.330	137.8	86.0	-20.5	427	2944			14814	.522	233.4	100.5	-24.1	2	12	
	14819	.398	63.4	78.8	+ 4.0	18	100			14821	.447	329.4	86.9	+16.1	3	13	
	14815	.430	83.4	74.4	- 3.2	8	136			14813	.301	219.9	85.1	-19.8	365	2763	
	14818	.771	70.9	52.0	+10.1	33	128	97 *c*		14819	.207	331.2	79.0	+ 3.7	25	160	
	14820	.966	99.2	23.9	-10.5	15	152	271 *f*		14815	.071	318.7	76.0	- 3.6	18	58	
		.854	102.0					160		14818	.448	52.9	52.2	+ 9.4	15	91	
		.880	61.6					164		14823	.780	64.5	26.7	+15.1	2	18	59 *c*
		.932	72.9					143		14820	.746	99.3	24.8	-11.4	16	98	168 *f*
		.955	109.0					314		14822	.913	106.9	6.8	-18.1	46	233	374 *c*
Feb.10			(-15.6)	(99.6)	(- 6.6)	(675)	(4617)	(2068)		14824	.975	71.1	359.1	+16.7	4	42	155 *c*
											.760	112.6					113
											.884	56.1					167
41.289		.929	243.4					324			.894	96.9					198
C		.858	323.5					85			.949	115.8					116
		.804	246.7					102	Feb.12			(-16.3)	(73.3)	(- 6.7)	(570)	(3874)	(2523)
		.753	259.1					112									
	14806	.983	255.5	167.0	-15.4	35	258	484 *c*									
	14808	.922	255.6	154.4	-15.8	25	173	241 *c*									
	14809	.549	272.3	119.7	- 4.4	46	260		43.296		.952	239.0					169
	14816	.453	237.7	110.5	-20.1	4	26		C		.940	260.4					335
	14814	.356	215.6	99.5	-23.3	2	11				.888	324.6					147
	14813	.232	178.0	86.0	-20.1	336	2783				.854	251.4					598
	14821	.371	4.1	84.9	+15.0	4	24			14809	.860	268.7	119.5	- 4.6	41	248	185 *c*
	14819	.225	35.5	79.0	+ 3.8	17	82			14821	.579	310.5	88.2	+16.0	2	6	
	14815	.184	72.9	76.4	- 3.6	6	37			14813	.465	238.8	85.0	-20.1	417	2795	
	14818	.600	64.5	53.4	+ 9.3	18	81			14819	.381	297.2	79.9	+ 3.6	11	53	
	14817	.562	104.5	52.6	-13.7	0	5			14815	.295	278.0	77.1	- 4.1	7	43	
	14820	.877	99.1	24.8	-11.1	24	104	140 *f*		14818	.308	26.5	52.1	+ 9.1	21	103	
	14822	.972	105.9	8.9	-17.0	4	27	307 *f*		14825	.552	58.0	31.7	+11.0	1	13	
		.790	59.1					178		14820	.582	100.4	24.5	-11.5	16	123	
		.858	107.5					289		14822	.783	107.3	8.6	-17.8	74	442	207 *c*
		.934	67.5					188		14824	.910	68.0	358.5	+16.7	12	50	575 *c*
		.964	97.2					174			.932	55.8					158
Feb.11			(-15.9)	(86.5)	(- 6.7)	(521)	(3871)	(2624)	Feb.13			(-16.6)	(60.1)	(- 6.8)	(602)	(3876)	(2374)

Group 14820. Feb. 10 - 21. A small decreasing regular spot with a drift in latitude.
Group 14821. Feb. 11 - 13. A pair of small spots on February 11; a single spot on February 12 - 13.
Group 14822. Feb. 11 - 23. A pair of regular spots when first seen fully in view at the east limb. From February 13, unstable spots appear, and finally merge with the original pair, which thus become composite spots. By February 20 the following spot begins to break up rapidly and disappears before reaching the limb.
Group 14823. Feb. 12 - 21. An unstable group coming into brief prominence on February 19.
Group 14824. Feb. 12 - 19. Return of Group 14792. A wide pair of small spots of which one component is alone visible on February 12 and 18.
Group 14825. Feb. 13 - 15. A short stream of small spots.

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
1947			°	°	°			
44.292		.948	276.5					146
C		.942	259.2					370
		.919	248.4					741
		.873	239.0					129
		.855	309.3					131
		.834	300.2					170
		.825	258.4					222
	14809	.954	267.6	119.6	- 4.4	44	297	245 *f*
	14813	.640	244.7	85.2	-21.2	490	2930	466 *c*
	14815	.573	272.0	81.9	- 4.4	13	45	
	14819	.583	284.8	81.2	+ 2.9	5	22	
	14818	.290	341.8	52.2	+ 9.1	24	99	
	14825	.392	40.8	32.0	+10.6	10	47	
	14820	.383	104.4	24.8	-11.7	18	103	
	14823	.561	46.2	22.1	+16.6	4	17	
	14822	.617	109.1	9.6	-17.0	82	398	
	14824	.793	63.2	359.6	+16.4	28	84	103 *c*
	14826	.913	64.2	346.0	+20.2	0	13 }	425 *c*
	14827	.951	66.9	339.1	+19.4	3	21 }	
		.834	72.3					132
		.855	52.5					262
		.962	56.2					189
		.965	105.7					474
Feb.14			(-17.0)	(47.0)	(- 6.8)	(721)	(4076)	(4205)
45.292		.965	248.4					308
C		.942	238.7					154
		.927	257.4					305
		.913	298.5					280
	14809	.994	266.5	117.8	- 4.2	18	193	120 *f*
	14813	.780	249.1	85.1	-21.6	463	2938	465 *c*
	14828	.788	306.5	77.1	+23.0	5	29	117 *c*
	14818	.412	310.9	52.1	+ 9.1	16	85	
	1249e	.487	352.6	37.7	+22.0	2	11	
	14825	.299	0.1	33.7	+10.5	15	66	
	14823	.422	20.5	25.0	+16.5	6	32	
	14820	.177	121.8	25.0	-12.1	21	91	
	14822	.435	115.9	9.7	-17.2	64	558	
	14824	.659	55.3	359.6	+16.4	11	77	
	14826	.822	60.1	344.6	+19.8	3	23 }	137 *c*
	14827	.868	62.9	338.9	+19.4	2	15 }	
		.882	53.7					309
		.905	104.2					390
		.940	121.4					183

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbrae	AREA Whole Spots	AREA Faculae
1947			°	°	°			
		.957	65.7					286
		.959	50.7					202
Feb.15			(-17.3)	(33.8)	(- 6.8)	(626)	(4118)	(3256)
46.312		.941	265.2					184
C		.897	289.9					199
		.874	276.9					182
		.842	269.3					184
		.826	233.4					139
	14813	.879	248.9	84.1	-21.4	238	2765	718 *c*
	14828	.895	300.0	77.5	+22.9	0	16	183 *c*
	14829	.638	255.3	59.9	-14.7	30	143	
	14818	.582	296.1	52.2	+ 8.9	10	85	
	14820	.129	221.5	25.4	-12.4	14	104	
	14823	.412	349.9	24.7	+16.9	5	26	
	14822	.256	134.3	9.4	-17.0	94	690	
	14824	.499	39.3	1.3	+16.1	5	37	
	14826	.699	53.0	344.3	+19.3	3	15 }	47 *c*
	14827	.746	57.6	339.0	+18.4	3	14 }	
		.769	107.8					197
		.837	48.1					210
		.849	62.5					336
		.890	123.3					275
		.917	109.3					130
		.964	64.7					252
Feb.16			(-17.7)	(20.4)	(- 6.9)	(402)	(3895)	(3236)
47.289		.951	298.7					174
C		.951	275.4					202
		.924	268.2					258
		.916	259.7					116
		.906	238.0					123
	14813	.968	249.8	84.2	-21.2	325	2635	944 *c*
	1249f	.970	284.9	81.1	+12.5	13	104	245 *c*
	14829	.790	257.1	59.9	-14.4	32	166	121 *c*
	14818	.740	289.2	52.4	+ 9.2	14	82	
	14820	.320	251.0	25.5	-12.5	19	89	
	14823	.501	324.6	25.1	+17.5	18	69	
	14830	.310	235.0	22.8	-16.9	14	84	
	14822	.185	187.2	8.9	-17.4	108	733	
	14824	.410	17.2	0.3	+16.1	5	30	
	14826	.573	41.0	344.1	+19.2	2	10	

Group 14826. Feb. 14 - 17. Return of Group 14795. A small spot.
Group 14827. Feb. 14 - 16. A small spot.
Group 14828. Feb. 15 - 16. A pair of small spots.
Group 14829. Feb. 16 - 18. A small pair; one spot remains on February 18.
Group 14830. Feb. 17 - 21. A stream of small changing spots.

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
1947			°	°	°			
	14831	.954	107.0	293.9	-18.2	34	160	369 *c*
		.784	57.2					126
		.817	128.4					298
		.922	63.5					183
Feb.17			(-18.0)	(7.5)	(- 6.9)	(584)	(4162)	(3159)
48.292 C	14813	.803	301.5					157
		.974	248.0	72.8	-23.0	41	556	418 *c*
	14829	.903	257.9	59.5	-13.9	2	12	212 *c*
	14818	.864	284.7	51.9	+ 8.9	6	34	155 *c*
	14820	.516	256.9	25.2	-12.8	14	77	
	14823	.621	309.9	24.1	+17.3	14	79	
	14830	.508	247.7	23.6	-17.2	5	35	
	14822	.296	231.2	8.2	-17.4	101	888	
	14824	.412	352.7	357.4	+17.0	1	8	
	14831	.864	107.5	294.1	-18.6	19	119	360 *c*
	14832	.979	65.9	280.2	+21.8	10	51	197 *c*
		.742	131.7					78
		.829	57.8					187
Feb.18			(-18.3)	(354.3)	(- 7.0)	(213)	(1859)	(1764)
49.373 C		.979	256.9					125
		.906	297.9					270
		.906	248.1					136
		.879	290.7					218
		.872	257.9					255
	14818	.959	281.4	51.9	+ 8.8	17	84	228 *c*
	14820	.708	258.7	25.3	-12.9	13	89	
	14823	.772	298.9	24.9	+16.9	25	229	166 *c*
	14830	.682	251.8	20.4	-17.5	21	99	
	14833	.590	300.5	11.2	+11.4	1	9	
	14822	.506	246.3	9.1	-17.8	135	716	
	14824	.491	325.1	357.1	+17.0	2	15	
	14831	.715	108.5	294.8	-18.0	49	324	194 *f*
	14832	.918	63.9	278.6	+20.5	13	183	377 *c*
	14834	.967	98.3	264.2	- 9.8	8	69	358 *c*

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbrae	AREA Whole Spots	AREA Faculae
1947			°	°	°			
		.866	112.3					187
Feb.19			(-18.7)	(340.1)	(- 7.0)	(284)	(1817)	(2514)
50.293 C		.975	262.2					139
		.966	293.4					279
		.939	252.6					242
		.928	285.2					181
	14818	.995	279.4	51.4	+ 8.6	0	43	
	14820	.845	259.2	26.1	-12.9	9	92	93 *c*
	14830	.834	254.2	24.8	-17.0	13	86	150 *c*
	14823	.867	294.6	23.4	+17.2	26	95	197 *c*
	14835	.858	303.6	19.3	+24.0	4	20	81 *c*
	14833	.727	292.4	11.0	+11.0	3	26	46 *c*
	14822	.669	251.3	9.5	-17.6	79	611	
	14831	.549	111.6	295.8	-17.6	50	361	
	14832	.826	58.7	279.1	+20.9	17	119	202 *c*
	14834	.932	98.8	258.6	-10.7	23	147	510 *c*
		.772	112.0					197
		.876	134.1					97
Feb.20			(-19.0)	(328.0)	(- 7.0)	(224)	(1600)	(2414)
51.288 C		.978	281.1					125
		.920	246.1					173
		.884	266.2					89
		.798	292.1					123
	14830	.937	254.5	25.4	-17.0	15	143	206 *c*
	14820	.938	258.7	25.4	-13.0	9	54	83 *f*
	14823	.945	291.9	21.9	+17.9	9	45	287 *c*
	14835	.942	299.7	19.1	+24.8	0	6	173 *c*
	14833	.882	286.7	14.1	+11.1	2	12	55 *c*
	14822	.820	253.1	10.2	-17.9	72	602	175 *c*
	14831	.374	120.7	295.3	-17.7	53	589	
	14832	.701	50.8	279.6	+20.5	19	109	127 *f*
	14834	.833	98.7	258.0	-11.2	31	209	465 *c*
	14836	.946	60.1	250.1	+25.2	0	12	176 *f*
Feb.21			(-19.3)	(314.9)	(- 7.1)	(210)	(1781)	(2257)

Group 14831. Feb.17-Mar.1. Return of Group 14802. Numerous spots in a long stream. By February 23 the leading part begins to condense into a composite spot which continues to grow. Meanwhile the following spots are in slow decline.

Group 14832. Feb. 18 - 28. A pair of smallish spots; the leading spot remains after February 20.

Group 14833. Feb. 19 - 22. A single spot on February 19 and 21; a pair on the other days.

Group 14834. Feb.19-Mar.3. Return of Group 14807. A long stream of small changing spots. After February 28, only two or three dying spots remain.

Group 14835. Feb. 20 - 21. A pair of spots on February 20; a single spot on February 21.

Group 14836. Feb. 21 - 28. A few variable 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
1947			°	°	°				1947			°	°	°			
52.295		.976	297.0					166			.931	240.2					281
C		.972	246.4					111			.931	296.8					532
		.940	260.9					229			.889	311.2					378
		.889	291.0					228			.841	246.8					121
		.877	306.4					174			.827	258.4					154
		.850	297.8					198			.783	300.9					158
		.783	310.4					236		14831	.417	243.0	296.9	-17.4	110	765	
	14833	.960	284.4	13.1	+11.7	4	42	225 *c*		14832	.463	350.4	278.8	+19.9	10	37	
	14822	.929	254.0	10.8	-17.5	39	285	464 *c*		14839	.510	182.2	275.5	-37.6	4	14	
	14831	.205	150.8	295.6	-17.3	53	527			14834	.264	109.4	259.4	-11.9	55	357	
	14832	.582	38.4	279.0	+20.5	13	98			14836	.673	37.8	247.0	+25.7	10	54	
	14834	.679	99.2	258.6	-11.4	34	265	95 *f*		14837	.769	43.2	237.5	+28.4	2	7	186 *c*
	14836	.886	56.4	247.0	+25.3	15	82	262 *f*		14838	.847	63.4	221.5	+18.0	29	175	173 *c*
	1250a	.976	99.5	223.4	-10.8	4	25	109 *c*		14840	.984	100.0	193.5	-11.1	0	19	285 *c*
		.831	106.2					85			.897	44.0					295
		.927	114.4					111			.907	55.8					155
		.934	69.2					146			.921	74.8					152
Feb.22			(-19.6)	(301.6)	(- 7.1)	(162)	(1324)	(2839)			.937	108.2					185
											.966	64.9					125
									Feb.24			(-20.2)	(274.1)	(- 7.1)	(220)	(1428)	(3642)
53.448		.968	284.9					192									
G		.957	304.3					167									
		.951	294.2					384									
		.940	242.1					110	55.408		.980	291.5					322
		.881	288.6					103	G		.935	300.0					138
		.861	300.5					406			.931	257.7					251
		.845	314.0					263			.922	247.6					113
	14822	.997	253.6	13.4	-16.8	43	348	579 *c*			.842	303.5					151
	14831	.243	224.3	296.6	-17.0	131	837				.834	229.8					207
	14832	.475	15.0	278.9	+20.1	16	76			14831	.617	251.4	298.2	-17.1	132	877	
	14834	.461	102.3	259.1	-11.9	73	338			14832	.536	326.9	278.7	+19.8	4	14	
	14836	.777	48.9	246.2	+25.3	18	73	121 *c*		14839	.555	201.3	275.4	-38.0	27	147	
	14837	.864	52.8	236.0	+27.0	0	4	87 *c*		14841	.357	2.0	259.9	+13.6	4	13	
	14848	.936	68.1	220.9	+17.6	18	64	154 *c*		14834	.087	159.3	258.8	-11.8	45	273	
		.866	97.5					151		14836	.575	21.6	247.1	+25.1	5	23	
		.902	59.2					87		14838	.727	53.9	222.1	+19.8	32	127	116 *c*
		.952	50.1					264		14840	.906	99.1	195.0	-11.3	2	11	238 *c*
Feb.23			(-19.9)	(286.4)	(- 7.1)	(299)	(1740)	(3068)		14842	.974	94.5	183.3	- 6.0	24	100	126 *c*
										1250b	.981	115.7	179.7	-26.6	0	23	
											.866	42.3					195
54.383		.960	286.0					174			.905	59.7					139
G		.941	253.9					288	Feb.25			(-20.5)	(260.6)	(- 7.2)	(275)	(1608)	(1996)

Group 14837. Feb. 23 - 24. A tiny spot.

Group 14838. Feb.23-Mar.6. A cluster of small spots when first seen, expanding steadily into a large stream formation by February 27. The leading portion consists of a regular spot with an appendage which, on March 2, begins to break up and has gone by March 4. The rear of the group, which as a whole spreads 7° in latitude, remains complex.

Group 14839. Feb. 24 - 28. A string of small spots appearing near the C.M. in high southern latitude.

Group 14840. Feb.24-Mar.9. A tiny spot until March 1 when a burst of activity produces in a few days a stream consisting of two fair-sized composite spots. The following one is breaking up as it passes round the limb.

Group 14841. Feb.25-Mar.2. A stream of small spots developing from a cluster of dots first seen on the central meridian.

Group 14842. Feb.25-Mar.9. A regular spot followed by a distant companion until March 1.

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
1947			°	°	°			
56.464		.971	297.0					269
G		.912	232.8					265
		.844	302.6					112
	14831	.782	253.6	298.3	-17.2	131	1100	180 *c*
	14832	.662	311.6	278.3	+19.9	5	17	
	14839	.640	214.8	274.2	-38.1	27	139	
	14843	.505	322.2	265.5	+16.6	19	92	
	14841	.428	326.8	260.6	+13.9	21	139	
	14834	.237	250.8	259.8	-11.5	43	312	
	14836	.532	357.8	248.0	+24.8	2	12	
	1250c	.435	29.7	233.9	+15.1	5	25	
	14844	.638	22.4	230.6	+29.1	1	5	
	14838	.593	39.4	223.1	+20.6	51	315	
	14840	.764	99.2	196.5	-11.7	5	25	107 *f*
	14842	.908	94.4	181.2	- 7.0	36	183	181 *c*
	14845	.976	104.4	168.1	-15.6	50	306	243 *c*
		.895	104.2					110
		.957	113.2					241
Feb.26			(-20.8)	(246.7)	(- 7.2)	(396)	(2670)	(1708)
57.614		.949	297.9					155
G		.931	235.3					355
		.792	301.7					116
	14831	.913	254.4	298.2	-17.2	131	1385	554 *c*
	14839	.746	224.3	272.6	-37.3	8	43	205 *c*
	14843	.690	302.1	268.8	+15.8	26	117	
	14841	.616	304.2	263.1	+14.1	12	72	
	14834	.507	261.9	262.0	-10.3	36	202	
	14846	.621	321.6	256.1	+22.5	14	95	
	14844	.581	1.3	230.6	+28.2	5	27	
	14838	.481	15.8	223.5	+20.3	136	748	
	14840	.573	100.7	196.5	-12.0	8	21	
	14847	.682	99.5	188.3	-11.7	5	22	
	14842	.768	93.0	181.1	- 6.9	39	195	198 *c*
	14845	.887	103.7	168.4	-15.4	71	321	105 *c*
	14848	.916	99.3	164.5	-11.4	34	208	148 *c*
		.919	110.9					304
Feb.27			(-21.1)	(231.5)	(- 7.2)	(525)	(3456)	(2140)
58.295		.964	294.4					157
C		.959	237.5					277

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbrae	AREA Whole Spots	AREA Faculae
1947			°	°	°			
		.873	296.2					141
	14831	.963	254.0	298.2	-17.3	114	1140	538 *c*
	14843	.792	295.8	270.1	+15.3	16	116	95 *c*
	14841	.717	299.5	262.8	+15.1	7	39	
	14839	.794	226.4	269.5	-38.3	2	11	196 *c*
	14834	.630	261.2	261.8	-11.1	26	137	
	14846	.699	311.6	256.5	+21.1	4	33	
	14838	.471	358.7	223.3	+20.7	113	950	
	14840	.443	101.6	196.4	-11.5	4	25	
	14847	.563	99.4	188.3	-11.2	4	17	
	14842	.658	92.2	181.3	- 6.9	19	148	69 *p*
	14845	.807	103.8	168.5	-15.3	66	324	134 *c*
	14848	.840	98.6	165.0	-11.1	39	226	193 *c*
		.837	113.0					126
		.938	121.2					243
		.940	106.4					200
		.953	66.3					121
Feb.28			(-21.2)	(222.6)	(- 7.2)	(414)	(3166)	(2490)
59.388		.944	301.8					132
G		.911	231.3					289
		.898	246.5					247
	14831	.986	252.7	290.2	-18.2	10	81	493 *c*
	1250d	.982	283.5	285.2	+11.7	18	47	124 *c*
	14843	.922	290.3	271.8	+15.5	17	95	219 *c*
	14841	.862	293.5	263.3	+16.0	0	4	
	14834	.821	262.1	263.8	-10.6	26	77	160 *c*
	14846	.836	302.1	257.7	+21.8	4	18	144 *c*
	14838	.521	333.3	222.6	+20.7	151	1051	
	14840	.231	110.2	195.5	-11.6	12	40	
	14842	.438	91.3	182.1	- 7.1	33	157	
	14845	.643	105.5	168.4	-15.4	60	262	
	14848	.686	98.5	164.6	-11.0	41	262	81 *c*
		.877	105.9					146
		.915	118.1					323
		.936	97.1					260
		.952	171.6					14
		.952	168.2					11
		.974	107.5					215
Mar.1			(-21.5)	(208.2)	(- 7.2)	(372)	(2094)	(2858)

Group 14843. Feb.26-Mar. 2. A small regular spot forming in front of Group 14841 and moving forwards 7½° in five days.
Group 14844. Feb. 26 - 27. A tiny spot on February 26; a pair on February 27.
Group 14845. Feb.26-Mar.10. Return of Group 14806. A stable regular spot.
Group 14846. Feb.27-Mar. 2. A cluster of small spots on February 27 of which only one remains by March 1.
Group 14847. Feb. 27 - 28. A small ephemeral spot.
Group 14848. Feb.27-Mar. 8. A regular spot followed by small companions after March 1. From this date, the parent spot begins to divide into two small spots which drift apart as the whole group dies out.

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
1947			°	°	°			
60.449		.953	231.4					179
G		.834	309.6					217
		.815	253.1					160
	14843	.989	287.3	273.0	+15.8	13	115	159 *c*
	14841	.940	288.3	261.1	+14.4	3	13	
	14834	.941	261.9	265.0	-10.0	9	49	413 *c*
	14846	.928	296.2	257.1	+21.0	0	5	248 *c*
	14838	.638	316.8	222.0	+21.3	169	1053	
	14840	.078	175.8	193.9	-11.7	19	120	
	14842	.181	91.6	183.7	- 7.4	31	144	
	14845	.450	110.2	168.3	-15.4	58	286	
	14848	.491	99.1	164.8	-10.7	60	272	
	14849	.957	92.3	121.0	- 4.3	37	187	333 *c*
		.833	105.5					197
		.953	115.6					179
		.957	104.8					279
Mar.2			(-21.8)	(194.2)	(- 7.2)	(399)	(2244)	(2364)
61.456		.981	295.5					222
G		.917	303.2					299
		.833	320.8					167
	14834	.989	259.4	263.3	-11.5	7	30	415 *c*
	14838	.758	307.1	221.3	+21.7	103	935	171 *c*
	14840	.220	248.2	192.9	-11.7	27	230	
	14842	.037	259.3	183.0	- 7.6	23	140	
	14845	.271	121.9	167.2	-15.3	50	242	
	14848	.289	102.5	164.3	-10.5	27	137	
	14849	.873	90.8	120.1	- 4.2	24	161	199 *c*
	14850	.954	107.5	107.3	-18.8	11	46	251 *c*
	14851	.995	113.8	94.4	-24.3	34	168	500 *c*
		.820	126.9					114
		.863	102.3					161
		.896	113.0					184
Mar.3			(-22.0)	(180.9)	(- 7.2)	(306)	(2089)	(2683)

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbrae	AREA Whole Spots	AREA Faculae
1947			°	°	°			
62.295		.958	302.3					237
C		.946	288.9					193
		.875	315.0					328
	14838	.857	301.4	221.9	+22.1	112	998	367 *c*
	14840	.399	258.8	193.3	-11.1	78	479	
	14852	.463	328.2	184.6	+16.1	3	19	
	14842	.233	268.4	183.4	- 7.4	13	123	
	14853	.376	208.1	181.3	-26.4	11	38	
	14845	.147	166.8	167.9	-15.4	60	263	
	14848	.095	129.7	165.7	-10.7	23	135	
	14854	.303	90.6	152.2	- 7.0	2	10	
	14849	.754	89.2	121.0	- 4.2	42	161	165 *f*
	14850	.868	107.6	108.7	-18.7	29	176	168 *c*
	14851	.969	110.8	92.7	-21.9	208	1972	922 *c*
	14855	.992	77.1	89.0	+11.8	15	160	141 *p*
		.803	117.3					141
		.921	97.6					296
Mar.4			(-22.2)	(169.9)	(- 7.2)	(596)	(4534)	(2958)
63.297		.950	310.2					234
C		.903	241.5					390
	14838	.934	297.0	220.3	+22.0	124	790	763 *c*
	14840	.586	260.7	192.7	-11.3	146	707	
	14852	.583	308.9	184.6	+15.1	12	45	
	14842	.450	268.3	183.5	- 7.2	26	140	
	14853	.478	225.9	179.1	-26.0	4	22	
	14848	.201	255.2	168.0	-10.0	18	93	
	14845	.232	231.6	167.5	-15.3	50	239	
	14854	.088	93.5	151.6	- 7.5	4	21	
	14849	.587	87.3	120.8	- 4.3	35	221	
	14850	.760	108.5	107.3	-18.7	48	257	196 *nf*
	14851	.893	111.9	93.0	-22.8	281	2579	975 *c*
	14855	.963	74.2	84.9	+13.1	161	1576	563 *c*
	14856	.955	102.1	83.1	-13.7	32	232	457 *c*

Group 14849. Mar. 2 - 14. Return of Group 14809: fourth appearance. A stable regular spot with a slight drift from the equator.

Group 14850. Mar. 3 - 15. A stream of small spots. The rear part increases and after March 10 tends to consolidate into a composite spot, while the preceding part of the group dies out.

Group 14851. Mar. 3 - 17. Return of Group 14813. A great complex group: at first a large composite spot, the principal nucleus of which is roughly circular. By March 7, the whole has become a massive elongated formation consisting of two large composite spots linked together by a penumbral structure. From March 7 to 12, there is little change in general appearance, but on March 13 a division between the two parts becomes more pronounced. The leading section appears to be decreasing as it approaches the west limb.

Group 14852. Mar. 4 - 8. A small stream with a brief maximum on March 6.

Group 14853. Mar. 4 - 9. A few small spots, not seen on March 8.

Group 14854. Mar. 4 - 7. A tiny spot, except on March 5 when there is a pair.

Group 14855. Mar. 4 - 16. A large complex group; two composite spots of which the leader is the larger. The group begins to break up on March 7. The separate pieces spread out in longitude, forming a large stream with a regular spot as leader. Meanwhile the second composite spot is disintegrating.

Group 14856. Mar. 5 - 15. A small regular spot with a few companions. By March 13 it begins to break up and quickly dies out.

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
1947			°	°	°				1947			°	°	°			
		.901	91.8					315		14842	.918	264.9	184.2	- 7.5	21	119	218 *f*
		.904	126.4					172		14848	.773	262.9	168.2	-10.1	3	11	81 *c*
		.926	62.5					194		14845	.760	255.7	166.8	-15.5	47	236	
Mar.5			(-22.5)	(156.7)	(- 7.2)	(941)	(6922)	(4259)		14849	.074	302.1	120.8	- 4.9	26	170	
										14850	.273	137.3	106.0	-18.6	55	263	
										14851	.478	126.4	92.6	-23.0	643	3615	
64.309		.983	306.4					226		14855	.607	56.6	86.0	+13.3	189	1409	
C		.933	235.1					189		14856	.570	104.5	82.7	-14.1	29	162	
		.909	252.5					151		14857	.862	98.0	57.2	-10.5	25	131	177 *c*
		.891	287.3					116		14858	.896	102.6	52.9	-14.5	24	131	582 *f*
		.869	267.3					106			.806	117.0					302
	14838	.988	293.5	220.6	+21.8	118	1157	578 *c*			.905	128.9					197
	14840	.768	261.5	193.9	-11.1	120	937	221 *p*			.907	73.3					150
	14852	.732	299.5	184.7	+15.7	28	233				.914	82.7					104
	14842	.647	267.1	183.9	- 7.4	21	143				.921	63.4					161
	14853	.616	235.9	177.9	-26.1	8	44				.962	77.3					95
	14845	.421	248.5	167.3	-15.4	49	253		Mar.8			(-23.1)	(117.2)	(- 7.2)	(1153)	(7015)	(3743)
	14848	.375	258.9	165.3	-10.8	8	45										
	14854	.122	263.4	150.4	- 7.9	1	10										
	14849	.385	84.5	120.9	- 4.6	29	180		67.309		.923	261.1					275
	14850	.610	111.9	106.8	-19.0	49	315		C	14840	.995	258.3	189.2	-12.3	10	29	347 *c*
	14851	.777	112.9	93.0	-22.2	368	2544	429 *f*		14842	.987	263.9	185.0	- 7.2	27	161	247 *f*
	1250e	.845	91.1	85.7	- 4.8	0	7	84 *c*		14853	.950	247.5	176.8	-23.6	9	60	347 *c*
	14855	.878	70.9	85.3	+12.9	116	1373	318 *c*		14845	.889	255.9	167.2	-15.8	39	226	232 *c*
	14856	.863	101.9	83.2	-13.9	19	137	333 *f*		14849	.289	276.0	120.5	- 5.2	36	161	
		.865	59.0					116		14850	.196	189.1	105.7	-18.3	33	195	
		.950	113.1					604		14851	.333	146.5	92.3	-23.1	704	3886	
Mar.6			(-22.7)	(143.4)	(- 7.2)	(934)	(7378)	(3471)		14855	.465	39.9	86.0	+14.0	221	1554	
										14856	.383	109.5	82.1	-14.0	25	230	
										14857	.722	97.3	57.3	-10.3	18	83	95 *c*
65.413	14840	.900	261.1	193.5	-11.1	120	762	359 *c*		14858	.776	102.7	52.6	-14.4	24	118	161 *c*
G	14852	.864	293.5	184.2	+16.1	23	146	98 *c*			.890	107.7					174
	14842	.809	266.1	183.1	- 7.4	20	123				.935	62.7					178
	14853	.772	241.3	177.8	-26.6	5	19				.964	104.3					314
	14848	.637	262.9	168.6	-10.1	5	23		Mar.9			(-23.3)	(103.8)	(- 7.2)	(1146)	(6703)	(2370)
	14845	.622	254.1	167.0	-15.4	47	226										
	14854	.362	267.3	150.1	- 7.7	1	8										
	14849	.146	74.3	120.7	- 4.9	33	191		68.298		.927	294.1					422
	14850	.417	120.8	106.6	-19.0	58	297		C		.898	240.9					409
	14851	.625	117.5	92.1	-22.5	512	3333				.859	263.3					310
	14855	.743	65.6	85.0	+12.7	182	1435	449 *f*		14845	.966	255.9	166.9	-15.4	53	287	315 *c*
	14856	.717	102.4	82.8	-13.9	38	149	183 *c*		14849	.498	272.3	120.6	- 5.1	21	201	
	14857	.941	99.3	57.8	-11.2	13	86	177 *c*		14850	.323	228.9	105.7	-19.2	53	311	
	14858	.965	103.3	53.0	-14.7	21	135	197 *c*		14851	.279	184.5	92.2	-23.3	843	4179	
		.899	114.1					420		14855	.362	12.9	86.1	+13.4	193	1332	
Mar.7			(-22.9)	(128.8)	(- 7.2)	(1078)	(6933)	(1883)		14856	.181	133.3	83.0	-14.2	31	152	
										14857	.530	97.1	58.7	- 9.8	11	44	
										14858	.615	104.1	53.0	-14.3	18	87	
66.298		.954	250.4					174		14859	.965	106.5	14.8	-17.8	17	103	253 *c*
C		.873	302.3					108			.874	105.3					478
		.873	243.3					324			.945	73.9					208
	14840	.972	260.3	194.4	-11.1	75	655	776 *c*			.965	99.3					180
	14852	.945	289.5	184.7	+15.7	16	113	294 *c*	Mar.10			(-23.5)	(90.8)	(- 7.2)	(1240)	(6696)	(2575)

Group 14857, Mar. 7 - 14. One or two small spots.
Group 14858, Mar. 7 - 19. A small regular spot decreasing slowly.
Group 14859, Mar. 10 - 22. Return of Group 14822. A small regular spot with companions on March 14 and 16.

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

U.T.	Group No.	MEASURES		POSITION		AREA		
		Dist.	Pos. Angle	Long.	Lat.	Umbrae	Whole Spots	Faculae
1947			°	°	°			
69.297		.933	261.1					263
C		.857	255.1					204
	14849	.682	270.1	120.6	- 5.2	20	178	
	14850	.481	241.4	104.2	-19.8	65	361	
	14851	.353	217.7	91.1	-23.1	813	4547	
	14855	.382	334.5	87.8	+13.4	135	1123	
	14856	.159	213.8	82.8	-14.7	29	164	
	14860	.309	154.8	69.7	-23.4	13	87	
	14857	.294	102.0	60.7	-10.4	7	36	
	14858	.420	108.3	53.4	-14.1	14	84	
	14859	.883	106.8	15.0	-18.2	10	82	172 *c*
	14861	.959	71.3	7.3	+15.6	3	26	301 *c*
		.886	96.7					159
		.887	62.9					228
		.948	107.5					298
Mar.11			(-23.7)	(77.6)	(- 7.2)	(1109)	(6688)	(1625)
70.301		.947	262.1					131
C		.942	244.3					266
		.931	288.7					130
		.858	255.1					227
		.791	241.9					207
	14849	.833	268.7	120.9	- 5.1	29	153	181 *c*
	14850	.650	247.8	104.0	-19.8	44	439	
	14851	.519	235.7	92.1	-23.3	777	4554	
	14855	.506	312.9	86.7	+13.4	190	994	
	14856	.343	247.2	83.4	-14.4	24	110	
	14860	.292	198.3	70.1	-23.2	38	182	
	14857	.120	123.3	58.6	-10.9	9	47	
	14858	.218	121.7	53.4	-13.6	18	103	
	14859	.760	107.9	15.0	-18.2	20	106	
	14861	.867	67.1	8.6	+15.7	4	11	288 *c*
		.875	108.3					330
		.935	56.5					192
Mar.12			(-23.9)	(64.4)	(- 7.2)	(1153)	(6699)	(1952)
71.414		.949	254.8					301
C		.935	316.5					104
		.931	233.7					144
		.905	245.7					271
		.855	260.5					72
		.835	237.9					58
	14849	.947	266.9	121.2	- 5.3	20	171	157 *c*
	14850	.815	250.8	104.3	-19.8	50	324	194 *c*
1947			°	°	°			
14851		.679	242.1	90.6	-24.0	707	4205	
14855		.688	298.9	87.9	+13.8	96	674	
14856		.558	254.1	83.3	-14.8	16	101	
14860		.431	228.3	70.1	-23.3	15	73	
14857		.198	254.5	60.8	-10.1	3	14	
14858		.139	207.6	53.5	-14.2	15	90	
14859		.589	112.5	14.7	-18.9	19	103	
14861		.732	61.3	8.1	+15.2	3	9	202 *f*
		.912	57.7					361
		.974	65.3					369
Mar.13			(-24.1)	(49.7)	(- 7.2)	(944)	(5764)	(2233)
72.344		.944	243.5					272
C		.915	259.5					157
		.844	303.5					109
		.825	265.7					169
14849		.993	265.5	121.1	- 5.3	16	61	230 *c*
14850		.904	251.6	102.9	-19.7	34	229	211 *c*
14851		.806	245.3	90.6	-24.1	669	4052	501 *c*
14855		.820	292.9	88.5	+14.1	62	448	165 *c*
14856		.720	257.1	83.7	-14.2	8	68	
14860		.595	240.2	71.5	-23.1	10	47	
14857		.375	259.6	59.4	-10.5	7	37	
14858		.295	246.7	53.6	-13.6	14	80	
14859		.416	119.9	15.2	-18.6	10	81	
		.795	54.8					122
		.920	62.0					323
Mar.14			(-24.3)	(37.5)	(- 7.2)	(830)	(5103)	(2259)
73.305		.932	264.6					174
C		.920	268.9					202
		.855	305.6					92
14850		.974	251.7	103.2	-19.4	32	291	297 *c*
14851		.896	247.2	88.9	-23.6	634	3989	521 *c*
14855		.915	289.1	87.7	+14.2	81	614	626 *c*
14856		.858	258.3	84.4	-13.7	2	13	147 *c*
14860		.754	246.4	73.0	-22.5	3	17	
14858		.487	254.8	53.6	-13.7	12	93	
14859		.263	140.1	14.6	-18.7	19	92	
14862		.925	103.7	316.3	-15.4	3	20	103 *c*
14863		.981	103.3	304.8	-14.4	43	323	161 *c*
		.837	55.5					291
Mar.15			(-24.5)	(24.8)	(- 7.2)	(829)	(5452)	(2614)

Group 14860. Mar. 11 - 16. A pair of small spots; the leader remains after March 14.
Group 14861. Mar. 11 - 13. Perhaps the end of a regular spot.
Group 14862. Mar. 15 - 26. A bi-polar group; small spots mark its place some days before its definite growth begins near the central meridian.
Group 14863. Mar. 15 - 27. A slowly diminishing regular spot with a companion on March 22.

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
1947			°	°	°				1947			°	°	°			
74.310		.939	297.1					184		14858	.989	257.8	54.6	-13.1	0	20	224 *c*
C		.925	257.9					416		14859	.673	250.8	13.8	-18.1	16	72	
		.892	271.6					176		14863	.480	106.9	303.8	-14.3	35	201	
		.780	241.0					136		14864	.557	113.3	299.4	-18.7	2	9	
	14855	.987	285.6	89.8	+14.0	33	171	559 *f*		14865	.855	99.2	272.8	-11.5	14	74	199 *c*
	14851	.969	247.3	89.0	-23.8	390	3825	669 *c*			.871	58.6					152
	14860	.874	248.6	72.8	-22.1	2	17	71 *c*			.923	66.3					346
	14858	.668	257.6	53.6	-13.7	13	97				.945	103.9					355
	14859	.209	193.8	14.6	-18.8	13	81				.960	115.7					188
	14862	.812	103.2	316.9	-14.9	8	37	97 *c*	Mar.19			(-25.1)	(332.0)	(- 7.1)	(67)	(376)	(1918)
	14863	.917	102.0	304.4	-13.8	45	259	208 *c*									
	14864	.945	107.4	299.6	-18.8	9	42	311 *c*									
Mar.16			(-24.6)	(11.6)	(- 7.2)	(513)	(4529)	(2827)									
									78.461		.943	255.2					295
									G		.923	295.6					285
75.466		.971	255.1					180			.902	262.9					114
G		.913	250.0					240			.795	292.1					181
		.894	242.3					220		14859	.833	252.7	13.4	-18.2	10	56	88 *c*
		.838	232.8					150		14862	.163	163.6	314.1	-16.0	6	28	
	14851	.997	245.8	83.7	-24.5	110	830	581 *c*		*1251b*	.306	145.3	306.1	-21.4	2	7	
	14858	.837	258.6	53.6	-13.4	12	70	244 *p*		14863	.253	120.3	303.8	-14.1	36	209	
	1251a	.714	310.6	31.9	+21.9	3	14			14865	.689	99.2	273.0	-11.4	9	41	
	14859	.355	235.0	14.1	-18.5	15	97			14866	.786	59.0	271.5	+19.0	3	18	207 *f*
	14862	.639	105.7	316.8	-15.4	5	20			14867	.935	109.2	246.7	-20.4	6	25	344 *f*
	14863	.787	102.2	304.1	-14.0	45	226	106 *c*			.826	104.2					214
	14864	.839	107.8	299.0	-18.8	6	34	116 *c*			.861	116.0					108
	14865	.992	101.0	272.5	-11.8	8	57	108 *c*			.929	132.0					193
		.867	113.0					77			.948	64.5					274
		.911	59.7					132	Mar.20			(-25.2)	(316.8)	(- 7.0)	(72)	(384)	(2303)
		.914	106.2					322									
Mar.17			(-24.8)	(356.3)	(- 7.1)	(204)	(1348)	(2476)									
									79.619		.962	258.6					119
76.351		.956	246.5					388	G		.939	300.5					95
G		.942	234.5					188			.927	289.2					350
	14858	.928	258.3	53.6	-13.5	12	73	312 *c*			.869	244.8					88
	14859	.511	245.8	14.0	-18.2	13	104				.847	304.6					134
	14863	.651	103.3	304.1	-14.0	48	251			14859	.943	253.1	13.1	-18.2	3	16	167 *f*
	14864	.715	109.2	299.4	-18.7	3	18			14862	.277	233.2	314.9	-16.3	27	139	
	14865	.946	99.8	272.9	-11.6	6	53	287 *c*		14863	.134	196.6	303.9	-14.4	31	186	
		.822	108.3					150		14868	.252	142.1	292.3	-18.3	2	15	
		.945	111.7					160		14865	.481	101.0	272.9	-11.4	11	48	
		.953	69.3					179		14867	.816	110.1	247.0	-20.4	2	11	252 *f*
Mar.18			(-24.9)	(344.7)	(- 7.1)	(82)	(499)	(1664)		14869	.980	74.2	225.6	+13.9	10	71	135 *c*
										14870	.993	69.6	221.6	+19.1	28	208	158 *c*
											.874	135.4					136
77.308		.925	298.3					181			.972	101.4					69
C		.839	257.6					273	Mar.21			(-25.4)	(301.6)	(- 7.0)	(114)	(694)	(1703)

Group 14864. Mar. 16 - 19. Return of Group 14831: third appearance. A small spot - probably the end of a regular spot by its steady position.

Group 14865. Mar. 17 - 25. A small spot with a companion on March 24.

Group 14866. Mar. 20 - 29. A regular spot and follower developing from a cluster of dots on March 22. Two days earlier, a small ephemeral spot appeared 2° northwards.

Group 14867. Mar. 20 - 21. A tiny spot.

Group 14868. Mar. 21 - 22. A tiny spot on March 21; a pair on March 22.

Group 14869. Mar. 21 - 24. A small spot, except on March 23, when there is a pair.

Group 14870. Mar.21-Apr.2. Return of Group 14838. A very stable regular spot.

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
1947			°	°	°				1947			°	°	°			
80.329		.964	288.0					316			.933	258.9					103
C		.913	245.7					155			.922	305.5					192
		.898	302.8					242		14871	.884	249.5	328.6	-21.3	4	25	90 c
		.774	303.4					203		14862	.774	254.7	316.9	-16.1	82	578	160 c
	14859	.981	252.6	12.5	-18.4	0	15	201 c		14863	.623	255.2	304.4	-14.5	20	114	
	14862	.400	244.0	314.1	-16.6	62	431			14875	.501	267.9	296.3	- 7.0	8	36	
	14863	.238	236.8	304.0	-14.3	31	179			14876	.505	334.9	279.3	+20.4	1	5	
	14868	.192	181.5	292.5	-18.1	3	25			14866	.417	341.4	274.0	+16.4	24	119	
	14865	.334	104.6	273.0	-11.4	9	46			14865	.151	232.5	273.1	-12.1	6	15	
	14866	.519	39.2	272.2	+17.1	3	31			14872	.204	113.5	255.1	-11.4	3	12	
	1251c	.912	100.4	225.8	-12.3	5	23	174 c		14873	.500	122.4	239.2	-21.7	5	24	
	14869	.943	72.2	224.6	+14.2	13	70	275 c		14869	.717	62.8	225.2	+13.9	4	17	
	14870	.966	67.6	221.1	+19.4	32	196	218 c		14870	.783	58.7	221.2	+19.1	27	186	197 f
		.946	59.4					163		14874	.903	98.3	201.1	-10.4	76	603	474 c
Mar.22			(-25.4)	(292.2)	(- 7.0)	(158)	(1016)	(1947)			.861	88.9					84
											.915	52.3					132
											.952	112.5					155
											.963	73.5					176
81.445		.975	296.8					170	Mar.24			(-25.7)	(266.1)	(- 6.9)	(260)	(1734)	(2159)
G		.932	302.2					135									
		.895	292.1					160									
		.879	311.2					138									
		.815	257.6					76									
	14871	.787	248.6	329.0	-21.0	6	25	80 c	83.363		.788	246.2					134
	14862	.632	253.2	316.3	-15.9	82	524		G	14871	.978	250.0	331.7	-21.0	0	9	136 c
	14863	.460	252.0	304.2	-14.4	34	155			14862	.902	255.4	318.3	-15.8	71	479	307 c
	14865	.107	138.9	273.4	-11.5	4	22			14863	.789	256.6	304.5	-14.8	22	120	98 c
	14866	.410	11.0	272.8	+16.7	29	146			14875	.689	267.0	295.9	- 7.1	9	37	
	14872	.397	102.2	254.3	-11.1	4	16			14876	.631	315.4	280.3	+20.5	3	8	
	14873	.643	115.4	239.1	-21.4	5	29			14866	.543	314.0	276.0	+15.8	19	112	
	14869	.857	67.2	222.6	+15.5	9	53	153 c		14865	.379	257.4	274.2	-11.1	2	16	
	14870	.878	63.6	221.3	+19.2	30	190	177 c		14872	.086	202.2	254.1	-11.5	10	53	
	14874	.969	99.2	201.1	-10.6	113	549	469 c		14873	.334	141.8	239.4	-21.8	2	10	
		.937	54.8					281		14870	.650	49.4	220.9	+19.0	32	181	
Mar.23			(-25.6)	(277.5)	(- 6.9)	(316)	(1709)	(1839)		14874	.776	97.6	201.0	-10.3	100	737	105 c
										14877	.899	71.4	191.3	+13.4	7	33	139 c
											.893	103.2					158
											.931	112.2					298
82.309		.967	297.9					207			.942	95.2					129
C		.951	291.5					189	Mar.25			(-25.8)	(252.2)	(- 6.9)	(277)	(1795)	(1504)

Group 14871. Mar. 23 - 25. One or two tiny spots.
Group 14872. Mar. 23 - 29. A stream of small spots of which only one remains by March 27.
Group 14873. Mar. 23-Apr. 1. A small stream of protracted development led by a regular spot which is the most stable component.
Group 14874. Mar. 23-Apr. 4. Return of Group 14840. A large composite spot that undergoes little change during its disk passage.
Group 14875. Mar. 24 - 26. One or two spots.
Group 14876. Mar. 24 - 26. A very small spot.
Group 14877. Mar. 25-Apr. 4. Small spots that develop into a longish stream of changing spots.

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
1947			°	°	°			
84.309		.956	298.5					180
C		.881	248.8					359
		.858	300.0					114
	14862	.978	255.5	318.9	-15.6	80	546	323 c
	14863	.900	257.0	304.5	-14.7	13	103	162 c
	14875	.837	266.7	296.7	- 6.5	4	15	89 c
	14876	.767	305.1	281.8	+21.2	2	9	130 p
	14866	.687	302.8	276.6	+16.4	28	118	
	14878	.449	327.0	254.3	+15.4	2	16	
	14872	.245	250.4	253.3	-11.3	13	87	
	14873	.234	187.0	241.4	-20.2	0	5	
	14870	.534	35.2	220.7	+19.4	43	173	
	14874	.619	97.8	201.3	-10.1	109	714	
	14877	.804	66.8	190.3	+14.1	29	127	197 c
	1251d	.888	112.0	181.0	-16.0	6	39	260 c
		.812	101.8					136
		.862	118.8					105
		.917	94.4					198
		.951	105.8					240
Mar.26			(-25.8)	(239.7)	(- 6.8)	(329)	(1952)	(2493)
85.683		.972	247.7					234
Mt.W		.958	264.1					144
		.917	253.1					331
		.903	298.1					136
		.883	304.3					107
		.824	261.3					94
		.808	299.8					170
	14863	.991	255.8	305.1	-14.9	22	101	118 s
	14866	.869	293.9	277.5	+16.9	28	110	109 s
	14878	.656	303.9	255.9	+15.8	22	82	
	14872	.511	258.7	252.2	-11.6	6	36	
	14873	.390	230.1	240.2	-20.9	30	85	
	14870	.443	3.1	220.2	+19.3	29	132	
	14874	.344	100.6	201.6	-10.0	171	703	
	14877	.598	55.5	191.2	+13.9	40	176	
	14879	.722	114.5	176.6	-22.2	58	258	
	14880	.922	73.7	157.0	+12.1	25	99	175 c
		.831	104.9					180
		.925	102.6					73
		.943	109.3					50

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbrae	AREA Whole Spots	AREA Faculae
1947			°	°	°			
		.952	129.3					85
Mar.27			(-26.0)	(221.6)	(- 6.8)	(431)	(1782)	(2006)
86.606		.920	300.2					98
G		.916	256.8					204
	14866	.947	290.2	277.2	+16.6	14	62	158 c
	14878	.791	295.8	256.9	+15.6	14	105	108 c
	14872	.673	260.4	251.8	-11.4	5	18	
	14873	.546	241.7	240.2	-20.7	34	188	
	14870	.472	338.4	220.0	+19.3	33	169	
	14874	.143	113.2	201.8	- 9.8	112	766	
	14877	.456	40.7	191.6	+13.8	27	171	
	14879	.582	119.0	176.3	-22.0	49	355	
	14880	.835	69.6	156.2	+12.9	20	106	113 c
	14881	.880	73.4	150.4	+11.1	7	34	105 c
	14882	.945	115.6	137.6	-26.4	28	147	285 c
		.864	107.0					110
		.908	131.5					118
		.957	102.0					189
Mar.28			(-26.0)	(209.4)	(- 6.7)	(343)	(2121)	(1488)
87.311		.967	249.1					145
C		.963	258.4					236
		.954	239.9					230
		.943	298.1					222
		.883	256.9					114
	14866	.985	288.3	277.3	+16.6	17	110	257 f
	14878	.885	291.5	258.6	+15.4	12	96	214 c
	14872	.784	260.6	252.0	-11.5	2	9	98 p
	14873	.661	246.0	240.1	-20.7	39	242	
	14870	.536	323.7	219.6	+19.1	31	158	
	14874	.072	208.5	202.1	-10.3	115	622	
	14877	.368	21.7	192.1	+13.2	46	239	
	14879	.473	125.9	175.8	-22.1	65	449	
	14880	.752	66.0	155.4	+13.1	24	153	132 c
	14881	.794	70.9	150.5	+10.7	12	67	53 c
	14882	.871	116.7	139.9	-26.5	8	77	330 c
	14883	.977	93.5	122.2	- 4.8	9	51	124 c
		.876	102.9					200
		.963	100.9					157
		.980	109.5					106
Mar.29			(-26.1)	(200.1)	(- 6.7)	(380)	(2273)	(2618)

Group 14878. Mar. 26 - 30. A small regular spot with a follower that develops from a pair of tiny spots.
Group 14879. Mar.27-Apr.6. A stream of nondescript spots. The leading ones have fused by March 30 into a composite spot that remains the chief feature of the group.
Group 14880. Mar.27-Apr.7. Unstable spots which by April 3 condense into two small composite spots.
Group 14881. Mar.28-Apr.1. A small spot.
Group 14882. Mar. 28 - 31. One or two small spots.
Group 14883. Mar.29-Apr.2. Return of Group 14849: fifth appearance. A small spot.

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
1947			°	°	°				1947			°	°	°			
88.409		.967	255.1					207		14880	.452	41.8	155.8	+13.3	17	116	
C		.934	246.6					104		14881	.464	53.9	151.5	+ 9.7	6	48	
		.917	258.9					291		14885	.627	148.1	149.0	-38.1	14	68	
		.883	287.2					80		14882	.591	128.0	142.4	-26.9	2	9	
		.870	295.7					87		14883	.770	91.1	123.4	- 5.1	3	19	106 *f*
		.809	303.2					118		14886	.979	113.9	94.1	-24.7	203	1966	619 *c*
	14878	.968	288.1	258.3	+15.6	8	59	224 *c*			.859	110.7					375
	14873	.820	249.4	240.6	-20.6	26	213	186 *c*			.879	87.2					134
	14870	.673	308.6	219.4	+19.3	27	156				.928	121.4					200
	14874	.285	257.4	202.0	- 9.8	114	658				.947	102.8					265
	14884	.510	341.9	195.5	+22.5	8	39				.955	95.8					267
	14877	.352	345.3	190.9	+13.2	55	321		Mar.31			(-26.2)	(173.8)	(- 6.6)	(591)	(4162)	(2830)
	14879	.307	149.6	176.1	-21.8	76	482										
	14880	.589	56.1	155.7	+13.4	25	114										
	14881	.622	64.5	151.1	+10.1	11	65		90.350		.946	288.6					185
	14885	.713	139.5	149.7	-38.2	11	33		G		.924	258.4					172
	14882	.730	120.5	141.2	-26.5	4	22	214 *c*			.866	304.9					198
	14883	.884	92.7	123.4	- 5.5	4	28	111 *f*		14873	.988	250.6	242.6	-20.1	13	139	425 *f*
	14886	.996	113.3	98.5	-23.7	69	591	683 *p*		14870	.893	295.6	218.5	+19.4	26	148	255 *c*
		.847	103.5					89		14874	.666	262.2	202.0	-10.1	115	651	
		.916	121.1					184		14877	.637	300.4	194.4	+13.4	45	328	
Mar.30			(-26.1)	(185.7)	(- 6.6)	(438)	(2781)	(2578)		14887	.560	314.3	184.8	+17.0	4	24	
										14879	.357	221.6	174.8	-21.7	79	549	
										14880	.343	12.9	155.6	+13.0	23	167	
										14881	.303	24.9	152.7	+ 9.4	5	29	
89.309		.976	260.3					144		14885	.544	163.2	148.7	-37.7	9	52	
C		.909	304.8					89		14883	.600	89.8	123.2	- 5.1	4	14	
		.865	294.2					192		14888	.853	95.9	101.3	- 8.4	0	7	117 *c*
		.793	312.3					106		14889	.946	72.4	91.8	+14.3	0	6	316 *c*
	14873	.915	250.5	240.6	-20.5	39	172	333 *c*		14886	.956	113.5	86.2	-24.3	562	5433	1166 *c*
	14870	.781	301.2	218.7	+19.2	31	167				.756	111.6					93
	14874	.472	260.6	201.9	-10.2	131	619				.835	122.4					200
	14884	.595	324.9	195.5	+22.9	2	21				.910	103.7					264
	14877	.457	318.2	192.0	+13.6	66	400				.963	66.6					406
	14879	.264	184.5	175.1	-21.8	77	557		Apr.1			(-26.2)	(160.1)	(- 6.5)	(885)	(7547)	(3797)

Group 14884. Mar. 30 - 31. A pair of small spots.

Group 14885. Mar.30-Apr. 3. A few variable spots in high latitude.

Group 14886. Mar.30-Apr.14. Return of Group 14851: third appearance. A vast group - the largest ever recorded at Greenwich (i.e. since 1874) and exceeding by 15 per cent the mean area of the previous largest spot, Group 14417 of 1946 February. The chief component is a huge elliptical spot with many nuclei and its axis inclined nearly 60° to the direction of the Sun's equator. Preceding this is a complex spot, more or less linked by spot structures to its great companion until April 7 when the division between them becomes more distinct. Apart from this, there is a remarkable absence of change.

Although complete continuity of this group with the giant spots (Nos. 14813 and 14851) of the two preceding rotations must be accepted, the run of the daily areas shows clearly that two successive growth impulses must have taken place on the Sun's invisible hemisphere to produce the peak area about March 11 - 12 and April 8.

Group 14887. Apr. 1 - 4. A tiny spot.

Group 14888. Apr. 1 - 2. A small spot.

Group 14889. Apr. 1 - 3. Return of Group 14855. A tiny spot.

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
1947			°	°	°				1947			°	°	°			
91.475		.953	300.6					262			.954	123.4					266
C		.931	235.2					101	Apr.3			(-26.3)	(131.4)	(- 6.4)	(1150)	(7519)	(2844)
		.904	253.3					174									
		.840	303.2					109									
	14870	.970	292.0	217.6	+19.4	26	186	253 *s*	93.311		.979	295.0					259
	14874	.832	261.7	201.8	-10.5	86	559	303 *c*	C		.935	247.3					135
	14877	.802	293.1	194.5	+14.1	23	173	159 *c*			.926	255.1					170
	14887	.724	303.8	184.5	+18.7	1	8				.892	262.9					119
	14879	.528	237.9	173.9	-22.0	53	361			14874	.986	260.1	202.2	-10.8	44	359	244 *c*
	14880	.371	331.3	155.7	+12.5	30	278			14877	.971	287.1	194.6	+14.8	12	80	296 *c*
	14885	.526	180.7	145.7	-38.1	6	29			14887	.927	292.9	184.9	+18.4	0	8	122 *c*
	14890	.363	158.5	136.7	-26.1	10	45			14879	.831	248.6	176.9	-21.3	43	254	186 *c*
	14883	.373	87.9	123.3	- 5.2	2	12			14880	.642	298.0	156.3	+12.2	71	330	
	14888	.675	95.7	102.6	- 8.6	4	25			14890	.422	212.7	135.8	-26.9	26	212	
	14889	.838	68.1	92.0	+14.4	0	10	312 *c*		14892	.306	231.3	135.4	-17.2	38	227	
	14886	.865	114.4	85.7	-24.3	686	5566	1007 *c*		14886	.635	120.9	84.5	-24.2	751	5586	138 *f*
	14891	.976	102.7	68.8	-13.8	9	72	235 *c*		14891	.770	102.7	70.6	-13.8	10	112	112 *f*
		.798	128.9					134		14893	.958	77.5	49.5	+10.0	7	19	192 *n*
		.822	98.4					84			.882	112.1					295
		.931	76.9					116			.904	121.5					201
Apr.2			(-26.3)	(145.2)	(- 6.5)	(936)	(7324)	(3249)			.949	129.6					119
											.966	107.3					184
									Apr.4			(-26.3)	(121.0)	(- 6.4)	(1002)	(7187)	(2772)
92.518		.955	298.5					126									
C		.905	255.3					225									
		.852	247.1					133	94.325		.949	294.3					152
	14874	.947	261.9	202.3	- 9.8	44	581	326 *c*	C		.947	261.1					200
	14877	.919	289.9	194.9	+15.4	24	174	408 *c*		14879	.924	249.5	175.6	-21.3	24	212	302 *c*
	14887	.870	297.9	186.3	+20.4	0	4	93 *c*		14880	.795	291.5	156.7	+12.8	30	257	105 *c*
	14879	.706	246.9	175.2	-20.7	47	295			14892	.490	247.7	135.6	-16.3	95	626	
	14880	.518	307.8	156.1	+12.6	66	369			14890	.547	227.9	134.6	-27.1	17	89	
	14885	.557	197.4	143.6	-38.2	1	5			14886	.484	131.1	84.1	-24.3	726	5764	
	14890	.355	194.7	137.1	-26.4	23	100			14891	.611	104.4	70.2	-13.7	12	90	
	14892	.196	193.7	134.2	-17.3	15	87			14893	.865	73.8	50.1	+10.6	13	76	52 *c*
	14889	.702	62.5	91.6	+13.9	1	6			14894	.964	73.8	35.5	+13.7	20	131	99 *c*
	14886	.748	117.7	84.8	-24.8	910	5785	442 *f*			.777	116.3					205
	14891	.872	103.4	70.3	-14.4	19	113	238 *c*			.892	109.0					166
		.834	70.5					136			.920	128.4					190
		.852	59.3					103			.926	102.0					127
		.952	112.5					348	Apr.5			(-26.4)	(107.6)	(- 6.3)	(937)	(7245)	(1598)

Group 14890. Apr. 2 - 8. A minor stream, with a brief maximum on April 4. The follower is the larger component.
Group 14891. Apr. 2 - 13. A slowly-diminishing regular spot with occasional companions.
Group 14892. Apr. 3 - 9. A bi-polar group growing very rapidly from near the C.M. and already of considerable size as it passes out of sight.
Group 14893. Apr. 4 - 14. One or two small spots, not seen on April 8 - 9.
Group 14894. Apr. 5 - 16. A slowly-diminishing regular spot with an occasional companion.

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
1947			°	°	°			
95.310		.942	254.0					126
C		.886	260.8					150
		.823	226.6					143
	14879	.988	249.5	177.1	-21.2	19	230	349 *f*
	14880	.901	287.5	156.2	+12.8	9	275	353 *c*
	14892	.647	251.8	134.3	-16.4	118	1097	
	14890	.679	236.6	133.8	-26.7	39	166	
	14895	.448	273.9	121.1	- 3.8	5	23	
	14896	.543	345.6	103.2	+25.5	4	20	
	14886	.370	149.2	82.7	-24.4	756	5276	
	14891	.440	109.2	69.4	-13.9	10	139	
	14893	.742	69.4	49.8	+10.7	4	26	72 *c*
	14894	.892	70.8	34.6	+14.0	12	100	130 *c*
		.797	103.6					107
		.913	105.0					183
Apr.6			(-26.4)	(94.6)	(- 6.2)	(976)	(7352)	(1613)
96.307		.940	257.8					173
C		.907	230.2					127
	14880	.976	284.8	156.8	+12.9	0	28	296 *c*
	14890	.811	241.0	134.0	-27.0	3	55	298 *c*
	14892	.793	254.2	133.9	-16.3	166	1065	181 *c*
	14895	.660	272.0	122.7	- 3.3	22	100	
	14896	.612	328.1	102.4	+25.4	9	73	
	14886	.309	183.9	82.8	-24.1	949	5931	
	14891	.248	124.8	69.4	-14.2	23	115	
	14893	.570	59.4	51.6	+11.4	4	20	
	14894	.785	66.0	33.9	+14.4	15	94	90 *c*
	14897	.772	104.8	31.0	-15.3	5	24	104 *c*
Apr.7			(-26.4)	(81.5)	(- 6.2)	(1196)	(7505)	(1269)
97.468		.957	264.5					151
G		.956	230.6					244
	14890	.941	244.0	136.6	-26.4	5	47	390 *c*
	14892	.929	255.4	134.9	-15.8	134	1654	321 *c*
	14895	.835	269.6	122.7	- 3.7	16	136	123 *c*
	14898	.673	257.6	108.3	-12.8	0	9	
	14896	.740	313.4	102.6	+25.6	10	52	
	14899	.464	270.6	93.7	- 5.1	17	125	
	14886	.408	218.7	82.3	-24.3	739	6132	
	14891	.157	206.4	70.2	-14.1	15	95	
	1251e	.410	11.4	61.2	+17.5	2	17	
	14894	.613	56.4	34.4	+14.6	8	73	

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbrae	AREA Whole Spots	AREA Faculae
1947			°	°	°			
	14897	.557	108.6	33.1	-15.3	4	42	
		.857	63.0					139
		.865	112.2					199
		.961	64.7					177
Apr.8			(-26.4)	(66.1)	(- 6.1)	(950)	(8382)	(1744)
98.318		.958	243.4					298
C		.859	247.2					188
	14892	.976	254.8	133.2	-16.1	116	2025	632 *c*
	14895	.921	267.9	122.0	- 4.3	22	206	136 *c*
	14898	.806	259.0	108.8	-12.4	8	47	118 *c*
	14896	.867	302.8	107.9	+24.5	0	9	74 *c*
	14899	.641	268.2	94.8	- 5.7	29	201	
	14886	.529	232.0	82.0	-24.3	625	5468	
	14891	.296	238.8	70.0	-14.6	6	23	
	14894	.490	44.3	34.3	+14.8	13	78	
	14897	.424	113.4	31.2	-15.2	5	37	
		.938	63.2					139
Apr.9			(-26.4)	(54.9)	(- 6.0)	(824)	(8094)	(1585)
99.342		.950	250.2					310
G		.933	231.7					92
		.900	240.8					306
		.816	302.8					134
		.806	256.4					178
	14895	.987	266.3	122.3	- 4.6	24	267	296 *c*
	14898	.932	258.6	110.7	-12.8	11	76	205 *c*
	14896	.951	298.4	108.1	+24.6	6	21	169 *nf*
	14899	.809	266.8	95.5	- 6.1	47	243	106 *c*
	14900	.820	295.0	92.0	+16.5	10	43	111 *c*
	14886	.680	240.1	81.6	-24.4	788	5360	226 *p*
	14891	.494	250.2	70.0	-14.9	7	33	
	14893	.351	325.8	52.9	+10.9	6	34	
	14894	.375	18.3	34.4	+14.8	17	68	
	14897	.231	135.2	31.7	-15.3	18	145	
	14901	.507	57.3	15.8	+10.4	2	13	
	14902	.971	105.2	324.4	-16.1	23	87	332 *c*
		.840	57.4					127
		.861	99.2					98
		.890	74.5					166
		.933	68.2					153
		.959	60.1					136
Apr.10			(-26.4)	(41.4)	(- 6.0)	(959)	(6390)	(3145)

Group 14895. Apr. 6 - 10. A short slowly-growing stream of small spots.
Group 14896. Apr. 6 - 11. An area of feeble activity.
Group 14897. Apr. 7 - 15. Small unstable spots becoming a short-lived stream by April 10.
Group 14898. Apr. 8 - 11. A little group.
Group 14899. Apr. 8 - 12. A pair of spots of limited development.
Group 14900. Apr. 10 - 12. A pair of small spots; one remains on April 12.
Group 14901. Apr. 10 - 14. A small spot (or spots) seen over a 4° range in longitude.
Group 14902. Apr. 10 - 19. Return of Group 14862. Three small spots in a line of which the leading two are the more stable.

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
1947			°	°	°			
100.346		.979	298.9					322
G		.915	236.6					466
		.893	256.5					367
		.865	303.6					133
	14898	.980	258.7	107.3	-12.2	0	10	491 c
	14896	.975	297.4	100.7	+25.0	5	62	193 c
	14899	.930	265.1	96.7	- 6.7	25	139	393 c
	14900	.927	290.3	92.8	+16.3	3	15	351 c
	14886	.804	243.5	80.3	-24.6	705	4813	446 c
	14891	.672	254.1	69.9	-15.0	6	24	
	14893	.493	305.1	52.3	+11.0	5	18	
	14894	.371	343.2	34.4	+14.8	16	60	
	14897	.176	198.6	31.4	-15.4	22	98	
	14901	.349	34.5	16.5	+10.9	2	31	
	1251 f	.774	65.1	341.7	+15.0	2	7	92 *f*
	14902	.893	105.3	324.5	-16.3	27	118	595 c
		.870	57.3					135
		.961	57.5					158
Apr.11			(-26.3)	(28.1)	(- 5.9)	(818)	(5395)	(4142)
101.311		.956	255.5					291
C		.951	295.0					122
		.923	303.3					111
	14899	.986	263.7	96.1	- 7.2	12	126	176 c
	14900	.982	289.5	91.6	+17.8	0	57	171 c
	14886	.903	245.2	79.8	-24.9	639	5130	583 c
	14891	.841	255.7	72.8	-15.1	7	42	238 c
	14893	.655	294.3	52.7	+11.0	2	14	
	14894	.469	318.7	34.0	+15.1	10	71	
	14897	.314	237.5	31.3	-15.2	24	97	
	14901	.285	350.4	18.2	+10.4	2	7	
	14902	.777	106.6	324.7	-16.5	23	180	298 c
		.947	112.6					233
		.954	105.1					177
		.956	65.7					91
Apr.12			(-26.3)	(15.4)	(- 5.8)	(719)	(5724)	(2491)
102.309		.951	264.1					104
C		.943	300.9					127
		.913	233.9					117
		.910	293.4					180
		.855	257.5					104
		.835	247.6					233
		.788	238.3					157
	14886	.958	245.4	76.1	-25.2	416	3617	821 c
	14891	.946	255.3	73.8	-15.7	0	30	237 c
	14893	.819	288.1	54.5	+11.2	9	42	122 c

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1947			°	°	°			
	14894	.621	303.7	34.5	+15.3	10	37	
	14897	.498	247.5	30.7	-16.0	10	69	
	14901	.391	313.6	18.8	+10.1	3	14	
	14903	.365	99.2	340.9	- 8.7	0	5	
	14902	.618	109.2	324.9	-16.2	28	140	
	14904	.932	65.1	297.7	+20.7	0	5	170 c
		.806	106.9					118
		.883	114.7					160
		.913	104.5					235
		.969	109.5					215
Apr.13			(-26.3)	(2.2)	(- 5.7)	(476)	(3959)	(3100)
103.317		.952	295.1					145
G		.928	259.7					194
		.896	234.2					138
		.859	247.2					152
	14886	.993	245.5	73.6	-25.0	265	2016	734 *f*
	14893	.922	285.1	53.9	+11.5	17	135	173 c
	14894	.769	295.2	34.8	+15.1	9	28	
	14897	.675	253.0	30.8	-15.6	4	26	
	14901	.571	296.7	20.0	+ 9.9	2	10	
	14903	.138	115.9	341.7	- 9.1	2	10	
	14902	.443	116.0	324.5	-16.3	25	133	
	14904	.838	61.2	297.6	+20.2	2	8	146 *n*
	14905	.941	107.4	278.1	-18.3	19	55	240 c
		.914	98.4					137
		.929	115.2					180
		.959	69.7					195
Apr.14			(-26.2)	(348.9)	(- 5.7)	(345)	(2421)	(2434)
104.474		.954	280.4					92
G		.943	248.2					364
		.939	239.6					354
		.904	257.4					260
		.893	231.0					161
		.834	302.8					81
	14894	.906	290.2	35.4	+15.6	2	13	164 c
	14897	.838	255.8	30.6	-15.0	0	4	96 c
	14902	.244	140.9	324.4	-16.4	17	81	
	1252a	.508	19.2	323.2	+23.0	5	27	
	14904	.691	52.7	297.9	+20.1	0	5	
	14905	.821	109.4	278.8	-19.1	11	66	152 c
	14906	.941	68.8	266.7	+17.8	10	42	284 c
		.859	119.6					119
		.879	58.3					139
		.966	103.4					127
		.984	111.8					153
Apr.15			(-26.2)	(333.6)	(- 5.6)	(45)	(238)	(2546)

Group 14903. Apr. 13 - 20. An area of minor disturbance with a brief maximum on April 19.
Group 14904. Apr. 13 - 15. A tiny spot.
Group 14905. Apr. 14 - 25. A group of bi-polar type, with the follower, a composite spot, temporarily the chief component by April 19.
Group 14906. Apr. 15 - 25. Small unstable spots over a progressive range of 4° in latitude.

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
1947			°	°	°			
105.331		.939	233.3					161
G		.933	255.1					337
	14894	.965	287.5	34.6	+15.2	0	13	155 *c*
	14903	.395	259.7	345.4	- 9.1	2	10	
	14902	.195	193.2	324.9	-16.4	9	39	
	14905	.711	111.7	278.1	-19.2	19	96	
	14906	.865	65.9	266.5	+17.6	11	43	129 *c*
	14907	.895	64.9	263.2	+19.5	2	12	128 *c*
		.930	101.4					122
		.944	113.7					201
Apr.16			(-26.1)	(322.3)	(- 5.5)	(43)	(213)	(1233)
106.326		.970	254.9					283
G		.959	297.4					176
		.913	287.0					185
	1252b	.731	258.5	356.1	-12.1	7	26	
	14903	.607	258.7	346.4	-11.1	6	23	
	14902	.325	233.0	324.8	-16.4	7	29	
	14905	.581	115.9	275.7	-19.2	65	312	
	14906	.745	60.5	266.5	+17.5	12	47	78 *c*
	14907	.796	59.8	262.3	+19.9	7	26	103 *c*
		.846	115.4					84
		.944	111.4					388
		.970	69.0					182
Apr.17			(-26.0)	(309.2)	(- 5.4)	(104)	(463)	(1479)
107.441		.962	291.4					142
G		.933	248.3					277
		.932	237.6					92
		.871	302.7					80
	14903	.779	259.3	345.7	-11.7	6	43	188 *p*
	14908	.772	248.8	344.1	-19.6	3	25	86 *c*
	14902	.514	246.8	323.9	-16.3	6	21	
	14905	.394	128.4	275.5	-19.1	68	460	
	14906	.593	52.8	265.1	+16.3	9	55	
	14907	.666	51.0	261.1	+20.3	7	23	
	14909	.748	69.2	249.1	+11.7	3	16	
		.836	113.8					287
		.954	65.0					407
Apr.18			(-26.0)	(294.5)	(- 5.3)	(102)	(643)	(1559)

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbrae	AREA Whole Spots	AREA Faculae
1947			°	°	°			
108.328		.956	246.5					146
C		.937	297.6					185
		.918	286.9					122
		.835	306.9					196
	14903	.882	259.3	344.8	-11.9	30	120	223 *c*
	14908	.873	249.9	343.3	-20.1	4	19	102 *c*
	14902	.664	250.7	323.4	-16.7	1	10	
	14905	.286	152.3	274.6	-19.9	89	459	
	14906	.465	37.9	265.5	+16.4	2	10	
	14907	.545	38.9	261.4	+20.1	2	14	
	14910	.952	67.5	214.0	+19.4	18	77	363 *p*
	14911	.982	101.1	203.0	-11.9	18	73	241 *np*
		.963	105.8					179
Apr.19			(-25.9)	(282.7)	(- 5.3)	(164)	(782)	(1757)
109.386		.945	300.4					68
G		.830	303.7					70
	14908	.962	251.2	343.6	-19.4	7	49	97 *c*
	14903	.962	259.2	343.4	-11.8	13	65	102 *c*
	14905	.266	200.0	274.3	-19.6	48	333	
	14910	.860	63.4	214.3	+19.6	14	50	44 *c*
	14911	.910	99.6	203.0	-10.9	21	56	168 *c*
	14912	.962	64.0	198.8	+23.2	29	104	120 *c*
		.932	112.9					92
Apr.20			(-25.8)	(268.8)	(- 5.2)	(132)	(657)	(761)
110.343		.951	299.1					323
G		.922	255.9					317
		.921	247.3					185
	14905	.402	230.7	275.3	-19.5	68	317	
	14906	.371	333.2	266.0	+14.2	4	30	
	14910	.747	57.9	214.1	+19.6	10	61	
	14911	.802	99.3	202.7	-10.5	7	17	155 *s*
	14912	.895	60.9	198.0	+23.1	20	112	265 *c*
	14913	.914	112.1	190.2	-22.2	5	20	161 *s*
	14914	.988	110.5	174.1	-21.0	13	69	285 *c*
		.921	96.5					157
		.966	59.9					342
Apr.21			(-25.7)	(256.1)	(- 5.1)	(127)	(626)	(2190)

Group 14907. Apr. 18 - 19. One or two little spots, immediately *n* Group 14908.
Group 14908. Apr. 18 - 20. A small spot on April 18 and 20; a pair on April 19.
Group 14909. Apr. 18 - 27. Intermittent. A group developing towards the west limb from a dot on April 23. Five days earlier a small spot had marked the position.
Group 14910. Apr. 19 - 30. Return of Group 14870: third appearance. A small spot with one or two companions from April 22 which later increase to a variable cluster.
Group 14911. Apr. 19 - 21. Return of Group 14874: third appearance. A small spot reducing to a speck.
Group 14912. Apr. 20 - 29. A small dying regular spot with a companion on April 25.
Group 14913. Apr. 21 - 22. A single spot.
Group 14914. Apr. 21 - 29. Return of Group 14879. A small spot slowly dying out.

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
1947			°	°	°			
111.404		.968	248.0					220
G		.961	256.0					478
		.869	247.0					428
	14905	.583	243.7	275.5	-19.1	36	181	
	14906	.542	307.9	268.3	+14.9	4	12	
	14910	.622	47.8	212.8	+20.3	19	40	
	14911	.636	100.4	202.8	-10.4	1	7	
	14912	.782	55.1	198.1	+22.9	18	63	164 *f*
	14913	.806	113.8	189.6	-22.0	0	9	95 *c*
	14914	.930	111.0	173.6	-21.3	19	58	291 *c*
	14915	.977	99.1	164.0	-10.0	37	356	367 *c*
		.907	58.0					465
		.915	43.1					208
Apr.22			(-25.6)	(242.1)	(- 5.0)	(134)	(726)	(2716)
112.321		.946	291.3					149
C		.936	246.1					427
		.925	254.9					240
		.895	332.3					193
		.836	298.7					198
		.835	244.9					176
		.831	348.7					136
	14905	.728	248.2	275.5	-19.1	34	211	168 *c*
	14906	.634	299.7	264.5	+14.2	13	85	
	14909	.432	306.9	250.5	+10.4	1	5	
	14910	.519	32.3	212.8	+21.2	18	72	
	14912	.672	47.1	197.8	+23.0	17	66	
	14916	.837	56.1	180.3	+24.6	2	6	252 *c*
	14914	.845	112.1	173.1	-21.2	12	87	260 *c*
	14915	.935	99.1	160.5	-10.3	148	796	519 *c*
	14917	.973	107.1	152.7	-17.8	28	173	348 *c*
	14918	.988	105.8	148.0	-16.4	22	123	
		.887	104.3					210
		.925	119.5					396
		.940	65.7					222
		.953	74.5					319
Apr.23			(-25.5)	(230.0)	(- 4.9)	(295)	(1624)	(4213)
113.359		.960	244.9					197
G		.949	259.0					141
		.929	294.1					166

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbrae	AREA Whole Spots	AREA Faculae
1947			°	°	°			
	14905	.872	251.3	276.7	-18.6	30	121	277 *c*
	14906	.763	292.3	262.7	+13.5	18	78	115 *c*
	14909	.620	294.5	251.2	+10.9	33	173	
	14910	.427	5.8	213.7	+20.2	13	50	
	14912	.544	32.8	197.8	+22.6	11	66	
	14916	.704	48.6	181.2	+23.7	13	93	
	14914	.713	115.1	172.7	-21.0	10	45	
	14915	.822	99.2	160.9	-10.3	116	704	122 *c*
	14917	.894	107.3	153.0	-17.6	48	242	87 *c*
	14918	.939	105.5	146.1	-16.2	49	255	649 *c*
	14919	.995	96.4	131.7	- 6.9	10	77	131 *c*
		.828	123.5					120
		.878	62.4					129
		.884	73.4					143
		.976	114.9					252
Apr.24			(-25.3)	(216.3)	(- 4.8)	(351)	(1904)	(2529)
114.328		.973	291.1					162
C		.919	239.6					165
		.904	298.2					177
	14905	.953	251.1	276.1	-19.4	12	97	529 *c*
	14906	.891	287.8	264.1	+13.5	4	24	249 *c*
	14909	.784	286.8	253.0	+10.0	65	522	137 *c*
	14920	.756	291.4	249.5	+12.7	25	181	
	14910	.461	336.4	214.8	+20.2	7	61	
	14912	.450	12.7	197.4	+21.3	14	85	
	14916	.572	34.2	183.0	+23.8	93	419	
	14921	.475	57.1	179.7	+10.6	39	167	
	14914	.564	121.1	172.5	-20.9	14	43	
	14922	.606	112.0	167.7	-16.9	1	7	
	14915	.676	99.6	161.1	-10.0	124	637	
	14917	.775	108.6	153.4	-17.3	31	212	
	14918	.851	106.2	145.4	-16.2	66	793	916 *c*
	14923	.957	55.2	136.8	+31.3	7	22	257 *f*
	14919	.955	95.1	130.6	- 6.3	22	98	439 *c*
		.932	117.8					223
Apr.25			(-25.2)	(203.5)	(- 4.7)	(524)	(3368)	(3254)
115.331		.982	248.7					293
G		.968	290.5					243
	1252c	.936	258.7	259.8	-12.2	7	28	119 *c*

Group 14915. Apr.22-May 4. A stream of normal type; a regular spot with double umbra leads; the follower, of composite structure, begins to break up on April 28 and disappears as a cluster.

Group 14916. Apr.23-May 2. A biggish stream developing from one or two dots on April 23. By April 26, the leader has become a stable regular spot which outlives the rest of the group.

Group 14917. Apr.23-May 5. A stable regular spot with an occasional companion.

Group 14918. Apr.23-May 3. Return of Group 14892. A stream in which both leader and follower soon begin to break up into clusters of small spots. The following cluster is the first to die out.

Group 14919. Apr. 24 - 29. Changing spots in a small stream.

Group 14920. Apr. 25 - 27. A small spot north of Group 14909.

Group 14921. Apr.25-May 3. A stream of rapid rise and decay. The chief component, a regular spot, alone remains when the limb is reached.

Group 14922. Apr. 25 - 27. A tiny spot.

Group 14923. Apr. 25 - 29. One or two small spots.

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
1947			°	°	°			
	1252d	.924	249.6	257.6	-20.5	9	35	122 *c*
	14909	.906	283.1	253.6	+ 9.8	58	613	386 *c*
	14920	.873	287.6	248.6	+12.9	11	134	
	14910	.556	317.2	213.8	+19.8	10	56	
	1252e	.344	237.0	207.5	-15.1	1	10	
	14912	.468	345.1	197.6	+22.2	8	44	
	14924	.371	8.3	187.0	+16.8	1	5	
	14916	.481	10.3	184.8	+23.6	80	446	
	14921	.321	34.7	179.5	+10.7	66	391	
	14914	.412	134.3	171.9	-21.0	4	23	
	14922	.425	123.9	168.5	-17.9	3	13	
	14915	.490	102.3	161.2	-10.0	75	518	
	14917	.619	111.7	153.4	-16.9	35	163	
	14918	.729	108.4	144.2	-16.5	41	503	88 *c*
	14923	.896	50.7	135.6	+31.9	6	18	223 *f*
	14919	.867	95.0	130.0	- 6.6	11	59	319 *c*
	14925	.949	99.7	118.3	-10.7	14	132	284 *f*
		.858	118.1					285
		.876	105.3					163
		.947	114.1					174
		.969	106.8					247
Apr.26			(-25.1)	(190.2)	(- 4.6)	(440)	(3191)	(2946)
116.321 C		.942	291.6					97
		.891	245.3					215
		.848	295.2					123
		.842	285.0					110
	14909	.980	281.0	254.3	+ 9.8	59	290	500 *c*
	14920	.956	285.0	248.2	+12.7	22	121	
	14910	.699	304.8	214.6	+19.9	9	45	
	14912	.552	324.8	197.2	+22.5	9	38	
	14924	.417	337.4	186.8	+18.1	8	43	
	14916	.495	343.6	185.9	+23.8	92	458	
	14921	.265	353.0	179.0	+10.7	75	368	
	14914	301	162.4	171.5	-21.1	6	19	
	14922	.295	147.8	167.6	-18.8	0	4	
	14915	.288	109.8	161.2	- 9.9	80	515	
	14917	.440	119.2	153.6	-16.5	30	141	
	14918	.561	112.7	144.6	-16.3	69	434	

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1947			°	°	°			
	14923	.809	44.3	135.5	+32.0	9	31	247 *f*
	14919	.725	96.0	130.7	- 7.4	20	118	162 *c*
	14925	.854	99.6	118.4	-10.5	29	154	311 *f*
	14926	.979	113.0	98.3	-23.4	17	84	241 *c*
		.863	123.0					204
		.885	112.6					305
		.944	92.8					213
		.974	104.7					239
		.977	123.2					152
Apr.27			(-25.0)	(177.1)	(- 4.5)	(534)	(2863)	(3119)
117.581 G		.958	245.1					330
		.947	288.0					191
		.939	295.6					196
		.842	292.8					114
		.833	313.7					102
	14910	.840	299.6	212.2	+21.8	5	10	104 *c*
	14912	.704	308.8	196.8	+22.5	5	20	
	14924	.573	310.8	187.5	+18.0	22	107	
	14916	.625	318.2	187.5	+23.8	101	683	
	14927	.404	252.0	183.5	-11.2	1	10	
	14921	.399	310.0	178.5	+10.7	94	527	
	14914	.336	211.2	171.2	-20.9	3	8	
	14915	.101	186.5	161.2	-10.1	83	492	
	14917	.240	151.9	153.8	-16.5	31	174	
	14918	.351	127.1	143.6	-16.4	31	318	
	14923	.680	30.2	136.8	+31.9	1	10	
	14928	.487	114.0	133.1	-15.3	5	23	
	14919	.505	96.2	130.3	- 6.9	21	96	
	14925	.674	100.5	118.3	-10.3	26	123	
	14929	.785	92.0	108.8	- 4.3	6	22	110 *c*
	14930	.856	61.8	106.7	+21.2	5	15	140 *nf*
	14926	.933	113.8	91.9	-23.8	48	220	601 *c*
		.884	98.6					180
		.923	105.8					759
		.939	124.1					245
		.940	70.8					148
		.948	61.5					211
Apr.28			(-24.8)	(160.5)	(- 4.4)	(488)	(2858)	(3431)

Group 14924. Apr.26-May 2. A short stream of small spots; the leader is the most stable.

Group 14925. Apr.26-May 7. A stable regular spot.

Group 14926. Apr.27-May 6. With Group 14933, a return of Group 14886: fourth appearance. A wide pair of small regular spots; the leader begins to break up on May 3, and then the follower two days later.

Group 14927. Apr. 28 - 29. A pair of small spots.

Group 14928. Apr.28-May 2. Small variable spots widely spread.

Group 14929. Apr.28-May 1. A few tiny spots. Continues as Group 14937.

Group 14930. Apr.28-May 8. A short-lived stream of minor importance. The leader, a small regular spot, remains by May 4, joined temporarily by a small companion on May 7.

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
1947			°	°	°				1947			°	°	°			
118.306		.907	308.8					93		14917	.398	235.1	154.1	-17.0	25	161	
G		.836	255.2					421		14918	.294	225.3	146.7	-16.0	18	66	
	14910	.906	296.3	211.6	+21.6	13	34	173 c		14928	.215	152.5	128.3	-15.1	26	71	
	14912	.791	302.9	196.7	+22.4	2	11			14925	.291	111.9	118.3	-10.3	26	145	
	14924	.689	302.0	188.7	+18.0	43	188			14934	.461	130.7	112.3	-21.3	20	59	
	14916	.720	309.4	188.2	+23.7	102	716			14929	.385	91.7	111.6	- 4.5	1	5	
	14927	.546	254.6	183.3	-11.9	8	23			14931	.544	129.5	107.0	-24.0	1	5	
	14921	.519	298.9	178.3	+10.7	76	355			14930	.618	48.2	104.8	+20.5	31	115	
	14914	.434	227.2	170.8	-21.2	9	16			14932	.693	114.4	92.2	-19.8	6	23	
	14915	.220	242.8	162.3	-10.0	82	397			14926	.725	119.1	90.6	-23.6	36	147	
	1252f	.512	189.1	156.5	-24.5	1	8			14933	.905	115.3	70.3	-24.6	81	786	598 c
	14917	.221	193.8	154.0	-16.6	23	146				.937	124.9					398
	14918	.245	148.2	143.2	-16.3	32	137				.951	36.8					109
	14923	.625	19.6	136.7	+31.7	0	4				.957	77.4					153
	14928	.374	120.2	131.4	-14.9	6	18		Apr.30			(-24.5)	(134.2)	(- 4.2)	(584)	(3252)	(1813)
	14919	.355	99.3	130.3	- 7.3	13	42										
	14925	.545	102.2	118.3	-10.2	25	146										
	14929	.664	90.8	109.4	- 3.7	6	19		120.552		.954	244.9					167
	14931	.728	118.2	106.8	-23.2	5	13		G		.937	308.6					161
	14930	.773	58.1	106.4	+21.0	12	30	84 c			.916	260.1					125
	1252g	.716	97.2	105.2	- 8.2	10	21				.782	241.7					91
	14932	.854	110.7	93.0	-19.8	6	31	483 c		14924	.951	290.7	190.6	+18.2	35	206	270 c
	14926	.872	114.4	91.3	-23.3	41	191	715 c		14916	.941	297.3	187.3	+24.0	123	731	410 c
	14933	.983	114.2	70.7	-24.6	109	511	409 c		14921	.866	284.2	179.6	+10.1	50	272	218 c
		.861	101.2					299		14915	.684	259.7	164.2	-10.0	56	289	
		.924	127.6					160		14917	.577	246.0	154.6	-16.9	25	151	
		.925	56.8					73		14918	.472	244.1	147.3	-15.5	14	59	
		.933	72.8					123		14928	.249	216.3	130.1	-15.5	23	92	
		.946	104.8					172		14925	.116	154.7	118.4	-10.1	25	138	
		.953	64.2					166		14934	.326	155.7	113.1	-21.3	16	89	
		.977	40.4					78		14929	.149	90.5	112.7	- 4.1	0	5	
		.986	120.6					429		14931	.413	149.3	107.9	-24.7	3	9	
Apr.29			(-24.6)	(150.9)	(- 4.3)	(624)	(3057)	(3878)		14930	.497	31.7	105.1	+21.0	59	229	
										14932	.544	122.9	92.2	-20.7	2	24	
										14926	.593	125.7	89.7	-23.7	34	175	
119.570		.955	257.2					169		14933	.807	117.7	69.7	-24.5	97	782	171 c
G		.926	244.7					30		14935	.937	73.9	53.7	+13.5	3	10	263 c
		.921	289.5					71		14936	.985	102.7	40.8	-13.2	20	90	309 c
	14910	.984	289.5	211.6	+18.3	0	14	145 c			.885	128.0					340
	14924	.861	293.9	189.9	+18.0	42	167	63 c			.918	116.9					482
	14916	.861	300.9	187.8	+23.7	163	833	77 c			.928	32.9					136
	14921	.733	288.9	178.9	+10.7	68	340				.969	108.5					203
	14915	.491	256.4	163.1	-10.3	40	315		May 1			(-24.3)	(121.3)	(- 4.1)	(585)	(3351)	(3346)

Group 14931. Apr. 29-May 8. Intermittent. A tiny spot that has gone by May 3: four days later, small spots appear in a stream.

Group 14932. Apr. 29-May 4. A wide pair of small spots.

Group 14933. Apr. 29-May 11. With Group 14928, a return of Group 14886: fourth appearance. A large composite spot, the leading part of which separates from the main body and dies out, while the latter continues to decrease.

Group 14934. Apr. 30-May 8. A stream of small changing spots, of which only one remains by May 5.

Group 14935. May 1 - 2. A tiny spot.

Group 14936. May 1 - 13. A composite spot with two clusters of small spots in its wake. These clusters die out leaving the leader alone by May 11.

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
1947			°	°	°			
121.325		.879	253.3					103
C		.869	245.5					99
	14924	.985	290.3	188.8	+19.1	5	72	239 *c*
	14916	.984	295.1	187.6	+23.8	96	507	261 *f*
	14921	.943	282.1	180.2	+10.0	30	203	243 *c*
	14915	.802	260.3	164.2	-10.1	51	277	99 *c*
	14917	.709	249.9	154.9	-16.9	21	138	
	14918	.585	249.8	145.5	-15.0	13	52	
	14928	.364	234.8	128.9	-15.8	9	49	
	14925	.168	231.3	118.6	-10.0	21	142	
	14934	.296	186.9	113.2	-21.0	17	77	
	14931	.345	171.4	107.8	-23.9	1	5	
	14930	.430	11.8	105.6	+20.8	28	182	
	14932	.373	132.1	94.1	-18.2	0	10	
	14926	.467	136.1	90.4	-23.3	37	161	
	14933	.704	121.2	69.8	-24.4	92	725	
	14935	.851	71.6	55.1	+13.3	2	10	127 *c*
	14936	.953	103.9	38.5	-14.4	31	279	487 *c*
		.824	113.9					174
		.836	127.8					641
		.867	26.9					66
		.928	109.3					219
		.944	118.0					248
May 2			(-24.1)	(111.0)	(- 4.0)	(454)	(2889)	(3006)
122.388		.961	253.1					234
C		.942	245.9					259
		.902	289.7					101
		.897	236.0					172
		.873	256.9					224
		.837	239.7					70
	14921	.994	279.8	179.7	+ 9.3	18	79	205 *n*
	14915	.926	260.5	164.9	-10.3	52	245	325 *f*
	14917	.845	252.7	154.2	-16.7	40	113	100 *c*
	14918	.722	253.9	142.5	-14.2	5	13	
	14925	.387	253.7	119.0	- 9.8	20	117	
	14934	.388	221.5	112.9	-20.6	17	52	

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbrae	AREA Whole Spots	AREA Faculae
1947			°	°	°			
	14937	.270	269.9	112.6	- 3.8	52	252	
	14930	.440	341.3	105.6	+20.7	19	63	
	14932	.253	159.9	91.8	-17.6	1	11	
	14926	.349	161.9	90.3	-23.2	28	107	
	14933	.558	130.0	69.1	-24.5	64	620	
	14938	.681	57.9	59.8	+18.1	49	107	
	14936	.853	104.9	38.8	-14.7	63	356	704 *c*
	14939	.948	81.3	26.5	+ 6.9	14	45	96 *c*
		.833	113.1					99
		.839	19.8					60
		.842	119.7					121
		.865	128.1					142
May 3			(-23.9)	(97.0)	(- 3.9)	(442)	(2180)	(2912)
123.333		.967	287.8					297
C		.955	258.2					219
		.948	242.2					239
		.892	308.4					145
		.887	259.9					141
		.820	316.1					172
		.808	246.4					203
	14915	.986	260.5	165.1	-10.0	32	315	238 *nf*
	14917	.938	253.6	154.2	-16.7	28	182	367 *c*
	14925	.577	258.4	119.3	- 9.7	24	148	
	14937	.484	269.6	113.4	- 3.5	101	499	
	14934	.522	232.8	111.0	-21.8	8	45	
	14930	.542	319.2	106.6	+20.6	18	74	
	14932	.271	202.6	90.8	-18.2	6	28	
	14926	.339	191.4	88.7	-23.1	22	100	
	14933	.438	145.2	68.6	-24.6	99	577	
	14940	.547	150.6	66.1	-32.0	5	32	
	14938	.544	47.5	59.7	+18.0	135	725	
	14936	.736	106.9	37.9	-15.0	92	639	274 *c*
	14939	.855	79.5	26.8	+ 6.9	7	38	165 *f*
		.837	128.4					120
May 4			(-23.8)	(84.5)	(- 3.8)	(577)	(3402)	(2580)

Group 14937. May 3 - 8. A stream, suddenly appearing west of the central meridian, whose maximum is probably reached on the invisible hemisphere. The leader becomes a regular spot; the follower, a composite spot, is the larger component.

Group 14938. May 3 - 12. A bi-polar group of rapid growth. The leader is a partially formed regular spot but more stable than the follower, which is composite and breaks up by May 9.

Group 14939. May 3 - 5. A small spot.

Group 14940. May 4 - 7. A few faint variable spots.

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
1947			°	°	°			
124.368		.973	296.9					194
G		.955	248.9					208
		.903	309.9					196
		.884	254.3					265
		.883	263.1					288
		.873	244.9					277
	14917	.997	253.7	157.0	-16.5	30	152	393 *c*
	1252h	.959	300.9	139.6	+28.2	3	12	107 *c*
	14925	.754	260.3	119.5	- 9.7	27	133	
	14937	.677	268.7	113.3	- 3.6	101	594	
	14934	.677	242.3	110.6	-21.2	3	23	
	14930	.680	305.7	106.7	+20.4	10	51	
	14926	.443	224.8	90.3	-21.7	18	97	
	1252i	.794	359.8	71.0	+48.7	2	9	77 *c*
	14940	.474	178.3	69.9	-31.9	4	38	
	14933	.364	174.3	68.5	-24.8	70	450	
	14938	.418	28.1	58.9	+17.9	142	789	
	14936	.540	111.7	39.7	-14.6	76	467	
	14939	.714	76.3	26.6	+ 7.1	1	11	69 *f*
	14941	.958	101.6	357.3	-12.2	28	129	389 *c*
		.954	63.3					74
May 5			(-23.5)	(70.8)	(- 3.7)	(515)	(2955)	(2537)
125.138		.953	262.7					153
K		.953	256.0					171
		.949	307.6					148
		.935	249.8					161
		.917	242.4					92
		.844	252.7					87
		.838	239.1					57
	14925	.858	260.7	119.6	- 9.8	18	102	105 *c*
	14937	.800	268.3	113.6	- 3.6	101	655	183 *c*
	14934	.788	245.5	110.7	-21.3	2	8	78 *c*
	14930	.782	300.2	106.6	+20.6	3	14	
	14926	.551	233.0	88.9	-22.5	8	56	
	14940	.498	192.6	68.0	-32.5	2	12	
	14933	.384	197.5	67.9	-25.0	86	519	
	14938	.368	3.6	59.2	+17.9	120	704	
	14936	.370	120.3	41.5	-14.1	58	422	
	14941	.904	102.2	356.0	-12.5	67	353	328 *c*
	14942	.961	76.8	348.0	+11.6	7	51	209 *f*
		.892	114.4					103
		.950	63.2					133
		.965	111.0					197
May 6			(-23.4)	(60.6)	(- 3.6)	(472)	(2896)	(2205)

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbrae	AREA Whole Spots	AREA Faculae
1947			°	°	°			
126.325		.962	243.3					198
C		.957	253.7					280
		.884	255.8					140
		.813	341.9					187
		.799	254.7					237
		.757	230.5					184
	14925	.964	260.9	119.6	- 9.7	17	126	213 *c*
	14937	.929	267.5	113.1	- 3.6	129	884	653 *c*
	14930	.926	294.0	109.3	+20.6	17	39	367 *c*
	14931	.881	248.3	105.7	-20.7	21	87	224 *c*
	14940	.559	219.7	68.8	-28.6	1	9	
	14933	.510	222.5	67.2	-25.3	71	476	
	14938	.424	327.9	58.5	+17.6	119	773	
	14936	.203	154.9	39.8	-14.1	76	443	
	14943	.702	111.7	1.9	-17.6	5	36	
	14941	.764	103.9	355.6	-12.9	88	451	166 *f*
	14942	.846	73.5	349.1	+11.9	19	186	148 *c*
	14944	.980	81.6	327.3	+ 7.5	0	10	228 *c*
		.841	123.7					152
		.866	112.5					240
		.879	59.7					149
		.928	104.2					132
		.982	105.1					370
May 7			(-23.1)	(44.9)	(- 3.5)	(563)	(3520)	(4268)
127.323		.983	258.5					117
C		.958	283.7					95
		.928	302.0					146
		.889	236.7					297
		.872	334.0					111
		.869	289.5					99
		.849	297.6					93
		.842	251.0					405
		.827	242.1					348
	14937	.978	266.9	109.7	- 3.8	47	548	380 *c*
	14930	.975	293.0	106.2	+21.5	0	9	352 *c*
	14931	.954	248.9	104.0	-21.1	14	176	566 *c*
	14933	.644	233.6	66.5	-25.1	49	408	
	14938	.552	309.5	58.1	+17.4	102	713	
	14936	.255	225.8	42.5	-13.6	63	399	
	14943	.526	117.3	2.6	-16.9	28	253	
	14941	.601	106.9	355.7	-12.8	76	475	
	14942	.680	68.7	351.6	+11.7	13	85	

Group 14941. May 5 - 18. A stream, led by a regular spot which is the only stable component.
Group 14942. May 6 - 18. A stream developing from a few small spots into a regular spot followed by a train of small components.
Group 14943. May 7 - 15. A few small spots growing into a changing stream which dies out before reaching the west limb.
Group 14944. May 7 - 11. One or two 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
1947			°	°	°				1947			°	°	°			
	14944	.899	79.9	328.7	+ 7.5	6	42	113 c			.891	235.2					719
	14945	.984	69.5	314.1	+19.4	36	162	117 c			.855	225.4					275
		.753	116.7					109			.759	237.6					150
		.817	103.8					161		14946	.989	250.6	86.7	-19.7	0	79	358 c
		.944	107.1					429		14933	.888	243.2	65.6	-25.1	50	257	338 c
		.945	115.0					166		14938	.829	293.6	57.3	+17.4	93	703	317 c
		.957	62.0					112		14936	.619	252.0	41.8	-13.5	65	390	
May 8			(-22.9)	(31.7)	(- 3.4)	(434)	(3270)	(4216)		14943	.233	175.4	3.6	-16.6	40	227	
										14941	.224	138.8	356.0	-12.8	88	508	
										14942	.315	37.4	353.5	+11.3	85	368	
128.350		.967	243.7					394		14944	.599	70.8	330.0	+ 8.7	4	19	
G		.946	295.7					190		14945	.861	65.2	309.0	+19.3	127	621	160 c
		.945	287.2					68		14947	.952	65.8	295.6	+21.8	74	375	222 c
		.943	233.1					169			.795	111.1					180
		.915	328.0					154			.895	102.2					244
		.896	243.3					228			.924	116.8					241
		.818	231.3					108	May 10			(-22.4)	(4.7)	(- 3.2)	(626)	(3547)	(4237)
		.774	221.6					117									
	14946	.936	252.3	87.4	-17.8	0	20	425 c									
	14933	.780	240.3	66.3	-24.9	42	332	147 p									
	14938	.701	299.7	57.8	+17.8	105	640										
	14936	.418	244.5	40.9	-13.4	71	395		130.356		.963	280.6					141
	14943	.339	134.5	3.6	-16.9	34	193		C		.943	235.2					521
	14941	.405	114.2	356.1	-12.6	81	442				.933	251.2					211
	14942	.484	58.9	353.3	+11.5	33	148				.905	243.0					332
	14944	.771	77.1	329.1	+ 7.7	11	48				.889	229.8					380
	14945	.946	68.3	309.8	+19.3	72	379	372 c			.814	240.6					170
	14947	.994	67.8	296.5	+21.6	40	228	126 c		14933	.962	245.0	65.2	-24.8	83	333	394 c
		.855	116.3					163		14938	.927	290.2	57.1	+17.4	82	712	389 c
		.869	106.6					250		14936	.796	256.2	43.8	-12.8	63	317	243 c
		.970	112.7					206		*1253a*	.797	290.3	41.8	+14.0	2	7	70 c
		.971	102.1					209		14943	.319	223.6	4.8	-16.3	27	171	
May 9			(-22.7)	(18.2)	(- 3.3)	(489)	(2825)	(3326)		14941	.184	204.3	356.0	-12.7	90	507	
										14942	.249	349.4	354.3	+11.0	104	573	
										14944	.411	60.5	330.5	+ 8.7	2	8	
										14945	.731	59.8	309.8	+19.2	98	599	125 c
										14947	.877	62.3	294.7	+22.3	51	311	183 c
129.370		.972	244.2					276			.817	102.0					104
C		.953	227.6					161			.857	119.4					158
		.946	324.7					201			.947	103.8					271
		.896	283.6					296			.958	68.2					170
		.896	250.9					99	May 11			(-22.2)	(351.6)	(- 3.1)	(602)	(3538)	(3862)

Group 14945. May 8 - 21. A stream whose leader is at first a double spot. From May 11, a growing spot near this leader is absorbed by it to form a fairly stable regular spot. The follower is composite and undergoes minor changes.
Group 14946. May 9 - 10. Two tiny spots on May 9; a single spot on May 10.
Group 14947. May 9 - 21. A regular spot, preceded by one or two companions.

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
1947			°	°	°				1947			°	°	°			
131.415		.967	247.7					286	133.386		.952	298.0					184
G		.957	237.6					289	G		.935	234.7					253
		.952	228.7					219			.884	292.0					121
		.862	234.4					112		14948	.997	251.0	37.6	-19.1	30	140	224 *f*
	14938	.986	288.3	56.3	+17.5	47	368	268 *c*		*1253c*	.981	254.6	30.5	-15.7	0	23	201 *c*
	14936	.918	257.5	44.1	-12.7	42	230	255 *c*		14943	.851	253.8	9.3	-15.2	5	17	182 *c*
	14948	.892	251.7	40.1	-17.6	38	219	155 *c*		14941	.730	256.8	357.9	-11.4	64	359	176 *c*
	14943	.513	244.1	6.1	-15.5	25	115			14942	.727	288.2	356.2	+11.2	65	407	
	14941	.362	243.3	356.8	-12.2	68	357			14945	.381	12.2	306.7	+19.0	109	810	
	14942	.374	310.7	354.3	+11.1	90	558			14947	.519	36.0	292.4	+22.2	36	207	
	1253b	.461	124.9	314.3	-17.9	0	3			14951	.591	50.6	282.7	+19.6	10	55	
	14945	.603	51.9	307.6	+19.1	133	744			14952	.517	110.7	282.0	-12.8	3	9	
	14947	.765	57.1	293.8	+22.3	51	247	163 *c*		14949	.672	104.2	270.1	-11.5	3	12	
	14949	.919	101.0	271.0	-11.3	6	20	303 *f*		14950	.721	73.6	267.2	+ 9.8	23	158	105 *f*
	14950	.951	78.7	266.7	+ 9.8	32	166	254 *c*		14953	.864	117.6	254.2	-25.0	5	18	256 *f*
		.943	69.1					134			.763	101.5					176
		.947	113.3					157			.861	74.9					269
May 12			(-21.9)	(337.6)	(- 3.0)	(532)	(3027)	(2595)			.893	107.6					125
											.925	69.3					237
											.970	101.2					230
											.982	71.2					176
132.333		.953	237.1					235	May 14			(-21.4)	(311.6)	(- 2.7)	(353)	(2215)	(2915)
C		.897	256.3					396									
		.896	279.5					99									
		.874	250.1					181	134.351		.954	291.4					254
	14936	.982	257.9	44.7	-12.4	34	246	112 *c*	G		.841	246.2					269
	14948	.963	251.7	39.7	-18.4	24	233	279 *c*		14943	.944	254.6	9.2	-15.4	3	14	237 *c*
	14943	.670	249.9	6.1	-15.5	4	39			14941	.870	258.3	359.0	-11.5	50	309	314 *c*
	14941	.546	252.3	357.5	-11.9	44	310			14942	.859	284.6	356.5	+11.1	60	343	164 *c*
	14942	.544	295.3	355.4	+10.8	64	446			14945	.399	338.4	307.7	+19.1	121	747	
	14945	.475	38.1	307.5	+19.1	107	760			14947	.428	14.3	292.3	+21.8	40	228	
	14947	.647	49.9	293.3	+22.1	40	261			14951	.474	35.2	281.9	+20.2	7	25	
	14951	.750	60.3	281.9	+19.6	7	40			14952	.340	121.9	281.7	-12.8	0	4	
	14952	.709	105.6	281.2	-13.1	3	22			14949	.494	109.4	270.5	-11.7	3	8	
	14949	.823	101.7	270.5	-11.2	0	11	343 *f*		14950	.552	67.2	267.8	+10.1	19	139	
	14950	.862	77.1	267.3	+ 9.6	24	138	150 *c*		14953	.746	122.0	254.7	-25.1	4	10	124 *f*
	14953	.949	115.5	254.8	-25.0	3	17	178 *f*		14954	.809	67.6	247.8	+16.3	0	6	106 *c*
		.845	114.7					185		14955	.981	64.1	222.6	+24.8	0	18	108 *c*
		.877	63.3					137			.868	118.8					148
		.940	108.3					112			.881	102.2					125
		.959	75.7					270			.933	69.2					149
May 13			(-21.7)	(325.5)	(- 2.9)	(354)	(2523)	(2677)	May 15			(-21.2)	(298.8)	(- 2.6)	(307)	(1851)	(1998)

Group 14948. May 12 - 14. A short stream forming near the west limb.
Group 14949. May 12 - 15. A small spot which, from its stability, is probably the end of a regular spot.
Group 14950. May 12 - 23. A small stable regular spot with a small drift northwards.
Group 14951. May 13 - 17. A few small changing spots.
Group 14952. May 13 - 15. A small spot.
Group 14953. May 13 - 17. A small spot shrinking to a speck.
Group 14954. May 15 - 16. Tiny variable spots.
Group 14955. May 15 - 26. An area of feeble but protracted disturbance until May 23, when a bi-polar group begins to develop.

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
1947			°	°	°			
135.332	14941	.958	259.0	359.0	-11.2	19	134	234 *c*
G	14942	.956	282.5	357.6	+11.1	46	349	287 *c*
	1253d	.905	251.7	349.9	-17.6	0	8	244 *c*
	14956	.807	281.6	338.5	+ 7.8	23	147	145 *c*
	14945	.504	316.9	307.1	+19.1	94	730	
	14947	.419	346.7	291.7	+21.5	34	217	
	14951	.389	8.9	282.1	+20.0	8	40	
	14950	.382	55.4	267.3	+10.1	25	137	
	14953	.615	128.9	254.1	-24.7	0	6	
	14954	.705	60.3	245.7	+18.5	1	11	
	14955	.881	62.2	228.2	+22.9	0	5	117 *f*
	14957	.892	120.4	225.4	-28.0	0	6	61 *c*
	14958	.930	106.9	217.9	-16.6	0	7	177 *c*
		.960	69.4					220
May 16			(-20.9)	(285.8)	(- 2.5)	(250)	(1797)	(1485)
136.336		.977	253.2					393
G		.974	285.0					197
		.892	299.2					51
		.888	258.4					73
		.797	254.0					56
	14956	.930	279.2	340.1	+ 7.6	29	105	211 *c*
	14959	.676	246.8	312.9	-17.2	7	23	
	14945	.661	303.0	308.3	+19.1	116	645	
	14947	.504	322.4	291.7	+21.2	42	211	
	14951	.419	334.6	283.5	+19.8	8	23	
	14950	.236	22.2	267.3	+10.1	21	130	
	1253e	.299	145.2	262.3	-16.5	1	5	
	14953	.483	142.7	253.8	-24.8	1	6	
	1253f	.549	113.5	241.3	-14.7	3	15	
	14957	.776	125.4	226.7	-28.3	34	79	93 *c*
	14958	.828	109.1	217.8	-17.1	16	28	180 *f*
	14960	.904	66.8	210.7	+19.7	0	8	90 *c*
	14961	.934	72.2	205.3	+15.7	12	41	61 *c*
	14962	.979	72.0	195.9	+17.0	346	1034	228 *c*
		.798	58.2					170

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbrae	AREA Whole Spots	AREA Faculae
1947			°	°	°			
		.916	78.9					42
		.942	102.2					50
		.948	117.4					88
		.958	59.8					79
May 17			(-20.6)	(272.5)	(- 2.4)	(636)	(2353)	(2062)
137.330		.981	278.6					222
C		.927	254.0					321
		.839	240.6					100
	14959	.825	250.3	313.7	-17.5	13	63	247 *c*
	14945	.782	296.1	307.0	+18.5	134	662	330 *c*
	14947	.626	308.7	290.8	+21.0	20	150	
	14950	.257	327.7	267.4	+10.2	27	137	
	1253g	.450	184.9	261.9	-28.8	4	49	
	14955	.645	50.5	227.0	+22.1	3	29	
	14957	.653	133.0	226.7	-28.2	89	471	
	14958	.684	112.5	218.2	-16.9	3	14	
	14960	.738	61.5	216.3	+18.9	1	13	
	14961	.820	69.8	206.8	+15.0	3	21	114 *c*
	14962	.921	70.5	194.5	+16.9	250	1321	820 *c*
	14963	.967	64.1	187.0	+24.3	46	212	344 *c*
	14964	.977	68.2	183.7	+20.7	34	239	132 *c*
	14965	.970	106.1	183.6	-16.1	78	479	356 *c*
	14966	.982	79.7	181.2	+ 9.6	34	155	148 *c*
		.916	118.6					122
May 18			(-20.3)	(259.4)	(- 2.3)	(739)	(4015)	(3256)
138.322		.938	261.8					47
C		.937	243.0					203
		.834	252.8					99
		.793	239.3					109
	14959	.919	252.1	312.4	-17.3	33	238	267 *c*
	14945	.904	292.7	308.2	+19.3	86	497	349 *c*
	14947	.747	300.8	289.5	+20.8	20	102	74 *c*
	14950	.414	301.0	267.3	+10.2	25	119	

Group 14956. May 16 - 17. Two small spots.

Group 14957. May 16 - 27. From a tiny spot a big group quickly develops in which both leader and follower are at first regular spots. From May 21, companions between them grow and coalesce with the parent spots which, by May 25, have merged into a complex entity of apparent instability.

Group 14958. May 16 - 20. A small spot.

Group 14959. May 17 - 20. A group of bi-polar type growing near the west limb.

Group 14960. May 17 - 28. A stream of small changing spots.

Group 14961. May 17 - 21. A small spot vanishing.

Group 14962. May 17 - 29. A large composite spot, preceded and followed by clusters of small spots. These grow until May 21 when the group has become a long stream of irregular spots that are fast dying out at the west limb.

Group 14963. May 18 - 29. With Group 14964, a return of Group 14918. A regular spot with a few variable companions.

Group 14964. May 18 - 28. With Group 14963, a return of Group 14918. A small composite spot dying out.

Group 14965. May 18 - 30. A stream reaching its peak area a few days from the east limb. The leading regular spot is supplemented by another closely following it by the fusion of subsidiary spots. The following component of the group is meanwhile decreasing to a tiny spot.

Group 14966. May 18 - 30. A return of Group 14921. A stable regular spot with a distant companion on May 26 - 27.

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
1947			°	°	°			
	14967	.240	122.4	234.5	- 9.5	12	48	
	14955	.519	37.8	226.3	+22.0	13	68	
	14957	.536	144.5	225.8	-27.8	111	699	
	14958	.513	119.8	218.7	-16.7	1	8	
	14960	.614	54.6	214.5	+18.9	3	27	
	14961	.675	65.6	207.0	+14.5	5	20	
	14962	.817	66.8	194.6	+17.4	182	1532	260 *c*
	14963	.898	61.6	186.5	+24.1	52	202	310 *c*
	14964	.906	66.4	184.3	+20.2	26	156	188 *c*
	14965	.899	106.8	182.9	-16.0	75	504	313 *c*
	14966	.919	78.2	180.6	+ 9.9	34	178	188 *n*
	14968	.991	105.9	164.0	-16.0	25	206	159 *c*
		.935	116.6					122
		.976	97.4					248
May 19			(-20.0)	(246.3)	(- 2.2)	(703)	(4604)	(2936)
139.122 K		.964	245.2					59
		.881	241.7					133
		.865	258.5					105
	14959	.967	251.8	310.5	-18.1	33	162	149 *c*
	14945	.953	290.6	306.0	+18.9	97	477	171 *c*
	14947	.838	296.2	288.8	+20.4	17	94	147 *c*
	14950	.559	291.8	267.4	+10.2	25	154	
	14967	.127	176.4	235.2	- 9.3	15	71	
	14969	.260	3.8	234.7	+12.9	6	37	
	14955	.441	20.8	226.0	+22.1	24	93	
	14957	.472	159.5	224.9	-28.2	136	763	
	14958	.375	132.8	219.1	-16.7	1	9	
	14960	.488	42.6	215.3	+19.0	4	20	
	14961	.542	58.4	207.3	+14.6	6	12	
	14962	.705	62.4	195.0	+17.4	186	1736	
	14963	.816	57.8	186.6	+24.3	47	224	303 *c*
	14964	.826	63.3	184.0	+20.4	62	234	114 *c*
	14965	.814	108.1	182.4	-15.8	147	777	188 *c*
	14966	.835	76.4	180.4	+10.1	36	203	181 *n*
	14970	.942	67.1	167.8	+20.7	6	18	173 *c*
	14968	.953	105.8	163.7	-15.7	41	357	232 *c*
		.932	77.0					114
		.935	98.6					235
		.938	116.6					136
		.948	53.2					115

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1947			°	°	°			
		.962	59.8					151
May 20			(-19.8)	(235.7)	(- 2.1)	(889)	(5441)	(2706)
140.397 C		.898	251.0					175
		.850	294.3					103
		.775	255.4					175
	14945	.993	289.4	300.6	+19.0	16	110	126 *c*
	14947	.950	292.0	288.4	+20.2	11	32	246 *c*
	14950	.768	285.6	267.4	+10.7	23	148	96 *c*
	14967	.331	247.5	236.8	- 9.0	13	76	
	14969	.388	309.2	236.6	+12.3	5	26	
	14955	.426	342.6	226.7	+22.0	14	71	
	14971	.180	324.2	224.9	+ 6.4	1	12	
	14957	.463	190.2	224.2	-28.9	146	794	
	14960	.367	2.0	218.0	+19.5	19	69	
	14961	.334	33.6	207.9	+14.2	4	6	
	14972	.381	115.2	198.3	-11.1	8	23	
	14962	.497	48.4	196.0	+17.4	164	1370	
	14963	.655	48.4	186.5	+24.1	42	239	
	14964	.652	54.9	184.3	+20.4	36	277	
	14965	.633	114.0	181.9	-16.4	145	796	
	14966	.647	72.0	180.3	+10.0	45	178	
	14970	.824	63.0	167.2	+20.7	11	48	99 *n*
	14968	.862	107.6	160.2	-16.1	89	420	276 *c*
	14973	.914	123.6	156.1	-31.3	7	27	189 *f*
	14974	.919	99.0	152.3	- 9.0	9	23	74 *sf*
		.796	118.4					109
		.876	51.4					126
		.945	116.1					201
		.964	101.6					204
		.972	126.1					138
May 21			(-19.4)	(218.8)	(- 1.9)	(808)	(4745)	(2337)
141.486 G		.959	249.3					158
		.953	292.3					168
		.934	259.3					236
		.900	246.3					142
		.855	255.5					197
		.855	236.8					164
		.783	284.1					237
	14950	.900	283.2	267.4	+11.0	16	132	301 *n*

Group 14967. May 19 - 25. A small regular spot followed by one or two companions.

Group 14968. May 19–June 1. A stream whose leader is closely followed by a few small spots which it absorbs by May 28. The follower breaks up and dies out by May 28, although subsidiary spots in the middle of the stream show an increase.

Group 14969. May 20 - 26. A pair of small spots: the leader is left after May 24.

Group 14970. May 20 - 31. The origin and rise to maximum of a large group from a pair of nuclei. The leader becomes a composite spot and the chief component. The follower is represented by a cluster of small spots which begin to die out after May 27.

Group 14971. May 21 - 26. A small spot followed by a cluster.

Group 14972. May 21 - 28. A stream of small spots; the leader becomes a small regular and is left by May 27.

Group 14973. May 21 - 28. Intermittent. One or two tiny spots.

Group 14974. May 21 - 31. A stream, developing rapidly from a small spot and reaching its maximum area on the fourth day. The leader, a regular spot, alone survives by May 30.

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
1947			°	°	°				1947			°	°	°			
	14969	.584	294.3	237.3	+12.3	8	85			14966	.301	48.6	180.1	+ 9.8	27	140	
	14967	.541	256.5	236.4	- 8.7	11	66			14970	.569	47.6	166.7	+21.0	79	469	
	14955	.556	315.5	229.1	+21.7	11	97			14968	.580	115.4	160.5	-15.8	87	600	
	14971	.422	290.5	227.8	+ 6.8	18	109			14974	.675	101.5	151.4	- 9.0	30	184	
	14957	.540	212.9	223.8	-28.5	99	797			14976	.928	56.6	130.1	+29.9	3	12	124 *c*
	14960	.419	329.6	217.3	+19.3	8	98				.782	123.3					230
	14972	.196	157.1	199.9	-12.2	11	66				.816	99.0					95
	14962	.354	23.6	195.9	+17.1	125	1111				.858	134.4					107
	14963	.525	34.1	185.7	+24.0	44	293				.872	107.4					245
	14964	.493	41.5	184.2	+19.9	44	174				.917	93.6					219
	14965	.441	124.7	182.3	-16.1	102	774				.930	107.4					180
	14966	.452	63.9	180.2	+ 9.8	28	184				.951	101.5					195
	14970	.702	56.3	165.7	+21.5	24	174	112 *f*			.975	111.1					170
	14968	.716	110.5	160.4	-15.8	77	545	206 *f*			.980	92.4					244
	14975	.785	122.1	156.9	-25.9	0	8	130 *f*	May 23			(-18.8)	(193.3)	(- 1.7)	(899)	(5613)	(3332)
	14974	.793	99.9	152.4	- 8.9	25	127	161 *c*									
		.806	120.2					144									
		.871	91.9					115	143.296 G		.979	294.1					110
		.875	122.3					165			.967	282.7					199
		.878	55.1					119			.959	242.1					198
		.901	99.9					182			.957	251.4					155
		.919	128.3					158			.924	289.0					147
		.944	107.7					308			.900	237.0					142
		.951	59.5					219		14969	.875	285.7	240.0	+12.8	7	33	154 *c*
		.980	115.9					197		14967	.852	261.5	238.6	- 8.1	9	39	123 *c*
		.981	95.3					287		14955	.809	299.5	229.9	+22.4	71	429	96 *c*
May 22			(-19.1)	(204.4)	(- 1.8)	(651)	(4840)	(4106)		14971	.763	280.1	229.4	+ 6.6	28	137	62 *c*
										14957	.744	231.2	221.8	-28.9	96	759	90 *c*
										14960	.657	303.2	216.1	+19.7	31	140	
142.328 C		.963	247.4					141		14972	.402	241.9	201.7	-12.4	33	152	
		.956	256.6					316		14962	.411	320.9	196.2	+17.0	113	896	
		.940	239.4					128		14963	.435	348.6	185.9	+23.5	35	274	
		.886	283.2					142		14964	.377	350.7	184.2	+20.1	15	80	
		.872	295.8					168		14965	.249	193.1	183.8	-15.5	92	467	
		.871	250.0					78		14966	.199	3.3	179.8	+ 9.8	33	148	
		.853	241.6					84		14970	.443	30.7	166.6	+20.7	93	492	
		.777	236.2					131		14968	.410	126.3	160.5	-15.5	116	600	
	14950	.967	282.0	267.6	+11.1	17	98	226 *c*		14977	.465	133.7	159.6	-20.2	1	9	
	14969	.736	289.0	238.6	+12.7	16	80	109 *c*		14974	.497	104.7	151.5	- 8.6	93	463	
	14967	.700	259.8	237.3	- 8.3	18	90			14976	.838	52.7	130.8	+29.4	4	33	165 *c*
	14955	.680	305.8	229.6	+22.0	43	207			14978	.889	114.1	119.7	-22.0	5	23	99 *c*
	14971	.590	284.2	228.3	+ 6.9	45	215			14979	.928	119.9	114.8	-28.2	3	12	179 *nf*
	14957	.632	222.9	222.6	-28.9	121	781				.827	94.5					180
	14960	.521	314.1	216.6	+19.6	44	194				.841	101.5					136
	14972	.222	214.6	200.7	-12.2	39	164				.848	119.2					193
	14962	.327	351.7	196.1	+17.1	165	1294				.887	107.7					195
	14963	.452	15.4	185.8	+24.1	32	301				.915	91.9					197
	14964	.396	19.8	185.1	+20.1	29	165				.976	109.4					385
	14965	.305	143.8	182.6	-15.8	104	619		May 24			(-18.5)	(180.5)	(- 1.6)	(878)	(5186)	(3205)

Group 14975. May 22 - 28. A pair of tiny spots seen only on May 22 and 28.
Group 14976. May 23 - 28. A pair of small spots.
Group 14977. May 24 - 25. A small spot just south of Group 14968.
Group 14978. May 24-June 3. A stream of normal type growing rapidly from a few nuclei. The follower dies out by June 1.
Group 14979. May 24-June 3. A long stream of small variable 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
1947			°	°	°				1947			°	°	°			
144.330		.970	241.3					178		14968	.292	208.9	161.8	-16.0	95	604	
C	14969	.961	284.1	239.7	+13.1	7	39	167 *c*		14974	.140	178.0	153.1	- 9.3	49	306	
	14967	.953	261.9	239.0	- 8.2	3	21	124 *f*		14973	.515	174.2	149.9	-31.9	0	4	
	14955	.920	295.7	230.6	+22.8	45	355	170 *c*		14981	.537	18.0	142.5	+29.3	24	38	
	14971	.898	277.7	230.1	+ 6.2	20	133	173 *c*		14976	.601	32.0	132.1	+29.3	19	48	
	14957	.850	236.2	220.6	-29.1	131	1051	290 *c*		14978	.608	126.7	121.7	-22.3	67	292	
	14960	.804	296.8	216.5	+20.2	16	107	150 *c*		14979	.755	127.8	110.9	-28.4	15	36	35 *c*
	14972	.619	251.2	203.6	-12.7	12	82			14982	.873	111.2	94.2	-19.0	36	101	79 *c*
	14962	.565	303.9	196.0	+17.0	59	814			14980	.933	135.4	91.5	-42.2	30	110	136 *f*
	14963	.507	325.4	185.0	+23.1	44	306				.766	111.6					102
	14965	.383	230.1	184.5	-15.6	73	425				.795	119.7					45
	14964	.451	325.7	182.5	+20.4	13	51				.844	104.0					102
	14966	.289	311.7	179.4	+ 9.6	17	140				.950	122.0					210
	14970	.396	0.3	166.7	+21.7	74	592				.951	113.3					283
	14968	.270	155.7	160.2	-15.7	78	625		May 26			(-17.8)	(153.4)	(- 1.3)	(825)	(4660)	(2220)
	14977	.350	158.1	158.8	-20.4	1	12										
	14974	.276	115.9	152.3	- 8.3	45	362										
	14976	.706	44.5	132.5	+28.9	14	74										
	14978	.756	118.3	121.1	-22.0	30	142	108 *f*									
	14979	.867	122.1	110.6	-28.2	13	72	189 *c*	146.333		.940	249.2					209
	14980	.974	133.1	93.4	-42.2	28	150	95 *c*	C		.810	310.9					85
		.808	92.0					167		14957	.982	240.9	218.2	-28.8	80	679	274 *c*
		.922	108.8					339		14972	.904	256.3	204.4	-12.9	19	106	168 *c*
		.925	114.1					230		14962	.834	292.2	194.2	+17.6	80	611	561 *c*
		.948	103.2					206		14963	.779	301.9	186.2	+23.4	35	207	126 *c*
May 25			(-18.1)	(166.8)	(- 1.5)	(723)	(5553)	(2586)		14965	.720	249.4	184.5	-15.5	51	370	
										14966	.633	287.3	178.0	+ 9.9	28	190	
										14970	.567	311.5	167.2	+20.9	126	769	
										14968	.444	233.8	162.1	-16.3	126	688	
										14974	.289	240.9	155.1	- 9.2	56	328	
145.343		.862	247.0					238		14973	.530	200.2	152.6	-30.9	0	2	
C	14969	.994	283.2	236.4	+12.9	0	18	117 *c*		14981	.512	357.2	141.9	+29.4	9	37	
	14971	.975	277.0	230.1	+ 6.5	11	60	125 *c*		14976	.529	15.1	131.2	+29.3	6	27	
	14955	.975	293.8	228.6	+22.8	50	191	184 *c*		14978	.471	140.7	121.6	-22.4	102	408	
	14957	.936	239.5	220.1	-28.8	69	696	316 *c*		14979	.640	136.6	110.4	-28.6	14	69	
	14960	.906	293.0	215.8	+20.1	9	22	106 *c*		14982	.743	115.1	95.1	-19.1	51	261	253 *c*
	14972	.778	254.6	203.5	-12.7	29	119	33 *c*		14980	.889	138.9	87.8	-42.7	29	180	163 *c*
	14962	.725	295.6	196.4	+17.2	67	577	109 *c*			.875	113.3					160
	14963	.645	310.2	185.8	+23.5	32	211				.887	122.8					285
	14965	.561	243.8	184.7	-15.4	71	385				.961	109.7					196
	14964	.597	308.4	183.2	+20.5	11	30				.963	70.4					183
	14966	.450	296.4	177.5	+10.3	38	185				.974	119.1					193
	14970	.443	331.2	166.6	+21.5	103	627		May 27			(-17.5)	(140.3)	(- 1.2)	(812)	(4932)	(2856)

Group 14980. May 25–June 6. A stream, led by a small regular spot, in high southern latitude. The leader alone remains by June 4.

Group 14981. May 26 - 27. A pair of small spots.

Group 14982. May 26–June 5. A cluster of small spots, growing into a stream of normal type by May 28. Both leader and follower are regular spots, the former surviving by June 3.

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
1947			°	°	°			
147.313		.848	305.1					407
G	14972	.976	257.1	204.3	-12.8	16	117	182 *f*
	14962	.930	289.3	194.0	+17.5	44	391	1005 *c*
	14963	.880	296.9	185.4	+22.8	25	170	151 *c*
	14965	.849	252.5	184.2	-15.4	52	317	226 *c*
	14966	.794	282.8	178.8	+ 9.4	32	157	121 *c*
	14970	.719	301.3	168.3	+21.0	99	781	
	14968	.612	244.7	162.3	-16.0	92	604	
	14974	.508	252.5	156.6	- 9.7	43	237	
	14975	.579	230.9	156.2	-22.3	4	10	
	14973	.614	215.7	151.9	-30.8	1	11	
	14976	.529	358.5	128.2	+30.7	1	10	
	14978	.374	166.6	121.9	-22.3	55	335	
	14979	.527	152.5	111.3	-28.8	11	59	
	14983	.567	128.5	98.9	-21.6	16	54	
	14982	.589	122.3	95.6	-19.3	70	332	
	14980	.823	144.1	86.5	-42.5	26	165	146 *c*
	14984	.933	72.9	59.8	+15.5	0	10	157 *nf*
	14985	.954	68.4	56.6	+20.2	15	102	277 *c*
	14986	.984	110.7	48.2	-20.5	82	400	322 *n*
	14987	.983	101.7	48.1	-11.7	53	404	181 *c*
		.805	127.0					287
		.817	114.9					138
		.920	77.9					144
		.946	117.5					485
		.955	125.3					455
May 28			(-17.1)	(127.3)	(- 1.1)	(737)	(4666)	(4684)
148.342		.931	302.0					329
C		.829	260.0					198
	14962	.983	288.4	192.0	+17.9	30	213	434 *c*
	14963	.961	294.2	185.5	+22.8	16	113	272 *c*
	14965	.948	253.6	184.5	-15.8	50	372	322 *c*
	14966	.911	280.8	178.6	+ 9.4	16	179	172 *n*
	14970	.842	296.2	167.6	+21.2	115	1173	316 *c*
	14968	.774	250.0	162.7	-16.0	102	740	239 *c*
	14974	.696	257.2	157.0	- 9.6	45	269	
	14978	.387	198.8	121.4	-22.4	42	345	
	14979	.470	175.2	111.1	-28.8	14	100	
	14983	.435	146.0	98.6	-22.0	24	172	
	14982	.436	135.6	95.0	-19.0	53	318	

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1947			°	°	°			
	14980	.755	151.6	84.7	-42.3	29	154	228 *c*
	14984	.824	70.0	60.4	+15.7	2	19	245 *c*
	14985	.864	65.4	56.9	+20.5	21	143	130 *c*
	14988	.908	127.6	53.5	-34.1	13	90	708 *c*
	14986	.926	112.0	47.3	-20.7	43	453	364 *c*
	14987	.921	103.0	47.2	-12.4	38	356	592 *c*
		.808	111.8					205
		.905	119.8					361
May 29			(-16.8)	(113.7)	(- 1.0)	(653)	(5209)	(5115)
149.313		.979	298.6					302
G		.940	261.6					183
		.932	238.6					94
		.902	303.7					131
		.841	231.8					116
	14965	.991	254.2	182.8	-15.8	52	343	396 *c*
	14966	.981	279.5	179.0	+ 9.1	28	192	202 *n*
	14970	.936	292.4	168.1	+20.5	141	1128	680 *c*
	1253*h*	.901	248.7	163.5	-19.5	2	13	319 *c*
	14968	.891	252.2	162.6	-16.2	109	569	
	14974	.849	259.0	158.3	- 9.8	43	243	54 *c*
	14978	.496	221.0	121.4	-22.8	48	272	
	14979	.496	196.0	109.8	-29.3	20	95	
	1253*i*	.336	197.0	106.8	-19.6	3	24	
	14983	.371	172.6	97.8	-22.4	45	259	
	14982	.325	167.1	96.4	-19.3	58	272	
	14980	.707	161.6	83.2	-42.8	32	168	
	14984	.692	65.4	60.1	+16.0	6	23	
	14985	.752	61.0	56.3	+20.7	23	138	98 *c*
	14988	.822	132.0	53.6	-33.9	8	43	434 *c*
	14986	.838	114.9	46.4	-21.2	65	486	367 *c*
	14987	.827	104.4	45.9	-12.4	57	328	842 *c*
		.796	70.0					93
		.816	122.4					128
		.930	76.1					154
		.935	122.7					222
		.940	95.8					116
		.946	133.8					331
		.958	112.8					236
May 30			(-16.4)	(100.8)	(- 0.9)	(740)	(4596)	(5498)

Group 14983. May 28–June 5. A pair of irregular spots forming just *s* Group 14982 and soon on the downgrade.
Group 14984. May 28–June 3. With Group 14985, a return of Group 14938. A few small scattered spots.
Group 14985. May 28–June 3. With Group 14984, a return of Group 14938. A small spot with a few variable close companions.
Group 14986. May 28–June 9. Probable return of Group 14948. A stream of normal type dispersing rapidly after June 3.
Group 14987. May 28–June 4. Return of Group 14936. A long stream in rapid decline. By June 3 only the middle components remain but on June 4 a small faint cluster appears at the rear.
Group 14988. May 29–June 7. A small group, indecisive in development.

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
1947			°	°	°				1947			°	°	°			
150.342		.965	300.4					150		14980	.679	190.4	82.2	-42.4	24	91	
G		.935	244.3					239		14984	.339	36.2	60.8	+15.2	4	47	
		.895	236.2					152		14985	.448	37.0	56.1	+20.3	9	53	
		.863	227.0					101		14988	.581	152.8	54.6	-31.6	1	7	
		.818	306.2					118		14991	.483	127.6	49.1	-17.6	6	35	
	14970	.986	291.6	166.4	+21.2	114	1104	384 *c*		14986	.542	129.7	46.3	-20.7	47	339	
	14968	.971	253.7	162.8	-16.0	87	553	283 *c*		14987	.508	115.2	44.7	-12.9	39	221	
	14974	.952	260.2	159.0	- 9.6	29	214	229 *f*		14994	.961	78.8	359.5	+10.5	23	129	293 *n*
	14978	.646	234.9	121.9	-22.4	45	230				.762	117.2					188
	14989	.543	265.2	119.9	- 3.3	4	24				.783	145.2					444
	14979	.583	216.6	110.4	-28.5	15	62				.892	62.4					134
	14983	.399	203.0	96.9	-22.3	41	301				.910	136.0					158
	14982	.352	207.0	96.9	-19.0	45	232				.919	110.4					224
	14990	.324	350.2	90.5	+17.8	7	21				.925	102.9					202
	14980	.674	174.0	81.7	-42.7	31	140				.932	126.0					136
	14984	.539	57.2	59.2	+16.2	1	9		June 1			(-15.6)	(72.7)	(- 0.6)	(352)	(1997)	(4150)
	14985	.605	53.6	56.1	+20.3	17	123										
	14988	.740	137.4	50.4	-33.5	0	5	181 *c*									
	14991	.656	114.8	48.9	-16.6	5	27		152.343		.982	232.2					430
	14986	.700	119.4	46.7	-20.7	69	451		C		.965	254.7					312
	14987	.681	107.8	45.7	-12.5	68	284	179 *c*			.958	294.5					248
		.826	100.2					100			.943	304.3					246
		.859	112.9					489			.935	238.3					108
		.862	127.6					202			.879	256.3					254
		.899	138.6					466			.756	246.4					84
		.966	64.8					152		14992	.965	285.1	134.7	+14.4	41	208	199 *c*
		.974	107.4					150		14978	.902	245.4	123.0	-22.3	48	194	312 *c*
May 31			(-16.0)	(87.2)	(- 0.8)	(578)	(3780)	(3575)		14989	.867	266.9	120.7	- 2.9	37	200	311 *c*
										14979	.813	231.1	108.1	-30.9	2	24	237 *c*
										14982	.662	240.5	98.3	-19.4	34	208	
151.442		.967	240.0					235		14983	.671	236.7	97.8	-21.9	45	245	
C		.958	262.1					172		14990	.569	302.8	90.8	+17.5	5	32	
		.958	303.4					153		14980	.714	201.1	81.0	-42.1	9	56	
		.943	230.8					115		14984	.271	1.1	60.5	+15.2	7	41	
		.892	255.6					122		14985	.368	11.3	56.4	+20.5	5	36	
		.890	307.2					157		14988	.545	162.9	50.0	-31.7	4	22	
		.839	248.8					182		14991	.361	145.1	48.3	-17.6	6	67	
		.831	232.0					89		14986	.433	146.1	45.8	-21.5	42	198	
	14968	.994	254.4	156.1	-15.5	0	18	200 *c*		14987	.339	129.4	45.3	-12.8	23	97	
	14992	.878	286.8	132.7	+14.4	9	51	133 *c*		14994	.890	77.6	358.8	+10.8	17	109	295 *n*
	14993	.879	296.4	131.1	+22.6	7	25	115 *c*			.773	110.6					156
	14978	.808	242.4	123.2	-22.3	37	226	213 *f*			.818	59.0					143
	14989	.748	266.2	120.9	- 3.2	42	184	485 *p*			.855	102.7					149
	14979	.713	228.8	110.1	-28.4	4	32				.930	115.1					240
	14982	.513	231.5	97.7	-19.1	41	234				.950	104.0					175
	14983	.533	226.7	97.3	-21.9	48	257				.956	84.7					186
	14990	.427	316.8	90.5	+17.5	11	48		June 2			(-15.3)	(60.8)	(- 0.5)	(325)	(1737)	(4085)

Group 14989. May 31-June 3. A small spot with a few variable companions.
Group 14990. May 31-June 3. A pair of spots; the leader is left on June 3.
Group 14991. May 31-June 6. A faint cluster of small spots.
Group 14992. June 1 - 2. A cluster of spots lost to view at the west limb.
Group 14993. June 1 - 3. Intermittent. A pair of spots on June 1; a single spot on June 3.
Group 14994. June 1 - 8. Return of Group 14942. A small regular spot joined on June 5 by a short string of small spots closely *s* of it. But extinction of the whole group soon follows.

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
1947			°	°	°				1947			°	°	°			
153.382		.980	304.1					113	155.480		.952	289.3					166
G		.955	256.4					286	G		.899	243.5					323
		.890	235.5					226			.890	235.3					399
	14993	.992	293.8	128.6	+23.5	0	18	88 *c*			.877	291.5					106
	14978	.973	247.3	122.4	-22.1	23	224	473 *c*			.844	225.9					86
	14989	.956	267.3	119.7	- 2.7	12	66	851 *c*			.787	295.9					158
	14979	.922	240.7	111.2	-26.9	0	6	309 *c*		14982	.987	249.8	99.1	-19.9	33	188	422 *c*
	14982	.819	246.0	99.4	-19.6	34	176	321 *p*		14983	.983	248.6	97.6	-21.0	5	109	
	14983	.811	242.7	97.8	-22.0	22	161	247 *c*		14980	.933	224.5	80.2	-41.7	3	15	505 *f*
	14990	.776	292.6	95.3	+17.0	0	4	108 *c*		14997	.673	302.2	56.6	+20.9	3	15	
	14980	.781	210.2	79.2	-42.6	11	51	357 *c*		14991	.559	236.1	48.3	-18.1	3	19	
	1253j	.590	236.6	78.3	-19.3	1	4			14988	.669	217.9	48.0	-31.8	19	79	
	14984	.355	319.1	60.9	+15.1	3	12			14986	.544	228.5	45.0	-21.1	12	88	
	14985	.396	341.1	54.9	+21.5	4	37			14994	.383	62.1	359.2	+10.1	11	91	
	14988	.525	185.1	50.1	-31.8	37	173			14995	.818	60.9	328.3	+23.3	40	485	206 *c*
	14991	.298	186.4	49.0	-17.6	8	149			14996	.942	66.3	310.8	+22.1	75	610	441 *c*
	14987	.194	174.9	46.0	-11.5	9	42				.784	110.9					143
	14986	.359	174.3	44.8	-21.3	35	200				.904	111.5					266
	14994	.761	75.3	358.7	+10.8	21	115	101 *f*	June 5			(-14.1)	(19.2)	(- 0.1)	(204)	(1699)	(3221)
	14995	.988	65.7	327.2	+23.9	48	377	542 *c*									
		.811	112.3					428									
		.871	71.9					278									
		.883	81.3					218	156.292		.959	237.4					438
		.938	106.0					393	G		.959	246.2					339
June 3			(-14.9)	(47.0)	(- 0.4)	(268)	(1815)	(5339)			.921	284.3					131
											.897	293.4					141
											.876	229.8					260
154.329		.951	237.9					213			.852	238.1					283
C		.885	257.4					142			.838	248.0					229
		.856	291.3					192			.836	258.1					146
		.808	232.6					186			.808	286.4					96
	14982	.916	248.3	99.1	-19.9	33	161	264 *c*		14980	.973	227.8	80.4	-40.8	4	30	403 *f*
	14983	.909	244.9	97.5	-22.8	24	128	249 *c*		14997	.784	295.4	57.1	+19.6	24	86	217 *c*
	14980	.857	218.7	80.5	-42.1	4	19	323 *f*		14988	.763	225.6	48.4	-32.1	11	56	134 *c*
	14988	.574	202.7	49.6	-32.1	38	135			14991	.679	242.4	47.7	-18.3	5	28	
	14991	.376	218.6	48.7	-17.3	4	78			14986	.650	236.8	43.9	-20.8	21	97	
	14986	.393	203.5	44.1	-21.3	28	165			*12531*	.479	240.8	33.9	-13.5	7	48	
	14987	.275	207.8	42.1	-14.3	6	44			14994	.224	39.6	0.2	+ 9.9	32	155	
	1253k	.282	25.2	27.4	+14.4	4	11			14995	.720	56.2	327.9	+23.5	114	726	148 *f*
	14994	.610	70.8	358.7	+11.3	15	100			14996	.874	64.4	310.4	+22.1	97	497	539 *c*
	14995	.936	64.7	327.5	+23.4	38	528	217 *c*		14998	.878	72.8	308.5	+15.0	7	28	197 *c*
	14996	.989	66.5	314.2	+23.1	44	363	280 *c*			.816	115.0					168
		.923	107.5					230			.949	117.0					162
June 4			(-14.5)	(34.5)	(- 0.3)	(238)	(1732)	(2296)	June 6			(-13.8)	(8.5)	(0.0)	(322)	(1751)	(4031)

Group 14995. June 3 - 15. A large group of stream type consisting of two composite spots. The follower grows until June 8, afterwards breaking up and so dying out. The leader undergoes little change but is slowly diminishing as it goes round the limb.

Group 14996. June 4 - 15. A return of Group 14945. A stream consisting of two clusters of small spots. On June 9 they begin to disperse and die out.

Group 14997. June 5 - 7. Two or three small spots.

Group 14998. June 6 - 14. A few small spots reaching a maximum by June 9 as a stream led by a regular spot; this alone remains by June 14.

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
1947			°	°	°			
157.368		.969	221.5					199
C		.949	248.9					261
		.932	239.8					332
		.923	258.1					214
		.818	235.9					143
		.814	257.7					172
		.801	216.0					369
	14997	.909	292.5	57.6	+20.4	5	37	519 *c*
	14988	.893	232.7	51.5	−32.6	4	30	466 *c*
	14986	.797	243.3	43.6	−20.9	12	93	386 *c*
	14999	.538	313.9	18.8	+21.9	2	11	
	14994	.203	324.7	1.0	+ 9.6	10	68	
	15000	.356	353.9	356.5	+20.7	12	60	
	14995	.566	45.7	328.2	+23.3	99	925	
	15001	.577	119.1	322.7	−16.2	4	16	
	14998	.718	68.9	310.5	+15.0	6	42	
	14996	.745	60.5	310.2	+21.5	43	456	131 *f*
		.868	65.0					89
		.912	120.1					215
		.955	66.5					184
June 7			(−13.3)	(354.2)	(+ 0.1)	(197)	(1738)	(3680)
158.332		.971	289.7					365
C		.946	234.9					508
		.929	259.9					119
		.860	227.7					141
		.839	216.5					223
		.817	254.2					115
		.766	242.8					120
	14986	.897	246.7	42.9	−20.6	8	72	553 *c*
	14994	.370	296.4	1.1	+ 9.6	2	22	
	15000	.429	327.7	355.7	+21.3	7	36	
	14995	.451	28.5	328.0	+23.5	160	1071	
	15001	.402	131.9	323.5	−15.3	2	10	
	14998	.520	60.9	313.6	+14.8	21	107	
	14996	.612	52.9	309.9	+21.8	52	313	
		.783	60.7					90
		.869	124.5					100
		.869	99.4					223
		.881	64.2					175
1947			°	°	°			
		.967	75.7					216
		.976	102.7					200
June 8			(−12.9)	(341.5)	(+ 0.2)	(252)	(1631)	(3148)
159.331		.977	261.1					179
C		.962	240.3					241
		.933	231.6					458
		.899	219.2					201
		.899	253.4					277
		.872	243.3					158
	14986	.956	247.2	39.5	−21.6	0	22	378 *c*
	15000	.543	313.9	353.2	+22.3	1	12	
	14995	.389	1.1	327.8	+23.1	91	837	
	15001	.279	164.4	323.9	−15.2	1	5	
	14998	.342	44.5	314.0	+14.4	46	218	
	14996	.462	38.1	310.5	+21.5	25	257	
		.810	113.2					76
		.895	103.3					161
		.959	61.5					117
June 9			(−12.5)	(328.3)	(+ 0.3)	(164)	(1351)	(2246)
160.299		.965	253.5					410
G		.964	231.6					318
		.948	243.8					232
		.881	223.9					217
		.831	249.4					174
	14999	.916	292.5	20.1	+20.7	0	6	155 *c*
	14995	.435	332.3	328.1	+23.0	103	769	
	15001	.306	209.4	324.4	−15.0	1	4	
	14998	.248	1.6	315.1	+14.7	24	134	
	14996	.368	13.9	310.1	+21.2	23	180	
	1254a	.917	73.0	250.1	+15.7	0	11	150 *c*
	15002	.949	122.2	247.4	−30.2	0	11	222 *c*
	15003	.953	115.5	245.3	−24.1	0	11	147 *c*
		.904	58.6					146
		.951	98.6					128
		.969	77.7					207
June 10			(−12.1)	(315.5)	(+ 0.4)	(151)	(1126)	(2506)

Group 14999. June 7 - 10. A faint spot, seen only on June 7 and 10.
Group 15000. June 7 - 10. A few unstable spots.
Group 15001. June 7 - 10. A small pair on June 7; afterwards a single spot.
Group 15002. June 10 - 12. A tiny spot near the east limb.
Group 15003. June 10 - 11. Another tiny spot.

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
1947			°	°	°				1947			°	°	°			
161.326		.976	285.1					155			.913	257.5					108
G		.953	254.2					244			.820	250.4					194
		.935	229.9					224		14995	.844	295.9	329.9	+22.1	105	588	301 *c*
		.848	254.3					86		14998	.692	290.2	317.0	+14.4	14	65	
		.834	244.3					135		14996	.636	306.0	308.8	+22.5	6	84	
	15000	.808	296.7	352.6	+21.6	4	13	166 *p*		15005	.807	79.4	221.9	+ 9.0	19	130	123 *c*
	14995	.564	312.5	328.6	+22.9	76	571			15006	.888	107.1	213.9	−14.8	4	31	112 *c*
	14998	.346	317.0	316.0	+15.2	22	135			15007	.919	122.7	212.8	−29.3	0	9	425 *c*
	14996	.390	343.5	308.8	+22.5	25	145			15008	.956	103.5	203.0	−12.7	3	15	167 *c*
	15004	.529	67.8	272.0	+12.0	0	4				.828	59.9					218
	15002	.876	125.5	246.5	−30.2	2	9	139 *c*			.945	74.0					707
	15003	.863	117.7	245.8	−23.3	0	5	96 *c*	June 13			(−10.9)	(275.1)	(+ 0.8)	(151)	(922)	(2974)
		.966	65.3					350									
		.833	68.9					113									
		.869	101.3					150	164.188		.882	251.3					145
		.910	76.1					246	K		.812	306.6					90
		.949	123.5					163		14995	.928	292.3	330.6	+21.0	65	464	390 *c*
		.957	81.5					117		14998	.814	286.8	317.2	+14.1	5	26	81 *c*
June 11			(−11.7)	(301.9)	(+ 0.6)	(129)	(882)	(2384)		14996	.729	297.2	307.5	+20.0	3	17	144 *c*
										15005	.672	78.1	222.5	+ 8.6	22	137	
										15008	.887	104.5	202.7	−12.4	4	22	124 *c*
162.351		.959	282.5					233		15009	.985	66.8	184.6	+23.0	11	73	306 *p*
C		.936	259.1					188			.837	126.7					213
		.920	247.1					281			.873	77.5					119
		.873	283.1					125			.875	71.5					186
	15000	.913	294.0	352.2	+22.1	8	27	211 *c*			.885	63.9					103
	14995	.710	302.1	328.8	+22.6	65	618				.968	107.9					229
	14998	.526	298.2	316.9	+15.0	19	108				.973	74.6					160
	14996	.495	319.9	308.4	+22.8	19	169		June 14			(−10.5)	(264.0)	(+ 0.9)	(110)	(739)	(2290)
	15004	.365	54.0	270.7	+13.0	4	21										
	15002	.776	131.1	245.9	−30.1	2	6										
	15005	.930	80.7	220.3	+ 8.9	5	30	74 *c*	165.383		.978	253.9					136
		.776	73.5					141	G		.933	301.9					142
		.806	122.3					122			.932	244.6					250
		.894	62.4					346			.927	284.8					182
		.948	106.8					208		14995	.992	292.0	330.6	+22.0	46	420	566 *f*
		.949	71.5					193		14996	.881	294.9	307.7	+22.3	2	13	390 *c*
		.964	120.1					453		15010	.483	231.8	271.4	−16.3	14	90	
June 12			(−11.3)	(288.3)	(+ 0.7)	(122)	(979)	(2575)		15011	.182	292.6	257.9	+ 5.1	9	48	
										1254b	.476	184.3	250.5	−27.1	3	18	
										15005	.406	72.3	225.3	+ 8.1	15	101	
163.350		.974	251.7					243		15006	.628	116.0	212.5	−15.0	3	8	
C		.960	291.1					236		15007	.748	134.0	209.8	−30.3	4	12	92 *f*
		.918	282.5					140		15008	.733	108.2	202.9	−12.4	4	10	

Group 15004. June 11 - 12. One or two ephemeral spots.
Group 15005. June 12 - 23. A nondescript group till more definite growth occurs towards the west limb.
Group 15006. June 13 - 23. Small unstable spots.
Group 15007. June 13 - 15. Return of Group 14957. A tiny spot, not seen on June 14.
Group 15008. June 13 - 16. Return of Group 14972. A small spot decreasing to a speck.
Group 15009. June 14 - 26. Return of Groups 14963 and 14964: third appearance. A small persistent spot until June 22.
Then, other spots appear grouped in an unstable cluster of which only one spot remains by June 25.
Group 15010. June 15 - 19. Apparently a minor group, although its later history is lost to observation.
Group 15011. June 15 - 16. A short-lived pair.

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
1947			°	°	°				1947			°	°	°			
	15009	.913	65.4	184.2	+22.8	11	62	315 *c*			.900	294.6					184
	15012	.945	80.6	177.6	+ 9.2	6	21			15010	.774	247.4	270.9	-16.4	27	135	120 *c*
	15013	.973	105.0	172.6	-14.2	92	708	529 *c*		15016	.714	254.1	267.0	-10.3	6	31	82 *p*
	15014	.988	69.8	167.6	+20.1	107	841	521 *c*		15005	.122	354.4	223.6	+ 8.3	20	127	
	15015	.997	110.2	163.8	-20.0	0	98	294 *sp*		15018	.370	176.6	221.6	-20.3	4	18	
		.875	111.5					213		15006	.315	142.7	211.6	-13.1	10	89	
		.906	73.1					215		15009	.691	57.6	183.8	+22.6	8	51	
		.963	57.6					168		15012	.717	78.2	177.8	+ 9.3	4	15	
June 15			(-10.0)	(248.2)	(+ 1.1)	(316)	(2450)	(4013)		15013	.798	109.4	172.1	-14.5	73	617	153 *c*
										15014	.841	66.6	167.8	+20.2	108	721	381 *c*
										15015	.885	113.2	163.3	-19.7	25	155	359 *c*
166.337		.958	293.4					537		15017	.891	77.6	160.5	+11.6	17	43	155 *c*
C		.847	296.0					166		15019	.985	113.1	144.5	-22.5	0	20	159 *c*
	15010	.639	242.6	270.5	-16.1	14	101				.838	51.4					147
	15016	.521	248.2	263.8	-10.1	1	10				.932	61.8					626
	15011	.366	282.6	255.4	+ 5.7	2	11				.943	105.4					238
	1254c	.354	8.3	231.4	+21.7	1	6		June 17			(-9.2)	(222.9)	(+ 1.3)	(302)	(2022)	(2986)
	15005	.205	54.4	224.9	+ 8.0	15	63										
	1254d	.396	31.4	221.8	+20.8	0	6										
	15006	.458	126.0	212.1	-14.4	9	40		168.339		.962	293.1					221
	15008	.574	113.8	202.1	-12.4	0	4		C		.904	285.3					143
	15009	.800	62.5	184.6	+22.4	10	59	150 *c*			.830	299.1					89
	15012	.847	79.7	177.1	+ 9.3	4	25	67 *c*		15010	.897	251.0	270.9	-16.3	13	125	180 *c*
	15013	.894	106.6	172.6	-14.2	70	569	345 *c*		15016	.874	256.3	268.8	-11.2	61	362	161 *c*
	15014	.932	68.6	167.0	+20.3	118	734	427 *c*		15020	.474	251.7	236.0	- 7.2	0	4	
	15015	.952	111.4	164.2	-19.9	6	64	229 *c*		15021	.378	285.5	230.5	+ 7.1	18	84	
	15017	.971	76.6	158.7	+13.3	4	23	157 *p*		15018	.428	208.0	221.5	-20.7	5	25	
		.804	115.3					140		15005	.220	313.2	218.4	+10.0	7	44	
		.900	57.0					178		15006	.251	186.9	210.9	-12.9	8	58	
		.915	97.3					96		15009	.537	47.9	183.7	+22.3	9	40	
		.981	57.5					169		15012	.531	74.5	178.0	+ 9.3	1	8	
June 16			(-9.6)	(234.5)	(+ 1.2)	(254)	(1715)	(2661)		15013	.626	114.3	173.3	-13.8	49	350	
										15014	.702	62.1	167.9	+20.1	106	623	43 *f*
										15015	.769	117.9	162.9	-20.1	19	143	96 *c*
167.294		.983	292.0					184		15017	.763	75.7	160.3	+11.8	15	99	69 *c*
G		.949	256.8					198		15022	.854	108.0	152.3	-14.5	4	19	105 *p*

Group 15012. June 15 - 21. Return of Group 14966: third appearance. A small spot probably the end of a regular spot.

Group 15013. June 16 - 26. A stream. Its leader is a regular spot with a few variable companions. The composite follower disintegrates from June 21 into small fragments which spread out in longitude. The group dies out before reaching the limb.

Group 15014. June 15 - 27. Return of Group 14970. A large nearly circular spot with triple umbra and occasional close companions. Decreasing slowly in size, its position is steady with a latitude trend northwards.

Group 15015. June 15 - 25. A wide pair of small spots. Because of the change in latitude. this group is taken as a revival rather than a return of Group 14968.

Group 15016. June 16 - 19. A few small spots growing rapidly as they pass round the limb.

Group 15017. June 16 - 27. The development to maximum of a large stream from a small spot near the east limb. By June 21, leading spots begin to coalesce into a large regular spot which remains stable. The slow dissolution of the following part of the stream is offset by condensation of intermediate spots into a subsidiary regular spot when the peak area of the group is reached.

Group 15018. June 17 - 23. A pair of tiny spots, when first seen near the C.M., developing into a short stream.

Group 15019. June 17 - 24. Intermittent. One or two variable spots.

Group 15020. June 18 - 22. A pair of growing spots.

Group 15021. June 18 - 22. Two clusters of developing spots.

Group 15022. June 18 - 25. One or two small spots, not seen on June 24.

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
1947			°	°	°			
	15023	.950	75.1	137.8	+14.6	3	25	115 *f*
		.844	58.4					228
		.865	121.3					111
		.940	114.5					113
		.944	106.3					117
		.961	97.1					119
		.978	61.8					110
June 18			(-8.7)	(209.1)	(+ 1.4)	(318)	(2009)	(2020)
169.388 G		.975	284.1					230
		.940	267.1					133
		.895	279.6					115
		.883	288.0					122
		.878	305.1					108
		.862	235.5					204
		.847	253.6					107
	15010	.975	253.1	271.2	-16.1	40	282	278 *c*
	15016	.969	257.7	270.0	-11.5	76	393	267 *c*
	1254e	.913	295.5	259.2	+23.8	0	11	152 *c*
	15020	.667	256.9	236.0	- 7.5	16	55	
	15021	.604	280.5	231.8	+ 7.5	86	362	
	15018	.558	227.2	221.1	-20.9	28	150	
	15005	.418	290.9	218.4	+ 9.9	22	118	
	15006	.394	228.5	212.8	-13.7	10	40	
	15024	.241	152.9	188.8	-10.9	4	25	
	15009	.408	28.3	183.2	+22.5	12	47	
	15025	.420	144.9	180.5	-18.5	1	13	
	15012	.329	65.3	177.6	+ 9.3	3	8	
	15013	.456	125.3	172.8	-13.8	71	459	
	15014	.548	53.5	167.3	+20.3	119	508	
	15015	.626	125.1	162.4	-19.8	25	103	
	15017	.576	71.7	161.4	+11.6	33	163	
	15022	.704	113.5	153.4	-15.1	9	39	
	15023	.855	74.3	137.3	+14.2	5	15	113 *c*
		.842	118.4					201
		.845	108.7					193
		.851	98.9					142
		.929	61.1					230
		.942	69.1					135
		.944	52.8					138
		.944	101.2					172
		.951	93.1					275
		.956	111.5					309
June 19			(-8.3)	(195.2)	(+ 1.5)	(560)	(2791)	(3624)
170.339 C		.940	237.9					162
		.918	246.5					98

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbrae	AREA Whole Spots	AREA Faculae
1947			°	°	°			
		.903	286.7					205
		.761	302.0					69
	15020	.816	259.1	236.4	- 7.9	27	231	144 *c*
	15021	.761	278.5	231.8	+ 7.5	39	479	157 *c*
	15018	.692	236.7	220.7	-21.0	39	219	
	15005	.596	284.3	218.3	+ 9.7	32	229	
	15006	.555	242.1	212.8	-13.7	4	25	
	1254f	.376	313.3	199.1	+16.4	1	9	
	15024	.240	204.4	188.4	-11.0	11	57	
	15009	.355	359.4	182.8	+22.3	4	16	
	15025	.349	174.8	180.7	-18.7	2	16	
	15012	.160	33.3	177.5	+ 9.3	1	6	
	15013	.317	147.1	172.4	-13.8	48	482	
	15014	.411	37.9	167.0	+20.4	77	530	
	15017	.371	60.8	163.4	+11.9	11	87	
	15015	.498	138.3	162.0	-20.2	10	71	
	15022	.557	120.3	152.9	-14.9	2	16	
	15023	.722	71.7	137.8	+14.2	1	9	
		.829	71.9					109
		.833	54.1					160
		.862	91.5					153
		.950	117.9					229
		.977	108.7					308
June 20			(-7.9)	(182.6)	(+ 1.6)	(309)	(2482)	(1794)
171.334 C		.961	287.6					99
		.931	294.6					135
		.864	302.6					165
		.777	225.2					176
	15020	.923	260.5	236.0	- 8.0	52	245	161 *c*
	15021	.890	278.1	232.0	+ 8.0	40	534	189 *c*
	15018	.828	243.2	221.4	-20.7	37	330	119 *c*
	15005	.773	280.8	219.5	+ 9.4	43	315	115 *c*
	15006	.648	248.6	207.4	-12.2	22	102	
	15024	.396	237.4	189.1	-10.5	19	141	
	15009	.409	329.1	182.4	+22.2	5	20	
	15025	.409	206.6	180.6	-19.6	0	5	
	15012	.189	314.6	177.2	+ 9.4	0	6	
	15013	.276	189.1	172.0	-13.9	31	384	
	15026	.361	181.9	170.1	-19.3	7	43	
	15014	.326	7.6	166.8	+20.6	83	466	
	15017	.188	25.6	164.7	+11.5	42	359	
	15015	.392	165.5	163.4	-20.4	14	71	
	1254g	.535	25.0	153.9	+30.7	1	8	
	15022	.418	134.6	151.5	-15.2	4	16	
		.904	121.0					206
		.918	108.8					418
June 21			(-7.4)	(169.4)	(+ 1.8)	(400)	(3045)	(1783)

Group 15023. June 18 - 26. Return of Group 14992. A single spot dying out; weak activity is renewed 5° following in longitude after a lapse of two days, which dies out by June 26.

Group 15024. June 19 - 25. A pair of small spots, the leader of which becomes a small regular spot outliving its companion.

Group 15025. June 19 - 21. A small faint spot.

Group 15026. June 21 - 24. A small regular spot, immediately s Group 15012.

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
1947			°	°	°			
172.335		.962	298.0					121
C		.939	237.1					161
		.909	293.0					54
		.830	233.2					158
	15020	.984	261.2	235.2	- 8.3	41	192	161 c
	15021	.977	278.0	233.7	+ 8.2	23	542	314 c
	15018	.922	246.6	220.5	-20.6	57	310	267 c
	15005	.901	279.6	220.1	+ 9.4	59	537	203 c
	15027	.817	284.6	210.1	+12.9	3	17	78 c
	15006	.822	253.7	209.7	-12.2	18	72	207 c
	15024	.582	248.8	189.5	-10.5	27	145	
	15009	.536	310.2	182.2	+21.8	5	12	
	15028	.363	235.8	173.8	- 9.9	8	43	
	15013	.385	222.3	171.6	-14.6	43	423	
	15026	.434	214.4	171.1	-19.0	11	60	
	15014	.363	332.3	166.4	+20.5	80	393	
	15017	.239	313.8	166.2	+11.4	43	459	
	15015	.385	197.4	163.1	-19.6	8	40	
	15022	.322	169.0	152.4	-16.4	19	88	
	15019	.484	150.6	141.2	-23.0	8	47	
		.843	102.6					113
		.847	113.4					207
		.897	124.0					125
		.977	120.7					154
June 22			(-7.0)	(156.1)	(+ 1.9)	(453)	(3380)	(2323)
173.396		.938	236.2					319
C		.891	291.5					146
		.791	294.3					181
	15005	.978	279.9	220.0	+10.1	41	308	337 c
	15018	.982	248.4	219.4	-20.7	65	452	240 c
	15006	.935	256.1	210.1	-12.2	6	18	254 c
	15027	.923	283.4	209.1	+13.1	42	172	354 c
	15024	.761	254.3	190.1	-10.5	19	94	
	15009	.701	301.3	182.5	+22.8	34	153	
	15028	.567	249.2	174.5	- 9.8	22	115	
	15026	.584	233.4	171.6	-18.6	15	41	
	15013	.547	237.8	170.6	-15.1	91	509	
	15017	.452	291.5	167.4	+11.3	117	607	
	15014	.505	309.9	166.4	+20.6	63	392	
	15015	.514	224.1	164.3	-19.7	4	36	

U.T.	Group No.	Measures Dist.	Measures Pos. Angle	Position Long.	Position Lat.	Area Umbrae	Area Whole Spots	Area Faculae
1947			°	°	°			
	15022	.369	209.1	152.9	-16.8	13	72	
	15019	.435	187.9	145.8	-23.5	5	23	
	15023	.278	36.8	132.2	+14.7	12	43	
	15029	.466	31.2	126.7	+25.3	1	6	
	15030	.886	80.8	80.0	+ 9.0	2	10	205 c
		.907	124.4					145
		.919	116.7					393
		.957	69.0					170
		.962	108.1					180
		.965	100.4					167
		.969	123.3					444
June 23			(-6.5)	(142.1)	(+ 2.0)	(552)	(3051)	(3535)
174.349		.973	240.1					170
G		.943	293.2					222
		.904	248.9					160
		.850	286.3					173
	15027	.986	283.3	209.8	+13.4	39	305	347 c
	15024	.887	257.9	190.9	- 9.7	13	68	99 c
	15009	.826	297.3	182.5	+23.5	22	117	100 c
	15028	.726	254.6	174.5	- 9.6	6	55	
	15026	.727	242.7	172.1	-17.9	7	25	
	15013	.701	246.9	171.1	-14.4	66	358	
	15017	.654	285.9	169.3	+11.9	176	963	
	15014	.647	300.7	165.9	+20.9	78	354	
	15015	.654	236.2	164.6	-19.5	1	8	
	15019	.517	214.5	148.0	-23.1	5	25	
	15023	.227	346.7	132.6	+14.8	22	125	
	15029	.418	7.5	126.0	+26.4	62	277	
	15030	.778	79.3	78.9	+ 9.6	9	60	147 c
	15031	.984	111.5	51.5	-20.7	0	19	210 c
		.843	120.3					212
		.853	111.0					153
		.858	101.1					134
		.866	127.7					250
		.875	64.7					107
		.923	74.3					119
		.965	103.1					303
		.966	67.9					87
		.975	121.9					305
June 24			(-6.1)	(129.5)	(+ 2.1)	(506)	(2759)	(3298)

Group 15027. June 22 - 24. A restricted three days' record of new spots near the west limb.
Group 15028. June 22 - 25. Small fleeting spots in a short stream.
Group 15029. June 23 - 30. A stream developing from a tiny spot near the central meridian. The initial vigorous growth is soon halted, and the spots are individually unstable.
Group 15030. June 23 - 26. A small spot.
Group 15031. June 24-July 2. One or two little spots, not seen on July 1.

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
1947			°	°	°			
175.356		.970	249.9					255
G		.951	301.6					128
		.940	235.8					151
		.935	286.3					352
		.904	246.7					293
		.824	304.0					172
	15024	.970	259.2	191.1	- 9.9	14	83	163 *f*
	15009	.929	295.2	183.0	+24.1	9	46	248 *c*
	15028	.898	256.6	178.7	-11.0	2	10	217 *n*
	15013	.858	252.4	173.2	-13.8	25	125	184 *c*
	15017	.809	282.7	169.5	+11.5	178	1062	294 *c*
	15015	.808	246.0	166.7	-17.8	2	10	66 *c*
	15014	.791	295.4	165.9	+21.2	56	358	191 *c*
	1254h	.717	235.6	155.6	-22.1	3	18	
	15022	.670	242.0	154.0	-16.5	1	12	
	15023	.353	309.0	132.5	+14.9	16	77	
	15029	.444	339.6	126.0	+26.6	91	378	
	15030	.650	76.2	76.3	+10.6	6	26	
	15032	.779	131.2	74.1	-29.1	7	49	127 *c*
	15031	.933	113.6	50.0	-21.0	10	51	508 *c*
	15033	.999	74.7	28.7	+15.4	0	91	88 *p*
		.875	105.9					261
		.916	136.7					255
		.926	127.8					211
		.940	121.6					284
		.970	105.0					117
June 25			(-5.6)	(116.1)	(+ 2.2)	(420)	(2396)	(4565)
176.413		.960	254.1					729
G		.947	301.7					142
		.939	240.1					216
		.904	260.8					146
		.890	249.9					376
		.831	303.7					246
		.804	246.3					165
	15009	.988	294.1	183.2	+24.1	6	50	366 *c*
	15017	.934	281.9	171.0	+11.9	181	1122	529 *c*
	15014	.904	292.6	165.6	+21.3	45	349	264 *c*
	15023	.541	294.1	132.8	+14.7	5	27	

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbrae	AREA Whole Spots	AREA Faculae
1947			°	°	°			
	15029	.549	318.5	126.0	+26.3	45	304	
	15034	.367	196.9	108.6	-18.2	5	23	
	15030	.457	71.0	76.2	+10.6	3	17	
	15032	.670	139.7	72.7	-28.6	17	119	
	15035	.629	106.9	64.9	- 8.7	3	18	
	15031	.835	116.9	49.6	-20.8	4	22	225 *c*
	15033	.969	74.9	26.6	+15.2	83	543	255 *c*
		.819	108.3					220
		.839	128.4					335
		.908	144.1					163
		.939	104.9					265
		.949	116.1					361
		.954	128.1					415
June 26			(-5.1)	(102.2)	(+ 2.3)	(397)	(2594)	(5418)
177.328		.970	251.5					418
G		.970	261.0					186
		.955	298.5					267
		.909	249.5					301
		.898	302.8					312
		.881	238.8					193
	15017	.988	282.1	171.2	+12.4	137	873	560 *c*
	15014	.969	291.3	165.3	+21.2	42	285	261 *c*
	15029	.671	308.5	125.8	+26.6	46	328	
	15034	.469	223.5	109.7	-17.6	3	8	
	15032	.577	152.9	72.7	-28.5	16	99	
	15035	.473	112.9	64.0	- 8.4	5	26	
	1254i	.654	112.7	52.0	-12.7	1	8	
	15036	.653	71.9	50.5	+13.5	3	11	
	15031	.719	122.3	49.6	-20.7	5	22	98 *f*
	15033	.895	74.5	27.0	+14.9	103	545	480 *c*
		.838	133.0					377
		.855	109.7					265
		.860	120.3					211
		.946	117.9					192
		.948	130.3					267
		.967	106.9					178
June 27			(-4.7)	(90.0)	(+ 2.4)	(361)	(2205)	(4566)

Group 15032. June 25-July 4. Intermittent. One or two small spots not seen on June 30, July 1 and 3.
Group 15033. June 25-July 8. A bi-polar group reaching its peak area three days after its entry on to the Sun's disk as a regular spot followed by a cluster. By July 1 the leader has split into two and on the next day the leading part likewise divides as it approaches the limb. The cluster in the rear spreads out after June 30 and so fades away by July 7.
Group 15034. June 26 - 29. One or two variable spots.
Group 15035. June 26 - 30. One or two small spots.
Group 15036. June 27-July 3. A pair of spots, except on June 30, when one is seen.

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
1947			°	°	°			
178.388		.979	281.3					221
G		.970	249.1					418
		.967	297.7					400
		.962	306.7					290
		.884	244.9					208
		.876	285.0					177
		.869	259.1					276
	15029	.805	301.9	125.8	+26.8	66	430	215 *c*
	15034	.589	232.1	105.3	-18.8	1	17	
	15037	.463	350.9	80.8	+29.7	0	8	
	15032	.521	173.1	71.9	-28.4	8	57	
	15035	.255	133.1	65.2	- 7.4	4	20	
	15036	.434	65.8	52.2	+12.6	5	32	
	15031	.587	131.8	48.2	-20.6	2	20	
	15033	.758	71.3	28.0	+15.8	107	860	153 *c*
	1254 j	.954	116.3	6.7	-24.1	3	20	267 *c*
	15038	.949	71.2	4.8	+18.6	14	109	354 *f*
	15039	.988	116.6	357.4	-25.8	0	44	
		.779	130.6					182
		.863	108.7					147
		.924	133.7					475
June 28			(-4.3)	(76.0)	(+ 2.6)	(210)	(1617)	(3783)
179.496		.970	262.2					293
C		.969	249.8					199
		.953	306.8					163
		.943	285.9					215
		.899	255.6					113
		.898	267.4					189
		.794	232.5					82
	15029	.910	298.0	124.9	+26.5	55	295	348 *c*
	15034	.749	242.2	105.4	-18.5	2	8	135 *p*
	15037	.553	326.7	81.7	+29.9	12	63	
	15032	.547	197.5	72.1	-28.7	3	20	
	15035	.184	197.2	64.4	- 7.4	7	38	
	15040	.335	167.0	56.8	-16.3	3	28	
	15036	.214	35.9	53.9	+12.6	4	10	
	15031	.480	146.6	44.9	-21.0	3	23	
	15033	.584	67.2	27.5	+15.2	129	666	
	15038	.834	70.0	6.0	+18.1	15	78	339 *c*
	15041	.914	123.0	0.8	-28.5	38	174	243 *c*
	15039	.930	120.0	357.4	-26.5	45	193	133 *c*
	15042	.936	110.2	354.2	-17.8	3	15	154 *c*
		.755	129.6					110

U.T.	Group No.	Measures Dist.	Measures Pos. Angle	Position Long.	Position Lat.	Area Umbræ	Area Whole Spots	Area Faculæ
1947			°	°	°			
		.762	149.2					223
		.894	140.0					346
June 29			(-3.8)	(61.3)	(+ 2.7)	(319)	(1611)	(3285)
180.130		.950	255.5					136
K		.896	234.5					179
		.882	246.7					180
		.807	253.7					81
		.794	239.3					97
	15029	.948	297.3	123.3	+26.7	30	211	403 *c*
	15037	.619	318.5	81.0	+29.9	10	56	
	15035	.258	223.9	63.3	- 7.9	2	9	
	15040	.366	199.5	60.2	-17.3	7	36	
	15036	.172	356.4	53.5	+12.7	3	30	
	15031	.414	165.1	46.4	-20.7	3	14	
	15033	.474	62.0	27.3	+15.3	120	680	
	15038	.750	68.5	6.0	+17.8	14	63	200 *c*
	15041	.861	125.9	0.5	-28.6	57	276	335 *c*
	15039	.879	122.1	357.0	-26.2	51	322	
	15042	.884	112.2	353.7	-18.1	2	20	129 *n*
	15043	.979	68.8	334.7	+21.3	14	72	216 *c*
		.813	149.9					118
		.857	138.5					226
		.906	70.4					163
		.930	117.3					130
June 30			(-3.5)	(52.9)	(+ 2.8)	(313)	(1789)	(2593)
181.340		.959	249.6					252
C		.950	241.5					158
		.926	257.9					147
		.876	246.5					138
	15037	.749	308.7	79.2	+30.0	5	38	87 *c*
	1254k	.574	242.5	68.2	-12.8	1	7	
	15040	.506	228.1	60.0	-17.0	4	22	
	15036	.326	302.9	53.1	+12.9	5	34	
	12541	.565	198.3	48.6	-29.5	1	8	
	1254m	.334	205.8	45.5	-14.5	4	19	
	15033	.265	35.9	27.7	+15.2	94	522	
	1254n	.454	132.8	16.8	-15.2	0	4	
	15038	.593	60.9	3.8	+19.1	5	25	
	15041	.733	134.9	0.7	-28.7	49	253	220 *c*
	15044	.834	131.5	349.9	-31.5	8	50	
	15039	.742	129.0	357.3	-25.5	36	228	85 *c*

Group 15037. June 28–July 2. A pair of small spots.
Group 15038. June 28–July 4. A pair of spots; the follower remains by July 2.
Group 15039. June 28–July 5. A few spots developing into a short stream of which the rear part is the first to die out.
Group 15040. June 29–July 1. Faint spots.
Group 15041. June 29–July 10. A slowly-diminishing regular spot.
Group 15042. June 29 - 30. A small spot.
Group 15043. June 30–July 9. Return of Group 14995. A single spot until July 3; afterwards one or two variable spots represent the position.
Group 15044. July 1 - 9. A stream of small unstable spots closely *f* Group 15041.

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
1947			°	°	°			
	15045	.816	75.8	342.8	+13.2	2	15	68 *c*
	15043	.893	67.4	334.8	+21.4	18	74	226 *f*
		.784	156.6					116
		.857	146.3					118
		.943	109.1					148
		.953	61.3					346
		.980	70.3					192
July 1			(-2.9)	(36.9)	(+ 2.9)	(232)	(1299)	(2301)
182.333		.969	249.5					207
G		.956	237.1					195
		.883	244.8					159
		.855	277.9					133
		.842	236.9					170
	15037	.856	303.5	79.0	+29.9	5	24	146 *c*
	15032	.793	229.7	67.2	-28.6	2	13	133 *c*
	15036	.525	289.1	54.2	+12.5	5	39	
	15031	.511	224.3	45.8	-18.6	4	35	
	15033	.229	341.8	28.0	+15.5	75	472	
	15046	.684	184.3	27.6	-39.9	0	10	
	15041	.629	146.5	0.6	-28.8	49	268	
	15038	.491	51.9	359.6	+20.3	5	13	
	15039	.619	139.7	357.6	-25.4	24	135	
	15044	.709	141.8	353.1	-31.1	5	23	
	15045	.674	71.7	342.6	+14.5	6	22	
	15043	.783	64.7	334.5	+21.5	14	50	133 *f*
	15047	.995	73.4	299.3	+16.8	0	43	
		.720	167.1					166
		.832	154.8					135
		.844	112.3					129
		.884	59.7					318
		.920	68.8					204
		.942	131.6					204
		.950	121.3					164
July 2			(-2.5)	(23.8)	(+ 3.0)	(194)	(1147)	(2596)
183.373		.961	244.2					205
G		.947	301.4					179
		.941	279.0					237
		.935	237.4					257
		.889	232.2					249

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbrae	AREA Whole Spots	AREA Faculae
1947			°	°	°			
		.885	292.6					160
		.847	246.4					300
		.779	225.0					219
		.763	237.4					178
	15036	.709	285.7	54.3	+13.2	0	19	
	15033	.371	305.7	28.1	+15.4	47	332	
	15046	.715	198.2	26.8	-39.6	10	87	
	15041	.542	163.4	359.9	-28.1	50	222	
	1254*o*	.206	58.8	359.8	+ 9.1	5	25	
	15038	.344	30.2	359.4	+20.3	3	10	
	15039	.517	157.0	357.1	-25.3	15	63	
	15044	.638	152.6	350.0	-31.5	4	33	
	15043	.648	60.3	333.1	+21.1	9	57	
	15047	.954	73.8	297.6	+16.3	38	164	304 *c*
	15048	.987	70.2	288.9	+20.1	6	48	292 *c*
		.827	61.7					488
		.935	64.0					272
July 3			(-2.0)	(10.0)	(+ 3.1)	(187)	(1060)	(3340)
184.342		.974	244.3					150
G		.968	291.1					135
		.946	230.4					211
		.903	283.6					266
		.889	249.9					400
		.874	235.3					306
		.818	222.9					258
		.816	242.7					238
		.803	285.1					134
	15032	.966	238.2	67.7	-29.5	0	10	318 *c*
	15033	.553	293.7	28.8	+15.5	30	306	
	15046	.771	207.1	24.5	-40.3	16	91	219 *c*
	15038	.298	352.1	359.7	+20.2	1	8	
	15041	.520	183.5	359.3	-27.9	34	204	
	15039	.481	178.3	356.3	-25.4	10	54	
	15044	.574	169.1	350.0	-31.0	1	14	
	15043	.483	49.7	334.1	+21.1	3	14	
	15049	.636	128.9	325.4	-20.7	3	15	
	15047	.868	72.9	297.6	+16.4	20	167	152 *c*
	15048	.928	70.0	289.6	+19.7	16	92	270 *c*
	15050	.988	103.4	277.4	-12.7	44	328	313 *p*
		.869	62.1					277
July 4			(-1.5)	(357.2)	(+ 3.2)	(178)	(1303)	(3647)

Group 15045. July 1 - 2. A small spot on July 1; a pair on July 2.
Group 15046. July 2 - 5. A pair of widely-separated small spots in high southern latitude.
Group 15047. July 2 - 11. A small composite spot which disintegrates and dies out.
Group 15048. July 3 - 15. A weak intermittent group lapsing from July 9 - 12 inclusive.
Group 15049. July 4 - 11. A small diminishing regular spot followed by a companion until July 7.
Group 15050. July 4 - 16. Return of Group 15016. A stable regular spot followed by a small changing companion until July 10.

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
1947			°	°	°			
185.299		.964	252.9					363
G		.945	237.1					418
		.942	283.3					187
		.915	246.8					213
		.846	234.9					258
		.816	249.3					100
	15033	.714	288.5	28.9	+15.4	36	239	
	15046	.837	215.5	24.0	-40.3	6	57	239 *c*
	15041	.561	202.6	358.6	-27.8	40	202	
	15039	.512	196.5	353.8	-26.0	3	20	
	15044	.574	186.0	348.5	-31.5	5	57	
	15043	.351	33.5	332.6	+20.2	2	20	
	15049	.490	143.9	326.7	-20.1	20	94	
	15047	.731	70.7	298.8	+16.2	26	147	92 *f*
	15048	.838	68.5	288.8	+19.8	13	120	215 *c*
	15050	.941	105.2	276.0	-13.1	84	454	225 *c*
	15051	.969	108.4	270.8	-16.9	4	92	167 *c*
		.924	114.1					164
		.933	60.5					142
		.936	80.5					113
		.943	72.1					136
July 5			(-1.1)	(344.5)	(+ 3.3)	(239)	(1502)	(3032)
186.328		.969	252.6					231
C		.950	244.8					318
		.940	238.8					220
		.935	231.7					356
		.903	221.4					269
		.877	249.3					356
		.845	235.9					108
		.805	215.9					108
	15033	.861	286.1	29.8	+15.5	28	231	382 *c*
	15041	.653	217.4	357.5	-28.1	18	202	
	15044	.620	201.7	346.5	-31.7	15	54	
	15043	.309	358.8	331.3	+21.3	6	54	
	15049	.407	172.8	327.8	-20.3	24	145	
	15047	.573	66.5	297.9	+16.0	20	106	
	15048	.701	65.0	288.6	+19.7	9	62	
	15050	.833	108.1	276.7	-13.0	63	393	515 *c*
	15051	.876	112.4	272.9	-17.6	4	69	260 *c*
		.849	61.2					116
		.960	62.5					99
July 6			(-0.6)	(330.9)	(+ 3.4)	(187)	(1316)	(3338)
187.383		.971	230.8					260
G		.966	250.0					483

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbrae	AREA Whole Spots	AREA Faculae
1947			°	°	°			
		.962	238.8					581
		.935	224.0					449
		.896	247.0					233
		.857	215.7					266
		.807	239.0					155
		.786	286.6					122
	15033	.960	285.0	30.8	+15.4	12	74	464 *f*
	15041	.768	227.8	357.1	-28.3	20	182	110 *c*
	15044	.737	221.3	351.3	-30.6	7	71	
	15052	.582	230.2	345.0	-18.7	4	20	
	15043	.391	325.0	330.9	+22.0	1	16	
	15049	.445	205.2	328.6	-20.2	12	80	
	15047	.383	53.0	298.5	+16.6	11	66	
	15048	.526	57.6	289.0	+19.4	4	26	
	15050	.693	113.2	276.3	-13.2	64	399	
	15051	.746	117.6	273.2	-17.6	7	49	240 *c*
	15053	.774	105.4	268.0	- 9.6	17	94	
	15054	.967	80.3	241.7	+10.3	17	85	394 *f*
		.896	74.0					181
		.910	60.9					138
		.936	100.9					210
July 7			(-0.2)	(317.0)	(+ 3.5)	(176)	(1162)	(4286)
188.367		.971	238.7					213
G		.968	250.6					204
		.952	222.2					298
		.898	243.1					157
		.874	288.1					130
	15033	.985	283.5	24.3	+13.9	0	20	238 *nf*
	15041	.864	233.9	356.2	-28.4	37	197	387 *c*
	15044	.829	228.3	349.9	-30.9	9	51	
	15052	.725	239.1	344.9	-19.1	10	55	118 *c*
	15043	.543	306.7	331.8	+22.1	5	21	
	15049	.571	225.7	329.6	-20.1	11	69	
	15047	.227	18.2	299.7	+16.0	8	68	
	15048	.401	47.1	285.9	+19.2	1	7	
	15050	.522	122.2	277.1	-12.8	63	313	
	15051	.598	126.3	273.7	-17.6	16	92	
	15053	.610	111.0	268.8	- 9.6	29	141	
	15054	.886	80.4	241.6	+10.1	20	95	324 *f*
	15055	.989	103.0	223.7	-12.2	7	39	155 *c*
	15056	.992	80.4	220.9	+10.0	0	27	407 *c*
		.800	102.7					105
		.902	101.5					133
		.976	113.9					130
July 8			(+0.3)	(303.9)	(+ 3.6)	(216)	(1195)	(2999)

Group 15051. July 5 - 13. Return of Group 15010. A small spot immediately s Group 15050.
Group 15052. July 7 - 10. One or two small spots.
Group 15053. July 7 - 13. A pair of small spots, appearing just north of Group 15050, which separate in longitude and die out.
Group 15054. July 7 - 15. A pair of small spots; one remains after July 11.
Group 15055. July 8 - 14. A single spot, steady in position, decreasing to a dot.
Group 15056. July 8 - 15. Return of Group 15005. A pair of small spots. On July 10 companions appear round the follower to form a short-lived cluster.

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
1947			°	°	°			
189.404		.975	288.4					148
C		.961	223.4					198
		.944	244.0					234
		.915	292.2					96
		.864	220.0					111
		.843	296.2					144
	15041	.944	238.1	355.6	-28.4	27	190	493 c
	15044	.914	232.5	348.6	-31.8	10	49	
	15052	.872	246.8	347.4	-18.0	9	42	122 c
	15043	.699	296.7	332.0	+21.1	6	25	
	15049	.713	236.8	329.4	-19.9	9	41	
	15057	.580	208.6	308.3	-26.9	8	20	
	15047	.273	326.6	299.2	+16.9	14	82	
	15050	.367	141.4	276.7	-12.9	62	315	
	1255a	.397	34.0	276.3	+22.8	2	9	
	15051	.452	142.2	273.4	-17.2	17	74	
	15053	.428	122.6	268.8	- 9.7	15	115	
	15058	.622	124.3	257.8	-17.2	12	38	
	15054	.750	79.4	241.9	+10.4	20	74	232 f
	15056	.904	82.4	225.5	+ 8.5	18	102	391 c
	15055	.927	105.0	224.0	-12.4	12	55	234 c
	15059	.980	121.4	216.0	-29.7	98	637	246 c
		.932	125.0					121
		.935	115.4					217
		.974	76.1					386
July 9			(+0.8)	(290.2)	(+ 3.8)	(339)	(1868)	(3373)
190.356		.945	293.1					118
C		.940	229.6					210
		.834	294.0					241
	15041	.984	240.3	353.5	-28.3	19	214	482 s
	15052	.946	248.0	345.7	-19.3	11	41	294 c
	15049	.836	242.8	329.7	-20.0	8	25	102 sf
	15057	.689	223.8	309.7	-26.5	1	9	
	15047	.415	304.6	298.5	+17.2	4	20	
	15050	.289	178.2	277.1	-12.8	83	338	
	1255b	.335	3.3	276.3	+28.8	4	53	
	15051	.367	170.4	273.9	-17.3	10	72	
	15053	.277	148.2	269.1	- 9.7	20	84	
	15058	.470	141.4	259.7	-17.8	1	15	
	15054	.588	77.4	242.1	+10.5	10	60	
	15056	.788	82.2	225.7	+ 8.5	18	142	126 c
	15055	.826	108.1	224.3	-12.5	8	37	129 c

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbrae	AREA Whole Spots	AREA Faculae
1947			°	°	°			
	15059	.935	124.5	214.6	-30.3	108	654	366 c
	15060	.956	68.2	204.7	+22.0	15	225	281 c
	15061	.988	61.7	195.9	+28.6	20	151	282 c
		.850	119.2					189
		.892	76.6					221
		.927	94.1					148
July 10			(+1.2)	(277.6)	(+ 3.9)	(340)	(2140)	(3189)
191.370		.940	286.8					145
C		.926	294.0					204
		.837	299.1					223
		.821	288.0					87
	15049	.936	246.6	330.2	-20.2	3	22	214 c
	1255c	.734	278.2	311.3	+ 8.7	1	9	
	15047	.568	295.6	296.6	+17.6	1	7	
	15050	.365	218.0	277.5	-12.8	46	294	
	15051	.406	204.6	274.4	-17.6	4	27	
	15053	.258	192.4	267.4	-10.5	3	32	
	15054	.387	72.0	242.3	+10.5	5	28	
	15056	.586	81.8	228.5	+ 8.0	8	61	
	15055	.683	113.4	224.4	-12.7	6	42	
	15059	.863	129.2	213.4	-30.5	103	645	310 c
	15060	.864	67.4	205.5	+21.4	25	201	162 c
	15061	.936	62.3	195.6	+27.3	38	384	183 c
		.935	111.2					123
		.971	73.9					182
		.978	64.6					106
July 11			(+1.6)	(264.2)	(+ 4.0)	(243)	(1752)	(1939)
192.313		.981	292.3					129
G		.971	247.3					332
		.969	282.9					207
		.912	297.1					391
		.905	287.7					215
		.883	236.2					196
		.856	277.8					122
	15050	.510	235.8	277.2	-12.9	61	255	
	15051	.525	225.1	274.6	-17.9	5	21	
	15053	.353	225.0	266.3	-10.4	6	38	
	15054	.192	57.1	242.3	+10.0	11	25	
	15056	.387	77.7	229.3	+ 8.5	5	18	
	15055	.525	121.9	224.7	-12.4	5	12	

Group 15057. July 9 - 10. A pair of small spots on July 9; a single spot on July 10.

Group 15058. July 9 - 10. Two or three tiny spots on July 9, of which one remains on the next day.

Group 15059. July 9 - 21. An elongated spot with a double umbra that coalesces by July 17, when the whole spot becomes circular. There are a few tiny companions following until July 14.

Group 15060. July 10 - 22. A single spot until July 12 when others appear forming a stream. These newer spots soon die out leaving the leader alone by July 19.

Group 15061. July 10 - 23. A diminishing composite spot with a marked drop in area between July 19 and 20.

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
1947			°	°	°			
	15059	.779	135.7	212.6	-30.6	89	576	106 *c*
	15060	.771	64.5	203.2	+22.1	50	317	130 *c*
	15061	.875	59.1	193.0	+28.8	62	359	59 *c*
	15062	.939	80.9	181.7	+10.0	3	17	439 *s*
	15063	.975	77.1	174.1	+13.5	152	966	
		.852	114.8					132
		.877	75.1					155
		.891	126.2					126
		.921	65.3					264
		.929	104.7					496
July 12			(+2.1)	(251.7)	(+ 4.1)	(449)	(2604)	(3499)
		.971	294.8					297
193.549 C		.966	280.2					190
		.906	287.2					261
		.893	296.5					209
		.812	245.6					151
	15048	.780	290.0	285.6	+18.1	3	18	196 *n*
	15050	.707	246.7	277.0	-13.1	47	267	
	15051	.722	240.0	276.3	-17.9	1	16	
	15053	.581	244.9	267.6	-10.7	2	16	
	15054	.150	309.6	242.1	+ 9.6	2	10	
	15056	.120	54.4	229.8	+ 8.2	4	40	
	15055	.335	148.0	225.0	-12.3	1	8	
	15059	.656	149.1	212.5	-30.3	74	514	139 *f*
	15060	.594	57.1	202.9	+22.3	35	279	
	15061	.743	53.7	192.3	+29.1	41	350	
	1255d	.788	112.3	186.7	-14.6	2	9	129 *nf*
	15062	.818	78.9	180.6	+11.5	3	28	625 *s*
	15063	.873	76.4	174.7	+13.9	137	716	
	15064	.929	126.6	174.4	-31.6	8	88	187 *c*
	15065	.957	76.7	162.0	+13.9	12	129	174 *c*
		.791	67.6					100
		.819	136.2					107
		.835	58.8					101
		.873	117.3					148
		.933	98.4					153
		.939	109.6					289
		.954	65.4					402
July 13			(+2.6)	(235.4)	(+ 4.2)	(372)	(2488)	(3858)

U.T.	Group No.	Measures Dist.	Measures Pos. Angle	Position Long.	Position Lat.	Area Umbrae	Area Whole Spots	Area Faculae
1947			°	°	°			
194.474 G		.956	297.3					175
		.924	256.7					179
		.891	246.0					290
		.836	296.9					210
		.773	237.0					198
	15048	.900	288.6	287.0	+18.6	6	28	433 *p*
	15050	.833	251.4	276.9	-12.8	44	270	159 *c*
	15054	.336	286.0	242.1	+ 9.4	5	11	
	15056	.140	300.0	230.1	+ 8.3	1	14	
	15055	.282	186.4	224.9	-11.9	0	3	
	15059	.593	163.2	211.7	-30.3	99	490	
	15060	.449	45.3	203.0	+22.4	41	328	
	15061	.631	46.6	191.5	+29.3	43	353	
	15062	.698	77.4	179.2	+11.8	6	58	113 *f*
	15063	.757	75.1	174.4	+14.1	170	820	
	15064	.863	132.0	173.8	-32.4	17	100	176 *c*
	15065	.882	76.4	161.3	+14.0	37	160	342 *c*
	15066	.889	68.6	160.9	+21.0	2	10	196 *c*
	15067	.933	111.5	157.2	-18.2	3	10	166 *c*
	15068	.973	114.6	149.9	-22.6	4	15	256 *c*
	15069	.981	78.5	143.9	+12.1	50	244	521 *c*
		.805	117.6					194
		.928	57.8					338
		.954	124.6					75
		.970	62.8					186
July 14			(+3.0)	(223.1)	(+ 4.3)	(528)	(2914)	(4207)
195.297 G		.955	248.9					460
		.938	235.6					99
		.914	278.9					99
		.842	245.1					234
	15048	.957	288.6	285.5	+19.0	3	15	696 *c*
	15050	.919	253.8	276.9	-13.0	47	242	183 *f*
	15054	.502	282.2	241.9	+ 9.8	3	14	
	15056	.328	282.4	231.0	+ 8.1	4	24	
	15070	.185	356.8	212.8	+14.9	1	6	
	15059	.572	178.2	211.0	-30.4	93	487	
	15060	.334	24.6	203.6	+21.9	37	320	
	15061	.536	36.6	190.8	+29.4	50	291	
	1255e	.469	124.7	189.1	-11.5	0	3	

Group 15062. July 12 - 24. A large composite spot with three principal nuclei growing from a small spot on July 12. The leading nucleus becomes the centre of a regular spot which just separates from the main body as it nears the west limb.

Group 15063. July 12 - 24. A large stable regular spot whose only abnormality is a small protrusion from the umbra on July 18 - 21.

Group 15064. July 13 - 22. A pair of small spots fading out by July 21; a single spot represents the position on July 23.

Group 15065. July 13 - 23. Return of Group 15017. A small diminishing spot with a double umbra until July 19.

Group 15066. July 14 - 15. A return of Group 15014: third appearance. A tiny spot.

Group 15067. July 14 - 17. A diminutive spot.

Group 15068. July 14 - 18. A tiny spot.

Group 15069. July 14 - 28. A stream, consisting of two composite spots, which grow fairly rapidly. After July 19, however, the leading sunspot disintegrates, but reforming as a composite spot by July 24, rises sharply in area as it passes round the Sun's limb. The following part of the group is fairly stable until July 23 when it begins rapidly to die out.

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
1947			°	°	°			
	15062	.547	75.2	179.6	+11.7	21	223	
	15063	.625	72.6	174.4	+14.2	164	698	
	15064	.791	136.6	172.6	-31.7	21	65	135 c
	15065	.776	75.4	161.7	+13.9	39	164	273 c
	15066	.794	67.2	161.0	+20.6	0	4	87 c
	15067	.847	114.5	158.3	-18.0	2	7	95 c
	15068	.912	116.6	150.8	-22.0	0	8	172 c
	15069	.945	78.8	141.1	+12.0	62	511	429 c
		.876	127.9					83
		.882	58.8					315
		.938	102.4					199
		.957	67.5					138
		.966	117.0					220
		.966	54.6					285
July 15			(+3.4)	(212.2)	(+ 4.3)	(547)	(3082)	(4202)
196.390 C		.974	293.9					217
		.943	246.7					148
		.927	256.0					162
	15050	.985	256.1	276.2	-12.8	25	169	136 c
	1255f	.667	217.7	225.1	-27.7	3	9	
	15070	.291	304.4	212.0	+13.8	1	7	
	15059	.602	197.9	210.1	-30.4	91	410	
	15060	.310	338.3	204.8	+21.2	33	184	
	15061	.436	16.1	189.9	+29.1	44	270	
	15062	.337	67.8	179.3	+11.5	52	534	
	15063	.422	65.3	174.6	+14.2	177	674	
	15064	.699	148.9	172.5	-32.6	8	39	
	15065	.598	72.9	161.9	+13.8	25	157	
	15067	.696	122.1	159.6	-18.1	1	8	
	15068	.791	122.0	151.8	-21.7	2	11	110 c
	15069	.813	78.3	143.5	+12.1	56	573	284 c
	15071	.921	95.1	131.3	- 2.8	2	28	194 c
		.803	56.3					185
		.845	105.0					83
		.898	121.1					127
		.931	48.3					135
		.952	64.5					431
		.960	79.5					197
July 16			(+3.9)	(197.8)	(+ 4.5)	(520)	(3073)	(2409)
197.339 C		.983	260.7					266
		.963	249.9					163
		.896	257.5					112
		.870	247.8					113
		.817	278.1					230
	15059	.669	211.7	209.2	-30.5	85	418	
1947			°	°	°			
	15060	.436	312.3	205.3	+21.2	25	172	
	15061	.420	351.7	189.2	+28.9	46	256	
	15062	.167	43.3	178.5	+11.4	110	1078	
	15063	.248	46.8	174.5	+14.1	141	656	
	15064	.630	161.3	171.4	-32.1	4	31	
	15072	.510	33.0	166.7	+29.5	1	5	
	15065	.424	66.5	161.7	+13.8	23	108	
	15067	.563	133.1	159.6	-18.5	1	7	
	15068	.666	130.3	152.2	-21.7	0	5	
	15069	.681	77.7	142.6	+11.7	101	965	
	15071	.810	97.1	131.8	- 3.1	4	25	192 c
	15073	.990	111.3	105.9	-20.3	7	45	477 c
		.816	126.4					230
		.862	45.9					98
		.882	63.7					257
		.883	107.3					94
		.886	79.6					215
		.971	102.1					230
July 17			(+4.3)	(185.2)	(+ 4.5)	(548)	(3771)	(2677)
198.385 G		.955	256.0					231
		.935	280.5					353
		.918	246.8					145
		.893	238.8					165
		.834	291.2					114
		.827	231.6					152
		.825	252.4					132
		.825	278.0					244
	15059	.770	222.9	208.8	-30.6	85	447	131 *f*
	15060	.603	299.3	205.5	+20.9	28	153	
	15061	.490	327.5	188.8	+28.7	28	221	
	15062	.178	311.6	179.2	+11.3	182	1411	
	15063	.179	342.1	174.6	+14.4	175	757	
	1255g	.449	183.1	172.9	-21.9	1	8	
	15064	.615	180.4	171.7	-33.2	13	69	
	15074	.287	11.0	168.1	+20.9	6	34	
	15072	.433	11.1	165.9	+29.6	1	5	
	15065	.231	43.9	161.9	+14.1	13	84	
	15068	.556	142.7	150.2	-21.8	1	13	
	15069	.482	73.4	143.4	+11.9	158	1073	
	15071	.604	101.8	135.2	- 3.4	1	8	
	15075	.717	61.2	128.3	+23.5	0	4	
	15073	.934	113.6	105.9	-20.1	3	17	481 c
		.770	77.0					63
		.839	58.7					168
		.898	104.4					209
		.924	125.0					134
July 18			(+4.8)	(171.4)	(+ 4.6)	(695)	(4304)	(2722)

Group 15070. July 15 - 16. A tiny spot.
Group 15071. July 16 - 18. A pair of small spots on July 16 and 17; a single spot on July 18.
Group 15072. July 17 - 18. A tiny spot.
Group 15073. July 17 - 29. A stream of very unstable spots with a brief maximum on July 21.
Group 15074. July 18 - 21. A few small variable spots.
Group 15075. July 18 - 26. A feeble disturbance, no spots being seen on July 19 and 20.

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
1947			°	°	°				1947			°	°	°			
199.371		.956	242.4					232			.973	68.8					98
G		.946	285.2					245			.981	105.5					262
		.937	276.6					307	July 20			(+5.7)	(143.0)	(+ 4.8)	(744)	(4571)	(2871)
		.922	254.4					206									
		.910	236.2					109									
		.828	284.2					368	201.308		.973	282.5					222
		.825	218.4					92	G		.970	262.9					162
	15059	.860	230.0	208.0	-30.5	78	448	188 *c*			.934	226.5					95
	15060	.746	294.2	204.9	+21.0	28	138				.923	248.1					194
	15061	.603	313.4	188.1	+28.5	35	202				.904	297.3					187
	15076	.427	306.2	179.6	+18.9	3	19				.830	289.5					174
	15062	.368	289.2	179.0	+11.3	225	1459				.810	251.7					196
	15063	.320	301.8	174.5	+14.2	163	702			15059	.981	237.5	206.3	-30.5	98	567	280 *sf*
	15064	.634	196.2	170.4	-32.7	18	110			15060	.946	290.3	204.0	+20.7	21	70	243 *f*
	15074	.327	328.9	168.7	+20.8	3	10			15061	.840	300.9	187.5	+28.4	11	91	153 *c*
	15065	.172	340.2	161.7	+14.0	16	52			15062	.712	281.0	178.0	+11.2	162	1300	110 *p*
	15069	.295	63.6	142.7	+12.0	105	1012			15063	.674	285.7	174.5	+14.1	172	666	
	15073	.852	116.8	104.5	-19.8	29	103	317 *c*		15074	.618	298.9	168.0	+21.3	3	9	
	15077	.966	103.2	84.9	-11.4	78	557	222 *c*		15065	.498	289.5	161.5	+13.8	12	46	
	15078	.979	59.7	79.5	+30.6	0	12	98 *c*		15069	.223	305.9	143.3	+12.3	127	846	
		.772	107.8					72		15075	.291	15.6	127.9	+21.1	4	8	
		.878	125.7					108		15073	.633	131.6	102.5	-20.5	35	289	
		.952	114.9					93		15077	.783	108.8	83.8	-11.4	106	534	215 *c*
July 19			(+5.2)	(158.3)	(+ 4.7)	(781)	(4824)	(2657)		15079	.921	68.8	65.7	+21.4	3	15	134 *c*
											.831	125.0					82
											.868	78.5					276
200.527		.953	245.9					150			.945	122.9					313
G		.933	284.5					269			.954	108.1					339
		.931	261.9					155	July 21			(+6.1)	(132.7)	(+ 4.9)	(754)	(4441)	(3375)
		.907	224.7					177									
		.868	300.0					104									
		.838	243.1					95	202.304		.969	235.4					207
	15059	.945	235.3	207.2	-30.5	66	479	375 *sf*	G		.932	246.7					188
	15060	.883	291.3	204.6	+21.0	17	83	116 *c*			.927	288.9					259
	15061	.755	304.2	188.1	+28.5	16	86				.926	255.7					301
	15076	.627	294.5	179.9	+18.8	1	10				.861	240.6					113
	15062	.591	282.7	178.9	+11.4	205	1365				.816	273.3					158
	15063	.535	289.4	174.2	+14.3	166	726			15060	.994	290.1	204.5	+20.5	9	70	195 *c*
	15064	.708	213.1	170.0	-32.0	4	32			15061	.933	298.7	188.0	+28.6	3	34	392 *c*
	15074	.479	306.7	167.2	+21.0	4	22			15062	.851	280.3	177.9	+11.4	133	1387	257 *c*
	15065	.352	297.9	161.6	+13.9	11	40			15063	.820	284.1	174.5	+14.4	118	670	
	15069	.128	358.5	143.2	+12.1	134	972			15064	.897	227.8	172.7	-34.1	0	8	190 *c*
	1255h	.324	60.0	126.3	+13.9	1	6			15065	.675	285.1	161.5	+13.8	3	14	
	15073	.732	124.3	102.9	-20.7	33	195	218 *f*		***1255j***	.677	296.1	160.0	+21.1	1	10	
	15077	.877	106.2	83.9	-11.7	83	539	276 *c*		15069	.443	289.6	144.7	+13.0	89	983	
	1255i	.931	78.5	74.1	+12.5	3	16	213 *c*		15075	.310	332.3	128.3	+20.8	1	6	
		.919	57.9					131		15073	.517	146.7	101.9	-20.7	21	219	
		.956	120.5					232		15077	.641	114.7	83.2	-11.5	64	462	90 *f*

Group 15076. July 19 - 20. One or two small spots.

Group 15077. July 19 - 31. A stream, in which both leader and follower are regular spots each with a few companions until July 26.

Group 15078. July 19 - 31. A small spot on July 19; nothing is then seen until July 23, when a few small spots grow into a stream led by a regular spot.

Group 15079. July 21 - 29. A small unstable stream, not seen on July 23 and 24.

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
1947			°	°	°			
	15079	.822	66.6	65.3	+22.0	2	14	80 c
		.729	75.9					67
		.853	133.7					120
		.860	110.7					190
		.908	126.9					190
		.917	76.1					86
		.956	109.5					425
		.962	120.5					187
		.966	82.9					110
July 22			(+6.5)	(119.5)	(+ 5.0)	(444)	(3877)	(3805)
203.380 C		.981	256.8					169
		.973	291.0					143
		.965	247.3					231
		.950	234.1					387
		.920	252.7					84
		.914	270.9					137
		.892	301.2					98
		.881	259.7					93
		.861	290.9					240
		.824	245.1					99
		.808	234.6					103
		.786	303.7					135
	15061	.986	298.3	186.7	+28.7	0	32	267 c
	15062	.950	280.7	177.5	+11.7	98	1174 }	809 c
	15063	.935	283.5	174.9	+14.4	83	614 }	
	15065	.834	282.9	161.8	+13.5	2	12	179 c
	15069	.651	285.5	145.4	+13.9	113	783	
	15075	.451	309.1	127.2	+21.2	11	59	
	15073	.432	176.9	103.9	-20.4	23	129	
	15078	.535	36.7	83.7	+30.1	2	17	
	15077	.481	127.1	82.3	-12.1	83	429	
	15080	.851	116.4	51.7	-19.2	0	17	206 c
		.835	133.2					181
		.854	125.3					74
		.866	108.5					133
		.879	82.3					116
		.929	119.7					150
		.945	127.1					186
		.949	70.6					279
		.958	111.7					346
		.979	121.6					161
July 23			(+6.9)	(105.3)	(+ 5.1)	(415)	(3266)	(5006)
204.356 C		.972	252.6					257
		.970	261.8					180
		.962	239.5					221
		.949	292.0					279
		.930	300.5					271

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbrae	AREA Whole Spots	AREA Faculae
1947			°	°	°			
		.906	247.9					170
		.884	240.5					189
		.825	304.0					196
	15063	.990	284.0	175.0	+14.5	86	398 }	635 c
	15062	.990	280.2	174.8	+10.8	14	274 }	
	15069	.794	283.8	144.8	+14.1	133	1140	718 c
	15075	.602	299.2	126.6	+21.3	10	49	
	15073	.469	204.0	104.1	-20.2	12	118	
	15078	.425	12.1	86.5	+29.6	15	85	
	15077	.329	150.8	83.0	-11.5	75	533	
	15081	.496	123.7	65.6	-11.2	1	8	
		.751	140.0					117
		.762	166.8					172
		.830	125.5					89
		.849	68.7					179
		.861	114.7					142
		.872	132.0					192
		.941	76.0					196
		.944	123.0					267
		.944	114.2					302
		.966	132.7					213
July 24			(+7.4)	(92.4)	(+ 5.2)	(346)	(2605)	(4985)
205.393 C		.983	291.1					178
		.967	298.8					151
		.967	245.5					172
		.929	302.3					194
		.920	292.9					71
		.917	257.0					83
		.910	312.4					119
		.882	239.6					175
		.873	305.0					125
		.821	260.6					117
	15069	.917	283.3	145.4	+14.3	221	1736	711 c
	15075	.752	294.8	125.8	+22.0	7	32	159 c
	15073	.594	226.0	105.3	-19.0	14	72	
	15078	.422	341.8	87.2	+28.8	53	283	
	15077	.303	191.2	82.0	-11.9	73	426	
	15081	.339	148.4	68.2	-11.5	2	13	
	15079	.358	32.6	66.6	+22.6	15	57	
	15082	.913	100.9	14.1	- 7.7	0	8	
	15083	.952	73.2	5.8	+17.6	11	68	261 c
		.783	141.6					90
		.822	120.4					175
		.848	76.0					179
		.850	130.5					230
		.890	138.1					109
		.921	124.2					212
		.962	131.4					202
July 25			(+7.8)	(78.6)	(+ 5.3)	(396)	(2695)	(3713)

Group 15080. July 23 - 28. Intermittent. A tiny spot.
Group 15081. July 24 - 27. One or two ephemeral spots.
Group 15082. July 25 - 26. A tiny spot on July 25; a pair on July 26.
Group 15083. July 25-Aug. 3. A small spot with a close companion from July 27 - August 1.

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
1947			°	°	°				1947			°	°	°			
206.319		.973	293.1					147			.873	139.3					159
G		.952	243.1					296			.956	139.0					356
		.950	302.5					327			.963	106.3					163
		.944	256.6					120			.963	126.8					265
		.913	309.4					111			.970	69.2					135
		.911	264.5					235	July 27			(+8.6)	(52.9)	(+ 5.4)	(185)	(1402)	(3321)
		.860	299.8					101									
		.838	240.0					63									
	15069	.980	283.7	145.7	+14.5	103	1706	573 *c*	208.373		.965	258.2					130
	15075	.861	292.4	125.2	+21.9	2	16	172 *c*	G		.965	299.1					259
	15073	.705	233.8	103.6	−20.3	11	88				.951	250.5					294
	15078	.510	321.6	87.4	+28.4	72	421				.914	237.1					281
	15077	.399	221.8	82.1	−12.1	79	388			15073	.927	244.9	102.9	−20.8	7	51	578 *p*
	15081	.308	189.4	69.3	−12.3	1	4			15078	.766	303.1	85.9	+28.5	88	504	94 *c*
	15079	.303	358.4	66.9	+22.8	14	59			15077	.713	247.2	81.2	−11.9	61	356	
	15080	.436	151.1	53.7	−17.2	1	4			15079	.524	303.9	67.0	+21.8	3	19	
	15084	.398	75.0	43.5	+10.8	1	8			15085	.500	228.5	61.9	−14.2	4	9	
	15082	.796	104.0	15.4	− 7.8	6	20	76 *c*		15080	.447	214.7	54.5	−16.1	0	3	
	15083	.871	72.9	5.8	+17.5	12	77	338 *f*		15086	.522	152.8	24.3	−22.2	1	7	
		.859	140.5					179		15083	.570	66.7	6.0	+17.6	9	87	
		.871	130.8					186		15087	.709	124.3	1.0	−19.1	34	157	132 *f*
		.897	149.6					77		15088	.973	71.2	321.6	+19.6	4	45	480 *c*
		.962	110.8					331			.873	144.1					352
		.969	135.2					342			.877	108.1					130
July 26			(+8.2)	(66.4)	(+ 5.3)	(302)	(2791)	(3674)			.886	130.8					221
											.890	119.5					201
											.944	62.9					138
207.336		.969	266.0					155			.955	125.7					249
C		.957	282.1					228			.957	113.1					235
		.949	307.8					140			.958	136.0					237
		.944	294.4					368	July 28			(+9.1)	(39.2)	(+ 5.5)	(211)	(1238)	(4011)
		.878	300.0					139									
		.836	231.2					162									
	15073	.826	240.0	102.7	−20.9	12	98	364 *p*									
	15078	.628	310.0	85.9	+28.2	75	617		209.334		.955	240.6					191
	15077	.553	238.4	81.6	−12.0	65	417		G		.942	257.0					118
	15081	.390	220.2	67.7	−12.0	2	16				.864	288.0					68
	15079	.375	322.6	67.1	+22.5	6	47				.825	224.6					182
	15085	.363	202.4	61.1	−14.2	2	18			15073	.983	247.4	102.7	−21.0	13	56	256 *c*
	15084	.201	59.9	42.7	+11.1	2	14			15078	.880	299.2	86.9	+28.2	88	395	273 *c*
	15086	.634	137.8	25.4	−23.1	3	23			15077	.851	252.2	82.2	−11.9	74	361	284 *c*
	15083	.743	71.1	5.6	+17.6	16	119	126 *f*		15079	.671	297.6	66.4	+22.4	5	12	
	15087	.871	116.0	357.0	−19.4	2	33	326 *f*		15083	.386	56.9	6.8	+17.4	18	68	
		.792	145.4					165		15087	.561	137.3	2.9	−19.1	40	231	
		.835	126.2					70		15088	.910	70.7	320.8	+19.9	26	97	598 *c*

Group 15084. July 26 - 27. A small spot on July 26; a pair on July 27.
Group 15085. July 27 - 31. A small spot on July 27 - 28 replaced by another 2½° south on July 30 - 31.
Group 15086. July 27 - 28. A few tiny spots.
Group 15087. July 27-Aug. 6. A regular spot developing with a train of variable companions that die out by August 4.
Group 15088. July 28-Aug. 9. A regular spot followed by a train of small spots until August 5.

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
1947			°	°	°				1947			°	°	°			
	15089	.968	110.5	314.1	-18.2	77	478	379 *c*		15083	.232	325.7	6.6	+16.7	6	22	
		.797	137.8					123		15087	.428	189.1	2.9	-19.2	59	455	
		.847	152.6					299		15090	.107	336.9	1.2	+11.3	0	7	
		.847	61.4					117		15091	.222	8.1	356.9	+18.4	1	8	
		.876	132.1					308		15088	.621	64.7	322.3	+19.9	21	146	
		.878	116.8					167		15089	.789	118.2	312.0	-18.0	159	1494	
		.934	53.8					159		15092	.991	98.1	277.6	- 7.2	18	83	170 *c*
		.940	141.2					218		15093	.994	103.9	276.8	-13.1	9	70	74 *p*
		.947	130.1					160			.796	59.1					131
		.967	62.0					222			.826	70.9					161
July 29			(+9.4)	(26.5)	(+ 5.6)	(341)	(1698)	(4122)			.950	67.5					398
											.963	111.3					251
									July 31			(+10.3)	(358.8)	(+ 5.7)	(294)	(2421)	(3196)
210.301 G		.897	283.0					153									
		.866	226.7					148									
		.814	292.4					148									
	15078	.958	297.6	87.5	+28.0	37	313	402 *c*	212.324 C		.969	254.1					199
	15077	.937	255.0	81.1	-11.9	43	307	427 *c*			.966	293.1					127
	15085	.810	244.6	63.3	-16.6	0	4	131 *c*			.957	236.7					264
	15083	.233	31.0	6.5	+17.2	9	47				.932	247.8					257
	15087	.453	157.8	3.3	-19.1	23	280				.930	282.5					135
	15090	.239	65.4	1.0	+11.2	1	6				.906	227.3					285
	15088	.801	69.1	321.1	+20.1	22	145	289 *c*			.868	249.9					178
	15089	.908	112.6	312.3	-17.7	99	1073	280 *c*			.836	275.9					121
		.800	161.2					247			.822	242.1					231
		.803	137.7					181			.818	233.5					267
		.896	145.3					179			.807	219.6					261
		.916	58.9					212		15083	.381	300.7	6.9	+16.7	7	24	
		.933	74.5					188		15087	.494	211.3	2.7	-19.3	95	648	
		.982	68.8					119		15091	.290	319.8	358.3	+18.4	1	6	
July 30			(+9.8)	(13.7)	(+ 5.7)	(234)	(2175)	(3104)		15088	.459	56.1	323.2	+20.1	40	221	
										15089	.662	125.5	312.7	-17.8	211	1631	
										15092	.934	100.3	279.3	- 7.4	15	77 }	
211.430 G		.961	242.4					142		15093	.953	105.5	276.9	-12.8	33	148 }	369 *c*
		.953	234.2					243		15094	.983	101.3	269.1	- 9.9	142	768 }	
		.948	284.5					212			.889	66.7					287
		.912	292.7					221			.897	112.9					249
		.856	231.6					165			.929	76.9					149
		.835	244.5					185			.950	121.6					106
	15078	.988	298.0	81.4	+28.5	6	57	315 *f*			.952	59.9					161
	15077	.987	256.1	77.8	-12.7	15	70	258 *f*			.974	112.7					193
	15085	.922	249.1	62.6	-16.7	0	9	270 *c*	Aug.1			(+10.7)	(347.0)	(+ 5.8)	(544)	(3523)	(3839)

Group 15089. July 29-Aug. 9. A long stream in which the leader and follower, both composite spots, are linked by a continuous string of changing spots. The follower is the first to break up and die out.

Group 15090. July 30 - 31. A tiny spot.

Group 15091. July 31-Aug. 4. A pair of small spots on July 31 and August 2; a single spot on the other days.

Group 15092. July 31-Aug. 12. A regular spot, stable until August 7. It then splits into two but soon reforms as an elongated spot with a double umbra.

Group 15093. July 31-Aug. 12. Return of Group 15050: third appearance. A regular spot of marked stability.

Group 15094. Aug. 1 - 13. A sizable stream. The large rear spot is composite and changes slowly, but after August 8 it decreases and becomes a regular spot. The leading section of the stream consists of small spots that increase and form another composite spot. After August 9 this, too, becomes a regular formation.

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
1947			°	°	°			
213.386		.982	283.3					148
G		.979	247.1					166
		.977	255.3					237
		.965	235.3					237
		.965	229.1					107
		.946	242.2					140
		.943	277.7					152
		.926	247.7					225
		.897	255.7					103
		.887	290.9					171
		.886	223.3					220
		.878	240.5					262
		.876	232.1					236
		.840	284.3					85
		.798	293.2					124
	15083	.577	290.1	7.1	+16.3	4	21	
	15087	.631	228.9	3.0	-19.3	96	534	
	15091	.465	300.3	357.9	+18.8	4	19	
	15088	.308	35.6	321.9	+20.2	40	232	
	15089	.515	140.4	312.8	-17.7	281	1699	
	15095	.850	125.5	282.8	-25.9	2	15	
	15092	.811	103.8	280.5	- 7.6	15	92	
	15093	.857	108.6	276.8	-12.6	20	132	658 c
	15094	.917	103.6	268.3	-10.0	151	1266	
	15096	.968	77.2	256.7	+13.8	0	10	180 c
		.820	119.5					130
		.835	64.9					94
		.930	57.9					139
		.953	127.7					130
		.955	117.5					171
Aug.2			(+11.1)	(332.9)	(+ 5.9)	(613)	(4020)	(4115)
214.433		.970	250.8					208
G		.947	244.0					229
		.937	236.7					275
		.931	289.3					340
		.923	226.5					266
		.842	203.1					253
	15083	.749	286.3	7.4	+16.1	4	17	73 c
	15087	.766	238.9	2.8	-19.0	59	412	139 p
	15091	.622	293.9	356.0	+19.4	0	3	
	15088	.248	351.1	321.4	+20.1	33	285	
	15089	.407	167.6	313.9	-17.3	161	1629	

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1947			°	°	°			
	15095	.717	133.5	284.3	-24.6	0	5	
	15092	.637	109.9	282.1	- 7.7	15	118	
	15093	.718	113.5	276.9	-12.2	17	129	
	15094	.799	107.0	268.5	- 9.7	101	1236	169 c
	15096	.876	79.7	257.7	+11.8	19	109	250 c
	15097	.961	107.1	247.6	-14.6	19	142	179 c
		.829	56.7					142
		.861	120.4					146
Aug.3			(+11.5)	(319.1)	(+ 6.0)	(428)	(4085)	(2669)
215.437		.977	288.9					159
G		.974	233.6					247
		.941	226.9					184
		.882	300.5					120
		.876	280.3					95
	15087	.889	244.6	3.9	-19.3	69	361	236 c
	15091	.796	288.9	358.2	+18.7	2	7	
	1256a	.891	211.5	346.8	-44.9	4	20	250 c
	15088	.357	314.1	321.6	+20.1	42	268	
	15089	.418	196.5	312.9	-17.6	198	1435	
	15095	.612	145.5	283.5	-24.6	1	9	
	15092	.454	121.7	282.9	- 8.2	30	150	
	15093	.560	122.5	277.0	-12.2	23	131	
	15094	.655	112.3	268.0	- 9.6	186	1283	
	15096	.744	80.1	257.6	+11.4	59	187	
	15097	.876	110.5	248.0	-14.7	30	158	158 c
	15098	.920	105.9	241.2	-12.1	3	11	247 c
	15099	.987	81.9	224.6	+ 8.9	6	21	242 c
		.883	79.3					207
		.934	97.9					157
		.962	70.0					329
		.983	103.7					22
Aug.4			(+11.9)	(305.8)	(+ 6.0)	(653)	(4041)	(2653)
216.340		.971	231.0					160
C		.956	299.3					94
		.951	286.7					178
		.931	279.3					76
		.925	219.6					346
		.860	227.4					86
		.856	286.0					42
		.846	204.1					62
		.822	238.3					68

Group 15095. Aug. 2 - 5. A tiny spot.
Group 15096. Aug. 2 - 12. A pair of growing spots separating in longitude to form a long stream with a few tiny spots in between.
Group 15097. Aug. 3 - 14. A regular spot, dying out as it passes round the west limb.
Group 15098. Aug. 4 - 15. One or two small spots, not seen on August 10 and 11.
Group 15099. Aug. 4 - 16. Small spots developing by August 11 into a typical bi-polar group.

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
1947			°	°	°				1947			°	°	°			
		.818	216.7					58		15100	.904	115.8	220.9	-20.1	36	314	164 c
	15087	.961	248.2	4.3	-18.9	51	290	332 f		15101	.948	72.4	208.6	+18.6	17	223	254 f
	15088	.511	300.5	321.8	+20.4	25	204				.793	67.7					164
	15089	.515	219.9	314.1	-17.4	201	1132				.807	110.2					84
	15095	.529	163.5	284.5	-24.3	0	4				.895	79.8					246
	15092	.308	141.9	282.9	- 8.0	25	161				.934	59.6					153
	15093	.422	137.4	277.0	-12.2	18	99				.977	80.5					179
	15094	.475	122.2	270.0	- 9.0	192	1109		Aug.6			(+12.6)	(280.8)	(+ 6.1)	(393)	(3993)	(3065)
	15096	.595	79.7	257.5	+11.0	58	180										
	15097	.769	115.2	248.0	-14.9	33	154	62 c									
	15098	.821	108.9	241.6	-11.7	3	16	111 c	218.364		.973	245.2					213
	15099	.920	83.0	226.6	+ 8.8	5	25	176 c	C		.963	234.2					223
	15100	.970	112.4	221.6	-19.9	0	22	160 c			.940	217.8					193
		.836	80.6					51			.928	299.0					89
		.884	103.4					94			.924	291.6					230
		.894	69.8					246			.921	226.6					197
		.938	119.2					47			.918	245.6					194
		.973	75.2					94			.906	208.6					91
		.980	60.6					108		15088	.826	290.5	322.5	+20.4	33	207	203 f
Aug.5			(+12.2)	(293.9)	(+ 6.1)	(611)	(3396)	(2651)		15089	.791	242.8	314.2	-17.0	95	774	522 c
										15092	.368	227.0	282.8	- 8.5	16	103	
										15093	.356	207.4	276.7	-12.2	21	103	
217.327		.967	224.0					172		15094	.268	188.2	269.3	- 9.1	221	1500	
C		.955	286.2					166		15102	.402	167.8	262.0	-16.9	80	295	
		.948	218.0					223		15096	.155	60.6	259.2	+10.5	49	234	
		.926	232.4					203		15097	.468	138.7	248.6	-14.6	27	149	
		.909	242.5					171		15098	.530	121.0	239.7	-10.3	9	55	
		.881	211.3					93		15099	.657	84.2	225.9	+ 8.5	7	67	
		.876	222.0					206		15100	.784	121.6	222.0	-19.9	60	411	118 c
		.830	291.8					148		15101	.848	71.9	209.1	+18.6	35	203	286 c
	15087	.996	250.0	3.0	-19.2	21	176	300 f		15103	.920	105.8	202.5	-11.9	3	9	291 f
	15088	.680	293.2	322.3	+20.1	38	222			15104	.920	81.4	199.7	+10.4	3	14	170 c
	15089	.647	233.7	313.8	-17.3	84	1092			15105	.974	124.6	197.0	-31.6	43	332	180 c
	15092	.253	188.0	282.8	- 8.3	15	124			15106	.958	81.4	193.3	+10.0	3	28	520 c
	15093	.326	168.2	276.9	-12.5	20	120			15107	.982	81.1	187.4	+ 9.9	18	189	
	15094	.348	139.6	267.6	- 9.3	99	1247				.848	57.0					94
	15096	.379	75.8	258.9	+11.0	39	280				.937	117.4					125
	15097	.625	123.2	248.3	-14.4	20	157				.956	68.0					223
	15098	.682	114.9	241.7	-11.9	1	11				.959	58.9					251
	15099	.803	83.8	227.2	+ 8.6	3	27	139 c	Aug.7			(+13.0)	(267.1)	(+ 6.2)	(723)	(4673)	(4413)

Group 15100. Aug. 5 - 16. A stream of small spots of which the leader, a regular, alone survives at the west limb.

Group 15101. Aug. 6 - 17. A stream led by a regular spot. By August 10 this begins to break up into a cluster. The following part of the stream dies out by August 12.

Group 15102. Aug. 7 - 13. A stream, appearing suddenly near the central meridian, rising to maximum growth in three days and already in full decline as it passes out of sight. The leader is a regular spot and the follower a composite one.

Group 15103. Aug. 7 - 12. A small spot.

Group 15104. Aug. 7 - 13. A short stream closely preceding Group 15106 which absorbs it.

Group 15105. Aug. 7 - 18. Return of Group 15059. A stable regular spot.

Group 15106. Aug. 7 - 19. A large and active complex group. From a small spot on August 7 - 9, a complex spot develops and expands in longitude. By August 13, continued growth changes have produced four composite spots in line, of which the leader is the biggest and showing least change.

Group 15107. Aug. 7 - 19. A regular spot with a small companion following until August 10; then other spots appear in the rear, but by August 17 this train has died out leaving the original spot and one small companion.

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
1947			°	°	°				1947			°	°	°			
219.303		.965	233.4					130			.903	285.4					281
G		.963	289.4					146			.885	255.5					95
		.960	221.3					121			.854	248.4					105
		.943	299.2					102			.820	240.6					174
		.933	215.4					95			.804	231.8					121
		.932	227.2					109		15088	.991	290.0	322.4	+20.6	40	242	390 *f*
		.903	207.7					92		15089	.995	254.5	320.7	−14.7	19	139	825 *f*
		.840	303.8					85		15092	.732	253.2	283.4	− 7.8	31	217	
	15088	.920	289.5	322.1	+20.4	32	222	297 *c*		15093	.670	244.0	276.5	−12.1	19	103	
	15089	.901	247.9	315.1	−16.7	50	562	618 *c*		15094	.559	243.4	268.9	− 9.0	199	1383	
	15092	.518	243.4	282.5	− 7.8	35	180			15102	.570	226.7	264.2	−16.7	92	632	
	15093	.479	229.8	276.6	−12.1	18	105			15096	.387	281.2	261.2	+10.1	15	102	
	15094	.359	224.6	269.4	− 8.7	140	1280			15097	.394	204.8	248.4	−14.7	17	107	
	15102	.418	200.8	263.6	−16.7	71	546			15098	.278	176.7	237.7	− 9.8	0	6	
	1256b	.278	202.8	260.9	− 8.6	1	7			15099	.216	75.0	226.5	+ 9.3	25	153	
	15096	.115	310.0	259.8	+10.4	19	257			15100	.502	149.0	222.8	−19.3	40	207	
	15097	.369	163.5	248.5	−14.4	21	130			15101	.525	65.3	208.6	+18.1	64	303	
	15098	.378	138.6	240.0	−10.3	2	18			15103	.633	116.1	203.4	−11.0	4	21	
	15099	.465	82.6	227.0	+ 9.0	23	138			15104	.614	81.6	200.7	+10.1	14	54	
	15100	.652	130.7	223.1	−19.8	42	328			15105	.827	135.3	195.8	−31.4	49	328	176 *c*
	15101	.725	70.8	208.8	+18.2	50	302	83 *c*		15106	.711	81.4	193.2	+10.5	9	43	
	15103	.814	108.8	203.1	−11.3	3	18	104 *f*		15107	.784	81.5	186.8	+10.6	34	187	184 *c*
	15104	.804	82.4	200.9	+ 9.8	6	31	47 *c*		15110	.856	72.4	179.6	+18.3	36	224	186 *c*
	15105	.922	128.0	196.6	−31.3	50	296	303 *c*		15108	.869	78.0	177.9	+13.5	29	153	387 *c*
	15106	.876	81.9	193.2	+10.1	7	24			15109	.942	122.5	175.0	−27.7	26	110	405 *c*
	15107	.919	81.0	187.4	+10.8	40	244	833 *c*		15111	.996	75.0	152.7	+15.4	59	436	214 *c*
	15108	.966	77.7	179.0	+13.5	38	186				.827	112.0					352
	15109	.995	119.2	174.9	−28.1	10	153	123 *c*			.857	59.6					426
		.834	64.5					93			.883	88.6					400
		.866	115.2					68			.914	136.2					298
		.880	57.6					119			.937	73.4					172
		.890	73.6					75			.946	66.0					252
		.908	66.8					149			.975	82.8					221
		.940	108.4					365	Aug.9			(+13.8)	(238.6)	(+ 6.3)	(821)	(5150)	(6224)
		.952	61.8					332									
		.966	71.0					152									
		.974	93.8					174									
Aug.8			(+13.4)	(254.7)	(+ 6.3)	(658)	(5027)	(4815)	221.356		.978	248.5					287
									C		.964	285.9					307
											.952	301.5					161
220.517		.979	283.8					161			.895	246.9					160
C		.916	301.2					246			.887	236.5					142
		.903	293.4					153			.853	293.2					158

Group 15108. Aug. 8 - 18. Return of Groups 15062 and 15083. A regular spot in decline which is advanced after August 14. A drift towards the equator is apparent.

Group 15109. Aug. 8 - 20. A pair of regular spots almost in contact and slowly merging into a single regular spot. After August 18 this shrinks rapidly.

Group 15110. Aug. 9 - 20. A stream of rapid growth but soon in decline. The leader becomes a regular spot and alone remains after August 16.

Group 15111. Aug. 9 - 22. Return of Group 15069. A large stable regular spot with a few companions.

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
1947			°	°	°			
	15092	.852	256.5	284.0	- 7.9	53	259	
	15093	.793	249.1	276.6	-12.2	13	104	510 c
	15094	.716	251.9	270.8	- 8.2	191	1692	
	15096	.592	277.6	263.9	+ 9.7	9	79	
	15102	.678	235.7	263.2	-17.2	104	551	
	15097	.498	224.5	248.6	-14.8	12	111	
	15099	.059	16.3	226.5	+ 9.6	23	156	
	15100	.449	167.7	221.7	-19.5	53	265	
	15101	.360	55.9	209.3	+17.7	37	313	
	15103	.498	125.7	203.3	-11.0	5	24	
	15104	.447	80.1	201.0	+10.1	13	114	
	15105	.754	142.8	195.3	-31.4	43	312	111 c
	15106	.574	79.4	192.5	+11.3	61	496	
	15107	.647	81.1	187.1	+10.6	21	142	
	15110	.733	71.7	180.8	+17.7	98	626	188 c
	15108	.759	78.1	178.0	+13.2	27	159	114 c
	15109	.879	126.4	174.7	-27.6	32	164	370 *f*
	15111	.966	75.9	151.5	+15.2	59	380	243 c
		.802	85.9					240
		.810	58.5					122
		.876	140.5					206
		.880	73.6					150
		.922	62.5					156
		.940	84.1					177
Aug.10			(+14.1)	(227.5)	(+ 6.4)	(854)	(5947)	(3802)
222.355 G		.959	247.5					198
		.944	291.6					189
		.872	296.7					208
	15092	.947	259.2	284.0	- 8.0	22	219	235 c
	15093	.902	253.3	276.1	-12.0	18	121	
	*1256*c	.957	239.7	281.5	-26.5	33	192	223 c
	15094	.836	254.7	268.8	- 9.0	115	979	435 c
	15102	.806	243.2	262.9	-17.1	56	551	175 c
	15096	.739	277.5	262.1	+ 9.8	0	5	
	15097	.640	237.3	248.0	-14.8	9	104	
	15099	.226	283.5	227.1	+ 9.3	25	280	
	15100	.451	197.5	222.5	-19.0	26	210	
	15101	.212	19.5	210.1	+17.9	19	164	
	15103	.352	147.5	203.2	-11.0	1	8	
	15104	.224	73.1	201.8	+10.0	10	96	
	15105	.673	154.6	194.6	-31.3	37	295	
	15106	.365	76.1	193.2	+11.0	38	615	
	15107	.481	79.9	185.6	+10.5	19	207	
	15112	.569	53.1	184.2	+25.6	3	18	
	15110	.573	67.3	180.7	+18.1	64	510	

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbrae	AREA Whole Spots	AREA Faculae
1947			°	°	°			
	15108	.599	76.6	177.7	+13.1	20	122	
	15109	.784	132.5	174.0	-27.1	22	178	183 *sf*
	15111	.885	75.9	151.6	+15.4	81	483	472 *f*
		.789	65.3					121
		.813	148.7					136
		.822	85.9					90
		.893	136.9					114
		.905	59.9					159
		.949	121.0					108
		.957	101.3					156
		.960	67.0					121
		.973	56.7					317
Aug.11			(+14.5)	(214.3)	(+ 6.4)	(618)	(5357)	(3640)
223.385 G		.971	282.9					234
		.936	294.1					224
		.934	238.3					237
		.905	300.9					239
	15092	.995	261.3	283.6	- 7.9	10	77	1085 c
	15094	.949	258.5	270.6	- 8.7	142	900	
	15093	.977	256.3	276.4	-11.8	25	138	148 c
	15102	.921	248.3	264.0	-17.0	60	398	324 c
	15096	.876	277.9	262.2	+10.0	2	9	366 c
	15097	.782	245.1	247.7	-14.8	17	78	116 c
	15098	.675	247.1	239.7	-10.1	5	25	
	15099	.461	278.3	228.1	+ 9.6	77	451	
	15100	.560	220.3	223.2	-19.2	45	179	
	15101	.263	318.5	211.2	+17.7	14	95	
	15103	.297	189.5	203.5	-10.5	1	4	
	15104	.069	333.7	202.5	+10.0	28	84	
	15105	.621	170.9	194.1	-31.2	34	324	
	15106	.137	54.5	192.5	+11.0	85	783	
	15107	.282	76.0	184.6	+10.1	47	297	
	15112	.423	37.7	184.1	+25.7	5	48	
	15110	.385	57.9	180.8	+17.9	41	390	
	15108	.395	72.5	178.1	+12.8	20	123	
	15109	.677	143.8	174.1	-27.2	22	140	
	15111	.756	74.9	151.6	+15.6	96	479	536 *f*
		.876	125.1					130
		.892	59.1					201
		.908	102.5					176
		.952	116.6					295
		.953	51.5					373
		.955	69.7					95
		.976	61.3					335
Aug.12			(+14.9)	(200.7)	(+ 6.5)	(776)	(5022)	(5114)

Group 15112. Aug. 11 - 15. A few small spots *n* Group 15110.

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
1947			°	°	°			
224.326		.964	279.2					204
C		.957	297.2					168
		.955	242.1					128
		.927	255.5					102
		.914	279.4					189
		.884	297.2					58
		.847	278.4					72
	15094	.979	256.8	264.6	−11.4	36	334	536 *c*
	15102	.982	251.3	264.5	−16.9	90	259	374 *c*
	15097	.889	248.8	247.4	−15.5	2	12	167 *c*
	15098	.811	252.3	239.8	−10.2	6	32	152 *c*
	15099	.638	276.6	228.1	+ 9.1	80	636	
	15100	.686	232.8	223.5	−19.1	28	168	
	15101	.428	298.1	211.5	+17.5	7	56	
	15104	.266	283.0	203.5	+ 9.7	20	135	
	15106	.147	301.2	195.6	+10.8	65	953	
	15105	.618	187.6	193.8	−31.1	38	249	
	15107	.101	49.4	183.9	+10.3	32	345	
	15112	.349	14.8	182.6	+26.1	4	21	
	15110	.231	30.8	181.2	+17.8	46	358	
	15108	.200	58.4	178.3	+12.4	10	109	
	15109	.600	158.3	173.9	−27.5	12	119	
	15113	.454	84.1	161.2	+ 8.5	1	8	
	15114	.572	46.0	160.3	+29.1	6	50	
	15111	.604	72.8	151.7	+15.5	71	564	
	15115	.653	59.6	150.3	+24.4	3	20	
	15116	.955	72.0	114.6	+19.1	3	37	108 *f*
	15117	.984	110.8	111.9	−19.0	0	11	536 *c*
		.770	70.7					147
		.806	104.2					65
		.807	56.2					112
		.878	69.4					138
		.886	120.4					201
		.886	50.3					236
		.935	60.6					200
		.940	102.0					177
Aug.13			(+15.2)	(188.3)	(+ 6.5)	(560)	(4476)	(4070)
225.369		.948	245.0					102
C		.948	277.9					240
		.851	292.8					137
	15097	.968	251.8	247.1	−15.7	4	14	194 *c*

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1947			°	°	°			
	15098	.932	255.0	240.9	−11.4	15	65	230 *c*
	15099	.799	276.4	227.8	+ 9.0	96	592	188 *c*
	15100	.820	240.6	223.6	−19.4	26	140	212 *c*
	15118	.669	282.8	216.5	+13.5	10	50	
	15119	.639	275.2	214.4	+ 8.4	6	24	
	15101	.619	290.1	211.9	+17.5	10	35	
	15106	.362	283.0	195.5	+10.8	201	1322	
	15105	.668	203.9	192.9	−31.3	49	253	
	15107	.168	291.8	183.5	+10.1	49	338	
	15110	.226	331.3	181.0	+17.9	41	285	
	15112	.360	347.0	179.7	+27.0	2	18	
	15108	.116	323.4	178.5	+11.9	16	105	
	15109	.565	178.2	173.4	−27.6	19	119	
	15114	.443	28.4	160.6	+29.2	17	83	
	15113	.275	78.6	158.7	+ 9.5	8	40	
	15111	.411	66.5	151.6	+15.5	103	548	
	15115	.479	48.8	151.3	+24.4	1	6	
	15116	.876	72.0	113.0	+18.9	37	194	181 *c*
	15117	.916	114.0	112.6	−18.8	5	18	627 *c*
		.812	128.4					122
		.818	47.5					95
		.851	104.6					126
		.874	60.0					169
Aug.14			(+15.6)	(174.5)	(+ 6.6)	(715)	(4249)	(2623)
226.354		.931	290.7					209
G	15098	.991	257.3	241.9	−11.5	0	25	417 *c*
	15099	.911	277.1	227.6	+ 9.3	62	529	212 *c*
	15100	.918	246.1	223.7	−18.8	18	170	351 *c*
	15118	.832	281.7	218.2	+13.4	4	21	201 *c*
	15101	.768	287.7	211.5	+17.8	4	21	
	15119	.795	275.7	214.4	+ 8.6	8	30	52 *c*
	15106	.593	278.7	197.9	+10.5	163	1099	
	15105	.746	216.4	192.5	−31.1	38	188	
	15107	.377	280.2	183.6	+10.0	34	249	
	15110	.370	304.5	180.2	+18.4	37	225	
	15112	.446	320.1	180.0	+26.3	0	10	
	15108	.305	287.6	178.7	+11.7	7	47	
	15109	.594	197.3	173.0	−27.8	20	109	
	15113	.050	40.3	159.6	+ 8.9	2	12	
	15114	.392	5.8	158.9	+29.5	16	76	
	15111	.227	48.3	151.4	+15.2	76	500	

Group 15113. Aug. 13 - 17. One or two small spots.
Group 15114. Aug. 13 - 17. A stream of small spots.
Group 15115. Aug. 13 - 14. A single spot.
Group 15116. Aug. 13 - 25. A regular spot, followed by a few small spots until August 20.
Group 15117. Aug. 13 - 20. A few faint variable spots.
Group 15118. Aug. 14 - 15. Two or three small spots.
Group 15119. Aug. 14 - 15. A pair of 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
1947			°	°	°				1947			°	°	°			
	15120	.583	141.1	138.5	-21.3	15	60			15105	.910	231.3	191.0	-31.0	40	187	164 c
	15116	.753	71.1	113.0	+18.6	41	314	151 c		15107	.777	276.2	186.5	+ 9.0	18	58	
	15117	.825	118.7	111.7	-19.0	4	16	148 c		15110	.721	288.4	180.9	+17.8	33	182	
	15121	.957	114.8	92.9	-21.3	33	142	253 c		15108	.684	279.7	178.5	+11.5	3	6	
	15122	.975	105.3	86.7	-13.2	15	126	240 c		15109	.763	223.5	171.6	-28.2	14	114	
		.870	109.1					92		15113	.427	276.1	160.5	+ 8.7	1	3	
		.931	124.3					130		15114	.535	319.4	158.8	+30.1	2	9	
		.973	59.7					330		15111	.305	298.6	151.2	+14.8	103	727	
Aug.15			(+15.9)	(161.5)	(+ 6.7)	(597)	(3969)	(2786)		15120	.458	187.4	138.7	-20.2	8	84	
										15116	.400	56.8	114.6	+18.9	56	293	
										15117	.599	136.6	109.4	-19.7	3	13	
										15121	.774	125.4	92.6	-21.7	54	309	151 c
227.555		.866	251.3					132		15122	.794	112.9	86.6	-13.6	26	114	50 f
C		.852	294.7					126		15123	.949	109.2	66.8	-15.8	3	14	184 c
		.822	212.5					192			.862	58.3					313
	15099	.982	277.5	225.3	+ 8.6	34	199	228 c			.932	118.8					92
	15100	.989	249.9	223.9	-18.6	23	180	270 f			.971	75.6					117
	15101	.909	287.1	211.6	+18.3	2	13	272 c	Aug.17			(+16.6)	(135.2)	(+ 6.7)	(513)	(3179)	(2802)
	15106	.797	278.1	198.7	+10.5	161	1359	312 c									
	15105	.849	226.7	191.6	-31.0	46	196	177 c									
	15107	.610	278.6	183.2	+10.5	21	156										
	15110	.591	291.2	180.8	+17.8	23	196		229.338		.959	289.9					231
	15108	.544	281.4	178.5	+11.8	6	21		C		.929	222.5					385
	15109	.684	215.4	172.1	-27.8	15	109				.923	303.9					200
	15113	.249	279.9	159.9	+ 8.9	4	21				.921	253.9					281
	15114	.448	331.3	159.9	+29.5	6	19				.916	243.9					191
	15111	.176	326.3	151.4	+15.1	103	638				.855	297.2					233
	15120	.467	162.9	137.2	-19.8	17	72				.838	271.3					603
	15116	.538	64.9	114.7	+19.0	58	279			15106	.959	278.8	196.2	+10.3	83	936	
	15117	.655	127.7	112.7	-17.9	5	12			15107	.898	276.8	186.2	+ 9.1	12	42	888 c
	15121	.858	120.9	93.2	-22.1	69	288	163 c		15108	.846	278.7	180.2	+11.0	2	8	
	15122	.883	109.1	86.8	-13.4	21	114	318 f		15105	.972	235.5	191.3	-31.2	31	199	194 sf
		.853	131.1					104		15110	.850	287.3	180.5	+18.2	21	191	216 c
		.918	58.5					304		15109	.856	231.1	170.8	-28.0	12	100	216 sf
Aug.16			(+16.3)	(145.6)	(+ 6.7)	(614)	(3872)	(2598)		15111	.499	287.7	151.3	+14.7	90	590	
										15120	.528	211.7	139.1	-20.1	14	70	
										15116	.240	26.9	115.4	+19.1	31	236	
228.344		.951	254.7					219		15117	.482	156.2	110.1	-19.4	6	29	
G		.926	293.3					210		15121	.651	136.1	93.0	-22.0	59	414	
		.904	219.2					190		15122	.655	120.1	86.5	-13.6	20	118	
		.889	247.6					135		15123	.847	112.9	68.2	-15.2	10	17	306 c
		.822	251.8					129		15124	.943	110.9	55.1	-17.0	0	10	166 c
	15101	.967	286.9	211.5	+18.0	4	10	328 c			.930	125.5					224
	15106	.894	278.0	199.0	+10.1	145	1056	520 c	Aug.18			(+16.9)	(122.0)	(+ 6.8)	(391)	(2960)	(4334)

Group 15120. Aug. 15 - 22. A short stream of small variable spots.
Group 15121. Aug. 15 - 25. A stream in which the leader, as usual, is the most stable member.
Group 15122. Aug. 15 - 28. Return of Group 15077. A small stable regular spot.
Group 15123. Aug. 17 - 21. A spot decreasing to a speck.
Group 15124. Aug. 18 - 23. A few 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
1947			°	°	°				1947			°	°	°			
230.347		.972	254.0					261			.930	75.4					180
G		.936	226.2					207			.968	117.0					151
		.923	299.4					308	Aug.20			(+17.6)	(95.6)	(+ 6.9)	(182)	(1308)	(3235)
		.912	274.0					772									
		.819	296.2					278									
	15106	.989	281.6	191.1	+12.4	0	16	340 c	232.413		.963	295.2					251
	15107	.978	277.3	187.2	+ 8.5	0	21		G		.946	254.9					122
	15110	.941	287.3	179.8	+18.5	23	140	262 c			.945	234.1					172
	15109	.936	236.6	170.8	-28.0	7	35	453 f			.844	294.9					275
	15111	.679	284.1	151.4	+14.5	70	451				.825	232.3					130
	15120	.647	227.6	139.1	-19.9	17	74			15111	.938	282.7	151.9	+14.2	46	433	492 c
	15116	.238	335.1	114.8	+19.1	37	217			15120	.882	244.1	138.2	-19.0	7	48	269 c
	15117	.445	185.8	111.4	-19.4	6	20			15116	.579	294.0	115.3	+19.3	24	161	
	15121	.544	152.3	92.9	-22.1	69	384			15121	.519	200.3	92.6	-22.2	31	182	
	15122	.502	132.9	86.6	-13.6	25	129			15122	.357	194.7	86.7	-13.2	16	102	
	15123	.721	118.6	67.9	-15.1	4	12			15125	.311	167.5	77.5	-10.7	11	47	
	15124	.855	115.1	54.7	-17.3	28	88	114 c		15123	.430	143.4	66.2	-13.4	0	2	
		.889	135.0					210		15124	.537	134.5	58.1	-15.7	6	39	
		.933	108.5					266		15126	.987	111.3	4.0	-19.6	27	242	266 c
		.949	59.8					215		15127	.986	73.8	359.6	+17.1	15	79	180 c
		.962	69.4					225			.913	119.8					138
Aug.19			(+17.2)	(108.7)	(+ 6.8)	(286)	(1587)	(3911)			.948	130.1					265
									Aug.21			(+17.9)	(81.4)	(+ 6.9)	(183)	(1335)	(2560)
231.338		.972	279.8					278	233.374		.965	256.8					128
C		.968	271.8					216	G		.933	235.0					110
		.954	300.2					218			.931	271.4					77
		.953	246.8					143			.930	291.0					185
		.923	293.1					228			.929	297.4					184
		.897	276.2					186			.925	263.1					74
		.886	226.1					118			.863	306.6					201
		.856	301.9					149			.807	236.3					211
	15110	.990	288.2	179.0	+18.9	14	106	180 f		15111	.990	283.4	151.8	+14.2	62	398	442 f
	15109	.985	239.8	170.2	-28.0	0	20	320 sf		15120	.958	247.4	138.0	-19.3	0	24	376 c
	15111	.825	282.7	151.5	+14.4	56	496	297 c		15116	.733	290.6	115.3	+19.7	15	117	
	15120	.763	236.7	138.1	-19.7	12	80	86 c		15121	.624	219.7	94.1	-22.4	15	90	
	15116	.385	305.4	114.9	+19.3	31	197			15122	.458	221.1	86.7	-13.5	14	78	
	15117	.505	201.0	106.7	-21.2	0	5			15125	.341	200.2	75.6	-11.7	1	6	
	15121	.488	175.0	93.0	-22.1	36	187			15124	.427	154.8	57.9	-15.8	1	9	
	15122	.380	156.0	86.5	-13.4	18	103			15128	.877	112.0	11.3	-15.5	2	11	394 c
	15125	.432	134.5	77.4	-11.0	5	24			15126	.933	114.2	4.3	-19.6	25	188	
	15123	.571	129.0	68.4	-14.8	0	4			15127	.923	74.2	0.6	+17.2	9	50	327 c
	15124	.714	121.5	56.3	-16.6	10	86	70 c			.901	123.1					78
		.859	112.1					172			.909	61.9					176
		.880	67.4					114			.938	131.7					423
		.925	59.0					129	Aug.22			(+18.2)	(68.7)	(+ 6.9)	(144)	(971)	(3386)

Group 15125. Aug. 20 - 23. A few unstable spots.

Group 15126. Aug. 21-Sept. 1. Return of Group 15087. A small regular spot with one or two variable companions. After August 29, a growth occurs of new and larger spots.

Group 15127. Aug. 21 - 27. A small spot; on one day (August 26) there is a companion.

Group 15128. Aug. 22-Sept. 1. A stream growing from a single nucleus and led by a regular spot that alone survives by August 29, in the general dissolution of the group 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
1947			°	°	°				1947			°	°	°			
234.339		.981	244.1					166	236.357		.961	252.5					81
C		.921	301.5					237	G		.960	234.1					81
		.916	257.4					135			.892	235.9					63
		.912	309.9					213			.785	305.2					182
		.892	242.3					315		15116	.993	289.5	114.2	+20.1	28	167	276 *f*
		.854	232.1					115		15121	.947	243.3	95.4	-22.5	3	17	253 *c*
	15116	.855	289.3	114.9	+20.1	14	150	120 *f*		15122	.874	249.8	86.7	-13.8	11	74	115 *c*
	15121	.736	230.3	93.6	-22.5	8	67			*1256d*	.530	314.9	54.4	+28.3	1	6	
	15122	.600	235.9	86.5	-13.6	9	94			15129	.415	4.1	27.3	+31.3	16	138	
	15125	.451	227.6	75.7	-11.1	0	4			15128	.478	144.3	12.5	-16.1	18	133	
	15124	.392	184.3	57.6	-15.9	1	8			15126	.563	140.1	6.9	-19.0	20	109	
	15128	.761	117.3	11.5	-15.4	2	10			15127	.482	65.4	2.0	+17.8	1	8	
	15126	.843	119.3	4.6	-20.0	16	179	252 *c*		15130	.967	69.1	312.7	+22.0	98	866	403 *c*
	15127	.811	73.3	1.5	+17.6	6	37	157 *c*			.821	148.6					169
		.804	127.9					74			.909	80.7					136
		.843	142.8					162			.929	141.1					214
		.852	109.3					63			.935	122.4					143
		.908	134.1					208			.945	111.4					482
Aug.23			(+18.5)	(55.9)	(+ 7.0)	(56)	(549)	(2217)	Aug.25			(+19.1)	(29.3)	(+ 7.0)	(196)	(1518)	(2598)
									237.373		.918	245.0					156
									G		.846	246.7					149
235.324		.975	256.6					97			.827	223.3					100
C		.955	245.2					329			.768	239.3					98
		.954	304.6					198		15122	.957	253.2	86.2	-13.8	15	85	120 *s*
		.953	295.8					72		*1256e*	.965	242.3	85.2	-24.3	4	21	164 *c*
		.907	231.6					169		15131	.886	304.6	76.9	+33.8	0	10	187 *c*
		.897	310.0					148		15129	.457	337.0	27.9	+31.7	38	206	
	15116	.945	289.0	114.9	+20.2	27	113	266 *f*		15128	.393	172.8	12.9	-15.7	32	179	
	15121	.856	238.4	94.8	-22.4	9	23	180 *c*		15126	.453	163.4	8.0	-18.6	23	130	
	15122	.747	244.6	86.7	-13.7	20	96			15127	.356	55.9	357.8	+18.2	5	24	
	15129	.484	29.5	26.7	+31.5	13	87			15130	.893	69.0	312.1	+21.9	97	731	470 *c*
	15128	.609	127.6	13.0	-15.7	3	11				.827	60.3					91
	15126	.716	126.4	5.3	-19.6	24	135	155 *f*			.830	112.7					162
	15127	.663	71.0	1.9	+17.8	5	16				.859	146.2					188
	15130	.994	68.8	316.8	+21.8	9	127	380 *p*			.874	120.6					151
		.811	144.8					112			.935	76.7					111
		.935	139.2					168			.940	112.4					364
		.947	119.4					152			.948	132.4					160
		.951	77.5					106			.949	59.2					162
		.975	60.9					97			.950	144.2					198
		.985	110.3					124			.979	120.2					82
Aug.24			(+18.8)	(42.9)	(+ 7.0)	(110)	(608)	(2753)	Aug.26			(+19.4)	(15.8)	(+ 7.1)	(214)	(1386)	(3113)

Group 15129. Aug. 24 - 31. A small group, led by a regular spot, quickly passing through its life history.
Group 15130. Aug. 24-Sept. 5. Return of Group 15088. A long stream of variable spots past its maximum growth. The follower spot is a small regular spot and this remains the most stable component.
Group 15131. Aug. 26 - 27. 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
1947			°	°	°				1947			°	°	°			
238.345		.983	248.6					213			.880	249.7					178
G		.941	252.7					200			.784	241.2					146
		.923	227.7					191		15129	.685	311.1	27.4	+32.3	22	129	
		.913	237.2					166		15128	.535	225.0	12.9	-15.6	24	189	
		.870	244.4					322		15126	.533	214.6	8.5	-19.2	22	131	
		.849	217.5					150		15138	.380	344.4	356.5	+28.4	0	6	
	15131	.955	301.4	76.7	+32.0	0	8	210 *c*		15132	.272	71.1	334.7	+11.9	4	18	
	15129	.555	320.6	27.4	+31.8	31	157			15130	.618	63.4	313.5	+21.8	104	591	
	15128	.422	202.9	12.8	-15.8	33	222			15134	.882	75.1	287.4	+16.5	9	79	183 *c*
	15126	.448	192.5	8.9	-18.7	22	138			15135	.924	101.9	284.1	- 8.1	67	517	364 *c*
	15127	.222	26.9	356.9	+18.5	0	4			15136	.942	107.6	282.4	-13.9	44	405	253 *c*
	15132	.477	79.7	334.6	+11.1	2	18			15137	.950	76.7	277.1	+14.8	17	133	150 *f*
	15133	.709	124.2	325.1	-17.9	1	8	178 *f*		15139	.973	73.0	272.0	+18.1	4	53	176 *c*
	15130	.762	67.1	314.1	+21.9	108	558	299 *c*		15140	.987	105.9	271.6	-14.4	33	194	145 *c*
	15134	.964	74.7	287.4	+16.6	20	207	271 *c*		15141	.992	100.1	268.7	- 9.0	0	53	431 *c*
	15135	.987	99.6	283.7	- 8.2	82	503	113 *c*			.811	124.3					310
	15136	.994	105.3	281.6	-14.2	9	70	207 *p*			.832	160.2					308
	15137	.995	75.5	277.4	+15.1	24	144				.887	81.8					244
		.853	117.3					260			.896	62.2					230
		.873	149.3					256			.912	116.1					179
		.913	57.3					248			.924	149.4					324
		.925	134.3					237			.931	134.0					370
		.933	120.8					188			.964	121.4					211
		.948	67.4					105			.976	64.6					153
		.952	110.5					166	Aug.28			(+20.0)	(349.9)	(+ 7.1)	(350)	(2498)	(5331)
		.957	146.1					212									
		.966	81.0					217									
Aug.27			(+19.7)	(3.0)	(+ 7.1)	(332)	(2037)	(4409)	240.339		.976	252.8					180
									G		.964	241.2					126
											.948	228.8					160
239.333		.980	302.2					140			.900	248.6					286
G		.968	254.6					178			.889	238.8					62
		.955	248.0					227			.833	231.6					154
		.949	237.6					196			.833	218.2					328
		.927	225.0					136		15142	.824	294.8	31.7	+24.3	0	6	50 *c*
		.917	281.7					99		15129	.798	305.4	26.7	+32.2	13	76	93 *c*

Group 15132. Aug. 27-Sept. 4. A short stream, developing from a pair of tiny spots first seen on August 27. Both leader and follower are small composite spots.

Group 15133. Aug. 27 - 31. Intermittent. A tiny spot.

Group 15134. Aug. 27-Sept. 1. A small composite spot rapidly dying out.

Group 15135. Aug. 27-Sept. 8. Return of Group 15092. A distinctive spot in slow decline and changing from complex to regular structure by September 3. Concurrently, occasional companions become numerous south of the parent spot, though the reference of those to this group or to Group 15136 is somewhat arbitrary on some days after September 1.

Group 15136. Aug. 27-Sept. 7. A pair of spots soon becoming regular in outline. The follower begins to die out rapidly after September 3. On September 6 another spot appears for one day closely following the leader.

Group 15137. Aug. 27-Sept. 8. A stable regular spot with a small drift equatorwards.

Group 15138. Aug. 28-Sept. 1. Intermittent. A tiny spot.

Group 15139. Aug. 28-Sept. 9. A small stream in constant change, but typically bi-polar on August 31 and September 1.

Group 15140. Aug. 28-Sept. 9. Probable return of Group 15093: fourth appearance. A stable regular spot.

Group 15141. Aug. 28-Sept. 9. Return of Group 15094. A few spots with others forming behind after August 31. The leading part of the resulting stream coalesces into a small irregular spot, and this alone remains after September 4.

Group 15142. Aug. 29 - 31. A faint spot without umbra, not seen on August 30.

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
1947			°	°	°				1947			°	°	°			
	15128	.676	237.4	12.8	−15.6	24	178			15140	.824	112.9	272.3	−14.2	27	168	60 *c*
	15126	.675	230.8	10.2	−19.3	17	115			15139	.792	73.5	271.2	+17.5	19	189	108 *c*
	15132	.071	24.6	335.0	+10.8	16	74			15141	.865	105.5	266.2	− 9.6	16	138	243 *c*
	15143	.499	162.5	327.5	−21.3	3	9			15145	.918	72.3	256.3	+19.0	0	11	178 *c*
	15130	.435	54.6	314.5	+21.1	83	459			15146	.967	106.5	251.2	−13.9	21	191	489 *sp*
	15134	.764	74.0	286.8	+16.7	2	7	35 *c*			.831	64.4					88
	1257a	.772	69.6	286.5	+20.2	2	5	83 *c*			.834	130.7					168
	15144	.783	80.6	284.8	+11.8	0	9	46 *c*			.859	78.0					96
	15135	.816	105.4	284.3	− 8.2	89	530	180 *c*			.936	122.3					139
	15136	.852	111.0	281.9	−13.7	51	353	162 *c*			.943	83.1					147
	15137	.853	77.0	277.7	+14.8	30	171	88 *c*	Aug.30			(+20.5)	(323.7)	(+ 7.2)	(291)	(2895)	(3203)
	15140	.924	108.4	272.3	−13.9	32	168	78 *c*									
	15139	.904	74.2	271.3	+17.3	16	77	156 *c*									
	15141	.952	103.2	266.6	−10.2	23	140	781 *c*	242.345		.969	239.7					249
	15145	.982	71.5	256.0	+19.4	5	18	76 *c*	G		.955	286.3					131
		.819	62.2					59			.951	233.2					146
		.855	149.3					154			.936	227.8					207
		.860	95.2					88			.896	221.0					254
		.880	124.8					213			.846	208.7					126
		.912	159.4					138			.843	286.2					105
		.927	65.5					165		15142	.976	292.8	29.4	+23.8	0	11	200 *c*
		.934	79.6					189		15129	.957	300.8	24.6	+31.5	12	61	264 *c*
		.935	58.1					79		15128	.916	249.6	12.9	−15.4	9	66	188 *c*
		.956	132.3					134		15126	.909	244.3	10.5	−19.7	69	528	316 *c*
		.982	109.8					236		15138	.753	300.2	357.6	+27.4	2	12	
Aug.29			(+20.2)	(336.7)	(+ 7.1)	(406)	(2395)	(4579)		15132	.446	278.7	336.7	+10.3	45	453	
										1257b	.596	204.8	326.2	−25.7	0	4	
										15133	.463	207.2	322.9	−17.2	1	5	
241.321		.959	250.4					191		15130	.270	348.8	313.4	+22.5	41	434	
C		.931	291.7					134		15144	.372	80.8	288.4	+10.1	10	49	
		.913	285.6					106		15135	.506	120.4	284.1	− 8.3	54	457	
		.906	238.9					180		15134	.463	67.0	283.9	+16.9	0	3	
		.888	232.5					95		15136	.576	127.5	282.2	−14.1	44	275	
		.872	224.3					200		15137	.543	74.2	277.7	+14.5	30	180	
		.814	214.8					208		15140	.687	120.2	272.5	−14.5	23	144	
	15129	.889	302.3	25.7	+31.9	10	64	172 *c*		15139	.628	70.7	271.9	+17.6	28	250	
	15128	.800	244.5	12.0	−15.4	12	213	90 *c*		15141	.731	110.2	266.3	− 9.4	22	144	89 *f*
	15126	.794	239.1	9.6	−19.0	27	219	111 *c*		15146	.887	109.8	251.1	−13.9	27	143	93 *c*
	15132	.221	286.1	336.1	+10.5	29	245			*1257c*	.867	75.4	249.6	+16.2	0	5	76 *c*
	15130	.297	30.8	314.3	+21.8	29	415			15147	.973	81.2	232.8	+10.2	43	377	656 *c*
	15144	.585	81.9	287.8	+10.5	4	30				.856	118.0					240
	15134	.611	72.0	286.5	+16.6	0	4				.895	96.2					63
	15135	.676	110.5	284.1	− 8.1	36	537				.933	106.8					373
	15136	.729	117.1	281.9	−14.0	44	311				.965	70.8					128
	15137	.719	75.9	277.7	+15.1	17	160		Aug.31			(+20.8)	(310.2)	(+ 7.2)	(460)	(3601)	(3904)

Group 15143. Aug.29–Sept. 3. A small spot not seen on August 30 and 31.
Group 15144. Aug.29–Sept. 3. One or two small spots.
Group 15145. Aug. 29 – 30. A small spot.
Group 15146. Aug.30–Sept.10. Return of Group 15097. A very stable regular spot with a drift equatorwards.
Group 15147. Aug.31–Sept.11. Return of Group 15099. A regular spot with a few trailer spots that grow rapidly from September 3 into a large composite spot. This, however, is unstable and from September 7 it disintegrates, and the dissolution of the whole group soon follows.

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
1947			°	°	°				1947			°	°	°			
243.345		.963	235.4					124		15141	.448	130.5	263.6	-10.1	34	262	
G		.945	284.9					119		15146	.625	122.5	251.1	-13.5	28	148	
		.942	226.6					300		15147	.765	82.3	233.6	+10.5	46	280	272 c
		.890	237.8					198		15148	.872	95.1	223.7	- 0.9	25	81	134 c
		.889	217.2					147		15150	.981	103.1	207.1	-11.2	57	364	403 c
		.861	285.0					178		15151	.974	80.9	206.1	+10.5	15	65	472 c
	15128	.982	252.5	13.1	-15.6	5	28 }	326 c			.862	69.3					222
	15126	.978	247.9	11.1	-19.8	66	518 }				.885	113.8					134
	15138	.879	296.5	358.3	+26.6	0	7	112 c			.927	122.7					75
	15132	.629	277.7	336.1	+10.4	81	587				.958	110.4					175
	15143	.655	225.6	326.9	-21.0	0	1				.959	69.9					177
	15130	.365	313.6	313.3	+21.5	25	172		Sept.2			(+21.3)	(283.8)	(+ 7.2)	(483)	(2959)	(3804)
	15144	.149	72.8	288.6	+ 9.7	5	22										
	15135	.342	140.0	284.1	- 8.1	64	370										
	15134	.271	53.0	283.9	+16.4	0	3										
	15136	.432	146.6	282.8	-14.1	37	234		245.350		.959	223.3					317
	15137	.346	66.8	277.8	+14.7	23	156		G		.948	233.9					141
	15139	.437	63.1	272.8	+17.9	24	157				.944	287.3					153
	15140	.540	132.1	272.5	-14.6	25	122				.913	213.7					220
	15141	.592	117.6	264.9	- 9.8	29	154				.890	200.3					173
	15146	.768	114.8	251.2	-13.8	27	147	86 f			.837	235.1					145
	15147	.889	82.4	233.7	+10.0	37	289	442 c		15132	.908	278.7	336.3	+10.9	61	501	466 c
	15148	.968	93.4	222.0	- 1.4	13	67	173 c		15143	.873	243.3	325.9	-19.0	0	7	240 c
		.847	100.6					95		15130	.717	291.2	315.7	+20.1	8	54	107 c
		.863	110.2					112		15144	.346	277.7	290.7	+ 9.4	3	14	
		.958	71.2					273		15152	.481	210.9	285.4	-17.3	9	31	
		.962	109.4					142		15136	.418	211.4	283.4	-13.8	45	227	
		.963	116.6					124		15135	.353	217.7	283.1	- 9.1	51	359	
		.968	82.4					200		15137	.171	315.0	277.6	+14.1	27	131	
Sept.1			(+21.0)	(296.9)	(+ 7.2)	(461)	(3034)	(3151)		15153	.255	193.3	273.9	- 7.1	1	10	
										15139	.207	348.6	272.9	+18.8	9	59	
										15140	.373	184.7	272.3	-14.5	28	137	
244.340		.978	230.2					320		15141	.295	162.9	265.5	- 9.1	33	178	
G		.957	242.6					289		15146	.471	136.6	251.2	-13.1	27	135	
		.954	296.0					167		*1257d*	.584	107.9	236.8	- 4.3	0	3	
		.952	287.3					201		15147	.584	81.3	234.6	+10.9	59	324	
		.927	219.3					210		15148	.725	97.6	224.7	- 0.5	12	57	90 f
		.876	207.7					164		*1257e*	.870	67.5	209.8	+23.1	0	7	162 c
		.857	187.5					109		15150	.910	106.4	207.7	-11.7	48	213	356 c
	15132	.796	277.9	336.9	+10.6	75	635	226 c		15151	.902	81.8	205.5	+10.5	8	31	378 c
	15143	.784	235.7	327.6	-21.0	2	7	54 c			.770	69.3					106
	15130	.527	298.7	313.3	+20.9	18	133				.826	115.1					130
	15144	.142	286.5	291.7	+ 9.4	3	5				.849	74.5					235
	15135	.271	178.9	283.5	- 8.5	62	365				.921	95.9					100
	15136	.361	177.9	283.0	-13.8	44	240				.948	116.9					141
	15137	.163	38.9	277.8	+14.4	31	146				.956	64.1					210
	15139	.261	43.5	273.0	+17.9	16	90				.963	81.1					458
	15140	.419	152.5	272.0	-14.7	26	134				.980	71.9					251
	15149	.343	40.7	269.9	+22.0	1	4		Sept.3			(+21.5)	(270.5)	(+ 7.2)	(429)	(2478)	(4579)

Group 15148. Sept. 1 - 8. A pair of small spots within 1° of the Sun's equator, the leader alone remaining by September 4.
Group 15149. Sept. 2 - 9. From a feeble start, a stream develops and is still growing as it passes from view.
Group 15150. Sept. 2 - 13. A long stream of numerous small spots in general decline which is hastened after about September 7.
Group 15151. Sept. 2 - 9. A small spot with a companion on September 6, 7 and 9.
Group 15152. Sept. 3 - 7. A few small variable spots.
Group 15153. Sept. 3 - 5. One or two small spots.

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
1947			°	°	°			
246.368		.948	246.1					457
G		.947	218.0					192
		.939	230.1					65
		.899	210.8					103
		.895	298.6					75
		.888	201.4					49
		.879	243.8					154
		.835	236.0					133
	15132	.973	279.7	334.4	+11.0	28	213	639 c
	15130	.846	289.2	315.0	+20.0	2	23	474 c
	1257f	.806	222.4	296.2	-30.9	4	15	29 c
	15136	.569	233.4	284.9	-13.4	32	166	
	15152	.591	228.2	284.3	-16.7	11	40	
	15135	.510	238.9	283.1	- 8.7	59	256	
	15137	.366	290.1	277.6	+13.9	23	126	
	15153	.403	228.6	274.7	- 8.5	11	26	
	15140	.446	214.1	271.9	-14.7	25	126	
	15139	.292	309.7	270.6	+17.7	2	37	
	15149	.336	325.4	268.9	+23.0	1	7	
	15141	.330	210.4	266.7	- 9.4	29	130	
	15146	.361	164.0	251.2	-13.1	26	125	
	15147	.384	77.3	234.6	+11.5	85	442	
	15148	.513	102.6	227.1	- 0.2	9	39	
	15154	.676	75.2	214.5	+15.3	16	35	
	15150	.793	110.2	207.8	-11.2	70	229	116 c
	15151	.779	82.8	205.5	+10.1	13	38	72 c
		.771	64.6					44
		.916	83.9					446
		.931	58.4					31
		.933	120.6					62
		.934	71.4					345
		.942	107.6					200
Sept.4			(+21.8)	(257.0)	(+ 7.2)	(446)	(2073)	(3686)
247.365		.967	249.0					307
G		.962	225.8					205
		.944	295.9					204
		.940	216.3					197
		.928	207.9					121
		.921	234.0					188
		.894	254.4					127
		.874	225.4					81
	15130	.952	288.5	317.1	+19.8	2	34	640 c
	1257g	.947	240.6	309.1	-24.9	3	25	348 c

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1947			°	°	°			
	15136	.719	243.6	285.1	-13.2	22	126	
	15152	.729	239.0	284.3	-16.6	6	31	
	15135	.674	249.6	283.3	- 8.0	35	204	
	15137	.559	284.2	277.6	+13.9	19	105	
	15139	.555	291.1	276.5	+17.5	19	93	
	15153	.574	243.6	275.0	- 8.6	3	18	
	15140	.577	231.4	271.5	-14.7	24	129	
	15141	.495	236.4	268.4	- 9.3	18	177	
	15149	.469	307.1	267.7	+23.0	1	14	
	15146	.366	199.6	251.0	-12.9	24	131	
	15147	.182	64.8	234.2	+11.5	67	552	
	15148	.305	114.2	227.7	- 0.3	4	22	
	15154	.507	72.5	213.9	+15.0	23	151	
	15150	.654	117.6	207.6	-11.8	41	219	
	15151	.618	83.8	205.4	+ 9.5	7	32	
	15155	.977	106.6	168.7	-14.5	0	12	236 c
		.842	73.0					188
		.844	107.1					126
		.861	117.2					245
		.869	82.4					363
		.901	91.6					259
		.937	68.9					384
		.954	130.6					261
		.957	61.5					212
Sept.5			(+22.0)	(243.8)	(+ 7.2)	(318)	(2075)	(4692)
248.344		.978	243.6					348
G		.974	291.0					369
		.943	257.2					185
		.928	300.2					211
		.916	243.0					112
		.868	230.4					102
		.861	279.8					256
		.817	307.2					117
	15136	.837	249.4	284.1	-12.8	28	121	200 c
	15152	.849	244.2	283.9	-17.4	5	22	99 c
	15135	.813	255.5	283.2	- 7.4	15	117	165 c
	15137	.729	282.2	277.9	+13.8	20	118	
	15139	.728	287.5	277.4	+17.6	13	106	
	15140	.716	241.2	271.2	-14.7	16	124	
	15141	.676	247.4	270.0	- 9.4	20	171	
	15149	.634	298.5	268.1	+23.3	14	85	
	15146	.473	224.6	250.7	-12.8	17	135	
	15147	.095	325.1	234.1	+11.7	95	602	

Group 15154. Sept. 4 - 13. A small group of vigorous growth from a pair of spots but soon dispersing.

Group 15155. Sept. 5 - 16. Developing spots in a stream which are individually unstable. The dissolution of the group is nearly complete before it passes out of sight.

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
1947			°	°	°			
	15148	.144	160.7	228.2	- 0.6	5	14	
	15156	.336	159.2	223.9	-11.1	21	93	
	15154	.323	63.6	213.5	+15.1	27	147	
	15150	.471	131.3	209.8	-11.3	48	234	
	15151	.417	80.5	206.3	+10.5	13	36	
	15155	.934	109.4	165.2	-15.2	6	35	221 *c*
	15157	.979	77.7	151.5	+13.5	26	223	303 *c*
		.764	69.5					131
		.790	85.2					294
		.853	125.9					129
		.861	135.9					156
		.879	61.6					189
		.933	69.0					203
		.965	125.2					149
		.972	136.2					213
Sept.6			(+22.2)	(230.9)	(+ 7.2)	(389)	(2383)	(4152)
249.315 C		.950	243.5					122
		.948	301.5					153
		.946	279.1					134
		.933	234.9					164
	15136	.936	253.7	284.8	-12.4	13	59	274 *c*
	15152	.935	248.7	283.5	-16.9	10	74	249 *c*
	15135	.919	258.9	283.2	- 7.2	14	149	262 *c*
	15137	.859	281.7	277.8	+13.7	19	93	361 *c*
	15139	.831	287.0	274.6	+18.1	21	146	
	15140	.836	247.3	270.7	-14.5	25	137	113 *c*
	15141	.821	253.3	270.7	- 9.3	10	61	295 *c*
	15149	.783	294.3	268.9	+23.4	28	155	198 *c*
	15146	.618	238.3	250.6	-12.8	20	138	
	15147	.281	285.9	234.0	+11.3	72	567	
	15148	.222	232.0	228.1	- 0.7	2	10	
	15156	.329	197.4	223.8	-11.1	42	201	
	15154	.140	17.1	215.7	+14.8	20	82	
	15150	.363	157.7	210.0	-12.4	37	185	
	15151	.205	73.1	206.6	+10.5	6	19	
	15158	.381	55.1	198.9	+19.3	2	12	
	15159	.520	60.5	189.2	+21.1	4	19	

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1947			°	°	°			
	15155	.844	113.5	164.9	-15.4	37	132	231 *c*
	15157	.909	78.3	152.0	+13.6	24	193	407 *c*
		.832	61.1					158
		.852	144.8					187
		.871	127.7					100
		.890	53.4					120
		.924	65.8					128
		.940	108.3					286
		.943	116.4					243
		.969	57.4					153
Sept.7			(+22.5)	(218.1)	(+ 7.2)	(406)	(2432)	(4338)
250.467 G		.917	246.9					365
		.907	238.5					160
	15135	.990	261.5	283.4	- 7.3	24	147	228 *c*
	15137	.963	282.5	278.3	+13.9	20	108	138 *c*
	15141	.945	256.8	271.7	- 9.9	17	130	240 *c*
	15139	.923	287.8	271.1	+19.1	23	152	230 *c*
	15140	.945	251.7	270.7	-14.6	17	130	148 *c*
	15149	.912	292.3	269.3	+23.3	44	315	203 *c*
	15146	.784	247.4	250.6	-12.7	29	132	
	15147	.519	278.7	234.2	+10.7	37	261	
	15148	.453	253.5	228.5	- 0.9	1	5	
	15156	.472	228.3	223.9	-11.5	36	259	
	15154	.267	301.6	216.5	+15.0	6	28	
	15150	.350	200.6	210.1	-11.9	23	129	
	15151	.047	322.0	204.6	+ 9.3	4	17	
	15158	.217	12.9	200.0	+19.3	20	83	
	15160	.130	50.7	197.0	+11.8	2	18	
	15159	.325	43.9	189.0	+20.5	30	149	
	15155	.676	121.3	166.4	-14.7	37	194	
	15157	.776	78.1	151.7	+13.7	28	190	322 *f*
	15161	.894	114.5	144.3	-18.1	0	6	221 *c*
		.913	56.1					150
		.924	142.3					321
		.926	67.9					296
Sept.8			(+22.7)	(202.9)	(+ 7.2)	(398)	(2453)	(3022)

Group 15156. Sept. 6 - 12. A short stream, suddenly appearing in front of Group 15150. The small spots in between have disappeared by September 8.

Group 15157. Sept. 6 - 18. Return of Group 15111: third appearance. A spot with twin umbræ that coalesce after September 14 when the spot as a whole assumes a regular outline.

Group 15158. Sept. 7 - 13. A small indecisive group.

Group 15159. Sept. 7 - 15. A small stream developing from two spots; however, only the leader, a small composite spot, and a tiny follower remain.

Group 15160. Sept. 8 - 9. A small spot.

Group 15161. Sept. 8 - 18. A tiny spot on September 8 and 9; on the next day a stream of spots suddenly appears. The leading pair combine to form a small regular spot which alone remains by September 14.

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
1947			°	°	°				1947			°	°	°			
251.370		.962	265.6					203		15163	.881	71.6	113.7	+19.6	16	67	148 *f*
G		.954	243.9					167			.791	124.9					106
		.929	237.7					137			.823	56.5					97
		.869	275.6					113			.933	117.1					330
	15141	.992	258.7	272.1	−10.2	19	61	175 *f*	Sept.10			(+23.1)	(176.0)	(+ 7.2)	(278)	(1706)	(1861)
	15139	.980	288.1	271.1	+19.1	22	162	331 *c*									
	15140	.991	253.7	270.8	−15.0	25	116	165 *f*									
	15149	.970	292.5	268.4	+23.5	40	366	219 *c*	253.519		.982	260.6					142
	15146	.888	251.7	250.6	−12.6	25	110	303 *c*	C		.952	247.0					142
	15162	.802	260.9	243.3	− 2.9	0	12				.940	285.4					190
	15147	.701	277.9	235.8	+10.7	36	200				.915	237.8					95
	15156	.612	240.6	223.8	−11.4	38	207				.895	265.7					110
	15154	.488	289.5	219.4	+15.7	4	19				.870	290.0					100
	15150	.477	229.3	212.5	−11.4	25	176			15147	.954	278.0	235.8	+ 9.8	9	75	378 *c*
	15151	.284	284.2	207.2	+10.9	5	48			15156	.895	253.6	223.5	−11.2	30	143	265 *c*
	15158	.290	315.1	203.4	+18.8	19	96			15154	.831	283.6	219.2	+15.2	4	12	202 *c*
	15160	.142	303.1	197.9	+11.6	3	16			15150	.784	249.0	210.8	−11.5	6	31	160 *c*
	15159	.231	2.1	190.5	+20.5	19	139			15165	.734	294.3	208.8	+22.6	10	49	
	1257h	.472	159.3	180.9	−19.0	0	4			15158	.708	289.6	207.2	+18.9	11	67	
	15155	.553	130.1	165.2	−14.3	50	353			15159	.516	295.9	191.9	+19.3	33	197	
	15157	.633	76.7	151.8	+13.9	24	168			15164	.436	189.0	166.7	−18.2	22	93	
	15161	.773	120.6	146.8	−18.0	0	14	73 *f*		15155	.372	189.8	166.3	−14.2	60	361	
	15163	.968	70.9	114.1	+20.2	10	74	189 *c*		15157	.226	55.8	151.5	+14.3	21	159	
		.852	67.7					129		15161	.500	148.8	146.8	−18.3	42	200	
		.921	60.7					258		15163	.751	70.0	114.2	+19.7	11	69	138 *f*
		.939	103.7					245			.833	121.4					256
		.971	55.1					184			.903	48.5					163
Sept.9			(+22.9)	(191.0)	(+ 7.2)	(364)	(2341)	(2891)			.926	109.7					200
											.946	125.2					150
											.966	116.7					270
252.502		.949	285.9					104			.984	82.7					90
C		.839	286.1					90	Sept.11			(+23.4)	(162.6)	(+ 7.2)	(259)	(1456)	(3051)
	15146	.972	255.7	250.1	−12.0	19	178	297 *sf*									
	15162	.930	264.5	243.7	− 2.3	9	72	179 *c*									
	15147	.859	277.1	235.6	+ 9.8	21	165	372 *c*	254.333		.980	280.7					349
	15156	.776	249.1	223.5	−11.2	44	199	138 *c*	C		.958	292.5					169
	15154	.694	284.1	220.0	+15.0	3	18				.913	277.7					132
	1257i	.633	278.1	215.4	+10.7	3	14				.843	276.8					170
	15150	.658	243.5	212.8	−11.2	11	101				.754	275.9					100
	15158	.523	295.1	205.9	+19.0	9	47			15156	.964	256.1	224.1	−11.2	44	206	365 *c*
	15159	.336	310.7	191.6	+19.5	22	122			15154	.911	284.9	218.2	+16.5	8	26	264 *c*
	15164	.450	160.9	167.1	−17.9	4	29			15150	.864	251.9	208.6	−11.7	13	60	367 *c*
	15155	.406	154.1	165.5	−14.2	60	345			15158	.833	288.9	208.4	+19.7	18	100	153 *c*
	15157	.420	71.3	151.9	+14.3	17	154			15165	.819	292.9	206.5	+22.8	10	98	
	15161	.623	131.1	146.6	−17.9	40	195			15159	.652	291.1	191.7	+19.1	31	220	

Group 15162. Sept. 9 - 10. A small spot.
Group 15163. Sept. 9 - 14. Return of Group 15116. A small spot which dies out before reaching the central meridian.
Group 15164. Sept. 10 - 17. A variable stream, appearing just south of Group 15155, and developing further as it passes out of view.
Group 15165. Sept. 11 - 14. A mass of small spots appearing near 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
1947			°	°	°				1947			°	°	°			
	15155	.440	215.5	167.0	-13.9	34	426		256.310		.944	254.8					327
	15164	.491	208.9	166.2	-18.4	16	127		C		.931	245.0					265
	15157	.127	4.5	151.2	+14.4	25	147				.927	277.1					461
	15161	.439	168.9	146.7	-18.2	25	217				.924	267.7					197
	15163	.625	67.4	114.2	+19.6	22	65				.909	236.5					156
	15166	.897	75.7	87.4	+16.0	2	12	136 *c*			.897	222.9					269
	15167	.970	101.3	77.6	- 9.0	4	18	65 *c*			.891	296.7					143
	15168	.994	80.5	67.2	+10.2	18	154	117 *sp*			.832	205.4					118
		.876	37.7					101			.826	276.3					307
		.878	115.4					159		15165	.972	291.1	203.7	+22.1	19	263	400 *c*
		.892	128.3					72		15159	.910	288.5	192.0	+19.8	23	156	270 *f*
		.975	108.9					217		15164	.766	237.5	168.6	-19.0	22	181	
Sept.12			(+23.5)	(151.8)	(+ 7.2)	(270)	(1876)	(2936)		15155	.735	242.8	168.0	-14.3	24	231	
										15157	.434	287.9	150.8	+14.2	26	146	
										15161	.564	224.1	149.9	-17.2	14	121	
255.310		.980	279.9					160		15163	.285	40.9	114.3	+19.4	2	15	
C		.935	277.7					228		15166	.612	73.4	88.3	+15.8	45	214	
		.882	271.7					126		15167	.779	107.9	77.2	- 9.1	6	26	124 *sf*
		.845	213.5					112		15168	.858	82.0	66.1	+10.5	21	116	286 *n*
		.832	250.4					68		15169	.932	78.6	56.2	+13.2	22	144	235 *c*
		.829	278.1					174			.839	115.7					109
		.829	240.9					97			.884	54.7					139
		.788	232.3					97			.938	117.9					156
	15154	.983	286.9	219.8	+17.9	0	19	241 *c*			.945	111.3					214
	15150	.961	255.0	210.4	-12.2	7	35	507 *c*	Sept.14			(+23.9)	(125.7)	(+ 7.2)	(224)	(1613)	(4176)
	15158	.920	287.0	206.7	+18.4	9	49	147 *c*									
	15165	.910	291.8	205.0	+22.8	24	273	202 *c*									
	15159	.798	289.3	191.8	+19.7	24	249		257.515		.957	277.5					445
	15155	.576	232.0	166.7	-14.3	31	368		C		.957	229.7					333
	15164	.606	225.7	166.0	-18.5	15	142				.851	298.5					145
	15157	.241	302.7	150.9	+14.5	25	164			15159	.990	288.7	193.4	+19.4	24	165	393 *f*
	15161	.450	199.7	148.0	-17.9	20	139			15155	.895	249.9	169.8	-14.4	24	94	259 *c*
	15163	.451	60.4	114.4	+19.4	4	40			15164	.904	244.6	169.5	-19.3	28	302	336 *c*
	15166	.769	74.7	88.5	+16.3	3	26	71 *f*		15157	.656	283.5	150.8	+14.2	24	128	
	15167	.889	104.2	78.3	- 9.1	2	26	99 *c*		15161	.725	238.1	149.7	-17.0	17	120	97 *c*
	15168	.948	81.8	66.9	+10.0	14	169	233 *c*		15166	.369	64.7	89.6	+15.8	49	274	
	15169	.991	77.7	55.5	+13.1	20	117	152 *c*		15167	.586	117.0	78.0	- 9.3	5	33	
		.842	125.7					121		15168	.683	82.5	66.5	+10.4	19	153	
		.850	83.7					82		15169	.802	79.8	56.1	+12.5	25	137	129 *c*
		.868	118.1					131		15170	.965	78.2	34.0	+13.2	30	227	
		.942	57.0					144			.836	116.7					139
		.952	111.1					193			.927	130.5					187
Sept.13			(+23.7)	(138.9)	(+ 7.2)	(198)	(1816)	(3385)	Sept.15			(+24.1)	(109.8)	(+ 7.2)	(245)	(1633)	(2463)

Group 15166. Sept. 12 - 22. A small stream developing from a small spot. The leader, a regular spot, is the most stable component.

Group 15167. Sept. 12 - 18. A few small changing spots.

Group 15168. Sept. 12 - 25. A regular spot; a few companions appear after September 21 north of it.

Group 15169. Sept. 13 - 24. A pair of spots which break up by September 16. The small stream that results increases temporarily before fading away.

Group 15170. Sept. 15 - 22. A pair of dying spots; the follower just outlasts its companion.

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
1947			°	°	°				1947			°	°	°			
258.349		.982	290.7					205		15166	.357	295.2	92.0	+15.5	41	335	
G		.970	278.0					204		15171	.396	215.6	86.1	−11.7	7	24	
		.964	267.8					187		15167	.290	183.2	73.4	− 9.6	3	18	
		.956	231.3					114		15168	.123	60.6	66.3	+10.6	30	178	
		.926	217.6					132		15169	.298	69.2	56.0	+13.0	8	84	
		.917	295.8					112		15170	.635	78.4	33.0	+12.9	32	217	
		.899	209.2					102		15173	.918	114.4	10.5	−19.0	46	284	293 *c*
		.876	286.6					115			.924	125.2					126
	15155	.963	253.2	170.4	−14.0	13	95	273 *c*			.940	104.7					206
	15164	.959	247.4	168.2	−19.2	71	488	472 *c*	Sept.18			(+24.6)	(72.5)	(+ 7.2)	(202)	(1440)	(1250)
	15157	.778	282.2	150.2	+14.0	21	153	105 *c*									
	15161	.829	243.6	149.6	−17.2	20	141	152 *sf*									
	15166	.207	44.4	90.2	+15.6	49	318										
	15171	.398	144.4	85.2	−11.8	4	11		261.637		.962	293.8					324
	15167	.453	127.8	77.6	− 9.3	13	78		G		.941	252.6					181
	15168	.538	81.8	66.2	+10.5	34	185				.897	240.8					278
	15169	.677	78.6	56.1	+13.0	17	101				.845	289.8					94
	15170	.907	78.8	33.0	+13.1	77	325	441 *c*		15166	.615	285.8	93.1	+15.3	36	275	
	15172	.944	75.9	27.1	+15.7	3	16	107 *c*		15171	.623	239.2	88.5	−12.6	1	6	
		.890	133.6					147		15168	.198	289.0	66.3	+10.7	24	149	
		.957	57.2					153		15169	.096	345.7	56.8	+12.4	14	116	
Sept.16			(+24.2)	(98.8)	(+ 7.2)	(322)	(1911)	(3021)		15170	.378	74.4	33.6	+12.4	17	115	
										15173	.786	121.2	10.2	−19.0	42	241	255 *c*
											.848	76.0					74
259.363		.957	296.0					153			.919	120.8					184
G		.948	218.0					140			.933	82.6					308
		.930	288.3					151			.936	132.1					347
	15164	.989	248.0	163.2	−20.4	7	30	532 *n*			.963	115.7					247
	15157	.902	282.2	150.5	+14.1	10	135	193 *c*			.981	78.0					340
	15161	.930	247.8	149.7	−17.5	22	170	293 *c*	Sept.19			(+24.8)	(55.4)	(+ 7.1)	(134)	(902)	(2632)
	15166	.175	327.8	90.9	+15.6	35	321										
	15171	.324	182.2	86.1	−11.6	6	43										
	15167	.341	147.8	74.8	− 9.6	10	62		262.518		.961	244.7					271
	15168	.332	78.6	66.2	+10.5	20	149		C		.908	291.1					129
	15169	.493	75.8	56.1	+13.2	8	74				.844	241.2					132
	15170	.783	78.9	33.5	+13.1	45	257	102 *c*		15166	.764	284.1	93.8	+15.3	42	267	
	15172	.838	75.8	28.0	+15.8	0	4	89 *c*		15168	.385	280.1	66.4	+10.4	33	180	
	15173	.979	110.5	10.6	−18.6	17	190	254 *c*		15169	.253	293.1	57.5	+12.6	24	188	
		.919	54.8					113		15170	.196	64.0	33.5	+11.9	8	55	
		.934	120.1					109		15173	.672	129.1	10.4	−19.1	44	212	
		.957	74.8					95		15174	.945	75.1	331.9	+16.4	0	6	140 *c*
Sept.17			(+24.4)	(85.4)	(+ 7.2)	(180)	(1435)	(2224)		15175	.981	110.5	328.4	−18.4	18	88	290 *n*
											.841	83.9					160
											.893	119.8					216
260.344	15157	.976	283.2	151.1	+14.4	16	122	215 *f*			.965	67.7					205
C	15161	.984	250.8	149.1	−17.3	19	178	410 *f*	Sept.20			(+24.9)	(43.8)	(+ 7.1)	(169)	(996)	(1543)

Group 15171. Sept. 16 - 19. One or two small spots.
Group 15172. Sept. 16 - 17. A tiny spot, probably related to Group 15170.
Group 15173. Sept. 17 - 29. Return of Group 15126: third appearance. A stable regular spot in slow decline.
Group 15174. Sept. 20-Oct. 1. A large stream of normal type developing rapidly from a tiny spot. The leader, a regular spot, is the only survivor at the west limb.
Group 15175. Sept. 20-Oct. 2. A slowly diminishing regular spot with a companion until September 24.

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
1947			°	°	°				1947			°	°	°			
263.442		.960	290.6					120			.945	295.7					85
G		.943	230.4					166			.921	246.9					213
		.933	239.6					216			.842	237.7					113
		.932	248.0					137		15168	.882	278.7	67.2	+11.0	76	425	293 c
		.779	251.0					107		15169	.814	281.3	59.7	+13.2	25	113	92 c
	15166	.883	283.8	94.2	+15.5	51	208	335 c		15173	.455	190.0	9.6	-19.5	35	194	
	15168	.568	278.0	66.3	+10.4	18	152			15174	.488	66.5	337.0	+17.3	104	528	
	15169	.444	285.3	57.6	+13.1	41	220			15175	.710	123.9	326.7	-17.8	42	216	69 f
	15170	.084	325.2	34.4	+11.0	8	36			15176	.955	102.7	294.0	- 9.8	0	18	413 c
	15173	.555	142.0	10.5	-19.2	46	215			15177	.976	108.8	290.4	-16.6	9	110	414 c
	15174	.847	74.0	333.3	+17.3	27	209	314 c		15178	.982	75.7	284.4	+15.4	41	117	252 c
	15175	.935	112.4	326.4	-18.0	36	240	450 c			.833	66.9					221
		.859	142.4					196			.838	149.7					204
		.930	67.8					258			.882	73.9					141
		.946	134.4					222			.899	120.1					177
		.984	67.6					277			.932	142.5					199
Sept.21			(+25.0)	(31.6)	(+ 7.1)	(227)	(1280)	(2798)			.965	98.3					231
											.975	59.3					172
									Sept.23			(+25.3)	(4.8)	(+ 7.0)	(332)	(1721)	(3694)
264.406		.969	245.1					179									
G		.938	308.9					144									
		.927	254.0					133									
		.917	240.3					181									
	15166	.963	284.4	94.3	+15.7	26	184	289 c	266.377		.924	246.8					173
	15168	.747	278.3	67.5	+10.8	35	310	87 c	G		.915	236.7					193
	15169	.641	282.5	58.8	+13.4	27	193				.896	225.4					164
	15170	.226	291.7	31.2	+11.7	2	18			*1258a*	.991	290.0	77.0	+20.7	14	90	154 c
	15173	.467	161.8	10.1	-19.3	34	218			15168	.959	279.7	67.0	+11.2	47	383	385 c
	1257j	.524	87.6	347.2	+ 7.2	0	4			15169	.908	281.6	58.7	+13.5	5	42	245 c
	15174	.696	71.9	335.1	+17.6	47	275			15173	.523	211.4	9.6	-19.7	27	176	
	15175	.846	116.7	326.4	-18.1	34	211	214 c		15179	.426	173.9	350.1	-18.0	4	7	
		.812	148.4					105		15174	.302	51.4	338.5	+17.6	144	653	
		.852	65.9					171		15180	.438	144.0	337.5	-13.9	1	6	
		.913	140.2					204		15175	.585	134.6	327.0	-17.9	31	171	
		.928	123.4					134		15181	.791	71.0	300.6	+19.3	0	3	93 c
		.931	66.7					243		15176	.878	105.0	293.7	- 9.6	4	17	303 f
		.962	113.9					162		15177	.918	112.4	290.2	-17.3	0	14	350 c
		.969	99.7					111		15178	.927	76.4	284.1	+15.2	21	147	464 c
		.971	73.5					117			.840	123.6					134
Sept.22			(+25.1)	(18.9)	(+ 7.0)	(205)	(1413)	(2474)			.906	147.9					367
											.928	57.5					149
											.952	134.4					235
265.470		.975	287.1					223			.962	102.7					383
G		.962	254.8					182	Sept.24			(+25.4)	(352.8)	(+ 7.0)	(298)	(1709)	(3792)

Group 15176. Sept. 23-Oct. 4. A stream of variable spots with a brief maximum on September 25.
Group 15177. Sept. 23 - 27. A few variable spots.
Group 15178. Sept. 23-Oct. 4. A decreasing regular spot followed by one or two companions until September 29.
Group 15179. Sept. 24 - 27. A single spot on September 24; a pair on the other days.
Group 15180. Sept. 24 - 28. A pair of tiny spots.
Group 15181. Sept. 24-Oct. 4. The rapid development from September 30 of a regular spot with an unstable follower, is preceded by several days of feeble activity.

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
1947			°	°	°			
267.345		.950	247.1					142
G		.942	227.5					181
		.800	280.2					149
	15168	.990	281.5	63.0	+12.4	14	123	319 *f*
	15173	.637	226.5	9.4	-19.9	38	190	
	15179	.467	202.0	350.7	-18.7	8	34	
	15174	.187	4.2	339.3	+17.7	178	1127	
	15180	.365	173.5	337.7	-14.1	0	5	
	15175	.474	152.9	327.0	-18.1	21	154	
	1258b	.390	43.1	323.3	+23.1	1	10	
	1258c	.522	114.7	311.7	- 6.4	1	8	
	15181	.636	70.9	301.2	+17.5	1	3	
	15176	.764	109.3	293.2	- 9.8	47	232	107 *c*
	15177	.834	115.9	288.6	-17.0	2	8	104 *f*
	15178	.818	76.4	284.9	+15.1	28	166	220 *c*
	15182	.866	71.8	279.7	+19.2	13	62	288 *c*
	15183	.894	106.3	279.3	-11.2	4	24	162 *c*
	15184	.952	122.5	274.9	-28.0	6	40	180 *c*
		.849	53.5					85
		.940	99.9					244
		.974	65.4					317
Sept.25			(+25.5)	(340.1)	(+ 7.0)	(362)	(2186)	(2498)
268.555		.952	246.8					126
G		.937	237.4					206
		.930	281.2					393
	15173	.789	238.3	9.4	-19.6	25	151	271 *f*
	15179	.597	224.4	350.2	-19.0	4	20	
	15174	.312	307.6	339.1	+17.6	178	909	
	15180	.410	215.9	338.3	-12.6	2	11	
	15175	.424	186.2	326.8	-17.9	24	134	
	15181	.413	62.4	301.7	+17.4	7	33	
	15176	.551	119.0	295.0	- 9.4	29	141	
	15185	.586	125.6	294.8	-13.8	2	17	
	15177	.651	128.1	291.7	-17.8	0	9	
	15178	.616	74.6	286.3	+14.9	15	108	
	15182	.713	70.0	279.2	+19.0	32	140	192 *c*
	15183	.759	112.0	278.3	-11.7	2	3	122 *c*
	15184	.863	128.8	274.4	-28.4	16	76	101 *f*
	15186	.967	104.8	251.2	-12.4	4	14	68 *c*

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbrae	AREA Whole Spots	AREA Faculae
1947			°	°	°			
	15187	.987	99.4	244.8	- 8.0	49	364	230 *c*
		.822	103.6					97
		.855	74.8					140
		.874	117.3					171
		.885	65.6					216
		.929	108.1					165
		.937	139.6					158
		.942	57.6					115
		.959	82.7					214
		.964	73.2					311
		.967	117.2					151
Sept.26			(+25.6)	(324.1)	(+ 6.9)	(389)	(2130)	(3447)
269.423		.967	282.1					216
G		.862	229.3					110
	15173	.882	243.4	9.2	-19.5	19	148	443 *c*
	15179	.710	234.5	350.1	-18.8	0	2	
	15174	.486	295.0	340.1	+17.9	177	1028	
	15180	.543	234.8	339.5	-12.0	2	11	
	15175	.479	209.5	326.9	-17.8	23	138	
	15181	.267	46.3	301.0	+17.3	4	22	
	15185	.454	140.5	295.4	-13.8	4	10	
	15176	.405	133.1	295.2	- 9.4	30	130	
	15177	.512	140.3	292.7	-16.7	5	20	
	1258d	.435	60.7	289.1	+18.5	1	11	
	15178	.449	70.1	286.8	+15.0	12	91	
	15182	.567	66.9	279.4	+18.6	23	152	
	15183	.628	118.1	278.3	-11.5	0	3	
	15184	.784	135.2	273.8	-28.4	14	74	109 *c*
	15186	.902	107.5	251.0	-12.5	2	8	119 *c*
	15187	.939	101.5	244.4	- 8.3	95	468	279 *c*
		.786	64.0					127
		.856	121.3					172
		.893	79.6					258
		.901	55.9					128
		.924	87.9					130
		.948	70.1					313
		.966	78.9					234
Sept.27			(+25.7)	(312.6)	(+ 6.9)	(411)	(2316)	(2638)

Group 15182. Sept. 25-Oct. 4. A stream of small spots undergoing slight changes and dying out before reaching the west limb.
Group 15183. Sept. 25 - 29. A tiny spot of uncertain individual continuity.
Group 15184. Sept. 25-Oct. 2. A small spot, with a companion on September 28.
Group 15185. Sept. 26-Oct. 4. A few unstable spots due south of Group 15176.
Group 15186. Sept. 26-Oct. 5. Return of Group 15146: third appearance. A small but definite spot fading out by September 29. Weak activity is continued for a few days 2° southwards by small spots in a stream.
Group 15187. Sept. 26-Oct. 8. A pair of regular spots, each with variable companions. The leader is the first to die out.

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
1947			°	°	°				1947			°	°	°			
270.309		.922	235.0					152		15189	.203	76.2	276.3	+ 9.4	8	31	
C		.891	226.6					189		15184	.625	159.5	273.3	−29.1	7	18	
		.847	214.2					130		15187	.719	108.5	244.4	− 8.2	74	481	
	15173	.949	246.8	8.5	−19.4	24	146	280 *c*		15188	.938	106.5	220.7	−12.8	64	522	560 *c*
	15174	.630	290.6	339.2	+18.1	175	946				.838	71.8					197
	15180	.672	242.6	338.5	−12.6	3	23				.859	111.1					136
	15175	.583	225.6	326.8	−17.9	23	123				.903	63.3					161
	15181	.189	357.6	301.5	+17.6	2	13				.937	78.5					336
	15185	.358	166.8	296.2	−13.5	6	30				.968	65.7					339
	15176	.297	160.0	295.1	− 9.4	13	130		Sept.29			(+25.9)	(287.8)	(+ 6.8)	(494)	(2906)	(3235)
	15178	.268	58.2	287.4	+14.7	12	94										
	15183	.445	130.7	281.0	−10.4	0	3										
	15182	.411	58.4	279.4	+18.7	30	177										
	15184	.704	143.9	272.9	−28.6	10	66		272.348		.971	248.4					115
	15186	.806	110.4	250.6	−12.0	0	3	76 *c*	G		.959	230.5					214
	15187	.848	104.2	245.1	− 8.2	76	506	152 *c*			.957	240.4					190
	15188	.982	103.6	224.0	−11.9	15	319	198 *c*			.952	275.6					180
		.790	81.4					157			.925	220.6					190
		.886	76.4					208			.924	253.0					116
		.961	74.0					211			.803	233.3					111
Sept.28			(+25.8)	(301.0)	(+ 6.8)	(389)	(2579)	(1753)		15174	.903	286.6	339.2	+17.9	127	744	353 *c*
										15175	.847	244.1	326.9	−17.6	20	100	250 *c*
										15181	.474	297.3	300.3	+18.6	32	218	
										15176	.486	238.2	298.6	− 8.6	8	29	
										15185	.505	232.2	298.0	−11.8	6	41	
271.304		.952	235.8					174		15190	.347	281.2	294.1	+10.3	2	13	
C		.923	244.3					237		15178	.279	302.2	288.1	+15.1	23	101	
		.918	226.1					189		15182	.231	336.8	279.5	+19.0	27	166	
		.872	213.3					131		15189	.104	295.3	279.4	+ 9.3	2	10	
		.860	235.0					105		15184	.597	178.7	273.1	−29.7	1	7	
		.858	274.7					188		15186	.502	136.3	253.1	−14.8	8	44	
	15173	.994	249.0	8.4	−19.9	26	171	202 *c*		15187	.557	116.6	243.9	− 8.5	65	461	
	15174	.782	287.1	339.2	+17.6	196	957	181 *c*		15188	.833	110.5	221.0	−12.9	87	426	560 *c*
	15175	.715	236.7	326.5	−17.8	20	132	99 *p*		15191	.871	65.2	213.6	+24.9	7	20	253 *c*
	15181	.287	319.1	299.2	+19.1	9	40			15192	.991	70.6	190.0	+20.1	22	116	136 *c*
	15185	.367	204.9	296.9	−12.7	11	88				.811	79.2					229
	15176	.310	205.1	295.4	− 9.4	20	118				.915	75.4					96
	15178	.144	1.7	287.5	+15.0	15	104				.931	94.6					136
	15183	.333	164.6	282.6	−11.8	1	5				.962	81.5					403
	15182	.245	32.3	279.9	+18.7	43	239		Sept.30			(+26.0)	(274.0)	(+ 6.8)	(437)	(2496)	(3532)

Group 15188. Sept.28–Oct.10. Return of Group 15156. A long stream, the leading part of which at first consists of three spots almost in contact. These then join together, forming an elongated composite spot which survives the rest of the group.

Group 15189. Sept. 29 – 30. A couple of small spots on September 29; a single spot on September 30.

Group 15190. Sept. 30–Oct. 4. One or two small unstable spots.

Group 15191. Sept.30–Oct.10. A stream of complex spots growing rapidly from small spots near the east limb and reaching a maximum on October 3. Decay is also rapid, the rear part of the group being the last to go.

Group 15192. Sept.30–Oct.13. A large stream of composite spots which by October 5 have joined together to form a complex structure. Two days later, this separates, the leading spot remaining the most stable component.

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
1947			°	°	°				1947			°	°	°			
273.549		.970	254.3					204			.797	237.1					120
G		.964	226.9					331		15175	.989	250.9	326.0	−17.6	7	30	183 *c*
		.935	240.2					203		15181	.790	288.4	299.6	+18.6	63	553	166 *c*
		.898	295.5					215		15176	.809	254.3	299.3	− 8.5	11	69	204 *c*
		.897	214.3					301		15185	.806	249.7	297.9	−12.0	8	50	170 *c*
		.880	231.1					163		15190	.713	278.5	293.2	+10.7	5	18	68 *p*
		.846	240.1					188		15178	.665	285.5	288.9	+15.2	7	60	
		.821	288.3					97		15182	.551	293.4	279.5	+18.3	14	72	
	15174	.996	287.1	345.0	+17.6	47	456	493 *c*		15184	.678	214.0	272.8	−28.0	0	6	
	15175	.954	249.1	327.2	−17.6	7	59	316 *sf*		15193	.288	239.3	261.8	− 1.9	7	29	
	15176	.706	250.3	300.3	− 8.8	3	11			15186	.388	194.5	253.3	−15.2	12	43	
	15181	.680	290.3	300.3	+18.6	56	348			15194	.431	188.9	251.5	−18.4	2	9	
	15185	.689	244.7	297.6	−11.9	3	17			15187	.282	165.3	243.4	− 9.1	69	424	
	15190	.571	279.0	293.1	+10.6	4	19			15188	.550	126.9	220.7	−13.3	89	537	
	15178	.524	288.1	289.1	+15.1	15	84			15191	.643	59.3	210.2	+24.5	49	520	
	15182	.398	302.1	278.9	+18.4	16	135			15192	.861	71.3	187.8	+19.5	130	785	314 *c*
	15184	.641	199.9	272.8	−30.4	1	6			15195	.973	102.3	172.7	−10.3	4	23	176 *c*
	15193	.155	202.5	261.6	− 1.5	1	8			15196	.961	73.8	172.5	+17.4	0	7	207 *c*
	15186	.380	167.7	253.4	−15.0	9	40			15197	.980	109.5	172.1	−17.5	27	182	151 *p*
	15194	.441	165.0	251.3	−18.4	2	19				.862	113.7					165
	15187	.363	137.0	243.8	− 8.8	84	428				.862	83.1					351
	15188	.673	118.0	220.8	−13.1	87	408	87 *f*			.940	93.5					97
	15191	.743	63.3	211.7	+24.1	36	174	164 *c*			.951	121.1					179
	15192	.927	71.5	189.5	+19.6	63	465	530 *c*	Oct.2			(+26.1)	(247.5)	(+ 6.7)	(504)	(3417)	(4097)
		.840	111.6					123									
		.847	84.1					292									
		.933	81.7					460									
		.940	100.6					260	275.345		.974	243.3					193
		.945	60.6					169	G		.960	222.9					176
		.945	113.4					371			.931	214.1					135
		.962	90.7					221			.910	248.9					93
Oct.1			(+26.1)	(258.2)	(+ 6.7)	(434)	(2677)	(5188)			.908	205.0					92
											.861	242.0					186
										15181	.910	287.7	300.5	+18.8	51	304	324 *c*
										15176	.924	258.4	300.3	− 8.0	9	49	457 *c*
274.357		.987	286.7					273		15185	.907	256.6	297.6	− 9.1	2	15	
G		.951	295.1					358		15190	.873	277.3	295.7	+ 9.6	2	20	90 *c*
		.940	220.3					212		15178	.816	284.0	289.4	+15.2	3	28	85 *c*
		.924	242.3					245		15182	.728	289.0	280.8	+18.3	5	23	
		.923	232.1					130		15198	.659	276.6	275.9	+ 9.3	14	78	
		.889	289.8					158		15193	.483	252.6	261.9	− 2.4	27	133	
		.888	207.3					170		15186	.479	218.6	252.5	−15.6	14	73	

Group 15193. Oct. 1 - 7. An equatorial stream developing from a tiny spot first seen near the central meridian. Both leader and follower soon become regular spots, the follower being the larger.

Group 15194. Oct. 1 - 2. A pair of small spots.

Group 15195. Oct. 2 - 13. Small spots in a stream.

Group 15196. Oct. 2 - 13. A small spot, closely following Group 15192, with one or two companions on October 3 and 4.

Group 15197. Oct. 2 - 13. Return of Group 15184. A stable regular spot with a distant companion on October 8.

Group 15198. Oct. 3 - 6. A small stream appearing near the west limb.

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
1947			°	°	°			
	15187	.309	211.6	243.9	− 8.7	41	327	
	15199	.501	177.0	232.9	−23.3	2	16	
	15188	.404	146.3	221.2	−13.2	52	382	
	15191	.492	48.8	210.5	+24.9	82	633	
	15192	.730	69.9	188.2	+19.1	111	987	209 *c*
	15196	.859	74.4	175.0	+16.7	26	106	100 *c*
	15197	.917	112.3	171.9	−17.4	27	171	397 *f*
	15195	.909	104.6	171.3	−10.3	5	35	113 *c*
	15200	.987	75.9	152.5	+15.0	6	39	316 *c*
		.855	125.5					96
		.891	56.7					61
		.904	119.2					143
		.947	67.3					274
		.960	130.8					137
Oct.3			(+26.2)	(234.5)	(+ 6.6)	(479)	(3419)	(3677)
276.375 G		.953	247.5					473
		.952	226.2					161
		.929	215.8					299
		.901	254.8					165
		.869	243.7					245
		.846	229.1					166
		.824	253.2					177
	15176	.988	261.2	300.7	− 7.6	13	148	421 *c*
	15185	.980	259.0	297.9	− 9.4	5	39	
	15181	.979	287.8	300.4	+18.7	15	199	291 *c*
	15190	.966	278.4	296.5	+ 9.8	13	80	230 *c*
	15178	.927	283.8	289.5	+15.2	0	9	123 *c*
	15182	.865	288.3	281.0	+19.0	2	13	368 *c*
	15198	.811	276.8	275.3	+ 9.3	33	165	177 *c*
	15193	.671	259.2	262.0	− 2.3	82	364	
	15186	.621	234.6	252.5	−15.5	8	42	
	15187	.463	235.6	243.6	− 9.1	52	310	
	15199	.532	201.0	232.8	−23.3	9	76	
	15188	.344	182.9	221.9	−13.5	83	428	
	15191	.359	28.6	210.0	+24.7	87	425	
	15201	.360	54.8	208.1	+18.1	14	60	
	15202	.459	77.0	193.8	+11.7	0	4	
	15192	.569	66.3	187.7	+18.6	195	1209	
	15196	.706	72.0	176.4	+17.2	12	87	
	15197	.814	116.8	171.5	−17.3	25	167	235 *f*
	15195	.801	108.6	170.5	−10.7	17	74	129 *c*
1947			°	°	°			
	1258e	.894	80.8	157.1	+11.1	2	8	475 *c*
	15200	.928	77.8	152.1	+13.8	8	33	
		.890	66.5					267
		.918	136.0					238
		.932	103.6					227
		.956	111.6					244
Oct.4			(+26.2)	(220.9)	(+ 6.5)	(675)	(3940)	(5111)
277.422 G		.955	247.2					148
		.950	226.9					106
		.945	258.2					219
		.935	216.7					93
		.927	237.7					132
		.925	287.8					667
		.915	205.1					219
		.871	252.6					180
		.851	233.6					159
		.809	294.9					114
	15198	.942	277.7	278.0	+ 9.4	19	170	403 *c*
	15193	.826	262.4	261.9	− 2.5	71	452	157 *c*
	15186	.775	243.9	253.1	−15.4	2	11	144 *c*
	15187	.639	246.9	243.5	− 9.3	36	254	
	15199	.647	219.9	234.0	−23.8	9	39	
	15188	.424	217.8	222.5	−13.2	55	374	
	15191	.321	350.3	210.5	+24.8	70	410	
	15101	.218	21.3	202.3	+18.1	23	120	
	1258f	.174	42.9	200.1	+13.8	1	7	
	15192	.391	55.1	187.4	+19.0	207	1587	
	1258g	.411	73.3	183.4	+12.7	2	14	
	15196	.524	66.7	176.9	+17.6	17	87	
	15197	.676	124.2	171.5	−17.0	29	160	
	15195	.642	115.3	171.0	−10.7	17	114	
	15200	.792	76.7	154.6	+14.4	0	3	265 *f*
		.803	126.1					129
		.848	115.1					189
		.864	105.0					111
		.892	141.4					184
		.893	79.9					123
		.926	68.7					117
		.933	115.1					122
		.959	79.1					155
Oct.5			(+26.3)	(207.1)	(+ 6.5)	(558)	3802)	(4136)

Group 15199. Oct. 3 - 6. A string of small spots lasting for a few days only.
Group 15200. Oct. 3 - 6. Return of Group 15157: fourth appearance. One or two small spots.
Group 15201. Oct. 4 - 8. A pair of spots; the leader alone remains on October 8 as a dot.
Group 15202. Oct. 4 - 11. Intermittent. A tiny spot on October 4. Five days later the region is weakly active.

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
1947			°	°	°			
278.296 C		.968	219.6					125
		.963	288.8					355
		.943	253.5					160
		.932	239.0					175
		.928	208.7					129
		.877	295.1					133
		.866	245.3					213
		.827	279.1					227
	15198	.988	278.3	277.1	+ 9.2	0	60	161 c
	15193	.917	264.0	261.2	- 2.8	81	488	271 c
	15187	.771	252.3	243.4	- 9.3	42	258	149 c
	15199	.751	230.1	234.4	-23.8	12	39	
	15188	.548	233.1	222.2	-13.5	43	254	
	15191	.391	325.3	209.6	+24.9	51	356	
	15201	.239	328.6	203.0	+18.1	14	53	
	15192	.256	31.2	187.5	+19.0	232	1490	
	15196	.370	56.9	176.6	+17.7	12	63	
	15203	.394	77.2	172.6	+10.9	7	19	
	15195	.495	125.6	171.4	-10.8	9	44	
	15197	.558	134.2	170.9	-17.0	37	169	
	15200	.661	75.2	154.4	+14.5	1	6	
		.788	78.3					122
		.846	118.9					200
		.893	79.4					177
		.944	61.3					194
		.947	109.3					248
Oct.6			(+26.3)	(195.5)	(+ 6.4)	(541)	(3299)	(3039)
279.374 G		.950	249.5					289
		.932	282.6					242
		.917	299.9					188
		.908	276.5					111
		.908	267.1					73
		.839	283.5					207
		.833	235.9					160
		.831	247.9					115
	15193	.981	265.5	259.4	- 3.1	45	146	276 c
	15187	.892	254.4	242.1	-10.8	44	208	248 c
	15188	.716	244.1	222.6	-13.4	30	178	58 c
	15191	.545	308.9	209.2	+25.7	53	265	
	15201	.425	300.1	204.0	+18.2	10	46	
	15192	.243	336.5	187.2	+19.1	256	1335	
	15196	.216	23.3	176.2	+17.8	10	59	

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1947			°	°	°			
	15203	.154	60.4	173.5	+10.7	3	21	
	15197	.426	156.1	171.0	-16.5	32	155	
	15195	.351	147.7	170.3	-11.0	4	48	
		.833	113.7					121
		.842	59.1					92
		.908	68.9					58
		.948	114.7					180
		.949	105.3					77
		.980	75.9					81
Oct.7			(+26.3)	(181.3)	(+ 6.4)	(487)	(2461)	(2576)
280.576 G		.953	283.8					218
		.944	243.0					141
		.944	305.7					128
		.861	288.8					197
		.830	277.8					123
	15187	.974	257.1	240.6	-11.0	27	196	285 c
	15188	.872	250.9	223.1	-13.3	16	83	324 c
	15201	.688	288.8	208.4	+17.5	0	1	
	15191	.703	300.4	207.5	+25.5	20	110	119 c
	15192	.421	303.0	187.3	+19.1	249	1306	
	15196	.266	318.5	176.1	+17.6	11	65	
	15203	.148	305.4	172.5	+11.2	0	11	
	15195	.307	198.4	171.1	-10.6	4	17	
	15197	.397	191.8	170.3	-16.5	22	146	
	15204	.523	130.5	141.4	-14.0	4	16	
	15205	.893	75.1	101.8	+16.1	0	4	138 sf
	15206	.930	109.4	100.3	-15.4	5	18	104 c
	15207	.989	71.6	82.6	+19.1	43	177	55 c
		.863	122.0					158
		.957	120.3					151
		.982	82.4					104
		.985	105.9					62
Oct.8			(+26.4)	(165.5)	(+ 6.3)	(401)	(2150)	(2307)
281.408 G		.975	279.6					73
		.950	287.4					194
		.901	280.4					178
		.854	287.1					117
	15188	.946	253.3	222.9	-13.6	31	146	1121 c
	15191	.843	298.1	210.8	+26.9	2	23	270 c
	15202	.624	279.6	193.1	+10.9	1	7	

Group 15203. Oct. 6 - 8. A pair of small spots.
Group 15204. Oct. 8 - 16. On October 8 two nuclei which quickly develop into regular spots.
Group 15205. Oct. 8 - 19. Weak but sustained spot-occurrence.
Group 15206. Oct. 8 - 18. Intermittent. A small spot until October 11; a lapse of four days - then a pair of spots from October 16.
Group 15207. Oct. 8 - 21. A stable regular spot in slow decline.

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
1947			°	°	°				1947			°	°	°			
	15192	.565	294.6	187.3	+18.9	180	1269			15206	.534	134.1	104.5	-16.1	1	4	
	15196	.404	300.9	175.7	+17.8	9	50			15205	.448	67.2	102.6	+15.5	0	2	
	15195	.399	224.3	170.9	-10.5	5	52			15208	.615	83.4	89.9	+ 8.9	1	8	
	15197	.465	214.1	170.2	-16.5	24	152			15207	.726	69.1	82.2	+19.3	42	204	
	15204	.403	148.8	142.1	-13.9	11	57			15209	.777	81.2	76.7	+10.7	30	186	234 *c*
	15206	.833	113.4	102.2	-15.5	4	20	90 *c*			.828	66.6					89
	15205	.794	74.6	101.9	+16.0	0	3	121 *f*			.869	77.8					355
	15208	.915	83.2	87.9	+ 8.8	5	20	102 *c*			.921	49.5					113
	15207	.951	71.8	81.7	+19.2	40	221	234 *f*			.942	76.4					244
	15209	.978	80.1	75.9	+11.0	16	226	411 *c*	Oct.11			(+26.4)	(127.9)	(+ 6.1)	(322)	(1851)	(2618)
		.855	126.2					160									
		.915	116.5					123									
		.934	104.8					123									
		.935	48.8					108	284.545 G		.974	259.2					193
		.960	124.5					137			.961	273.8					216
Oct.9			(+26.4)	(154.5)	(+ 6.3)	(328)	(2246)	(3562)			.937	250.4					188
											.932	242.2					211
										15192	.960	287.8	187.7	+18.7	124	963	702 *c*
282.361 G		.941	264.1					82		15196	.888	287.1	176.0	+17.9	2	19	79 *c*
		.937	272.8					94		15195	.857	253.6	169.7	-10.7	4	28	214 *c*
		.932	283.4					545		15197	.866	247.0	169.1	-16.4	20	146	132 *sf*
		.851	272.9					212		15204	.586	234.4	142.5	-14.6	75	450	
	15188	.994	255.0	223.6	-14.1	31	184	321 *f*		15210	.436	179.6	112.9	-19.6	2	20	
	15191	.904	295.2	206.6	+25.4	2	10	576 *c*		15205	.316	56.6	97.3	+15.8	0	4	
	15202	.783	279.8	193.6	+11.5	13	38	74 *c*		15208	.417	80.0	88.6	+ 9.7	1	5	
	15192	.735	290.0	188.6	+18.8	179	972			15207	.547	63.2	82.0	+19.4	37	228	
	15196	.576	292.2	175.8	+17.7	16	45			15209	.587	80.2	77.2	+10.7	25	170	
	15195	.550	239.7	170.7	-10.7	24	69				.799	76.4					258
	15197	.586	230.2	169.8	-16.5	33	149				.941	74.2					162
	15204	.349	183.4	143.1	-14.1	70	344				.975	79.2					148
	15206	.696	120.0	103.3	-15.5	8	17		Oct.12			(+26.4)	(113.1)	(+ 6.1)	(390)	(2033)	(2503)
	15205	.647	72.6	102.1	+16.0	0	5										
	15208	.796	83.4	88.9	+ 9.0	9	25	69 *f*									
	15207	.865	71.2	81.9	+19.3	42	208	44 *c*	285.294 C		.972	239.9					90
	15209	.911	81.0	75.9	+10.7	32	230	791 *c*			.895	241.8					119
		.922	67.1					157			.815	248.3					83
Oct.10			(+26.4)	(141.9)	(+ 6.2)	(459)	(2296)	(2965)			.797	237.9					71
											.764	283.3					82
										15192	.989	287.5	186.0	+18.2	49	503	364 *c*
283.426 G		.968	295.5					325		15196	.951	286.9	176.0	+17.9	3	14	
		.965	273.0					188		15195	.934	255.6	170.2	-11.1	15	83	140 *c*
		.964	289.2					226		15197	.931	249.7	168.5	-16.4	20	127	132 *c*
		.895	271.0					123		15204	.687	241.0	141.5	-14.7	72	426	
		.856	298.2					117		15205	.214	32.2	96.4	+16.3	4	29	
	15202	.937	280.4	198.0	+11.9	3	25	228 *c*		15208	.263	76.2	88.3	+ 9.4	2	5	
	15192	.868	288.1	188.3	+18.7	144	802	376 *c*		15207	.421	55.2	81.8	+19.4	41	224	
	15196	.749	288.6	175.9	+17.9	8	30			15209	.436	77.4	77.6	+10.8	29	151	
	15197	.733	240.6	169.5	-16.5	21	134				.852	75.4					112
	15195	.704	247.6	169.3	-11.0	5	41				.914	82.1					131
	15204	.428	214.9	142.5	-14.6	67	415		Oct.13			(+26.4)	(103.2)	(+ 6.0)	(235)	(1562)	(1324)

Group 15208. Oct. 9 - 19. A small area of weak intermittent disturbance, marked by a small spot except on October 14, 16 and 18.
Group 15209. Oct. 9 - 20. A composite spot, disappearing rather abruptly.
Group 15210. Oct. 12 - 14. A pair of tiny spots not seen on October 13.

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
1947			°	°	°				1947			°	°	°			
286.658		.920	283.3					252			.852	235.3					51
G	15204	.859	248.9	141.0	−14.7	58	311	317 *c*		15206	.844	247.0	104.2	−15.8	14	72	88 *c*
	15210	.580	226.5	111.4	−18.2	1	12			15205	.785	285.6	102.1	+15.7	28	127	130 *c*
	15205	.274	313.5	97.1	+16.6	11	69			15208	.655	275.5	91.5	+ 7.9	3	17	
	15207	.236	15.1	81.5	+19.0	42	217			15207	.540	297.0	81.0	+19.1	34	214	
	15209	.165	54.6	77.4	+11.3	19	170			15209	.466	282.8	78.0	+11.0	22	114	
	15211	.968	115.4	13.9	−22.8	22	188	344 *c*		*1258i*	.184	314.4	58.2	+13.1	1	6	
		.966	100.7					294		15211	.744	130.0	12.0	−24.0	98	582	51 *c*
Oct.14			(+26.3)	(85.2)	(+ 5.9)	(153)	(967)	(1207)		15212	.694	109.0	9.1	− 8.7	17	53	
										15213	.880	107.0	351.4	−11.9	16	67	170 *f*
										15214	.894	73.1	346.9	+17.6	64	319	154 *c*
											.835	84.0					68
287.293		.965	283.5					180			.929	117.9					58
C		.892	291.0					165			.966	74.6					203
		.858	280.9					146	Oct.17			(+26.2)	(50.5)	(+ 5.7)	(297)	(1571)	(1189)
	15204	.919	250.8	140.7	−15.0	31	274	303 *c*									
	15205	.395	300.2	97.7	+17.0	9	84										
	15208	.204	292.0	87.9	+10.2	0	3										
	15207	.246	342.1	81.5	+19.4	48	227		290.290		.884	237.4					272
	1258h	.040	220.8	78.4	+ 4.2	0	4		C	15206	.951	250.6	106.4	−16.4	7	82	172 *c*
	15209	.096	351.7	77.7	+11.3	24	182			15205	.912	284.6	103.4	+15.5	3	28	212 *c*
	15211	.939	117.9	12.2	−23.6	54	378	417 *c*		15207	.700	292.2	80.5	+19.4	21	181	
		.929	101.4					287		15209	.654	281.0	78.0	+11.4	10	139	
Oct.15			(+26.3)	(76.9)	(+ 5.9)	(166)	(1152)	(1498)		15211	.617	141.0	12.3	−23.5	78	681	
										15212	.521	116.4	9.3	− 8.5	5	31	
										15213	.764	111.6	350.8	−12.5	12	75	94 *f*
288.292		.978	280.5					75		15214	.777	71.6	346.8	+17.8	37	265	102 *c*
C		.911	281.1					128		15215	.989	120.6	320.5	−29.1	7	43	
		.802	242.9					106			.898	72.6					290
	15204	.986	254.1	142.0	−14.6	24	265	206 *c*	Oct.18			(+26.2)	(37.3)	(+ 5.6)	(180)	(1525)	(1142)
	15206	.699	240.4	102.7	−15.6	11	92										
	15205	.589	290.7	98.7	+16.7	6	51										
	15207	.369	309.1	81.2	+19.0	51	225		291.310		.987	252.6					164
	15209	.259	292.1	77.8	+11.2	27	181		C		.982	300.4					111
	15211	.864	122.9	11.0	−24.5	100	721	285 *c*			.936	234.7					134
	15212	.825	104.1	10.0	− 8.2	4	34	136 *c*			.903	251.9					74
	15213	.963	104.1	351.3	−11.8	7	62	251 *f*		15205	.993	285.5	108.1	+16.0	0	50	190 *c*
	15214	.970	73.3	346.9	+17.6	48	349	197 *c*		*1258j*	.981	245.1	99.1	−23.1	18	92	141 *c*
		.933	81.8					147		15208	.911	277.4	89.8	+ 9.0	2	7	68 *c*
Oct.16			(+26.3)	(63.7)	(+ 5.8)	(278)	(1980)	(1531)		15207	.832	289.8	79.8	+19.4	29	127	121 *c*
										15209	.807	279.5	77.8	+10.9	20	49	88 *c*
										15211	.522	159.1	12.2	−23.6	81	623	
289.292		.920	246.4					68		15212	.362	132.5	8.3	− 8.8	7	22	
C		.905	298.0					148		15213	.610	119.5	351.1	−12.8	15	46	

Group 15211. Oct. 14 - 28. A group of stream type. A large composite spot develops in front, as the following section dies out. After October 22, the leader distends in longitude and breaks up.

Group 15212. Oct. 16 - 23. One or two small spots over a 5° range in longitude.

Group 15213. Oct. 16 - 22. A close pair of small spots; only one is seen on October 21 and 22.

Group 15214. Oct. 16 - 28. Return of Group 15174. A stable regular spot.

Group 15215. Oct. 18 - 29. A regular spot alone until October 24. Then small companions appear, while the parent spot breaks up and so dies out.

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
1947			°	°	°				1947			°	°	°			
	15214	.628	68.3	346.3	+17.8	77	294			15214	.293	42.8	345.8	+17.6	48	279	
	15216	.749	79.5	335.4	+11.5	21	59	198 *nf*		15216	.361	72.6	337.3	+11.2	58	372	
	15215	.950	123.7	318.7	−29.6	17	118	163 *n*		15215	.787	134.3	317.8	−29.2	28	187	52 *f*
	15217	.980	119.3	310.1	−27.2	5	22	106 *c*		15217	.891	128.0	303.7	−30.1	12	47	182 *c*
		.802	114.4					45		15218	.923	70.3	290.2	+20.2	25	111	206 *c*
		.819	67.5					111		15219	.957	105.4	286.8	−13.0	81	600	
		.919	62.1					229		15220	.980	108.4	281.8	−16.8	10	89	133 *c*
		.967	70.0					83		15221	.986	105.8	279.4	−14.5	12	82	
		.968	100.7					147			.788	96.9					35
Oct.19			(+26.1)	(23.9)	(+ 5.5)	(292)	(1509)	(2173)			.837	106.6					58
											.855	83.4					61
											.911	113.8					103
											.937	78.4					212
292.290		.959	234.6					223	Oct.21			(+26.0)	(357.8)	(+ 5.4)	(333)	(2435)	(1637)
C		.819	284.1					168									
	15207	.934	288.6	80.4	+19.3	18	177	306 *c*									
	15209	.920	279.4	78.3	+10.8	5	57	400 *c*	294.621		.962	282.9					178
	15211	.478	183.3	12.7	−22.9	64	571		G		.888	286.5					179
	15212	.240	174.7	9.7	− 8.3	1	6				.861	279.1					152
	15213	.450	131.8	351.0	−12.2	2	15			15212	.583	247.4	13.0	− 8.5	1	8	
	15214	.466	61.0	345.7	+18.0	49	277			15211	.678	226.3	12.4	−23.4	52	703	
	15216	.562	77.5	337.1	+11.5	53	349			15213	.351	211.6	351.0	−12.1	1	13	
	15215	.879	127.7	318.4	−29.2	25	154	212 *f*		15214	.231	338.4	345.3	+17.6	65	286	
	15217	.951	123.3	305.5	−29.3	3	24	378 *c*		15216	.107	29.8	337.1	+10.6	53	380	
	15218	.984	70.7	290.3	+19.9	16	118	519 *p*		15222	.414	52.6	319.9	+19.4	0	6	
	15219	.994	102.9	288.9	−12.1	26	180			15215	.656	147.8	316.8	−28.8	28	148	
		.884	68.4					181		15217	.770	136.6	302.8	−29.7	3	14	94 *c*
		.907	103.4					354		15218	.776	67.2	290.4	+21.0	20	132	230 *c*
		.941	133.5					110		15219	.837	109.9	286.4	−13.4	95	600	
		.948	80.7					232		15220	.896	112.1	280.1	−17.1	15	109	346 *c*
		.971	108.3					262		15221	.898	108.8	279.1	−14.3	25	115	
Oct.20			(+26.1)	(11.0)	(+ 5.5)	(262)	(1928)	(3345)		15223	.946	94.9	269.8	− 2.8	47	219	647 *c*
											.828	79.9					236
											.848	121.2					135
											.901	63.1					152
293.289		.968	279.9					272			.907	75.7					157
C		.891	283.8					164			.928	103.3					235
	15207	.990	288.4	80.7	+19.0	7	45	159 *f*			.940	69.6					241
	15211	.534	205.6	12.3	−23.5	50	608				.966	117.5					188
	15213	.343	161.0	351.2	−13.5	2	15		Oct.22			(+25.9)	(340.2)	(+ 5.3)	(405)	(2733)	(3170)

Group 15216. Oct. 19 - 28. A new stream of which the leader, a regular spot, soon breaks up but eventually survives the following part which dies out by October 27.

Group 15217. Oct. 19 - 23. A small spot.

Group 15218. Oct. 20 - 29. Small unstable spots.

Group 15219. Oct. 20 - 31. A stream probably near its maximum development at the east limb. The following part is diminishing throughout, leaving the leader, a small regular spot, alone at the west limb.

Group 15220. Oct. 21 - 26. A small spot rapidly dying out.

Group 15221. Oct. 21-Nov. 1. A regular spot, with a few companions on October 23 and 27.

Group 15222. Oct. 22 - 30. A pair of regular spots developing from a faint spot on October 22, that is probably the nucleus of the leader.

Group 15223. Oct. 22-Nov. 2. Return of Group 15193. A regular spot in the equatorial belt, with occasional companions.

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

U.T.	Group No.	MEASURES		POSITION		AREA		
		Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ
1947			°	°	°			
295.439		.953	286.8					126
G	*1259a*	.941	277.0	39.9	+ 8.3	3	13	123 *c*
	15212	.721	252.1	13.2	- 9.0	1	13	
	15211	.775	234.7	12.6	-22.8	70	629	86 *c*
	15214	.339	310.0	345.1	+17.5	55	272	
	15216	.195	297.6	339.5	+10.3	53	340	
	15215	.593	160.7	316.5	-28.8	35	172	
	15222	.345	38.5	316.2	+20.7	14	42	
	15217	.693	145.4	302.5	-30.0	3	9	
	15218	.647	65.0	291.0	+19.9	13	114	
	15219	.722	114.4	287.0	-13.5	104	577	
	15220	.807	116.0	280.1	-17.3	18	125	89 *c*
	15221	.811	112.0	278.7	-14.4	31	156	
	15224	.783	73.0	278.2	+16.5	3	10	37 *c*
	15223	.873	96.0	269.3	- 2.6	40	337	257 *f*
	15225	.991	100.6	248.4	- 9.7	32	79	122 *p*
		.857	66.6					116
		.866	105.3					87
		.937	118.4					186
		.945	76.2					249
		.948	66.2					68
		.961	108.4					78
Oct.23			(+25.8)	(329.4)	(+ 5.2)	(475)	(2888)	(1624)
296.475		.987	279.9					300
G		.846	256.5					164
		.845	227.9					123
	15211	.884	241.3	12.6	-22.3	47	425	526 *c*
	15214	.520	296.1	345.0	+17.6	46	258	
	15216	.413	284.4	339.7	+10.5	68	425	
	1259b	.341	316.5	330.1	+19.2	2	11	
	15226	.125	343.1	317.9	+11.9	24	109	
	15222	.270	358.5	316.2	+20.7	36	251	
	15215	.554	180.7	316.2	-28.4	29	167	
	1259c	.288	165.8	311.7	-11.1	2	12	
	15218	.483	56.7	290.5	+19.9	20	108	
	15219	.554	123.8	287.7	-13.4	54	409	
	15220	.669	123.0	280.0	-17.2	13	56	
	15221	.672	117.9	278.2	-14.2	19	137	
	15224	.638	70.9	277.1	+16.0	0	3	
	15227	.684	62.4	275.0	+22.3	3	9	

U.T.	Group No.	MEASURES		POSITION		AREA		
		Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ
1947			°	°	°			
	15223	.738	98.7	269.1	- 2.9	45	291	321 *c*
	15225	.942	103.0	247.1	-10.4	49	258	285 *c*
	15228	.962	70.3	241.0	+20.4	13	67	264 *c*
	15229	.987	109.2	237.6	-17.9	27	167	
		.841	102.5					91
		.842	111.0					101
		.851	75.8					115
		.895	86.7					147
		.911	123.3					185
		.942	96.3					113
		.948	60.3					153
		.951	79.5					88
Oct.24			(+25.7)	(315.8)	(+ 5.1)	(497)	(3163)	(2976)
297.419		.944	228.0					207
C		.915	234.6					183
		.780	276.8					85
	15211	.962	245.0	13.6	-22.3	34	261	669 *c*
	15230	.932	287.6	12.3	+18.2	3	8	106 *c*
	15214	.676	290.6	344.7	+17.5	51	255	
	15216	.599	280.6	339.9	+10.3	60	464	
	15226	.287	294.0	318.7	+11.5	67	416	
	15222	.335	322.0	315.9	+20.1	70	387	
	15215	.577	198.1	315.0	-28.2	30	163	
	15218	.333	36.0	291.3	+20.4	20	87	
	15219	.392	142.7	289.2	-13.2	44	316	
	15220	.535	134.0	279.7	-17.2	4	12	
	15221	.534	127.6	277.5	-14.4	22	128	
	15223	.572	102.2	269.4	- 2.8	39	332	
	15225	.844	105.6	247.8	-10.3	47	250	215 *f*
	15228	.884	69.9	241.4	+20.1	10	106	209 *c*
	15229	.934	111.1	237.4	-17.6	21	132	246 *c*
	15231	.979	105.6	227.1	-14.1	26	127	191 *p*
		.826	120.6					131
		.881	57.8					79
		.889	79.2					81
		.891	148.6					128
		.932	119.7					116
		.975	82.4					95
		.977	74.9					244
Oct.25			(+25.6)	(303.3)	(+ 5.0)	(548)	(3444)	(2985)

Group 15224. Oct. 23 - 24. A pair of tiny spots on October 23; a single speck on October 24.
Group 15225. Oct. 23-Nov. 4. Return of Group 15187. A slowly diminishing regular spot with a companion until October 27.
Group 15226. Oct. 24 - 30. A stream of rapid growth and decay appearing near the central meridian. The leader is the most stable component and alone remains to pass round the limb.
Group 15227. Oct. 24 - 28. Tiny spots, seen only on October 24 and 28.
Group 15228. Oct. 24 - 29. A few small spots, not seen on October 27.
Group 15229. Oct. 24-Nov. 5. A regular spot in general decline.
Group 15230. Oct. 25 - 26. A small spot near the west limb.
Group 15231. Oct. 25-Nov. 5. Return of Group 15188: third appearance. A small 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
1947			°	°	°				1947			°	°	°			
298.310		.970	261.0					214		15221	.337	187.6	277.5	−14.7	27	157	
C		.968	239.7					251		15223	.156	140.9	269.3	− 2.1	36	184	
		.952	232.3					171		15225	.508	119.3	248.3	−10.1	46	253	
		.893	279.0					164		15229	.688	121.6	237.2	−17.3	38	185	
		.890	237.1					150		15231	.783	112.9	226.9	−14.5	26	146	44 *c*
		.874	250.9					152		15233	.903	74.2	210.3	+16.3	0	5	195 *c*
		.871	261.9					118		15234	.990	72.0	192.2	+18.5	24	220	208 *c*
	15230	.983	287.5	11.7	+18.1	5	74	383 *p*			.862	118.8					54
	15211	.992	246.9	11.5	−22.1	8	42	220 *s*			.889	108.4					428
	15214	.805	288.3	344.7	+17.6	49	202	138 *c*			.913	63.4					532
	15232	.803	249.1	341.9	−13.5	2	9	348 *c*			.946	83.9					150
	15216	.752	280.1	340.3	+10.8	48	276		Oct.27			(+25.4)	(274.9)	(+ 4.8)	(539)	(2852)	(3146)
	15226	.465	286.1	318.6	+11.8	47	358										
	15222	.475	304.3	316.2	+19.9	53	342										
	15215	.639	212.5	314.4	−28.0	19	108										
	15218	.255	357.3	292.3	+19.6	6	41		300.493		.948	231.6					170
	15219	.312	178.9	291.2	−13.2	32	209		G		.941	243.2					161
	15220	.420	152.5	280.0	−17.0	1	6				.929	296.2					59
	15221	.406	144.1	277.4	−14.4	27	134				.918	222.9					110
	15223	.402	107.3	269.1	− 2.3	30	205				.868	213.2					55
	15225	.720	109.3	248.1	−10.2	40	254	110 *c*			.850	301.2					83
	15228	.777	67.9	241.8	+20.1	12	52	119 *c*			.803	252.7					164
	15229	.849	114.1	237.5	−17.4	14	136	128 *c*			.791	223.4					53
	15231	.921	107.8	227.0	−14.2	11	110	449 *c*		15216	.987	279.9	344.0	+10.5	12	55	499 *f*
		.784	75.9					136		15214	.986	287.4	344.0	+17.9	26	161	269 *f*
		.889	147.0					161		15232	.981	254.6	339.8	−14.1	16	95	292 *c*
		.913	80.1					232		15226	.829	281.2	318.8	+11.9	43	355	172 *c*
		.940	114.7					186		15222	.800	291.4	314.9	+19.8	43	288	55 *c*
		.945	73.1					160		15215	.862	232.0	313.6	−29.1	11	52	194 *c*
		.947	66.3					163		15219	.580	237.7	293.0	−13.9	28	166	
		.983	64.8					255		15218	.517	301.4	290.6	+19.7	0	6	
Oct.26			(+25.5)	(291.6)	(+ 4.9)	(404)	(2558)	(4408)		15221	.407	215.2	276.8	−14.8	16	84	
										15227	.371	337.3	271.8	+24.6	1	5	
										15223	.165	225.8	269.6	− 1.9	33	163	
										15225	.360	135.2	247.9	−10.2	40	237	
299.577		.946	234.6					117		15228	.443	51.4	241.2	+20.4	4	15	
G		.946	243.0					134		15229	.552	132.0	237.4	−17.4	13	101	
		.916	226.8					122		15231	.650	119.2	227.0	−14.7	22	137	
		.864	241.0					87		15233	.799	73.0	210.2	+16.4	2	6	65 *c*
		.861	218.0					129		15234	.948	72.3	191.1	+18.2	45	230	371 *c*
	15214	.938	287.2	344.8	+17.8	79	270	231 *c*		15235	.993	99.6	180.7	− 8.9	45	232	183 *p*
	15216	.928	278.9	343.3	+10.1	49	219	394 *c*			.788	115.8					116
	15232	.925	252.8	340.2	−13.9	11	59	149 *c*			.854	61.9					209
	15226	.697	282.0	318.9	+11.8	73	420				.907	81.0					130
	15222	.676	294.0	315.7	+19.6	67	375				.909	88.9					131
	15215	.772	225.8	313.9	−28.8	23	86	172 *c*			.953	113.0					72
	15218	.390	311.4	292.9	+19.4	4	25				.977	63.2					101
	15219	.422	222.5	291.9	−13.5	36	248		Oct.28			(+25.2)	(262.8)	(+ 4.7)	(400)	(2388)	(3714)

Group 15232. Oct. 26 - 28. A single small spot on October 26; a pair on October 28.
Group 15233. Oct. 27 - 28. A tiny spot.
Group 15234. Oct. 27-Nov. 9. Return of Group 15192. A stable regular spot with a close companion until October 30.
Group 15235. Oct. 28-Nov. 9. A regular spot followed by a train of small variable companions between November 1 and 5.

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
1947			°	°	°			
301.408		.987	287.6					291
C		.972	295.9					178
		.947	245.4					197
		.894	214.4					189
		.891	300.3					279
		.890	254.7					325
		.870	229.3					259
	15226	.929	280.9	319.2	+11.8	32	221	292 *c*
	15222	.899	289.5	314.5	+19.5	29	206	234 *c*
	15215	.934	235.9	313.2	−29.5	3	12	360 *c*
	15219	.731	245.7	293.9	−14.1	24	217	142 *c*
	15218	.666	295.1	290.4	+19.9	1	7	
	15221	.535	231.9	276.4	−15.1	15	84	
	15223	.340	251.3	269.4	− 1.9	34	176	
	15225	.257	170.3	248.2	−10.0	44	218	
	15228	.316	27.1	241.9	+20.8	0	3	
	15229	.432	148.8	237.2	−17.2	14	85	
	15231	.512	129.5	226.7	−14.7	20	124	
	15236	.544	75.9	218.3	+11.5	2	9	
	15234	.860	71.5	191.8	+18.2	24	143	251 *c*
	15235	.946	100.7	180.9	− 8.6	55	479	739 *f*
		.785	59.5					187
		.840	86.2					274
		.868	106.3					138
		.940	70.9					216
		.941	63.0					201
		.948	118.9					164
		.953	108.6					261
Oct.29			(+25.1)	(250.7)	(+ 4.6)	(297)	(1984)	(5177)
302.286		.963	238.4					253
C		.962	257.8					153
		.960	298.2					206
		.933	220.6					103
		.917	233.3					211
		.883	279.5					68
		.835	238.6					95
		.818	290.4					110
	15226	.989	281.0	321.1	+11.5	56	161	188 *f*
	15222	.968	289.4	315.0	+19.9	39	168	156 *c*
	15219	.858	251.0	295.5	−13.7	35	288	136 *c*
	15221	.669	241.0	276.3	−15.2	11	80	
	15223	.522	260.0	269.9	− 1.2	38	204	
	15237	.294	328.8	248.3	+19.1	22	41	
	15225	.294	211.6	248.1	− 9.8	29	204	
	15229	.368	173.2	236.5	−16.7	20	105	
	15231	.389	147.7	226.7	−14.6	17	93	
	15236	.358	70.6	219.1	+11.1	1	3	
	15234	.749	69.8	191.6	+18.1	33	166	82 *c*
	15235	.863	102.5	180.9	− 8.3	50	407	729 *f*
		.866	71.0					84
		.870	62.4					150

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbrae	AREA Whole Spots	AREA Faculae
1947			°	°	°			
		.894	119.4					118
		.949	113.9					100
		.954	74.8					52
		.986	103.4					61
Oct.30			(+25.0)	(239.1)	(+ 4.6)	(351)	(1920)	(3055)
303.590		.946	288.5					242
C		.942	242.1					109
		.936	280.0					119
		.901	267.2					48
		.892	260.4					70
		.864	255.0					105
		.856	288.2					112
		.837	300.4					86
	15219	.973	254.7	296.7	−13.8	36	213	346 *f*
	15221	.845	249.0	276.5	−15.1	20	81	142 *s*
	15223	.754	264.7	270.4	− 1.0	32	224	131 *c*
	15237	.493	302.8	247.9	+19.4	11	67	
	15225	.495	241.2	247.9	− 9.8	32	194	
	15229	.442	214.3	236.9	−17.0	18	85	
	15231	.334	194.0	226.7	−14.5	20	95	
	15234	.536	62.6	192.0	+18.1	32	161	
	15235	.685	107.0	180.6	− 8.2	56	503	196 *f*
		.842	117.4					108
		.883	64.5					68
		.895	105.6					82
		.924	74.6					164
		.925	115.2					110
		.965	108.9					100
		.967	64.8					183
Oct.31			(+24.8)	(221.9)	(+ 4.4)	(257)	(1623)	(2521)
304.379		.950	256.4					84
C		.940	297.6					46
		.939	287.9					46
		.862	293.7					41
		.854	234.5					70
		.823	256.4					47
	15221	.925	251.2	276.7	−15.5	10	22	110 *c*
	15223	.860	265.2	270.3	− 1.9	20	140	88 *c*
	15237	.630	295.2	248.4	+19.0	5	20	
	15225	.631	247.9	247.8	−10.1	23	177	
	15229	.550	228.1	236.8	−17.5	14	70	
	15231	.412	217.1	226.3	−14.8	14	67	
	15234	.401	52.7	192.0	+18.1	29	154	
	15235	.550	112.2	180.7	− 8.2	79	447	
		.802	107.8					27
		.882	75.9					67
		.918	64.0					66
		.938	107.0					60
Nov.1			(+24.7)	(211.5)	(+ 4.4)	(194)	(1097)	(752)

Group 15236. Oct. 29 - 30. A small ephemeral spot.
Group 15237. Oct. 30-Nov. 3. A short stream of small spots of which only one remains by November 2.

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
1947			°	°	°				1947			°	°	°			
305.373		.948	293.4					132		15239	.721	244.3	215.4	-15.2	3	18	89 *p*
C		.943	238.3					173		15234	.394	309.7	191.7	+18.3	36	164	
		.942	250.9					156		15235	.257	212.2	181.1	- 8.6	37	441	
		.901	259.1					121		15238	.396	355.1	175.4	+27.1	9	45	
		.869	283.7					127			.865	116.3					105
		.848	239.7					89			.896	75.3					119
	15223	.954	266.4	270.4	- 2.2	28	121	257 *c*			.946	111.3					242
	15225	.783	253.4	247.9	-10.1	30	192		Nov.4			(+24.1)	(173.2)	(+ 4.0)	(139)	(935)	(1550)
	15237	.756	290.9	246.3	+18.4	5	26										
	15229	.697	239.0	237.1	-17.7	16	85										
	15231	.558	234.3	226.3	-15.2	17	111		308.387		.947	216.1					85
	15234	.267	24.5	191.7	+18.2	30	146		G		.943	286.9					194
	15235	.365	125.9	181.1	- 8.3	56	575				.928	208.4					59
		.765	60.5					90			.914	279.9					160
		.838	79.0					135			.885	196.5					94
		.863	111.3					167			.856	287.6					95
		.868	61.5					85			.853	298.1					135
Nov.2			(+24.5)	(198.4)	(+ 4.2)	(182)	(1256)	(1532)			.738	305.1					65
										15229	.985	251.5	236.8	-17.5	11	68	63 *s*
										15231	.937	252.8	226.1	-14.6	6	28	96 *c*
306.431		.968	260.5					172		15239	.863	249.0	215.4	-15.8	15	63	138 *c*
G		.964	252.8					142		15234	.579	296.8	191.6	+18.4	23	119	
		.963	282.7					161		15235	.437	242.5	181.6	- 8.0	66	384	
		.953	243.1					215		15238	.465	326.6	175.3	+26.5	12	58	
		.948	219.7					85		15240	.949	113.1	90.3	-20.4	6	17	234 *c*
		.921	211.1					126			.796	47.4					63
		.889	200.4					95			.803	118.3					46
		.860	186.3					96			.894	54.1					61
	15225	.904	256.9	247.6	-10.0	17	143	269 *f*			.914	124.3					107
	15237	.879	288.7	245.5	+18.3	4	14	248 *c*			.932	102.5					105
	15229	.835	245.8	237.3	-17.5	10	71	100 *c*			.946	80.9					134
	15231	.718	244.7	226.5	-14.8	17	42		Nov.5			(+23.9)	(158.7)	(+ 3.9)	(139)	(737)	(1934)
	15234	.275	334.3	191.7	+18.4	30	148										
	15235	.224	166.5	181.5	- 8.4	72	458										
	15238	.410	18.9	176.0	+26.7	11	48		309.524		.962	289.6					248
		.930	58.0					89	C		.943	270.7					141
		.936	114.9					62		15239	.969	251.1	217.1	-17.2	4	35	380 *c*
		.942	106.3					81		***1259e***	.905	294.9	207.5	+24.0	0	9	315 *c*
		.967	74.5					85		15234	.754	291.4	191.3	+18.5	23	125	
Nov.3			(+24.3)	(184.5)	(+ 4.1)	(161)	(924)	(2026)		15235	.636	252.7	181.3	- 7.9	54	430	
										15238	.612	309.1	175.4	+25.9	6	45	
										15241	.904	102.0	80.3	- 9.1	5	29	136 *c*
307.288		.972	263.8					67		15242	.974	71.9	66.5	+18.5	28	280	206 *c*
C		.969	279.9					64			.861	84.7					104
		.953	240.3					104			.867	116.9					212
		.946	289.1					161			.885	76.9					113
	15225	.966	258.5	247.0	-10.0	25	116	216 *s*			.892	70.1					70
	15229	.920	248.9	237.2	-17.6	10	57	124 *c*			.949	80.1					83
	1259d	.842	287.7	230.0	+17.0	0	7	193 *c*			.952	64.7					68
	15231	.828	249.2	226.2	-14.7	19	87	66 *c*	Nov.6			(+23.7)	(143.7)	(+ 3.8)	(120)	(953)	(2076)

Group 15238. Nov. 3 - 10. A string of small variable spots.
Group 15239. Nov. 4 - 6. A pair of small spots seen near the west limb.
Group 15240. Nov. 5 - 7. A small spot near the east limb on November 5: a dot on November 7.
Group 15241. Nov. 6 - 12. A pair of small spots, not seen on November 10.
Group 15242. Nov. 6 - 16. A regular spot which disintegrates after November 12 and so dies out rapidly.

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
1947			°	°	°				1947			°	°	°			
310.429		.959	287.6					153		15235	.971	261.6	182.1	- 7.2	23	234	602 *sf*
G		.952	269.4					124		15238	.944	295.6	177.0	+25.3	6	39	326 *c*
		.946	260.5					150		15243	.844	249.5	161.7	-15.1	4	26	126 *c*
		.944	298.3					279		15241	.435	117.1	84.0	- 8.2	2	12	
		.939	205.4					204		15245	.467	78.5	79.5	+ 8.5	2	16	
		.938	250.5					172		15242	.701	66.1	64.4	+19.1	59	298	162 *nf*
		.929	280.7					133		15244	.815	82.5	52.4	+ 8.2	46	306	216 *c*
		.882	265.5					116			.909	69.3					176
		.818	242.7					76	Nov.9			(+23.1)	(106.9)	(+ 3.5)	(150)	(992)	(1937)
	15234	.868	289.1	191.4	+18.4	24	138	181 *c*									
	15235	.781	257.3	181.8	- 7.5	68	371	177 *c*									
	15238	.743	302.1	176.0	+25.9	6	38	70 *c*									
	15243	.564	237.5	161.1	-14.4	5	23		313.292		.982	259.3					246
	15240	.797	122.5	85.2	-22.8	0	3	125 *c*	C		.973	242.8					113
	15241	.775	104.3	82.6	- 8.6	22	74	105 *c*			.958	234.5					108
	15242	.918	71.1	65.5	+18.8	35	309	286 *f*			.941	253.9					123
	15244	.980	83.1	53.2	+ 7.5	54	248	152 *c*			.890	243.5					46
		.786	79.9					106			.883	294.5					101
		.867	131.4					110			.860	283.3					72
		.867	61.5					77		15238	.978	295.1	172.1	+25.3	5	31	416 *c*
Nov.7			(+23.5)	(131.8)	(+ 3.7)	(214)	(1204)	(2796)		15245	.256	68.5	80.1	+ 8.6	15	63	
										15242	.554	59.5	63.8	+19.2	32	278	
										15244	.682	81.5	51.2	+ 8.2	59	347	74 *c*
											.842	69.7					68
311.439		.976	280.7					119			.946	106.1					144
C		.952	267.7					101			.962	71.2					113
		.888	242.9					137	Nov. 10			(+22.9)	(94.0)	(+ 3.4)	(111)	(719)	(1624)
		.847	235.6					108									
	15234	.955	288.2	191.1	+18.4	18	151	228 *c*									
	15235	.909	260.0	182.7	- 7.5	36	246	362 *sf*									
	15238	.863	297.3	176.1	+25.2	6	41	139 *c*	314.304		.943	291.6					62
	15243	.729	245.6	161.6	-14.9	6	34		C		.904	255.2					86
	15241	.607	109.1	83.1	- 8.5	9	43				.898	246.4					95
	15242	.815	69.1	65.0	+19.0	22	242	220 *nf*			.888	299.4					103
	15244	.901	83.3	54.2	+ 7.6	31	219	159 *f*			.876	222.0					87
		.831	76.5					66		15241	.205	185.0	81.7	- 8.5	10	29	
		.949	72.3					99		15245	.088	358.2	80.9	+ 8.3	36	241	
Nov.8			(+23.3)	(118.4)	(+ 3.6)	(128)	(976)	(1738)		15242	.399	45.2	63.3	+19.4	34	281	
										15244	.471	79.1	53.0	+ 8.0	80	392	
											.858	110.0					113
											.903	71.0					122
312.313		.962	246.8					151			.952	116.4					221
C		.911	241.5					178			.967	79.2					81
	15234	.993	288.1	190.6	+18.4	8	61		Nov. 11			(+22.6)	(80.7)	(+ 3.3)	(160)	(943)	(970)

Group 15243. Nov. 7 - 9. A pair of small spots on November 7 and 8; a single spot on November 9.
Group 15244. Nov. 7 - 19. A regular spot followed by a string of small companions on November 9 - 14.
Group 15245. Nov. 9 - 17. A developing stream; the leader is the most stable component and alone remains to pass round 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
1947			°	°	°				1947			°	°	°			
315.289		.951	248.2					101		15242	.459	310.1	63.1	+19.8	19	218	
C	15241	.308	229.2	81.3	− 8.5	5	41			15244	.252	289.0	55.1	+ 7.5	39	247	
	15245	.243	293.8	80.6	+ 8.7	81	449			15249	.143	6.9	40.3	+11.0	4	24	
	15242	.289	16.0	62.9	+19.2	35	263			15250	.642	112.5	4.2	−11.8	1	10	
	15244	.256	69.8	53.7	+ 8.2	51	330			15247	.829	109.9	347.8	−14.7	27	188	236 *c*
	15246	.986	111.6	349.6	−20.6	23	105	112 *c*		15246	.850	117.3	347.4	−21.2	75	510	179 *c*
	15247	.987	105.6	348.3	−14.8	12	91	161 *c*		15251	.869	70.9	341.9	+17.9	32	203	149 *c*
		.913	120.3					434		15252	.991	76.5	318.9	+13.8	14	191	
		.947	77.4					260			.871	80.5					107
Nov.12			(+22.4)	(67.7)	(+ 3.2)	(207)	(1279)	(1068)			.908	129.3					150
											.931	107.7					313
											.941	74.0					139
											.950	66.5					183
316.485		.883	245.0					82			.970	82.7					127
G		.793	235.6					54			.981	100.3					106
	15248	.658	229.3	84.5	−22.8	11	25		Nov.14			(+21.9)	(41.3)	(+ 2.9)	(295)	(2242)	(2495)
	15245	.501	282.6	81.4	+ 8.9	64	443										
	15242	.341	327.9	62.9	+19.6	34	155										
	15244	.097	335.9	54.2	+ 8.0	53	262		318.287	15253	.869	256.8	87.2	−10.0	25	137	186 *c*
	15249	.235	53.5	40.9	+11.0	12	26		C	15248	.870	241.2	84.0	−23.2	6	24	155 *c*
	15250	.770	107.9	3.6	−11.7	3	17	43 *c*		15245	.798	279.0	80.9	+ 8.9	82	698	140 *c*
	15247	.911	107.5	348.3	−14.5	22	142	149 *c*		15242	.617	299.0	63.0	+19.7	4	92	
	1259f	.946	102.5	342.0	−10.8	0	6			15244	.486	279.6	57.0	+ 7.1	28	251	
	15246	.929	114.2	346.8	−21.1	75	374	123 *c*		15254	.609	320.4	54.8	+30.4	12	62	
	15251	.940	71.7	342.2	+18.2	29	181	151 *s*		15249	.254	305.2	40.4	+11.1	6	46	
		.782	99.4					35		15255	.309	170.0	25.0	−14.9	8	32	
		.871	126.6					132		15250	.482	120.8	3.3	−11.7	2	25	
Nov.13			(+22.1)	(51.9)	(+ 3.0)	(303)	(1631)	(769)		15256	.628	112.2	352.0	−11.4	3	22	
										15246	.725	123.4	347.9	−21.3	91	617	171 *c*
										15247	.696	114.6	347.5	−14.7	26	176	
										15251	.745	68.0	341.8	+18.1	19	182	
										15252	.936	75.8	319.0	+14.2	38	197	146 *s*
317.290		.951	246.9					219		15257	.961	67.5	314.6	+22.4	4	23	187 *c*
C		.919	285.6					93			.848	109.6					159
		.885	241.6					158			.857	70.9					102
		.812	251.6					134			.863	82.6					73
	15248	.756	235.2	83.7	−23.4	9	49	202 *c*			.923	101.8					191
	15245	.642	280.1	80.9	+ 8.7	75	602		Nov.15			(+21.6)	(28.2)	(+ 2.8)	(354)	(2584)	(1510)

Group 15246. Nov. 12 - 24. An irregular stream, the leader of which is, however, a stable regular spot. The following part consists of a string of spots, which, undergoing considerable changes, are on the decline as the limb is reached.

Group 15247. Nov. 12 - 24. A revival rather than a return of Group 15232. A regular spot with an occasional close companion.

Group 15248. Nov. 13 - 15. A pair of short-lived spots.

Group 15249. Nov. 13 - 16. Another pair of short-lived spots.

Group 15250. Nov. 13 - 18. One or two small spots.

Group 15251. Nov. 13 - 26. Return of Group 15214: third appearance. A stable regular spot with a companion on November 22.

Group 15252. Nov. 14 - 26. Return of Group 15226. A stable regular spot drifting backwards in longitude.

Group 15253. Nov. 15 - 16. A pair of small spots near the west limb.

Group 15254. Nov. 15 - 17. Two or three unstable spots.

Group 15255. Nov. 15 - 21. Two or three small spots precede the rapid development of this group which occurs near the west limb.

Group 15256. Nov. 15 - 20. Small nondescript spots.

Group 15257. Nov. 15 - 22. Return of Group 15222. A small spot, with others on November 19 and 20.

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
1947			°	°	°				1947			°	°	°			
319.313		.980	278.6					155			.814	75.6					136
C		.962	245.9					191			.877	55.6					140
	15253	.971	258.3	89.8	−10.7	5	43	371 c			.909	68.8					188
	15245	.919	278.7	81.3	+ 9.1	24	288	281 c			.914	137.6					217
	15242	.781	291.9	64.3	+18.7	5	20	58 c			.957	117.2					160
	15244	.678	277.2	57.1	+ 6.9	20	164				.959	125.2					585
	15254	.732	309.8	54.9	+29.9	7	44				.976	70.8					212
	15249	.430	291.0	38.7	+11.3	1	11		Nov.17			(+21.0)	(359.8)	(+ 2.6)	(395)	(2691)	(3994)
	15250	.305	144.1	4.1	−11.6	1	11										
	15256	.434	123.7	353.1	−11.4	9	40										
	15258	.439	65.9	350.5	+12.7	0	4										
	15246	.587	135.1	348.1	−22.1	97	593		321.539		.965	293.8					288
	15247	.533	123.9	347.5	−14.8	25	147		G		.940	303.4					142
	15251	.591	62.4	341.3	+18.1	20	154				.854	288.1					72
	15252	.837	75.0	318.4	+14.0	36	165	96 c		15244	.953	276.4	57.6	+ 6.8	28	174	237 *nf*
	15257	.881	66.3	314.4	+22.0	4	28	138 c		15255	.740	247.5	30.1	−14.7	19	79	
	15259	.963	121.3	304.4	−29.1	35	154	165 c		15250	.412	235.7	5.5	−11.1	3	18	
	15260	.984	109.3	296.6	−18.4	40	409	337 c		15256	.296	216.8	355.7	−11.3	1	10	
		.853	106.3					130		15258	.203	326.9	351.8	+12.1	1	4	
		.961	131.1					112		15247	.307	186.2	347.3	−15.3	17	128	
		.968	73.5					165		15246	.410	180.7	345.6	−21.7	81	632	
Nov.16			(+21.3)	(14.6)	(+ 2.7)	(329)	(2275)	(2199)		15251	.283	15.7	340.7	+18.1	26	133	
										1260a	.398	137.2	329.1	−14.6	2	15	
										15261	.381	113.6	324.8	− 6.5	23	65	
										15252	.495	66.0	317.7	+13.7	26	150	
320.442		.931	284.8					397		15257	.589	54.1	314.4	+22.2	4	8	
C		.882	296.9					176		15259	.778	130.7	303.3	−28.6	21	148	95 c
	15245	.990	278.6	81.8	+ 8.9	49	324	319 *f*		15262	.724	68.5	300.7	+17.0	6	19	50 *f*
	15244	.846	276.4	57.4	+ 6.8	21	168	314 *f*		15260	.792	114.9	296.5	−17.8	59	465	106 c
	15254	.864	302.7	56.0	+29.2	4	19	140 c		15263	.861	102.2	287.0	− 9.2	4	22	95 c
	15255	.507	234.8	25.0	−14.6	3	28				.847	64.1					60
	15250	.253	197.8	4.3	−11.3	5	31				.879	72.0					68
	15256	.250	162.9	355.5	−11.2	5	28				.892	128.9					204
	15258	.223	41.2	351.2	+12.2	1	9				.917	119.4					67
	15247	.370	145.3	347.3	−15.1	25	145				.931	111.0					117
	15246	.467	151.8	346.1	−21.7	118	765				.945	3.7					20
	15251	.412	48.5	340.9	+18.2	34	167				.953	136.1					88
	15261	.564	105.6	326.8	− 6.5	2	10				.954	88.3					125
	15252	.682	72.2	318.0	+13.9	30	156				.964	96.1					120
	15257	.748	62.0	314.4	+22.3	4	27	128 c			.965	69.1					164
	15259	.886	124.2	303.6	−28.4	34	214	378 c			.979	76.7					106
	15260	.916	111.5	296.0	−18.5	60	600	504 c	Nov. 18			(+20.7)	(345.3)	(+ 2.4)	(321)	(2070)	(2224)

Group 15258. Nov. 16 - 18. A tiny spot.

Group 15259. Nov. 16 - 27. A revival rather than a return of Group 15215. A small decreasing elongated spot, followed by a few unstable companions.

Group 15260. Nov. 16 - 27. A stream of normal type. As usual, the follower is the first to die out.

Group 15261. Nov. 17 - 26. A small spot becoming regular by November 22. This is preceded by one or two small spots which have a brief maximum on November 24 - 25.

Group 15262. Nov. 18 - 27. A small spot, preceding the development of a regular spot, closely followed by a few small spots. The latter die out leaving the regular spot alone by November 25.

Group 15263. Nov. 18 - 27. The compressed life-history of this small stream of normal type is completed in ten days.

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
1947			°	°	°				1947			°	°	°			
322.297		.924	284.0					230			.945	121.4					142
C	15244	.991	276.4	57.6	+ 6.7	14	90	295 *nf*			.968	104.0					184
	15255	.845	250.7	30.7	−14.8	22	229	159 *c*	Nov.20			(+20.2)	(322.1)	(+ 2.2)	(418)	(2441)	(2195)
	15256	.434	237.3	357.1	−11.4	2	10										
	15247	.366	213.0	347.2	−15.5	28	164										
	15246	.456	202.9	346.3	−22.5	76	545		324.289		.923	242.2					190
	15251	.286	342.3	340.5	+18.0	22	179		C		.833	254.4					170
	15261	.235	131.9	325.2	− 6.7	12	74				.833	234.0					246
	15252	.359	55.8	317.6	+13.8	31	178			15255	.974	254.8	24.8	−14.3	58	388	337 *c*
	15257	.476	42.5	315.0	+22.6	5	39			15247	.666	243.2	347.1	−15.8	18	114	
	15259	.699	136.9	302.5	−28.6	26	144			15246	.687	232.8	345.4	−22.8	70	425	
	15262	.601	63.9	301.0	+17.2	39	239			15251	.565	300.0	339.9	+18.1	26	125	
	15260	.693	118.5	295.8	−17.5	54	440	82 *f*		15261	.279	234.8	322.3	− 7.2	13	80	
	15263	.765	103.9	286.7	− 9.0	21	132	102 *c*		15252	.247	326.8	317.1	+13.9	30	140	
	15264	.829	113.8	282.6	−18.1	0	5	210 *f*		15257	.357	347.5	313.9	+22.4	5	50	
	15265	.939	73.3	265.9	+16.4	0	12	200 *c*		15262	.298	26.2	301.2	+17.5	53	309	
		.826	133.0					240		15259	.532	166.0	300.7	−28.9	9	58	
		.879	90.9					175		15260	.398	147.5	296.2	−17.5	85	505	
		.880	122.3					98		15263	.426	117.4	286.7	− 9.3	35	168	
		.901	65.3					120		15264	.573	129.0	281.1	−19.2	12	61	
		.927	101.1					209		15265	.711	67.8	265.7	+17.1	18	90	189 *f*
		.944	107.3					94			.842	105.7					135
Nov.19			(+20.5)	(335.3)	(+ 2.3)	(352)	(2480)	(2214)			.863	123.1					144
											.891	68.3					252
											.961	107.1					409
											.976	75.0					236
323.301		.970	282.4					149	Nov.21			(+19.8)	(309.1)	(+ 2.1)	(432)	(2513)	(2308)
C		.954	232.4					172									
		.863	287.4					103									
		.820	237.6					219	325.290		.960	255.3					165
		.740	227.2					93	C		.933	239.1					345
	15255	.912	253.2	26.2	−14.3	69	465	362 *c*			.927	284.9					139
	15256	.644	249.6	359.9	−11.2	1	8				.898	254.6					142
	15247	.509	233.0	347.0	−15.8	22	112				.890	223.6					126
	15246	.558	220.6	345.2	−23.0	65	476				.845	280.5					166
	15251	.406	312.9	340.2	+18.1	37	155			15247	.805	248.7	346.9	−15.7	8	114	105 *c*
	15261	.167	191.3	324.0	− 7.2	9	24			15246	.801	238.9	343.9	−23.0	45	541	340 *c*
	15252	.222	22.8	317.0	+13.9	35	145			15251	.722	293.8	339.8	+18.3	40	177	
	15257	.381	20.0	314.0	+23.0	7	37			15261	.478	251.3	322.9	− 7.0	20	148	
	15259	.598	149.8	302.1	−28.9	12	76			15252	.409	301.6	316.9	+14.2	25	156	
	15262	.434	51.4	301.3	+17.7	47	253			15257	.455	322.3	313.4	+22.9	1	8	
	15260	.536	128.8	296.2	−17.6	61	412			15262	.285	342.3	301.1	+17.6	41	281	
	15263	.627	108.5	285.1	− 9.7	31	158			15259	.527	188.7	301.1	−29.3	4	20	
	15264	.718	120.2	281.1	−19.4	7	45	112 *f*		15260	.339	182.3	296.7	−17.7	91	479	
	15265	.851	71.8	264.8	+16.6	15	75	215 *c*		15263	.237	146.3	288.3	− 9.3	38	249	
		.817	102.0					217		15264	.426	146.6	281.6	−18.8	6	47	
		.888	113.0					227		15266	.524	53.8	269.3	+19.8	1	12	

Group 15264. Nov. 19 - 29. A pair of small spots widely separated in longitude. On November 23, other spots appear in front, and a big increase then follows resulting in two composite spots which are still growing as they pass out of view.

Group 15265. Nov. 19 - 30. A stream of small unstable spots.

Group 15266. Nov. 22 - 23. A tiny ephemeral spot.

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

U.T.	Group No.	MEASURES		POSITION		AREA		
		Dist.	Pos. Angle	Long.	Lat.	Umbrae	Whole Spots	Faculae
1947			°	°	°			
	15265	.505	60.5	268.8	+16.1	9	119	
		.890	71.2					194
		.945	107.3					507
Nov.22			(+19.5)	(295.9)	(+ 2.0)	(329)	(2351)	(2229)
326.310 C		.971	256.8					172
		.936	280.4					249
		.829	234.3					46
		.810	246.5					107
	15247	.915	251.9	346.8	−15.7	12	82	101 *c*
	15246	.912	244.2	344.9	−22.5	37	323	588 *c*
	15251	.861	290.0	340.5	+18.1	15	111	118 *f*
	15261	.679	257.8	324.2	− 6.8	28	187	
	1260b	.752	315.2	321.8	+33.6	0	6	
	15252	.589	291.8	316.6	+14.2	21	140	
	15262	.417	311.5	301.5	+17.8	34	209	
	15259	.580	207.2	300.0	−29.1	1	9	
	15260	.415	216.8	297.4	−17.5	37	253	
	15263	.226	205.0	287.9	− 9.9	47	221	
	15264	.353	188.3	285.5	−18.5	21	71	
	15266	.369	31.7	270.5	+20.1	1	5	
	15265	.346	41.9	268.5	+16.7	25	98	
	15267	.681	81.8	239.8	+ 6.9	30	55	71 *f*
	15268	.830	108.4	228.4	−14.0	0	4	227 *c*
	15269	.977	64.2	205.4	+25.6	0	23	182 *c*
		.808	66.6					106
		.925	69.9					136
		.927	59.2					98
		.930	104.8					157
		.938	114.3					180
Nov.23			(+19.2)	(282.4)	(+ 1.9)	(309)	(1797)	(2538)
327.277 C		.959	280.7					183
		.867	295.9					147
		.863	276.2					133
	15247	.976	253.7	345.9	−15.5	9	47	204 *s*
	15246	.965	245.0	342.0	−23.5	68	423	617 *c*
	15251	.943	288.5	339.6	+18.0	15	124	235 *c*
	15261	.827	260.1	324.7	− 7.2	83	447	302 *c*
	15252	.745	288.0	316.5	+14.4	27	116	
	15262	.569	300.0	300.7	+17.9	21	219	

U.T.	Group No.	MEASURES		POSITION		AREA		
		Dist.	Pos. Angle	Long.	Lat.	Umbrae	Whole Spots	Faculae
1947			°	°	°			
	15259	.654	219.5	297.9	−28.8	16	101	
	15260	.550	232.9	297.0	−17.8	50	267	
	15263	.369	236.4	287.8	−10.1	26	117	
	15264	.447	220.8	287.5	−18.1	91	502	
	15265	.289	13.9	265.5	+17.9	16	121	
	15267	.484	79.4	241.2	+ 6.6	16	56	
	15268	.695	114.7	228.9	−15.5	1	7	78 *f*
	15269	.925	62.7	204.1	+25.7	8	44	420 *c*
	15270	.970	69.7	194.3	+20.1	0	34	170 *f*
		.836	120.3					191
		.839	109.6					287
		.904	148.7					195
		.926	75.4					178
		.952	120.5					84
		.953	92.3					121
		.956	102.0					494
		.956	111.9					106
Nov.24			(+18.9)	(269.7)	(+ 1.7)	(447)	(2625)	(4145)
328.413 G		.983	240.9					202
		.939	303.7					141
		.906	301.2					192
		.828	222.9					194
	15251	.997	287.4	340.3	+17.5	12	146	164 *f*
	15261	.946	262.3	325.2	− 6.7	53	363	461 *c*
	15252	.887	285.6	316.5	+14.5	30	138	174 *c*
	15259	.804	233.9	301.4	−27.1	19	94	232 *c*
	15262	.742	293.2	300.3	+18.1	37	221	
	15260	.754	244.4	300.1	−17.9	28	170	344 *c*
	15263	.598	250.6	289.5	−10.1	13	56	
	15264	.613	238.1	287.6	−17.5	127	756	
	15265	.337	327.0	265.8	+17.9	18	92	
	15267	.240	69.1	241.7	+ 6.4	9	25	
	15271	.497	87.4	225.0	+ 2.6	9	53	
	15272	.820	124.1	205.7	−26.2	2	19	176 *c*
	15269	.801	59.1	205.4	+25.3	11	38	246 *c*
	15270	.881	68.4	194.5	+19.6	23	116	168 *c*
	15273	.937	97.7	185.8	− 6.6	6	25	329 *c*
	15274	.961	113.6	183.0	−22.1	35	209	333 *c*
	15275	.962	64.4	181.8	+25.0	27	121	270 *c*
		.843	155.6					221
		.844	108.7					284
Nov.25			(+18.5)	(254.7)	(+ 1.6)	(459)	(2642)	(4131)

Group 15267. Nov. 23 - 26. Two or three small spots.
Group 15268. Nov. 23 - 24. A tiny spot.
Group 15269. Nov. 23 - 29. One or two variable spots not seen on November 27 and 28.
Group 15270. Nov. 24-Dec. 1. Return of Group 15234: third appearance. A small spot, with a companion on November 25 to 27 and December 1.
Group 15271. Nov. 25 - 28. A few feeble equatorial spots.
Group 15272. Nov. 25-Dec. 3. One or two small spots with a brief maximum on December 1.
Group 15273. Nov. 25-Dec. 2. Return of Group 15235. A persistent small spot.
Group 15274. Nov. 25-Dec. 5. A pair of composite spots which breaks up into a stream of small spots and so dies out.
Group 15275. Nov. 25-Dec. 1. A pair of spots, of which one remains after November 26.

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
1947			°	°	°			
329.420		.967	294.8					104
G		.921	228.7					138
		.820	228.3					284
	15261	.985	262.2	320.9	- 7.4	20	147	261 *c*
	15252	.964	284.6	315.6	+14.5	13	105	203 *c*
	15259	.904	239.5	301.7	-26.6	7	59	376 *c*
	15260	.876	248.1	300.0	-18.2	25	154	128 *c*
	15262	.866	290.4	299.9	+18.3	41	201	178 *c*
	15263	.763	256.1	289.9	- 9.6	5	20	187 *p*
	15264	.755	245.3	287.1	-17.3	111	811	298 *c*
	15265	.492	305.0	266.3	+17.7	11	84	
	15276	.487	191.3	247.5	-26.9	13	76	
	15267	.083	351.0	242.1	+ 6.2	5	24	
	15271	.272	85.0	225.7	+ 2.8	6	31	
	15269	.630	55.5	207.5	+22.1	1	4	
	15272	.715	130.8	204.3	-26.6	3	17	82 *f*
	15277	.721	54.9	200.8	+25.5	1	6	
	15270	.752	65.2	195.3	+19.3	16	85	226 *c*
	15273	.843	99.1	184.7	- 6.8	6	22	244 *c*
	15274	.871	116.7	184.5	-22.1	65	335	467 *c*
	15275	.883	61.7	182.2	+25.5	16	78	175 *c*
		.862	107.5					192
		.958	63.5					413
Nov.26			(+18.1)	(241.4)	(+ 1.5)	(365)	(2259)	(3956)
330.353		.953	235.8					290
C		.949	304.3					132
		.947	258.0					129
		.941	222.6					245
		.897	231.6					212
		.889	238.1					159
		.849	222.8					158
	15259	.966	245.0	301.9	-23.7	0	11	190 *c*
	15262	.948	289.2	299.7	+18.6	29	183	213 *c*
	15260	.951	250.6	299.4	-17.9	24	132	209 *c*
	15264	.864	248.4	286.4	-17.8	120	1053	355 *c*
	15263	.841	259.7	285.5	- 7.9	0	13	191 *c*
	15265	.651	295.5	266.9	+17.3	6	45	
	15276	.563	212.0	248.6	-27.1	18	117	
	15271	.073	62.0	225.4	+ 3.3	3	18	
	15272	.607	140.6	203.7	-26.6	0	5	
	15277	.667	46.6	195.8	+28.3	0	4	
	15270	.617	59.6	194.9	+19.3	14	55	
	15273	.715	101.2	184.3	- 6.9	9	34	
	15274	.767	120.9	184.0	-22.1	51	304	216 *c*
	15275	.785	58.4	181.7	+25.1	14	40	87 *f*
		.826	104.8					157
		.889	61.0					340

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1947			°	°	°			
		.905	72.4					109
		.909	109.0					125
		.913	125.8					152
		.927	116.6					139
		.959	66.4					219
Nov.27			(+17.8)	(229.1)	(+ 1.4)	(288)	(2014)	(4027)
331.517		.968	237.1					257
G		.960	285.7					114
		.960	260.4					192
		.952	227.0					122
		.884	270.3					81
		.854	261.3					83
	15264	.964	251.1	286.8	-17.8	137	1452	537 *c*
	15265	.833	288.8	268.8	+16.3	12	102	144 *c*
	15276	.706	227.0	249.3	-27.7	21	125	
	15271	.189	278.0	224.6	+ 2.7	2	26	
	15278	.338	159.8	206.8	-17.2	2	13	
	15272	.506	158.8	202.0	-26.9	1	8	
	15277	.522	31.4	196.0	+27.5	1	14	
	15270	.418	44.5	195.9	+18.4	8	52	
	15273	.509	106.6	184.5	- 7.3	9	53	
	15274	.605	131.4	184.5	-22.4	24	270	
	15275	.634	49.5	181.7	+25.2	8	35	
		.784	55.7					70
		.930	128.1					73
Nov.28			(+17.4)	(213.8)	(+ 1.2)	(225)	(2150)	(1673)
332.289		.957	231.7					160
C		.950	261.9					231
		.947	270.8					160
		.935	222.5					131
		.915	295.9					128
		.904	247.8					169
		.886	256.7					111
	15264	.987	251.0	283.2	-18.5	91	552	343 *c*
	15265	.909	288.1	267.9	+16.9	7	52	281 *c*
	15276	.804	233.5	250.4	-27.8	18	84	132 *c*
	15278	.321	189.6	206.8	-17.3	4	23	
	15269	.412	353.8	206.4	+25.2	3	21	
	15272	.455	180.6	203.9	-25.9	1	6	
	1260c	.055	63.1	200.8	+ 2.5	0	3	
	15270	.322	22.9	196.1	+18.2	3	33	
	15277	.455	15.7	195.7	+26.9	6	46	
	15273	.353	114.1	184.7	- 7.2	12	52	
	15274	.493	141.4	184.4	-21.5	31	207	
	15275	.544	39.1	181.3	+25.9	4	26	

Group 15276. Nov. 26 - 30. A pair of small spots; the leader remains on November 30.
Group 15277. Nov. 26-Dec. 5. A small variable stream.
Group 15278. Nov. 28-Dec. 2. A pair of spots, the leader alone remaining after November 29.

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

U.T.	Group No.	Measures		Position		Area		
		Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ
1947			°	°	°			
	15279	.875	107.9	144.3	−15.0	8	65	94 c
	15280	.967	101.8	129.2	−11.1	0	12	89 c
		.823	60.5					92
		.858	134.9					71
Nov.29			(+17.1)	(203.6)	(+ 1.1)	(188)	(1182)	(2192)
333.321 C		.971	260.0					236
		.951	246.3					184
		.887	257.7					156
		.803	277.3					70
	15265	.979	287.1	267.9	+17.0	0	10	409 c
	15276	.918	238.5	252.4	−28.2	2	16	168 c
	1260d	.516	291.7	219.2	+11.8	3	14	
	15278	.467	227.3	211.0	−17.5	3	10	
	15272	.504	202.7	202.5	−26.6	3	28	
	15277	.453	343.7	198.1	+26.7	11	69	
	15270	.311	338.7	196.8	+17.8	3	13	
	15273	.169	148.6	184.9	− 7.3	11	50	
	15274	.409	165.5	183.7	−22.2	18	127	
	15275	.455	22.1	179.1	+25.9	3	25	
	15279	.746	111.5	144.2	−15.1	56	264	110 c
	15280	.881	103.9	129.4	−11.7	0	4	147 c
Nov.30			(+16.7)	(190.0)	(+ 1.0)	(113)	(630)	(1480)
334.437 G		.961	241.3					230
		.959	289.9					188
		.955	253.2					198
		.950	265.1					155
		.890	279.1					283
		.855	289.9					187
		.832	252.1					371
		.807	300.4					109
		.790	272.1					132
		.769	240.8					84
	1260e	.896	242.6	235.5	−23.9	2	10	218 c
	15281	.690	291.2	216.9	+15.0	3	18	
	15278	.653	241.9	212.2	−17.2	3	10	
	15272	.620	223.2	203.4	−26.0	25	100	
	15277	.562	320.9	198.5	+26.5	22	115	
	15270	.455	309.6	196.8	+17.5	4	15	
	15273	.222	233.3	185.6	− 6.8	7	27	
	15274	.411	199.3	183.7	−21.9	13	78	
	15275	.400	0.4	175.1	+24.3	5	19	

U.T.	Group No.	Measures		Position		Area		
		Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ
1947			°	°	°			
	15279	.555	119.0	145.3	−14.8	94	472	
	15282	.971	102.6	99.9	−12.1	23	84	189 c
	15283	.984	81.8	95.9	+ 8.2	5	41	118 c
		.840	55.3					140
		.905	70.9					164
		.925	113.9					198
Dec.1			(+16.3)	(175.3)	(+ 0.8)	(206)	(989)	(2964)
335.294 C		.944	244.1					204
		.941	279.2					168
		.941	287.5					244
		.899	252.1					425
		.889	271.9					158
		.849	300.5					216
	15281	.808	290.4	216.1	+16.7	2	3	213 c
	15278	.778	247.3	212.4	−16.9	2	6	237 c
	15272	.731	234.0	204.5	−24.8	11	50	
	15277	.672	311.0	198.4	+26.6	14	77	
	15273	.395	251.1	186.0	− 6.7	5	26	
	15274	.472	214.7	180.8	−22.0	7	59	
	15279	.410	131.5	145.5	−15.0	68	449	
	15282	.908	103.7	99.8	−12.1	15	91	285 c
	15283	.933	81.5	95.4	+ 8.2	3	26	112 c
	15284	.982	82.2	85.2	+ 7.8	49	233	343 c
		.896	116.5					187
		.948	98.4					130
		.966	73.7					198
Dec.2			(+15.9)	(164.0)	(+ 0.7)	(176)	(1020)	(3120)
336.422 C		.962	257.1					245
		.934	283.7					217
		.905	248.7					340
	15272	.864	241.0	205.0	−24.4	4	19	187 c
	15277	.832	301.5	201.1	+26.1	6	52	428 c
	15274	.630	234.0	182.1	−21.2	8	64	
	15279	.263	172.1	147.0	−14.4	50	365	
	15282	.768	105.9	100.3	−11.7	6	41	
	15283	.808	80.3	95.7	+ 8.2	5	23	113 c
	15284	.899	81.5	85.5	+ 7.9	31	171	381 c
		.872	69.3					190
		.876	103.5					237
		.913	118.1					165
		.951	73.3					267
Dec.3			(+15.5)	(149.1)	(+ 0.6)	(110)	(735)	(2770)

Group 15279. Nov.29-Dec.9. A stream of normal type, developing from a pair of small spots on November 29. The follower begins to break up on December 5 while the leader remains fairly stable throughout.

Group 15280. Nov. 29 - 30. A small spot.

Group 15281. Dec. 1 - 2. A small spot.

Group 15282. Dec. 1 - 7. A small spot; not seen on December 5.

Group 15283. Dec. 1 - 4. A small spot shrinking to a speck.

Group 15284. Dec. 2 - 14. Return of Group 15245. A stable regular spot in slow decline with one or two variable companions.

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
1947			°	°	°			
337.330		.984	282.9					342
C		.936	243.7					234
		.936	253.5					204
		.912	260.7					253
		.911	237.7					188
		.895	288.1					151
		.867	267.9					157
		.817	254.3					198
		.751	304.7					125
	1260f	.984	248.5	215.6	−21.0	0	36	421 *c*
	15277	.938	297.1	204.6	+25.5	21	188	462 *c*
	1260g	.920	280.8	203.6	+10.1	3	16	187 *c*
	15274	.759	240.5	182.3	−21.5	8	52	188 *c*
	15279	.314	213.0	147.3	−14.7	61	315	
	15282	.628	109.5	100.2	−11.7	1	10	
	15283	.674	78.1	95.6	+ 8.3	1	5	
	15284	.792	80.6	85.4	+ 7.7	39	191	220 *c*
	15285	.943	76.5	67.3	+12.9	3	12	291 *c*
		.838	124.1					171
		.861	72.0					327
		.946	59.7					158
Dec.4			(+15.1)	(137.2)	(+ 0.5)	(137)	(825)	(4277)
338.372		.962	280.8					113
C		.895	262.7					139
		.885	254.7					111
		.866	301.5					135
		.774	301.4					165
	15277	.974	296.9	198.6	+26.2	13	41	274 *c*
	15274	.895	247.4	184.7	−19.9	2	11	235 *c*
	15279	.470	235.9	147.0	−14.9	49	296	
	15286	.173	187.5	124.7	− 9.6	3	23	
	15284	.619	78.1	85.9	+ 7.5	28	194	
	15287	.688	68.2	82.2	+15.0	11	73	
	15285	.821	75.2	69.3	+12.2	15	45	178 *c*
	15288	.985	81.8	43.6	+ 8.1	6	82	103 *c*
	15289	.992	100.9	41.0	−10.8	15	138	339 *c*
	15290	.996	103.9	39.0	−13.8	0	90	
		.918	76.7					209
		.935	59.1					131
Dec.5			(+14.7)	(123.4)	(+ 0.3)	(142)	(993)	(2132)

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1947			°	°	°			
339.305		.966	287.5					80
C		.963	262.9					134
		.957	298.1					177
		.957	246.6					462
		.927	255.8					124
		.870	299.1					380
		.869	234.6					157
		.852	244.4					119
	15279	.609	244.1	145.5	−15.2	58	403	
	15286	.292	233.0	124.7	− 9.9	4	26	
	15291	.331	223.2	124.5	−13.7	7	30	
	15282	.276	145.3	101.9	−12.9	2	16	
	15284	.453	71.9	85.4	+ 8.2	24	152	
	15287	.533	61.3	82.3	+15.0	15	63	
	15285	.703	72.4	68.0	+12.4	18	175	
	15288	.931	81.5	43.0	+ 7.9	14	49	161 *c*
	15289	.942	101.5	41.3	−10.8	12	129	229 *c*
	15290	.963	105.3	37.6	−14.7	46	329	287 *c*
	15292	.989	102.3	30.1	−12.1	49	276	198 *c*
		.926	74.2					110
Dec.6			(+14.3)	(111.1)	(+ 0.2)	(249)	(1648)	(2618)
340.281		.968	258.1					165
C		.957	214.0					196
		.950	297.9					446
		.943	238.9					154
		.929	247.9					210
		.923	231.9					67
		.855	305.4					201
	15279	.761	250.5	146.0	−14.6	44	301	248 *c*
	15286	.493	250.5	126.3	− 9.3	3	14	
	15291	.504	242.8	125.6	−13.1	46	186	
	15282	.228	191.5	101.0	−12.7	1	3	
	15284	.264	56.3	85.5	+ 8.5	28	168	
	15287	.368	46.5	82.3	+14.7	9	43	
	15285	.537	66.9	68.1	+12.2	15	74	
	15288	.825	80.3	43.3	+ 8.0	5	35	95 *c*
	15289	.840	102.9	42.1	−10.7	19	106	148 *c*
	15290	.871	106.9	39.1	−14.6	21	188	199 *c*
	15292	.934	103.8	30.1	−12.8	54	394	728 *c*
		.945	78.3					157
Dec.7			(+13.9)	(98.3)	(+ 0.1)	(245)	(1512)	(3014)

Group 15285. Dec. 4 - 11. A pair of small spots; others appear after December 8, to form a small unstable cluster.
Group 15286. Dec. 5 - 9. One or two small spots that come to nothing.
Group 15287. Dec. 5 - 13. A pair of spots, one component not being present on December 9, 12 and 13.
Group 15288. Dec. 5 - 7. A small spot.
Group 15289. Dec. 5 - 14. A small spot with a few variable companions on several days.
Group 15290. Dec. 5 - 17. A spot *f* Group 15292 with a brief maximum on December 6. There are one or two companions.
Group 15291. Dec. 6 - 10. A small stream of brief duration.
Group 15292. Dec. 6 - 18. Return of Group 15255. A spot which grows rapidly into a large composite structure. The leading part gradually condenses into a spot of nearly regular outline. The following portion remains broken and slowly diminishes.

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
1947			°	°	°				1947			°	°	°			
341.499		.942	286.8					144			.889	72.9					152
G		.925	297.0					254			.958	78.2					74
	15279	.915	254.0	147.4	−14.7	33	248	305 *c*			.959	120.4					245
	15291	.712	251.4	125.9	−13.1	21	152				.966	84.4					103
	15284	.158	340.5	85.2	+ 8.4	26	180				.984	98.8					238
	15287	.245	353.9	83.7	+13.9	6	44		Dec.10			(+12.6)	(56.6)	(− 0.3)	(242)	(1730)	(2089)
	15285	.332	48.3	67.6	+12.6	24	148										
	15289	.672	105.6	41.2	−10.4	19	153										
	15290	.710	110.6	39.0	−14.5	20	163										
	15292	.809	105.4	29.4	−12.4	147	1078	234 *c*	344.287		.974	256.8					362
		.855	75.0					125	C		.954	229.0					189
		.942	115.0					191			.922	220.8					187
		.959	104.8					151			.920	250.2					184
		.962	77.6					117			.898	285.8					165
Dec.8			(+13.4)	(82.2)	(− 0.1)	(296)	(2166)	(1521)			.876	243.0					140
											.855	256.6					180
											.762	246.2					105
										15284	.650	283.3	85.1	+ 8.3	20	114	
342.482		.944	289.1					212		15287	.664	290.4	85.1	+13.1	11	56	
G	15279	.992	255.0	151.6	−14.9	8	50	561 *f*		15285	.426	299.2	67.7	+11.6	1	4	
	15286	.858	258.2	127.6	−10.2	4	23	202 *c*		15289	.189	157.8	41.4	−10.4	15	76	
	15291	.855	254.3	126.9	−13.5	13	50	265 *c*		15290	.251	155.4	39.4	−13.5	14	73	
	15284	.311	298.4	85.3	+ 8.3	21	106			15292	.366	126.2	27.9	−12.8	138	969	
	15287	.345	315.7	83.6	+14.1	4	19			15293	.740	105.8	359.0	−11.9	12	73	141 *c*
	15285	.227	6.2	67.9	+12.8	18	105			15294	.898	115.3	344.1	−22.7	5	21	235 *f*
	15289	.495	110.6	41.3	−10.1	15	88			15295	.939	72.2	336.9	+16.6	3	19	222 *c*
	15290	.538	116.0	39.6	−13.8	13	77				.765	70.5					161
	15292	.671	109.0	28.9	−12.8	169	1280	301 *f*			.890	83.8					102
		.883	120.0					265			.931	123.2					310
		.923	75.9					421			.943	97.6					434
		.936	105.0					228			.972	112.0					349
		.974	115.0					189	Dec.11			(+12.2)	(45.5)	(− 0.4)	(219)	(1405)	(3466)
Dec.9			(+13.0)	(69.3)	(− 0.2)	(265)	(1798)	(2644)									
									345.291		.968	283.0					123
343.446	15291	.966	255.6	131.0	−13.9	4	28	393 *c*	C		.959	257.2					273
G	15284	.494	287.3	84.9	+ 8.1	31	140				.932	245.4					284
	15287	.503	297.7	83.7	+13.2	6	39				.881	291.4					99
	15285	.291	322.2	67.1	+12.9	6	46				.871	251.4					147
	15289	.312	123.4	41.3	−10.1	16	84				.859	234.4					223
	15290	.366	129.1	39.7	−13.6	12	75			15287	.838	286.0	87.8	+12.9	4	38	207 *c*
	15292	.516	114.7	28.0	−12.7	152	1219			15284	.811	280.4	85.7	+ 8.0	21	88	255 *c*
	15293	.858	104.3	358.5	−12.4	2	23	146 *s*		15296	.704	252.8	75.6	−12.4	14	57	
	15294	.964	113.8	343.5	−23.0	7	44	458 *c*		15289	.235	224.2	41.8	−10.3	10	50	
	15295	.986	73.0	337.0	+16.7	6	32			15290	.257	207.6	39.3	−13.7	10	73	
		.801	75.6					108		15292	.229	157.8	27.2	−12.8	130	1234	
		.826	123.4					172		15293	.570	109.6	359.2	−11.5	13	103	

Group 15293. Dec. 10 - 14. A pair of small spots.
Group 15294. Dec. 10 - 16. Return of Group 15246. A small spot reduced finally to a speck.
Group 15295. Dec. 10 - 22. Return of Group 15252: fourth appearance. A small spot until December 16; on the next day a stream develops with its axis highly inclined to the equator. As this stream grows it separates into three spots which are declining as they pass round the 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
1947			°	°	°				1947			°	°	°			
	15294	.793	119.0	343.6	−22.9	3	27	218 *f*		15296	.951	257.2	77.2	−12.4	0	6	82 *c*
	15295	.851	70.2	335.9	+16.4	6	36	179 *c*		15289	.613	253.6	42.3	−10.5	3	13	
		.830	98.4					372		15290	.580	247.6	39.0	−13.4	12	73	
		.903	113.8					289		15292	.430	238.1	27.7	−13.8	198	1095	
		.936	97.1					220		15297	.292	192.3	9.4	−17.3	14	82	
		.947	106.6					160		15293	.223	143.2	357.9	−11.1	3	21	
Dec.12			(+11.8)	(32.3)	(− 0.6)	(211)	(1706)	(3049)		15294	.524	136.5	342.7	−23.0	2	10	
										15295	.565	58.7	335.6	+16.3	4	10	
										15299	.677	125.7	328.9	−23.8	29	172	
346.285		.946	290.3					128		15298	.942	67.1	297.4	+21.2	19	79	150 *c*
C		.942	242.2					138		15300	.937	104.7	296.9	−14.0	6	32	352 *c*
		.941	249.7					137			.784	67.5					75
		.939	258.5					105			.865	94.1					83
		.887	235.3					156			.887	73.0					111
		.853	287.3					218			.911	115.5					251
	15287	.937	284.1	87.8	+12.9	3	8	153 *c*			.954	110.7					462
	15284	.919	279.3	85.4	+ 8.2	8	63	237 *c*			.955	121.3					226
	15296	.852	256.3	76.8	−11.9	2	8	94 *c*			.963	97.1					249
	15289	.419	246.3	42.0	−10.3	7	43				.969	50.5					125
	15290	.404	235.7	39.2	−13.8	8	75		Dec.14			(+10.9)	(5.7)	(− 0.8)	(302)	(1660)	(3349)
	15292	.259	213.9	27.7	−13.1	154	988										
	15297	.349	145.3	7.2	−17.3	1	11										
	15293	.386	119.6	359.3	−11.6	5	48										
	15294	.661	125.3	343.5	−23.0	3	15		348.341		.952	283.6					201
	15295	.719	66.1	336.2	+16.3	3	24	124 *f*	C		.853	287.4					69
	15298	.993	68.6	297.0	+21.2	0	41			15301	.948	262.0	63.3	− 7.9	6	58	115 *c*
		.802	97.9					148		15290	.756	251.4	39.7	−14.5	5	22	163 *c*
		.817	117.7					198		15292	.620	250.2	28.7	−12.8	81	697	
		.894	105.1					115		15297	.412	227.2	10.5	−17.0	39	275	
		.916	70.3					116		15294	.407	157.8	342.5	−22.9	1	3	
		.963	101.5					154		15295	.406	42.6	335.5	+16.5	3	10	
		.964	112.7					174		15299	.506	140.8	331.7	−23.8	60	216	
		.972	74.0					109		15300	.828	106.8	297.4	−14.4	0	5	74 *c*
Dec. 13			(+11.3)	(19.2)	(− 0.7)	(194)	(1324)	(2504)		15298	.848	64.2	297.4	+21.1	9	45	62 *nf*
										15302	.964	74.6	278.5	+14.6	43	181	193 *f*
											.837	120.0					286
347.310		.973	242.5					179			.869	97.9					167
C		.971	285.1					299			.931	129.2					57
		.953	235.7					119			.942	113.0					276
		.892	229.9					126			.946	121.9					158
		.872	285.3					296			.957	102.6					160
	15284	.986	278.2	85.6	+ 8.0	12	67	164 *s*	Dec.15			(+10.4)	(352.1)	(− 0.9)	(247)	(1512)	(1981)

Group 15298. Dec. 12 - 14. *A pair of small spots on December 12; a single spot on the other days.*
Group 15297. Dec. 13 - 20. The rapid growth is seen of a large stream of normal type. Both leader and follower appear to absorb the companion spots between them.
Group 15298. Dec. 13 - 21. A persistent small spot reduced finally to a dot.
Group 15299. Dec. 14 - 21. A small stream of rapid rise and decay.
Group 15300. Dec. 14 - 15. A small spot.
Group 15301. Dec. 15 - 16. A pair of spots; one remains very near the west limb on December 16.
Group 15302. Dec. 15 - 28. A spot of nearly regular outline which sheds a small satellite on December 20. A distant companion is included in the group until December 19.

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
1947			°	°	°			
349.322		.964	282.4					192
C		.952	301.6					135
		.924	287.0					148
		.902	308.9					144
		.879	280.0					163
		.771	240.2					130
	15301	.989	261.6	60.5	− 8.5	13	82	106 c
	15290	.883	254.6	40.3	−14.1	11	49	478 c
	15292	.770	253.8	28.4	−13.1	140	755	322 c
	15297	.572	239.0	10.1	−18.0	108	629	
	15294	.377	187.0	342.0	−23.0	1	4	
	15295	.291	13.2	335.3	+15.3	3	19	
	15299	.407	160.6	330.8	−23.6	51	294	
	15298	.732	59.2	297.0	+21.2	14	80	
	1261a	.879	121.6	281.5	−27.9	2	8	160 c
	15302	.896	72.6	277.2	+15.0	37	244	220 c
	15303	.974	71.8	263.5	+17.5	17	87	125 c
		.821	105.8					137
		.859	113.7					284
		.862	88.9					72
		.900	131.3					214
		.901	99.3					142
		.922	108.2					228
		.949	62.8					115
		.951	116.6					200
Dec.16			(+10.0)	(339.2)	(− 1.1)	(397)	(2251)	(3715)
350.284		.981	285.5					106
C		.914	281.1					115
	15290	.974	255.4	43.1	−14.5	0	17	376 c
	15292	.890	256.7	28.7	−12.4	109	684	259 c
	15297	.720	246.6	10.2	−17.5	157	744	98 c
	1261b	.458	333.0	339.5	+22.8	1	8	
	15295	.308	336.6	333.8	+15.2	19	142	
	15299	.392	188.1	329.9	−23.9	41	252	
	15298	.598	50.9	296.8	+21.0	12	49	
	15304	.543	102.1	294.3	− 7.5	8	46	
	15302	.788	69.7	276.8	+15.0	45	306	144 c
	15303	.912	69.7	262.7	+17.9	23	144	109 c
		.754	115.3					239
		.880	118.1					152

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbrae	AREA Whole Spots	AREA Faculae
1947			°	°	°			
		.931	133.8					140
		.954	93.5					154
		.968	103.3					102
Dec.17			(+9.5)	(326.5)	(− 1.2)	(415)	(2392)	(1994)
351.372		.961	250.5					204
C		.890	241.6					125
	15292	.976	258.6	29.4	−11.4	88	582	473 c
	15297	.861	250.4	10.2	−17.5	117	936	238 c
	15295	.464	309.1	334.1	+15.7	56	323	
	15299	.488	218.8	331.6	−23.5	20	171	
	15298	.451	33.0	297.0	+20.9	3	20	
	15304	.309	110.7	295.3	− 7.5	13	66	
	15302	.620	63.6	277.3	+14.9	37	222	
	15303	.787	66.6	263.2	+17.3	8	56	165 c
	15305	.957	67.6	241.2	+20.9	56	297	308 c
		.872	104.0					137
		.911	137.6					101
		.938	120.2					149
		.968	105.2					225
		.972	92.2					132
Dec.18			(+9.0)	(312.2)	(− 1.3)	(398)	(2673)	(2257)
352.291		.930	242.4					140
C		.911	286.0					101
		.883	234.8					89
	15297	.945	252.2	10.2	−17.2	117	1008	462 c
	15295	.617	298.8	334.1	+16.1	62	389	
	15299	.602	230.8	330.5	−23.5	24	120	
	15298	.379	8.1	296.7	+20.5	1	8	
	15304	.138	139.2	294.8	− 7.4	10	38	
	15302	.474	54.1	276.7	+14.8	37	218	
	15303	.663	61.8	262.5	+17.1	13	64	
	15305	.883	65.0	241.2	+21.1	62	379	294 c
	15306	.906	90.2	235.3	− 0.7	0	7	173 c
	15307	.976	76.7	223.4	+12.7	9	74	222 c
		.833	143.9					112
		.911	120.4					188
		.937	108.6					354
		.943	138.4					139
Dec.19			(+8.6)	(300.0)	(− 1.4)	(335)	(2305)	(2274)

Group 15303. Dec. 16 - 22. Return of Group 15265. A slowly-diminishing spot last seen on the central meridian.

Group 15304. Dec. 17 - 23. One or two small unstable spots. Although listed as a return of Group 15265, a revival of spot formation must obviously have taken place on the invisible hemisphere.

Group 15305. Dec. 18 - 29. A regular spot with a follower that grows into a small composite spot before dying out by December 27. Meanwhile, the leader becomes elongated and then divides into two regular spots of which the follower soon disappears.

Group 15306. Dec. 19 - 20. A tiny equatorial spot.

Group 15307. Dec. 19 - 31. A few small variable spots until December 27; on the next day fresh activity is producing a stream.

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
1947			°	°	°				1947			°	°	°			
353.291		.964	241.5					115			.943	60.4					246
C		.874	282.4					43			.948	76.5					209
		.864	236.3					51	Dec.21			(+7.7)	(273.3)	(- 1.7)	(161)	(1103)	(2769)
		.820	262.5					127									
		.816	246.7					81									
	15297	.979	253.6	4.9	-16.4	29	374	231 c	355.285		.983	261.0					277
	15308	.747	282.4	334.2	+ 8.1	7	28	93 c	C		.960	247.0					257
	15295	.768	293.4	334.1	+16.6	60	418	288 c			.931	260.8					182
	15299	.747	239.5	331.3	-23.4	10	61				.901	244.2					189
	15298	.409	337.5	296.5	+20.5	2	15				.880	237.6					119
	15304	.192	239.3	296.4	- 7.2	4	21			15295	.973	286.5	335.9	+15.5	18	161	313 c
	15302	.320	29.9	277.5	+14.5	26	192			15308	.963	279.2	334.2	+ 8.3	0	30	149 c
	15303	.513	51.9	262.1	+16.9	16	48			15311	.899	251.5	323.7	-17.4	6	39	146 c
	15305	.785	60.5	239.8	+21.6	66	558	219 c		15304	.558	258.2	293.9	- 8.0	4	26	
	15306	.781	91.3	235.7	- 2.0	2	6	33 c		15302	.399	315.6	277.3	+14.8	23	136	
	15307	.890	74.5	225.5	+12.9	29	147	193 c		15303	.335	358.9	261.0	+17.6	2	13	
	15309	.986	110.7	206.8	-20.7	0	23	112 c		15305	.525	41.5	238.8	+21.3	73	498	
		.854	111.5					108		15312	.592	130.3	231.1	-24.0	8	47	
		.925	105.6					95		15307	.612	65.6	225.8	+13.1	7	40	
		.951	115.3					83		15310	.870	115.8	202.4	-23.2	17	90	163 c
		.958	63.1					107		15313	.906	118.8	198.2	-26.6	12	66	141 c
Dec.20			(+8.1)	(286.9)	(- 1.6)	(251)	(1891)	(1979)		15314	.966	101.2	185.8	-11.2	4	19	163 c
											.804	56.6					105
											.886	58.2					245
354.318		.937	297.1					133			.886	76.6					134
C		.925	248.3					162			.927	67.8					110
		.922	262.5					239			.947	144.4					95
		.816	260.3					116			.959	110.8					164
	15295	.899	288.6	335.4	+15.9	41	333	356 c			.964	60.3					135
	15308	.880	280.1	334.1	+ 8.0	2	17	108 c	Dec.22			(+7.2)	(260.6)	(- 1.8)	(174)	(1165)	(3087)
	15299	.848	242.3	328.5	-24.1	4	35	268 c									
	15304	.426	256.6	297.9	- 7.2	2	10										
	15298	.525	315.1	296.5	+20.2	1	5		356.297		.953	240.3					204
	15302	.291	346.1	277.4	+14.7	19	157		C		.942	299.9					122
	15303	.380	30.8	261.6	+17.3	3	25				.851	254.6					158
	15305	.653	53.0	239.3	+21.7	72	430				.837	241.0					170
	15307	.750	70.3	226.9	+13.4	8	50	188 f			.799	231.3					129
	15309	.931	111.0	205.8	-20.1	6	28	76 c		15311	.973	252.8	323.6	-17.2	26	237	332 c
	15310	.951	115.7	202.6	-24.9	3	13	104 c		15304	.714	258.0	292.3	- 9.8	1	12	
		.746	113.0					78		15302	.564	299.6	277.6	+14.5	16	132	
		.867	114.5					156		15315	.294	169.9	244.2	-18.7	2	17	
		.868	79.7					135		15305	.412	19.4	238.9	+20.9	58	404	
		.918	99.7					195		15312	.463	145.0	230.5	-24.0	15	98	

Group 15308. Dec. 20 - 22. A pair of small spots.
Group 15309. Dec. 20 - 21. A single spot on December 20; a pair on December 21.
Group 15310. Dec. 21 - 29. A few small spots; only one remains after December 23.
Group 15311. Dec. 22 - 23. A pair of spots appearing near the west limb.
Group 15312. Dec. 22 - 30. Four days after the initial appearance of a stream of small spots, activity mounts, and the stream is resolved into a string of composite spots. The following components appear, however, to be declining as the group passes out of view.
Group 15313. Dec. 22 - 28. A small spot, with a few companions, appearing near the east limb and then rapidly dying out.
Group 15314. Dec. 22 - 23. A small spot.
Group 15315. Dec. 23 - 26. Intermittent. A small spot on December 23 and 24; a miniature stream on December 26.

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
1947			°	°	°				1947			°	°	°			
	15307	.446	54.9	225.4	+13.0	4	36				.853	248.9					395
	15310	.743	121.7	203.6	−24.3	13	74	154 c			.840	236.0					182
	15313	.813	123.3	197.4	−27.6	7	57	116 c			.829	259.9					101
	15314	.873	102.6	187.0	−11.9	2	15	124 c		15302	.861	288.5	278.1	+14.6	12	53	123 c
		.876	113.7					193		15305	.488	321.1	239.7	+20.2	22	167	
		.932	125.1					226		15312	.398	209.3	232.8	−22.3	15	168	
		.942	102.3					153		15307	.275	354.8	222.2	+13.6	1	8	
		.951	64.7					133		15310	.459	145.0	204.0	−24.1	3	21	
		.953	113.5					153		15313	.562	139.8	196.7	−27.3	4	19	
Dec.23			(+6.7)	(247.3)	(− 1.9)	(144)	(1082)	(2367)		15316	.700	119.6	179.9	−21.8	47	309	94 c
										15317	.901	103.8	156.9	−13.4	7	50	153 c
										15318	.947	78.8	150.4	+ 9.9	3	12	46 c
357.291		.982	298.6					80		15319	.960	104.2	147.2	−14.2	30	169	587 s
C		.935	240.9					145			.856	55.5					279
		.925	256.4					298			.908	120.1					207
		.911	247.5					275			.963	64.4					152
		.900	297.2					107	Dec.25			(+5.8)	(220.7)	(− 2.2)	(144)	(976)	(3418)
		.867	236.5					125									
		.843	259.7					144									
		.841	290.7					96									
		.799	247.5					259	359.305		.944	250.3					219
	15302	.726	292.4	277.9	+14.5	19	82	62 c	C		.932	259.7					99
	15315	.336	213.4	245.4	−18.2	1	2				.917	239.1					103
	15305	.393	348.1	239.1	+20.4	41	381				.838	294.8					104
	15312	.360	172.7	231.4	−22.9	15	90			15302	.948	286.3	277.6	+14.6	0	12	91 c
	15307	.323	30.8	224.4	+13.9	4	59			15315	.657	248.5	246.9	−15.7	10	51	
	15310	.599	130.3	204.2	−24.5	5	38			15305	.637	306.3	240.7	+20.1	15	136	
	15313	.698	129.3	196.7	−27.8	6	31			15312	.530	227.2	232.6	−23.1	48	345	
	15316	.861	114.7	176.8	−22.2	31	100	158 c		15320	.389	229.5	225.6	−16.7	3	18	
	15317	.977	104.1	156.6	−14.2	5	28	252 c		15307	.385	315.9	223.6	+13.8	0	8	
		.795	120.1					128		15310	.373	170.9	204.0	−23.8	1	5	
		.801	102.1					173		15313	.467	157.3	196.0	−27.6	2	10	
		.821	51.2					136		15316	.559	128.7	179.7	−22.4	65	517	
		.941	60.5					258		15317	.794	105.5	156.0	−13.6	6	35	79 c
		.960	117.3					257		15318	.845	77.9	151.2	+ 8.9	0	6	29 c
Dec.24			(+6.3)	(234.2)	(− 2.1)	(127)	(811)	(2953)		15319	.882	104.7	146.4	−14.0	18	220	80 c
										15321	.953	106.9	135.7	−16.7	7	37	66 c
											.796	126.5					51
358.315		.979	255.8					199			.839	50.0					47
C		.957	291.9					160			.885	112.6					111
		.953	262.0					186			.901	61.5					48
		.949	239.6					130			.967	99.0					120
		.932	251.4					424	Dec.26			(+5.3)	(207.7)	(− 2.3)	(175)	(1400)	(1247)

Group 15316. Dec.24-1948 Jan. 4. A stream seen from its origin, in which the leader, a nearly regular spot, almost divides into two and then coalesces again. The following part of the group remains a collection of small spots, slowly diminishing.

Group 15317. Dec.24-1948 Jan. 5. A nondescript stream of small spots.

Group 15318. Dec.25-1948 Jan. 5. A collection of small changing spots of which only two remain by January 4.

Group 15319. Dec.25-1948 Jan. 6. Return of Group 15279. A stable regular spot with occasional companions. The umbra is crossed by a bright "bridge" on December 31.

Group 15320. Dec. 26 - 28. A pair of small spots on December 26; a single spot on the other two days.

Group 15321. Dec.26-1948 Jan. 6. A small stream of normal type developing from two small spots near the east limb. The leader becomes a regular spot and alone remains at the west limb.

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
1947			°	°	°			
360.295		.981	252.6					156
C		.975	261.0					161
		.974	282.8					204
		.966	241.4					198
		.939	290.8					180
		.910	248.0					124
		.811	252.2					115
	15305	.785	298.0	241.9	+19.9	18	102	117 c
	15312	.676	237.2	232.7	−23.3	66	420	
	15320	.558	244.1	226.0	−16.1	2	9	
	15307	.559	298.2	224.9	+13.2	6	44	
	15310	.393	198.5	202.4	−24.1	1	14	
	15313	.423	182.4	195.7	−27.3	2	15	
	15316	.428	144.2	178.9	−22.5	123	730	
	1261c	.630	42.5	166.6	+25.3	0	5	
	15317	.645	108.2	155.7	−13.5	9	58	
	15318	.708	72.6	151.4	+10.4	3	15	
	15319	.762	107.0	146.0	−14.4	40	269	72 c
	15321	.852	109.0	137.2	−17.3	42	261	181 c
		.792	116.0					221
		.887	98.6					289
		.951	97.1					250
		.958	109.1					286
		.965	57.4					177
Dec.27			(+4.8)	(194.6)	(− 2.4)	(312)	(1942)	(2731)
361.309		.930	223.9					182
C		.930	255.8					267
		.806	267.9					79
		.799	301.3					95
	15305	.897	293.7	241.9	+19.9	13	82	302 *f*
	15312	.811	243.7	233.1	−22.6	76	513	283 c
	15320	.726	250.1	226.4	−16.1	0	3	
	15307	.720	290.8	224.8	+12.9	55	251	188 c
	15310	.482	218.8	200.6	−24.5	0	2	
	15313	.480	208.1	196.0	−27.5	2	9	
	15316	.348	173.2	178.7	−22.8	119	756	
	15317	.456	115.0	156.2	−13.5	11	63	
	15318	.538	64.3	151.8	+11.2	22	136	
	15319	.600	110.5	146.0	−14.2	38	249	
	15321	.715	112.4	137.6	−17.6	35	240	
		.754	100.5					174
		.841	111.9					134
		.857	98.2					279
		.940	111.9					332
		.952	73.1					167

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbrae	AREA Whole Spots	AREA Faculae
1947			°	°	°			
		.959	99.7					289
Dec.28			(+4.3)	(181.3)	(− 2.6)	(371)	(2304)	(2771)
362.475		.985	255.3					121
G		.909	255.8					102
		.867	297.5					97
		.763	241.3					125
		.752	297.6					82
	15305	.980	291.3	242.3	+20.2	22	142	261 *f*
	15312	.930	246.4	233.4	−22.9	86	676	505 c
	15307	.879	286.1	225.6	+12.7	78	555	306 c
	15310	.639	233.3	200.1	−24.6	3	17	
	15316	.392	209.5	177.9	−22.5	119	699	
	15317	.264	135.1	154.9	−13.4	19	204	
	15318	.338	44.4	152.0	+11.3	30	197	
	15319	.384	121.9	146.3	−14.2	52	262	
	15321	.529	120.3	137.4	−17.8	47	258	
	15322	.842	70.5	111.0	+14.7	4	38	60 c
	1261d	.863	67.8	109.2	+17.5	2	11	63 c
		.831	111.3					86
		.842	101.1					99
		.937	109.0					183
		.939	76.9					217
Dec.29			(+3.7)	(165.9)	(− 2.7)	(462)	(3059)	(2307)
363.288		.977	293.0					288
C		.954	253.5					239
		.885	299.5					144
		.873	248.4					159
		.815	240.6					126
		.815	306.4					126
	15312	.976	246.5	232.4	−23.5	47	530	319 c
	15307	.946	284.4	224.8	+12.7	68	540	334 c
	15316	.496	225.3	177.6	−22.9	116	699	
	15317	.176	180.8	155.4	−12.9	14	151	
	15318	.254	14.6	151.5	+11.4	19	141	
	15319	.253	143.6	146.3	−14.4	55	270	
	15321	.391	133.2	137.8	−18.1	44	310	
	15322	.719	65.6	112.6	+15.2	1	14	77 *f*
		.874	70.6					169
		.879	80.2					260
		.918	117.8					234
		.970	75.9					273
Dec.30			(+3.4)	(155.2)	(− 2.8)	(364)	(2655)	(2748)

Group 15322. Dec.29-1948 Jan. 8. A cluster reaching a maximum by January 3 and declining rapidly to a single small spot at the west limb.

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
1947			°	°	°				1947			°	°	°			
364.299		.945	249.1					220		15318	.298	324.8	151.9	+11.2	13	60	
C		.933	274.9					171		15319	.211	201.1	146.4	-14.2	45	277	
		.930	264.4					211		15323	.220	175.5	140.9	-15.5	10	71	
		.924	298.3					295		15321	.276	166.8	138.1	-18.4	49	321	
		.890	256.3					102		15322	.582	59.2	110.9	+14.8	5	32	
		.881	305.8					131		15324	.959	96.3	68.4	- 6.9	10	77	190 *f*
		.872	240.5					210		15325	.971	83.1	66.4	+ 6.0	8	82	130 *c*
		.868	284.9					104			.871	73.3					200
	15307	.986	283.5	221.1	+12.8	44	254	293 *c*			.970	74.0					190
	15316	.638	236.9	177.2	-22.7	103	607		Dec.31			(+2.9)	(141.9)	(- 2.9)	(303)	(1888)	(2447)
	15317	.301	230.2	155.6	-13.9	16	107										

Group 15323. Dec.31-1948 Jan. 4. A few spots ϕ Group 15321.
Group 15324. Dec.31-1948 Jan. 4. A small spot.
Group 15325. Dec.31-1948 Jan. 9. A spot slowly diminishing to a speck.

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ROYAL OBSERVATORY, GREENWICH.

General Catalogue of Groups of Sunspots

For the Year

1947

GREENWICH PHOTO-HELIOGRAPHIC RESULTS, 1947

GENERAL CATALOGUE OF GROUPS OF SUNSPOTS FOR THE YEAR 1947.

Groups of sunspots, lasting for two or more days, are numbered in the *first* column in continuation of the group-numbers given in 1946 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 p. C 117–118.

The *second* column gives the corresponding Mount Wilson group number, as identified from the bi-monthly summaries of the Mount Wilson magnetic observations of sunspots published in *Publications of the Astronomical Society of the Pacific*.

The *third* column gives the U.T. of the central meridian passage of each group as deduced from its mean longitude (given in the *eleventh* 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 *fourth* 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 *sixth* and *eighth* 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 *ninth* and *tenth* columns are corrected for the effect of foreshortening and are expressed in millionths of the Sun's visible hemisphere.

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

The *thirteenth* 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 latitudes 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
G	Mt. W			Date	Longitude from Central Meridian	Date	Longitude from Central Meridian	Umbræ	Whole Spots	Longitude	Latitude	
		1946-47		1947	°	1947	°			°	°	
14772	8344	1947 Jan. 7.96	12	Jan. 1	-84	Jan. 12	+58	32	207	178.5	-22.5	I 1431 (2)
73	45	1946 Dec. 30.8	3	3	+49	5	+72	2	11	286.1	+16.1	
74	46	31.3	4	3	+42	6	+77	3	20	279.0	-25.3	
14775	8347	1947 Jan. 10.1	5	5	-60	9	-10	9	56	150.3	+39.8	
76	60 } 62 }	12.94	13	6	-79	18	+74	58	459	113.0	-20.2	II
77	51	12.67	13	6	-83	18	+77	93	445	116.6	- 5.2	I 1430 (2)
78	54	8.48	2	8	- 3	9	+14	1	10	171.8	- 9.2	
79	53	14.25	13	8	-76	20	+81	72	434	95.7	+22.6	II
14780	8356	15.80	12	9	-82	20	+61	16	89	75.2	+12.4	II
81	55	13.30	10	10	-40	19	+77	82	605	108.2	-10.7	II
82	57	15.87	12	10	-76	21	+73	9	46	74.4	-25.0	II
83	58	17.76	12	12	-71	23	+75	66	393	49.4	+11.4	I 1427 (3)
84	59	19.37	13	13	-79	25	+80	78	508	28.4	-15.7	II
14785	8362	18.0	2	14	-47	15	-35	2	10	46.8	-12.8	
86	60	14.2	2	15	+13	16	+29	2	13	95.8	-11.9	
87	65	15.77	7	15	-11	21	+78	29	158	75.7	-12.9	II
88	61	16.8	2	15	-21	16	- 5	7	47	61.8	+20.0	
89	63	19.42	8	15	-59	22	+42	13	58	27.6	-20.0	II
14790	8364	20.66	12	15	-75	26	+78	78	521	11.3	-12.5	II
91	66	21.64	12	15	-80	26	+60	27	156	358.5	+26.0	I 1432 (2)
92	67	21.91	12	16	-72	27	+74	40	232	354.8	+13.1	I 1434 (1)
93	69 pt.	23.21	7	17	-75	23	+ 2	17	66	337.8	-30.1	II
94	69 pt.	24.18	8	17	-86	24	+ 1	10	64	325.0	-34.9	II
14795	8370	22.48	11	18	-57	28	+77	65	410	347.4	+19.2	I 1435 (1)
96	71	24.6	3/4	18	-81	21	-42	2	8	318.9	+16.2	I 1433 (2)
97	..	21.36	4	20	-11	23	+26	3	25	2.1	-10.8	
98	74 } 78 }	22.42	5/7	21	-14	27	+70	4	21	348.1	+ 9.0	II
99	..	26.9	6	21	-72	26	- 8	14	55	289.5	+19.5	II
14800	8375	23.87	8	22	-20	29	+74	49	311	329.1	-16.1	II
01	73	27.6	6	22	-67	27	0	11	56	280.6	+20.6	II
02	77	27.01	11	23	-48	Feb. 2	+81	86	647	287.1	-20.3	I 1436 (1)
03	69 pt.	23.8	3	24	+10	Jan. 26	+32	2	19	330.5	-31.5	
04	80	31.60	5	27	-54	31	0	5	22	227.3	+10.0	
14805	8381	Feb. 3.9	5	29	-75	Feb. 2	-15	13	74	183.7	-11.6	
06	82	5.10	13	30	-75	11	+80	133	848	168.1	-15.6	I 1437 (1)
07	83	Jan. 29.9	5	Feb. 1	+34	5	+85	18	146	250.2	-12.0	I 1438 (1)
08	85	Feb. 6.23	12	1	-64	12	+81	55	359	153.2	-16.2	II
09	86	8.77	13	3	-73	15	+84	50	272	119.7	- 4.4	I 1430 (3)
14810	8390	3.4	5	4	+10	8	+66	8	50	190.4	-27.8	
11	84	5.9	2	4	-21	5	- 9	0	7	156.9	-29.0	
12	88	9.8	2	5	-60	6	-47	8	26	105.6	+27.9	
13	92	11.34	14	5	-74	18	+78	291	2131	85.8	-21.1	I 1439 (1)
14	91	10.27	7	6	-50	12	+27	4	21	100.0	-23.7	II
14815	8393	12.10	8	7	-68	14	+35	10	72	75.8	- 3.5	II
16	94	9.45	5	8	-13	12	+36	4	31	110.7	-19.8	
17	97	13.8	2/4	8	-73	11	-34	0	3	53.0	-14.0	
18	96	13.89	13	8	-73	20	+83	21	103	52.3	+ 9.4	I 1427 (4)
19	95	11.83	6	9	-34	14	+34	14	80	79.5	+ 3.6	II

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
G	Mt. W			Date	Longitude from Central Meridian	Date	Longitude from Central Meridian	Umbræ	Whole Spots	Longitude	Latitude	
		1947		1947	°	1947	°			°	°	
14820	8400	Feb. 15.96	12	Feb. 10	-76	Feb. 21	+70	16	98	25.1	-12.1	II
21	8398	11.28	3	11	- 2	13	+27	3	14	86.7	+15.7	
22	8401	17.17	13	11	-78	23	+87	81	560	9.2	-17.5	I 1440 (1)
23	03	16.02	9/10	12	-47	21	+67	11	61	24.2	+16.9	II
24	04	17.93	8	12	-74	19	+17	8	43	359.1	+16.6	I 1434 (2)
14825	8402	15.4	3	13	-28	15	0	9	42	32.5	+10.7	
26	05	19.02	4	14	-61	17	-23	2	15	344.8	+19.6	I 1435 (2)
27	06	19.5	3	14	-68	16	-41	3	17	339.0	+19.1	
28	8399	12.0	2	15	+43	16	+57	2	22	77.3	+23.0	
29	8410	13.3	3	16	+40	18	+65	21	107	59.8	-14.3	
14830	..	16.1	5	17	+15	21	+70	14	89	23.4	-17.1	
31	8411	22.70	13	17	-74	Mar. 1	+82	84	682	296.3	-17.6	I 1436 (2)
32	15	24.01	9	18	-74	Feb. 26	+32	12	78	279.0	+20.4	II
33	14	16.9	4	19	+31	22	+72	2	22	12.4	+11.3	
34	16	25.42	13	19	-76	Mar. 3	+82	36	215	260.4	-11.1	I 1438 (2)
14835	8417	16.4	2	20	+51	Feb. 21	+64	2	13	19.2	+24.4	
36	19pt.	26.40	6	21	-65	26	+ 1	8	43	247.6	+25.2	II
37	19pt.	27.2	2	23	-50	24	-37	1	6	236.8	+27.7	
38	21, 23, 24	28.35	12	23	-66	Mar. 6	+77	96	697	221.9	+20.6	I 1441 (1)
39	22	24.4	5	24	+ 1	Feb. 28	+47	14	71	273.4	-37.9	
14840	8425	Mar. 2.42	14	24	-81	Mar. 9	+85	51	334	194.5	-11.4	I 1442 (1)
41	27	Feb. 25.32	6	25	- 1	2	+67	8	47	261.8	+14.5	II
42	28	Mar. 3.32	13	25	-77	9	+81	26	147	182.8	- 7.2	II
43	26	Feb. 24.7	5	26	+19	2	+79	18	107	269.8	+15.8	
44	32	27.7	2	26	-16	Feb. 27	- 1	3	16	230.6	+28.6	
14845	8433	Mar. 4.47	13	26	-79	Mar. 10	+76	54	267	167.6	-15.4	I 1437 (2)
46	30	Feb. 25.7	4	27	+25	2	+63	6	38	256.8	+21.6	
47	..	Mar. 2.9	2	27	-43	Feb. 28	-34	4	20	188.3	-11.4	
48	34	4.60	10	27	-67	Mar. 8	+51	26	141	165.9	-10.6	II
49	35	8.02	13	Mar. 2	-73	14	+84	29	178	120.8	- 4.8	I 1430 (4)
14850	8436	9.18	13	3	-74	15	+78	43	270	105.6	-19.1	II
51	38	10.24	15	3	-86	17	+87	581	3637	91.6	-23.1	I 1439 (2)
52	39	3.2	5	4	+15	8	+68	16	111	184.6	+15.7	
53	37	3.6	5/6	4	+11	9	+73	6	30	178.6	-25.7	
54	40	5.72	4	4	-18	7	+21	2	12	151.1	- 7.5	
14855	8441	10.60	13	4	-81	16	+78	138	1059	86.8	+13.5	I 1443 (1)
56	42	10.88	11	5	-74	15	+60	23	138	83.1	-14.2	II
57	45	12.73	8	7	-71	14	+22	12	60	58.8	-10.5	II
58	46	13.14	13	7	-76	19	+83	16	97	53.3	-14.0	II
59	49	16.10	13	10	-76	22	+80	14	83	14.4	-18.4	I 1440 (2)
14860	8447	11.78	6	11	- 8	16	+61	14	70	71.2	-22.9	II
61	50	16.6	3	11	-70	13	-42	3	15	8.0	+15.5	
62	54	20.65	10/12	15	-68	26	+79	36	234	316.4	-15.8	I 1444 (1)
63	55	21.42	13	15	-80	27	+84	33	182	304.2	-14.3	II
64	56	21.8	4	16	-72	19	-33	5	26	299.4	-18.8	I 1436 (3)
14865	8457	23.77	9	17	-84	25	+22	8	39	273.2	-11.5	II
66	58	23.66	9/10	20	-45	29	+77	15	80	274.7	+16.8	II
67	..	25.8	2	20	-70	21	-55	4	18	246.8	-20.4	
68	59	22.31	2	21	- 9	22	0	2	20	292.4	-18.2	
69	62	27.5	4	21	-76	24	-41	9	53	224.5	+14.4	

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
G	Mt. W			Date	Longitude from Central Meridian	Date	Longitude from Central Meridian	Umbræ	Whole Spots	Longitude	Latitude	
		1947		1947	°	1947	°			°	°	
14870	8463	Mar. 27.81	13	Mar. 21	−80	Apr. 2	+72	31	174	219.9	+19.2	I 1441 (2)
71	64	19.5	3	23	+52	Mar. 25	+80	3	20	329.8	−21.1	
72	68	25.27	7	23	−23	29	+52	6	32	253.4	−11.4	II
73	61	26.28	10	23	−38	Apr. 1	+82	19	110	240.1	−21.0	II
74	66	29.19	13	23	−76	4	+81	101	642	201.7	−10.2	I 1442 (2)
14875	8467	22.0	3	24	+30	Mar. 26	+57	7	29	296.3	− 6.9	
76	69	23.2	3	24	+13	26	+42	2	7	280.5	+20.7	
77	70	29.88	11	25	−61	Apr. 4	+74	33	205	192.7	+13.9	II
78	71	25.0	5	26	+15	Mar. 30	+73	9	69	257.0	+15.5	
79	72	31.18	11	27	−45	Apr. 6	+82	57	390	175.5	−21.6	I 1445 (1)
14880	8473pt.	Apr. 1.65	12	27	−65	7	+75	29	199	156.0	+12.9	II
81	73pt.	2.0	5	28	−59	1	− 7	8	49	151.2	+10.2	
82	74	2.8	4	28	−72	Mar. 31	−31	10	64	140.3	−26.6	
83	76	4.2	5	29	−78	Apr. 2	−22	4	25	123.1	− 5.1	I 1430 (5)
84	77	Mar. 29.7	2	30	+10	Mar. 31	+22	5	30	195.5	+22.7	
14885	8475	Apr. 2.31	5	30	−36	Apr. 3	+12	8	37	147.3	−38.1	
86	78	7.18	16	30	−87	14	+85	736	5520	83.1	−24.4	I 1439 (3)
87	..	Mar. 30.4	4	Apr. 1	+25	4	+64	1	11	185.1	+18.6	
88	79	Apr. 5.8	2	1	−59	2	−43	2	16	102.0	− 8.5	
89	80	6.5	3	1	−68	3	−40	0	7	91.8	+14.2	I 1443 (2)
14890	8482	3.21	7	2	− 8	8	+70	18	102	135.5	−26.7	II
91	83	8.14	12	2	−76	13	+72	10	74	70.4	−14.4	II
92	84	3.3	7	3	+ 3	9	+78	97	969	134.5	−16.5	I 1446 (1)
93	85 } 84 }	9.54	9/11	4	−72	14	+65	6	35	51.9	+10.9	II
94	86	10.86	12	5	−72	16	+72	11	64	34.6	+14.8	II
14895	8487	4.2	5	6	+26	10	+81	16	116	122.1	− 3.8	
96	88	5.6	6	6	+ 9	11	+73	6	40	104.2	+25.1	II
97	89	11.11	9	7	−50	15	+57	10	60	31.3	−15.4	II
98	91	5.2	4	8	+42	11	+79	5	36	108.8	−12.6	
99	90	6.3	5	8	+28	12	+81	30	177	95.2	− 5.9	
14900	8493	6.5	3	10	+51	12	+76	4	38	92.1	+16.9	
01	95	12.12	5	10	−26	14	+31	2	15	17.9	+10.3	
02	96	16.17	10	10	−77	19	+41	17	84	324.4	−16.4	I 1444 (2)
03	99	14.69	7/8	13	−21	20	+75	7	34	344.0	−10.5	II
04	98	18.2	3	13	−64	15	−36	1	6	297.7	+20.3	
14905	8500	19.82	12	14	−71	25	+73	42	226	276.2	−19.2	II
06	01pt.	20.63	10/11	15	−67	25	+61	8	39	265.6	+15.6	II
07	01pt.	20.9	4	16	−59	19	−21	4	19	262.0	+20. 0	
08	04	14.7	3	18	+50	20	+75	5	31	343.7	−19.7	
09	05	21.66	6/10	18	−45	27	+77	22	162	252.0	+10.4	II
14910	8506	24.58	12	19	−69	30	+77	11	48	213.4	+20.2	I 1441 (3)
11	07	25.4	4	19	−80	22	−39	12	38	202.9	−10.9	I 1442 (3)
12	08	25.77	10	20	−70	29	+46	13	61	197.6	+22.6	II
13	09	26.4	2	21	−66	22	−52	2	14	189.9	−22.1	
14	11	27.70	9	21	−82	29	+20	10	37	172.2	−21.1	I 1445 (2)
14915	8512	28.45	13	22	−78	May 4	+81	82	471	162.2	−10.1	II
16	10	26.70	10	23	−50	2	+77	86	489	185.4	+23.8	I 1447 (1)
17	13	29.09	13	23	−77	5	+86	30	166	153.8	−17.0	II
18	16	29.76	11	23	−82	3	+46	34	263	144.9	−15.9	I 1446 (2)
19	18	30.9	6	24	−85	Apr. 29	−21	17	83	130.4	− 6.9	II

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
G	Mt. W			Date	Longitude from Central Meridian	Date	Longitude from Central Meridian	Umbræ	Whole Spots	Longitude	Latitude	
		1947		1947	°	1947	°			°	°	
14920	8514	Apr. 21.9	3	Apr. 25	+46	Apr. 27	+71	19	145	248.8	+12.8	
21	21	27.17	9	25	-24	May 3	+83	62	328	179.2	+10.5	I 1448 (1)
22	..	28.0	3	25	-36	Apr. 27	-10	1	8	167.9	-17.9	
23	17	30.4	5	25	-67	29	-14	5	17	136.3	+31.8	
24	15	26.46	7	26	- 3	May 2	+78	22	113	188.5	+18.0	II
14925	8522	May 1.74	12	26	-72	7	+75	23	134	118.8	-10.1	II
26	26pt.	3.90	10	27	-79	6	+28	30	139	90.2	-23.1	I 1439 (4)
27	28	Apr. 26.8	2	28	+23	Apr. 29	+32	4	16	183.4	-11.6	
28	30	30.86	5	28	-27	May 2	+18	14	51	130.4	-15.3	
29	24	May 2.4	4	28	-52	1	- 9	3	13	110.6	- 4.2	
14930	8525	2.68	11	28	-54	8	+74	18	75	106.3	+20.8	II
31	32	2.66	6/10	29	-44	8	+72	4	30	106.5	-22.9	II
32	26pt.	3.74	6	29	-58	4	+ 6	4	21	92.4	-19.0	II
33	27	5.59	13	29	-80	11	+74	74	522	67.9	-24.8	I 1439 (4)
34	31	2.25	7	30	-22	6	+50	12	50	112.0	-21.2	II
14935	8534	6.6	2	May 1	-68	2	-56	2	10	54.4	+13.4	
36	35	7.61	13	1	-80	13	+79	61	382	41.2	-13.8	I 1449 (1)
37	37	2.2	6	3	+16	8	+78	97	577	113.2	- 3.6	II
38	40	6.30	10	3	-37	12	+79	105	652	58.5	+17.7	I 1450 (1)
39	38	8.7	3	3	-70	5	-44	7	31	26.6	+ 7.0	
14940	..	5.56	4	4	-18	7	+24	3	23	68.2	-31.2	
41	8543	10.96	12	5	-74	16	+73	64	361	356.9	-12.2	II
42	44	11.20	11	6	-73	16	+72	53	319	353.6	+11.3	I 1451 (1)
43	45	10.33	9	7	-43	15	+70	19	118	5.2	-16.2	II
44	46	13.1	5	7	-78	11	-21	5	25	329.1	+ 8.0	
14945	8547	14.66	14	8	-78	21	+82	108	639	307.9	+19.1	I 1452 (1)
46	..	4.1	2	9	+69	10	+82	0	20	87.4	-17.8	
47	48	15.87	13	9	-82	21	+70	36	203	291.9	+21.5	II
48	50	7.7	3	12	+62	14	+86	31	226	39.9	-18.0	I 1453 (1)
49	55	17.5	4	12	-67	15	-28	3	13	270.5	-11.4	
14950	8556	17.73	12	12	-71	23	+74	23	138	267.3	+10.2	II
51	53	16.59	5	13	-44	17	+11	8	37	282.4	+19.8	
52	54	16.6	3	13	-44	15	-17	2	12	281.6	-12.9	
53	57	18.7	5	13	-71	17	-19	3	11	254.3	-24.9	
54	..	19.3	2	15	-51	16	-40	0	8	246.8	+17.4	
14955	$85\frac{80}{77}\}$	20.73	11/12	15	-76	26	+75	23	130	227.7	+22.5	II
56	58	12.3	2	16	+53	17	+68	26	126	339.3	+ 7.7	
57	64	21.05	12	16	-60	27	+78	93	631	223.4	-28.5	I 1454 (1)
58	65	21.4	5	16	-68	20	-17	4	13	218.3	-16.8	
59	69	14.3	4	17	+40	20	+75	22	122	312.4	-17.5	
14960	8566	21.63	10	17	-62	26	+62	14	70	215.7	+19.5	II
61	67	22.3	5	17	-67	21	-11	6	20	206.9	+14.8	
62	68	23.19	13	17	-77	29	+78	139	992	195.1	+17.3	II
63	71pt.	23.88	12	18	-72	29	+72	38	229	186.0	+23.7	I 1447 (2)
64	71pt.	24.03	9	18	-76	26	+30	30	156	183.9	+20.3	I 1447 (2)
14965	8572	24.07	13	18	-76	30	+82	87	524	183.5	-15.8	II
66	78	24.37	13	18	-78	30	+78	30	171	179.5	+ 9.8	I 1448 (2)
67	75	20.04	7	19	-12	25	+72	12	59	236.8	- 8.7	II
68	82	25.72	14	19	-82	June 1	+83	92	575	161.6	-15.9	II
69	80	19.96	7	20	- 1	May 26	+83	8	50	237.8	+12.7	II

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
G	Mt. W			Date	Longitude from Central Meridian	Date	Longitude from Central Meridian	Umbræ	Whole Spots	Longitude	Latitude	
		1947		1947	°	1947	°			°	°	
14970	8581	May 25.31	12	May 20	-68	May 31	+79	82	615	167.1	+21.0	I 1455 (1)
71	83	20.7	6	21	+ 6	26	+77	20	111	228.4	+ 6.6	II
72	85	22.66	8	21	-20	28	+77	21	104	202.0	-12.4	I 1456 (1)
73	84	26.40	4/8	21	-63	28	+25	1	6	152.6	-31.2	
74	86	26.26	11	21	-66	31	+72	42	251	154.4	- 9.2	II
14975	8587	26.10	2/7	22	-48	28	+29	1	3	156.6	-24.1	
76	88	28.05	6	23	-63	28	+ 1	8	34	130.8	+29.6	II
77	90	25.9	2	24	-21	25	- 8	1	10	159.2	-20.3	
78	91	28.73	11	24	-61	June 3	+75	46	245	121.8	-22.3	II
79	92	29.56	11	24	-66	3	+64	10	52	110.8	-28.6	II
14980	8594	31.58	13	25	-73	6	+72	20	102	84.0	-42.2	II
81	..	27.19	2	26	-11	May 27	+ 2	16	38	142.2	+29.4	
82	99pt.	30.61	11	26	-59	June 5	+80	44	226	97.0	-19.3	II
83	93	30.54	9	28	-28	5	+78	30	187	97.8	-22.0	II
84	8602	June 2.38	7	28	-68	3	+14	3	23	60.2	+15.6	I 1450 (2)
14985	8601	2.69	7	28	-71	3	+ 8	13	90	56.2	+20.6	I 1450 (2)
86	06	3.54	13	28	-79	9	+71	36	236	45.0	-21.0	I 1453 (2)
87	05	3.49	8	28	-79	4	+ 8	37	222	45.6	-12.6	I 1449 (2)
88	03	3.08	10	29	-60	7	+57	14	64	51.0	-32.5	II
89	8598	May 28.84	4	31	+33	3	+73	24	118	120.3	- 3.0	
14990	8600	31.0	4	31	+ 3	3	+48	6	26	91.8	+17.4	
91	04	June 3.26	7	31	-38	6	+39	5	58	48.6	-17.6	II
92	..	May 27.8	2	June 1	+60	2	+74	25	130	133.7	+14.4	I 1457 (1)
93	..	28.0	2/3	1	+58	3	+82	4	12	131.1	+22.6	
94	07 16	June 6.96	8	1	-73	8	+20	16	99	359.6	+10.3	I 1451 (2)
14995	8611	9.32	13	3	-80	15	+82	84	663	328.4	+23.0	I 1458 (1)
96	12	10.76	12	4	-80	15	+60	34	249	309.4	+21.8	I 1452 (2)
97	14	2.6	3	5	+37	7	+63	11	46	57.1	+20.3	
98	13	10.39	9	6	-60	14	+53	18	96	314.3	+14.7	II
99	19	5.5	2/4	7	+25	10	+65	0	4	19.4	+21.3	
15000	8617	7.4	5/6	7	+ 2	12	+64	5	25	354.0	+21.6	
01	20	9.68	4	7	-32	10	+ 9	2	9	323.6	-15.4	
02	24	15.5	3	10	-68	12	-42	1	9	246.6	-30.2	
03	25	15.6	2	10	-70	11	-56	0	8	245.6	-23.7	
04	22	13.6	2	11	-30	12	-18	2	12	271.4	+12.5	
15005	8626	17.43	12	12	-68	23	+78	25	178	221.1	+ 9.1	I 1459 (1)
06	34	18.16	10/11	13	-61	23	+68	9	44	211.4	-13.4	II
07	27	18.2	2/3	13	-62	15	-38	1	7	211.3	-29.8	I 1454 (2)
08	30	18.8	4	13	-72	16	-32	3	13	202.7	-12.5	I 1456 (2)
09	35	20.28	13	14	-79	26	+81	12	58	183.3	+22.7	I 1447 (3)
15010	8631	13.7	5	15	+23	19	+76	22	147	271.0	-16.2	I 1460 (1)
11	32	14.7	2	15	+10	16	+21	6	30	256.6	+ 5.4	
12	36	20.72	7	15	-71	21	+ 8	3	13	177.5	+ 9.3	I 1448 (3)
13	37pt.	21.12	11	15	-76	25	+57	60	453	172.2	-14.2	II
14	38	21.54	13	15	-81	27	+75	81	476	166.6	+20.6	I 1455 (2)
15015	8639	21.76	11	15	-84	25	+51	11	70	163.7	-19.7	II
16	29	13.9	4	16	+29	19	+75	36	199	267.4	-10.8	I 1461 (1)
17	43	21.68	12	16	-76	27	+81	74	453	164.8	+11.8	I 1462 (1)
18	46	17.44	7	17	- 1	23	+77	34	215	220.9	-20.7	II
19	48 59	23.19	4/8	17	-78	24	+18	2	14	144.9	-23.0	

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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
G	Mt. W			Date	Longitude from Central Meridian	Date	Longitude from Central Meridian	Umbræ	Whole Spots	Longitude	Latitude	
		1947		1947	°	1947	°			°	°	
15020	8650	June 16.3	5	June 18	+27	June 22	+79	24	134	236.1	- 7.6	
21	51	16.6	5	18	+21	22	+78	41	400	232.0	+ 7.7	
22	56	22.59	7/8	18	-57	25	+38	6	33	152.8	-15.6	II
23	49 61	23.95	7/9	18	-71	26	+31	7	36	134.7	+14.6	I 1457 (2)
24	53	19.80	7	19	- 6	25	+75	15	88	189.7	-10.4	II
15025	8654	20.49	3	19	-15	21	+11	1	11	180.6	-18.9	
26	37pt.	21.2	4	21	+ 1	24	+43	10	42	171.2	-18.7	
27	47	18.3	3	22	+54	24	+80	22	94	209.6	+13.0	
28	60	20.9	4	22	+18	25	+63	10	56	175.4	-10.1	
29	62	24.64	8	23	-15	30	+70	50	279	125.6	+26.4	II
15030	8663	28.2	4	23	-62	26	-26	5	28	77.8	+10.0	
31	66	30.49	8/9	24	-78	July 2	+22	3	23	48.2	-20.5	II
32	67 86	28.75	7/10	25	-42	4	+70	5	37	71.2	-28.8	II
33	68	July 2.00	14	25	-87	8	+80	72	456	28.2	+15.4	II
34	65	June 26.0	4	26	+ 6	June 29	+44	3	14	107.2	-18.3	
15035	8669	29.27	5	26	-37	30	+10	4	22	64.4	- 8.0	
36	70	30.12	7	27	-40	July 3	+44	4	25	53.1	+12.9	II
37	73	28.1	5	28	+ 5	2	+55	6	38	80.3	+29.9	
38	71	July 3.92	7	28	-71	4	+ 2	8	44	2.8	+19.2	II
39	75pt.	4.38	8	28	-79	5	+ 9	23	132	356.7	-25.8	II
15040	8672	June 29.67	3	29	- 4	1	+23	5	29	59.0	-16.9	
41	75pt.	July 4.25	12	29	-60	10	+76	36	215	358.4	-28.3	II
42	76	4.6	2	29	-67	June 30	-59	2	18	354.0	-18.0	
43	77 8701	6.17	10	30	-78	July 9	+42	8	40	333.0	+21.3	I 1458 (2)
44	8675pt.	4.90	9	July 1	-47	9	+58	7	45	349.8	-31.3	II
15045	8685	5.4	2	1	-54	2	-41	4	18	342.7	+13.8	
46	83	2.2	4	2	+ 4	5	+40	8	61	25.7	-40.0	
47	89	8.79	10	2	-84	11	+32	16	92	298.3	+16.6	II
48	91 8710	9.61	9/13	3	-81	15	+73	5	31	287.5	+19.2	II
49	8692	6.52	8	4	-32	11	+66	11	61	328.4	-20.2	II
15050	8693	10.41	13	4	-80	16	+78	56	311	276.8	-12.9	I 1461 (2)
51	..	10.65	9	5	-74	13	+41	8	57	273.7	-17.5	I 1460 (2)
52	94	5.2	4	7	+28	10	+68	8	40	345.8	-18.8	
53	95	11.08	7	7	-49	13	+32	13	74	268.0	-10.0	II
54	96	13.05	9	7	-75	15	+30	10	45	242.0	+10.1	II
15055	8698	14.36	7	8	-80	14	+ 2	5	26	224.6	-12.4	II
56	99	14.06	8	8	-83	15	+19	8	57	228.6	+ 8.3	I 1459 (2)
57	8702	8.0	2	9	+18	10	+32	4	14	309.0	-26.7	
58	04	11.8	2	9	-32	10	-18	6	26	258.8	-17.5	
59	00	15.40	13	9	-74	21	+74	90	521	210.9	-30.4	I 1463 (1)
15060	8705	15.89	13	10	-73	22	+85	30	206	204.3	+21.5	II
61	..	16.96	14	10	-82	23	+81	35	241	190.2	+28.7	II
62	06	17.80	13	12	-70	24	+82	100	836	179.1	+11.4	I 1464 (1)
63	07	18.15	13	12	-78	24	+83	152	722	174.5	+14.1	
64	08	18.32	9/10	13	-61	22	+53	9	54	172.2	-32.5	II
15065	8709	19.12	11	13	-73	23	+56	18	88	161.7	+13.9	I 1462 (2)
66	12	19.2	2	14	-62	15	-51	1	7	161.0	+20.8	I 1455 (3)
67	13	19.3	4	14	-66	17	-26	2	8	158.7	-18.2	
68	14	19.9	5	14	-73	18	-21	1	10	151.0	-22.0	
69	15	20.47	13	14	-79	26	+79	112	965	143.8	+12.8	I 1465 (1)

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G	Mt. W			Date	Longitude from Central Meridian	Date	Longitude from Central Meridian	Umbræ	Whole Spots	Longitude	Latitude	
		1947		1947	°	1947	°			°	°	
15070	8717	July 15.3	2	July 15	+ 1	July 16	+14	1	6	212.4	+14.4	
71	20	21.3	3	16	-66	18	-36	2	20	132.8	- 3.1	
72	19	18.8	2	17	-18	18	- 6	1	5	166.3	+29.6	
73	21 } 30 }	23.50	13	17	-79	29	+76	17	114	103.8	-20.4	II
74	25	18.64	4	18	- 3	21	+35	4	19	168.0	+21.0	
15075	8727	21.73	7/9	18	-43	26	+59	4	19	127.0	+21.7	II
76	23	17.8	2	19	+21	20	+37	2	14	179.8	+18.8	
77	26	25.09	13	19	-73	31	+79	74	442	82.6	-11.8	I 1466 (1)
78	34	24.87	10/13	19	-79	31	+83	36	221	85.6	+28.9	II
79	32	26.32	7/9	21	-67	29	+40	5	25	66.4	+22.?	II
15080	8735	27.31	3/6	23	-54	28	+15	0	4	53.3	-17.5	
81	37	26.22	4	24	-25	27	+15	2	10	67.7	-11.8	
82	..	30.2	2	25	-64	26	-51	3	14	14.8	- 7.8	
83	36	30.85	10	25	-73	Aug. 3	+48	10	55	6.4	+17.1	II
84	40	28.1	2	26	-23	July 27	-10	2	11	43.1	+11.0	
15085	8739	26.6	4/5	27	+ 8	31	+64	1	8	62.2	-15.4	
86	41	29.5	2	27	-28	28	-15	2	15	24.8	-22.6	
87	42 } 43 }	31.16	11	27	-56	Aug. 6	+82	53	340	2.4	-19.2	I 1467 (1)
88	44	Aug. 3.22	13	28	-78	9	+84	30	191	321.9	+20.1	I 1468 (1)
89	45	3.86	12	29	-72	9	+82	147	1182	313.4	-17.5	II
15090	8746	July 31.26	2	30	-13	July 31	+ 2	0	6	1.1	+11.2	
91	48	31.53	5	31	- 2	Aug. 4	+52	2	9	357.5	+18.7	
92	49	Aug. 6.20	13	31	-81	12	+83	25	155	282.5	- 7.9	I 1469 (1)
93	50	6.64	13	31	-82	12	+76	20	119	276.7	-12.2	I 1461 (3)
94	52	7.21	13	Aug. 1	-78	13	+76	157	1220	269.1	- 9.2	I 1470 (1)
15095	8755	6.1	4	2	-50	5	- 9	1	8	283.8	-24.8	
96	56	7.92	11	2	-76	12	+62	24	132	259.7	+10.9	II
97	57	8.81	12	3	-72	14	+73	18	110	248.0	-14.8	I 1471 (1)
98	71 } 78 }	9.39	10/12	4	-65	15	+80	4	22	240.3	-10.9	II
99	59	10.39	13	4	-81	16	+80	39	278	227.1	+ 9.1	I 1472 (1)
15100	8762	10.72	12	5	-72	16	+78	33	216	222.7	-19.4	II
01	63	11.66	12	6	-72	17	+76	22	145	210.3	+18.0	II
02	64	7.64	7	7	- 5	13	+76	79	462	263.5	-16.9	II
03	65	12.20	6	7	-65	12	+ 3	3	14	203.2	-11.1	II
04	67pt.	12.33	7	7	-67	13	+15	13	75	201.4	+10.0	II
15105	8766	12.90	12	7	-70	18	+69	42	263	193.9	-31.2	I 1463 (2)
06	67pt.	12.81	13	7	-74	19	+82	85	726	195.1	+10.6	II
07	67pt.	13.53	13	7	-80	19	+78	27	190	185.6	+10.0	II
08	68	14.07	11	8	-76	18	+58	16	94	178.5	+12.4	I 1464 (2)
09	70	14.48	13	8	-80	20	+75	16	113	173.0	-27.7	II
15110	8769	13.91	12	9	-59	20	+83	42	302	180.6	+18.0	II
11	74	16.11	14	9	-86	22	+83	80	524	151.5	+15.0	I 1465 (2)
12	73	13.79	5	11	-30	15	+18	3	23	182.1	+26.1	
13	76	15.47	5	13	-27	17	+25	3	17	160.0	+ 8.9	
14	77	15.49	5	13	-28	17	+24	9	47	159.7	+29.5	
15115	8778	16.2	2	13	-38	14	-23	2	13	150.8	+24.4	
16	79	18.90	13	13	-74	25	+85	31	192	114.6	+19.3	I 1473 (1)
17	82	19.18	8	13	-76	20	+11	4	16	110.8	-19.3	II
18	80	11.1	2	14	+42	15	+57	7	36	217.4	+13.4	
19	81	11.3	2	14	+40	15	+53	7	27	214.4	+ 8.5	

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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
G	Mt. W			Date	Longitude from Central Meridian	Date	Longitude from Central Meridian	Umbræ	Whole Spots	Longitude	Latitude	
		1947		1947	°	1947	°			°	°	
15120	8783	Aug. 17.10	8	Aug. 15	-23	Aug. 22	+69	11	64	138.4	-19.9	II
21	84	20.50	11	15	-69	25	+66	35	191	93.5	-22.1	II
22	85	21.00	12	15	-75	26	+70	18	103	86.6	-13.5	I 1466 (2)
23	86	22.5	5	17	-68	21	-15	3	10	67.5	-14.9	
24	88	23.29	6	18	-67	23	+ 2	8	40	56.6	-16.4	II
15125	8787	21.78	4	20	-18	23	+20	4	20	76.6	-11.1	
26	89	26.99	12	21	-77	Sept. 1	+74	30	219	7.7	-19.3	I 1467 (2)
27	90	27.6	7	21	-82	Aug. 27	- 6	4	23	0.1	+17.8	II
28	91	26.62	11	22	-57	Sept. 1	+76	15	113	12.5	-15.6	II
29	94	25.55	8	24	-16	Aug. 31	+74	19	115	26.7	+31.8	II
15130	8792	31.05	13	24	-86	Sept. 5	+73	51	372	314.1	+21.3	I 1468 (2)
31	..	21.8	2	26	+61	Aug. 27	+74	0	9	76.8	+32.9	
32	95	29.42	9	27	-28	Sept. 4	+77	38	305	335.6	+10.8	II
33	..	30.30	2/5	27	-38	Aug. 31	+13	0	3	324.0	-17.6	
34	96	Sept. 2.2	6	27	-76	Sept. 1	-13	5	50	286.0	+16.6	II
15135	8797	2.35	13	27	-79	8	+80	52	364	283.6	- 8.2	I 1469 (2)
36	98	2.38	12	27	-81	7	+67	37	229	283.3	-13.6	II
37	99	2.80	13	27	-86	8	+75	23	136	277.7	+14.3	II
38	8808	Aug. 27.8	3/5	28	+ 7	1	+61	0	5	357.5	+27.5	
39	01	Sept. 3.16	13	28	-78	9	+80	16	117	272.9	+17.9	II
15140	8802	3.25	13	28	-78	9	+80	25	141	271.7	-14.5	I 1461 (4)
41	03	3.59	13	28	-81	9	+81	23	153	267.3	- 9.6	I 1470 (2)
42	..	Aug. 25.3	2/3	29	+55	Aug. 31	+79	0	6	30.6	+24.0	
43	00	30.07	4/6	29	- 9	Sept. 3	+55	1	4	327.0	-20.6	
44	04	Sept. 1.97	6	29	-52	3	+20	4	22	288.7	+10.2	II
15145	...	4.4	2	29	-81	Aug. 30	-67	0	11	256.3	+19.0	
46	8806	4.83	12	30	-72	Sept.10	+74	24	143	250.9	-13.1	I 1471 (2)
47	07	6.08	12	31	-77	11	+73	51	344	234.4	+10.7	I 1472 (2)
48	09	6.70	8	Sept. 1	-75	8	+26	9	37	226.2	- 0.7	II
49	14	3.48	7/8	2	-14	9	+77	16	118	268.7	+23.1	II
15150	8810	7.96	12	2	-77	13	+72	32	165	209.6	-11.6	II
51	12	8.24	8	2	-78	9	+16	9	36	205.9	+10.2	II
52	15	2.3	5	3	+15	7	+65	8	40	284.3	-17.0	
53	..	3.0	3	3	+ 3	5	+31	5	18	274.5	- 8.1	
54	11	7.41	10	4	-42	13	+81	12	58	216.8	+15.3	II
15155	8818	11.18	12	5	-75	16	+72	31	220	167.0	-14.4	II
56	16	6.88	7	6	- 7	12	+72	36	187	223.8	-11.2	I 1474 (1)
57	17	12.38	13	6	-79	18	+79	22	160	151.2	+14.1	I 1465 (3)
58	19	8.35	7	7	-19	13	+68	13	65	204.4	+19.1	II
59	20	9.37	9	7	-29	15	+84	23	156	191.0	+19.9	II
15160	..	8.88	2	8	- 6	9	+ 7	2	17	197.4	+11.7	
61	8822	12.63	11	8	-59	18	+77	20	136	147.9	-17.7	II
62	24	5.4	2	9	+52	10	+68	4	42	243.5	- 2.6	
63	23	15.2	6	9	-77	14	-11	11	55	114.2	+19.6	I 1473 (2)
64	26	11.15	8	10	- 9	17	+78	25	195	167.5	-18.6	I 1475 (1)
15165	8825	8.2	4	11	+46	14	+78	16	171	206.0	+22.6	
66	27	16.93	11	12	-64	22	+75	34	221	91.1	+15.7	II
67	28pt.	18.02	7	12	-74	18	+ 1	6	37	76.7	- 9.3	II
68	29pt.	18.79	14	12	-85	25	+83	31	212	66.6	+10.6	II
69	29pt.	19.50	12	13	-83	24	+66	20	128	57.2	+13.0	II

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
G	Mt. W			Date	Longitude from Central Meridian	Date	Longitude from Central Meridian	Umbræ	Whole Spots	Longitude	Latitude	
		1947		1947	°	1947	°			°	°	
15170	8830pt.	Sept.21.31	8	Sept.15	-76	Sept.22	+12	27	156	33.3	+12.4	II
71	28pt.	17.28	4	16	-14	19	+33	4	21	86.5	-11.9	
72	30pt.	21.7	2	16	-72	17	-57	2	10	27.6	+15.8	
73	32	23.09	13	17	-75	29	+81	33	197	9.8	-19.3	I 1467 (3)
74	33	25.54	12	20	-72	Oct. 1	+87	123	671	337.4	+17.5	I 1476 (1)
15175	8834	26.35	13	20	-75	2	+78	24	138	326.8	-17.9	II
76	39pt.	28.63	12	23	-71	4	+80	16	91	296.7	- 9.0	II
77	40	29.1	5	23	-74	Sept.27	-20	3	32	290.7	-17.1	
78	41	29.33	12	23	-80	Oct. 4	+69	14	90	287.5	+15.1	II
79	37	24.57	4	24	- 3	Sept.27	+38	4	16	350.3	-18.6	
15180	8842	25.48	5	24	-15	28	+38	2	11	338.3	-13.0	
81	46	28.34	11	24	-52	Oct. 4	+80	22	158	300.6	+18.3	II
82	43	29.92	10	25	-60	4	+60	20	118	279.7	+18.7	II
83	47	29.9	5	25	-61	Sept.29	- 5	1	8	279.9	-11.3	
84	48	30.39	8	25	-65	Oct. 2	+25	7	37	273.5	-28.8	II
15185	8839pt.	28.61	9	26	-29	4	+77	5	34	296.9	-12.0	II
86	51	Oct. 2.00	9/10	26	-73	5	+46	6	28	252.3	-14.3	I 1471 (3)
87	52	2.65	13	26	-79	8	+75	58	360	243.6	- 9.0	I 1477 (1)
88	55	4.29	13	28	-77	10	+82	54	338	222.0	-13.1	I 1474 (2)
89	54	Sept.30.06	2	29	-12	Sept.30	+ 5	5	20	277.8	+ 9.4	
15190	8856	28.8	5	30	+20	Oct. 4	+76	5	30	294.5	+10.2	
91	58	Oct. 5.20	11	30	-60	10	+65	42	268	210.0	+25.1	II
92	59	6.88	14	30	-84	13	+83	172	1098	187.9	+19.0	I 1478 (1)
93	57	1.3	7	Oct. 1	+ 3	7	+78	45	246	261.7	- 2.2	I 1479 (1)
94	60	2.06	2	1	- 7	2	+ 4	2	14	251.4	-18.4	
15195	8864	8.18	12	2	-75	13	+67	9	52	170.8	-10.7	II
96	63	7.80	12	2	-75	13	+73	10	53	175.8	+17.6	II
97	61	8.19	12	2	-75	13	+65	26	155	170.5	-16.8	I 1475 (2)
98	62	Sept.30.2	4	3	+41	6	+82	22	138	276.4	+ 9.3	
99	65	Oct. 3.42	4	3	- 2	6	+39	8	42	233.5	-23.6	
15200	8868	9.5	4	3	-82	6	-41	3	14	153.7	+14.2	I 1465 (4)
01	66	5.57	5	4	-23	8	+43	12	56	205.2	+18.0	
02	67/78	6.37	4/8	4	-27	11	+70	2	9	194.6	+11.5	
03	71	8.02	3	6	-23	8	+ 7	3	17	172.9	+10.9	
04	73	10.37	9	8	-24	16	+78	46	284	141.9	-14.5	II
15205	8875/80	13.53	12	8	-64	19	+84	6	37	100.1	+16.1	II
06	74	13.28	7/11	8	-65	18	+69	5	28	103.4	-15.8	II
07	76	14.96	14	8	-83	21	+83	37	204	81.3	+19.3	II
08	77/85	14.37	8/11	9	-67	19	+66	2	8	89.1	+ 9.1	II
09	79	15.26	12	9	-79	20	+67	22	155	77.4	+11.0	II
15210	..	12.62	2/3	12	0	14	+26	1	11	112.2	-18.9	
11	8881	20.18	13	14	-71	26	+80	58	493	12.4	-23.2	II
12	87	20.33	7/8	16	-54	23	+44	4	21	10.4	- 8.5	II
13	88	21.80	7	16	-72	22	+11	8	42	351.1	-12.4	II
14	84	22.21	13	16	-77	28	+81	56	277	345.7	+17.7	I 1476 (2)
15215	8890pt.	24.44	12	18	-77	29	+62	21	118	316.2	-28.9	II
16	93	22.73	10	19	-48	28	+81	51	320	338.8	+10.8	II
17	90pt.	25.3	5	19	-74	23	-27	5	23	304.9	-29.3	
18	95	26.35	10	20	-81	29	+40	12	70	291.1	+20.0	II
19	96	26.36	12	20	-82	31	+75	52	349	290.8	-13.5	II

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
G	Mt. W			Date	Longitude from Central Meridian	Date	Longitude from Central Meridian	Umbræ	Whole Spots	Longitude	Latitude	
		1947		1947	°	1947	°			°	°	
15220	8896pt.	Oct. 27.2	6	Oct. 21	-76	Oct. 26	-12	10	66	280.3	-17.1	II
21	96pt.	27.37	12	21	-78	Nov. 1	+65	20	105	277.5	-14.7	II
22	99	24.45	9	22	-20	Oct. 30	+76	39	229	316.1	+20.0	I 1480 (1)
23	97	27.97	12	22	-70	Nov. 2	+72	35	216	269.7	- 2.1	I 1479 (2)
24	8900	27.4	2	23	-51	Oct. 24	-39	2	6	277.6	+16.2	
15225	8901	29.63	13	23	-81	Nov. 4	+74	35	208	247.8	-10.1	I 1477 (2)
26	8898	24.3	7	24	+ 2	Oct. 30	+82	48	313	318.7	+11.8	I 1481 (1)
27	..	27.69	2/5	24	-41	28	+ 9	1	3	273.4	+23.4	
28	8902	30.1	5/6	24	-75	29	- 9	6	40	241.5	+20.4	
29	03	30.44	13	24	-78	Nov. 5	+78	17	104	237.1	-17.4	II
15230	..	20.2	2	25	+69	Oct. 26	+80	3	8	12.3	+18.2	
31	8907	31.23	12	25	-76	Nov. 5	+67	18	97	226.6	-14.6	I 1474 (3)
32	05	22.6	3	26	+50	Oct. 28	+77	10	54	340.6	-13.8	
33	..	Nov. 1.5	2	27	-65	28	-53	1	6	210.2	+16.4	
34	08	2.89	14	27	-83	Nov. 9	+84	29	154	191.6	+18.3	I 1478 (2)
15235	8909	3.67	13	28	-82	9	+75	54	415	181.4	- 8.1	I 1482 (1)
36	..	Oct. 31.8	2	29	-32	Oct. 30	-20	2	6	218.7	+11.3	
37	10	29.7	5	30	+ 9	Nov. 3	+61	9	34	247.3	+18.8	
38	14	Nov. 4.12	8	Nov. 3	- 8	10	+78	8	43	175.4	+26.0	II
39	15	1.0	3	4	+42	6	+73	7	39	216.0	-16.1	
15240	8916	10.8	2/3	5	-68	7	-47	2	7	87.8	-21.6	
41	17	11.19	6/7	6	-63	12	+14	8	33	82.2	- 8.6	II
42	19	12.56	11	6	-77	16	+50	28	221	64.1	+19.2	II
43	20	5.2	3	7	+29	9	+55	5	28	161.5	-14.8	
44	22	13.28	13	7	-79	19	+82	42	259	54.7	+ 7.6	II
15245	8921	11.30	9	9	-27	17	+82	47	350	80.7	+ 8.7	I 1483 (1)
46	25	18.50	13	12	-78	24	+72	75	519	345.8	-22.2	I 1484 (1)
47	24	18.39	13	12	-79	24	+76	19	127	347.3	-15.2	II
48	27	11.0	3	13	+33	15	+56	9	33	84.1	-23.1	
49	23	14.38	4	13	-11	16	+24	6	27	40.1	+11.1	
15250	8929	17.11	6	13	-48	18	+20	2	19	4.2	-11.5	II
51	26	18.88	13	13	-70	25	+86	26	158	340.8	+18.1	I 1476 (3)
52	32	20.67	13	14	-82	26	+74	28	149	317.2	+14.1	I 1481 (2)
53	30	10.7	2	15	+59	16	+75	15	90	88.5	-10.4	
54	34	13.2	3	15	+27	17	+56	8	42	55.2	+29.8	
15255	$89\frac{31}{30}$	15.38	6/7	15	- 3	21	+76	26	174	27.0	-14.6	I 1485 (1)
56	36	17.76	6	15	-36	20	+38	4	20	355.6	-11.3	II
57	33	20.89	8	15	-74	22	+18	4	28	314.3	+22.5	I 1480 (2)
58	37	18.09	3	16	-24	18	+ 6	1	6	351.2	+12.3	
59	35	21.84	12	16	-70	27	+73	15	91	301.7	-28.1	II
15260	8938	22.18	12	16	-78	27	+70	51	357	297.3	-17.9	II
61	41	20.12	10	17	-33	26	+80	27	155	324.5	- 6.9	II
62	42	21.92	10	18	-45	27	+71	35	213	300.7	+17.8	II
63	43	22.93	10	18	-58	27	+56	22	116	287.4	- 9.4	II
64	44	23.13	11	19	-53	29	+80	63	480	284.7	-18.2	II
15265	8945pt.	24.49	12	19	-69	30	+78	11	75	266.9	+17.0	I 1486 (1)
66	45pt.	24.3	2	22	-27	23	-12	1	8	269.9	+20.0	
67	46	26.44	4	23	-43	26	+ 1	15	40	241.2	+ 6.5	
68	..	27.4	2	23	-54	24	-41	0	5	228.6	-14.8	
69	48pt.	29.13	5/7	23	-77	29	+ 3	3	17	205.8	+24.8	

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
G	Mt. W			Date	Longitude from Central Meridian	Date	Longitude from Central Meridian	Umbræ	Whole Spots	Longitude	Latitude	
		1947		1947	°	1947-48	°			°	°	
15270	8950	Nov. 29.90	8	Nov. 24	-75	Dec. 1	+22	9	50	195.6	+18.8	I 1478 (3)
71	49	27.65	4	25	-30	Nov. 28	+11	5	32	225.2	+ 2.8	
72	56	29.27	9	25	-49	Dec. 3	+56	6	28	203.9	-26.0	II
73	52	30.70	8	25	-69	2	+22	8	36	185.1	- 7.0	I 1482 (2)
74	53	30.82	11	25	-72	5	+61	24	156	183.4	-21.7	II
15275	8951	Dec. 1.0	7	25	-73	1	0	11	49	180.4	+25.3	II
76	54	Nov. 25.8	5	26	+ 6	Nov. 30	+62	14	84	249.6	-27.5	
77	48pt.	29.66	10	26	-41	Dec. 5	+75	10	61	198.8	+26.6	II
78	55	28.82	5	28	- 7	2	+48	3	12	209.8	-17.2	
79	58	Dec. 3.66	11	29	-59	9	+82	52	318	146.0	-14.8	I 1487 (1)
15280	..	4.9	2	29	-74	Nov. 30	-61	0	8	129.3	-11.4	
81	..	Nov. 28.3	2	Dec. 1	+42	Dec. 2	+52	2	10	216.5	+15.8	
82	8959	Dec. 7.11	6/7	1	-75	7	+ 3	7	35	100.5	-12.2	II
83	..	7.5	4	1	-79	4	-42	4	24	95.6	+ 8.2	
84	60	8.26	13	2	-79	14	+80	26	144	85.4	+ 8.1	I 1483 (2)
15285	8964	9.59	8	4	-70	11	+22	12	76	67.9	+12.4	II
86	62pt.	5.2	4/5	5	+ 1	9	+58	3	17	125.8	- 9.8	
87	63	8.34	9	5	-41	13	+69	8	43	84.3	+13.9	II
88	..	11.5	3	5	-80	7	-55	8	55	43.3	+ 8.0	
89	65pt.	11.58	10	5	-82	14	+37	13	82	41.6	-10.4	II
15290	8965pt.	11.74	13	5	-84	17	+77	14	101	39.6	-14.1	II
91	62pt.	5.1	5	6	+13	10	+74	18	89	126.8	-13.5	
92	65pt.	12.58	13	6	-81	18	+77	130	915	28.5	-12.7	I 1485 (2)
93	68	14.8	5	10	-58	14	- 8	7	54	358.8	-11.7	
94	67	16.02	7	10	-73	16	+ 3	3	18	343.1	-22.9	I 1484 (2)
15295	8969	16.61	13	10	-80	22	+75	22	147	335.4	+16.1	I 1476 (4)
96	70	8.9	3	12	+43	14	+72	5	24	76.5	-12.2	
97	71	14.01	8	13	-12	20	+78	79	526	9.7	-17.4	I 1488 (1)
98	73	19.53	9	13	-82	21	+23	8	38	296.9	+20.8	II
99	72	16.99	8	14	-37	21	+55	30	165	330.4	-23.7	II
15300	8974	19.5	2	14	-69	15	-55	3	18	297.2	-14.2	
01	75	9.9	2	15	+71	16	+81	6	58	63.3	- 7.9	
02	76	21.00	12	15	-74	26	+70	26	161	277.5	+14.7	II
03	83	22.15	7	16	-76	22	0	12	62	262.4	+17.4	I 1486 (2)
04	82	19.68	7	17	-32	23	+45	6	31	295.0	- 7.8	II
15305	8984	23.82	12	18	-71	29	+76	43	298	240.4	+20.7	I 1489 (1)
06	85	24.2	2	19	-65	20	-51	1	6	235.5	- 1.4	
07	86	25.00	13	19	-77	31	+79	22	151	224.8	+13.2	II
08	88	16.7	3	20	+47	22	+74	3	25	334.2	+ 8.1	
09	90pt.	26.4	2	20	-80	21	-68	6	28	205.8	-20.1	
15310	8990pt.	26.68	9	21	-71	29	+34	5	30	202.7	-24.2	II
11	91	17.5	2	22	+63	23	+76	16	138	323.6	-17.3	
12	92	24.44	9	22	-30	30	+77	42	321	232.2	-23.2	I 1490 (1)
13	90pt.	27.14	7	22	-62	28	+15	5	30	196.7	-27.4	II
14	..	27.9	2	22	-75	23	-60	3	17	186.4	-11.6	
15315	8993	23.43	3/4	23	- 3	26	+39	3	18	245.5	-17.5	
16	94	28.57	12	24	-57	Jan. 4	+79	89	538	177.9	-22.6	I 1491 (1)
17	95	30.30	13	24	-78	5	+77	13	97	155.1	-14.0	I 1492 (1)
18	97	30.54	12	25	-70	5	+78	19	145	151.9	+10.1	II
19	96	30.95	13	25	-74	6	+83	43	246	146.5	-14.2	I 1487 (2)

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
G	Mt. W			Date	Longitude from Central Meridian	Date	Longitude from Central Meridian	Umbræ	Whole Spots	Longitude	Latitude	
		1947-48		1947	°	1947-48	°			°	°	
15320	..	Dec. 24.9	3	Dec. 26	+18	Dec. 28	+45		10	226.0	-16.3	
21	8998	31.58	12	26	-72	Jan. 6	+78	38	237	138.2	-18.0	I 1493 (1)
22	9000	Jan. 2.56	11	29	-55	8	+78	16	100	112.1	+13.4	II
23	..	Dec. 31.21	5	31	- 1	4	+56	4	25	143.0	-16.7	
24	01	Jan. 5.8	5	31	-74	4	-19	8	49	69.6	- 7.0	
15325	9002	5.98	10	31	-76	9	+42	4	28	67.1	+ 5.4	II

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
	1947	°	1947			°	°		1947	°	1947			°	°
1248b	Jan. 1	+ 1.9	Jan. 1.3	2	17	265.8	−20.4	*1254c*	June 16	− 3.1	June 16.6	1	6	231.4	+21.7
c	6	−23.8	8.1	1	6	176.8	−27.9	*d*	16	−12.7	17.4	0	6	221.8	+20.8
d	7	+76.9	1.5	9	26	264.1	−13.5	*e*	19	+64.0	14.5	0	11	259.2	+23.8
e	8	−72.5	13.8	7	28	101.7	− 8.9	*f*	20	+16.5	19.1	1	9	199.1	+16.4
f	18	+51.9	14.5	11	59	92.2	−27.6	*g*	21	−15.5	22.5	1	8	153.9	+30.7
g	20	+63.3	15.7	4	10	77.1	−20.3	*h*	25	+39.5	22.4	3	18	155.6	−22.1
								i	27	−38.0	30.2	1	8	52.0	−12.7
1249a	Jan. 22	−23.7	Jan. 24.2	2	8	324.5	+18.5	*j*	28	−69.3	July 3.6	3	20	6.7	−24.1
b	25	+74.6	19.8	0	11	22.0	−20.5	*k*	July 1	+31.3	June 29.0	1	7	68.2	−12.8
c	29	−17.2	30.7	1	6	238.7	+30.1	*l*	1	+11.7	30.5	1	8	48.6	−29.5
d	Feb. 4	−15.2	Feb. 5.5	4	20	163.4	+32.3	*m*	1	+ 8.6	30.7	4	19	45.5	−14.5
e	15	+ 3.9	15.0	2	11	37.7	+22.0	*n*	1	−20.1	July 2.9	0	4	16.8	−15.2
f	17	+73.6	11.7	13	104	81.1	+12.5	*o*	3	−10.2	4.1	5	25	359.8	+ 9.1
1250a	Feb. 22	−78.2	Feb. 28.2	4	25	223.4	−10.8	*1255a*	July 9	−13.9	July 10.5	2	9	276.3	+22.8
b	25	−80.9	Mar. 3.6	0	23	179.7	−26.6	*b*	10	− 1.3	10.5	4	53	276.3	+28.8
c	26	−12.8	Feb. 27.4	5	25	233.9	+15.1	*c*	11	+47.1	7.8	1	9	311.3	+ 8.7
d	Mar. 1	+77.0	23.5	18	47	285.2	+11.7	*d*	13	−48.7	17.2	2	9	186.7	−14.6
e	6	−57.7	Mar. 10.7	0	7	85.7	− 4.8	*e*	15	−23.1	17.0	0	3	189.1	−11.5
								f	16	+27.3	14.3	3	9	225.1	−27.7
1251a	Mar. 17	+35.6	Mar. 14.8	3	14	31.9	+21.9	*g*	18	+ 1.5	18.3	1	8	172.9	−21.9
b	20	−10.7	21.3	2	7	306.1	−21.4	*h*	20	−16.7	21.8	1	6	126.3	+13.9
c	22	−66.4	27.4	5	23	225.8	−12.3	*i*	20	−68.9	25.7	3	16	74.1	+12.5
d	26	−58.7	30.8	6	39	181.0	−16.0	*j*	22	+40.5	19.2	1	10	160.0	+21.1
e	Apr. 8	− 4.9	Apr. 8.8	2	17	61.2	+17.5								
f	11	−46.4	14.9	2	7	341.7	+15.0	*1256a*	Aug. 4	+41.0	Aug. 1.3	4	20	346.8	−44.9
								b	8	+ 6.2	7.8	1	7	260.9	− 8.6
1252a	Apr. 15	−10.4	Apr. 16.3	5	27	323.2	+23.0	*c*	11	+67.2	6.3	33	192	281.5	−26.5
b	17	+46.9	13.8	7	26	356.1	−12.1	*d*	25	+25.1	23.5	1	6	54.4	+28.3
c	26	+69.6	21.1	7	28	259.8	−12.2	*e*	26	+69.4	21.1	4	21	85.2	−24.3
d	26	+67.4	21.2	9	35	257.6	−20.5								
e	26	+17.3	25.0	1	10	207.5	−15.1	*1257a*	Aug. 29	−50.2	Sept. 2.1	2	5	286.5	+20.2
f	29	+ 5.6	28.9	1	8	156.5	−34.5	*b*	31	+16.0	Aug. 30.1	0	4	326.2	−25.7
g	29	−45.7	May 2.8	10	21	105.2	− 8.2	*c*	31	−60.6	Sept. 4.9	0	5	249.6	+16.2
h	May 5	+68.8	Apr. 30.2	3	12	139.6	+28.2	*d*	Sept. 3	−33.7	5.9	0	3	236.8	− 4.3
i	5	+ 0.2	May 5.4	2	9	71.0	+48.7	*e*	3	−60.7	7.9	0	7	209.8	+23.1
								f	4	+39.2	1.4	4	15	296.2	−30.9
1253a	May 11	+50.2	May 7.6	2	7	41.8	+14.0	*g*	5	+65.3	Aug. 31.4	3	25	309.1	−24.9
b	12	−23.3	14.2	0	3	314.3	−17.9	*h*	9	−10.1	Sept. 10.1	0	4	180.9	−19.0
c	14	+78.9	8.4	0	23	30.5	−15.7	*i*	10	+39.4	7.5	3	14	215.4	+10.7
d	16	+64.1	11.5	0	8	349.9	−17.6	*j*	22	−31.7	24.8	0	4	347.2	+ 7.2
e	17	−10.2	18.1	1	5	262.3	−16.5								
f	17	−31.2	19.7	3	15	241.3	−14.7								
g	18	+ 2.5	18.1	4	49	261.9	−28.8	*1258a*	Sept. 24	+84.2	Sept. 18.0	14	90	77.0	+20.7
h	30	+62.7	25.6	2	13	163.5	−19.5	*b*	25	−16.8	26.6	1	10	323.3	+23.1
i	30	+ 6.0	29.9	3	24	106.8	−19.6	*c*	25	−28.4	27.5	1	8	311.7	− 6.4
j	June 3	+31.3	June 1.0	1	4	78.3	−19.3	*d*	27	−23.5	29.2	1	11	289.1	+18.5
k	4	− 7.1	4.9	4	11	27.4	+14.4	*e*	Oct. 4	−63.8	Oct. 9.2	2	8	157.1	+11.1
l	6	+25.4	4.4	7	48	33.9	−13.5	*f*	5	− 7.0	6.0	1	7	200.1	+13.8
								g	5	−23.7	7.2	2	14	183.4	+12.7
								h	15	+ 1.5	15.2	0	4	78.4	+ 4.2
1524a	June 10	−65.4	June 15.2	0	11	250.1	+15.7	*i*	17	+ 7.7	16.7	1	6	58.2	+13.1
b	15	+ 2.3	15.2	3	18	250.5	−27.1	*j*	19	+75.2	13.6	18	92	99.1	−23.1

GENERAL CATALOGUE OF SUNSPOTS

SUNSPOTS SEEN ON ONE DAY ONLY

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
	1947	°	1947			°	°		1947	°	1947			°	°
1259a	Oct. 23	+70.5	Oct. 18.1	3	13	39.9	+ 8.3	*1260d*	Nov. 30	+29.2	Nov. 28.1	3	14	219.2	+11.8
b	24	+14.3	23.4	2	11	330.1	+19.2	*e*	Dec. 1	+60.2	26.9	2	10	235.5	-23.9
c	24	- 4.1	24.8	2	12	311.7	-11.1	*f*	4	+78.4	28.4	0	36	215.6	-21.0
d	Nov. 4	+56.8	31.0	0	7	230.0	+17.0	*g*	4	+66.4	29.3	3	16	203.6	+10.1
e	6	+63.8	Nov. 1.7	0	9	207.5	+24.0								
f	13	-69.9	18.8	0	6	342.0	-10.8								
								1261a	Dec. 16	-57.7	Dec. 20.7	2	8	281.5	-27.9
1260a	Nov. 18	-16.2	Nov. 19.8	2	15	329.1	-14.6	*b*	17	+13.0	16.3	1	8	339.5	+22.8
b	23	+39.4	20.3	0	6	321.8	+33.6	*c*	27	-28.0	29.4	0	5	166.6	+25.3
c	29	- 2.8	29.5	0	3	200.8	+ 2.5	*d*	29	-56.7	Jan. 2.8	2	11	109.2	+17.5

Greenwich Number	Mt. Wilson Number
1248b	8340
c	49
d	48
f	68
g	72
1249a	8376
c	79
d	87
e	8409
f	07
1250a	8420
b	29
c	31
e	44
1251a	8452
c	65
e	92
f	97
1252a	8502
b	03
c	19
d	23
f	29
h	36
i	42

Greenwich Number	Mt. Wilson Number
1253a	8549
b	52
c	41
e	70
f	59
g	61
h	97
i	96
l	8615
1254a	8623
c	41
d	42
e	57
f	52
g	58
h	64
k	81
l	78
m	82
n	84
o	88
1255a	8703
d	11
f	18
g	24

Greenwich Number	Mt. Wilson Number
1255h	8729
i	31
1256a	8758
c	72
d	93
1257g	8813
h	21
j	35
1258b	8844
c	45
d	53
e	69
g	70
h	83
i	86
j	82
1259c	8906
d	13
e	18
1260a	8940
b	47
c	57
1261a	8979
b	80
c	99

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	
		1946-47			1947	°	1947	°		°	°	
1	14773	Dec. 30.8	1248	3	Jan. 3	+49	Jan. 5	+72	11	286	+16	
	99	Jan. 26.9	1249	6	Jan. 21	-72	Jan. 26	- 8	55	290	+20	II
2	14776	Jan. 12.94	1248	13	Jan. 6	-79	Jan. 18	+74	459	113	-20	II
	814	Feb. 10.27	1249	7	Feb. 6	-50	Feb. 12	+27	21	100	-24	II
	16	Feb. 9.45	1249	5	Feb. 8	-13	Feb. 12	+36	31	111	-20	
	50	Mar. 9.18	1250	13	Mar. 3	-74	Mar. 15	+78	270	106	-19	II
3	14801	Jan. 27.6	1249	6	Jan. 22	-67	Jan. 27	0	56	281	+21	II
	32	Feb. 24.01	1250	9	Feb. 18	-74	Feb. 26	+32	78	279	+20	II
	43	Feb. 24.7	1250	5	Feb. 26	+19	Mar. 2	+79	107	270	+16	
	66	Mar. 23.66	1251	9/10	Mar. 20	-45	Mar. 29	+77	80	275	+17	II
4	14805	Feb. 3.9	1249	5	Jan. 29	-75	Feb. 2	-15	74	184	-12	
	47	Mar. 2.9	1250	2	Feb. 27	-43	Feb. 28	-34	20	188	-11	
5	14817	Feb. 13.8	1249	2/4	Feb. 8	-73	Feb. 11	-34	3	53	-14	
	58	Mar. 13.14	1250	13	Mar. 7	-76	Mar. 19	+83	97	53	-14	II
6	14821	Feb. 11.28	1249	3	Feb. 11	- 2	Feb. 13	+27	14	87	+16	
	55	Mar. 10.60	1250	13	Mar. 4	-81	Mar. 16	+78	1059	87	+14	I 1443
	89	Apr. 6.5	1251	3	Apr. 1	-68	Apr. 3	-40	7	92	+14	I 1443
7	14841	Feb. 25.32	1250	6	Feb. 25	- 1	Mar. 2	+67	47	262	+15	II
	78	Mar. 25.0	1251	5	Mar. 26	+15	Mar. 30	+73	69	257	+16	
8	14852	Mar. 3.2	1250	5	Mar. 4	+15	Mar. 8	+68	111	185	+16	
	77	Mar. 29.88	1251	11	Mar. 25	-61	Apr. 4	+74	205	193	+14	II
	87	Mar. 30.4	1251	4	Apr. 1	+25	Apr. 4	+64	11	185	+19	II
	924	Apr. 26.46	1252	7	Apr. 26	- 3	May 2	+78	113	188	+18	II
	62	May 23.19	1253	13	May 17	-77	May 29	+78	992	195	+17	II
9	14883	Apr. 4.2	1251	5	Mar. 29	-78	Apr. 2	-22	25	123	- 5	I 1430 (5)
	919	Apr. 30.9	1252	6	Apr. 24	-85	Apr. 29	-21	83	130	- 7	II
10	14884	Mar. 29.7	1251	2	Mar. 30	+10	Mar. 31	+22	30	196	+23	
	912	Apr. 25.77	1252	10	Apr. 20	-70	Apr. 29	+46	61	198	+23	II
11	14893	Apr. 9.54	1251	9/11	Apr. 4	-72	Apr. 14	+65	35	52	+11	II
	935	May 6.6	1252	2	May 1	-68	May 2	-56	10	54	+13	
12	14897	Apr. 11.11	1251	9	Apr. 7	-50	Apr. 15	+57	60	31	-15	II
	936	May 7.61	1252	13	May 1	-80	May 13	+79	382	41	-14	I 1449 (1)
	48	May 7.7	1253	3	May 12	+62	May 14	+86	226	40	-18	I 1453 (1)
	87	June 3.49	1253	8	May 28	-79	June 4	+ 8	222	46	-13	I 1449 (2)
	86	June 3.54	1253	13	May 28	-79	June 9	+71	236	45	-21	I 1453 (2)
	15031	June 30.49	1254	8/9	June 24	-78	July 2	+22	23	48	-21	II
13	14904	Apr. 18.2	1252	3	Apr. 13	-64	Apr. 15	-36	6	298	+20	
	47	May 15.87	1253	13	May 9	-82	May 21	+70	203	292	+21	II
14	14910	Apr. 24.58	1252	12	Apr. 19	-69	Apr. 30	+77	48	213	+20	I 1441 (3)
	60	May 21.63	1253	10	May 17	-62	May 26	+62	70	216	+19	II

REVIVAL GROUPS OF SUNSPOTS

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	
		1947			1947	°	1947	°		°	°	
15	14911	Apr. 25.4	1252	4	Apr. 19	-80	Apr. 22	-39	38	203	-11	I 1442 (3)
	72	May 22.66	1253	8	May 21	-20	May 28	+77	104	202	-12	I 1456
	15008	June 18.8	1254	4	June 13	-72	June 16	-32	13	203	-12	I 1456
16	14915	Apr. 28.45	1252	13	Apr. 22	-78	May 4	+81	471	162	-10	II
	74	May 26.26	1253	11	May 21	-66	May 31	+72	251	154	- 9	II
17	14917	Apr. 29.09	1252	13	Apr. 23	-77	May 5	+86	166	154	-17	II
	68	May 25.72	1253	14	May 19	-82	June 1	+83	575	162	-16	II
	15015	June 21.76	1254	11	June 15	-84	June 25	+51	70	164	-20	II
	67	July 19.3	1255	4	July 14	-66	July 17	-26	8	159	-18	
18	14923	Apr. 30.4	1252	5	Apr. 25	-67	Apr. 29	-14	17	136	+32	
	76	May 28.05	1253	6	May 23	-63	May 28	+ 1	34	131	+30	II
19	14929	May 2.4	1252	4	Apr. 28	-52	May 1	- 9	13	111	- 4	
	37	May 2.2	1252	6	May 3	+16	May 8	+78	577	113	- 4	II
	89	May 28.84	1253	4	May 31	+33	June 3	+73	118	120	- 3	
20	14931	May 2.66	1252	6/10	Apr. 29	-44	May 8	+72	30	107	-23	II
	32	May 3.74	1252	6	Apr. 29	-58	May 4	+ 6	21	92	-19	II
	82	May 30.61	1253	11	May 26	-59	June 5	+80	226	97	-19	II
	83	May 30.54	1253	9	May 28	-28	June 5	+78	187	98	-22	II
21	14940	May 5.56	1252	4	May 4	-18	May 7	+24	23	68	-31	
	88	June 3.08	1253	10	May 29	-60	June 7	+57	64	51	-33	II
22	14950	May 17.73	1253	12	May 12	-71	May 23	+74	138	267	+10	II
	15004	June 13.6	1254	2	June 11	-30	June 12	-18	12	271	+12	
23	14953	May 18.7	1253	5	May 13	-71	May 17	-19	11	254	-25	
	15003	June 15.6	1254	2	June 10	-70	June 11	-56	8	246	-24	
24	14961	May 22.3	1253	5	May 17	-67	May 21	-11	20	207	+15	
	15027	June 18.3	1254	3	June 22	+54	June 24	+80	94	210	+13	
	70	July 15.3	1255	2	July 15	+ 1	July 16	+14	6	212	+14	
	118	Aug. 11.1	1256	2	Aug. 14	+42	Aug. 15	+57	36	217	+13	
	54	Sept. 7.41	1257	10	Sept. 4	-42	Sept. 13	+81	58	217	+15	II
25	14965	May 24.07	1253	13	May 18	-76	May 30	+82	524	183	-16	II
	15025	June 20.49	1254	3	June 19	-15	June 21	+11	11	181	-19	
26	14967	May 20.04	1253	7	May 19	-12	May 25	+72	59	237	- 9	II
	15020	June 16.3	1254	5	June 18	+27	June 22	+79	134	236	- 8	
27	14993	May 28.0	1253	2/3	June 1	+58	June 3	+82	12	131	+23	
	15029	June 24.64	1254	8	June 23	-15	June 30	+70	279	126	+26	II
28	15012	June 20.72	1254	7	June 15	-71	June 21	+ 8	13	178	+ 9	I 1448 (3)
	62	July 17.80	1255	13	July 12	-70	July 24	+82	836	179	+11	I 1464
	63	July 18.15	1255	13	July 12	-78	July 24	+83	722	174	+14	I 1464
	108	Aug. 14.07	1256	11	Aug. 8	-76	Aug. 18	+58	94	178	+12	I 1464
29	15034	June 26.0	1254	4	June 26	+ 6	June 29	+44	14	107	-18	
	73	July 23.50	1255	13	July 17	-79	July 29	+76	114	104	-20	II
	121	Aug. 20.50	1256	11	Aug. 15	-69	Aug. 25	+66	191	93	-22	II
30	15038	July 3.92	1254	7	June 28	-71	July 4	+ 2	44	3	+19	II
	83	July 30.85	1255	10	July 25	-73	Aug. 3	+48	55	6	+17	II
	91	July 31.53	1256	5	July 31	- 2	Aug. 4	+52	9	357	+19	
	127	Aug. 27.6	1256	7	Aug. 21	-82	Aug. 27	- 6	23	0	+18	II

REVIVAL GROUPS OF SUNSPOTS

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	
		1947			1947	°	1947	°		°	°	
31	15040	June 29.67	1254	3	June 29	- 4	July 1	+23	29	59	-17	
	80	July 27.31	1255	3/6	July 23	-54	July 28	+15	4	53	-18	
	124	Aug. 23.29	1256	6	Aug. 18	-67	Aug. 23	+ 2	40	57	-16	II
32	15043	July 6.17	1255	10	June 30	-78	July 9	+42	40	333	+21	I 1458 (2)
	88	Aug. 3.22	1256	13	July 28	-78	Aug. 9	+84	191	322	+20	} I 1468
	130	Aug. 31.05	1257	13	Aug. 24	-86	Sept. 5	+73	372	314	+21	
33	15053	July 11.08	1255	7	July 7	-49	July 13	+32	74	268	-10	II
	94	Aug. 7.21	1256	13	Aug. 1	-78	Aug. 13	+76	1220	269	- 9	} I 1470
	141	Sept. 3.59	1257	13	Aug. 28	-81	Sept. 9	+81	153	267	-10	
34	15056	July 14.06	1255	8	July 8	-83	July 15	+19	57	229	+ 8	I 1459 (2)
	99	Aug. 10.39	1256	13	Aug. 4	-81	Aug. 16	+80	278	227	+ 9	} I 1472
	147	Sept. 6.08	1257	12	Aug. 31	-77	Sept.11	+73	344	234	+11	
35	15058	July 11.8	1255	2	July 9	-32	July 10	-18	26	259	-18	
	102	Aug. 7.64	1256	7	Aug. 7	- 5	Aug. 13	+76	462	263	-17	II
36	15061	July 16.96	1255	14	July 10	-82	July 23	+81	241	190	+29	II
	112	Aug. 13.79	1256	5	Aug. 11	-30	Aug. 15	+18	23	182	+26	
37	15072	July 18.8	1255	2	July 17	-18	July 18	- 6	5	166	+30	
	114	Aug. 15.49	1256	5	Aug. 13	-28	Aug. 17	+24	47	160	+29	
38	15076	July 17.8	1255	2	July 19	+21	July 20	+37	14	180	+19	
	110	Aug. 13.91	1256	12	Aug. 9	-59	Aug. 20	+83	302	181	+18	II
39	15081	July 26.22	1255	4	July 24	-25	July 27	+15	10	68	-12	}
	85	July 26.6	1255	4/5	July 27	+ 8	July 31	+64	8	62	-15	
	123	Aug. 22.5	1256	5	Aug. 17	-68	Aug. 21	-15	10	68	-15	
40	15089	Aug. 3.86	1256	12	July 29	-72	Aug. 9	+82	1182	313	-18	II
	133	Aug. 30.30	1257	2/5	Aug. 27	-38	Aug. 31	+13	3	324	-18	
	75	Sept.26.35	1258	13	Sept.20	-75	Oct. 2	+78	138	327	-18	II
41	15101	Aug. 11.66	1256	12	Aug. 6	-72	Aug. 17	+76	145	210	+18	II
	58	Sept. 8.35	1257	7	Sept. 7	-19	Sept.13	+68	65	204	+19	II
	201	Oct. 5.57	1258	5	Oct. 4	-23	Oct. 8	+43	56	205	+18	
	33	Nov. 1.5	1259	2	Oct. 27	-65	Oct. 28	-53	6	210	+16	
	81	Nov. 28.3	1260	2	Dec. 1	+42	Dec. 2	+52	10	216	+16	
42	15103	Aug. 12.20	1256	6	Aug. 7	-65	Aug. 12	+ 3	14	203	-11	II
	50	Sept. 7.96	1257	12	Sept. 2	-77	Sept.13	+72	165	210	-12	II
43	15104	Aug. 12.33	1256	7	Aug. 7	-67	Aug. 13	+15	75	201	+10	II
	51	Sept. 8.24	1257	8	Sept. 2	-78	Sept. 9	+16	36	206	+10	II
44	15106	Aug. 12.81	1256	13	Aug. 7	-74	Aug. 19	+82	726	195	+11	II
	60	Sept. 8.88	1257	2	Sept. 8	- 6	Sept. 9	+ 7	17	197	+12	
	202	Oct. 6.37	1258	4/8	Oct. 4	-27	Oct. 11	+70	9	195	+12	
45	15122	Aug. 21.00	1256	12	Aug. 15	-75	Aug. 26	+70	103	87	-14	I 1466 (2)
	71	Sept.17.28	1257	4	Sept.16	-14	Sept.19	+33	21	86	-12	
46	15125	Aug. 21.78	1256	4	Aug. 20	-18	Aug. 23	+20	20	77	-11	
	67	Sept.18.02	1257	7	Sept.12	-74	Sept.18	+ 1	37	77	- 9	II
47	15134	Sept. 2.2	1257	6	Aug. 27	-76	Sept. 1	-13	50	286	+17	II
	78	Sept.29.33	1258	12	Sept.23	-80	Oct. 4	+69	90	287	+15	II

REVIVAL GROUPS OF SUNSPOTS

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	
		1947			1947	°	1947	°		°	°	
48	15135	Sept. 2.35	1257	13	Aug. 27	-79	Sept. 8	+80	364	284	- 8	I 1469 (2)
	40	Sept. 3.25	1257	13	Aug. 28	-78	Sept. 9	+80	141	272	-15	I 1461 (4)
	83	Sept.29.9	1258	5	Sept.25	-61	Sept.29	- 5	8	280	-11	
49	15144	Sept. 1.97	1257	6	Aug. 29	-52	Sept. 3	+20	22	289	+10	II
	90	Sept.28.8	1258	5	Sept.30	+20	Oct. 4	+76	30	295	+10	
50	15152	Sept. 2.3	1257	5	Sept. 3	+15	Sept. 7	+65	40	284	-17	
	77	Sept.29.1	1258	5	Sept.23	-74	Sept.27	-20	32	291	-17	
51	15161	Sept.12.63	1257	11	Sept. 8	-59	Sept.18	+77	136	148	-18	II
	204	Oct. 10.37	1258	9	Oct. 8	-24	Oct. 16	+78	284	142	-14	II
52	15165	Sept. 8.2	1257	4	Sept.11	+46	Sept.14	+78	171	206	+23	
	91	Oct. 5.20	1258	11	Sept.30	-60	Oct. 10	+65	268	210	+25	II
53	15166	Sept.16.93	1257	11	Sept.12	-64	Sept.22	+75	221	91	+16	II
	205	Oct. 13.53	1258	12	Oct. 8	-64	Oct. 19	+84	37	100	+16	II
54	15168	Sept.18.79	1257	14	Sept.12	-85	Sept.25	+83	212	67	+11	II
	209	Oct. 15.26	1258	12	Oct. 9	-79	Oct. 20	+67	155	77	+11	II
	45	Nov. 11.30	1259	9	Nov. 9	-27	Nov. 17	+82	350	81	+ 9	I 1483
	84	Dec. 8.26	1260	13	Dec. 2	-79	Dec. 14	+80	144	85	+ 8	
55	15180	Sept.25.48	1258	5	Sept.24	-15	Sept.28	+38	11	338	-13	
	232	Oct. 22.6	1259	3	Oct. 26	+50	Oct. 28	+77	54	341	-14	
	47	Nov. 18.39	1260	13	Nov. 12	-79	Nov. 24	+76	127	347	-15	II
56	15182	Sept.29.92	1258	10	Sept.25	-60	Oct. 4	+60	118	280	+19	II
	224	Oct. 27.4	1259	2	Oct. 23	-51	Oct. 24	-39	6	278	+16	
57	15185	Sept.28.61	1258	9	Sept.26	-29	Oct. 4	+77	34	297	-12	II
	219	Oct. 26.36	1259	12	Oct. 20	-82	Oct. 31	+75	349	291	-14	II
58	15213	Oct. 21.80	1259	7	Oct. 16	-72	Oct. 22	+11	42	351	-12	II
	56	Nov. 17.76	1260	6	Nov. 15	-36	Nov. 20	+38	20	356	-11	II
	93	Dec. 14.8	1260	5	Dec. 10	-58	Dec. 14	- 8	54	359	-12	
59	15215	Oct. 24.44	1259	12	Oct. 18	-77	Oct. 29	+62	118	316	-29	II
	59	Nov. 21.84	1260	12	Nov. 16	-70	Nov. 27	+73	91	302	-28	II
60	15220	Oct. 27.2	1259	6	Oct. 21	-76	Oct. 26	-12	66	280	-17	II
	64	Nov. 23.13	1260	11	Nov. 19	-53	Nov. 29	+80	480	285	-18	II
61	15227	Oct. 27.69	1259	2/5	Oct. 24	-41	Oct. 28	+ 9	3	273	+23	
	66	Nov. 24.3	1260	2	Nov. 22	-27	Nov. 23	-12	8	270	+20	
62	15231	Oct. 31.23	1259	12	Oct. 25	-76	Nov. 5	+67	97	227	-15	I 1474 (3)
	68	Nov. 27.4	1260	2	Nov. 23	-54	Nov. 24	-41	5	229	-15	
	320	Dec. 24.9	1261	3	Dec. 26	+18	Dec. 28	+45	10	226	-16	
63	15239	Nov. 1.0	1259	3	Nov. 4	+42	Nov. 6	+73	39	216	-16	
	78	Nov. 28.82	1260	5	Nov. 28	- 7	Dec. 2	+48	12	210	-17	
	309	Dec. 26.4	1261	2	Dec. 20	-80	Dec. 21	-68	28	206	-20	
64	15249	Nov. 14.38	1259	4	Nov. 13	-11	Nov. 16	+24	27	40	+11	
	88	Dec. 11.5	1260	3	Dec. 5	-80	Dec. 7	-55	55	43	+ 8	
65	15263	Nov. 22.93	1260	10	Nov. 18	-58	Nov. 27	+56	116	287	- 9	II
	304	Dec. 19.68	1261	7	Dec. 17	-32	Dec. 23	+45	31	295	- 8	II

REVIVAL GROUPS OF SUNSPOTS

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	
		1947/48			1947/48	°	1947/48	°		°	°	
66	15272	Nov. 29.27	1260	9	Nov. 25	-49	Dec. 3	+56	28	204	-26	II
	310	Dec. 26.68	1261	9	Dec. 21	-71	Dec. 29	+34	30	203	-24	II
67	15274	Nov. 30.82	1260	11	Nov. 25	-72	Dec. 5	+61	156	183	-22	II
	316	Dec. 28.57	1261	12	Dec. 24	-57	Jan. 4	+79	538	178	-23	} I 1491
	53	Jan. 25.50	1262	14	Jan. 19	-76	Feb. 1	+87	228	170	-24	
68	15285	Dec. 9.59	1260	8	Dec. 4	-70	Dec. 11	+22	76	68	+12	II
	331	Jan. 5.54	1261	6	Jan. 5	- 3	Jan. 10	+63	86	73	+14	II (1948)
69	15292	Dec. 12.58	1260	13	Dec. 6	-81	Dec. 18	+77	915	29	-13	I 1485 (2)
	336	Jan. 8.62	1261	5	Jan. 8	- 4	Jan. 12	+48	18	32	-11	
70	15301	Dec. 9.9	1261	2	Dec. 15	+71	Dec. 16	+81	58	63	- 8	
	24	Jan. 5.8	1261	5	Dec. 31	-74	Jan. 4	-19	49	70	- 7	
71	15303	Dec. 22.15	1261	7	Dec. 16	-76	Dec. 22	0	62	262	+17	I 1486 (2)
	40	Jan. 18.33	1262	13	Jan. 12	-78	Jan. 24	+78	153	264	+18	II (1948)
72	15308	Dec. 16.7	1261	3	Dec. 20	+47	Dec. 22	+74	25	334	+ 8	
	38	Jan. 12.7	1261	2	Jan. 9	-44	Jan. 10	-32	16	339	+ 9	
73	15311	Dec. 17.5	1261	2	Dec. 22	+63	Dec. 23	+76	138	324	-17	
	35	Jan. 13.4	1262	7	Jan. 7	-79	Jan. 13	- 3	103	329	-15	II (1948)
74	15314	Dec. 27.9	1261	2	Dec. 22	-75	Dec. 23	-60	17	186	-12	
	62	Jan. 24.2	1262	4	Jan. 26	+28	Jan. 29	+67	8	187	-12	

C.B.H. 25938 - Wt. 4697 - Dd. - 550 - 4/55

ROYAL OBSERVATORY, GREENWICH.

Ledgers of Groups of Sunspots

For the Year

1947

Ledger I.—Recurrent Groups

GREENWICH PHOTO-HELIOGRAPHIC RESULTS, 1947

LEDGER I - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1947.

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 Mount Wilson by the letters C, K and Mt. 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.

C.B.H. 25908 - Wt. 4697 - D.J. - 550 - 4/55

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

No. 1434. Latitude +14°.8

Group 14792 in Rotation 1249
" 14824 " " 1250

Group 14792. Jan. 16-27. A regular spot. On January 25, its umbra becomes elongated, and by the next day the whole spot has split latitudinally into two.

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.
d					°	°	°	°
15.393 G	13	83	23	147	355.5	0.0	+13.5	-72.0
16.416 G	50	261	53	276	354.9	-0.6	+13.2	-59.1
17.460 G	65	352	49	268	354.7	-0.8	+13.0	-45.6
18.315 C	67	408	43	261	354.9	-0.7	+12.9	-34.1
19.471 G	78	488	44	273	354.8	-0.8	+13.1	-19.0
20.439 G	74	399	39	211	354.9	-0.7	+12.9	- 6.1
21.415 G	82	443	43	235	355.0	-0.6	+12.9	+ 6.8
22.425 G	80	414	45	232	355.1	-0.5	+13.2	+20.2
23.462 G	69	350	44	224	354.9	-0.8	+13.1	+33.6
24.511 G	48	307	37	239	354.6	-1.1	+13.2	+47.2
25.313 C	38	245	38	245	354.2	-1.5	+13.1	+57.3
26.606 G	11	82	23	171	354.2	-1.5	+12.9	+74.3
Means	..	..	40	232	354.8	..	+13.1	..

Group 14824. Feb. 12-19. A wide pair of small spots of which one component is alone visible on February 12 and 18.

42.294 C	2	19	4	42	359.1	+3.1	+16.7	-74.2
43.296 C	10	42	12	50	358.5	+2.4	+16.7	-61.6
44.292 C	33	101	28	84	359.6	+3.5	+16.4	-47.4
45.292 C	16	115	11	77	359.6	+3.5	+16.4	-34.2
46.312 C	8	63	5	37	1.3	+5.2	+16.1	-19.1
47.289 C	10	53	5	30	0.3	+4.2	+16.1	- 7.2
48.292 C	2	15	1	8	357.4	+1.2	+17.0	+ 3.1
49.373 C	4	27	2	15	357.1	+0.9	+17.0	+17.0
Means	..	..	8	43	359.1	..	+16.6	..

No. 1435. Latitude +19°.4

Group 14795 in Rotation 1249
" 14826 " " 1249

Group 14795. Jan. 18-28. A long stream of variable spots with a considerable spread in latitude. By January 22, the leader has become the most stable member.

17.460 G	9	37	10	39	343.3	0.0	+21.8	-57.0
18.315 C	26	208	20	161	344.9	+1.7	+20.0	-44.1
19.471 G	101	406	66	266	344.0	+0.9	+22.5	-29.8
20.439 G	64	399	37	235	344.5	+1.5	+21.8	-16.5
21.415 G	90	399	50	220	346.3	+3.4	+20.2	- 1.9
22.425 G	122	562	69	320	348.5	+5.7	+18.7	+13.6
23.462 G	137	612	87	387	351.2	+8.5	+17.7	+29.9
24.511 G	99	658	76	497	351.3	+8.7	+16.9	+43.9

No. 1435. Group 14795 - *continued*

25.313 C	120	866	112	806	350.3	+7.8	+17.0	+53.4
26.606 G	61	547	105	893	349.2	+6.8	+17.0	+69.3
27.290 C	33	255	87	681	347.6	+5.3	+17.5	+76.7
Means	..	..	65	410	347.4	..	+19.2	..

Group 14828. Feb. 14-17. A small spot.

44.292 C	0	11	0	13	346.0	+5.3	+20.2	-61.0
45.292 C	4	27	3	23	344.6	+4.0	+19.8	-49.2
46.312 C	4	21	3	15	344.3	+3.8	+19.3	-36.1
47.289 C	4	17	2	10	344.1	+3.7	+19.2	-23.4
Means	..	..	2	15	344.8	..	+19.6	..

No. 1436. Latitude -18°.9

Group 14802 in Rotation 1249
" 14831 " " 1250
" 14864 " " 1251

Group 14802. Jan. 23-Feb. 2. A bi-polar group growing quickly from a few small spots on January 23. The leader, *a*, is the most stable component.

22.425 G	26	163	20	125	287.2	0.0	-20.6	-47.7
23.462 G	160	935	99	578	287.0	-0.1	-20.4	-34.3
24.511 G	184	1672	101	919	287.2	+0.2	-20.4	-20.2
25.313 C	211	1597	111	838	287.6	+0.6	-20.2	- 9.3
26.606 G	348	1730	129	900	287.0	+0.1	-20.4	+ 7.1
27.290 C	203	1421	111	768	287.1	+0.3	-20.6	+16.2
28.426 G	142	1003	86	606	287.4	+0.7	-20.3	+31.5
29.463 G	111	772	82	556	287.0	+0.4	-20.1	+44.8
30.505 G	56	669	53	646	286.7	+0.2	-20.0	+58.2
31.480 G	48	361	69	534	286.4	0.0	-20.0	+70.7
32.308 C	18	118	54	342	285.5	..	-20.1	+80.7
Means	..	..	86	647	287.1	..	-20.3	..

Spot *a*

22.425 G	13	98	10	73	288.4	0.0	-20.6	-46.5
23.462 G	82	499	49	299	289.6	+1.3	-20.3	-31.7
24.511 G	102	858	55	463	290.2	+2.0	-20.4	-17.2
25.313 C	132	878	69	457	290.5	+2.3	-20.1	- 6.4
26.606 G	146	892	76	464	290.4	+2.3	-20.2	+10.5
27.290 C	130	775	72	426	290.8	+2.8	-20.2	+19.9
28.426 G	99	588	61	365	290.5	+2.6	-19.8	+34.6
29.463 G	87	464	66	353	290.5	+2.7	-19.6	+48.3
30.505 G	30	419	31	436	290.1	+2.4	-19.3	+61.6
31.480 G	22	187	38	325	290.1	+2.5	-19.4	+74.4
32.308 C	10	59	38	225	288.9	..	-19.0	+84.1

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

Date U.T. Place	Projected Area		Corrected Area		Longitude and Proper Motion	Lati-tude	Long. from C.M.
	Umbræ	Whole Spots	Umbræ	Whole Spots			
No. 1436. Group 14802 - *continued*							
Spot *b*							
d 22.425 G	13	65	10	52	284.°5 0.°0	-21.°0	-50.°4
23.462 G	78	436	50	279	284.3 - 0.1	-20.5	-37.0
24.511 G	82	814	46	456	283.4 - 0.9	-20.4	-24.0
25.313 C	79	719	42	381	283.0 - 1.3	-20.5	-13.9
26.606 G	102	838	53	436	283.1 - 1.1	-20.4	+ 3.2
27.290 C	73	646	39	342	282.6 - 1.5	-20.7	+11.7
28.426 G	43	415	25	241	282.5 - 1.5	-20.6	+26.6
29.463 G	24	308	16	203	281.9 - 2.0	-20.5	+39.7
30.505 G	26	250	22	210	281.5 - 2.3	-20.6	+53.0
31.480 G	26	174	31	209	281.7 - 2.0	-21.0	+66.0
32.308 C	8	59	16	117	281.6 - 2.1	-21.2	+76.8
Group 14831. Feb. 17-Mar. 1. Return or revival of Group 14802. *Numerous spots in a long stream. By February 23 the leading part begins to condense into a composite spot which continues to grow. Meanwhile the following spots are in slow decline.*							
47.289 C	20	94	34	160	293.9 + 7.6	-18.2	-73.6
48.292 C	19	116	19	119	294.1 + 7.8	-18.6	-60.2
49.373 C	69	311	49	324	294.8 + 8.6	-18.0	-45.3
50.293 C	83	594	50	361	295.8 + 9.7	-17.6	-32.2
51.288 C	100	1082	53	589	295.3 + 9.3	-17.7	-19.6
52.295 C	104	1028	53	527	295.6 + 9.7	-17.3	- 6.0
53.448 G	254	1626	131	837	296.6 +10.8	-17.0	+10.2
54.383 G	199	1386	110	765	296.9 +11.2	-17.4	+22.8
55.408 G	208	1370	132	877	298.2 +12.5	-17.1	+37.6
56.464 G	159	1334	131	1100	298.3 +12.7	-17.2	+51.6
57.614 G	105	1112	131	1385	298.2 +12.7	-17.2	+66.7
58.295 C	57	553	114	1140	298.2 +12.8	-17.3	+75.6
59.388 G	4	28	(10	81	290.2 ..	-18.2)	+82.0
Means	..	..	84	682	296.3 ..	-17.6	..
Group 14864. Mar. 16-19. A small spot - probably the end of a regular spot by its steady position.							
74.310 C	6	28	9	42	299.6 +15.5	-18.8	-72.0
75.466 G	7	37	6	34	299.0 +15.0	-18.8	-57.3
76.351 G	4	26	3	18	299.4 +15.5	-18.7	-45.3
77.308 C	4	15	2	9	299.4 +15.6	-18.7	-32.6
Means	..	..	5	26	299.4 ..	-18.8	..

Date U.T. Place	Projected Area		Corrected Area		Longitude and Proper Motion	Lati-tude	Long. from C.M.
	Umbræ	Whole Spots	Umbræ	Whole Spots			
No. 1437. Latitude -15°.5							
Group 14806 in Rotation 1249							
" 14845 " " 1250							
Group 14806. Jan. 30-Feb. 11. A big composite spot, *a*, with several variable companions that have died out by February 10.							
d 29.463 G	60	347	108	627	167.°3 0.°0	-16.°3	-74.°9
30.505 G	155	1124	152	1122	167.9 +0.6	-15.7	-60.6
31.480 G	247	1617	184	1207	168.3 +1.0	-15.7	-47.4
32.308 C	245	1833	155	1154	168.5 +1.2	-15.7	-36.3
33.291 C	262	1714	143	935	168.8 +1.5	-15.3	-23.0
34.300 C	345	2052	177	1055	168.5 +1.2	-15.4	-10.1
35.293 C	284	1718	145	874	168.1 +0.8	-15.7	+ 2.6
36.292 C	263	1655	139	873	167.7 +0.4	-15.5	+15.4
37.302 C	174	1155	101	668	168.1 +0.8	-15.4	+29.1
38.294 C	155	924	105	623	167.5 +0.2	-15.4	+41.5
39.308 C	136	634	120	558	168.3 +1.0	-15.5	+55.7
40.296 C	54	376	70	486	167.8 +0.5	-15.1	+68.2
41.289 C	13	97	35	258	167.0 ..	-15.4	+80.5
Means	..	..	133	848	168.1 ..	-15.6	..
Spot *a*							
29.463 G	17	80	28	133	168.8 0.0	-14.1	-73.4
30.505 G	111	658	105	625	169.8 +1.0	-15.0	-58.7
31.480 G	156	914	112	658	169.7 +0.9	-15.2	-46.0
32.308 C	165	1277	102	792	169.5 +0.7	-15.4	-35.3
33.291 C	209	1262	113	681	169.9 +1.1	-15.2	-21.9
34.300 C	259	1358	132	693	170.2 +1.4	-15.2	- 8.4
35.293 C	205	1258	105	642	169.4 +0.6	-15.2	+ 3.9
36.292 C	237	1241	126	658	168.9 +0.1	-15.1	+16.6
37.302 C	160	1000	93	580	168.7 -0.1	-15.2	+29.7
38.294 C	139	766	95	521	168.5 -0.3	-15.4	+42.5
39.308 C	136	634	120	558	168.3 -0.5	-15.5	+55.7
40.296 C	50	351	65	456	167.9 -0.9	-15.4	+68.3
41.289 C	13	97	35	258	167.0 ..	-15.4	+80.5
Group 14845. Feb. 28-Mar. 10. A stable regular spot.							
56.464 G	22	136	50	306	168.1 -0.8	-15.6	-78.6
57.614 G	66	300	71	321	168.4 -0.5	-15.4	-63.1
58.295 C	78	386	66	324	168.5 -0.4	-15.3	-54.1
59.388 G	92	403	60	262	168.4 -0.5	-15.4	-39.8
60.449 G	103	510	58	286	168.3 -0.6	-15.4	-25.9
61.456 G	96	466	50	242	167.2 -1.7	-15.3	-13.7
62.295 C	117	515	60	263	167.9 -1.0	-15.4	- 2.0
63.297 C	98	469	50	239	167.5 -1.4	-15.3	+10.8
64.309 C	89	460	49	253	167.3 -1.6	-15.4	+23.9
65.413 G	74	353	47	226	167.0 -1.9	-15.4	+38.2
66.298 C	61	307	47	236	166.8 -2.1	-15.5	+49.6
67.309 C	36	209	39	226	167.2 -1.8	-15.8	+63.4
68.298 C	28	151	53	287	166.9 -2.1	-15.4	+76.1
Means	..	..	54	267	167.6 ..	-15.4	..

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

No. 1438. Latitude -11°.6

Group 14807 in Rotation 1249
" 14834 " " 1250

Group 14807. Feb. 1-5. A stream developing. Only a few days' growth of this group, west of the central meridian, is visible.

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.
d					°	°	°	°
31.480 G	4	13	2	8	249.7	0.0	-12.1	+34.0
32.308 C	14	140	10	97	249.3	- 0.5	-12.4	+44.5
33.291 C	32	255	30	238	249.5	- 0.4	-12.6	+57.7
34.300 C	17	131	30	239	252.5	+ 2.6	-11.0	+73.9
35.293 C	0	8	(0	38	250.6	..	-12.8)	+85.1
Means	..	..	18	146	250.2	..	-12.0	..

Group 14834. Feb. 19-Mar. 3. A long stream of small changing spots. After February 28, only two or three dying spots remain.

49.373 C	4	36	(8	69	264.2	..	- 9.8)	-75.9
50.293 C	16	101	23	147	258.6	+ 7.3	-10.7	-69.4
51.288 C	36	228	31	209	258.0	+ 6.6	-11.2	-56.9
52.295 C	49	391	34	265	258.6	+ 7.1	-11.4	-43.0
53.448 G	129	599	73	338	259.1	+ 7.5	-11.9	-27.3
54.383 G	105	690	55	357	259.4	+ 7.8	-11.9	-14.7
55.408 G	88	548	45	273	258.8	+ 7.1	-11.8	- 1.8
56.464 G	83	606	43	312	259.8	+ 8.0	-11.5	+13.1
57.614 G	61	346	36	202	262.0	+10.1	-10.3	+30.5
58.295 C	40	212	26	137	261.8	+ 9.8	-11.1	+39.2
59.388 G	28	86	26	77	263.8	+11.7	-10.6	+55.6
60.449 G	6	31	9	49	265.0	+12.8	-10.0	+70.8
61.456 G	2	9	7	30	263.3	..	-11.5	+82.4
Means	..	..	36	215	260.4	..	-11.1	..

No. 1439. Latitude -23°.2

Group 14813 in Rotation 1249
" 14851 " " 1250
" 14886 " " 1251
" 14926, 14933 " " 1252

Group 14813. Feb. 5-18. The origin of a giant complex group - a sirgle spot on February 5; on the next day other spots appear, and grow rapidly, and by February 8 the leading three have coalesced into a large composite structure which undergoes continual change during further growth; after February 10, however, it remains fairly stable almost to the west limb. The rear component, *b*, of the group remains a stable regular spot throughout.

No. 1439. Group 14813 - *continued*

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.
d					°	°	°	°
35.293 C	6	25	10	43	91.3	0.0	-23.1	-74.2
36.292 C	34	216	45	266	86.1	-5.0	-22.0	-66.2
37.302 C	104	889	86	747	86.6	-4.3	-21.2	-52.4
38.294 C	353	2762	242	1856	85.3	-5.4	-20.9	-40.7
39.308 C	588	3876	340	2235	85.7	-4.7	-21.2	-26.9
40.296 C	791	5495	427	2944	86.0	-4.2	-20.5	-13.6
41.289 C	647	5367	336	2783	86.0	-4.0	-20.1	- 0.5
42.294 C	691	5213	365	2763	85.1	-4.7	-19.8	+11.8
43.296 C	734	4909	417	2795	85.0	-4.6	-20.1	+24.9
44.292 C	756	4456	490	2930	85.2	-4.2	-21.2	+38.2
45.292 C	570	3625	463	2938	85.1	-4.1	-21.6	+51.3
46.312 C	229	2495	238	2765	84.1	-4.8	-21.4	+63.7
47.289 C	192	1455	325	2635	84.2	-4.5	-21.2	+76.7
48.292 C	19	256	(41	556	72.8	..	-23.0)	+78.5
Means	..	..	291	2131	85.8	..	-21.1	..

Spot *b*

36.292 C	17	63	27	100	79.7	0.0	-21.6	-72.6
37.302 C	17	181	17	183	78.6	-0.9	-21.9	-60.4
38.294 C	164	878	121	650	79.3	0.0	-21.5	-46.7
39.308 C	193	1142	120	708	77.8	-1.3	-21.8	-34.8
40.296 C	290	1369	162	767	76.7	-2.1	-22.3	-22.9
41.289 C	231	1648	122	873	76.2	-2.4	-22.7	-10.3
42.294 C	229	1218	119	633	75.4	-3.0	-23.1	+ 2.1
43.296 C	216	1159	117	626	74.6	-3.6	-23.5	+14.5
44.292 C	197	928	114	538	73.3	-4.7	-23.8	+26.3
45.292 C	168	840	111	554	72.9	-4.9	-23.5	+39.1
46.312 C	132	1069	111	898	73.7	-3.9	-22.6	+53.3
47.289 C	101	634	120	754	73.3	-4.0	-22.8	+65.8
48.292 C	19	256	41	556	72.8	-4.3	-23.0	+78.5

Group 14851. Mar. 3-17. A great complex group: at first a large composite spot, the principal nucleus of which is roughly circular. By March 7, the whole has become a massive elongated formation consisting of two large composite spots *a* and *b*, linked together by a penumbral structure. From March 7 to 12, there is little change in general appearance, but on March 13 a division between the two parts becomes more pronounced. The leading section appears to be decreasing as it approaches the west limb.

61.456 G	7	35	(34	168	94.4	..	-24.3)	-86.5
62.295 C	102	994	208	1972	92.7	+7.2	-21.9	-77.2
63.297 C	248	2313	281	2579	93.0	+7.7	-22.8	-63.7
64.309 C	454	3169	368	2544	93.0	+7.9	-22.2	-50.4
65.413 G	799	5221	512	3333	92.1	+7.2	-22.5	-36.7
66.298 C	1126	6335	643	3615	92.6	+7.9	-23.0	-24.6
67.309 C	1314	7251	704	3886	92.3	+7.9	-23.1	-11.5
68.298 C	1610	7993	843	4179	92.2	+8.0	-23.3	+ 1.4
69.297 C	1515	8437	813	4547	91.1	+7.1	-23.1	+13.5

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

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. 1439. Group 14851 - *continued*								
d					°	°	°	°
70.301 C	1350	7851	777	4554	92.1	+8.3	-23.3	+27.7
71.414 C	1035	6151	707	4205	90.6	+7.0	-24.0	+40.9
72.344 C	809	4739	669	4052	90.6	+7.2	-24.1	+53.1
73.305 C	553	3393	634	3989	88.9	+5.7	-23.6	+64.1
74.310 C	217	1785	390	3825	89.0	+6.1	-23.8	+77.4
75.466 G	18	136	(110	830	83.7	..	-24.5)	+87.4
Means	..	..	581	3637	91.6	..	-23.1	..
Spot *a*								
64.309 C	151	1312	113	984	96.3	0.0	-23.5	-47.1
65.413 G	324	2273	198	1387	96.6	+0.5	-23.6	-32.2
66.298 C	532	2947	298	1650	96.2	+0.3	-23.3	-21.0
67.309 C	554	3246	294	1720	95.8	+0.1	-23.5	- 8.0
68.298 C	711	4564	376	2396	95.3	-0.1	-23.7	+ 4.5
69.297 C	490	3791	270	2085	97.0	+1.8	-23.6	+19.4
70.301 C	524	3953	314	2372	95.7	+0.7	-23.2	+31.3
71.414 C	375	2300	278	1702	95.9	+1.1	-23.1	+46.2
72.344 C	230	2019	223	1958	96.5	+1.9	-24.0	+59.0
73.305 C	170	1301	240	1834	95.2	+0.8	-23.5	+70.4
74.310 C	17	562	54	1770	94.8	..	-24.0	+83.2
Spot *b*								
64.309 C	303	1857	255	1560	90.0	0.0	-22.2	-53.4
65.413 G	475	2948	314	1946	89.6	-0.2	-22.3	-39.2
66.298 C	594	3388	345	1965	89.2	-0.4	-22.5	-28.0
67.309 C	760	4011	410	2166	89.0	-0.4	-22.6	-14.8
68.298 C	899	3429	467	1783	87.7	-1.4	-22.9	- 3.1
69.297 C	1025	4646	543	2462	88.7	-0.2	-22.7	+11.1
70.301 C	826	3898	463	2182	87.3	-1.4	-23.2	+22.9
71.414 C	660	3851	429	2503	86.8	-1.7	-23.7	+37.1
72.344 C	579	2720	446	2094	86.3	-2.0	-23.6	+48.8
73.305 C	383	2092	394	2155	86.0	-2.1	-23.5	+61.2
74.310 C	200	1223	336	2055	85.8	-2.1	-23.8	+74.2
75.466 G	18	136	(110	830	83.7	..	-24.5)	+87.4

Group 14886. Mar. 30-Apr. 14. A vast group - the largest ever recorded at Greenwich (i.e. since 1874) and exceeding by 16 per cent the mean area of the previous largest spot, Group 14417 of 1946 February. The chief component, *b*, is a huge elliptical spot with many nuclei and its axis inclined nearly 60° to the direction of the Sun's equator. Preceding this is a complex spot, more or less linked by spot structures to its great companion until April 7 when the division between them becomes more distinct. Apart from this, there is a remarkable absence of change.

Although complete continuity of this group with the giant spots (Nos. 14813 and 14851) of the two preceding rotations must be accepted, the run of the daily areas shows clearly that two successive growth impulses must have taken place on the Sun's invisible hemisphere to produce the peak area about March 11-12 and April 8.

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. 1439. Group 14886 - *continued*								
d					°	°	°	°
88.409 C	13	111	(69	591	98.5	..	-23.7)	-87.2
89.309 C	91	825	(203	1966	94.1	..	-24.7)	-79.7
90.350 G	361	3228	562	5433	86.2	+ 6.7	-24.3	-73.9
91.475 C	689	5605	686	5566	85.7	+ 6.4	-24.3	-59.5
92.518 C	1199	7653	910	5785	84.8	+ 5.7	-24.8	-46.6
93.311 C	1151	8629	751	5586	84.5	+ 5.6	-24.2	-36.5
94.325 C	1272	10081	726	5764	84.1	+ 5.4	-24.3	-23.5
95.310 C	1395	9754	756	5276	82.7	+ 4.2	-24.4	-11.9
96.307 C	1783	11148	949	5931	82.8	+ 4.6	-24.1	+ 1.3
97.468 G	1342	11074	739	6132	82.3	+ 4.3	-24.3	+16.2
98.318 C	1078	9277	625	5468	82.0	+ 4.2	-24.3	+27.1
99.342 G	1188	7814	788	5360	81.6	+ 4.0	-24.4	+40.2
100.346 G	858	5722	705	4813	80.3	+ 2.9	-24.6	+52.2
101.311 C	553	4397	639	5130	79.8	+ 2.6	-24.9	+64.4
102.309 C	248	2108	(416	3617	76.1	..	-25.2)	+73.9
103.317 G	67	504	(265	2016	73.6	..	-25.0)	+84.7
Means	..	..	736	5520	83.1	..	-24.4	..
Spot *b*								
89.309 C	9	159	(32	574	89.6	..	-26.9)	-84.2
90.350 G	166	1927	340	3950	82.6	- 1.8	-24.5	-77.5
91.475 C	366	2730	425	3167	80.4	- 3.8	-24.5	-64.8
92.518 C	739	4374	606	3587	80.1	- 3.9	-25.2	-51.3
93.311 C	728	4700	502	3243	79.3	- 4.5	-24.4	-41.7
94.325 C	760	5968	448	3521	79.2	- 4.4	-24.6	-28.4
95.310 C	1002	6307	551	3469	77.7	- 5.7	-24.8	-16.9
96.307 C	1214	6921	643	3668	77.2	- 6.0	-24.2	- 4.3
97.468 G	981	7283	530	3933	76.7	- 6.2	-24.6	+10.6
98.318 C	808	5871	452	3288	76.2	- 6.5	-24.6	+21.3
99.342 G	923	4897	581	3085	75.4	- 7.1	-24.8	+34.0
100.346 G	687	3945	515	2959	74.6	- 7.7	-25.0	+46.5
101.311 C	445	3201	441	3169	74.4	- 7.7	-25.3	+59.0
102.309 C	231	1922	358	2979	74.1	- 7.8	-25.2	+71.9
103.317 G	58	410	(222	1566	73.3	..	-25.9)	+84.4

Group 14926. Apr. 27-May 8. A wide pair of small regular spots; the leader, *a*, begins to break up on May 3, and then the follower, *b*, two days later.

116.321 C	7	35	(17	84	98.3	..	-23.4)	-78.8
117.581 G	34	154	48	220	91.9	+18.2	-23.8	-68.6
118.306 G	41	183	41	191	91.3	+17.8	-23.3	-59.6
119.570 G	50	201	36	147	90.6	+17.3	-23.6	-43.6
120.552 G	55	282	34	175	89.7	+16.6	-23.7	-31.6
121.325 C	66	284	37	161	90.4	+17.5	-23.3	-20.6
122.388 C	52	202	28	107	90.3	+17.6	-23.2	- 6.7
123.333 C	42	187	22	100	88.7	+16.2	-23.1	+ 4.2
124.368 G	32	173	18	97	90.3	+18.1	-21.7	+19.5
125.138 K	14	95	8	56	88.9	+16.8	-22.5	+28.3
Means	..	..	30	139	90.2	..	-23.1	..

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

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. 1439. Group 14926 - *continued*							
Spot *a*							
d					°	°	°
116.321 C	7	35	17	84	98.3 0.0	-23.4	-78.8
117.581 G	11	50	12	56	97.6 - 0.4	-23.4	-62.9
118.306 G	14	38	12	33	97.4 - 0.5	-23.3	-53.5
119.570 G	18	47	12	31	96.8 - 0.8	-23.9	-37.4
120.552 G	14	48	8	28	95.7 - 1.7	-23.3	-25.6
121.325 C	24	106	13	58	94.9 - 2.3	-23.7	-16.1
122.388 C	26	92	14	48	93.5 - 3.5	-23.3	- 3.5
123.333 C	13	53	7	29	94.1 - 2.7	-23.1	+ 9.6
124.368 G	16	91	9	52	93.7 - 2.9	-20.7	+22.9
125.138 K	8	38	5	23	92.6 - 3.8	-22.1	+32.0
Spot *b*							
117.581 G	23	104	36	164	88.7 0.0	-23.8	-71.8
118.306 G	27	145	29	158	88.8 + 0.5	-23.3	-62.1
119.570 G	32	154	24	116	88.3 0.0	-23.7	-45.9
120.552 G	41	234	26	147	87.6 - 0.5	-23.5	-33.7
121.325 C	42	178	24	103	87.6 - 0.3	-23.3	-23.4
122.388 C	26	110	14	59	87.3 - 0.4	-23.2	- 9.7
123.333 C	29	134	15	71	87.0 - 0.5	-23.1	+ 2.5
124.368 G	16	82	9	45	85.9 - 1.3	-22.3	+15.1
125.138 K	6	57	3	33	86.2 - 0.9	-22.6	+25.6
Group 14933. Apr. 29-May 11. A large composite spot, the leading part of which separates from the main body and dies out, while the latter continues to decrease.							
118.306 G	41	192	109	511	70.7 ..	-24.6	-80.2
119.570 G	70	678	81	786	70.3 - 7.9	-24.6	-63.9
120.552 G	116	931	97	782	69.7 - 8.3	-24.5	-51.6
121.325 C	132	1036	92	725	69.8 - 8.0	-24.4	-41.2
122.388 C	106	1034	64	620	69.1 - 8.5	-24.5	-27.9
123.333 C	176	1030	99	577	68.6 - 8.8	-24.6	-15.9
124.368 G	129	835	70	450	68.5 - 8.6	-24.8	- 2.3
125.138 K	160	962	86	519	67.9 - 9.1	-25.0	+ 7.3
126.325 C	123	821	71	476	67.2 - 9.5	-25.3	+22.3
127.323 C	75	627	49	408	66.5 -10.0	-25.1	+34.8
128.350 G	52	415	42	332	66.3 -10.0	-24.9	+48.1
129.370 C	46	238	50	257	65.6 -10.5	-25.1	+60.9
130.356 C	46	185	83	333	65.2 -10.7	-24.8	+73.6
Means	..	..	74	522	67.9 ..	-24.8	..

No. 1440. Latitude -17°.9

Group 14822 in Rotation 1249
" 14859 " " 1250

Group 14822. Feb. 11-23. A pair of regular spots when first seen fully in view at the east limb. From February 13, unstable

continued

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. 1440. Group 14822 - *continued*							
spots appear, and finally merge with the original pair, which thus become composite spots. By February 20 the following spot begins to break up rapidly and disappears before reaching the limb.							
d					° °	°	°
41.289 C	2	13	(4	27	8.9 ..	-17.0	-77.6
42.294 C	38	189	46	233	6.8 0.0	-18.1	-66.5
43.296 C	92	544	74	442	8.6 + 1.9	-17.8	-51.5
44.292 C	128	621	82	398	9.6 + 2.9	-17.0	-37.4
45.292 C	113	1000	64	558	9.7 + 3.1	-17.2	-24.1
46.312 C	181	1336	94	690	9.4 + 2.8	-17.0	-11.0
47.289 C	212	1437	108	733	8.9 + 2.4	-17.4	+ 1.4
48.292 C	191	1691	101	888	8.2 + 1.7	-17.4	+13.9
49.373 C	233	1227	135	716	9.1 + 2.7	-17.8	+29.0
50.293 C	115	905	79	611	9.5 + 3.1	-17.6	+41.5
51.288 C	80	677	72	602	10.2 + 3.9	-17.9	+55.3
52.295 C	27	200	39	285	10.8 + 4.6	-17.5	+69.2
53.448 G	7	57	43	348	13.4 ..	-16.8	+87.0
Means	..	..	81	560	9.2 ..	-17.5	..
Group 14859. Mar. 10-22. A small regular spot with companions on March 14 and 16.							
68.298 C	9	55	17	103	14.8 + 9.5	-17.8	-76.0
69.297 C	9	77	10	82	15.0 + 9.7	-18.2	-62.6
70.301 C	26	138	20	106	15.0 + 9.8	-18.2	-49.4
71.414 C	30	166	19	103	14.7 + 9.5	-18.9	-35.0
72.344 C	19	147	10	81	15.2 +10.1	-18.6	-22.3
73.305 C	36	177	19	92	14.6 + 9.5	-18.7	-10.2
74.310 C	26	158	13	81	14.6 + 9.6	-18.8	+ 3.0
75.466 G	29	183	15	97	14.1 + 9.2	-18.5	+17.8
76.351 G	22	180	13	104	14.0 + 9.1	-18.2	+29.3
77.308 C	24	107	16	72	13.8 + 9.0	-18.1	+41.8
78.461 G	11	62	10	56	13.4 + 8.6	-18.2	+56.6
79.619 G	2	11	3	16	13.1 + 8.4	-18.2	+71.5
80.329 C	0	6	0	15	12.5 ..	-18.4	+80.3
Means	..	..	14	83	14.4 ..	-18.4	..

No. 1441. Latitude +20°.0

Group 14838 in Rotation 1250
" 14870 " " 1251
" 14910 " " 1252

Group 14838. Feb. 23-Mar. 6. A cluster of small spots when first seen, expanding steadily into a large stream formation by February 27. The leading portion, *a*, consists of a regular spot with an appendage which, on March 2, begins to break up and has gone by March 4. The rear of the group, which as a whole spreads 7° in latitude, remains complex.

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

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. 1441. Group 14838 - *continued*								
d					°	°	°	°
53.448 G	13	46	18	64	220.9	0.0	+17.6	-65.5
54.383 G	31	188	29	175	221.5	+0.7	+18.0	-52.6
55.408 G	44	175	32	127	222.1	+1.4	+19.8	-38.5
56.464 G	81	505	51	315	223.1	+2.5	+20.6	-23.6
57.614 G	237	1314	136	748	223.5	+3.1	+20.3	- 8.0
58.295 C	200	1683	113	950	223.3	+3.0	+20.7	+ 0.7
59.388 G	258	1796	151	1051	222.6	+2.4	+20.7	+14.4
60.449 G	261	1627	169	1053	222.0	+1.9	+21.3	+27.8
61.456 G	133	1220	103	935	221.3	+1.3	+21.7	+40.4
62.295 C	113	1032	112	998	221.9	+2.0	+22.1	+52.0
63.297 C	83	545	124	790	220.3	+0.5	+22.0	+63.6
64.309 C	30	282	118	1157	220.6	+0.9	+21.8	+77.2
Means	..	..	96	697	221.9	..	+20.6	..
Spot *a*								
57.614 G	145	646	83	368	226.1	0.0	+20.3	- 5.4
58.295 C	117	920	66	515	225.8	-0.2	+20.0	+ 3.2
59.388 G	140	942	83	556	225.6	-0.3	+20.2	+17.4
60.449 G	127	712	85	477	226.3	+0.5	+20.7	+32.1
61.456 G	61	401	50	329	225.6	-0.1	+21.0	+44.7
62.295 C	49	284	53	310	226.6	+1.0	+21.7	+56.7
63.297 C	30	155	56	291	226.7	+1.2	+22.5	+70.0
Group 14870. Mar. 21-Apr. 2. A very stable regular spot.								
79.619 G	7	51	28	208	221.6	..	+19.1	-80.0
80.329 C	17	103	32	196	221.1	-2.4	+19.4	-71.1
81.445 G	29	183	30	190	221.3	-2.1	+19.2	-56.2
82.309 C	34	233	27	186	221.2	-2.1	+19.1	-44.9
83.363 G	49	274	32	181	220.9	-2.3	+19.0	-31.3
84.309 C	73	293	43	173	220.7	-2.4	+19.4	-19.0
85.683 †	51	236	29	132	220.2	-2.7	+19.3	- 1.4
86.606 G	58	297	33	169	220.0	-2.8	+19.3	+10.6
87.311 C	52	267	31	158	219.6	-3.1	+19.1	+19.5
88.409 C	41	233	27	156	219.4	-3.2	+19.3	+33.7
89.309 C	39	209	31	167	218.7	-3.8	+19.2	+44.9
90.350 G	24	135	26	148	218.5	-3.9	+19.4	+58.4
91.475 C	13	92	26	186	217.6	-4.6	+19.4	+72.4
Means	..	..	31	174	219.9	..	+19.2	..
Group 14910. Apr. 19-30. A small spot with one or two companions from April 22 which later increase to a variable cluster.								
108.328 C	11	48	18	77	214.0	-6.3	+19.4	-68.7
109.386 G	14	52	14	50	214.3	-5.9	+19.6	-54.5
110.343 G	14	81	10	61	214.1	-6.0	+19.6	-42.0
111.404 G	29	63	19	40	212.8	-7.2	+20.3	-29.3
112.321 C	31	124	18	72	212.8	-7.1	+21.2	-17.2
113.359 G	24	90	13	50	213.7	-6.0	+20.2	- 2.6
114.328 C	13	109	7	61	214.8	-4.8	+20.2	+11.3
115.331 G	16	93	10	56	213.8	-5.7	+19.8	+23.6

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. 1441. Group 14910 - *continued*								
d					°	°	°	°
116.321 C	13	64	9	45	214.6	-4.8	+19.9	+37.5
117.581 G	5	11	5	10	212.2	-7.1	+21.8	+51.7
118.306 G	11	29	13	34	211.6	-7.6	+21.6	+60.7
119.570 G	0	5	0	14	211.6	-7.4	+18.3	+77.4
Means	..	..	11	48	213.4	..	+20.2	..

No. 1442. Latitude -10°.8

Group 14840 in Rotation 1250
" 14874 " " 1251
" 14911 " " 1252

Group 14840. Feb. 24-Mar. 9. A tiny spot until March 1 when a burst of activity produces in a few days a stream consisting of two fair-sized composite spots. The following one is breaking up as it passes round the limb.

54.383 G	0	7	0	19	193.5	..	-11.1	-80.6
55.408 G	2	9	2	11	195.0	0.0	-11.3	-65.6
56.464 G	7	33	5	25	196.5	+1.4	-11.7	-50.2
57.614 G	13	35	8	21	196.5	+1.3	-12.0	-35.0
58.295 C	8	45	4	25	196.4	+1.1	-11.5	-26.2
59.388 G	22	77	12	40	195.5	+0.1	-11.6	-12.7
60.449 G	38	241	19	120	193.9	-1.6	-11.7	- 0.3
61.456 G	53	447	27	230	192.9	-2.7	-11.7	+12.0
62.295 C	140	854	78	479	193.3	-2.4	-11.1	+23.4
63.297 C	235	1128	146	707	192.7	-3.1	-11.3	+36.0
64.309 C	155	1202	120	937	193.9	-2.0	-11.1	+50.5
65.413 G	101	643	120	762	193.5	-2.5	-11.1	+64.7
66.298 C	36	309	75	655	194.4	-1.6	-11.1	+77.2
67.309 C	2	6	(10	29	189.2	..	-12.3)	+85.4
Means	..	..	51	334	194.5	..	-11.4	..

Group 14874. Mar. 23-Apr. 4. A large composite spot that undergoes little change during its disk passage.

81.445 G	57	276	113	549	201.1	+3.5	-10.6	-76.4
82.309 C	66	524	76	603	201.1	+3.4	-10.4	-65.0
83.363 G	126	933	100	737	201.0	+3.2	-10.3	-51.2
84.309 C	171	1115	109	714	201.3	+3.4	-10.1	-38.4
85.683 †	323	1326	171	703	201.6	+3.6	-10.0	-20.0
86.606 G	220	1501	112	766	201.8	+3.7	- 9.8	- 7.6
87.311 C	230	1245	115	622	202.1	+3.9	-10.3	+ 2.0
88.409 C	220	1265	114	658	202.0	+3.7	- 9.8	+16.3
89.309 C	230	1086	131	619	201.9	+3.5	-10.2	+28.1
90.350 G	171	972	115	651	202.0	+3.5	-10.1	+41.9
91.475 C	95	621	86	559	201.8	+3.2	-10.5	+56.6
92.518 C	30	395	44	581	202.3	+3.6	- 9.8	+70.9
93.311 C	15	123	44	359	202.2	..	-10.8	+81.2
Means	..	..	101	642	201.7	..	-10.2	..

† Mount Wilson

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

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.
No. 1442. - *continued*							
Group 14911. Apr. 19-21. A small spot reducing to a speck.							
d					°	°	°
108.328 C	7	28	18	73	203.0	+2.8	-11.9	-79.7
109.386 G	18	47	21	56	203.0	+2.7	-10.9	-65.8
110.343 G	9	20	7	17	202.7	+2.3	-10.5	-53.4
111.404 G	2	11	1	7	202.8	+2.3	-10.4	-39.3
Means	..	..	12	38	202.9	..	-10.9	..
No. 1443. Latitude +13°.9							
Group 14855 in Rotation 1250							
" 14889 " " 1251							
Group 14855. Mar. 4-16. A large complex group; two composite spots of which the leader is the larger. The group begins to break up on March 7. The separate pieces spread out in longitude, forming a large stream with a regular spot, *a*, as leader. Meanwhile the second composite spot, *b*, is disintegrating.							
62.295 C	4	42	(15	160	89.0	..	+11.8)	-80.9
63.297 C	81	857	161	1576	84.9	0.0	+13.1	-71.8
64.309 C	110	1298	116	1373	85.3	+0.4	+12.9	-58.1
65.413 G	247	1945	182	1435	85.0	0.0	+12.7	-43.8
66.298 C	304	2260	189	1409	86.0	+1.0	+13.3	-31.2
67.309 C	390	2748	221	1554	86.0	+0.9	+14.0	-17.8
68.298 C	357	2466	193	1332	86.1	+1.0	+13.4	- 4.7
69.297 C	247	2051	135	1123	87.8	+2.7	+13.4	+10.2
70.301 C	328	1708	190	994	86.7	+1.5	+13.4	+22.3
71.414 C	139	977	96	674	87.9	+2.7	+13.8	+38.2
72.344 C	71	512	62	448	88.5	+3.2	+14.1	+51.0
73.305 C	61	465	81	614	87.7	+2.4	+14.2	+62.9
74.310 C	10	49	33	171	89.8	+4.5	+14.0	+78.2
Means	..	..	138	1059	86.8	..	+13.5	..
Spot *a*							
70.301 C	89	507	53	304	91.7	0.0	+12.1	+27.3
71.414 C	45	292	33	213	92.1	+0.4	+12.7	+42.4
72.344 C	28	192	27	182	92.4	+0.6	+13.2	+54.9
73.305 C	23	179	35	272	93.0	+1.2	+13.8	+68.2
74.310 C	6	30	24	122	92.5	..	+14.0	+80.9
Spot *b*							
63.297 C	30	187	78	484	79.9	0.0	+12.8	-76.8
64.309 C	34	437	42	538	80.0	+0.1	+12.7	-63.4
65.413 G	61	486	50	399	79.7	-0.3	+12.6	-49.1
66.298 C	64	500	43	335	79.9	-0.1	+12.9	-37.3

continued

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.
No. 1443. Group 14855 - *continued*							
Spot *b* - *continued*							
d					°	°	°	°
67.309 C	94	524	55	309	79.6	-0.5	+12.9	-24.2
68.298 C	72	400	39	216	79.6	-0.5	+12.5	-11.2
69.297 C	30	236	16	125	79.8	-0.3	+12.4	+ 2.2
70.301 C	49	219	27	120	80.1	-0.1	+13.0	+15.7
71.414 C	17	89	11	55	80.1	-0.1	+12.9	+30.4
72.344 C	11	81	8	60	80.3	0.0	+13.4	+42.8
73.305 C	6	62	6	60	80.1	-0.2	+13.5	+55.3
Group 14889. Apr. 1-3. A tiny spot.							
90.350 G	0	4	0	6	91.8	-0.7	+14.3	-68.3
91.475 C	0	11	0	10	92.0	-0.5	+14.4	-53.2
92.518 C	2	9	1	6	91.6	-1.0	+13.9	-39.8
Means	..	..	0	7	91.8	..	+14.2	..
No. 1444. Latitude -16°.1							
Group 14862 in Rotation 1251							
" 14902 " " 1252							
Group 14862. Mar. 15-26. A bi-polar group; small spots mark its place some days before its definite growth begins near the central meridian.							
73.305 C	2	15	3	20	316.3	0.0	-15.4	-68.5
74.310 C	9	43	8	37	316.9	+0.6	-14.9	-54.7
75.466 G	7	31	5	20	316.8	+0.5	-15.4	-39.5
76.351 G	0	0	0	0	..	..	..	..
77.308 C	0	0	0	0	..	..	..	..
78.461 G	11	55	6	28	314.1	-2.2	-16.0	- 2.7
79.619 G	51	267	27	139	314.9	-1.3	-16.3	+13.3
80.329 C	114	784	62	431	314.1	-2.1	-16.6	+21.9
81.445 G	126	814	82	524	316.3	+0.1	-15.9	+38.8
82.309 C	105	738	82	578	316.9	+0.7	-16.1	+50.8
83.363 G	58	400	71	479	318.3	+2.1	-15.8	+66.1
84.309 C	30	229	80	546	318.9	+2.7	-15.6	+79.2
Means	..	..	36	234	316.4	..	-15.8	..
Spot *a*							
81.445 G	86	491	57	324	318.6	0.0	-15.1	+41.1
82.309 C	60	428	50	355	319.7	+1.1	-15.2	+53.6
83.363 G	40	239	54	323	321.4	+2.8	-15.2	+69.2
84.309 C	21	116	66	365	322.0	..	-14.8	+82.3

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

No. 1444. - *continued*

Group 14902. Apr. 10-19. Three small spots in a line, of which the leading two are the more stable.

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.
d					°	°	°	°
99.342 G	11	42	23	87	324.4	+6.0	-16.1	-77.0
100.346 G	24	107	27	118	324.5	+6.1	-16.3	-63.6
101.311 C	28	225	23	180	324.7	+6.3	-16.5	-50.7
102.309 C	45	221	28	140	324.9	+6.5	-16.2	-37.3
103.317 G	45	237	25	133	324.5	+6.1	-16.3	-24.4
104.474 G	33	157	17	81	324.4	+6.0	-16.4	- 9.2
105.331 G	18	76	9	39	324.9	+6.5	-16.4	+ 2.6
106.326 G	14	54	7	29	324.8	+6.4	-16.4	+15.6
107.441 G	11	36	6	21	323.9	+5.5	-16.3	+29.4
108.328 C	2	15	1	10	323.4	+5.0	-16.7	+40.7
Means	..	..	17	84	324.4	..	-16.4	..

No. 1445. Latitude -21°.4

Group 14879 in Rotation 1251
" 14914 " " 1252

Group 14879. Mar. 27-Apr. 6. A stream of nondescript spots. The leading ones have fused by March 30 into a composite spot, *a*, that remains the chief feature of the group.

85.683 †	81	360	58	258	176.6	0.0	-22.0	-45.0
86.606 G	78	575	49	355	176.3	-0.2	-22.0	-33.1
87.311 C	114	789	65	449	175.8	-0.5	-22.1	-24.3
88.409 C	145	916	76	482	176.1	-0.1	-21.8	- 9.6
89.309 C	148	1071	77	557	175.1	-0.9	-21.8	+ 1.3
90.350 G	148	1024	79	549	174.8	-1.1	-21.7	+14.7
91.475 C	88	607	53	361	173.9	-1.8	-22.0	+28.7
92.518 C	66	414	47	295	175.2	-0.3	-20.7	+43.8
93.311 C	48	283	43	254	176.9	+1.5	-21.3	+55.9
94.325 C	17	155	24	212	175.6	+0.3	-21.3	+68.0
95.310 C	6	73	19	230	177.1	..	-21.2	+82.5
Means	..	..	57	390	175.5	..	-21.6	..

Spot *a*

85.683 †	45	228	31	157	178.8	0.0	-21.6	-42.8
86.606 G	51	386	31	232	178.0	-0.7	-21.5	-31.4
87.311 C	71	540	40	302	177.6	-0.9	-21.7	-22.5
88.409 C	98	644	51	335	177.9	-0.5	-21.3	- 7.8
89.309 C	101	783	53	407	177.6	-0.6	-21.2	+ 3.8
90.350 G	93	606	50	327	177.7	-0.4	-21.2	+17.6
91.475 C	54	363	33	221	177.6	-0.3	-21.3	+32.4
92.518 C	60	382	43	275	176.9	-0.8	-20.3	+45.5
93.311 C	48	279	43	251	177.0	-0.6	-21.1	+56.0
94.325 C	17	149	24	207	177.4	-0.1	-21.0	+69.8
95.310 C	6	73	19	230	177.1	..	-21.2	+82.5

No. 1445. - *continued*

Group 14914. Apr. 21-29. A small spot slowly dying out.

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.
d					°	°	°	°
110.343 G	4	22	13	69	174.1	..	-21.0	-82.0
111.404 G	14	43	19	58	173.6	-1.2	-21.3	-68.5
112.321 C	13	94	12	87	173.1	-1.5	-21.2	-56.9
113.359 G	14	63	10	45	172.7	-1.8	-21.0	-43.6
114.328 C	24	72	14	43	172.5	-1.8	-20.9	-31.0
115.331 G	7	41	4	23	171.9	-2.3	-21.0	-18.3
116.321 C	11	37	6	19	171.5	-2.5	-21.1	- 5.6
117.581 G	5	16	3	8	171.2	-2.6	-20.9	+10.7
118.306 G	16	29	9	16	170.8	-2.9	-21.2	+19.9
Means	..	..	10	37	172.2	..	-21.1	..

No. 1446. Latitude -16°.2

Group 14892 in Rotation 1251
" 14918 " " 1252

Group 14892. Apr. 3-9. A bi-polar group growing very rapidly from near the C.M. and already of considerable size as it passes out of sight.

92.518 C	28	171	15	87	134.2	0.0	-17.3	+ 2.8
93.311 C	71	430	38	227	135.4	+1.2	-17.2	+14.4
94.325 C	164	1086	95	626	135.6	+1.4	-16.3	+28.0
95.310 C	175	1653	118	1097	134.3	+0.1	-16.4	+39.7
96.307 C	203	1302	166	1065	133.9	-0.3	-16.3	+52.4
97.468 G	98	1163	134	1654	134.9	+0.8	-15.8	+68.8
98.318 C	38	662	116	2025	133.2	-0.9	-16.1	+78.3
Means	..	..	97	969	134.5	..	-16.5	..

Spot *a*

92.518 C	15	102	8	52	135.6	0.0	-17.6	+ 4.2
93.311 C	58	324	31	172	137.5	+1.9	-17.1	+16.5
94.325 C	104	581	61	343	138.3	+2.7	-16.9	+30.7
95.310 C	106	700	75	497	139.4	+3.8	-17.5	+44.8
96.307 C	58	378	56	363	140.6	+5.0	-17.5	+59.1
97.468 G	29	448	53	820	141.3	+5.8	-16.6	+75.2
98.318 C	19	369	69	1332	138.3	..	-17.1	+83.4

Spot *b*

92.518 C	13	69	7	35	132.0	0.0	-17.3	+ 0.6
93.311 C	13	106	7	55	132.1	+0.1	-17.1	+11.1
94.325 C	60	505	34	283	131.9	-0.1	-16.0	+24.3
95.310 C	69	953	43	600	131.3	-0.7	-15.9	+36.7
96.307 C	145	924	110	702	130.4	-0.6	-15.7	+48.9
97.468 G	60	615	68	695	130.4	-1.5	-16.0	+64.3
98.318 C	13	220	23	396	129.8	-2.1	-15.7	+74.9

† Mount Wilson

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

No. 1446. - *continued*

Group 14918. Apr. 23-May 3. Possibly only a revival of Group 14892. A stream in which both leader and follower soon begin to break up into clusters of small spots. The following cluster is the first to die out.

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.
d					°	°	°	°
112.321 C	7	39	(22	123	148.0	..	-16.4)	-82.0
113.359 G	33	175	49	255	146.1	+10.8	-16.2	-70.2
114.328 C	68	818	66	793	145.4	+10.1	-16.2	-58.1
115.331 G	57	689	41	503	144.2	+ 8.9	-16.5	-46.0
116.321 C	114	718	69	434	144.6	+ 9.3	-16.3	-32.5
117.581 G	59	598	31	318	143.6	+ 8.3	-16.4	-16.9
118.306 G	63	264	32	137	143.2	+ 7.9	-16.3	- 7.7
119.570 G	34	126	18	66	146.7	+11.4	-16.0	+12.5
120.552 G	25	104	14	59	147.3	+12.0	-15.5	+26.0
121.325 C	22	84	13	52	145.5	+10.2	-15.0	+34.5
122.388 C	7	18	5	13	142.5	+ 7.3	-14.2	+45.5
Means	..	..	34	263	144.9	..	-15.9	..

No. 1447. Latitude +22°.8

Group 14916 in Rotation 1252
" 14963 } " " 1253
" 14964 }
" 15009 " " 1254

Group 14916. Apr. 23-May 2. A biggish stream developing from one or two dots on April 23. By April 26, the leader, *a*, has become a stable regular spot which outlives the rest of the group.

112.321 C	2	7	2	6	180.3	0.0	+24.6	-49.7
113.359 G	18	133	13	93	181.2	+ 1.1	+23.7	-35.1
114.328 C	153	687	93	419	183.0	+ 3.1	+23.8	-20.5
115.331 G	140	777	80	446	184.8	+ 5.1	+23.6	- 5.4
116.321 C	158	795	92	458	185.9	+ 6.4	+23.8	+ 8.8
117.581 G	156	1060	101	683	187.5	+ 8.3	+23.8	+27.0
118.306 G	142	990	102	716	188.2	+ 9.1	+23.7	+37.3
119.570 G	163	845	163	833	187.8	+ 8.9	+23.7	+53.6
120.552 G	84	498	123	731	187.3	+ 8.6	+24.0	+66.0
121.325 C	35	185	96	507	187.6	+ 9.1	+23.8	+76.6
Means	..	..	86	489	185.4	..	+23.8	..

Spot *a*

114.328 C	96	351	58	211	185.3	0.0	+23.5	-18.2
115.331 G	70	377	40	215	188.3	+ 3.2	+23.9	- 1.9
116.321 C	105	464	61	269	190.1	+ 5.2	+24.1	+13.0
117.581 G	104	683	69	451	190.3	+ 5.7	+24.0	+29.8
118.306 G	97	703	72	520	190.6	+ 6.1	+23.9	+39.7
119.570 G	118	540	122	556	189.9	+ 5.6	+24.1	+55.7
120.552 G	82	484	121	716	187.7	+ 3.6	+23.8	+66.4
121.325 C	35	185	96	507	187.6	+ 3.7	+23.8	+76.6

No. 1447. - *continued*

Group 14963. May 18-29. A regular spot with a few variable companions.

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.
d					°	°	°
137.330 C	24	110	46	212	187.0	+6.3	+24.3	-72.4
138.322 C	46	179	52	202	186.5	+6.0	+24.1	-59.8
139.122 K	55	260	47	224	186.6	+6.3	+24.3	-49.1
140.397 C	64	362	42	239	186.5	+6.4	+24.1	-32.3
141.486 G	75	497	44	293	185.7	+5.8	+24.0	-18.7
142.328 C	57	537	32	301	185.8	+6.1	+24.1	- 7.5
143.296 G	64	499	35	274	185.9	+6.4	+23.5	+ 5.4
144.330 C	75	528	44	306	185.0	+5.7	+23.1	+18.2
145.343 C	49	325	32	211	185.8	+6.7	+23.5	+32.4
146.333 C	44	262	35	207	186.2	+7.3	+23.4	+45.9
147.313 G	23	162	25	170	185.4	+6.7	+22.8	+58.1
148.342 C	9	64	16	113	185.5	+7.0	+22.8	+71.8
Means	..	..	38	229	186.0	..	+23.7	..

Group 14964. May 18-26. A small composite spot dying out.

137.330 C	15	104	34	239	183.7	+3.0	+20.7	-75.7
138.322 C	22	133	26	156	184.3	+3.8	+20.2	-62.0
139.122 K	70	266	62	234	184.0	+3.7	+20.4	-51.7
140.397 C	55	420	36	277	184.3	+4.2	+20.4	-34.5
141.486 G	78	306	44	174	184.2	+4.3	+19.9	-20.2
142.328 C	53	305	29	165	185.1	+5.4	+20.1	- 8.2
143.296 G	27	148	15	80	184.2	+4.7	+20.1	+ 3.7
144.330 C	24	91	13	51	182.5	+3.2	+20.4	+15.7
145.343 C	18	49	11	30	183.2	+4.1	+20.5	+29.8
Means	..	..	30	156	183.9	..	+20.3	..

Group 15009. June 14-26. A small persistent spot until June 22. Then, other spots appear grouped in an unstable cluster of which only one spot remains by June 25.

164.188 K	4	26	11	73	184.6	+9.3	+23.0	-79.4
165.383 G	9	51	11	62	184.2	+9.1	+22.8	-64.0
166.337 C	13	71	10	59	184.6	+9.7	+22.4	-49.9
167.294 G	12	74	8	51	183.8	+9.1	+22.6	-39.1
168.339 C	16	67	9	40	183.7	+9.2	+22.3	-25.4
169.388 G	21	85	12	47	183.2	+8.9	+22.5	-12.0
170.339 C	7	31	4	16	182.8	+8.7	+22.3	+ 0.2
171.334 C	9	36	5	20	182.4	+8.5	+22.2	+13.0
172.335 C	9	20	5	12	182.2	+8.5	+21.8	+26.1
173.396 C	49	219	34	153	182.5	+9.0	+22.8	+40.4
174.349 G	25	133	22	117	182.5	+9.2	+23.5	+53.0
175.356 G	7	34	9	46	183.0	+9.9	+24.1	+66.9
176.413 G	2	16	6	50	183.2	..	+24.1	+81.0
Means	..	..	12	58	183.3	..	+22.7	..

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

No. 1448. Latitude +9°.9

Group 14921 in Rotation 1252
" 14966 " " 1253
" 15012 " " 1254

Group 14921. Apr. 25-May 3. A stream of rapid rise and decay. The chief component, a regular spot, *a*, alone remains when the limb is reached.

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.
d					°	°	°
114.328 C	70	295	39	167	179.7	0.0	+10.6	-23.8
115.331 G	126	746	66	391	179.5	-0.3	+10.7	-10.7
116.321 C	146	707	75	368	179.0	-0.9	+10.7	+ 1.9
117.581 G	172	965	94	527	178.5	-1.6	+10.7	+18.0
118.306 G	129	599	76	355	178.3	-1.8	+10.7	+27.4
119.570 G	91	457	68	340	178.9	-1.4	+10.7	+44.7
120.552 G	50	272	50	272	179.6	-0.8	+10.1	+58.3
121.325 C	20	135	30	203	180.2	-0.3	+10.0	+69.2
122.388 C	4	18	18	79	179.7	..	+ 9.3	+82.7
Means	..	..	62	328	179.2	..	+10.5	..

Spot *a*

115.331 G	97	540	50	281	181.1	0.0	+10.4	- 9.1
116.321 C	118	521	61	271	180.8	-0.4	+10.3	+ 3.7
117.581 G	93	558	51	307	180.8	-0.6	+10.4	+20.3
118.306 G	70	443	42	266	180.8	-0.6	+ 9.9	+29.9
119.570 G	59	353	45	268	181.0	-0.6	+ 9.8	+46.8
120.552 G	41	222	42	229	181.0	-0.7	+ 9.6	+59.7
121.325 C	20	128	30	195	180.7	-1.1	+ 9.8	+69.7
122.388 C	4	18	18	79	179.7	..	+ 9.3	+82.7

Group 14966. May 18-30. A stable regular spot with a distant companion on May 26-27.

137.330 C	13	60	34	155	181.2	-2.4	+ 9.6	-78.2
138.322 C	27	141	34	178	180.6	-3.1	+ 9.9	-65.7
139.122 K	40	226	36	203	180.4	-3.4	+10.1	-55.3
140.397 C	69	274	45	178	180.3	-3.6	+10.0	-38.5
141.486 G	50	328	28	184	180.2	-3.9	+ 9.8	-24.2
142.328 C	51	270	27	140	180.1	-4.1	+ 9.8	-13.2
143.296 G	64	290	33	148	179.8	-4.5	+ 9.8	- 0.7
144.330 C	33	270	17	140	179.4	-5.0	+ 9.6	+12.6
145.343 C	68	332	38	185	177.5	-7.0	+10.3	+24.1
146.333 C	44	293	28	190	178.0	-6.6	+ 9.9	+37.7
147.313 G	39	192	32	157	178.8	-5.9	+ 9.4	+51.5
148.342 C	13	149	16	179	178.6	-6.2	+ 9.4	+64.9
149.313 G	11	76	28	192	179.0	-5.9	+ 9.1	+78.2
Means	..	..	30	171	179.5	..	+ 9.8	..

No. 1448. - *continued*

Group 15012. June 15-21. A small spot, probably the end of a regular spot.

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.
d					°	°	°
165.383 G	4	14	6	21	177.6	- 9.2	+ 9.2	-70.6
166.337 C	4	27	4	25	177.1	- 9.8	+ 9.3	-57.4
167.294 G	5	21	4	15	177.8	- 9.2	+ 9.3	-45.1
168.339 C	2	13	1	8	178.0	- 9.1	+ 9.3	-31.1
169.388 G	5	16	3	8	177.6	- 9.6	+ 9.3	-17.6
170.339 C	2	11	1	6	177.5	- 9.8	+ 9.3	- 5.1
171.334 C	0	11	0	6	177.2	-10.2	+ 9.4	+ 7.8
Means	..	..	3	13	177.5	..	+ 9.3	..

No. 1449. Latitude -13°.2

Group 14936 in Rotation 1252
" 14987 " " 1253

Group 14936. May 1-13. A composite spot, *a*, with two clusters of small spots in its wake. These clusters die out leaving the leader alone by May 11.

120.552 G	7	32	(20	90	40.8	..	-13.2)	-80.5
121.325 C	18	161	31	279	38.5	0.0	-14.4	-72.5
122.388 C	64	365	63	356	38.8	+ 0.2	-14.7	-58.2
123.333 C	125	862	92	639	37.9	- 0.7	-15.0	-46.6
124.368 G	127	783	76	467	39.7	+ 1.0	-14.6	-31.1
125.138 K	108	783	58	422	41.5	+ 2.8	-14.1	-19.1
126.325 C	149	862	76	443	39.8	+ 1.0	-14.1	- 5.1
127.323 C	121	770	63	399	42.5	+ 3.7	-13.6	+10.8
128.350 G	127	712	71	395	40.9	+ 2.0	-13.4	+22.7
129.370 C	101	607	65	390	41.8	+ 2.9	-13.5	+37.1
130.356 C	77	387	63	317	43.8	+ 4.8	-12.8	+52.2
131.415 G	34	184	42	230	44.1	+ 5.1	-12.7	+66.5
132.333 C	13	95	34	246	44.7	+ 5.6	-12.4	+79.2
Means	..	..	61	382	41.2	..	-13.8	..

Spot *a*

120.552 G	7	32	20	90	40.8	..	-13.2	-80.5
121.325 C	11	95	16	138	40.8	0.0	-13.3	-70.2
122.388 C	42	251	38	226	40.9	0.0	-14.1	-56.1
123.333 C	75	506	52	349	42.0	+ 1.1	-14.1	-42.5
124.368 G	89	583	52	338	42.3	+ 1.3	-14.0	-28.5
125.138 K	94	647	50	343	42.8	+ 1.8	-13.8	-17.8
126.325 C	136	715	69	365	43.4	+ 2.3	-13.2	- 1.5
127.323 C	110	671	57	349	43.8	+ 2.7	-13.2	+12.1
128.350 G	116	621	65	348	43.9	+ 2.7	-12.9	+25.7
129.370 C	92	554	60	360	43.9	+ 2.7	-12.9	+39.2
130.356 C	77	387	63	317	43.8	+ 2.5	-12.8	+52.2
131.415 G	34	184	42	230	44.1	+ 2.8	-12.7	+66.5
132.333 C	13	95	34	246	44.7	+ 3.3	-12.4	+79.2

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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. 1449. - *continued*							
Group 14987. May 28-June 4. A long stream in rapid decline. By June 3 only the middle components remain but on June 4 a small faint cluster appears at the rear.							
d					°	°	°
147.313 G	19	150	53	404	48.1	+5.9	-11.7	-79.2
148.342 C	29	258	38	356	47.2	+4.9	-12.4	-66.5
149.313 G	62	359	57	328	45.9	+3.6	-12.4	-54.9
150.342 G	96	410	68	284	45.7	+3.3	-12.5	-41.5
151.442 C	67	377	39	221	44.7	+2.3	-12.9	-28.0
152.343 C	41	183	23	97	45.3	+2.8	-12.8	-15.5
153.382 G	16	83	9	42	46.0	+3.5	-11.5	- 1.0
154.329 C	11	84	6	44	42.1	-0.5	-14.3	+ 7.6
Means	..	..	37	222	45.6	..	-12.6	..
No. 1450. Latitude +17°.9							
Group 14938 in Rotation 1252							
" 14984 } " " 14985 }				1253			
Group 14938. May 3-12. A bi-polar group of rapid growth. The leader, *a*, is a partially formed regular spot but more stable than the follower, *b*, which is composite and breaks up by May 9.							
122.388 C	71	156	49	107	59.8	0.0	+18.1	-37.2
123.333 C	225	1212	135	725	59.7	0.0	+18.0	-24.8
124.368 G	259	1435	142	789	58.9	-0.8	+17.9	-11.9
125.138 K	222	1304	120	704	59.2	-0.4	+17.9	- 1.4
126.325 C	216	1401	119	773	58.5	-1.1	+17.6	+13.6
127.323 C	167	1181	102	713	58.1	-1.4	+17.4	+26.4
128.350 G	150	905	105	640	57.8	-1.7	+17.8	+39.6
129.370 C	105	789	93	703	57.3	-2.1	+17.4	+52.6
130.356 C	64	537	82	712	57.1	-2.3	+17.4	+65.5
131.415 G	14	107	(47	368	56.3	..	+17.5)	+78.7
Means	..	..	105	652	58.5	..	+17.7	..
Spot *a*							
122.388 C	42	99	29	67	60.4	0.0	+18.6	-36.6
123.333 C	128	682	76	402	61.3	+1.0	+18.3	-23.2
124.368 G	159	849	87	467	60.9	+0.6	+18.5	- 9.9
125.138 K	134	739	72	399	61.2	+1.0	+18.4	+ 0.6
126.325 C	143	814	80	456	60.8	+0.6	+18.1	+15.9
127.323 C	121	697	75	432	60.7	+0.6	+18.1	+29.0
128.350 G	77	535	57	396	60.7	+0.6	+18.5	+42.5
129.370 C	57	433	54	411	59.9	-0.1	+18.2	+55.2
130.356 C	24	249	36	378	60.2	+0.2	+18.4	+68.6
131.415 G	7	59	28	240	59.1	..	+18.5	+81.5

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. 1450. Group 14938 - *continued*							
Spot *b*							
d					°	°	°
122.388 C	29	57	20	40	57.7	0.0	+17.3	-39.3
123.333 C	97	530	59	323	56.7	-0.9	+17.4	-27.8
124.368 G	100	586	55	322	55.9	-1.7	+17.3	-14.9
125.138 K	88	565	48	305	55.8	-1.7	+17.3	- 4.8
126.325 C	73	587	39	317	55.4	-2.1	+17.0	+10.5
127.323 C	46	484	27	281	54.9	-2.5	+17.0	+23.2
128.350 G	73	370	48	244	54.2	-3.2	+17.0	+36.0
129.370 C	48	356	39	292	54.1	-3.2	+16.6	+49.4
130.356 C	40	288	46	334	53.8	-3.5	+16.7	+62.2
131.415 G	7	48	19	128	55.4	-1.8	+16.6	+77.8
Group 14984. May 28-June 3. A few small scattered spots.							
147.313 G	0	7	0	10	59.8	+0.8	+15.5	-67.5
148.342 C	2	22	2	19	60.4	+1.5	+15.7	-53.3
149.313 G	9	34	6	23	60.1	+1.2	+16.0	-40.7
150.342 G	2	16	1	9	59.2	+0.4	+16.2	-28.0
151.442 C	7	89	4	47	60.8	+2.0	+15.2	-11.9
152.343 C	13	78	7	41	60.5	+1.8	+15.2	- 0.3
153.382 G	5	23	3	12	60.9	+2.2	+15.1	+13.9
Means	..	..	3	23	60.2	..	+15.6	..
Group 14985. May 28-June 3. A small spot with a few variable close companions.							
147.313 G	9	62	15	102	56.6	-2.4	+20.2	-70.7
148.342 C	21	144	21	143	56.9	-2.0	+20.5	-56.8
149.313 G	30	181	23	138	56.3	-2.6	+20.7	-44.5
150.342 G	27	195	17	123	56.1	-2.7	+20.3	-31.1
151.442 C	16	95	9	53	56.1	-2.7	+20.3	-16.6
152.343 C	9	67	5	36	56.4	-2.3	+20.5	- 4.4
153.382 G	7	69	4	37	54.9	-3.8	+21.5	+ 7.9
Means	..	..	13	90	56.2	..	+20.6	..
No. 1451. Latitude +10°.8							
Group 14942 in Rotation 1253							
" 14994 " " 1254							
Group 14942. May 6-16. A stream developing from a few small spots into a regular spot, *a*, followed by a train of small components.							
125.138 K	4	29	7	51	348.0	0.0	+11.6	-72.6
126.325 C	20	196	19	186	349.1	+1.0	+11.9	-55.8
127.323 C	19	125	13	85	351.6	+3.4	+11.7	-40.1
128.350 G	57	259	33	148	353.3	+5.0	+11.5	-24.9

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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. 1451. Group 14942 - *continued*							
129.370 C	162	702	85	368	353.5	+5.1	+11.3	−11.2
130.356 C	200	1102	104	573	354.3	+5.8	+11.0	+ 2.7
131.415 G	166	1038	90	558	354.3	+5.7	+11.1	+16.7
132.333 C	108	749	64	446	355.4	+6.7	+10.8	+29.9
133.386 G	89	557	65	407	356.2	+7.4	+11.2	+44.6
134.351 G	60	344	60	343	356.5	+7.6	+11.1	+57.7
135.332 G	27	205	46	349	357.6	+8.6	+11.1	+71.8
Means	..	..	53	319	353.6	..	+11.3	..
Spot *a*							
126.325 C	11	112	10	99	351.5	0.0	+11.7	−53.4
127.323 C	15	99	10	65	353.3	+1.7	+11.7	−38.4
128.350 G	52	232	30	132	354.4	+2.7	+11.2	−23.8
129.370 C	107	484	56	252	355.4	+3.6	+10.8	− 9.3
130.356 C	161	889	84	462	355.8	+3.9	+10.7	+ 4.2
131.415 G	125	804	68	434	356.4	+4.4	+10.8	+18.8
132.333 C	95	636	57	382	356.7	+4.6	+10.6	+31.2
133.386 G	80	486	59	360	357.5	+5.3	+11.0	+45.9
134.351 G	55	303	56	309	358.3	+6.0	+11.0	+59.5
135.332 G	27	198	46	341	358.0	+5.6	+11.0	+72.2

Group 14994. June 1-8. A small regular spot joined on June 5 by a short string of small spots closely *s* of it. But extinction of the whole group soon follows.

151.442 C	13	73	23	129	359.5	+5.5	+10.5	−73.2
152.343 C	16	100	17	109	358.8	+4.7	+10.8	−62.0
153.382 G	27	149	21	115	358.7	+4.5	+10.8	−48.3
154.329 C	24	158	15	100	358.7	+4.4	+11.3	−35.8
155.480 G	20	167	11	91	359.2	+4.8	+10.1	−20.0
156.292 G	64	302	32	155	0.2	+5.7	+ 9.9	− 8.3
157.368 C	18	133	10	68	1.0	+6.4	+ 9.6	+ 6.8
158.332 C	4	40	2	22	1.1	+6.4	+ 9.6	+19.6
Means	..	..	16	99	359.6	..	+10.3	..

No. 1452. Latitude +20°.5

Group 14945 in Rotation 1253
" 14996 " " 1254

Group 14945. May 8-21. A stream whose leader, *a*, is at first a double spot. From May 11, a growing spot near this leader is absorbed by it to form a fairly stable regular spot. The follower, *b*, is composite and undergoes minor changes.

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. 1452. Group 14945 - *continued*							
127.323 C	13	59	(36	162	314.1	..	+19.4)	−77.6
128.350 G	46	234	72	379	309.8	0.0	+19.3	−68.4
129.370 C	125	621	127	621	309.0	−0.7	+19.3	−55.7
130.356 C	136	807	98	599	309.8	+0.3	+19.2	−41.8
131.415 G	214	1194	133	744	307.6	−1.8	+19.1	−30.0
132.333 C	188	1329	107	760	307.5	−1.8	+19.1	−18.0
133.386 G	201	1500	109	810	306.7	−2.5	+19.0	− 4.9
134.351 G	219	1363	121	747	307.7	−1.3	+19.1	+ 8.9
135.332 G	161	1262	94	730	307.1	−1.8	+19.1	+21.3
136.336 G	178	967	116	645	308.3	−0.5	+19.1	+35.8
137.330 C	164	813	134	662	307.0	−1.6	+18.5	+47.6
138.322 C	73	424	86	497	308.2	−0.3	+19.3	+61.9
139.122 K	52	268	97	477	306.0	−2.4	+18.9	+70.3
140.397 C	4	27	(16	110	300.6	..	+19.0)	+81.8
Means	..	..	108	639	307.9	..	+19.1	..
Spot *a*							
127.323 C	13	59	36	162	314.1	0.0	+19.4	−77.6
128.350 G	32	145	43	193	313.1	−0.9	+19.8	−65.1
129.370 C	46	273	40	238	313.9	+0.1	+19.9	−50.8
130.356 C	90	376	62	259	313.8	+0.1	+19.9	−37.8
131.415 G	100	502	60	301	312.8	−0.8	+20.2	−24.8
132.333 C	97	511	54	286	312.8	−0.7	+20.2	−12.7
133.386 G	96	552	52	298	312.6	−0.7	+20.4	+ 1.0
134.351 G	123	570	69	319	312.8	−0.4	+20.2	+14.0
135.332 G	93	592	56	355	311.6	−1.4	+20.2	+25.8
136.336 G	73	561	51	393	311.3	−1.6	+19.6	+38.8
137.330 C	66	323	59	291	312.0	−0.8	+20.1	+52.6
138.322 C	40	217	53	289	311.8	−0.9	+20.1	+65.5
139.122 K	27	114	61	256	311.3	−1.3	+20.1	+75.6
Spot *b*							
128.350 G	14	89	29	186	304.0	0.0	+18.6	−74.2
129.370 C	79	348	87	383	304.8	+0.9	+18.8	−59.9
130.356 C	46	431	36	340	305.2	+1.5	+18.7	−46.4
131.415 G	114	692	73	443	305.4	+1.8	+18.9	−32.2
132.333 C	91	818	53	474	304.4	+0.9	+18.5	−21.1
133.386 G	105	948	57	512	303.7	+0.3	+18.5	− 7.9
134.351 G	96	793	52	428	303.9	+0.7	+18.4	+ 5.1
135.332 G	68	670	38	375	303.0	−0.1	+18.1	+17.2
136.336 G	105	406	65	252	303.3	+0.3	+17.9	+30.8
137.330 C	71	360	53	266	303.2	+0.4	+18.1	+43.8
138.322 C	33	207	33	208	303.8	+1.1	+18.4	+57.5
139.122 K	25	154	36	221	303.4	+0.8	+18.2	+67.7
140.397 C	4	27	(16	110	300.6	..	+19.0)	+81.8

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No. 1452. - *continued*

Group 14996. June 4-15. A stream consisting of two clusters of small spots. On June 9 they begin to disperse and die out.

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					°	°	°
154.329 C	13	108	(44	363	314.2	..	+23.1)	-80.3
155.480 G	50	414	75	610	310.8	+0.3	+22.1	-68.4
156.292 G	94	488	97	497	310.4	0.0	+22.1	-58.1
157.368 C	58	611	43	456	310.2	0.0	+21.5	-44.0
158.332 C	82	497	52	313	309.9	-0.2	+21.8	-31.6
159.331 C	45	455	25	257	310.5	+0.5	+21.5	-17.8
160.299 G	44	334	23	180	310.1	+0.3	+21.2	- 5.4
161.326 G	46	265	25	145	308.8	-0.9	+22.5	+ 6.9
162.351 C	34	295	19	169	308.4	-1.2	+22.8	+20.1
163.350 C	9	129	6	84	308.8	-0.7	+22.5	+33.7
164.188 K	4	24	3	17	307.5	-1.8	+20.0	+43.5
165.383 G	2	12	2	13	307.7	-1.5	+22.3	+59.5
Means	..	..	34	249	309.4	..	+21.8	..

No. 1453. Latitude -19°.5

Group 14948 in Rotation 1253
" 14986 " " 1253

Group 14948. May 12-14. A short stream forming near the west limb.

131.415 G	34	200	38	219	40.1	0.0	-17.6	+62.5
132.333 C	13	130	24	233	39.7	-0.3	-18.4	+74.2
133.386 G	5	23	(30	140	37.6	..	-19.1)	+86.0
Means	..	..	31	226	39.9	..	-18.0	..

Group 14986. May 28-June 9. A stream of normal type dispersing rapidly after June 3.

147.313 G	30	146	82	400	48.2	+9.7	-20.5	-79.1
148.342 C	33	346	43	453	47.3	+8.9	-20.7	-66.4
149.313 G	73	533	65	486	46.4	+8.1	-21.2	-54.4
150.342 G	97	637	69	451	46.7	+8.5	-20.7	-40.5
151.442 C	78	568	47	339	46.3	+8.2	-20.7	-26.4
152.343 C	75	359	42	198	45.8	+7.8	-21.5	-15.0
153.382 G	66	373	35	200	44.8	+6.9	-21.3	- 2.2
154.329 C	51	302	28	165	44.1	+6.3	-21.3	+ 9.6
155.480 G	20	147	12	88	45.0	+7.3	-21.1	+25.8
156.292 G	32	149	21	97	43.9	+6.3	-20.8	+35.4
157.368 C	15	114	12	93	43.6	+6.1	-20.9	+49.4
158.332 C	7	64	8	72	42.9	+5.5	-20.6	+61.4
159.331 C	0	13	0	22	39.5	+2.2	-21.6	+71.2
Means	..	..	36	236	45.0	..	-21.0	..

No. 1454. Latitude -29°.2

Group 14957 in Rotation 1253
" 15007 " " 1254

Group 14957. May 16-27. From a tiny spot a big group quickly develops in which both leader and follower are at first regular spots. From May 21, companions between them grow and coalesce with the parent spots which, by May 26, have merged into a complex entity of apparent instability.

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					°	°	°
135.332 G	0	5	0	6	225.4	0.0	-28.0	-60.4
136.336 G	43	100	34	79	226.7	+1.7	-28.3	-45.8
137.330 C	137	718	89	471	226.7	+2.2	-28.2	-32.7
138.322 C	186	1177	111	699	225.8	+1.7	-27.8	-20.5
139.122 K	241	1351	136	763	224.9	+1.1	-28.2	-10.8
140.397 C	261	1410	146	794	224.2	+1.0	-28.9	+ 5.4
141.486 G	167	1341	99	797	223.8	+1.0	-28.5	+19.4
142.328 C	188	1220	121	781	222.6	+0.2	-28.9	+29.3
143.296 G	128	1017	96	759	221.8	-0.2	-28.9	+41.3
144.330 C	139	1118	131	1051	220.6	-0.9	-29.1	+53.8
145.343 C	49	497	69	696	220.1	-1.0	-28.8	+66.7
146.333 C	31	262	80	679	218.2	-2.5	-28.8	+77.9
Means	..	..	93	631	223.4	..	-28.5	..

Group 15007. June 13-15. A tiny spot, not seen on June 14.

163.350 C	0	7	0	9	212.8	-0.6	-29.3	-62.3
164.188 K	0	0	0	0	..	..	..	..
165.383 G	5	16	4	12	209.8	-2.7	-30.3	-38.4
Means	..	..	1	7	211.3	..	-29.8	..

No. 1455. Latitude +20°.8

Group 14970 in Rotation 1253
" 15014 " " 1254
" 15066 " " 1255

Group 14970. May 20-31. The origin and rise to maximum of a large group from a pair of nuclei. The leader, *a*, becomes a composite spot and the chief component. The follower is represented by a cluster of small spots which begin to die out after May 27.

139.122 K	4	12	6	18	167.8	0.0	+20.7	-67.9
140.397 C	13	55	11	48	167.2	-0.4	+20.7	-51.6
141.486 G	34	249	24	174	165.7	-1.8	+21.5	-38.7
142.328 C	131	776	79	469	166.7	-0.7	+21.0	-26.6
143.296 G	167	884	93	492	166.6	-0.6	+20.7	-13.9
144.330 C	137	1090	74	592	166.7	-0.4	+21.7	- 0.1
145.343 C	186	1123	103	627	166.6	-0.3	+21.5	+13.2
146.333 C	208	1272	126	769	167.2	+0.4	+20.9	+26.9
147.313 G	139	1096	99	781	168.3	+1.6	+21.0	+41.0

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

Date U.T. Place	Projected Area		Corrected Area		Longitude and Proper Motion		Lati-tude	Long. from C.M.
	Umbræ	Whole Spots	Umbræ	Whole Spots				
No. 1455. Group 14970 - *continued*								
d					°	°	°	°
148.342 C	124	1268	115	1173	167.6	+1.1	+21.2	+53.9
149.313 G	101	806	141	1128	168.1	+1.7	+20.5	+67.3
150.342 G	39	378	114	1104	166.4	+0.1	+21.2	+79.2
Means	..	..	82	615	167.1	..	+21.0	..
Spot *a*								
141.486 G	23	153	16	104	167.0	0.0	+20.5	-37.4
142.328 C	80	477	47	281	168.5	+1.6	+20.2	-24.8
143.296 G	121	659	67	362	168.8	+2.0	+20.5	-11.7
144.330 C	93	676	50	365	169.3	+2.7	+20.4	+ 2.5
145.343 C	124	716	69	401	169.4	+2.9	+20.2	+16.0
146.333 C	164	963	100	587	168.9	+2.6	+20.6	+28.6
147.313 G	116	946	84	681	168.9	+2.7	+20.5	+41.6
148.342 C	120	1212	112	1127	168.1	+2.0	+21.0	+54.4
149.313 G	101	806	141	1128	168.1	+2.2	+20.5	+67.3
150.342 G	39	378	114	1104	166.4	+0.6	+21.2	+79.2
Group 15014. June 15-27. A large nearly circular spot with triple umbra and occasional close companions. Decreasing slowly in size, its position is steady with a latitude trend northwards.								
165.383 G	34	267	107	841	167.6	..	+20.1	-80.6
166.337 C	87	540	118	734	167.0	+3.4	+20.3	-67.5
167.294 G	117	784	108	721	167.8	+4.4	+20.2	-55.1
168.339 C	152	890	106	623	167.9	+4.6	+20.1	-41.2
169.388 G	198	846	119	508	167.3	+4.2	+20.3	-27.9
170.339 C	140	963	77	530	167.0	+4.0	+20.4	-15.6
171.334 C	156	879	83	466	166.8	+3.9	+20.6	- 2.6
172.335 C	149	727	80	393	166.4	+3.7	+20.5	+10.3
173.396 C	109	676	63	392	166.4	+3.8	+20.6	+24.3
174.349 G	120	545	78	354	165.9	+3.4	+20.9	+36.4
175.356 G	69	442	56	358	165.9	+3.6	+21.2	+49.8
176.413 G	39	301	45	349	165.6	+3.4	+21.3	+63.4
177.328 G	21	143	42	285	165.3	+3.2	+21.2	+75.3
Means	..	..	81	476	166.6	..	+20.6	..
Group 15066. July 14-15. A tiny spot.								
194.474 G	2	9	2	10	160.9	+1.2	+21.0	-62.2
195.297 G	0	5	0	4	161.0	+1.4	+20.6	-51.2
Means	..	..	1	7	161.0	..	+20.8	..

Date U.T. Place	Projected Area		Corrected Area		Longitude and Proper Motion		Lati-tude	Long. from C.M.
	Umbræ	Whole Spots	Umbræ	Whole Spots				
No. 1456. Latitude -12°.4								
Group 14972 in Rotation 1253								
" 15008 " " 1254								
Group 14972. May 21-28. A stream of small spots; the leader, *a*, becomes a small regular spot and is left by May 27.								
d					°	°	°	°
140.397 C	14	42	8	23	198.3	0.0	-11.1	-20.5
141.486 G	20	130	11	66	199.9	+1.5	-12.2	- 4.5
142.328 C	77	318	39	164	200.7	+2.3	-12.2	+ 7.4
143.296 G	60	279	33	152	201.7	+3.2	-12.4	+21.2
144.330 C	18	129	12	82	203.6	+5.0	-12.7	+36.8
145.343 C	38	150	29	119	203.5	+4.9	-12.7	+50.1
146.333 C	16	91	19	106	204.4	+5.7	-12.9	+64.1
147.313 G	7	52	16	117	204.3	+5.5	-12.8	+77.0
Means	..	..	21	104	202.0	..	-12.4	..
Spot *a*								
140.397 C	7	24	4	13	199.0	0.0	-11.6	-19.8
141.486 G	11	71	6	36	201.7	+2.6	-12.1	- 2.7
142.328 C	49	203	25	106	202.9	+3.8	-12.2	+ 9.6
143.296 G	46	233	25	128	203.5	+4.3	-12.4	+23.0
144.330 C	18	122	12	78	203.9	+4.6	-12.8	+37.1
145.343 C	29	128	23	104	204.5	+5.2	-12.8	+51.1
146.333 C	16	91	19	106	204.4	+5.0	-12.9	+64.1
147.313 G	7	52	16	117	204.3	+4.8	-12.8	+77.0
Group 15008. June 13-16. A small spot decreasing to a speck.								
163.350 C	2	9	3	15	203.0	+2.4	-12.7	-72.1
164.188 K	4	21	4	22	202.7	+2.0	-12.4	-61.3
165.383 G	5	14	4	10	202.9	+2.2	-12.4	-45.3
166.337 C	0	7	0	4	202.1	+1.3	-12.4	-32.4
Means	..	..	3	13	202.7	..	-12.5	..
No. 1457. Latitude +14°.5								
Group 14992 in Rotation 1253								
" 15023 " " 1254								
Group 14992. June 1-2. A cluster of spots lost to view at the west limb.								
151.442 C	9	49	9	51	132.7	0.0	+14.4	+60.0
152.343 C	22	111	41	208	134.7	+2.0	+14.4	+73.9
Means	..	..	25	130	133.7	..	+14.4	..

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

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. 1457. - *continued*							
Group 15023. June 18-26. A single spot dying out; weak activity is renewed 5° following in longitude after a lapse of two days, but dies out by June 26.							
d					°	°	°
168.339 C	2	16	3	25	137.8	+4.6	+14.6	−71.3
169.388 G	5	16	5	15	137.3	+4.1	+14.2	−57.9
170.339 C	2	13	1	9	137.8	+4.6	+14.2	−44.8
171.334 C	0	0	0	0	..	..	..	..
172.335 C	0	0	0	0	..	..	..	..
173.396 C	23	83	12	43	132.2	−1.1	+14.7	− 9.9
174.349 G	42	246	22	125	132.6	−0.7	+14.8	+ 3.1
175.356 G	30	145	16	77	132.5	−0.8	+14.9	+16.4
176.413 G	9	46	5	27	132.8	−0.6	+14.7	+30.6
Means	..	..	7	36	134.7	..	+14.6	..
No. 1458. Latitude +22°.1							
Group 14995 in Rotation 1254							
" 15043 " " 1255							
Group 14995. June 3-15. A large group of stream type consisting of two composite spots. The follower grows until June 8, afterwards breaking up and so dying out. The leader, *a*, undergoes little change but is slowly diminishing as it goes round the limb.							
153.382 G	16	128	48	377	327.2	0.0	+23.9	−79.8
154.329 C	27	377	38	528	327.5	+0.5	+23.4	−67.0
155.480 G	48	559	40	485	328.3	+1.5	+23.3	−50.9
156.292 G	160	1003	114	726	327.9	+1.2	+23.5	−40.6
157.368 C	164	1530	99	925	328.2	+1.7	+23.3	−26.0
158.332 C	284	1896	160	1071	328.0	+1.7	+23.5	−13.5
159.331 C	167	1537	91	837	327.8	+1.7	+23.1	− 0.5
160.299 G	187	1389	103	769	328.1	+2.1	+23.0	+12.6
161.326 G	126	945	76	571	328.6	+2.8	+22.9	+26.7
162.351 C	91	872	65	618	328.8	+3.2	+22.6	+40.5
163.350 C	112	629	105	588	329.9	+4.5	+22.1	+54.8
164.188 K	49	348	65	464	330.6	+5.3	+21.0	+66.6
165.383 G	12	110	46	420	330.6	..	+22.0	+82.4
Means	..	..	84	663	328.4	..	+23.0	..
Spot *a*							
155.480 G	37	339	30	278	330.2	0.0	+22.1	−49.0
156.292 G	105	579	72	400	330.2	+0.1	+22.4	−38.3
157.368 C	91	786	53	456	331.2	+1.3	+21.8	−23.0

continued

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. 1458. Group 14995 - *continued*							
Spot *a* - *continued*							
d					°	°	°
158.332 C	161	946	89	520	330.8	+1.1	+21.9	−10.7
159.331 C	127	872	69	471	330.7	+1.2	+21.6	+ 2.4
160.299 G	159	888	87	488	330.5	+1.2	+21.5	+15.0
161.326 G	92	692	56	422	330.3	+1.1	+21.8	+28.4
162.351 C	71	638	51	459	330.4	+1.4	+21.7	+42.1
163.350 C	103	600	97	564	330.5	+1.7	+21.8	+55.4
164.188 K	47	339	63	454	330.8	+2.1	+20.8	+66.8
165.383 G	12	110	46	420	330.6	..	+22.0	+82.4
Group 15043. June 30-July 9. A single spot until July 3; afterwards one or two variable spots represent the position.							
180.130 K	6	30	14	72	334.7	+8.9	+21.3	−78.2
181.340 C	16	67	18	74	334.8	+9.2	+21.4	−62.1
182.333 G	18	62	14	50	334.5	+9.1	+21.5	−49.3
183.373 G	14	88	9	57	333.1	+7.9	+21.1	−36.9
184.342 G	5	25	3	14	334.1	+9.0	+21.1	−23.1
185.299 G	4	39	2	20	332.6	+7.7	+20.2	−11.9
186.328 C	11	103	6	54	331.3	+6.6	+21.3	+ 0.4
187.383 G	2	30	1	16	330.9	+6.4	+22.0	+13.9
188.367 G	9	35	5	21	331.8	+7.5	+22.1	+27.9
189.404 C	9	36	6	25	332.0	+7.8	+21.1	+41.8
Means	..	..	8	40	333.0	..	+21.3	..
No. 1459. Latitude +8°.7							
Group 15005 in Rotation 1254							
" 15056 " " 1255							
Group 15005. June 12-23. A nondescript group till more definite growth occurs towards the west limb.							
162.351 C	4	22	5	30	220.3	0.0	+ 8.9	−68.0
163.350 C	22	154	19	130	221.9	+1.5	+ 9.0	−53.2
164.188 K	33	202	22	137	222.5	+2.0	+ 8.6	−41.5
165.383 G	28	186	15	101	225.3	+4.6	+ 8.1	−22.9
166.337 C	29	123	15	63	224.9	+4.1	+ 8.0	− 9.6
167.294 G	39	251	20	127	223.6	+2.7	+ 8.3	+ 0.7
168.339 C	13	85	7	44	218.4	−2.7	+10.0	+ 9.3
169.388 G	39	214	22	118	218.4	−2.8	+ 9.9	+23.2
170.339 C	53	370	32	229	218.3	−3.0	+ 9.7	+35.7
171.334 C	56	395	43	315	219.5	−2.0	+ 9.4	+50.1
172.335 C	52	466	59	537	220.1	−1.5	+ 9.4	+64.0
173.396 C	17	125	41	308	220.0	−1.7	+10.1	+77.9
Means	..	..	25	178	221.1	..	+ 9.1	..

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No. 1459. - *continued*

Group 15056. July 8-15. A pair of small spots. On July 10 companions appear round the follower to form a short-lived cluster.

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.
188.367 G	0	7	0	27	220.9	..	+10.0	-83.0
189.404 C	15	87	18	102	225.5	+1.7	+ 8.5	-64.7
190.356 C	22	174	18	142	225.7	+1.8	+ 8.5	-51.9
191.370 C	13	98	8	61	228.5	+4.4	+ 8.0	-35.7
192.313 G	9	33	5	18	229.3	+5.1	+ 8.5	-22.4
193.549 C	9	80	4	40	229.8	+5.4	+ 8.2	- 5.6
194.474 G	2	28	1	14	230.1	+5.6	+ 8.3	+ 7.0
195.297 G	7	46	4	24	231.0	+6.4	+ 8.1	+18.8
Means	..	..	8	57	228.6	..	+ 8.3	..

No. 1460. Latitude -16°.9

Group 15010 in Rotation 1254
" 15051 " " 1255

Group 15010. June 15-19. Apparently a minor group, although its later history is lost to observation.

165.383 G	25	158	14	90	271.4	0.0	-16.3	+23.2
166.337 C	22	156	14	101	270.5	-0.9	-16.1	+36.0
167.294 G	35	171	27	135	170.9	-0.4	-16.4	+48.0
168.339 C	11	109	13	125	270.9	-0.4	-16.3	+61.8
169.388 G	17	114	40	282	271.2	-0.1	-16.1	+76.0
Means	..	..	22	147	271.0	..	-16.2	..

Group 15051. July 5-13. A small spot immediately s Group 15050.

185.299 G	2	48	4	92	270.8	0.0	-16.9	-73.7
186.328 C	4	67	4	69	272.9	+2.1	-17.6	-58.0
187.383 G	9	65	7	49	273.2	+2.5	-17.6	-43.8
188.367 G	25	148	16	92	273.7	+3.0	-17.6	-30.2
189.404 C	31	132	17	74	273.4	+2.7	-17.2	-16.8
190.356 C	18	134	10	72	273.9	+3.2	-17.3	- 3.7
191.370 C	7	49	4	27	274.4	+3.8	-17.6	+10.2
192.313 G	9	35	5	21	274.6	+4.0	-17.9	+22.9
193.549 C	2	22	1	16	276.3	+5.7	-17.9	+40.9
Means	..	..	8	57	273.7	..	-17.5	..

No. 1461. Latitude -12°.6

Group 15016 in Rotation 1254
" 15050 " " 1255
" 15093 " " 1256
" 15140 " " 1257

Group 15016. June 16-19. A few small spots growing rapidly as they pass round the limb.

Date U.T. Place	Projected Area Umbræ	Projected Area Whole Spots	Corrected Area Umbræ	Corrected Area Whole Spots	Longitude and Proper Motion	Latitude	Lati-tude	Long. from C.M.
166.337 C	2	18	1	10	263.8	0.0	-10.1	+29.3
167.294 G	9	44	6	31	267.0	+ 3.1	-10.3	+44.1
168.339 C	58	346	61	362	268.8	+ 4.9	-11.2	+59.7
169.388 G	37	189	76	393	270.0	+ 6.0	-11.5	+74.8
Means	..	..	36	199	267.4	..	-10.8	..

Group 15050. July 4-16. A stable regular spot followed by a small changing companion until July 10.

184.342 G	14	104	44	328	277.4	+12.4	-12.7	-79.8
185.299 G	58	312	84	454	276.0	+11.0	-13.1	-68.5
186.328 C	69	439	63	393	276.7	+11.7	-13.0	-54.2
187.383 G	93	578	64	399	276.3	+11.1	-13.2	-40.7
188.367 G	107	536	63	313	277.1	+11.8	-12.8	-26.8
189.404 C	116	591	62	315	276.7	+11.4	-12.9	-13.5
190.356 C	159	651	83	338	277.1	+11.7	-12.8	- 0.5
191.370 C	85	544	46	294	277.5	+12.0	-12.8	+13.3
192.313 G	106	439	61	255	277.2	+11.7	-12.9	+25.5
193.549 C	67	381	47	267	277.0	+11.4	-13.1	+41.6
194.474 G	49	300	44	270	276.9	+11.2	-12.8	+53.8
195.297 G	37	192	47	242	276.9	+11.2	-13.0	+64.7
196.390 C	9	60	25	169	276.2	+10.4	-12.8	+78.4
Means	..	..	56	311	276.8	..	-12.9	..

Group 15093. July 31-Aug. 12. A regular spot of marked stability.

211.430 G	2	16	9	70	276.8	..	-13.1	-82.0
212.324 C	20	91	33	148	276.9	+10.1	-12.8	-70.1
213.386 G	21	137	20	132	276.8	+ 9.9	-12.6	-56.1
214.433 G	23	179	17	129	276.9	+ 9.9	-12.2	-42.2
215.437 G	39	218	23	131	277.0	+10.0	-12.2	-28.8
216.340 C	33	180	18	99	277.0	+ 9.9	-12.2	-16.9
217.327 C	38	226	20	120	276.9	+ 9.7	-12.5	- 3.9
218.364 C	40	195	21	103	276.7	+ 9.5	-12.2	+ 9.6
219.303 G	32	185	18	105	276.6	+ 9.3	-12.1	+21.9
220.517 C	29	153	19	103	276.5	+ 9.1	-12.1	+37.9
221.356 C	16	127	13	104	276.6	+ 9.2	-12.2	+49.1
222.355 G	16	105	18	121	276.1	+ 8.6	-12.0	+61.8
223.385 G	11	60	25	138	276.4	+ 8.8	-11.8	+75.7
Means	..	..	20	119	276.7	..	-12.2	..

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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. 1461. - *continued*							
Group 15140. Aug. 28-Sept. 9. A stable regular spot; probably not identical with the spot of Group 15093.							
d 239.333 G	11	64	33	194	271.°6 + 3.°0	-14.°4	-78.°3
240.339 G	25	130	32	168	272.3 + 3.6	-13.9	-64.4
241.321 C	31	191	27	168	272.3 + 3.6	-14.2	-51.4
242.345 G	34	209	23	144	272.5 + 3.7	-14.5	-37.7
243.345 G	43	207	25	122	272.5 + 3.6	-14.6	-24.4
244.340 G	48	243	26	134	272.0 + 3.1	-14.7	-11.8
245.350 G	52	254	28	137	272.3 + 3.3	-14.5	+ 1.8
246.368 G	45	225	25	126	271.9 + 2.8	-14.7	+14.9
247.365 G	39	211	24	129	271.5 + 2.4	-14.7	+27.7
248.344 G	23	175	16	124	271.2 + 2.0	-14.7	+40.3
249.315 C	11	70	25	137	270.7 + 1.4	-14.5	+52.6
250.467 G	11	86	17	130	270.7 + 1.3	-14.6	+67.8
251.370 G	7	32	25	116	270.8 + 1.4	-15.0	+79.8
Means	..	..	25	141	271.7 ..	-14.5	..
No. 1462. Latitude +12°.8							
Group 15017 in Rotation 1254 " 15065 " " 1255							
Group 15017. June 16-27. The development to maximum of a large stream from a small spot near the east limb. By June 21, leading spots begin to coalesce into a large regular spot, *a*, which remains stable. The slow dissolution of the following part of the stream is offset by condensation of intermediate spots into a subsidiary regular spot when the peak area of the group is reached.							
166.337 C	2	11	4	23	158.7 0.0	+13.3	-75.8
167.294 G	16	39	17	43	160.5 + 1.7	+11.6	-62.4
168.339 C	20	129	15	99	160.3 + 1.5	+11.8	-48.8
169.388 G	53	266	33	163	161.4 + 2.5	+11.6	-33.8
170.339 C	20	163	11	87	163.4 + 4.5	+11.9	-19.2
171.334 C	84	704	42	359	164.7 + 5.7	+11.5	- 4.7
172.335 C	82	888	43	459	166.2 + 7.1	+11.4	+10.1
173.396 C	208	1082	117	607	167.4 + 8.3	+11.3	+25.3
174.349 G	265	1456	176	963	169.3 +10.1	+11.9	+39.8
175.356 G	203	1220	178	1062	169.5 +10.2	+11.5	+53.4
176.413 G	129	796	181	1122	171.0 +11.7	+11.9	+68.8
177.328 G	39	251	137	873	171.2 ..	+12.4	+81.2
Means	..	..	74	453	164.8 ..	+11.8	..
Spot *a*							
171.334 C	40	399	20	203	167.2 0.0	+11.5	- 2.2
172.335 C	51	582	27	303	167.9 + 0.6	+11.4	+11.8

continued

No. 1462. Group 15017 - *continued*

Spot *a* - *continued*

d 173.396 C	172	776	98	442	169.°8	+2.°5	+11.°4	+27.°7
174.349 G	191	966	130	657	172.7	+5.3	+12.7	+43.2
175.356 G	147	849	134	773	172.2	+4.8	+12.7	+56.1
176.413 G	108	644	157	947	172.4	+4.9	+12.8	+70.2
177.328 G	32	200	122	764	172.8	..	+12.9	+82.8
Group 15065. July 13-23. A small diminishing spot with a double umbra until July 19.								
193.549 C	7	76	12	129	162.0	-6.8	+13.9	-73.4
194.474 G	35	152	37	160	161.3	-7.5	+14.0	-61.8
195.297 G	49	208	39	164	161.7	-7.2	+13.9	-50.5
196.390 C	40	254	25	157	161.9	-7.1	+13.8	-35.9
197.339 C	42	196	23	108	161.7	-7.3	+13.8	-23.5
198.385 G	25	164	13	84	161.9	-7.2	+14.1	- 9.5
199.371 G	32	101	16	52	161.7	-7.4	+14.0	+ 3.4
200.527 G	21	76	11	40	161.6	-7.6	+13.9	+18.6
201.308 G	21	80	12	46	161.5	-7.8	+13.8	+28.8
202.304 G	5	21	3	14	161.5	-7.8	+13.8	+42.0
203.380 C	2	13	2	12	161.8	-7.6	+13.5	+56.5
Means	..	..	18	88	161.7	..	+13.9	..
No. 1463. Latitude -30°.8								
Group 15059 in Rotation 1255 " 15105 " " 1256								
Group 15059. July 9-21. An elongated spot with a double umbra that coalesces by July 17, when the whole spot becomes circular. There are a few tiny companions following until July 14.								
189.404 C	40	259	98	637	216.0	0.0	-29.7	-74.2
190.356 C	78	468	108	654	214.6	-0.9	-30.3	-63.0
191.370 C	106	663	103	645	213.4	-1.6	-30.5	-50.8
192.313 G	113	741	89	576	212.6	-2.0	-30.6	-39.1
193.549 C	111	776	74	514	212.5	-1.5	-30.3	-22.9
194.474 G	160	790	99	490	211.7	-1.8	-30.3	-11.4
195.297 G	152	799	93	487	211.0	-2.1	-30.4	- 1.2
196.390 C	147	662	91	410	210.1	-2.5	-30.4	+12.3
197.339 C	127	624	85	418	209.2	-2.9	-30.5	+24.0
198.385 G	109	573	85	447	208.8	-2.8	-30.6	+37.4
199.371 G	80	462	78	448	208.0	-3.1	-30.5	+49.7
200.527 G	44	317	66	479	207.2	-3.3	-30.5	+64.2
201.308 G	39	225	98	567	206.3	-3.8	-30.5	+73.6
Means	..	..	90	521	210.9	..	-30.4	..

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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. 1463. - *continued*							
Group 15105. Aug. 7-18. A stable regular spot.							
d 218.364 C	20	153	43	332	197.0	-4.8	-31.6	-70.1
219.303 G	39	231	50	296	196.6	-4.7	-31.3	-58.1
220.517 C	56	373	49	328	195.8	-4.9	-31.4	-42.8
221.356 C	56	411	43	312	195.3	-5.0	-31.4	-32.2
222.355 G	55	440	37	295	194.6	-5.2	-31.3	-19.7
223.385 G	53	506	34	324	194.1	-5.2	-31.2	- 6.6
224.326 C	60	396	38	249	193.8	-5.0	-31.1	+ 5.5
225.369 C	73	378	49	253	192.9	-5.4	-31.3	+18.4
226.354 G	50	251	38	188	192.5	-5.3	-31.1	+31.0
227.555 C	49	208	46	196	191.6	-5.6	-31.0	+46.0
228.344 G	34	157	40	187	191.0	-5.8	-31.0	+55.8
229.338 C	15	95	31	199	191.3	-5.1	-31.2	+69.3
Means	..	..	42	263	193.9	..	-31.2	..

No. 1464. Latitude +12°.6

Group 15062 } in Rotation 1255
" 15063 }
" 15108 " " 1256

Group 15062. July 12-24. A large composite spot with three principal nuclei growing from a small spot on July 12. The leading nucleus becomes the centre of a regular spot which just separates from the main body as it nears the west limb.

192.313 G	2	12	3	17	181.7	0.0	+10.0	-70.0
193.549 C	4	33	3	28	180.6	-1.2	+11.5	-54.8
194.474 G	9	83	6	58	179.2	-2.6	+11.8	-43.9
195.297 G	35	372	21	223	179.6	-2.3	+11.7	-32.6
196.390 C	98	1008	52	534	179.3	-2.7	+11.5	-18.5
197.339 C	216	2114	110	1078	178.5	-3.5	+11.4	- 6.7
198.385 G	356	2767	182	1411	179.2	-2.9	+11.3	+ 7.8
199.371 G	416	2702	225	1459	179.0	-3.2	+11.3	+20.7
200.527 G	331	2201	205	1365	178.9	-3.3	+11.4	+35.9
201.308 G	228	1831	162	1300	178.0	-4.3	+11.2	+45.3
202.304 G	140	1460	133	1387	177.9	-4.5	+11.4	+58.4
203.380 C	62	743	98	1174	177.5	-4.9	+11.7	+72.2
204.356 C	4	80	(14	274	174.8	..	+10.8)	+82.4
Means	..	..	100	836	179.1	..	+11.4	..

Group 15063. July 12-24. A large stable regular spot whose only abnormality is a small protrusion from the umbra on July 18-21.

192.313 G	69	437	152	966	174.1	0.0	+13.5	-77.6
193.549 C	134	702	137	716	174.7	+0.5	+13.9	-60.7
194.474 G	224	1079	170	820	174.4	+0.2	+14.1	-48.7
195.297 G	256	1090	164	698	174.4	+0.1	+14.2	-37.8
196.390 C	321	1226	177	674	174.6	+0.2	+14.2	-23.2

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. 1464. Group 15063 - *continued*								
d 197.339 C	272	1262	141	656	174.5	+0.1	+14.1	-10.7
198.385 G	344	1485	175	757	174.6	+0.1	+14.4	+ 3.2
199.371 G	308	1325	163	702	174.5	-0.1	+14.2	+16.2
200.527 G	281	1230	166	726	174.2	-0.4	+14.3	+31.2
201.308 G	253	980	172	666	174.5	-0.2	+14.1	+41.8
202.304 G	136	770	118	670	174.5	-0.3	+14.4	+55.0
203.380 C	60	442	83	614	174.9	+0.1	+14.4	+69.6
204.356 C	25	116	86	398	175.0	..	+14.5	+82.6
Means	..	..	152	722	174.5	..	+14.2	..

Group 15108. Aug. 8-18. A regular spot in decline which is advanced after August 14. A drift towards the equator is apparent.

219.303 G	20	98	38	186	179.0	-4.5	+13.5	-75.7
220.517 C	29	153	29	153	177.9	-5.7	+13.5	-60.7
221.356 C	36	209	27	159	178.0	-5.6	+13.2	-49.5
222.355 G	32	197	20	122	177.7	-6.0	+13.1	-36.6
223.385 G	37	227	20	123	178.1	-5.7	+12.8	-22.6
224.326 C	20	214	10	109	178.3	-5.5	+12.4	-10.0
225.369 C	33	210	16	105	178.5	-5.4	+11.9	+ 4.0
226.354 G	14	91	7	47	178.7	-5.2	+11.7	+17.2
227.555 C	11	35	6	21	178.5	-5.5	+11.8	+32.9
228.344 G	5	9	3	6	178.5	-5.6	+11.5	+43.3
229.338 C	2	9	2	8	180.2	-3.9	+11.0	+58.2
Means	..	..	16	94	178.5	..	+12.4	..

No. 1465. Latitude +14°.0

Group 15069 in Rotation 1255
" 15111 " " 1256
" 15157 " " 1257
" 15200 " " 1258

Group 15069. July 14-26. A stream, consisting of two composite spots, which grow fairly rapidly. After July 19, however, the leading sunspot disintegrates, but reforming as a composite spot by July 24, rises sharply in area as it passes round the Sun's limb. The following part of the group is fairly stable until July 23 when it begins rapidly to die out.

194.474 G	19	93	50	244	143.9	0.0	+12.1	-79.2
195.297 G	44	339	62	511	141.1	-2.8	+12.0	-71.1
196.390 C	65	642	56	573	143.5	-0.5	+12.1	-54.3
197.339 C	148	1408	101	965	142.6	-1.4	+11.7	-42.6
198.385 G	278	1871	158	1073	143.4	-0.6	+11.9	-28.0
199.371 G	201	1941	105	1012	142.7	-1.4	+12.0	-15.6
200.527 G	264	1912	134	972	143.2	-0.9	+12.1	+ 0.2
201.308 G	246	1642	127	846	143.3	-0.9	+12.3	+10.6

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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.
No. 1465. Group 15069 - *continued*								
202.304 G	159	1759	89	983	144.7	+0.5	+13.0	+25.2
203.380 C	168	1191	113	783	145.4	+1.2	+13.9	+40.1
204.356 C	155	1335	133	1140	144.8	+0.5	+14.1	+52.4
205.393 C	167	1365	221	1736	145.4	+1.1	+14.3	+66.8
206.319 G	37	649	103	1706	145.7	+1.3	+14.5	+79.3
Means	..	..	112	965	143.8	..	+12.8	..
Group 15111. Aug. 9-22. A large stable regular spot with a few companions.								
220.517 C	11	82	59	436	152.7	..	+15.4	-85.9
221.356 C	31	200	59	380	151.5	+6.6	+15.2	-76.0
222.355 G	76	451	81	483	151.6	+6.6	+15.4	-62.7
223.385 G	126	630	96	479	151.6	+6.6	+15.6	-49.1
224.326 C	113	895	71	564	151.7	+6.7	+15.5	-36.6
225.369 C	188	997	103	548	151.6	+6.5	+15.5	-22.9
226.354 G	150	980	76	500	151.4	+6.3	+15.2	-10.1
227.555 C	201	1251	103	638	151.4	+6.2	+15.1	+ 5.8
228.344 G	198	1398	103	727	151.2	+6.0	+14.8	+16.0
229.338 C	155	1017	90	590	151.3	+6.1	+14.7	+29.3
230.347 G	103	663	70	451	151.4	+6.1	+14.5	+42.7
231.338 C	64	564	56	496	151.5	+6.2	+14.4	+55.9
232.413 G	32	303	46	433	151.9	+6.6	+14.2	+70.5
233.374 G	18	116	62	398	151.8	..	+14.2	+83.1
Means	..	..	80	524	151.5	..	+15.0	..
Group 15157. Sept. 6-18. A spot with twin umbræ that coalesce after September 14 when the spot as a whole assumes a regular outline.								
248.344 G	11	93	26	223	151.5	+5.6	+13.5	-79.4
249.315 C	20	162	24	193	152.0	+6.0	+13.6	-66.1
250.467 G	36	240	28	190	151.7	+5.7	+13.7	-51.2
251.370 G	38	262	24	168	151.8	+5.7	+13.9	-39.2
252.502 C	31	280	17	154	151.9	+5.8	+14.3	-24.1
253.519 C	42	311	21	159	151.5	+5.4	+14.3	-11.1
254.333 C	50	294	25	147	151.2	+5.0	+14.4	- 0.6
255.310 C	48	316	25	164	150.9	+4.7	+14.5	+12.0
256.310 C	48	266	26	146	150.8	+4.6	+14.2	+25.1
257.515 C	37	194	24	128	150.8	+4.5	+14.2	+41.0
258.349 G	27	194	21	153	150.2	+3.9	+14.0	+51.4
259.363 G	9	117	10	135	150.5	+4.1	+14.1	+65.1
260.344 C	7	54	16	122	151.1	+4.7	+14.4	+78.6
Means	..	..	22	160	151.2	..	+14.1	..

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.
No. 1465. - *continued*								
Group 15200. Oct. 3-6. One or two small spots.								
275.345 G	2	13	6	39	152.5	..	+15.0	-82.0
276.375 G	6	25	8	33	152.1	+5.1	+13.8	-68.8
277.422 G	0	4	0	3	154.6	+7.5	+14.4	-52.5
278.296 C	2	9	1	6	154.4	+7.3	+14.5	-41.1
Means	..	..	3	14	153.7	..	+14.2	..
No. 1466. Latitude -12°.7								
Group 15077 in Rotation 1255								
" 15122 " " 1256								
Group 15077. July 19-31. A stream, in which both leader, *a*, and follower, *b*, are regular spots each with a few companions until July 28.								
199.371 G	39	283	78	557	84.9	0.0	-11.4	-73.4
200.527 G	78	513	83	539	83.9	-1.1	-11.7	-59.1
201.308 G	129	656	106	534	83.8	-1.2	-11.4	-48.9
202.304 G	99	717	64	462	83.2	-1.9	-11.5	-36.3
203.380 C	146	752	83	429	82.3	-2.9	-12.1	-23.0
204.356 C	142	1012	75	533	83.0	-2.2	-11.5	- 9.4
205.393 C	138	812	73	426	82.0	-3.3	-11.9	+ 3.4
206.319 G	145	713	79	388	82.1	-3.2	-12.1	+15.7
207.336 C	110	694	65	417	81.6	-3.8	-12.0	+28.7
208.373 G	83	490	61	356	81.2	-4.3	-11.9	+42.0
209.334 G	76	379	74	361	82.2	-3.3	-11.9	+55.7
210.301 G	27	208	43	307	81.1	-4.5	-11.9	+67.4
211.430 G	5	23	(15	70	77.8	..	-12.7)	+79.0
Means	..	..	74	442	82.6	..	-11.8	..
Spot *a*								
199.371 G	32	237	56	412	86.4	0.0	-11.0	-71.9
200.527 G	53	370	51	359	85.8	-0.7	-11.0	-57.2
201.308 G	83	467	64	360	85.7	-0.8	-10.6	-47.0
202.304 G	69	494	43	306	85.9	-0.7	-10.5	-33.6
203.380 C	71	328	39	180	86.0	-0.7	-10.5	-19.3
204.356 C	69	593	36	308	86.0	-0.7	-10.7	- 6.4
205.393 C	67	444	35	231	85.7	-1.1	-11.0	+ 7.1
206.319 G	76	377	42	207	85.8	-1.0	-11.0	+19.4
207.336 C	54	355	33	220	85.9	-1.0	-11.2	+33.0
208.373 G	44	251	34	193	85.9	-1.1	-11.2	+46.7
209.334 G	46	207	48	215	85.8	-1.2	-11.4	+59.3
210.301 G	18	96	32	169	85.6	-1.5	-11.4	+71.9

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

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.
No. 1466. Group 15077 - *continued*							
Spot *b*							
d					° °	°	°
199.371 G	7	46	22	145	78.9 0.0	-13.4	-79.4
200.527 G	25	143	32	180	78.5 -0.5	-13.3	-64.5
201.308 G	46	189	42	174	78.3 -0.7	-13.3	-54.4
202.304 G	30	223	21	156	78.5 -0.6	-13.1	-41.0
203.380 C	62	370	37	218	78.4 -0.8	-13.0	-26.9
204.356 C	71	386	38	208	78.0 -1.2	-13.2	-14.4
205.393 C	71	368	38	195	77.7 -1.6	-12.8	- 0.9
206.319 G	69	336	37	181	77.7 -1.6	-12.9	+11.3
207.336 C	56	339	32	197	77.4 -2.0	-12.9	+24.5
208.373 G	39	239	27	163	77.6 -1.9	-12.7	+38.4
209.334 G	30	172	26	146	77.8 -1.7	-12.7	+51.3
210.301 G	9	112	11	138	77.5 -2.1	-12.9	+63.8
211.430 G	5	23	15	70	77.8 -1.9	-12.7	+79.0
Group 15122. Aug. 15-26. A small stable regular spot.							
226.354 G	7	57	15	126	86.7 -1.4	-13.2	-74.8
227.555 C	20	108	21	114	86.8 -1.4	-13.4	-58.8
228.344 G	32	139	26	114	86.6 -1.7	-13.6	-48.6
229.338 C	31	179	20	118	86.5 -1.8	-13.6	-35.5
230.347 G	43	223	25	129	86.6 -1.8	-13.6	-22.1
231.338 C	33	190	18	103	86.5 -1.9	-13.4	- 9.1
232.413 G	30	192	16	102	86.7 -1.8	-13.2	+ 5.3
233.374 G	25	139	14	78	86.7 -1.9	-13.5	+18.0
234.339 C	15	152	9	94	86.5 -2.1	-13.6	+30.6
235.324 C	26	128	20	96	86.7 -2.0	-13.7	+43.8
236.357 G	11	73	11	74	86.7 -2.1	-13.8	+57.4
237.373 G	9	50	15	85	86.2 -2.6	-13.8	+70.4
Means	..	..	18	103	86.6 ..	-13.5	..
No. 1467. Latitude -19°.3							
Group 15087 in Rotation 1255 " 15126 " " 1256 " 15173 " " 1257							
Group 15087. July 27-Aug. 6. A regular spot, *a*, developing with a train of variable companions that die out by August 4.							
207.336 C	2	31	2	33	357.0 0.0	-19.4	-55.9
208.373 G	48	221	34	157	1.0 +4.1	-19.1	-38.2
209.334 G	67	383	40	231	2.9 +6.1	-19.1	-23.6
210.301 G	41	497	23	280	3.3 +6.6	-19.1	-10.4
211.430 G	105	818	59	455	2.9 +6.3	-19.2	+ 4.1
212.324 C	166	1132	95	648	2.7 +6.2	-19.3	+15.7
213.386 G	146	823	96	534	3.0 +6.6	-19.3	+30.1
214.433 G	75	522	59	412	2.8 +6.5	-19.0	+43.7
215.437 G	62	327	69	361	3.9 +7.7	-19.3	+58.1
216.340 C	29	164	51	290	4.3 +8.1	-18.9	+70.4
217.327 C	4	33	21	176	3.0 ..	-19.2	+82.2
Means	..	..	53	340	2.4 ..	-19.2	..

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.
No. 1467. Group 15087 - *continued*							
Spot *a*							
d					° °	°	°
208.373 G	25	92	17	62	4.6 0.0	-19.3	-34.6
209.334 G	46	214	27	126	5.0 + 0.5	-19.3	-21.5
210.301 G	30	318	17	178	4.6 + 0.2	-19.1	- 9.1
211.430 G	71	534	40	299	5.1 + 0.8	-19.4	+ 6.3
212.324 C	102	735	59	426	4.8 + 0.6	-19.4	+17.8
213.386 G	119	605	79	399	5.0 + 0.9	-19.5	+32.1
214.433 G	66	396	53	321	5.0 + 1.0	-19.2	+45.9
215.437 G	57	302	64	338	4.7 + 0.8	-19.3	+58.9
216.340 C	29	164	51	290	4.3 + 0.4	-18.9	+70.4
217.327 C	4	33	21	176	3.0 ..	-19.2	+82.2
Group 15128. Aug. 21-Sept. 1. A small regular spot with one or two variable companions. After August 29, a growth occurs of new and larger spots.							
232.413 G	9	80	27	242	4.0 + 1.7	-19.6	-77.4
233.374 G	18	137	25	188	4.3 + 2.1	-19.6	-64.4
234.339 C	17	195	16	179	4.6 + 2.4	-20.0	-51.3
235.324 C	33	189	24	135	5.3 + 3.2	-19.6	-37.6
236.357 G	34	182	20	109	6.9 + 4.9	-19.0	-22.4
237.373 G	41	233	23	130	8.0 + 6.1	-18.6	- 7.8
238.345 G	39	246	22	138	8.9 + 7.1	-18.7	+ 5.9
239.333 G	37	224	22	131	8.5 + 6.8	-19.2	+18.6
240.339 G	25	169	17	115	10.2 + 8.6	-19.3	+33.5
241.321 C	33	268	27	219	9.6 + 8.1	-19.0	+45.9
242.345 G	56	447	69	528	10.5 + 9.1	-19.7	+60.3
243.345 G	27	213	66	518	11.1 + 9.8	-19.8	+74.2
Means	..	..	30	219	7.7 ..	-19.3	..
Group 15173. Sept. 17-29. A stable regular spot in slow decline.							
259.363 G	7	79	17	190	10.6 +10.8	-18.6	-74.8
260.344 C	37	227	46	284	10.5 +10.8	-19.0	-62.0
261.637 G	52	297	42	241	10.2 +10.6	-19.0	-45.2
262.518 C	65	316	44	212	10.4 +10.9	-19.1	-33.4
263.442 G	76	358	46	215	10.5 +11.1	-19.2	-21.1
264.406 G	61	389	34	218	10.1 +10.8	-19.3	- 8.8
265.470 G	63	347	35	194	9.6 +10.4	-19.5	+ 4.8
266.377 G	45	298	27	176	9.6 +10.5	-19.7	+16.8
267.345 G	58	293	38	190	9.4 +10.3	-19.9	+29.3
268.555 G	31	186	25	151	9.4 +10.5	-19.6	+45.3
269.423 G	18	141	19	148	9.2 +10.3	-19.5	+56.6
270.309 C	15	93	24	146	8.5 + 9.7	-19.4	+67.5
271.304 C	6	39	26	171	8.4 ..	-19.9	+80.6
Means	..	..	33	197	9.8 ..	-19.3	..

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

No. 1468. Latitude +20°.7

Group 15088 in Rotation 1256
" 15130 " " 1257

Group 15088. July 28-Aug. 9. A regular spot followed by a train of small spots until August 5.

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 208.373 G	2	21	4	45	321.6	0.0	+19.6	-77.6
209.334 G	21	80	26	97	320.8	-0.7	+19.9	-65.7
210.301 G	27	174	22	145	321.1	-0.2	+20.1	-52.6
211.430 G	34	231	21	146	322.3	+1.1	+19.9	-36.5
212.324 C	71	395	40	221	323.2	+2.1	+20.1	-23.8
213.386 G	75	444	40	232	321.9	+1.0	+20.2	-11.0
214.433 G	62	549	33	285	321.4	+0.6	+20.1	+ 2.3
215.437 G	78	497	42	268	321.6	+1.0	+20.1	+15.8
216.340 C	44	353	25	204	321.8	+1.3	+20.4	+27.9
217.327 C	56	326	38	222	322.3	+1.9	+20.1	+41.5
218.364 C	38	235	33	207	322.5	+2.2	+20.4	+55.4
219.303 G	25	176	32	222	322.1	+2.0	+20.4	+67.4
220.517 C	11	67	40	242	322.4	..	+20.6	+83.8
Means	..	..	30	191	321.9	..	+20.1	..

Group 15130. Aug. 24-Sept. 5. A long stream of variable spots past its maximum growth. The follower is a small regular spot and this remains the most stable component.

235.324 C	2	29	(9	127	316.8	..	+21.8)	-86.1
236.357 G	50	424	98	866	312.7	-5.1	+22.0	-76.6
237.373 G	91	652	97	731	312.1	-5.6	+21.9	-63.7
238.345 G	138	716	108	558	314.1	-3.5	+21.9	-48.9
239.333 G	165	937	104	591	313.5	-3.9	+21.8	-36.4
240.339 G	149	826	83	459	314.5	-2.8	+21.1	-22.2
241.321 C	53	790	29	415	314.3	-2.9	+21.8	- 9.4
242.345 G	79	835	41	434	313.4	-3.6	+22.5	+ 3.2
243.345 G	46	321	25	172	313.3	-3.6	+21.5	+16.4
244.340 G	30	223	18	133	313.3	-3.4	+20.9	+29.5
245.350 G	12	75	8	54	315.7	-0.9	+20.1	+45.2
246.368 G	2	23	2	23	315.0	-1.5	+20.0	+58.0
247.365 G	2	21	2	34	317.1	+0.8	+19.8	+73.3
Means	..	..	51	372	314.1	..	+21.3	..

No. 1469. Latitude -8°.0

Group 15092 in Rotation 1256
" 15135 " " 1257

Group 15092. July 31-Aug. 12. A regular spot, stable until August 7. It then splits into two but soon reforms as an enlongated spot with a double umbra.

No. 1469. Group 15092 - *continued*

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 211.430 G	5	23	18	83	277.6	..	- 7.2	-81.2
212.324 C	11	56	15	77	279.3	0.0	- 7.4	-67.7
213.386 G	18	108	15	92	280.5	+1.1	- 7.6	-52.4
214.433 G	23	181	15	118	282.1	+2.5	- 7.7	-37.0
215.437 G	53	268	30	150	282.9	+3.2	- 8.2	-22.9
216.340 C	47	304	25	161	282.9	+3.0	- 8.0	-11.0
217.327 C	29	238	15	124	282.8	+2.8	- 8.3	+ 2.0
218.364 C	29	191	16	103	282.8	+2.7	- 8.5	+15.7
219.303 G	60	311	35	180	282.5	+2.2	- 7.8	+27.8
220.517 C	42	297	31	217	283.4	+3.0	- 7.8	+44.8
221.356 C	56	273	53	259	284.0	+3.4	- 7.9	+56.5
222.355 G	14	142	22	219	284.0	+3.3	- 8.0	+69.7
223.385 G	2	16	10	77	283.6	..	- 7.9	+82.9
Means	..	..	25	155	282.5	..	- 7.9	..

Group 15135. Aug. 27-Sept. 8. A distinctive spot in slow decline and changing from complex to regular structure by September 3. Concurrently, occasional companions become numerous south of the parent spot, though the reference of those to this group or to Group 15138 is somewhat arbitrary on some days after September 1.

238.345 G	27	166	82	503	283.7	+0.8	- 8.2	-79.3
239.333 G	52	401	67	517	284.1	+1.0	- 8.1	-65.8
240.339 G	103	616	89	530	284.3	+1.1	- 8.2	-52.4
241.321 C	53	790	36	537	284.1	+0.7	- 8.1	-39.6
242.345 G	93	788	54	457	284.1	+0.6	- 8.3	-26.1
243.345 G	120	699	64	370	284.1	+0.5	- 8.1	-12.8
244.340 G	118	702	62	365	283.5	-0.3	- 8.5	- 0.3
245.350 G	95	674	51	359	283.1	-0.8	- 9.1	+12.6
246.368 G	102	443	59	256	283.1	-1.0	- 8.7	+26.1
247.365 G	52	300	35	204	283.3	-0.9	- 8.0	+39.5
248.344 G	18	138	15	117	283.2	-1.1	- 7.4	+52.3
249.315 C	11	118	14	149	283.2	-1.3	- 7.2	+65.1
250.467 G	7	43	24	147	283.4	..	- 7.3	+80.5
Means	..	..	52	364	283.6	..	- 8.2	..

No. 1470. Latitude -9°.4

Group 15094 in Rotation 1256
" 15141 " " 1257

Group 15094. Aug. 1-13. A sizable stream. The large rear spot, *b*, is composite and changes slowly, but after August 8 it decreases and becomes a regular spot. The leading section of the stream consists of small spots that increase and form another composite spot, *a*. After August 9 this, too, becomes a regular formation.

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

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.
No. 1470. Group 15094 - *continued*							
d					°	°	°
212.324 C	58	298	142	768	269.1	0.0	- 9.9	-77.9
213.386 G	119	1010	151	1266	268.3	-0.9	-10.0	-64.6
214.433 G	119	1473	101	1236	268.5	-0.9	- 9.7	-50.6
215.437 G	280	1935	186	1283	268.0	-1.5	- 9.6	-37.8
216.340 C	331	1909	192	1109	270.0	+0.4	- 9.0	-23.9
217.327 C	184	2338	99	1247	267.6	-2.1	- 9.3	-13.2
218.364 C	426	2884	221	1500	269.3	-0.5	- 9.1	+ 2.2
219.303 G	263	2392	140	1280	269.4	-0.5	- 8.7	+14.7
220.517 C	326	2262	199	1383	268.9	-1.2	- 9.0	+30.3
221.356 C	264	2342	191	1692	270.8	+0.6	- 8.2	+43.3
222.355 G	117	1021	115	979	268.8	-1.5	- 9.0	+54.5
223.385 G	94	570	142	900	270.6	+0.2	- 8.7	+69.9
224.326 C	15	139	(36	334	264.6	..	-11.4)	+76.3
Means	..	..	157	1220	269.1	..	- 9.2	..
Spot *a*							
218.364 C	122	557	63	290	274.5	0.0	- 6.7	+ 7.4
219.303 G	71	579	38	313	274.0	-0.6	- 6.6	+19.3
220.517 C	135	904	86	579	275.5	+0.7	- 6.8	+36.9
221.356 C	131	1117	102	871	275.8	+0.9	- 6.5	+48.3
222.355 G	62	421	68	463	276.1	+1.1	- 6.6	+61.8
223.385 G	32	247	62	483	276.1	+1.0	- 6.3	+75.4
Spot *b*							
212.324 C	20	129	69	442	266.7	..	-10.8	-80.3
213.386 G	73	559	102	783	265.5	0.0	-10.7	-67.4
214.433 G	92	1008	81	887	266.1	+0.5	-10.3	-53.0
215.437 G	211	1390	143	945	265.9	+0.2	-10.1	-39.9
216.340 C	224	1330	132	785	266.1	+0.2	- 9.9	-27.8
217.327 C	122	1563	66	844	265.9	-0.1	-10.0	-14.9
218.364 C	206	1647	107	856	265.6	-0.5	-10.3	- 1.5
219.303 G	174	1475	92	782	265.8	-0.4	- 9.8	+11.1
220.517 C	175	1194	103	704	265.6	-0.8	-10.7	+27.0
221.356 C	133	1225	89	821	265.8	-0.7	-10.3	+38.3
222.355 G	55	600	47	516	266.0	-0.6	-10.8	+51.7
223.385 G	62	323	80	417	265.9	-0.8	-11.2	+65.2
224.326 C	15	139	36	334	264.6	-2.2	-11.4	+76.3

Group 15141. Aug. 28-Sept. 9. A few spots, perhaps representing *b* of Group 15094, with others forming behind after August 31. The leading part of the resulting stream coalesces into a small irregular spot, and this alone remains after September 4.

239.333 G	0	14	0	53	268.7	..	- 9.0	-81.2
240.339 G	14	87	23	140	266.6	-2.2	-10.2	-70.1
241.321 C	16	141	16	138	266.2	-2.7	- 9.6	-57.5
242.345 G	30	200	22	144	266.3	-2.7	- 9.4	-43.9
243.345 G	46	247	29	154	264.9	-4.2	- 9.8	-32.0
244.340 G	61	466	34	262	263.6	-5.6	-10.1	-20.2

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.
No. 1470. Group 15141 - *continued*							
d					°	°	°
245.350 G	62	343	33	178	265.5	-3.9	- 9.1	- 5.0
246.368 G	55	246	29	130	266.7	-2.8	- 9.4	+ 9.7
247.365 G	32	311	18	177	268.4	-1.2	- 9.3	+24.6
248.344 G	30	252	20	171	270.0	+0.3	- 9.4	+39.1
249.315 C	11	70	10	61	270.7	+0.9	- 9.3	+52.6
250.467 G	11	86	17	130	271.7	+1.7	- 9.9	+68.8
251.370 G	5	16	19	61	272.1	..	-10.2	+81.1
Means	..	..	23	153	267.3	..	- 9.6	..

No. 1471. Latitude -14°.1

Group 15097 in Rotation 1256
" 15146 " " 1257
" 15186 " " 1258

Group 15097. Aug. 3-14. A regular spot, dying out as it passes round the west limb.

214.433 G	11	80	19	142	247.6	0.0	-14.6	-71.5
215.437 G	30	153	30	158	248.0	+0.4	-14.7	-57.8
216.340 C	42	198	33	154	248.0	+0.3	-14.9	-45.9
217.327 C	31	246	20	157	248.3	+0.6	-14.4	-32.5
218.364 C	47	262	27	149	248.6	+0.9	-14.6	-18.5
219.303 G	39	240	21	130	248.5	+0.7	-14.4	- 6.2
220.517 C	31	198	17	107	248.4	+0.6	-14.7	+ 9.8
221.356 C	20	191	12	111	248.6	+0.8	-14.8	+21.1
222.355 G	14	160	9	104	248.0	+0.1	-14.8	+33.7
223.385 G	21	98	17	78	247.7	-0.2	-14.8	+47.0
224.326 C	2	11	2	12	247.4	-0.6	-15.5	+59.1
225.369 C	4	14	4	14	247.1	-0.9	-15.7	+72.6
Means	..	..	18	110	248.0	..	-14.8	..

Group 15146. Aug. 30-Sept. 10. A very stable regular spot with a drift equatorwards. This represents a renewal of spot formation in the place of the earlier regular spot.

241.321 C	11	99	21	191	251.2	+2.6	-13.9	-72.5
242.345 G	25	134	27	143	251.1	+2.5	-13.9	-59.1
243.345 G	34	188	27	147	251.2	+2.6	-13.8	-45.7
244.340 G	43	232	28	148	251.1	+2.4	-13.5	-32.7
245.350 G	48	236	27	135	251.2	+2.5	-13.1	-19.3
246.368 G	48	232	26	125	251.2	+2.5	-13.1	- 5.8
247.365 G	45	243	24	131	251.0	+2.2	-12.9	+ 7.2
248.344 G	30	236	17	135	250.7	+1.9	-12.8	+19.8
249.315 C	31	219	20	138	250.6	+1.7	-12.8	+32.5
250.467 G	36	165	29	132	250.6	+1.7	-12.7	+47.7
251.370 G	23	102	25	110	250.6	+1.7	-12.6	+59.6
252.502 C	9	85	19	178	250.1	+1.1	-12.0	+74.1
Means	..	...	24	143	250.9	..	-13.1	..

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No. 1471. - *continued*

Group 15186. Sept. 26-Oct. 5. A small but definite spot fading out by September 29. Weak activity is continued for a few days 2° southwards by small spots in a stream.

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.
d					°	°	°
268.555 G	2	7	4	14	251.2	+1.7	-12.4	-72.9
269.423 G	2	7	2	8	251.0	+1.4	-12.5	-61.6
270.309 C	0	4	0	3	250.6	+1.0	-12.0	-50.4
271.304 C	0	0	0	0	..	..	..	..
272.348 G	13	76	8	44	253.1	+3.4	-14.8	-20.9
273.549 G	16	74	9	40	253.4	+3.7	-15.0	- 4.8
274.357 G	22	78	12	43	253.3	+3.5	-15.2	+ 5.8
275.345 G	24	128	14	73	252.5	+2.7	-15.6	+18.0
276.375 G	13	67	8	42	252.5	+2.7	-15.5	+31.6
277.422 G	2	15	2	11	253.1	+3.2	-15.4	+46.0
Means	..	..	6	28	252.3	..	-14.3	..

No. 1472. Latitude +9°.9

Group 15099 in Rotation 1256
" 15147 " " 1257

Group 15099. Aug. 4-16. Small spots developing by August 11 into a typical bi-polar group.

215.437 G	2	7	6	21	224.6	..	+ 8.9	-81.2
216.340 C	4	20	5	25	226.6	0.0	+ 8.8	-67.3
217.327 C	4	33	3	27	227.2	+0.5	+ 8.6	-53.6
218.364 C	11	100	7	67	225.9	-0.9	+ 8.5	-41.2
219.303 G	41	245	23	138	227.0	+0.1	+ 9.0	-27.7
220.517 C	48	296	25	153	226.5	-0.6	+ 9.3	-12.1
221.356 C	47	312	23	156	226.5	-0.7	+ 9.6	- 1.0
222.355 G	48	543	25	280	227.1	-0.2	+ 9.3	+12.8
223.385 G	137	802	77	451	228.1	+0.7	+ 9.6	+27.4
224.326 C	122	983	80	636	228.1	+0.6	+ 9.1	+39.8
225.369 C	115	706	96	592	227.8	+0.2	+ 9.0	+53.3
226.354 G	50	422	62	529	227.6	-0.1	+ 9.3	+66.1
227.555 C	13	77	(34	199	225.3	..	+ 8.6)	+79.7
Means	..	..	39	278	227.1	..	+ 9.1	..

Spot *a*

218.364 C	9	84	6	55	226.7	0.0	+ 8.5	-40.4
219.303 G	39	227	22	127	227.4	+0.6	+ 8.9	-27.3
220.517 C	24	178	12	91	229.3	+2.4	+ 9.3	- 9.3
221.356 C	20	200	10	100	228.9	+1.9	+ 9.7	+ 1.4
222.355 G	23	289	12	150	229.0	+1.8	+ 9.4	+14.7
223.385 G	82	511	47	291	229.8	+2.5	+ 9.6	+29.1
224.326 C	71	550	48	368	230.1	+2.7	+ 9.3	+41.8
225.369 C	55	371	49	330	230.9	+3.4	+ 9.0	+56.4
226.354 G	23	217	32	299	231.1	+3.5	+ 9.4	+69.6

No. 1472. Group 15099 - *continued*

Spot *b*

222.355 G	25	254	13	130	225.1	0.0	+ 9.3	+10.8
223.385 G	55	291	30	160	225.4	+0.2	+ 9.6	+24.7
224.326 C	51	433	32	268	225.1	-0.2	+ 8.9	+36.8
225.369 C	60	336	47	262	224.9	-0.5	+ 9.0	+50.4
226.354 G	27	205	30	230	225.7	+0.1	+ 9.0	+64.2
227.555 C	13	77	34	199	225.3	-0.4	+ 8.6	+79.7

Group 15147. Aug. 31-Sept. 11. A regular spot with a few trailer spots that grow rapidly from September 3 into a large composite spot. This, however, is unstable and from September 7 it disintegrates and the dissolution of the whole group soon follows.

242.345 G	20	177	43	377	232.8	+3.4	+10.2	-77.4
243.345 G	34	268	37	289	233.7	+4.2	+10.0	-63.2
244.340 G	59	363	46	280	233.6	+4.0	+10.5	-50.2
245.350 G	95	527	59	324	234.6	+4.9	+10.9	-35.9
246.368 G	156	809	85	442	234.6	+4.7	+11.5	-22.4
247.365 G	132	1090	67	552	234.2	+4.2	+11.5	- 9.6
248.344 G	190	1205	95	602	234.1	+4.0	+11.7	+ 3.2
249.315 C	138	1082	72	567	234.0	+3.8	+11.3	+15.9
250.467 G	63	445	37	261	234.2	+3.9	+10.7	+31.3
251.370 G	52	287	36	200	235.8	+5.4	+10.7	+44.8
252.502 C	22	172	21	165	235.6	+5.0	+ 9.8	+59.6
253.519 C	6	42	9	75	235.8	+5.1	+ 9.8	+73.2
Means	..	..	51	344	234.4	..	+10.7	..

No. 1473. Latitude +19°.5

Group 15116 in Rotation 1256
" 15163 " " 1257

Group 15116. Aug. 13-25. A regular spot, *a*, followed by a few small spots until August 20.

224.326 C	2	22	3	37	114.6	0.0	+19.1	-73.7
225.369 C	36	190	37	194	113.0	-1.5	+18.9	-61.5
226.354 G	55	422	41	314	113.0	-1.4	+18.6	-48.5
227.555 C	98	471	58	279	114.7	+0.4	+19.0	-30.9
228.344 G	104	541	56	293	114.6	+0.4	+18.9	-20.6
229.338 C	61	464	31	236	115.4	+1.3	+19.1	- 6.6
230.347 G	71	417	37	217	114.8	+0.8	+19.1	+ 6.1
231.338 C	57	365	31	197	114.9	+1.0	+19.3	+19.3
232.413 G	39	264	24	161	115.3	+1.5	+19.3	+33.9
233.374 G	21	160	15	117	115.3	+1.6	+19.7	+46.6
234.339 C	15	156	14	150	114.9	+1.3	+20.1	+59.0
235.324 C	18	75	27	113	114.9	+1.4	+20.2	+72.0
236.357 G	7	41	28	167	114.2	..	+20.1	+84.9
Means	..	..	31	192	114.6	..	+19.3	..

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Date U.T. Place	Projected Area		Corrected Area		Longitude and Proper Motion	Lati-tude	Long. from C.M.
	Umbræ	Whole Spots	Umbræ	Whole Spots			
No. 1473. Group 15116 - *continued*							
Spot *a*							
d					°	°	°
224.326 C	2	22	3	37	114.6	0.0	+19.1	-73.7
225.369 C	29	150	29	148	114.3	-0.2	+19.2	-60.2
226.354 G	46	344	34	251	114.8	+0.4	+19.0	-46.7
227.555 C	91	438	54	258	115.5	+1.2	+19.1	-30.1
228.344 G	93	486	50	262	115.8	+1.6	+19.1	-19.4
229.338 C	57	440	29	224	115.9	+1.8	+19.0	- 6.1
230.347 G	64	365	33	190	115.8	+1.8	+19.1	+ 7.1
231.338 C	53	345	29	186	115.4	+1.5	+19.3	+19.8
232.413 G	39	264	24	161	115.3	+1.5	+19.3	+33.9
233.374 G	21	160	15	117	115.3	+1.6	+19.7	+46.6
234.339 C	15	156	14	150	114.9	+1.3	+20.1	+59.0
235.324 C	18	75	27	113	114.9	+1.4	+20.2	+72.0
236.357 G	7	41	28	167	114.2	..	+20.1	+84.9
Group 15163. Sept. 9-14. A small spot which dies out before reaching the central meridian.								
251.370 G	5	38	10	74	114.1	+2.2	+20.2	-76.9
252.502 C	15	64	16	67	113.7	+1.9	+19.6	-62.3
253.519 C	15	92	11	69	114.2	+2.5	+19.7	-48.4
254.333 C	35	102	22	65	114.2	+2.6	+19.6	-37.6
255.310 C	7	72	4	40	114.4	+2.9	+19.4	-24.5
256.310 C	4	28	2	15	114.3	+2.9	+19.4	-11.4
Means	..	..	11	55	114.2	..	+19.6	..
No. 1474. Latitude -13°.0								
Group 15156 in Rotation 1257								
" 15188 " " 1258								
" 15231 " " 1259								
Group 15156. Sept. 6-12. A short stream, suddenly appearing in front of Group 15150. The small spots in between have disappeared by September 8.								
248.344 G	39	175	21	93	223.9	0.0	-11.1	- 7.0
249.315 C	79	379	42	201	223.8	-0.2	-11.1	+ 5.7
250.467 G	63	454	36	259	223.9	-0.1	-11.5	+21.0
251.370 G	61	328	38	207	223.8	-0.3	-11.4	+32.8
252.502 C	55	252	44	199	223.5	-0.6	-11.2	+47.5
253.519 C	27	127	30	143	223.5	-0.7	-11.2	+60.9
254.333 C	24	111	44	206	224.1	-0.2	-11.2	+72.3
Means	..	..	36	187	223.8	..	-11.2	..

Date U.T. Place	Projected Area		Corrected Area		Longitude and Proper Motion	Lati-tude	Long. from C.M.
	Umbræ	Whole Spots	Umbræ	Whole Spots			
No. 1474. - *continued*							
Group 15188. Sept. 28-Oct. 10. A long stream, the leading part of which at first consists of three spots almost in contact. These then join together, forming an elongated composite spot which survives the rest of the group.							
d					°	°	°	°
270.309 C	6	123	15	319	224.0	-1.2	-11.9	-77.0
271.304 C	44	365	64	522	220.7	-4.6	-12.8	-67.1
272.348 G	94	472	87	426	221.0	-4.3	-12.9	-53.0
273.549 G	130	603	87	408	220.8	-4.6	-13.1	-37.4
274.357 G	146	896	89	537	220.7	-4.7	-13.3	-26.8
275.345 G	95	698	52	382	221.2	-4.3	-13.2	-13.3
276.375 G	154	805	83	428	221.9	-3.7	-13.5	+ 1.0
277.422 G	100	672	55	374	222.5	-3.1	-13.2	+15.4
278.296 C	73	426	43	254	222.2	-3.5	-13.5	+26.7
279.374 G	42	250	30	178	222.6	-3.1	-13.4	+41.3
280.576 G	16	82	16	83	223.1	-2.7	-13.3	+57.6
281.408 G	20	96	31	146	222.9	-3.0	-13.6	+68.4
282.361 G	7	42	31	184	223.6	..	-14.1	+81.7
Means	..	..	54	338	222.0	..	-13.1	..
Group 15231. Oct. 25-Nov. 5. A small regular spot.								
297.419 C	11	53	26	127	227.1	+0.3	-14.1	-76.2
298.310 C	9	87	11	110	227.0	+0.2	-14.2	-64.6
299.577 G	33	183	26	146	226.9	0.0	-14.5	-48.0
300.493 G	33	207	22	137	227.0	0.0	-14.7	-35.8
301.408 C	34	213	20	124	226.7	-0.3	-14.7	-24.0
302.286 C	32	173	17	93	226.7	-0.4	-14.6	-12.4
303.590 C	38	180	20	95	226.7	-0.5	-14.5	+ 4.8
304.379 C	25	121	14	67	226.3	-0.9	-14.8	+14.8
305.373 C	29	185	17	111	226.3	-1.0	-15.2	+27.9
306.431 G	24	59	17	42	226.5	-0.8	-14.8	+42.0
307.288 C	21	98	19	87	226.2	-1.2	-14.7	+53.0
308.387 G	4	20	6	28	226.1	-1.3	-14.6	+67.4
Means	..	..	18	97	226.6	..	-14.6	..
No. 1475. Latitude -17°.7								
Group 15164 in Rotation 1257								
" 15197 " " 1258								
Group 15164. Sept. 10-17. A variable stream, appearing just south of Group 15155, and developing further as it passes out of view.								

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

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. 1475. Group 15164 - *continued*								
d					°	°	°	°
252.502 C	8	52	4	29	167.1	0.0	-17.9	- 8.9
253.519 C	39	167	22	93	166.7	-0.3	-18.2	+ 4.1
254.333 C	29	222	16	127	166.2	-0.8	-18.4	+14.4
255.310 C	24	227	15	142	166.0	-1.0	-18.5	+27.1
256.310 C	28	233	22	181	168.6	+1.7	-19.0	+42.9
257.515 C	24	260	28	302	169.5	+2.7	-19.3	+59.7
258.349 G	36	261	71	488	168.2	+1.4	-19.2	+69.4
259.363 G	2	9	(7	30	163.2	..	-20.4)	+77.8
Means	..	..	25	195	167.5	..	-18.6	..
Group 15197. Oct. 2-13. A stable regular spot with a distant companion on October 8.								
274.357 G	11	74	27	182	172.1	+6.1	-17.5	-75.4
275.345 G	22	138	27	171	171.9	+5.9	-17.4	-62.6
276.375 G	29	194	25	167	171.5	+5.6	-17.3	-49.4
277.422 G	42	236	29	160	171.5	+5.6	-17.0	-35.6
278.296 C	62	282	37	169	170.9	+5.1	-17.0	-24.6
279.374 G	58	281	32	155	171.0	+5.2	-16.5	-10.3
280.576 G	40	270	22	146	170.3	+4.6	-16.5	+ 4.8
281.408 G	42	272	24	152	170.2	+4.5	-16.5	+15.7
282.361 G	54	241	33	149	169.8	+4.2	-16.5	+27.9
283.426 G	29	184	21	134	169.5	+3.9	-16.5	+41.6
284.545 G	20	147	20	146	169.1	+3.6	-16.4	+56.0
285.294 C	15	94	20	127	168.5	+3.0	-16.4	+65.3
Means	..	..	26	155	170.5	..	-16.8	..
No. 1476. Latitude +17°.3								
Group 15174 in Rotation 1258 " 15214 " " 1259 " 15251 " " 1260 " 15295 " " 1261								
Group 15174. Sept. 20-Oct. 1. A large stream of normal type developing rapidly from a tiny spot. The leader, a, a regular spot, is the only survivor at the west limb.								
262.518 C	0	4	0	6	331.9	0.0	+16.4	-71.9
263.442 G	29	225	27	209	333.3	+1.4	+17.3	-58.3
264.406 G	67	392	47	275	335.1	+3.3	+17.6	-43.8
265.470 G	181	914	104	528	337.0	+5.2	+17.3	-27.8
266.377 G	275	1245	144	653	338.5	+6.8	+17.6	-14.3
267.345 G	349	2212	178	1127	339.3	+7.6	+17.7	- 0.8
268.555 G	335	1725	178	909	339.1	+7.4	+17.6	+15.0
269.423 G	306	1781	177	1028	340.1	+8.5	+17.9	+27.5

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. 1476. Group 15174 - *continued*								
d					°	°	°	°
270.309 C	262	1453	175	946	339.2	+ 7.6	+18.1	+38.2
271.304 C	229	1151	196	957	339.2	+ 7.7	+17.6	+51.4
272.348 G	96	574	127	744	339.2	+ 7.7	+17.9	+65.2
273.549 G	8	83	47	456	345.0	..	+17.6	+86.8
Means	..	..	123	671	337.4	..	+17.5	..
Spot *a*								
264.406 G	38	223	26	152	336.8	0.0	+17.0	-42.1
265.470 G	121	511	68	286	339.5	+ 2.7	+16.9	-25.3
266.377 G	134	600	68	306	343.2	+ 6.5	+16.8	- 9.6
267.345 G	172	995	88	507	344.7	+ 8.0	+16.9	+ 4.6
268.555 G	220	844	119	456	345.4	+ 8.8	+17.1	+21.3
269.423 G	190	1033	114	620	345.7	+ 9.1	+17.6	+33.1
270.309 C	171	775	120	542	345.5	+ 8.9	+17.8	+44.5
271.304 C	160	676	147	622	345.4	+ 8.9	+17.8	+57.6
272.348 G	74	401	107	581	344.9	+ 8.4	+17.7	+70.9
273.549 G	8	83	47	456	345.0	..	+17.6	+86.8
Spot *b*								
264.406 G	29	169	21	123	332.2	0.0	+18.1	-46.7
265.470 G	60	405	36	242	332.9	+ 0.7	+18.0	-31.9
266.377 G	123	493	66	266	332.7	+ 0.6	+18.2	-20.1
267.345 G	99	726	50	370	332.2	+ 0.1	+18.1	- 7.9
268.555 G	72	491	37	250	331.6	- 0.4	+18.2	+ 7.5
269.423 G	69	390	37	211	331.6	- 0.4	+18.4	+19.0
270.309 C	50	300	30	177	331.1	- 0.9	+18.4	+30.1
271.304 C	26	235	18	162	330.9	- 1.0	+18.4	+43.1
272.348 G	9	63	8	57	330.8	- 1.1	+18.4	+56.8
Group 15214. Oct. 16-28. A stable regular spot.								
288.292 C	24	173	48	349	346.9	+11.1	+17.6	-76.8
289.292 C	58	287	64	319	346.9	+11.1	+17.6	-63.6
290.290 C	47	336	37	265	346.8	+11.0	+17.8	-50.5
291.310 C	120	460	77	294	346.3	+10.6	+17.8	-37.6
292.290 C	88	494	49	277	345.7	+10.0	+18.0	-25.3
293.289 C	92	537	48	279	345.8	+10.2	+17.6	-12.0
294.621 G	128	561	65	286	345.3	+ 9.7	+17.6	+ 5.1
295.439 G	103	513	55	272	345.1	+ 9.5	+17.5	+15.7
296.475 G	79	444	46	258	345.0	+ 9.5	+17.6	+29.2
297.419 C	75	375	51	255	344.7	+ 9.2	+17.5	+41.4
298.310 C	58	241	49	202	344.7	+ 9.3	+17.6	+53.1
299.577 G	55	189	79	270	344.8	+ 9.4	+17.8	+69.9
300.493 G	4	18	26	161	344.0	..	+17.9	+81.2
Means	..	..	56	277	345.7	..	+17.7	..

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

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. 1476. - *continued*							
Group 15251. Nov. 13-25. A stable regular spot with a companion on November 22.							
d 316.485 G	20	125	29	181	342.°2	+7.°5	+18.°2	-69.°7
317.290 C	32	203	32	203	341.9	+7.2	+17.9	-59.4
318.287 C	25	243	19	182	341.8	+7.2	+18.1	-46.4
319.313 C	32	249	20	154	341.3	+6.7	+18.1	-33.3
320.442 C	61	304	34	167	340.9	+6.3	+18.2	-18.9
321.539 G	50	255	26	133	340.7	+6.2	+18.1	- 4.6
322.297 C	42	344	22	179	340.5	+6.0	+18.0	+ 5.2
323.301 C	67	281	37	155	340.2	+5.8	+18.1	+18.1
324.289 C	44	208	26	125	339.9	+5.5	+18.1	+30.8
325.290 C	55	246	40	177	339.8	+5.4	+18.3	+43.9
326.310 C	15	113	15	111	340.5	+6.2	+18.1	+58.1
327.277 C	10	84	15	124	339.6	+5.3	+18.0	+69.9
328.413 G	2	24	12	146	340.3	..	+17.5	+85.6
Means	..	..	26	158	340.8	..	+18.1	..
Group 15295. Dec. 10-22. A small spot until December 16; on the next day a stream develops with its axis highly inclined to the equator. As this stream grows it separates into three spots which are declining as they pass round the limb.							
343.446 G	2	11	6	32	337.0	+3.4	+16.7	-79.6
344.287 C	2	13	3	19	336.9	+3.3	+16.6	-68.6
345.291 C	6	38	6	36	335.9	+2.3	+16.4	-56.4
346.285 C	4	33	3	24	336.2	+2.7	+16.3	-43.0
347.310 C	6	17	4	10	335.6	+2.1	+16.3	-30.1
348.341 C	6	19	3	10	335.5	+2.1	+16.5	-16.6
349.322 C	6	36	3	19	335.3	+1.9	+15.3	- 3.9
350.284 C	36	270	19	142	333.8	+0.4	+15.2	+ 7.3
351.372 C	101	577	56	323	334.1	+0.8	+15.7	+21.9
352.291 C	99	615	62	389	334.1	+0.8	+16.1	+34.1
353.291 C	77	537	60	418	334.1	+0.9	+16.6	+47.2
354.318 C	37	293	41	333	335.4	+2.2	+15.9	+62.1
355.285 C	8	75	18	161	335.9	+2.7	+15.5	+75.3
Means	..	..	22	147	335.4	..	+16.1	..
No. 1477. Latitude -9°.6							
Group 15187 in Rotation 1258 " 15225 " " 1259							
Group 15187. Sept. 26-Oct. 8. A pair of regular spots, each with variable companions. The leader, *a*, is the first to die out.							
268.555 G	18	124	49	364	244.8	0.0	- 8.0	-79.3
269.423 G	65	323	95	468	244.4	-0.5	- 8.3	-68.2
270.309 C	80	534	76	506	245.1	+0.1	- 8.2	-55.9
271.304 C	101	667	74	481	244.4	-0.7	- 8.2	-43.4
272.348 G	108	762	65	461	243.9	-1.3	- 8.5	-30.1

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. 1477. Group 15187 - *continued*							
d 273.549 G	157	800	84	428	243.°8	-1.°6	- 8.°8	-14.°4
274.357 G	132	815	69	424	243.4	-2.1	- 9.1	- 4.1
275.345 G	78	616	41	327	243.9	-1.7	- 8.7	+ 9.4
276.375 G	91	549	52	310	243.6	-2.1	- 9.1	+22.7
277.422 G	55	393	36	254	243.5	-2.3	- 9.3	+36.4
278.296 C	54	329	42	258	243.4	-2.5	- 9.3	+47.9
279.374 G	40	188	44	208	242.1	-4.0	-10.8	+60.8
280.576 G	13	90	27	196	240.6	-5.6	-11.0	+75.1
Means	..	..	58	360	243.6	..	- 9.0	..
Spot *a*							
268.555 G	16	99	39	244	247.0	0.0	- 7.8	-77.1
269.423 G	36	193	46	247	247.0	-0.1	- 7.4	-65.6
270.309 C	48	324	43	288	246.9	-0.3	- 7.7	-54.1
271.304 C	45	378	31	261	246.6	-0.7	- 7.7	-41.2
272.348 G	54	379	32	224	246.0	-1.4	- 7.7	-28.0
273.549 G	74	392	39	208	245.7	-1.9	- 7.9	-12.5
274.357 G	67	363	35	189	245.4	-2.3	- 7.8	- 2.1
275.345 G	36	328	19	174	245.5	-2.3	- 7.8	+11.0
276.375 G	49	248	28	141	245.2	-2.7	- 7.8	+24.3
277.422 G	22	161	15	106	245.6	-2.4	- 7.5	+38.5
278.296 C	26	144	21	117	245.4	-2.7	- 7.7	+49.9
279.374 G	4	18	5	22	245.9	-2.4	- 7.7	+64.6
Spot *b*							
268.555 G	2	25	10	120	241.4	..	- 8.9	-82.7
269.423 G	29	130	49	221	241.2	0.0	- 9.0	-71.4
270.309 C	32	210	33	218	241.6	+0.3	- 9.2	-59.4
271.304 C	56	289	43	220	241.6	+0.2	- 9.3	-46.2
272.348 G	54	383	33	237	241.5	0.0	- 9.6	-32.5
273.549 G	83	408	45	220	242.0	+0.3	- 9.8	-16.2
274.357 G	65	452	34	235	242.0	+0.2	- 9.7	- 5.5
275.345 G	42	288	22	153	241.8	-0.1	- 9.8	+ 7.3
276.375 G	42	301	24	169	242.2	+0.2	-10.4	+21.3
277.422 G	33	232	21	148	242.3	+0.2	-10.4	+35.2
278.296 C	28	185	21	141	241.9	-0.3	-10.4	+46.4
279.374 G	18	105	20	116	242.3	-0.1	-10.2	+61.0
280.576 G	4	36	9	85	241.7	-0.8	-10.0	+76.2
Group 15225. Oct. 23-Nov. 4. A slowly-diminishing regular spot with a companion until October 27.							
295.439 G	9	22	32	79	248.4	..	- 9.7	-81.0
296.475 G	31	176	49	258	247.1	+2.7	-10.4	-68.7
297.419 C	51	268	47	250	247.8	+3.3	-10.3	-55.5
298.310 C	55	355	40	254	248.1	+3.5	-10.2	-43.5
299.577 G	79	436	46	253	248.3	+3.5	-10.1	-26.6
300.493 G	75	447	40	237	247.9	+3.0	-10.2	-14.9
301.408 C	85	419	44	218	248.2	+3.2	-10.0	- 2.5

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

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.
No. 1477. Group 15225 - *continued*							
d					°	°	°
302.286 C	55	392	29	204	248.1	+3.0	- 9.8
303.590 C	57	341	32	194	247.9	+2.7	- 9.8
304.379 C	36	276	23	177	247.8	+2.5	-10.1
305.373 C	38	240	30	192	247.9	+2.5	-10.1
306.431 G	15	123	17	143	247.6	+2.0	-10.0
307.288 C	13	61	25	116	247.0	+1.3	-10.0
Means	..	..	35	208	247.8	..	-10.1
No. 1478. Latitude +18°.7							
Group 15192 in Rotation 1258							
" 15234 " " 1259							
" 15270 " " 1260							
Group 15192. Sept. 30-Oct. 13. A large stream of composite spots which by October 5 have joined together to form a complex structure. Two days later, this separates, the leading spot, *a*, remaining the most stable component.							
272.348 G	6	31	22	116	190.0	..	+20.1
273.549 G	47	343	63	465	189.5	0.0	+19.6
274.357 G	132	791	130	785	187.8	-1.6	+19.5
275.345 G	149	1340	111	987	188.2	-1.2	+19.1
276.375 G	321	1986	195	1209	187.7	-1.6	+18.6
277.422 G	379	2901	207	1587	187.4	-1.8	+19.0
278.296 C	452	2879	232	1490	187.5	-1.6	+19.0
279.374 G	495	2589	256	1335	187.2	-1.9	+19.1
280.576 G	450	2354	249	1306	187.3	-1.7	+19.1
281.408 G	292	2079	180	1269	187.3	-1.6	+18.9
282.361 G	245	1322	179	972	188.6	-0.2	+18.8
283.426 G	138	777	144	802	188.3	-0.4	+18.7
284.545 G	67	526	124	963	187.7	-1.0	+18.7
285.294 C	15	126	(49	503	186.0	..	+18.2)
Means	..	..	172	1098	187.9	..	+19.0
Spot *a*							
272.348 G	4	20	(16	81	189.0	..	+19.2)
273.549 G	45	332	61	452	188.6	0.0	+19.6
274.357 G	76	459	71	427	189.7	+1.2	+19.3
275.345 G	71	644	50	451	190.2	+1.7	+19.4
276.375 G	136	798	80	471	190.9	+2.5	+19.2
277.422 G	283	1862	153	1005	189.5	+1.2	+19.2
278.296 C	340	1746	173	890	189.7	+1.5	+18.7
279.374 G	321	1572	167	817	190.4	+2.2	+19.0
280.576 G	256	1400	146	798	190.9	+2.8	+19.0
281.408 G	214	1298	135	818	190.8	+2.8	+18.7
282.361 G	165	952	125	724	190.5	+2.6	+18.5
283.426 G	127	684	135	725	190.3	+2.5	+18.2
284.545 G	60	455	114	864	189.1	+1.2	+18.5
285.294 C	6	98	(26	430	188.3	..	+17.9)

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.
No. 1478. - *continued*								
Group 15234. Oct. 27-Nov. 9. A stable regular spot with a close companion until October 30.								
d					°	°	°	°
299.577 G	7	64	24	220	192.2	..	+18.5	-82.7
300.493 G	29	148	45	230	191.1	+ 4.6	+18.2	-71.7
301.408 C	25	147	24	143	191.8	+ 5.1	+18.2	-58.9
302.286 C	43	221	33	166	191.6	+ 5.2	+18.1	-47.5
303.590 C	55	273	32	161	192.0	+ 5.7	+18.1	-29.9
304.379 C	53	280	29	154	192.0	+ 5.8	+18.1	-19.5
305.373 C	57	280	30	146	191.7	+ 5.6	+18.2	- 6.7
306.431 G	57	284	30	148	191.7	+ 5.6	+18.4	+ 7.2
307.288 C	66	303	36	164	191.7	+ 5.7	+18.3	+18.5
308.387 G	37	195	23	119	191.6	+ 5.7	+18.4	+32.9
309.524 C	30	165	23	125	191.3	+ 5.5	+18.5	+47.6
310.429 G	24	138	24	138	191.4	+ 5.6	+18.4	+59.6
311.439 C	11	91	18	151	191.1	+ 5.4	+18.4	+72.7
312.313 C	2	15	8	61	190.6	..	+18.4	+83.7
Means	..	..	29	154	191.6	..	+18.3	..
Group 15270. Nov. 24-Dec. 1. A small spot, with a companion on November 25 to 27 and December 1.								
327.277 C	0	17	0	34	194.3	+ 9.8	+20.1	-75.4
328.413 G	22	111	23	116	194.5	+10.1	+19.6	-60.2
329.420 G	22	113	16	85	195.3	+11.0	+19.3	-46.1
330.353 C	23	88	14	55	194.9	+10.7	+19.3	-34.2
331.517 G	15	94	8	52	195.9	+11.8	+18.4	-17.9
332.289 C	6	63	3	33	196.1	+12.0	+18.2	- 7.5
333.321 C	6	25	3	13	196.8	+12.8	+17.8	+ 6.8
334.437 G	7	26	4	15	196.8	+12.9	+17.5	+21.5
Means	..	..	9	50	195.6	..	+18.8	..
No. 1479. Latitude -2°.2								
Group 15193 in Rotation 1258								
" 15223 " " 1259								
Group 15193. Oct. 1-7. An equatorial stream developing from a tiny spot first seen near the central meridian. Both leader, *a*, and follower, *b*, soon become regular spots, the follower being the larger.								
273.549 G	2	16	1	8	261.6	0.0	- 1.5	+ 3.4
274.357 G	13	54	7	29	261.8	0.0	- 1.9	+14.3
275.345 G	49	234	27	133	261.9	0.0	- 2.4	+27.4
276.375 G	123	542	82	364	262.0	- 0.1	- 2.3	+41.1
277.422 G	80	504	71	452	261.9	- 0.4	- 2.5	+54.8
278.296 C	63	376	81	488	261.2	- 1.3	- 2.8	+65.7
279.374 G	18	58	(45	146	259.4	..	- 3.1)	+78.1
Means	..	..	45	246	261.7	..	- 2.2	..

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Date U.T. Place	Projected Area		Corrected Area		Longitude and Proper Motion	Latitude	Long. from C.M.
	Umbræ	Whole Spots	Umbræ	Whole Spots			
No. 1479. Group 15193 - *continued*							
Spot *a*							
274.d357 G	4	18	2	10	263.7	0.0	- 1.5	+16.2
275.345 G	16	80	9	47	265.4	+1.5	- 2.1	+30.9
276.375 G	29	176	21	127	266.2	+2.1	- 2.1	+45.3
277.422 G	25	172	25	174	266.8	+2.5	- 2.4	+59.7
278.296 C	22	148	34	228	266.1	+1.7	- 2.3	+70.6
Spot *b*							
274.357 G	9	36	5	19	260.8	0.0	- 2.1	+13.3
275.345 G	33	154	18	86	260.2	-0.8	- 2.6	+25.7
276.375 G	76	301	49	193	259.8	-1.4	- 3.2	+38.9
277.422 G	51	301	42	250	259.2	-2.2	- 3.0	+52.1
278.296 C	41	228	47	260	258.8	-2.7	- 3.2	+63.3
279.374 G	18	58	45	146	259.4	-2.3	- 3.1	+78.1
Group 15223. Oct. 22-Nov. 2. A regular spot in the equatorial belt, with occasional companions.							
294.621 G	31	144	47	219	269.8	+2.3	- 2.8	-70.4
295.439 G	39	330	40	337	269.3	+1.7	- 2.6	-60.1
296.475 G	61	394	45	291	269.1	+1.3	- 2.9	-46.7
297.419 C	64	543	39	332	269.4	+1.4	- 2.8	-33.9
298.310 C	55	377	30	205	269.1	+0.9	- 2.3	-22.5
299.577 G	70	361	36	184	269.3	+0.9	- 2.1	- 5.6
300.493 G	64	319	33	163	269.6	+1.0	- 1.9	+ 6.8
301.408 C	64	332	34	176	269.4	+0.7	- 1.9	+18.7
302.286 C	64	345	38	204	269.9	+1.0	- 1.2	+30.8
303.590 C	42	295	32	224	270.4	+1.3	- 1.0	+48.5
304.379 C	21	144	20	140	270.3	+1.0	- 1.9	+58.8
305.373 C	17	74	28	121	270.4	+0.9	- 2.2	+72.0
Means	..	..	35	216	269.7	..	- 2.1	..

No. 1480. Latitude +21°.2

Group 15222 in Rotation 1259
" 15257 " " 1260

Group 15222. Oct. 22-30. A pair of regular spots, *a*, and *b*, developing from a faint spot on October 22, that is probably the nucleus of the leader.

Date U.T. Place	Projected Area		Corrected Area		Longitude and Proper Motion	Latitude	Long. from C.M.
	Umbræ	Whole Spots	Umbræ	Whole Spots			
No. 1480. Group 15222 - *continued*							
294.d621 G	0	11	0	6	319.9	0.0	+19.4	-20.3
295.439 G	24	79	14	42	316.2	-3.6	+20.7	-13.2
296.475 G	70	482	36	251	316.2	-3.4	+20.7	+ 0.4
297.419 C	130	724	70	387	315.9	-3.6	+20.1	+12.6
298.310 C	94	598	53	342	316.2	-3.1	+19.9	+24.6
299.577 G	99	554	67	375	315.7	-3.5	+19.6	+40.8
300.493 G	51	346	43	288	314.9	-4.1	+19.8	+52.1
301.408 C	26	181	29	206	314.5	-4.4	+19.5	+63.8
302.286 C	19	81	39	168	315.0	-3.8	+19.9	+75.9
Means	..	..	39	229	316.1	..	+20.0	..
Spot *a*							
294.621 G	0	11	0	6	319.9	0.0	+19.4	-20.3
295.439 G	11	48	6	25	317.5	-2.3	+20.4	-11.9
296.475 G	37	253	19	132	318.4	-1.2	+20.4	+ 2.6
297.419 C	68	334	37	180	318.4	-1.1	+19.8	+15.1
298.310 C	45	334	26	194	318.6	-0.7	+19.8	+27.0
299.577 G	51	301	36	211	318.3	-0.9	+19.3	+43.4
300.493 G	29	183	26	161	317.5	-1.5	+19.6	+54.7
301.408 C	15	100	18	122	316.7	-2.2	+19.5	+66.0
302.286 C	13	60	29	133	316.9	-1.9	+19.8	+77.8
Spot *b*							
295.439 G	13	31	8	17	314.4	0.0	+20.7	-15.0
296.475 G	33	229	17	119	313.7	-0.5	+20.9	- 2.1
297.419 C	62	390	33	207	313.2	-0.9	+20.7	+ 9.9
298.310 C	49	264	27	148	312.9	-1.1	+20.3	+21.3
299.577 G	48	253	31	164	312.5	-1.3	+19.9	+37.6
300.493 G	22	163	17	127	312.3	-1.3	+19.9	+49.5
301.408 C	11	81	11	84	311.7	-1.8	+19.6	+61.0
302.286 C	6	21	10	35	312.3	-1.1	+20.0	+73.2
Group 15257. Nov. 15-22. A small spot, with others on November 19 and 20.							
318.287 C	2	13	4	23	314.6	-1.8	+22.4	-73.6
319.313 C	4	27	4	28	314.4	-1.8	+22.0	-60.2
320.442 C	6	36	4	27	314.4	-1.6	+22.3	-45.4
321.539 G	7	13	4	8	314.4	-1.5	+22.2	-30.9
322.297 C	8	69	5	39	315.0	-0.7	+22.6	-20.3
323.301 C	13	69	7	37	314.0	-1.6	+23.0	- 8.1
324.289 C	10	94	5	50	313.9	-1.5	+22.4	+ 4.8
325.290 C	2	15	1	8	313.4	-1.9	+22.9	+17.5
Means	..	..	4	28	314.3	..	+22.5	..

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

No. 1481. Latitude +12°.9

Group 15226 in Rotation 1259
" 15252 " " 1260

Group 15226. Oct. 24-30. A stream of rapid growth and decay appearing near the central meridian. The leader, *a*, is the most stable component and alone remains to pass round the limb.

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.
296.475 G	49	217	24	109	317°.9	0°.0	+11°.9	+ 2°.1
297.419 C	128	795	67	416	318.7	+0.7	+11.5	+15.4
298.310 C	81	629	47	358	318.6	+0.6	+11.8	+27.0
299.577 G	103	600	73	420	318.9	+0.8	+11.8	+44.0
300.493 G	50	396	43	355	318.8	+0.7	+11.9	+56.0
301.408 C	23	161	32	221	319.2	+1.0	+11.8	+68.5
302.286 C	17	49	56	161	321.1	..	+11.5	+82.0
Means	..	..	48	313	318.7	..	+11.8	..

Spot *a*

296.475 G	29	103	14	52	320.3	0.0	+11.8	+ 4.5
297.419 C	81	488	43	259	320.7	+0.3	+11.7	+17.4
298.310 C	60	407	35	236	321.3	+0.9	+11.8	+29.7
299.577 G	79	387	57	279	321.0	+0.5	+11.8	+46.1
300.493 G	26	264	24	248	320.8	+0.3	+12.0	+58.0
301.408 C	19	138	27	195	320.5	-0.1	+11.6	+69.8
302.286 C	17	49	56	161	321.1	..	+11.5	+82.0

Spot *b*

296.475 G	20	114	10	57	316.3	0.0	+11.9	+ 0.5
297.419 C	47	307	24	157	315.6	-0.8	+11.6	+12.3
298.310 C	21	222	12	122	314.8	-1.6	+11.8	+23.2
299.577 G	24	213	16	141	315.0	-1.5	+12.1	+40.1
300.493 G	24	132	19	107	315.0	-1.5	+12.0	+52.2
301.408 C	4	23	5	26	314.6	-2.0	+12.4	+63.9

Group 15252. Nov. 14-26. A stable regular spot drifting backwards in longitude.

317.290 C	4	53	14	191	318.9	..	+13.8	-82.4
318.287 C	27	141	38	197	319.0	-2.6	+14.2	-69.2
319.313 C	40	181	36	165	318.4	-3.3	+14.0	-56.2
320.442 C	44	229	30	156	318.0	-3.7	+13.9	-41.8

No. 1481. Group 15252 - *continued*

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.
321.539 G	46	264	26	150	317°.7	-4°.1	+13°.7	-27°.6
322.297 C	57	330	31	178	317.6	-4.2	+13.8	-17.7
323.301 C	69	284	35	145	317.0	-4.9	+13.9	- 5.1
324.289 C	57	269	30	140	317.1	-4.9	+13.9	+ 8.0
325.290 C	46	284	25	156	316.9	-5.1	+14.2	+21.0
326.310 C	34	225	21	140	316.6	-5.5	+14.2	+34.2
327.277 C	36	155	27	116	316.5	-5.6	+14.4	+46.8
328.413 G	28	129	30	138	316.5	-5.7	+14.5	+61.8
329.420 G	7	57	13	105	315.6	-6.7	+14.5	+74.2
Means	..	..	28	149	317.2	..	+14.1	..

No. 1482. Latitude -7°.5

Group 15235 in Rotation 1259
" 15273 " " 1260

Group 15235. Oct. 28-Nov. 9. A regular spot followed by a train of small variable companions between November 1 and 5.

300.493 G	11	57	45	232	180.7	..	- 8.9	-82.1
301.408 C	36	315	55	479	180.9	0.0	- 8.6	-69.8
302.286 C	51	415	50	407	180.9	-0.1	- 8.3	-58.2
303.590 C	83	740	56	503	180.6	-0.6	- 8.2	-41.3
304.379 C	131	742	79	447	180.7	-0.6	- 8.2	-30.8
305.373 C	104	1064	56	575	181.1	-0.4	- 8.3	-17.3
306.431 G	141	897	72	458	181.5	-0.1	- 8.4	- 3.0
307.288 C	72	848	37	441	181.1	-0.6	- 8.6	+ 7.9
308.387 G	118	685	66	384	181.6	-0.3	- 8.0	+22.9
309.524 C	83	661	54	430	181.3	-0.8	- 7.9	+37.6
310.429 G	85	465	68	371	181.8	-0.4	- 7.5	+50.0
311.439 C	30	207	36	246	182.7	+0.4	- 7.5	+64.3
312.313 C	11	114	23	234	182.1	-0.4	- 7.2	+75.2
Means	..	..	54	415	181.4	..	- 8.1	..

Group 15273. Nov. 25-Dec. 2. A persistent small spot.

328.413 G	4	17	6	25	185.8	+1.0	- 6.6	-68.9
329.420 G	7	24	6	22	184.7	-0.2	- 6.8	-56.7
330.353 C	13	48	9	34	184.3	-0.8	- 6.9	-44.8
331.517 G	15	92	9	53	184.5	-0.7	- 7.3	-29.3
332.289 C	23	98	12	52	184.7	-0.6	- 7.2	-18.9
333.321 C	21	98	11	50	184.9	-0.6	- 7.3	- 5.1
334.437 G	13	52	7	27	185.6	-0.1	- 6.8	+10.3
335.294 C	10	48	5	26	186.0	+0.2	- 6.7	+22.0
Means	..	..	8	36	185.1	..	- 7.0	..

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

No. 1483. Latitude +8°.4

Group 15245 in Rotation 1259
" 15284 " " 1260

Group 15245. Nov. 9-17. A developing stream; the leader, *a*, is the most stable component and alone remains to pass round the west limb.

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					°	°	°
312.313 C	4	29	2	16	79.5	0.0	+ 8.5	-27.4
313.292 C	28	121	15	63	80.1	+0.5	+ 8.6	-13.9
314.304 C	72	481	36	241	80.9	+1.1	+ 8.3	+ 0.2
315.289 C	157	869	81	449	80.6	+0.7	+ 8.7	+12.9
316.485 G	110	760	64	443	81.4	+1.3	+ 8.9	+29.5
317.290 C	114	922	75	602	80.9	+0.7	+ 8.7	+39.6
318.287 C	97	840	82	698	80.9	+0.6	+ 8.9	+52.7
319.313 C	19	226	24	288	81.3	+0.9	+ 9.1	+66.7
320.442 C	12	80	49	324	81.8	..	+ 8.9	+82.0
Means	..	..	47	350	80.7	..	+ 8.7	..

Spot *a*

312.313 C	4	23	2	13	80.1	0.0	+ 8.5	-26.8
313.292 C	17	68	9	35	82.1	+1.9	+ 8.5	-11.9
314.304 C	32	283	16	142	83.3	+2.9	+ 8.1	+ 2.6
315.289 C	89	576	46	300	82.5	+2.0	+ 8.6	+14.8
316.485 G	68	583	40	344	83.4	+2.7	+ 8.7	+31.5
317.290 C	82	595	55	399	83.2	+2.4	+ 8.9	+41.9
318.287 C	82	538	71	468	83.1	+2.2	+ 9.0	+54.9
319.313 C	13	156	18	212	83.3	+2.3	+ 9.1	+68.7
320.442 C	10	67	44	294	83.6	..	+ 9.0	+83.8

Group 15284. Dec. 2-14. A stable regular spot in slow decline with one or two variable companions.

335.294 C	19	90	49	233	85.2	+2.0	+ 7.8	-78.8
336.422 C	27	151	31	171	85.5	+2.2	+ 7.9	-63.6
337.330 C	46	234	39	191	85.4	+1.9	+ 7.7	-51.8
338.372 C	43	305	28	194	85.9	+2.3	+ 7.5	-37.5
339.305 C	44	272	24	152	85.4	+1.7	+ 8.2	-25.7
340.281 C	53	322	28	168	85.5	+1.7	+ 8.5	-12.8
341.499 G	50	354	26	180	85.2	+1.2	+ 8.4	+ 3.0
342.482 G	39	204	21	106	85.3	+1.2	+ 8.3	+16.0
343.446 G	54	246	31	140	84.9	+0.6	+ 8.1	+28.3
344.287 C	31	174	20	114	85.1	+0.7	+ 8.3	+39.6
345.291 C	25	105	21	88	85.7	+1.2	+ 8.0	+53.4
346.285 C	6	50	8	63	85.4	+0.7	+ 8.2	+66.2
347.310 C	4	23	12	67	85.6	+0.8	+ 8.0	+79.9
Means	..	..	26	144	85.4	..	+ 8.1	..

No. 1484. Latitude -22°.6

Group 15246 in Rotation 1260
" 15294 " " 1261

Group 15246. Nov. 12-24. An irregular stream, the leader, *a*, of which is, however, a stable regular spot. The following part consists of a string of spots which, undergoing considerable changes, are on the decline as the limb is reached.

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					°	°	°	°
315.289 C	8	36	(23	105	349.6	..	-20.6)	-78.1
316.485 G	55	296	75	374	346.8	0.0	-21.1	-65.1
317.290 C	80	532	75	510	347.4	+0.8	-21.2	-53.9
318.287 C	125	844	91	617	347.9	+1.4	-21.3	-40.3
319.313 C	156	951	97	593	348.1	+1.8	-22.1	-26.5
320.442 C	207	1354	118	765	346.1	+0.1	-21.7	-13.7
321.539 G	148	1154	81	632	345.6	-0.2	-21.7	+ 0.3
322.297 C	135	971	76	545	346.3	+0.6	-22.5	+11.0
323.301 C	108	792	65	476	345.2	-0.3	-23.0	+23.1
324.289 C	101	614	70	425	345.4	+0.1	-22.8	+36.3
325.290 C	51	638	45	541	343.9	-1.2	-23.0	+48.0
326.310 C	29	248	37	323	344.9	0.0	-22.5	+62.5
327.277 C	31	210	68	423	342.0	-2.7	-23.5	+72.3
Means	..	..	75	519	345.8	..	-22.2	..

Spot *a*

315.289 C	8	36	(23	105	349.6	..	-20.6)	-78.1
316.485 G	31	217	35	247	351.2	0.0	-21.0	-60.7
317.290 C	46	270	39	227	352.4	+1.4	-21.5	-48.9
318.287 C	59	331	40	225	352.9	+2.0	-21.8	-35.3
319.313 C	93	462	55	273	352.6	+1.9	-22.0	-22.0
320.442 C	103	548	57	301	352.4	+2.0	-22.0	- 7.4
321.539 G	78	567	43	312	351.8	+1.6	-21.9	+ 6.5
322.297 C	80	494	46	282	351.2	+1.1	-21.9	+15.9
323.301 C	57	414	35	257	350.5	+0.6	-22.0	+28.4
324.289 C	59	309	43	226	350.4	+0.7	-22.0	+41.3
325.290 C	34	273	32	254	349.6	+0.1	-22.1	+53.7
326.310 C	19	160	27	230	349.5	+0.2	-21.8	+67.1
327.277 C	13	61	39	185	348.7	-0.4	-21.8	+79.0

Spot *b*

316.485 G	13	37	24	68	340.1	0.0	-20.5	-71.8
317.290 C	21	167	24	194	340.0	+0.1	-20.7	-61.3
318.287 C	25	186	21	154	339.9	+0.1	-20.4	-48.3
319.313 C	40	257	27	172	339.7	+0.1	-20.5	-34.9
320.442 C	46	210	27	122	339.7	+0.4	-20.1	-20.1
321.539 G	31	187	17	101	340.2	+1.1	-19.6	- 5.1
322.297 C	23	162	12	87	340.5	+1.5	-19.8	+ 5.2

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

No. 1484. - *continued*

Group 15294. Dec. 10-16. A small spot reduced finally to a speck.

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					°	°	°
343.446 G	4	24	7	44	343.5	-2.5	-23.0	-73.1
344.287 C	4	19	5	21	344.1	-1.7	-22.7	-61.4
345.291 C	4	33	3	27	343.6	-2.0	-22.9	-48.7
346.285 C	4	23	3	15	343.5	-1.9	-23.0	-35.7
347.310 C	4	17	2	10	342.7	-2.5	-23.0	-23.0
348.341 C	2	6	1	3	342.5	-2.5	-22.9	- 9.6
349.322 C	2	8	1	4	342.0	-2.8	-23.0	+ 2.8
Means	..	..	3	18	343.1	..	-22.9	..

No. 1485. Latitude -13°.7

Group 15255 in Rotation 1259
" 15292 " " 1260

Group 15255. Nov. 15-21. Two or three small spots precede the rapid development of this group which occurs near the west limb.

318.287 C	15	61	8	32	25.0	0.0	-14.9	- 3.2
319.313 C	0	0	0	0	..	..	..	..
320.442 C	6	48	3	28	25.0	-0.1	-14.6	+25.2
321.539 G	26	107	19	79	30.1	+5.0	-14.7	+44.8
322.297 C	23	246	22	229	30.7	+5.5	-14.8	+55.4
323.301 C	57	386	69	465	26.2	+1.0	-14.3	+64.1
324.289 C	27	183	58	388	24.8	-0.5	-14.3	+75.7
Means	..	..	26	174	27.0	..	-14.6	..

Group 15292. Dec. 6-18. A spot which grows rapidly into a large composite structure. The leading part gradually condenses into a spot of nearly regular outline. The following portion remains broken and slowly diminishes.

339.305 C	15	84	49	276	30.1	..	-12.1	-81.0
340.281 C	39	286	54	394	30.1	+4.1	-12.8	-68.2
341.499 G	174	1280	147	1078	29.4	+3.4	-12.4	-52.8
342.482 G	248	1899	169	1280	28.9	+2.8	-12.8	-40.4
343.446 G	263	2100	152	1219	28.0	+1.9	-12.7	-28.6
344.287 C	258	1799	138	969	27.9	+1.8	-12.8	-17.6
345.291 C	255	2414	130	1234	27.2	+1.0	-12.8	- 5.1

No. 1485. Group 15292 - *continued*

d					°	°	°	°
346.285 C	297	1913	154	988	27.7	+1.5	-13.1	+ 8.5
347.310 C	357	1984	198	1095	27.7	+1.4	-13.8	+22.0
348.341 C	125	1085	81	697	28.7	+2.4	-12.8	+36.6
349.322 C	173	947	140	755	28.4	+2.0	-13.1	+49.2
350.284 C	95	612	109	684	28.7	+2.3	-12.4	+62.2
351.372 C	33	220	88	582	29.4	+2.9	-11.4	+77.2
Means	..	..	130	915	28.5	..	-12.7	..

No. 1486. Latitude +17°.2

Group 15265 in Rotation 1260
" 15303 " " 1261

Group 15265. Nov. 19-30. A stream of small unstable spots.

322.297 C	0	8	0	12	265.9	0.0	+16.4	-69.4
323.301 C	16	78	15	75	264.8	-1.1	+16.6	-57.3
324.289 C	25	126	18	90	265.7	-0.1	+17.1	-43.4
325.290 C	16	205	9	119	268.8	+3.0	+16.1	-27.1
326.310 C	47	185	25	98	268.5	+2.7	+16.7	-13.9
327.277 C	30	233	16	121	265.5	-0.2	+17.9	- 4.2
328.413 G	33	172	18	92	265.8	+0.1	+17.9	+11.1
329.420 G	20	146	11	84	266.3	+0.7	+17.7	+24.9
330.353 C	8	68	6	45	266.9	+1.3	+17.3	+37.8
331.517 G	13	114	12	102	268.8	+3.2	+16.3	+55.0
332.289 C	6	44	7	52	267.9	+2.4	+16.9	+64.3
333.321 C	0	4	0	10	267.9	+2.4	+17.0	+77.9
Means	..	..	11	75	266.9	..	+17.0	..

Group 15303. Dec. 16-22. A slowly-diminishing spot last seen on the central meridian. Although listed as a return of Group 15265, a revival of spot formation must obviously have taken place on the invisible hemisphere.

349.322 C	8	40	17	87	263.5	-1.4	+17.5	-75.7
350.284 C	19	119	23	144	262.7	-2.2	+17.9	-63.8
351.372 C	10	69	8	56	263.2	-1.6	+17.3	-49.0
352.291 C	19	96	13	64	262.5	-2.3	+17.1	-37.5
353.291 C	27	83	16	48	262.1	-2.7	+16.9	-24.8
354.318 C	6	46	3	25	261.6	-3.1	+17.3	-11.7
355.285 C	4	25	2	13	261.0	-3.7	+17.6	+ 0.4
Means	..	..	12	62	262.4	..	+17.4	..

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

No. 1487. Latitude -14°.5

Group 15279 in Rotation 1260
" 15319 " " 1261
" 15358 " " 1262

Group 15279. Nov. 29-Dec. 9. A stream of normal type, developing from a pair of small spots on November 29. The follower, b, begins to break up on December 5 while the leader, a, remains fairly stable throughout.

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.
d					°	°	°
332.289 C	8	63	8	65	144.3	0.0	-15.0	-59.3
333.321 C	75	352	56	264	144.2	-0.1	-15.1	-45.8
334.437 G	156	787	94	472	145.3	+0.9	-14.8	-30.0
335.294 C	125	823	68	449	145.5	+1.1	-15.0	-18.5
336.422 C	96	702	50	365	147.0	+2.6	-14.4	- 2.1
337.330 C	115	592	61	315	147.3	+2.9	-14.7	+10.1
338.372 C	84	514	49	296	147.0	+2.5	-14.9	+23.6
339.305 C	89	631	58	403	145.5	+1.0	-15.2	+34.4
340.281 C	56	387	44	301	146.0	+1.5	-14.6	+47.7
341.499 G	26	196	33	248	147.4	+2.9	-14.7	+65.2
342.482 G	2	13	8	50	151.6	..	-14.9	+82.3
Means	..	..	52	318	146.0	..	-14.8	..

Spot *a*

333.321 C	42	176	30	127	146.1	0.0	-15.2	-43.9
334.437 G	76	388	44	225	148.2	+2.1	-14.5	-27.1
335.294 C	71	374	38	198	150.3	+4.1	-15.0	-13.7
336.422 C	50	355	26	185	151.8	+5.6	-15.0	+ 2.7
337.330 C	56	341	30	184	152.2	+6.0	-15.2	+15.0
338.372 C	38	226	23	136	152.5	+6.3	-15.8	+29.1
339.305 C	36	178	25	125	152.6	+6.3	-15.8	+41.5
340.281 C	10	90	9	79	152.4	+6.1	-15.4	+54.1
341.499 G	13	111	19	159	151.0	+4.7	-14.8	+68.8
342.482 G	2	13	8	50	151.6	..	-14.9	+82.3

Spot *b*

333.321 C	33	176	26	137	142.0	0.0	-15.1	-48.0
334.437 G	80	399	50	247	142.0	0.0	-15.1	-33.3
335.294 C	54	449	30	251	141.6	-0.5	-14.9	-22.4
336.422 C	46	347	24	180	141.9	-0.2	-14.3	- 7.2
337.330 C	59	251	31	131	141.6	-0.5	-14.5	+ 4.4
338.372 C	21	232	12	128	142.5	+0.4	-14.8	+19.1
339.305 C	36	332	22	199	141.8	-0.4	-15.1	+30.7
340.281 C	29	199	21	141	142.0	-0.2	-14.4	+43.7
341.499 G	13	85	14	89	142.8	+0.6	-14.2	+60.6

No. 1487. - *continued*

Group 15319. Dec. 25-1948 Jan. 6. A stable regular spot with occasional companions. The umbra is crossed by a bright "bridge" on December 31.

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.
d					°	°	°	°
358.315 C	17	96	30	169	147.2	+0.4	-14.2	-73.5
359.305 C	17	210	18	220	146.4	-0.4	-14.0	-61.3
360.295 C	52	349	40	269	146.0	-0.8	-14.4	-48.6
361.309 C	62	401	38	249	146.0	-0.9	-14.2	-35.3
362.475 G	97	486	52	262	146.3	-0.6	-14.2	-19.6
363.288 C	106	520	55	270	146.3	-0.6	-14.4	- 8.9
364.299 C	89	543	45	277	146.4	-0.5	-14.2	+ 4.5
0.796 †	87	514	49	288	146.5	-0.5	-14.3	+24.4
1.288 C	92	497	54	293	146.7	-0.3	-14.3	+31.0
2.292 C	50	352	35	246	146.4	-0.6	-13.9	+43.9
3.299 C	58	245	55	230	146.9	-0.1	-14.1	+57.7
4.349 C	31	146	47	222	146.5	-0.5	-13.9	+71.1
5.288 C	2	21	8	80	146.0	..	-13.4	+83.0
Means	..	..	43	246	146.5	..	-14.2	..

Group 15358. 1948 Jan. 22-27. A small unstable stream.

21.474 G	10	26	12	30	145.3	-2.2	-14.5	-64.6
22.289 C	12	99	11	81	146.8	-0.8	-14.2	-52.3
23.385 G	28	115	18	76	145.4	-2.2	-14.8	-39.3
24.438 G	32	222	17	123	145.3	-2.3	-14.4	-25.5
25.288 C	27	177	14	93	145.4	-2.2	-14.8	-14.3
26.287 C	15	61	8	31	142.6	-5.1	-14.7	- 3.9
Means	..	..	13	72	145.1	..	-14.6	...

No. 1488. Latitude -17°.7

Group 15297 in Rotation 1260
" 15330 " " 1261
" 15368 " " 1262

Group 15297. Dec. 13-20. The rapid growth is seen of a large stream of normal type. Both leader, a, and follower, b, appear to absorb the companion spots between them.

346.285 C	2	21	1	11	7.2	0.0	-17.3	-12.0
347.310 C	27	158	14	82	9.4	+2.3	-17.3	+ 3.7
348.341 C	71	502	39	275	10.5	+3.4	-17.0	+18.4
349.322 C	177	1034	108	629	10.1	+3.1	-18.0	+30.9
350.284 C	213	1026	157	744	10.2	+3.2	-17.5	+43.7
351.372 C	117	949	117	936	10.2	+3.3	-17.5	+58.0
352.291 C	76	642	117	1008	10.2	+3.3	-17.2	+70.2
353.291 C	12	156	(29	374	4.9	..	-16.4)	+78.0
Means	..	..	79	526	9.7	..	-17.4	..

† Mount Wilson

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

Date U.T. Place	Projected Area		Corrected Area		Longitude and Proper Motion		Latitude	Long. from C.M.
	Umbræ	Whole Spots	Umbræ	Whole Spots				
No. 1488. Group 15297 - *continued*								
Spot *a*								
d					°	°	°	°
347.310 C	17	102	9	53	10.9	0.0	-17.5	+ 5.2
348.341 C	48	286	27	160	13.1	+ 2.3	-18.1	+21.0
349.322 C	100	564	63	355	13.6	+ 2.8	-18.3	+34.4
350.284 C	132	560	102	431	14.2	+ 3.5	-18.4	+47.7
351.372 C	67	483	73	526	13.8	+ 3.1	-18.0	+61.6
352.291 C	36	341	68	641	14.2	+ 3.6	-17.9	+74.2
Spot *b*								
346.285 C	2	21	1	11	7.2	0.0	-17.3	-12.0
347.310 C	10	56	5	29	7.0	- 0.1	-17.1	+ 1.3
348.341 C	19	180	10	95	6.2	- 0.9	-16.4	+14.1
349.322 C	67	424	39	246	6.2	- 0.8	-16.3	+27.0
350.284 C	77	451	52	302	6.2	- 0.8	-16.4	+39.7
351.372 C	50	466	44	410	6.5	- 0.4	-16.9	+54.3
352.291 C	40	301	49	367	5.2	- 1.7	-16.3	+65.2
353.291 C	12	156	29	374	4.9	- 1.9	-16.4	+78.0
Group 15330. 1948 Jan. 4-16. A stable regular spot, showing a slight drift in latitude.								
3.299 C	27	160	55	323	13.1	+ 3.2	-17.6	-76.1
4.349 C	42	256	47	284	12.4	+ 2.6	-17.8	-63.0
5.288 C	52	393	42	318	12.3	+ 2.5	-17.9	-50.7
6.288 C	77	418	50	272	12.2	+ 2.5	-18.1	-37.6
7.367 C	60	460	34	258	12.0	+ 2.4	-18.4	-23.6
8.293 C	64	441	34	234	11.6	+ 2.0	-18.4	-11.8
9.286 C	102	574	53	298	11.5	+ 1.9	-18.6	+ 1.1
10.357 C	108	505	57	268	10.6	+ 1.1	-18.2	+14.4
11.288 C	77	412	45	239	11.0	+ 1.5	-18.4	+27.0
12.346 C	75	426	51	290	11.3	+ 1.9	-18.5	+41.2
13.507 C	33	245	30	220	10.6	+ 1.3	-18.4	+55.8
14.293 C	37	168	46	207	10.7	+ 1.4	-18.7	+66.3
15.285 C	21	98	54	254	11.2	+ 1.9	-18.7	+79.8
Means	..	..	46	267	11.6	..	-18.3	..
Group 15368. 1948 Feb. 1-8. A stream of small spots closely *f* Group 15366.								
31.526 C	4	15	5	20	8.3	- 0.1	-18.2	-69.2
32.303 C	8	55	8	50	10.1	+ 1.7	-18.1	-57.2
33.296 C	8	48	6	33	11.6	+ 3.2	-17.4	-42.6
34.455 G	8	46	4	26	13.1	+ 4.8	-16.6	-25.9
35.304 C	6	46	3	24	12.8	+ 4.5	-17.8	-15.0
36.427 G	4	81	2	41	12.5	+ 4.3	-17.6	- 0.5
37.291 C	8	50	4	26	14.0	+ 5.8	-16.9	+12.4
38.310 C	6	42	3	25	18.4	+10.3	-16.7	+30.2
Means	..	..	4	31	12.6	..	-17.4	..

Date U.T. Place	Projected Area		Corrected Area		Longitude and Proper Motion		Latitude	Long. from C.M.
	Umbræ	Whole Spots	Umbræ	Whole Spots				
No. 1489. Latitude +19°.1								
Group 15305 in Rotation 1261								
" 15345 " " 1262								
Group 15305. Dec. 18-29. A regular spot, *a*, with a follower, *b*, that grows into a small composite spot before dying out by December 27. Meanwhile *a* becomes elongated and then divides into two regular spots of which the follower soon disappears.								
d					°	°	°	°
351.372 C	33	172	56	297	241.2	0.0	+20.9	-71.0
352.291 C	58	357	62	379	241.2	+0.1	+21.1	-58.8
353.291 C	84	689	66	558	239.8	-1.2	+21.6	-47.1
354.318 C	112	655	72	430	239.3	-1.6	+21.7	-34.0
355.285 C	125	853	73	498	238.8	-2.1	+21.3	-21.8
356.297 C	106	739	58	404	238.9	-1.9	+20.9	- 8.4
357.291 C	75	697	41	381	239.1	-1.6	+20.4	+ 4.9
358.315 C	39	289	22	167	239.7	-0.9	+20.2	+19.0
359.305 C	23	208	15	136	240.7	+0.2	+20.1	+33.0
360.295 C	23	127	18	102	241.9	+1.5	+19.9	+47.3
361.309 C	12	73	13	82	241.9	+1.6	+19.9	+60.6
362.475 G	9	58	22	142	242.3	+2.1	+20.2	+76.4
Means	..	..	43	298	240.4	..	+20.7	..
Spot *a*								
351.372 C	31	157	50	253	242.2	0.0	+21.2	-70.0
352.291 C	50	307	51	313	242.2	+0.1	+20.9	-57.8
353.291 C	69	460	52	350	242.9	+0.9	+21.5	-44.0
354.318 C	89	439	56	277	242.6	+0.7	+21.7	-30.7
355.285 C	79	553	45	315	242.3	+0.4	+21.3	-18.3
356.297 C	81	483	44	261	242.0	+0.2	+21.0	- 5.3
357.291 C	58	535	32	294	241.5	-0.2	+20.4	+ 7.3
358.315 C	31	254	18	147	241.5	-0.1	+20.1	+20.8
359.305 C	21	193	14	127	242.4	+0.9	+20.2	+34.7
360.295 C	23	127	18	102	241.9	+0.5	+19.9	+47.3
361.309 C	12	73	13	82	241.9	+0.6	+19.9	+60.6
362.475 G	9	58	22	142	242.3	+1.1	+20.2	+76.4
Spot *b*								
351.372 C	2	15	6	44	233.2	0.0	+20.2	-79.0
352.291 C	8	50	11	66	234.6	+1.5	+21.1	-65.4
353.291 C	15	229	14	208	233.7	+0.7	+21.1	-53.2
354.318 C	23	216	16	153	233.4	+0.5	+21.3	-39.9
355.285 C	46	300	28	183	233.2	+0.3	+21.3	-27.4
356.297 C	25	256	14	143	233.8	+1.0	+20.6	-13.5
357.291 C	17	162	9	87	233.2	+0.5	+20.7	- 1.0
358.315 C	8	35	4	20	233.5	+0.9	+20.7	+12.8
359.305 C	2	15	1	9	232.7	+0.2	+20.6	+25.0

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

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. 1489. - *continued*							
Group 15345. 1948 Jan. 14-18. A few small spots, of which only one remains by January 18.							
d					°	°	°
13.507 C	0	8	0	17	240.6	+0.8	+17.2	-74.2
14.293 C	8	34	11	43	240.7	+1.0	+17.3	-63.7
15.285 C	12	85	11	73	241.2	+1.5	+17.8	-50.2
16.287 C	8	36	5	24	241.8	+2.2	+17.1	-36.4
17.437 G	2	9	1	5	241.9	+2.4	+17.9	-21.1
Means	..	..	6	32	241.2	..	+17.5	..
No. 1490. Latitude -23°.8							
Group 15312 in Rotation 1261							
" 15344 " " 1262							
Group 15312. Dec. 22-30. Four days after the initial appearance of a stream of small spots, activity mounts, and the stream is resolved into a string of composite spots. The following components appear, however, to be declining as the group passes out of view.							
355.285 C	12	75	8	47	231.1	0.0	-24.0	-29.5
356.297 C	27	173	15	98	230.5	-0.4	-24.0	-16.8
357.291 C	29	167	15	90	231.4	+0.8	-22.9	- 2.8
358.315 C	29	307	15	168	232.8	+2.4	-22.3	+12.1
359.305 C	81	584	48	345	232.6	+2.4	-23.1	+24.9
360.295 C	99	620	66	420	232.7	+2.8	-23.3	+38.1
361.309 C	89	599	76	513	233.1	+3.4	-22.6	+51.8
362.475 G	63	490	86	676	233.4	+4.0	-22.9	+67.5
363.288 C	20	213	47	530	232.4	+3.2	-23.5	+77.2
Means	..	..	42	321	232.2	..	-23.2	..
Spot *a*							
357.291 C	8	67	4	36	236.0	0.0	-21.3	+ 1.8
358.315 C	19	191	10	105	235.3	-0.5	-21.6	+14.6
359.305 C	25	193	15	116	236.1	+0.6	-22.1	+28.4
360.295 C	40	358	28	251	235.7	+0.4	-22.5	+41.1
361.309 C	58	424	52	377	235.2	+0.1	-22.4	+53.9
362.475 G	35	270	54	418	236.6	+1.8	-22.5	+70.7
363.288 C	10	121	30	367	235.9	..	-23.3	+80.7
Group 15344. 1948 Jan. 14-24. A pair of small spots; one remains after January 18.							
13.507 C	8	62	14	110	240.7	+9.7	-24.3	-74.1
14.293 C	12	62	14	74	239.7	+8.8	-24.4	-64.7
15.285 C	14	98	12	83	238.9	+8.3	-24.5	-52.5
16.287 C	17	71	12	49	237.6	+7.2	-25.1	-40.6

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. 1490. Group 15344 - *continued*							
d					°	°	°	°
17.437 G	21	63	12	36	237.6	+7.5	-24.5	-25.4
18.489 G	6	45	3	24	237.6	+7.7	-24.6	-11.6
19.422 C	10	23	5	12	237.4	+7.7	-25.1	+ 0.5
20.371 C	6	25	3	14	237.4	+8.0	-25.0	+13.0
21.474 G	6	15	4	9	236.9	+7.7	-25.0	+27.0
22.289 C	0	2	0	1	237.3	+8.3	-22.7	+38.2
23.385 G	2	11	2	9	236.2	+7.5	-22.3	+51.5
Means	..	..	7	38	237.9	..	-24.3	..
No. 1491. Latitude -23°.2							
Group 15316 in Rotation 1261							
" 15353 " " 1262							
Group 15316. Dec. 24-1948 Jan. 4. A stream seen from its origin, in which the leader, *a*, a nearly regular spot, almost divides into two and then coalesces again. The following part of the group remains a collection of small spots, slowly diminishing.							
357.291 C	31	103	31	100	176.8	0.0	-22.2	-57.4
358.315 C	67	436	47	309	179.9	+3.3	-21.8	-40.8
359.305 C	106	849	65	517	179.7	+3.3	-22.4	-28.0
360.295 C	222	1313	123	730	178.9	+2.7	-22.5	-15.7
361.309 C	225	1425	119	756	178.7	+2.8	-22.8	- 2.6
362.475 G	218	1285	119	699	177.9	+2.2	-22.5	+12.0
363.288 C	199	1205	116	699	177.6	+2.1	-22.9	+22.4
364.299 C	158	921	103	607	177.2	+1.9	-22.7	+35.3
0.796 †	109	560	100	524	176.7	+1.7	-22.8	+54.6
1.288 C	91	518	103	572	176.0	+1.1	-23.0	+60.3
2.292 C	33	191	67	394	175.9	+1.2	-23.0	+73.4
3.299 C	0	15	(0	37	167.8	..	-22.1)	+78.6
Means	..	..	89	538	177.9	..	-22.6	..
Spot *a*							
357.291 C	8	37	7	33	180.2	0.0	-21.3	-54.0
358.315 C	40	241	27	164	182.0	+2.0	-21.8	-38.7
359.305 C	52	474	31	280	182.1	+2.3	-22.7	-25.6
360.295 C	139	730	76	402	181.8	+2.2	-22.9	-12.8
361.309 C	173	1032	92	547	181.4	+2.1	-23.0	+ 0.1
362.475 G	164	883	90	486	181.5	+2.4	-22.9	+15.6
363.288 C	160	903	94	533	181.1	+2.2	-22.8	+25.9
364.299 C	106	678	72	461	180.9	+2.2	-22.9	+39.0
0.796 †	73	419	72	415	180.4	+2.0	-22.8	+58.3
1.288 C	64	337	78	411	180.7	+2.4	-22.8	+65.0
2.292 C	23	133	55	319	180.9	+2.8	-23.0	+78.4

† Mount Wilson

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

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.
No. 1491. - *continued*							
Group 15353. 1948 Jan 19-Feb. 1. A stable regular spot with a small persistent drift away from the equator.							
d					°	°	°
18.489 G	24	136	46	262	173.3	-1.3	-23.0	-75.9
19.422 C	44	224	50	253	173.3	-1.1	-23.0	-63.6
20.371 C	40	297	33	247	172.6	-1.6	-23.1	-51.8
21.474 G	58	367	38	242	172.1	-1.9	-23.3	-37.8
22.289 C	61	382	36	225	171.6	-2.2	-23.6	-27.5
23.385 G	59	456	32	246	170.9	-2.6	-23.6	-13.8
24.438 G	71	449	38	238	170.1	-3.2	-23.8	- 0.7
25.288 C	77	414	41	219	169.8	-3.3	-24.0	+10.1
26.287 C	46	372	26	212	168.8	-4.1	-24.1	+22.3
27.462 G	69	367	45	239	167.8	-4.9	-24.3	+36.8
28.292 C	52	280	40	213	167.5	-5.0	-24.4	+47.4
29.288 C	50	205	50	205	166.7	-5.6	-24.5	+59.7
30.288 C	13	109	20	169	165.9	-6.2	-24.6	+72.1
31.526 C	4	15	21	80	164.7	..	-24.6	+87.2
Means	..	..	38	228	170.0	..	-23.8	..
No. 1492. Latitude -13°.3							
Group 15317 in Rotation 1261 " 15355 " " 1262 " 15386 " " 1263							
Group 15317. Dec. 24-1948 Jan 5. A nondescript stream of small spots.							
357.291 C	2	12	5	28	156.6	0.0	-14.2	-77.6
358.315 C	6	44	7	50	156.9	+0.2	-13.4	-63.8
359.305 C	8	43	6	35	156.0	-0.7	-13.6	-51.7
360.295 C	14	88	9	58	155.7	-1.1	-13.5	-38.9
361.309 C	18	114	11	63	156.2	-0.6	-13.5	-25.1
362.475 G	37	393	19	204	154.9	-2.0	-13.4	-11.0
363.288 C	27	297	14	151	155.4	-1.5	-12.9	+ 0.2
364.299 C	31	204	16	107	155.6	-1.4	-13.9	+13.7
0.796 †	40	181	24	108	153.3	-3.7	-14.6	+31.2
1.288 C	32	179	20	116	154.0	-3.1	-14.8	+38.3
2.292 C	25	137	19	107	152.5	-4.6	-15.7	+50.0
3.299 C	14	122	18	153	154.6	-2.6	-13.9	+65.4
4.349 C	4	43	8	97	152.8	-4.4	-15.3	+77.4
Means	..	..	13	97	155.1	..	-14.0	..
Group 15355. 1948 Jan. 20-Feb. 1. A regular spot followed by a few variable companions. Between January 22 and 25, the *nf* portion of the regular spot breaks away. All the following spots have died out by February 1.							
19.422 C	15	61	45	185	155.4	..	-14.1	-81.5
20.371 C	40	173	53	228	156.1	-2.0	-14.2	-68.3
21.474 G	69	330	57	274	156.6	-1.5	-14.1	-53.3
No. 1492. Group 15355 - *continued*							
d					°	°	°	°
22.289 C	79	466	54	317	156.9	- 1.3	-14.0	-42.2
23.385 G	124	762	71	434	157.3	- 0.9	-13.5	-27.4
24.438 G	140	730	73	380	158.2	- 0.1	-13.6	-12.6
25.288 C	104	545	53	278	159.1	+ 0.8	-13.8	- 0.6
26.287 C	63	507	33	263	159.8	+ 1.4	-13.6	+13.3
27.462 G	99	551	57	319	160.2	+ 1.8	-13.7	+29.2
28.292 C	84	410	56	270	159.2	+ 0.7	-13.5	+39.1
29.288 C	75	399	64	335	160.2	+ 1.7	-13.1	+53.2
30.288 C	44	234	58	300	161.1	+ 2.5	-12.9	+67.3
31.526 C	2	13	12	79	164.1	..	-12.3	+86.6
Means	..	..	57	309	158.6	..	-13.6	..
Spot *a*							
19.422 C	15	61	45	185	155.4	..	-14.1	-81.5
20.371 C	40	173	53	228	156.1	0.0	-14.2	-68.3
21.474 G	69	330	57	274	156.6	+ 0.4	-14.1	-53.3
22.289 C	79	466	54	317	156.9	+ 0.7	-14.0	-42.2
23.385 G	124	762	71	434	157.3	+ 1.0	-13.5	-27.4
24.438 G	140	730	73	380	158.2	+ 1.9	-13.6	-12.6
25.288 C	96	489	49	249	159.5	+ 3.1	-13.9	- 0.2
26.287 C	59	474	31	246	160.2	+ 3.8	-13.7	+13.7
27.462 G	95	501	55	291	160.8	+ 4.3	-13.7	+29.8
28.292 C	71	328	48	220	161.4	+ 4.9	-13.5	+41.3
29.288 C	65	309	56	266	162.0	+ 5.4	-13.1	+55.0
30.288 C	38	171	51	231	162.9	+ 6.3	-12.7	+69.1
31.526 C	2	13	12	79	164.1	..	-12.3	+86.6
Group 15386. 1948 Feb. 15-27. A small regular spot dividing into two on February 18, when some small companions appear, but the whole group has nearly disappeared by the time it reaches the west limb.							
45.402 G	0	4	0	29	167.2	..	-11.9	-87.6
46.399 G	11	92	19	162	167.2	+ 9.7	-11.9	-74.5
47.297 C	23	139	24	147	167.2	+ 9.7	-12.0	-62.7
48.481 G	39	190	28	138	167.7	+10.1	-11.7	-46.6
49.293 C	38	223	23	138	168.1	+10.5	-11.8	-35.5
50.423 G	48	255	26	137	167.9	+10.2	-11.9	-20.8
51.296 C	40	201	20	102	166.8	+ 9.1	-12.4	-10.4
52.321 C	23	129	11	64	167.5	+ 9.7	-12.6	+ 3.8
53.295 C	23	91	12	48	167.2	+ 9.4	-12.3	+16.3
54.595 G	13	56	7	33	167.0	+ 9.1	-12.4	+33.3
55.532 G	2	29	1	20	167.0	+ 9.1	-12.7	+45.6
56.377 G	13	46	12	41	167.1	+ 9.1	-13.3	+56.8
57.383 G	2	7	3	9	166.4	+ 8.4	-13.1	+69.4
Means	..	..	16	87	167.3	..	-12.3	..

† Mount Wilson

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

No. 1493. Latitude -18°.8

Group 15321 in Rotation 1261
" 15357 " " 1262

Group 15321. Dec. 26-1948 Jan. 6. A small stream of normal type developing from two small spots near the east limb. The leader, *a*, becomes a regular spot and alone remains at the west limb.

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.
Spot *a*							
d					°	°	°
359.305 C	4	23	7	37	135.7	0.0	-16.7	-72.0
360.295 C	44	274	42	261	137.2	+1.6	-17.3	-57.4
361.309 C	50	335	35	240	137.6	+2.1	-17.6	-43.7
362.475 G	80	439	47	258	137.4	+2.0	-17.8	-28.5
363.288 C	81	570	44	310	137.8	+2.4	-18.1	-17.4
364.299 C	94	619	49	321	138.1	+2.8	-18.4	- 3.8
0.796 †	93	509	50	277	138.5	+3.3	-18.6	+16.4
1.288 C	69	460	39	259	138.5	+3.4	-18.6	+22.8
2.292 C	59	389	37	250	138.1	+3.0	-18.4	+35.6
3.299 C	60	308	49	249	138.9	+3.9	-18.5	+49.7
4.349 C	37	165	45	197	139.4	+4.5	-18.5	+64.0
5.288 C	10	96	24	226	141.1	+6.3	-18.0	+78.1
Means	..	..	38	237	138.2	..	-18.0	..
Spot *a*							
360.295 C	27	164	25	149	138.7	0.0	-17.2	-55.9
361.309 C	31	183	21	126	139.8	+1.2	-17.8	-41.5
362.475 G	45	201	26	115	140.2	+1.7	-17.9	-25.7
363.288 C	58	368	31	199	140.0	+1.5	-18.1	-15.2
364.299 C	52	349	27	181	141.1	+2.7	-18.3	- 0.8
0.796 †	60	362	33	199	141.3	+3.0	-18.4	+19.2
1.288 C	54	352	31	201	141.4	+3.2	-18.4	+25.7
2.292 C	40	275	26	182	141.5	+3.4	-18.2	+39.0
3.299 C	52	254	43	211	141.4	+3.3	-18.2	+52.2
4.349 C	33	146	41	180	141.2	+3.2	-18.1	+65.8
5.288 C	10	96	24	226	141.1	+3.2	-18.0	+78.1

No. 1493. Group 15321 - *continued*

Spot *b*

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.
d					°	°	°
360.295 C	17	110	17	112	134.8	0.0	-17.7	-59.8
361.309 C	19	152	14	114	134.4	-0.3	-17.7	-46.9
362.475 G	35	238	21	143	135.2	+0.6	-17.8	-30.7
363.288 C	23	202	13	111	134.4	-0.2	-18.2	-20.8
364.299 C	42	270	22	140	134.1	-0.4	-18.4	- 7.8
0.796 †	33	147	17	78	132.9	-1.5	-18.6	+10.8
1.288 C	15	108	8	58	132.9	-1.4	-18.8	+17.2
2.292 C	19	114	11	68	132.0	-2.2	-19.2	+29.5
3.299 C	8	54	6	38	131.9	-2.3	-19.0	+42.7
4.349 C	4	19	4	17	131.8	-2.3	-19.1	+56.4

Group 15357. 1948 Jan. 21-Feb. 1. A single spot until January 25, when other small spots behind form a cluster by January 28. The whole group dies out before reaching the limb.

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.
20.371 C	6	52	18	158	142.7	..	-19.1	-81.7
21.474 G	15	104	19	131	143.0	+6.4	-19.1	-66.9
22.289 C	15	150	14	135	143.0	+6.5	-19.4	-56.1
23.385 G	24	184	16	125	143.5	+7.0	-19.1	-41.2
24.438 G	41	225	24	130	143.8	+7.4	-19.4	-27.0
25.288 C	36	199	19	107	143.6	+7.3	-20.0	-16.1
26.287 C	16	184	8	94	142.8	+6.6	-19.6	- 3.7
27.462 G	41	304	22	159	141.7	+5.6	-20.2	+10.7
28.292 C	23	157	13	86	141.6	+5.5	-19.8	+21.5
29.288 C	18	138	11	86	141.8	+5.8	-19.9	+34.8
30.288 C	8	32	6	25	142.0	+6.1	-19.9	+48.2
31.526 C	2	6	2	7	142.7	+6.9	-19.4	+65.2
Means	..	..	14	99	142.7	..	-19.6	..

† Mount Wilson

ROYAL OBSERVATORY, GREENWICH.

Ledgers of Groups of Sunspots

For the Year

1947

Ledger II.—Non-Recurrent Groups

GREENWICH PHOTO-HELIOGRAPHIC RESULTS, 1947

LEDGER II - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1947.

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 Mount Wilson by the letters C, K and Mt. 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.

C.B.H. 25908 - Wt. 4697 - D1. - 550 - 4/55

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

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 14776.							
Jan. 6-18. A long stream consisting of three composite spots. The leader, *a*, breaks up into a cluster and dies out by January 16. The following spot, *b*, slowly diminishing, disappears on the same day. The surviving central spot, *c*, is slowly dying out as it passes round the limb.							
d					°	°	°	°
5.288 C	4	25	(10	65	121.2	..	-20.1)	-79.4
6.305 C	37	369	63	611	116.2	0.0	-20.5	-71.0
7.287 C	71	758	73	767	115.8	-0.3	-20.7	-58.4
8.449 G	119	1039	90	782	113.4	-2.5	-20.6	-45.5
9.283 C	165	1177	107	765	110.9	-4.9	-20.4	-37.1
10.289 C	160	1136	92	653	110.5	-5.2	-20.1	-24.2
11.428 G	126	998	66	526	111.2	-4.4	-20.1	- 8.5
12.408 G	102	794	54	414	110.9	-4.6	-19.9	+ 4.1
13.424 C	100	683	55	380	113.4	-1.9	-19.9	+20.0
14.289 C	85	483	51	293	114.1	-1.1	-19.4	+32.1
15.393 G	24	172	18	126	112.8	-2.3	-20.4	+45.3
16.416 G	22	128	21	123	112.4	-2.6	-20.1	+58.4
17.460 G	4	37	7	64	114.3	-0.6	-20.2	+74.0
Means	..	..	58	459	113.0	..	-20.2	..
Spot *a*							
5.288 C	4	25	10	65	121.2	0.0	-20.1	-79.4
6.305 C	21	227	28	304	119.3	-1.8	-20.7	-67.9
7.287 C	37	476	33	428	118.8	-2.2	-21.1	-55.4
8.449 G	43	393	29	263	119.1	-1.7	-20.7	-39.8
9.283 C	46	287	27	169	119.4	-1.3	-20.2	-28.6
10.289 C	29	177	16	96	119.6	-1.0	-19.8	-15.1
11.428 G	22	259	11	135	119.6	-0.9	-19.7	- 0.1
12.408 G	22	165	12	87	120.1	-0.2	-20.1	+13.3
13.424 C	21	175	12	102	120.0	-0.2	-20.2	+26.6
14.289 C	10	71	6	46	120.0	-0.1	-20.4	+38.0
Spot *b*							
6.305 C	8	67	21	174	107.8	0.0	-20.2	-79.4
7.287 C	17	166	22	216	106.8	-0.9	-20.2	-67.4
8.449 G	39	341	33	290	106.1	-1.4	-20.5	-52.8
9.283 C	71	497	50	348	106.1	-1.3	-20.7	-41.9
10.289 C	62	514	37	308	105.3	-2.0	-21.0	-29.4
11.428 G	56	367	30	198	104.8	-2.4	-20.7	-14.9
12.408 G	26	230	14	120	104.5	-2.6	-20.9	- 2.3
13.424 C	8	96	4	51	103.8	-3.1	-20.7	+10.4
14.289 C	0	4	0	2	105.5	-1.3	-21.0	+23.5
Spot *c*							
6.305 C	8	75	14	133	113.2	0.0	-20.7	-74.0
7.287 C	17	116	18	123	112.8	-0.3	-20.6	-61.4

continued

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 14776 - *continued*							
Spot *c* - *continued*							
d					°	°	°	°
8.449 G	37	305	28	229	112.7	-0.2	-20.7	-46.2
9.283 C	48	393	30	248	112.8	0.0	-20.5	-35.2
10.289 C	69	445	39	249	112.5	-0.2	-20.3	-22.2
11.428 G	48	372	25	193	112.0	-0.6	-19.9	- 7.7
12.408 G	54	399	28	207	112.6	+0.1	-19.9	+ 5.8
13.424 C	71	412	39	227	111.8	-0.5	-19.8	+18.4
14.289 C	75	408	45	245	111.8	-0.4	-20.0	+29.8
15.393 G	24	172	18	126	112.8	+0.7	-20.4	+45.3
16.416 G	22	128	21	123	112.4	+0.4	-20.1	+58.4
17.460 G	4	37	7	64	114.3	+2.4	-20.2	+74.0
Group 14779.							
Jan. 8-20. A slowly-diminishing regular spot followed by some changing companions.							
7.287 C	37	227	(93	572	98.1	..	+22.0)	-76.1
8.449 G	94	650	120	825	96.5	0.0	+22.0	-62.4
9.283 C	114	780	104	711	96.4	+0.1	+22.0	-51.6
10.289 C	160	895	115	641	96.2	+0.1	+22.4	-38.5
11.428 G	120	791	73	484	96.1	+0.2	+22.5	-23.6
12.408 G	126	794	72	453	96.6	+0.9	+22.9	-10.2
13.424 C	129	695	72	389	96.0	+0.5	+23.0	+ 2.6
14.289 C	100	636	58	369	95.6	+0.2	+22.1	+13.6
15.393 G	87	501	55	316	94.5	-0.7	+21.7	+27.0
16.416 G	74	312	56	237	95.0	0.0	+23.2	+41.0
17.460 G	37	187	38	191	95.2	+0.4	+23.5	+54.9
18.315 C	21	108	30	157	94.5	-0.1	+23.2	+65.5
19.471 G	6	35	26	154	94.4	..	+23.2	+80.6
Means	..	..	72	434	95.7	..	+22.6	..
Group 14780.							
Jan. 9-20. A small stable regular spot with a following companion on January 19.							
8.449 G	0	9	0	40	76.5	..	+12.5	-82.4
9.283 C	12	52	23	99	74.6	0.0	+12.7	-73.4
10.289 C	17	125	18	132	74.7	0.0	+12.7	-60.0
11.428 G	24	151	18	112	75.0	+0.2	+12.7	-44.7
12.408 G	35	208	21	127	75.7	+0.9	+12.7	-31.1
13.424 C	31	204	17	112	75.9	+1.0	+12.6	-17.5
14.289 C	35	233	19	123	75.6	+0.6	+12.2	- 6.4
15.393 G	26	129	14	68	75.6	+0.6	+11.9	+ 8.1
16.416 G	35	137	20	77	75.6	+0.5	+12.2	+21.6
17.460 G	26	108	17	69	75.8	+0.6	+11.9	+35.5
18.315 C	8	66	6	50	74.5	-0.7	+12.2	+45.5
19.471 G	4	13	4	14	74.8	-0.5	+12.2	+61.0
Means	..	..	16	89	75.2	..	+12.4	..

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

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 14781.							
Jan. 10-19. A stream suddenly appearing closely *sf* Group 14777. The leader, *a*, soon becomes regular while the follower, *b*, remains composite.							
d					°	°	°	°
9.283 C	39	228	26	150	108.1	0.0	-10.3	-39.9
10.289 C	79	584	44	329	108.8	+0.6	-10.2	-25.9
11.428 G	136	1164	70	600	108.6	+0.3	- 9.7	-11.1
12.408 G	177	1310	89	656	107.8	-0.6	-10.5	+ 1.0
13.424 C	137	1098	72	571	108.0	-0.5	-10.9	+14.6
14.289 C	164	1319	93	748	107.3	-1.3	-10.7	+25.3
15.393 G	213	1284	143	849	107.4	-1.3	-11.7	+39.9
16.416 G	130	1105	113	941	108.2	-0.6	-11.2	+54.2
17.460 G	56	415	87	598	109.8	+0.9	-10.9	+69.5
18.315 C	2	21	(4	46	106.4	..	-11.1)	+77.4
Means	..	..	82	605	108.2	..	-10.7	..
Spot *a*							
9.283 C	29	166	19	108	108.7	0.0	- 9.7	-39.3
10.289 C	54	341	30	188	110.8	+2.0	- 9.6	-23.9
11.428 G	76	529	39	270	112.1	+3.2	- 9.3	- 7.6
12.408 G	95	655	48	328	112.3	+3.3	-10.1	+ 5.5
13.424 C	87	524	46	278	112.7	+3.6	-10.3	+19.3
14.289 C	87	545	51	322	113.2	+4.0	-10.6	+31.2
15.393 G	76	310	55	226	114.2	+4.9	-10.8	+46.7
16.416 G	39	243	39	243	114.2	+4.8	-10.8	+60.2
17.460 G	26	139	48	257	115.3	+5.8	-10.8	+75.0
Spot *b*							
9.283 C	10	62	7	42	105.6	0.0	-11.5	-42.4
10.289 C	25	243	14	141	105.7	0.0	-11.2	-29.0
11.428 G	60	635	31	330	105.1	-0.7	-10.9	-14.6
12.408 G	82	655	41	328	104.8	-1.1	-11.1	- 2.0
13.424 C	50	574	26	293	104.6	-1.4	-11.3	+11.2
14.289 C	77	774	42	426	105.2	-0.9	-11.5	+23.2
15.393 G	137	974	88	623	105.7	-0.5	-11.5	+38.2
16.416 G	67	697	53	551	105.1	-1.2	-11.6	+51.1
17.460 G	17	204	20	235	105.1	-1.3	-11.7	+64.8
18.315 C	2	21	4	46	106.4	-0.1	-11.1	+77.4
Group 14782.							
Jan. 10-21. A small slowly-diminishing regular spot followed by a distant companion except on January 12-16.							

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 14782 - *continued*							
d					°	°	°	°
9.283 C	4	12	8	24	71.8	0.0	-23.6	-76.2
10.289 C	10	79	11	84	73.7	+2.2	-23.6	-61.0
11.428 G	19	156	14	115	75.1	+3.9	-25.4	-44.6
12.408 G	26	148	16	92	75.7	+4.8	-25.1	-31.1
13.424 C	37	125	21	70	76.1	+5.4	-25.0	-17.3
14.289 C	17	48	9	26	76.1	+5.7	-25.2	- 5.9
15.393 G	9	52	5	28	76.0	+5.9	-25.3	+ 8.5
16.416 G	19	76	11	43	73.6	+3.8	-25.5	+19.6
17.460 G	9	44	6	27	73.2	+3.6	-25.8	+32.9
18.315 C	6	21	4	16	73.8	+4.5	-25.3	+44.8
19.471 G	4	9	4	9	73.8	+4.8	-24.9	+60.0
20.439 G	0	9	0	15	73.7	+5.0	-25.3	+72.7
Means	..	..	9	46	74.4	..	-25.0	..
Group 14784.							
Jan. 13-25. A stream in which both leader, *a*, and follower, *b*, become regular spots. After January 17, the small spots in between have gone.							
12.408 G	33	330	77	756	27.5	0.0	-15.2	-79.3
13.424 C	91	582	112	692	28.5	+1.0	-15.0	-64.9
14.289 C	139	761	120	646	29.2	+1.7	-15.2	-52.8
15.393 G	146	933	95	608	29.3	+1.8	-15.3	-38.2
16.416 G	147	1071	83	605	28.6	+1.1	-15.5	-25.4
17.460 G	179	1063	93	550	29.0	+1.5	-15.8	-11.3
18.315 C	121	894	62	456	28.2	+0.7	-16.1	- 0.8
19.471 G	117	706	62	371	28.1	+0.6	-15.5	+14.3
20.439 G	100	577	57	328	28.3	+0.8	-16.3	+27.3
21.415 G	95	549	63	363	28.2	+0.7	-16.2	+40.0
22.425 G	78	397	64	329	27.3	-0.2	-16.4	+52.4
23.462 G	39	311	48	389	28.1	+0.6	-16.4	+66.8
24.511 G	24	128	67	346	27.4	..	-16.4	+80.0
Means	..	..	78	508	28.4	..	-15.7	..
Spot *a*							
12.408 G	24	252	45	474	31.6	0.0	-14.8	-75.2
13.424 C	58	420	62	449	30.9	-0.7	-15.0	-62.5
14.289 C	75	495	59	391	31.3	-0.3	-15.4	-50.7
15.393 G	102	641	64	404	31.4	-0.2	-15.1	-36.1
16.416 G	78	642	43	353	31.3	-0.3	-15.6	-22.7
17.460 G	98	642	50	327	31.6	0.0	-15.4	- 8.7
18.315 C	67	520	34	265	31.6	0.0	-15.7	+ 2.6
19.471 G	69	434	37	230	31.1	-0.5	-15.5	+17.3
20.439 G	59	369	34	214	30.8	-0.8	-16.1	+29.8
21.415 G	52	328	36	226	31.1	-0.5	-16.0	+42.9
22.425 G	37	215	33	191	31.0	-0.6	-16.2	+56.1
23.462 G	22	181	30	250	30.8	-0.8	-16.2	+69.5
24.511 G	13	65	45	223	30.2	..	-16.2	+82.8

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

Group 14784 - *continued*

Spot *b*

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.
d					°	°	°	°
12.408 G	9	78	32	282	23.9	..	-15.5	-82.9
13.424 C	33	162	50	243	22.5	0.0	-15.3	-70.9
14.289 C	64	266	61	255	23.2	+0.7	-15.8	-58.8
15.393 G	44	292	31	204	23.7	+1.2	-15.9	-43.8
16.416 G	65	373	38	220	23.4	+0.9	-16.0	-30.6
17.460 G	72	339	38	180	23.4	+0.9	-16.0	-16.9
18.315 C	54	374	28	191	23.8	+1.3	-16.1	- 5.2
19.471 G	48	272	25	141	23.6	+1.1	-16.1	+ 9.8
20.439 G	41	208	23	114	23.4	+0.9	-16.4	+22.4
21.415 G	43	221	27	137	23.5	+1.0	-16.6	+35.3
22.425 G	41	182	31	138	23.3	+0.8	-16.6	+48.4
23.462 G	17	130	18	139	23.8	+1.3	-16.6	+62.5
24.511 G	11	63	22	123	23.5	+1.0	-16.3	+76.1

Group 14787.

Jan. 15-21. A few variable spots in the form of a stream.

14.289 C	16	48	8	25	70.6	0.0	-11.2	-11.4
15.393 G	31	131	17	66	74.2	+3.5	-13.2	+ 6.7
16.416 G	70	390	38	213	75.9	+5.2	-13.4	+21.9
17.460 G	65	377	40	235	76.3	+5.5	-13.4	+36.0
18.315 C	57	377	42	279	76.7	+5.9	-13.6	+47.7
19.471 G	37	162	41	180	76.7	+5.8	-13.1	+62.9
20.439 G	7	48	16	109	79.3	+8.3	-12.7	+78.3
Means	..	..	29	158	75.7	..	-12.9	..

Group 14789.

Jan. 15-22. A stream of small changing spots immediately s Group 14784.

14.289 C	8	46	8	46	22.7	0.0	-21.1	-59.3
15.393 G	18	66	12	45	25.2	+2.6	-20.3	-42.3
16.416 G	24	143	14	84	25.8	+3.3	-20.4	-28.2
17.460 G	21	109	11	57	27.4	+5.1	-20.1	-12.9
18.315 C	21	88	11	46	30.2	+8.0	-19.2	+ 1.2
19.471 G	60	203	32	108	29.7	+7.6	-19.3	+15.9
20.439 G	21	102	12	60	29.8	+7.8	-19.9	+28.8
21.415 G	9	30	6	20	30.0	+8.1	-19.3	+41.8
Means	..	..	13	58	27.6	..	-20.0	..

Group 14790.

Jan. 15-26. A stream consisting of numerous small spots. The leading portion coalesces into a regular spot by January 22 while the following spots undergo slight change and slowly fade out.

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.
d					°	°	°	°
14.289 C	37	431	68	797	7.0	0.0	-12.5	-75.0
15.393 G	116	720	113	703	7.1	0.0	-12.5	-60.4
16.416 G	116	833	84	607	8.0	+0.9	-12.6	-46.0
17.460 G	156	1050	92	621	8.0	+0.8	-12.9	-32.3
18.315 C	204	1267	110	679	9.6	+2.3	-13.4	-19.4
19.471 G	218	1065	109	537	12.7	+5.3	-12.8	- 1.1
20.439 G	125	826	66	427	13.0	+5.6	-12.6	+12.0
21.415 G	111	777	62	436	13.9	+6.4	-12.6	+25.7
22.425 G	79	597	51	386	14.1	+6.5	-12.2	+39.2
23.462 G	91	520	76	431	13.5	+5.9	-12.4	+52.2
24.511 G	41	279	50	349	13.5	+5.8	-12.2	+66.1
25.313 C	23	117	54	284	15.2	+7.5	-11.8	+78.3
Means	..	..	78	521	11.3	..	-12.5	

Group 14793.

Jan. 17-23. A short stream of small variable spots; only one remains on January 23.

16.416 G	13	54	25	103	338.8	0.0	-30.3	-75.2
17.460 G	28	104	32	115	338.7	+0.4	-30.3	-61.6
18.315 C	25	121	21	102	338.8	+0.9	-30.1	-50.2
19.471 G	30	102	20	69	337.4	0.0	-30.0	-36.4
20.439 G	15	59	9	36	336.6	-0.3	-30.4	-24.4
21.415 G	13	41	7	23	336.9	+0.4	-29.9	-11.3
22.425 G	4	30	2	16	337.3	+1.3	-30.0	+ 2.4
Means	..	..	17	66	337.8	..	-30.1	..

Group 14794.

Jan. 17-24. A small regular spot slowly dying out.

16.416 G	0	13	0	62	327.8	..	-34.8	-86.2
17.460 G	9	74	16	131	326.7	0.0	-34.5	-73.6
18.315 C	10	75	12	86	327.0	+0.9	-34.8	-62.0
19.471 G	17	106	14	89	325.4	0.0	-34.8	-48.4
20.439 G	17	95	12	66	324.9	+0.2	-34.9	-36.1
21.415 G	17	87	10	54	325.7	+1.6	-35.0	-22.5
22.425 G	9	30	5	18	323.1	-0.3	-34.8	-11.8
23.462 G	2	6	1	3	322.5	-0.2	-35.4	+ 1.2
Means	..	..	10	64	325.0	..	-34.9	..

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

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 14798. Jan. 21-27. One or two small spots not seen on January 25 and 26.							
d					°	°	°
20.439 G	4	26	2	14	346.8	0.0	+ 9.5	-14.2
21.415 G	8	68	4	35	346.8	-0.1	+ 8.9	- 1.4
22.425 G	15	52	8	28	348.7	+1.7	+ 9.1	+13.8
23.462 G	13	65	8	38	347.9	+0.7	+ 9.1	+26.6
24.511 G	0	0	0	0	..	..	..	..
25.313 C	0	0	0	0	..	..	..	..
26.606 G	4	20	6	32	350.3	+2.7	+ 8.4	+70.4
Means	..	..	4	21	348.1	..	+ 9.0	..
Group 14799. Jan. 21-26. A small cluster of variable spots.							
20.439 G	20	65	38	124	289.5	0.0	+19.9	-71.5
21.415 G	20	82	22	89	289.9	+0.5	+19.6	-58.3
22.425 G	15	82	12	66	289.6	+0.3	+19.9	-45.3
23.462 G	13	37	8	24	289.7	+0.5	+19.4	-31.6
24.511 G	6	26	3	15	289.1	0.0	+18.9	-18.3
25.313 C	2	17	1	10	289.4	+0.4	+19.4	- 7.5
Means	..	..	14	55	289.5	..	+19.5	..
Group 14800. Jan. 22-29. A stream developing rapidly from a few small spots first seen on January 22. The leader, *a*, becomes a regular spot and is the most stable component.							
21.415 G	13	56	7	30	328.4	0.0	-16.8	-19.8
22.425 G	33	145	17	75	329.0	+0.6	-16.0	- 5.9
23.462 G	126	578	64	295	329.1	+0.7	-15.5	+ 7.8
24.511 G	126	810	69	442	328.7	+0.3	-16.0	+21.3
25.313 C	107	771	64	464	329.4	+1.0	-16.0	+32.5
26.606 G	79	686	62	526	328.7	+0.3	-16.4	+48.8
27.290 C	73	375	71	361	329.7	+1.4	-16.1	+58.8
28.426 G	23	166	41	296	329.5	+1.2	-15.9	+73.6
Means	..	..	49	311	329.1	..	-16.1	..
Spot *a*							
22.425 G	20	80	10	41	330.4	0.0	-15.5	- 4.5
23.462 G	78	302	40	154	330.5	+0.1	-15.5	+ 9.2
24.511 G	63	464	35	255	330.7	+0.3	-15.4	+23.3
25.313 C	84	552	51	337	330.8	+0.4	-15.6	+33.9
26.606 G	59	421	47	333	330.7	+0.3	-15.7	+50.8
27.290 C	65	280	64	277	330.8	+0.4	-15.4	+59.9
28.426 G	17	121	32	230	331.7	+1.4	-15.3	+75.8

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 14801. Jan. 22-27. A few small spots of which only one remains by January 26.							
d					°	°	°
21.415 G	11	47	17	72	281.1	0.0	+21.9	-67.1
22.425 G	17	82	17	80	281.1	+0.1	+21.5	-53.8
23.462 G	21	125	16	92	280.9	+0.1	+21.2	-40.4
24.511 G	17	97	11	60	280.6	-0.1	+19.3	-26.8
25.313 C	6	42	3	24	280.1	-0.5	+19.8	-16.8
26.606 G	2	9	1	5	279.6	-0.8	+19.9	- 0.3
Means	..	..	11	56	280.6	..	+20.6	..
Group 14808. Feb. 1-12. A stream of normal type growing rapidly from tiny spots on February 1. The leader, *a*, remains a regular spot, the follower, *b*, being composite.							
31.480 G	2	17	2	19	151.4	0.0	-16.1	-64.3
32.308 C	21	136	17	113	152.2	+0.8	-16.1	-52.6
33.291 C	92	579	60	373	153.4	+2.0	-15.8	-38.4
34.300 C	110	897	62	508	152.9	+1.5	-16.1	-25.7
35.293 C	181	726	94	376	153.9	+2.5	-16.3	-11.6
36.292 C	152	935	78	477	154.0	+2.7	-16.3	+ 1.7
37.302 C	151	1112	79	586	152.7	+1.4	-16.4	+13.7
38.294 C	166	827	96	473	153.4	+2.1	-16.4	+27.4
39.308 C	92	785	63	513	151.7	+0.4	-16.8	+39.1
40.296 C	31	380	28	334	154.6	+3.3	-15.7	+55.0
41.289 C	19	130	25	173	154.4	+3.1	-15.8	+67.9
42.294 C	8	40	26	130	154.0	..	-15.7	+80.7
Means	..	..	55	359	153.2	..	-16.2	..
Spot *a*							
32.308 C	8	67	6	53	154.2	0.0	-15.8	-50.6
33.291 C	40	293	25	182	155.8	+1.6	-15.8	-36.0
34.300 C	50	401	28	221	156.6	+2.4	-16.0	-22.0
35.293 C	102	437	52	223	157.2	+3.0	-15.9	- 8.3
36.292 C	103	521	53	266	157.6	+3.4	-16.4	+ 5.3
37.302 C	50	370	27	200	157.8	+3.7	-16.3	+18.8
38.294 C	107	407	63	240	157.6	+3.5	-16.0	+31.6
39.308 C	67	281	48	200	158.1	+4.0	-15.6	+45.5
40.296 C	23	244	22	232	158.3	+4.2	-15.2	+58.7
41.289 C	13	90	19	133	157.9	+3.8	-15.5	+71.4
42.294 C	6	32	22	116	156.8	..	-15.4	+83.5

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

Group 14808 - *continued*

Spot b

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.
d					°	°	°	°
32.308 C	13	69	11	60	149.7	0.0	-16.3	-55.1
33.291 C	25	169	17	115	149.5	-0.2	-16.3	-42.3
34.300 C	54	458	31	266	150.2	+0.5	-16.5	-28.4
35.293 C	77	274	41	145	148.9	-0.8	-16.8	-16.6
36.292 C	36	340	18	173	148.5	-1.2	-16.6	- 3.8
37.302 C	74	536	38	279	148.8	-0.8	-16.6	+ 9.8
38.294 C	42	336	23	185	148.6	-1.0	-17.0	+22.6
39.308 C	23	491	14	304	147.9	-1.7	-17.2	+35.3
40.296 C	8	136	6	102	147.5	-2.1	-16.4	+47.9
41.289 C	6	40	6	40	147.6	-2.0	-16.4	+61.1
42.294 C	2	8	4	14	147.9	-1.7	-16.0	+74.6

Group 14814.

Feb. 6-12. One or two small spots.

36.292 C	6	29	5	23	102.3	0.0	-24.2	-50.0
37.302 C	8	48	5	32	99.3	-2.8	-23.5	-39.7
38.294 C	8	50	5	29	99.5	-2.3	-23.6	-26.5
39.308 C	8	27	4	14	99.5	-2.1	-22.9	-13.1
40.296 C	12	54	6	28	100.8	-0.6	-24.0	+ 1.2
41.289 C	4	21	2	11	99.5	-1.7	-23.3	+13.0
42.294 C	4	21	2	12	100.5	-0.4	-24.1	+27.2
Means	..	..	4	21	100.0	..	-23.7	..

Group 14815.

Feb. 7-14. A single small spot near the equator on February 7; on the next day other spots appear in a long stream, but this dies out before reaching the limb.

37.302 C	2	15	3	20	71.3	0.0	- 2.6	-67.7
38.294 C	10	93	8	74	75.5	+4.0	- 3.2	-50.5
39.308 C	30	252	19	162	74.2	+2.5	- 3.3	-38.4
40.296 C	16	248	8	136	74.4	+2.6	- 3.2	-25.2
41.289 C	12	71	6	37	76.4	+4.4	- 3.6	-10.1
42.294 C	36	115	18	58	76.0	+3.8	- 3.6	+ 2.7
43.296 C	14	82	7	43	77.1	+4.7	- 4.1	+17.0
44.292 C	21	74	13	45	81.9	+9.3	- 4.4	+34.9
Means	..	..	10	72	75.8	..	- 3.5	..

Group 14819.

Feb. 9-14. A stream of small changing spots.

Group 14819 - *continued*

d					°	°	°	°
39.308 C	12	107	8	66	78.9	0.0	+ 3.7	-33.7
40.296 C	33	182	18	100	78.8	-0.3	+ 4.0	-20.8
41.289 C	33	159	17	82	79.0	-0.3	+ 3.8	- 7.5
42.294 C	48	313	25	160	79.0	-0.4	+ 3.7	+ 5.7
43.296 C	21	99	11	53	79.9	+0.3	+ 3.6	+19.8
44.292 C	8	36	5	22	81.2	+1.4	+ 2.9	+34.2
Means	..	..	14	80	79.5	..	+ 3.6	..

Group 14820.

Feb. 10-21. A small decreasing regular spot with a drift in latitude.

40.296 C	8	80	15	152	23.9	0.0	-10.5	-75.7
41.289 C	23	101	24	104	24.8	+0.8	-11.1	-61.7
42.294 C	21	130	16	98	24.8	+0.7	-11.4	-48.5
43.296 C	27	202	16	123	24.5	+0.4	-11.5	-35.6
44.292 C	34	191	18	103	24.8	+0.6	-11.7	-22.2
45.292 C	42	178	21	91	25.0	+0.7	-12.1	- 8.8
46.312 C	27	208	14	104	25.4	+1.0	-12.4	+ 5.0
47.289 C	36	168	19	89	25.5	+1.1	-12.5	+18.0
48.292 C	25	132	14	77	25.2	+0.7	-12.8	+30.9
49.373 C	19	126	13	89	25.3	+0.7	-12.9	+45.2
50.293 C	10	99	9	92	26.1	+1.4	-12.9	+58.1
51.288 C	6	38	9	54	25.4	+0.7	-13.0	+70.5
Means	..	..	16	98	25.1	..	-12.1	..

Group 14823.

Feb. 12-21. An unstable group coming into brief prominence on February 19.

42.294 C	2	23	2	18	26.7	0.0	+15.1	-46.6
43.296 C	0	0	0	0	..	..	..	..
44.292 C	6	29	4	17	22.1	-4.5	+16.6	-24.9
45.292 C	10	59	6	32	25.0	-1.6	+16.5	- 8.8
46.312 C	10	48	5	26	24.7	-1.9	+16.9	+ 4.3
47.289 C	30	121	18	69	25.1	-1.5	+17.5	+17.6
48.292 C	21	124	14	79	24.1	-2.4	+17.3	+29.8
49.373 C	32	292	25	229	24.9	-1.6	+16.9	+44.8
50.293 C	27	95	26	95	23.4	-3.1	+17.2	+55.4
51.288 C	6	30	9	45	21.9	-4.5	+17.9	+67.0
Means	..	..	11	61	24.2	..	+16.9	..

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

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 14832.							
Feb. 18-26. A pair of smallish spots; the leading spot remains after February 20.							
d 48.292 C	4	21	10	51	280.2°	0.0°	+21.8°	-74.1°
49.373 C	10	147	13	183	278.6	-1.5	+20.5	-61.5
50.293 C	19	135	17	119	279.1	-0.8	+20.9	-48.9
51.288 C	27	156	19	109	279.6	-0.2	+20.5	-35.3
52.295 C	21	160	13	98	279.0	-0.7	+20.5	-22.6
53.448 G	28	133	16	76	278.9	-0.7	+20.1	- 7.5
54.383 G	18	66	10	37	278.8	-0.6	+19.9	+ 4.7
55.408 G	7	24	4	14	278.7	-0.6	+19.8	+18.1
56.464 G	7	26	5	17	278.3	-0.9	+19.9	+31.6
Means	..	..	12	78	279.0	..	+20.4	..
Group 14836.							
Feb. 21-26. A few variable spots.							
51.288 C	0	8	0	12	250.1	0.0	+25.2	-64.8
52.295 C	14	74	15	82	247.0	-2.8	+25.3	-54.6
53.448 G	24	92	18	73	246.2	-3.3	+25.3	-40.2
54.383 G	14	81	10	54	247.0	-2.2	+25.7	-27.1
55.408 G	9	37	5	23	247.1	-1.8	+25.1	-13.5
56.464 G	4	20	2	12	248.0	-0.6	+24.8	+ 1.3
Means	..	..	8	43	247.6	..	+25.2	..
Group 14841.							
Feb. 25-Mar. 2. A stream of small spots developing from a cluster of dots first seen on the central meridian.							
55.408 G	7	24	4	13	259.9	0.0	+13.6	- 0.7
56.464 G	37	249	21	139	260.6	+0.7	+13.9	+13.9
57.614 G	20	116	12	72	263.1	+3.1	+14.1	+31.6
58.295 C	10	55	7	39	262.8	+2.8	+15.1	+40.2
59.388 G	0	4	0	4	263.3	+3.3	+16.0	+55.1
60.449 G	2	9	3	13	261.1	+1.1	+14.4	+66.9
Means	..	..	8	47	261.8	..	+14.5	..
Group 14842.							
Feb. 25-Mar. 9. A regular spot followed by a distant companion until March 1.							
55.408 G	11	46	(24	100	183.3	..	- 6.0)	-77.3
56.464 G	31	149	36	183	181.2	0.0	- 7.0	-65.5
57.614 G	50	250	39	195	181.1	-0.3	- 6.9	-50.4
58.295 C	29	223	19	148	181.3	-0.2	- 6.9	-41.3

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 14842 - *continued*							
d 59.388 G	60	282	33	157	182.1°	+0.5°	- 7.1°	-26.1°
60.449 G	61	283	31	144	183.7	+1.9	- 7.4	-10.5
61.456 G	46	280	23	140	183.0	+1.1	- 7.6	+ 2.1
62.295 C	25	242	13	123	183.4	+1.3	- 7.4	+13.5
63.297 C	47	250	26	140	183.5	+1.3	- 7.2	+26.8
64.309 C	32	220	21	143	183.9	+1.5	- 7.4	+40.5
65.413 G	24	145	20	123	183.1	+0.6	- 7.4	+54.3
66.298 C	17	95	21	119	184.2	+1.5	- 7.5	+67.0
67.309 C	9	53	27	161	185.0	..	- 7.2	+81.2
Means	..	..	26	147	182.8	..	- 7.2	..
Group 14848.							
Feb. 27-Mar. 8. A regular spot followed by small companions after March 1. From this date, the parent spot begins to divide into two small spots which drift apart as the whole group dies out.							
57.614 G	28	169	34	208	164.5	0.0	-11.4	-67.0
58.295 C	42	246	39	226	165.0	+0.4	-11.1	-57.6
59.388 G	59	383	41	262	164.6	-0.1	-11.0	-43.6
60.449 G	105	479	60	272	164.8	0.0	-10.7	-29.4
61.456 G	51	261	27	137	164.3	-0.6	-10.5	-16.6
62.295 C	46	269	23	135	165.7	+0.7	-10.7	- 4.2
63.297 C	34	182	18	93	168.0	+2.9	-10.0	+11.3
64.309 C	16	82	8	45	165.3	+0.1	-10.8	+21.9
65.413 G	8	35	5	23	168.6	+3.3	-10.1	+39.8
66.298 C	4	14	3	11	168.2	+2.8	-10.1	+51.0
Means	..	..	26	141	165.9	..	-10.6	..
Group 14850.							
Mar. 3-15. A stream of small spots. The rear part increases and after March 10 tends to consolidate into a composite spot, while the preceding part of the group dies out.							
61.456 G	7	28	11	46	107.3	0.0	-18.8	-73.6
62.295 C	28	174	29	176	108.7	+1.5	-18.7	-61.2
63.297 C	63	333	48	257	107.3	+0.2	-18.7	-49.4
64.309 C	78	498	49	315	106.8	-0.2	-19.0	-36.6
65.413 G	107	542	58	297	106.6	-0.4	-19.0	-22.2
66.298 C	106	505	55	263	106.0	-0.9	-18.6	-11.2
67.309 C	64	383	33	195	105.7	-1.1	-18.3	+ 1.9
68.298 C	100	586	53	311	105.7	-1.0	-19.2	+14.9
69.297 C	115	634	65	361	104.2	-2.4	-19.8	+26.6
70.301 C	66	665	44	439	104.0	-2.5	-19.8	+39.6
71.414 C	57	377	50	324	104.3	-2.1	-19.8	+54.6
72.344 C	29	197	34	229	102.9	-3.4	-19.7	+65.4
73.305 C	15	136	32	291	103.2	-3.1	-19.4	+78.4
Means	..	..	43	270	105.6	..	-19.1	..

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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 14856.								
Mar. 5-15. A small regular spot with a few companions. By March 13 it begins to break up and quickly dies out.								
d					°	°	°	°
63.297 C	19	140	32	232	83.1	0.0	-13.7	-73.6
64.309 C	19	140	19	137	83.2	+0.1	-13.9	-60.2
65.413 G	53	210	38	149	82.8	-0.4	-13.9	-46.0
66.298 C	47	265	29	162	82.7	-0.5	-14.1	-34.5
67.309 C	46	424	25	230	82.1	-1.1	-14.0	-21.7
68.298 C	60	298	31	152	83.0	-0.3	-14.2	- 7.8
69.297 C	57	320	29	164	82.8	-0.5	-14.7	+ 5.2
70.301 C	45	207	24	110	83.4	+0.1	-14.4	+19.0
71.414 C	26	168	16	101	83.3	-0.1	-14.8	+33.6
72.344 C	11	94	8	68	83.7	+0.3	-14.2	+46.2
73.305 C	2	13	2	13	84.4	+1.0	-13.7	+59.6
Means	..	..	23	138	83.1	..	-14.2	..
Group 14857.								
Mar. 7-14. One or two small spots.								
65.413 G	9	59	13	86	57.8	0.0	-11.2	-71.0
66.298 C	25	133	25	131	57.2	-0.7	-10.5	-60.0
67.309 C	24	115	18	83	57.3	-0.7	-10.3	-46.5
68.298 C	19	74	11	44	58.7	+0.6	- 9.8	-32.1
69.297 C	13	70	7	36	60.7	+2.5	-10.4	-16.9
70.301 C	18	92	9	47	58.6	+0.3	-10.9	- 5.8
71.414 C	6	26	3	14	60.8	+2.4	-10.1	+11.1
72.344 C	13	69	7	37	59.4	+0.9	-10.5	+21.9
Means	..	..	12	60	58.8	..	-10.5	..
Group 14858.								
Mar. 7-19. A small regular spot decreasing slowly.								
65.413 G	11	72	21	135	53.0	0.0	-14.7	-75.8
66.298 C	21	117	24	131	52.9	-0.1	-14.5	-64.3
67.309 C	30	149	24	118	52.6	-0.5	-14.4	-51.2
68.298 C	28	138	18	87	53.0	-0.1	-14.3	-37.8
69.297 C	26	153	14	84	53.4	+0.3	-14.1	-24.2
70.301 C	36	202	18	103	53.4	+0.2	-13.6	-11.0
71.414 C	30	179	15	90	53.5	+0.3	-14.2	+ 3.8
72.344 C	26	153	14	80	53.6	+0.3	-13.6	+16.1
73.305 C	21	164	12	93	53.6	+0.3	-13.7	+28.8
74.310 C	19	145	13	97	53.6	+0.3	-13.7	+42.0
75.466 G	13	77	12	70	53.6	+0.2	-13.4	+57.3
76.351 G	9	55	12	73	53.6	+0.2	-13.5	+68.9
77.308 C	0	6	0	20	54.6	..	-13.1	+82.6
Means	..	..	16	97	53.3	..	-14.0	..

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 14860.								
Mar. 11-16. A pair of small spots; the leader remains after March 14.								
d					°	°	°	°
69.297 C	24	166	13	87	69.7	0.0	-23.4	- 7.9
70.301 C	73	351	38	182	70.1	+0.6	-23.2	+ 5.7
71.414 C	28	132	15	73	70.1	+0.8	-23.3	+20.4
72.344 C	17	75	10	47	71.5	+2.4	-23.1	+34.0
73.305 C	4	23	3	17	73.0	+4.1	-22.5	+48.2
74.310 C	2	17	2	17	72.8	+4.1	-22.1	+61.2
Means	..	..	14	70	71.2	..	-22.9	..
Group 14863.								
Mar. 15-27. A slowly-diminishing regular spot with a companion on March 22.								
73.305 C	17	128	43	323	304.8	..	-14.4	-80.0
74.310 C	36	209	45	259	304.4	0.0	-13.8	-67.2
75.466 G	55	279	45	226	304.1	-0.3	-14.0	-52.2
76.351 G	73	381	48	251	304.1	-0.4	-14.0	-40.6
77.308 C	62	353	35	201	303.8	-0.7	-14.3	-28.2
78.461 G	69	402	36	209	303.8	-0.7	-14.1	-13.0
79.619 G	62	371	31	186	303.9	-0.7	-14.4	+ 2.3
80.329 C	60	351	31	179	304.0	-0.6	-14.3	+11.8
81.445 G	60	276	34	155	304.2	-0.4	-14.4	+26.7
82.309 C	32	178	20	114	304.4	-0.2	-14.5	+38.3
83.363 G	27	148	22	120	304.5	-0.2	-14.8	+52.3
84.309 C	11	90	13	103	304.5	-0.2	-14.7	+64.8
85.683 †	6	28	22	101	305.1	..	-14.9	+83.5
Means	..	..	33	182	304.2	..	-14.3	..
Group 14865.								
Mar. 17-25. A small spot with a companion on March 24.								
75.466 G	2	15	8	57	272.5	..	-11.8	-83.8
76.351 G	4	35	6	53	272.9	0.0	-11.6	-71.8
77.308 C	15	77	14	74	272.8	-0.2	-11.5	-59.2
78.461 G	13	60	9	41	273.0	-0.1	-11.4	-43.8
79.619 G	20	84	11	48	272.9	-0.3	-11.4	-28.7
80.329 C	17	86	9	46	273.0	-0.2	-11.4	-19.2
81.445 G	9	44	4	22	273.4	+0.1	-11.5	- 4.1
82.309 C	11	30	6	15	273.1	-0.3	-12.1	+ 7.0
83.363 G	4	29	2	16	274.2	+0.7	-11.1	+22.0
Means	..	..	8	39	273.2	..	-11.5	..

† Mount Wilson

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Group 14866.

Mar. 20-29. A regular spot and follower developing from a cluster of dots on March 22. Two days earlier, a small ephemeral spot appeared 2° northwards.

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.
d					°	°	°	°
78.461 G	4	22	3	18	271.5	0.0	+19.0	-45.3
79.619 G	0	0	0	0	..	..	..	..
80.329 C	6	54	3	31	272.2	+0.8	+17.1	-20.0
81.445 G	53	269	29	146	272.8	+1.4	+16.7	- 4.7
82.309 C	45	216	24	119	274.0	+2.6	+16.4	+ 7.9
83.363 G	33	190	19	112	276.0	+4.6	+15.8	+23.8
84.309 C	41	171	28	118	276.6	+5.3	+16.4	+36.9
85.683 †	28	110	28	110	277.5	+6.2	+16.9	+55.9
86.606 G	9	40	14	62	277.2	+5.9	+16.6	+67.8
87.311 C	6	39	17	110	277.3	+6.0	+16.6	+77.2
Means	..	..	15	80	274.7	..	+16.8	..

Group 14872.

Mar. 23-29. A stream of small spots of which only one remains by March 27.

81.445 G	7	29	4	16	254.3	0.0	-11.1	-23.2
82.309 C	6	23	3	12	255.1	+0.7	-11.4	-11.0
83.363 G	18	107	10	53	254.1	-0.4	-11.5	+ 1.9
84.309 C	25	169	13	87	253.3	-1.3	-11.3	+13.6
85.683 †	11	62	6	36	252.2	-2.5	-11.6	+30.6
86.606 G	7	27	5	18	251.8	-3.0	-11.4	+42.4
87.311 C	2	11	2	9	252.0	-2.8	-11.5	+51.9
Means	..	..	6	32	253.4	..	-11.4	..

Group 14873.

Mar. 27-Apr. 1. A small stream of protracted development led by a regular spot which is the most stable component.

81.445 G	7	44	5	29	239.1	0.0	-21.4	-38.4
82.309 C	10	41	5	24	239.2	+0.2	-21.7	-26.9
83.363 G	4	18	2	10	239.4	+0.6	-21.8	-12.8
84.309 C	0	9	0	5	241.4	+2.7	-20.2	+ 1.7
85.683 †	56	157	30	85	240.2	+1.7	-20.9	+18.6
86.606 G	56	313	34	188	240.2	+1.8	-20.7	+30.8
87.311 C	58	361	39	242	240.1	+1.8	-20.7	+40.0
88.409 C	30	242	26	213	240.6	+2.5	-20.6	+54.9
89.309 C	31	135	39	172	240.6	+2.6	-20.5	+66.8
90.350 G	4	44	13	139	242.6	..	-20.1	+82.5
Means	..	..	19	110	240.1	..	-21.0	..

Group 14877.

Mar. 25-Apr. 4. Small spots that develop into a longish stream of changing spots.

d					°	°	°	°
83.363 G	6	29	7	33	191.3	0.0	+13.4	-60.9
84.309 C	33	151	29	127	190.3	-1.0	+14.1	-49.4
85.683 †	64	281	40	176	191.2	-0.2	+13.9	-30.4
86.606 G	49	304	27	171	191.6	+0.2	+13.8	-17.8
87.311 C	85	445	46	239	192.1	+0.6	+13.2	- 8.0
88.409 C	103	599	55	321	190.9	-0.6	+13.2	+ 5.2
89.309 C	120	713	66	400	192.0	+0.5	+13.6	+18.2
90.350 G	69	504	45	328	194.4	+2.8	+13.4	+34.3
91.475 C	28	209	23	173	194.5	+2.9	+14.1	+49.3
92.518 C	19	138	24	174	194.9	+3.2	+15.4	+63.5
93.311 C	6	39	12	80	194.6	+2.9	+14.8	+73.6
Means	..	..	33	205	192.7	..	+13.9	..

Group 14880.

Mar. 27-Apr. 7. Unstable spots which by April 3 condense into two small composite spots.

85.683 †	20	78	25	99	157.0	0.0	+12.1	-64.6
86.606 G	22	118	20	106	156.2	-0.9	+12.9	-53.2
87.311 C	30	200	24	153	155.4	-1.7	+13.1	-44.7
88.409 C	41	184	25	114	155.7	-1.5	+13.4	-30.0
89.309 C	30	208	17	116	155.8	-1.4	+13.3	-18.0
90.350 G	43	315	23	167	155.6	-1.7	+13.0	- 4.5
91.475 C	56	516	30	278	155.7	-1.6	+12.5	+10.5
92.518 C	115	635	66	369	156.1	-1.3	+12.6	+24.7
93.311 C	108	510	71	330	156.3	-1.2	+12.2	+35.3
94.325 C	37	314	30	257	156.7	-0.8	+12.8	+49.1
95.310 C	8	239	9	275	156.2	-1.4	+12.8	+61.6
96.307 C	0	12	0	28	156.8	-0.8	+12.9	+75.3
Means	..	..	29	199	156.0	..	+12.9	..

Group 14890.

Apr. 2-8. A minor stream, with a brief maximum on April 4. The follower is the larger component.

91.475 C	18	84	10	45	136.7	0.0	-26.1	- 8.5
92.518 C	43	188	23	100	137.1	+0.7	-26.4	+ 5.7
93.311 C	48	382	26	212	135.8	-0.3	-26.9	+14.8
94.325 C	28	149	17	89	134.6	-1.1	-27.1	+27.0
95.310 C	58	244	39	166	133.8	-1.6	-26.7	+39.2
96.307 C	4	65	3	55	134.0	-1.1	-27.0	+52.5
97.468 G	4	31	5	47	136.6	+1.9	-26.4	+70.5
Means	..	..	18	102	135.5	..	-26.7	..

† Mount Wilson

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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 14891.							
Apr. 2-13. A slowly-diminishing regular spot with occasional companions.							
d					°	°	°
91.475 C	4	32	9	72	68.8	0.0	-13.8	-76.4
92.518 C	19	112	19	113	70.3	+1.5	-14.4	-61.1
93.311 C	13	143	10	112	70.6	+1.7	-13.8	-50.4
94.325 C	19	143	12	90	70.2	+1.3	-13.7	-37.4
95.310 C	19	252	10	139	69.4	+0.5	-13.9	-25.2
96.307 C	45	224	23	115	69.4	+0.5	-14.2	-12.1
97.468 G	29	187	15	95	70.2	+1.2	-14.1	+ 4.1
98.318 C	11	45	6	23	70.0	+1.0	-14.6	+15.1
99.342 G	13	58	7	33	70.0	+1.0	-14.9	+28.6
100.346 G	9	36	6	24	69.9	+0.8	-15.0	+41.8
101.311 C	8	45	7	42	72.8	+3.7	-15.1	+57.4
102.309 C	0	20	0	30	73.8	+4.7	-15.7	+71.6
Means	..	..	10	74	70.4	..	-14.4	..
Group 14893.							
Apr. 4-14. One or two small spots, not seen on April 8-9.							
93.311 C	4	11	7	19	49.5	0.0	+10.0	-71.5
94.325 C	13	76	13	76	50.1	+0.5	+10.6	-57.5
95.310 C	6	35	4	26	49.8	+0.1	+10.7	-44.8
96.307 C	6	32	4	20	51.6	+1.8	+11.4	-29.9
97.468 G	0	0	0	0	..	..	..	..
98.318 C	0	0	0	0	..	..	..	..
99.342 G	11	62	6	34	52.9	+2.8	+10.9	+11.5
100.346 G	9	31	5	18	52.3	+2.1	+11.0	+24.2
101.311 C	4	22	2	14	52.7	+2.4	+11.0	+37.3
102.309 C	10	48	9	42	54.5	+4.1	+11.2	+52.3
103.317 G	13	105	17	135	53.9	+3.4	+11.5	+65.0
Means	..	..	6	35	51.9	..	+10.9	..
Group 14894.							
Apr. 5-16. A slowly-diminishing regular spot with an occasional companion.							
94.325 C	11	71	20	131	35.5	0.0	+13.7	-72.1
95.310 C	11	91	12	100	34.6	-0.9	+14.0	-60.0
96.307 C	19	117	15	94	33.9	-1.6	+14.4	-47.6
97.468 G	13	116	8	73	34.4	-1.2	+14.6	-31.7
98.318 C	22	136	13	78	34.3	-1.3	+14.8	-20.6
99.342 G	31	125	17	68	34.4	-1.2	+14.8	- 7.0
Group 14894 - *continued*							
100.346 G	29	112	16	60	34.4	-1.2	+14.8	+ 6.3
101.311 C	17	125	10	71	34.0	-1.6	+15.1	+18.6
102.309 C	15	58	10	37	34.5	-1.2	+15.3	+32.3
103.317 G	11	36	9	28	34.8	-0.9	+15.1	+45.9
104.474 G	2	11	2	13	35.4	-0.3	+15.6	+61.8
105.331 G	0	7	0	13	34.6	-1.1	+15.2	+72.3
Means	..	..	11	64	34.6	..	+14.8	..
Group 14896.							
Apr. 6-11. An area of feeble activity.							
95.310 C	8	34	4	20	103.2	0.0	+25.5	+ 8.6
96.307 C	13	116	9	73	102.4	-0.5	+25.4	+20.9
97.468 G	13	70	10	52	102.6	0.0	+25.6	+36.5
98.318 C	0	9	0	9	107.9	+5.5	+24.5	+53.0
99.342 G	4	13	6	21	108.1	+6.0	+24.6	+66.7
100.346 G	2	27	5	62	100.7	-1.1	+25.0	+72.6
Means	..	..	6	40	104.2	..	+25.1	..
Group 14897.							
Apr. 7-15. Small unstable spots becoming a short-lived stream by April 10.							
96.307 C	6	31	5	24	31.0	0.0	-15.3	-50.5
97.468 G	7	69	4	42	33.1	+2.1	-15.3	-33.0
98.318 C	10	67	5	37	31.2	+0.2	-15.2	-23.7
99.342 G	34	283	18	145	31.7	+0.7	-15.3	- 9.7
100.346 G	42	192	22	98	31.4	+0.4	-15.4	+ 3.3
101.311 C	45	183	24	97	31.3	+0.3	-15.2	+15.9
102.309 C	18	119	10	69	30.7	-0.3	-16.0	+28.5
103.317 G	6	38	4	26	30.8	-0.2	-15.6	+41.9
104.474 G	0	4	0	4	30.6	-0.5	-15.0	+57.0
Means	..	..	10	60	31.3	..	-15.4	..
Group 14903.							
Apr. 13-20. An area of minor disturbance with a brief maximum on April 19.							
102.309 C	0	9	0	5	340.9	0.0	- 8.7	-21.3
103.317 G	4	20	2	10	341.7	+0.7	- 9.1	- 7.2
104.474 G	0	0	0	0	..	..	..	..
105.331 G	4	18	2	10	345.4	+4.2	- 9.1	+23.1
106.326 G	9	36	6	23	346.4	+5.1	-11.1	+37.2

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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 14903 - *continued*							
d					°	°	°
107.441 G	8	54	6	43	345.7	+4.3	-11.7	+51.2
108.328 C	29	114	30	120	344.8	+3.3	-11.9	+62.1
109.386 G	7	36	13	65	343.4	+1.8	-11.8	+74.6
Means	..	..	7	34	344.0	..	-10.5	..
Group 14905							
Apr. 14-25. A group of bi-polar type, with the follower, *b*, a composite spot, temporarily the chief component by April 19.							
103.317 G	13	38	19	55	278.1	0.0	-18.3	-70.8
104.474 G	13	76	11	66	278.8	+0.8	-19.1	-54.8
105.331 G	27	135	19	96	278.1	+0.2	-19.2	-44.2
106.326 G	106	506	65	312	275.7	-2.1	-19.2	-33.5
107.441 G	124	840	68	460	275.5	-2.2	-19.1	-19.0
108.328 C	170	872	89	459	274.6	-3.0	-19.9	- 8.1
109.386 G	94	641	48	333	274.3	-3.2	-19.6	+ 5.5
110.343 G	123	574	68	317	275.3	-2.2	-19.5	+19.2
111.404 G	59	293	36	181	275.5	-1.9	-19.1	+33.4
112.321 C	46	290	34	211	275.5	-1.8	-19.1	+45.5
113.359 G	29	116	30	121	276.7	-0.5	-18.6	+60.4
114.328 C	7	57	12	97	276.1	-1.0	-19.4	+72.6
Means	..	..	42	226	276.2	..	-19.2	..
Spot *a*							
103.317 G	13	31	19	44	278.6	0.0	-18.3	-70.3
104.474 G	11	60	9	50	280.2	+1.7	-18.9	-53.4
105.331 G	16	81	11	56	279.6	+1.2	-18.9	-42.7
106.326 G	54	209	32	125	278.3	0.0	-19.0	-30.9
107.441 G	63	538	34	291	276.9	-1.3	-19.0	-17.6
108.328 C	72	384	37	200	277.9	-0.2	-19.2	- 4.8
109.386 G	47	245	24	127	278.2	+0.2	-18.7	+ 9.4
110.343 G	76	326	43	183	278.8	+0.8	-18.5	+22.7
111.404 G	32	158	20	101	278.7	+0.8	-18.4	+36.6
112.321 C	31	164	24	125	278.5	+0.7	-18.4	+48.5
113.359 G	22	94	24	102	279.1	+1.4	-18.2	+62.8
114.328 C	7	50	12	88	277.7	+0.1	-18.2	+74.2
Spot *b*							
103.317 G	0	7	0	11	276.1	0.0	-18.5	-72.8
104.474 G	2	16	2	16	274.6	-1.4	-19.3	-59.0

continued

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 14905 - *continued*							
Spot *b* - *continued*							
d					°	°	°	°
105.331 G	11	54	8	40	275.7	-0.2	-19.3	-46.6
106.326 G	52	297	33	187	273.7	-2.1	-19.6	-35.5
107.441 G	61	302	34	169	271.8	-3.9	-19.9	-22.7
108.328 C	98	488	52	259	272.1	-3.5	-20.6	-10.6
109.386 G	47	396	24	206	271.4	-4.1	-20.3	+ 2.6
110.343 G	47	248	25	134	271.3	-4.2	-20.4	+15.2
111.404 G	27	135	16	80	271.4	-4.0	-20.1	+29.3
112.321 C	15	126	10	86	271.0	-4.3	-20.5	+41.0
113.359 G	7	22	6	19	270.5	-4.7	-20.4	+54.2
114.328 C	0	7	0	9	269.2	-5.9	-23.8	+65.7
Group 14906.							
Apr. 15-25. Small unstable spots over a progressive range of 4° in latitude.							
104.474 G	7	29	10	42	266.7	0.0	+17.8	-66.9
105.331 G	11	43	11	43	266.5	-0.2	+17.6	-55.8
106.326 G	16	63	12	47	266.5	-0.2	+17.5	-42.7
107.441 G	14	88	9	55	265.1	-1.6	+16.3	-29.4
108.328 C	4	17	2	10	265.5	-1.2	+16.4	-17.2
109.386 G	0	0	0	0	..	..	..	..
110.343 G	7	56	4	30	266.0	-0.7	+14.2	+ 9.9
111.404 G	7	20	4	12	268.3	+1.6	+14.9	+26.2
112.321 C	20	133	13	85	264.5	-2.2	+14.2	+34.5
113.359 G	22	101	18	78	262.7	-4.0	+13.5	+46.4
114.328 C	4	22	4	24	264.1	-2.6	+13.5	+60.6
Means	..	..	8	39	265.6	..	+15.6	..
Group 14909.							
Apr. 18-27. Intermittent. A group developing towards the west limb from a dot on April 23. Five days earlier a small spot had marked the position.							
107.441 G	4	22	3	16	249.1	0.0	+11.7	-45.4
108.328 C	0	0	0	0	..	..	..	..
109.386 G	0	0	0	0	..	..	..	..
110.343 G	0	0	0	0	..	..	..	..
111.404 G	0	0	0	0	..	..	..	..
112.321 C	2	9	1	5	250.5	+0.9	+10.4	+20.5
113.359 G	52	270	33	173	251.2	+1.5	+10.9	+34.9
114.328 C	81	652	65	522	253.0	+3.2	+10.0	+49.5
115.331 G	50	524	58	613	253.6	+3.7	+ 9.8	+63.4
116.321 C	24	118	59	290	254.3	+4.3	+ 9.8	+77.2
Means	..	..	22	162	252.0	..	+10.4	..

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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 14912.							
Apr. 20-29. A small dying regular spot with a companion on April 25.							
d					°	°	°
109.386 G	16	58	29	104	198.8	0.0	+23.2	−70.0
110.343 G	18	101	20	112	198.0	−0.6	+23.1	−58.1
111.404 G	22	79	18	63	198.1	−0.3	+22.9	−44.0
112.321 C	26	98	17	66	197.8	−0.4	+23.0	−32.2
113.359 G	18	112	11	66	197.8	−0.2	+22.6	−18.5
114.328 C	26	153	14	85	197.4	−0.4	+21.3	− 6.1
115.331 G	14	77	8	44	197.6	0.0	+22.2	+ 7.4
116.321 C	15	64	9	38	197.2	−0.3	+22.5	+20.1
117.581 G	7	29	5	20	196.8	−0.4	+22.5	+36.3
118.306 G	2	14	2	11	196.7	−0.4	+22.4	+45.8
Means	..	..	13	61	197.6	..	+22.6	..
Group 14915.							
Apr. 22-May 4. A stream of normal type; a regular spot, *a*, with double umbra leads; the follower, *b*, of composite structure, begins to break up on April 28 and disappears as a cluster.							
111.404 G	16	155	(37	356	164.0	..	−10.0)	−78.1
112.321 C	105	578	148	796	160.5	0.0	−10.3	−69.5
113.359 G	133	801	116	704	160.9	+0.3	−10.3	−55.4
114.328 C	181	942	124	637	161.1	+0.4	−10.0	−42.4
115.331 G	133	904	75	518	161.2	+0.4	−10.0	−29.0
116.321 C	153	979	80	515	161.2	+0.3	− 9.9	−15.9
117.581 G	165	985	83	492	161.2	+0.1	−10.1	+ 0.7
118.306 G	162	777	82	397	162.3	+1.1	−10.0	+11.4
119.570 G	70	547	40	315	163.1	+1.8	−10.3	+28.9
120.552 G	81	420	56	289	164.2	+2.8	−10.0	+42.9
121.325 C	62	334	51	277	164.2	+2.7	−10.1	+53.2
122.388 C	40	187	52	245	164.9	+3.3	−10.3	+67.9
123.333 C	11	108	32	315	165.1	..	−10.0	+80.6
Means	..	..	82	471	162.2	..	−10.1	..
Spot *a*							
111.404 G	16	155	37	356	164.0	0.0	−10.0	−78.1
112.321 C	70	414	85	501	163.9	−0.2	− 9.8	−66.1
113.359 G	97	551	80	452	163.5	−0.7	−10.1	−52.8
114.328 C	118	665	77	432	163.8	−0.5	− 9.6	−39.7
115.331 G	106	669	59	375	163.5	−0.9	− 9.7	−26.7
116.321 C	120	675	62	351	163.5	−1.0	− 9.7	−13.6
117.581 G	122	664	61	332	163.6	−1.1	− 9.4	+ 3.1
118.306 G	124	664	63	339	163.7	−1.1	− 9.7	+12.8
119.570 G	56	488	32	283	164.1	−0.8	−10.0	+29.9
120.552 G	79	406	55	280	164.4	−0.6	−10.0	+43.1
121.325 C	62	334	51	277	164.2	−0.9	−10.1	+53.2
122.388 C	40	187	52	245	164.9	−0.3	−10.3	+67.9
123.333 C	11	108	32	315	165.1	..	−10.0	+80.6
Group 14915 - *continued*							
Spot *b*							
d					°	°	°	°
112.321 C	35	164	63	295	155.5	0.0	−11.2	−74.5
113.359 G	36	250	36	252	155.7	+0.1	−11.0	−60.6
114.328 C	63	277	47	205	156.0	+0.3	−10.7	−47.5
115.331 G	27	235	16	143	156.0	+0.2	−10.8	−34.2
116.321 C	33	304	18	164	156.3	+0.4	−10.9	−20.8
117.581 G	43	321	22	160	157.1	+1.0	−11.2	− 3.4
118.306 G	38	113	19	58	157.6	+1.4	−10.9	+ 6.7
119.570 G	14	59	8	32	157.7	+1.4	−11.2	+23.5
120.552 G	2	14	1	9	158.7	+2.3	−11.0	+37.4
Group 14917.							
Apr. 23-May 5. A stable regular spot with an occasional companion.							
112.321 C	13	81	28	173	152.7	0.0	−17.8	−77.3
113.359 G	43	218	48	242	153.0	+0.3	−17.6	−63.3
114.328 C	39	268	31	212	153.4	+0.8	−17.3	−50.1
115.331 G	54	255	35	163	153.4	+0.8	−16.9	−36.8
116.321 C	53	252	30	141	153.6	+1.0	−16.5	−23.5
117.581 G	61	341	31	174	153.8	+1.3	−16.5	− 6.7
118.306 G	45	287	23	146	154.0	+1.5	−16.6	+ 3.1
119.570 G	47	298	25	161	154.1	+1.6	−17.0	+19.9
120.552 G	41	247	25	151	154.6	+2.2	−16.9	+33.3
121.325 C	29	194	21	138	154.9	+2.5	−16.9	+43.9
122.388 C	42	121	40	113	154.2	+1.8	−16.7	+57.2
123.333 C	19	125	28	182	154.2	+1.9	−16.7	+69.7
124.368 G	5	25	30	152	157.0	..	−16.5	+86.2
Means	..	..	30	166	153.8	..	−17.0	..
Group 14919.							
Apr. 24-29. Changing spots in a small stream.							
113.359 G	2	16	10	77	131.7	..	− 6.9	−84.6
114.328 C	13	59	22	98	130.6	0.0	− 6.3	−72.9
115.331 G	11	59	11	59	130.0	−0.8	− 6.6	−60.2
116.321 C	27	162	20	118	130.7	−0.2	− 7.4	−46.4
117.581 G	36	165	21	96	130.3	−0.8	− 6.9	−30.2
118.306 G	23	79	13	42	130.3	−0.9	− 7.3	−20.6
Means	..	..	17	83	130.4	..	6.9	..

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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 14924.							
Apr. 26-May 2. A short stream of small spots; the leader, *a*, is the most stable.							
d					°	°	°
115.331 G	2	9	1	5	187.0	0.0	+16.8	- 3.2
116.321 C	15	79	8	43	186.8	-0.1	+18.1	+ 9.7
117.581 G	36	176	22	107	187.5	+0.6	+18.0	+27.0
118.306 G	63	271	43	188	188.7	+1.9	+18.0	+37.8
119.570 G	43	167	42	167	189.9	+3.1	+18.0	+55.7
120.552 G	21	123	35	206	190.6	+3.9	+18.2	+69.3
121.325 C	2	25	5	72	188.8	+2.1	+19.1	+77.8
Means	..	..	22	113	188.5	..	+18.0	..
Spot *a*							
117.581 G	16	81	10	50	189.7	0.0	+17.9	+29.2
118.306 G	27	149	19	106	190.8	+1.1	+17.8	+39.9
119.570 G	25	111	26	117	192.4	+2.8	+17.8	+58.2
120.552 G	16	98	28	173	192.8	+3.3	+17.6	+71.5
121.325 C	0	7	0	23	190.4	+0.9	+18.2	+79.4
Group 14925.							
Apr. 26-May 7. A stable regular spot.							
115.331 G	9	84	14	132	118.3	0.0	-10.7	-71.9
116.321 C	31	162	29	154	118.4	0.0	-10.5	-58.7
117.581 G	38	181	26	123	118.3	-0.2	-10.3	-42.2
118.306 G	41	244	25	146	118.3	-0.3	-10.2	-32.6
119.570 G	50	278	26	145	118.3	-0.5	-10.3	-15.9
120.552 G	50	275	25	138	118.4	-0.5	-10.1	- 2.9
121.325 C	42	279	21	142	118.6	-0.4	-10.0	+ 7.6
122.388 C	37	216	20	117	119.0	-0.1	- 9.8	+22.0
123.333 C	40	242	24	148	119.3	+0.1	- 9.7	+34.8
124.368 G	36	175	27	133	119.5	+0.2	- 9.7	+48.7
125.138 K	19	105	18	102	199.6	+0.2	- 9.8	+59.0
126.325 C	9	68	17	126	119.6	+0.1	- 9.7	+74.7
Means	..	..	23	134	118.8	..	-10.1	..
Group 14930.							
Apr. 28-May 8. A short-lived stream of minor importance. The leader, a small regular spot, remains by May 4, joined temporarily by a small companion on May 7.							

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 14930 - *continued*							
d					°	°	°	°
117.581 G	5	16	5	15	106.7	0.0	+21.2	-53.8
118.306 G	16	38	12	30	106.4	-0.2	+21.0	-44.5
119.570 G	49	181	31	115	104.8	-1.6	+20.5	-29.4
120.552 G	103	397	59	229	105.1	-1.2	+21.0	-16.2
121.325 C	52	330	28	182	105.6	-0.6	+20.8	- 5.4
122.388 C	33	114	19	63	105.6	-0.4	+20.7	+ 8.6
123.333 C	31	125	18	74	106.6	+0.7	+20.6	+22.1
124.368 G	14	75	10	51	106.7	+0.9	+20.4	+35.9
125.138 K	4	17	3	14	106.6	+0.9	+20.6	+46.0
126.325 C	11	29	17	39	109.3	+3.8	+20.6	+64.4
127.323 C	0	4	0	9	106.2	+0.8	+21.5	+74.5
Means	..	..	18	75	106.3	..	+20.8	..
Group 14931.							
Apr. 29-May 8. Intermittent. A tiny spot that has gone by May 3: four days later, small spots appear in a stream.							
118.306 G	7	18	5	13	106.8	0.0	-23.2	-44.1
119.570 G	2	9	1	5	107.0	+0.5	-24.0	-27.2
120.552 G	5	16	3	9	107.9	+1.6	-24.7	-13.4
121.325 C	2	9	1	5	107.8	+1.6	-23.9	- 3.2
122.388 C	0	0	0	0	..	..	..	..
123.333 C	0	0	0	0	..	..	..	..
124.368 G	0	0	0	0	..	..	..	..
125.138 K	0	0	0	0	..	..	..	..
126.325 C	20	83	21	87	105.7	+0.5	-20.7	+60.8
127.323 C	9	110	14	176	104.0	-1.0	-21.1	+72.3
Means	..	..	4	30	106.5	..	-22.9	..
Group 14932.							
Apr. 29-May 4. A wide pair of small spots.							
118.306 G	7	32	6	31	93.0	0.0	-19.8	-57.9
119.570 G	9	32	6	23	92.2	-0.7	-19.8	-42.0
120.552 G	4	39	2	24	92.2	-0.6	-20.7	-29.1
121.325 C	0	18	0	10	94.1	+1.4	-18.2	-16.9
122.388 C	2	20	1	11	91.8	-0.8	-17.6	- 5.2
123.333 C	11	55	6	28	90.8	-1.8	-18.2	+ 6.3
Means	..	..	4	21	92.4	..	-19.0	..

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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 14934.							
Apr. 30-May 6. A stream of small changing spots, of which only one remains by May 5.							
d					°	°	°
119.570 G	36	104	20	59	112.3	0.0	-21.3
120.552 G	29	168	16	89	113.1	+0.9	-21.3
121.325 C	33	148	17	77	113.2	+1.2	-21.0
122.388 C	31	96	17	52	112.9	+1.0	-20.6
123.333 C	14	77	8	45	111.0	-0.7	-21.8
124.368 G	5	34	3	23	110.6	-1.0	-21.2
125.138 K	2	10	2	8	110.7	-0.8	-21.3
Means	..	..	12	50	112.0	..	-21.2
Group 14937.							
May 3-8. A stream, suddenly appearing west of the central meridian, whose maximum is probably reached on the invisible hemisphere. The leader, *a*, becomes a regular spot; the follower, *b*, a composite spot is the largest component.							
122.388 C	101	482	52	252	112.6	0.0	- 3.8
123.333 C	176	871	101	499	113.4	+0.6	- 3.5
124.368 G	146	874	101	594	113.3	+0.3	- 3.6
125.138 K	120	777	101	655	113.6	+0.5	- 3.6
126.325 C	92	656	129	884	113.1	-0.2	- 3.6
127.323 C	20	233	(47	548	109.7	..	- 3.8)
Means	..	..	97	577	113.2	..	- 3.6
Spot *a*							
122.388 C	33	145	17	77	115.7	0.0	- 4.1
123.333 C	81	361	48	213	117.4	+1.5	- 3.4
124.368 G	64	263	48	197	118.8	+2.7	- 3.2
125.138 K	34	229	33	222	119.7	+3.5	- 3.2
126.325 C	20	108	41	221	120.9	+4.5	- 2.7
Spot *b*							
122.388 C	68	337	35	175	110.9	0.0	- 3.8
123.333 C	95	510	53	286	110.7	-0.4	- 3.6
124.368 G	82	611	53	397	110.9	-0.4	- 3.5
125.138 K	86	548	68	433	111.6	+0.2	- 3.7
126.325 C	68	493	84	606	111.2	-0.4	- 3.6
127.323 C	20	233	47	548	109.7	-2.1	- 3.8

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 14941.							
May 5-16. A stream, led by a regular spot, *a*, which is the only stable component.							
d					°	°	°
124.368 G	16	75	28	129	357.3	0.0	-12.2
125.138 K	59	303	67	353	356.0	-1.4	-12.5
126.325 C	112	583	88	451	355.6	-1.8	-12.9
127.323 C	123	761	76	475	355.7	-1.8	-12.8
128.350 G	148	805	81	442	356.1	-1.5	-12.6
129.370 C	172	992	88	508	356.0	-1.7	-12.8
130.356 C	176	994	90	507	356.0	-1.7	-12.7
131.415 G	125	665	68	357	356.8	-1.0	-12.2
132.333 C	73	519	44	310	357.5	-0.4	-11.9
133.386 G	87	492	64	359	357.9	-0.1	-11.4
134.351 G	50	306	50	309	359.0	+1.0	-11.5
135.332 G	11	78	19	134	359.0	+0.9	-11.2
Means	..	..	64	361	356.9	..	-12.2
Spot *a*							
124.368 G	16	75	28	129	357.3	0.0	-12.2
125.138 K	44	200	48	220	357.6	+0.2	-12.4
126.325 C	64	418	48	314	357.3	-0.1	-12.7
127.323 C	99	543	60	331	357.4	-0.1	-12.5
128.350 G	109	583	59	315	357.6	0.0	-12.4
129.370 C	128	724	65	369	357.3	-0.4	-12.5
130.356 C	121	807	62	412	357.6	-0.1	-12.2
131.415 G	114	599	62	323	357.6	-0.2	-11.9
132.333 C	71	497	43	298	357.8	-0.1	-11.9
133.386 G	87	492	64	359	357.9	-0.1	-11.4
134.351 G	50	306	50	309	359.0	+1.0	-11.5
135.332 G	11	78	19	134	359.0	+0.9	-11.2
Group 14943.							
May 7-15. A few small spots growing into a changing stream which dies out before reaching the west limb.							
126.325 C	7	51	5	36	1.9	0.0	-17.6
127.323 C	48	429	28	253	2.6	+0.7	-16.9
128.350 G	66	372	34	193	3.6	+1.7	-16.9
129.370 C	80	442	40	227	3.6	+1.7	-16.6
130.356 C	51	323	27	171	4.8	+2.9	-16.3
131.415 G	43	197	25	115	6.1	+4.3	-15.5
132.333 C	6	57	4	39	6.1	+4.3	-15.5
133.386 G	5	18	5	17	9.3	+7.5	-15.2
134.351 G	2	9	3	14	9.2	+7.4	-15.4
Means	..	..	19	118	5.2	..	-16.2

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

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 14947.							
May 9-21. A regular spot, preceded by one or two companions.							
d					°	°	°
128.350 G	9	52	40	228	296.5	..	+21.6	-81.7
129.370 C	46	233	74	375	295.6	0.0	+21.8	-69.1
130.356 C	49	302	51	311	294.7	-0.7	+22.3	-56.9
131.415 G	65	317	51	247	293.8	-1.5	+22.3	-43.8
132.333 C	60	395	40	261	293.3	-1.8	+22.1	-32.2
133.386 G	61	354	36	207	292.4	-2.6	+22.2	-19.2
134.351 G	73	415	40	228	292.3	-2.5	+21.8	- 6.5
135.332 G	61	396	34	217	291.7	-3.0	+21.5	+ 5.9
136.336 G	73	367	42	211	291.7	-2.8	+21.2	+19.2
137.330 C	31	236	20	150	290.8	-3.5	+21.0	+31.4
138.322 C	26	137	20	102	289.5	-4.7	+20.8	+43.2
139.122 K	19	103	17	94	288.8	-5.2	+20.4	+53.1
140.397 C	7	20	11	32	288.4	-5.4	+20.2	+69.6
Means	..	..	36	203	291.9	..	+21.5	..
Group 14950.							
May 12-23. A small stable regular spot with a small drift northwards.							
131.415 G	20	104	32	166	266.7	0.0	+ 9.8	-70.9
132.333 C	24	141	24	138	267.3	+0.5	+ 9.6	-58.2
133.386 G	32	219	23	158	267.2	+0.3	+ 9.8	-44.4
134.351 G	32	232	19	139	267.8	+0.8	+10.1	-31.0
135.332 G	46	253	25	137	267.3	+0.2	+10.1	-18.5
136.336 G	41	255	21	130	267.3	+0.1	+10.1	- 5.2
137.330 C	51	263	27	137	267.4	+0.1	+10.2	+ 8.0
138.322 C	46	217	25	119	267.3	-0.2	+10.2	+21.0
139.122 K	42	257	25	154	267.4	-0.1	+10.2	+31.7
140.397 C	29	190	23	148	267.4	-0.3	+10.7	+48.6
141.486 G	14	116	16	132	267.4	-0.4	+11.0	+63.0
142.328 C	9	51	17	98	267.6	-0.3	+11.1	+74.3
Means	..	..	23	138	267.3	..	+10.2	..
Group 14955.							
May 15-26. An area of feeble but protracted disturbance until May 23, when a bi-polar group begins to develop.							
134.351 G	0	7	0	18	222.6	0.0	+24.8	-76.2
135.332 G	0	5	0	5	228.2	+5.8	+22.9	-57.6
136.336 G	0	0	0	0	..	..	..	..
137.330 C	4	44	3	29	227.0	+5.0	+22.1	-32.4
138.322 C	22	115	13	68	226.3	+4.5	+22.0	-20.0
Group 14955 - *continued*							
d					°	°	°	°
139.122 K	43	167	24	93	226.0	+4.3	+22.1	- 9.7
140.397 C	25	130	14	71	226.7	+5.3	+22.0	+ 7.9
141.486 G	18	162	11	97	229.1	+7.9	+21.7	+24.7
142.328 C	64	305	43	207	229.6	+8.5	+22.0	+36.3
143.296 G	84	504	71	429	229.9	+9.0	+22.4	+49.4
144.330 C	35	272	45	355	230.6	+9.9	+22.8	+63.8
145.343 C	20	77	50	191	228.6	+8.1	+22.8	+75.2
Means	..	..	23	130	227.7	..	+22.5	..
Group 14960.							
May 17-28. A stream of small changing spots.							
136.336 G	0	7	0	8	210.7	0.0	+19.7	-61.8
137.330 C	2	18	1	13	216.3	+5.7	+18.9	-43.1
138.322 C	6	42	3	27	214.5	+4.0	+18.9	-31.8
139.122 K	8	34	4	20	215.3	+4.9	+19.0	-20.4
140.397 C	34	129	19	69	218.0	+7.7	+19.5	- 0.8
141.486 G	14	176	8	98	217.3	+7.1	+19.3	+12.9
142.328 C	75	329	44	194	216.6	+6.5	+19.6	+23.3
143.296 G	47	209	31	140	216.1	+6.1	+19.7	+35.6
144.330 C	19	126	16	107	216.5	+6.6	+20.2	+49.7
145.343 C	7	18	9	22	215.8	+6.0	+20.1	+62.4
Means	..	..	14	70	215.7	..	+19.5	..
Group 14962.							
May 17-29. A large composite spot, c, preceded and followed by clusters of small spots. These grow until May 21 when the group has become a long stream of irregular spots that are fast dying out at the west limb.							
136.336 G	144	431	346	1034	195.9	0.0	+17.0	-76.6
137.330 C	201	1052	250	1321	194.5	-1.4	+16.9	-64.9
138.322 C	217	1798	182	1532	194.6	-1.2	+17.4	-51.7
139.122 K	270	2496	186	1736	195.0	-0.8	+17.4	-40.7
140.397 C	284	2360	164	1370	196.0	+0.3	+17.4	-22.8
141.486 G	230	2061	125	1111	195.9	+0.2	+17.1	- 8.5
142.328 C	310	2440	165	1294	196.1	+0.4	+17.1	+ 2.8
143.296 G	206	1637	113	896	196.2	+0.6	+17.0	+15.7
144.330 C	97	1337	59	814	196.0	+0.4	+17.0	+29.2
145.343 C	93	811	67	577	196.4	+0.9	+17.2	+43.0
146.333 C	89	679	80	611	194.2	-1.3	+17.6	+53.9
147.313 G	32	276	44	391	194.0	-1.5	+17.5	+66.7
148.342 C	11	76	30	213	192.0	-3.4	+17.9	+78.3
Means	..	..	139	992	195.1	..	+17.3	..

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

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 14962 - *continued*								
Spot *c*								
d					°	°	°	°
136.336 G	144	431	346	1034	195.9	0.0	+17.0	-76.6
137.330 C	179	895	215	1074	195.9	0.0	+16.4	-63.5
138.322 C	199	1520	165	1262	196.5	+0.7	+17.2	-49.8
139.122 K	236	2061	160	1401	196.7	+0.9	+17.2	-39.0
140.397 C	175	1448	102	840	195.3	-0.4	+17.8	-23.5
141.486 G	116	1161	63	627	194.5	-1.2	+17.8	- 9.9
142.328 C	124	1054	66	559	194.2	-1.5	+17.6	+ 0.9
143.296 G	64	524	35	283	194.0	-1.6	+17.3	+13.5
144.330 C	49	758	29	455	195.0	-0.6	+17.0	+28.2
145.343 C	60	659	42	461	194.5	-1.0	+17.4	+41.1
146.333 C	89	679	80	611	194.2	-1.3	+17.6	+53.9
147.313 G	30	253	42	352	194.8	-0.7	+17.3	+67.5
148.342 C	9	67	26	196	192.9	-2.5	+17.5	+79.2
Group 14965.								
May 18-30. A stream, reaching its peak area a few days from the east limb. The leading regular spot, *a*, is supplemented by another closely following it by the fusion of subsidiary spots. The following component of the group is meanwhile decreasing to a tiny spot.								
137.330 C	38	227	78	479	183.6	0.0	-16.1	-75.8
138.322 C	66	422	75	504	182.9	-0.7	-16.0	-63.4
139.122 K	165	889	147	777	182.4	-1.2	-15.8	-53.3
140.397 C	225	1229	145	796	181.9	-1.7	-16.4	-36.9
141.486 G	180	1371	102	774	182.3	-1.3	-16.1	-22.1
142.328 C	197	1178	104	619	182.6	-1.0	-15.8	-10.7
143.296 G	175	898	92	467	183.8	+0.2	-15.5	+ 3.3
144.330 C	135	781	73	425	184.5	+0.9	-15.6	+17.7
145.343 C	118	635	71	385	184.7	+1.1	-15.4	+31.3
146.333 C	69	517	51	370	184.5	+0.9	-15.5	+44.2
147.313 G	55	335	52	317	184.2	+0.6	-15.4	+56.9
148.342 C	34	249	50	372	184.5	+0.9	-15.8	+70.8
149.313 G	14	94	52	343	182.8	..	-15.8	+82.0
Means	..	..	87	524	183.5	..	-15.8	..
Spot *a*								
137.330 C	27	150	49	274	185.3	0.0	-15.4	-74.1
138.322 C	44	241	45	246	186.1	+0.8	-15.3	-60.2
139.122 K	76	420	59	328	186.5	+1.1	-15.1	-49.2
140.397 C	73	327	44	196	187.3	+2.0	-15.4	-31.5
141.486 G	57	342	31	185	187.2	+1.9	-15.4	-17.2
142.328 C	55	369	29	192	187.2	+1.9	-15.3	- 6.1

continued

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 14965 - *continued*								
Spot *a* - *continued*								
d					°	°	°	°
143.296 G	59	349	31	181	187.2	+1.9	-15.1	+ 6.7
144.330 C	42	290	23	160	187.1	+1.8	-15.0	+20.3
145.343 C	42	270	26	167	187.2	+1.9	-14.5	+33.8
146.333 C	36	202	27	149	186.8	+1.5	-14.4	+46.5
147.313 G	18	121	18	122	186.7	+1.4	-14.8	+59.4
148.342 C	9	69	15	119	186.5	+1.2	-14.7	+72.8
149.313 G	2	14	15	103	187.0	..	-14.7	+86.2
Group 14967.								
May 19-25. A small regular spot followed by one or two companions.								
138.322 C	22	93	12	48	234.5	0.0	- 9.5	-11.8
139.122 K	31	143	15	71	235.2	+0.6	- 9.3	- 0.5
140.397 C	24	143	13	76	236.8	+2.0	- 9.0	+18.0
141.486 G	19	112	11	66	236.4	+1.5	- 8.7	+32.0
142.328 C	26	128	18	90	237.3	+2.3	- 8.3	+44.0
143.296 G	9	41	9	39	238.6	+3.5	- 8.1	+58.1
144.330 C	2	13	3	21	239.0	+3.7	- 8.2	+72.2
Means	..	..	12	59	236.8	..	- 8.7	..
Group 14968.								
May 19-June 1. A stream whose leader, *a*, is closely followed by a few small spots which it absorbs by May 28. The follower breaks up and dies out by May 28, although subsidiary spots in the middle of the stream show an increase.								
138.322 C	7	57	25	206	164.0	..	-16.0	-82.3
139.122 K	25	219	41	357	163.7	0.0	-15.7	-72.0
140.397 C	91	433	89	420	160.2	-3.5	-16.1	-58.6
141.486 G	107	750	77	545	160.4	-3.3	-15.8	-44.0
142.328 C	143	972	87	600	160.5	-3.2	-15.8	-32.8
143.296 G	210	1085	116	600	160.5	-3.2	-15.5	-20.0
144.330 C	150	1196	78	625	160.2	-3.5	-15.7	- 6.6
145.343 C	181	1147	95	604	161.8	-1.9	-16.0	+ 8.4
146.333 C	227	1232	126	688	162.1	-1.6	-16.3	+21.8
147.313 G	144	944	92	604	162.3	-1.4	-16.0	+35.0
148.342 C	125	924	102	740	162.7	-1.0	-16.0	+49.0
149.313 G	96	501	109	569	162.6	-1.0	-16.2	+61.8
150.342 G	41	264	87	553	162.8	-0.8	-16.0	+75.6
151.442 C	0	4	(0	18	156.1	..	-15.5)	+83.4
Means	..	..	92	575	161.6	..	-15.9	..

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

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 14968 - *continued*							
Spot *a*							
d					°	°	°
138.322 C	7	57	25	206	164.0	..	-16.0	-82.3
139.122 K	25	219	41	357	163.7	0.0	-15.7	-72.0
140.397 C	69	340	62	306	163.5	-0.2	-16.0	-55.3
141.486 G	73	458	50	311	163.4	-0.3	-15.9	-41.0
142.328 C	108	590	64	348	163.7	0.0	-16.1	-29.6
143.296 G	135	709	73	383	163.8	+0.1	-16.3	-16.7
144.330 C	91	796	47	414	163.9	+0.2	-16.4	- 2.9
145.343 C	119	844	63	447	164.0	+0.3	-16.4	+10.6
146.333 C	153	824	87	470	164.5	+0.8	-16.4	+24.2
147.313 G	112	755	73	491	164.5	+0.8	-16.3	+37.2
148.342 C	107	673	89	559	165.2	+1.5	-16.2	+51.5
149.313 G	64	327	79	402	166.0	+2.4	-16.2	+65.2
150.342 G	25	156	63	393	165.6	+2.0	-16.0	+78.4
Group 14969.							
May 20-26. A pair of small spots: the leader is left after May 24.							
139.122 K	12	70	6	37	234.7	0.0	+12.9	- 1.0
140.397 C	9	49	5	26	236.6	+1.8	+12.3	+17.8
141.486 G	13	137	8	85	237.3	+2.4	+12.3	+32.9
142.328 C	22	108	16	80	238.6	+3.7	+12.7	+45.3
143.296 G	7	32	7	33	240.0	+5.0	+12.8	+59.5
144.330 C	4	.22	7	39	239.7	+4.7	+13.1	+72.9
145.343 C	0	4	0	18	236.4	..	+12.9	+83.0
Means	..	..	8	50	237.8	..	+12.7	..
Group 14971.							
May 21-28. A small spot followed by a cluster.							
140.397 C	2	24	1	12	224.9	0.0	+ 6.4	+ 6.1
141.486 G	32	196	18	109	227.8	+2.7	+ 6.8	+23.4
142.328 C	71	345	45	215	228.3	+3.1	+ 6.9	+35.0
143.296 G	36	176	28	137	229.4	+4.0	+ 6.6	+48.9
144.330 C	17	115	20	133	230.1	+4.6	+ 6.2	+63.3
145.343 C	4	25	11	60	230.1	+4.4	+ 6.5	+76.7
Means	..	..	20	111	228.4	..	+ 6.6	..
Group 14974.							
May 21-31. A stream, developing rapidly from a small spot and reaching its maximum area on the fourth day. The leader, *a*, a regular spot, alone survives by May 30.							
140.397 C	7	18	9	23	152.3	0.0	- 9.0	-66.5
141.486 G	30	155	25	127	152.4	0.0	- 8.9	-52.0

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 14974 - *continued*							
d					°	°	°
142.328 C	47	272	30	184	151.4	-1.1	- 9.0	-41.9
143.296 G	162	801	93	463	151.5	-1.2	- 8.6	-29.0
144.330 C	88	699	45	362	152.3	-0.5	- 8.3	-14.5
145.343 C	95	601	49	306	153.1	+0.2	- 9.3	- 0.3
146.333 C	106	620	56	328	155.1	+2.1	- 9.2	+14.8
147.313 G	75	408	43	237	156.6	+3.4	- 9.7	+29.3
148.342 C	64	387	45	269	157.0	+3.7	- 9.6	+43.3
149.313 G	46	259	43	243	158.3	+4.9	- 9.8	+57.5
150.342 G	18	133	29	214	159.0	+5.5	- 9.6	+71.8
Means	..	..	42	251	154.4	..	- 9.2	..
Spot *a*							
141.486 G	21	89	17	70	153.9	0.0	- 9.4	-50.5
142.328 C	27	95	17	61	154.8	+0.8	- 9.3	-38.5
143.296 G	27	128	15	72	155.7	+1.6	- 9.3	-24.8
144.330 C	55	385	28	196	155.5	+1.3	- 8.7	-11.3
145.343 C	64	455	33	232	156.1	+1.7	- 9.4	+ 2.7
146.333 C	93	562	49	298	156.6	+2.1	- 9.4	+16.3
147.313 G	73	394	42	229	157.2	+2.6	- 9.7	+29.9
148.342 C	60	360	42	252	157.4	+2.7	- 9.7	+43.7
149.313 G	46	259	43	243	158.3	+3.4	- 9.8	+57.5
150.342 G	18	133	29	214	159.0	+4.0	- 9.6	+71.8
Group 14976.							
May 23-28. A pair of small spots.							
142.328 C	2	9	3	12	130.1	0.0	+29.9	-63.2
143.296 G	4	36	4	33	130.8	+1.1	+29.4	-49.7
144.330 C	20	104	14	74	132.5	+3.3	+28.9	-34.3
145.343 C	29	75	19	48	132.1	+3.3	+29.3	-21.3
146.333 C	11	45	6	27	131.2	+2.9	+29.3	- 9.1
147.313 G	2	18	1	10	128.2	+0.3	+30.7	+ 0.9
Means	..	..	8	34	130.8	..	+29.6	..
Group 14978.							
May 24-June 3. A stream of normal type growing rapidly from a few nuclei. The follower, *b*, dies out by June 1.							
143.296 G	5	21	5	23	119.7	0.0	-22.0	-60.8
144.330 C	39	188	30	142	121.1	+1.6	-22.0	-45.7
145.343 C	107	464	67	292	121.7	+2.4	-22.3	-31.7
146.333 C	180	719	102	408	121.6	+2.5	-22.4	-18.7
147.313 G	100	618	55	335	121.9	+2.9	-22.3	- 5.4
148.342 C	76	632	42	345	121.4	+2.6	-22.4	+ 7.7
149.313 G	82	467	48	272	121.4	+2.8	-22.8	+20.6
150.342 G	69	346	45	230	121.9	+3.5	-22.4	+34.7

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

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 14978 - *continued*							
d					°	°	°	°
151.442 C	44	269	37	226	123.2	+5.0	-22.3	+50.5
152.343 C	42	169	48	194	123.0	+5.0	-22.3	+62.2
153.382 G	11	105	23	224	122.4	+4.6	-22.1	+75.4
Means	..	..	46	245	121.8	..	-22.3	..
Spot *a*								
144.330 C	24	80	18	58	123.5	0.0	-22.0	-43.3
145.343 C	27	181	16	110	124.3	+1.0	-22.0	-29.1
146.333 C	82	395	46	221	124.3	+1.2	-22.0	-16.0
147.313 G	59	426	32	230	124.6	+1.6	-22.3	- 2.7
148.342 C	47	408	26	224	124.4	+1.6	-22.2	+10.7
149.313 G	57	341	34	201	124.2	+1.6	-22.6	+23.4
150.342 G	60	309	40	207	123.8	+1.4	-22.5	+36.6
151.442 C	44	269	37	226	123.2	+1.0	-22.3	+50.5
152.343 C	42	169	48	194	123.0	+1.0	-22.3	+62.2
153.382 G	11	105	23	224	122.4	+0.6	-22.1	+75.4
Spot *b*								
143.296 G	5	21	5	23	119.7	0.0	-22.0	-60.8
144.330 C	15	108	12	84	119.4	-0.1	-22.0	-47.4
145.343 C	40	135	26	89	117.6	-1.7	-22.3	-35.8
146.333 C	80	249	46	144	117.0	-2.1	-22.3	-23.3
147.313 G	34	144	19	79	115.8	-3.2	-22.3	-11.5
148.342 C	22	184	12	99	115.1	-3.7	-22.4	+ 1.4
149.313 G	23	103	13	58	115.1	-3.5	-22.5	+14.3
150.342 G	9	37	5	23	115.0	-3.4	-22.5	+27.8
Group 14979.								
May 24-June 3. A long stream of small variable spots.								
143.296 G	2	9	3	12	114.8	0.0	-28.2	-65.7
144.330 C	13	71	13	72	110.6	-3.8	-28.2	-56.2
145.343 C	20	48	15	36	110.9	-3.1	-28.4	-42.5
146.333 C	22	106	14	69	110.4	-3.2	-28.6	-29.9
147.313 G	20	100	11	59	111.3	-1.9	-28.8	-16.0
148.342 C	26	178	14	100	111.1	-1.7	-28.8	- 2.6
149.313 G	36	165	20	95	109.8	-2.6	-29.3	+ 9.0
150.342 G	23	101	15	62	110.4	-1.5	-28.5	+23.2
151.442 C	6	44	4	32	110.1	-1.4	-28.4	+37.4
152.343 C	2	28	2	24	108.1	-3.0	-30.9	+47.3
153.382 G	0	5	0	6	111.2	+0.5	-26.9	+64.2
Means	..	..	10	52	110.8	..	-28.6	..

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 14980.							
May 25-June 6. A stream, led by a small regular spot, *a*, in high southern latitude. The leader alone remains by June 4.							
d					°	°	°	°
144.330 C	13	69	28	150	93.4	0.0	-42.2	-73.4
145.343 C	22	80	30	110	91.5	-0.9	-42.2	-61.9
146.333 C	27	166	29	180	87.8	-3.6	-42.7	-52.5
147.313 G	30	187	26	165	86.5	-4.0	-42.5	-40.8
148.342 C	38	202	29	154	84.7	-4.8	-42.3	-29.0
149.313 G	45	236	32	168	83.2	-5.3	-42.8	-17.6
150.342 G	46	207	31	140	81.7	-5.8	-42.7	- 5.5
151.442 C	35	134	24	91	82.2	-4.2	-42.4	+ 9.5
152.343 C	13	80	9	56	81.0	-4.5	-42.1	+20.2
153.382 G	14	64	11	51	79.2	-5.3	-42.6	+32.2
154.329 C	4	20	4	19	80.5	-3.1	-42.1	+46.0
155.480 G	2	11	3	15	80.2	-2.2	-41.7	+61.0
156.292 G	2	14	4	30	80.4	-1.2	-40.8	+71.9
Means	..	..	20	102	84.0	..	-42.2	..
Spot *a*								
144.330 C	13	69	28	150	93.4	0.0	-42.2	-73.4
145.343 C	22	80	30	110	91.5	-0.9	-42.2	-61.9
146.333 C	20	122	20	124	90.2	-1.2	-42.1	-50.1
147.313 G	25	135	21	112	89.6	-0.9	-41.8	-37.7
148.342 C	27	140	20	102	88.2	-1.3	-41.5	-25.5
149.313 G	25	117	17	80	86.6	-1.9	-41.5	-14.2
150.342 G	23	101	15	67	85.3	-2.2	-41.5	- 1.9
151.442 C	24	98	16	66	83.8	-2.6	-41.5	+11.1
152.343 C	13	71	9	50	82.5	-3.0	-41.5	+21.7
153.382 G	14	55	11	44	81.2	-3.3	-41.5	+34.2
154.329 C	4	20	4	19	80.5	-3.1	-42.1	+46.0
155.480 G	2	11	3	15	80.2	-2.2	-41.7	+61.0
156.292 G	2	14	4	30	80.4	-1.2	-40.8	+71.9
Group 14982.								
May 26-June 5. A cluster of small spots, growing into a stream of normal type by May 28. Both leader, *a*, and follower, *b*, are regular spots, the former surviving by June 3.								
145.343 C	35	99	36	101	94.2	0.0	-19.0	-59.2
146.333 C	67	344	51	261	95.1	+1.0	-19.1	-45.2
147.313 G	112	531	70	332	95.6	+1.6	-19.3	-31.7
148.342 C	94	574	53	318	95.0	+1.1	-19.0	-18.7
149.313 G	108	510	58	272	96.4	+2.6	-19.3	- 4.4
150.342 G	83	433	45	232	96.9	+3.2	-19.0	+ 9.7

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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 14982 - *continued*								
d					°	°	°	°
151.442 C	71	402	41	234	97.7	+4.1	-19.1	+25.0
152.343 C	51	309	34	208	98.3	+4.8	-19.4	+37.5
153.382 G	39	202	34	176	99.4	+6.0	-19.6	+52.4
154.329 C	27	131	33	161	99.1	+5.7	-19.9	+64.6
155.480 G	11	62	33	188	99.1	+5.9	-19.9	+79.9
Means	..	..	44	226	97.0	..	-19.3	..
Spot *a*								
146.333 C	31	171	22	121	97.6	0.0	-18.7	-42.7
147.313 G	57	246	34	148	98.3	+0.8	-18.7	-29.0
148.342 C	51	317	28	171	99.0	+1.6	-19.0	-14.7
149.313 G	62	341	33	181	99.4	+2.1	-19.4	- 1.4
150.342 G	57	323	31	174	99.7	+2.5	-19.6	+12.5
151.442 C	51	333	30	196	99.6	+2.5	-19.3	+26.9
152.343 C	44	273	30	186	99.6	+2.6	-19.6	+38.8
153.382 G	39	202	34	176	99.4	+2.5	-19.6	+52.4
154.329 C	27	131	33	161	99.1	+2.3	-19.9	+64.6
155.480 G	11	62	33	188	99.1	+2.4	-19.9	+79.9
Spot *b*								
146.333 C	18	113	15	94	89.7	0.0	-19.7	-50.6
147.313 G	30	162	20	107	89.7	+0.1	-19.5	-37.6
148.342 C	27	162	16	94	89.4	-0.1	-19.5	-24.3
149.313 G	37	135	20	73	89.2	-0.2	-19.4	-11.6
150.342 G	21	94	11	50	89.3	-0.1	-19.2	+ 2.1
151.442 C	16	51	9	28	89.5	+0.3	-18.6	+16.8
152.343 C	7	27	4	16	89.5	+0.4	-18.4	+28.7
Group 14983.								
May 28-June 5. A pair of irregular spots forming just s Group 14982 and soon on the downgrade.								
147.313 G	27	89	16	54	98.9	0.0	-21.6	-28.4
148.342 C	44	311	24	172	98.6	-0.1	-22.0	-15.1
149.313 G	83	479	45	259	97.8	-0.7	-22.4	- 3.0
150.342 G	75	554	41	301	96.9	-1.5	-22.3	+ 9.7
151.442 C	80	435	48	257	97.3	-0.9	-21.9	+24.6
152.343 C	66	362	45	245	97.8	-0.2	-21.9	+37.0
153.382 G	25	188	22	161	97.8	0.0	-22.0	+50.8
154.329 C	20	105	24	128	97.5	-0.2	-22.8	+63.0
155.480 G	2	41	5	109	97.6	+0.1	-21.0	+78.4
Means	..	..	30	187	97.8	..	-22.0	..

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 14988.								
May 29-June 7. A small group, indecisive in development.								
d					°	°	°	°
148.342 C	11	76	13	90	53.5	0.0	-34.1	-60.2
149.313 G	9	50	8	43	53.6	+0.6	-33.9	-47.2
150.342 G	0	7	0	5	50.4	-2.0	-33.5	-36.8
151.442 C	2	11	1	7	54.6	+2.8	-31.6	-18.1
152.343 C	7	36	4	22	50.0	-1.3	-31.7	-10.8
153.382 G	62	297	37	173	50.1	-0.6	-31.8	+ 3.1
154.329 C	64	222	38	135	49.6	-0.5	-32.1	+15.1
155.480 G	27	117	19	79	48.0	-1.5	-31.8	+28.8
156.292 G	14	73	11	56	48.4	-0.6	-32.1	+39.9
157.368 C	4	27	4	30	51.5	+3.1	-32.6	+57.3
Means	..	..	14	64	51.0	..	-32.5	..
Group 14991.								
May 31-June 8. A faint cluster of small spots.								
150.342 G	7	41	5	27	48.9	0.0	-16.6	-38.3
151.442 C	11	62	6	35	49.1	+0.3	-17.6	-23.6
152.343 C	11	124	6	67	48.3	-0.5	-17.6	-12.5
153.382 G	16	286	8	149	49.0	+0.2	-17.6	+ 2.0
154.329 C	7	144	4	78	48.7	0.0	-17.3	+14.2
155.480 G	5	32	3	19	48.3	-0.4	-18.1	+29.1
156.292 G	7	41	5	28	47.7	-0.9	-18.3	+39.2
Means	..	..	5	58	48.6	..	-17.6	..
Group 14998.								
June 6-14. A few small spots reaching a maximum by June 9 as a stream led by a regular spot, *a*; this alone remains by June 14.								
156.292 G	7	27	7	28	308.5	0.0	+15.0	-60.0
157.368 C	8	58	6	42	310.5	+2.0	+15.0	-43.7
158.332 C	36	183	21	107	313.6	+5.1	+14.8	-27.9
159.331 C	87	408	46	218	314.0	+5.4	+14.4	-14.3
160.299 G	46	258	24	134	315.1	+6.5	+14.7	- 0.4
161.326 G	42	251	22	135	316.0	+7.4	+15.2	+14.1
162.351 C	33	185	19	108	316.9	+8.3	+15.0	+28.6
163.350 C	20	94	14	65	317.0	+8.3	+14.4	+41.9
164.188 K	6	30	5	26	317.2	+8.5	+14.1	+53.2
Means	..	..	18	96	314.3	..	+14.7	..

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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 14998 - *continued*							
Spot *a*							
d					°	°	°	°
159.331 C	38	174	20	92	316.7	0.0	+14.8	-11.6
160.299 G	39	221	20	115	317.0	+0.3	+14.7	+ 1.5
161.326 G	30	184	16	99	317.4	+0.7	+14.8	+15.5
162.351 C	29	165	17	97	317.5	+0.7	+14.9	+29.2
163.350 C	20	94	14	65	317.0	+0.2	+14.4	+41.9
164.188 K	6	30	5	26	317.2	+0.4	+14.1	+53.2
Group 15006.							
June 13-23. Small unstable spots.							
163.350 C	4	29	4	31	213.9	0.0	-14.8	-61.2
164.188 K	0	0	0	0	..	..	..	..
165.383 G	5	12	3	8	212.5	-1.5	-15.0	-35.7
166.337 C	16	71	9	40	212.1	-1.9	-14.4	-22.4
167.294 G	19	171	10	89	211.6	-2.5	-13.1	-11.3
168.339 C	15	112	8	58	210.9	-3.2	-12.9	+ 1.8
169.388 G	18	74	10	40	212.8	-1.4	-13.7	+17.6
170.339 C	7	42	4	25	212.8	-1.4	-13.7	+30.2
171.334 C	34	156	22	102	207.4	-6.9	-12.2	+38.0
172.335 C	20	80	18	72	209.7	-4.6	-12.2	+53.6
173.396 C	4	13	6	18	210.1	-4.3	-12.2	+68.0
Means	..	..	9	44	211.4	..	-13.4	..
Group 15013.							
June 15-25. A stream. Its leader is a regular spot with a few variable companions. The composite follower disintegrates from June 21 into small fragments which spread out in longitude. The group dies out before reaching the limb.							
165.383 G	41	290	92	708	172.6	0.0	-14.2	-75.6
166.337 C	61	499	70	569	172.6	0.0	-14.2	-61.9
167.294 G	90	741	73	617	172.1	-0.6	-14.5	-50.8
168.339 C	76	540	49	350	173.3	+0.6	-13.8	-35.8
169.388 G	126	813	71	459	172.8	+0.1	-13.8	-22.4
170.339 C	91	914	48	482	172.4	-0.4	-13.8	-10.2
171.334 C	60	739	31	384	172.0	-0.8	-13.9	+ 2.6
172.335 C	78	768	43	423	171.6	-1.2	-14.6	+15.5
173.396 C	152	848	91	509	170.6	-2.3	-15.1	+28.5
174.349 G	92	503	66	358	171.1	-1.8	-14.4	+41.6
175.356 G	24	125	25	125	173.2	+0.3	-13.8	+57.1
Means	..	..	60	453	172.2	..	-14.2	..

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 15015.							
June 15-25. A wide pair of small spots. Because of the change in latitude, this group is taken as a revival rather than a return of Group 14968.							
d					°	°	°	°
165.383 G	0	16	0	98	163.8	..	-20.0	-84.4
166.337 C	4	40	6	64	164.2	0.0	-19.9	-70.3
167.294 G	23	145	25	155	163.3	-0.8	-19.7	-59.6
168.339 C	24	183	19	143	162.9	-1.1	-20.1	-46.2
169.388 G	40	161	25	103	162.4	-1.5	-19.8	-32.8
170.339 C	18	123	10	71	162.0	-1.8	-20.2	-20.6
171.334 C	25	130	14	71	163.4	-0.3	-20.4	- 6.0
172.335 C	14	74	8	40	163.1	-0.5	-19.6	+ 7.0
173.396 C	7	62	4	36	164.3	+0.8	-19.7	+22.2
174.349 G	2	12	1	8	164.6	+1.2	-19.5	+35.1
175.356 G	2	12	2	10	166.7	+3.4	-17.8	+50.6
Means	..	..	11	70	163.7	..	-19.7	..
Group 15018.							
June 17-23. A pair of tiny spots, when first seen near the C.M., developing into a short stream.							
167.294 G	7	34	4	18	221.6	0.0	-20.3	- 1.3
168.339 C	9	45	5	25	221.5	0.0	-20.7	+12.4
169.388 G	46	247	28	150	221.1	-0.2	-20.9	+25.9
170.339 C	56	314	39	219	220.7	-0.5	-21.0	+38.1
171.334 C	42	373	37	330	221.4	+0.3	-20.7	+52.0
172.335 C	42	234	57	310	220.5	-0.4	-20.6	+64.4
173.396 C	24	163	65	452	219.4	-1.4	-20.7	+77.3
Means	..	..	34	215	220.9	..	-20.7	..
Group 15022.							
June 18-25. One or two small spots, not seen on June 24.							
168.339 C	4	20	4	19	152.3	0.0	-14.5	-56.8
169.388 G	14	55	9	39	153.4	+1.1	-15.1	-41.8
170.339 C	4	27	2	16	152.9	+0.6	-14.9	-29.7
171.334 C	7	29	4	16	151.5	-0.8	-15.2	-17.9
172.335 C	36	165	19	88	152.4	+0.1	-16.4	- 3.7
173.396 C	25	136	13	72	152.9	+0.6	-16.8	+10.8
174.349 G	0	0	0	0	..	..	..	..
175.356 G	2	18	1	12	154.0	+1.7	-16.5	+37.9
Means	..	..	6	33	152.8	..	-15.6	..

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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 15024.							
June 19-25. A pair of small spots, the leader of which becomes a small regular spot outliving its companion.							
d					°	°	°
169.388 G	7	48	4	25	188.8	0.0	-10.9	- 6.4
170.339 C	20	111	11	57	188.4	-0.5	-11.0	+ 5.8
171.334 C	34	257	19	141	189.1	+0.1	-10.5	+19.7
172.335 C	43	235	27	145	189.5	+0.4	-10.5	+33.4
173.396 C	24	122	19	94	190.1	+0.9	-10.5	+48.0
174.349 G	12	64	13	68	190.9	+1.6	- 9.7	+61.4
175.356 G	7	41	14	83	191.1	+1.7	- 9.9	+75.0
Means	..	..	15	88	189.7	..	-10.4	..
Group 15029.							
June 23-30. A stream developing from a tiny spot near the central meridian. The initial vigorous growth is soon halted, and the spots are individually unstable.							
173.396 C	2	11	1	6	126.7	0.0	+25.3	-15.4
174.349 G	112	504	62	277	126.0	-0.4	+26.4	- 3.5
175.356 G	161	674	91	378	126.0	-0.1	+26.6	+ 9.9
176.413 G	75	506	45	304	126.0	+0.3	+26.3	+23.8
177.328 G	69	485	46	328	125.8	+0.4	+26.6	+35.8
178.388 G	78	504	66	430	125.8	+0.7	+26.8	+49.8
179.496 C	45	240	55	295	124.9	+0.2	+26.5	+63.6
180.130 K	17	130	30	211	123.3	-1.2	+26.7	+70.4
Means	..	..	50	279	125.6	..	+26.4	..
Spot *a*							
173.396 C	2	11	1	6	126.7	0.0	+25.3	-15.4
174.349 G	80	267	44	147	127.6	+1.2	+25.7	- 1.9
175.356 G	60	301	34	169	129.3	+3.2	+25.9	+13.2
176.413 G	32	198	20	123	130.7	+5.0	+25.9	+28.5
177.328 G	23	193	16	137	130.6	+5.2	+25.7	+40.6
178.388 G	30	191	28	180	131.1	+6.0	+26.1	+55.1
179.496 C	16	78	23	112	129.8	+5.1	+25.9	+68.5
180.130 K	4	21	10	50	130.9	+6.4	+25.7	+78.0
Spot *b*							
174.349 G	32	237	18	130	124.1	0.0	+27.1	- 5.4
175.356 G	101	373	57	209	123.2	-0.6	+27.3	+ 7.1
176.413 G	41	294	24	173	122.7	-0.7	+27.1	+20.5
177.328 G	37	255	24	166	122.5	-0.6	+27.1	+32.5
178.388 G	48	313	38	250	122.9	+0.1	+27.4	+46.9
179.496 C	22	100	24	110	121.8	-0.6	+27.7	+60.5
180.130 K	9	92	13	132	121.1	-1.1	+27.7	+68.2

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 15031.							
June 24-July 2. One or two little spots, not seen on July 1.							
d					°	°	°
174.349 G	0	7	0	19	51.5	0.0	-20.7	-78.0
175.356 G	7	37	10	51	50.0	-1.4	-21.0	-66.1
176.413 G	5	25	4	22	49.6	-1.7	-20.8	-52.6
177.328 G	7	30	5	22	49.6	-1.6	-20.7	-40.4
178.388 G	4	32	2	20	48.2	-2.8	-20.6	-27.8
179.496 C	6	40	3	23	44.9	-5.9	-21.0	-16.4
180.130 K	6	26	3	14	46.4	-4.4	-20.7	- 6.5
181.340 C	0	0	0	0	..	..	..	..
182.333 G	7	60	4	35	45.8	-4.7	-18.6	+22.0
Means	..	..	3	23	48.2	..	-20.5	..
Group 15032.							
June 25-July 4. Intermittent. One or two small spots not seen on June 30, July 1 and 3.							
175.356 G	9	62	7	49	74.1	0.0	-29.1	-42.0
176.413 G	25	177	17	119	72.7	-1.0	-28.6	-29.5
177.328 G	26	161	16	99	72.7	-0.6	-28.5	-17.3
178.388 G	14	97	8	57	71.9	-0.9	-28.4	- 4.1
179.496 C	6	34	3	20	72.1	-0.3	-28.7	+10.8
180.130 K	0	0	0	0	..	..	..	..
181.340 C	0	0	0	0	..	..	..	..
182.333 G	2	16	2	13	67.2	-4.0	-28.6	+43.4
183.373 G	0	0	0	0	..	..	..	..
184.342 G	0	5	0	10	67.7	-2.7	-29.5	+70.5
Means	..	..	5	37	71.2	..	-28.8	..
Group 15033.							
June 25-July 8. A bi-polar group reaching its peak area three days after its entry on to the Sun's disk as a regular spot, *a*, followed by a cluster. By July 1 the leader has split into two and on the next day the leading part likewise divides as it approaches the limb. The cluster in the rear spreads out after June 30 and so fades away by July 7.							
175.356 G	0	9	(0	91	28.7	..	+15.4)	-87.4
176.413 G	46	297	83	543	26.6	0.0	+15.2	-75.6
177.328 G	92	494	103	545	27.0	+0.4	+14.9	-63.0
178.388 G	143	1111	107	860	28.0	+1.4	+15.8	-48.0
179.496 C	210	1077	129	666	27.5	+0.9	+15.2	-33.8
180.130 K	214	1205	120	680	27.3	+0.7	+15.3	-25.6
181.340 C	180	1001	94	522	27.7	+1.1	+15.2	- 9.2
182.333 G	144	913	75	472	28.0	+1.4	+15.5	+ 4.2
183.373 G	88	620	47	332	28.1	+1.5	+15.4	+18.1
184.342 G	51	513	30	306	28.8	+2.1	+15.5	+31.6
185.299 G	51	335	36	239	28.9	+2.2	+15.4	+44.4

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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 15033 - *continued*							
d 186.328 C	29	236	28	231	29.8 +3.1	+15.5	+58.9
187.383 G	7	42	12	74	30.8 +4.1	+15.4	+73.8
188.367 G	0	7	(0	20	24.3 ..	+13.9)	+80.4
Means	..	..	72	456	28.2 ..	+15.4	..
Spot *a*							
176.413 G	39	242	64	397	29.9 0.0	+14.7	-72.3
177.328 G	64	368	65	375	29.7 -0.2	+14.5	-60.3
178.388 G	120	667	88	487	30.5 +0.6	+14.3	-45.5
179.496 C	161	687	97	412	30.3 +0.4	+14.8	-31.0
180.130 K	158	792	87	436	30.2 +0.3	+14.8	-22.7
181.340 C	140	711	73	370	30.2 +0.3	+15.1	- 6.7
182.333 G	102	647	53	336	30.0 +0.1	+15.5	+ 6.2
183.373 G	58	425	31	230	29.7 -0.2	+15.4	+19.7
184.342 G	44	474	26	284	29.5 -0.5	+15.3	+32.3
185.299 G	49	314	35	226	29.7 -0.3	+15.4	+45.2
186.328 C	29	236	28	231	29.8 -0.2	+15.5	+58.9
187.383 G	7	42	12	74	30.8 +0.8	+15.4	+73.8
188.367 G	0	7	(0	20	24.3 ..	+13.9)	+80.4
Group 15036.							
June 27-July 3. A pair of spots, except on June 30, when one is seen.							
177.328 G	5	16	3	11	50.5 0.0	+13.5	-39.5
178.388 G	9	57	5	32	52.2 +1.6	+12.6	-23.8
179.496 C	7	20	4	10	53.9 +3.3	+12.6	- 7.4
180.130 K	6	58	3	30	53.5 +2.8	+12.7	+ 0.6
181.340 C	9	66	5	34	53.1 +2.4	+12.9	+16.2
182.333 G	9	67	5	39	54.2 +3.4	+12.5	+30.4
183.373 G	0	27	0	19	54.3 +3.4	+13.2	+44.3
Means	..	..	4	25	53.1 ..	+12.9	..
Group 15038.							
June 28-July 4. A pair of spots; the follower remains by July 2.							
178.388 G	9	67	14	109	4.8 0.0	+18.6	-71.2
179.496 C	17	85	15	78	6.0 +1.3	+18.1	-55.3
180.130 K	19	82	14	63	6.0 +1.4	+17.8	-46.9
181.340 C	8	40	5	25	3.8 -0.7	+19.1	-33.1
182.333 G	9	23	5	13	359.6 -4.8	+20.3	-24.2
183.373 G	5	18	3	10	359.4 -4.9	+20.3	-10.6
184.342 G	2	16	1	8	359.7 -4.6	+20.2	+ 2.5
Means	..	..	8	44	2.8 ..	+19.2	..

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 15039.							
June 28-July 5. A few spots developing into a short stream of which the rear part is the first to die out.							
d 178.388 G	0	14	0	44	357.4 0.0	-25.8	-78.6
179.496 C	33	143	45	193	357.4 +0.3	-26.5	-63.9
180.130 K	49	310	51	322	357.0 +0.1	-26.2	-55.9
181.340 C	49	308	36	228	357.3 +0.8	-25.5	-39.6
182.333 G	37	210	24	135	357.6 +1.4	-25.4	-26.2
183.373 G	27	108	15	63	357.1 +1.2	-25.3	-12.9
184.342 G	17	93	10	54	356.3 +0.7	-25.4	- 0.9
185.299 G	5	35	3	20	353.8 -1.5	-26.0	+ 9.3
Means	..	..	23	132	356.7 ..	-25.8	..
Group 15041.							
June 29-July 10. A slowly-diminishing regular spot.							
179.496 C	31	143	38	174	0.8 0.0	-28.5	-60.5
180.130 K	58	282	57	276	0.5 -0.1	-28.6	-52.4
181.340 C	67	346	49	253	0.7 +0.6	-28.7	-36.2
182.333 G	76	418	49	268	0.6 +0.9	-28.8	-23.2
183.373 G	85	377	50	222	359.9 +0.6	-28.1	-10.1
184.342 G	58	351	34	204	359.3 +0.4	-27.9	+ 2.1
185.299 G	67	337	40	202	358.6 +0.1	-27.8	+14.1
186.328 C	27	306	18	202	357.5 -0.6	-28.1	+26.6
187.383 G	25	233	20	182	357.1 -0.6	-28.3	+40.1
188.367 G	37	199	37	197	356.2 -1.1	-28.4	+52.3
189.404 C	18	127	27	190	355.6 -1.3	-28.4	+65.4
190.356 C	7	78	19	214	353.5 -3.0	-28.3	+75.9
Means	..	..	36	215	358.4 ..	-28.3	..
Group 15044.							
July 1-9. A stream of small unstable spots closely *f* Group 15041.							
181.340 C	9	56	8	50	349.9 0.0	-31.5	-47.0
182.333 G	7	32	5	23	353.1 +3.7	-31.1	-30.7
183.373 G	7	51	4	33	350.0 +1.1	-31.5	-20.0
184.342 G	2	23	1	14	350.0 +1.6	-31.0	- 7.2
185.299 G	9	94	5	57	348.5 +0.6	-31.5	+ 4.0
186.328 C	22	84	15	54	346.5 -0.9	-31.7	+15.6
187.383 G	9	97	7	71	351.3 +4.5	-30.6	+34.3
188.367 G	10	57	9	51	349.9 +3.6	-30.9	+46.0
189.404 C	8	40	10	49	348.6 +2.8	-31.8	+58.4
Means	..	..	7	45	349.8 ..	-31.3	..

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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 15047. July 2-11. A small composite spot which disintegrates and dies out.							
d					°	°	°	°
182.333 G	0	9	0	43	299.3	..	+16.8	-84.5
183.373 G	23	101	38	164	297.6	0.0	+16.3	-72.4
184.342 G	20	168	20	167	297.6	0.0	+16.4	-59.6
185.299 G	35	201	26	147	298.8	+1.2	+16.2	-45.7
186.328 C	33	174	20	106	297.9	+0.4	+16.0	-33.0
187.383 G	19	123	11	66	298.5	+1.0	+16.6	-18.5
188.367 G	16	134	8	68	299.7	+2.2	+16.0	- 4.2
189.404 C	27	159	14	82	299.2	+1.7	+16.9	+ 9.0
190.356 C	8	36	4	20	298.5	+1.1	+17.2	+20.9
191.370 C	2	11	1	7	296.6	-0.8	+17.6	+32.4
Means	..	..	16	92	298.3	..	+16.6	..
Group 15048. July 3-15. A weak intermittent group lapsing from July 9-12 inclusive.							
183.373 G	2	16	6	48	288.9	..	+20.1	-81.1
184.342 G	12	69	16	92	289.6	0.0	+19.7	-67.6
185.299 G	14	132	13	120	288.8	-0.7	+19.8	-55.7
186.328 C	13	89	9	62	288.6	-0.8	+19.7	-42.3
187.383 G	7	44	4	26	289.0	-0.3	+19.4	-28.0
188.367 G	2	12	1	7	285.9	-3.3	+19.2	-18.0
189.404 C	0	0	0	0	..	..	..	..
190.356 C	0	0	0	0	..	..	..	..
191.370 C	0	0	0	0	..	..	..	..
192.313 G	0	0	0	0	..	..	..	..
193.549 C	4	22	3	18	285.6	-3.2	+18.1	+50.2
194.474 G	5	25	6	28	287.0	-1.7	+18.6	+63.9
195.297 G	2	9	3	15	285.5	-3.1	+19.0	+73.3
Means	..	..	5	31	287.5	..	+19.2	..
Group 15049. July 4-11. A small diminishing regular spot followed by a companion until July 7.							
184.342 G	5	23	3	15	325.4	0.0	-20.7	-31.8
185.299 G	35	164	20	94	326.7	+1.4	-20.1	-17.8
186.328 C	44	263	24	145	327.8	+2.6	-20.3	- 3.1
187.383 G	21	143	12	80	328.6	+3.6	-20.2	+11.6
188.367 G	18	113	11	69	329.6	+4.7	-20.1	+25.7
189.404 C	13	58	9	41	329.4	+4.6	-19.9	+39.2
190.356 C	9	27	8	25	329.7	+5.0	-20.0	+52.1
191.370 C	2	16	3	22	330.2	+5.6	-20.2	+66.0
Means	..	..	11	61	328.4	..	-20.2	..

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 15053. July 7-13. A pair of small spots, appearing just north of Group 15050, which separate in longitude and die out.							
d					°	°	°	°
187.383 G	21	120	17	94	268.0	0.0	- 9.6	-49.0
188.367 G	46	222	29	141	268.8	+0.7	- 9.6	-35.1
189.404 C	27	207	15	115	268.8	+0.6	- 9.7	-21.4
190.356 C	38	161	20	84	269.1	+0.8	- 9.7	- 8.5
191.370 C	6	62	3	32	267.4	-1.0	-10.5	+ 3.2
192.313 G	11	70	6	38	266.3	-2.3	-10.4	+14.6
193.549 C	4	25	2	16	267.6	-1.1	-10.7	+32.2
Means	..	..	13	74	268.0	..	-10.0	..
Group 15054. July 7-15. A pair of small spots; one remains after July 11.							
187.383 G	9	44	17	85	241.7	0.0	+10.3	-75.3
188.367 G	19	88	20	95	241.6	-0.2	+10.1	-62.3
189.404 C	27	98	20	74	241.9	0.0	+10.4	-48.3
190.356 C	16	96	10	60	242.1	+0.1	+10.5	-35.5
191.370 C	9	51	5	28	242.3	+0.2	+10.5	-21.9
192.313 G	21	49	11	25	242.3	+0.1	+10.0	- 9.4
193.549 C	4	20	2	10	242.1	-0.3	+ 9.6	+ 6.7
194.474 G	9	21	5	11	242.1	-0.4	+ 9.4	+19.0
195.297 G	5	25	3	14	241.9	-0.7	+ 9.8	+29.7
Means	..	..	10	45	242.0	..	+10.1	..
Group 15055. July 8-14. A single spot, steady in position, decreasing to a dot.							
188.367 G	2	12	7	39	223.7	..	-12.2	-80.2
189.404 C	9	42	12	55	224.0	0.0	-12.4	-66.2
190.356 C	9	42	8	37	224.3	+0.2	-12.5	-53.3
191.370 C	9	62	6	42	224.4	+0.3	-12.7	-39.8
192.313 G	9	21	5	12	224.7	+0.5	-12.4	-27.0
193.549 C	2	16	1	8	225.0	+0.7	-12.3	-10.4
194.474 G	0	5	0	3	224.9	+0.5	-11.9	+ 1.8
Means	..	..	5	26	224.6	..	-12.4	..
Group 15060. July 10-22. A single spot until July 12 when others appear forming a stream. These newer spots soon die out leaving the leader, *a*, alone by July 19.							

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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 15060 - *continued*							
d					°	°	°
190.356 C	9	134	15	225	204.7	0.0	+22.0	−72.9
191.370 C	25	203	25	201	205.5	+1.0	+21.4	−58.7
192.313 G	63	402	50	317	203.2	−1.2	+22.1	−48.5
193.549 C	56	453	35	279	202.9	−1.3	+22.3	−32.5
194.474 G	74	586	41	328	203.0	−1.0	+22.4	−20.1
195.297 G	69	606	37	320	203.6	−0.3	+21.9	− 8.6
196.390 C	62	348	33	184	204.8	+1.1	+21.2	+ 7.0
197.339 C	45	308	25	172	205.3	+1.7	+21.2	+20.1
198.385 G	44	243	28	153	205.5	+2.1	+20.9	+34.1
199.371 G	37	184	28	138	204.9	+1.6	+21.0	+46.6
200.527 G	16	78	17	83	204.6	+1.5	+21.0	+61.6
201.308 G	14	46	21	70	204.0	+1.0	+20.7	+71.3
202.304 G	2	16	9	70	204.5	..	+20.5	+85.0
Means	..	..	30	206	204.3	..	+21.5	..

Spot *a*

190.356 C	9	134	15	225	204.7	0.0	+22.0	−72.9
191.370 C	25	203	25	201	205.5	+1.0	+21.4	−58.7
192.313 G	51	303	39	230	204.8	+0.4	+21.7	−46.9
193.549 C	40	328	24	197	205.0	+0.8	+21.3	−30.4
194.474 G	46	270	25	148	206.1	+2.1	+21.2	−17.0
195.297 G	28	252	15	131	206.2	+2.3	+20.8	− 6.0
196.390 C	51	265	27	140	206.3	+2.6	+20.9	+ 8.5
197.339 C	38	261	21	146	206.0	+2.4	+20.9	+20.8
198.385 G	44	236	28	149	205.6	+2.2	+20.9	+34.2
199.371 G	37	184	28	138	204.9	+1.6	+21.0	+46.6
200.527 G	16	78	17	83	204.6	+1.5	+21.0	+61.6
201.308 G	14	46	21	70	204.0	+1.0	+20.7	+71.3
202.304 G	2	16	9	70	204.5	..	+20.5	+85.0

Group 15061.

July 10–23. A diminishing composite spot with a marked drop in area between July 19 and 20.

190.356 C	6	44	20	151	195.9	..	+28.6	−81.7
191.370 C	27	274	38	384	195.6	0.0	+27.3	−68.6
192.313 G	60	349	62	359	193.0	−2.2	+28.8	−58.7
193.549 C	56	473	41	350	192.3	−2.4	+29.1	−43.1
194.474 G	67	552	43	353	191.5	−2.8	+29.3	−31.6
195.297 G	85	494	50	291	190.8	−3.2	+29.4	−21.4
196.390 C	78	482	44	270	189.9	−3.6	+29.1	− 7.9
197.339 C	83	466	46	256	189.2	−4.0	+28.9	+ 4.0
198.385 G	49	388	28	221	188.8	−3.9	+28.7	+17.4
199.371 G	55	320	35	202	188.1	−4.2	+28.5	+29.8
200.527 G	21	113	16	86	188.1	−3.7	+28.5	+45.1

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 15061 - *continued*							
d					°	°	°
201.308 G	12	99	11	91	187.5	−4.0	+28.4	+54.8
202.304 G	2	25	3	34	188.0	−3.1	+28.6	+68.5
203.380 C	0	11	0	32	186.7	..	+28.7	+81.4
Means	..	..	35	241	190.2	..	+28.7	..

Group 15064.

July 13–22. A pair of small spots fading out by July 21; a single spot represents the position on July 23.

193.549 C	6	65	8	88	174.4	0.0	−31.6	−61.0
194.474 G	17	101	17	100	173.8	−0.1	−32.4	−49.3
195.297 G	26	79	21	65	172.6	−0.8	−31.7	−39.6
196.390 C	11	56	8	39	172.5	−0.3	−32.6	−25.3
197.339 C	6	47	4	31	171.4	−0.9	−32.1	−13.8
198.385 G	21	111	13	69	171.7	0.0	−33.2	+ 0.3
199.371 G	28	170	18	110	170.4	−0.7	−32.7	+12.1
200.527 G	7	46	4	32	170.0	−0.5	−32.0	+27.0
201.308 G	0	0	0	0	..	..	..	..
202.304 G	0	7	0	8	172.7	+3.2	−34.1	+53.2
Means	..	..	9	54	172.2	..	−32.5	..

Group 15073.

July 17–29. A stream of very unstable spots with a brief maximum on July 21.

197.339 C	2	13	7	45	105.9	0.0	−20.3	−79.3
198.385 G	2	12	3	17	105.9	+0.1	−20.1	−65.5
199.371 G	30	108	29	103	104.5	−1.1	−19.8	−53.8
200.527 G	44	262	33	195	102.9	−2.6	−20.7	−40.1
201.308 G	53	442	35	289	102.5	−2.9	−20.5	−30.2
202.304 G	37	375	21	219	101.9	−3.4	−20.7	−17.6
203.380 C	41	232	23	129	103.9	−1.2	−20.4	− 1.4
204.356 C	22	207	12	118	104.1	−0.9	−20.2	+11.7
205.393 C	22	116	14	72	105.3	+0.4	−19.0	+26.7
206.319 G	16	124	11	88	103.6	−1.2	−20.3	+37.2
207.336 C	13	111	12	98	102.7	−1.9	−20.9	+49.8
208.373 G	5	39	7	51	102.9	−1.6	−20.8	+63.7
209.334 G	5	21	13	56	102.7	−1.7	−21.0	+76.2
Means	..	..	17	114	103.8	..	−20.4	..

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

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 15075.								
July 18-26. A feeble disturbance, no spots being seen on July 19 and 20.								
d					°	°	°	°
198.385 G	0	5	0	4	128.3	0.0	+23.5	-43.1
199.371 G	0	0	0	0	..	..	..	..
200.527 G	0	0	0	0	..	..	..	..
201.308 G	7	16	4	8	127.9	+ 0.1	+21.1	- 4.8
202.304 G	2	12	1	6	128.3	+ 0.7	+20.8	+ 8.8
203.380 C	20	107	11	59	127.2	- 0.3	+21.2	+21.9
204.356 C	15	78	10	49	126.6	- 0.7	+21.3	+34.2
205.393 C	9	42	7	32	125.8	- 1.3	+22.0	+47.2
206.319 G	2	16	2	16	125.2	- 1.8	+21.9	+58.8
Means	..	..	4	19	127.0	..	+21.7	..
Group 15078.								
July 19-31. A small spot on July 19; nothing is then seen until July 23, when a few small spots grow into a stream led by a regular spot.								
199.371 G	0	5	0	12	79.5	0.0	+30.6	-78.8
200.527 G	0	0	0	0	..	..	..	..
201.308 G	*0*	*0*	*0*	*0*	..	..	..	..
202.304 G	0	0	0	0	..	..	..	..
203.380 C	4	29	2	17	83.7	+ 5.9	+30.1	-21.6
204.356 C	27	154	15	85	86.5	+ 9.1	+29.6	- 5.9
205.393 C	96	511	53	283	87.2	+10.2	+28.8	+ 8.6
206.319 G	124	721	72	421	87.4	+10.8	+28.4	+21.0
207.336 C	116	947	75	617	85.9	+ 9.7	+28.2	+33.0
208.373 G	108	635	88	504	85.9	+10.2	+28.5	+46.7
209.334 G	81	356	88	395	86.9	+11.6	+28.2	+60.4
210.301 G	20	168	37	313	87.5	+12.6	+28.0	+73.8
211.430 G	2	18	(6	57	81.4	..	+28.5)	+82.6
Means	..	..	36	221	85.6	..	+28.9	..
Group 15079.								
July 21-29. A small unstable stream, not seen on July 23 and 24.								
201.308 G	2	12	3	15	65.7	0.0	+21.4	-67.0
202.304 G	2	16	2	14	65.3	- 0.2	+22.0	-54.2
203.380 C	0	0	0	0	..	..	..	..
204.356 C	0	0	0	0	..	..	..	..
205.393 C	27	105	15	57	66.6	+ 1.6	+22.6	-12.0
206.319 G	26	115	14	59	66.9	+ 2.1	+22.8	+ 0.5
207.336 C	11	87	6	47	67.1	+ 2.5	+22.5	+14.2
208.373 G	5	32	3	19	67.0	+ 2.6	+21.8	+27.8
209.334 G	7	18	5	12	66.4	+ 2.2	+22.4	+39.9
Means	..	..	5	25	66.4	..	+22.2	..

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 15083.								
July 25-Aug. 3. A small spot with a close companion from July 27 - August 1.								
d					°	°	°	°
205.393 C	7	42	11	68	5.8	0.0	+17.6	-72.8
206.319 G	12	76	12	77	5.8	0.0	+17.5	-60.6
207.336 C	22	161	16	119	5.6	-0.1	+17.6	-47.3
208.373 G	14	143	9	87	6.0	+0.3	+17.6	-33.2
209.334 G	34	126	18	68	6.8	+1.1	+17.4	-19.7
210.301 G	18	92	9	47	6.5	+0.9	+17.2	- 7.2
211.430 G	11	44	6	22	6.6	+1.0	+16.7	+ 7.8
212.324 C	13	44	7	24	6.9	+1.3	+16.7	+19.9
213.386 G	7	34	4	21	7.1	+1.6	+16.3	+34.2
214.433 G	5	23	4	17	7.4	+1.9	+16.1	+48.3
Means	..	..	10	55	6.4	..	+17.1	..
Group 15089.								
July 29-Aug. 9. A long stream in which the leader, *a*, and follower, *b*, both composite spots, are linked by a continuous string of changing spots. The follower is the first to break up and die out.								
209.334 G	42	246	77	478	314.1	0.0	-18.2	-72.4
210.301 G	83	904	99	1073	312.3	-1.8	-17.7	-61.4
211.430 G	195	1839	159	1494	312.0	-2.0	-18.0	-46.8
212.324 C	315	2433	211	1631	312.7	-1.3	-17.8	-34.3
213.386 G	483	2923	281	1699	312.8	-1.1	-17.7	-20.1
214.433 G	293	2954	161	1629	313.9	0.0	-17.3	- 5.2
215.437 G	355	2579	198	1435	312.9	-0.9	-17.6	+ 7.1
216.340 C	342	1928	201	1132	314.1	+0.3	-17.4	+20.2
217.327 C	124	1646	84	1092	313.8	+0.1	-17.3	+33.0
218.364 C	115	945	95	774	314.2	+0.5	-17.0	+47.1
219.303 G	43	488	50	562	315.1	+1.4	-16.7	+60.4
220.517 C	4	29	19	139	320.7	..	-14.7	+82.1
Means	..	..	147	1182	313.4	..	-17.5	..
Spot *a*								
209.334 G	9	32	12	44	320.5	0.0	-16.5	-66.0
210.301 G	5	32	4	29	321.7	+1.2	-17.3	-52.0
211.430 G	46	421	32	295	319.6	-0.8	-16.7	-39.2
212.324 C	95	657	58	401	320.3	-0.1	-16.6	-26.7
213.386 G	135	937	74	515	321.1	+0.8	-16.3	-11.8
214.433 G	128	1037	69	560	321.5	+1.2	-15.7	+ 2.4
215.437 G	142	840	80	470	321.6	+1.4	-15.2	+15.8
216.340 C	113	686	69	418	321.9	+1.7	-15.2	+28.0
217.327 C	53	568	38	403	321.1	+1.0	-15.0	+40.3
218.364 C	44	333	41	310	321.0	+0.9	-14.8	+53.9
219.303 G	21	215	29	295	320.7	+0.6	-14.8	+66.0
220.517 C	4	29	19	139	320.7	..	-14.7	+82.1

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

Date U.T. Place	Projected Area		Corrected Area		Longitude and Proper Motion		Latitude	Long. from C.M.
	Umbræ	Whole Spots	Umbræ	Whole Spots				
Group 15089 - *continued*								
Spot *b*								
d					°	°	°	°
209.334 G	5	44	15	133	308.5	0.0	-19.1	-78.0
210.301 G	44	405	58	535	309.3	+0.8	-17.7	-64.4
211.430 G	71	582	65	530	307.0	-1.4	-19.4	-51.8
212.324 C	118	824	86	602	306.8	-1.6	-19.3	-40.2
213.386 G	108	662	68	417	305.5	-2.8	-19.5	-27.4
214.433 G	82	982	47	560	305.7	-2.6	-19.5	-13.4
215.437 G	112	818	63	458	304.5	-3.7	-19.8	- 1.3
216.340 C	138	862	79	491	306.4	-1.8	-19.6	+12.5
217.327 C	42	748	26	464	305.9	-2.2	-19.7	+25.1
218.364 C	49	428	35	308	306.1	-2.0	-19.3	+39.0
219.303 G	18	213	16	192	305.4	-2.7	-19.7	+50.7
Group 15096.								
Aug. 2-12. A pair of growing spots separating in longitude to form a long stream with a few tiny spots in between.								
213.386 G	0	5	0	10	256.7	0.0	+13.8	-76.2
214.433 G	18	105	19	109	257.7	+0.9	+11.8	-61.4
215.437 G	78	250	59	187	257.6	+0.7	+11.4	-48.2
216.340 C	94	293	58	180	257.5	+0.5	+11.0	-36.4
217.327 C	73	513	39	280	258.9	+1.8	+11.0	-21.9
218.364 C	99	464	49	234	259.2	+2.0	+10.5	- 7.9
219.303 G	38	506	19	257	259.8	+2.5	+10.4	+ 5.1
220.517 C	28	184	15	102	261.2	+3.8	+10.1	+22.6
221.356 C	15	127	9	79	263.9	+6.4	+ 9.7	+36.4
222.355 G	0	7	0	5	262.1	+4.5	+ 9.8	+47.8
223.385 G	2	9	2	9	262.2	+4.5	+10.0	+61.5
Means	..	..	24	132	259.7	..	+10.9	..
Group 15098.								
Aug. 4-15. One or two small spots, not seen on August 10 and 11.								
215.437 G	2	9	3	11	241.2	0.0	-12.1	-64.6
216.340 C	4	18	3	16	241.6	+0.3	-11.7	-52.3
217.327 C	2	16	1	11	241.7	+0.3	-11.9	-39.1
218.364 C	16	93	9	55	239.7	-1.8	-10.3	-27.4
219.303 G	4	34	2	18	240.0	-1.6	-10.3	-14.7
220.517 C	0	11	0	6	237.7	-4.0	- 9.8	- 0.9
221.356 C	0	0	0	0	..	..	..	..
222.355 G	0	0	0	0	..	..	..	..
223.385 G	7	37	5	25	239.7	-2.3	-10.1	+39.0
224.326 C	7	38	6	32	239.8	-2.3	-10.2	+51.5
225.369 C	11	47	15	65	240.9	-1.3	-11.4	+66.4
226.354 G	0	7	0	25	241.9	..	-11.5	+80.4
Means	..	..	4	22	240.3	..	-10.9	..
Group 15100.								
Aug. 5-16. A stream of small spots of which the leader, *a*, a regular spot, alone survives at the west limb.								
d					°	°	°	°
216.340 C	0	11	0	22	221.6	0.0	-19.9	-72.3
217.327 C	31	264	36	314	220.9	-0.6	-20.1	-59.9
218.364 C	72	504	60	411	222.0	+0.6	-19.9	-45.1
219.303 G	62	494	42	328	223.1	+1.8	-19.8	-31.6
220.517 C	69	358	40	207	222.8	+1.6	-19.3	-15.8
221.356 C	96	472	53	265	221.7	+0.6	-19.5	- 5.8
222.355 G	46	371	26	210	222.5	+1.5	-19.0	+ 8.2
223.385 G	75	297	45	179	223.2	+2.3	-19.2	+22.5
224.326 C	40	241	28	168	223.5	+2.7	-19.1	+35.2
225.369 C	29	159	26	140	223.6	+2.9	-19.4	+49.1
226.354 G	14	133	18	170	223.7	+3.1	-18.8	+62.2
227.555 C	7	55	23	180	223.9	+3.4	-18.6	+78.3
Means	..	..	33	216	222.7	..	-19.4	..
Spot *a*								
217.327 C	18	153	19	165	223.1	0.0	-20.1	-57.7
218.364 C	36	340	28	265	223.8	+0.8	-19.9	-43.3
219.303 G	37	247	24	158	225.4	+2.5	-19.6	-29.3
220.517 C	38	211	22	120	225.3	+2.5	-19.6	-13.3
221.356 C	47	206	26	115	225.3	+2.6	-19.8	- 2.2
222.355 G	37	295	21	168	224.6	+2.0	-19.4	+10.3
223.385 G	62	263	38	160	224.9	+2.4	-19.2	+24.2
224.326 C	38	228	27	160	224.7	+2.3	-19.2	+36.4
225.369 C	29	148	26	132	224.7	+2.4	-19.2	+50.2
226.354 G	14	128	18	165	224.7	+2.5	-18.8	+63.2
227.555 C	7	55	23	180	223.9	+1.8	-18.6	+78.3
Group 15101.								
Aug. 6-17. A stream led by a regular spot. By August 10 this begins to break up into a cluster. The following part of the stream dies out by August 12.								
217.327 C	11	144	17	223	208.6	0.0	+18.6	-72.2
218.364 C	38	216	35	203	209.1	+0.6	+18.6	-58.0
219.303 G	68	414	50	302	208.8	+0.3	+18.2	-45.9
220.517 C	109	514	64	303	208.6	+0.2	+18.1	-30.0
221.356 C	69	586	37	313	209.3	+0.9	+17.7	-18.2
222.355 G	37	321	19	164	210.1	+1.8	+17.9	- 4.2
223.385 G	27	183	14	95	211.2	+3.0	+17.7	+10.5
224.326 C	13	102	7	56	211.5	+3.3	+17.5	+23.2
225.369 C	15	55	10	35	211.9	+3.8	+17.5	+37.4
226.354 G	5	27	4	21	211.5	+3.4	+17.8	+50.0
227.555 C	2	11	2	13	211.6	+3.6	+18.3	+66.0
228.344 G	2	5	4	10	211.5	+3.5	+18.0	+76.3
Means	..	..	22	145	210.3	..	+18.0	..

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Group 15102.

Aug. 7-13. A stream, appearing suddenly near the central meridian, rising to maximum growth in three days and already in full decline as it passes out of sight. The leader, *a*, is a regular spot and the follower, *b*, a composite one.

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 218.364 C	146	537	80	295	262.0	0.0	-16.9	- 5.1
219.303 G	128	984	71	546	263.6	+1.6	-16.7	+ 8.9
220.517 C	151	1041	92	632	264.2	+2.3	-16.7	+25.6
221.356 C	151	804	104	551	263.2	+1.3	-17.2	+35.7
222.355 G	63	633	56	551	262.9	+1.0	-17.1	+48.6
223.385 G	41	284	60	398	264.0	+2.2	-17.0	+63.3
224.326 C	25	81	90	259	264.5	+2.7	-16.9	+76.2
Means	..	..	79	462	263.5	..	-16.9	..

Spot *a*

218.364 C	64	191	35	105	265.0	0.0	-17.5	- 2.1
219.303 G	50	421	28	236	266.6	+1.6	-17.0	+11.9
220.517 C	75	537	47	338	268.0	+3.1	-17.4	+29.4
221.356 C	91	369	66	269	268.6	+3.7	-17.1	+41.1
222.355 G	34	289	33	283	269.3	+4.4	-17.3	+55.0
223.385 G	27	165	45	274	270.1	+5.3	-17.3	+69.4
224.326 C	18	46	79	202	269.5	..	-16.6	+81.2

Spot *b*

218.364 C	82	346	45	190	260.9	0.0	-16.5	- 6.2
219.303 G	78	563	43	310	260.7	-0.2	-16.4	+ 6.0
220.517 C	60	426	35	247	257.8	-3.0	-16.4	+19.2
221.356 C	49	346	31	221	258.4	-2.4	-16.7	+30.9
222.355 G	27	314	21	242	258.3	-2.5	-16.6	+44.0
223.385 G	14	119	15	124	258.0	-2.7	-16.7	+57.3
224.326 C	7	35	11	57	257.3	-3.4	-17.2	+69.0

Group 15103.

Aug. 7-12. A small spot.

218.364 C	2	7	3	9	202.5	0.0	-11.9	-64.6
219.303 G	4	21	3	18	203.1	+0.5	-11.3	-51.6
220.517 C	7	33	4	21	203.4	+0.7	-11.0	-35.2
221.356 C	9	42	5	24	203.3	+0.5	-11.0	-24.2
222.355 G	2	16	1	8	203.2	+0.3	-11.0	-11.1
223.385 G	2	7	1	4	203.5	+0.5	-10.5	+ 2.8
Means	..	..	3	14	203.2	..	-11.1	..

Group 15104.

Aug. 7-13. A short stream closely preceding Group 15106 which absorbs it.

					°	°	°	°
d 218.364 C	2	11	3	14	199.7	0.0	+10.4	-67.4
219.303 G	7	37	6	31	200.9	+1.1	+ 9.8	-53.8
220.517 C	22	85	14	54	200.7	+0.8	+10.1	-37.9
221.356 C	24	205	13	114	201.0	+1.0	+10.1	-26.5
222.355 G	16	188	10	96	201.8	+1.7	+10.0	-12.5
223.385 G	55	170	28	84	202.5	+2.2	+10.0	+ 1.8
224.326 C	38	259	20	135	203.5	+3.1	+ 9.7	+15.2
Means	..	..	13	75	201.4	..	+10.0	..

Group 15106.

Aug. 7-19. A large and active complex group. From a small spot on August 7-9, a complex spot develops and expands in longitude. By August 13, continued growth changes have produced four composite spots in line, of which the leader is the biggest and showing least change.

218.364 C	2	16	3	28	193.3	0.0	+10.0	-73.8
219.303 G	7	23	7	24	193.2	-0.2	+10.1	-61.5
220.517 C	13	60	9	43	193.2	-0.3	+10.5	-45.4
221.356 C	100	813	61	496	192.5	-1.1	+11.3	-35.0
222.355 G	71	1138	38	615	193.2	-0.5	+11.0	-21.1
223.385 G	169	1552	85	783	192.5	-1.3	+11.0	- 8.2
224.326 C	128	1881	65	953	195.6	+1.7	+10.8	+ 7.3
225.369 C	369	2432	201	1322	195.5	+1.5	+10.8	+21.0
226.354 G	256	1742	163	1099	197.9	+3.8	+10.5	+36.4
227.555 C	197	1602	161	1359	198.7	+4.5	+10.5	+53.1
228.344 G	132	933	145	1056	199.0	+4.7	+10.1	+63.8
229.338 C	46	457	83	936	196.2	+1.8	+10.3	+74.2
230.347 G	0	5	(0	16	191.1	..	+12.4)	+82.4
Means	..	..	85	726	195.1	..	+10.6	..

Group 15107.

Aug. 7-19. A regular spot with a small companion following until August 10; then other spots appear in the rear, but by August 17 this train has died out leaving the original spot and one small companion.

218.364 C	7	73	18	189	187.4	0.0	+ 9.9	-79.7
219.303 G	32	196	40	244	187.4	-0.1	+10.8	-67.3
220.517 C	43	233	34	187	186.8	-0.8	+10.6	-51.8
221.356 C	33	218	21	142	187.1	-0.6	+10.6	-40.4
222.355 G	32	362	19	207	185.6	-2.2	+10.5	-28.7
223.385 G	89	565	47	297	184.6	-3.4	+10.1	-16.1

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

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 15107 - *continued*								
d					°	°	°	°
224.326 C	64	688	32	345	183.9	-4.2	+10.3	- 4.4
225.369 C	97	663	49	338	183.5	-4.7	+10.1	+ 9.0
226.354 G	63	458	34	249	183.6	-4.7	+10.0	+22.1
227.555 C	33	249	21	156	183.2	-5.2	+10.5	+37.6
228.344 G	23	73	18	58	186.5	-2.0	+ 9.0	+51.3
229.338 C	11	38	12	42	186.2	-2.4	+ 9.1	+64.2
230.347 G	0	9	0	21	187.2	-1.5	+ 8.5	+78.5
Means	..	..	27	190	185.6	..	+10.0	..
Group 15109.								
Aug. 8-20. A pair of regular spots almost in contact and slowly merging into a single regular spot. After August 18 this shrinks rapidly.								
219.303 G	2	32	10	153	174.9	0.0	-28.1	-79.8
220.517 C	18	75	26	110	175.0	+0.6	-27.7	-63.6
221.356 C	31	158	32	164	174.7	+0.6	-27.6	-52.8
222.355 G	27	222	22	178	174.0	+0.2	-27.1	-40.3
223.385 G	32	206	22	140	174.1	+0.7	-27.2	-26.6
224.326 C	20	192	12	119	173.9	+0.9	-27.5	-14.4
225.369 C	31	199	19	119	173.4	+0.8	-27.6	- 1.1
226.354 G	32	176	20	109	173.0	+0.7	-27.8	+11.5
227.555 C	22	161	15	109	172.1	+0.3	-27.8	+26.5
228.344 G	18	148	14	114	171.6	+0.1	-28.2	+36.4
229.338 C	13	104	12	100	170.8	-0.4	-28.0	+48.8
230.347 G	5	25	7	35	170.8	0.0	-28.0	+62.1
231.338 C	0	7	0	20	170.2	-0.2	-28.0	+74.6
Means	..	..	16	113	173.0	..	-27.7	..
Group 15110.								
Aug. 9-20. A stream of rapid growth but soon in decline. The leader, *a*, becomes a regular spot and alone remains after August 16.								
220.517 C	38	233	36	224	179.6	0.0	+18.3	-59.0
221.356 C	133	844	98	626	180.8	+1.2	+17.7	-46.7
222.355 G	103	827	64	510	180.7	+1.2	+18.1	-33.6
223.385 G	74	721	41	390	180.8	+1.4	+17.9	-19.9
224.326 C	88	696	46	358	181.2	+1.8	+17.8	- 7.1
225.369 C	80	559	41	285	181.0	+1.7	+17.9	+ 6.5
226.354 G	69	419	37	225	180.2	+0.9	+18.4	+18.7
227.555 C	37	316	23	196	180.8	+1.6	+17.8	+35.2
228.344 G	46	253	33	182	180.9	+1.8	+17.8	+45.7
229.338 C	22	203	21	191	180.5	+1.4	+18.2	+58.5
230.347 G	16	96	23	140	179.8	+0.8	+18.5	+71.1
231.338 C	4	31	14	106	179.0	..	+18.9	+83.4
Means	..	..	42	302	180.6	..	+18.0	..

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 15110 - *continued*								
Spot *a*								
d					°	°	°	°
221.356 C	93	531	67	382	182.0	0.0	+17.0	-45.5
222.355 G	73	552	44	331	182.3	+0.4	+16.9	-32.0
223.385 G	37	522	20	277	183.3	+0.4	+16.7	-17.4
224.326 C	64	506	33	258	183.3	+0.5	+16.9	- 5.0
225.369 C	60	460	31	235	182.8	+1.0	+17.2	+ 8.3
226.354 G	55	310	30	167	182.1	+0.4	+17.6	+20.6
227.555 C	35	309	22	192	181.1	-0.5	+17.8	+35.5
228.344 G	46	253	33	182	180.9	-0.7	+17.8	+45.7
229.338 C	22	203	21	191	180.5	-1.0	+18.2	+58.5
230.347 G	16	96	23	140	179.8	-1.7	+18.5	+71.1
231.338 C	4	31	14	106	179.0	..	+18.9	+83.4
Group 15117.								
Aug. 13-20. A few faint variable spots.								
224.326 C	0	4	0	11	111.9	0.0	-19.0	-76.4
225.369 C	4	15	5	18	112.6	+0.8	-18.8	-61.9
226.354 G	5	18	4	16	111.7	0.0	-19.0	-49.8
227.555 C	7	18	5	12	112.7	+1.1	-17.9	-32.9
228.344 G	5	21	3	13	109.4	-2.1	-19.7	-25.8
229.338 C	11	51	6	29	110.1	-1.3	-19.4	-11.9
230.347 G	10	36	6	20	111.4	+0.1	-19.4	+ 2.7
231.338 C	0	9	0	5	106.7	-4.5	-21.2	+11.1
Means	..	..	4	16	110.8	..	-19.3	..
Group 15120.								
Aug. 15-22. A short stream of small variable spots.								
226.354 G	23	98	15	60	138.5	0.0	-21.3	-23.0
227.555 C	31	126	17	72	137.2	-1.2	-19.8	- 8.4
228.344 G	14	150	8	84	138.7	+0.4	-20.2	+ 3.5
229.338 C	24	119	14	70	139.1	+0.9	-20.1	+17.1
230.347 G	25	114	17	74	139.1	+1.0	-19.9	+30.4
231.338 C	16	104	12	80	138.1	+0.2	-19.7	+42.5
232.413 G	7	46	7	48	138.2	+0.4	-19.0	+56.8
233.374 G	0	14	0	24	138.0	+0.3	-19.3	+69.3
Means	..	..	11	64	138.4	..	-19.9	..
Group 15121.								
Aug. 15-25. A stream in which the leader, as usual, is the most stable member.								
226.354 G	20	85	33	142	92.9	0.0	-21.3	-68.6
227.555 C	70	296	69	288	93.2	+0.5	-22.1	-52.4

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

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 15121 - *continued*							
d					°	°	°
228.344 G	76	540	54	309	92.6	+0.1	-21.7	-42.6
229.338 C	90	628	59	414	93.0	+0.6	-22.0	-29.0
230.347 G	116	645	69	384	92.9	+0.7	-22.1	-15.8
231.338 C	62	327	36	187	93.0	+1.0	-22.1	- 2.6
232.413 G	54	310	31	182	92.6	+0.8	-22.2	+11.2
233.374 G	23	142	15	90	94.1	+2.4	-22.4	+25.4
234.339 C	11	90	8	67	93.6	+2.1	-22.5	+37.7
235.324 C	9	24	9	23	94.8	+3.5	-22.4	+51.9
236.357 G	2	11	3	17	95.4	+4.3	-22.5	+66.1
Means	..	..	35	191	93.5	..	-22.1	
Group 15124.							
Aug. 18-23. A few small spots.							
229.338 C	0	7	0	10	55.1	0.0	-17.0	-66.9
230.347 G	29	91	28	88	54.7	-0.4	-17.3	-54.0
231.338 C	13	119	10	86	56.3	+1.2	-16.6	-39.3
232.413 G	11	66	6	39	58.1	+3.1	-15.7	-23.3
233.374 G	2	16	1	9	57.9	+2.9	-15.8	-10.8
234.339 C	2	15	1	8	57.6	+2.6	-15.9	+ 1.7
Means	..	..	8	40	56.6	..	-16.4	..
Group 15127.							
Aug. 21-27. A small spot; on one day (August 26) there is a companion.							
232.413 G	5	27	15	79	359.6	..	+17.1	-81.8
233.374 G	7	39	9	50	0.6	0.0	+17.2	-68.1
234.339 C	7	44	6	37	1.5	+1.0	+17.6	-54.4
235.324 C	7	24	5	16	1.9	+1.4	+17.8	-41.0
236.357 G	2	14	1	8	2.0	+1.6	+17.8	-27.3
237.373 G	9	45	5	24	357.8	-2.6	+18.2	-18.0
238.345 G	0	7	0	4	356.9	-3.4	+18.5	- 6.1
Means	..	..	4	23	0.1	..	+17.8	..
Group 15128.							
Aug. 22-Sept. 1. A stream growing from a single nucleus and led by a regular spot, *a*, that alone survives by August 29 in the general dissolution of the group towards the west limb.							
233.374 G	2	11	2	11	11.3	0.0	-15.5	-57.4
234.339 C	2	13	2	10	11.5	+0.2	-15.4	-44.4
235.324 C	4	18	3	11	13.0	+1.7	-15.7	-29.9
236.357 G	32	232	18	133	12.5	+1.2	-16.1	-16.8

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 15128 - *continued*							
d					°	°	°
237.373 G	59	331	32	179	12.9	+1.6	-15.7	- 2.9
238.345 G	59	405	33	222	12.8	+1.5	-15.8	+ 9.8
239.333 G	41	321	24	189	12.9	+1.6	-15.6	+23.0
240.339 G	36	262	24	178	12.8	+1.5	-15.6	+36.1
241.321 C	15	257	12	213	12.0	+0.7	-15.4	+48.3
242.345 G	7	54	9	66	12.9	+1.6	-15.4	+62.7
243.345 G	2	11	5	28	13.1	+1.8	-15.6	+76.2
Means	..	..	15	113	12.5	..	-15.6	..
Spot *a*							
233.374 G	2	11	2	11	11.3	0.0	-15.5	-57.4
234.339 C	2	13	2	10	11.5	+0.2	-15.4	-44.4
235.324 C	4	18	3	11	13.0	+1.7	-15.7	-29.9
236.357 G	23	196	13	112	13.5	+2.2	-16.1	-15.8
237.373 G	43	276	23	149	14.1	+2.8	-16.1	- 1.7
238.345 G	50	332	28	183	13.8	+2.5	-16.0	+10.8
239.333 G	34	287	20	169	13.5	+2.2	-15.6	+23.6
240.339 G	36	262	24	178	12.8	+1.5	-15.6	+36.1
241.321 C	15	257	12	213	12.0	+0.7	-15.4	+48.3
242.345 G	7	54	9	66	12.9	+1.6	-15.4	+62.7
243.345 G	2	11	5	28	13.1	+1.8	-15.6	+76.2
Group 15129.							
Aug. 24-31. A small group, led by a regular spot, quickly passing through its life history.							
235.324 C	22	152	13	87	26.7	0.0	+31.5	-16.2
236.357 G	29	251	16	138	27.3	+1.1	+31.3	- 2.0
237.373 G	68	367	38	206	27.9	+2.3	+31.7	+12.1
238.345 G	51	264	31	157	27.4	+2.3	+31.8	+24.4
239.333 G	32	189	22	129	27.4	+2.8	+32.3	+37.5
240.339 G	16	91	13	76	26.7	+2.7	+32.2	+50.0
241.321 C	9	59	10	64	25.7	+2.2	+31.9	+62.0
242.345 G	7	36	12	61	24.6	+1.6	+31.5	+74.4
Means	..	..	19	115	26.7	..	+31.8	..
Group 15132.							
Aug. 27-Sept. 4. A short stream, developing from a pair of tiny spots first seen on August 27. Both leader, *a*, and follower, *b*, are small composite spots.							
238.345 G	4	32	2	18	334.6	0.0	+11.1	-28.4
239.333 G	7	35	4	18	334.7	0.0	+11.9	-15.2
240.339 G	32	150	16	74	335.0	+0.2	+10.8	- 1.7

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

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 15132 - *continued*							
d					°	°	°
241.321 C	57	475	29	245	336.1	+1.2	+10.5	+12.4
242.345 G	81	808	45	453	336.7	+1.7	+10.3	+26.5
243.345 G	125	912	81	587	336.1	+1.0	+10.4	+39.2
244.340 G	91	767	75	635	336.9	+1.7	+10.6	+53.1
245.350 G	50	415	61	501	336.3	+1.0	+10.9	+65.8
246.368 G	11	87	28	213	334.4	-1.0	+11.0	+77.4
Means	..	..	38	305	335.6	..	+10.8	..
Spot *a*							
241.321 C	24	211	12	110	339.0	0.0	+ 9.7	+15.3
242.345 G	27	433	15	247	339.1	0.0	+ 9.7	+28.9
243.345 G	61	365	41	248	339.8	+0.6	+ 9.8	+42.9
244.340 G	41	347	37	312	340.8	+1.5	+10.3	+57.0
245.350 G	20	163	29	236	341.1	+1.7	+ 9.8	+70.6
246.368 G	2	14	11	74	342.8	..	+10.3	+85.8
Spot *b*							
238.345 G	2	16	1	9	333.0	0.0	+11.8	-30.0
239.333 G	2	14	1	7	333.5	+0.4	+12.7	-16.4
240.339 G	7	41	4	20	333.1	-0.1	+12.0	- 3.6
241.321 C	26	198	13	101	333.2	-0.1	+11.4	+ 9.5
242.345 G	54	375	30	206	334.0	+0.6	+10.9	+23.8
243.345 G	64	547	40	339	333.9	+0.4	+10.9	+37.0
244.340 G	50	420	38	323	334.0	+0.4	+11.0	+50.2
245.350 G	30	252	32	265	332.9	-0.8	+11.4	+62.4
246.368 G	9	73	17	139	332.9	-0.9	+11.5	+75.9
Group 15134.							
Aug. 27-Sept. 1. A small composite spot rapidly dying out.							
238.345 G	11	112	20	207	287.4	0.0	+16.6	-75.6
239.333 G	9	75	9	79	287.4	0.0	+16.5	-62.5
240.339 G	2	9	2	7	286.8	-0.6	+16.7	-49.9
241.321 C	0	7	0	4	286.5	-0.8	+16.6	-37.2
242.345 G	0	5	0	3	283.9	-3.4	+16.9	-26.3
243.345 G	0	5	0	3	283.9	-3.4	+16.4	-13.0
Means	..	..	5	50	286.0	..	+16.6	..
Group 15136.							
Aug. 27-Sept. 7. A pair of spots soon becoming regular in outline. The follower, *b*, begins to die out rapidly after September 3.							

continued

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 15136 - *continued*							
On September 6 another spot appears for one day closely following the leader, *a*.							
d					°	°	°	°
238.345 G	2	16	(9	70	281.6	..	-14.2)	-81.4
239.333 G	30	269	44	405	282.4	0.0	-13.9	-67.5
240.339 G	55	370	51	353	281.9	-0.5	-13.7	-54.8
241.321 C	61	429	44	311	281.9	-0.6	-14.0	-41.8
242.345 G	72	449	44	275	282.2	-0.3	-14.1	-28.0
243.345 G	66	423	37	234	282.8	+0.2	-14.1	-14.1
244.340 G	81	445	44	240	283.0	+0.4	-13.8	- 0.8
245.350 G	82	415	45	227	283.4	+0.7	-13.8	+12.9
246.368 G	53	270	32	166	284.9	+2.2	-13.4	+27.9
247.365 G	30	175	22	126	285.1	+2.3	-13.2	+41.3
248.344 G	30	132	28	121	284.1	+1.3	-12.8	+53.2
249.315 C	9	42	13	59	284.8	+1.9	-12.4	+66.7
Means	..	..	37	229	283.3	..	-13.6	..
Spot *a*							
239.333 G	21	169	29	237	283.4	0.0	-13.7	-66.5
240.339 G	39	226	35	206	284.0	+0.6	-14.3	-52.7
241.321 C	35	246	24	172	284.3	+0.8	-14.1	-39.4
242.345 G	45	261	27	157	284.6	+1.1	-14.1	-25.6
243.345 G	43	257	24	141	285.0	+1.4	-13.9	-11.9
244.340 G	54	295	29	159	285.1	+1.5	-13.7	+ 1.3
245.350 G	57	295	31	162	285.4	+1.7	-13.3	+14.9
246.368 G	39	225	24	140	286.5	+2.8	-13.1	+29.5
247.365 G	23	141	17	104	286.6	+2.8	-13.2	+42.8
248.344 G	14	50	14	49	287.0	+3.2	-13.0	+56.1
Spot *b*							
239.333 G	9	100	15	168	279.8	0.0	-14.1	-70.1
240.339 G	16	144	16	147	279.3	-0.5	-14.0	-57.4
241.321 C	26	183	20	139	279.0	-0.9	-13.9	-44.7
242.345 G	27	188	17	118	279.1	-0.8	-14.2	-31.1
243.345 G	23	166	13	93	279.5	-0.5	-14.2	-17.4
244.340 G	27	150	15	81	279.4	-0.6	-14.4	- 4.4
245.350 G	25	120	14	65	279.5	-0.6	-14.1	+ 9.0
246.368 G	14	45	8	26	279.7	-0.4	-13.9	+22.7
247.365 G	7	34	5	22	279.8	-0.4	-13.4	+36.0
Group 15137.							
Aug. 27-Sept. 8. A stable regular spot with a small drift equatorwards.							
238.345 G	5	30	24	144	277.4	..	+15.1	-85.6
239.333 G	11	84	17	133	277.1	0.0	+14.8	-72.8
240.339 G	32	180	30	171	277.7	+0.6	+14.8	-59.0
241.321 C	24	222	17	160	277.7	+0.5	+15.1	-46.0

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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 15137 - *continued*							
d					°	°	°
242.345 G	50	305	30	180	277.7	+0.5	+14.5	−32.5
243.345 G	43	295	23	156	277.8	+0.6	+14.7	−19.1
244.340 G	61	286	31	146	277.8	+0.5	+14.4	− 6.0
245.350 G	52	257	27	131	277.6	+0.3	+14.1	+ 7.1
246.368 G	43	234	23	126	277.6	+0.3	+13.9	+20.6
247.365 G	32	175	19	105	277.6	+0.3	+13.9	+33.8
248.344 G	27	161	20	118	277.9	+0.5	+13.8	+47.0
249.315 C	20	96	19	93	277.8	+0.4	+13.7	+59.7
250.467 G	11	59	20	108	278.3	+0.9	+13.9	+75.4
Means	..	..	23	136	277.7	..	+14.3	..
Group 15139.							
Aug. 28-Sept. 9. A small stream in constant change, but typically bi-polar on August 31 and September 1.							
239.333 G	2	25	4	53	272.0	0.0	+18.1	−77.9
240.339 G	14	66	16	77	271.3	−0.6	+17.3	−65.4
241.321 C	22	229	19	189	271.2	−0.7	+17.5	−52.5
242.345 G	43	390	28	250	271.9	+0.1	+17.6	−38.3
243.345 G	43	282	24	157	272.8	+1.0	+17.9	−24.1
244.340 G	31	177	16	90	273.0	+1.3	+17.9	−10.8
245.350 G	16	115	9	59	272.9	+1.2	+18.8	+ 2.4
246.368 G	4	71	2	37	270.6	−1.0	+17.7	+13.6
247.365 G	32	156	19	93	276.5	+4.9	+17.5	+32.7
248.344 G	18	145	13	106	277.4	+5.9	+17.6	+46.5
249.315 C	24	160	21	146	274.6	+3.2	+18.1	+56.5
250.467 G	18	118	23	152	271.1	−0.3	+19.1	+68.2
251.370 G	9	66	22	162	271.1	..	+19.1	+80.1
Means	..	..	16	117	272.9	..	+17.9	..
Group 15144.							
Aug. 29-Sept. 3. One or two small spots.							
240.339 G	0	11	0	9	284.8	0.0	+11.8	−51.9
241.321 C	7	48	4	30	287.8	+2.9	+10.5	−35.9
242.345 G	19	91	10	49	288.4	+3.4	+10.1	−21.8
243.345 G	9	43	5	22	288.6	+3.5	+ 9.7	− 8.3
244.340 G	5	9	3	5	291.7	+6.5	+ 9.4	+ 7.9
245.350 G	5	27	3	14	290.7	+5.4	+ 9.4	+20.2
Means	..	..	4	22	288.7	..	+10.2	..

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 15148.							
Sept. 1-8. A pair of small spots within 1° of the Sun's equator, the leader alone remaining by September 4.							
d					°	°	°	°
243.345 G	7	34	13	67	222.0	0.0	− 1.4	−74.9
244.340 G	25	80	25	81	223.7	+1.5	− 0.9	−60.1
245.350 G	16	80	12	57	224.7	+2.3	− 0.5	−45.8
246.368 G	16	68	9	39	227.1	+4.5	− 0.2	−29.9
247.365 G	7	43	4	22	227.7	+4.9	− 0.3	−16.1
248.344 G	9	27	5	14	228.2	+5.3	− 0.6	− 2.7
249.315 C	4	20	2	10	228.1	+5.0	− 0.7	+10.0
250.467 G	2	9	1	5	228.5	+5.1	− 0.9	+25.6
Means	..	..	9	37	226.2	..	− 0.7	..
Group 15149.							
Sept. 2-9. From a feeble start, a stream develops and is still growing as it passes from view.							
244.340 G	2	7	1	4	269.9	0.0	+22.0	−13.9
245.350 G	0	0	0	0	..	..	..	..
246.368 G	2	14	1	7	268.9	−0.6	+23.0	+11.9
247.365 G	2	25	1	14	267.7	−1.6	+23.0	+23.9
248.344 G	22	132	14	85	268.1	−1.0	+23.3	+37.2
249.315 C	35	190	28	155	268.9	0.0	+23.4	+50.8
250.467 G	36	260	44	315	269.3	+0.7	+23.3	+66.4
251.370 G	20	181	40	366	268.4	0.0	+23.5	+77.4
Means	..	..	16	118	268.7	..	+23.1	..
Group 15150.							
Sept. 2-13. A long stream of numerous small spots in general decline which is hastened after about September 7.							
244.340 G	24	147	57	364	207.1	0.0	−11.2	−76.7
245.350 G	41	175	48	213	207.7	+0.5	−11.7	−62.8
246.368 G	84	275	70	229	207.8	+0.5	−11.2	−49.2
247.365 G	61	328	41	219	207.6	+0.2	−11.8	−36.2
248.344 G	82	406	48	234	209.8	+2.4	−11.3	−21.1
249.315 C	68	341	37	185	210.0	+2.5	−12.4	− 8.1
250.467 G	41	241	23	129	210.1	+2.5	−11.9	+ 7.2
251.370 G	43	307	25	176	212.5	+4.8	−11.4	+21.5
252.502 C	17	151	11	101	212.8	+5.0	−11.2	+36.8
253.519 C	8	39	6	31	210.8	+2.9	−11.5	+48.2
254.333 C	13	61	13	60	208.6	+0.7	−11.7	+56.8
255.310 C	4	20	7	35	210.4	+2.4	−12.2	+71.5
Means	..	..	32	165	209.6	..	−11.6	..

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Group 15151.

Sept. 2-9. A small spot with a companion on September 6, 7 and 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.
d					°	°	°	°
244.340 G	7	30	15	65	206.1	0.0	+10.5	-77.7
245.350 G	7	27	8	31	205.5	-0.7	+10.5	-65.0
246.368 G	16	48	13	38	205.5	-0.8	+10.1	-51.5
247.365 G	11	50	7	32	205.4	-1.0	+ 9.5	-38.4
248.344 G	23	64	13	36	206.3	-0.2	+10.5	-24.6
249.315 C	11	38	6	19	206.6	0.0	+10.5	-11.5
250.467 G	7	34	4	17	204.6	-2.2	+ 9.3	+ 1.7
251.370 G	9	92	5	48	207.2	+0.3	+10.9	+16.2
Means	..	..	9	36	205.9	..	+10.2	..

Group 15154.

Sept. 4-13. A small group of vigorous growth from a pair of spots but soon dispersing.

246.368 G	23	52	16	35	214.5	0.0	+15.3	-42.5
247.365 G	39	259	23	151	213.9	-0.6	+15.0	-29.9
248.344 G	52	279	27	147	213.5	-1.0	+15.1	-17.4
249.315 C	40	162	20	82	215.7	+1.2	+14.8	- 2.4
250.467 G	11	54	6	28	216.5	+2.0	+15.0	+13.6
251.370 G	7	34	4	19	219.4	+4.9	+15.7	+28.4
252.502 C	4	26	3	18	220.0	+5.4	+15.0	+44.0
253.519 C	4	14	4	12	219.2	+4.6	+15.2	+56.6
254.333 C	7	22	8	26	218.2	+3.6	+16.5	+66.4
255.310 C	0	7	0	19	219.8	..	+17.9	+80.9
Means	..	..	12	58	216.8	..	+15.3	..

Group 15155.

Sept. 5-16. Developing spots in a stream which are individually unstable. The dissolution of the group is nearly complete before it passes out of sight.

247.365 G	0	5	0	12	168.7	0.0	-14.5	-75.1
248.344 G	4	25	6	35	165.2	-3.5	-15.2	-65.7
249.315 C	40	142	37	132	164.9	-3.9	-15.4	-53.2
250.467 G	54	284	37	194	166.4	-2.4	-14.7	-36.5
251.370 G	83	587	50	353	165.2	-3.6	-14.3	-25.8
252.502 C	110	633	60	345	165.5	-3.3	-14.2	-10.5
253.519 C	110	668	60	361	166.3	-2.6	-14.2	+ 3.7
254.333 C	62	765	34	426	167.0	-1.9	-13.9	+15.2
255.310 C	50	598	31	368	166.7	-2.2	-14.3	+27.8
256.310 C	32	308	24	231	168.0	-1.0	-14.3	+42.3
257.515 C	22	85	24	94	169.8	+0.8	-14.4	+60.0
258.349 G	7	52	13	95	170.4	+1.4	-14.0	+71.6
Means	..	..	31	220	167.0	..	-14.4	..

Group 15158.

Sept. 7-13. A small indecisive group.

d					°	°	°	°
249.315 C	4	22	2	12	198.9	0.0	+19.3	-19.2
250.467 G	39	163	20	83	200.0	+1.2	+19.3	- 2.9
251.370 G	36	185	19	96	203.4	+4.7	+18.8	+12.4
252.502 C	15	79	9	47	205.9	+7.3	+19.0	+29.9
253.519 C	15	94	11	67	207.2	+8.7	+18.9	+44.6
254.333 C	20	111	18	100	208.4	+9.9	+19.7	+56.6
255.310 C	7	39	9	49	206.7	+8.3	+18.4	+67.8
Means	..	..	13	65	204.4	..	+19.1	..

Group 15159.

Sept. 7-15. A small stream developing from two spots; however, only the leader, a small composite spot, and a tiny follower remain.

249.315 C	7	33	4	19	189.2	0.0	+21.1	-28.9
250.467 G	56	285	30	149	189.0	-0.1	+20.5	-13.9
251.370 G	36	271	19	139	190.5	+1.5	+20.5	- 0.5
252.502 C	41	230	22	122	191.6	+2.8	+19.5	+15.6
253.519 C	57	335	33	197	191.9	+3.2	+19.3	+29.3
254.333 C	48	331	31	220	191.7	+3.1	+19.1	+39.9
255.310 C	29	299	24	249	191.8	+3.3	+19.7	+52.9
256.310 C	19	127	23	156	192.0	+3.6	+19.8	+66.3
257.515 C	7	48	24	165	193.4	..	+19.4	+83.6
Means	..	..	23	156	191.0	..	+19.9	..

Group 15161.

Sept. 8-18. A tiny spot on September 8 and 9; on the next day a stream of spots suddenly appears. The leading pair combine to form a small regular spot which alone remains by September 14.

250.467 G	0	5	0	6	144.3	0.0	-18.1	-58.6
251.370 G	0	18	0	14	146.8	+2.5	-18.0	-44.2
252.502 C	64	305	40	195	146.6	+2.4	-17.9	-29.4
253.519 C	72	344	42	200	146.8	+2.7	-18.3	-15.8
254.333 C	46	393	25	217	146.7	+2.6	-18.2	- 5.1
255.310 C	37	249	20	139	148.0	+3.9	-17.9	+ 9.1
256.310 C	24	201	14	121	149.9	+5.9	-17.2	+24.2
257.515 C	24	166	17	120	149.7	+5.8	-17.0	+39.9
258.349 G	22	158	20	141	149.6	+5.7	-17.2	+50.8
259.363 G	16	126	22	170	149.7	+5.8	-17.5	+64.3
260.344 C	7	65	19	178	149.1	+5.3	-17.3	+76.6
Means	..	..	20	136	147.9	..	-17.7	..

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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 15166.							
Sept. 12-22. A small stream developing from a small spot. The leader, *a*, a regular spot, is the most stable component.							
d					°	°	°
254.333 C	2	11	2	12	87.4	0.0	+16.0	−64.4
255.310 C	4	33	3	26	88.5	+1.1	+16.3	−50.4
256.310 C	72	340	45	214	88.3	+0.9	+15.8	−37.4
257.515 C	93	512	49	274	89.6	+2.2	+15.8	−20.2
258.349 G	97	619	49	318	90.2	+2.8	+15.6	− 8.6
259.363 G	67	630	35	321	90.9	+3.5	+15.6	+ 5.5
260.344 C	76	628	41	335	92.0	+4.6	+15.5	+19.5
261.637 G	56	434	36	275	93.1	+5.7	+15.3	+37.7
262.518 C	54	342	42	267	93.8	+6.4	+15.3	+50.0
263.442 G	47	193	51	208	94.2	+6.8	+15.5	+62.6
264.406 G	13	94	26	184	94.3	+6.9	+15.7	+75.4
Means	..	..	34	221	91.1	..	+15.7	..
Spot *a*							
254.333 C	2	11	2	12	87.4	0.0	+16.0	−64.4
255.310 C	4	33	3	26	88.5	+1.1	+16.3	−50.4
256.310 C	52	227	32	141	89.2	+1.8	+16.4	−36.5
257.515 C	76	379	40	201	90.8	+3.4	+16.0	−19.0
258.349 G	81	410	41	209	91.8	+4.4	+15.7	− 7.0
259.363 G	56	382	29	195	93.0	+5.6	+15.6	+ 7.6
260.344 C	50	462	27	249	93.8	+6.4	+15.6	+21.3
261.637 G	38	268	25	174	95.2	+7.8	+15.4	+39.8
262.518 C	41	270	33	216	95.6	+8.2	+15.2	+51.8
263.442 G	40	153	45	171	95.9	+8.5	+15.5	+64.3
264.406 G	11	74	23	155	96.4	+9.0	+15.9	+77.5
Group 15167.							
Sept. 12-18. A few small changing spots.							
254.333 C	2	9	4	18	77.6	0.0	− 9.0	−74.2
255.310 C	2	24	2	26	78.3	+0.6	− 9.1	−60.6
256.310 C	7	33	6	26	77.2	−0.6	− 9.1	−48.5
257.515 C	9	53	5	33	78.0	0.0	− 9.3	−31.8
258.349 G	23	137	13	78	77.6	−0.5	− 9.3	−21.2
259.363 G	18	118	10	62	74.8	−3.4	− 9.6	−10.6
260.344 C	6	33	3	18	73.4	−4.9	− 9.6	+ 0.9
Means	..	..	6	37	76.7	..	− 9.3	..
Group 15168.							
Sept. 12-25. A regular spot; a few companions appear after September 21 north of it.							
254.333 C	4	35	18	154	67.2	..	+10.2	−84.6
255.310 C	9	109	14	169	66.9	0.0	+10.0	−72.0

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 15168 - *continued*							
d					°	°	°	°
256.310 C	22	120	21	116	66.1	−0.9	+10.5	−59.6
257.515 C	28	225	19	153	66.5	−0.6	+10.4	−43.3
258.349 G	58	313	34	185	66.2	−1.0	+10.5	−32.6
259.363 G	38	281	20	149	66.2	−1.1	+10.5	−19.2
260.344 C	61	355	30	178	66.3	−1.1	+10.6	− 6.2
261.637 G	47	292	24	149	66.3	−1.2	+10.7	+10.9
262.518 C	61	334	33	180	66.4	−1.2	+10.4	+22.6
263.442 G	29	250	18	152	66.3	−1.4	+10.4	+34.7
264.406 G	47	414	35	310	67.5	−0.3	+10.8	+48.6
265.470 G	72	405	76	425	67.2	−0.7	+11.0	+62.4
266.377 G	27	220	47	383	67.0	−1.0	+11.2	+74.2
267.345 G	4	36	(14	123	63.0	..	+12.4)	+82.9
Means	..	..	31	212	66.6	..	+10.6	..
Group 15169.							
Sept. 13-24. A pair of spots which breaks up by September 16. The small stream that results increases temporarily before fading away.							
255.310 C	6	35	20	117	55.5	..	+13.1	−83.4
256.310 C	16	104	22	144	56.2	0.0	+13.2	−69.5
257.515 C	30	163	25	137	56.1	−0.2	+12.5	−53.7
258.349 G	25	148	17	101	56.1	−0.2	+13.0	−42.7
259.363 G	14	130	8	74	56.1	−0.3	+13.2	−29.3
260.344 C	15	161	8	84	56.0	−0.4	+13.0	−16.5
261.637 G	29	234	14	116	56.8	+0.3	+12.4	+ 1.4
262.518 C	46	366	24	188	57.5	+0.9	+12.6	+13.7
263.442 G	72	394	41	220	57.6	+1.0	+13.1	+26.0
264.406 G	42	293	27	193	58.8	+2.1	+13.4	+39.9
265.470 G	29	130	25	113	59.7	+3.0	+13.2	+54.9
266.377 G	4	34	5	42	58.7	+1.9	+13.5	+65.9
Means	..	..	20	128	57.2	..	+13.0	..
Group 15170.							
Sept. 15-22. A pair of dying spots; the follower just outlasts its companion.							
257.515 C	16	117	30	227	34.0	0.0	+13.2	−75.8
258.349 G	64	274	77	325	33.0	−1.1	+13.1	−65.8
259.363 G	54	317	45	257	33.5	−0.6	+13.1	−51.9
260.344 C	48	334	32	217	33.0	−1.2	+12.9	−39.5
261.637 G	32	211	17	115	33.6	−0.7	+12.4	−21.8
262.518 C	15	109	8	55	33.5	−0.9	+11.9	−10.3
263.442 G	15	72	8	36	34.4	0.0	+11.0	+ 2.8
264.406 G	4	36	2	18	31.2	−3.3	+11.7	+12.3
Means	..	..	27	156	33.3	..	+12.4	..

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Date U.T. Place	Projected Area		Corrected Area		Longitude and Proper Motion		Latitude	Long. from C.M.
	Umbræ	Whole Spots	Umbræ	Whole Spots				
Group 15175.								
Sept. 20-Oct. 2. A slowly-diminishing regular spot with a companion until September 24.								
d					°	°	°	°
262.518 C	7	35	18	88	328.4	0.0	-18.4	-75.4
263.442 G	26	175	36	240	326.4	-1.9	-18.0	-65.2
264.406 G	38	230	34	211	326.4	-1.9	-18.1	-52.5
265.470 G	60	305	42	216	326.7	-1.5	-17.8	-38.1
266.377 G	51	280	31	171	327.0	-1.2	-17.9	-25.8
267.345 G	36	271	21	154	327.0	-1.1	-18.1	-13.1
268.555 G	43	244	24	134	326.8	-1.3	-17.9	+ 2.7
269.423 G	40	242	23	138	326.9	-1.1	-17.8	+14.3
270.309 C	37	201	23	123	326.8	-1.2	-17.9	+25.8
271.304 C	28	186	20	132	326.5	-1.4	-17.8	+38.7
272.348 G	22	108	20	100	326.9	-0.9	-17.6	+52.9
273.549 G	4	36	7	59	327.2	-0.6	-17.6	+69.0
274.357 G	2	9	7	30	326.0	-1.7	-17.6	+78.5
Means	..	..	24	138	326.8	..	-17.9	..
Group 15176.								
Sept. 23-Oct. 4. A stream of variable spots with a brief maximum on September 25.								
265.470 G	0	11	0	18	294.0	0.0	- 9.8	-70.8
266.377 G	4	16	4	17	293.7	-0.4	- 9.6	-59.1
267.345 G	61	300	47	232	293.2	-1.0	- 9.8	-46.9
268.555 G	49	233	29	141	295.0	+0.6	- 9.4	-29.1
269.423 G	54	237	30	130	295.2	+0.7	- 9.4	-17.4
270.309 C	24	249	13	130	295.1	+0.5	- 9.4	- 5.9
271.304 C	37	223	20	118	295.4	+0.7	- 9.4	+ 7.6
272.348 G	14	49	8	29	298.6	+3.7	- 8.6	+24.6
273.549 G	4	16	3	11	300.3	+5.3	- 8.8	+42.1
274.357 G	13	81	11	69	299.3	+4.2	- 8.5	+51.8
275.345 G	7	38	9	49	300.3	+5.1	- 8.0	+65.8
276.375 G	4	47	13	148	300.7	+5.3	- 7.6	+79.8
Means	..	..	16	91	296.7	..	- 9.0	..
Group 15178.								
Sept. 23-Oct. 4. A decreasing regular spot followed by one or two companions until September 29.								
265.470 G	16	45	41	117	284.4	..	+15.4	-80.4
266.377 G	15	110	21	147	284.1	0.0	+15.2	-68.7
267.345 G	33	193	28	166	284.9	+0.8	+15.1	-55.2

Date U.T. Place	Projected Area		Corrected Area		Longitude and Proper Motion		Latitude	Long. from C.M.
	Umbræ	Whole Spots	Umbræ	Whole Spots				
Group 15178 - *continued*								
d					°	°	°	°
268.555 G	24	172	15	108	286.3	+2.2	+14.9	-37.8
269.423 G	22	162	12	91	286.8	+2.7	+15.0	-25.8
270.309 C	24	181	12	94	287.4	+3.2	+14.7	-13.6
271.304 C	30	203	15	104	287.5	+3.3	+15.0	- 0.3
272.348 G	45	195	23	101	288.1	+3.9	+15.1	+14.1
273.549 G	25	143	15	84	289.1	+4.9	+15.1	+30.9
274.357 G	11	90	7	60	288.9	+4.7	+15.2	+41.4
275.345 G	4	33	3	28	289.4	+5.2	+15.2	+54.9
276.375 G	0	7	0	9	289.5	+5.3	+15.2	+68.6
Means	..	..	14	90	287.5	..	+15.1	..
Group 15181.								
Sept. 24-Oct. 4. The rapid development from September 30 of a regular spot with an unstable follower is preceded by several days of feeble activity.								
266.377 G	0	4	0	3	300.6	0.0	+19.3	-52.2
267.345 G	2	4	1	3	301.2	+0.7	+17.5	-38.9
268.555 G	13	60	7	33	301.7	+1.2	+17.4	-22.4
269.423 G	7	43	4	22	301.0	+0.6	+17.3	-11.6
270.309 C	4	26	2	13	301.5	+1.2	+17.6	+ 0.5
271.304 C	17	76	9	40	299.2	-1.1	+19.1	+11.4
272.348 G	56	381	32	218	300.3	+0.1	+18.6	+26.3
273.549 G	82	515	56	348	300.3	+0.2	+18.6	+42.1
274.357 G	76	677	63	553	299.6	-0.5	+18.6	+52.1
275.345 G	42	252	51	304	300.5	+0.5	+18.8	+66.0
276.375 G	6	76	15	199	300.4	+0.5	+18.7	+79.5
Means	..	..	22	158	300.6	..	+18.3	..
Group 15182.								
Sept. 25-Oct. 4. A stream of small spots undergoing slight changes and dying out before reaching the west limb.								
267.345 G	13	63	13	62	279.7	0.0	+19.2	-60.4
268.555 G	45	197	32	140	279.2	-0.4	+19.0	-44.9
269.423 G	38	250	23	152	279.4	-0.1	+18.6	-33.2
270.309 C	56	322	30	177	279.4	-0.1	+18.7	-21.6
271.304 C	84	461	43	239	279.9	+0.5	+18.7	- 7.9
272.348 G	52	325	27	166	279.5	+0.2	+19.0	+ 5.5
273.549 G	29	248	16	135	278.9	-0.3	+18.4	+20.7
274.357 G	24	122	14	72	279.5	+0.3	+18.3	+32.0
275.345 G	7	31	5	23	280.8	+1.7	+18.3	+46.3
276.375 G	2	13	2	13	281.0	+2.0	+19.0	+60.1
Means	..	..	20	118	279.7	..	+18.7	..

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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 15184. Sept. 25-Oct. 2. A small spot, with a companion on September 28.							
d					°	°	°
267.345 G	4	25	6	40	274.9	0.0	-28.0	-65.2
268.555 G	16	78	16	76	274.4	0.0	-28.4	-49.7
269.423 G	18	92	14	74	273.8	-0.2	-28.4	-38.8
270.309 C	15	93	10	66	272.9	-0.8	-28.6	-28.1
271.304 C	11	28	7	18	273.3	0.0	-29.1	-14.5
272.348 G	2	11	1	7	273.1	+0.3	-29.7	- 0.9
273.549 G	2	9	1	6	272.8	+0.5	-30.4	+14.6
274.357 G	0	9	0	6	272.8	+0.8	-28.0	+25.3
Means	..	..	7	37	273.5	..	-28.8	..
Group 15185. Sept. 26-Oct. 4. A few unstable spots due south of Group 15176.							
268.555 G	4	27	2	17	294.8	0.0	-13.8	-29.3
269.423 G	7	18	4	10	295.4	+0.5	-13.8	-17.2
270.309 C	11	56	6	30	296.2	+1.3	-13.5	- 4.8
271.304 C	21	162	11	88	296.9	+1.9	-12.7	+ 9.1
272.348 G	11	70	6	41	298.0	+2.9	-11.8	+24.0
273.549 G	4	25	3	17	297.6	+2.4	-11.9	+39.4
274.357 G	9	60	8	50	297.9	+2.7	-12.0	+50.4
275.345 G	2	13	2	15	297.6	+2.3	- 9.1	+63.1
276.375 G	2	16	5	39	297.9	+2.5	- 9.4	+77.0
Means	..	..	5	34	296.9	..	-12.0	..
Group 15191. Sept. 30-Oct. 10. A stream of complex spots growing rapidly from small spots near the east limb and reaching a maximum on October 3. Decay is also rapid, the rear part of the group being the last to go.							
272.348 G	7	20	7	20	213.6	0.0	+24.9	-60.4
273.549 G	47	235	36	174	211.7	-1.6	+24.1	-46.5
274.357 G	76	793	49	520	210.2	-2.8	+24.5	-37.3
275.345 G	143	1106	82	633	210.5	-2.3	+24.9	-24.0
276.375 G	162	789	87	425	210.0	-2.5	+24.7	-10.9
277.422 G	133	772	70	410	210.5	-1.7	+24.8	+ 3.4
278.296 C	94	656	51	356	209.6	-2.3	+24.9	+14.1
279.374 G	89	444	53	265	209.2	-2.4	+25.7	+27.9
280.576 G	29	158	20	110	207.5	-3.8	+25.5	+42.0
281.408 G	2	23	2	23	210.8	-0.3	+26.9	+56.3
282.361 G	2	9	2	10	206.6	-4.2	+25.4	+64.7
Means	..	..	42	268	210.0	..	+25.1	..

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 15195. Oct. 2-13. Small spots in a stream.							
d					°	°	°
274.357 G	2	11	4	23	172.7	0.0	-10.3	-74.8
275.345 G	4	29	5	35	171.3	-1.5	-10.3	-63.2
276.375 G	20	89	17	74	170.5	-2.4	-10.7	-50.4
277.422 G	25	174	17	114	171.0	-2.0	-10.7	-36.1
278.296 C	15	75	9	44	171.4	-1.7	-10.8	-24.1
279.374 G	8	89	4	48	170.3	-2.9	-11.0	-11.0
280.576 G	7	33	4	17	171.1	-2.2	-10.6	+ 5.6
281.408 G	9	96	5	52	170.9	-2.5	-10.5	+16.4
282.361 G	40	116	24	69	170.7	-2.8	-10.7	+28.8
283.426 G	7	58	5	41	169.3	-4.3	-11.0	+41.4
284.545 G	4	28	4	28	169.7	-4.0	-10.7	+56.6
285.294 C	11	60	15	83	170.2	-3.6	-11.1	+67.0
Means	..	..	9	52	170.8	..	-10.7	..
Group 15196. Oct. 2-13. A small spot, closely following Group 15192, with one or two companions on October 3 and 4.							
274.357 G	0	4	0	7	172.5	0.0	+17.4	-75.0
275.345 G	27	112	26	106	175.0	+2.5	+16.7	-59.5
276.375 G	18	123	12	87	176.4	+4.0	+17.2	-44.5
277.422 G	29	147	17	87	176.9	+4.5	+17.6	-30.2
278.296 C	22	116	12	63	176.6	+4.3	+17.7	-18.9
279.374 G	20	116	10	59	176.2	+3.9	+17.8	- 5.1
280.576 G	22	125	11	65	176.1	+3.9	+17.6	+10.6
281.408 G	16	91	9	50	175.7	+3.5	+17.8	+21.2
282.361 G	27	74	16	45	175.8	+3.7	+17.7	+33.9
283.426 G	11	40	8	30	175.9	+3.8	+17.9	+48.0
284.545 G	2	18	2	19	176.0	+4.0	+17.9	+62.9
285.294 C	2	9	3	14	176.0	+4.0	+17.9	+72.8
Means	..	..	10	53	175.8	..	+17.6	..
Group 15204. Oct. 8-16. On October 8 two nuclei which quickly develop into regular spots, *a* and *b*.							
280.576 G	8	26	4	16	141.4	0.0	-14.0	-24.1
281.408 G	20	105	11	57	142.1	+0.7	-13.9	-12.4
282.361 G	132	649	70	344	143.1	+1.7	-14.1	+ 1.2
283.426 G	120	748	67	415	142.5	+1.0	-14.6	+14.6
284.545 G	122	731	75	450	142.5	+1.0	-14.6	+29.4
285.294 C	103	614	72	426	141.5	0.0	-14.7	+38.3
286.658 G	58	315	58	311	141.0	-0.6	-14.7	+55.8
287.293 C	24	212	31	274	140.7	-0.9	-15.0	+63.8
288.292 C	8	86	24	265	142.0	+0.4	-14.6	+78.3
Means	..	..	46	284	141.9	..	-14.5	..

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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 15204 - *continued*								
Spot *a*								
d					°	°	°	°
280.576 G	4	13	2	8	143.1	0.0	-13.6	-22.4
281.408 G	13	67	7	36	143.0	-0.1	-13.9	-11.5
282.361 G	83	482	44	255	144.2	+1.1	-14.1	+ 2.3
283.426 G	67	397	38	222	144.8	+1.6	-14.6	+16.9
284.545 G	58	382	37	241	144.9	+1.7	-14.4	+31.8
285.294 C	47	289	34	208	144.8	+1.6	-14.1	+41.6
286.658 G	31	131	33	140	144.4	+1.1	-14.1	+59.2
287.293 C	11	81	16	119	144.7	+1.4	-14.2	+67.8
288.292 C	4	43	15	164	144.4	..	-14.3	+80.7
Spot *b*								
280.576 G	4	13	2	8	139.7	0.0	-14.4	-25.8
281.408 G	7	38	4	21	140.4	+0.7	-13.9	-14.1
282.361 G	49	167	26	89	139.8	+0.1	-14.0	- 2.1
283.426 G	53	351	29	193	140.0	+0.2	-14.4	+12.1
284.545 G	64	349	38	209	139.6	-0.2	-14.7	+26.5
285.294 C	56	325	38	218	139.0	-0.8	-15.1	+35.8
286.658 G	27	184	25	171	139.2	-0.7	-15.1	+54.0
287.293 C	13	131	15	155	138.9	-1.0	-15.2	+62.0
288.292 C	4	43	9	101	139.2	-0.7	-15.5	+75.5
Group 15205.								
Oct. 8-19. Weak but sustained spot-occurrence.								
280.576 G	0	4	0	4	101.8	0.0	+16.1	-63.7
281.408 G	0	4	0	3	101.9	+0.1	+16.0	-52.6
282.361 G	0	7	0	5	102.1	+0.3	+16.0	-39.8
283.426 G	0	4	0	2	102.6	+0.8	+15.5	-25.3
284.545 G	0	8	0	4	97.3	-4.5	+15.8	-15.8
285.294 C	8	56	4	29	96.4	-5.4	+16.3	- 6.8
286.658 G	20	133	11	69	97.1	-4.6	+16.6	+11.9
287.293 C	17	154	9	84	97.7	-4.0	+17.0	+20.8
288.292 C	10	83	6	51	98.7	-3.0	+16.7	+35.0
289.292 C	34	156	28	127	102.1	+0.4	+15.7	+51.6
290.290 C	2	23	3	28	103.4	+1.7	+15.5	+66.1
291.310 C	0	10	0	50	108.1	..	+16.0	+84.2
Means	..	..	6	37	100.1	..	+16.1	..
Group 15206.								
Oct. 8-18. Intermittent. A small spot until October 11; a lapse of four days - then a pair of spots from October 16.								
280.576 G	4	13	5	18	100.3	0.0	-15.4	-65.2
281.408 G	4	22	4	20	102.2	+1.9	-15.5	-52.3
282.361 G	11	25	8	17	103.3	+3.0	-15.5	-38.6

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 15206 - *continued*								
d					°	°	°	°
283.426 G	2	7	1	4	104.5	+4.2	-16.1	-23.4
284.545 G	0	0	0	0	..	..	..	..
285.294 C	0	0	0	0	..	..	..	..
286.658 G	0	0	0	0	..	..	..	..
287.293 C	0	0	0	0	..	..	..	..
288.292 C	15	131	11	92	102.7	+2.4	-15.6	+39.0
289.292 C	15	77	14	72	104.2	+3.9	-15.8	+53.7
290.290 C	4	49	7	82	106.4	+6.1	-16.4	+69.1
Means	..	..	5	28	103.4	..	-15.8	..
Group 15207.								
Oct. 8-21. A stable regular spot in slow decline.								
280.576 G	13	54	43	177	82.6	..	+19.1	-82.9
281.408 G	25	138	40	221	81.7	0.0	+19.2	-72.8
282.361 G	42	210	42	208	81.9	+0.3	+19.3	-60.0
283.426 G	58	284	42	204	82.2	+0.7	+19.3	-45.7
284.545 G	62	380	37	228	82.0	+0.6	+19.4	-31.1
285.294 C	75	407	41	224	81.8	+0.5	+19.4	-21.4
286.658 G	82	426	42	217	81.5	+0.3	+19.0	- 3.7
287.293 C	92	437	48	227	81.5	+0.4	+19.4	+ 4.6
288.292 C	94	417	51	225	81.2	+0.1	+19.0	+17.5
289.292 C	58	362	34	214	81.0	0.0	+19.1	+30.5
290.290 C	30	259	21	181	80.5	-0.4	+19.4	+43.2
291.310 C	32	141	29	127	79.8	-1.0	+19.4	+55.9
292.290 C	13	128	18	177	80.4	-0.3	+19.3	+69.4
293.289 C	2	13	7	45	80.7	..	+19.0	+82.9
Means	..	..	37	204	81.3	..	+19.3	..
Group 15208.								
Oct. 8-19. A small area of weak intermittent disturbance, marked by a small spot except on October 14, 16 and 18.								
281.408 G	4	16	5	20	87.9	0.0	+ 8.8	-66.6
282.361 G	11	31	9	25	88.9	+0.9	+ 9.0	-53.0
283.426 G	2	13	1	8	89.9	+1.7	+ 8.9	-38.0
284.545 G	2	9	1	5	88.6	+0.3	+ 9.7	-24.5
285.294 C	4	9	2	5	88.3	-0.1	+ 9.4	-14.9
286.658 G	0	0	0	0	..	..	..	..
287.293 C	0	6	0	3	87.9	-0.7	+10.2	+11.0
288.292 C	0	0	0	0	..	..	..	..
289.292 C	4	26	3	17	91.5	+2.6	+ 7.9	+41.0
290.290 C	0	0	0	0	..	..	..	..
291.310 C	2	6	2	7	89.8	+0.7	+ 9.0	+65.9
Means	..	..	2	8	89.1	..	+ 9.1	..

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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 15209.							
Oct. 9-20. A composite spot, disappearing rather abruptly.							
d					°	°	°
281.408 G	7	96	16	226	75.9	0.0	+11.0	-78.6
282.361 G	27	192	32	230	75.9	-0.1	+10.7	-66.0
283.426 G	38	235	30	186	76.7	+0.6	+10.7	-51.2
284.545 G	40	275	25	170	77.2	+1.0	+10.7	-35.9
285.294 C	51	270	29	151	77.6	+1.3	+10.8	-25.6
286.658 G	38	333	19	170	77.4	+1.0	+11.3	- 7.8
287.293 C	49	364	24	182	77.7	+1.2	+11.3	+ 0.8
288.292 C	51	349	27	181	77.8	+1.2	+11.2	+14.1
289.292 C	39	203	22	114	78.0	+1.4	+11.0	+27.5
290.290 C	15	210	10	139	78.0	+1.3	+11.4	+40.7
291.310 C	24	58	20	49	77.8	+1.0	+10.9	+53.9
292.290 C	4	45	5	57	78.3	+1.4	+10.8	+67.3
Means	..	..	22	155	77.4	..	+11.0	..
Group 15211.							
Oct. 14-26. A group of stream type. A large composite spot develops in front, as the following section dies out. After October 22, the leader distends in longitude and breaks up.							
286.658 G	11	93	22	188	13.9	0.0	-22.8	-71.3
287.293 C	39	263	54	378	12.2	-1.6	-23.6	-64.7
288.292 C	102	734	100	721	11.0	-2.6	-24.5	-52.7
289.292 C	133	781	98	582	12.0	-1.3	-24.0	-38.5
290.290 C	123	1072	78	681	12.3	-0.8	-23.5	-25.0
291.310 C	137	1066	81	623	12.2	-0.7	-23.6	-11.7
292.290 C	113	995	64	571	12.7	0.0	-22.9	+ 1.7
293.289 C	85	1029	50	608	12.3	-0.2	-23.5	+14.5
294.621 G	77	1034	52	703	12.4	+0.2	-23.4	+32.2
295.439 G	88	796	70	629	12.6	+0.6	-22.8	+43.2
296.475 G	44	400	47	425	12.6	+0.8	-22.3	+56.8
297.419 C	19	147	34	261	13.6	+2.0	-22.3	+70.3
298.310 C	2	11	8	42	11.5	+0.1	-22.1	+79.9
Means	..	..	58	493	12.4	..	-23.2	..
Group 15212.							
Oct. 16-23. One or two small spots over a 5° range in longitude.							
288.292 C	4	39	4	34	10.0	0.0	- 8.2	-53.7
289.292 C	25	77	17	53	9.1	-1.0	- 8.7	-41.4

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 15212 - *continued*							
d					°	°	°
290.290 C	8	53	5	31	9.3	-1.0	- 8.5	-28.0
291.310 C	13	41	7	22	8.3	-2.1	- 8.8	-15.6
292.290 C	2	11	1	6	9.7	-0.8	- 8.3	- 1.3
293.289 C	0	0	0	0	..	..	..	..
294.621 G	2	13	1	8	13.0	+2.2	- 8.5	+32.8
295.439 G	2	18	1	13	13.2	+2.2	- 9.0	+43.8
Means	..	..	4	21	10.4	..	- 8.5	..
Group 15213.							
Oct. 16-22. A close pair of small spots; only one is seen on October 21 and 22.							
288.292 C	4	34	7	62	351.3	0.0	-11.8	-72.4
289.292 C	15	64	16	67	351.4	0.0	-11.9	-59.1
290.290 C	15	98	12	75	350.8	-0.6	-12.5	-46.5
291.310 C	24	74	15	46	351.1	-0.4	-12.8	-32.8
292.290 C	4	26	2	15	351.0	-0.6	-12.2	-20.0
293.289 C	4	28	2	15	351.2	-0.4	-13.5	- 6.6
294.621 G	2	24	1	13	351.0	-0.7	-12.1	+10.8
Means	..	..	8	42	351.1	..	-12.4	..
Group 15215.							
Oct. 18-29. A regular spot alone until October 24. Then small companions appear, while the parent spot breaks up and so dies out.							
290.290 C	2	13	7	43	320.5	0.0	-29.1	-76.8
291.310 C	11	75	17	118	318.7	-1.4	-29.6	-65.2
292.290 C	24	148	25	154	318.4	-1.3	-29.2	-52.6
293.289 C	34	231	28	187	317.8	-1.4	-29.2	-40.0
294.621 G	42	225	28	148	316.8	-1.9	-28.8	-23.4
295.439 G	57	277	35	172	316.5	-1.9	-28.8	-12.9
296.475 G	48	279	29	167	316.2	-1.7	-28.4	+ 0.4
297.419 C	49	264	30	163	315.0	-2.5	-28.2	+11.7
298.310 C	29	166	19	108	314.4	-2.8	-28.0	+22.8
299.577 G	29	110	23	86	313.9	-2.7	-28.8	+39.0
300.493 G	11	53	11	52	313.6	-2.6	-29.1	+50.8
301.408 C	2	9	3	12	313.2	-2.7	-29.5	+62.5
Means	..	..	21	118	316.2	..	-28.9	..

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Group 15216.

Oct. 19-28. A new stream of which the leader, *a*, a regular spot, soon breaks up but eventually survives the following part which dies out by October 27.

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					°	°	°
291.310 C	28	79	21	59	335.4	0.0	+11.5	-48.5
292.290 C	88	578	53	349	337.1	+1.6	+11.5	-33.9
293.289 C	109	693	58	372	337.3	+1.7	+11.2	-20.5
294.621 G	106	753	53	380	337.1	+1.4	+10.6	- 3.1
295.439 G	105	668	53	340	339.5	+3.7	+10.3	+10.1
296.475 G	123	774	68	425	339.7	+3.8	+10.5	+23.9
297.419 C	96	743	60	464	339.9	+3.9	+10.3	+36.6
298.310 C	62	356	48	276	340.3	+4.2	+10.8	+48.7
299.577 G	37	165	49	219	343.3	+7.1	+10.1	+68.4
300.493 G	4	18	12	55	344.0	..	+10.5	+81.2
Means	..	..	51	320	338.8	..	+10.8	..

Spot *a*

292.290 C	60	396	35	234	339.4	0.0	+10.8	-31.6
293.289 C	56	385	29	200	340.9	+1.4	+10.2	-16.9
294.621 G	77	360	38	180	342.0	+2.4	+ 9.8	+ 1.8
295.439 G	81	411	41	210	342.2	+2.5	+ 9.6	+12.8
296.475 G	73	453	41	254	342.1	+2.3	+ 9.9	+26.3
297.419 C	70	513	45	328	342.3	+2.4	+ 9.7	+39.0
298.310 C	53	288	42	230	342.9	+2.9	+ 9.8	+51.3
299.577 G	37	165	49	219	343.3	+3.2	+10.1	+68.4
300.493 G	4	18	12	55	344.0	..	+10.5	+81.2

Group 15218.

Oct. 20-29. Small unstable spots.

292.290 C	6	43	16	118	290.3	..	+19.9	-80.7
293.289 C	19	86	25	111	290.2	0.0	+20.2	-67.6
294.621 G	25	170	20	132	290.4	+0.4	+21.0	-49.8
295.439 G	20	174	13	114	291.0	+1.0	+19.9	-38.4
296.475 G	35	187	20	108	290.5	+0.7	+19.9	-25.3
297.419 C	37	164	20	87	291.3	+1.6	+20.4	-12.0
298.310 C	11	79	6	41	292.3	+2.7	+19.6	+ 0.7
299.577 G	7	46	4	25	292.9	+3.4	+19.4	+18.0
300.493 G	0	11	0	6	290.6	+1.2	+19.7	+27.8
301.408 C	2	11	1	7	290.4	+1.1	+19.9	+39.7
Means	..	..	12	70	291.1	..	+20.0	..

Group 15219.

Oct. 20-31. A stream probably near its maximum development at the east limb. The following part is diminishing throughout, leaving the leader, *a*, a small regular spot, alone at the west limb.

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					°	°	°	°
292.290 C	6	41	(26	180	288.9	..	-12.1)	-82.1
293.289 C	45	347	81	600	286.8	0.0	-13.0	-71.0
294.621 G	106	659	95	600	286.4	-0.5	-13.4	-53.8
295.439 G	143	791	104	577	287.0	+0.1	-13.5	-42.4
296.475 G	92	678	54	409	287.7	+0.7	-13.4	-28.1
297.419 C	81	577	44	316	289.2	+2.2	-13.2	-14.1
298.310 C	60	395	32	209	291.2	+4.2	-13.2	- 0.4
299.577 G	66	449	36	248	291.9	+4.8	-13.5	+17.0
300.493 G	46	269	28	166	293.0	+5.9	-13.9	+30.2
301.408 C	32	294	24	217	293.9	+6.7	-14.1	+43.2
302.286 C	36	299	35	288	295.5	+8.3	-13.7	+56.4
303.590 C	17	100	36	213	296.7	+9.5	-13.8	+74.8
Means	..	..	52	349	290.8	..	-13.5	..

Spot *a*

293.289 C	9	124	12	170	291.0	0.0	-11.9	-66.8
294.621 G	42	203	34	162	292.0	+0.9	-12.5	-48.2
295.439 G	57	334	38	224	292.0	+0.9	-12.8	-37.4
296.475 G	48	266	27	152	293.0	+1.8	-13.2	-22.8
297.419 C	45	315	24	170	293.4	+2.2	-13.6	- 9.9
298.310 C	38	268	20	142	293.8	+2.6	-13.3	+ 2.2
299.577 G	33	255	18	143	294.8	+3.5	-13.1	+19.9
300.493 G	35	194	22	122	295.2	+3.9	-13.8	+32.4
301.408 C	28	262	21	196	295.2	+3.8	-13.9	+44.5
302.286 C	34	290	33	281	295.7	+4.3	-13.7	+56.6
303.590 C	17	100	36	213	296.7	+5.3	-13.8	+74.8

Group 15220.

Oct. 21-28. A small spot rapidly dying out.

293.289 C	4	36	10	89	281.8	0.0	-16.8	-76.0
294.621 G	13	97	15	109	280.1	-1.7	-17.1	-60.1
295.439 G	22	149	18	125	280.1	-1.6	-17.3	-49.3
296.475 G	20	84	13	56	280.0	-1.7	-17.2	-35.8
297.419 C	6	21	4	12	279.7	-2.0	-17.2	-23.6
298.310 C	2	11	1	6	280.0	-1.6	-17.0	-11.6
Means	..	..	10	66	280.3	..	-17.1	..

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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 15221. Oct. 21-Nov. 1. A regular spot, with a few companions on October 23 and 27.							
d					°	°	°
293.289 C	4	28	12	82	279.4	0.0	-14.5	-78.4
294.621 G	22	102	25	115	279.1	-0.3	-14.3	-61.1
295.439 G	37	183	31	156	278.7	-0.7	-14.4	-50.7
296.475 G	29	205	19	137	278.2	-1.3	-14.2	-37.6
297.419 C	38	217	22	128	277.5	-2.0	-14.4	-25.8
298.310 C	49	243	27	134	277.4	-2.1	-14.4	-14.2
299.577 G	51	297	27	157	277.5	-2.0	-14.7	+ 2.6
300.493 G	29	152	16	84	276.8	-2.8	-14.8	+14.0
301.408 C	26	143	15	84	276.4	-3.2	-15.1	+25.7
302.286 C	17	119	11	80	276.3	-3.3	-15.2	+37.2
303.590 C	21	87	20	81	276.5	-3.1	-15.1	+54.6
304.379 C	8	17	10	22	276.7	-2.0	-15.5	+65.2
Means	..	..	20	105	277.5	..	-14.7	..
Group 15229. Oct. 24-Nov. 5. A regular spot in general decline.							
296.475 G	9	55	27	167	237.6	0.0	-17.9	-78.2
297.419 C	15	96	21	132	237.4	-0.2	-17.6	-65.9
298.310 C	15	145	14	136	237.5	0.0	-17.4	-54.1
299.577 G	55	268	38	185	237.2	-0.3	-17.3	-37.7
300.493 G	22	169	13	101	237.4	0.0	-17.4	-25.4
301.408 C	26	155	14	85	237.2	-0.2	-17.2	-13.5
302.286 C	38	196	20	105	236.5	-0.9	-16.7	- 2.6
303.590 C	32	151	18	85	236.9	-0.4	-17.0	+15.0
304.379 C	23	117	14	70	236.8	-0.5	-17.5	+25.3
305.373 C	23	121	16	85	237.1	-0.1	-17.7	+38.7
306.431 G	11	79	10	71	237.3	+0.1	-17.5	+52.8
307.288 C	8	45	10	57	237.2	+0.1	-17.6	+64.0
308.387 G	4	24	11	68	236.8	-0.3	-17.5	+78.1
Means	..	..	17	104	237.1	..	-17.4	..
Group 15238. Nov. 3-10. A string of small variable spots.							
306.431 G	20	88	11	48	176.0	0.0	+26.7	- 8.5
307.288 C	17	83	9	45	175.4	-0.3	+27.1	+ 2.2
308.387 G	22	103	12	58	175.3	-0.1	+26.5	+16.6
309.524 C	10	72	6	45	175.4	+0.4	+25.9	+31.7
310.429 G	8	51	6	38	176.0	+1.2	+25.9	+44.2
311.439 C	6	43	6	41	176.1	+1.6	+25.2	+57.7
312.313 C	4	26	6	39	177.0	+2.8	+25.3	+70.1
313.292 C	2	13	5	31	172.1	-1.8	+25.3	+78.1
Means	..	..	8	43	175.4	..	+26.0	..

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 15241. Nov. 6-12. A pair of small spots, not seen on November 10.							
d					°	°	°	°
309.524 C	4	25	5	29	80.3	0.0	- 9.1	-63.4
310.429 G	28	94	22	74	82.6	+3.2	- 8.6	-49.2
311.439 G	14	68	9	43	83.1	+3.5	- 8.5	-35.3
312.313 C	4	23	2	12	84.0	+4.3	- 8.2	-22.9
313.292 C	0	0	0	0	..	..	..	..
314.304 C	19	57	10	29	81.7	+1.8	- 8.5	+ 1.0
315.289 C	10	78	5	41	81.3	+1.2	- 8.5	+13.6
Means	..	..	8	33	82.2	..	- 8.6	..
Group 15242. Nov. 6-16. A regular spot which disintegrates after November 12 and so dies out rapidly.							
309.524 C	13	129	28	280	66.5	0.0	+18.5	-77.2
310.429 G	28	247	35	309	65.5	-0.9	+18.8	-66.3
311.439 C	25	281	22	242	65.0	-1.3	+19.0	-53.4
312.313 C	84	426	59	298	64.4	-1.8	+19.1	-42.5
313.292 C	53	464	32	278	63.8	-2.4	+19.2	-30.2
314.304 C	63	521	34	281	63.3	-2.8	+19.4	-17.4
315.289 C	68	506	35	263	62.9	-3.1	+19.2	- 4.8
316.485 G	64	293	34	155	62.9	-3.0	+19.6	+11.0
317.290 C	34	390	19	218	63.1	-2.7	+19.8	+21.8
318.287 C	6	146	4	92	63.0	-2.7	+19.7	+34.8
319.313 C	6	25	5	20	64.3	-1.3	+18.7	+49.7
Means	..	..	28	221	64.1	..	+19.2	..
Group 15244. Nov. 7-19. A regular spot, *a*, followed by a string of small companions on November 9-14.							
310.429 G	22	101	54	248	53.2	0.0	+ 7.5	-78.6
311.439 C	27	192	31	219	54.2	+0.9	+ 7.6	-64.2
312.313 C	54	353	46	306	52.4	-1.1	+ 8.2	-54.5
313.292 C	85	513	59	347	51.2	-2.4	+ 8.2	-42.8
314.304 C	144	696	80	392	53.0	-0.8	+ 8.0	-27.7
315.289 C	99	641	51	330	53.7	-0.2	+ 8.2	-14.0
316.485 G	105	526	53	262	54.2	+0.1	+ 8.0	+ 2.3
317.290 C	75	477	39	247	55.1	+0.9	+ 7.5	+13.8
318.287 C	49	441	28	251	57.0	+2.7	+ 7.1	+28.8
319.313 C	30	241	20	164	57.1	+2.6	+ 6.9	+42.5
320.442 C	23	181	21	168	57.4	+2.8	+ 6.8	+57.6
321.539 G	17	107	28	174	57.6	+2.8	+ 6.8	+72.3
322.297 C	4	25	14	90	57.6	..	+ 6.7	+82.3
Means	..	..	42	259	54.7	..	+ 7.6	..

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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 15244 - *continued*							
Spot *a*							
d					°	°	°
310.429 G	22	101	54	248	53.2	0.0	+ 7.5	-78.6
311.439 C	27	192	31	219	54.2	+0.9	+ 7.6	-64.2
312.313 C	44	272	36	223	54.4	+0.9	+ 7.4	-52.5
313.292 C	42	342	27	222	54.8	+1.2	+ 7.5	-39.2
314.304 C	106	473	58	260	55.2	+1.4	+ 7.4	-25.5
315.289 C	78	449	40	229	55.7	+1.8	+ 7.3	-12.0
316.485 G	72	412	36	206	56.2	+2.1	+ 7.3	+ 4.3
317.290 C	65	409	34	213	56.6	+2.4	+ 7.1	+15.3
318.287 C	49	441	28	251	57.0	+2.7	+ 7.1	+28.8
319.313 C	30	241	20	164	57.1	+2.6	+ 6.9	+42.5
320.442 C	23	181	21	168	57.4	+2.8	+ 6.8	+57.6
321.539 G	17	107	28	174	57.6	+2.8	+ 6.8	+72.3
322.297 C	4	25	14	90	57.6	..	+ 6.7	+82.3
Group 15247.							
Nov. 12-24. A regular spot with an occasional close companion.							
315.289 C	4	30	12	91	348.3	0.0	-14.8	-79.4
316.485 G	18	118	22	142	348.3	0.0	-14.5	-63.6
317.290 C	30	211	27	188	347.8	-0.5	-14.7	-53.5
318.287 C	38	255	26	176	347.5	-0.8	-14.7	-40.7
319.313 C	42	249	25	147	347.5	-0.8	-14.8	-27.1
320.442 C	46	269	25	145	347.3	-1.1	-15.1	-12.5
321.539 G	33	242	17	128	347.3	-1.1	-15.3	+ 2.0
322.297 C	52	304	28	164	347.2	-1.2	-15.5	+11.9
323.301 C	38	193	22	112	347.0	-1.4	-15.8	+24.9
324.289 C	27	170	18	114	347.1	-1.3	-15.8	+38.0
325.290 C	10	136	8	114	346.9	-1.5	-15.7	+51.0
326.310 C	10	67	12	82	346.8	-1.6	-15.7	+64.4
327.277 C	4	21	9	47	345.9	-2.2	-15.5	+76.2
Means	..	..	19	127	347.3	..	-15.2	..
Group 15250.							
Nov. 13-18. One or two small spots.							
316.485 G	4	22	3	17	3.6	0.0	-11.7	-48.3
317.290 C	2	15	1	10	4.2	+0.5	-11.8	-37.1
318.287 C	4	44	2	25	3.3	-0.5	-11.7	-24.9
319.313 C	2	21	1	11	4.1	+0.3	-11.6	-10.5
320.442 C	10	59	5	31	4.3	+0.4	-11.3	+ 4.5
321.539 G	6	33	3	18	5.5	+1.5	-11.1	+20.2
Means	..	..	2	19	4.2	..	-11.5	..
Group 15256.							
Nov. 15-20. Small nondescript spots.							
318.287 C	4	34	3	22	352.0	0.0	-11.4	-36.2
319.313 C	17	72	9	40	353.1	+1.0	-11.4	-21.5
320.442 C	10	53	5	28	355.5	+3.3	-11.2	- 4.3
321.539 G	2	18	1	10	355.7	+3.4	-11.3	+10.4
322.297 C	4	19	2	10	357.1	+4.7	-11.4	+21.8
323.301 C	2	13	1	8	359.9	+7.4	-11.2	+37.8
Means	..	..	4	20	355.6	..	-11.3	..
Group 15259.							
Nov. 16-27. A small decreasing elongated spot, followed by a few unstable companions.							
319.313 C	19	84	35	154	304.4	0.0	-29.1	-70.2
320.442 C	32	200	34	214	303.6	-0.4	-28.4	-56.2
321.539 G	26	187	21	148	303.3	-0.2	-28.6	-42.0
322.297 C	37	208	26	144	302.5	-0.7	-28.6	-32.8
323.301 C	19	122	12	76	302.1	-0.8	-28.9	-20.0
324.289 C	14	97	9	58	300.7	-1.8	-28.9	- 8.4
325.290 C	6	34	4	20	301.1	-1.0	-29.3	+ 5.2
326.310 C	2	15	1	9	300.0	-1.7	-29.1	+17.6
327.277 C	25	153	16	101	297.9	-3.4	-28.8	+28.2
328.413 G	24	113	19	94	301.4	+0.5	-27.1	+46.7
329.420 G	6	50	7	59	301.7	+1.2	-26.6	+60.3
330.353 C	0	6	0	11	301.9	+1.8	-23.7	+72.8
Means	..	..	15	91	301.7	..	-28.1	..
Group 15260.							
Nov. 16-27. A stream of normal type. As usual, the follower, *b*, is the first to die out.							
319.313 C	15	139	40	409	296.6	0.0	-18.4	-78.0
320.442 C	48	481	60	600	296.0	-0.5	-18.5	-63.8
321.539 G	72	560	59	465	296.5	0.0	-17.8	-48.8
322.297 C	78	632	54	440	295.8	-0.6	-17.5	-39.5
323.301 C	101	689	61	412	296.2	-0.2	-17.6	-25.9
324.289 C	155	929	85	505	296.2	-0.1	-17.5	-12.9
325.290 C	172	905	91	479	296.7	+0.4	-17.7	+ 0.8
326.310 C	69	464	37	253	297.4	+1.2	-17.5	+15.0
327.277 C	84	449	50	267	297.0	+0.8	-17.8	+27.3
328.413 G	37	225	28	170	300.1	+4.0	-17.9	+45.4
329.420 G	24	151	25	154	300.0	+4.0	-18.2	+58.6
330.353 C	15	82	24	132	299.4	+3.4	-17.9	+70.3
Means	..	..	51	357	297.3	..	-17.9	..

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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 15260 - *continued*							
Spot *a*							
d					°	°	°
319.313 C	11	74	26	174	298.6	0.0	-19.4	-76.0
320.442 C	29	258	34	299	297.7	-0.8	-18.6	-62.1
321.539 G	31	198	24	154	298.6	+0.1	-17.8	-46.7
322.297 C	21	132	14	87	299.5	+1.1	-17.6	-35.8
323.301 C	44	229	26	133	300.2	+1.8	-18.1	-21.9
324.289 C	48	242	26	131	300.7	+2.4	-18.4	- 8.4
325.290 C	67	218	36	116	301.1	+2.8	-18.1	+ 5.2
326.310 C	27	174	15	97	301.4	+3.2	-18.1	+19.0
327.277 C	40	220	25	136	301.1	+2.9	-17.8	+31.4
328.413 G	24	164	18	126	301.2	+3.1	-17.7	+46.5
329.420 G	20	120	21	125	300.4	+2.4	-17.7	+59.0
330.353 C	13	67	21	110	300.0	+2.0	-17.6	+70.9
Spot *b*							
319.313 C	4	65	14	235	293.9	..	-17.4	-80.7
320.442 C	19	223	26	301	293.8	0.0	-18.2	-66.0
321.539 G	41	362	35	311	294.1	+0.4	-18.0	-51.2
322.297 C	38	267	27	192	292.9	-0.8	-17.8	-42.4
323.301 C	32	237	20	147	291.9	-1.7	-17.6	-30.2
324.289 C	63	357	35	196	292.2	-1.4	-17.2	-16.9
325.290 C	78	233	41	123	291.4	-2.1	-16.6	- 4.5
326.310 C	23	155	12	82	291.0	-2.5	-16.0	+ 8.6
327.277 C	29	166	16	93	290,8	-2.6	-16.3	+21.1
Group 15261.							
Nov. 17-26. A small spot becoming regular by November 22. This is preceded by one or two small spots which have a brief maximum on November 24 - 25.							
320.442 C	4	17	2	10	326.8	0.0	- 6.5	-33.0
321.539 G	42	119	23	65	324.8	-2.2	- 6.5	-20.5
322.297 C	23	143	12	74	325.2	-1.9	- 6.7	-10.1
323.301 C	17	47	9	24	324.0	-3.2	- 7.2	+ 1.9
324.289 C	25	155	13	80	322.3	-5.1	- 7.2	+13.2
325.290 C	36	258	20	148	322.9	-4.6	- 7.0	+27.0
326.310 C	42	275	28	187	324.2	-3.5	- 6.8	+41.8
327.277 C	93	500	83	447	324.7	-3.1	- 7.2	+55.0
328.413 G	35	231	53	363	325.2	-2.8	- 6.7	+70.5
329.420 G	7	52	(20	147	320.9	..	- 7.4)	+79.5
Means	..	..	27	155	324.5	..	- 6.9	..
Group 15262.							
Nov. 18-27. A small spot, preceding the development of a regular spot closely followed by a few small spots. The latter die out leaving the regular spot alone by November 25.							
Group 15262 - *continued*							
d					°	°	°	°
321.539 G	9	26	6	19	300.7	0.0	+17.0	-44.6
322.297 C	61	382	39	239	301.0	+0.3	+17.2	-34.3
323.301 C	84	458	47	253	301.3	+0.7	+17.7	-20.8
324.289 C	101	592	53	309	301.2	+0.6	+17.5	- 7.9
325.290 C	79	542	41	281	301.1	+0.6	+17.6	+ 5.2
326.310 C	61	380	34	209	301.5	+1.1	+17.8	+19.1
327.277 C	34	359	21	219	300.7	+0.3	+17.9	+31.0
328.413 G	50	299	37	221	300.3	0.0	+18.1	+45.6
329.420 G	41	203	41	201	299.9	-0.4	+18.3	+58.5
330.353 C	19	118	29	183	299.7	-0.5	+18.6	+70.6
Means	..	..	35	213	300.7	..	+17.8	..
Group 15263.							
Nov. 18-27. The compressed life-history of this small stream of normal type is completed in ten days.							
321.539 G	4	22	4	22	287.0	0.0	- 9.2	-38.3
322.297 C	27	170	21	132	286.7	-0.4	- 9.0	-48.6
323.301 C	49	245	31	158	285.1	-2.1	- 9.7	-37.0
324.289 C	62	303	35	168	286.7	-0.6	- 9.3	-22.4
325.290 C	75	483	38	249	288.3	+0.8	- 9.3	- 7.6
326.310 C	90	428	47	221	287.9	+0.3	- 9.9	+ 5.5
327.277 C	48	215	26	117	287.8	+0.1	-10.1	+18.1
328.413 G	21	89	13	56	289.5	+1.7	-10.1	+34.8
329.420 G	7	26	5	20	289.9	+1.9	- 9.6	+48.5
330.353 C	0	14	0	13	285.5	-2.6	- 7.9	+56.4
Means	..	..	22	116	287.4	..	- 9.4	..
Group 15264.							
Nov. 19-29. A pair of small spots widely separated in longitude. On November 23, other spots appear in front, and a big increase then follows resulting in two composite spots, *a* and *b*, which are still growing as they pass out of view.							
322.297 C	0	6	0	5	282.6	0.0	-18.1	-52.7
323.301 C	10	63	7	45	281.1	-1.4	-19.4	-41.0
324.289 C	21	101	12	61	281.1	-1.4	-19.2	-28.0
325.290 C	12	84	6	47	281.6	-0.8	-18.8	-14.3
326.310 C	40	132	21	71	285.5	+3.2	-18.5	+ 3.1
327.277 C	164	903	91	502	287.5	+5.2	-18.1	+17.8
328.413 G	200	1190	127	756	287.6	+5.4	-17.5	+32.9
329.420 G	146	1059	111	811	287.1	+5.0	-17.3	+45.7
330.353 C	119	1033	120	1053	286.4	+4.3	-17.8	+57.3
331.517 G	77	745	137	1452	286.8	+4.8	-17.8	+73.0
323.289 C	32	192	(91	552	283.2	..	-18.5)	+79.6
Means	..	..	63	480	284.7	..	-18.2	..

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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 15264 - *continued*							
Spot *a*							
d					°	°	°
327.277 C	80	548	45	307	289.2	0.0	-18.3	+19.5
328.413 G	100	595	66	393	290.9	+1.8	-17.7	+36.2
329.420 G	61	488	50	400	291.2	+2.1	-17.1	+49.8
330.353 C	48	462	54	522	290.9	+1.9	-17.3	+61.8
331.517 G	20	340	48	816	290.8	+1.9	-17.6	+77.0
Spot *b*							
327.277 C	84	355	46	195	283.9	0.0	-17.5	+14.2
328.413 G	100	595	61	363	284.1	+0.3	-17.3	+29.4
329.420 G	85	571	61	411	283.8	0.0	-17.2	+42.4
330.353 C	71	571	66	531	284.2	+0.5	-17.7	+55.1
331.517 G	57	405	89	636	283.7	+0.1	-18.5	+69.9
332.289 C	32	192	91	552	282.6	-1.0	-18.5	+79.0
Group 15272.							
Nov. 25-Dec. 3. One or two small spots with a brief maximum on December 1.							
328.413 G	2	22	2	19	205.7	0.0	-26.2	-49.0
329.420 G	4	24	3	17	204.3	-1.1	-26.6	-37.1
330.353 C	0	8	0	5	203.7	-1.4	-26.6	-25.4
331.517 G	2	13	1	8	202.0	-2.7	-26.9	-11.8
332.289 C	2	10	1	6	203.9	-0.6	-25.9	+ 0.3
333.321 C	6	48	3	28	202.5	-1.7	-26.6	+12.5
334.437 G	39	156	25	100	203.4	-0.4	-26.0	+28.1
335.294 C	15	69	11	50	204.5	+0.9	-24.8	+40.5
336.422 C	4	19	4	19	205.0	+1.8	-24.4	+55.9
Means	..	..	6	28	203.9	..	-26.0	..
Group 15274.							
Nov. 25-Dec. 5. A pair of composite spots which breaks up into a stream of small spots and so dies out.							
328.413 G	20	118	35	209	183.0	0.0	-22.1	-71.7
329.420 G	65	329	65	335	184.5	+1.7	-22.1	-56.9
330.353 C	65	393	51	304	184.0	+1.3	-22.1	-45.1
331.517 G	39	427	24	270	184.5	+2.0	-22.4	-29.3
332.289 C	54	360	31	207	184.4	+2.0	-21.5	-19.2
333.321 C	33	230	18	127	183.7	+1.5	-22.2	- 6.3
334.437 G	24	141	13	78	183.7	+1.7	-21.9	+ 8.4
335.294 C	13	104	7	59	180.8	-1.1	-22.0	+16.8
336.422 C	13	100	8	64	182.1	+0.4	-21.2	+33.0
337.330 C	10	69	8	52	182.3	+0.8	-21.5	+45.1
338.372 C	2	10	2	11	184.7	+3.4	-19.9	+61.3
Means	..	..	24	156	183.4	..	-21.7	..
Group 15275.							
Nov. 25-Dec. 1. A pair of spots, of which one remains after November 26.							
d					°	°	°	°
328.413 G	15	67	27	121	181.8	0.0	+25.0	-72.9
329.420 G	15	74	16	78	182.2	+0.7	+25.5	-59.2
330.353 C	17	50	14	40	181.7	+0.5	+25.1	-47.4
331.517 G	13	54	8	35	181.7	+0.8	+25.2	-32.1
332.289 C	6	44	4	26	181.3	+0.6	+25.9	-22.3
333.321 C	6	44	3	25	179.1	-1.3	+25.9	-10.9
334.437 G	9	35	5	19	175.1	-5.0	+24.3	- 0.2
Means	..	..	11	49	180.4	..	+25.3	..
Group 15277.							
Nov. 26-Dec. 5. A small variable stream.							
329.420 G	2	9	1	6	200.8	0.0	+25.5	-40.6
330.353 C	0	6	0	4	195.8	-4.7	+28.3	-33.3
331.517 G	2	24	1	14	196.0	-4.1	+27.5	-17.8
332.289 C	10	82	6	46	195.7	-4.2	+26.9	- 7.9
333.321 C	22	123	11	69	198.1	-1.4	+26.7	+ 8.1
334.437 G	37	191	22	115	198.5	-0.6	+26.5	+23.2
335.294 C	21	113	14	77	198.4	-0.5	+26.6	+34.4
336.422 C	6	58	6	52	201.1	+2.6	+26.1	+52.0
337.330 C	14	129	21	188	204.6	+6.4	+25.5	+67.4
338.372 C	6	19	13	41	198.6	+0.8	+26.2	+75.2
Means	..	..	10	61	198.8	..	+26.6	..
Group 15282.							
Dec. 1-7. A small spot, not seen on December 5.							
334.437 G	11	41	23	84	99.9	0.0	-12.1	-75.4
335.294 C	13	77	15	91	99.8	-0.2	-12.1	-64.2
336.422 C	8	52	6	41	100.3	+0.3	-11.7	-48.8
337.330 C	2	15	1	10	100.2	+0.1	-11.7	-37.0
338.372 C	0	0	0	0	..	..	..	..
339.305 C	4	31	2	16	101.9	+1.6	-12.9	- 9.2
340.281 C	2	6	1	3	101.0	+0.7	-12.7	+ 2.7
Means	..	..	7	35	100.5	..	-12.2	..
Group 15285.							
Dec. 4-11. A pair of small spots; others appear after December 8, to form a small unstable cluster.							
337.330 C	2	8	3	12	67.3	0.0	+12.9	-69.9
338.372 C	17	52	15	45	69.3	+1.9	+12.2	-54.1

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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 15285 - *continued*								
d					°	°	°	°
339.305 C	25	248	18	175	68.0	+0.6	+12.4	-43.1
340.281 C	25	125	15	74	68.1	+0.6	+12.2	-30.2
341.499 G	45	280	24	148	67.6	0.0	+12.6	-14.6
342.482 G	35	206	18	105	67.9	+0.2	+12.8	- 1.4
343.446 G	11	89	6	46	67.1	-0.6	+12.9	+10.5
344.287 C	2	8	1	4	67.7	-0.1	+11.6	+22.2
Means	..	..	12	76	67.9	..	+12.4	..
Group 15287.								
Dec. 5-13. A pair of spots, one component not being present on December 9, 12 and 13.								
338.372 C	16	107	11	73	82.2	0.0	+15.0	-41.2
339.305 C	27	106	15	63	82.3	+0.1	+15.0	-28.8
340.281 C	17	79	9	43	82.3	0.0	+14.7	-16.0
341.499 G	11	85	6	44	83.7	+1.4	+13.9	+ 1.5
342.482 G	7	35	4	19	83.6	+1.2	+14.1	+14.3
343.446 G	11	68	6	39	83.7	+1.3	+13.2	+27.1
344.287 C	16	84	11	56	85.1	+2.7	+13.1	+39.6
345.291 C	4	42	4	38	87.8	+5.3	+12.9	+55.5
346.285 C	2	6	3	8	87.8	+5.3	+12.9	+68.6
Means	..	..	8	43	84.3	..	+13.9	..
Group 15289.								
Dec. 5-14. A small spot with a few variable companions on several days.								
338.372 C	4	36	15	138	41.0	..	-10.8	-82.4
339.305 C	8	88	12	129	41.3	0.0	-10.8	-69.8
340.281 C	21	115	19	106	42.1	+0.7	-10.7	-56.2
341.499 G	28	228	19	153	41.2	-0.3	-10.4	-41.0
342.482 G	26	154	15	88	41.3	-0.3	-10.1	-28.0
343.446 G	30	158	16	84	41.3	-0.4	-10.1	-15.3
344.287 C	29	150	15	76	41.4	-0.4	-10.4	- 4.1
345.291 C	19	98	10	50	41.8	-0.1	-10.3	+ 9.5
346.285 C	13	79	7	43	42.0	0.0	-10.3	+22.8
347.310 C	4	21	3	13	42.3	+0.2	-10.5	+36.6
Means	..	..	13	82	41.6	..	-10.4	..

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 15290.								
Dec. 5-17. A spot *f* Group 15292 with a brief maximum on December 6. There are one or two companions.								
d					°	°	°	°
338.372 C	0	17	0	90	39.0	..	-13.8	-84.4
339.305 C	25	180	46	329	37.6	0.0	-14.7	-73.5
340.281 C	21	186	21	188	39.1	+1.5	-14.6	-59.2
341.499 G	28	230	20	163	39.0	+1.3	-14.5	-43.2
342.482 G	22	130	13	77	39.6	+1.9	-13.8	-29.7
343.446 G	22	139	12	75	39.7	+2.0	-13.6	-16.9
344.287 C	27	140	14	73	39.4	+1.6	-13.5	- 6.1
345.291 C	19	140	10	73	39.3	+1.5	-13.7	+ 7.0
346.285 C	15	136	8	75	39.2	+1.3	-13.8	+20.0
347.310 C	21	119	12	73	39.0	+1.1	-13.4	+33.3
348.341 C	6	29	5	22	39.7	+1.8	-14.5	+47.6
349.322 C	10	46	11	49	40.3	+2.3	-14.1	+61.1
350.284 C	0	8	0	17	43.1	+5.1	-14.5	+76.6
Means	..	..	14	101	39.6	..	-14.1	..
Group 15298.								
Dec. 13-21. A persistent small spot reduced finally to a dot.								
346.285 C	0	10	0	41	297.0	..	+21.2	-82.2
347.310 C	13	54	19	79	297.4	0.0	+21.2	-68.3
348.341 C	10	48	9	45	297.4	+0.1	+21.1	-54.7
349.322 C	19	109	14	80	297.0	-0.1	+21.2	-42.2
350.284 C	19	79	12	49	296.8	-0.2	+21.0	-29.7
351.372 C	6	36	3	20	297.0	+0.2	+20.9	-15.2
352.291 C	2	15	1	8	296.7	0.0	+20.5	- 3.3
353.291 C	4	27	2	15	296.5	-0.1	+20.5	+ 9.6
354.318 C	2	8	1	5	296.5	+0.1	+20.2	+23.2
Means	..	..	8	38	296.9	..	+20.8	..
Group 15299.								
Dec. 14-21. A small stream of rapid rise and decay.								
347.310 C	44	253	29	172	328.9	0.0	-23.8	-36.8
348.341 C	102	371	60	216	331.7	+3.0	-23.8	-20.4
349.322 C	94	537	51	294	330.8	+2.4	-23.6	- 8.4
350.284 C	75	464	41	252	329.9	+1.7	-23.9	+ 3.4
351.372 C	35	297	20	171	331.6	+3.6	-23.5	+19.4
352.291 C	37	190	24	120	330.5	+2.7	-23.5	+30.5
353.291 C	14	81	10	61	331.3	+3.8	-23.4	+44.4
354.318 C	4	37	4	35	328.5	+1.2	-24.1	+55.2
Means	..	..	30	165	330.4	..	-23.7	..

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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 15302.								
Dec. 15-26. A spot of nearly regular outline which sheds a small satellite on December 20. A distant companion is included in the group until December 19.								
d					°	°	°	°
348.341 C	23	98	43	181	278.5	0.0	+14.6	-73.6
349.322 C	33	220	37	244	277.2	-1.3	+15.0	-62.0
350.284 C	54	376	45	306	276.8	-1.7	+15.0	-49.7
351.372 C	58	351	37	222	277.3	-1.3	+14.9	-34.9
352.291 C	65	387	37	218	276.7	-1.9	+14.8	-23.3
353.291 C	50	362	26	192	277.5	-1.1	+14.5	- 9.4
354.318 C	37	302	19	157	277.4	-1.2	+14.7	+ 4.1
355.285 C	42	252	23	136	277.3	-1.4	+14.8	+16.7
356.297 C	27	220	16	132	277.6	-1.1	+14.5	+30.3
357.291 C	27	114	19	82	277.9	-0.8	+14.5	+43.7
358.315 C	12	54	12	53	278.1	-0.6	+14.6	+57.4
359.305 C	0	8	0	12	277.6	-1.2	+14.6	+69.9
Means	..	..	26	161	277.5	..	+14.7	..
Group 15304.								
Dec. 17-23. One or two small unstable spots.								
350.284 C	14	78	8	46	294.3	0.0	- 7.5	-32.2
351.372 C	25	127	13	66	295.3	+0.8	- 7.5	-16.9
352.291 C	20	75	10	38	294.8	+0.2	- 7.4	- 5.2
353.291 C	8	40	4	21	296.4	+1.7	- 7.2	+ 9.5
354.318 C	4	19	2	10	297.9	+3.0	- 7.2	+24.6
355.285 C	6	44	4	26	293.9	-1.1	- 8.0	+33.3
356.297 C	2	17	1	12	292.3	-2.8	- 9.8	+45.0
Means	..	..	6	31	295.0	..	- 7.8	..
Group 15307.								
Dec. 19-31. A few small variable spots until December 27; on the next day fresh activity is producing a stream.								
352.291 C	4	33	9	74	223.4	0.0	+12.7	-76.6
353.291 C	27	135	29	147	225.5	+2.0	+12.9	-61.4
354.318 C	10	67	8	50	226.9	+3.4	+13.4	-46.4
355.285 C	10	62	7	40	225.8	+2.2	+13.1	-34.8
356.297 C	8	64	4	36	225.4	+1.8	+13.0	-21.9
357.291 C	8	111	4	59	224.4	+0.7	+13.9	- 9.8
358.315 C	2	15	1	8	222.2	-1.5	+13.6	+ 1.5

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 15307 - *continued*								
d					°	°	°	°
359.305 C	0	15	0	8	223.6	-0.2	+13.8	+15.9
360.295 C	10	73	6	44	224.9	+1.1	+13.2	+30.3
361.309 C	75	347	55	251	224.8	+0.9	+12.9	+43.5
362.475 G	72	521	78	555	225.6	+1.7	+12.7	+59.7
363.288 C	41	339	68	540	224.8	+0.8	+12.7	+69.6
364.299 C	15	87	(44	254	221.1	..	+12.8)	+79.2
Means	..	..	22	151	224.8	..	+13.2	..
Group 15310.								
Dec. 21-29. A few small spots; only one remains after December 23.								
354.318 C	2	8	3	13	202.6	0.0	-24.9	-70.7
355.285 C	17	89	17	90	202.4	0.0	-23.2	-58.2
356.297 C	17	100	13	74	203.6	+1.5	-24.3	-43.7
357.291 C	8	62	5	38	204.2	+2.3	-24.5	-30.0
358.315 C	6	37	3	21	204.0	+2.4	-24.1	-16.7
359.305 C	2	10	1	5	204.0	+2.6	-23.8	- 3.7
360.295 C	2	25	1	14	202.4	+1.3	-24.1	+ 7.8
361.309 C	0	4	0	2	200.6	-0.3	-24.5	+19.3
362.475 G	4	26	3	17	200.1	-0.5	-24.6	+34.2
Means	..	..	5	30	202.7	..	-24.2	..
Group 15313.								
Dec. 22-28. A small spot, with a few companions, appearing near the east limb and then rapidly dying out.								
355.285 C	10	56	12	66	198.2	0.0	-26.6	-62.4
356.297 C	8	67	7	57	197.4	-0.4	-27.6	-49.9
357.291 C	8	44	6	31	196.7	-0.8	-27.8	-37.5
358.315 C	6	31	4	19	196.7	-0.4	-27.3	-24.0
359.305 C	4	17	2	10	196.0	-0.7	-27.6	-11.7
360.295 C	4	27	2	15	195.7	-0.7	-27.3	+ 1.1
361.309 C	4	15	2	9	196.0	0.0	-27.5	+14.7
Means	..	..	5	30	196.7	..	-27.4	..
Group 15318.								
Dec. 25-1948 Jan. 5. A collection of small changing spots of which only two remain by January 4.								
358.315 C	2	8	3	12	150.4	0.0	+ 9.9	-70.3
359.305 C	0	6	0	6	151.2	+0.7	+ 8.9	-56.5
360.295 C	4	21	3	15	151.4	+0.8	+10.4	-43.2

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR, 1947

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 15318 - *continued*							
d					°	°	°
361.309 C	38	231	22	136	151.8	+1.1	+11.2	−29.5
362.475 G	56	372	30	197	152.0	+1.1	+11.3	−13.9
363.288 C	37	271	19	141	151.5	+0.6	+11.4	− 3.7
364.299 C	25	114	13	60	151.9	+0.8	+11.2	+10.0
0.796 †	49	147	29	86	151.8	+0.6	+ 9.9	+29.7
1.288 C	20	164	13	106	152.6	+1.3	+10.0	+36.9
2.292 C	52	364	43	292	152.0	+0.6	+ 9.0	+49.5
3.299 C	35	283	40	334	152.4	+0.9	+ 8.6	+63.2
4.349 C	10	104	27	293	153.5	+1.9	+ 9.0	+78.1
Means	..	..	19	145	151.9	..	+10.1	..

Group 15322.

Dec. 29-1948 Jan. 8. A cluster reaching a maximum by January 3 and declining rapidly to a single small spot at the west limb.

362.475 G	4	41	4	38	111.0	0.0	+14.7	−54.9
363.288 C	2	19	1	14	112.6	+1.6	+15.2	−42.6
364.299 C	8	52	5	32	110.9	−0.2	+14.8	−31.0
0.796 †	54	209	28	111	110.6	−0.6	+13.7	−11.5
1.288 C	39	316	20	164	111.2	0.0	+13.5	− 4.5
2.292 C	86	472	46	249	111.1	−0.1	+13.4	+ 8.6
3.299 C	56	374	31	212	111.8	+0.5	+13.2	+22.6

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 15322 - *continued*							
d					°	°	°
4.349 C	39	238	25	156	112.7	+1.4	+13.1	+37.3
5.288 C	15	79	12	64	112.6	+1.2	+12.5	+49.6
6.288 C	10	40	12	48	113.9	+2.5	+12.2	+64.1
7.367 C	2	8	5	21	113.4	+1.9	+11.6	+77.8
Means	..	..	16	100	112.1	..	+13.4	..

Group 15325.

Dec. 31-1948 Jan. 9. A spot slowly diminishing to a speck.

364.299 C	4	40	8	82	66.4	0.0	+ 6.0	−75.5
0.796 †	11	49	10	44	67.0	+0.4	+ 5.7	−55.1
1.288 C	12	67	9	51	67.5	+0.8	+ 5.5	−48.2
2.292 C	10	52	6	32	67.3	+0.4	+ 5.5	−35.2
3.299 C	6	50	3	28	67.1	0.0	+ 5.3	−22.1
4.349 C	6	33	3	17	67.3	+0.1	+ 5.1	− 8.1
5.288 C	6	31	3	16	67.6	+0.2	+ 5.4	+ 4.6
6.288 C	6	23	3	12	67.8	+0.2	+ 5.3	+18.0
7.367 C	2	19	1	11	67.0	−0.7	+ 5.0	+31.4
8.293 C	0	2	0	1	65.6	−2.3	+ 5.4	+42.2
Means	..	..	4	28	67.1	..	+ 5.4	..

† Mount Wilson

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

1947

TOTAL AREAS OF SUNSPOTS AND FACULÆ FOR EACH DAY IN THE YEAR, 1947

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 and Kodaikanal by the letters C and K respectively. A photograph taken at Mount Wilson on March 27 is indicated by Mt. W.

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
1947	d								1947	d							
January	1.476	G	254	1421	1670	218	1205	1973	February	17.289	C	596	3870	2408	584	4162	3159
	2.474	G	192	1154	2262	195	1161	2912		18.292	C	297	2457	1418	213	1859	1764
	3.403	G	136	898	2128	101	660	2838		19.373	C	412	2374	2100	284	1817	2514
	4.281	C	124	853	2439	89	621	2859		20.293	C	292	2087	2057	224	1600	2414
	5.312	C	127	1031	1524	102	811	1653		21.288	C	267	2329	1985	210	1781	2257
	6.288	C	117	823	2156	134	1002	2606		22.295	C	219	1887	2406	162	1324	2839
	7.305	C	243	1479	2734	287	1801	3313		23.448	G	455	2557	2310	299	1740	3068
	8.287	C	274	2035	3031	331	2383	3667		24.383	G	376	2451	2999	220	1428	3642
	9.449	G	427	2679	1427	349	2280	1737		25.408	G	422	2487	1620	275	1608	1996
	10.283	C	498	3214	2863	366	2322	3206		26.464	G	516	3483	1324	396	2670	1708
	11.289	C	623	3865	2650	390	2424	2874		27.614	G	666	4094	1972	525	3456	2140
	12.428	G	646	4504	1746	415	2853	2069		28.295	C	497	3633	2152	414	3166	2490
	13.408	G	774	4946	1904	505	3430	2422									
	14.424	C	805	4874	2164	522	3146	2454									
	15.289	C	878	5536	2338	626	4160	2915	March	1.388	G	547	3171	2185	372	2094	2858
	16.393	G	966	5461	1708	692	3990	2153		2.449	G	602	3329	1862	399	2244	2364
	17.416	G	964	5818	3651	735	4363	4038		3.456	G	419	2904	1904	306	2089	2683
	18.460	G	940	5224	5802	755	4109	6564		4.295	C	661	4457	2344	596	4534	2958
	19.315	C	734	4602	3625	464	2909	4384		5.297	C	1000	6727	3263	941	6922	4259
	20.471	G	870	4369	3885	549	2747	5355		6.309	C	1089	8101	2747	934	7378	3471
	21.439	G	562	3392	3090	365	2172	4081		7.413	G	1529	9787	1754	1078	6933	1883
	22.415	G	553	3189	1916	361	2088	2749		8.298	C	1810	10755	3021	1153	7015	3743
	23.425	G	528	2876	2757	375	2107	3232		9.309	C	1991	11691	1662	1146	6703	2370
	24.462	G	688	3662	1658	463	2547	1776		10.298	C	2247	12108	2035	1240	6696	2575
	25.511	G	551	4039	2214	419	2922	2866		11.297	C	2038	12185	1289	1109	6688	1625
	26.313	C	517	3712	1955	392	2716	2331		12.301	C	1978	11395	1800	1153	6699	1952
	27.606	G	407	3085	1877	328	2537	2413		13.414	C	1368	8300	1789	944	5764	2233
	28.290	C	315	2074	2172	274	1827	2928		14.344	C	999	6001	2077	830	5103	2259
	29.426	G	177	1246	1749	147	1029	2227		15.305	C	711	4514	2227	829	5452	2614
	30.463	G	222	1324	2668	226	1343	3913		16.310	C	325	2434	2110	513	4529	2827
	31.505	G	232	1944	1779	219	1870	1991		17.466	G	135	778	1881	204	1348	2476
										18.351	G	112	677	1154	82	499	1664
										19.308	C	105	558	1520	67	376	1918
February	1.480	G	321	2108	2204	269	1827	2414		20.461	G	116	632	1966	72	384	2303
	2.308	C	302	2244	1390	238	1715	1792		21.619	G	152	855	1336	114	694	1703
	3.291	C	409	2675	1454	271	1757	1860		22.329	C	233	1499	1433	158	1016	1947
	4.300	C	574	3607	2018	356	2232	2371		23.445	G	364	2021	1436	316	1709	1839
	5.293	C	565	3019	2886	318	1715	4183		24.309	C	334	2102	1744	260	1734	2159
	6.292	C	565	3465	2698	336	2030	3445		25.363	G	342	2198	1338	277	1795	1504
	7.302	C	519	3797	1763	318	2373	1768		26.309	C	400	2319	2224	329	1952	2493
	8.294	C	843	5365	1229	563	3540	1354		27.683	Mt.W	673	2761	1613	431	1782	2006
	9.308	C	1000	6487	996	642	4061	1269		28.606	G	541	3430	1199	343	2121	1488
	10.296	C	1119	7563	1722	675	4617	2068		29.311	C	615	3628	1946	380	2273	2618
	11.289	C	874	6620	1990	521	3871	2624		30.409	C	656	3852	2161	438	2781	2578
	12.294	C	950	6605	2090	570	3874	2523		31.309	C	733	4510	2150	591	4162	2830
	13.296	C	986	6360	2079	602	3876	2374									
	14.292	C	1080	5992	3653	721	4076	4205									
	15.292	C	829	5399	2680	626	4118	3256	April	1.350	G	860	6438	2753	885	7547	3797
	16.312	C	526	4565	3034	402	3895	3236		2.475	C	1014	7897	2923	936	7324	3249

TOTAL AREAS OF SUNSPOTS AND FACULÆ FOR EACH DAY IN THE YEAR, 1947

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
1947	d								1947	d							
April	3.518	C	1523	9728	2397	1150	7519	2844	June	1.442	C	522	2970	3818	352	1997	4150
	4.311	C	1464	10556	2075	1002	7187	2772		2.343	C	415	2259	3250	325	1737	4085
	5.325	C	1561	12075	1361	937	7245	1598		3.382	G	313	2028	4215	268	1815	5339
	6.310	C	1695	12416	1392	976	7352	1613		4.329	C	255	1673	1909	238	1732	2296
	7.307	C	2113	13200	1156	1196	7505	1269		5.480	G	190	1573	2755	204	1699	3221
	8.468	G	1559	13129	1371	950	8382	1744		6.292	G	422	2288	3631	322	1751	4031
	9.318	C	1230	10721	1069	824	8094	1585		7.368	C	304	2660	3362	197	1738	3680
	10.342	G	1379	8898	2546	959	6390	3145		8.332	C	430	2764	2485	252	1631	3148
	11.346	G	999	6409	3133	818	5395	4142		9.331	C	303	2442	1616	164	1351	2246
	12.311	C	663	5067	1846	719	5724	2491		10.299	G	279	2016	1759	151	1126	2506
	13.309	C	342	2613	2414	476	3959	3100		11.326	G	221	1498	1876	129	882	2384
	14.317	G	165	1003	1691	345	2421	2434		12.351	C	178	1441	1963	122	979	2575
	15.474	G	64	331	2027	45	238	2546		13.350	C	169	1051	2420	151	922	2974
	16.331	G	62	290	918	43	213	1233		14.188	K	100	651	1959	110	739	2290
	17.326	G	163	727	1058	104	463	1479		15.383	G	191	1272	2589	316	2450	4013
	18.441	G	176	1106	1305	102	643	1559		16.337	C	246	1605	2073	254	1715	2661
	19.328	C	231	1136	1373	164	782	1757		17.294	G	372	2482	2531	302	2022	2986
	20.386	G	153	861	563	132	657	761		18.339	C	435	2718	1752	318	2009	2020
	21.343	G	179	870	1564	127	626	2190		19.388	G	789	3841	2795	560	2791	3624
	22.404	G	149	675	2047	134	726	2716		20.339	C	508	4014	1561	309	2482	1794
	23.321	C	265	1453	3465	295	1624	4213		21.334	C	598	4478	1627	400	3045	1783
	24.359	G	388	2095	1911	351	1904	2529		22.335	C	606	4241	1852	453	3380	2323
	25.328	C	718	4396	2594	524	3368	3254		23.396	C	748	3982	2430	552	3051	3535
	26.331	G	654	4493	2214	440	3191	2946		24.349	G	721	3794	2542	506	2759	3298
	27.321	C	791	4288	2443	534	2863	3119		25.356	G	536	2891	3795	420	2396	4565
	28.581	G	799	4797	2692	488	2858	3431		26.413	G	349	2266	4278	397	2594	5418
	29.306	G	859	4197	3129	624	3057	3878		27.328	G	275	1652	3483	361	2205	4566
	30.570	G	766	4075	1299	584	3252	1813		28.388	G	268	1973	2887	210	1617	3783
										29.496	C	398	2037	2819	319	1611	3285
										30.130	K	409	2313	2299	313	1789	2593
May	1.552	G	718	3997	2634	585	3351	3346									
	2.325	C	533	3324	2497	454	2889	3006									
	3.388	C	599	3058	2508	442	2180	2912	July	1.340	C	365	2058	1909	232	1299	2301
	4.333	C	886	4989	2178	577	3402	2580		2.333	G	324	1881	2393	194	1147	2596
	5.368	G	782	4586	1872	515	2955	2537		3.373	G	274	1577	2830	187	1060	3340
	6.138	K	716	4405	1710	472	2896	2205		4.342	G	207	1508	3130	178	1303	3647
	7.325	C	761	4769	3520	563	3520	4268		5.299	G	287	1760	2437	239	1502	3032
	8.323	C	601	4336	3311	434	3270	4216		6.328	C	252	1761	2855	187	1316	3338
	9.350	G	669	3829	2464	489	2825	3326		7.383	G	229	1551	3245	176	1162	4286
	10.370	C	844	4679	3663	626	3547	4237		8.367	G	305	1646	2161	216	1195	2999
	11.356	C	805	4661	3168	602	3538	3862		9.404	C	384	1987	2519	339	1868	3373
	12.415	G	720	4029	1783	532	3027	2595		10.356	C	397	2212	2333	340	2140	3189
	13.333	C	500	3523	2212	354	2523	2677		11.370	C	293	2046	1582	243	1752	1939
	14.386	G	511	3311	2360	353	2215	2915		12.313	G	472	2588	2687	449	2604	3499
	15.351	G	458	2763	1838	307	1851	1998		13.549	C	468	3155	3291	372	2488	3858
	16.332	G	349	2489	1163	250	1797	1485		14.474	G	676	3838	3385	528	2914	4207
	17.336	G	561	2384	1494	636	2353	2062		15.297	G	771	4295	3406	547	3082	4202
	18.330	C	711	3847	2528	739	4015	3256		16.390	C	843	4810	1885	520	3073	2409
	19.322	C	801	5167	2441	703	4604	2936		17.339	C	949	6494	2119	548	3771	2677
	20.122	K	1107	6883	2206	889	5441	2706		18.385	G	1248	7740	2449	695	4304	2722
	21.397	C	1230	7348	1956	808	4745	2337		19.371	G	1236	7653	2244	781	4824	2657
	22.486	G	1081	8097	3557	651	4840	4106		20.527	G	1120	6827	2245	744	4571	2871
	23.328	C	1523	9563	2694	899	5613	3332		21.308	G	1009	6043	2807	754	4441	3375
	24.296	G	1459	8582	2668	878	5186	3205		22.304	G	586	5192	3061	444	3877	3805
	25.330	C	1060	8241	2243	723	5553	2586		23.380	C	503	3538	3839	415	3266	5006
	26.343	C	1179	6631	1733	825	4660	2220		24.356	C	392	2995	3914	346	2605	4985
	27.333	C	1157	6676	2440	812	4932	2856		25.393	C	470	3025	3123	396	2695	3713
	28.313	G	872	5407	3854	737	4666	4684		26.319	G	375	2467	2702	302	2791	3674
	29.342	C	754	5860	4604	653	5209	5115		27.336	C	290	2155	2564	185	1402	3321
	30.313	G	812	4807	4557	740	4596	5498		28.373	G	274	1614	2921	211	1238	4011
	31.342	G	644	3802	2975	578	3780	3575		29.334	G	333	1608	3359	341	1698	4122

TOTAL AREAS OF SUNSPOTS AND FACULÆ FOR EACH DAY IN THE YEAR, 1947

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
1947	d								1947	d							
July	30.301	G	218	2059	2807	234	2175	3104	September	25.345	G	585	3529	1950	362	2186	2498
	31.430	G	361	3049	2254	294	2421	3196		26.555	G	592	3122	2766	389	2130	3447
										27.423	G	592	3376	2162	411	2316	2638
										28.309	C	538	3376	1379	389	2579	1753
August	1.324	C	656	4460	3131	544	3523	3839		29.304	C	625	3631	2550	494	2906	3235
	2.386	G	878	5534	3161	613	4020	4115		30.348	G	534	3119	2878	437	2496	3532
	3.433	G	629	6078	2245	428	4085	2669									
	4.437	G	987	6284	1923	653	4041	2653									
	5.340	C	970	5385	2044	611	3396	2651	October	1.549	G	568	3211	4010	434	2677	5188
	6.327	C	587	6023	2385	393	3993	3065		2.357	G	680	4605	3294	504	3417	4097
	7.364	C	1110	6886	3430	723	4673	4413		3.345	G	683	4948	2809	479	3419	3677
	8.303	G	916	7121	3663	658	5027	4815		4.375	G	1041	5815	4002	675	3940	5111
	9.517	C	1085	6737	4950	821	5150	6224		5.422	G	921	6264	3611	558	3802	4136
	10.356	C	1187	8334	3450	854	5947	3802		6.296	C	891	5358	2483	541	3299	3039
	11.355	G	796	7286	3000	618	5357	3640		7.374	G	794	4137	2097	487	2461	2576
	12.385	G	1063	7025	3857	776	5022	5114		8.576	G	602	3233	1823	401	2150	2307
	13.326	C	781	7010	2796	560	4476	4070		9.408	G	443	3049	2742	328	2246	3562
	14.369	C	1158	7002	2321	715	4249	2623		10.361	G	614	2965	2497	459	2296	2965
	15.354	G	861	5625	2059	597	3969	2786		11.426	G	407	2368	2175	322	1851	2618
	16.555	C	816	5058	2200	614	3872	2598		12.545	G	323	2158	1854	290	2033	2503
	17.344	G	697	4297	2336	513	3179	2802		13.294	C	284	1645	1027	235	1562	1324
	18.338	C	492	3389	3701	391	2960	4334		14.658	G	211	1320	844	153	967	1207
	19.347	G	423	2340	2951	286	1587	3911		15.293	C	221	1444	1145	166	1152	1498
	20.338	C	258	1764	2474	182	1308	3235		16.292	C	312	2046	1113	278	1980	1531
	21.413	G	208	1381	1926	183	1335	2560		17.292	C	383	2044	1059	297	1571	1189
	22.374	G	118	785	2541	144	971	3386		18.290	C	246	2113	1071	180	1525	1142
	23.339	C	69	672	2013	56	549	2217		19.310	C	401	2055	1628	292	1509	2173
	24.324	C	121	639	1958	110	608	2753		20.290	C	350	2524	2450	262	1928	3345
	25.357	G	169	1239	1962	196	1518	2598		21.289	C	409	3071	1263	333	2435	1637
	26.373	G	279	1698	2633	214	1386	3113		22.621	G	558	3810	2720	405	2733	3170
	27.345	G	338	2010	3432	332	2037	4409		23.439	G	659	4035	1309	475	2888	1624
	28.333	G	397	2649	3945	350	2498	5331		24.475	G	711	4473	2530	497	3163	2976
	29.339	G	512	3004	3865	406	2395	4579		25.419	C	811	5093	2236	548	3444	2985
	30.321	C	392	4014	2915	291	2895	3203		26.310	C	601	3798	3095	404	2558	4408
	31.345	G	620	4970	2894	460	3601	3904		27.577	G	699	3770	2684	539	2852	3146
										28.493	G	451	2726	2981	400	2388	3714
										29.408	C	385	2401	4067	297	1984	5177
September	1.345	G	645	4157	2350	461	3034	3151		30.286	C	415	2375	2383	351	1920	3055
	2.340	G	688	4186	2871	483	2959	3804		31.590	C	364	2284	2141	257	1623	2521
	3.350	G	651	3714	3805	429	2478	4579									
	4.368	G	703	3227	2939	446	2073	3686									
	5.365	G	530	3481	3496	318	2075	4692	November	1.379	C	305	1727	657	194	1097	752
	6.344	G	613	3668	3371	389	2383	4152		2.373	C	274	1998	1326	182	1256	1532
	7.315	C	587	3480	3712	406	2432	4338		3.431	G	272	1543	1562	161	924	2026
	8.467	G	507	3067	2409	398	2453	3022		4.288	C	201	1471	1230	139	935	1550
	9.370	G	439	2859	1944	364	2341	2891		5.387	G	205	1101	1634	139	737	1934
	10.502	C	402	2404	1653	278	1706	1861		6.524	C	142	1077	1568	120	953	2076
	11.519	C	408	2299	2487	259	1456	3051		7.429	G	204	1139	2378	214	1204	2796
	12.333	C	353	2580	2311	270	1876	2936		8.439	C	121	928	1530	128	976	1738
	13.310	C	247	2257	2605	198	1816	3385		9.313	C	167	1014	1656	150	992	1937
	14.310	C	281	1886	3479	224	1613	4176		10.292	C	168	1111	1002	111	719	1624
	15.515	C	290	1823	2019	245	1633	2463		11.304	C	298	1755	780	160	943	970
	16.349	G	368	2187	2261	322	1911	3021		12.289	C	346	2160	707	207	1279	1068
	17.363	G	236	1892	1474	180	1435	2224		13.485	G	416	2232	701	303	1631	769
	18.344	C	270	1901	829	202	1440	1250		14.290	C	391	2914	2173	295	2242	2495
	19.637	G	218	1477	1936	134	902	2632		15.287	C	454	3411	1437	354	2584	1510
	20.518	C	248	1506	1112	169	996	1543		16.313	C	396	2570	1456	329	2275	2199
	21.442	G	294	1667	2205	227	1280	2798		17.442	C	515	3347	3233	395	2691	3994
	22.406	G	272	1855	1933	205	1413	2474		18.539	G	494	3139	1732	321	2070	2224
	23.470	G	425	2206	2700	332	1721	3694		19.297	C	551	3857	1941	352	2480	2214
	24.377	G	434	2267	2869	298	1709	3792		20.301	C	650	3720	2084	418	2441	2195

TOTAL AREAS OF SUNSPOTS AND FACULÆ FOR EACH DAY IN THE YEAR, 1947

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
1947 d								1947 d							
November 21.289	C	669	3841	1880	432	2513	2308	December 10.446	G	401	2874	1463	242	1730	2089
22.290	C	562	3851	1931	329	2351	2229	11.287	C	385	2486	2685	219	1405	3466
23.310	C	486	2643	2162	309	1797	2538	12.291	C	374	3120	2791	211	1706	3049
24.277	C	596	3440	3233	447	2625	4145	13.285	C	355	2367	2110	194	1324	2504
25.413	G	539	2993	3542	459	2642	4131	14.310	C	490	2715	2331	302	1660	3349
26.420	G	418	2566	3673	365	2259	3956	15.341	C	349	2200	1620	247	1512	1981
27.353	C	314	2145	3410	288	2014	4027	16.322	C	528	3010	3281	397	2251	3715
28.517	G	213	1814	1187	225	2150	1673	17.284	C	527	3046	1682	415	2392	1994
29.289	C	182	1149	1669	188	1182	2192	18.372	C	418	2798	1611	398	2673	2257
30.321	C	183	983	1150	113	630	1480	19.291	C	380	2416	1736	335	2305	2274
								20.291	C	315	2163	1789	251	1891	1979
								21.318	C	220	1470	2516	161	1103	2769
								22.285	C	242	1591	2225	174	1165	3087
December 1.437	G	308	1494	2504	206	989	2964	23.297	C	213	1536	1975	144	1082	2367
2.294	C	222	1355	2519	176	1020	3120	24.291	C	190	1314	2590	127	811	2953
3.422	C	160	1109	2498	110	735	2770	25.315	C	186	1317	2765	144	976	3418
4.330	C	193	1081	3520	137	825	4277	26.305	C	265	2083	1040	175	1400	1247
5.372	C	180	1133	1619	142	993	2132	27.295	C	478	2940	2090	312	1942	2731
6.305	C	269	1783	1839	249	1648	2618	28.309	C	573	3548	2591	371	2304	2771
7.281	C	326	1892	2383	245	1512	3014	29.475	G	642	4122	1998	462	3059	2307
8.499	G	392	2865	1247	296	2166	1521	30.288	C	513	3434	2102	364	2655	2748
9.482	G	396	2717	2139	265	1798	2644	31.299	C	449	2763	1739	303	1888	2447

MEAN AREAS OF SUNSPOTS AND FACULÆ FOR EACH ROTATION OF THE SUN,
FROM 1946 DECEMBER 25 TO 1947 DECEMBER 14.

The mean areas have been formed by taking the means of the areas for each day of observation throughout each rotation of the Sun, the projected areas being the areas as measured on the photographs and expressed in millionths of the Sun's apparent disk, and the areas corrected for foreshortening being expressed in millionths of the Sun's visible hemisphere.

The rotations adopted in the following table (which is in continuation of those for the years 1878–1946 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
1248	1946 December 25.18	28	530	3270	2522	391	2438	3000
1249	1947 January 21.52	27	602	3959	2113	415	2768	2605
1250	February 17.86	27	879	5470	2089	621	4048	2574
1251	March 17.19	28	783	5392	1841	568	4080	2317
1252	April 13.48	27	507	2917	2172	378	2212	2759
1253	May 10.72	27	756	4699	2743	570	3551	3301
1254	June 6.93	27	385	2430	2440	292	1881	3048
1255	July 4.13	27	540	3428	2780	397	2595	3482
1256	July 31.34	28	643	4468	2743	467	3238	3485
1257	August 27.57	27	429	2756	2575	313	2030	3290
1258	September 23.83	27	529	3175	2233	375	2300	2818
1259	October 21.12	27	386	2444	1822	285	1805	2274
1260	November 17.42	28	387	2446	2303	273	1763	2815

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
1947	365	558	3559	2326	405	2637	2894

MEAN HELIOGRAPHIC LATITUDE OF SUNSPOTS FOR EACH ROTATION OF THE SUN, FROM 1946 DECEMBER 25 TO 1947 DECEMBER 14.

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		
				°		°	°	°
1248	1946 December 25.18	28	1195	19.85	1243	14.77	+ 2.20	17.26
1249	1947 January 21.52	27	354	15.06	2413	17.67	-13.48	17.33
1250	February 17.86	27	912	16.62	3136	19.49	-11.36	18.85
1251	March 17.19	28	356	15.36	3724	21.62	-18.39	21.07
1252	April 13.48	27	788	17.69	1424	15.89	- 3.93	16.53
1253	May 10.72	27	1875	18.15	1676	19.44	+ 0.41	18.76
1254	June 6.93	27	1320	17.45	561	17.51	+ 7.03	17.47
1255	July 4.13	27	1684	15.66	911	20.38	+ 3.01	17.32
1256	July 31.34	28	1385	14.72	1853	15.85	- 2.77	15.37
1257	August 27.57	27	1054	15.14	977	13.54	+ 1.35	14.37
1258	September 23.83	27	1367	18.21	933	14.37	+ 4.99	16.65
1259	October 21.12	27	721	13.97	1084	14.27	- 2.99	14.15
1260	November 17.42	28	427	15.10	1336	16.17	- 8.60	15.92

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		
			°		°	°	°
1947	365	992	16.58	1645	17.86	-4.91	17.38

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ROYAL OBSERVATORY, GREENWICH

Observations of Solar Flocculi and Solar Flares

Made with the

Spectrohelioscope

In the Year

1947

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OBSERVATIONS OF SOLAR FLOCCULI MADE WITH THE SPECTROHELIOSCOPE IN THE YEAR 1947

The following observations relate to (1) absorption filaments or dark flocculi visible on the Sun's disk in the light of *Hα* in the immediade vicinity of sunspots*, and (2) solar flares otherwise known as bright chromospheric eruptions.

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.

Absorption Filaments or Flocculi

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.

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

* An analysis of the radial velocities of 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.

(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.

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OBSERVATIONS OF SOLAR FLOCCULI MADE WITH THE SPECTROHELIOSCOPE IN THE YEAR, 1947

Dark Hα Flocculi							Associated Group of Sunspots				
Reference 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	Jan. 13	9.9	0	1.7	0.5	*f*	14779	−11	Jan. 14.25	+23	434
2	13	11.6	+38	0.5	0.3	*p*	783	−56	17.76	+11	393
3	16	10.0	−33	0.7	1.0	*nf*	781	+41	13.30	−11	605
4	16	10.1	+ 6	1.2	1.3	*sf*	776	+46	12.94	−20	459
5	16	10.2	− 8	2.0	0.4	*c*	784	−39	19.37	−16	508
6	Jan. 16	10.3	−46 to +44	1.7	0.6	*f*	14790	−56	Jan. 20.66	−12	521
7	16	11.7	−50	0.6	0.8	*n*	790	−55			
8	17	12.2	−40 to +34	2.0	..	*c*	781	+55	13.30	−11	605
9	20	12.4	− 1	1.6	0.8	*s*	790	− 2	20.66	−12	521
10	27	14.0	− 3	1.0	1.6	*f*	800	+49	23.87	−16	311
11	Jan. 27	14.3	+50	0.6	1.0	*f*	14801	+ 1	Jan. 27.6	+21	56
12	27	14.3	− 7	1.2	1.0	*p*	801	+ 1			
13	Feb. 26	11.0	+140	2.5	..	*p*	831	+50	Feb. 22.70	−18	682
14	Mar. 3	11.6	−59 to +59	2.2	0.8	*f*	840	+14	Mar. 2.42	−11	334
15	25	9.8	0	1.5	0.8	*sf*	874	−50	29.19	−10	642
16	April 1	11.4	+43	1.8	0.8	*s*	14886	−75	April 7.18	−24	5520
17	10	8.6	+ 2	2.2	1.0	*f*	886	+42			
18	10	15.1	−28 to +28	1.2	0.6	*f*	886	+46			
19	11	8.5	+ 1	2.4	2.0	*s*	886	+55			
20	11	9.0	− 5 to +25	0.6	..	*p*	886	+55			
21	April 11	9.9	−50	0.7	0.3	*p*	14886	+56	April 7.18	−24	5520
22	11	9.9	+41	0.6	3.0	*p*	886	+56			
23	18	9.1	− 2	0.7	0.4	*p*	902	+29	16.17	−16	84
24	24	8.0	−36 to +52	0.8	0.3	*sp*	906	+49	20.63	+16	39
25	24	8.1	− 1	1.2	0.6	*p*	909	+35	21.66	+10	162
26	April 24	8.4	+ 3	1.3	0.7	*s*	14916	−31	April 26.70	+24	489
27	26	8.1	+61	3.3	1.0	*sf*	918	−45	29.76	−16	263
28	29	7.6	− 3	2.1	0.5	*s*	933	−83	May 5.59	−25	522
29	29	7.7	− 3	3.5	1.2	*s*	925	−32	1.74	−10	134
30	29	8.2	−42	0.5	0.3	*c*	916	+35	April 26.70	+24	489
31	April 29	8.4	+29	0.7	1.3	*f*	14930	−44	May 2.68	+21	75
32	May 3	7.7	−43 to +45	1.5	0.6	*c*	938	−39	6.30	+18	652
33	3	8.0	+29	*	0.6	*c*	937	+16	2.2	− 4	577
34	3	8.0	− 4	5.0	1.5	*sp*	933	−30	5.59	−25	522
35	3	8.4	+ 2	2.3	2.5	*s*	939	−71	8.7	+ 7	31
36	May 3	8.4	+35	0.5	2.3	*s*	14939	−71	May 8.7	+ 7	31
37	5	7.7	+ 1	4.0	1.7	*s*	925	+47	1.74	−10	134
38	5	7.8	+ 7	4.0	2.2	*s*	933	− 4	5.59	−25	522
39	5	9.9	− 5	0.9	0.5	*c*	938	−12	6.30	+18	652
40	5	8.0	−40	0.5	2.5	*f*	936	−30	7.61	−14	382
41	May 5	8.0	+ 3	2.3	2.0	*s*	14936	−30	May 7.61	−14	382
42	5	9.0	−27	0.4	2.5	*n*	930	+36	2.68	+21	75
43	7	8.0	0	1.8	0.3	*n*	938	+14	6.30	+18	652
44	7	8.2	− 4	0.5	0.3	*s*	937	+68	2.2	− 4	577
45	7	8.2	+ 1	0.4	0.3	*n*	937	+68			
46	May 7	8.3	−74 to +58	1.2	0.2	*s*	14936	− 3	May 7.61	−14	382
47	7	8.5	−85 to +51	2.5	0.2	*s*	936	− 3			
48	7	8.7	−63 to +76	5.0	0.3	*p*	936	− 3			
49	9	9.1	0	1.8	2.0	*s*	936	+23			
50	9	9.3	− 5	1.7	1.5	*p*	933	+50	5.59	−25	522

OBSERVATIONS OF SOLAR FLOCCULI MADE WITH THE SPECTROHELIOSCOPE IN THE YEAR, 1947

Dark Hα Flocculi								Associated Group of Sunspots					
Reference 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	°	
51	May	12	10.2	+25	0.6	0.3	*p*	14942	+16	May	11.20	+11	319
52		14	8.3	+ 1 to +47	0.6	0.3	*s*	941	+45		10.96	−12	361
53		14	8.3	−24 to +38	1.8	..	*n*	941	+45				
54		15	7.8	+ 1	1.6	0.3	*n*	942	+54		11.20	+11	319
55		15	7.9	0	1.3	0.6	*n*	941	+58		10.96	−12	361
56	May	17	8.2	−50	0.8	1.5	*n*	14945	+35	May	14.66	+19	639
57		17	8.3	+33	0.6	0.7	*p*	945	+36				
58		17	10.5	−38 to +78	2.0	0.6	*p*	945	+37				
59		22	12.8	−14 to +54	1.0	..	*p*	970	−37		25.31	+21	615
60		24	7.5	−29 to +49	1.5	0.3	*p*	963	+ 6		23.88	+24	229
61	May	27	13.0	−13 to +48	2.0	..	*f*	14966	+42	May	24.37	+10	171
62		28	7.8	−42 to +41	0.6	0.6	*f*	963	+59		23.88	+24	229
63		28	8.0	+ 2	1.2	0.8	*s*	970	+40		25.31	+21	615
64		28	8.4	− 1	7.0	0.9	*c*	978	− 5		28.73	−22	245
65		28	9.6	−52	0.6	0.5	*n*	982	−29		30.61	−19	226
66	May	29	8.0	0	2.0	0.5	*p*	14985	−58	June	2.69	+21	90
67		29	8.5	−48 to +57	1.0	2.0	*p*	985	−57				
68		29	9.2	−47	0.8	0.5	*n*	984	−53		2.38	+16	23
69		29	9.2	+44	2.6	0.6	*p*	985	−57		2.69	+21	90
70		29	9.3	−32	1.4	3.8	*np*	985	−57				
71	May	29	12.4	+41	0.5	0.7	*s*	14978	+10	May	28.73	−22	245
72		29	12.4	−61 to +30	0.6	2.0	*s*	968	+50		25.72	−16	575
73		30	9.0	+ 6	1.0	0.5	*n*	982	− 3		30.61	−19	226
74		30	9.2	+11	3.3	0.5	*p*	986	−55	June	3.54	−21	236
75		30	9.3	+ 3	5.0	1.0	*c*	978	+22	May	28.73	−22	245
76	May	30	9.4	+ 8	2.3	..	*s*	14970	+67	May	25.31	+21	615
77		30	10.4	−33 to +54	2.5	0.5	*sf*	979	+12		29.56	−29	52
78		31	9.6	+ 3	1.2	0.5	*c*	982	+10		30.61	−19	226
79		31	9.7	− 3	4.0	0.6	*f*	978	+35		28.73	−22	245
80		31	9.8	+ 1	1.5	0.5	*s*	986	−41	June	3.54	−21	236
81	May	31	9.8	+ 6	2.3	1.2	*p*	14987	−41	June	3.49	−13	222
82	June	2	8.2	− 3	4.5	0.7	*f*	978	+61	May	28.73	−22	245
83		3	8.1	+ 1	3.4	0.7	*f*	978	+74				
84		3	8.4	− 1	3.2	2.5	*n*	980	+37		31.58	−42	102
85		3	12.9	− 4	1.5	1.0	*f*	986	0	June	3.54	−21	236
86	June	4	8.9	+24	0.3	4.0	*n*	14986	+11	June	3.54	−21	236
87		10	9.1	+ 1	1.1	1.5	*p*	995	+14		9.32	+23	663
88		11	8.2	− 1	1.3	1.0	*f*	998	+13		10.39	+15	96
89		12	10.0	+ 3	1.5	0.6	*p*	995	+41		9.32	+23	663
90		16	9.0	+ 4	1.3	0.5	*p*	15014	−68		21.54	+21	476
91	June	16	9.0	+ 4	1.3	3.0	*f*	15014	−68	June	21.54	+21	476
92		16	9.1	+34	0.2	0.5	*p*	013	−63		21.12	−14	453
93		16	9.2	+ 5	1.6	2.0	*p*	013	−63				
94		16	9.3	+ 4	1.7	3.0	*p*	009	−52		20.28	+23	58
95		17	9.2	−22	1.0	0.7	*p*	017	−57		21.68	+12	453
96	June	17	9.3	0	5.0	0.6	*c*	15014	−55	June	21.54	+21	476
97		17	9.4	− 1	2.0	2.0	*p*	009	−38		20.28	+23	58
98		17	9.5	− 3	1.9	2.0	*s*	009	−38				
99		17	9.6	− 5	0.8	0.3	*c*	013	−49		21.12	−14	453
100		17	9.6	−28 to +22	0.8	..	*c*	013	−49				

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Dark $H\alpha$ Flocculi							Associated Group of Sunspots				
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	d	h		′	′			°	d	°	
101	June 17	9.6	0	1.5	1.4	*p*	15013	−49	June 21.12	−14	453
102	17	10.0	+34	0.5	0.6	*p*	010	+50	13.7	−16	147
103	19	9.2	−37 to +38	0.3	1.5	*p*	021	+37	16.6	+ 8	400
104	19	9.2	+29	0.8	0.6	*p*	021	+37			
105	19	9.4	+57	1.3	0.5	*s*	021	+37			
106	June 24	8.6	−156 to +11	2.0	1.0	*n*	15017	+35	June 21.68	+12	453
107	24	9.6	+43	0.8	0.2	*c*	013	+43	21.12	−14	453
108	24	13.1	− 1	1.0	0.3	*c*	017	+38	21.68	+12	453
109	25	9.3	+45	1.6	0.9	*p*	017	+49			
110	25	9.4	+31	0.3	0.2	*c*	032	−44	28.75	−29	37
111	June 25	9.9	−51 to +41	0.8	0.2	*c*	15031	−67	June 30.49	−21	23
112	26	8.0	− 2	0.5	0.4	*p*	017	+62	21.68	+12	453
113	July 4	9.0	+23	0.3	0.3	*c*	049	−28	July 6.52	−20	61
114	4	9.1	− 3	1.7	1.4	*s*	049	−28			
115	4	9.2	−14 to +36	0.6	..	*c*	033	+32	2.00	+15	456
116	July 4	9.4	− 6	2.5	1.4	*n*	15048	−69	July 9.61	+19	31
117	7	12.9	− 2	0.6	0.3	*c*	050	−38	10.41	−13	311
118	12	9.0	−46	1.1	0.8	*c*	060	−47	15.89	+22	206
119	12	9.1	− 7	1.5	0.8	*f*	059	−40	15.40	−30	521
120	12	9.2	− 4	1.6	1.3	*p*	059	−40			
121	July 15	8.2	+30	1.8	1.0	*f*	15065	−50	July 19.12	+14	88
122	15	8.3	− 4	1.6	1.3	*p*	062	−32	17.80	+11	836
123	15	8.3	− 5	1.3	1.2	*c*	060	− 7	15.89	+22	206
124	15	8.3	+ 1	2.3	1.8	*s*	060	− 7			
125	15	9.3	+ 2	2.4	0.6	*np*	069	−67	20.47	+13	965
126	July 19	9.2	−37	0.6	0.5	*s*	15069	−14	July 20.47	+13	965
127	22	8.9	+ 1	1.3	0.4	*f*	062	+60	17.80	+11	836
128	22	8.9	+ 1	0.6	0.8	*p*	062	+60			
129	22	9.0	+10	2.5	0.4	*n*	069	+25	20.47	+13	965
130	22	9.1	− 6	1.0	1.5	*s*	069	+25			
131	July 23	9.0	−52 to +51	1.7	..	*c*	15062	+74	July 17.80	+11	836
132	23	9.2	+ 5	1.5	1.0	*c*	069	+39	20.47	+13	965
133	25	13.2	+ 1	2.4	1.4	*f*	073	+27	23.50	−20	114
134	26	9.1	− 2	3.5	1.2	*f*	073	+38			
135	28	9.1	−19	1.2	0.7	*s*	087	−37	31.16	−19	340
136	July 28	9.1	+30	0.4	0.5	*f*	15087	−37	July 31.16	−19	340
137	28	9.1	−30	1.8	0.3	*n*	087	−37			
138	28	9.1	0	1.2	2.1	*n*	087	−37			
139	28	9.4	+ 3	2.1	0.6	*f*	073	+65	23.50	−20	114
140	29	10.4	+23 to +47	0.4	..	*c*	087	−23	31.16	−19	340
141	July 31	12.6	− 9	3.3	0.6	*f*	15089	−44	Aug. 3.86	−18	1182
142	Aug. 1	8.4	−11	1.2	0.6	*s*	089	−33			
143	1	9.1	+ 2	1.3	1.4	*sp*	087	+16	July 31.16	−19	340
144	8	10.3	−50 to +43	0.3	0.5	*c*	100	−30	Aug. 10.72	−19	216
145	9	8.2	−47 to +33	0.8	0.6	*n*	101	−31	11.66	+18	145
146	Aug. 9	8.2	+27	0.3	0.5	*p*	15101	−31	Aug. 11.66	+18	145
147	9	8.3	−25 to +43	2.2	0.8	*f*	108	−62	14.07	+12	94
148	9	9.0	+41	0.3	1.5	*f*	103	−37	12.20	−11	14
149	9	9.0	− 3	3.0	1.0	*s*	099	−13	10.39	+ 9	278
150	9	9.0	+ 1	1.5	1.3	*n*	099	−13			

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	d	h		′	′			°	d	°	
151	Aug. 9	9.1	+ 3	1.4	1.0	*n*	15099	−13	Aug. 10.39	+ 9	278
152	9	9.1	− 2	1.2	0.6	*n*	099	−13			
153	9	9.2	+ 1	1.1	0.8	*n*	094	+29	7.21	− 9	1220
154	12	10.1	−24 to +48	2.2	0.6	*f*	108	−22	14.07	+12	94
155	12	10.4	− 1	5.5	1.3	*n*	099	+27	10.39	+ 9	278
156	Aug. 12	10.4	− 1	3.0	3.2	*s*	15099	+27	Aug. 10.39	+ 9	278
157	12	14.4	−44 to +53	3.5	0.3	*c*	108	−19	14.07	+12	94
158	13	8.5	− 2	3.2	0.5	*s*	108	− 9			
159	13	8.6	+ 3	1.7	1.6	*n*	106	+ 7	12.81	+11	726
160	13	8.9	− 8 to +36	1.0	1.5	*p*	106	+ 7			
161	Aug. 13	10.0	− 1	0.6	1.0	*f*	15106	+ 8	Aug. 12.81	+11	726
162	13	10.2	+ 1	2.7	1.5	*nf*	099	+40	10.39	+ 9	278
163	13	10.2	+22	1.5	1.8	*f*	099	+40			
164	13	10.3	+ 1	1.8	0.6	*f*	110	− 6	13.91	+18	302
165	13	10.3	− 1	3.2	1.5	*p*	110	− 6			
166	Aug. 13	11.0	0	1.6	0.4	*n*	15106	+ 9	Aug. 12.81	+11	726
167	13	11.8	+ 1	0.3	0.5	*c*	106	+ 9			
168	14	11.0	+ 2	2.5	0.3	*sf*	108	+ 5	14.07	+12	94
169	14	11.1	− 4	4.0	1.2	*n*	099	+54	10.39	+ 9	278
170	14	11.3	+17	0.4	0.2	*c*	116	−58	18.90	+19	192
171	Aug. 14	11.4	− 1 to +29	1.0	0.6	*sf*	15111	−22	Aug. 16.11	+15	524
172	14	11.5	+38	0.7	0.3	*n*	106	+22	12.81	+11	726
173	14	13.8	−66 to +53	1.0	..	*sp*	106	+23			
174	14	13.9	−59 to +63	1.2	0.6	*p*	106	+23			
175	14	15.1	+33 to +127	1.9	..	*sp*	106	+24			
176	Aug. 15	9.9	+ 3	1.3	..	*c*	15106	+34	Aug. 12.81	+11	726
177	15	10.3	− 5	1.0	0.2	*c*	121	−67	20.50	−22	191
178	15	10.4	−24 to +21	1.2	0.5	*s*	111	− 9	16.11	+15	524
179	15	10.5	+ 2	1.5	2.0	*f*	108	+18	14.07	+12	94
180	15	10.6	− 4	3.0	1.5	*n*	099	+67	10.39	+ 9	278
181	Aug. 16	9.3	− 2	1.3	1.4	*f*	15106	+47	Aug. 12.81	+11	726
182	16	9.9	− 3	2.6	0.6	*f*	108	+31	14.07	+12	94
183	16	9.9	− 1	1.2	0.8	*f*	108	+31			
184	16	10.1	−49 to +97	3.1	0.6	*p*	106	+48	12.81	+11	726
185	18	9.0	+ 1	1.8	2.2	*n*	116	− 7	18.90	+19	192
186	Aug. 18	9.1	− 1	4.0	1.7	*f*	15121	−28	Aug. 20.50	−22	191
187	20	11.0	− 2	4.5	2.0	*sf*	121	0			
188	21	10.3	−47	0.3	1.3	*nf*	116	+33	18.90	+19	192
189	21	10.5	− 4	1.5	1.1	*sf*	124	−24	23.29	−16	40
190	21	10.5	+ 4	1.8	1.8	*f*	124	−24			
191	Aug. 21	10.5	−20 to +22	1.7	3.5	*sf*	15124	−24	Aug. 23.29	−16	40
192	22	9.1	−33 to + 5	2.3	1.3	*p*	126	−61	26.99	−19	219
193	23	10.0	−41 to +36	1.2	1.8	*s*	126	−47			
194	23	10.1	− 1	4.0	2.4	*f*	121	+39	20.50	−22	191
195	25	9.3	− 3	1.7	0.2	*c*	126	−21	26.99	−19	219
196	Aug. 25	9.4	− 3	2.5	0.7	*p*	15126	−21	Aug. 26.99	−19	219
197	25	10.0	−41	1.2	0.2	*c*	130	−74	31.05	+21	372
198	25	10.1	+ 1	2.0	1.7	*p*	130	−74			
199	25	10.2	+ 4	1.3	1.0	*n*	129	− 2	25.55	+32	115
200	25	13.5	−26 to +28	0.6	..	*c*	130	−72	31.05	+21	372

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	d	h		′	′			°	d	°	
201	Aug. 28	10.2	− 8	1.2	0.8	*n*	15135	−65	Sept. 2.35	− 8	364
202	28	10.2	−15	0.8	2.0	*n*	139	−76	3.16	+18	117
203	28	10.3	+36	0.3	1.4	*n*	130	−35	Aug. 31.05	+21	372
204	28	15.0	+ 7	0.5	..	*c*	136	−63	Sept. 2.38	−14	229
205	29	8.9	+37	2.5	0.3	*f*	130	−22	Aug. 31.05	+21	372
206	Aug. 29	9.3	−13 to +46	1.5	..	*c*	15141	−69	Sept. 3.59	−10	153
207	29	9.5	+40	1.5	2.3	*f*	130	−22	Aug. 31.05	+21	372
208	29	10.6	+16	1.6	1.3	*n*	139	−62	Sept. 3.16	+18	117
209	29	13.2	−46	1.2	0.7	*n*	135	−50	2.35	− 8	364
210	Sept. 2	9.8	−26 to +33	1.3	0.3	*f*	132	+53	Aug. 29.42	+11	305
211	Sept. 2	11.7	−135	1.2	..	*c*	15136	+ 2	Sept. 2.38	−14	229
212	5	10.5	+ 4	0.6	0.2	*c*	147	− 8	6.08	+11	344
213	10	10.4	0	7.5	0.7	*s*	159	+14	9.37	+20	156
214	11	9.9	− 3	1.3	1.2	*f*	159	+27			
215	11	9.9	− 1	11.0	0.9	*s*	159	+27			
216	Sept. 11	10.0	−23 to +40	1.5	0.3	*s*	15161	−16	Sept. 12.63	−18	136
217	11	10.2	0	3.0	1.3	*f*	150	+46	7.96	−12	165
218	15	8.9	+ 1	2.5	1.7	*n*	166	−21	16.93	+16	221
219	16	8.9	+ 7	2.3	1.7	*n*	166	− 7			
220	16	9.1	+ 4	0.8	1.6	*s*	171	−12	17.28	−12	21
221	Sept. 17	9.1	+ 2	2.5	1.6	*n*	15166	+ 6	Sept. 16.93	+16	221
222	22	9.8	+ 2	2.0	3.0	*s*	174	−41	25.54	+18	671
223	22	10.1	+21	1.2	2.2	*f*	175	−52	26.35	−18	138
224	22	10.2	+ 4	1.6	1.4	*s*	173	− 9	23.09	−19	197
225	23	14.1	− 3	1.0	1.5	*s*	174	−26	25.54	+18	671
226	Sept. 23	14.2	− 5 to +41	1.0	0.5	*c*	15174	−26	Sept. 25.54	+18	671
227	23	14.2	+ 3	2.1	2.0	*s*	175	−36	26.35	−18	138
228	24	9.0	− 2	7.0	2.3	*s*	175	−26			
229	25	8.9	+33	0.6	0.3	*c*	174	− 2	25.54	+18	671
230	25	9.0	+40	0.4	0.6	*f*	178	−52	29.33	+15	90
231	Sept. 25	9.0	+ 1	8.0	2.0	*s*	15175	−13	Sept. 26.35	−18	138
232	25	9.2	−21	0.5	0.8	*f*	177	−49	29.1	−17	32
233	27	11.2	+ 1	1.0	0.8	*c*	174	+25	25.54	+18	671
234	30	8.8	+22	1.6	2.0	*s*	174	+64			
235	30	8.9	0	4.0	0.8	*sf*	187	−30	Oct. 2.65	− 9	360
236	Oct. 3	8.7	+43	0.4	0.5	*c*	15191	−24	Oct. 5.20	+25	268
237	3	9.1	− 1	0.7	0.5	*c*	188	−12	4.29	−13	338
238	3	9.2	−82 to − 8	1.5	0.7	*n*	191	−24	5.20	+25	268
239	4	11.1	+40	0.5	0.4	*p*	181	+81	Sept. 28.34	+18	158
240	15	10.4	+ 1	1.3	0.5	*f*	209	+ 2	Oct. 15.26	+11	155
241	Oct. 23	14.0	− 2	2.5	0.8	*c*	15219	−37	Oct. 26.36	−14	349
242	23	14.1	− 6	1.4	0.4	*c*	223	−58	27.97	− 2	216
243	23	14.2	+ 4	0.8	0.3	*c*	218	−36	26.35	+20	70
244	Nov. 3	10.0	+12	1.0	0.7	*f*	235	− 3	Nov. 3.67	− 8	415
245	3	10.2	+ 1	1.8	1.1	*n*	234	+ 7	2.89	+18	154
246	Nov. 3	10.4	−46	0.6	0.4	*f*	15237	+63	Oct. 29.7	+19	34
247	3	10.4	−13	3.0	1.5	*n*	237	+63			
248	5	11.0	− 2	1.5	0.5	*f*	235	+24	Nov. 3.67	− 8	415
249	13	11.9	+ 8	1.8	1.3	*n*	242	+12	12.56	+19	221
250	13	12.0	+ 2	2.3	0.7	*p*	246	−66	18.50	−22	519

OBSERVATIONS OF SOLAR FLOCCULI MADE WITH THE SPECTROHELIOSCOPE IN THE YEAR, 1947

Dark Hα Flocculi							Associated Group of Sunspots				
Reference 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	°	
251	Nov. 24	11.3	−10	2.3	0.3	*c*	15261	+57	Nov. 20.12	− 7	155
252	24	11.4	− 3	0.7	0.5	*f*	264	+18	23.13	−18	480
253	24	11.4	− 7	1.0	..	*c*	264	+18			
254	24	11.5	+10	2.0	1.6	*f*	246	+79	18.50	−22	519
255	24	11.6	+31	0.2	0.2	*c*	260	+30	22.18	−18	357
256	Nov. 25	10.1	0	0.9	0.3	*c*	15264	+30	Nov. 23.13	−18	480
257	25	10.1	− 2	1.2	1.0	*n*	264	+30			
258	25	10.1	− 2	1.3	1.6	*n*	264	+30			
259	25	10.2	+ 2	1.7	1.5	*p*	260	+43	22.18	−18	357
260	25	10.4	+ 7	0.8	0.6	*p*	261	+70	20.12	− 7	155
261	Dec. 29	11.3	− 1	4.0	0.7	*f*	15317	−11	Dec. 30.30	−14	97
262	29	11.5	− 5	1.7	0.5	*f*	312	+66	24.44	−23	321

NOTES

Reference Number

13. Associated with a flare 1. A broad marking overlying the sunspot.

17. A V-shaped marking following the spot around which a flare 1 occurred two hours later.

18. Associated with a flare 1.

21. A measure at $10^h\ 02^m$ gave −70 to −23 km./sec. By $10^h\ 08^m$ the marking had gone.

27. Associated with a flare 1.

38. This marking consists of two parellel filaments.

47., 48. Associated with a flare 1. No. 48 is a curved marking stretching between this group to the preceding one.

56., 57. Associated with a flare 1.

58. Associated with a flare 1. A further reading at $10^h\ 35^m$ gave a velocity of +9 to +134 km./sec., and another at $10^h\ 50^m$ gave −89 to +6 km./sec.

59. Associated with a flare 1.

60. Associated with a flare 2.

61. This marking moves clockwise into the spot.

65. Associated with a flare 1.

Reference Number

66. A further measure at $08^h\ 37^m$ gave a velocity of −19 to +54 km./sec.

67. Associated with a flare 1.

77. Associated with a flare 1. Another reading at $10^h\ 29^m$ gave +26 km./sec.

85. Associated with a flare 2. By $13^h\ 01^m$ the marking had become eruptive, the following velocities being obtained:-

$13^h\ 01^m$	−29 to	+39 km./sec.
13 04	−34	+80
13 08	+15	+99
13 16	+ 1	+73

103., 104., 105. Associated with a flare 2. A further reading on No. 105 at $09^h\ 33^m$ gave −18 to +96 km./sec.

106. Associated with a flare 2. Further measures of this marking, which became very active, were as follows:-

$08^h\ 42^m$	−62 to	+143 km./sec.
08 49	−29 to	+127

108. Associated with a flare 1.

110. Associated with a flare 1.

111. Associated with a flare 1.

OBSERVATIONS OF SOLAR FLOCCULI MADE WITH THE SPECTROHELIOSCOPE IN THE YEAR, 1947

NOTES

Reference Number

112. Another reading at $10^h\ 23^m$ gave -35 km./sec.

115. This marking moved clockwise into the sunspot.

126. A further reading at $09^h\ 18^m$ gave a velocity of +38 km./sec.; by $09^h\ 25^m$ the marking had disappeared.

141. A reading at $12^h\ 43^m$ gave +28 km./sec.

142. Associated with a flare 1^+.

157. Associated with a flare 3.

176. An arched marking between two sunspots.

184. Associated with a flare 1. Further measures at $10^h\ 20^m$ and $10^h\ 35^m$ gave velocities of +73 and -65 to +64 km./sec. respectively.

204. Associated with flare 1.

Reference Number

205. Associated with flare 1. A further measure at $09^h\ 09^m$ gave -2 to +53 km./sec.

207. Associated with a flare 1.

209. By $13^h\ 27^m$ the marking was descending, having a velocity of +60 km./sec.

210. Associated with a flare 2.

211. Associated with a flare 1. At $11^h\ 55^m$ the velocity was +46 km./sec. and a further measure at $14^h\ 55^m$ gave -18 to +56 km./sec.

212. Associated with a flare 2.

238. Associated with a flare 3^-. At $09^h\ 21^m$ the velocity was -22 to +65 km./sec., but by $09^h\ 30^m$ the marking had almost disappeared.

OBSERVATIONS OF SOLAR FLARES MADE WITH THE SPECTROHELIOSCOPE IN THE YEAR 1947

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 year 1947. This table continues the list of flares given in the 1946 volume. A complete list of 476 flares observed at Greenwich from 1930 to 1945 has been published in the volume for 1944. The following is an explanation of the material contained in the various columns:

Column 1. Reference-number of the flare.

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. 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 *Hα*
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 apporpriate 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 *Hα*-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 is made directly with the local continuum. A secondary "line-shifter" (see *Monthly Notices*, **99**, 463, 1939) is used to bring the continuum 15 A.U. from the centre of the *Hα*-line 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 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 YEAR, 1947

Ref. No.	U.T. of Observation			Position			U.T. of Max.	Approx. Area of Flare	Mag.	Central Intensity of $H\alpha$ (cont. = 100)		Associated Spot Group		Reference Number of Associated Dark $H\alpha$
	Date	From	To	Radial Dist.	Latitude	Long. from C.M.				U.T.	Int.	Group No.	Relative Position of Flare	
	1947	h m	h m		°	°	h m			h m				1947
1	Jan. 16	12 53	*12 58*	.86	12 S	60 E			1	12 53	76	14790	*p*	
2	Feb. 26	10 56	11 40	.76	19 S	50 W	<11 06		1+	11 06	66	14831	*c*	13
3	Apr. 10	10 39	11 02	.87	28 S	60 W			1	10 41	54	14886	*p*	
4	10	*11 27*	*12 07*	.57	31 S	26 W	11 34		1	11 34	60	14886	*f*	
5	10	14 44	15 07	.58	31 S	27 W	14 54	260	2	14 54	53	14886	*f*	18
6	26	08 00	*08 20*	.58	9 S	36 E			1			14918	*n*	27
7	26	09 07	*09 25*	.90	6 N	65 W	<09 08		1	09 08	60	14909	*c*	
8	May 3	09 20	*09 40*	.67	20 N	37 E	<09 20		1	09 20	57	14938	*c*	
9	7	08 25	*08 47*	.33	16 S	15 E			1	08 34	46	14936	*f*	46, 47, 48
10	14	08 08	*08 12*	.70	12 S	45 W			1			14941	*c*	52, 53
11	17	*08 15*	*08 40*	.60	16 N	33 W			1	08 19	57	14945	*c*	56, 57
12	17	*10 20*	*10 27*	.97	18 N	80 E			1			14962	*c*	
13	17	10 27	10 31	.73	18 N	42 W			1			14945	*p*	58
14	22	*12 35*	*12 56*	.71	21 N	40 E	12 42	120	1+	12 42	54	14970	*c*	59
15	22	*12 59*	*13 06*	.45	18 N	17 E			1	12 53	36	14962	*f*	
16	24	07 25	07 46	.45	17 N	18 W		230	2	07 35	49	14962	*c*	
17	27	09 20	*09 38*	.84	17 N	56 W	09 05		2	09 05	92	14962	*c*	
18	28	08 04	08 30	.55	20 S	29 E	<08 04		1	08 09	55	14983	*c*	
19	28	09 25	09 52	.55	18 S	30 E		80	1	09 36	51	14982	*c*	65
20	28	12 43	*13 00*	.54	20 S	28 E			1	12 53	47	14983	*c*	
21	29	08 05	*08 20*	.73	17 S	45 W			1			14968	*f*	
22	29	08 13	*08 35*	.45	19 S	20 E	<08 13		2	08 18	56	14982	*c*	
23	29	08 15	*08 50*	.85	22 N	56 E			1	08 33	48	14985	*c*	67
24	29	08 57	*09 06*	.41	23 S	10 W			1	08 54	52	14978	*s*	
25	30	*10 18*	*10 24*	.33	20 S	4 W	10 21		1	10 21	43	14983	*p*	
26	30	*12 51*	*13 20*	.80	9 S	53 E	12 55	320	2	12 55	66	14987	*c*	
27	31	10 10	10 30	.38	23 S	5 W	10 16		1	10 16	57	14983	*f*	
28	June 3	*12 28*	*12 45*	.37	22 S	2 E	12 34		1	12 34	52	14986	*c*	
29	3	*12 40*	*13 05*	.99	26 N	85 E	<12 48	300	1	12 48	56	14995	*n*	
30	3	*12 52*	*13 10*	.38	22 S	2 E	<12 57	220	2	12 57	53	14986	*c*	85
31	11	09 46	09 58	.33	17 N	10 W	09 48		1	09 48	42	14998	*f*	
32	17	08 50	*09 05*	.14	8 N	0	<08 50	85	1+	08 52	54	15005	*c*	
33	17	*09 38*	09 56	.85	24 N	57 E	09 41	210	1+	09 41	79	15014	*n*	
34	19	08 54	*09 26*	.56	6 N	34 W	<08 55	210	2	08 55	88	15021	*c*	103
35	24	08 28	*08 40*	.65	11 N	40 W	<08 28	290	2	08 35	43	15017	*c*	106
36	24	*13 25*	13 42	.65	11 N	40 W	13 28		1			15017	*c*	
37	25	*09 13*	*09 20*	.83	12 N	57 W	<09 17		1	09 17	44	15017	*c*	109
38	25	09 21	*09 37*	.75	28 S	41 E			1	09 23	51	15032	*c*	110
39	25	*09 52*	*10 06*	.94	19 S	70 E	09 55		1	09 55	54	15031	*c*	111
40	July 23	08 50	09 08	.89	11 N	65 W	<08 50		1	08 53	63	15062	*f*	131
41	25	09 15	*09 25*	.43	27 N	11 W			1			15078	*c*	
42	29	08 18	*08 30*	.95	16 S	73 E	<08 18		1	08 23	60	15089	*c*	
43	30	07 28	*07 40*	.88	16 S	60 E			1			15089	*c*	
44	31	14 00	14 12	.75	14 S	46 E			1	14 05	51	15089	*c*	
45	Aug. 1	07 58	08 30	.65	16 S	37 E	<07 58		1+	08 24	51	15089	*c*	142
46	2	09 17	09 19	.48	15 S	20 E	<09 17		1	09 19	63	15089	*c*	
47	12	*14 00*	*15 01*	.40	13 N	24 E	14 09	440	3	14 09	*164*	15108	*c*	157
48	13	*10 34*	*11 00*	.11	9 N	7 W	10 44	125	2	10 44	77	15106	*c*	166
49	16	10 05	*10 15*	.80	9 N	57 W	10 07		1	10 09	54	15106	*c*	184
50	25	10 01	*10 10*	.97	23 N	80 E	10 04		1+	10 04	97	15130	*c*	197
51	26	11 30	*11 40*	.86	24 N	60 E	<11 33		1	11 33	52	15130	*c*	
52	27	13 50	14 20	.78	22 N	50 E			1	13 58	60	15130	*c*	
53	28	*14 55*	*15 08*	.96	12 S	73 E	15 04		1	15 04	80	15136	*f*	204
54	29	08 50	*09 10*	.48	21 N	27 E	<08 50	140	1	08 55	46	15130	*c*	205
55	29	*09 23*	09 45	.48	21 N	27 E	<09 34		1	09 34	43	15130	*c*	207
56	Sept. 2	09 43	10 05	.79	8 N	54 E	<09 43		2	09 48	49	15132	*c*	210
57	2	11 35	11 41	.35	14 S	2 E			1			15136	*c*	211
58	2	11 55	12 02	.79	7 N	53 W			1	12 00	56	15132	*c*	

OBSERVATIONS OF SOLAR FLARES MADE WITH THE SPECTROHELIOSCOPE IN THE YEAR, 1947

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 No.	Relative Position of Flare	
	1947	h m	h m		o	o	h m			h m				1947
59	Sept. 5	09 56	*10 30*	.19	12 N	10 E	10 00	325	2	10 10	*51*	15147	c	212
60	11	10 15	*10 37*	.69	18 N	44 W	<10 15		2	10 17	86	15158	c	
61	25	14 13	14 19	.22	18 N	1 E	<14 13		1	14 18	*43*	15174	c	
62	Oct. 3	09 05	*09 12*	.46	25 N	23 E	<09 06		3	09 06	119	15191	c	238
63	33	*09 25*	*10 20*	.47	25 N	24 E	09 40	70	2	09 40	*105*	15191	c	

NOTES

Ref. No.

2. A complete radio fade-out lasted from $10^h\ 30^m$ to $10^h\ 45^m$.

29. An eruptive prominence 1′ - 2′ high arose from the flare region.

47. Intensity measures were as follows:

14^h	06^m	131
14	09	*164*
14	11	*147*
14	15	*154*
14	17	*115*

Ref. No.

14^h	25^m	*101*
14	30	*78*
14	36	*73*
14	37	*73*
14	40	*74*
14	47	*53*
14	52	*48*
14	54	51
15	07	38

49. A series of bright points within a small region.

54. Possibly the end of a larger flare.

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