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GREENWICH

PHOTO-HELIOGRAPHIC RESULTS

1949

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HER MAJESTY'S STATIONERY OFFICE
1956

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RESULTS OF MEASURES

MADE AT THE ROYAL GREENWICH OBSERVATORY

OF

PHOTOGRAPHS OF THE SUN

TAKEN AT GREENWICH, THE CAPE

AND KODAIKANAL IN THE YEAR

1949

UNDER THE DIRECTION OF

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

Published by Order of the Board of Admiralty
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GREENWICH PHOTO-HELIOGRAPHIC RESULTS 1949

INTRODUCTION

§1. *Positions and Areas of Sunspots and Faculæ for each Day in the Year* 1949.

The photographs from which these measures were made were taken at the Royal Greenwich Observatory, the Royal Observatory, Cape of Good Hope, and at the Kodaikanal Observatory, South India.

The photographs of the Sun obtained at Greenwich were taken with the 4-inch Photoheliograph, of which the original 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. On 1949 May 2 this photoheliograph was moved from Greenwich to Herstmonceux Castle, Sussex. Subsequent photographs continue to be designated "Greenwich" photographs.

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 365 days in 1949, those finally selected for measurement being supplied by the different observatories as under:

Greenwich	226
Cape	139
Kodaikanal	0
Total	365

The names of the measurers of the photographs for the year 1949 are as follows:

H. Barton	M. L. Nunn	R. W. Teague
P. S. Laurie	N. Rhodes	

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.

From the two methods, photographic and visual, monthly values of the zero of position-angles with respect to the wires have been adopted for each photoheliograph.

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 only one measure of area was taken except, for the most part, with large groups.

In the case of large or complex groups of spots, the positions of the chief components are measured individually, and also for groups so near the east or west limbs of the Sun that the effects of foreshortening are appreciable. In other cases the position of the centre of a group is estimated in the micrometer. In this respect a difference 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 only necessary, however, to apply this correction 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:

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

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

$$\sin\phi = \cos\rho \sin D + \sin\rho \cos D \cos\chi$$

$$\sin l = -\sin\chi \sin\rho \sec\phi$$

χ is found from the position-angle measured from the north point by subtracting P, the position-angle of the north end of the Sun's axis, measured eastward from the north point of the disk. The heliographic longitude of the spot is l + L, where L is the heliographic longitude of the centre of the disk. The three quantities P, D, and L for the time of the exposure of each photograph are derived from the *Ephemeris for Physical Observations of the Sun* given on p. 390 of the *Nautical Almanac* for 1949.

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 1949.0 to be 75°02′.9, and the period of the Sun's sidereal rotation to be 25.38 days; the meridian which passed through the ascending node on 1854 January 1, Greenwich mean noon, being taken as the zero meridian.

§2. *General Catalogue of Groups of Sunspots for* 1949.

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 1948, 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* 1949.

Ledger I. - Recurrent Groups. - This ledger supersedes the *Catalogue of Recurrent Groups of Sunspots* given in years previous to 1916 of the *Greenwich Photo-Heliographic Results*, and the reference numbers of the series are in continuation of those given therein. The groups forming this ledger have been abstracted from a general ledger of all spot groups seen throughout the year and were selected upon the following plan, reference being made to the *General Catalogue*:- If any spot group when first seen was 60° or more to the east of the central meridian, then the catalogue, and, if necessary, the daily results also (§1), were searched some fifteen or sixteen days earlier, to ascertain whether a spot group of similar heliographic longitude and latitude was then near the west limb of the Sun. Similarly, if any spot group when last seen was 60° or more to the west of the central meridian, then a search was made to identify with the earlier group, any spot near the Sun's east limb, about a fortnight later. When there appeared to be a case of probable identity between groups in consecutive rotations of the Sun (in some cases, partial transits of the disk), then the character of the group, its area, longitude and latitude, have been carefully compared before accepting its continuity as a recurrent group.

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

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

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

where ϕ is the latitude of the Spot. *See Greenwich Photo-Heliographic Results*, 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 Faculæ for each day, and Mean Areas and Mean Heliographic Latitude of Sunspots and Faculæ for each Rotation of the Sun, and for the year* 1949.

Particulars relating to this section are given in the headings on pages C 186 and C 190-191.

§5. *Observations of Solar Flocculi and Solar Flares made with the Spectrohelioscope in the year* 1949.

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, Mr. Rhodes and Miss Chapman.

ROYAL GREENWICH OBSERVATORY

Positions and Areas of Sunspots and Faculæ

For each day in the year

1949

GREENWICH PHOTO-HELIOGRAPHIC RESULTS, 1949

POSITIONS AND AREAS OF SUNSPOTS AND FACULÆ FOR EACH DAY IN THE YEAR 1949.

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). (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
1949			°	°	°			
0.457		.915	302.8					106
G		.810	286.4					138
	15834	.990	297.0	54.9	+26.1	21	89	135 *f*
	1275a	.918	284.1	41.0	+11.6	5	24	154 *c*
	15842	.825	306.1	24.1	+26.9	2	10	94 *c*
	15838	.645	247.1	14.1	-16.9	46	246	
	15841	.389	263.5	358.6	- 5.4	36	286	
	15843	.432	301.0	357.9	+ 9.9	46	329	
	15850	.321	246.6	353.2	-10.3	3	19	
	15849	.209	135.6	327.4	-11.6	0	9	
	15844	.323	47.7	321.9	+ 9.5	3	15	
	15846	.441	56.8	313.9	+11.0	38	171	
	15851	.912	97.0	270.2	- 7.7	12	65	381 *c*
		.857	108.3					134
		.924	117.8					70
		.950	73.9					120
		.957	109.6					221
Jan. 1			(+1.9)	(335.9)	(- 3.1)	(212)	(1263)	(1553)
1.277		.971	297.3					150
C		.969	282.5					187
		.893	285.3					125
		.883	302.1					143
	15838	.771	250.3	14.3	-17.2	45	281	82 *c*
	15841	.578	266.1	0.3	- 4.9	38	368	
	15843	.582	291.3	358.3	+ 9.5	48	314	
	15850	.492	254.5	353.8	-10.4	2	13	
	15849	.162	194.7	327.5	-12.2	1	19	
	15844	.232	13.3	322.0	+ 9.8	0	3	
	15846	.310	38.5	313.8	+10.8	28	182	
	15851	.836	96.6	268.5	- 7.3	4	34	163 *c*
		.860	114.3					181
		.877	104.5					182
		.891	70.9					216
		.944	108.0					219
		.969	84.0					103
Jan. 2			(+1.5)	(325.1)	(- 3.2)	(166)	(1214)	(1751)
2.502		.956	300.9					104
C		.925	291.8					122
		.835	245.6					122
		.816	109.3					89

U. T.	Group No.	MEASURES		POSITION		AREA		
		Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ
1949			°	°	°			
	15838	.913	252.7	14.5	-17.1	45	242	189 *c*
	15841	.783	266.0	0.4	- 5.2	48	318	143 *c*
	15843	.773	285.3	357.9	+ 9.5	35	256	126 *c*
	15849	.346	242.4	327.2	-12.4	5	34	
	15846	.259	340.3	314.1	+10.7	26	123	
	15851	.663	97.8	267.6	- 7.8	3	10	
	15852	.945	96.0	238.1	- 6.8	26	180	164 *c*
	15853	.949	83.6	238.1	+ 4.9	3	19	206 *c*
		.943	64.3					108
Jan. 3			(+0.9)	(309.0)	(- 3.4)	(191)	(1182)	(1373)
3.534		.908	245.8					90
G		.840	257.1					99
	15838	.986	253.4	16.0	-16.9	38	207	127 *c*
	15841	.912	265.8	1.2	- 5.3	23	183	150 *c*
	15843	.909	282.5	359.4	+ 9.8	28	166	123 *c*
	15846	.404	307.6	314.3	+10.9	19	96	
	15851	.467	101.0	267.9	- 8.2	1	6	
	15853	.828	82.0	240.3	+ 4.6	17	65	86 *c*
	15852	.844	95.6	237.9	- 6.6	26	191	71 *c*
	15854	.978	100.0	217.3	-10.5	40	162	184 *c*
		.860	59.7					94
		.956	92.2					218
Jan. 4			(+0.4)	(295.4)	(- 3.5)	(192)	(1076)	(1242)
4.299		.964	249.7					135
C		.919	242.7					53
		.910	287.3					112
	15841	.969	265.1	1.0	- 5.6	12	66	416 *c*
	15843	.966	280.9	359.2	+ 9.5	31	178	174 *c*
	15846	.534	296.7	314.2	+10.7	16	83	
	1275b	.578	1.1	284.6	+31.5	0	6	
	15851	.219	112.0	273.5	- 8.2	2	10	
	15853	.716	80.7	240.4	+ 4.1	25	166	188 *c*
	15852	.733	95.5	238.2	- 6.5	23	159	
	15855	.898	96.4	221.4	- 7.4	14	82	189 *c*
	15854	.919	99.7	218.5	-10.3	32	186	348 *f*
		.820	104.5					127
		.846	90.4					213
		.928	78.3					180
		.933	88.6					214
Jan. 5			(+0.1)	(285.3)	(- 3.6)	(155)	(936)	(2349)

Group 15850. Jan. 1 - 2. A small spot.
Group 15851. Jan. 1 - 6. A few tiny spots.
Group 15852. Jan. 3 - 14. Return of Group 15815: fifth appearance. A regular spot whose umbra is crossed by a bright "bridge" until January 8.
Group 15853. Jan. 3 - 12. A small spot, except between January 5 and January 9, when there is a stream.
Group 15854. Jan. 4 - 16. With Group 15855, a return of Group 15818. A regular spot with a few companions on January 6.
Group 15855. Jan. 5 - 12. With Group 15854, a return of Group 15818. A small stream of changing spots, forming immediately *p* Group 15854, and dying out rapidly after January 9.

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
1949			°	°	°			
5.287		.975	263.7					137
C		.974	286.2					113
		.853	286.8					148
		.812	266.0					88
	15849	.861	256.1	331.5	-13.8	2	22	116 *c*
	15846	.701	289.5	314.4	+10.8	13	106	
	15851	.074	203.2	274.0	- 7.6	0	6	
	15853	.528	77.2	241.3	+ 4.7	20	113	
	15852	.560	96.2	238.4	- 6.5	41	181	
	15855	.759	96.8	223.0	- 7.5	29	193	190 *c*
	15854	.807	100.2	218.7	-10.4	37	210	106 *c*
	15856	.994	107.2	188.1	-17.5	9	75	
		.814	77.8					108
		.824	90.0					165
		.908	100.4					441
Jan. 6			(-0.4)	(272.3)	(- 3.7)	(151)	(906)	(1612)
6.286		.929	284.7					474
C		.923	263.9					107
		.923	274.1					107
		.859	296.3					91
		.843	252.3					105
	15849	.949	258.3	330.9	-12.3	6	27	135 *c*
	15846	.824	285.0	312.8	+10.0	20	108	227 *c*
	1275c	.302	50.3	245.6	+ 7.4	0	4	
	15853	.341	67.1	240.8	+ 4.0	20	117	
	15852	.355	98.2	238.5	- 6.4	23	160	
	15855	.576	98.2	224.1	- 7.8	15	121	
	15854	.656	101.3	218.4	-10.3	26	150	
	15857	.684	108.1	217.0	-15.0	6	24	77 *f*
	15856	.945	107.3	188.2	-17.6	26	107	160 *c*
		.810	100.5					283
		.847	110.9					116
		.954	116.3					85
		.969	72.5					207
Jan. 7			(-0.9)	(259.1)	(- 3.8)	(142)	(818)	(2174)
7.289		.973	260.8					155
C		.945	253.8					142

U. T.	Group No.	MEASURES		POSITION		AREA		
		Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ
1949			°	°	°			
		.923	235.7					121
		.908	293.8					86
		.863	252.4					143
		.812	298.5					88
	15846	.936	282.7	313.9	+10.4	14	62	330 *c*
	15853	.159	33.4	240.9	+ 3.7	20	104	
	15852	.136	109.8	238.5	- 6.5	27	166	
	15855	.385	101.8	223.6	- 8.1	32	172	
	15854	.469	104.6	218.6	-10.2	31	155	
	15857	.513	113.4	216.8	-15.1	14	60	
	15856	.855	108.5	187.7	-17.8	20	106	153 *f*
	15858	.908	100.8	180.6	-11.4	12	93	118 *f*
		.897	76.8					82
		.923	69.6					147
		.944	59.2					110
		.953	85.5					153
		.970	75.6					147
Jan. 8			(-1.4)	(245.9)	(- 3.9)	(170)	(918)	(1975)
8.451		.972	290.8					136
G		.951	254.5					138
		.909	292.3					129
		.845	253.0					121
	1275d	.914	266.0	296.6	- 5.3	10	35	118 *c*
	15853	.227	304.2	241.4	+ 3.4	15	69	
	15852	.147	255.1	238.8	- 6.1	34	128	
	15855	.143	121.7	223.6	- 8.3	79	231	
	15854	.235	117.5	218.4	-10.1	40	156	
	15857	.285	132.6	218.1	-15.0	61	260	
	15856	.696	111.5	187.9	-17.7	22	99	93 *f*
	15858	.785	101.7	179.1	-11.6	62	275	89 *c*
	15859	.980	103.1	151.8	-13.6	15	54	179 *c*
		.775	70.8					103
		.827	63.8					123
		.862	86.2					95
		.876	74.8					178
		.932	81.4					88
		.965	71.8					102
Jan. 9			(-2.0)	(230.6)	(- 4.0)	(338)	(1307)	(1692)

Group 15856. Jan. 8 - 18. Return of Group 15821. A small regular spot, with a distant companion on January 13, 16 and 17.

Group 15857. Jan. 7 - 14. A bi-polar group which forms immediately s Group 15854, and dies out before reaching the west limb.

Group 15858. Jan. 8 - 13. A spot of rapid growth and decay.

Group 15859. Jan. 9 - 14. Return of Group 15823. An unstable group.

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
1949			°	°	°			
9.293		.976	264.8					140
C		.934	243.3					229
		.815	266.6					179
	15853	.454	283.3	245.6	+ 2.3	7	39	
	15852	.334	261.7	238.8	- 6.6	16	94	
	15855	.111	228.2	224.3	- 8.3	17	81	
	15854	.114	169.6	218.3	-10.5	48	177	
	15857	.199	168.4	217.1	-15.3	28	246	
	1275e	.129	105.0	212.3	- 6.0	1	5	
	15856	.560	117.2	188.0	-18.2	14	90	
	15858	.652	103.8	179.3	-12.1	33	214	
	15859	.933	104.8	150.5	-15.2	11	72	373 c
		.956	75.0					175
		.964	83.7					115
Jan. 10			(-2.4)	(219.5)	(- 4.1)	(175)	(1018)	(1211)
10.490		.961	297.7					96
G		.947	264.6					132
		.888	290.5					175
		.836	249.3					217
	15853	.682	278.7	246.1	+ 2.8	3	16	
	15852	.578	264.2	239.0	- 6.8	23	98	
	15855	.358	259.0	224.5	- 7.8	5	35	
	15854	.270	246.3	218.3	-10.3	37	142	
	15857	.316	229.5	218.2	-15.9	53	384	
	15856	.363	132.9	187.6	-18.2	26	107	
	15858	.444	108.7	178.5	-11.9	11	68	
	15859	.803	104.7	150.7	-14.3	5	36	207 c
	15860	.860	73.8	146.6	+11.5	4	18	156 c
	15861	.968	74.4	130.2	+13.9	38	239	466 c
		.955	107.7					305
		.957	63.7					367
Jan. 11			(-2.9)	(203.8)	(- 4.2)	(205)	(1143)	(2121)
11.440		.958	286.9					148
G		.944	255.8					146
		.922	245.6					248
	15853	.825	277.0	246.2	+ 3.3	4	11	91 c
	15852	.741	264.6	239.1	- 6.9	11	90	85 c
	15855	.607	263.0	228.6	- 7.7	1	8	
	15857	.487	244.1	218.3	-16.1	41	318	

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
	15854	.461	256.0	218.2	-10.3	30	153	
	15862	.366	266.2	212.7	- 5.4	1	6	
	15856	.255	165.7	187.5	-18.5	21	101	
	15858	.255	126.1	179.2	-12.8	5	43	
	15859	.626	104.3	153.1	-12.3	1	8	
	15860	.725	68.7	147.8	+12.1	3	16	
	15861	.890	72.6	130.7	+13.4	49	367	381 c
		.926	63.8					707
Jan. 12			(-3.4)	(191.3)	(- 4.3)	(167)	(1121)	(1806)
12.473		.928	297.7					173
G		.914	275.3					159
		.863	280.3					233
		.797	256.8					98
		.767	269.9					135
	15852	.880	264.7	239.4	- 6.8	11	72	196 c
	15857	.666	250.9	218.4	-15.8	28	190	
	15854	.651	259.4	218.1	-10.2	23	130	
	15862	.583	266.9	213.3	- 5.3	1	9	
	15856	.292	211.3	186.9	-18.7	23	116	
	15858	.157	193.3	179.8	-13.2	2	9	
	1275f	.379	10.1	173.7	+17.4	5	27	
	15859	.433	113.4	153.6	-13.9	11	94	
	15860	.568	62.1	147.0	+11.6	7	32	
	15861	.763	68.5	131.1	+13.2	54	296	222 c
	15863	.867	59.1	123.4	+23.9	6	24	243 c
	15864	.865	67.9	121.2	+16.6	2	17	127 c
	15865	.990	101.3	95.4	-11.8	141	593	234 p
		.887	108.5					127
		.889	77.8					105
		.975	71.5					144
Jan. 13			(-3.9)	(177.7)	(- 4.4)	(314)	(1609)	(2196)
13.287		.939	277.5					196
C		.898	256.3					118
		.860	265.7					223
		.825	274.1					184
	15852	.949	264.3	238.6	- 6.8	9	69	93 s
	15857	.787	253.1	218.3	-16.0	14	78	73 c
	15854	.778	260.5	217.9	-10.3	24	115	169 c
	15862	.718	268.3	212.7	- 4.4	3	18	118 c

Group 15860. Jan. 11 - 17. One or two small faint spots.
Group 15861. Jan. 11 - 22. A group of small changing spots. The leading part becomes composite and alone remains at the west limb.
Group 15862. Jan. 12 - 16. One or two tiny spots, not seen on January 15.
Group 15863. Jan. 13 - 20. Small changing spots with maximum area on January 16.
Group 15864. Jan. 13 - 15. A small spot not seen on January 14.
Group 15865. Jan. 13 - 28. Return of Group 15831. A regular spot which begins to decline after passing the C.M.

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
1949			°	°	°			
	15856	.418	232.9	187.4	-18.7	16	98	
	15860	.391	48.7	149.6	+10.6	4	36	
	15859	.371	125.6	148.6	-16.7	2	18	
	15861	.643	62.9	131.0	+13.4	39	202	
	15863	.780	54.2	123.3	+23.9	10	35	342 c
	15865	.948	101.1	95.2	-11.9	130	538	589 c
	15866	.962	96.8	92.6	- 7.8	14	128	89 c
		.824	106.7					147
		.928	69.5					84
Jan. 14			(-4.3)	(166.9)	(- 4.5)	(265)	(1335)	(2425)
14.286 C		.911	281.8					101
		.909	269.5					324
		.893	248.9					161
	15854	.898	260.5	217.8	-10.5	19	139	340 c
	15867	.635	256.1	192.8	-12.4	6	42	
	15856	.582	243.4	187.0	-18.9	15	109	
	15860	.264	13.2	150.3	+10.3	5	24	
	15868	.309	139.7	141.7	-18.1	13	95	
	15861	.470	49.3	132.4	+13.5	29	223	
	15863	.622	47.2	124.7	+20.9	12	74	
	15864	.633	56.9	120.4	+16.3	3	15	
	15865	.858	100.9	94.7	-11.7	95	701	239 c
	15866	.878	96.5	92.3	- 7.9	16	115	108 c
	15869	.931	73.3	87.4	+13.7	5	47	227 c
		.951	105.1					736
Jan. 15			(-4.7)	(153.8)	(- 4.6)	(218)	(1584)	(2236)
15.423 C		.950	298.1					66
		.939	289.9					60
		.926	258.0					452
		.879	251.3					76
		.762	295.3					72
	15854	.981	260.7	218.0	-10.0	10	53	142 c
	15862	.966	266.7	213.9	- 4.4	4	11	207 c
	15867	.807	258.5	192.6	-12.1	15	69	99 c
	15856	.743	248.6	185.6	-18.9	20	77	
	15870	.293	236.7	153.3	-13.8	2	13	
	15860	.332	329.1	148.8	+11.9	2	13	
	15868	.235	200.8	143.8	-17.3	32	181	
	15861	.342	19.6	132.0	+14.1	72	442	

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
	15863	.496	29.1	123.6	+23.8	31	183	
	15865	.697	102.5	94.9	-12.1	101	519	
	15866	.723	96.4	92.5	- 7.9	14	87	
	15869	.817	69.0	87.1	+14.1	20	105	211 c
	15871	.989	66.7	60.2	+22.2	194	1207	172 c
		.859	105.9					467
		.896	124.2					71
		.927	73.9					124
		.982	79.8					407
Jan. 16			(-5.3)	(138.8)	(- 4.7)	(517)	(2960)	(2626)
16.306 C		.975	258.6					301
		.951	249.1					184
		.857	291.7					361
	15867	.924	258.9	195.0	-12.1	5	25	141 c
	15856	.847	250.2	184.6	-19.3	19	63	151 c
	15860	.474	304.7	150.5	+11.2	1	5	
	15868	.346	230.1	143.3	-17.4	55	240	
	15861	.335	344.9	132.3	+14.0	68	383	
	15863	.438	6.3	124.3	+20.9	24	86	
	15872	.305	142.4	115.9	-18.7	3	17	
	15865	.547	104.3	94.6	-11.8	99	622	
	15866	.566	96.5	92.8	- 7.7	18	85	
	15869	.707	64.1	86.3	+14.4	27	72	
	15871	.963	64.1	56.8	+23.3	314	2342	662 c
	15873	.993	73.1	46.0	+16.1	8	41	127 c
		.752	107.9					714
		.850	66.3					69
		.914	76.0					332
Jan. 17			(-5.7)	(127.2)	(- 4.8)	(641)	(3981)	(3042)
17.308 C		.960	288.3					257
		.909	247.9					149
		.901	257.2					179
		.880	286.6					163
		.861	273.5					122
	15867	.988	258.8	195.6	-11.8	0	13	180 c
	15856	.951	251.5	186.4	-19.1	10	37	89 c
	15868	.532	244.9	144.2	-17.2	52	317	
	15861	.451	315.9	132.8	+14.2	55	328	
	15863	.468	340.2	123.7	+21.2	8	46	

Group 15866. Jan. 14 - 25. A small regular spot, immediately *n* Group 15865.
Group 15867. Jan. 15 - 18. A small spot.
Group 15868. Jan. 15 - 22. A group which forms near the C.M. and steadily increases in area throughout its transit.
Group 15869. Jan. 15 - 24. A stream of small changing spots.
Group 15870. Jan. 16 - 19. A tiny spot seen only on January 16 and 19.
Group 15871. Jan. 16 - 29. A large group, in which the leader is an elongated composite spot, with its umbra divided into two by a bright "bridge". This spot takes on a more circular shape for two or three days, before becoming elongated again. The follower is a smaller composite spot which is breaking up as it passes from view.
Group 15872. Jan. 17 - 23. A comparatively short-lived stream of small changing spots.
Group 15873. Jan. 17 - 26. A small spot with a distant companion on January 20.

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
1949			°	°	°			
	15872	.225	189.2	116.2	-17.6	10	75	
	15865	.351	110.9	94.5	-11.8	113	578	
	15866	.359	98.3	93.1	- 7.5	15	90	
	15869	.566	56.4	85.1	+13.9	8	41	
	15871	.887	60.7	56.9	+23.1	471	2454	649 c
	15874	.888	100.5	51.2	-11.6	6	23	99 c
	15873	.942	70.7	46.3	+16.3	15	65	107 c
	15875	.990	74.0	34.0	+15.1	34	271	243 c
		.817	73.3					234
		.983	93.7					194
Jan. 18			(-6.1)	(114.0)	(- 4.9)	(797)	(4338)	(2665)
18.286 C		.969	257.2					145
		.958	248.6					108
		.953	273.4					119
		.948	287.1					194
		.873	278.0					64
		.790	288.6					152
	15870	.802	256.8	154.3	-13.5	2	7	128 c
	15868	.705	251.4	145.1	-16.6	75	407	
	15861	.610	300.2	133.8	+13.6	59	205	
	15863	.562	324.2	121.8	+22.3	13	25	
	15872	.334	228.2	116.2	-17.6	24	106	
	15865	.164	136.8	94.5	-11.8	96	591	
	15866	.139	107.0	93.4	- 7.2	16	78	
	15869	.442	40.8	83.8	+14.7	15	75	
	15876	.382	131.4	83.5	-19.4	1	4	
	15877	.648	105.2	61.2	-13.7	10	37	
	15871	.793	55.4	56.0	+23.2	345	2054	719 c
	15874	.777	100.2	50.1	-11.1	2	5	42 c
	15873	.848	67.7	46.7	+15.9	14	59	151 c
	15875	.939	72.0	33.7	+15.0	27	174	293 c
	15878	.931	93.5	32.5	- 5.1	0	5	392 c
Jan. 19			(-6.6)	(101.1)	(- 5.0)	(699)	(3832)	(2507)
19.501 G		.937	285.0					336
		.925	314.3					155
		.880	277.1					101
		.827	302.1					342
	15868	.875	255.1	146.2	-15.5	90	742	489 c
	15861	.795	290.7	134.7	+13.0	53	182	207 c
	15863	.709	309.6	121.3	+22.7	3	29	

U. T.	Group No.	MEASURES		POSITION		AREA		
		Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ
1949			°	°	°			
	15872	.544	245.7	116.2	-17.3	25	183	
	15865	.199	233.6	94.5	-11.8	113	614	
	15866	.150	254.7	93.4	- 7.3	18	100	
	15869	.341	1.5	84.6	+14.7	15	82	
	15876	.234	175.0	83.9	-18.5	2	11	
	15877	.426	109.9	60.9	-12.9	17	111	
	15871	.657	44.9	54.9	+23.3	444	2417	249 c
	15873	.701	60.9	45.7	+15.9	20	88	125 c
	15875	.824	67.7	33.1	+15.1	28	162	127 c
	15878	.812	92.1	30.8	- 4.7	7	50	266 c
		.908	104.9					165
		.972	110.6					136
		.979	95.7					130
Jan. 20			(-7.1)	(85.1)	(- 5.1)	(835)	(4771)	(2828)
20.288 C		.974	286.1					204
		.894	300.3					349
		.806	304.5					176
	15868	.949	255.5	146.7	-15.4	130	996	723 c
	15861	.883	288.1	134.1	+13.3	45	164	776 c
	15872	.680	251.3	116.7	-16.4	27	117	
	15879	.491	261.0	104.0	- 8.9	15	45	
	15865	.359	250.1	94.8	-11.9	73	508	
	15866	.325	262.5	93.6	- 7.4	13	85	
	15876	.282	219.4	85.5	-17.6	1	8	
	15869	.378	332.3	85.1	+14.4	18	67	
	15877	.272	121.9	61.0	-13.2	15	56	
	15871	.567	33.3	55.0	+23.3	339	2468	
	15873	.567	52.9	46.9	+15.3	16	46	
	15875	.715	63.5	33.5	+14.7	33	168	62 c
	15878	.749	93.1	26.2	- 5.7	2	6	95 c
		.832	106.5					207
		.926	94.9					151
		.936	110.3					322
		.974	101.5					113
Jan. 21			(-7.5)	(74.7)	(- 5.2)	(727)	(4734)	(3178)
21.409 G		.965	297.1					203
		.910	300.0					413
	15868	.986	254.7	141.2	-16.0	33	191	365 c
	15861	.969	285.0	133.6	+13.1	14	117	449 c
	15872	.841	252.6	117.1	-17.5	17	82	195 c

Group 15874. Jan. 18 - 19. One or two tiny spots.

Group 15875. Jan. 18 - 28. A small regular spot which begins to disintegrate on January 23 and dies out before reaching the limb. On January 26, however, there is a temporary increase in area.

Group 15876. Jan. 19 - 21. A few tiny spots.

Group 15877. Jan. 19 - 24. A short stream of small spots, of which only one remains on January 23.

Group 15878. Jan. 19 - 25. A tiny spot, except on January 20 when three spots are present. Nothing is seen on January 23.

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
1949			°	°	°			
	15879	.667	261.2	101.8	- 9.8	1	5	
	15865	.575	256.6	94.7	-12.0	62	421	
	15866	.552	264.9	93.5	- 7.2	12	57	
	15869	.514	310.8	83.6	+14.7	2	16	
	15877	.145	187.9	61.2	-13.5	8	59	
	15880	.344	13.2	55.4	+14.2	16	71	
	15871	.492	11.0	54.2	+23.5	313	2222	
	15873	.414	32.8	46.6	+15.1	7	32	
	15878	.435	90.3	34.2	- 4.9	1	7	
	15875	.550	52.5	33.3	+14.8	20	147	
		.792	96.6					80
		.833	111.6					371
		.889	98.4					399
		.921	72.7					165
		.945	114.9					180
		.959	91.7					113
Jan. 22			(-8.0)	(60.0)	(- 5.3)	(506)	(3427)	(2933)
22.461 G		.969	293.0					237
		.961	284.5					173
		.949	299.9					256
		.855	262.7					167
		.809	293.5					120
	15872	.951	253.7	118.6	-17.1	7	39	346 c
	15865	.750	258.9	94.7	-11.8	62	433	
	15866	.741	265.2	94.0	- 7.2	13	82	
	15869	.676	301.9	82.7	+16.5	0	3	
	15877	.279	238.1	60.2	-13.7	2	12	
	15880	.375	335.1	55.4	+14.5	13	156	
	15871	.492	345.4	53.8	+23.0	331	2319	
	15881	.147	227.1	52.4	-11.1	8	55	
	15873	.345	359.2	46.4	+14.7	7	36	
	15875	.415	31.5	33.2	+15.4	14	146	
		.820	116.3					142
		.825	66.5					114
		.949	98.2					256
		.957	73.3					221
		.971	81.7					111
Jan. 23			(-8.5)	(46.1)	(- 5.4)	(457)	(3281)	(2143)

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
23.289		.965	250.8					235
C		.936	263.5					351
	15865	.858	259.2	94.5	-12.1	80	415	200 c
	15866	.852	265.2	93.8	- 7.0	14	89	57 c
	15869	.802	293.7	84.6	+15.2	0	6	142 c
	15882	.759	259.4	84.6	-11.7	2	10	78 c
	15877	.441	248.4	60.1	-14.3	1	8	
	15880	.498	313.2	57.2	+14.8	47	245	
	15871	.550	328.2	53.4	+22.6	333	2471	
	15881	.307	250.8	52.3	-11.0	12	64	
	15873	.388	332.2	45.9	+14.6	8	28	
	15875	.361	3.6	33.9	+15.5	9	104	
	15878	.035	64.6	33.4	- 4.6	1	5	
		.889	71.8					203
		.889	100.6					248
		.942	81.5					76
		.972	70.6					132
Jan. 24			(-8.8)	(35.2)	(- 5.5)	(507)	(3445)	(1722)
24.289		.930	288.9					381
C	15865	.950	259.3	94.3	-11.8	49	351	404 s
	15866	.945	264.5	93.2	- 7.0	6	44	103 c
	15882	.893	260.3	85.6	-11.1	4	21	102 c
	15880	.647	300.9	57.0	+14.9	42	372	
	15881	.513	256.3	52.6	-11.7	0	15	
	15871	.651	314.7	52.0	+22.4	262	2216	
	15873	.517	311.1	45.7	+14.3	3	14	
	15878	.218	274.1	34.6	- 4.5	2	14	
	15875	.415	330.3	34.4	+15.7	12	63	
	15883	.463	3.1	20.6	+21.9	3	22	
	15884	.867	67.7	325.7	+16.2	2	10	401 f
	15885	.995	92.9	297.9	- 3.4	62	340	137 p
Jan. 25			(-9.3)	(22.1)	(- 5.5)	(447)	(3482)	(1528)
25.286		.953	285.5					153
C		.926	254.1					301
	15865	.994	258.9	93.5	-11.6	35	246	300 f
	15880	.784	294.8	56.4	+15.4	31	324	139 c
	15881	.724	259.9	55.4	-11.2	2	8	

Group 15879. Jan. 21 - 22. A pair of spots on January 21; a single spot on January 22.
Group 15880. Jan. 22 - 28. A short stream appearing immediately s the leader of Group 15871.
Group 15881. Jan. 23 - 28. A few small variable spots, f Group 15877, with which it may be associated.
Group 15882. Jan. 24 - 25. A single small spot on January 24; a pair on the next day.
Group 15883. Jan. 25 - 31. One or two small changing spots.
Group 15884. Jan. 25 - 26. A tiny spot.
Group 15885. Jan. 25-Feb. 6. A regular spot whose umbra, on January 29, has divided into two parts. On the next day these parts begin to separate, the whole eventually forming a bi-polar group which dies out as it passes round the limb.

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
1949			°	°	°			
	15871	.773	305.3	51.9	+22.4	220	2115	433 c
	15873	.666	299.9	45.5	+14.8	3	17	
	15875	.565	309.9	35.7	+16.1	22	154	
	15883	.507	337.4	21.1	+22.3	13	65	
	15886	.526	102.3	337.5	-11.2	4	19	
	15884	.764	63.2	323.9	+16.2	3	8	189 c
	15885	.941	92.1	298.8	- 3.8	55	425	378 c
		.925	121.3					162
		.948	106.2					130
Jan. 26			(-9.7)	(9.0)	(- 5.6)	(388)	(3381)	(2185)
26.290 C		.971	253.6					193
		.952	283.0					135
		.919	255.6					158
	15880	.905	290.2	57.3	+15.5	52	288	189 c
	15881	.825	258.9	51.5	-12.4	0	5	122 c
	15871	.872	300.2	50.3	+22.7	279	1919	739 c
	15875	.704	299.0	35.3	+15.5	6	34	78 p
	15883	.611	319.8	20.9	+22.6	10	56	
	15886	.337	110.2	336.9	-12.1	1	8	
	15885	.839	91.0	298.7	- 3.9	63	379	131 c
	15887	.985	97.8	275.1	- 8.7	23	147	239 c
		.885	102.4					111
		.925	89.2					380
		.925	68.5					177
		.932	58.1					128
		.959	107.4					146
Jan. 27			(-10.2)	(355.7)	(- 5.7)	(434)	(2836)	(2926)
27.290 C		.813	268.0					88
	15880	.982	286.8	59.3	+15.2	16	184	115 c
	15871	.946	295.9	49.0	+22.1	220	1560	625 c
	15881	.903	259.3	47.4	-12.1	2	9	136 p
	15875	.825	294.4	33.8	+16.3	0	5	216 c
	15883	.725	310.0	19.5	+23.1	3	14	70 c
	15885	.688	90.4	299.1	- 4.5	81	435	155 f
	15888	.806	71.2	291.6	+11.4	3	18	167 c

U.T.	Group No.	MEASURES		POSITION		AREA		
		Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ
1949			°	°	°			
	15887	.920	96.2	275.3	- 8.0	37	212	212 c
		.827	88.0					405
		.827	105.5					138
		.962	107.1					94
Jan. 28			(-10.6)	(342.5)	(- 5.8)	(362)	(2437)	(2421)
28.409 G		.932	266.7					212
		.931	289.6					338
		.864	265.9					161
		.792	251.5					249
	15871	.973	297.1	39.8	+24.6	23	175	273 n
	15883	.860	299.9	20.8	+21.3	17	56	171 c
	15889	.141	120.2	320.7	- 9.9	6	26	
	15885	.471	88.8	299.7	- 4.6	96	466	
	15888	.633	64.2	292.4	+11.1	1	6	
	15890	.614	86.3	290.1	- 2.4	3	8	
	15887	.788	95.4	275.6	- 7.9	53	319	402 c
		.896	69.1					158
		.906	108.0					126
		.930	96.8					123
		.966	84.3					116
Jan. 29			(-11.1)	(327.8)	(- 5.9)	(199)	(1056)	(2329)
29.467 G		.958	264.5					224
		.908	252.3					307
		.780	245.6					243
	15883	.953	295.1	21.9	+21.7	10	59	246 c
	15889	.148	234.2	320.9	-10.8	14	71	
	15885	.238	85.3	300.2	- 4.6	70	437	
	15890	.398	79.7	290.9	- 1.4	1	9	
	15887	.628	95.3	274.9	- 7.9	65	402	
	15891	.964	83.5	240.3	+ 4.6	109	790	943 c
	15892	.981	99.2	234.5	-10.1	34	259	332 c
		.894	104.4					84
		.974	65.7					93
Jan. 30			(-11.5)	(313.9)	(- 5.9)	(303)	(2027)	(2472)

Group 15886. Jan. 26 - 27. A small spot.

Group 15887. Jan. 27-Feb. 8. A stream of variable spots, of which the leading portion coalesces into a large composite structure, while the following portion diminishes to a small spot.

Group 15888. Jan. 28-Feb. 6. A small spot on January 28 and 29; nothing is then seen until February 2 when a short stream appears, led by a small regular spot.

Group 15889. Jan. 29-Feb. 3. A pair of small spots, of which the leader alone remains by February 2.

Group 15890. Jan. 29 - 30. A small spot.

Group 15891. Jan. 30-Feb. 10. A large elongated spot when first seen. During the next few days other spots appear in its rear to form a stream which undergoes considerable change as it dies out. The whole is inclined fairly steeply to the equator.

Group 15892. Jan. 30-Feb. 12. A rapidly-developing composite spot which, by February 3, has begun to divide into three main portions. Later, the leading part is a large circular spot with a multiple umbra, and the other two parts are composite. The latter both diminish as the group passes round the limb.

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

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
30.319		.956	254.9					281
C		.932	266.1					141
		.915	250.7					205
		.848	246.7					196
		.821	263.3					200
	15883	.990	293.1	21.2	+21.8	16	108	396 c
	15889	.319	252.2	320.7	-11.3	5	29	
	15885	.047	65.5	300.3	- 4.9	60	436	
	15887	.461	96.5	275.2	- 8.3	68	312	
	15891	.896	81.3	240.1	+ 5.0	78	742	801 c
	15892	.922	97.3	235.1	- 9.0	50	396	601 c
		.936	62.4					88
		.948	90.3					161
		.976	107.1					94
Jan. 31			(-11.9)	(302.7)	(- 6.0)	(277)	(2023)	(3164)
31.464		.951	264.6					122
G		.945	248.7					231
		.941	283.3					64
		.922	256.9					126
		.910	292.2					104
		.845	242.0					91
		.792	292.5					161
	1276a	.936	301.6	350.6	+26.7	6	34	96 c
	15893	.802	309.7	331.0	+26.4	6	31	133 c
	15889	.582	260.1	323.1	-10.7	7	26	
	15894	.457	270.3	314.8	- 5.3	0	6	
	15885	.223	274.6	300.4	- 4.9	80	371	
	1276b	.177	199.1	291.0	-15.7	0	4	
	15887	.226	102.3	274.8	- 8.7	95	568	
	15891	.749	78.4	240.4	+ 4.5	157	783	344 c
	15892	.784	96.7	235.8	- 9.0	158	1031	268 c
	15895	.984	79.5	209.4	+ 9.1	5	47	152 c
		.901	87.4					249
		.932	75.3					73
		.936	109.5					153
		.941	98.5					383
Feb. 1			(-12.3)	(287.6)	(- 6.1)	(514)	(2901)	(2750)

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
32.388		.935	244.1					120
G		.905	287.4					215
		.883	260.1					127
		.822	281.9					66
		.807	295.1					293
	15893	.890	303.2	331.0	+25.7	7	24	257 c
	15889	.765	262.0	325.5	-10.1	3	20	75 c
	15894	.601	270.7	312.3	- 4.5	6	31	
	15885	.433	270.1	301.1	- 5.5	66	297	
	15888	.401	318.9	290.9	+11.5	20	57	
	15887	.047	178.1	275.3	- 8.7	106	674	
	15891	.583	74.4	241.3	+ 3.8	166	867	
	15892	.632	97.6	236.1	- 9.6	227	1210	130 f
	15895	.921	77.3	210.1	+ 9.1	19	80	84 c
	15896	.936	80.7	207.3	+ 6.4	3	21	78 c
		.789	84.9					229
		.824	105.0					86
		.867	93.1					76
		.921	104.7					277
		.959	68.9					94
Feb. 2			(-12.7)	(275.4)	(- 6.2)	(623)	(3281)	(2207)
33.400		.909	288.1					233
G		.805	294.3					73
	15893	.961	298.9	330.7	+25.5	4	23	120 c
	15889	.895	262.3	326.0	- 9.7	4	27	168 c
	15894	.777	269.5	313.1	- 4.3	29	98	97 c
	15885	.642	269.4	302.1	- 5.2	52	224	
	15888	.569	300.3	292.1	+11.5	41	190	
	15887	.242	259.9	276.0	- 8.5	141	654	
	15891	.387	62.4	242.1	+ 4.5	118	616	
	15892	.414	99.6	237.8	- 9.6	316	1648	
	15895	.805	73.2	210.9	+ 9.6	13	81	144 c
	15896	.826	77.7	208.0	+ 6.5	2	13	58 c
	15897	.935	66.4	196.9	+19.4	0	6	117 c
	15898	.974	72.0	187.9	+15.9	0	9	94 c
	15899	.974	90.8	185.3	- 2.2	60	233	119 c
		.809	105.3					111
		.929	99.2					102
Feb. 3			(-13.1)	(262.1)	(- 6.2)	(780)	(3822)	(1436)

Group 15893. Feb. 1 - 3. Four tiny apots on February 1; two on February 2; a single spot on February 3.
Group 15894. Feb. 1 - 5. A pair of small spots, of which only one remains on February 5.
Group 15895. Feb. 1 - 11. A small diminishing regular spot.
Group 15896. Feb. 2 - 3. A tiny spot.
Group 15897. Feb. 3 - 4. A tiny spot.
Group 15898. Feb. 3 - 14. A few persistent faint spots.
Group 15899. Feb. 3 - 14. A stream in which the leader becomes a stable regular spot and alone remains after 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
1949			°	°	°				1949			°	°	°			
34.394		.963	285.3					220	36.315		.927	251.5					98
G		.959	260.8					190	C		.926	272.5					193
		.935	252.0					136			.913	264.9					76
		.923	290.3					141			.910	258.7					75
		.901	301.0					99		15885	.981	266.5	302.7	- 4.6	14	117	165 c
	15894	.909	268.3	314.4	- 4.2	21	103	198 c		15888	.952	283.5	293.9	+10.7	23	108	129 c
	15885	.809	268.2	303.1	- 5.2	35	152	144 n		15887	.792	264.3	276.3	- 8.4	36	508	172 c
	15888	.731	291.0	292.8	+10.7	34	160	100 c		15891	.388	297.3	243.8	+ 4.2	81	547	
	15887	.457	263.4	276.2	- 8.6	90	673			15892	.239	254.3	237.1	- 9.9	378	2078	
	15891	.202	28.2	243.5	+ 4.0	106	642			15900	.219	114.1	212.0	-11.4	28	193	
	15892	.207	106.8	237.5	- 9.6	406	2120			15895	.343	39.5	211.0	+ 9.0	14	51	
	15895	.661	67.7	210.8	+ 9.5	9	66			15902	.499	100.8	193.9	-11.0	4	19	
	15900	.624	100.1	210.4	-11.2	6	25			15899	.585	83.1	188.3	- 1.2	60	327	
	15897	.858	60.7	195.9	+21.0	0	4	80 c		15898	.700	56.1	186.2	+17.9	18	94	
	15898	.902	68.8	188.2	+16.0	15	63	181 c		15901	.929	68.3	159.1	+17.4	25	107	159 c
	15899	.892	88.7	186.1	- 1.7	73	361	281 c		15903	.965	105.1	147.9	-16.3	65	459	338 c
		.851	98.9					72			.849	77.4					99
		.930	110.4					221			.867	102.1					158
		.956	78.7					146			.948	75.6					98
Feb. 4			(-13.5)	(249.0)	(- 6.3)	(795)	(4369)	(2209)	Feb. 6			(-14.3)	(223.7)	(- 6.4)	(746)	(4608)	(1760)
									37.466		.882	285.1					103
35.316		.918	298.5					158	G		.859	252.7					158
C		.799	271.8					131		15887	.932	263.5	277.8	- 8.4	41	246	614 c
	15894	.983	267.3	316.4	- 3.8	11	51	181 p		15891	.598	286.9	243.5	+ 4.6	79	440	
	15885	.919	267.7	303.7	- 4.6	13	121	215 c		15892	.467	260.7	236.4	-10.1	376	2003	
	15888	.873	285.9	295.3	+10.5	13	124	217 c		15904	.648	321.8	234.7	+24.7	1	7	
	15887	.635	264.5	276.4	- 8.3	74	699			15900	.114	217.8	212.7	-11.6	54	295	
	15891	.216	329.6	243.2	+ 4.4	95	675			15895	.268	352.5	210.6	+ 8.9	8	34	
	15892	.060	166.1	236.1	- 9.7	490	2248			15902	.275	107.5	193.2	-11.0	12	36	
	15900	.436	102.2	211.3	-11.0	3	45			15899	.343	74.3	189.4	- 0.8	53	288	
	15895	.502	59.3	211.1	+ 9.1	13	79			15898	.541	41.7	186.5	+17.8	4	19	
	15899	.755	86.7	188.2	- 1.7	61	416	189 c		15901	.830	63.5	157.6	+17.6	27	150	200 c
	15898	.836	64.4	184.9	+17.3	4	23	103 c		15903	.871	104.7	147.6	-16.0	84	418	575 c
	15901	.984	71.7	159.9	+16.7	5	68	115 c		15905	.903	72.9	146.7	+12.4	4	17	490 c
		.871	76.4					148		15906	.987	104.3	126.7	-15.1	27	152	328 c
		.952	81.6					237			.850	79.5					133
		.967	103.2					324			.962	81.2					176
Feb. 5			(-13.9)	(236.9)	(- 6.3)	(782)	(4549)	(2018)	Feb. 7			(-14.7)	(208.6)	(- 6.5)	(770)	(4105)	(2777)

Group 15900. Feb. 4 - 10. A stream of changing spots with a brief maximum on February 7.
Group 15901. Feb. 5 - 11. A small spot, with a companion on February 7 and 8.
Group 15902. Feb. 6 - 14. A wide pair of spots until February 11; later, a short growing stream.
Group 15903. Feb. 6 - 18. Return of Group 15868. A stream of small spots of which the leader alone remains by February 13. On the next day this spot begins to grow, and then it becomes composite.
Group 15904. Feb. 7 - 10. A single small spot on February 10 and 11; a pair on February 8 and 9.
Group 15905. Feb. 7 - 13. A few tiny spots.
Group 15906. Feb. 7 - 19. A small stable regular spot.

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

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
38.511		.965	281.5					122
G		.948	253.4					135
		.940	289.7					283
		.900	278.5					148
		.878	246.4					181
		.812	262.9					184
	15887	.991	264.6	277.5	- 6.3	7	32	468 *sf*
	15891	.769	282.7	243.5	+ 5.4	41	287	216 *c*
	15892	.670	262.7	237.0	- 9.7	350	2116	
	15904	.770	308.7	235.7	+23.8	12	59	
	15900	.308	250.4	212.0	-12.1	18	248	
	15895	.370	313.7	210.4	+ 8.5	5	27	
	15902	.079	173.9	194.3	-11.0	6	38	
	15899	.119	36.5	190.8	- 1.0	60	320	
	15898	.386	11.1	190.4	+15.7	5	42	
	1276c	.357	127.1	177.4	-18.6	4	17	
	15907	.554	107.1	161.7	-14.8	7	46	
	15901	.698	56.1	157.5	+17.7	26	126	
	15903	.715	105.7	149.3	-15.7	52	350	228 *c*
	15905	.806	68.6	144.6	+12.9	9	41	144 *c*
	15906	.916	103.9	127.8	-15.3	32	133	136 *c*
	15908	.963	103.9	119.5	-15.1	16	85	364 *c*
		.827	115.7					153
		.890	76.8					166
		.937	109.3					275
		.939	61.9					406
		.947	71.9					300
Feb. 8			(-15.1)	(194.8)	(- 6.5)	(650)	(3967)	(3909)
39.461		.943	247.2					112
G		.831	293.8					136
	15891	.870	281.0	241.3	+ 6.2	23	100	748 *c*
	15892	.816	263.0	237.3	- 9.6	283	1913	549 *c*
	15904	.869	301.5	235.8	+23.1	11	43	177 *c*
	15900	.499	256.2	211.9	-12.6	35	178	
	15895	.535	297.7	210.8	+ 8.6	6	22	
	15902	.198	245.9	192.9	-11.1	10	56	
	15898	.411	341.2	190.2	+16.3	13	89	
	15899	.168	305.4	190.1	- 1.0	49	320	
	15907	.385	116.6	161.4	-16.0	5	32	

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
	15901	.573	45.4	157.0	+17.7	16	95	
	15903	.558	109.4	149.2	-16.2	46	318	
	15905	.663	61.9	145.6	+12.9	4	25	
	15909	.862	63.4	128.0	+18.8	0	4	320 *sf*
	15906	.811	104.0	127.9	-15.2	22	159	102 *c*
	15908	.921	103.8	114.5	-15.2	66	329	606 *c*
		.874	56.4					334
		.953	93.4					124
		.965	61.6					205
Feb. 9			(-15.4)	(182.3)	(- 6.6)	(589)	(3683)	(3413)
40.426		.936	291.0					153
G		.846	272.8					193
		.806	254.0					92
	15891	.943	279.7	238.8	+ 6.8	12	90	589 *c*
	15892	.914	262.3	236.1	- 9.7	249	2013	616 *c*
	15904	.937	298.6	233.4	+23.8	3	16	209 *c*
	15900	.689	258.9	213.2	-12.4	25	96	
	15895	.696	290.2	210.8	+ 8.9	5	18	
	15902	.380	257.6	191.7	-10.8	5	28	
	15899	.376	284.4	190.9	- 0.9	43	295	
	15898	.518	318.8	190.4	+16.7	10	78	
	15910	.284	333.2	177.0	+ 8.1	12	73	
	15907	.209	142.6	162.0	-16.0	4	21	
	15901	.461	26.9	157.0	+17.8	11	74	
	15903	.370	115.1	149.4	-15.2	40	400	
	15911	.530	45.5	146.6	+15.7	2	13	
	15905	.510	51.6	145.6	+12.4	1	6	
	15906	.666	105.5	128.1	-15.2	15	121	
	15909	.754	58.1	127.3	+18.6	2	5	199 *n*
	15908	.811	104.0	115.2	-15.2	67	572	384 *c*
	15912	.972	94.7	92.9	- 6.1	8	54	283 *c*
	15913	.996	74.7	86.9	+14.5	0	37	170 *c*
		.837	111.4					149
		.844	47.9					172
		.887	93.6					140
		.916	65.8					241
		.935	57.5					272
		.956	104.9					512
Feb. 10			(-15.8)	(169.6)	(- 6.6)	(514)	(4010)	(4374)

Group 15907. Feb. 8 - 13. A small spot.

Group 15908. Feb. 8 - 20. A few small spots, developing into a stream of normal type by February 11. The follower breaks up and dies out by February 17, the leader remaining a stable regular spot.

Group 15909. Feb. 9 - 13. A small spot.

Group 15910. Feb. 10 - 16. A stream in which the leader is the most stable component.

Group 15911. Feb. 10 - 16. A short stream led by a small regular spot.

Group 15912. Feb. 10 - 12. Return of Group 15866. A small spot.

Group 15913. Feb. 10 - 21. A stream of normal type, whose leader becomes a regular spot and is the longest-lived. The follower undergoes minor changes and dies out after February 18.

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
1949			°	°	°			
41.470		.973	281.4					209
G		.952	270.3					280
		.937	295.0					78
		.929	253.3					102
		.917	282.1					135
		.900	275.2					137
		.878	263.6					227
		.802	256.4					398
	15892	.983	262.0	236.0	- 9.1	275	1561	509 c
	15895	.842	285.1	211.1	+ 8.9	2	8	95 c
	15902	.661	260.7	197.4	-11.2	15	53	
	15898	.668	301.4	191.9	+14.9	9	66	
	15899	.588	278.0	191.4	- 0.8	57	266	
	15910	.462	302.6	178.9	+ 8.2	48	249	
	15907	.195	214.2	162.4	-15.8	2	13	
	15901	.421	357.0	157.2	+18.1	4	14	
	15903	.200	142.6	148.7	-15.7	37	283	
	15911	.426	23.8	145.6	+16.2	24	114	
	15905	.378	29.6	144.9	+12.5	9	42	
	15906	.478	110.1	128.3	-15.4	20	118	
	15909	.614	47.6	127.5	+18.5	4	13	
	15908	.671	105.4	114.0	-15.2	96	516	166 f
	15912	.879	92.6	93.7	- 5.5	4	16	205 sf
	15913	.933	71.9	89.9	+14.2	76	451	235 c
	15914	.960	102.1	81.3	-13.5	19	90	241 c
		.829	97.7					97
		.842	53.0					260
		.854	107.8					135
		.884	64.9					104
		.942	110.4					176
Feb. 11			(-16.2)	(155.9)	(- 6.7)	(701)	(3873)	(3789)
42.354		.974	271.6					204
C		.922	259.9					484
		.917	283.1					144
	15892	.996	260.5	229.8	-10.0	0	80	105 c
	15902	.822	261.3	199.8	-11.0	29	171	136 c
	15899	.741	275.1	191.6	- 0.8	61	286	
	15898	.786	295.1	191.5	+15.0	2	12	166 c
	15910	.634	291.7	180.6	+ 8.2	44	327	
	15907	.351	242.0	162.9	-15.8	1	12	
	15903	.179	208.9	149.3	-15.7	30	171	
	15911	.383	356.5	145.6	+15.7	25	133	

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
	15905	.329	3.7	143.0	+12.4	6	41	
	15906	.310	120.1	128.1	-15.4	25	114	
	15909	.503	33.7	127.2	+18.2	2	14	
	15908	.497	109.1	115.2	-15.2	81	455	
	15912	.760	91.3	94.7	- 5.3	2	10	146 f
	15913	.835	68.3	91.3	+13.9	102	605	284 c
	15914	.877	101.7	82.4	-13.4	39	234	249 c
	15915	.963	97.7	69.2	- 9.2	7	49	189 c
		.904	109.4					146
Feb. 12			(-16.5)	(144.2)	(- 6.7)	(456)	(2714)	(2253)
43.405		.975	280.1					119
G		.952	249.5					229
	15902	.931	260.8	199.6	-11.1	63	388	365 c
	15898	.916	288.2	193.8	+13.7	2	9	161 c
	15899	.883	272.8	192.0	- 0.7	55	259	325 f
	15910	.795	286.4	180.7	+ 8.6	50	373	210 c
	15907	.552	252.2	163.3	-15.4	2	19	
	15916	.438	296.6	153.4	+ 5.0	4	10	
	15903	.368	244.7	150.5	-15.4	25	116	
	15905	.434	318.0	147.6	+12.2	4	18	
	15911	.458	325.4	146.0	+15.5	26	146	
	1276d	.237	207.6	137.0	-18.8	6	31	
	15906	.148	166.4	128.3	-15.0	21	120	
	15909	.428	6.0	127.7	+18.3	2	12	
	15908	.298	120.2	115.0	-15.1	79	463	
	15913	.685	60.8	92.5	+14.1	119	705	179 c
	15914	.716	100.4	84.5	-12.2	67	330	126 c
	15915	.866	96.6	70.0	- 9.1	4	28	164 c
	15917	.989	66.2	52.8	+22.2	115	623	607 p
		.917	71.7					81
Feb. 13			(-16.8)	(130.4)	(- 6.8)	(644)	(3650)	(2566)
44.323		.858	249.4					91
C	15902	.982	260.2	198.2	-10.9	96	498	464 c
	15898	.983	285.4	195.3	+13.7	5	21	238 c
	15899	.960	271.2	191.7	- 0.8	37	259	475 f
	15910	.885	283.6	178.5	+ 8.6	53	215	270 c
	15916	.599	287.5	153.1	+ 4.8	27	60	
	15903	.536	252.2	150.1	-15.2	12	103	
	15911	.584	308.4	146.5	+15.2	12	61	
	15906	.221	229.0	128.2	-15.0	14	98	

Group 15914. Feb. 11 - 23. A fairly large stream developing from a pair of small spots on February 11. The leader, at first a small regular spot, becomes complex on February 17 and 18 before reforming into a regular spot. The follower has developed into a fairly stable regular spot by February 17, while the intermediate spots have become composite by February 18, before breaking up and dying out as the group passes round the limb.

Group 15915. Feb. 12 - 18. A small spot not seen on February 16.

Group 15916. Feb. 13 - 17. One or two small spots.

Group 15917. Feb. 13 - 25. Return of Group 15871. A regular spot. On February 16 it begins to shed pieces of its penumbra to form companions, the largest of which precedes it.

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
1949			°	°	°			
	15908	.149	163.4	115.8	-15.0	30	354	
	1276e	.439	37.4	102.4	+13.8	0	3	
	15913	.546	49.9	92.9	+14.4	113	1052	
	15918	.456	110.3	92.1	-15.2	0	2	
	15914	.546	101.4	85.3	-11.9	39	250	
	15915	.739	96.7	70.4	- 9.5	7	25	71 *f*
	15917	.939	63.7	53.5	+21.8	88	492	512 *c*
	15919	.983	73.5	41.3	+14.8	5	16	231 *c*
	15920	.993	106.0	33.5	-16.7	33	232	112 *c*
		.963	95.3					115
Feb. 14			(-17.2)	(118.3)	(- 6.8)	(571)	(3741)	(2579)
45.300 C		.967	268.8					141
		.942	259.3					232
		.838	257.5					172
	15910	.959	281.0	177.2	+ 8.4	26	178	411 *c*
	15916	.758	282.5	153.2	+ 4.8	33	178	213 *c*
	15903	.711	255.8	150.7	-15.0	27	188	
	15911	.726	298.0	146.7	+14.7	11	48	235 *p*
	15906	.407	247.9	128.3	-15.1	19	119	
	15908	.227	230.0	115.7	-15.1	50	308	
	15921	.137	268.1	113.3	- 7.1	5	36	
	15913	.417	29.5	93.2	+14.5	127	765	
	15918	.264	125.8	92.6	-15.6	0	2	
	15914	.315	106.3	87.5	-11.6	31	228	
	15915	.565	97.5	70.9	- 9.9	4	15	
	15917	.855	59.3	53.3	+21.7	93	539	605 *c*
	15919	.913	70.2	42.9	+14.9	7	58	174 *c*
	15920	.966	105.3	29.2	-16.6	60	841	244 *c*
	15922	.982	72.7	29.0	+15.5	10	83	258 *np*
		.922	94.5					120
		.965	58.1					434
Feb. 15			(-17.5)	(105.4)	(- 6.9)	(503)	(3586)	(3239)
46.393 C		.939	256.5					333
		.905	287.8					317
	15910	.996	276.5	174.8	+ 5.8	0	53	105 *c*
	15916	.893	278.7	153.1	+ 4.5	21	104	137 *c*
	15903	.862	256.7	151.0	-14.9	39	385	355 *c*
	15911	.861	291.7	146.6	+14.7	2	10	134 *nf*
	15906	.608	254.0	128.1	-15.2	13	94	
	15908	.444	249.8	116.4	-15.1	51	311	
1949			°	°	°			
	15921	.393	267.4	114.2	- 7.4	5	28	
	15913	.365	355.3	92.8	+14.4	124	774	
	15918	.155	189.6	92.5	-15.7	1	11	
	15914	.097	140.3	87.4	-11.2	62	402	
	15917	.734	51.9	52.8	+21.5	106	665	207 *c*
	15919	.791	64.5	43.4	+15.2	22	97	112 *c*
	15920	.861	105.1	31.2	-16.4	59	570	389 *c*
	15922	.915	69.5	28.4	+15.5	7	36	171 *p*
		.805	43.9					150
		.904	52.5					268
		.965	65.2					98
		.966	99.1					141
		.975	110.5					164
Feb. 16			(-17.9)	(91.0)	(- 6.9)	(512)	(3540)	(3081)
47.363 G		.942	285.2					354
		.919	292.9					248
		.873	249.0					223
		.860	300.9					191
		.797	309.7					234
	15916	.966	276.2	152.4	+ 4.1	8	49	249 *c*
	15903	.949	256.8	150.8	-14.7	40	494	492 *c*
	15906	.762	255.8	128.1	-15.2	17	109	112 *c*
	15908	.632	254.8	117.3	-14.9	44	246	
	15921	.596	265.6	115.0	- 8.2	1	4	
	15913	.434	325.1	93.1	+14.1	112	894	
	15918	.288	237.7	92.9	-15.5	1	5	
	15914	.151	236.1	85.6	-11.7	143	1033	
	15915	.130	112.0	71.3	- 9.6	2	11	
	15923	.328	113.2	60.3	-14.0	1	5	
	15917	.617	41.0	52.6	+21.5	118	692	
	15919	.646	56.2	44.6	+15.3	20	94	
	15920	.735	105.6	31.0	-16.1	87	704	231 *c*
	15922	.820	65.2	27.8	+15.8	6	34	164 *c*
		.845	46.0					305
		.907	99.8					206
		.908	117.4					91
		.913	96.0					238
		.920	61.1					248
		.970	102.6					89
		.972	112.2					207
Feb. 17			(-18.2)	(78.3)	(- 6.9)	(600)	(4374)	(3882)

Group 15918. Feb. 14 - 17. A tiny spot.

Group 15919. Feb. 14 - 25. A small regular spot until February 18; on the next day other spots appear in the rear to form a stream of which only a single small component remains by February 22.

Group 15920. Feb. 14 - 27. A stream, of which the leader soon becomes a regular spot. The following part remains a collection of small variable spots which die out as the limb is reached.

Group 15921. Feb. 15 - 17. A pair of small spots, of which only one remains on February 17.

Group 15922. Feb. 15 - 25. One or two small spots, not seen on February 19.

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
1949			°	°	°			
48.402		.952	283.1					159
G		.933	297.5					179
		.917	248.9					231
		.896	305.9					295
		.881	298.7					161
	15903	.997	256.7	151.4	-13.8	12	110	142 *f*
	15906	.894	256.1	128.6	-15.5	20	104	85 *c*
	15908	.801	256.3	118.1	-15.1	38	189	198 *c*
	15913	.590	305.9	94.0	+14.1	93	585	
	15914	.363	255.9	85.6	-11.6	268	1192	
	15915	.138	242.7	71.7	-10.6	1	6	
	15923	.164	137.9	58.1	-13.9	6	27	
	15917	.513	22.5	52.5	+21.3	160	846	
	15919	.493	40.6	45.3	+15.3	16	76	
	1276f	.529	59.3	37.3	+ 9.4	2	6	
	15920	.548	109.9	32.2	-16.6	127	702	
	15922	.679	57.3	28.3	+15.8	6	39	
	15924	.726	117.1	19.6	-24.3	16	45	
	15925	.766	66.5	18.7	+12.9	9	27	86 *c*
	15926	.974	58.2	354.0	+28.8	0	15	173 *c*
		.825	110.9					144
		.828	56.1					214
		.871	98.1					132
		.938	106.7					157
		.939	117.6					143
Feb. 18			(-18.5)	(64.6)	(- 7.0)	(774)	(3969)	(2499)
49.381		.968	298.4					172
G		.887	305.7					258
		.875	266.6					113
		.825	249.6					173
		.785	261.7					122
	15906	.968	255.8	128.2	-15.4	22	90	131 *c*
	15908	.914	256.8	118.5	-14.9	45	193	180 *c*
	15927	.839	291.4	105.0	+13.7	2	10	50 *c*
	15913	.726	297.0	93.3	+14.0	90	428	
	15914	.584	260.3	87.5	-11.3	280	1410	
	15923	.172	223.4	58.7	-14.1	5	36	
	15917	.470	358.5	52.5	+20.9	183	962	
	15919	.398	21.0	43.3	+14.8	47	245	
	15920	.368	118.1	32.0	-16.5	174	808	
	15924	.566	123.6	20.7	-24.3	16	66	

U. T.	Group No.	MEASURES		POSITION		AREA		
		Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ
1949			°	°	°			
	15925	.601	58.5	20.2	+12.3	18	124	
	15928	.678	48.9	18.8	+20.5	1	9	
	15926	.905	55.2	355.0	+27.4	0	13	203 *c*
	15929	.976	79.5	335.9	+ 8.6	40	241	327 *n*
		.942	99.3					113
Feb. 19			(-18.8)	(51.7)	(- 7.0)	(923)	(4635)	(1842)
50.415		.948	296.5					136
G		.930	262.7					177
		.928	247.3					132
	15908	.985	255.9	119.4	-15.1	31	217	439 *f*
	15927	.954	285.8	108.1	+12.7	18	90	166 *nf*
	15913	.864	290.5	94.3	+13.8	68	338	204 *c*
	15914	.754	259.9	87.3	-12.2	212	1238	149 *c*
	15923	.362	247.9	58.3	-14.4	2	19	
	15930	.529	323.3	57.5	+18.4	2	9	
	15931	.377	234.2	56.9	-19.3	12	38	
	15917	.518	333.6	52.3	+20.8	162	1055	
	15919	.382	344.0	44.3	+14.5	29	143	
	15922	.414	15.5	31.5	+16.4	1	6	
	15920	.208	145.3	31.0	-16.7	148	884	
	15925	.416	36.2	23.6	+12.8	6	51	
	15924	.400	138.5	21.3	-24.1	12	45	
	15926	.834	49.1	352.6	+28.2	4	15	197 *c*
	15929	.893	76.7	336.9	+ 8.5	41	170	266 *c*
		.833	98.9					148
		.867	69.2					153
		.968	68.1					65
		.973	95.1					70
Feb. 20			(-19.1)	(38.1)	(- 7.0)	(748)	(4318)	(2302)
51.607		.885	247.1					175
G	15913	.966	286.7	94.7	+14.1	54	278	479 *c*
	15914	.897	260.5	86.8	-11.7	197	890	460 *c*
	15930	.701	306.7	58.7	+19.0	14	52	
	15931	.581	245.9	56.5	-19.6	8	20	
	15917	.645	314.7	51.6	+20.7	136	970	
	15919	.521	313.3	45.3	+14.3	21	102	
	15922	.420	335.5	32.8	+15.4	1	5	
	15920	.214	216.0	29.9	-17.0	128	821	
	15925	.330	357.9	23.1	+11.6	8	25	

Group 15923. Feb. 17 - 20. A few tiny spots.
Group 15924. Feb. 18 - 23. A pair of spots, of which only one remains by February 21.
Group 15925. Feb. 18 - 23. A few variable spots.
Group 15926. Feb. 18 - 28. One or two small, faint but persistent spots which are not seen on February 24.
Group 15927. Feb. 19 - 20. A small spot.
Group 15928. Feb. 19 - 25. Intermittent. A small spot on February 19 and 25; a pair on February 24.
Group 15929. Feb. 19-Mar. 2. A small stable regular spot.
Group 15930. Feb. 20 - 24. A short stream of small spots, appearing immediately *p* Group 15917.
Group 15931. Feb. 20 - 21. A pair of 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
1949			°	°	°			
	15924	.292	177.0	21.4	-24.0	6	12	
	15926	.676	35.7	356.2	+26.9	0	5	
	15929	.746	72.2	336.7	+ 8.2	23	116	165 *f*
		.841	90.7					101
		.869	59.4					99
		.939	90.0					127
		.952	97.5					106
Feb. 21			(-19.5)	(22.4)	(- 7.1)	(596)	(3296)	(1712)
52.423 G		.973	287.5					326
		.940	247.5					318
	15914	.970	259.5	88.4	-11.9	229	1095	840 *c*
	15930	.815	299.7	60.0	+19.1	23	79	136 *c*
	15917	.745	306.5	51.3	+20.8	153	1008	311 *c*
	15919	.649	302.1	46.0	+14.3	18	83	
	15922	.510	317.7	32.4	+15.5	5	20	
	15920	.361	239.5	30.5	-17.2	172	911	
	15925	.369	330.7	22.2	+11.7	9	40	
	15924	.332	207.3	21.2	-24.1	6	11	
	15926	.611	23.5	355.8	+27.1	11	37	
	15929	.620	67.4	336.4	+ 8.0	32	129	
	15932	.996	80.5	288.2	+ 8.7	21	80	104 *c*
		.866	88.4					109
		.924	94.9					169
		.957	86.0					150
		.960	74.7					136
Feb. 22			(-19.7)	(11.6)	(- 7.1)	(679)	(3493)	(2599)
53.289 C		.908	260.8					175
		.832	290.2					67
	15914	.981	256.1	80.3	-15.0	20	207	397 *c*
	15930	.905	295.3	60.1	+19.3	19	85	181 *c*
	15917	.841	300.8	50.7	+21.0	154	808	369 *c*
	15919	.768	295.4	45.8	+14.3	9	86	136 *c*
	15922	.644	303.8	33.7	+15.0	11	55	
	15920	.509	248.0	29.7	-17.2	181	794	
	15924	.437	227.1	20.6	-23.9	1	8	
	15925	.463	314.5	19.9	+12.2	2	21	
	15926	.620	13.6	350.6	+29.9	4	20	
	15929	.471	57.7	336.6	+ 8.0	23	113	
	15932	.967	80.6	286.4	+ 7.2	95	517	208 *c*
		.804	93.8					124
		.892	87.8					117

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
		.916	71.6					194
		.969	97.5					503
Feb. 23			(-20.0)	(0.2)	(- 7.1)	(519)	(2714)	(2471)
54.590 G		.948	253.6					119
		.917	306.4					123
		.906	264.4					153
		.841	313.9					201
	15930	.988	291.2	60.7	+19.5	42	189	233 *c*
	15917	.954	294.7	51.0	+20.9	151	877	516 *c*
	15919	.906	290.0	44.5	+14.7	27	99	225 *c*
	15922	.810	295.4	32.4	+15.7	3	20	92 *c*
	15920	.731	252.8	30.0	-17.5	131	689	
	15928	.689	309.2	17.6	+19.9	5	19	
	15929	.284	21.8	337.0	+ 8.1	20	109	
	15933	.342	26.4	334.2	+10.7	2	19	
	15934	.657	61.5	307.0	+12.4	8	32	
	15932	.842	76.6	287.7	+ 7.2	145	914	353 *c*
		.853	94.1					187
		.871	103.2					121
		.919	97.4					165
Feb. 24			(-20.4)	(343.1)	(- 7.2)	(534)	(2967)	(2488)
55.402 G		.971	252.2					90
		.958	302.2					225
		.939	263.0					111
		.919	309.0					387
		.853	245.0					94
	15917	.990	292.8	50.4	+21.2	178	1004	308 *c*
	15919	.968	287.2	45.0	+14.6	17	67	162 *c*
	15922	.895	291.1	32.1	+15.2	4	24	263 *c*
	15920	.842	253.8	30.1	-17.5	115	630	312 *c*
	15928	.800	300.8	18.9	+19.2	5	18	109 *c*
	15926	.649	329.4	354.1	+27.1	3	15	
	15929	.276	343.0	337.1	+ 8.0	16	113	
	15933	.317	346.7	336.6	+10.7	7	45	
	15934	.520	51.2	308.0	+12.4	36	158	
	15932	.730	73.4	287.8	+ 6.9	125	769	210 *c*
		.766	102.4					186
		.802	94.5					237
		.916	109.8					95
		.941	70.8					112

Group 15932. Feb. 22-Mar. 7. A stream of normal type. By March 5 only the leader and follower, both regular spots, remain.
Group 15933. Feb. 24 - 25. A pair of spots, immediately *n* Group 15929.
Group 15934. Feb. 24-Mar. 5. A bi-polar group developing from a pair of small spots appearing *p* Group 15932. Both leader and follower become composite in structure.

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
1949			°	°	°			
		.956	81.7					257
		.967	99.2					232
Feb. 25			(-20.6)	(332.4)	(- 7.2)	(506)	(2843)	(3390)
56.399		.971	304.9					336
G		.964	289.6					324
		.912	297.9					265
		.906	245.5					116
		.901	287.5					162
	15920	.939	253.7	30.2	-17.8	127	587	375 c
	15926	.746	315.3	354.9	+26.1	3	14	
	15929	.401	310.4	337.2	+ 8.2	19	99	
	15934	.392	29.1	308.1	+12.9	97	519	
	15932	.566	66.4	287.9	+ 6.9	134	760	
	15935	.977	95.1	241.2	- 6.5	90	469	502 c
	15936	.992	80.5	238.0	+ 8.4	99	420	231 p
		.863	80.7					193
		.880	101.5					103
		.961	87.9					78
Feb. 26			(-20.9)	(319.3)	(- 7.2)	(569)	(2868)	(2685)
57.396		.963	286.3					141
G		.956	295.5					202
		.942	263.5					225
		.874	248.3					122
		.823	316.1					77
	15920	.993	253.2	31.1	-17.5	64	639	633 f
	15926	.849	307.1	354.9	+26.1	7	31	145 c
	15929	.570	295.9	337.2	+ 8.2	15	77	
	15934	.343	355.8	307.6	+12.7	128	814	
	15937	.498	26.5	292.5	+19.3	2	9	
	15932	.387	52.0	288.3	+ 6.5	144	726	
	15938	.861	98.5	246.2	-11.0	11	36	323 f
	15939	.904	81.5	242.6	+ 4.5	5	17	193 f
	15935	.903	93.7	241.3	- 6.4	80	438	275 c
	15936	.933	78.0	239.0	+ 8.4	72	336	216 c
		.808	72.2					138
		.934	108.1					91

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
		.937	70.1					124
		.940	87.6					144
		.969	62.7					109
Feb. 27			(-21.1)	(306.1)	(- 7.2)	(528)	(3123)	(3158)
58.397	15926	.931	304.0	353.7	+28.0	0	5	134 c
G	15929	.730	288.2	337.2	+ 8.0	19	77	205 c
	15934	.413	323.2	307.5	+12.3	155	1041	
	15937	.458	1.9	292.0	+19.9	9	44	
	15932	.256	19.5	288.0	+ 6.7	156	698	
	15938	.715	98.4	247.0	-11.0	8	22	198 f
	15939	.767	77.7	244.3	+ 4.6	17	102	76 c
	15935	.780	92.6	241.5	- 6.5	98	531	213 c
	1277a	.875	58.4	239.0	+23.1	2	7	81 c
	15936	.836	74.7	238.5	+ 8.6	82	335	394 f
	15940	.970	107.1	215.6	-18.3	8	67	314 nf
		.861	105.2					139
		.897	84.6					208
Feb. 28			(-21.4)	(292.9)	(- 7.2)	(554)	(2929)	(1962)
59.388		.957	302.0					337
G		.935	246.9					260
		.872	260.0					267
		.807	296.1					203
	15929	.861	283.8	337.3	+ 8.0	18	84	272 n
	15934	.554	305.2	307.4	+12.2	174	1226	
	15937	.523	332.2	294.9	+20.5	4	19	
	15932	.287	327.0	288.9	+ 6.8	124	659	
	15938	.522	98.8	248.4	-10.7	4	12	
	15939	.584	71.3	246.3	+ 4.8	28	178	
	15935	.623	91.6	241.3	- 6.6	90	562	
	15936	.699	69.6	238.6	+ 8.7	63	368	127 n
	15940	.900	106.2	215.0	-17.7	12	57	349 c
	15941	.951	80.8	209.3	+ 6.4	11	42	157 np
	15942	.965	99.9	204.3	-11.4	8	62	124 f
		.816	77.4					265
		.907	97.1					208
Mar. 1			(-21.6)	(279.9)	(- 7.2)	(536)	(3269)	(2569)

Group 15935. Feb. 26-Mar. 9. Return of Group 15892. A regular spot, with occasional companions.

Group 15936. Feb. 26-Mar. 10. A regular spot, with occasional companions. Between March 4 and 7 it almost becomes attached to the rear of Group 15939, which immediately precedes it.

Group 15937. Feb. 27-Mar. 2. A single small spot except on February 28, when there is a pair.

Group 15938. Feb. 27-Mar. 9. A small persistent spot, with a pair of tiny companions on February 28.

Group 15939. Feb. 27-Mar. 9. A stream consisting of two composite spots developing from a small spot on February 27. Between March 4 and 7 the following part almost joins up with Group 15936. From March 7, the group declines rapidly and consists of a regular spot and companion by the time the limb is reached.

Group 15940. Feb. 28-Mar. 12. One or two small spots until March 2. Nothing is then seen until March 5 when a stream begins to develop, consisting of a regular spot with a double umbra and followed by a train of small companions which die out before reaching the limb.

Group 15941. Mar. 1 - 5. A small spot.

Group 15942. Mar. 1 - 8. Return of Group 15902. 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
1949			°	°	°			
60.302		.960	290.7					56
C		.941	260.9					216
		.917	297.7					131
		.882	287.1					267
	15929	.944	280.9	336.9	+ 7.8	12	99	302 c
	15934	.691	296.1	307.0	+12.1	128	972	
	15937	.614	317.1	294.4	+20.2	1	5	
	15932	.428	302.3	289.1	+ 6.5	119	549	
	15938	.332	101.7	248.6	-10.6	4	10	
	15939	.411	61.5	246.6	+ 4.6	46	283	
	15935	.450	91.0	241.0	- 6.9	86	527	
	15936	.550	62.5	238.4	+ 8.4	56	329	
	15940	.807	107.1	213.9	-18.0	4	17	130 c
	15941	.865	78.3	209.6	+ 6.4	11	32	41 c
	15942	.891	99.5	204.2	-11.7	14	74	72 c
	15943	.989	71.7	189.2	+16.8	26	390	108 p
		.903	110.7					122
		.935	100.5					206
		.951	88.3					306
		.983	79.8					112
Mar. 2			(-21.9)	(267.8)	(- 7.2)	(507)	(3287)	(2069)
61.304		.951	289.1					237
C		.940	263.9					200
		.935	305.5					118
		.835	269.9					191
	15934	.826	290.7	306.9	+12.6	133	1114	246 c
	15932	.604	291.1	289.1	+ 6.6	106	466	
	15938	.125	120.6	248.4	-10.8	2	6	
	15939	.259	36.4	245.9	+ 4.9	105	829	
	15935	.239	89.4	240.8	- 6.9	62	412	
	15936	.383	46.2	238.5	+ 8.4	71	371	
	15941	.732	74.3	209.7	+ 6.3	4	17	
	15942	.760	98.9	204.9	-11.4	8	45	118 f
	15943	.936	69.0	189.1	+16.7	69	360	166 c
	15944	.984	67.7	178.9	+20.3	27	236	369 c
		.848	98.8					239
		.867	87.0					339
		.872	71.9					86
		.947	78.7					653
Mar. 3			(-22.1)	(254.7)	(- 7.2)	(587)	(3856)	(2962)

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
62.308		.944	267.4					286
C		.849	302.2					189
	15934	.937	286.4	308.3	+12.6	158	1373	315 c
	15932	.759	285.4	288.7	+ 6.7	62	518	167 c
	15938	.136	241.8	248.4	-10.8	1	10	
	15939	.219	336.6	246.4	+ 4.4	79	998	
	15935	.013	77.8	240.7	- 7.0	55	315	
	15936	.273	9.8	238.7	+ 8.3	36	362	
	15941	.566	68.0	209.7	+ 6.1	2	21	
	15942	.595	99.2	204.8	-11.2	7	38	
	15943	.844	65.0	188.6	+16.6	69	398	145 c
	15944	.930	64.0	178.1	+20.9	38	235	216 c
		.894	76.4					588
		.918	114.5					185
		.955	101.5					176
Mar. 4			(-22.4)	(241.4)	(- 7.2)	(507)	(4268)	(2267)
63.336		.961	274.8					150
C		.957	265.6					180
		.933	295.9					233
		.900	311.2					60
		.823	262.5					336
	15934	.993	283.8	309.1	+12.7	134	1174	282 c
	15932	.889	281.6	289.0	+ 6.8	86	407	471 c
	15939	.371	302.6	246.1	+ 4.6	134	976	
	15938	.310	262.4	245.9	- 9.1	7	23	
	15935	.223	271.2	240.8	- 6.7	40	305	
	15936	.325	323.6	239.1	+ 8.0	48	309	
	15941	.382	53.4	210.0	+ 6.3	3	9	
	15940	.371	118.0	208.0	-16.7	1	8	
	15942	.397	102.1	204.7	-11.4	11	42	
	15943	.714	58.1	188.8	+16.6	78	363	78 c
	15944	.837	59.4	177.7	+20.7	38	238	104 c
	15945	.865	95.7	167.7	- 8.5	2	8	71 c
	15946	.920	102.3	160.2	-14.1	3	14	289 c
		.789	73.3					275
		.816	112.9					173
		.951	74.4					509
		.959	111.9					204
Mar. 5			(-22.6)	(227.9)	(- 7.2)	(585)	(3876)	(3415)

Group 15943. Mar. 2 - 14. A regular spot, with variable companions after March 7.
Group 15944. Mar. 3 - 15. A cluster, which coalesces into a composite spot on March 9. On the next day it has broken up again and is diminishing as it passes round the limb.
Group 15945. Mar. 5 - 7. A tiny spot.
Group 15946. Mar. 5 - 11. A small spot until March 8, after which small companions appear and a short stream is formed.

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
1949			°	°	°			
64.334		.967	292.8					143
C		.923	256.6					164
		.910	265.0					328
	15932	.963	279.1	287.7	+ 6.7	93	447	493 c
	15947	.742	283.4	260.9	+ 4.9	4	41	72 c
	15938	.531	265.3	246.9	− 8.6	8	25	
	15939	.553	290.0	246.0	+ 4.7	106	868	
	15935	.437	269.4	240.7	− 6.8	45	284	
	15936	.480	301.0	239.1	+ 7.7	46	268	
	15940	.197	147.6	208.4	−16.7	15	83	
	15942	.180	112.6	205.0	−11.0	4	17	
	1277b	.436	60.7	192.3	+ 5.6	1	4	
	15943	.572	47.0	188.9	+16.4	98	420	
	1277c	.467	97.3	186.8	− 9.8	3	12	
	15944	.719	52.0	177.6	+20.5	42	328	
	15945	.720	95.1	168.4	− 8.6	1	9	78 c
	15946	.804	102.0	160.8	−13.9	3	13	232 c
		.885	68.0					409
		.923	100.3					123
		.927	108.4					224
		.936	120.2					193
Mar. 6			(−22.8)	(214.7)	(− 7.2)	(469)	(2819)	(2459)
65.303		.968	262.0					186
C		.872	297.8					107
	15932	.990	276.9	282.7	+ 5.7	21	161	170 c
	15947	.878	279.2	262.2	+ 4.5	2	11	142 c
	15938	.709	264.8	247.4	− 8.8	16	24	
	15939	.724	283.0	246.8	+ 4.2	66	697	408 c
	15935	.626	268.1	240.9	− 6.8	31	211	
	15936	.653	290.8	239.9	+ 7.7	32	156	
	15940	.226	219.9	210.7	−17.0	41	245	
	15942	.094	217.9	205.4	−11.4	8	16	
	15943	.452	29.0	188.9	+16.2	103	530	
	15944	.605	40.8	177.1	+20.7	44	219	
	15945	.543	95.1	169.0	− 8.8	1	6	
	15946	.651	103.2	161.4	−14.0	3	10	
	15948	.989	73.4	123.2	+15.1	43	403	238 c
	15949	.990	106.8	118.5	−17.6	27	175	382 n
		.868	121.9					180
		.942	110.0					94
Mar. 7			(−23.0)	(202.0)	(− 7.2)	(438)	(2864)	(1907)

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
66.304		.918	259.8					132
C	15939	.867	279.4	247.6	+ 4.4	115	665	517 c
	15938	.852	264.2	247.6	− 8.7	6	30	189 c
	15935	.789	267.5	241.1	− 6.4	45	220	218 np
	15936	.805	285.0	240.2	+ 7.5	35	208	201 f
	15950	.507	299.0	215.3	+ 7.8	9	46	
	15940	.403	243.4	210.8	−17.0	48	342	
	15942	.293	254.2	205.4	−11.5	6	28	
	15943	.400	0.5	188.6	+16.3	99	686	
	15944	.507	23.4	176.4	+20.6	32	240	
	15946	.475	106.2	160.9	−13.9	2	9	
	15951	.642	101.2	148.8	−12.7	0	4	
	15948	.934	70.7	123.1	+15.1	88	546	260 f
	15949	.937	106.0	118.3	−17.5	42	216	448 c
		.825	111.8					93
		.895	77.5					94
		.924	57.2					123
Mar. 8			(−23.2)	(188.8)	(− 7.2)	(527)	(3240)	(2275)
67.468		.942	240.5					178
G		.938	289.9					252
		.885	258.1					259
		.873	273.1					224
		.866	293.7					261
		.852	283.0					251
		.850	248.7					103
	15939	.927	275.7	249.0	+ 3.8	45	404	620 c
	15938	.960	262.9	247.8	− 8.9	0	7	267 c
	15935	.926	266.3	241.5	− 6.1	14	132	359 c
	15936	.930	280.9	240.2	+ 7.3	15	151	252 c
	15952	.710	263.5	218.9	− 9.7	39	169	
	15950	.718	287.7	216.8	+ 7.4	12	88	
	15940	.637	252.3	212.6	−16.7	40	222	
	15943	.463	327.6	188.3	+16.0	94	553	
	1277d	.346	317.5	186.9	+ 4.7	4	20	
	15944	.458	354.3	176.2	+19.8	41	328	
	15946	.274	122.9	159.6	−15.5	2	14	
	1277e	.467	33.0	158.1	+16.0	0	2	
	15951	.391	105.1	150.7	−12.5	25	164	
	1277f	.585	133.1	144.0	−29.8	2	18	
	15948	.828	65.7	122.1	+15.4	92	486	160 c
	15949	.821	106.3	117.9	−17.5	37	211	314 f

Group 15947. Mar. 6 - 7. A small spot.
Group 15948. Mar. 7 - 19. A double spot which soon becomes an elongated spot with triple umbra. On March 15 it is again divided into two.
Group 15949. Mar. 7 - 19. Return of Group 15908. A small regular spot.
Group 15950. Mar. 8 - 11. Two or three small spots.
Group 15951. Mar. 8 - 17. A stream developing from a tiny spot on March 8. The leader, a regular spot, is the most stable component.
Group 15952. Mar. 9 - 12. A pair of spots, appearing fairly near the west limb.

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
1949			°	°	°			
	15953	.900	65.9	113.8	+18.0	8	30	283 *c*
	15954	.985	98.9	92.6	−10.0	104	460	299 *p*
		.879	94.5					183
		.902	49.3					152
		.927	109.0					378
		.960	71.9					348
		.961	59.0					253
Mar. 9			(−23.5)	(173.4)	(− 7.2)	(574)	(3459)	(5396)
68.424 G		.967	270.9					318
		.955	259.1					219
		.946	248.7					67
		.946	284.7					284
	15936	.986	278.3	239.9	+ 6.9	20	64	132 *f*
	15952	.849	263.2	219.3	− 9.6	60	291	200 *c*
	15950	.847	283.9	216.6	+ 7.7	17	73	143 *c*
	15940	.774	254.6	211.7	−16.4	23	212	299 *c*
	15943	.587	308.9	188.9	+15.2	118	588	
	15944	.523	331.1	176.4	+20.2	50	217	
	15946	.186	171.4	159.1	−17.8	28	83	
	15951	.166	119.5	152.4	−11.8	63	233	
	15948	.702	59.5	122.1	+15.2	83	457 }	144 *c*
	15953	.808	60.1	113.9	+18.6	18	58 }	
	15949	.684	107.9	118.0	−17.5	40	208	69 *f*
	15954	.926	97.9	92.4	−10.0	118	562	236 *c*
	15955	.987	81.9	81.4	+ 6.7	88	494	85 *c*
		.901	69.1					188
		.908	110.0					156
		.935	57.3					92
Mar. 10			(−23.7)	(160.8)	(− 7.2)	(726)	(3540)	(2632)
69.487 G		.830	292.1					88
	15952	.957	262.2	220.6	− 9.6	63	288	132 *c*
	15950	.947	281.8	216.2	+ 8.7	6	45	239 *c*
	15940	.916	254.9	214.0	−16.7	24	118	188 *c*
	15943	.737	297.8	189.0	+14.8	133	676	172 *c*
	15944	.650	313.7	176.8	+20.4	23	139	
	15946	.286	235.8	161.0	−16.2	11	30	
	15956	.208	218.3	154.5	−16.5	2	7	
	15951	.143	233.4	153.5	−12.0	57	252	
	15948	.550	47.3	122.4	+15.3	87	450	
	15949	.493	112.7	118.5	−17.3	32	145	

U. T.	Group No.	MEASURES		POSITION		AREA		
		Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ
1949			°	°	°			
	15953	.652	50.9	114.7	+18.2	24	105	
	15957	.702	64.3	06.6	+12.2	1	9	
	15954	.806	97.1	92.7	−10.0	114	571	549 *sf*
	15955	.915	79.3	82.2	+ 6.7	92	435	226 *f*
		.827	58.9					155
		.905	64.9					255
		.915	114.9					352
Mar. 11			(−23.9)	(146.8)	(− 7.2)	(669)	(3270)	(2356)
70.305 C		.986	279.8					248
		.904	271.2					210
		.841	280.4					177
	15952	.996	261.0	221.9	− 9.6	32	229	310 *c*
	15940	.973	254.8	213.9	−16.4	13	117 }	494 *c*
	1277g	.937	258.6	206.4	−13.1	8	51 }	
	15943	.830	293.4	187.9	+14.8	76	773	368 *c*
	15944	.741	306.2	175.6	+20.4	14	90	116 *c*
	15956	.346	241.1	154.4	−16.4	2	11	
	15951	.292	252.0	152.5	−12.1	61	350	
	15948	.453	33.3	121.2	+15.2	91	472	
	15949	.352	121.4	117.8	−17.3	28	164	
	15953	.546	40.8	114.2	+17.6	13	64	
	15957	.571	56.6	107.1	+12.0	2	10	
	15954	.687	97.2	92.5	−10.1	99	501	187 *f*
	15955	.827	77.0	82.1	+ 6.5	77	456	91 *c*
	15958	.978	68.2	61.9	+19.4	9	54	109 *c*
		.814	61.8					201
		.833	112.6					211
		.906	77.2					249
		.943	117.0					126
		.953	103.2					86
		.978	75.8					150
Mar. 12			(−24.0)	(136.1)	(− 7.2)	(525)	(3342)	(3333)
71.439 G		.964	258.2					387
		.955	247.9					274
		.953	269.6					269
		.951	278.8					387
		.861	285.1					302
	15943	.945	287.6	189.0	+13.9	66	512	465 *c*
	15944	.864	298.4	174.9	+20.1	9	46	400 *c*
	15956	.563	251.2	154.7	−16.4	1	7	

Group 15953. Mar. 9 - 16. A few small changing spots, of which only one remains after March 13.
Group 15954. Mar. 9 - 21. Return of Group 15914. A regular spot, whose umbra becomes divided by bright "bridges", firstly into two, and then into three. There are occasional small companions.
Group 15955. Mar. 10 - 22. A stable regular spot.
Group 15956. Mar. 11 - 13. A few variable spots.
Group 15957. Mar. 11 - 12. A tiny spot.
Group 15958. Mar. 12 - 19. 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
1949			°	°	°			
	15951	.548	259.0	154.3	-12.0	50	263	
	15948	.381	359.8	121.2	+15.1	77	506	
	15949	.187	161.5	117.6	-17.3	24	154	
	15953	.442	16.1	113.7	+17.9	4	28	
	15959	.145	100.8	112.9	- 8.7	17	82	
	15954	.481	97.6	92.3	-10.0	73	439	
	15955	.661	71.3	82.2	+ 6.7	67	434	
	1277h	.789	72.2	71.7	+ 9.3	2	7	137 *c*
	15958	.902	64.0	61.9	+19.6	15	89	277 *c*
	15960	.884	97.6	58.5	-10.1	6	24	183 *c*
	15961	.949	93.9	49.2	- 6.0	49	395	259 *c*
	15962	.988	65.7	44.2	+22.5	91	740	304 *c*
		.926	73.8					288
		.935	56.4					183
Mar. 13			(-24.2)	(121.1)	(- 7.2)	(551)	(3726)	(4115)
72.331		.947	280.6					360
C		.818	296.0					165
	15943	.990	286.4	188.6	+15.0	45	298	141 *c*
	15944	.937	295.2	174.0	+20.5	13	69	173 *c*
	1277i	.851	262.2	168.1	-10.4	0	6	204 *c*
	15951	.703	261.4	154.2	-11.1	37	201	
	15948	.428	333.4	120.7	+15.4	68	429	
	15949	.222	217.4	117.4	-17.2	35	154	
	15953	.440	349.6	114.1	+18.4	2	13	
	15959	.066	242.2	112.7	- 8.9	6	36	
	15954	.295	100.4	92.2	-10.0	80	440	
	15963	.315	114.2	92.1	-14.3	3	19	
	15955	.506	63.4	82.3	+ 6.7	111	437	
	15958	.811	59.1	61.8	+19.8	20	78	208 *f*
	15960	.758	96.2	59.7	- 9.4	10	54	83 *c*
	15961	.858	93.5	50.0	- 6.7	116	722	334 *c*
	15962	.945	63.2	43.7	+22.3	122	856	462 *c*
	15964	.979	105.6	29.7	-16.7	55	286	212 *c*
	15965	.992	111.3	24.7	-21.9	42	359	170 *c*
		.923	53.2					233
		.955	72.4					319
Mar. 14			(-24.4)	(109.3)	(- 7.2)	(765)	(4457)	(3064)

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
73.389		.900	290.7					378
G		.896	253.3					235
	15944	.992	291.7	174.7	+20.4	27	145	114 *f*
	15951	.822	259.7	151.1	-12.5	64	357	166 *c*
	15948	.563	311.5	121.2	+15.4	86	418	
	15949	.400	242.5	117.1	-17.3	22	138	
	15959	.329	267.1	114.7	- 7.7	6	16	
	15953	.519	326.7	112.8	+18.8	2	10	
	15966	.081	241.3	99.5	- 9.4	6	16	
	15954	.078	132.9	92.1	-10.2	72	384	
	15963	.123	149.3	91.7	-13.2	2	12	
	15955	.328	43.1	82.4	+ 6.8	74	426	
	15958	.683	50.3	61.6	+19.8	15	71	
	15960	.555	94.2	59.9	- 8.3	4	16	
	15961	.713	91.7	49.8	- 6.3	106	757	98 *c*
	15962	.860	58.3	43.2	+22.5	159	952	210 *c*
	15967	.872	68.3	38.6	+14.9	11	27	182 *c*
	15964	.907	104.4	29.6	-16.0	58	243	158 *c*
	15965	.948	110.2	22.9	-21.3	76	416	214 *c*
		.946	57.7					134
		.962	74.5					99
Mar. 15			(-24.5)	(95.4)	(- 7.2)	(790)	(4404)	(1988)
74.300		.967	291.1					164
C		.961	283.7					133
		.936	251.3					179
		.890	297.4					93
		.881	287.7					101
	15951	.932	259.7	152.8	-12.1	43	252	209 *c*
	15948	.689	301.8	120.7	+15.6	60	388	
	15949	.562	249.8	116.7	-17.1	19	116	
	15959	.521	266.9	114.9	- 7.7	1	5	
	15953	.587	309.5	111.3	+15.6	2	7	
	15966	.300	261.1	100.8	- 9.4	8	43	
	15954	.156	248.3	91.8	-10.3	69	348	
	15963	.173	227.5	90.9	-13.7	4	18	
	15955	.243	4.5	82.3	+ 6.8	67	383	
	1277j	.442	143.7	66.3	-27.6	1	10	
	15960	.362	94.7	62.1	- 8.3	2	8	

Group 15959. Mar. 13 - 18. A pair of small spots, of which only one remains by March 16.
Group 15960. Mar. 13 - 18. Two or three small spots.
Group 15961. Mar. 13 - 24. A bi-polar group. The leader is a regular spot, whose umbra has divided into two by March 22. The follower is less stable and is breaking up by March 20.
Group 15962. Mar. 13 - 25. Return of Group 15917; third appearance. A large spot, roughly circular.
Group 15963. Mar. 14 - 21. A few small spots until March 18 and then a composite mass.
Group 15964. Mar. 14 - 18. Return of Group 15920. An elongated spot, with a broken outline between March 17 and 23.
Group 15965. Mar. 14 - 17. A regular spot with variable companions; on March 22 the principal component begins to break up.
Group 15966. Mar. 15 - 20. A stream of increasing area.
Group 15967. Mar. 15 - 25. A few spots in the form of a stream; the follower is the largest component and alone remains by March 23.

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
1949			°	°	°			
	15958	.569	38.3	61.5	+19.8	13	71	
	15961	.559	90.3	49.3	- 6.1	114	723	
	15962	.763	52.7	42.6	+22.2	126	958	
	15967	.754	63.7	39.3	+14.4	3	20	202 *f*
	15964	.806	104.8	29.4	-16.1	49	302	133 *c*
	15965	.862	111.3	23.7	-21.9	61	375	271 *c*
		.857	57.9					123
		.900	100.3					97
		.901	71.9					194
		.942	51.5					219
		.947	64.8					197
		.954	109.3					123
Mar. 16			(-24.7)	(83.4)	(- 7.1)	(642)	(4027)	(2438)
75.305 C		.935	284.8					178
		.917	239.7					133
		.847	309.4					169
	15951	.992	259.3	153.9	-11.5	34	207	180 *c*
	15968	.842	254.4	127.8	-16.9	6	24	90 *c*
	15948	.821	294.8	120.6	+15.7	67	458	291 *c*
	15949	.728	253.2	116.7	-17.0	15	125	82 *p*
	15966	.506	264.0	100.6	- 9.1	9	49	
	15963	.388	250.9	92.2	-13.8	8	34	
	15954	.371	259.9	91.8	-10.3	67	396	
	15955	.323	318.3	82.5	+ 6.9	83	433	
	15958	.475	17.3	61.5	+19.8	14	67	
	15961	.351	88.9	49.5	- 6.3	121	770	
	15962	.650	42.6	41.8	+22.3	131	892	
	15967	.620	54.4	38.8	+15.1	4	17	
	15964	.658	106.2	29.2	-16.0	53	323	
	15965	.733	113.8	23.9	-22.1	67	301	244 *c*
		.858	64.8					187
		.865	109.4					106
		.866	45.8					180
		.945	95.8					113
		.960	117.0					132
Mar. 17			(-24.8)	(70.1)	(- 7.1)	(679)	(4096)	(2085)
76.308 C		.976	291.4					72
		.964	242.4					178
		.886	295.2					251
		.885	302.8					241
		.840	248.5					118

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
	1277k	.975	283.5	132.0	+11.4	4	33	154 *c*
	15968	.941	254.5	128.0	-16.9	6	35	246 *c*
	15948	.922	290.4	120.5	+15.7	60	375	233 *c*
	15949	.862	254.6	116.9	-16.9	24	130	157 *n*
	15966	.724	264.6	103.5	- 8.8	36	198	111 *c*
	15963	.591	256.8	93.0	-13.5	8	53	
	15954	.575	262.6	92.1	-10.0	57	316	
	15955	.492	298.4	82.6	+ 7.1	64	404	
	1277l	.411	323.4	71.4	+12.3	3	15	
	15958	.464	350.4	61.6	+20.0	7	37	
	15961	.128	82.8	49.6	- 6.1	138	816	
	15962	.545	26.6	41.7	+22.2	132	884	
	15967	.488	38.6	38.5	+15.6	17	96	
	15964	.478	110.4	29.3	-15.9	54	289	
	15965	.582	119.0	23.6	-22.3	66	357	
	15969	.792	113.5	5.1	-22.9	2	9	83 *c*
		.792	38.9					193
		.875	94.6					110
		.919	116.2					121
		.937	102.6					166
		.957	77.6					218
Mar. 18			(-25.0)	(56.9)	(- 7.1)	(678)	(4047)	(2652)
77.382 G		.888	290.3					156
	15948	.988	287.9	121.1	+16.4	28	236	253 *f*
	15949	.957	254.5	117.0	-16.9	22	162	246 *s*
	15966	.881	263.7	105.0	- 8.9	62	330	197 *c*
	15963	.764	258.9	92.9	-13.0	53	269	109 *s*
	15954	.759	263.1	92.5	- 9.8	62	301	
	1277m	.784	298.3	88.8	+17.0	3	14	99 *c*
	1277n	.805	308.5	86.7	+25.0	2	6	
	15955	.677	288.7	82.9	+ 7.2	67	386	
	15958	.544	326.0	61.6	+20.1	13	31	
	15961	.129	277.7	50.2	- 6.0	120	727	
	15962	.495	2.4	41.5	+22.5	152	994	
	15967	.397	10.7	38.4	+15.9	42	264	
	15964	.266	123.5	29.6	-15.2	47	331	
	15965	.411	130.7	23.2	-22.1	53	361	
	15970	.898	94.9	338.6	- 7.5	17	71	65 *c*
		.874	75.7					158
		.905	65.9					77
Mar. 19			(-25.1)	(42.8)	(- 7.0)	(743)	(4483)	(1360)

Group 15968. Mar. 17 - 18. One or two small spots.
Group 15969. Mar. 18 - 28. A tiny spot on March 18. Nothing is then seen until March 24, when a growing cluster appears.
Group 15970. Mar. 19 - 27. 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
1949			°	°	°			
78.317		.962	286.8					288
C		.926	250.7					280
		.871	297.4					260
	15966	.955	262.8	103.8	- 9.0	27	314	186 c
	15963	.880	259.0	92.6	-12.9	27	365	123 c
	15954	.875	262.4	91.9	-10.0	56	304	123 c
	15955	.810	283.9	82.6	+ 6.9	58	371	131 c
	15971	.736	300.9	71.5	+16.9	6	40	
	15972	.646	301.8	64.7	+14.1	7	29	
	15973	.504	307.8	54.3	+11.5	15	100	
	15961	.339	271.4	50.2	- 6.1	106	867	
	15962	.523	340.4	41.3	+22.5	163	1145	
	15967	.407	343.9	37.1	+16.0	41	248	
	15964	.148	176.7	29.9	-15.5	58	411	
	15965	.289	153.6	22.5	-21.9	37	394	
	15970	.759	94.0	340.8	- 7.6	13	67	137 f
	15974	.977	75.4	315.0	+12.5	25	324	284 c
		.947	93.4					396
Mar. 20			(-25.2)	(30.4)	(- 7.0)	(639)	(4979)	(2208)
79.379		.963	290.4					81
G		.952	301.3					106
		.873	244.4					248
	15963	.968	258.6	92.8	-12.8	22	290 }	422 c
	15954	.967	261.4	92.4	-10.1	35	222 }	
	15955	.926	280.5	82.7	+ 6.9	64	354	200 c
	15971	.874	293.6	72.9	+16.6	8	32	87 c
	15972	.796	294.2	64.8	+14.4	6	27	74 c
	15973	.668	295.6	54.1	+11.2	38	179	
	15961	.556	269.4	50.3	- 6.1	143	731	
	15962	.620	321.1	41.2	+22.4	221	1459	
	15967	.522	318.3	37.5	+16.3	37	182	
	15964	.267	235.2	29.5	-15.6	84	455	
	15965	.269	196.9	21.2	-21.8	42	369	
	15975	.206	172.2	14.7	-18.7	8	19	
	15970	.579	92.6	340.9	- 7.2	11	31	
	15974	.906	72.6	314.3	+12.5	47	238	247 c
	15976	.980	80.3	299.4	+ 8.0	27	162	119 c
Mar. 21			(-25.4)	(16.4)	(- 7.0)	(793)	(4750)	(1584)

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
80.306		.974	258.3					139
C		.957	289.9					128
		.932	245.7					320
		.871	259.8					162
	15955	.986	278.3	83.3	+ 6.9	82	394	152 f
	15972	.893	290.5	63.9	+14.8	4	23	107 c
	1277o	.889	300.4	60.4	+23.0	4	16	117 s
	15973	.798	289.9	53.9	+11.2	28	146	
	15961	.719	267.8	50.3	- 6.4	134	662	
	15962	.729	310.2	41.1	+22.5	163	1365	
	15967	.646	306.2	37.0	+16.5	39	179	
	15964	.441	247.9	29.2	-15.9	67	524	
	15965	.388	225.7	21.5	-22.0	53	431	
	15975	.272	220.9	15.0	-18.7	6	21	
	15970	.368	92.2	342.5	- 7.3	6	26	
	15974	.801	68.8	314.5	+12.4	39	229	266 c
	15976	.923	78.3	298.6	+ 7.9	31	191	441 c
		.946	102.7					146
Mar. 22			(-25.5)	(4.2)	(- 7.0)	(656)	(4207)	(1978)
81.305		.975	284.2					119
C		.956	294.7					161
		.835	289.2					77
	15973	.904	286.8	53.0	+11.9	28	87	103 c
	15961	.865	266.8	51.1	- 6.3	101	548	249 c
	15962	.841	302.7	40.9	+22.6	147	1340	335 c
	15967	.768	301.0	34.7	+18.3	19	80	83 c
	15964	.617	254.0	28.8	-15.2	59	401	
	15965	.545	239.0	21.2	-22.2	35	295	
	15975	.420	233.2	12.0	-21.0	1	10	
	15970	.132	89.0	343.4	- 6.7	2	13	
	15974	.660	62.0	314.5	+12.4	79	277	
	15976	.813	74.8	298.8	+ 8.1	26	177	141 c
	15977	.971	96.4	274.4	- 7.8	4	27	180 c
		.863	105.8					168
		.927	63.4					255
		.936	72.4					120
		.947	80.0					197
Mar. 23			(-25.6)	(351.0)	(- 6.9)	(501)	(3255)	(2188)

Group 15971. Mar. 20 - 21. A pair of small spots.
Group 15972. Mar. 20 - 22. A pair of small spots on the first two days; a single spot on March 22.
Group 15973. Mar. 20 - 24. A pair of spots until March 22; a single spot afterwards.
Group 15974. Mar. 20 - 30. Return of Group 15934. A diminishing regular spot.
Group 15975. Mar. 21 - 23. One or two small spots.
Group 15976. Mar. 21-Apr. 2. Return of Group 15932. A regular spot with a few companions between March 29 and 31.
Group 15977. Mar. 23 - 24. A tiny 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
1949			°	°	°			
82.388		.939	256.4					96
G		.875	314.0					137
	15973	.979	283.3	53.0	+11.4	17	118	164 *c*
	15961	.966	265.2	52.2	- 6.4	107	477	355 *c*
	15962	.937	296.7	41.1	+22.0	200	1537	286 *c*
	15967	.888	294.9	34.6	+18.3	12	55	124 *c*
	15964	.785	255.6	28.7	-15.5	48	348	113 *p*
	15965	.714	245.7	21.2	-22.0	29	239	85 *p*
	15969	.521	240.1	5.6	-21.1	5	46	
	15970	.111	261.0	343.1	- 7.8	0	4	
	15974	.494	49.3	314.4	+12.3	51	264	
	15976	.658	68.8	298.6	+ 8.3	35	201	
	15977	.877	94.9	275.2	- 7.6	2	13	114 *f*
	15978	.966	95.2	261.4	- 6.8	4	13	158 *c*
	15979	.984	86.9	257.6	+ 1.8	74	310	253 *p*
		.825	65.3					98
Mar. 24			(-25.7)	(336.8)	(- 6.9)	(584)	(3625)	(1983)
83.517		.918	285.8					125
G		.918	310.6					236
		.880	298.4					301
	15962	.993	293.8	41.3	+22.5	208	1131	255 *c*
	15967	.971	291.1	34.5	+18.5	8	45	164 *f*
	15964	.913	256.2	28.5	-15.4	51	258	338 *c*
	15965	.860	249.0	21.3	-21.5	23	166	384 *c*
	15969	.723	248.4	7.5	-20.2	51	260	85 *c*
	15970	.277	264.2	338.1	- 8.2	8	30	
	15974	.350	21.6	314.4	+12.2	41	240	
	15980	.339	41.8	308.8	+ 8.0	1	4	
	15976	.473	57.4	298.2	+ 8.5	39	185	
	15981	.581	68.6	289.1	+ 6.5	11	74	
	15978	.872	93.8	261.0	- 6.6	13	72	81 *c*
	15979	.909	84.8	257.2	+ 1.8	56	277	506 *c*
		.882	102.2					233
		.949	60.1					174
		.966	96.8					380
Mar. 25			(-25.8)	(321.9)	(- 6.8)	(510)	(2742)	(3262)
84.388		.961	281.6					158
G		.957	202.6					19
		.951	207.7					11

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
		.951	303.7					266
		.948	290.5					378
	15964	.975	254.7	28.7	-16.4	44	285	326 *c*
	15965	.936	247.7	20.5	-23.2	10	99	439 *c*
	15969	.848	248.9	8.4	-21.4	48	472	303 *c*
	15970	.477	264.5	339.0	- 8.6	10	43	
	15974	.330	346.7	314.8	+11.8	28	236	
	15980	.259	1.9	305.4	+ 8.2	1	4	
	15976	.337	37.5	298.5	+ 8.7	34	194	
	15981	.393	55.7	291.4	+ 6.3	5	22	
	15982	.683	77.1	268.7	+ 3.7	4	20	
	15978	.739	92.1	262.6	- 6.1	3	23	98 *f*
	15979	.804	82.9	257.6	+ 1.5	47	278	286 *f*
	15983	.996	96.9	225.0	- 7.5	11	69	
		.897	54.8					199
		.903	94.0					638
		.943	14.1					10
		.951	76.8					213
		.959	68.9					251
		.960	105.7					195
Mar. 26			(-25.9)	(310.4)	(- 6.8)	(245)	(1745)	(3790)
85.332		.778	291.2					111
C	15965	.991	248.2	22.0	-22.4	22	162	243 *f*
	15969	.943	250.0	9.4	-21.1	36	318	319 *c*
	15970	.641	265.8	337.9	- 7.9	1	8	
	15974	.421	317.6	314.7	+11.5	25	164	
	15980	.336	318.7	310.8	+ 7.9	1	5	
	15976	.270	0.6	297.7	+ 8.8	36	178	
	15981	.229	19.2	293.6	+ 5.7	2	9	
	15982	.481	70.3	271.0	+ 3.2	2	15	
	15978	.574	93.2	262.7	- 7.4	6	30	
	15979	.657	79.6	257.8	+ 1.5	57	368	
	15984	.859	53.8	247.5	+26.2	6	31	133 *c*
	15985	.879	69.3	239.9	+14.5	4	25	185 *c*
	15983	.954	97.0	224.9	- 8.7	7	39	194 *c*
		.773	81.0					184
		.813	92.6					512
		.884	80.6					171
		.958	70.8					406
		.968	79.5					125
Mar. 27			(-26.0)	(297.9)	(- 6.8)	(205)	(1352)	(2583)

Group 15978. Mar. 24-Apr. 5. One or two small spots until April 2, after which a short stream develops. The follower is the largest component and is the sole survivor after April 3.
Group 15979. Mar. 24-Apr. 5. An equatorial regular spot with occasional close companions.
Group 15980. Mar. 25 - 27. A tiny spot.
Group 15981. Mar. 25-Apr. 2. One or two small spots, not seen between March 28 and March 30.
Group 15982. Mar. 26 - 27. A pair of small spots on March 26; a single spot on the next day.
Group 15983. Mar. 26-Apr. 7. Return of Group 15952. A single small spot until April 1. On the next day another component appears forming a fairly widely-separated pair.
Group 15984. Mar. 27-Apr. 1. One or two small spots, not seen on March 29 and 30.
Group 15985. Mar. 27 - 30. A single small spot, except on March 29 when there is a cluster.

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
1949			°	°	°			
86.453		.900	256.6					135
C		.893	286.5					130
		.871	267.0					109
	15969	.989	248.2	6.4	-22.5	20	112	345 *n*
	15974	.600	299.5	315.2	+11.4	20	118	
	15976	.370	317.2	297.8	+ 9.2	33	164	
	15978	.318	93.5	264.5	- 7.5	4	25	
	15979	.453	72.7	257.6	+ 1.7	58	315	
	15984	.785	46.0	243.6	+27.8	3	12	60 *c*
	15985	.730	63.1	241.1	+14.3	4	18	166 *c*
	15983	.846	95.6	225.0	- 8.3	12	42	95 *f*
	15986	.979	73.0	207.5	+15.1	26	144	198 *c*
	15987	.991	103.6	199.7	-14.3	40	242	283 *c*
		.874	64.6					198
		.904	75.8					125
		.923	101.4					181
		.970	90.6					152
		.978	80.7					101
Mar. 28			(-26.0)	(283.1)	(- 6.7)	(220)	(1192)	(2278)
87.305		.957	256.1					109
C		.936	284.7					181
		.935	264.3					208
		.898	294.6					122
	15974	.725	292.4	314.8	+11.1	20	70	80 *c*
	15976	.503	301.4	297.6	+ 9.1	34	188	
	15978	.083	103.1	267.2	- 7.8	0	4	
	15988	.163	126.3	264.2	-12.1	1	11	
	15979	.288	60.1	257.5	+ 1.7	62	328	
	15985	.619	55.5	240.2	+14.8	7	30	
	15983	.727	95.4	225.1	- 8.5	14	30	74 *f*
	15986	.922	70.6	207.9	+15.0	22	148	178 *c*
	15987	.948	103.2	199.6	-14.7	29	140	213 *c*
	15989	.965	76.5	199.1	+11.1	36	145	318 *c*
		.839	103.3					147
Mar. 29			(-26.1)	(271.9)	(- 6.7)	(225)	(1094)	(1630)
88.308	15974	.858	287.2	315.1	+11.1	4	33	190 *c*
C	15976	.674	291.8	297.9	+ 9.4	47	212	
	15978	.145	265.0	267.0	- 7.2	0	5	
	15988	.127	222.9	263.7	-11.9	3	18	
	15979	.148	7.6	257.6	+ 1.8	63	276	

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
	15984	.591	23.1	243.8	+26.4	4	29	
	1278a	.348	67.8	240.0	+ 1.3	2	10	
	15985	.495	42.0	238.7	+15.3	2	19	
	15983	.554	95.2	225.0	- 8.4	4	40	
	15986	.821	66.6	207.7	+14.9	32	182	136 *c*
	15987	.854	103.2	199.7	-14.7	35	196	286 *f*
	15989	.881	73.0	199.6	+11.5	25	120	141 *c*
	15990	.917	76.4	194.3	+ 9.7	5	44	179 *c*
	15991	.930	74.0	192.8	+12.2	26	96	141 *c*
		.951	63.8					86
Mar. 30			(-26.2)	(258.7)	(- 6.6)	(252)	(1280)	(1159)
89.309		.940	293.8					125
C		.923	284.5					166
	15976	.818	286.3	298.0	+ 9.3	32	137	203 *c*
	15981	.734	284.4	290.9	+ 5.9	7	30	
	15978	.429	266.8	271.0	- 7.4	1	7	
	15988	.319	245.4	262.8	-13.9	3	12	
	15979	.260	304.0	257.9	+ 1.9	46	253	
	15984	.551	1.6	244.5	+26.7	14	42	
	15983	.351	96.5	224.9	- 8.5	3	18	
	15986	.690	60.4	207.3	+14.7	23	150	
	15987	.718	104.1	199.7	-14.7	23	161	168 *f*
	15989	.762	68.2	199.4	+11.8	23	112	102 *c*
	15990	.803	73.0	194.6	+ 9.4	10	34	104 *c*
	15991	.830	70.2	192.6	+12.4	33	71	71 *c*
		.940	73.4					93
		.943	102.8					144
		.971	63.2					111
Mar. 31			(-26.2)	(245.5)	(- 6.6)	(218)	(1027)	(1287)
90.319		.889	294.9					186
C	15976	.925	283.1	298.0	+ 9.5	42	168	301 *c*
	15981	.866	280.9	290.8	+ 6.0	22	108	236 *c*
	15978	.640	266.5	272.1	- 7.2	4	14	
	15988	.537	255.1	264.3	-13.5	2	11	
	15979	.456	286.7	258.0	+ 1.7	47	251	
	15984	.572	336.9	246.5	+25.3	6	39	
	15983	.129	106.3	225.0	- 8.5	4	12	
	15986	.542	49.6	207.0	+14.7	37	126	
	15989	.609	60.9	199.4	+11.7	26	179	
	15987	.551	106.7	199.3	-14.6	29	160	

Group 15986. Mar.28-Apr.8. A slowly-diminishing regular spot.
Group 15987. Mar.28-Apr.4. A small regular spot, dying out just past the C.M.
Group 15988. Mar.29-Apr.5. A pair of small spots until April 1. Nothing is seen on April 2, after which a small growing regular spot appears.
Group 15989. Mar.29-Apr.8. A small, nearly regular spot, with a few companions from March 31 to April 2.
Group 15990. Mar.30-Apr.10. A pair of small spots until April 1. Then there appears a cluster which has become composite by April 6.
Group 15991. Mar.30-Apr.10. Return of Group 15943. A small regular spot until April 5. On the next day a stream appears, of which the largest and most stable component is the leader.

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
1949			°	°	°			
	15990	.626	67.2	196.6	+ 8.7	7	48	
	15991	.689	63.8	193.0	+12.7	28	123	
	15992	.940	79.2	163.7	+ 7.8	0	22	421 *n*
	15993	.948	97.7	160.2	- 9.4	44	237	380 *c*
		.877	106.4					111
		.911	58.7					310
Apr. 1			(-26.3)	(232.2)	(- 6.5)	(298)	(1498)	(1945)
91.358 C		.952	254.9					156
		.939	290.1					186
		.874	263.5					99
	15976	.990	280.5	298.8	+ 9.4	31	168	101 *c*
	15981	.968	277.5	292.8	+ 5.6	0	49	246 *c*
	15994	.815	278.9	272.0	+ 3.4	13	72	110 *c*
	15978	.750	266.6	267.1	- 6.8	21	92	
	15979	.650	280.1	258.0	+ 1.6	47	234	
	15983	.107	229.1	223.1	-10.4	8	40	
	15986	.412	28.7	206.6	+14.8	24	173	
	15989	.440	45.7	199.7	+11.8	21	136	
	15987	.346	114.5	199.5	-14.3	21	88	
	15990	.449	56.3	196.3	+ 8.5	1	6	
	15991	.527	52.9	193.0	+12.7	14	54	
	15995	.843	69.2	164.4	+13.7	6	26	93 *c*
	15992	.844	76.3	162.7	+ 7.9	40	213	136 *c*
	15993	.852	97.3	159.6	- 9.6	31	180	327 *c*
	15996	.991	76.9	138.0	+12.0	40	249	
		.932	104.9					160
		.939	66.5					140
Apr. 2			(-26.3)	(218.4)	(- 6.4)	(318)	(1780)	(1754)
92.296 C		.976	284.9					72
		.813	310.9					92
	15994	.922	276.7	272.4	+ 3.6	19	150	239 *c*
	15978	.860	265.9	265.6	- 6.8	53	259	209 *c*
	15997	.847	260.3	264.3	-11.6	14	38	50 *c*
	15988	.832	257.1	262.7	-14.2	12	57	49 *c*
	15979	.797	276.7	258.2	+ 1.4	37	209	81 *c*
	15983	.308	254.1	223.6	-10.9	27	97	
	15986	.364	357.9	206.9	+14.8	22	124	

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
	15989	.328	18.5	200.0	+11.7	19	101	
	15987	.180	143.5	199.8	-14.7	16	58	
	15990	.316	36.7	195.1	+ 8.3	16	51	
	15991	.386	34.2	193.3	+12.3	13	57	
	15995	.716	64.9	164.6	+12.9	8	46	
	15992	.711	71.9	163.2	+ 8.0	37	153	
	15993	.726	97.7	159.4	-10.0	19	86	58 *c*
	15996	.936	74.9	139.0	+11.7	34	154	122 *f*
		.836	105.7					78
		.957	106.5					165
		.973	67.3					92
Apr. 3			(-26.3)	(206.1)	(- 6.4)	(346)	(1640)	(1307)
93.574 C		.905	304.1					276
		.867	264.6					389
		.798	295.1					153
	15994	.995	275.0	272.6	+ 4.3	0	43	185 *c*
	15997	.959	260.5	263.3	-10.9	7	45	179 *c*
	15978	.959	264.8	263.0	- 6.8	33	244	274 *p*
	15988	.945	256.6	260.8	-14.7	23	134	179 *np*
	15979	.930	274.1	257.0	+ 1.4	26	186	321 *c*
	15983	.543	260.5	222.0	-10.4	33	242	
	15986	.454	323.4	205.4	+15.2	24	150	
	15989	.355	331.4	199.2	+11.8	10	70	
	15987	.218	226.2	198.5	-14.8	2	18	
	15990	.272	339.8	194.6	+ 8.5	16	134	
	15991	.328	351.6	192.0	+12.5	8	42	
	15998	.309	175.8	187.8	-24.1	30	210	
	15999	.540	23.4	175.7	+23.5	3	21	
	15995	.519	54.0	163.9	+12.0	14	83	
	15992	.516	62.8	161.7	+ 8.0	24	152	
	15993	.525	99.4	157.6	-10.3	19	89	
	15996	.815	70.5	137.7	+11.9	11	119	105 *c*
	16000	.957	106.5	115.2	-17.6	3	19	159 *c*
		.853	108.1					205
		.904	65.2					201
		.921	75.8					109
		.966	68.4					226
		.968	95.4					339
Apr. 4			(-26.4)	(189.2)	(- 6.3)	(286)	(2001)	(3300)

Group 15992. Apr. 1 - 12. Small spots which undergo considerable changes.
Group 15993. Apr. 1 - 11. Return of Group 15951. A small regular spot with a preceding companion until April 5.
Group 15994. Apr. 2 - 4. A pair of spots.
Group 15995. Apr. 2 - 8. A stream of small changing spots.
Group 15996. Apr. 2 - 13. A diminishing regular spot.
Group 15997. Apr. 3 - 5. A few small spots.
Group 15998. Apr. 4 - 10. A stream, appearing suddenly near the C.M. The leader soon becomes regular and is the most stable component; the following part is a rapidly-declining train of spots.
Group 15999. Apr. 4 - 5. A pair of small spots on April 4; a single spot on April 5.
Group 16000. Apr. 4 - 8. Return of Group 15949; third appearance. 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
1949			°	°	°			
94.316		.957	300.1					349
C		.950	282.8					171
		.949	258.5					119
		.910	264.8					244
		.890	273.3					153
		.879	292.2					269
	15978	.994	263.8	263.8	- 6.9	40	189	69 c
	15997	.991	260.2	262.4	-10.5	7	79	101 c
	15988	.989	255.6	261.9	-15.1	43	177	135 c
	15979	.984	272.6	258.6	+ 1.4	30	173	151 c
	15983	.686	261.7	222.8	-10.3	32	172	82 c
	15986	.566	309.2	206.3	+15.2	23	117	
	15989	.469	311.3	200.4	+12.1	13	50	
	15990	.374	312.3	195.6	+ 8.5	10	98	
	15991	.399	323.6	193.4	+12.5	6	26	
	15998	.353	205.5	189.0	-24.7	67	364	
	15999	.503	7.8	175.1	+23.5	0	8	
	15995	.413	38.2	164.3	+12.8	12	84	
	15992	.379	48.4	162.8	+ 8.5	32	147	
	15993	.369	103.0	158.0	-10.6	14	82	
	15996	.700	65.8	138.8	+11.8	21	106	73 f
	16000	.890	106.6	116.2	-17.6	2	12	89 c
		.931	95.8					641
		.932	64.6					177
		.959	76.8					132
		.959	109.2					169
Apr. 5			(-26.4)	(179.4)	(- 6.3)	(352)	(1884)	(3124)
95.343		.969	301.8					86
C		.960	268.4					341
		.953	289.0					300
		.945	253.6					130
		.884	296.7					114
	15983	.832	261.6	222.5	-10.4	24	137	159 c
	15986	.715	298.5	206.4	+15.2	20	103	
	15989	.633	297.8	200.7	+12.0	11	52	
	15990	.554	296.2	196.0	+ 8.7	36	237	
	15991	.526	308.3	190.9	+13.4	51	276	
	15998	.504	228.0	190.3	-25.3	64	376	
	15995	.339	3.2	164.8	+13.5	12	69	
	15992	.263	8.9	163.6	+ 8.8	33	176	
	15993	.164	120.4	157.7	-10.9	10	70	
	15996	.536	56.4	138.9	+11.7	22	106	
	16000	.767	107.8	116.1	-17.6	2	7	
	1278b	.786	94.9	113.9	- 7.7	2	9	195 c
	16001	.992	82.0	84.2	+ 7.1	34	271	136 c
		.846	109.1					111
		.861	59.7					190
		.893	74.2					190
		.909	98.4					334

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
		.942	107.8					350
		.948	90.8					118
		.978	67.0					153
Apr. 6			(-26.4)	(165.9)	(- 6.2)	(321)	(1889)	(2907)
96.316		.950	289.1					273
C		.925	299.2					140
		.903	280.2					62
		.861	95.0					159
	15983	.944	262.4	224.2	- 9.2	26	225	336 c
	15986	.839	292.8	206.1	+15.3	24	96	111 c
	15989	.776	291.2	200.6	+12.2	12	46	
	15990	.714	289.7	195.8	+ 9.4	38	302	
	15991	.678	297.8	190.9	+13.6	55	351	
	15998	.646	237.6	189.9	-25.1	87	408	
	15995	.380	329.6	164.3	+13.1	3	19	
	15992	.334	325.8	163.9	+10.0	29	172	
	15993	.113	220.5	157.3	-11.0	11	58	
	15996	.379	37.8	139.4	+11.4	16	90	
	16000	.618	110.9	115.9	-17.6	1	6	
	16001	.938	80.6	84.6	+ 6.6	53	194	136 c
		.931	104.2					248
		.937	64.4					197
		.964	75.4					179
		.969	115.9					215
Apr. 7			(-26.4)	(153.0)	(- 6.1)	(355)	(1967)	(2056)
97.393		.946	295.8					82
C		.942	276.6					96
		.846	257.4					121
	15986	.940	288.5	206.0	+15.0	19	116	83 c
	15989	.898	286.8	200.2	+12.2	5	27	
	15990	.861	285.0	196.1	+ 9.6	42	330	157 c
	15991	.821	291.2	190.6	+13.5	110	725	147 c
	15998	.800	243.0	190.6	-24.8	61	371	128 c
	15992	.510	304.1	164.2	+11.0	22	266	
	15995	.511	315.0	160.7	+15.5	2	6	
	15993	.325	253.6	157.2	-11.1	10	43	
	15996	.298	357.6	139.5	+11.2	20	85	
	16000	.429	119.1	115.7	-17.6	1	5	
	16002	.717	96.2	92.8	- 8.7	36	170	74 c
	16001	.826	77.7	84.7	+ 6.5	42	202	67 c
	16003	.989	92.1	57.3	- 3.0	13	85	88 c
		.798	104.3					134
		.894	112.8					120
		.938	74.2					154
		.945	98.0					196
Apr. 8			(-26.4)	(138.8)	(- 6.1)	(383)	(2431)	(1647)

Group 16001. Apr. 6 - 18. Return of Group 15955. A stable regular spot.
Group 16002. Apr. 8 - 17. A stream in which the leader soon becomes a regular spot and alone remains after April 14.
Group 16003. Apr. 8 - 16. A small equatorial 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
1949			°	°	°			
98.592		.962	257.4					274
C		.856	305.0					146
	15990	.963	282.2	195.6	+10.0	40	289	226 c
	15998	.929	246.0	191.5	-24.5	53	265	320 c
	15991	.932	287.6	189.1	+14.0	88	603	337 c
	15992	.699	292.8	163.9	+11.1	29	199	169 p
	15993	.562	259.8	157.1	-10.7	9	70	
	15996	.404	316.0	139.5	+11.1	12	67	
	16004	.307	115.2	106.5	-13.2	0	4	
	16002	.495	97.4	93.3	- 8.9	52	236	
	16001	.651	72.6	84.5	+ 6.5	36	168	
	16005	.909	94.9	57.4	- 6.9	8	39	134 c
	16003	.913	90.8	57.1	- 3.2	13	65	120 c
		.938	74.8					170
		.970	65.2					198
Apr. 9			(-26.4)	(123.0)	(- 6.0)	(340)	(2005)	(2094)
99.323		.911	300.5					209
C		.854	252.1					155
	15990	.994	281.4	195.4	+10.5	31	220 }	502 c
	15991	.976	285.8	188.5	+13.9	88	713 }	
	15998	.979	246.5	192.7	-24.1	59	301	426 c
	15992	.817	288.5	165.3	+11.4	36	177	261 c
	15993	.692	260.4	157.1	-10.8	8	34	
	15996	.519	303.1	139.5	+11.1	10	55	
	16004	.155	139.5	107.4	-12.7	2	11	
	16002	.334	99.5	93.9	- 8.7	43	259	
	16001	.521	66.5	84.7	+ 6.8	40	185	
	16003	.829	89.7	57.4	- 3.1	12	73	89 c
	16005	.829	94.2	57.2	- 6.8	6	29	150 c
	16006	.983	65.2	37.7	+23.0	93	630	357 c
		.913	63.4					184
		.928	105.2					158
		.956	74.4					292
Apr. 10			(-26.3)	(113.3)	(- 5.9)	(428)	(2687)	(2783)
100.318		.984	244.1					208
C		.964	297.5					220
		.961	254.1					250
		.862	266.1					138
		.851	293.9					113
	15992	.910	285.7	163.4	+11.6	12	113	615 c
	15993	.837	260.9	157.3	-10.8	6	30	65 f

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
	15996	.683	293.1	139.8	+11.0	5	12	
	16004	.190	228.7	108.6	-13.0	0	6	
	16002	.114	115.9	94.3	- 8.7	43	259	
	16001	.342	51.1	84.7	+ 6.7	31	163	
	16005	.657	92.0	59.1	- 5.8	1	11	
	16003	.676	87.9	57.8	- 2.9	9	65	
	16006	.930	62.3	37.0	+23.0	97	598	689 c
	16007	.958	78.4	28.5	+ 9.3	0	15	169 c
	16008	.982	107.4	19.9	-18.2	70	388	238 c
		.832	58.7					97
		.885	69.9					302
		.927	103.3					172
		.980	65.9					187
Apr. 11			(-26.3)	(100.2)	(- 5.9)	(274)	(1660)	(3463)
101.317		.959	262.5					113
C		.944	291.3					64
	15992	.970	281.9	161.3	+10.0	0	8	330 c
	15996	.822	287.9	139.7	+11.1	15	29	74 c
	16004	.387	246.9	108.4	-14.1	6	22	
	16002	.138	249.7	94.5	- 8.5	52	355	
	16001	.221	9.1	85.0	+ 6.7	39	198	
	16003	.488	85.1	58.0	- 2.7	7	37	
	16006	.840	57.5	36.8	+23.1	48	485	171 c
	16007	.863	75.9	29.3	+ 9.1	15	71	108 c
	16008	.918	106.9	20.0	-17.8	77	313	155 c
	16009	.956	65.9	18.0	+21.0	11	68	127 c
	16010	.964	111.4	11.6	-22.1	48	216	218 c
		.825	67.3					134
		.935	61.3					136
		.941	121.5					95
Apr. 12			(-26.3)	(87.0)	(- 5.8)	(318)	(1802)	(1725)
102.486		.969	256.8					155
G		.867	250.8					168
	15996	.938	284.0	139.4	+11.0	6	16	150 f
	1278c	.905	298.8	130.9	+23.0	0	13	119 c
	1278d	.814	300.0	120.1	+20.2	0	2	87 c
	16004	.597	254.4	107.8	-13.0	4	24	
	16002	.407	260.8	95.5	- 8.9	46	235	
	16001	.317	312.4	85.2	+ 6.8	43	164	
	16003	.235	77.8	58.4	- 2.8	7	37	
	16006	.714	49.2	35.7	+23.1	73	474	189 c

Group 16004. Apr. 9 - 15. One or two tiny spots.
Group 16005. Apr. 9 - 11. Return of Group 15961. A small spot.
Group 16006. Apr. 10 - 18. Return of Group 15962; fourth appearance. A composite spot which disintegrates.
Group 16007. Apr. 11 - 17. Two tiny spots, which in two days become a composite structure. On the next day this has broken up into a stream which in turn quickly dies out. This group goes through its whole life-history in seven days.
Group 16008. Apr. 11 - 23. A regular spot, followed by a slightly smaller companion which is the first to break up and die out.
Group 16009. Apr. 12 - 23. At first a regular spot followed by a train of small variable companions. The whole undergoes considerable changes and is breaking up after April 20.
Group 16010. Apr. 12 - 24. Return of Group 15969. A stable regular spot with small variable companions until April 21.

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
1949			°	°	°			
	16007	.704	71.8	29.2	+ 8.5	58	287	170 c
	16008	.790	108.6	19.8	-18.1	73	364	351 c
	16009	.855	60.4	18.8	+21.5	48	212	346 c
	16010	.874	112.6	11.0	-22.5	49	277	339 c
		.847	122.2					271
		.935	51.8					249
Apr. 13			(-26.2)	(71.6)	(- 5.7)	(407)	(2105)	(2594)
103.344 G		.933	284.9					245
		.931	295.6					136
		.842	265.5					247
	1278e	.925	250.5	128.1	-20.1	0	9	188 c
	1278f	.744	270.4	108.2	- 3.4	5	19	69 c
	16004	.735	256.1	107.3	-13.9	7	47	86 c
	16002	.577	262.7	95.4	- 8.8	74	282	
	1278g	.608	316.3	86.8	+21.0	3	13	
	16001	.469	296.2	85.2	+ 6.8	42	166	
	16003	.062	27.4	58.6	- 2.4	10	24	
	16006	.616	39.2	35.2	+23.3	83	513	
	16007	.557	65.5	29.5	+ 8.5	32	207	
	16008	.654	111.0	20.5	-17.8	45	281	131 f
	16009	.757	54.2	18.9	+22.0	41	198	197 c
	16010	.771	114.4	11.1	-22.2	68	265	190 f
		.928	49.0					178
		.959	77.1					311
Apr. 14			(-26.2)	(60.2)	(- 5.6)	(410)	(2024)	(1978)
104.360 G		.971	292.3					137
		.925	266.9					263
		.901	293.5					178
		.898	248.3					214
	1278h	.934	282.5	114.2	+ 9.6	6	15	122 n
	16004	.897	258.3	110.9	-13.0	2	10	197 c
	16002	.762	263.4	96.5	- 8.6	42	264	177 c
	16001	.649	287.4	85.2	+ 6.8	38	180	
	16003	.217	283.7	58.9	- 2.5	7	18	
	16011	.399	16.4	40.1	+16.8	2	10	
	16006	.515	21.9	34.8	+23.0	69	299	
	16012	.612	21.1	32.2	+29.3	4	17	
	16007	.375	50.3	29.9	+ 8.4	26	139	
	16008	.476	117.7	20.7	-17.8	43	205	
	16009	.633	43.8	18.7	+22.1	76	322	

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
	16010	.619	119.5	11.3	-22.3	57	258	
		.846	99.5					166
		.878	73.9					186
Apr. 15			(-26.1)	(46.8)	(- 5.6)	(372)	(1737)	(1640)
105.411 G		.969	263.1					490
		.964	295.7					187
		.959	282.6					292
		.931	249.9					363
		.865	300.6					111
		.784	253.3					251
	16002	.896	262.9	96.8	- 8.8	45	200	256 c
	16001	.809	282.6	85.4	+ 6.8	42	181	195 c
	16003	.446	275.1	59.2	- 2.7	2	10	
	16011	.365	349.4	36.9	+15.5	1	7	
	16006	.482	357.9	34.0	+23.2	55	348	
	16012	.568	1.1	32.2	+28.9	2	24	
	16007	.239	12.3	30.0	+ 7.9	18	79	
	16008	.300	135.3	20.2	-17.6	42	202	
	16009	.527	27.8	17.6	+22.3	76	423	
	16010	.458	129.9	10.7	-22.1	50	290	
	16013	.964	106.7	317.7	-17.5	0	30	187 c
		.941	97.2					229
		.963	78.1					348
Apr. 16			(-26.1)	(32.9)	(- 5.5)	(333)	(1794)	(2909)
106.362 G		.948	295.6					140
		.900	253.2					255
		.880	309.3					105
		.867	289.6					123
	16002	.975	262.5	98.0	- 8.5	20	164	281 f
	16001	.912	279.8	85.0	+ 6.6	35	168	144 c
	16014	.747	287.8	66.4	+ 9.4	2	10	90 c
	16006	.520	336.4	33.4	+23.1	16	105	
	16012	.594	342.8	32.0	+29.1	2	18	
	16007	.286	324.1	30.1	+ 8.0	16	42	
	16008	.213	179.8	20.3	-17.6	45	202	
	16009	.460	5.8	17.5	+21.7	76	481	
	16010	.332	150.2	10.2	-22.0	51	313	
	1278i	.862	99.9	320.7	-11.2	2	11 }	277 c
	16013	.873	106.2	319.6	-16.7	30	184 }	
	16015	.986	82.8	301.0	+ 6.1	12	53	220 s

Group 16011. Apr. 15 - 16. Tiny spots.
Group 16012. Apr. 15 - 18. A small spot.
Group 16013. Apr. 16 - 26. At first a regular spot with a small companion to the south. On April 18 the companion is joined by other small spots and this whole portion rotates in a clockwise direction to form a small variable stream.
Group 16014. Apr. 17 - 19. One or two small spots.
Group 16015. Apr. 17 - 28. Two or three small fluctuating spots until April 20, after which there is a variable cluster which dies out rapidly.

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
1949			°	°	°			
	16016	.990	80.4	299.8	+ 8.6	38	147	207 *p*
		.889	72.9					266
		.938	95.8					192
		.941	61.6					131
Apr. 17			(-26.0)	(20.4)	(- 5.4)	(345)	(1898)	(2431)
107.414		.968	286.5					176
G		.951	305.1					125
	16001	.985	277.8	85.6	+ 6.7	45	259	141 *c*
	1278j	.887	257.9	69.2	-13.2	0	7	62 *c*
	16014	.888	283.9	67.3	+ 9.7	14	82	137 *c*
	16006	.622	317.5	33.5	+22.5	4	15	
	16012	.680	327.5	31.4	+30.1	0	7	
	16008	.313	227.0	20.3	-17.5	43	194	
	16009	.480	342.1	15.6	+21.8	81	536	
	16010	.288	192.3	10.3	-21.5	54	290	
	16013	.734	107.7	319.9	-16.5	41	183	204 *c*
	16015	.905	81.1	302.7	+ 5.7	30	174	312 *c*
	16016	.951	78.9	295.9	+ 8.8	43	244	335 *c*
		.951	107.5					162
Apr. 18			(-25.9)	(6.5)	(- 5.3)	(355)	(1991)	(1654)
108.347		.969	258.2					155
G		.908	299.8					211
		.898	266.8					139
		.770	296.3					314
		.765	315.2					431
	16014	.960	282.2	66.4	+10.1	11	83	163 *c*
	16008	.473	242.4	20.1	-17.3	39	191	
	16009	.565	324.8	14.8	+22.5	107	575	
	16010	.385	222.9	10.5	-21.3	55	240	
	16013	.581	110.8	319.9	-16.2	31	140	
	16015	.796	78.4	302.8	+ 6.0	24	149	118 *c*
	16016	.863	76.8	296.2	+ 8.6	54	271	268 *c*
	16017	.977	99.0	276.1	- 9.9	77	536	414 *c*
	16018	.994	74.2	272.3	+15.0	31	149	97 *c*
		.847	108.7					125
		.979	82.0					187
Apr. 19			(-25.8)	(354.2)	(- 5.2)	(429)	(2334)	(2622)

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
109.319		.962	294.1					97
C		.954	264.1					285
		.950	285.5					172
		.882	291.2					172
		.855	312.3					209
		.846	302.9					446
		.782	287.2					226
	16019	.774	257.2	31.9	-13.1	2	29	
	16008	.648	248.3	20.4	-17.8	27	173	
	16009	.676	312.1	14.1	+22.6	72	560	
	16010	.546	236.5	10.6	-22.0	37	233	
	16013	.408	119.6	319.7	-16.3	45	161	
	16015	.642	73.7	303.1	+ 6.4	14	61	
	16016	.740	72.6	295.8	+ 9.2	50	356	170 *c*
	16017	.907	98.6	275.9	-10.0	86	420	354 *c*
	16018	.970	71.7	267.9	+16.3	72	503	242 *c*
		.895	62.5					84
		.907	79.3					116
		.976	103.1					392
Apr. 20			(-25.7)	(341.3)	(- 5.1)	(405)	(2496)	(2965)
110.349		.946	290.4					342
G		.934	302.6					683
		.901	283.2					308
	16019	.895	257.4	31.4	-13.5	2	20	214 *c*
	16008	.801	251.6	20.4	-17.6	17	84	91 *c*
	16009	.797	304.0	13.4	+23.0	63	322	208 *c*
	16010	.705	243.8	10.5	-21.8	43	234	
	16020	.519	352.4	332.1	+25.8	7	38	
	16013	.248	145.5	319.3	-16.7	39	178	
	16015	.453	67.0	303.0	+ 5.6	26	109	
	16016	.570	66.6	295.9	+ 8.8	49	282	
	16017	.782	98.8	276.2	-10.0	79	445	291 *c*
	16018	.901	69.2	266.6	+16.3	78	590	327 *c*
	16021	.935	76.0	260.3	+11.2	6	19	242 *c*
	16022	.932	86.2	259.5	+ 1.7	3	15	235 *c*
		.841	79.9					166
		.929	100.8					815
Apr. 21			(-25.6)	(327.7)	(- 5.0)	(412)	(2336)	(3922)

Group 16016. Apr. 17 - 29. Return of Group 15976; third appearance. A small stream of normal type. The leader, a regular spot, is the only surviving component after April 23.

Group 16017. Apr. 19-May 1. A regular spot, closely followed by a large diminishing companion. On April 27 other small spots appear ahead of it.

Group 16018. Apr. 19-May 1. A stream led by a stable regular spot. The follower is a collection of variable spots and becomes the largest component though it is also the first to die out.

Group 16019. Apr. 20 - 21. A small spot.

Group 16020. Apr. 21 - 23. A few small spots on April 21; a wide pair on the other days.

Group 16021. Apr. 21 - 25. A small spot.

Group 16022. Apr. 22 - 27. Return of Group 15979. 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
1949			°	°	°			
111.315		.980	297.3					590
C		.965	257.1					164
		.962	283.3					216
		.887	311.3					93
	16008	.905	252.9	19.9	-17.6	10	71	144 *c*
	16009	.898	298.7	13.6	+23.0	29	140	235 *c*
	16010	.831	246.9	10.3	-21.9	44	204	301 *c*
	16023	.696	262.4	359.1	- 8.9	5	17	
	16020	.575	329.7	333.6	+25.0	11	41	
	16013	.210	198.7	319.0	-16.4	23	108	
	16015	.281	48.2	302.9	+ 5.9	25	128	
	16016	.386	52.5	297.0	+ 8.8	31	178	
	16017	.629	99.6	276.1	- 9.9	70	441	
	16018	.797	65.5	266.2	+16.0	85	560	144 *c*
	16021	.834	73.5	260.7	+10.8	8	32	196 *f*
	16022	.829	85.1	259.5	+ 1.2	4	15	65 *c*
		.818	102.9					375
		.869	88.7					131
		.951	89.3					104
		.951	59.5					86
Apr. 22			(-25.5)	(315.0)	(- 5.0)	(345)	(1935)	(2844)
112.356		.943	235.9					83
G	16008	.978	253.0	19.8	-17.6	5	33	259 *f*
	16009	.968	295.4	12.8	+23.0	8	61	626 *c*
	16010	.934	248.4	10.3	-21.9	37	214	668 *c*
	16023	.846	261.3	359.1	-10.0	6	24	96 *c*
	16020	.685	316.6	332.5	+25.6	9	50	
	16013	.362	233.8	318.9	-17.0	20	109	
	16024	.194	220.2	308.6	-13.4	4	24	
	16015	.191	348.5	303.4	+ 5.9	24	111	
	16016	.253	17.0	296.9	+ 9.0	26	138	
	16017	.433	103.4	276.0	-10.2	72	348	
	16018	.644	59.2	266.4	+15.1	88	470	
	16021	.688	68.5	260.7	+10.8	5	19	
	16022	.674	83.0	259.4	+ 1.1	0	5	
	16025	.967	78.4	227.4	+ 9.9	17	118	204 *c*
		.831	93.0					100
		.901	56.5					115
		.920	68.4					184
		.946	100.9					377
Apr. 23			(-25.4)	(301.2)	(- 4.9)	(321)	(1724)	(2712)

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
113.422		.891	285.4					122
G	16010	.992	248.5	10.9	-21.9	53	378	273 *f*
	16023	.946	261.1	358.4	-10.0	3	21	139 *c*
	16013	.565	245.4	319.6	-17.6	9	75	
	16024	.391	247.9	308.8	-12.9	4	16	
	16015	.328	300.5	303.5	+ 4.9	32	179	
	16016	.309	320.0	298.6	+ 8.9	21	104	
	16017	.208	117.5	276.3	-10.2	69	346	
	16018	.488	45.1	266.2	+15.6	77	445	
	16026	.441	115.1	262.8	-15.1	0	10	
	16021	.506	59.9	260.8	+10.4	2	9	
	16022	.476	78.7	259.4	+ 1.1	1	8	
	16027	.728	94.5	240.4	- 6.6	24	92	198 *f*
	16025	.875	76.1	227.8	+ 9.7	21	100	140 *c*
	16028	.967	68.5	214.9	+19.3	17	100	163 *nf*
		.803	66.4					140
		.897	102.2					302
		.968	78.5					243
Apr. 24			(-25.3)	(287.1)	(- 4.8)	(333)	(1883)	(1720)
114.358		.961	283.3					258
G		.954	259.2					277
		.898	299.5					140
	16013	.693	247.1	317.1	-19.1	11	70	85 *p*
	16015	.516	287.6	304.2	+ 4.8	30	200	
	16016	.464	300.3	298.6	+ 9.1	21	96	
	16017	.101	197.6	276.6	-10.3	65	310	
	16018	.367	22.1	266.6	+15.2	75	458	
	16026	.240	132.8	264.4	-14.0	4	17	
	16021	.349	41.5	261.3	+10.5	4	12	
	16022	.280	69.1	259.7	+ 1.1	2	8	
	16029	.316	119.5	258.4	-13.4	5	33	
	16027	.551	95.6	241.4	- 6.9	22	152	
	16025	.757	72.7	227.8	+ 9.8	15	74	219 *f*
	16028	.901	65.1	214.6	+19.9	28	107	310 *nf*
	16030	.978	112.9	196.4	-23.3	42	249	227 *c*
		.816	56.3					107
		.894	84.7					138
		.936	75.8					1008
		.968	102.5					155
Apr. 25			(-25.1)	(274.8)	(- 4.7)	(324)	(1786)	(2924)

Group 16023. Apr. 22 - 24. A single small spot on April 22 and 24; a pair on April 23.
Group 16024. Apr. 23 - 24. A pair of small spots.
Group 16025. Apr. 23 - 29. A small diminishing spot.
Group 16026. Apr. 24 - 26. A small spot.
Group 16027. Apr. 24-May 3. A stream of changing spots. The leader has become a regular spot by April 28 and it then remains stable. The following part is variable and dies out as the limb is approached.
Group 16028. Apr. 24-May 5. A small, slowly-diminishing regular spot with occasional companions.
Group 16029. Apr. 25 - 30. A short string of small spots, of which the follower is the largest component.
Group 16030. Apr. 25-May 7. Return of Group 15998. A regular spot.

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

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
115.477		.968	298.9					176
G		.952	262.4					127
		.892	281.6					111
		.883	312.0					36
		.879	293.8					223
	16013	.879	256.0	321.6	-14.5	0	7	259 *sf*
	16015	.705	281.9	303.7	+ 5.0	18	115	176 *c*
	16016	.656	289.8	298.5	+ 9.2	16	101	85 *p*
	16017	.305	250.1	276.9	-10.3	47	271	
	16018	.357	342.8	266.2	+15.2	95	496	
	16026	.181	208.0	265.0	-13.8	2	13	
	16022	.104	0.2	259.9	+ 1.3	1	6	
	16029	.173	162.0	256.9	-14.0	28	86	
	16027	.280	100.6	244.0	- 7.4	13	66	
	16025	.580	66.4	227.5	+ 9.6	9	30	
	16031	.701	53.0	223.2	+21.2	1	8	
	16028	.782	59.6	214.3	+20.1	23	106	291 *nf*
	16030	.904	114.0	195.9	-23.6	50	288	228 *c*
		.766	73.2					173
		.873	72.0					689
		.918	105.0					140
		.968	70.2					220
Apr. 26			(-25.0)	(260.0)	(- 4.6)	(303)	(1593)	(2934)
116.344		.968	286.1					221
G		.941	252.8					396
		.933	264.7					140
	16015	.808	279.7	301.4	+ 5.1	29	127	275 *c*
	16016	.789	285.5	298.7	+ 9.3	19	90	185 *c*
	16017	.490	255.4	277.3	-11.0	54	252	
	16018	.455	318.5	266.7	+15.5	80	444	
	16022	.229	297.0	260.2	+ 1.5	3	13	
	16029	.218	216.6	256.2	-14.5	23	112	
	16027	.063	125.3	245.5	- 6.5	33	133	
	16025	.426	56.7	227.4	+ 9.3	5	24	
	16031	.570	41.7	224.6	+21.0	1	7	
	16028	.673	52.5	213.9	+20.4	23	109	176 *f*
	16030	.816	115.9	195.5	-23.6	57	261	144 *c*
		.763	75.5					148
		.788	66.3					128
		.838	105.9					93
		.878	78.7					153
		.904	67.9					210
		.930	118.7					274
		.931	107.1					336
		.964	96.3					189
		.970	76.1					275
		.972	64.1					213
Apr. 27			(-24.9)	(248.5)	(- 4.5)	(327)	(1572)	(3556)

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
117.322	16015	.910	279.3	300.0	+ 6.5	5	15	313 *c*
C	16016	.901	282.7	298.4	+ 9.4	13	70	223 *c*
	16017	.668	258.3	277.2	-11.1	34	226	
	16018	.609	303.5	267.3	+15.8	68	218	
	16029	.386	241.9	256.1	-14.5	30	95	
	16032	.328	252.7	254.0	- 9.8	5	24	
	16027	.201	261.7	247.1	- 6.0	51	241	
	16025	.270	30.5	227.7	+ 9.0	2	8	
	16028	.544	39.9	213.8	+20.5	11	94	
	16030	.689	120.3	195.3	-23.6	34	249	
		.790	64.5					80
		.824	108.1					115
		.838	121.1					80
		.854	93.5					84
		.910	74.5					390
		.934	62.3					196
Apr. 28			(-24.7)	(235.6)	(- 4.4)	(253)	(1240)	(1481)
118.343		.928	300.3					196
G		.927	251.0					135
		.925	288.8					161
		.834	279.7					153
	16016	.977	280.2	298.7	+ 9.0	21	83	270 *f*
	16017	.823	259.6	277.4	-11.0	34	178	383 *p*
	16018	.764	293.8	268.3	+15.0	44	214	220 *c*
	16032	.554	259.2	255.4	- 9.6	4	17	
	16029	.566	249.8	255.3	-14.8	14	83	
	16027	.411	265.0	246.3	- 6.0	74	472	
	16025	.249	336.4	227.9	+ 8.9	0	4	
	16028	.438	18.3	213.7	+20.2	20	92	
	16030	.542	129.0	194.8	-23.7	51	237	
	16033	.984	70.0	144.8	+18.7	38	211	136 *p*
		.822	71.0					492
		.847	60.0					232
		.916	53.0					125
		.966	107.2					194
Apr. 29			(-24.6)	(222.1)	(- 4.3)	(300)	(1591)	(2697)
119.318		.970	283.6					200
C		.942	266.2					162
		.870	256.4					265
	16017	.927	260.0	277.3	-10.8	29	168	203 *c*
	1279a	.924	275.8	276.1	+ 3.7	3	14	138 *c*
	16018	.883	289.4	268.5	+14.9	28	177	249 *c*
	16029	.734	253.9	255.8	-14.6	5	32	125 *c*
	16027	.610	265.2	246.7	- 6.3	55	315	
	16034	.423	261.6	234.0	- 7.3	6	26	
	16028	.422	350.6	213.4	+20.3	12	74	

Group 16031. Apr. 26 - 27. A tiny spot.
Group 16032. Apr. 28 - 29. A pair of small spots.
Group 16033. Apr. 29-May 11. A stable regular spot.
Group 16034. Apr. 30-May 2. A small spot.

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
1949			°	°	°			
	16030	.411	145.6	194.6	-23.8	35	214	
	16033	.925	67.9	144.7	+18.5	29	165	194 *f*
		.797	51.7					81
		.870	65.5					100
		.906	108.4					179
Apr. 30			(-24.4)	(209.2)	(- 4.2)	(202)	(1185)	(1896)
120.322		.916	274.7					139
G	16017	.990	259.8	278.2	-10.7	31	216	549 *f*
	16018	.968	286.2	269.6	+14.5	22	157	796 *c*
	16027	.785	266.0	247.7	- 5.6	45	263	463 *c*
	16034	.630	263.8	235.0	- 7.1	7	48	
	16028	.496	325.6	213.3	+20.2	14	64	
	16030	.341	175.8	194.4	-23.9	40	208	
	16035	.405	20.2	187.6	+18.2	20	77	
	16036	.484	59.8	170.9	+10.3	5	17	
	16033	.825	64.1	144.7	+18.5	41	193	172 *f*
	16037	.891	81.2	133.9	+ 5.9	5	25	84 *c*
	16038	.975	94.2	118.8	- 5.0	0	11	414 *c*
		.790	111.0					119
		.908	110.4					120
		.950	68.0					374
		.972	82.4					165
May 1			(-24.2)	(196.0)	(- 4.1)	(230)	(1279)	(3395)
121.307		.962	255.2					223
G		.955	282.8					282
		.863	292.6					155
	16027	.912	266.0	248.7	- 5.3	39	235	453 *c*
	16034	.797	264.1	235.7	- 7.1	6	20	84 *c*
	16028	.588	310.2	211.1	+18.7	12	48	
	16030	.387	207.0	193.9	-24.0	38	182	
	16035	.384	343.1	189.6	+17.5	25	107	
	16036	.314	37.3	171.8	+10.5	11	38	
	16033	.693	58.0	144.8	+18.4	37	198	
	16037	.762	79.2	134.3	+ 5.6	4	18	80 *c*
	16038	.903	94.0	118.4	- 5.3	2	18	495 *c*
	16039	.942	74.4	114.4	+13.2	3	13	175 *f*
		.841	112.8					270
		.845	62.6					315
		.881	78.1					166
		.957	46.7					423
May 2			(-24.0)	(182.9)	(- 4.0)	(177)	(877)	(3121)

U. T.	Group No.	MEASURES		POSITION		AREA		
		Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ
1949			°	°	°			
122.325		.960	290.2					174
C		.873	286.1					202
	16027	.983	265.2	249.0	- 5.5	29	222	558 *c*
	16028	.736	300.3	211.5	+18.8	5	30	165 *c*
	16030	.511	226.8	193.5	-24.0	30	190	
	16035	.491	318.6	189.4	+17.9	81	405	
	16036	.258	350.8	171.9	+10.8	18	80	
	16033	.548	47.1	144.6	+18.3	31	232	
	16037	.555	74.2	137.2	+ 5.3	27	162	
	16038	.771	93.5	119.1	- 5.2	2	10	159 *f*
	16039	.849	72.2	113.7	+12.8	19	83	186 *c*
		.909	62.9					524
		.933	100.6					482
May 3			(-23.8)	(169.5)	(- 3.9)	(242)	(1414)	(2450)
123.328		.957	282.4					187
C		.925	256.6					343
		.842	279.3					152
		.793	289.9					135
	16028	.865	295.3	212.1	+19.6	7	26	202 *c*
	16030	.654	237.0	192.9	-23.8	24	135	
	16035	.639	303.8	189.9	+17.6	62	367	
	16036	.379	310.2	173.2	+10.5	21	168	
	16033	.424	26.6	144.7	+18.5	35	183	
	16037	.338	63.1	138.7	+ 5.2	66	352	
	16038	.583	93.4	120.6	- 5.0	1	9	
	16039	.716	68.2	113.4	+12.6	26	118	75 *c*
	16040	.778	58.8	110.9	+21.0	9	54	280 *c*
	16041	.945	81.4	86.2	+ 6.8	14	63	124 *c*
		.924	102.8					213
		.948	62.9					307
May 4			(-23.6)	(156.2)	(- 3.8)	(265)	(1475)	(2018)
124.370		.958	266.2					114
C		.942	277.2					226
		.891	291.0					552
	16028	.951	292.0	211.7	+19.6	3	18	148 *c*
	16030	.797	242.4	192.9	-24.0	12	83	82 *c*
	16035	.799	294.8	191.7	+17.2	41	216	103 *c*
	16036	.560	296.7	173.0	+11.3	49	261	
	16033	.380	354.5	144.7	+18.4	33	159	
	16037	.166	12.5	140.4	+ 5.6	91	497	
	16039	.553	60.5	113.1	+12.5	13	101	

Group 16035. May 1 - 7. A short-lived group of variable spots.
Group 16036. May 1 - 7. A scattered cluster, developing from a pair of small spots and disappearing suddenly before reaching the limb.
Group 16037. May 1 - 11. A stream, developing from a tiny spot when first seen. The leader is the most stable component and alone remains at the west limb.
Group 16038. May 1 - 4. A tiny spot.
Group 16039. May 2 - 12. A small spot with an occasional companion; nothing is seen on May 11.
Group 16040. May 4 - 7. A few small spots.
Group 16041. May 4 - 14 Return of Group 16001; third appearance. A persistent small spot.

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
1949			°	°	°			
	16040	.628	48.0	112.5	+21.6	11	77	
	16041	.846	79.4	85.8	+ 6.9	20	88	113 *c*
	16042	.989	106.2	60.5	−16.6	102	626	465 *c*
		.820	106.2					163
		.933	114.6					211
		.961	77.4					214
May 5			(−23.4)	(142.5)	(− 3.7)	(375)	(2126)	(2391)
125.345 G		.967	277.6					152
	16035	.910	290.9	192.3	+17.3	19	113	644 *c*
	16030	.898	245.0	192.3	−24.0	2	46	290 *c*
	16036	.707	289.6	172.2	+11.0	45	237	211 *c*
	16033	.449	326.4	144.7	+18.4	38	187	
	16037	.245	310.0	140.4	+ 5.5	117	733	
	16040	.487	30.4	114.3	+21.3	3	10	
	16039	.396	44.8	113.0	+12.8	9	40	
	16043	.421	107.7	105.6	−10.6	4	16	
	16041	.708	76.2	85.9	+ 7.1	13	84	
	16042	.932	106.5	61.0	−16.7	120	513	446 *c*
		.889	75.2					318
		.927	119.8					239
		.932	57.5					200
		.957	96.2					173
May 6			(−23.2)	(129.6)	(− 3.6)	(370)	(1979)	(2673)
126.345 C		.934	252.1					91
		.869	300.9					99
	16030	.970	244.8	192.2	−25.3	0	14	170 *f*
	16035	.972	288.8	190.6	+17.3	0	15	467 *c*
	16036	.840	285.8	171.6	+11.2	24	133	376 *c*
	16033	.581	309.4	144.4	+18.5	43	177	
	16037	.432	290.9	140.1	+ 5.6	122	710	
	16039	.289	10.9	113.1	+12.9	9	29	
	16040	.424	8.0	112.7	+21.2	5	26	
	16044	.068	100.7	112.5	− 4.2	8	26	
	16041	.538	70.4	85.7	+ 7.3	14	73	
	16042	.830	107.8	60.9	−16.7	82	501	246 *c*
		.797	73.5					235
		.857	121.8					180
		.870	98.2					144
		.949	71.4					173
May 7			(−23.0)	(116.3)	(− 3.5)	(307)	(1704)	(2181)

U. T.	Group No.	MEASURES		POSITION		AREA		
		Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ
1949			°	°	°			
127.367 G		.949	295.0					179
		.945	243.3					378
		.944	283.2					544
		.938	257.9					325
	16033	.726	299.8	144.3	+18.5	37	153	
	16037	.634	284.2	140.8	+ 6.3	123	655	
	16045	.413	243.6	125.1	−13.7	18	91	
	16044	.225	263.0	115.7	− 4.9	9	38	
	16039	.329	329.2	112.7	+13.0	4	17	
	16043	.142	205.1	106.3	−10.8	5	26	
	16041	.352	58.5	85.3	+ 7.5	12	55	
	16042	.687	110.4	60.8	−16.3	89	460	
	16046	.830	68.0	49.8	+16.1	2	18	119 *c*
		.782	100.2					146
		.942	79.2					150
		.955	108.9					208
		.955	68.8					226
		.980	60.4					308
May 8			(−22.8)	(102.8)	(− 3.4)	(299)	(1513)	(2583)
128.417 C		.973	280.6					141
		.964	302.2					102
	16033	.855	293.8	144.2	+18.4	28	152	106 *c*
	16037	.804	280.6	141.4	+ 6.5	90	507	143 *c*
	16045	.611	251.4	125.3	−13.8	52	258	
	16044	.443	265.2	115.1	− 5.0	51	121	
	16039	.482	303.7	113.1	+12.5	1	6	
	16041	.192	18.2	85.5	+ 7.2	9	38	
	16042	.507	117.8	61.1	−16.4	75	391	
	16046	.679	62.7	50.3	+15.6	5	14	
		.852	63.9					136
		.856	76.0					95
		.898	106.8					199
		.932	114.7					224
		.938	55.6					283
		.969	64.0					350
		.976	108.2					173
May 9			(−22.6)	(88.9)	(− 3.2)	(311)	(1487)	(1952)
129.356 G		.843	272.9					74
		.811	302.1					97
	16033	.941	290.7	144.2	+18.2	26	147	230 *c*
	16037	.927	279.1	143.6	+ 7.2	76	284	353 *c*

Group 16042. May 5 - 17. A composite spot which quickly breaks up; the largest part soon becomes regular and it is the sole survivor at the west limb.
Group 16043. May 6 - 8. A small spot, not seen on May 7.
Group 16044. May 7 - 12. A short-lived variable stream.
Group 16045. May 8 - 12. A stream of changing spots.
Group 16046. May 8 - 9. A pair of tiny spots.

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
1949			°	°	°			
	16045	.752	253.7	124.4	-14.2	47	244	217 *c*
	16044	.628	266.5	115.3	- 4.6	32	160	
	16039	.661	294.3	114.6	+13.3	1	9	
	16041	.241	319.1	85.6	+ 7.4	9	58	
	16042	.350	132.6	61.0	-16.7	67	393	
		.782	58.7					82
		.852	117.5					305
		.866	51.0					408
		.868	107.7					252
		.935	61.9					637
		.942	126.7					118
		.950	95.8					109
		.964	116.8					276
May 10			(-22.3)	(76.5)	(- 3.1)	(258)	(1295)	(3158)
130.434 C		.939	250.6					190
		.876	282.5					91
		.864	260.9					152
		.854	298.1					178
	16037	.991	277.1	144.0	+ 6.6	79	484	662 *f*
	16033	.991	288.8	143.0	+18.2	47	199	195 *nf*
	16045	.895	256.3	125.5	-13.6	44	184	190 *c*
	16044	.797	266.3	115.0	- 4.8	18	52	150 *c*
	16047	.670	249.3	102.8	-16.0	16	37	
	16041	.432	294.1	85.6	+ 7.4	12	36	
	16042	.231	174.9	61.1	-16.3	76	408	
	1279b	.864	115.1	4.2	-23.1	4	20	156 *c*
		.764	121.6					102
		.765	45.4					203
		.848	58.6					310
		.907	123.7					234
		.935	52.9					153
May 11			(-22.1)	(62.3)	(- 3.0)	(296)	(1420)	(2966)
131.391 C		.890	294.6					132
	16045	.964	255.8	124.2	-14.5	37	152	235 *c*
	16039	.928	283.3	116.4	+11.2	3	20	136 *c*
	16044	.919	266.0	116.2	- 4.8	2	23	192 *c*
	16047	.809	252.1	102.7	-16.1	9	36	129 *c*
	16041	.611	286.4	85.7	+ 7.6	8	33	
	16042	.305	219.6	61.2	-16.4	58	357	
	16048	.981	93.1	330.8	- 3.6	33	199	256 *c*
		.772	54.6					309
May 12			(-21.8)	(49.6)	(- 2.9)	(150)	(820)	(1389)

U. T.	Group No.	MEASURES		POSITION		AREA		
		Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ
1949			°	°	°			
132.326 C		.968	291.8					216
		.967	265.2					191
		.956	282.1					203
		.908	298.0					156
	1279c	.946	256.4	108.1	-13.8	9	52	263 *c*
	16041	.761	282.6	85.5	+ 7.7	7	27	137 *c*
	16042	.453	237.7	60.6	-16.6	56	343	
	16048	.911	92.0	331.7	- 3.0	24	158	440 *sf*
	16049	.949	62.7	329.3	+24.7	20	134	159 *c*
		.949	105.6					190
May 13			(-21.6)	(37.2)	(- 2.8)	(116)	(714)	(1955)
133.336 C		.937	296.7					155
		.922	257.8					198
	16041	.893	279.8	86.2	+ 7.5	2	20	94 *c*
	16042	.636	247.6	61.5	-16.1	41	284	
	16050	.332	52.5	8.5	+ 9.0	5	63	
	16048	.780	91.7	332.8	- 3.0	25	202	226 *f*
	16049	.870	59.3	328.6	+24.8	28	153	172 *c*
		.850	107.1					83
		.902	69.9					76
		.935	114.5					153
		.944	80.7					282
May 14			(-21.3)	(23.9)	(- 2.7)	(101)	(722)	(1439)
134.449 C		.972	279.5					115
		.967	285.4					127
		.917	253.2					136
		.888	306.6					83
		.879	284.8					150
		.768	242.4					60
	16042	.801	251.7	61.4	-16.1	41	224	83 *c*
	16050	.217	345.1	12.4	+ 9.5	6	15	
	16048	.602	92.9	332.3	- 3.8	35	207	49 *f*
	16049	.767	54.0	326.2	+24.8	14	74	111 *c*
	16051	.797	82.0	317.0	+ 4.8	6	18	219 *f*
		.792	67.4					100
		.889	71.4					107
		.956	80.0					185
		.967	95.2					149
May 15			(-21.0)	(9.2)	(- 2.6)	(102)	(538)	(1674)

Group 16047. May 11 - 12. A pair of small spots.
Group 16048. May 12 - 23. A regular spot accompanied by a number of variable companions in its rear from May 15 to May 22.
Group 16049. May 13 - 19. One or two small spots.
Group 16050. May 14 - 18. A few varying spots.
Group 16051. May 15 - 24. A small stream of variable spots which undergoes its whole life-history on the disk.

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
1949			°	°	°			
135.457		.962	282.5					144
G		.958	302.5					138
		.917	187.6					11
		.836	291.3					114
		.807	301.5					144
	16042	.913	253.5	61.2	-16.1	50	242	364 *c*
	16050	.352	303.1	13.1	+ 8.6	3	7	
	16048	.421	96.9	331.1	- 5.2	50	313	
	16049	.643	45.3	325.7	+24.6	12	55	
	16051	.620	80.7	318.1	+ 3.8	13	68	
	16052	.979	100.3	277.6	-10.6	26	192	992 *p*
		.769	71.9					249
		.880	79.9					522
May 16			(-20.7)	(355.8)	(- 2.5)	(154)	(877)	(2678)
136.335		.951	262.3					74
G		.951	286.9					200
	16042	.975	254.3	61.2	-15.8	24	192	369 *c*
	16053	.876	294.3	42.0	+19.8	2	11	213 *c*
	16054	.451	351.1	348.6	+24.0	11	44	
	16048	.224	103.0	331.6	- 5.2	52	327	
	16049	.545	33.2	325.1	+24.8	10	35	
	16051	.437	77.1	319.0	+ 3.4	28	108	
	16055	.811	96.7	290.2	- 6.8	0	8	182 *c*
	16052	.913	100.3	278.5	-10.4	25	134	364 *c*
	16056	.987	113.9	263.6	-24.0	21	158	94 *c*
		.931	58.1					77
		.937	82.5					354
		.962	70.1					266
		.977	89.9					78
May 17			(-20.5)	(344.2)	(- 2.4)	(173)	(1017)	(2271)
137.340		.981	251.7					144
G		.947	279.4					71
		.866	253.0					102
		.846	315.4					149
		.822	306.3					169
		.790	238.8					166
	16053	.940	291.1	38.7	+19.0	7	23	445 *c*
	16054	.524	327.2	348.9	+23.9	57	267	
	16048	.045	200.4	331.8	- 4.6	53	254	
	16049	.455	6.7	327.6	+24.6	9	41	
1949			°	°	°			
	16051	.203	62.4	320.6	+ 3.2	26	117	
	16052	.790	101.2	279.2	-10.2	37	241	141 *f*
	16056	.945	115.2	261.1	-24.5	48	254	422 *c*
		.843	111.2					95
		.862	79.6					190
		.903	68.0					262
		.937	89.9					176
		.940	99.2					331
		.940	106.1					248
		.948	168.7					14
		.964	79.2					148
May 18			(-20.2)	(330.9)	(- 2.2)	(237)	(1197)	(3273)
138.429		.969	292.9					159
G		.936	312.1					192
		.926	302.5					329
		.926	251.9					224
		.880	243.5					261
		.820	303.9					238
	16054	.662	311.3	349.4	+24.1	62	318	
	16048	.281	260.7	332.6	- 4.6	46	213	
	16049	.482	342.5	325.7	+25.2	3	17	
	16051	.119	322.7	320.6	+ 3.3	23	108	
	16052	.607	103.4	279.9	- 9.7	49	266	
	16056	.852	117.9	260.8	-24.6	47	217	210 *c*
		.844	69.5					297
		.844	104.1					339
		.860	82.9					144
		.913	92.3					194
		.971	81.1					164
May 19			(-19.9)	(316.5)	(- 2.1)	(230)	(1139)	(2751)
139.422		.966	310.3					108
G		.957	253.9					212
		.956	280.7					114
		.941	244.5					266
		.941	299.5					333
		.880	312.5					71
		.843	235.6					147
		.821	283.8					99
	16057	.845	255.3	0.4	-13.5	7	20	95 *c*
	16054	.793	302.5	350.2	+23.8	58	412	112 *c*

Group 16052. May 16 - 27. Return of Group 16017. A small stream developing from a single spot at the east limb. On May 23 only the leader and follower remain and on the next day only the follower.
Group 16053. May 17 - 18. A pair of tiny spots.
Group 16054. May 17 - 23. A small stream of normal type appearing near the C.M.
Group 16055. May 17 - 25. Intermittent. One or two small faint spots.
Group 16056. May 17 - 28. A pair of small spots, of which the leader is the longer-lived.
Group 16057. May 20 - 21. A pair of tiny spots.

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
1949			°	°	°			
	16048	.499	263.9	333.1	- 4.8	40	215	
	16051	.325	286.0	321.6	+ 3.2	24	90	
	16058	.341	121.1	286.1	-12.0	1	5	
	16052	.427	108.1	279.2	- 9.4	37	201	
	16056	.735	122.5	260.6	-24.6	41	191	108 *c*
		.882	81.9					191
		.954	62.5					169
		.954	73.2					187
May 20			(-19.5)	(303.4)	(- 2.0)	(208)	(1134)	(2212)
140.326 G		.978	264.3					108
		.975	247.9					126
		.930	241.4					246
		.929	308.5					229
		.900	281.5					156
		.827	254.8					100
	16057	.940	256.5	1.0	-13.3	6	29	180 *c*
	16054	.883	298.5	349.2	+23.8	48	281	259 *c*
	16048	.679	266.0	334.0	- 4.1	34	153	
	16051	.501	279.5	320.9	+ 3.0	24	76	
	16059	.066	275.9	295.1	- 1.5	8	30	
	16055	.100	152.7	288.8	- 6.9	2	8	
	16058	.209	151.9	285.6	-12.4	2	21	
	16052	.234	124.3	280.2	- 9.4	25	144	
	16056	.613	130.7	260.6	-25.1	26	141	
		.874	71.7					163
		.881	57.7					155
		.931	109.1					108
		.949	67.3					268
		.958	79.6					215
May 21			(-19.3)	(291.4)	(- 1.9)	(175)	(883)	(2313)
141.354 G		.961	281.1					161
		.959	309.1					158
		.824	303.3					241
	16054	.965	296.1	350.0	+24.6	47	310	318 *c*
	16048	.834	267.0	334.1	- 3.5	25	138	157 *c*
	16051	.692	276.7	321.1	+ 3.3	38	166	
	16059	.305	271.3	295.5	- 1.3	16	62	
	16055	.216	246.8	289.3	- 6.7	3	13	
	16058	.237	219.9	286.7	-12.2	1	11	
	16052.	.142	202.9	281.0	- 9.3	28	127	

U.T.	Group No.	MEASURES		POSITION		AREA		
		Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ
1949			°	°	°			
	16060	.314	123.3	262.3	-11.7	1	8	
	16056	.478	145.7	260.6	-24.9	31	92	
		.837	63.0					125
		.913	79.5					276
		.945	70.8					516
May 22			(-18.9)	(277.8)	(- 1.8)	(190)	(927)	(1952)
142.326 C		.934	296.0					138
		.897	315.4					112
		.885	252.4					119
	16054	.993	294.9	346.4	+24.5	37	155	164 *c*
	16048	.938	266.4	334.5	- 4.0	19	143	383 *sf*
	1280a	.889	300.7	323.1	+26.0	8	24	140 *c*
	16051	.826	274.0	320.3	+ 2.3	18	88	364 *c*
	16059	.511	270.2	295.6	- 1.4	18	88	
	16055	.463	259.0	292.1	- 6.5	1	9	
	16052	.298	241.6	280.4	- 9.7	15	85	
	16056	.398	169.6	260.5	-24.6	10	71	
	16061	.183	53.1	256.6	+ 4.6	35	154	
	16062	.854	76.2	207.6	+10.8	0	17	239 *n*
	16063	.969	72.4	190.8	+16.6	33	166	207 *n*
		.971	117.1					137
May 23			(-18.6)	(265.0)	(- 1.7)	(194)	(1000)	(2003)
143.353 C		.966	297.8					190
		.958	264.5					229
		.956	253.5					223
	16051	.928	275.4	319.1	+ 4.4	5	24	344 *p*
	1280b	.852	270.5	309.6	- 0.4	0	15	95 *c*
	16059	.707	269.8	296.2	- 1.2	33	242	101 *c*
	16052	.466	249.9	277.7	-10.5	9	38	
	16064	.521	341.6	262.1	+28.0	4	16	
	16056	.415	199.8	260.2	-24.4	7	57	
	16061	.141	322.1	256.4	+ 4.9	28	239	
	16065	.288	352.9	253.5	+15.1	6	52	
	16062	.713	72.7	207.6	+11.1	0	14	
	16063	.889	70.4	190.7	+16.6	34	156	341 *c*
	16066	.961	94.1	177.6	- 4.4	16	67	217 *f*
		.787	65.7					215
		.901	119.2					127
		.940	83.3					145
May 24			(-18.3)	(251.4)	(- 1.5)	(142)	(920)	(2227)

Group 16058. May 20 - 25. One or two small spots, not seen on May 23 and 24.
Group 16059. May 21 - 27. Two small spots, appearing near the C.M. and both quickly taking on regular outline.
Group 16060. May 22 - 29. Intermittent. A few faint spots on May 22; a tiny spot on May 28 and 29.
Group 16061. May 23 - 29. A stream of variable spots, appearing suddenly near the C.M. Only the leader remains by May 28.
Group 16062. May 23 - 25. A tiny spot.
Group 16063. May 23-June 2. A small diminishing regular spot, with a distant companion until May 29.
Group 16064. May 24 - 28. Intermittent. A pair of small spots on May 24 and 25. A single one on May 28.
Group 16065. May 24 - 28. A few small spots.
Group 16066. May 24-June 4. A small regular spot, followed by one or two companions until May 29.

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
1949			°	°	°			
144.325		.982	275.6					259
C		.949	269.7					122
		.893	281.6					244
	16059	.857	269.6	297.3	- 1.1	57	284	176 *c*
	16055	.807	262.0	291.9	- 7.2	3	13	76 *c*
	16058	.725	257.8	284.3	- 9.8	3	9	
	16052	.645	255.1	277.7	-10.6	6	19	
	16067	.752	313.2	277.5	+29.8	2	23	85 *c*
	16064	.608	324.4	262.1	+28.2	6	24	
	16056	.515	221.0	260.1	-24.1	9	23	
	16061	.335	288.8	257.0	+ 4.8	25	134	
	16065	.383	317.8	253.9	+15.0	16	53	
	16062	.582	66.2	205.6	+12.4	0	7	
	16063	.775	67.2	190.5	+16.5	25	148	246 *c*
	16066	.886	94.4	176.3	- 4.5	29	164	218 *c*
		.788	123.6					90
		.833	80.1					50
		.927	104.4					147
		.933	122.6					227
		.942	59.4					131
		.947	73.6					342
May 25			(-18.0)	(238.5)	(- 1.4)	(181)	(901)	(2413)
145.342		.963	255.3					163
C		.951	280.6					266
		.896	264.6					249
		.867	254.2					266
		.818	280.2					172
	16059	.960	269.0	298.6	- 1.3	56	243	205 *c*
	16067	.884	304.7	281.4	+29.4	0	7	128 *c*
	16052	.800	257.4	277.5	-10.8	3	17	89 *c*
	16056	.658	234.2	260.6	-23.6	12	50	
	16061	.556	280.2	258.2	+ 4.5	18	94	
	16065	.555	299.4	254.9	+14.6	9	35	
	16063	.626	61.2	190.4	+16.4	28	138	
	16066	.752	95.1	176.6	- 4.7	30	151	137 *c*
	16068	.928	74.4	158.3	+13.9	3	21	206 *f*
	16069	.966	84.3	150.5	+ 5.2	102	588	266 *c*
		.798	70.4					221
		.931	59.9					224
May 26			(-17.6)	(225.1)	(- 1.3)	(261)	(1344)	(2592)

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
146.357		.984	278.3					156
G		.959	255.9					258
		.955	301.7					95
		.952	266.5					129
		.909	246.1					108
		.907	279.5					162
		.859	296.3					133
	16059	.991	269.1	293.6	- 1.1	7	40	107 *c*
	16052	.918	258.9	277.8	-10.6	6	18	238 *f*
	16056	.795	240.2	260.4	-24.0	7	17	72 *c*
	16061	.744	277.1	259.2	+ 4.5	14	56	81 *c*
	16063	.452	48.7	191.0	+16.1	21	117	
	16066	.571	96.9	177.1	- 4.9	43	143	
	16068	.810	72.8	159.2	+13.1	4	14	126 *f*
	16069	.874	83.3	151.2	+ 5.3	75	474	416 *c*
	16070	.961	66.2	139.8	+22.4	19	186	386 *c*
		.926	53.3					105
		.972	92.7					190
		.973	103.0					145
May 27			(-17.3)	(211.6)	(- 1.2)	(196)	(1065)	(2907)
147.349		.965	261.7					188
C		.946	251.1					152
		.942	278.3					163
		.939	289.3					192
		.886	267.0					95
		.848	250.7					53
		.819	290.0					174
	16064	.931	299.5	263.5	+26.8	0	9	157 *nf*
	16060	.898	258.0	261.9	-11.2	2	12	142 *c*
	16061	.889	275.1	260.9	+ 4.0	4	24	72 *f*
	16056	.899	243.4	260.1	-24.2	2	8	80 *c*
	16063	.318	21.7	191.5	+16.0	21	105	
	16066	.372	100.1	177.0	- 4.8	19	125	
	16068	.735	67.1	154.0	+15.8	10	58	77 *c*
	16069	.730	81.9	152.2	+ 5.1	96	505	280 *c*
	16070	.884	63.5	139.7	+22.6	25	160	401 *c*
		.895	48.5					87
		.932	90.6					332
		.933	106.3					274
		.936	75.3					140
May 28			(-16.9)	(198.5)	(- 1.1)	(179)	(1006)	(3059)

Group 16067. May 25 - 26. A pair of tiny spots on May 25; a single spot on the next day.
Group 16068. May 26-June 2. A few small variable spots.
Group 16069. May 26-June 6. Return of Group 16037. A stream, in which both leader and follower soon become regular spots, the former being the larger.
Group 16070. May 27-June 6. A small regular spot, slowly petering 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
1949			°	°	°			
148.346		.978	300.3					209
C		.948	244.8					310
		.940	287.6					241
	16061	.974	274.7	261.9	+ 4.4	4	15	381 *f*
	16060	.963	256.6	259.2	-13.1	0	16	199 *c*
	16063	.318	336.2	192.9	+16.0	26	104	
	16066	.161	117.7	177.1	- 5.1	20	109	
	16068	.549	61.0	155.7	+14.6	5	34	
	16069	.530	81.2	153.8	+ 3.9	92	652	
	16070	.771	59.3	139.6	+22.5	34	144	303 *f*
	16071	.751	106.4	137.9	-12.8	5	25	276 *f*
	16072	.961	74.1	112.4	+15.0	91	465	344 *c*
		.859	94.6					237
		.882	78.3					117
		.938	105.9					143
		.944	64.8					249
May 29			(-16.6)	(185.3)	(- 0.9)	(277)	(1564)	(3009)
149.326		.973	288.4					166
C		.897	290.2					149
	16063	.450	307.9	193.8	+15.2	20	51	
	16066	.137	236.4	178.8	- 5.1	18	69	
	16069	.292	76.4	155.9	+ 3.2	165	779	
	16068	.403	47.0	154.6	+15.5	15	44	
	16071	.569	113.0	139.9	-13.4	22	82	
	16070	.639	51.6	139.6	+22.6	19	131	
	16072	.883	72.8	111.8	+14.7	122	471	255 *c*
		.796	57.2					218
		.835	109.4					160
		.916	63.2					164
		.952	104.8					179
May 30			(-16.2)	(172.3)	(- 0.8)	(381)	(1627)	(1291)
150.392		.948	285.8					284
G		.930	188.3					9
		.925	299.3					388
		.923	250.0					281
		.879	276.4					143
		.841	285.9					463
		.763	297.2					282
	16063	.629	296.1	193.9	+15.5	6	34	
	16066	.364	257.4	179.0	- 5.2	16	72	
	16069	.080	21.0	156.6	+ 3.6	114	927	
	16068	.266	6.8	156.4	+14.5	14	56	

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
	16071	.370	125.1	140.2	-12.9	28	171	
	16070	.499	37.6	139.0	+22.5	23	115	
	1280c	.578	50.0	130.0	+21.1	5	21	
	16072	.735	69.4	113.1	+14.5	57	369	185 *c*
		.759	52.6					174
		.865	60.6					170
		.869	81.0					114
		.920	179.0					6
		.943	171.5					7
		.946	75.8					261
		.955	109.0					247
		.956	65.6					230
		.979	167.9					17
May 31			(-15.8)	(158.2)	(- 0.7)	(263)	(1765)	(3261)
151.659		.949	286.3					162
G		.943	278.1					136
		.922	294.1					146
	16063	.836	288.6	196.5	+15.1	2	8	146 *c*
	16066	.618	261.9	179.3	- 5.4	11	43	
	16069	.286	284.3	157.6	+ 3.6	138	733	
	16068	.329	328.9	151.6	+15.8	3	8	
	16071	.217	173.9	140.1	-12.9	28	128	
	16070	.398	7.3	138.4	+22.6	16	95	
	16072	.477	56.9	117.2	+14.5	39	211	
	16073	.833	76.3	86.1	+11.1	12	94	245 *c*
	16074	.992	105.7	59.2	-15.6	19	96	531 *p*
		.857	60.6					176
		.973	98.0					170
June 1			(-15.3)	(141.5)	(- 0.5)	(268)	(1416)	(1712)
152.325		.970	287.3					301
G		.967	240.9					133
		.924	297.7					103
		.793	295.9					112
	16063	.903	288.3	195.7	+16.2	2	10	145 *c*
	16066	.731	263.3	179.3	- 5.2	10	35	
	16069	.436	278.7	158.2	+ 3.3	136	713	
	16068	.477	303.9	156.8	+14.9	5	15	
	16071	.259	215.7	141.6	-12.5	24	96	
	16070	.401	347.6	138.0	+22.5	16	91	
	16072	.365	45.3	117.2	+14.4	51	218	
	16073	.739	75.1	86.3	+10.5	34	145	76 *c*
	16074	.962	106.1	59.3	-15.5	16	79	366 *sp*

Group 16071. May 29–June 6. A stream of small variable spots.
Group 16072. May 29–June 9. A diminishing regular spot followed by a train of tiny companions until June 4.
Group 16073. June 1 - 11. A stream of variable spots which increases in area and becomes a scattered cluster. From June 7, the leading portion takes the form of two composite spots.
Group 16074. June 1 - 13. Return of Group 16042. A persistent 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
1949			°	°	°			
		.816	61.4					138
		.921	75.6					88
		.938	98.5					196
		.965	58.5					107
June 2			(-15.1)	(132.7)	(- 0.5)	(294)	(1402)	(1765)
153.332 C		.975	285.6					245
		.949	241.9					174
		.901	291.4					203
		.819	285.0					155
	16066	.869	264.0	179.3	- 5.4	4	27	182 *f*
	16069	.634	275.4	158.3	+ 3.2	95	596	
	16075	.642	308.9	152.2	+23.5	1	10	
	16071	.458	240.7	143.4	-13.2	8	59	
	16070	.490	323.6	137.6	+22.8	7	64	
	16072	.256	1.1	119.0	+14.5	30	177	
	16073	.554	69.1	87.6	+11.1	14	89	
	16074	.882	107.4	58.7	-15.4	9	96	413 *sp*
		.966	79.1					211
June 3			(-14.7)	(119.3)	(- 0.3)	(168)	(1118)	(1583)
154.347 G		.965	292.3					323
		.926	281.1					149
		.908	234.7					122
		.896	302.1					179
		.809	288.9					195
	16066	.962	265.2	179.7	- 4.6	9	20	226 *f*
	16069	.807	274.0	159.4	+ 3.1	129	612	376 *c*
	16075	.766	300.4	151.4	+22.6	10	54	89 *c*
	16071	.635	249.1	143.3	-13.2	18	83	
	16070	.625	308.3	137.8	+22.5	10	31	
	16076	.365	259.9	126.9	- 3.8	4	10	
	16072	.327	321.2	118.1	+14.5	33	173	
	16073	.374	55.1	87.7	+12.1	52	182	
	1280d	.676	119.5	67.4	-19.6	0	3	
	16074	.752	110.5	59.2	-15.4	16	61	80 *sf*
	16077	.946	71.1	36.1	+17.8	3	21	485 *c*
		.844	116.7					127
		.860	50.5					145
		.885	64.0					171
		.891	127.1					112
		.946	55.3					140
		.980	64.1					84
June 4			(-14.3)	(105.9)	(- 0.2)	(284)	(1250)	(3003)
1949			°	°	°			
155.367 G		.980	281.9					140
		.960	295.1					100
	16069	.924	273.5	159.6	+ 3.2	73	546	931 *c*
	1280e	.919	285.0	158.2	+13.7	3	9	290 *c*
	16075	.882	295.6	151.5	+22.3	17	57	153 *c*
	16071	.800	253.1	144.1	-13.5	10	56	146 *c*
	16070	.760	300.5	137.4	+22.6	14	23	161 *c*
	16076	.590	264.2	128.3	- 3.4	13	51	
	16072	.507	300.1	119.2	+14.5	32	177	
	16073	.227	13.1	89.4	+12.6	69	356	
	16074	.597	115.9	58.7	-15.1	13	34	
	16077	.827	69.1	38.7	+17.0	4	18	379 *c*
		.872	75.7					115
		.924	111.5					206
		.941	62.3					267
		.959	79.1					299
June 5			(-13.9)	(92.4)	(- 0.1)	(248)	(1327)	(3187)
156.374 G		.952	284.3					148
	16069	.984	273.3	158.5	+ 3.3	118	695	554 *c*
	16075	.972	292.7	154.1	+22.0	0	4	175 *nf*
	16071	.917	255.1	144.6	-13.6	7	34	167 *c*
	16070	.877	295.9	137.5	+22.5	2	11	166 *c*
	16076	.774	265.7	129.5	- 3.3	11	45	89 *c*
	16072	.671	291.9	118.9	+14.4	30	172	
	16073	.287	320.5	89.8	+12.7	88	414	
	16074	.430	128.1	58.7	-15.3	12	35	
	16077	.675	64.3	39.8	+17.0	1	9	
	16078	.867	82.6	19.4	+ 6.4	2	11	229 *n*
		.853	112.3					120
		.873	59.1					116
		.916	72.7					70
		.931	121.2					371
		.951	53.2					202
		.966	63.6					152
June 6			(-13.5)	(79.1)	(0.0)	(271)	(1430)	(2559)
157.472 C		.969	274.0					308
		.948	293.5					412
		.947	255.8					342
		.931	284.3					180
		.872	299.7					145
		.823	251.7					69
	16076	.936	266.1	133.6	- 3.6	15	115	292 *f*

Group 16075. June 3 - 6. One or two small spots.
Group 16076. June 4 - 8. One or two small spots.
Group 16077. June 4 - 8. A small spot, not seen on June 7.
Group 16078. June 6 - 11. A single spot on June 6, 7 and 10; a pair on June 8, 9 and 11.

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
1949			°	°	°			
	16072	.830	287.3	119.2	+14.4	28	160	98 c
	16073	.490	297.1	91.0	+13.0	96	497	
	16074	.284	158.3	58.3	−15.1	10	44	
	16078	.699	80.3	20.7	+ 6.9	1	8	
		.816	51.8					210
		.846	124.6					289
		.872	69.7					90
		.877	61.0					114
		.937	53.7					110
		.941	44.7					210
		.964	64.5					492
June 7			(−13.1)	(64.5)	(+ 0.2)	(150)	(824)	(3361)
158.580 G		.963	254.8					207
		.951	296.2					330
		.949	242.4					126
		.844	290.4					277
		.816	301.4					177
	16076	.994	266.6	133.4	− 3.3	22	92	433 c
	16072	.940	285.4	119.1	+14.5	35	146	258 c
	16073	.690	289.2	91.8	+13.3	84	693	
	16074	.300	208.5	58.4	−14.9	4	17	
	16077	.309	30.3	40.6	+15.7	1	11	
	16078	.553	77.7	17.1	+ 6.9	6	37	
	16079	.962	109.7	337.0	−18.8	13	54	251 c
	16080	.972	93.9	333.8	− 3.7	10	39	359 c
		.798	56.2					85
		.832	43.3					268
		.905	62.9					346
		.908	122.2					94
		.939	51.8					197
		.970	86.0					347
June 8			(−12.6)	(49.9)	(+ 0.3)	(175)	(1089)	(3755)
159.389 G		.964	294.5					211
		.932	252.3					249
		.916	286.8					225
		.897	297.9					282
	16072	.985	284.9	118.7	+14.7	20	141	286 f
	16073	.793	286.7	90.3	+13.4	81	999	463 c
	16074	.406	229.8	57.8	−14.8	8	35	
	16078	.388	73.1	17.3	+ 6.8	8	43	
	16079	.901	111.1	336.8	−18.7	8	39	296 sf
	16080	.909	94.1	334.1	− 3.6	3	19	300 c

U. T.	Group No.	MEASURES		POSITION		AREA		
		Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ
1949			°	°	°			
		.786	58.5					167
		.791	37.2					223
		.846	48.7					170
		.860	123.9					200
		.884	60.7					218
		.938	84.0					327
		.938	177.8					7
		.961	64.9					242
June 9			(−12.3)	(39.2)	(+ 0.4)	(128)	(1276)	(3866)
160.444 G		.964	294.3					170
		.920	250.5					159
	16073	.922	284.1	91.6	+13.1	95	663	970 c
	16074	.590	243.6	58.2	−14.7	6	14	
	16081	.474	306.5	48.6	+16.8	1	4	
	16078	.206	46.9	16.5	+ 8.6	3	7	
	16082	.986	105.0	305.5	−14.7	88	368	219 c
	16083	.990	93.3	303.6	− 3.2	62	589	237 c
		.809	95.8					292
		.824	114.5					363
		.857	81.1					154
		.879	63.1					238
		.950	58.3					109
		.966	116.5					108
June 10			(−11.9)	(25.2)	(+ 0.5)	(255)	(1645)	(3019)
161.339 G		.946	250.0					208
		.944	295.7					206
		.933	239.6					188
		.899	186.5					10
		.856	250.9					264
		.814	344.5					9
		.780	237.5					91
	16073	.976	283.0	90.4	+12.8	60	566	1150 c
	16074	.733	249.2	58.3	−14.6	4	12	
	16081	.636	294.7	50.2	+15.8	5	24	
	1280 f	.472	309.3	35.9	+17.9	3	10	
	16078	.140	325.3	18.0	+ 7.2	2	11	
	16084	.579	105.3	339.2	− 8.2	3	15	
	16085	.784	57.3	326.6	+25.4	2	11	162 f
	16082	.941	105.7	304.3	−14.5	114	731	275 c
	16083	.941	93.7	303.5	− 3.3	54	444	297 c
		.885	56.3					147
		.903	174.0					10

Group 16079. June 8 - 9. A small spot.
Group 16080. June 8 - 12. Return of Group 16048. Intermittent. A pair of tiny spots.
Group 16081. June 10 - 14. A group forming past the C.M. and growing as it passes round the limb.
Group 16082. June 10 - 22. A regular spot followed by a string of small companions until June 17; two of these re-appear on June 21.
Group 16083. June 10 - 22. Return of Group 16059. A small nearly-regular spot preceded by a few unstable spots until June 15. On June 18 these companions have disappeared and a new formation has appeared at the rear.
Group 16084. June 11 - 14. A pair of small spots.
Group 16085. June 11 - 20. Intermittent. An unstable group of tiny 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
1949			°	°	°			
		.934	81.5					301
		.955	99.5					209
June 11			(-11.5)	(13.4)	(+0.6)	(247)	(1824)	(3527)
162.360 G		.958	250.0					237
		.936	258.4					112
		.909	281.5					137
		.861	243.5					180
	16074	.866	252.7	58.2	-14.5	9	18	103 *s*
	16081	.793	288.8	50.7	+15.3	4	15	85 *c*
	16086	.447	256.4	25.6	-5.3	3	18	
	16087	.134	223.9	5.1	-4.7	9	26	
	16084	.378	114.1	339.5	-8.1	18	46	
	16080	.472	101.9	332.3	-4.9	4	12	
	16082	.840	107.9	304.3	-14.5	98	661	273 *c*
	16083	.839	94.5	303.1	-3.3	61	376	339 *c*
		.863	78.6					180
		.948	102.8					267
June 12			(-11.1)	(359.8)	(+0.8)	(206)	(1172)	(1913)
163.327 G		.958	261.9					179
		.924	245.1					103
		.913	234.2					111
		.879	297.5					191
		.802	290.5					210
	16074	.955	254.5	58.7	-14.5	3	12	205 *s*
	16081	.900	287.5	50.1	+16.1	42	211	348 *c*
	16086	.642	262.4	26.5	-4.2	5	21	
	16088	.452	296.6	11.3	+12.4	4	18	
	16087	.359	255.1	7.3	-4.4	1	6	
	16089	.429	223.1	4.8	-17.3	7	27	
	16084	.203	139.1	339.3	-7.9	20	54	
	16090	.309	110.5	330.2	-5.3	1	17	
	16085	.466	39.5	328.5	+21.8	4	23	
	16082	.712	111.5	304.0	-14.4	135	549	254 *c*
	16083	.691	95.7	303.7	-3.3	57	272	87 *f*
		.779	73.3					254
		.818	102.0					198
		.849	117.6					98
		.908	109.7					203
		.932	99.7					125
		.940	77.5					151
		.953	85.9					150
June 13			(-10.7)	(347.0)	(+0.9)	(279)	(1210)	(2867)
1949			°	°	°			
164.335 C		.978	247.8					132
		.940	235.4					194
		.912	292.2					296
		.765	283.4					120
	16081	.972	286.6	49.5	+16.3	53	301	213 *c*
	16086	.804	264.7	26.8	-3.7	6	39	82 *c*
	16089	.593	238.2	5.4	-17.3	2	15	
	16084	.182	213.1	339.4	-7.8	2	14	
	16090	.115	156.3	331.1	-5.0	0	9	
	16083	.501	98.4	304.1	-3.3	43	228	
	16082	.552	118.6	303.8	-14.4	115	568	
		.867	82.6					223
		.902	105.0					334
		.946	87.7					170
		.956	74.2					281
June 14			(-10.2)	(333.7)	(+1.0)	(221)	(1174)	(2045)
165.322 G		.967	287.8					311
		.924	298.7					134
		.911	244.8					152
		.884	278.8					195
		.849	307.4					141
		.825	232.6					112
		.807	318.6					126
	16086	.927	266.6	28.2	-2.8	7	21	170 *c*
	16088	.801	284.1	13.0	+11.9	8	31	75 *c*
	16082	.383	133.9	304.1	-14.2	98	533	
	16083	.299	103.7	303.8	-3.0	24	143	
	1281a	.613	109.4	284.7	-10.8	6	16	
		.822	106.8					160
		.840	87.7					116
		.842	72.6					169
		.896	56.6					103
		.931	114.2					202
		.949	71.4					198
June 15			(-9.8)	(320.6)	(+1.1)	(143)	(744)	(2364)
166.332 G		.961	247.6					163
		.956	276.3					270
		.951	299.3					166
		.909	310.0					328
		.907	237.2					257
		.875	262.1					118
		.866	195.0					18

Group 16086. June 12 - 16. One or two small spots.
Group 16087. June 12 - 13. A pair of small spots on June 12; a single spot on June 13.
Group 16088. June 13 - 17. One or two small spots, not seen on June 14.
Group 16089. June 13 - 16. Intermittent. A pair of spots on June 13 and 14; a single spot on June 16.
Group 16090. June 13 - 14. 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
1949			°	°	°			
		.844	315.6					171
		.826	301.5					162
	16086	.978	264.0	24.8	- 5.6	0	16	221 c
	16088	.912	283.2	12.5	+12.5	22	75	239 c
	16089	.886	250.4	7.7	-16.6	0	10	135 c
	16085	.495	314.2	329.6	+21.2	10	23	
	1281b	.452	342.8	315.9	+26.7	4	17	
	16082	.283	167.8	303.8	-14.8	86	515	
	16083	.127	133.0	302.0	- 3.7	63	299	
	1281c	.361	30.4	296.2	+19.3	1	10	
	16091	.995	68.1	223.3	+21.9	24	187	110 c
		.818	110.0					129
		.841	71.0					190
		.852	124.3					306
		.948	106.3					392
		.960	69.8					183
		.984	58.8					93
June 16			(-9.4)	(307.3)	(+1.2)	(210)	(1152)	(3651)
167.646 G		.942	310.2					169
		.922	296.2					177
		.833	300.0					135
		.786	240.2					261
	16088	.987	282.8	10.4	+12.8	0	15	164 c
	16085	.692	300.2	329.7	+21.4	29	92	
	16082	.381	225.0	306.0	-14.2	59	341	
	16083	.230	249.0	302.3	- 3.3	48	289	
	16091	.930	66.9	222.9	+21.9	19	78	154 n
		.944	78.3					156
June 17			(-8.8)	(289.9)	(+1.4)	(155)	(815)	(1216)
168.438 C'		.946	295.5					119
		.939	239.9					225
		.884	301.9					142
		.883	267.2					106
		.855	245.7					235
		.835	260.3					160
		.803	274.5					111
	16085	.798	295.8	329.6	+21.2	15	59	159 c
	16082	.516	238.2	306.2	-14.4	75	320	
	16083	.411	258.7	303.1	- 3.2	41	234	
	16092	.313	45.2	266.2	+14.2	2	16	
1949			°	°	°			
	16091	.858	65.5	222.5	+21.7	17	69	117 nf
	16093	.905	71.3	215.6	+17.5	2	15	121 nf
	16094	.974	96.7	203.0	- 6.2	39	228	141 f
		.870	78.8					146
		.907	56.5					105
		.928	120.7					178
		.970	70.7					360
June 18			(-8.5)	(279.4)	(+1.5)	(191)	(941)	(2425)
169.327 C		.966	295.9					276
		.944	248.1					218
		.935	264.7					341
		.910	276.6					278
		.907	303.7					158
	16085	.894	292.9	329.3	+21.1	19	91	132 c
	16082	.664	246.2	306.3	-14.2	57	348	
	16083	.602	262.2	304.1	- 3.4	35	202	
	16092	.212	357.5	268.1	+13.8	2	10	
	16091	.755	62.7	221.7	+21.3	14	56	81 f
	16093	.811	69.1	215.1	+17.7	11	59	105 c
	16094	.906	97.9	203.3	- 6.4	36	248	456 f
		.933	71.5					550
June 19			(-8.1)	(267.6)	(+1.6)	(174)	(1014)	(2595)
170.318 G		.970	265.5					186
		.957	248.0					117
		.913	302.0					208
		.861	258.8					113
	1281d	.971	276.1	330.5	+ 6.3	4	18	275 c
	16085	.972	290.1	330.4	+19.9	15	59	231 c
	16082	.813	251.0	306.8	-14.3	51	293	472 f
	16083	.774	263.9	304.8	- 3.6	29	169	434 c
	16091	.616	56.4	221.3	+21.2	11	55	
	16093	.670	65.4	215.0	+17.5	12	36	
	16094	.789	99.4	203.2	- 6.3	26	185	612 f
	16095	.968	83.4	179.1	+ 6.8	73	325	294 c
	16096	.981	77.8	175.8	+12.3	5	18	226 c
		.827	72.4					243
		.835	60.9					104
		.952	66.6					129
		.956	120.2					116
June 20			(-7.6)	(254.5)	(+1.7)	(226)	(1158)	(3760)

Group 16091. June 16 - 24. A small spot.
Group 16092. June 18 - 19. A small spot.
Group 16093. June 18 - 25. A few variable spots.
Group 16094. June 18 - 29. A slowly-diminishing spot.
Group 16095. June 20-July 2. A regular spot, closely followed by a companion.
Group 16096. June 20 - 21. A tiny 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
1949			°	°	°			
171.320		.952	300.0					407
G		.935	272.2					256
		.902	280.4					344
		.812	251.4					489
	16082	.918	253.0	306.2	-14.8	51	298	442 *c*
	16083	.903	265.3	305.3	- 3.4	24	151	315 *c*
	16091	.466	44.2	220.9	+21.2	10	43	
	16093	.495	56.6	215.7	+17.3	11	51	
	16094	.629	102.6	203.2	- 6.5	29	187	
	16095	.883	83.2	179.4	+ 6.8	56	263	202 *s*
	16096	.903	77.8	177.0	+11.8	2	10	348 *c*
	16097	.968	80.1	165.9	+10.0	14	73	467 *c*
	16098	.976	87.3	164.0	+ 3.0	56	342	270 *c*
		.796	101.7					170
		.879	64.1					108
		.927	122.3					334
		.968	63.9					114
		.983	72.6					122
June 21			(-7.2)	(241.2)	(+ 1.8)	(253)	(1418)	(4388)
172.380		.958	277.0					172
C		.938	287.0					127
		.889	254.3					168
		.848	241.9					73
	16082	.988	254.7	307.2	-14.8	41	239	362 *f*
	16083	.981	266.8	306.2	- 4.6	18	101	271 *sf*
	16091	.351	17.5	220.7	+21.3	8	19	
	16093	.321	34.7	216.2	+17.5	31	75	
	16094	.425	109.3	203.5	- 6.3	25	148	
	16095	.744	82.9	179.4	+ 6.5	55	257	113 *c*
	16097	.891	79.3	164.5	+10.4	94	359	257 *c*
	16098	.890	87.3	164.5	+ 3.3	53	326	228 *f*
	16099	.989	97.5	146.1	- 7.1	89	571	228 *c*
		.811	74.7					171
		.924	71.7					86
		.965	77.6					252
		.971	106.5					137
June 22			(-6.7)	(227.2)	(+ 1.9)	(414)	(2095)	(2645)
173.357		.967	256.7					222
G		.937	248.3					276
		.913	281.1					152

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
		.845	288.3					193
	1281e	.966	286.9	289.1	+16.9	4	53	152 *c*
	16091	.354	343.1	220.6	+21.8	3	8	
	16093	.270	356.4	215.3	+17.6	19	102	
	16094	.233	127.7	203.7	- 6.1	28	134	
	16095	.575	81.6	179.5	+ 6.5	71	301	
	16097	.773	78.5	164.2	+10.2	73	515	221 *c*
	16098	.765	87.3	163.4	+ 3.4	55	324	118 *c*
	16100	.908	72.3	149.9	+16.9	2	21	317 *c*
	16099	.932	98.5	146.3	- 7.1	141	597	342 *c*
	16101	.995	94.3	130.5	- 4.0	34	120	433 *p*
		.901	86.5					420
		.920	128.0					145
		.932	62.3					188
		.947	109.7					213
June 23			(-6.3)	(214.3)	(+ 2.1)	(430)	(2175)	(3392)
174.318		.976	205.2					32
G		.954	347.5					15
		.953	288.3					205
		.942	286.5					288
		.941	246.5					168
		.937	189.6					7
		.934	256.3					237
		.924	272.8					178
		.923	266.0					194
		.845	288.9					171
	16091	.455	318.3	220.6	+21.8	3	8	
	16093	.355	319.9	215.4	+17.8	9	35	
	16094	.149	194.1	203.7	- 6.1	17	155	
	16102	.241	51.5	190.6	+10.7	7	21	
	16095	.376	78.5	179.9	+ 6.4	44	291	
	16098	.603	87.3	164.6	+ 3.4	61	346	
	16097	.623	76.1	163.8	+10.5	46	465	
	1281f	.733	85.9	154.6	+ 4.5	0	4	
	16100	.800	70.1	149.9	+17.1	2	6	128 *c*
	16099	.831	100.1	146.3	- 7.1	110	743	207 *c*
	16101	.938	95.1	132.3	- 4.0	30	196	445 *c*
	16103	.987	78.5	120.9	+11.7	15	155	277 *c*
		.835	82.7					207
		.845	111.7					171
		.882	52.1					132
		.897	62.3					206

Group 16097. June 21-July 2. A variable stream, the leading and following portions of which coalesce into composite spots for a few days. On June 28 the whole group has broken up into a large number of small spots.

Group 16098. June 21-July 3. Return of Group 16069; third appearance. A stable regular spot.

Group 16099. June 22-July 4. A regular spot with a few close companions. From June 26 to 29 the spot is extended in longitude.

Group 16100. June 23 - 26. A small spot, not seen on June 25.

Group 16101. June 23-July 3. Return of Group 16076. A small spot, not seen on June 30 or July 1.

Group 16102. June 24-July 1. A few small variable spots.

Group 16103. June 24-July 3. A small spot with a few variable 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
1949			°	°	°			
		.944	82.7					225
		.949	106.3					198
		.951	68.5					147
June 24			(−5.9)	(201.6)	(+2.2)	(344)	(2425)	(3838)
175.319 G		.954	267.6					151
		.953	257.5					170
		.932	287.2					219
	16093	.517	302.0	215.6	+17.9	6	39	
	16094	.300	241.4	203.6	−6.0	25	115	
	16102	.140	348.6	189.9	+10.1	6	26	
	16095	.159	64.2	180.1	+6.3	47	251	
	16098	.402	86.8	164.7	+3.4	62	324	
	16097	.420	71.0	164.6	+9.9	80	451	
	16099	.681	103.2	146.5	−7.2	114	668	
	16101	.827	96.6	133.1	−4.1	35	168	400 *c*
	16103	.922	78.2	121.3	+11.8	20	127	687 *nf*
		.826	60.8					151
		.925	108.2					269
		.936	64.8					161
June 25			(−5.4)	(188.3)	(+2.3)	(395)	(2169)	(2208)
176.348 G		.947	288.1					142
		.837	290.3					63
	16094	.506	252.9	203.7	−6.4	9	44	
	16102	.298	297.9	190.2	+10.3	21	66	
	16095	.111	305.5	179.9	+6.1	42	264	
	16097	.220	50.2	164.9	+10.4	78	464	
	16098	.174	84.2	164.8	+3.3	70	354	
	16100	.437	60.2	151.7	+14.7	1	7	
	16099	.496	108.5	146.5	−6.9	133	713	
	16101	.690	98.0	131.7	−3.8	23	128	
	16103	.812	76.7	121.0	+12.2	24	105	171 *f*
	16104	.969	75.3	99.1	+14.8	38	186	1387 *c*
		.865	67.9					79
		.883	57.4					73
		.938	63.5					132
		.951	87.2					93
June 26			(−4.9)	(174.7)	(+2.4)	(439)	(2331)	(2140)
1949			°	°	°			
177.320 G		.946	288.9					105
		.869	281.3					322
		.844	301.9					86
		.830	292.1					246
	16094	.677	256.9	203.2	−6.9	9	34	
	16105	.652	291.7	200.7	+15.8	24	81	
	16102	.502	287.3	190.9	+10.8	25	163	
	16106	.511	296.0	190.1	+15.1	9	39	
	16095	.313	281.7	179.7	+6.0	43	223	
	16097	.151	335.3	165.5	+10.3	80	399	
	16098	.054	284.1	164.8	+3.3	75	312	
	16107	.282	166.2	157.9	−13.3	6	18	
	16099	.306	121.5	146.6	−6.7	145	715	
	16101	.508	101.6	132.0	−3.7	20	116	
	16103	.673	74.5	120.4	+12.2	20	107	
	1281g	.773	74.1	112.0	+13.8	0	2	157 *c*
	16104	.891	74.8	99.3	+14.7	33	165	1346 *c*
		.873	64.3					153
		.888	87.1					99
		.937	108.3					162
		.946	96.9					158
June 27			(−4.5)	(161.8)	(+2.5)	(489)	(2374)	(2834)
178.319 G		.950	280.3					220
		.948	244.3					126
		.946	254.7					140
		.932	295.5					204
		.920	288.1					204
		.916	233.4					85
		.848	295.3					86
	16094	.842	260.9	205.1	−6.2	6	26	185 *c*
	16105	.812	287.0	202.0	+15.3	66	317	188 *c*
	16106	.704	289.3	192.0	+15.3	46	199	
	16102	.692	283.2	191.8	+11.0	17	108	
	16095	.527	277.1	180.2	+6.0	36	170	
	16098	.284	272.9	165.0	+3.3	61	356	
	16097	.314	297.1	165.0	+10.7	109	598	
	16099	.164	168.9	146.8	−6.6	115	639	
	16101	.298	110.5	132.4	−3.5	16	95	
	16103	.490	68.9	120.8	+12.5	28	88	
	16104	.789	72.9	97.5	+15.0	47	233	
	16108	.863	76.1	89.4	+13.3	20	118	462 *c*
	16109	.939	78.4	78.8	+11.8	17	43	85 *c*

Group 16104. June 26–July 7. Return of Group 16073. A stream, consisting of a large number of small variable spots. The only stable component is a small regular spot near the centre and this is the only survivor at the west limb.

Group 16105. June 27 – 30. A short stream which appears near the west limb. It is fairly steeply inclined to the equator and is led by a regular spot.

Group 16106. June 27 – 30. A growing regular spot, followed by a train of small companions.

Group 16107. June 27–July 3. A pair of small spots on June 27. Then nothing is seen until a small stream appears on June 30. This stream is inclined to the equator, and its following part consists of a small regular spot.

Group 16108. June 28–July 5. A few variable spots.

Group 16109. June 28–July 1. A pair of 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
1949			°	°	°			
	16110	.962	112.3	77.0	-20.5	45	200	372 *c*
	16111	.969	106.2	74.4	-15.0	14	70	220 *c*
		.788	73.9					1029
		.838	98.3					106
		.947	61.4					71
June 28			(-4.1)	(148.6)	(+ 2.6)	(643)	(3260)	(3783)
179.381 G		.952	292.2					335
		.949	273.6					163
		.949	237.0					163
	16094	.951	262.0	205.8	- 6.7	0	11	365 *sf*
	16105	.924	285.8	201.7	+15.6	79	494	250 *c*
	16106	.862	286.1	193.4	+15.2	49	251	322 *c*
	16102	.846	280.9	192.0	+10.6	7	28	172 *s*
	16095	.719	275.6	180.3	+ 5.9	28	150	
	16097	.527	286.2	165.4	+10.7	94	427	
	16098	.511	271.8	165.1	+ 3.3	52	343	
	16099	.268	232.7	146.8	- 6.7	124	600	
	16101	.114	163.7	132.7	- 3.6	8	42	
	16103	.287	54.9	120.7	+12.1	15	82	
	16104	.644	69.2	96.0	+15.3	37	254	
	16112	.644	101.8	95.4	- 5.5	1	12	
	16108	.721	74.1	89.2	+13.3	23	104	90 *f*
	16109	.831	77.3	78.7	+12.0	14	47	90 *c*
	16110	.877	115.1	76.8	-20.4	31	176	466 *c*
	16111	.878	108.8	75.3	-15.0	5	19	398 *c*
		.978	74.6					407
June 29			(-3.6)	(134.5)	(+ 2.7)	(567)	(3040)	(3221)
180.626 G		.974	261.3					302
		.948	294.2					215
		.880	285.2					264
	16105	.989	287.2	199.9	+17.5	16	144	317 *c*
	16106	.982	284.9	197.3	+15.2	60	420	
	16102	.963	280.9	192.5	+11.3	26	148	249 *f*
	16095	.888	275.4	180.7	+ 6.1	13	107	128 *c*
	16097	.751	281.0	166.4	+10.2	34	263	287 *c*
	16098	.738	272.0	165.5	+ 3.4	67	343	
	16107	.705	250.2	160.6	-11.7	19	99	
	16099	.506	251.4	146.9	- 6.7	119	749	
	16103	.169	343.4	120.9	+12.2	7	40	
	16112	.393	111.4	96.6	- 5.5	2	11	
	16104	.426	59.8	95.8	+15.0	32	272	
	16108	.521	68.2	88.4	+13.6	15	104	

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
	16109	.640	74.2	79.2	+12.2	8	30	
	16110	.728	121.1	76.8	-19.8	20	175	
	16111	.702	114.0	76.8	-14.4	1	6	
	1281h	.798	109.0	67.5	-13.2	0	6	229 *sf*
	16113	.988	121.4	40.5	-30.4	0	6	272 *c*
		.846	119.2					236
		.899	73.6					418
		.945	58.4					192
June 30			(-3.0)	(118.1)	(+ 2.9)	(439)	(2923)	(3109)
181.322 G		.971	292.3					189
		.771	273.8					144
	16102	.985	281.3	189.1	+11.7	0	14	473 *c*
	16095	.948	275.5	180.2	+ 6.2	28	90	231 *c*
	16098	.840	272.4	165.8	+ 3.7	62	329	90 *f*
	16097	.832	281.1	164.8	+10.9	36	214	605 *c*
	16107	.809	252.7	160.8	-12.1	79	262	139 *c*
	16099	.636	255.3	146.9	- 6.9	120	634	
	16103	.260	310.3	120.5	+12.6	12	37	
	16104	.285	42.2	97.4	+15.1	45	300	
	1281i	.278	66.0	93.9	+ 9.3	3	19	
	16108	.393	61.2	88.1	+13.7	16	71	
	16109	.525	70.6	78.4	+12.6	3	21	
	16110	.629	127.1	76.6	-19.7	19	81	
	16111	.615	117.9	74.8	-14.2	0	15	
	16114	.842	72.2	52.3	+16.5	0	8	311 *c*
	16113	.947	123.8	43.0	-30.5	8	43	187 *c*
		.777	119.5					182
		.869	118.6					207
		.932	65.3					267
		.949	54.9					127
		.959	106.8					120
July 1			(-2.7)	(108.8)	(+ 3.0)	(431)	(2138)	(3272)
182.321 G		.975	285.4					203
		.869	273.2					173
		.807	245.2					136
		.778	281.2					92
	16095	.995	275.7	179.8	+ 6.0	10	86	360 *f*
	16098	.943	272.8	166.0	+ 3.7	55	305	133 *c*
	16097	.941	281.4	165.8	+11.8	7	23	360 *c*
	16107	.914	254.6	160.0	-12.7	54	371	262 *c*
	16099	.797	259.1	147.4	- 6.7	97	629	131 *c*
	16101	.611	256.4	132.1	- 5.7	1	10	

Group 16110. June 28-July 2. A small regular spot with a companion, quickly dying out.
Group 16111. June 28-July 9. One or two small spots with a brief maximum on July 3.
Group 16112. June 29 - 30. A small spot.
Group 16113. June 30-July 11. A small spot followed by a tiny companion until July 7; a single spot on July 10 and 11.
Group 16114. July 1 - 5. A tiny spot, not seen on July 2.

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
1949			°	°	°			
	16103	.456	291.4	121.2	+12.3	4	22	
	16104	.188	352.0	97.1	+13.8	43	390	
	16108	.263	38.4	85.9	+14.9	9	56	
	16111	.464	137.8	76.6	-17.1	4	21	
	16110	.507	139.8	75.3	-19.8	7	30	
	16113	.865	127.9	43.7	-30.1	12	28	220 *f*
		.790	66.9					94
		.862	108.4					90
		.943	80.6					256
		.947	57.0					214
		.966	113.4					175
July 2			(-2.2)	(95.6)	(+3.1)	(303)	(1971)	(2899)
183.366 G		.960	267.5					162
		.955	290.8					173
		.947	231.6					196
		.930	249.3					219
		.891	271.6					164
		.868	290.8					104
		.852	281.5					154
	16098	.994	273.6	165.4	+3.9	61	356	210 *f*
	16107	.985	256.2	160.6	-12.9	57	302	292 *c*
	16115	.952	281.1	154.0	+11.5	0	8	437 *c*
	16099	.918	261.4	147.6	-6.6	128	580	538 *sf*
	1281j	.847	299.7	137.0	+26.6	0	2	229 *c*
	16101	.794	259.6	133.4	-6.3	0	4	246 *c*
	16103	.637	284.7	120.6	+11.8	2	15	
	16104	.318	305.4	97.2	+13.7	46	356	
	16108	.212	344.4	85.2	+15.0	7	31	
	16111	.336	152.8	72.7	-14.1	20	93	
	1281k	.435	62.3	58.5	+14.5	0	1	
	16114	.550	63.5	51.0	+16.9	0	3	
	16113	.757	135.6	44.2	-30.1	12	70	154 *f*
		.848	83.0					163
		.878	46.7					145
		.911	76.2					152
		.921	119.6					220
		.940	61.7					151
		.940	97.8					133
July 3			(-1.8)	(81.8)	(+3.2)	(333)	(1821)	(4242)

U. T.	Group No.	MEASURES		POSITION		AREA		
		Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ
1949			°	°	°			
184.323 G		.962	271.9					83
		.950	289.3					92
		.945	251.2					226
		.924	298.5					134
		.917	280.7					157
		.899	262.1					391
		.782	288.1					333
	16115	.992	281.5	152.1	+11.8	19	107	120 *f*
	16099	.984	262.7	148.1	-6.5	88	499	320 *f*
	16104	.502	292.0	97.6	+13.7	38	248	
	16116	.646	220.4	96.9	-26.4	5	15	
	16108	.354	307.5	86.0	+15.5	6	57	
	16111	.308	189.8	72.2	-14.3	9	60	
	16114	.382	53.0	50.3	+16.4	1	15	
	16113	.665	145.5	43.4	-30.1	11	54	88 *f*
		.860	61.3					168
		.922	99.9					163
		.932	128.9					141
		.957	121.1					138
		.960	51.8					183
		.962	67.9					229
July 4			(-1.3)	(69.1)	(+3.3)	(177)	(1055)	(2966)
185.321 G		.971	298.3					119
		.962	261.8					250
		.941	280.4					118
		.897	290.1					336
		.784	233.9					83
	16117	.827	282.9	111.4	+12.6	0	10	221 *c*
	16104	.692	286.7	98.8	+13.9	23	130	
	16108	.539	294.5	86.4	+15.8	3	21	
	16111	.403	221.9	71.9	-14.1	4	22	
	16114	.237	21.8	50.7	+16.1	0	5	
	16113	.589	161.1	43.2	-30.4	12	40	
	16118	.859	132.7	7.0	-33.3	0	7	116 *c*
	16119	.979	115.4	340.6	-24.0	22	110	245 *c*
		.895	126.7					90
		.914	63.0					198
		.935	50.5					193
		.943	93.6					154
		.949	102.6					236
		.976	84.3					182
July 5			(-0.9)	(55.9)	(+3.4)	(64)	(345)	(2541)

Group 16115. July 3 - 4. A small spot, appearing near the west limb.
Group 16116. July 4 - 7. Intermittent. A pair of small spots on July 4 and 6; a single spot on July 7.
Group 16117. July 5 - 6. A pair of small spots on July 5; a single spot on July 6.
Group 16118. July 5 - 7. A single small spot on July 5; a pair on July 6 and 7.
Group 16119. July 5 - 13. A small regular spot followed by a distant companion until July 10.

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
1949			°	°	°			
186.334		.926	297.0					182
G		.848	276.4					152
		.806	256.0					117
	16117	.953	283.8	115.0	+14.2	0	15	471 *c*
	16104	.832	285.0	98.3	+14.4	19	69	1040 *c*
	16116	.857	236.5	95.0	-26.0	9	27	95 *c*
	16111	.545	236.2	70.3	-14.5	3	11	
	16120	.463	216.8	59.4	-18.4	31	114	
	16113	.560	177.9	41.1	-30.3	13	33	
	16121	.269	72.1	27.6	+ 8.1	0	4	
	16118	.781	139.0	4.3	-34.2	13	50	100 *c*
	16119	.916	118.1	340.6	-23.9	27	100	184 *c*
	16122	.957	110.0	331.8	-17.9	20	99	208 *sf*
		.817	139.2					120
		.820	103.3					101
		.891	85.2					164
		.905	46.9					121
		.923	71.4					119
		.926	61.6					90
		.934	97.0					224
July 6			(-0.4)	(42.5)	(+3.5)	(135)	(522)	(3488)
187.571		.949	260.2					163
G		.933	250.2					111
		.931	279.6					343
		.873	286.4					306
		.770	233.0					81
	16104	.961	284.4	100.3	+14.8	12	69	326 *p*
	16116	.964	242.1	96.9	-25.7	4	33	184 *c*
	16111	.786	243.7	73.8	-17.9	4	11	277 *c*
	16120	.637	236.2	59.8	-17.6	60	312	
	16113	.625	206.1	44.8	-30.6	0	4	
	16121	.089	341.2	27.9	+ 8.5	0	14	
	16118	.652	155.2	7.3	-32.8	5	20	
	16119	.795	124.0	340.3	-23.8	22	101	136 *c*
	16122	.853	113.8	331.2	-18.1	17	84	307 *c*
	16123	.984	105.1	308.0	-14.2	44	233	194 *c*
		.784	102.0					157
		.833	63.9					229
		.886	42.4					111
		.946	97.8					228
		.950	56.1					145
July 7			(+0.2)	(26.2)	(+3.6)	(168)	(881)	(3298)

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
188.557		.966	263.8					198
G		.935	284.2					642
	16111	.910	248.8	75.7	-17.5	0	6	790 *c*
	16120	.784	243.8	60.5	-17.7	41	399	203 *c*
	16121	.268	290.3	27.8	+ 8.7	0	6	
	16119	.668	132.4	340.7	-23.6	16	91	
	16122	.723	119.8	331.9	-18.2	9	42	35 *f*
	16123	.925	106.7	307.4	-13.9	30	190	276 *c*
		.821	86.1					171
		.841	117.4					255
		.865	99.3					274
		.928	78.0					277
		.940	56.6					218
July 8			(+0.6)	(13.1)	(+3.7)	(96)	(734)	(3339)
189.324		.966	285.3					154
G		.955	295.3					153
		.941	263.1					134
		.840	232.5					96
		.832	288.3					270
		.770	218.6					117
	16111	.934	251.7	69.7	-15.5	0	7	657 *c*
	16120	.875	247.5	60.6	-17.5	47	322	254 *c*
	16119	.587	143.3	340.3	-24.5	11	50	
	16122	.617	126.7	331.6	-18.3	9	29	
	16123	.848	109.3	307.5	-14.1	24	165	116 *c*
		.766	101.9					142
		.858	116.5					135
		.897	54.0					130
		.921	73.5					177
		.947	106.7					160
		.965	84.1					86
July 9			(+0.9)	(2.9)	(+3.8)	(91)	(573)	(2781)
190.338		.909	286.7					186
C		.847	228.5					207
	16120	.959	251.0	60.7	-16.9	34	314	455 *c*
	16113	.879	232.2	42.8	-30.2	0	7	
	16119	.493	164.5	341.2	-24.4	11	27	
	16123	.710	114.4	307.9	-14.1	30	165	77 *c*
	16124	.940	71.8	279.6	+18.4	10	58	155 *c*
		.916	111.4					109
July 10			(+1.4)	(349.5)	(+3.9)	(85)	(571)	(1189)

Group 16120. July 6 - 10. A short stream of changing spots, appearing suddenly in the western hemisphere.
Group 16121. July 6 - 8. A tiny spot.
Group 16122. July 6 - 9. A small spot, with two tiny companions on July 7.
Group 16123. July 7 - 19. Return of Group 16082. A stable regular spot.
Group 16124. July 10 - 21. A bi-polar group, of which the leader soon becomes a stable regular spot. The follower grows into a composite spot and then breaks up rapidly.

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
1949			°	°	°			
191.479		.938	288.9					329
G		.888	303.1					162
		.835	287.1					72
		.824	276.7					172
		.783	217.9					221
	16113	.954	235.1	40.8	-31.5	0	8	275 *f*
	16125	.421	318.5	351.8	+22.1	1	10	
	16119	.488	193.3	341.4	-24.3	5	21	
	16123	.540	123.9	307.0	-13.9	34	160	
	16126	.745	100.7	287.3	- 5.2	2	5	81 *f*
	16124	.826	70.1	279.5	+18.7	52	332	153 *c*
		.840	79.1					85
		.881	118.7					193
		.919	102.9					101
		.934	92.3					207
		.956	73.1					232
July 11			(+1.9)	(334.4)	(+ 4.0)	(94)	(536)	(2283)
192.323		.962	257.7					61
G		.960	232.3					222
		.949	286.7					144
		.944	300.2					104
		.930	248.2					62
		.923	308.1					119
		.920	276.7					131
		.847	234.5					160
		.820	282.4					90
		.793	220.1					123
	16125	.543	307.3	351.0	+22.8	4	8	
	16119	.552	210.2	340.9	-24.5	3	7	
	16127	.175	182.1	323.6	- 6.0	8	34	
	16123	.412	137.9	306.7	-13.8	20	130	
	16126	.603	104.1	287.4	- 5.1	3	14	
	16128	.609	71.7	286.7	+14.3	4	18	
	16124	.701	67.4	280.3	+18.6	62	399	91 *f*
		.826	102.2					162
		.847	76.3					97
		.922	111.7					102
		.928	122.4					106
		.934	58.3					127
		.940	71.3					284
		.942	85.5					153
July 12			(+2.3)	(323.2)	(+ 4.1)	(104)	(610)	(2338)

U. T.	Group No.	MEASURES		POSITION		AREA		
		Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ
1949			°	°	°			
193.339		.977	277.0					76
C		.954	244.0					164
		.917	280.6					83
		.876	217.6					138
		.869	298.6					89
		.809	237.9					66
		.754	294.4					85
	16129	.847	259.8	6.6	- 6.3	6	51	94 *c*
	16119	.666	225.6	341.1	-24.1	1	11	
	16127	.314	238.4	325.3	- 5.3	7	22	
	16123	.317	169.1	306.3	-13.9	25	163	
	16128	.426	63.4	286.7	+14.8	6	37	
	16126	.427	112.8	286.6	- 5.6	10	62	
	16124	.529	60.6	280.8	+18.7	98	617	
		.827	73.4					118
		.846	126.6					114
		.970	81.4					113
July 13			(+2.8)	(309.8)	(+ 4.2)	(153)	(963)	(1140)
194.444		.940	233.4					267
G		.937	298.8					212
		.876	293.0					130
		.840	262.4					233
		.830	314.8					184
		.767	234.4					179
	16129	.962	261.6	8.4	- 6.8	65	250	246 *c*
	16127	.526	253.4	325.5	- 4.9	3	26	
	16123	.362	211.2	306.3	-13.7	26	175	
	16126	.223	139.0	286.8	- 5.4	9	42	
	16128	.235	37.3	286.8	+15.0	17	100	
	16124	.347	43.7	280.6	+18.6	96	827	
	16130	.998	75.4	208.0	+14.8	15	169	331 *p*
		.966	66.8					131
July 14			(+3.2)	(295.2)	(+ 4.3)	(231)	(1589)	(1913)
195.437		.954	234.7					151
G		.947	263.1					248
		.937	292.7					130
		.910	181.5					14
		.904	243.9					213
		.879	313.1					287
		.861	236.3					123

Group 16125. July 11 - 12. A tiny spot.
Group 16126. July 11 - 19. Small variable spots.
Group 16127. July 12 - 16. A pair of small spots on July 12; a single spot on the other days.
Group 16128. July 12 - 20. A stream of small unstable spots with a brief maximum on July 15, forming immediately *s* of the leader of Group 16124.
Group 16129. July 13 - 14. A pair of spots appearing near the west limb.
Group 16130. July 14 - 27. A stable regular spot.

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

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
		.834	260.2					228
		.833	275.3					124
		.775	238.3					164
	16127	.702	258.0	325.4	- 5.2	5	31	
	16123	.502	232.5	306.1	-13.7	28	119	
	16126	.185	214.9	288.1	- 4.4	10	106	
	16128	.199	335.7	286.8	+14.8	22	150	
	16124	.242	6.5	280.4	+18.2	148	777	
	16130	.958	75.7	208.4	+15.0	21	115	217 *n*
	16131	.991	117.9	203.3	-26.8	18	108	234 *p*
	16132	.990	79.7	199.8	+10.8	48	230	254 *p*
		.762	80.1					89
		.865	77.5					103
		.919	66.7					131
		.961	96.7					223
		.965	59.3					173
July 15			(+3.7)	(282.0)	(+ 4.4)	(300)	(1636)	(3106)
196.389 G		.946	276.2					315
		.945	309.9					243
		.933	265.9					173
		.927	258.1					182
		.898	286.9					170
		.876	297.7					107
		.875	243.3					261
		.872	318.2					152
	1282a	.951	243.7	337.4	-23.3	0	8	333 *c*
	16127	.837	261.6	325.4	- 4.5	0	8	180 *c*
	16123	.655	243.0	306.3	-13.7	22	135	
	16126	.387	247.3	290.4	- 4.4	21	122	
	16128	.338	300.3	286.9	+14.1	12	64	
	16124	.294	323.3	280.1	+18.0	98	760	
	16130	.880	75.5	207.9	+14.9	15	105	263 *c*
	16131	.947	120.5	203.5	-26.9	37	175	243 *c*
	16132	.940	80.1	199.2	+10.8	26	160	225 *c*
	16133	.989	72.1	187.2	+18.4	0	16	481 *p*
		.813	112.9					98
		.920	56.6					261
		.922	100.2					324
		.929	65.5					154
July 16			(+4.1)	(269.5)	(+ 4.5)	(231)	(1553)	(4165)

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
197.457 G		.962	245.8					248
		.953	252.4					130
		.948	295.4					71
		.945	309.6					139
		.883	260.5					134
	16123	.801	249.2	305.5	-13.6	19	129	77 *c*
	16126	.588	255.4	290.0	- 4.7	30	99	
	16128	.570	287.9	289.1	+13.9	4	14	
	16124	.482	299.6	281.3	+17.8	88	451	
	16130	.748	74.1	207.4	+14.9	19	109	90 *f*
	16131	.856	125.3	204.0	-26.7	32	152	186 *c*
	16132	.831	79.6	199.1	+11.2	28	153	138 *c*
	16133	.937	71.0	185.6	+19.4	9	36	464 *c*
		.833	51.8					83
		.863	104.6					135
		.888	62.0					99
		.958	78.8					237
		.960	85.4					345
July 17			(+4.6)	(255.3)	(+ 4.6)	(229)	(1143)	(2576)
198.610 G		.959	269.8					160
		.944	320.5					207
		.936	261.7					322
		.926	279.6					331
		.906	289.5					161
		.885	306.3					184
	16123	.928	253.4	306.0	-13.5	19	129	225 *c*
	16126	.787	260.3	291.0	- 4.6	12	47	136 *c*
	16128	.779	288.3	290.6	+17.2	9	47	159 *c*
	16124	.698	291.5	283.1	+18.2	85	441	
	16130	.553	70.3	207.7	+14.7	21	119	
	16131	.728	133.7	204.3	-26.4	17	116	186 *f*
	16132	.652	77.9	199.7	+11.4	35	162	
	16133	.820	68.3	185.9	+20.4	8	42	283 *c*
	16134	.845	85.1	182.4	+ 6.7	7	28	331 *c*
	16135	.935	119.7	176.1	-25.6	17	62	276 *c*
	16136	.934	89.4	171.2	+ 2.3	7	17	310 *f*
	16137	.977	76.7	161.9	+14.0	16	58	273 *c*
		.847	76.7					182
		.926	78.1					362
		.963	104.5					253
July 18			(+5.1)	(240.1)	(+ 4.7)	(253)	(1268)	(4341)

Group 16131. July 15 - 26. A small diminishing regular spot, with one or two companions until July 18.
Group 16132. July 15 - 27. A stable regular spot.
Group 16133. July 16 - 27. A small bi-polar group, developing from a pair of tiny spots at the east limb. The leader is the most stable component and the longest-lived.
Group 16134. July 18 - 22. One or two small variable spots.
Group 16135. July 18 - 25. A few small changing spots, of which only one remains by July 23.
Group 16136. July 18 - 25. Return of Group 16098; fourth appearance. A small equatorial spot seen only on July 18, 19 and 25.
Group 16137. July 18 - 22. 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
1949			°	°	°			
199.292		.964	262.5					192
G		.960	278.6					183
		.957	288.2					136
		.947	304.6					142
		.881	251.5					121
	16123	.973	255.1	305.8	−13.2	26	128	282 *sf*
	16126	.892	262.8	293.3	− 4.1	2	13	240 *sf*
	16128	.867	287.0	290.9	+17.1	5	28	152 *c*
	16124	.792	289.2	282.7	+18.1	62	322	218 *c*
	16130	.424	65.6	207.6	+14.5	21	95	
	16131	.654	141.4	204.0	−26.4	24	120	
	16132	.525	75.9	199.8	+11.4	31	149	
	16133	.729	66.0	185.8	+20.6	22	113	81 *f*
	16138	.744	75.6	183.3	+13.9	4	14	71 *f*
	16134	.763	85.8	181.3	+ 6.3	5	19	80 *c*
	16135	.877	122.7	176.3	−25.5	9	56	197 *c*
	16136	.863	90.2	171.5	+ 2.3	2	12	160 *f*
	16137	.930	77.0	162.4	+13.8	7	28	284 *c*
	16139	.989	96.4	150.3	− 5.6	39	318	192 *c*
		.834	79.2					310
		.922	105.8					324
		.943	85.6					255
July 19			(+5.4)	(231.0)	(+ 4.8)	(259)	(1415)	(3620)
200.345		.959	254.5					139
G		.952	263.5					333
		.930	276.3					186
	16128	.967	283.9	292.9	+14.7	4	17	244 *c*
	16124	.923	287.7	284.6	+18.2	68	326	253 *f*
	16140	.732	283.3	263.9	+13.0	35	272	55 *p*
	16130	.235	46.5	207.0	+14.1	21	128	
	16131	.562	157.7	203.4	−26.4	19	112	
	16132	.315	68.1	199.8	+11.4	33	164	
	16141	.424	61.6	194.4	+16.1	0	3	
	16133	.554	59.6	186.6	+20.4	37	176	
	1282b	.623	127.7	186.0	−18.1	0	3	
	16138	.550	73.2	184.5	+13.2	35	194	
	16134	.581	85.1	181.6	+ 6.8	4	25	
	16135	.765	129.3	176.4	−25.2	8	49	90 *c*
	16137	.824	76.9	161.7	+13.6	4	30	186 *f*
	16139	.924	98.2	150.6	− 5.6	39	246	340 *sf*
		.834	110.7					269
		.910	87.1					246

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
		.947	71.5					231
		.956	111.4					193
		.959	79.5					120
July 20			(+5.9)	(217.1)	(+ 4.9)	(307)	(1745)	(2885)
201.419		.920	267.1					87
G		.917	254.7					86
	16124	.987	287.8	284.4	+18.3	70	264	280 *f*
	16140	.873	282.3	263.8	+13.2	33	204	150 *c*
	16130	.172	335.8	207.0	+14.0	21	112	
	16131	.520	180.1	203.0	−26.2	16	72	
	16132	.128	22.4	200.1	+11.7	22	122	
	16141	.219	28.4	196.7	+16.0	1	6	
	16133	.372	43.2	187.2	+20.5	29	170	
	16138	.341	63.9	184.6	+13.4	51	263	
	16134	.341	83.8	183.0	+ 6.8	1	10	
	16135	.639	140.5	176.4	−25.0	22	71	
	16137	.670	74.9	161.3	+13.8	1	8	
	16139	.803	100.5	150.6	− 5.3	37	217	132 *sf*
		.812	87.7					68
		.822	78.8					100
		.825	95.9					51
		.837	115.1					73
		.855	71.5					88
		.924	98.5					163
		.932	64.8					125
		.934	85.9					95
		.952	110.1					74
		.964	73.1					107
July 21			(+6.3)	(202.9)	(+ 5.0)	(304)	(1519)	(1679)
202.327		.953	257.7					205
G		.949	266.3					144
		.923	292.5					178
	16140	.953	281.5	263.7	+12.5	33	191	369 *c*
	16130	.315	299.9	207.2	+13.8	18	119	
	16131	.554	198.9	202.4	−26.6	13	80	
	16132	.199	307.0	200.2	+11.8	20	144	
	16141	.243	333.5	197.4	+17.5	0	5	
	16133	.273	14.3	186.8	+20.2	34	202	
	16138	.183	38.3	184.2	+13.2	66	484	
	16134	.154	71.7	182.5	+ 7.7	1	8	

Group 16138. July 19 - 28. A bi-polar group of which the leader is first a small composite spot and from July 23 a regular spot. The follower grows into a composite spot, but begins to break up and diminish after July 24.
Group 16139. July 19 - 31. Return of Group 16099. A stable regular spot, with a slow drift towards the equator.
Group 16140. July 20 - 22. A small stream, suddenly appearing west of the C.M., which is led by a regular spot.
Group 16141. July 20 - 27. A few variable 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
1949			°	°	°			
	16142	.297	143.3	180.6	- 8.8	1	5	
	16135	.559	156.1	176.4	-25.8	7	52	
	16137	.511	71.9	161.1	+13.5	1	7	
	16139	.660	104.1	151.1	- 5.4	40	267	
	16143	.948	79.0	119.1	+12.0	8	43	303 *f*
		.805	99.1					251
		.847	65.7					107
		.919	115.9					174
		.928	131.8					153
		.945	70.1					208
		.955	106.9					115
July 22			(+6.7)	(190.9)	(+ 5.0)	(242)	(1607)	(2207)
203.331 G		.960	287.7					183
		.934	277.6					159
		.890	246.3					87
		.842	278.7					127
		.834	255.1					72
	16130	.512	288.7	207.4	+13.8	17	96	
	16131	.641	215.9	202.4	-26.6	9	44	
	16132	.402	288.2	200.5	+11.9	25	156	
	16141	.346	304.7	194.7	+16.1	5	24	
	16133	.299	330.9	186.5	+20.1	36	183	
	16138	.189	319.6	184.8	+13.3	88	702	
	16142	.252	197.4	182.0	- 8.7	10	28	
	16135	.504	181.7	178.5	-25.0	8	17	
	1282c	.205	34.5	170.7	+14.8	3	9	
	16139	.476	110.9	151.2	- 5.2	34	280	
	16143	.868	79.0	117.2	+12.1	43	185	773 *c*
		.823	122.2					81
		.885	67.1					210
		.934	87.5					95
		.939	121.1					115
		.941	177.5					7
		.951	97.1					93
		.962	169.2					13
		.970	72.4					347
July 23			(+7.1)	(177.6)	(+ 5.1)	(278)	(1724)	(2362)
204.372 G		.926	280.8					121
		.858	247.6					67
		.780	293.8					92

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
	16130	.694	284.7	207.4	+13.9	17	90	
	16131	.757	227.8	202.5	-26.5	7	28	46 *p*
	16132	.606	283.4	200.7	+12.2	21	112	
	16141	.532	292.5	194.4	+16.2	8	44	
	16144	.471	251.3	190.2	- 4.0	0	3	
	16133	.441	306.3	185.9	+19.9	34	154	
	16138	.391	292.8	185.5	+13.5	138	936	
	16142	.376	236.2	182.1	- 7.1	18	66	
	16135	.552	205.8	179.1	-24.6	1	5	
	16139	.281	128.9	151.2	- 5.0	45	264	
	16143	.723	78.6	117.6	+11.8	52	288	
	16145	.968	72.6	87.7	+18.1	22	49	309 *c*
	16146	.996	102.4	80.4	-11.8	0	27	107 *p*
		.856	75.4					442
		.857	99.2					132
		.961	117.6					266
July 24			(+7.6)	(163.8)	(+ 5.2)	(363)	(2066)	(1582)
205.322 G		.943	242.9					102
		.931	281.2					186
		.923	250.0					103
		.896	259.0					168
		.869	292.8					172
		.829	277.6					143
		.821	301.3					80
		.820	225.4					130
		.767	290.4					126
	16130	.833	283.1	207.6	+13.8	13	113	120 *c*
	16131	.858	234.7	202.4	-26.4	7	17	228 *c*
	16132	.764	281.6	201.0	+12.3	18	128	
	16141	.693	287.3	194.4	+15.7	3	25	
	16144	.642	256.0	189.7	- 4.8	5	20	
	16138	.595	285.3	187.2	+13.3	134	814	
	16133	.599	296.6	185.8	+19.9	16	89	
	16142	.584	249.9	184.6	- 7.1	7	30	
	1282d	.534	272.2	183.5	+ 5.6	3	15	
	16135	.649	220.4	178.7	-24.8	0	3	
	16136	.316	257.0	169.1	+ 1.0	4	13	
	16139	.181	178.8	151.0	- 5.0	42	258	
	16143	.543	76.6	118.7	+11.7	42	312	
	16145	.896	72.4	87.5	+18.1	16	54	286 *s*
	16146	.955	104.5	80.4	-12.1	50	304	435 *c*
	16147	.943	68.7	80.3	+21.8	7	21	230 *c*

Group 16142. July 22 - 27. One or two small spots.
Group 16143. July 22 - 31. A stream led by a small regular spot until July 27, after which the whole declines.
Group 16144. July 24 - 25. A tiny spot on July 24; a small cluster on July 25.
Group 16145. July 24 - 30. A single small spot.
Group 16146. July 24-Aug. 5. At first a regular spot followed by a few small companions. On July 27 the whole group rapidly increases in area; the leader becomes elongated and, by August 2, splits into two regular spots. The follower, a composite spot, dies out fairly rapidly after August 1.
Group 16147. July 25 - 26. A tiny 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
1949			°	°	°			
		.767	74.8					269
		.830	66.2					112
		.858	81.4					190
		.859	113.5					112
		.906	122.2					215
		.959	110.6					219
July 25			(+8.0)	(151.2)	(+5.3)	(367)	(2216)	(3626)
206.326 G		.965	260.0					107
		.943	290.0					169
		.931	276.9					108
		.900	232.2					156
		.894	302.8					77
		.884	255.4					194
		.871	271.2					70
		.844	296.2					117
		.774	229.6					108
		.759	273.4					122
	16130	.933	282.9	207.3	+13.9	19	116	138 c
	16132	.891	281.1	201.3	+12.3	20	155	
	16131	.939	239.2	202.0	-26.4	10	26	240 c
	16141	.851	288.2	196.1	+18.3	4	13	181 c
	16142	.782	256.2	187.7	-7.2	2	7	82 sf
	16138	.755	283.4	186.9	+13.7	126	873	
	16133	.759	291.4	186.4	+19.7	15	38	
	1282e	.411	296.7	160.3	+15.6	4	12	
	16139	.288	232.7	151.2	-4.8	45	237	
	16143	.348	69.9	118.6	+11.9	59	246	
	16145	.782	70.9	87.1	+18.2	13	38	72 s
	16146	.860	107.2	81.1	-11.8	78	396	583 c
	16147	.855	67.1	79.9	+22.3	5	13	137 c
	16148	.979	111.1	62.8	-19.3	169	1169	1324 c
		.832	127.9					248
		.947	73.2					88
		.948	100.4					107
		.948	63.6					71
July 26			(+8.4)	(138.0)	(+5.4)	(569)	(3339)	(4499)
207.326 G		.973	293.2					147
		.965	236.4					344
		.951	301.9					293
		.871	274.4					301
		.848	234.9					302

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
	16130	.986	283.6	205.9	+14.3	15	67	228 c
	16132	.969	281.4	200.9	+12.4	18	123	
	16141	.958	286.0	198.7	+16.9	12	58	324 c
	16142	.919	261.8	190.5	-5.3	3	26	311 c
	16138	.884	282.0	187.1	+13.2	77	756	227 c
	16133	.884	289.2	186.8	+19.5	5	26	257 c
	16139	.471	248.9	150.7	-4.8	43	265	
	16143	.153	41.6	118.8	+12.0	37	244	
	16145	.637	67.4	86.5	+18.5	10	51	
	16146	.742	111.4	80.0	-11.8	98	884	183 c
	16148	.927	113.8	60.7	-19.6	169	1421	900 c
	16149	.975	114.1	51.2	-22.0	31	161	
		.777	61.0					145
		.817	119.0					237
		.904	123.3					200
		.907	69.3					216
		.955	74.4					227
July 27			(+8.8)	(124.7)	(+5.5)	(518)	(4082)	(4842)
208.324 G		.960	260.8					262
		.944	273.6					274
		.941	292.5					200
		.936	238.6					417
		.851	269.7					108
		.848	248.1					150
		.808	283.0					144
	16138	.963	282.2	186.5	+13.2	82	680	731 c
	16139	.656	256.2	151.1	-4.7	42	251	
	16143	.170	313.4	118.7	+12.1	28	179	
	16145	.472	59.4	86.2	+18.8	8	30	
	16146	.579	119.8	80.7	-11.9	215	1051	
	16148	.826	118.6	61.3	-19.8	202	1347	570 c
	16149	.908	118.1	51.5	-22.6	59	365	202 c
	16150	.938	76.0	41.3	+15.1	26	139	276 c
		.825	70.0					181
		.955	85.2					133
July 28			(+9.2)	(111.5)	(+5.5)	(662)	(4042)	(3648)
209.332 C		.980	291.6					111
		.971	238.5					160
		.957	271.0					170
		.953	284.2					145
		.944	252.5					134
		.875	273.1					58

Group 16148. July 26–Aug. 7. Return of Group 16120. A large stream, in which both leader and follower are composite. The former undergoes considerable changes, while, by August 4, its rear portion breaks off to form a small regular spot. The follower slowly diminishes throughout.

Group 16149. July 27–Aug. 6. A composite spot, immediately *f* Group 16148, which soon breaks up and dies out on the disk.

Group 16150. July 28 – 31. A wide pair of small spots.

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
1949			°	°	°			
		.827	282.5					216
	16139	.813	260.3	151.5	− 4.5	63	241	178 *sf*
	16143	.431	284.1	123.3	+11.1	10	43	
	16145	.308	39.9	86.2	+19.1	5	26	
	16146	.413	136.1	81.3	−11.9	186	1226	
	16151	.590	127.3	69.1	−16.0	7	22	
	16148	.697	125.9	61.5	−19.6	222	1349	
	16149	.805	123.1	51.6	−22.2	50	338	180 *c*
	16150	.832	75.7	41.9	+15.0	18	95	247 *c*
	16152	.958	95.9	25.6	− 4.0	0	19	155 *f*
	16153	.983	113.9	22.3	−22.2	5	35	169 *c*
July 29			(+9.7)	(98.2)	(+ 5.6)	(566)	(3394)	(1923)
210.329		.922	271.2					256
C		.920	282.3					224
		.908	243.9					118
		.792	257.9					118
	16139	.922	262.7	151.3	− 4.4	42	247	253 *sf*
	16143	.604	280.9	122.0	+11.1	13	55	
	16154	.173	319.2	91.6	+13.2	6	31	
	16145	.240	355.5	86.1	+19.4	5	15	
	16146	.316	167.6	81.0	−12.2	255	1525	
	16151	.451	142.0	68.3	−15.2	7	17	
	16148	.557	138.5	62.1	−19.3	228	1515	
	16149	.683	131.8	51.8	−22.2	55	190	
	16150	.682	73.9	42.4	+15.1	17	47	
	16152	.889	96.9	23.1	− 3.4	4	19	163 *c*
	16153	.929	116.9	21.5	−22.4	5	15	246 *c*
		.776	74.8					88
		.971	100.1					137
July 30			(+10.1)	(85.0)	(+ 5.7)	(637)	(3676)	(1603)
211.352		.959	280.9					193
C		.937	260.1					251
	16139	.987	264.7	151.5	− 4.2	67	303	149 *c*
	16143	.809	278.9	125.7	+10.6	8	19	121 *f*
	16154	.387	289.7	93.3	+12.8	7	19	
	16146	.347	207.6	80.9	−12.1	179	1482	
	16151	.367	171.3	68.2	−15.4	1	9	
	16148	.459	161.4	62.6	−19.9	252	1564	
	16149	.572	145.0	50.8	−22.4	22	68	
	16150	.529	69.3	40.7	+15.7	10	37	
	16152	.749	100.3	24.1	− 3.8	16	68	173 *c*
	16153	.837	121.5	21.3	−22.2	2	8	183 *f*
		.883	103.7					164
July 31			(+10.5)	(71.5)	(+ 5.8)	(564)	(3577)	(1234)

U. T.	Group No.	MEASURES		POSITION		AREA		
		Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ
1949			°	°	°			
212.339		.962	262.1					200
C		.948	294.7					189
		.932	285.3					211
		.873	280.6					271
		.834	289.7					140
	16154	.561	284.6	92.1	+12.9	6	31	
	16146	.478	230.1	80.4	−12.4	155	1190	
	16151	.396	203.9	67.9	−15.4	0	4	
	16148	.438	189.1	62.6	−19.8	195	1551	
	16149	.496	160.5	48.2	−22.0	2	14	
	16152	.568	104.9	25.2	− 3.6	16	74	
	16155	.761	108.4	11.4	− 9.9	7	31	131 *c*
		.940	109.5					258
		.956	84.4					260
Aug. 1			(+10.9)	(58.4)	(+ 5.8)	(381)	(2895)	(1660)
213.431		.952	300.5					74
G		.876	278.5					117
		.849	291.2					162
		.849	231.5					172
	1282f	.968	281.3	120.1	+12.4	0	36	403 *c*
	16154	.758	281.1	93.4	+12.2	16	65	89 *c*
	16146	.650	243.7	80.4	−12.0	150	923	
	16148	.524	213.5	61.9	−20.2	218	1412	
	16156	.286	309.8	57.2	+16.3	1	5	
	16149	.469	191.3	49.6	−21.4	8	56	
	16152	.354	115.5	25.4	− 3.2	30	113	
	16155	.594	116.2	11.4	−10.2	1	17	
	16157	.658	81.5	2.8	+10.0	9	22	
		.873	133.9					140
		.884	82.1					218
		.932	71.9					125
		.941	102.8					184
		.945	122.9					139
		.946	114.2					243
		.963	92.5					168
Aug. 2			(+11.3)	(44.0)	(+ 5.9)	(433)	(2649)	(2234)
214.339		.960	280.5					262
G		.951	289.5					147
		.923	233.7					192
		.897	296.9					115
		.872	288.1					208
		.815	238.6					89
		.788	294.7					83
	16154	.872	281.5	93.0	+13.0	15	43	244 *c*

Group 16151. July 29–Aug. 1. A pair of small spots on July 29; a single spot afterwards.
Group 16152. July 29–Aug. 8. A stream of small changing spots, not seen on August 7.
Group 16153. July 29 – 31. A tiny spot.
Group 16154. July 30–Aug. 4. A pair of small spots, of which only one remains on August 4.
Group 16155. Aug. 1 – 2. A pair of small spots.
Group 16156. Aug. 2 – 6. A single small spot on August 2 and 3; a pair on August 6.
Group 16157. Aug. 2 – 10. A small changing stream, with maximum area on August 6.

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
1949			°	°	°			
	16146	.789	249.5	80.9	−12.1	177	957	463 c
	16148	.637	228.3	62.2	−19.8	212	1085	
	16156	.424	293.9	55.6	+15.4	1	9	
	16149	.525	211.1	48.8	−20.9	12	78	
	1282g	.255	314.2	42.9	+16.1	1	6	
	1282h	.177	0.5	31.9	+16.1	1	7	
	16152	.184	146.1	26.1	− 2.8	19	126	
	16157	.487	81.0	2.9	+ 9.6	8	25	
		.886	102.5				392	392
		.903	51.5					106
		.914	120.2					167
Aug. 3			(+11.7)	(32.0)	(+ 6.0)	(446)	(2336)	(2468)
215.359 C		.963	241.1					183
		.958	294.5					96
		.872	244.7					168
		.861	295.5					185
	16154	.957	281.8	92.3	+13.0	7	47	413 c
	16146	.911	254.0	81.7	−11.8	138	859	502 c
	16148	.767	237.7	61.9	−19.8	191	1123	280 c
	16149	.646	226.3	48.4	−21.2	8	51	
	16152	.212	227.4	27.4	− 2.3	10	65	
	16157	.242	75.1	4.9	+ 9.4	7	38	
	16158	.967	106.4	305.7	−14.1	8	39	226 c
		.883	119.7					153
		.905	81.2					90
		.968	73.5					196
Aug. 4			(+12.1)	(18.5)	(+ 6.0)	(369)	(2222)	(2492)
216.361 G		.957	285.5					233
		.945	295.4					225
		.899	232.2					116
	16146	.979	256.0	81.4	−12.3	120	872	600 c
	16148	.878	243.2	61.5	−20.0	111	1064	818 c
	16149	.786	237.6	50.2	−20.6	9	72	160 c
	16152	.425	251.4	28.9	− 2.2	4	21	
	16157	.063	336.8	6.6	+ 9.4	22	116	
	16159	.622	107.1	328.7	− 5.6	0	6	
	16158	.891	109.2	305.3	−14.0	5	20	179 s
	16160	.991	72.4	281.5	+18.2	51	332	323 p
		.923	41.1					192
		.933	73.5					501
		.935	98.0					318
		.959	56.4					160
Aug. 5			(+12.4)	(5.2)	(+ 6.1)	(322)	(2503)	(3825)

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
217.533 G	16148	.970	247.3	62.1	−20.2	243	1332	1310 c
	16149	.929	244.9	53.6	−20.5	7	28	
	16156	.936	284.1	59.8	+15.3	3	15	175 c
	16152	.661	257.7	29.9	− 3.4	3	12	
	16157	.295	281.9	6.7	+ 9.4	32	189	
	16160	.921	72.4	282.2	+18.6	43	232	286 n
		.826	74.1					464
		.857	100.9					154
Aug. 6			(+12.9)	(349.8)	(+ 6.2)	(331)	(1808)	(2389)
218.325 C		.971	286.4					115
		.867	285.5					244
		.848	275.7					94
	16148	.990	249.1	58.1	−19.6	78	624	592 c
	16157	.458	278.8	6.5	+ 9.5	19	108	
	16159	.285	138.8	328.5	− 6.2	1	7	
	16160	.837	72.0	282.5	+18.4	35	285	382 c
		.957	78.4					491
Aug. 7			(+13.2)	(339.3)	(+ 6.2)	(133)	(1024)	(1918)
219.322 G		.942	275.5					168
		.937	286.0					226
		.862	236.4					156
	16152	.858	262.4	24.3	− 3.2	0	7	238 c
	16161	.775	282.3	17.1	+13.5	2	9	75 c
	16157	.661	276.0	7.6	+ 8.7	10	75	
	16160	.701	69.6	282.3	+18.7	45	260	
		.859	79.0					122
		.940	74.2					216
Aug. 8			(+13.6)	(326.1)	(+ 6.3)	(57)	(351)	(1201)
220.327 G		.950	263.9					272
		.948	244.3					160
		.893	254.9					139
	16161	.893	281.4	16.5	+13.1	18	73	209 c
	16157	.828	276.0	9.0	+ 8.6	15	64	236 c
	1283a	.807	282.4	6.8	+13.8	2	9	75 c
	1283b	.380	66.9	291.7	+14.5	4	22	
	16160	.538	64.5	282.1	+18.8	46	242	
		.815	70.0					217
		.959	79.3					179
Aug. 9			(+13.9)	(312.8)	(+ 6.4)	(85)	(410)	(1487)

Group 16158. Aug. 4 - 5. Return of Group 16123; third appearance. A small spot.
Group 16159. Aug. 5 - 7. A tiny spot, not seen on August 6.
Group 16160. Aug. 5 - 17. Return of Group 16124. A stable regular spot.
Group 16161. Aug. 8 - 9. 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
1949			°	°	°			
221.325		.986	246.2					96
C		.973	281.3					260
		.874	239.9					80
	16157	.944	275.8	10.7	+ 7.6	3	24	234 *nf*
	16160	.363	52.5	282.0	+18.8	49	276	
	16162	.848	83.0	241.3	+ 9.3	2	8	132 *f*
		.932	77.5					106
Aug. 10			(+14.3)	(299.6)	(+ 6.4)	(54)	(308)	(908)
222.322		.970	280.3					208
G		.943	245.3					135
		.908	226.3					376
		.854	274.1					162
	16163	.856	238.5	338.5	-22.6	2	13	132 *c*
	16160	.227	19.1	281.9	+18.8	32	190	
	16162	.736	83.1	238.8	+ 9.5	0	5	198 *f*
		.826	76.7					110
		.954	80.9					412
		.956	67.8					210
Aug. 11			(+14.7)	(286.4)	(+ 6.5)	(34)	(208)	(1943)
223.329		.943	275.1					152
G		.886	255.8					195
	1283c	.989	247.2	351.1	-21.3	7	30	72 *c*
	16163	.939	242.2	337.6	-23.3	0	7	190 *c*
	16164	.706	247.4	314.5	-10.9	2	32	
	16160	.259	326.0	281.9	+18.7	39	238	
	16162	.573	82.4	238.1	+ 9.7	3	14	
	16165	.984	78.0	192.5	+12.9	34	240	186 *c*
		.867	67.2					228
		.885	83.0					317
		.939	74.0					197
		.950	107.2					107
		.959	116.8					179
		.975	85.8					150
		.980	99.1					84
Aug. 12			(+15.0)	(273.1)	(+ 6.5)	(85)	(561)	(2057)

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
224.323		.957	257.8					233
G		.938	246.4					147
		.905	238.7					93
		.781	242.0					146
	16164	.852	253.2	315.9	-10.5	26	125	149 *c*
	16166	.492	286.2	289.0	+13.7	1	6	
	16160	.414	302.0	281.7	+18.8	35	203	
	16162	.338	79.0	240.4	+ 9.9	9	61	
	16167	.377	70.6	238.7	+13.4	13	56	
	16168	.546	78.1	227.0	+11.9	1	13	
	16165	.915	78.6	193.2	+13.1	42	227	179 *c*
	16169	.977	78.2	181.4	+12.9	87	569	545 *c*
		.783	60.8					182
		.790	81.1					203
		.849	72.7					204
		.870	108.2					104
		.908	86.9					349
		.919	121.2					229
		.935	99.2					443
		.952	68.0					166
Aug. 13			(+15.4)	(260.0)	(+ 6.6)	(214)	(1260)	(3372)
225.418		.940	277.2					255
C		.903	246.2					126
		.818	277.4					171
		.785	288.2					177
	16164	.950	256.2	315.3	-10.9	68	303	278 *c*
	16166	.715	282.2	291.2	+13.4	6	25	
	16160	.604	292.0	281.5	+18.4	45	280	
	16162	.097	62.0	240.6	+ 9.1	69	322	
	16167	.178	43.8	238.2	+13.9	9	30	
	16168	.292	65.2	229.8	+13.4	8	31	
	16170	.332	75.0	226.5	+11.1	16	103	
	16165	.793	78.6	192.8	+13.0	40	237	230 *c*
	16169	.903	77.9	180.4	+13.8	139	647	1025 *c*
		.777	88.9					192
		.825	93.7					350
		.862	68.1					206

Group 16162. Aug. 10 - 20. A small spot until August 12, after which a bi-polar group develops rapidly. The whole is dying out as it passes round the limb.
Group 16163. Aug. 11 - 12. A small spot.
Group 16164. Aug. 12 - 15. A pair of spots, appearing near the west limb.
Group 16165. Aug. 12 - 22. Return of Group 16138. A stream of small spots, of which the only stable member is a small regular spot near the centre; this alone remains after August 18.
Group 16166. Aug. 13 - 16. A small spot, except on August 15, when there is a pair.
Group 16167. Aug. 13 - 19. Intermittent. One or two small spots.
Group 16168. Aug. 13 - 17. Two or three variable spots.
Group 16169. Aug. 13 - 25. A large cluster of which the main part forms a gamma-type spot between August 18 and 20, but on August 21 begins to break up again, quickly dying out. The much smaller leading part of the group consists of three main nuclei which remain just separated and begin to die out after August 23.
Group 16170. Aug. 14 - 17. A small regular spot with one or two tiny companions. It appears suddenly and lasts for only four days.

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
1949			°	°	°			
		.915	87.8					258
		.945	108.6					149
Aug. 14			(+15.8)	(245.5)	(+ 6.6)	(400)	(1978)	(3417)
226.344		.958	250.4					138
G		.933	278.0					141
		.924	242.8					88
		.887	286.9					256
		.876	257.1					152
	16164	.988	258.4	312.6	-10.3	22	107	112 *p*
	16166	.839	281.5	290.7	+13.3	13	53	156 *c*
	16160	.748	288.8	281.4	+18.5	44	224	
	16162	.132	289.7	240.5	+ 9.2	55	312	
	16167	.173	336.7	237.4	+15.8	1	7	
	16168	.151	32.9	228.5	+13.9	18	72	
	16170	.144	59.9	226.0	+10.7	26	88	
	16165	.617	78.1	195.2	+12.6	57	289	
	16169	.796	76.9	180.3	+14.5	204	966	662 *c*
	1283d	.917	110.5	170.3	-15.7	2	9	
	16171	.934	80.8	163.7	+11.0	10	49	161 *c*
	16172	.987	96.2	153.4	- 5.0	15	118	113 *c*
		.807	88.7					211
		.859	112.3					144
		.885	125.1					122
		.948	73.9					141
		.950	87.9					253
		.968	105.7					157
Aug. 15			(+16.1)	(233.3)	(+ 6.7)	(467)	(2294)	(3007)
227.248		.949	257.4					126
G	16166	.946	280.7	293.1	+12.3	3	14	340 *n*
	16160	.862	287.3	281.1	+18.3	52	217	175 *n*
	16162	.327	277.3	240.4	+ 8.7	42	329	
	16168	.188	316.2	229.0	+14.4	9	53	
	16170	.101	313.2	225.6	+10.6	12	84	
	16165	.446	74.6	195.3	+12.8	31	262	
	16169	.665	76.0	179.7	+14.2	123	983	
	16171	.820	81.4	165.8	+11.0	20	96	140 *c*
	16172	.932	98.6	153.7	- 5.5	7	65	127 *c*
		.886	88.4					184
		.936	75.6					258
		.941	106.0					302
Aug. 16			(+16.4)	(221.3)	(+ 6.7)	(299)	(2103)	(1652)

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
228.343		.926	294.7					105
G		.884	280.3					145
		.811	287.1					194
	16160	.958	287.2	281.2	+18.4	46	227	196 *c*
	16162	.549	275.9	240.2	+ 8.9	46	249	
	16168	.396	290.3	229.2	+14.2	18	62	
	16170	.325	282.2	225.6	+10.4	7	25	
	16173	.369	231.8	223.7	- 6.7	3	14	
	16165	.229	63.1	194.8	+12.5	27	108	
	16169	.475	72.1	179.1	+14.4	131	1163	
	16171	.617	81.7	168.6	+10.4	24	136	
	16174	.735	81.2	159.2	+11.1	20	64	
	16172	.815	102.0	153.8	- 5.7	15	61	78 *c*
	16175	.972	81.3	129.8	+10.0	100	529	420 *c*
		.835	75.9					184
		.869	111.1					296
		.900	85.9					156
		.964	73.1					168
Aug. 17			(+16.7)	(206.8)	(+ 6.8)	(437)	(2638)	(1942)
229.559		.983	292.6					122
G		.964	281.5					168
	1283e	.914	286.5	257.5	+17.8	9	26	164 *c*
	16162	.759	275.4	240.4	+ 8.5	30	135	128 *c*
	16167	.669	282.7	232.8	+13.5	5	20	
	16173	.601	251.1	225.5	- 5.6	33	166	
	16165	.121	332.4	194.1	+12.9	16	87	
	16169	.228	54.9	179.8	+14.2	133	1241	
	16171	.354	78.3	170.2	+10.5	24	161	
	16174	.521	80.1	159.4	+11.0	10	23	
	16172	.625	108.2	154.3	- 5.7	13	50	
	16175	.869	81.9	130.0	+10.4	129	613	380 *c*
	16176	.982	71.7	110.2	+19.2	28	176	214 *c*
		.876	74.1					259
		.909	62.9					149
		.962	106.7					83
Aug. 18			(+17.1)	(190.8)	(+ 6.8)	(430)	(2698)	(1667)
230.336		.961	287.2					175
C	16162	.868	276.6	241.1	+ 9.1	9	60	188 *c*
	16167	.787	282.0	232.7	+13.7	0	2	181 *c*
	16173	.721	255.4	224.8	- 5.5	44	217	190 *c*
	16165	.248	292.6	194.0	+12.1	5	20	

Group 16171. Aug. 15 - 26. A stream led by a regular spot. This spot becomes the largest and most stable component and alone remains on August 25.

Group 16172. Aug. 15 - 26. Return of Group 16139; third appearance. A small persistent spot.

Group 16173. Aug. 17 - 22. A small stream in which the follower is the largest and longest-lived component.

Group 16174. Aug. 17 - 20. A few tiny spots dying out on the C.M.

Group 16175. Aug. 17 - 29. A regular spot. The umbra is elongated and becomes divided into three parts on August 25 and 26.

Group 16176. Aug. 18 - 31. A regular spot, leading a train of small 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
1949			°	°	°			
	16169	.132	5.0	179.8	+14.4	126	1052	
	16171	.196	73.2	169.6	+10.0	55	273	
	16174	.374	77.0	158.8	+11.2	4	22	
	16172	.484	115.8	154.6	- 5.9	6	29	
	16175	.763	82.5	130.5	+10.2	95	521	508 *f*
	16176	.938	72.2	109.9	+19.0	29	202	308 *nf*
		.781	68.8					115
		.893	77.2					146
		.932	108.9					120
Aug. 19			(+17.4)	(180.5)	(+ 6.9)	(373)	(2398)	(1931)
231.425		.915	283.4					210
G	16162	.950	276.5	238.4	+ 8.3	0	36	262 *c*
	16173	.861	259.5	224.1	- 5.4	45	335	162 *c*
	16165	.473	283.9	194.0	+12.6	3	14	
	16169	.262	302.1	179.3	+14.7	99	1079	
	1283f	.150	237.6	173.3	+ 2.3	1	6	
	16177	.400	190.5	170.4	-16.2	8	32	
	16171	.089	314.0	169.8	+10.4	82	560	
	16174	.128	62.6	159.5	+10.2	4	22	
	16172	.296	138.7	154.8	- 6.0	5	29	
	16175	.584	82.3	130.2	+10.1	93	575	
	16178	.747	74.5	117.8	+16.1	2	10	
	16176	.838	71.5	109.0	+19.2	31	281	201 *c*
	16179	.995	102.4	83.8	-11.5	10	43	242 *p*
		.768	82.3					89
		.951	76.1					165
Aug. 20			(+17.7)	(166.1)	(+ 6.9)	(383)	(3022)	(1331)
232.406		.960	281.7					301
G		.900	278.5					117
		.881	293.5					120
		.835	266.6					103
		.821	275.7					198
		.811	285.3					174
	16173	.949	262.1	223.6	- 5.2	31	217	192 *c*
	16180	.691	271.7	196.9	+ 6.1	3	17	
	16165	.660	281.0	194.5	+12.5	1	9	
	16169	.450	287.9	179.2	+14.1	137	981	
	16177	.511	222.5	174.0	-15.6	11	39	
	16171	.300	282.6	170.3	+10.4	110	414	

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
	16172	.229	188.0	154.9	- 6.1	4	18	
	16175	.392	80.5	130.1	+10.1	112	597	
	16178	.563	69.2	119.8	+17.3	17	54	
	16176	.709	69.5	108.6	+19.3	60	299	80 *c*
	16179	.942	104.2	84.9	-10.8	41	245	318 *c*
	16181	.977	107.5	78.2	-15.4	21	120	357 *p*
	16182	.997	73.9	66.1	+16.5	30	165	126 *p*
		.777	73.7					90
		.840	62.5					84
		.861	76.3					269
		.909	113.9					271
		.950	68.5					107
Aug. 21			(+18.1)	(153.1)	(+ 6.9)	(578)	(3175)	(2907)
233.295		.934	290.3					236
G		.930	269.3					185
		.919	282.9					287
		.908	253.3					135
		.896	239.5					192
		.894	277.5					208
		.816	254.7					196
	16173	.989	264.2	222.0	- 4.6	16	128	173 *c*
	16165	.790	280.6	193.9	+12.7	2	9	164 *nf*
	16180	.770	272.7	191.9	+ 6.5	5	30	203 *p*
	16169	.615	284.1	179.2	+14.1	91	875	
	16177	.637	232.8	173.3	-16.7	4	31	
	16171	.476	278.3	169.8	+10.1	78	440	
	16172	.328	225.7	155.0	- 6.4	5	12	
	16175	.204	73.9	130.0	+10.1	106	645	
	16178	.405	66.3	118.8	+15.8	19	107	
	1283g	.410	76.3	117.5	+11.9	3	9	
	16183	.550	131.9	116.4	-15.1	1	4	
	16176	.564	65.7	108.5	+19.3	37	324	
	16179	.865	107.1	84.2	-11.0	39	207	332 *c*
	16181	.917	109.9	78.1	-15.5	14	104	126 *p*
	1283h	.939	111.0	75.1	-17.0	3	16	
	16182	.959	74.4	66.8	+16.9	24	155	150 *c*
	16184	.989	111.5	63.4	-19.9	30	118	255 *p*
	16185	.992	108.3	61.4	-17.0	8	53	156 *p*
		.767	74.7					125
		.884	68.5					157
		.892	117.7					251

Group 16177. Aug. 20 - 24. Two or three small spots.

Group 16178. Aug. 20 - 30. One or two small spots appearing immediately *f* Group 16175 and quickly developing into a large complex mass which begins to decline after August 26.

Group 16179. Aug. 20-Sept. 1. Return of Group 16146. A stable regular spot with occasional small companions.

Group 16180. Aug. 21 - 24. A few variable spots.

Group 16181. Aug. 21-Sept. 2. A regular spot until August 27; on the next day small companions appear. These grow and merge with the regular spot to form a composite spot by August 31.

Group 16182. Aug. 21-Sept. 3. A regular spot.

Group 16183. Aug. 22 - 27. A pair of small spots.

Group 16184. Aug. 22-Sept. 2. Return of Group 16148; third appearance. A small spot, suddenly developing on August 29 into a composite spot which is apparently declining rapidly as it passes round the limb.

Group 16185. Aug. 22-Sept. 3. A regular spot, with a distant companion at a lower latitude on August 26 and 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
1949			°	°	°			
		.903	179.0					8
		.919	166.0					3
		.943	59.5					101
Aug. 22			(+18.3)	(141.4)	(+ 7.0)	(485)	(3267)	(3643)
234.395 C		.979	277.7					185
		.978	286.8					155
		.898	259.3					112
	16180	.898	274.5	191.1	+ 7.1	12	67	129 *p*
	16169	.786	282.0	179.0	+13.8	43	351	701 *c*
	16177	.786	243.0	173.5	-16.1	5	25	196 *c*
	16171	.681	277.1	170.1	+10.0	67	376	
	16172	.525	245.3	155.5	- 6.5	2	8	
	16175	.076	316.6	129.9	+10.2	104	578	
	16178	.198	37.5	119.7	+15.9	34	217	
	16183	.378	158.8	118.8	-13.6	4	18	
	16176	.366	52.3	109.1	+19.5	33	264	
	16179	.729	112.6	83.8	-11.1	39	222	
	16181	.801	115.1	78.3	-15.2	29	139	131 *sf*
	16182	.867	74.1	66.3	+17.2	31	169	293 *f*
	16184	.932	114.7	62.9	-19.9	15	177	249 *c*
	16185	.940	111.1	60.6	-17.0	22	77	150 *c*
		.804	62.9					166
		.839	122.5					140
		.892	106.6					169
		.946	119.9					184
Aug. 23			(+18.7)	(126.9)	(+ 7.0)	(440)	(2688)	(2960)
235.321 C		.947	259.5					152
		.906	269.9					154
		.865	292.3					152
	16180	.972	275.8	191.4	+ 7.2	19	84	277 *p*
	16169	.901	282.3	179.5	+14.1	36	202	1478 *c*
	16177	.899	249.0	174.9	-15.4	2	14	253 *c*
	16171	.820	277.7	170.1	+10.3	75	344	183 *c*
	16172	.683	252.5	155.4	- 6.5	3	12	
	16175	.267	282.9	129.9	+10.1	97	552	
	16178	.165	325.7	120.1	+14.8	104	509	
	16183	.364	189.5	118.1	-13.9	19	89	
	16176	.238	23.9	108.8	+19.4	29	245	
	16179	.591	120.3	83.4	-11.3	38	250	
	16181	.678	121.7	78.0	-15.2	24	137	
	16182	.747	73.5	66.3	+16.9	34	155	352 *f*
	16184	.846	119.2	62.9	-20.1	27	191	502 *c*
	16185	.855	115.1	60.7	-17.2	12	91	386 *c*
		.924	75.7					142

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
		.940	113.4					112
		.959	111.0					153
Aug. 24			(+18.9)	(114.6)	(+ 7.0)	(519)	(2875)	(4296)
236.641 G		.984	251.8					186
		.969	288.7					295
		.901	250.3					207
		.886	269.8					147
		.873	286.3					186
	16169	.984	281.7	178.0	+12.8	5	58	280 *c*
	16171	.964	278.7	172.4	+10.2	26	278	364 *f*
	16172	.871	257.9	156.0	- 6.9	2	11	211 *c*
	16175	.545	278.1	130.3	+10.4	106	654	
	16178	.411	290.3	120.6	+14.7	185	1458	
	16183	.497	224.3	118.1	-14.2	9	58	
	16176	.279	321.9	107.7	+19.6	30	310	
	16179	.393	142.3	83.1	-11.1	43	320	
	16181	.494	138.9	77.6	-15.1	32	194	
	16182	.530	68.5	66.2	+17.3	28	152	
	16184	.687	129.7	63.1	-20.1	21	150	
	16185	.697	123.9	60.1	-17.2	19	101	
		.760	72.9					70
		.813	119.5					213
		.837	76.8					83
		.846	127.7					233
		.891	99.6					249
		.955	78.3					417
Aug. 25			(+19.3)	(97.2)	(+ 7.1)	(506)	(3744)	(3141)
237.436 G		.928	250.7					166
		.921	285.2					260
		.881	236.4					108
	16171	.996	279.8	172.7	+10.4	48	314	507 *f*
	16172	.932	259.2	153.9	- 7.4	0	12	250 *c*
	16186	.793	234.0	130.6	-22.6	2	6	111 *c*
	16175	.687	277.3	130.3	+10.1	128	497	
	16178	.555	286.4	120.0	+15.0	242	1477	
	16183	.613	236.0	118.2	-13.9	2	23	
	16176	.402	305.3	107.1	+20.1	43	272	
	16179	.328	166.5	82.2	-11.4	52	304	
	16181	.408	157.1	77.3	-15.0	32	179	
	16182	.384	61.2	66.1	+17.3	28	128	
	16184	.588	139.8	63.0	-20.1	25	138	
	16185	.579	132.8	60.5	-16.7	20	104	
	16187	.933	76.6	16.9	+15.0	3	15	606 *c*
	16188	.970	83.0	10.1	+ 8.5	18	79	164 *c*
	16189	.990	79.5	3.9	+11.4	38	189	161 *c*

Group 16186. Aug. 26 - 28. A tiny spot, not seen on August 27.
Group 16187. Aug. 26-Sept. 2. A few small variable spots within an extended area.
Group 16188. Aug. 26-Sept. 5. A small spot with a double umbra. By September 1 it begins to break up and die out.
Group 16189. Aug. 26-Sept. 4. A small regular spot with one or two close companions. The whole begins to disintegrate after September 2.

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
1949			°	°	°			
		.773	128.2					303
		.800	102.3					208
		.834	67.4					103
		.930	101.9					231
Aug. 26			(+19.6)	(86.7)	(+ 7.1)	(681)	(3737)	(3178)
238.327 C		.956	238.2					111
		.956	253.8					203
		.952	283.2					177
		.867	237.2					99
		.846	286.0					123
	16175	.821	277.4	130.5	+10.1	83	498	290 c
	16183	.767	244.7	120.4	-14.1	0	3	78 c
	16178	.709	283.9	120.1	+14.8	153	1357	
	16176	.566	294.7	107.8	+19.6	35	218	
	16179	.346	201.4	82.3	-11.7	43	244	
	16181	.383	185.4	77.0	-15.2	60	198	
	16182	.229	39.4	66.2	+17.2	30	130	
	16184	.491	155.7	62.6	-19.5	24	134	
	16185	.476	149.0	60.1	-17.1	15	70	
	16187	.836	76.8	17.7	+14.9	2	8	340 c
	16188	.895	83.8	11.0	+ 8.7	29	85	124 c
	16189	.943	80.8	3.7	+11.0	38	339	96 c
		.869	103.8					99
		.962	97.0					99
Aug. 27			(+19.8)	(74.9)	(+ 7.1)	(512)	(3284)	(1839)
239.425 G		.935	270.2					95
		.883	250.8					181
	16186	.967	244.5	131.0	-22.4	4	21	104 c
	16175	.939	278.1	130.8	+10.0	89	387	241 f
	16178	.859	283.0	120.1	+14.8	139	945	429 c
	16176	.733	290.2	107.1	+19.5	49	298	
	16179	.488	229.9	82.7	-11.7	43	233	
	16181	.464	216.3	76.9	-15.1	56	301	
	16182	.200	330.7	66.2	+17.0	36	127	
	16184	.455	184.5	62.6	-19.8	20	125	
	16185	.424	178.3	59.6	-17.9	14	76	
	16187	.623	78.3	21.8	+12.8	3	22	
	16188	.754	85.0	11.2	+ 8.5	21	92	78 c
	16189	.834	81.9	3.5	+10.7	61	277	154 c
	16190	.907	116.2	0.5	-20.1	8	38	283 f
		.963	86.5					167
Aug. 28			(+20.1)	(60.4)	(+ 7.1)	(543)	(2942)	(1732)
1949			°	°	°			
240.353 G		.957	254.4					116
		.778	249.1					198
	16175	.992	279.0	131.8	+ 9.8	69	443	131 c
	16178	.942	282.7	119.4	+14.3	113	911	790 c
	16176	.850	288.6	106.7	+19.5	40	245	483 c
	16179	.634	241.4	82.7	-11.8	34	211	
	16181	.590	231.6	76.7	-15.2	74	306	
	16182	.348	300.8	66.3	+17.0	28	110	
	16184	.510	207.8	62.8	-19.9	42	201	
	16185	.462	204.2	59.6	-17.8	13	75	
	16191	.530	115.0	19.4	- 6.7	6	38	
	16187	.517	75.2	17.4	+13.7	5	37	
	16188	.592	85.8	11.7	+ 8.2	21	103	
	16189	.697	82.1	3.8	+10.6	57	273	
	16190	.819	121.0	359.9	-20.2	22	76	289 c
		.850	88.0					118
		.920	75.2					171
		.944	100.4					188
Aug. 29			(+20.4)	(48.2)	(+ 7.1)	(524)	(3029)	(2484)
241.373 G		.894	254.0					101
		.879	283.9					130
		.840	235.8					136
	16178	.994	284.1	119.8	+14.7	101	597	496 c
	16176	.951	288.8	107.9	+20.1	29	131	224 c
	16179	.787	249.0	83.1	-11.6	28	195	97 p
	16181	.733	241.6	76.4	-15.0	63	367	175 c
	16182	.537	290.8	66.2	+17.1	21	124	
	16184	.627	224.6	62.5	-20.1	39	231	
	16185	.578	224.1	59.8	-17.8	12	62	
	16187	.254	67.2	20.9	+12.6	9	40	
	16191	.354	133.7	19.8	- 7.2	6	37	
	16188	.384	86.4	12.0	+ 8.0	21	119	
	16189	.510	80.8	4.0	+10.9	48	267	
	16190	.682	132.4	2.1	-21.3	11	37	
	16192	.965	103.8	322.1	-11.2	17	81	450 c
	16193	.987	81.9	313.3	+ 9.1	55	667	148 c
		.857	104.8					142
Aug. 30			(+20.6)	(34.7)	(+ 7.2)	(460)	(2955)	(2099)
242.350 G		.952	256.1					238
		.940	285.9					378
		.930	296.7					107
		.927	243.4					210
		.842	238.2					167
		.831	292.5					81

Group 16190. Aug. 28 - 31. One or two small spots.

Group 16191. Aug. 29-Sept. 5. A regular spot followed by a train of small variable spots which are dying out as the limb is approached.

Group 16192. Aug. 30-Sept. 9. A small regular spot until September 3. On the next day some small companions appear, and the whole group declines rapidly after reaching its maximum area on September 7.

Group 16193. Aug. 30-Sept. 11. A nearly-regular spot with a double umbra, followed by a companion until September 7.

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
1949			°	°	°			
	16176	.994	289.3	107.6	+19.9	31	220	186 *f*
	16179	.898	253.1	82.9	−11.7	36	174	301 *f*
	16181	.857	247.7	76.7	−14.9	92	566	545 *c*
	16182	.700	287.1	66.0	+17.1	22	108	
	16184	.750	234.9	62.4	−20.1	44	209	159 *s*
	16185	.708	235.7	59.6	−17.8	14	61	
	16191	.247	183.1	22.6	− 7.0	62	237	
	16187	.135	28.1	18.1	+14.0	5	22	
	16188	.167	84.7	12.2	+ 8.0	22	111	
	16189	.302	77.5	4.4	+10.7	30	159	
	16190	.552	146.9	3.1	−20.6	7	29	
	16194	.848	100.1	325.1	− 4.6	5	15	105 *f*
	16192	.882	106.5	322.6	−10.8	21	90	308 *c*
	1283i	.938	106.5	314.8	−12.7	7	16	448 *c*
	16193	.931	82.7	312.6	+ 9.4	96	663	499 *c*
	16195	.970	112.1	309.8	−19.3	8	34	157 *n*
	16196	.994	77.6	296.8	+13.1	41	141	448 *c*
Aug. 31			(+20.9)	(21.8)	(+ 7.2)	(543)	(2855)	(4337)
243.426 G		.962	237.8					225
		.960	284.7					160
		.951	263.4					126
		.919	293.2					144
	16179	.975	256.4	82.6	−11.5	44	186	1008 *c*
	16181	.947	251.4	75.7	−15.0	91	585	
	16182	.845	285.9	65.7	+17.2	17	91	348 *f*
	16184	.872	241.6	62.3	−20.4	22	123	794 *c*
	16185	.839	243.4	59.4	−17.6	8	44	360 *n*
	16197	.526	276.2	39.5	+ 9.4	3	12	
	16191	.365	229.2	23.7	− 6.8	69	345	
	16187	.269	297.2	21.8	+14.0	3	18	
	16188	.085	279.2	12.4	+ 7.9	22	101	
	16189	.081	37.8	4.7	+10.8	22	144	
	16194	.707	102.8	324.1	− 3.8	40	202	
	16192	.751	112.2	322.6	−11.4	14	78	466 *f*
	16193	.811	83.6	313.0	+ 9.4	96	625	323 *c*
	16195	.892	115.5	309.5	−18.8	12	69	127 *c*
	16196	.942	78.5	296.4	+13.2	26	207	1112 *c*
	16198	.990	70.8	284.1	+19.9	17	79	75 *c*
		.926	105.2					134
Sept. 1			(+21.2)	(7.6)	(+ 7.2)	(506)	(2909)	(5402)

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
244.350 G		.957	294.0					76
		.936	253.4					255
		.898	239.8					257
		.859	231.7					132
	16181	.990	253.0	74.6	−15.6	55	559	575 *c*
	16182	.934	285.6	65.4	+17.1	22	94	136 *f*
	16184	.951	246.2	63.0	−19.9	8	43	336 *c*
	16185	.927	247.6	59.2	−17.6	12	45	
	16197	.707	274.4	40.6	+ 8.2	1	14	
	16187	.486	285.4	23.6	+13.8	1	5	
	16191	.522	243.9	23.5	− 6.9	45	355	
	16188	.293	273.0	12.5	+ 7.8	22	46	
	16189	.179	291.5	5.1	+10.8	23	94	
	16194	.534	108.4	325.0	− 3.5	49	259	
	16192	.609	118.8	322.6	−11.0	14	70	
	16193	.674	83.8	312.8	+ 9.5	101	535	
	16195	.779	120.6	310.6	−18.2	39	111	182 *c*
	16196	.850	78.8	296.7	+13.2	43	182	560 *c*
	16198	.961	72.4	280.2	+18.8	54	227	252 *c*
	16199	.981	66.6	274.8	+24.3	18	68	206 *p*
Sept. 2			(+21.4)	(355.4)	(+ 7.2)	(507)	(2707)	(2967)
245.392 G		.979	257.7					218
		.971	244.1					373
		.928	248.2					166
		.902	236.5					235
		.862	259.5					145
		.856	276.1					131
	16182	.988	286.5	64.1	+17.3	16	123	238 *f*
	16185	.985	250.1	58.4	−18.1	6	25	111 *c*
	16191	.717	253.3	25.2	− 6.7	38	337	
	16188	.514	272.3	12.6	+ 7.4	5	30	
	16189	.403	280.7	5.3	+10.9	6	71	
	16200	.359	137.7	327.5	− 8.3	1	8	
	16194	.339	121.7	324.9	− 3.3	30	202	
	16192	.446	134.2	322.7	−11.2	9	65	
	16193	.473	83.3	313.3	+ 9.6	69	489	
	16195	.637	129.8	310.8	−17.8	14	144	
	16196	.701	78.8	296.9	+13.0	19	211	
	16198	.876	72.5	279.9	+18.8	37	220	157 *c*
	16199	.920	66.7	274.0	+24.2	6	43	228 *p*

Group 16194. Aug. 31-Sept. 8. A stream, growing rapidly from a tiny spot on August 31, in which the follower is the only stable component and alone remains on September 6. This group undergoes its whole life-history on the disk.

Group 16195. Aug. 31-Sept. 11. A stream of small spots.

Group 16196. Aug. 31-Sept. 11. A stream of small spots undergoing changes from day to day and declining to a single tiny spot by September 10.

Group 16197. Sept. 1 - 4. A small spot, not seen on September 3.

Group 16198. Sept. 1 - 13. Return of Group 16180; third appearance. A regular spot, preceded by a few companions until September 6.

Group 16199. Sept. 2 - 5. A small spot.

Group 16200. Sept. 3 - 10. A small unstable 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
1949			°	°	°			
	16201	.984	105.1	264.3	-13.4	19	312	236 *c*
		.902	57.4					117
Sept. 3			(+21.7)	(341.6)	(+7.2)	(275)	(2280)	(2355)
246.287 C		.961	240.7					175
		.946	261.1					217
		.858	279.7					117
		.796	284.7					108
	16197	.938	276.1	40.0	+8.2	6	19	147 *c*
	16191	.841	257.6	25.3	-6.4	45	270	227 *c*
	16188	.685	273.6	13.3	+8.4	3	12	
	16189	.574	278.3	5.0	+10.7	5	28	
	16200	.270	173.1	327.9	-8.3	5	38	
	16194	.199	155.7	325.1	-3.2	30	149	
	16192	.347	153.3	320.7	-10.8	15	82	
	16193	.286	81.2	313.2	+9.4	79	462	
	16195	.516	144.3	311.4	-17.8	28	203	
	16196	.548	76.5	296.7	+13.4	20	111	
	16198	.772	71.3	279.4	+19.0	45	219	186 *c*
	16199	.829	65.8	274.2	+24.0	8	45	182 *np*
	16201	.939	107.5	262.8	-13.7	81	473	422 *c*
	16202	.958	115.9	261.3	-22.3	7	41	155 *c*
		.933	71.9					271
		.978	82.1					155
Sept. 4			(+21.9)	(329.8)	(+7.2)	(377)	(2152)	(2362)
247.321 G		.943	291.3					151
		.914	280.9					499
		.787	232.9					275
	16191	.954	260.6	27.2	-6.7	41	256	627 *c*
	16188	.852	273.1	14.8	+6.4	10	46	225 *c*
	16200	.324	219.3	328.0	-7.4	4	25	
	16194	.244	222.7	325.6	-3.2	26	53	
	16192	.326	197.6	321.8	-10.8	10	33	
	16193	.057	44.9	313.8	+9.5	64	418	
	16195	.424	171.7	312.4	-17.5	26	135	
	16196	.328	71.7	297.6	+12.7	29	135	
	16198	.619	67.7	278.9	+19.3	34	141	
	16199	.695	63.2	273.7	+23.6	5	19	
	16201	.829	111.3	263.8	-13.2	116	742	167 *c*
	16202	.871	120.3	262.1	-21.9	19	73	111 *c*
	16203	.988	99.5	236.4	-8.2	6	22	96 *c*
	16204	.986	82.7	235.1	+8.3	0	15	171 *c*

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
		.860	71.1					264
		.925	83.3					148
		.971	73.1					92
Sept. 5			(+22.1)	(316.1)	(+7.2)	(390)	(2113)	(2826)
248.344 G		.963	259.6					291
		.955	284.3					246
		.899	277.6					513
		.890	240.0					161
	16194	.415	245.7	324.8	-3.2	4	28	
	16200	.450	234.9	324.3	-8.3	15	43	
	16192	.424	227.2	320.9	-9.8	16	87	
	16193	.200	281.2	314.0	+9.3	61	318	
	16195	.444	198.4	311.0	-17.7	41	201	
	16196	.109	27.6	299.6	+12.7	21	136	
	16198	.449	61.6	278.0	+18.8	23	132	
	16205	.565	49.3	273.7	+27.9	1	11	
	16201	.696	117.4	263.4	-13.1	157	780	269 *c*
	16202	.793	127.3	259.3	-23.5	2	9	127 *c*
	16204	.903	85.4	237.7	+7.2	21	73	251 *c*
	16203	.928	102.1	236.3	-8.4	3	21	229 *nf*
		.928	75.0					136
Sept. 6			(+22.4)	(302.6)	(+7.2)	(365)	(1839)	(2223)
249.332 G		.961	280.1					342
		.949	244.4					232
		.869	272.8					125
		.782	250.4					91
	16194	.591	255.8	324.4	-2.4	4	17	
	16200	.618	246.4	324.4	-8.4	20	127	
	16192	.564	239.7	319.1	-10.1	16	115	
	16193	.416	276.7	314.2	+9.3	53	306	
	16195	.536	218.8	310.2	-17.9	56	243	
	16196	.160	298.6	297.8	+11.5	22	123	
	16198	.288	44.4	277.4	+18.8	22	131	
	16205	.420	34.4	274.2	+27.1	1	8	
	16201	.539	127.8	263.8	-12.8	148	954	
	16204	.785	86.4	237.6	+7.3	25	141	264 *c*
	16203	.827	105.6	236.1	-8.6	2	10	187 *f*
		.805	73.9					86
		.963	68.0					187
		.963	79.1					187
Sept. 7			(+22.6)	(289.6)	(+7.2)	(369)	(2175)	(1701)

Group 16201. Sept. 3 - 15. A stream, led by a stable regular spot. The following part becomes composite by September 7 but again breaks up by September 10 into a train of variable spots. These die out as the group reaches the limb.

Group 16202. Sept. 4 - 6. One or two spots.

Group 16203. Sept. 5 - 7. A small spot.

Group 16204. Sept. 5 - 16. Return of Group 16162. A string of spots, except on September 15, when the leader is by itself.

Group 16205. Sept. 6 - 9. 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
1949			°	°	°			
250.345		.951	273.0					109
G		.916	238.9					125
		.904	256.0					184
	16200	.785	253.2	325.4	− 8.4	24	133	324 c
	16194	.762	259.8	324.7	− 2.9	2	5	164 p
	16192	.713	247.1	318.0	−10.7	21	88	72 p
	16193	.613	276.2	314.2	+ 9.4	54	312	
	16195	.662	231.4	309.2	−18.1	42	216	
	16196	.401	283.0	299.6	+11.8	15	45	
	16198	.200	355.9	277.1	+18.7	21	121	
	16205	.337	4.5	274.5	+26.7	3	19	
	16201	.416	147.2	262.9	−13.4	209	1173	
	16204	.601	88.4	239.1	+ 6.7	32	137	
	16206	.934	120.3	213.6	−25.0	10	22	135 c
	16207	.923	79.5	208.1	+12.5	27	56	556 c
		.909	66.8					149
		.932	72.8					248
Sept. 8			(+22.8)	(276.2)	(+ 7.2)	(460)	(2327)	(2066)
251.341		.957	239.2					134
G		.909	263.0					269
	16200	.902	257.2	325.5	− 8.2	13	136	376 c
	16192	.833	250.4	316.1	−11.9	2	16	
	16193	.781	276.2	314.7	+ 9.3	30	260	145 c
	16195	.781	239.6	308.0	−18.2	40	258	168 c
	16196	.638	277.5	302.8	+10.3	3	16	
	16198	.302	311.9	276.7	+18.6	20	122	
	16205	.367	327.2	275.6	+25.0	0	3	
	16201	.360	180.0	263.0	−13.8	139	1081	
	16204	.377	92.4	240.9	+ 5.7	19	137	
	16206	.850	125.7	213.5	−25.1	15	79	90 c
	16207	.818	79.8	207.7	+12.4	9	30	236 c
	16208	.975	77.2	184.8	+14.0	25	135	960 c
		.812	68.0					173
		.914	100.0					166
Sept. 9			(+23.0)	(263.0)	(+ 7.2)	(315)	(2273)	(2717)
252.363		.811	285.5					269
G	16200	.981	260.0	326.9	− 8.3	23	113	546 f
	16193	.906	277.2	315.0	+ 9.6	34	199	314 c
	16195	.894	245.6	308.2	−18.0	95	316	460 c
	16196	.810	277.0	304.0	+ 9.9	12	21	556 c

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
	16198	.483	296.5	276.6	+18.8	15	74	
	16201	.427	214.2	263.7	−13.7	169	924	
	16204	.143	97.8	241.3	+ 6.0	14	128	
	1284a	.377	137.1	234.5	− 9.0	0	5	
	16209	.473	82.8	221.2	+ 9.8	1	5	
	16206	.742	134.1	213.5	−25.3	35	153	54 c
	16207	.638	80.0	209.7	+11.9	16	77	
	16208	.895	77.4	185.3	+14.4	35	210	341 c
	16210	.992	104.0	168.9	−12.8	27	214	127 c
		.778	71.4					143
		.834	84.0					265
		.926	71.0					207
		.943	109.1					184
Sept. 10			(+23.2)	(249.5)	(+ 7.2)	(476)	(2439)	(3466)
253.368		.974	257.5					221
G		.867	285.2					316
	16193	.978	278.6	315.0	+ 9.9	42	160	182 c
	16195	.964	249.2	307.2	−17.8	78	344	279 c
	16196	.925	277.4	304.5	+ 9.6	3	18	258 c
	16198	.652	290.8	276.2	+18.9	11	65	
	16201	.571	233.8	264.5	−13.3	193	983	
	16211	.444	299.2	260.4	+19.0	4	16	
	16204	.060	248.8	239.5	+ 6.0	30	168	
	16209	.244	77.4	222.4	+10.1	1	8	
	16206	.624	147.4	214.6	−25.0	33	146	
	16207	.452	77.2	209.6	+12.2	1	5	
	16208	.759	77.4	186.7	+14.2	35	202	220 c
	16210	.964	105.8	164.3	−13.1	125	706	556 c
	16212	.988	74.4	153.9	+16.4	95	433	205 c
		.772	86.4					70
		.882	112.8					202
		.884	71.3					167
		.926	82.1					148
Sept. 11			(+23.4)	(236.3)	(+ 7.2)	(651)	(3254)	(2824)
254.396		.940	282.5					590
G		.808	301.6					380
	16198	.802	288.4	276.1	+19.0	9	43	187 p
	16201	.727	243.4	264.5	−13.7	203	1068	264 p
	16211	.627	291.5	260.6	+19.0	18	66	
	16204	.256	269.2	237.6	+ 6.7	25	129	

Group 16206. Sept. 8 - 18. A regular spot, followed by a small companion until September 13.
Group 16207. Sept. 8 - 11. One or two small spots.
Group 16208. Sept. 9 - 18. Return of Group 16189. A regular spot leading a small stream; the whole dies out before reaching the limb.
Group 16209. Sept. 10 - 13. Two or three faint spots.
Group 16210. Sept. 10 - 23. A large composite spot, which undergoes very little change in shape except for a longitudinal elongation for a few days. It is closely preceded by a regular spot with a few companions until September 21.
Group 16211. Sept. 11 - 14. One or two small spots.
Group 16212. Sept. 11 - 22. A diminishing composite spot followed by a few tiny companions until September 15.

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
1949			°	°	°			
	16209	.046	320.5	224.4	+ 9.2	6	26	
	16206	.551	167.7	215.3	-25.3	38	148	
	16208	.590	75.4	186.7	+14.4	44	215	
	16210	.890	108.6	163.0	-12.9	159	1074	622 *c*
	16212	.921	75.7	154.9	+15.9	64	363	744 *c*
		.767	68.0					158
		.837	79.2					227
		.845	88.5					95
		.886	97.6					121
		.911	66.4					244
Sept. 12			(+23.6)	(222.7)	(+ 7.2)	(566)	(3132)	(3632)
255.383 G		.902	297.6					312
	16198	.904	287.7	275.0	+19.0	6	21	314 *p*
	16201	.848	248.8	263.9	-13.7	174	926	746 *c*
	16211	.788	288.9	261.6	+19.3	9	33	82 *n*
	16204	.487	269.7	238.8	+ 6.1	15	83	
	16209	.207	278.2	221.5	+ 8.7	4	19	
	16206	.540	189.8	215.4	-24.8	35	179	
	16208	.411	70.4	186.1	+14.5	41	236	
	16210	.793	112.8	161.1	-13.1	227	1523	503 *c*
	16212	.805	75.3	155.7	+16.1	78	400	379 *c*
	1284b	.943	74.9	138.1	+16.6	3	13	341 *c*
	16213	.969	81.3	133.2	+10.2	28	111	80 *f*
		.863	64.4					133
Sept. 13			(+23.8)	(209.6)	(+ 7.2)	(620)	(3544)	(2890)
256.408 C		.959	294.8					132
	16201	.942	252.7	263.6	-13.6	109	730	614 *c*
	16211	.914	287.9	262.9	+19.2	2	18	100 *f*
	16204	.743	270.8	244.2	+ 5.4	7	30	204 *c*
	16206	.606	211.2	216.2	-24.3	21	123	
	16208	.212	55.4	185.8	+14.0	34	215	
	16210	.649	121.1	161.4	-13.7	158	1483	249 *f*
	16212	.654	74.5	155.4	+15.5	58	334	83 *f*
	16213	.886	82.4	133.2	+10.1	14	83	131 *nf*
		.786	66.2					115
		.862	72.8					150
		.957	73.4					481
		.971	85.1					156
Sept. 14			(+24.0)	(196.1)	(+ 7.2)	(403)	(3016)	(2415)
1949			°	°	°			
257.551 G		.951	288.0					362
		.933	277.8					201
		.805	284.7					228
		.804	251.6					285
	16201	.983	252.4	257.6	-15.7	30	130	458 *c*
	16204	.860	272.9	240.6	+ 6.2	16	43	332 *c*
	16206	.725	225.8	215.7	-24.4	26	132	
	16214	.229	288.3	193.7	+11.1	5	19	
	16208	.143	331.2	185.1	+14.4	34	207	
	16210	.478	136.6	161.3	-13.5	220	1726	
	16212	.441	68.6	155.9	+15.8	52	303	
	16213	.740	82.6	133.0	+10.3	17	95	279 *f*
	16215	.965	105.9	108.8	-13.2	82	492	293 *c*
	16216	.969	85.6	105.0	+ 6.1	4	18	126 *n*
		.850	70.9					744
		.866	82.8					168
		.969	71.6					247
Sept. 15			(+24.2)	(181.0)	(+ 7.2)	(486)	(3165)	(3723)
258.422 G		.904	256.2					144
		.888	276.1					269
		.883	285.1					204
	16204	.966	273.9	244.9	+ 5.6	4	27	175 *nf*
	16206	.819	233.3	215.4	-24.3	23	112	220 *sf*
	16214	.416	281.6	193.9	+11.4	1	11	
	16208	.298	296.6	185.4	+14.6	26	156	
	16210	.383	158.9	161.4	-13.7	207	1487	
	16212	.269	56.7	156.1	+15.5	49	245	
	16213	.593	83.1	133.0	+ 9.8	14	79	
	16215	.898	108.5	108.7	-13.1	100	523	410 *c*
	16217	.980	61.9	88.8	+28.9	0	17	138 *n*
	16218	.993	77.7	85.1	+13.0	20	147	153 *p*
		.784	70.5					452
		.922	70.3					319
		.925	84.3					191
Sept. 16			(+24.3)	(169.5)	(+ 7.2)	(444)	(2804)	(2675)
259.324 G		.955	278.0					262
		.950	262.3					177
		.793	279.7					277
	16206	.899	238.7	214.7	-24.0	10	112	267 *sf*
	16208	.473	286.9	185.3	+14.3	10	78	

Group 16213. Sept. 13 - 24. Return of Group 16175. A small regular spot.
Group 16214. Sept. 15 - 19. A tiny spot, not seen on September 17 and 18.
Group 16215. Sept. 15 - 26. A stream of normal type, led by a stable regular spot which alone remains after September 23.
Group 16216. Sept. 15 - 22. A stream of small changing spots not seen on September 16.
Group 16217. Sept. 16 - 20. A small spot.
Group 16218. Sept. 16 - 23. A small, diminishing regular spot with one or two tiny companions on September 22 and 23.

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
1949			°	°	°			
	16210	.369	188.7	160.9	-14.1	173	1685	
	16212	.147	10.5	156.0	+15.5	21	235	
	16213	.415	82.7	133.0	+ 9.6	12	83	
	16219	.533	65.3	126.9	+19.0	1	5	
	16215	.798	112.2	108.5	-12.8	71	513	194 *c*
	16216	.793	87.1	104.9	+ 6.7	6	39	66 *c*
	1284c	.951	112.9	89.8	-19.1	6	29	188 *c*
	16217	.923	61.9	89.8	+28.6	0	9	152 *c*
	16218	.951	78.7	84.7	+12.9	18	126	127 *c*
		.820	68.7					166
		.880	75.2					152
		.887	83.1					73
		.944	69.1					168
		.954	97.6					221
		.960	105.1					218
Sept.17			(+24.5)	(157.6)	(+ 7.2)	(328)	(2914)	(2708)
260.310 C		.909	281.8					337
		.852	272.2					93
	16206	.967	243.0	214.7	-23.8	25	114	225 *sf*
	16208	.653	283.5	185.3	+14.2	9	42	
	16210	.443	216.7	160.4	-13.9	273	1470	
	16212	.238	309.3	155.6	+15.6	45	218	
	16213	.203	79.0	133.0	+ 9.1	19	63	
	16219	.339	53.6	128.0	+18.4	5	31	
	16215	.656	119.6	108.9	-13.1	105	542	
	16216	.616	88.4	106.5	+ 6.6	13	71	
	16217	.820	60.2	90.9	+28.3	3	13	85 *c*
	16218	.861	79.4	84.6	+12.7	24	137	135 *c*
	16220	.955	108.6	75.0	-15.4	12	68	314 *c*
		.850	114.2					102
		.894	98.8					121
		.946	117.6					166
Sept.18			(+24.6)	(144.6)	(+ 7.1)	(533)	(2769)	(1578)
261.331 G		.969	281.2					402
		.958	273.0					213
		.945	291.8					169
		.908	268.4					119
		.888	286.7					218
		.815	244.4					213
		.791	281.8					328
		.790	294.4					82
	16214	.886	279.2	194.0	+11.4	2	7	165 *c*

U. T.	Group No.	MEASURES		POSITION		AREA		
		Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ
1949			°	°	°			
	16221	.581	280.6	166.7	+11.9	1	7	
	16210	.593	234.4	160.8	-13.9	273	1431	
	16212	.453	291.0	157.0	+15.7	22	97	
	16213	.046	310.4	133.1	+ 8.7	8	62	
	16219	.195	9.6	129.1	+18.1	4	13	
	16215	.480	133.0	110.1	-12.4	96	459	
	16216	.398	89.2	107.6	+ 6.8	28	132	
	16217	.694	56.2	90.4	+28.1	3	11	
	16218	.722	78.6	84.7	+13.1	13	58	79 *f*
	16220	.883	112.5	73.2	-16.1	12	72	603 *c*
	16222	.987	83.2	49.9	+ 7.8	21	130	285 *c*
		.770	121.1					70
		.776	103.4					134
		.779	67.6					125
		.875	124.8					163
		.878	60.0					116
		.920	72.8					368
		.948	102.0					122
Sept.19			(+24.8)	(131.1)	(+ 7.1)	(483)	(2479)	(3974)
262.344 G		.970	282.3					273
		.935	276.2					95
		.931	291.0					182
		.926	250.4					221
		.897	283.5					403
		.809	290.7					191
	16221	.756	278.7	167.2	+11.2	5	21	139 *c*
	16210	.735	243.7	160.3	-13.8	238	1336	374 *c*
	16212	.637	285.9	157.1	+15.6	16	41	
	16213	.270	276.3	133.5	+ 8.5	15	66	
	16219	.285	311.9	130.6	+17.9	6	17	
	16223	.308	203.3	124.9	- 9.3	13	37	
	16215	.350	159.9	110.8	-12.1	93	429	
	16216	.150	91.0	109.2	+ 6.8	17	75	
	16217	.553	46.8	90.6	+28.5	7	13	
	16218	.545	77.1	84.9	+12.9	8	39	
	16220	.745	117.7	74.9	-15.1	8	47	369 *c*
	16222	.930	84.2	49.0	+ 8.0	51	219	302 *c*
	16224	.998	97.5	32.6	- 6.9	52	346	142 *p*
		.795	107.3					120
		.909	119.1					227
		.931	105.6					258
		.943	112.1					250
		.979	75.7					134
Sept.20			(+24.9)	(117.8)	(+ 7.1)	(529)	(2686)	(3680)

Group 16219. Sept. 17 - 20. One or two small spots.

Group 16220. Sept. 18 - 29. Return of Group 16181. A cluster of tiny spots until September 20. Nothing is seen on the next day, but on September 22 a growing cluster reappears, the most stable component being a small composite spot.

Group 16221. Sept. 19 - 20. A small spot.

Group 16222. Sept. 19 - 28. A variable stream in which first the leader, and then the follower, is the largest component.

Group 16223. Sept. 20 - 25. A stream of small spots, forming immediately preceding Group 16215.

Group 16224. Sept.20-Oct.2. A composite spot which divides into two by September 23. At the same time other small spots appear, the whole forming a stream in which the leading and central portions are the largest components.

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
1949			°	°	°			
263.310		.967	284.1					253
C		.923	291.7					183
		.878	281.9					272
		.875	259.3					90
		.863	270.8					118
	16210	.848	248.7	159.2	-13.8	111	1079	556 *c*
	16212	.794	283.7	157.9	+15.2	3	18	126 *c*
	16213	.479	274.9	133.7	+ 8.6	14	58	
	16223	.433	229.7	124.5	- 9.5	25	119	
	16215	.345	197.1	110.9	-12.1	55	386	
	16216	.091	265.9	110.2	+ 6.7	6	46	
	16218	.349	71.7	85.2	+12.9	8	36	
	16222	.823	84.9	49.3	+ 8.2	33	233	178 *c*
	16224	.949	99.3	34.7	- 6.5	35	257	347 *c*
		.831	107.3					126
		.878	116.7					227
		.926	121.7					314
		.951	75.8					349
Sept.21			(+25.1)	(105.0)	(+ 7.1)	(290)	(2232)	(3139)
264.351		.954	269.8					148
G		.944	294.8					152
		.820	292.8					343
	16210	.947	253.0	159.8	-13.5	136	735	821 *c*
	16212	.917	284.2	158.5	+15.8	5	14	502 *c*
	16213	.674	275.4	133.9	+ 8.8	14	52	
	16223	.612	244.6	125.2	- 9.4	31	118	
	16215	.469	228.4	112.2	-11.5	69	338	
	16216	.273	271.5	107.2	+ 7.1	8	39	
	16218	.149	47.9	84.8	+12.7	8	31	
	16220	.478	140.0	72.8	-14.8	28	91	
	16222	.658	85.4	50.0	+ 8.3	27	156	
	1284d	.788	76.8	39.0	+14.7	3	11	164 *f*
	16224	.849	102.6	35.0	- 6.8	61	381	505 *c*
	16225	.962	122.3	23.9	-28.4	4	20	115 *p*
		.835	127.0					131
		.862	116.2					99
		.911	74.5					350
		.931	85.6					76
Sept.22			(+25.2)	(91.3)	(+ 7.0)	(394)	(1986)	(3406)
265.451		.956	287.1					529
G		.880	288.7					210
	16210	.997	255.1	159.9	-14.1	122	604	350 *f*
	16213	.837	275.9	133.8	+ 8.7	10	36	139 *n*
	16223	.778	252.2	125.1	- 9.1	24	81	139 *c*
	16215	.658	242.7	113.3	-11.9	62	294	
	16218	.178	298.3	85.9	+11.7	6	26	

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
	16220	.383	172.8	73.9	-15.2	56	256	
	16222	.461	85.8	49.2	+ 8.1	21	119	
	16224	.695	107.9	35.1	- 7.1	57	335	
	16226	.813	114.2	26.7	-15.0	3	29	158 *c*
	16225	.880	126.9	24.2	-27.7	22	86	248 *c*
		.879	77.6					302
		.946	118.5					137
Sept.23			(+25.3)	(76.7)	(+ 7.0)	(383)	(1866)	(2212)
266.372		.967	293.4					303
G		.955	285.1					204
		.877	289.1					253
		.835	279.0					141
	16213	.932	276.7	133.8	+ 8.8	5	27	196 *n*
	16223	.901	256.2	126.8	- 9.2	12	94	249 *c*
	16215	.811	250.0	115.5	-11.7	66	280	110 *c*
	16220	.422	204.7	75.1	-15.5	29	247	
	16222	.264	84.4	49.3	+ 8.2	11	97	
	16224	.535	114.4	35.3	- 6.7	60	575	
	16226	.692	120.4	26.6	-15.0	0	11	
	16225	.791	133.4	24.3	-27.6	11	72	73 *c*
		.829	77.6					180
		.906	121.4					184
		.934	86.8					155
		.942	75.4					132
Sept.24			(+25.4)	(64.6)	(+ 7.0)	(194)	(1403)	(2180)
267.370		.953	280.2					218
G		.952	288.4					306
		.865	285.9					155
		.829	247.2					199
		.827	273.9					216
		.813	292.5					114
	16223	.981	259.4	128.7	- 9.0	0	10	226 *c*
	16215	.920	253.6	115.7	-12.1	59	319	213 *c*
	16227	.770	279.7	102.0	+11.8	5	24	
	16220	.544	226.6	75.5	-15.6	58	329	
	16222	.078	69.6	47.2	+ 8.5	22	148	
	16224	.358	130.6	35.6	- 6.8	67	551	
	16225	.686	144.4	24.7	-27.6	13	54	
	1284e	.680	136.4	20.8	-23.5	1	6	
		.836	86.1					82
		.879	126.3					128
		.940	89.1					97
		.943	107.2					83
		.955	80.4					129
		.967	100.5					432
Sept.25			(+25.6)	(51.4)	(+ 6.9)	(225)	(1441)	(2598)

Group 16225. Sept. 22 - 26. A pair of small spots.
Group 16226. Sept. 23 - 24. Two or three tiny spots.
Group 16227. Sept. 25 - 27. 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
1949			°	°	°			
268.304		.964	286.5					220
C		.947	274.7					166
		.926	250.4					255
		.872	291.5					120
		.831	248.1					116
	16215	.981	255.7	115.7	-12.5	55	295	235 c
	16227	.899	279.6	103.7	+11.6	20	89	116 c
	16220	.680	237.7	75.6	-15.7	57	289	
	16222	.127	280.7	46.3	+ 8.2	24	140	
	16224	.236	166.1	35.8	- 6.3	90	462	
	16225	.611	158.5	24.5	-27.8	4	24	
	16228	.853	80.3	340.1	+11.8	7	23	108 c
		.818	131.7					140
		.884	104.1					253
		.969	101.9					281
Sept.26			(+25.7)	(39.1)	(+ 6.9)	(257)	(1322)	(2010)
269.471		.963	251.8					245
G		.960	291.5					197
		.936	285.0					126
		.935	259.9					203
		.924	241.3					231
		.891	296.6					98
		.839	282.4					133
		.826	231.6					128
		.824	259.4					79
	16227	.983	280.4	104.0	+11.4	28	164	242 c
	1284f	.938	277.8	94.0	+ 9.7	3	10	130 c
	16220	.837	246.2	76.2	-15.5	42	190	585 c
	16222	.388	273.6	46.6	+ 7.8	12	57	
	16224	.318	224.8	36.7	- 6.3	68	429	
	16228	.674	81.4	341.1	+10.9	3	11	
		.866	106.0					288
		.934	83.7					279
		.944	115.8					117
		.969	107.2					201
Sept.27			(+25.8)	(23.7)	(+ 6.9)	(156)	(861)	(3282)
270.308		.943	282.2					160
C		.930	259.6					132
		.853	233.6					227
	16220	.922	249.8	76.5	-15.7	29	196	667 c
	16222	.530	274.7	44.8	+ 8.3	1	9	
	16224	.463	242.5	37.0	- 6.1	68	366	
	16228	.525	82.0	341.0	+10.0	0	6	
	16229	.605	115.4	339.2	- 9.4	1	15	

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
		.774	112.4					111
		.873	83.9					310
		.926	113.0					369
		.956	75.5					274
Sept.28			(+25.8)	(12.7)	(+ 6.8)	(99)	(592)	(2250)
271.651		.942	240.3					148
G		.869	248.8					168
		.857	273.8					215
		.847	235.6					104
		.768	274.8					105
	16220	.994	254.2	76.4	-14.8	0	18	296 f
	16224	.700	253.7	37.3	- 6.3	46	247	
	16229	.365	138.3	340.7	- 9.1	12	44	
		.823	118.8					178
		.836	78.9					245
		.945	86.0					153
		.966	74.5					106
		.982	103.8					347
Sept.29			(+26.0)	(354.9)	(+ 6.8)	(58)	(309)	(2065)
272.449		.944	252.4					285
G		.928	241.2					223
		.889	275.6					387
		.829	235.2					199
		.790	225.2					218
		.783	283.6					162
	16224	.819	257.8	37.8	- 6.0	28	192	465 c
	16229	.278	175.5	343.1	- 9.3	5	21	
	16230	.983	106.6	267.4	-14.9	34	362	443 c
		.783	77.6					134
		.870	87.2					135
		.905	72.0					90
		.961	62.4					119
Sept.30			(+26.0)	(344.4)	(+ 6.7)	(67)	(575)	(2860)
273.329		.973	246.7					311
G		.955	276.3					335
		.903	234.0					206
		.884	282.5					201
		.864	245.3					122
	16224	.916	261.1	37.9	- 5.3	18	149	616 c
	16229	.332	216.8	344.4	- 8.8	2	14	
	16231	.776	110.5	285.2	-11.2	14	82	91 c
	16230	.922	108.7	268.7	-14.3	66	449	587 c

Group 16228. Sept. 26 - 28. A small spot.
Group 16229. Sept. 28-Oct. 2. A small spot.
Group 16230. Sept. 30-Oct. 12. Return of Group 16201. A stream, in which the follower splits into a pair of regular spots by October 10. From September 30 the leading portion of the group grows rapidly, forming another composite spot by October 5. This part slowly declines as it crosses the disk.
Group 16231. Oct. 1 - 10. A diminishing regular spot followed by a small distant companion.

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
1949			°	°	°			
	16232	.980	83.1	253.8	+ 8.1	76	915	403 c
		.776	71.5					106
		.902	62.0					116
		.918	70.9					210
		.937	54.4					110
Oct. 1			(+26.1)	(332.8)	(+ 6.7)	(176)	(1609)	(3414)
274.431 G		.952	285.6					216
		.921	236.4					99
		.903	267.5					102
		.891	251.8					122
		.882	277.7					211
	16224	.982	262.9	36.2	- 5.6	0	10	734 c
	16229	.526	241.7	346.0	- 8.6	1	8	
	16233	.624	159.7	303.9	-29.3	1	12	
	16231	.583	118.3	286.9	-10.4	23	259	
	16230	.803	113.5	268.9	-14.4	66	496	361 c
	16234	.797	72.1	265.4	+18.2	8	53	134 c
	16235	.871	81.7	257.2	+10.5	2	25 }	504 c
	16232	.896	83.9	254.2	+ 8.3	134	1156 }	
	16236	.878	67.3	256.8	+23.0	4	37	203 c
		.769	59.4					122
		.863	54.2					87
		.906	102.9					365
Oct. 2			(+26.1)	(318.2)	(+ 6.6)	(239)	(2056)	(3260)
275.620 G		.918	282.2					181
		.874	229.6					273
	16237	.666	289.0	343.8	+17.5	7	19	
	16238	.330	284.9	321.5	+11.1	1	4	
	16233	.590	185.3	306.2	-29.2	15	92	
	16231	.374	137.9	287.9	- 9.6	37	205	
	16230	.636	122.4	269.1	-14.4	117	537	
	16234	.617	68.8	265.5	+18.2	12	45	
	16235	.701	82.0	257.9	+10.3	32	212	
	16236	.726	64.2	257.5	+23.1	37	210	172 f
	1285a	.823	118.2	252.9	-18.6	2	6	228 p
	16232	.749	85.0	253.9	+ 8.1	212	1504	395 c

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
	16239	.888	64.3	240.1	+25.8	2	8	155 c
		.918	84.1					181
		.932	104.4					167
		.955	75.3					222
Oct. 3			(+26.2)	(302.6)	(+ 6.6)	(474)	(2842)	(1974)
276.368 G		.948	238.4					242
		.935	284.8					279
		.806	251.0					140
	16237	.778	287.2	343.6	+17.4	6	24	
	16238	.499	280.8	322.5	+11.0	1	2	
	16233	.624	199.8	306.7	-29.5	23	89	
	1285b	.037	285.6	294.7	+ 7.1	4	19	
	16231	.289	166.9	288.9	- 9.8	31	182	
	16240	.246	107.0	279.1	+ 2.2	2	14	
	16230	.518	132.1	269.4	-14.3	164	721	
	16234	.447	63.6	268.0	+17.3	4	12	
	16236	.595	59.6	259.0	+22.9	58	253	
	16235	.556	81.4	258.9	+10.1	44	203	
	16232	.629	85.6	253.6	+ 7.8	218	1323	169 f
	16239	.820	62.2	238.8	+26.4	0	2	115 c
		.767	124.9					105
		.875	105.3					149
		.879	75.3					116
		.964	77.4					309
Oct. 4			(+26.2)	(292.7)	(+ 6.5)	(555)	(2844)	(1624)
277.368 G		.850	244.9					73
	16237	.903	285.6	344.6	+16.9	8	29	124 c
	16241	.910	286.3	343.0	- 9.6	24	95	220 c
	16242	.773	295.7	328.9	+23.8	9	48	78 c
	16238	.690	279.5	323.3	+11.2	1	5	
	16233	.697	213.7	305.8	-29.5	13	49	
	16231	.327	211.9	289.6	- 9.7	34	158	
	16240	.087	179.3	279.4	+ 1.5	18	70	
	16230	.380	157.5	270.9	-14.0	143	777	
	16234	.263	43.0	268.7	+17.4	4	27	
	16236	.420	47.9	259.9	+22.5	70	427	

Group 16232. Oct. 1 - 13. A large complex spot, of which the main nucleus is nearly regular after October 5; the whole group declines slowly from that day.
Group 16233. Oct. 2 - 8. A pair of small spots.
Group 16234. Oct. 2 - 6. A pair of small spots on October 2 and 3; a single spot afterwards.
Group 16235. Oct. 2 - 12. A stream of unstable spots, immediately north of Group 16232, which goes through its complete life-history on the disk.
Group 16236. Oct. 2 - 12. A stream developing from one or two tiny spots first seen on October 2. The leader becomes composite and is the most stable component.
Group 16237. Oct. 3 - 6. A pair of tiny spots, of which one remains on October 6.
Group 16238. Oct. 3 - 5. A tiny spot.
Group 16239. Oct. 3 - 14. At first a small spot, not seen on October 5. On October 7 other spots appear in the form of a stream which is declining as it passes round the limb.
Group 16240. Oct. 4 - 10. A stream of small spots, appearing near the C.M. and dying out before reaching the limb.
Group 16241. Oct. 5 - 6. A few small spots appearing near the west limb.
Group 16242. Oct. 5 - 7. A few tiny spots.

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
1949			°	°	°			
	16235	.354	76.7	259.1	+10.8	66	286	
	16232	.446	85.7	253.0	+ 7.7	230	1354	
		.890	81.0					364
		.920	94.8					155
		.930	65.6					120
		.953	85.7					200
		.959	118.9					233
		.962	72.5					301
Oct. 5			(+26.3)	(279.5)	(+ 6.5)	(620)	(3325)	(1868)
278.425 G		.940	248.0					162
		.910	263.8					119
		.875	255.7					183
		.807	239.7					225
		.805	275.3					300
	16237	.987	285.7	347.5	+16.4	0	21	197 *c*
	16241	.980	258.2	342.4	-10.1	32	200	334 *c*
	16242	.895	294.1	329.0	+24.3	15	45	153 *c*
	16233	.793	224.7	305.2	-29.3	6	18	144 *c*
	16231	.497	238.5	290.9	- 9.2	25	129	
	16240	.279	254.5	281.1	+ 1.9	28	126	
	16230	.368	195.9	271.5	-14.2	135	597	
	16234	.183	0.9	265.4	+16.9	5	16	
	16236	.290	17.5	260.2	+22.4	103	498	
	16235	.142	54.7	258.8	+11.0	91	439	
	16232	.219	82.8	253.0	+ 7.8	186	1092	
	16239	.489	50.3	241.4	+24.0	0	4	
		.813	82.1					663
		.916	122.3					315
		.923	72.2					863
		.944	93.1					117
Oct. 6			(+26.3)	(265.6)	(+ 6.4)	(626)	(3185)	(3775)
279.464 G		.952	259.1					126
		.931	240.0					90
		.909	280.4					93
		.892	248.3					160
		.889	273.3					108
		.777	279.7					53
	16242	.972	293.1	329.6	+24.0	19	125	263 *c*
	16233	.887	232.1	304.9	-29.2	4	32	105 *sf*
	1285c	.844	237.7	302.3	-22.8	2	15	79 *c*
	16231	.660	247.6	289.9	- 9.5	20	123	
	16240	.486	262.3	280.5	+ 1.9	23	164	
	16230	.468	221.5	270.4	-14.4	79	737	
	16236	.308	332.2	260.7	+22.1	81	624	
	16235	.151	298.5	259.5	+10.4	114	440	
	16232	.037	306.9	253.5	+ 7.7	148	1095	

U. T.	Group No.	MEASURES		POSITION		AREA		
		Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ
1949			°	°	°			
	16239	.344	28.0	241.7	+24.0	4	27	
	1285d	.770	73.5	201.6	+16.7	0	3	152 *c*
	16243	.923	132.2	195.5	-34.9	10	58	103 *c*
	1285e	.948	78.7	179.7	+12.7	0	6	440 *c*
	16244	.981	107.9	175.6	-16.1	0	10	155 *c*
	16245	.976	71.3	173.2	+19.6	4	25	101 *c*
		.774	87.6					106
		.863	64.7					153
		.883	95.9					130
		.979	101.4					187
Oct. 7			(+26.3)	(251.8)	(+ 6.4)	(508)	(3484)	(2604)
280.382 G		.963	278.4					183
		.953	246.4					183
		.945	293.2					85
		.932	284.6					121
		.837	284.4					142
	16233	.959	237.4	306.6	-28.8	0	3	163 *sf*
	16231	.813	254.4	291.9	- 8.8	21	93	128 *sf*
	16240	.649	265.8	279.9	+ 2.1	24	140	
	16230	.596	234.9	269.8	-14.5	144	691	
	16236	.441	308.2	261.5	+21.7	142	654	
	16235	.328	284.6	258.5	+10.7	82	519	
	16232	.235	277.2	253.2	+ 7.8	177	992	
	16239	.295	349.1	243.2	+23.1	34	175	
	16243	.859	137.6	194.9	-34.9	17	64	257 *c*
	16244	.922	111.6	176.2	-17.1	0	9	306 *c*
	16245	.920	71.6	172.3	+19.3	65	325	566 *c*
	16246	.968	103.4	166.2	-11.2	12	36	754 *c*
		.770	66.6					105
		.810	78.4					171
		.929	95.0					134
		.931	83.8					166
		.948	60.8					208
Oct. 8			(+26.4)	(239.7)	(+ 6.3)	(718)	(3701)	(3672)
281.395 G		.977	241.0					179
		.940	279.0					97
		.936	288.2					109
	16231	.926	258.0	292.5	- 8.6	21	90	114 *sf*
	16240	.804	268.2	279.7	+ 2.3	8	34	136 *c*
	16230	.735	243.6	269.1	-14.4	94	594	142 *c*
	16236	.607	298.0	261.5	+21.7	101	609	
	16235	.530	280.5	258.3	+10.9	51	272	
	16232	.453	274.7	253.4	+ 7.8	167	795	
	16239	.402	317.2	243.6	+23.1	46	292	
	16243	.786	144.6	193.0	-34.5	24	86	132 *c*
	16244	.826	115.8	175.5	-17.1	4	10	97 *c*

Group 16243. Oct. 7 - 16. Two or three small spots, of which only one remains by October 13.
Group 16244. Oct. 7 - 17. A few variable spots, not seen on October 11.
Group 16245. Oct. 7 - 18. A composite spot, which soon begins to break up and decline.
Group 16246. Oct. 8 - 19. Return of Group 16210. A stream in which the only stable component is the leader, a small regular spot; this splits into two on October 16.

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
1949			°	°	°			
	16245	.814	70.0	172.2	+19.9	101	544	185 *c*
	16246	.902	106.8	164.6	−12.2	28	134	605 *c*
		.777	85.0					97
		.914	61.6					177
		.940	120.4					113
		.946	74.5					220
		.983	66.2					120
Oct. 9			(+26.4)	(226.4)	(+6.3)	(645)	(3460)	(2523)
282.348 G		.965	279.6					147
		.918	287.2					111
	16231	.985	260.2	292.5	−8.5	20	118	119 *sf*
	16240	.923	269.5	281.0	+1.9	0	11	284 *c*
	16230	.860	249.1	269.6	−14.4	57	502	572 *c*
	16236	.751	292.6	261.6	+21.0	38	464	173 *c*
	16235	.720	277.8	260.0	+9.9	23	183	43 *c*
	16232	.641	274.7	253.8	+7.8	92	662	
	16239	.543	303.8	243.0	+23.0	31	313	
	16243	.718	154.4	191.8	−34.5	18	94	
	16244	.709	123.0	175.3	−17.9	5	19	60 *f*
	16245	.677	66.4	172.5	+20.4	77	588	
	16246	.790	110.0	164.7	−11.6	14	110	699 *c*
	16247	.999	70.6	129.2	+19.9	0	16	379 *c*
		.818	61.6					133
		.839	75.0					131
		.919	54.2					55
		.920	64.8					154
		.933	101.5					137
		.946	77.4					404
Oct. 10			(+26.4)	(213.8)	(+6.2)	(375)	(3080)	(3601)
283.644 G		.984	271.6					214
		.938	298.9					239
		.886	247.4					261
		.868	238.2					266
		.853	286.0					275
	16230	.968	253.2	269.7	−14.5	75	524	728 *c*
	16236	.918	289.4	263.8	+20.2	48	314	666 *f*
	16235	.885	277.7	259.3	+9.7	20	83	817 *c*
	16232	.844	274.8	254.5	+7.3	81	526	
	16239	.738	295.9	242.7	+23.1	38	261	169 *c*
	1285f	.135	283.8	204.3	+7.9	1	6	
	16243	.664	169.4	188.2	−34.5	11	73	
	16245	.457	56.2	172.9	+20.3	56	446	

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
	16246	.581	119.0	165.2	−11.2	39	228	
	16247	.911	69.8	130.7	+20.9	2	19	167 *c*
	16248	.923	66.8	129.0	+23.7	5	35	
	16249	.952	104.0	126.5	−11.3	33	169	215 *c*
	16250	.964	75.9	121.3	+15.2	44	205	307 *c*
		.798	75.0					139
		.812	64.0					207
		.890	81.2					218
Oct. 11			(+26.4)	(196.7)	(+6.1)	(453)	(2889)	(4888)
284.351 G		.928	244.6					384
		.925	295.6					504
		.905	285.4					142
	16230	.988	254.0	266.2	−14.7	76	362	179 *f*
	16235	.974	277.8	264.8	+8.9	4	20	749 *c*
	16232	.917	275.4	254.2	+7.4	115	580	
	16236	.967	289.4	263.6	+20.2	25	176	190 *c*
	16239	.823	293.7	242.0	+22.8	54	215	207 *c*
	16243	.653	180.1	187.5	−34.6	5	19	
	16244	.402	149.8	175.4	−14.4	6	38	
	16245	.344	44.7	172.6	+19.9	83	502	
	16246	.457	128.9	166.2	−11.0	53	249	
	16251	.567	132.0	161.4	−16.9	1	11	
	16247	.836	69.5	131.0	+20.4	32	146	296 *c*
	16248	.856	65.6	129.1	+23.9	4	32	
	16249	.890	106.1	126.9	−11.4	25	103	339 *c*
	16250	.908	76.3	121.7	+14.9	49	355	317 *c*
	16252	.980	116.6	113.2	−24.5	17	71	119 *c*
		.783	80.8					133
		.912	85.8					134
		.961	67.8					138
Oct. 12			(+26.4)	(187.4)	(+6.0)	(549)	(2879)	(3831)
285.368 G		.967	247.7					320
		.916	258.1					150
		.906	276.5					181
	1285g	.984	287.3	254.7	+18.1	19	145	219 *c*
	16232	.983	276.6	253.7	+7.6	96	503	592 *f*
	16239	.928	292.7	242.4	+23.3	21	152	332 *c*
	1285h	.471	294.7	200.3	+16.7	2	13	
	16243	.677	193.3	184.8	−35.2	1	6	
	16244	.381	181.9	174.7	−16.3	0	5	
	16245	.245	4.8	172.7	+20.1	43	444	
	16246	.309	157.5	167.0	−10.6	32	223	

Group 16247. Oct. 10 - 22. A small composite spot with a few tiny following companions.
Group 16248. Oct. 11 - 14. A small spot.
Group 16249. Oct. 11 - 19. Small unstable spots.
Group 16250. Oct. 11 - 23. A stream led by a fairly stable regular spot, which alone remains after October 21.
Group 16251. Oct. 12 - 18. One or two small spots.
Group 16252. Oct. 12 - 15. 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
1949			°	°	°			
	16251	.460	153.3	161.4	-18.3	2	29	
	16247	.692	66.9	131.4	+20.2	35	256	69 *f*
	16248	.736	61.7	128.6	+24.6	3	13	
	16249	.740	110.9	129.3	-11.0	11	53	51 *c*
	16250	.776	76.3	123.0	+14.4	68	460	193 *c*
	16253	.835	108.9	120.2	-12.1	4	14	147 *c*
	16252	.923	119.5	112.4	-24.2	12	57	210 *c*
	16254	.964	80.5	98.8	+10.7	0	7	265 *c*
		.873	67.3					158
		.931	78.1					224
		.945	109.1					251
		.955	98.9					111
		.963	66.6					143
Oct. 13			(+26.3)	(173.9)	(+ 6.0)	(349)	(2380)	(3616)
286.424 G		.833	235.4					70
		.807	276.1					373
	16239	.989	291.9	243.0	+22.5	0	13	335 *c*
	16243	.736	206.7	183.9	-35.6	1	7	69 *nf*
	16244	.468	216.3	176.7	-16.4	6	58	
	16245	.324	319.5	172.9	+19.9	29	223	
	16246	.319	205.1	167.9	-10.9	19	156	
	16251	.406	182.9	161.2	-17.9	4	22	
	16255	.259	35.7	150.9	+17.9	1	6	
	16247	.513	59.9	131.9	+20.1	28	227	
	16249	.560	119.7	130.4	-11.0	7	41	
	16248	.580	54.3	128.9	+24.8	2	11	
	16250	.613	73.7	122.7	+14.6	73	568	
	16253	.688	114.7	120.4	-12.1	1	11	
	16252	.828	124.7	111.9	-24.2	6	26	263 *c*
	16256	.883	100.9	99.4	- 6.7	4	21	83 *c*
	16254	.897	81.0	95.9	+10.7	4	17	303 *c*
		.822	77.4					193
		.834	114.2					220
		.884	66.2					106
		.961	61.5					196
		.969	99.1					133
		.975	106.9					221
Oct. 14			(+26.3)	(160.0)	(+ 5.9)	(185)	(1407)	(2565)
287.393 G		.924	273.6					172
		.918	282.2					166
		.887	229.6					131
		.830	288.7					216
	16243	.813	218.3	185.0	-35.0	0	3	143 *c*
	16244	.626	234.2	179.0	-16.5	9	41	
	16245	.481	301.8	172.9	+19.9	37	239	
	16246	.449	230.9	167.9	-11.0	23	141	

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
	16251	.493	205.7	160.3	-20.6	4	19	
	16255	.221	340.7	151.6	+17.8	1	7	
	16247	.359	45.1	131.5	+20.2	40	202	
	16249	.405	133.5	129.9	-10.5	11	46	
	16250	.433	67.9	122.8	+14.6	121	597	
	16253	.532	123.8	120.5	-11.9	2	13	
	16252	.720	132.2	111.6	-24.2	3	13	209 *f*
	1285i	.673	79.3	104.9	+11.5	0	3	201 *f*
	16256	.749	103.4	100.4	- 6.0	3	8	
		.834	79.1					179
		.894	59.9					270
		.897	99.8					174
		.935	109.3					430
		.940	118.5					112
Oct. 15			(+26.3)	(147.2)	(+ 5.8)	(254)	(1332)	(2403)
288.351 C		.912	286.5					129
	16243	.901	225.9	187.0	-35.4	0	13	102 *c*
	16244	.795	243.5	182.5	-16.9	7	23	54 *c*
	16245	.658	293.1	174.3	+19.3	40	206	
	16246	.601	242.9	167.5	-11.0	29	165	
	16251	.597	223.5	160.5	-20.4	2	15	
	1285j	.282	297.7	149.4	+13.0	3	11	
	16249	.280	171.7	132.3	-10.3	24	140	
	16247	.257	10.9	131.6	+20.2	34	158	
	16250	.260	50.7	122.6	+15.0	103	551	
	16256	.586	108.5	100.8	- 5.9	4	12	
		.809	103.7					100
		.809	114.1					64
		.839	57.9					156
		.921	113.5					381
		.964	82.4					118
Oct. 16			(+26.3)	(134.6)	(+ 5.7)	(246)	(1294)	(1104)
289.544 G		.956	230.9					185
		.949	283.3					192
		.943	295.9					262
		.893	240.2					85
		.863	279.9					108
		.853	273.4					116
	16244	.927	249.0	183.5	-17.0	3	12	239 *c*
	16245	.832	289.9	174.8	+19.6	34	170	250 *c*
	16246	.780	250.8	167.4	-11.2	31	131	577 *c*
	16251	.756	237.3	161.3	-19.9	2	8	84 *c*
	16249	.360	222.6	133.2	- 9.9	12	70	
	16247	.326	324.0	130.7	+20.7	26	148	
	16250	.172	335.8	123.1	+14.5	74	419	
		.802	117.8					276

Group 16253. Oct. 13 - 20. A tiny spot, not seen on October 16-19.
Group 16254. Oct. 13 - 14. A small spot on October 13; a pair on October 14.
Group 16255. Oct. 14 - 15. A tiny spot.
Group 16256. Oct. 14 - 24. A few small spots, not seen on October 17 and with maximum area on October 23.

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
1949			°	°	°			
		.889	81.7					262
		.953	89.1					90
		.954	98.6					399
		.963	115.8					181
		.972	74.2					115
Oct. 17			(+26.2)	(118.9)	(+5.6)	(182)	(958)	(3421)
290.300		.974	233.7					117
C		.948	257.2					232
		.946	250.4					260
		.900	276.9					109
	16245	.915	289.0	175.4	+19.6	11	87	479 *c*
	16246	.883	254.6	168.7	-10.8	12	120	273 *sf*
	16251	.844	242.2	161.2	-19.8	2	12	205 *n*
	16249	.483	238.0	133.3	-9.7	2	23	
	16247	.448	305.4	131.7	+20.1	15	121	
	16250	.297	301.2	124.0	+14.2	39	415	
	16256	.185	152.3	104.0	-3.8	0	7	
		.788	84.2					173
		.928	100.4					370
		.943	72.2					104
Oct. 18			(+26.2)	(108.9)	(+5.6)	(81)	(785)	(2322)
291.341		.973	288.0					564
G		.968	275.1					108
		.918	250.1					415
		.905	240.1					115
		.902	288.5					63
		.888	296.4					167
		.806	283.2					112
	16246	.973	258.0	170.2	-10.3	15	113	338 *c*
	16249	.659	248.3	133.5	-9.8	2	25	
	16247	.636	295.3	132.8	+20.1	18	103	
	16250	.504	289.2	124.5	+14.3	29	338	
	16256	.220	217.7	102.9	-4.5	2	16	
		.763	102.5					136
		.871	82.7					89
		.881	102.8					418
		.967	79.8					127
Oct. 19			(+26.1)	(95.2)	(+5.5)	(66)	(595)	(2652)
292.311		.966	253.6					243
C		.956	246.4					180

U. T.	Group No.	MEASURES		POSITION		AREA		
		Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ
1949			°	°	°			
		.942	294.7					110
		.865	283.8					233
		.856	295.8					103
		.816	253.0					184
	16247	.763	291.0	131.2	+19.4	7	79	228 *c*
	16253	.699	246.6	123.2	-12.0	1	9	
	16250	.660	285.6	123.2	+14.3	52	346	
	16256	.414	243.0	104.1	-5.7	5	27	
	16257	.172	302.8	90.8	+10.6	1	11	
	16258	.898	80.8	18.2	+10.7	4	21	78 *c*
		.797	107.6					263
		.884	71.0					91
		.965	77.9					162
Oct. 20			(+26.0)	(82.4)	(+5.4)	(70)	(493)	(1875)
293.561		.955	257.3					128
G		.944	285.9					165
		.940	279.5					177
		.904	254.9					180
		.836	247.8					131
		.798	230.3					120
	16247	.904	289.3	130.7	+19.7	10	93	227 *nf*
	16250	.840	283.7	123.1	+14.4	44	298	154 *c*
	16256	.635	256.5	104.0	-3.9	22	140	
	16257	.394	287.5	88.4	+11.7	21	133	
	16258	.737	80.8	18.4	+10.4	19	102	
	16259	.912	99.2	1.2	-6.1	5	27	257 *c*
		.854	76.8					116
Oct. 21			(+25.9)	(65.9)	(+5.3)	(121)	(793)	(1655)
294.356		.969	258.6					127
C		.930	252.7					173
		.848	233.1					161
		.828	282.2					134
		.772	254.2					83
	16247	.962	288.4	130.2	+19.1	4	20	101 *c*
	16250	.924	283.4	123.2	+14.4	36	307	165 *c*
	16260	.826	251.1	108.3	-12.4	11	81	56 *c*
	16256	.761	260.2	104.0	-4.0	38	311	
	16257	.541	282.8	87.8	+11.2	55	354	
	16261	.198	51.7	46.3	+12.2	1	21	
	16258	.603	80.8	18.4	+9.7	16	123	
	16259	.814	100.9	2.2	-5.7	4	24	161 *c*

Group 16257. Oct. 20 - 25. A stream developing from a tiny spot just past the C.M. The only stable component is a small regular spot to the rear.
Group 16258. Oct. 20 - 31. A stream in which the follower becomes a small regular spot and alone remains by October 27.
Group 16259. Oct. 21 - 31. A pair of small spots until October 26, when others appear in the form of a stream which is declining as it reaches the limb.
Group 16260. Oct. 22 - 23. A pair of small spots.
Group 16261. Oct. 22 - 27. 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
1949			°	°	°			
	16262	.989	78.4	333.3	+12.2	36	295	154 *c*
		.945	106.5					130
Oct. 22			(+25.8)	(55.4)	(+5.2)	(201)	(1536)	(1445)
295.294		.939	239.0					154
C		.906	246.8					112
		.897	230.9					156
	16250	.984	283.8	123.6	+14.5	52	370	318 *f*
	16260	.929	254.6	109.2	-12.2	14	45	180 *c*
	16256	.873	261.8	102.8	-4.5	49	334	286 *c*
	16263	.836	280.6	99.8	+11.7	7	42	195 *c*
	16257	.728	279.8	89.7	+10.7	65	376	
	16261	.159	322.4	48.7	+12.4	3	13	
	16258	.442	77.2	17.1	+10.3	32	156	
	16259	.692	103.8	0.7	-5.6	20	86	163 *f*
	16262	.943	79.0	332.1	+12.1	67	367	531 *f*
		.958	66.0					313
Oct. 23			(+25.8)	(43.0)	(+5.2)	(309)	(1789)	(2408)
296.393		.978	254.2					125
C		.965	235.9					120
		.852	243.8					152
		.839	254.5					77
	16256	.967	263.5	102.9	-4.9	28	289	255 *c*
	16263	.953	280.2	101.3	+11.2	17	89	123 *c*
	16257	.870	280.5	89.1	+11.7	43	274	215 *c*
	16261	.384	290.7	50.0	+12.5	11	50	
	16258	.223	64.9	16.7	+10.4	43	221	
	16259	.478	111.8	2.1	-5.6	6	28	
	16264	.806	120.2	340.6	-20.5	9	27	73 *c*
	16262	.830	78.9	332.3	+12.1	71	349	288 *f*
		.867	63.0					213
		.939	105.0					266
		.941	90.3					93
		.943	117.9					111
Oct. 24			(+25.7)	(28.5)	(+5.1)	(228)	(1327)	(2111)
297.398		.963	261.1					161
G		.916	247.6					271
		.914	256.3					121
		.888	301.0					154
		.846	240.1					246
	16257	.962	281.1	89.9	+12.0	51	360	289 *c*

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
	16261	.601	284.9	51.7	+12.9	17	96	
	16258	.093	346.5	16.6	+10.2	31	160	
	16259	.246	135.1	5.3	-5.1	16	40	
	16264	.688	127.7	339.8	-20.8	6	28	
	16262	.684	78.1	332.3	+11.8	66	331	261 *f*
	16265	.956	83.7	302.1	+7.5	22	151	244 *c*
		.778	59.0					191
		.903	73.3					101
		.959	119.5					249
		.983	103.5					88
Oct. 25			(+25.5)	(15.3)	(+5.0)	(209)	(1166)	(2376)
298.301		.944	301.5					128
C		.942	248.4					156
	16261	.771	283.0	53.7	+13.1	3	45	
	16258	.236	292.8	16.1	+10.0	23	108	
	16259	.178	188.4	4.9	-5.2	7	85	
	16264	.566	137.4	339.4	-20.0	2	17	
	16262	.519	74.8	332.7	+12.0	42	337	
	16265	.868	84.0	303.1	+7.7	28	164	260 *f*
		.922	123.0					205
		.953	101.8					295
Oct. 26			(+25.4)	(3.4)	(+4.9)	(105)	(756)	(1044)
299.381		.966	246.5					230
G		.938	276.1					409
		.874	261.1					561
		.859	246.2					171
		.753	257.9					217
	16261	.904	282.1	53.9	+12.9	8	36	198 *f*
	16266	.746	290.4	36.3	+18.3	2	5	
	16258	.433	283.3	14.3	+10.1	17	143	
	16259	.321	237.9	4.9	-5.2	12	119	
	16264	.441	162.3	340.9	-20.0	0	5	
	16262	.309	64.9	332.5	+12.1	55	328	
	1286a	.444	39.0	331.3	+24.6	1	5	
	16265	.724	84.1	302.7	+7.6	24	173	169 *f*
	16267	.791	120.7	302.7	-20.5	0	2	147 *f*
	16268	.982	80.6	269.7	+10.1	0	23	360 *c*
		.863	134.7					129
		.865	85.9					174
		.926	104.3					375
		.937	117.5					155
		.971	79.7					90
Oct. 27			(+25.3)	(349.1)	(+4.8)	(119)	(839)	(3385)

Group 16262. Oct. 22-Nov. 3. A regular spot which has divided into two parts by October 29. The following part has died out by November 2.
Group 16263. Oct. 23 - 24. A pair of small spots.
Group 16264. Oct. 24 - 27. A pair of small spots, of which only one remains by October 27.
Group 16265. Oct. 25-Nov. 3. A small regular spot, which begins to break up on October 28.
Group 16266. Oct. 27 - 28. A single small spot on October 27; a pair on the next day.
Group 16267. Oct. 27 - 28. A tiny spot.
Group 16268. Oct. 27-Nov. 3. One or two faint 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
1949			°	°	°			
300.359		.956	281.3					185
G		.950	261.8					228
		.872	261.0					245
	16266	.870	289.2	36.3	+19.0	8	32	126 *c*
	16258	.626	280.4	14.7	+10.1	14	95	
	16259	.516	252.4	5.7	− 4.9	36	125	
	16262	.148	25.7	332.5	+12.3	59	295	
	16269	.294	88.2	319.1	+ 5.0	5	18	
	16265	.547	83.6	303.1	+ 7.5	21	125	
	16267	.678	127.8	301.4	−20.7	1	7	116 *f*
	1286b	.857	112.1	281.0	−16.1	2	12	278 *np*
	16268	.927	81.9	268.1	+ 9.3	12	68	405 *c*
		.916	89.4					177
		.929	68.3					178
		.936	57.2					108
Oct. 28			(+25.2)	(336.2)	(+ 4.7)	(158)	(777)	(2046)
301.318		.954	264.9					244
C		.951	287.6					154
		.939	256.1					199
	16258	.776	278.4	14.5	+ 9.4	3	28	170 *c*
	16259	.699	257.4	6.7	− 5.3	10	90	
	16262	.204	311.2	332.6	+12.2	48	265	
	16269	.069	85.8	319.7	+ 4.9	0	6	
	16265	.345	80.6	303.6	+ 7.5	9	57	
	16270	.680	112.2	283.8	−11.3	0	4	97 *f*
	16268	.786	81.3	271.8	+ 9.7	2	12	247 *f*
	16271	.976	65.4	245.6	+25.0	42	264	282 *c*
		.873	66.5					163
		.916	115.4					248
		.930	84.2					374
		.944	72.4					351
Oct. 29			(+25.0)	(323.6)	(+ 4.6)	(114)	(726)	(2529)
302.410		.781	251.8					211
G	16258	.903	278.9	13.9	+10.0	2	13	293 *c*
	16259	.862	262.2	7.9	− 4.4	13	87	272 *c*
	16262	.419	290.9	332.7	+12.7	47	222	
	16265	.096	60.3	304.4	+ 7.2	3	17	
	16270	.488	121.5	284.3	−10.6	1	11	
	16268	.600	81.2	272.5	+ 8.9	4	16	
	16272	.821	102.8	255.5	− 7.8	8	56	116 *c*

U.T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
	16271	.899	64.7	246.0	+24.6	69	452	726 *c*
	16273	.949	67.3	237.5	+23.0	24	116	
		.787	90.7					249
		.822	117.0					306
		.841	78.5					344
		.863	55.6					237
		.933	115.7					241
		.938	124.1					94
Oct. 30			(+24.9)	(309.2)	(+ 4.5)	(171)	(990)	(3089)
303.418		.924	288.5					184
G		.882	256.0					185
	16258	.983	278.9	15.7	+ 9.6	0	11	132 *c*
	16259	.968	264.8	10.7	− 3.8	4	39	316 *sf*
	16262	.610	285.1	332.9	+12.7	25	195	
	16265	.150	284.1	304.3	+ 6.4	4	25	
	16274	.259	9.1	293.4	+19.1	3	17	
	16270	.324	143.0	284.5	−10.6	5	51	
	16268	.406	81.6	272.1	+ 7.4	4	31	
	16272	.691	106.5	254.1	− 8.0	1	10	
	16271	.779	61.3	247.2	+24.8	45	502	361 *c*
	16273	.845	65.7	239.5	+22.8	10	88	223 *c*
		.813	121.5					243
		.942	60.0					162
		.950	81.1					243
		.963	71.1					161
Oct. 31			(+24.7)	(295.9)	(+ 4.4)	(101)	(969)	(2210)
304.436		.965	259.4					227
G		.902	242.7					126
		.882	273.0					92
	16262	.775	282.8	333.1	+12.7	33	168	211 *c*
	16275	.777	237.8	327.3	−21.4	0	3	
	16276	.610	252.4	318.2	− 7.1	9	40	
	16277	.569	278.7	317.0	+ 8.5	0	8	
	16265	.380	276.6	304.7	+ 6.4	1	8	
	1286c	.465	217.6	299.7	−17.5	0	4	
	16274	.277	337.2	289.0	+19.0	15	74	
	1286d	.193	207.0	287.5	− 5.6	4	17	
	16270	.289	186.1	284.3	−12.3	6	40	
	16268	.211	70.2	271.0	+ 8.3	2	11	
	16271	.641	56.0	246.9	+24.5	89	484	203 *f*
	16273	.716	62.0	239.4	+22.8	12	55	220 *c*

Group 16269. Oct. 28 - 29. A small spot.
Group 16270. Oct. 29-Nov. 2. A few small spots.
Group 16271. Oct. 29-Nov. 9. A long stream, in which both leader and follower are regular spots. The intermediate spots die out by November 6, and the follower by November 8.
Group 16272. Oct. 30 - 31. A tiny cluster on October 30; a single small spot on October 31.
Group 16273. Oct. 30-Nov. 3. A wide pair of small spots.
Group 16274. Oct. 31-Nov. 7. A growing stream, developing from a pair of small spots near to the C.M.
Group 16275. Nov. 1 - 2. A small spot.
Group 16276. Nov. 1 - 4. A pair of small spots.

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
1949			°	°	°			
		.853	71.8					94
		.866	59.6					240
		.930	81.6					446
		.961	68.9					253
Nov. 1			(+24.6)	(282.5)	(+ 4.3)	(171)	(912)	(2112)
305.483 G		.944	260.2					132
		.942	275.0					162
		.933	250.1					136
		.893	295.2					145
	16262	.903	281.9	333.3	+12.5	17	164	183 c
	16275	.901	244.0	328.8	-21.2	2	13	85 c
	16276	.783	257.6	318.9	- 6.9	8	44	70 c
	16277	.765	277.7	318.6	+ 8.6	2	7	75 c
	16265	.582	275.0	304.2	+ 6.3	1	16	
	16274	.418	308.8	288.8	+19.1	16	121	
	16270	.365	225.1	283.9	-10.8	2	20	
	1286e	.358	197.6	275.1	-15.7	1	5	
	16268	.056	346.8	269.4	+ 7.3	2	23	
	16271	.508	44.2	245.8	+25.1	48	434	
	16273	.570	56.2	238.1	+22.0	5	30	
	16278	.941	67.0	198.7	+23.0	3	25	322 c
	16279	.985	100.6	189.7	- 9.7	140	1233	293 c
		.851	76.0					157
Nov. 2			(+24.4)	(268.7)	(+ 4.2)	(247)	(2135)	(1760)
306.393 G		.963	248.5					221
		.946	295.2					201
		.913	274.7					120
	16262	.971	282.2	333.1	+12.8	31	162	220 f
	16276	.900	260.2	319.8	- 7.0	6	46	124 c
	16265	.726	274.9	303.2	+ 6.4	1	11	66 p
	16274	.570	298.8	288.5	+19.4	28	159	
	16268	.251	291.0	270.4	+ 9.1	2	8	
	16271	.392	25.0	246.2	+24.8	70	357	
	16273	.442	44.0	237.4	+22.3	6	43	
	16280	.575	49.3	227.9	+25.6	1	5	
	16278	.831	66.6	201.8	+21.6	9	46	283 c
	16279	.930	102.4	189.7	- 9.9	183	1062	585 c
	16281	.977	87.9	179.1	+ 3.0	9	46	198 c
		.943	57.2					114
		.969	79.4					88
		.980	70.0					271
Nov. 3			(+24.2)	(256.7)	(+ 4.1)	(346)	(1945)	(2491)

U. T.	Group No.	MEASURES		POSITION		AREA		
		Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ
1949			°	°	°			
307.295 C		.955	275.6					211
		.831	277.0					151
	16276	.973	261.6	320.5	- 7.2	0	53	131 c
	16274	.712	294.0	288.3	+19.7	16	164	65 c
	16271	.357	357.4	245.8	+24.8	50	357	
	16280	.447	33.8	228.9	+25.5	8	74	
	16278	.709	62.5	202.3	+22.0	7	57	81 c
	16279	.843	104.5	189.1	- 9.9	101	1137	403 c
	16281	.914	87.7	178.8	+ 3.8	5	40	143 c
	16282	.966	103.5	171.3	-11.9	8	32	372 c
		.898	68.8					192
		.925	76.8					192
		.933	116.6					174
		.960	67.8					260
Nov. 4			(+24.0)	(244.8)	(+ 4.0)	(195)	(1914)	(2375)
308.294 C		.952	252.8					137
		.941	236.0					201
		.930	277.9					186
		.835	254.2					286
	16274	.863	289.8	290.5	+19.0	74	371	325 c
	16271	.439	327.2	246.8	+25.3	52	259	
	16280	.373	6.4	229.0	+25.5	37	166	
	16278	.571	57.2	200.7	+21.3	40	229	
	16279	.693	108.6	190.0	- 9.8	172	1027	302 f
	16281	.758	89.0	182.4	+ 3.3	2	6	213 f
	16282	.889	105.9	170.8	-12.2	12	41	141 np
		.866	69.2					504
		.878	116.7					165
		.950	108.6					386
		.970	75.8					85
Nov. 5			(+23.8)	(231.6)	(+ 3.9)	(389)	(2099)	(2931)
309.417 G		.924	256.8					369
		.817	276.1					473
		.791	293.6					134
	16274	.959	288.6	290.4	+18.9	65	733	319 c
	16271	.575	309.6	245.9	+24.7	54	313	
	16280	.405	339.2	226.0	+25.9	40	431	
	16278	.399	38.8	201.3	+21.7	33	287	
	16279	.515	116.8	189.1	-10.0	100	984	
	16281	.548	88.7	183.6	+ 3.9	1	5	
	16282	.746	110.0	171.2	-12.1	3	23	132 f
		.758	121.7					125

Group 16277. Nov. 1 - 2. A tiny spot.

Group 16278. Nov. 2 - 13. A pair of tiny spots when first seen. These develop into a moderately sized cluster with maximum area on November 11.

Group 16279. Nov. 2 - 14. A stream of normal type in which the follower, a composite spot, is at first the largest component but which is reduced to a tiny spot at the west limb. The leader is stable throughout.

Group 16280. Nov. 3 - 12. A stream forming immediately behind Group 16271. The follower becomes a regular spot and the only stable component.

Group 16281. Nov. 3 - 7. A single small spot, except on November 4 when there is a pair.

Group 16282. Nov. 4 - 11. Return of Group 16246; third appearance. A small spot.

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
1949			°	°	°			
		.870	117.8					211
		.886	107.1					259
		.928	75.4					293
Nov. 6			(+23.6)	(216.8)	(+ 3.8)	(296)	(2776)	(2315)
310.411 G		.961	257.8					290
		.890	280.2					501
		.889	243.9					592
		.872	292.6					188
	16274	.991	289.8	286.5	+20.1	72	332	208 *c*
	16271	.738	301.0	247.8	+25.0	44	222	175 *c*
	16280	.515	318.5	225.9	+26.0	91	457	
	16278	.307	9.1	200.7	+21.2	51	242	
	16279	.339	133.8	189.4	- 9.9	143	906	
	16281	.330	87.6	184.5	+ 4.3	4	14	
	16283	.501	65.1	175.7	+15.4	57	212	
	16282	.587	116.8	171.4	-12.2	6	17	
		.903	104.6					402
		.914	74.6					534
		.931	59.8					207
Nov. 7			(+23.4)	(203.7)	(+ 3.7)	(468)	(2402)	(3097)
311.479 G		.927	274.6					362
		.927	287.4					347
		.903	243.3					366
		.860	304.1					159
	16271	.893	295.8	251.4	+24.5	29	154	224 *c*
	16280	.656	307.1	225.1	+26.1	109	617	
	16278	.356	324.8	202.2	+20.2	38	218	
	16279	.243	176.2	188.7	-10.5	129	846	
	16283	.299	46.2	176.7	+15.3	38	169	
	16282	.409	130.6	171.2	-12.1	8	28	
	16284	.950	99.5	118.8	- 7.9	3	11	500 *n*
	16285	.968	80.5	114.0	+10.1	87	421	523 *c*
	16286	.992	96.2	107.4	- 5.7	0	27	
		.795	106.7					98
		.866	71.0					304
		.938	108.1					219
Nov. 8			(+23.2)	(189.6)	(+ 3.5)	(441)	(2491)	(3102)
312.293 C		.934	285.7					160
		.919	239.4					345
		.901	302.6					312

U.T.	Group No.	MEASURES		POSITION		AREA		
		Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ
1949			°	°	°			
	16271	.956	294.8	251.5	+24.7	25	146	232 *c*
	16280	.757	302.2	224.3	+26.2	95	641	267 *c*
	16278	.472	308.6	202.0	+20.3	79	466	
	16279	.295	216.7	189.2	-10.2	114	658	
	16283	.205	4.2	178.0	+15.2	22	84	
	16282	.302	153.8	171.1	-12.2	6	22	
	16284	.870	101.5	119.7	- 8.2	4	13	113 *c*
	16285	.910	80.4	113.4	+10.2	48	464	333 *c*
	16286	.955	97.6	106.9	- 6.2	6	50	378 *c*
	16287	.966	94.0	104.3	- 2.9	8	32	360 *c*
		.916	110.6					182
		.922	67.8					175
Nov. 9			(+23.0)	(178.9)	(+ 3.5)	(407)	(2576)	(2857)
313.386 G		.977	245.1					228
		.974	291.7					239
		.967	236.5					170
		.930	304.3					325
	16280	.869	298.5	222.6	+26.2	127	756	564 *c*
	16278	.646	297.7	201.9	+20.1	116	775	
	16279	.493	242.1	190.7	-10.3	78	483	
	16283	.318	309.2	179.2	+14.8	18	74	
	16282	.297	203.8	171.5	-12.4	4	8	
	16284	.728	104.6	119.3	- 8.2	11	44	100 *c*
	16285	.778	79.5	113.7	+10.2	80	429	150 *c*
	16286	.866	98.7	105.4	- 5.8	4	13	234 *c*
	16287	.875	94.9	104.0	- 2.6	4	25	279 *c*
	16288	.987	73.2	83.3	+17.2	0	12	405 *sp*
		.789	70.5					124
		.888	70.3					141
		.889	79.7					165
		.912	123.4					172
		.923	112.4					155
		.960	95.3					174
Nov. 10			(+22.7)	(164.5)	(+ 3.3)	(442)	(2619)	(3625)
314.302 C	16280	.943	296.9	222.0	+26.4	65	558	304 *c*
	16278	.778	293.8	201.6	+20.4	81	821	250 *c*
	16279	.649	250.7	190.7	- 9.8	59	434	
	16283	.515	292.7	181.6	+14.2	12	88	
	16282	.422	230.5	171.8	-12.5	1	6	
	1286f	.347	312.7	167.8	+16.6	3	10	
	16284	.558	111.9	120.9	- 9.3	4	26	
	16285	.627	77.1	114.1	+10.5	45	502	

Group 16283. Nov. 7 - 14. A variable stream, appearing suddenly, of which only one component is left by November 11.
Group 16284. Nov. 8 - 19. A stream of small spots.
Group 16285. Nov. 8 - 16. A composite spot, showing very little change until November 12, when it begins to break up and die out.
Group 16286. Nov. 8 - 10. With Group 16287, a return of Group 16256. One or two tiny spots.
Group 16287. Nov. 9 - 14. With Group 16286, a return of Group 16256. A single small spot until November 13; a small stream on the next day.
Group 16288. Nov. 10 - 14. A small spot.

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
1949			°	°	°			
	16287	.752	96.3	104.2	− 2.6	5	17	66 *f*
	16288	.928	71.9	84.6	+17.9	11	101	216 *f*
		.831	75.1					225
Nov. 11			+22.5)	(152.4)	(+ 3.2)	(286)	(2563)	(1061)
315.384 G		.951	281.8					227
		.827	262.2					125
	16280	.989	297.3	219.9	+27.5	72	387	189 *c*
	16278	.900	291.5	201.4	+20.7	104	739	614 *c*
	16279	.807	254.8	190.2	−10.3	65	391	255 *c*
	16283	.705	286.7	182.0	+13.9	8	45	
	16289	.455	339.3	148.6	+28.1	2	11	
	16284	.389	122.1	118.7	− 9.0	28	127	
	16285	.435	73.6	113.1	+ 9.8	50	323	
	16287	.565	98.9	104.3	− 2.4	2	11	
	16288	.816	69.9	84.6	+18.1	13	40	259 *c*
	16290	.983	79.5	58.5	+10.9	35	133	300 *c*
		.875	106.0					294
		.884	117.2					186
		.884	88.6					117
		.903	79.3					126
		.953	55.4					267
		.975	90.0					170
Nov. 12			(+22.2)	(138.1)	(+ 3.1)	(379)	(2207)	(3129)
316.430 G		.850	247.6					268
		.841	272.8					121
	16278	.971	290.7	200.3	+20.8	72	544	472 *c*
	16279	.924	257.6	190.6	−10.3	40	235	465 *c*
	16283	.859	284.5	183.0	+13.9	4	13	226 *f*
	16284	.218	154.5	118.9	− 8.3	28	155	
	16285	.210	54.2	114.4	+10.0	66	447	
	16287	.347	105.3	104.8	− 2.4	1	5	
	16288	.661	65.2	85.2	+18.4	7	29	
	16291	.645	76.1	84.8	+11.2	24	106	
	16290	.928	78.2	56.3	+12.1	67	390	233 *c*
	16292	.989	71.2	42.6	+19.0	7	36	249 *c*
	16293	.990	74.4	42.2	+15.9	7	62	194 *c*
		.888	118.2					213
		.889	55.0					260
		.923	92.6					396
		.941	105.2					145
Nov. 13			(+22.0)	(124.3)	(+ 3.0)	(323)	(2022)	(3242)

U. T.	Group No.	MEASURES		POSITION		AREA		
		Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ
1949			°	°	°			
317.474 G		.960	291.1					155
		.944	248.5					296
		.942	273.1					129
		.890	297.5					239
		.876	286.7					271
		.846	250.9					204
		.823	239.3					193
		.744	247.9					131
	16279	.978	259.1	187.6	−10.0	26	180	617 *c*
	16283	.955	283.5	183.2	+13.7	3	18	108 *c*
	16284	.242	218.3	119.3	− 8.0	24	220	
	16285	.135	329.2	114.6	+ 9.5	30	366	
	16294	.218	345.7	113.7	+15.0	1	8	
	16287	.161	142.2	104.9	− 4.4	2	16	
	16288	.479	55.5	86.1	+18.3	2	14	
	16291	.448	71.4	85.1	+10.8	49	411	
	16290	.816	77.5	56.3	+11.8	58	441	175 *c*
	16293	.912	74.9	45.1	+15.0	5	19	182 *c*
	16292	.929	71.3	42.8	+18.4	9	27	247 *c*
		.814	97.6					169
		.819	50.6					143
		.899	107.1					173
		.938	93.8					187
		.958	102.1					244
		.975	83.9					387
Nov. 14			(+21.7)	(110.6)	(+ 2.9)	(209)	(1720)	(4250)
318.463 G		.955	253.3					307
		.953	286.4					355
		.945	294.8					181
		.899	244.6					345
		.874	255.2					245
		.822	286.6					124
	16289	.819	301.0	149.0	+26.6	0	3	143 *c*
	16284	.395	243.9	118.6	− 7.5	32	201	
	16295	.307	255.4	114.7	− 1.8	43	193	
	16285	.307	293.5	114.0	+ 9.6	18	122	
	16294	.340	305.6	114.0	+13.9	20	82	
	16296	.262	230.0	109.1	− 7.0	8	55	
	16291	.248	57.8	85.2	+10.2	95	563	
	16290	.666	75.8	56.5	+11.4	79	502	
	16293	.787	73.4	46.5	+14.7	6	26	204 *c*
	16292	.831	69.6	42.5	+18.4	8	21	260 *c*
	16297	.928	83.0	29.5	+ 7.5	5	37	441 *c*

Group 16289. Nov. 12 – 15. A small spot, seen only on November 12 and 15.
Group 16290. Nov. 12 – 24. A regular spot, with a close companion until November 22.
Group 16291. Nov. 13 – 22. A bi-polar group, in which the leader, a composite spot, is the longest-lived component.
Group 16292. Nov. 13 – 19. A small spot.
Group 16293. Nov. 13 – 15. A single small spot on November 13; a pair on November 14 and 15.
Group 16294. Nov. 14 – 17. Small spots.
Group 16295. Nov. 15 – 20. A composite spot, appearing suddenly on November 15 and growing rapidly to its maximum area.
Group 16296. Nov. 15 – 19. One or two small spots.
Group 16297. Nov. 15 – 23. A few small spots, not seen on November 16.

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
1949			°	°	°			
		.759	106.8					108
		.864	93.0					259
		.898	104.0					271
		.959	75.4					96
		.982	67.6					142
		.991	94.8					159
Nov. 15			(+21.4)	(97.5)	(+2.7)	(314)	(1805)	(3640)
319.531 G		.957	253.1					223
		.941	243.3					207
		.902	234.7					87
		.897	260.3					62
		.890	284.7					202
		.885	300.4					164
	16284	.613	253.7	119.8	-7.8	10	77	
	16295	.535	262.1	115.4	-2.0	126	837	
	16294	.549	291.9	115.0	+14.0	3	50	
	16285	.523	283.2	114.4	+9.1	4	34	
	16296	.477	249.5	110.1	-7.2	4	30	
	16298	.378	296.4	103.7	+12.1	24	101	
	16291	.132	343.5	85.7	+9.8	64	715	
	16290	.480	70.7	56.1	+11.4	60	453	
	16292	.691	65.7	42.1	+18.4	1	14	
	16299	.924	96.0	16.6	-4.5	3	19	140 c
	16300	.977	77.8	5.7	+12.5	0	9	291 c
		.809	105.6					204
		.841	81.9					341
		.940	64.7					316
Nov. 16			(+21.1)	(83.5)	(+2.6)	(299)	(2339)	(2237)
320.586 G		.972	247.4					159
		.963	283.0					159
		.946	310.2					149
		.940	237.7					142
		.919	288.4					151
		.899	253.6					111
	16284	.783	258.3	119.9	-7.5	21	100	143 c
	16294	.742	285.5	116.5	+13.1	2	15	111 c
	16295	.725	265.0	115.6	-1.9	197	1254	182 c
	16296	.696	255.5	112.2	-8.2	1	8	
	16298	.594	287.4	104.8	+12.2	41	190	
	16291	.309	295.4	85.9	+10.0	106	543	
	16301	.328	320.0	82.2	+16.9	24	102	
	16290	.281	56.0	55.8	+11.4	60	331	

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
	16292	.520	57.1	42.2	+18.5	2	12	
	16297	.653	81.0	29.1	+7.8	0	5	
	16299	.781	97.0	18.7	-3.9	2	16	105 c
	16300	.902	74.8	5.5	+14.8	4	35	328 c
		.837	62.3					218
		.929	96.2					117
		.941	106.6					79
Nov. 17			(+20.8)	(69.5)	(+2.5)	(460)	(2611)	(2154)
321.292 C		.933	284.5					259
		.820	290.2					146
		.803	278.8					244
	16284	.879	259.8	120.8	-7.8	13	76	170 c
	16295	.825	265.8	115.4	-2.1	151	1280	280 c
	16296	.801	257.8	112.3	-8.3	0	3	96 f
	16298	.707	285.0	104.3	+12.2	40	244	
	16291	.450	287.0	86.0	+9.7	67	522	
	16301	.427	306.4	81.2	+16.9	28	180	
	16290	.181	27.8	55.3	+11.5	75	496	
	16292	.454	47.6	39.4	+20.0	1	7	
	16297	.547	78.8	27.5	+8.1	6	52	
	16302	.722	62.1	17.1	+21.4	6	38	94 c
	16300	.822	74.3	5.7	+14.2	5	40	206 c
	16303	.995	111.7	337.6	-21.3	19	182	144 c
		.856	97.4					161
		.890	106.0					92
		.984	67.0					88
Nov. 18			(+20.6)	(60.2)	(+2.4)	(411)	(3120)	(1980)
322.405 G		.946	279.6					596
		.941	272.8					95
		.922	290.7					223
		.852	267.0					207
	16284	.964	261.6	119.4	-7.5	3	50	242 c
	16295	.939	266.2	115.1	-2.8	88	1001	355 c
	16296	.916	261.4	111.2	-6.9	0	9	101 c
	16298	.866	283.5	105.1	+12.8	18	211	207 c
	16291	.666	281.8	86.8	+9.6	32	360	
	16301	.612	295.4	80.8	+17.0	18	123	
	16290	.231	315.2	55.1	+11.7	58	459	
	16292	.318	19.4	39.2	+19.6	2	20	
	16297	.313	70.0	28.4	+8.3	12	124	
	16302	.537	52.3	18.6	+21.2	21	122	
	16300	.617	71.6	8.8	+13.1	1	9	

Group 16298. Nov. 16 - 20. A group whose leader is the most prominent component.
Group 16299. Nov. 16 - 17. One or two tiny spots.
Group 16300. Nov. 16 - 25. Two or three faint small spots until November 20, after which there is a wide pair.
Group 16301. Nov. 17 - 22. A stream of small spots, appearing immediately north of the follower of Group 16291.
Group 16302. Nov. 18 - 26. A sparse stream, led by a small regular spot which alone remains after November 23.
Group 16303. Nov. 18 - 30. A regular spot followed by a distant companion until November 28. Two new small spots appear in the rear on November 30.

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
1949			°	°	°			
	16303	.958	113.3	334.8	-21.5	59	261	303 c
	16304	.956	75.9	332.9	+14.1	12	106	149 c
	16305	.958	83.2	332.4	+ 7.2	3	22	102 c
		.885	78.3					140
		.931	66.2					103
		.969	99.7					195
Nov. 19			(+20.3)	(45.6)	(+ 2.3)	(327)	(2877)	(3018)
323.309 C		.962	290.8					227
		.948	273.1					163
		.935	262.0					292
		.869	287.7					168
	16295	.992	266.8	116.1	- 2.8	73	737	446 c
	16298	.954	283.0	106.0	+13.1	34	194	391 c
	16291	.821	279.7	88.5	+ 9.2	19	172	176 c
	16301	.750	290.6	80.7	+16.7	26	194	120 c
	16290	.392	295.2	54.8	+11.6	53	521	
	16306	.316	319.0	46.1	+15.8	1	5	
	16297	.136	36.0	29.1	+ 8.5	5	53	
	16302	.393	37.7	18.9	+20.1	29	196	
	16300	.451	64.8	9.0	+13.0	1	7	
	16303	.877	116.6	336.3	-21.8	22	205	280 c
	16305	.864	83.2	334.1	+ 6.9	13	68	403 c
	16304	.876	75.0	333.1	+14.2	15	78	176 c
		.913	100.8					280
Nov. 20			(+20.0)	(33.7)	(+ 2.2)	(291)	(2430)	(3122)
324.531 G		.931	282.6					354
		.907	240.7					129
		.878	251.4					181
	16291	.955	278.6	90.1	+ 8.7	28	254	316 c
	16301	.903	287.2	81.4	+16.3	13	70	249 c
	16290	.620	286.3	54.8	+11.5	72	426	
	16306	.498	300.1	44.1	+16.2	2	13	
	16307	.405	227.6	35.5	-13.9	6	16	
	16297	.235	298.6	29.6	+ 8.4	6	42	
	16302	.317	354.6	19.4	+20.3	26	111	
	16300	.293	36.9	7.1	+15.4	15	74	
	16303	.741	122.1	335.3	-21.7	43	247	185 c
	16305	.700	82.3	333.5	+ 6.8	12	60	57 f
	16304	.720	72.8	332.8	+13.9	25	96	70 f
	16308	.958	72.6	304.7	+17.2	200	1027	463 c
		.772	102.8					134

U. T.	Group No.	MEASURES		POSITION		AREA		
		Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ
1949			°	°	°			
		.874	107.3					100
		.937	82.4					154
Nov. 21			(+19.6)	(17.6)	(+ 2.0)	(448)	(2436)	(2392)
325.407 G		.971	244.6					178
		.948	253.7					220
		.931	272.1					117
		.884	280.3					127
		.880	244.3					171
		.788	260.1					229
	16291	.991	279.3	88.3	+ 9.5	0	25	228 c
	16301	.962	285.2	79.8	+15.1	0	7	359 c
	16290	.760	283.6	54.7	+11.5	65	367	118 c
	16306	.652	293.0	44.5	+16.2	3	15	
	16307	.552	241.6	35.8	-13.5	13	47	
	16297	.425	286.2	30.3	+ 8.5	1	6	
	16302	.388	327.5	18.8	+20.9	19	96	
	16300	.252	359.6	6.1	+16.4	15	63	
	16305	.519	81.0	335.1	+ 6.3	6	23	
	16303	.631	129.2	334.3	-21.8	42	211	
	16304	.572	68.6	332.9	+13.6	16	89	
	16308	.880	71.4	305.4	+17.2	156	784	419 c
		.874	82.7					145
		.931	165.0					9
		.952	169.1					6
		.961	103.3					251
		.964	80.9					120
		.976	69.7					540
		.978	95.1					127
Nov. 22			(+19.3)	(6.0)	(+ 1.9)	(336)	(1733)	(3364)
326.291 C		.972	253.3					88
		.905	264.0					146
		.881	249.1					154
	16290	.874	282.5	54.8	+11.8	78	364	257 c
	16306	.793	288.4	45.6	+15.5	3	16	71 c
	16307	.700	247.4	36.1	-14.2	37	297	
	16297	.604	281.6	31.0	+ 8.4	1	9	
	16302	.523	308.1	20.3	+20.4	28	120	
	16300	.328	319.6	7.1	+16.2	19	111	
	16303	.506	142.6	335.1	-21.9	113	352	
	16305	.359	77.5	333.8	+ 6.1	20	99	
	16304	.411	60.2	333.0	+13.4	21	111	
	16308	.768	68.6	306.1	+17.4	161	970	168 c
	16309	.922	68.4	288.4	+20.5	2	26	460 c

Group 16304. Nov. 19-Dec. 1. Return of Group 16262. A small, fairly stable regular spot.
Group 16305. Nov. 19 - 28. Two or three small spots, of which only one remains by November 26.
Group 16306. Nov. 20 - 24. One or two small spots.
Group 16307. Nov. 21 - 28. A pair of spots which grow fairly rapidly.
Group 16308. Nov. 21-Dec. 3. An elongated spot whose umbra divides into two by November 27. There are a few close companions immediately following.
Group 16309. Nov. 23 - 30. Return of Group 16274. A pair of small spots, not seen on November 25 and 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
1949			°	°	°			
	16310	.976	85.4	277.1	+ 4.9	14	81	344 *np*
		.802	79.9					87
		.878	89.2					66
		.919	98.5					212
		.928	109.8					140
Nov. 23			(+19.0)	(354.4)	(+ 1.8)	(497)	(2556)	(2193)
327.291 C		.958	253.0					162
		.940	262.7					183
		.748	279.7					94
	16290	.961	281.7	54.9	+11.7	60	294	237 *c*
	16306	.911	286.4	46.1	+15.6	0	7	218 *nf*
	16311	.844	275.3	38.6	+ 5.4	0	6	135 *c*
	16307	.836	251.1	35.8	-14.7	105	544	262 *c*
	16302	.690	297.7	21.6	+20.0	10	58	
	16300	.490	301.4	6.9	+16.3	6	30	
	16303	.414	166.3	335.2	-21.9	47	208	
	16312	.245	148.2	333.7	-10.3	3	18	
	16304	.250	34.3	332.9	+13.5	17	90	
	16305	.171	64.3	332.3	+ 5.9	17	66	
	16308	.622	62.7	305.8	+17.9	157	947	
	16309	.848	66.7	285.2	+20.5	7	37	425 *c*
	16310	.914	85.1	275.3	+ 5.2	21	109	484 *c*
		.801	104.6					139
		.858	79.9					113
		.923	109.1					175
		.960	73.9					444
Nov. 24			(+18.7)	(341.2)	(+ 1.7)	(450)	(2414)	(3071)
328.290 C		.963	288.5					212
		.870	278.3					137
		.838	263.2					87
	16311	.934	276.1	36.8	+ 6.3	0	6	194 *c*
	16307	.934	254.1	35.7	-14.2	135	749	584 *c*
	16302	.827	292.8	21.8	+19.6	13	54	155 *c*
	16300	.676	290.3	8.8	+14.8	4	18	
	16313	.530	279.9	359.6	+ 6.6	13	56	
	16303	.413	196.9	335.4	-21.6	22	132	
	16305	.114	310.9	332.9	+ 5.9	6	36	
	16304	.226	339.1	332.7	+13.7	10	68	
	16312	.204	197.7	331.6	- 9.6	42	210	
	16308	.455	50.9	306.3	+18.1	166	1030	
	16310	.791	84.7	276.0	+ 5.2	24	111	306 *c*
	16314	.982	77.3	249.1	+12.8	16	153	238 *c*

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
		.863	76.3					175
		.916	68.3					155
		.945	113.3					239
Nov. 25			(+18.3)	(328.0)	(+ 1.6)	(451)	(2623)	(2482)
329.293 C		.961	277.1					297
		.939	264.4					121
		.887	254.2					67
		.824	288.4					74
	16307	.987	253.7	34.6	-15.8	51	487	362 *c*
	16302	.926	290.7	21.4	+19.6	5	25	188 *f*
	16313	.750	277.7	3.1	+ 6.7	0	4	47 *c*
	16303	.523	220.9	336.4	-21.9	25	142	
	16305	.352	282.4	334.9	+ 5.6	4	17	
	16304	.366	305.4	332.6	+13.5	16	65	
	16312	.335	237.3	331.3	- 9.0	47	303	
	16308	.324	24.7	306.6	+18.4	129	1023	
	16315	.457	106.5	288.8	- 6.1	6	36	
	16310	.614	84.5	277.2	+ 4.5	18	77	126 *f*
	16314	.911	76.8	249.7	+12.6	28	89	350 *c*
		.949	61.8					231
Nov. 26			(+18.0)	(314.8)	(+ 1.4)	(329)	(2268)	(1863)
330.433 G		.972	293.0					228
		.942	262.8					144
		.924	286.5					281
		.889	276.3					165
		.870	254.6					132
	16303	.673	233.8	335.6	-22.3	16	103	
	16305	.586	277.2	335.4	+ 5.2	0	2	
	16312	.565	251.2	332.5	- 9.3	77	409	
	16304	.570	292.4	332.5	+13.6	20	87	
	16308	.315	340.4	306.2	+18.5	163	965	
	16315	.216	136.0	291.1	- 7.7	2	7	
	16309	.385	36.8	285.7	+19.1	6	39	
	16310	.385	82.0	277.4	+ 4.2	19	105	
	16314	.776	74.8	249.9	+12.5	22	92	192 *c*
	1287a	.849	62.2	244.7	+24.0	4	21	186 *c*
	16316	.982	80.4	220.8	+ 9.7	27	127	368 *c*
		.877	76.4					359
		.904	118.6					278
		.944	64.9					294
		.958	56.8					282
Nov. 27			(+17.6)	(299.8)	(+ 1.3)	(356)	(1957)	(2909)

Group 16310. Nov. 23-Dec. 4. A small regular spot, with an occasional companion.
Group 16311. Nov. 24 - 25. A tiny spot.
Group 16312. Nov. 24-Dec. 1. A small stream, developing from a single spot when first seen near the C.M. The leader quickly becomes regular in outline.
Group 16313. Nov. 25 - 26. A pair of spots on November 25, of which only one remains on the next day.
Group 16314. Nov. 25-Dec. 3. Two small spots, which coalesce and die out.
Group 16315. Nov. 26-Dec. 2. A small spot.
Group 16316. Nov. 27-Dec. 2. One or two small spots, not seen on December 1.

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
1949			°	°	°			
331.431		.966	286.9					144
G		.960	275.6					95
		.940	257.2					126
		.937	266.6					76
		.856	290.6					167
	16303	.790	240.5	334.3	-22.0	14	105	176 c
	16312	.743	255.4	333.3	-10.0	77	498	205 c
	16305	.729	275.8	333.1	+ 5.0	0	3	124 p
	16304	.729	287.9	332.0	+13.7	11	85	
	16308	.436	314.0	305.9	+18.7	131	881	
	16317	.563	192.0	294.5	-32.1	2	21	
	16315	.182	211.5	292.1	- 7.7	9	17	
	16309	.313	2.8	285.7	+19.3	1	13	
	16318	.249	144.8	278.2	-10.5	10	33	
	16310	.173	70.0	277.3	+ 4.6	11	84	
	16314	.612	71.0	250.4	+12.4	15	91	
	16319	.727	57.5	244.7	+23.8	5	20	
	16316	.906	79.8	222.0	+ 9.7	5	46	289 c
	16320	.971	64.2	211.6	+25.3	49	502	415 c
	16321	.995	67.3	202.6	+22.7	10	62	
		.807	124.5					155
		.861	61.8					213
		.905	71.5					101
		.910	52.8					168
		.957	104.3					92
		.975	58.5					168
Nov. 28			(+17.2)	(286.6)	(+ 1.2)	(350)	(2461)	(2714)
332.609		.905	277.9					227
G		.844	240.6					223
	16303	.933	245.5	337.5	-22.3	15	71	208 f
	16312	.893	257.5	333.4	-10.7	82	488	291 c
	16304	.879	284.9	331.7	+13.5	21	73	113 f
	16308	.623	299.3	305.9	+18.5	165	756	
	16317	.638	212.0	294.4	-31.7	6	20	
	16315	.397	246.7	292.6	- 8.0	2	7	
	16309	.376	330.3	282.5	+19.9	6	47	
	16318	.238	215.0	279.0	-10.0	18	82	
	16310	.125	299.6	277.3	+ 4.5	19	80	
	16314	.386	60.1	251.2	+12.0	18	98	
	16319	.576	46.8	243.8	+24.0	2	16	
	16316	.768	76.9	221.7	+10.9	9	51	146 c
	16322	.827	108.0	217.1	-14.2	6	29	118 c

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
	16320	.886	61.7	211.7	+25.3	75	425	416 c
	16321	.945	65.5	201.8	+23.4	30	237	631 c
	16323	.965	100.8	197.0	-10.1	24	177	207 c
		.753	45.6					83
		.778	57.6					86
		.931	53.8					192
		.961	94.5					135
Nov. 29			(+16.8)	(271.1)	(+ 1.0)	(498)	(2657)	(3076)
333.517		.956	276.2					237
G		.946	293.6					198
	16312	.966	258.4	333.4	-11.0	56	511	525 c
	16303	.969	247.1	333.0	-21.9	17	83	311 c
	16304	.956	284.2	331.5	+13.8	18	121	154 c
	16308	.762	293.9	306.2	+18.5	150	740	258 c
	16317	.749	224.0	296.7	-31.8	2	9	48 c
	16315	.575	254.4	293.0	- 8.1	4	9	
	16309	.506	309.4	283.5	+19.5	1	18	
	16318	.381	238.7	278.3	-10.5	13	76	
	16310	.331	282.6	277.9	+ 5.0	11	60	
	16314	.228	34.6	251.5	+11.7	11	71	
	16319	.481	34.0	242.0	+24.3	6	38	
	16316	.638	74.0	220.6	+10.8	1	14	
	16322	.674	113.5	219.5	-14.8	6	59	
	16320	.798	58.4	210.5	+25.3	63	428	143 c
	16321	.873	63.9	200.9	+23.0	29	303	549 c
	16323	.901	101.8	195.7	-10.2	42	165	218 s
	16324	.959	97.0	186.0	- 6.4	3	16	240 f
		.855	50.0					156
		.883	95.2					161
		.959	85.5					57
		.963	77.6					179
		.971	108.4					312
Nov. 30			(+16.4)	(259.1)	(+ 0.9)	(433)	(2721)	(3746)
334.286		.969	247.1					229
C		.924	278.2					94
	16304	.993	283.5	332.0	+13.5	16	85	173 f
	16312	.984	259.5	328.1	-10.1	20	153	168 c
	16308	.857	291.3	306.1	+18.5	118	681	501 c
	16315	.703	256.7	292.6	- 8.7	3	9	
	16318	.527	249.5	278.9	- 9.9	21	138	

Group 16317. Nov. 28 - 30. One or two tiny spots.
Group 16318. Nov. 28-Dec. 5. A stream of small variable spots.
Group 16319. Nov. 28-Dec. 6. A pair of small spots, not seen on December 4 and 5.
Group 16320. Nov. 28-Dec. 7. Return of Group 16280. Two spots, close together, which slowly diminish.
Group 16321. Nov. 28-Dec. 11. Return of Group 16278. A small regular spot with a close companion which is eventually absorbed. On December 7 a tiny and more distant companion appears.
Group 16322. Nov. 29-Dec. 4. Two or three small spots.
Group 16323. Nov. 29-Dec. 11. Return of Group 16279. A slowly-diminishing regular spot.
Group 16324. Nov. 30-Dec. 2. Tiny 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
1949			°	°	°			
	16310	.488	278.7	277.8	+ 4.9	7	38	
	16314	.190	344.5	252.0	+11.3	5	52	
	16319	.415	15.8	241.9	+24.3	11	80	
	16322	.541	120.6	220.3	-15.2	13	61	
	16320	.702	53.5	210.6	+25.2	51	342	153 *c*
	16321	.779	60.9	201.6	+22.8	20	168	539 *c*
	16323	.811	103.3	195.9	-10.3	25	165	202 *sf*
	16324	.893	97.9	186.3	- 6.7	0	7	120 *c*
		.893	78.5					207
		.944	110.5					408
		.950	70.3					198
		.965	61.5					196
Dec. 1			(+16.1)	(249.0)	(+ 0.8)	(310)	(1979)	(3188)
335.285 C		.925	280.3					95
		.905	272.7					121
		.868	249.1					94
		.811	285.9					80
		.793	294.7					257
	16308	.943	289.4	305.2	+18.5	102	630	474 *c*
	16315	.843	259.0	292.4	- 8.8	2	6	96 *c*
	1287b	.798	254.5	287.4	-11.9	0	3	69 *c*
	16318	.713	256.7	280.2	- 8.9	25	146	153 *c*
	16310	.671	276.5	277.6	+ 4.9	7	21	
	16314	.329	304.3	251.8	+11.4	3	16	
	16319	.410	346.9	241.6	+24.1	7	33	
	16316	.289	55.5	221.8	+10.1	1	17	
	16322	.377	136.0	220.1	-15.0	6	57	
	16320	.573	43.5	210.1	+25.1	40	278	
	16321	.644	53.6	201.7	+23.0	16	151	
	16323	.659	106.5	196.0	-10.3	22	150	
	16324	.797	98.8	183.6	- 6.6	2	19	90 *c*
		.792	77.7					77
		.862	111.6					410
		.899	71.7					189
		.914	60.8					166
		.952	105.3					118
Dec. 2			(+15.7)	(235.8)	(+ 0.7)	(233)	(1527)	(2489)
336.286 C		.946	236.6					190
		.933	247.5					215
		.931	259.9					339
		.909	281.9					274
		.890	293.6					456
	16308	.990	288.4	303.8	+18.2	27	257	298 *c*
	16318	.847	258.9	279.7	- 9.1	33	313	223 *c*
	16310	.824	275.3	277.8	+ 4.6	5	35	173 *n*
	16314	.490	293.3	249.8	+11.6	0	7	

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
	16319	.501	321.1	242.5	+23.3	4	35	
	16322	.292	168.4	219.1	-16.1	3	27	
	16320	.465	26.7	209.3	+25.0	36	260	
	16321	.509	41.4	201.3	+22.8	24	154	
	16323	.486	113.0	195.7	-10.4	26	158	
	16325	.947	98.6	151.9	- 7.9	3	27	285 *c*
		.776	114.2					198
		.865	60.4					186
		.909	106.4					237
		.924	117.3					243
		.968	70.5					368
Dec. 3			(+15.4)	(222.6)	(+ 0.5)	(161)	(1273)	(3685)
337.413 G		.965	292.1					410
		.954	250.3					161
		.915	281.6					375
		.865	292.5					108
		.849	247.4					226
	16318	.955	259.8	280.0	- 9.6	40	240	386 *c*
	16310	.941	274.8	277.7	+ 4.6	6	25	152 *sf*
	1287c	.440	325.6	223.2	+21.6	6	34	
	16322	.335	211.4	218.2	-16.1	4	32	
	16326	.338	350.1	211.3	+19.8	9	56	
	16320	.420	358.0	208.7	+25.1	30	184	
	16321	.397	16.2	200.9	+22.7	21	124	
	16323	.276	131.3	195.7	-10.0	21	149	
	16325	.785	98.6	156.6	- 6.5	35	217	88 *c*
	1287d	.858	99.9	149.4	- 8.2	0	11	109 *c*
	16327	.980	71.9	130.0	+17.8	22	123	392 *c*
		.805	115.3					275
		.872	71.4					132
		.958	57.5					187
		.964	102.2					242
		.974	78.5					95
		.983	91.7					290
Dec. 4			(+14.9)	(207.8)	(+ 0.4)	(194)	(1195)	(3628)
338.442 G		.968	275.9					341
		.945	288.5					328
		.926	246.9					228
		.863	282.6					160
		.835	298.6					312
		.747	285.9					130
	16318	.995	258.9	277.9	-11.0	10	105	298 *c*
	16326	.460	323.7	211.2	+22.0	19	101	
	16320	.475	332.2	208.3	+25.0	14	119	
	16321	.400	345.3	200.5	+23.0	19	123	
	16323	.178	189.0	195.8	- 9.8	17	112	

Group 16325. Dec. 3 - 13. A stream, developing from two tiny spots, whose follower, at first double, soon becomes a composite spot - the largest component. The whole group undergoes its whole life-history on the disk.
Group 16326. Dec. 4 - 10. A variable stream which is still growing as it passes round the limb.
Group 16327. Dec. 4 - 15. A small regular spot with unstable companions between December 8 and 13.

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
1949			°	°	°			
	16328	.433	3.2	192.7	+25.8	4	24	
	16325	.627	101.0	156.1	− 6.6	66	350	
	16327	.918	70.3	129.0	+18.1	25	149	317 *f*
	16329	.921	95.4	127.5	− 4.9	15	73	190 *c*
	16330	.938	90.6	124.7	− 0.5	3	16	273 *c*
		.775	68.1					258
		.929	78.7					407
		.937	105.7					183
Dec. 5			(+14.5)	(194.2)	(+ 0.3)	(192)	(1172)	(3425)
339.282 C		.936	282.7					132
		.851	274.9					179
		.835	306.7					188
	16319	.893	296.1	243.6	+23.2	4	35	291 *c*
	16326	.577	311.0	211.1	+22.3	18	169	
	16320	.570	317.5	208.1	+25.0	14	81	
	16321	.473	324.7	200.3	+22.8	22	117	
	16323	.278	230.1	195.6	−10.1	14	138	
	16328	.458	341.9	192.2	+25.9	1	11	
	16325	.462	104.9	156.5	− 6.6	46	362	
	16327	.826	68.1	129.6	+18.0	13	105	202 *c*
	16329	.824	96.1	128.0	− 4.9	6	94	214 *c*
	16330	.851	90.6	125.0	− 0.4	2	10	125 *c*
		.864	77.9					414
		.911	68.5					251
		.939	96.5					271
		.951	74.9					134
		.963	76.8					190
Dec. 6			(+14.1)	(183.1)	(+ 0.2)	(140)	(1122)	(2591)
340.465 G		.955	297.8					216
		.948	242.2					285
		.943	287.0					209
		.864	294.1					149
		.795	250.4					213
	1287e	.933	304.5	232.3	+31.9	3	12	150 *c*
	16331	.890	280.9	229.8	+ 9.7	0	4	222 *f*
	16326	.759	300.9	212.4	+22.9	69	446	330 *c*
	16320	.728	305.6	208.2	+25.0	11	64	
	16321	.622	308.6	199.3	+22.8	27	123	
	16323	.499	250.4	195.9	− 9.6	15	114	
	16328	.572	319.4	191.9	+25.7	2	16	
	1287f	.381	212.8	180.1	−18.6	1	4	
	16325	.231	119.6	156.0	− 6.5	65	335	

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
	16327	.666	62.4	129.4	+17.9	34	170	
	16329	.673	97.2	125.7	− 4.8	39	206	
	16332	.703	73.1	124.4	+11.8	9	32	
		.783	66.1					243
		.831	93.6					482
		.897	62.8					183
		.912	76.0					446
Dec. 7			(+13.6)	(167.6)	(0.0)	(275)	(1526)	(3128)
341.288 C		.960	302.5					276
		.885	251.6					146
		.832	308.3					188
	16331	.938	279.7	225.9	+ 9.0	3	36	304 *c*
	16326	.858	296.9	212.5	+22.7	45	443	418 *c*
	16321	.726	301.8	198.4	+22.3	20	130	54 *c*
	16323	.644	254.7	195.6	− 9.8	10	125	
	16328	.673	309.3	191.7	+25.1	4	38	
	16325	.121	162.9	154.7	− 6.7	26	318	
	16327	.530	55.1	129.7	+17.5	10	180	
	16329	.499	99.6	127.2	− 4.9	31	328	
	16332	.536	67.9	126.4	+11.5	2	19	
	1287g	.546	103.7	124.5	− 7.5	0	23	
		.844	73.5					233
		.946	77.8					190
		.976	69.9					328
Dec. 8			(+13.3)	(156.7)	(− 0.1)	(151)	(1640)	(2137)
342.394 G		.938	284.0					235
		.923	294.2					393
		.922	252.6					223
		.874	268.4					200
	16326	.953	294.3	212.5	+23.0	138	1089	399 *c*
	16321	.853	297.0	197.3	+22.6	46	260	114 *c*
	16323	.813	258.6	195.7	− 9.3	17	141	146 *c*
	16328	.810	302.0	191.3	+25.2	30	250	119 *c*
	16325	.246	242.7	154.8	− 6.6	32	352	
	16327	.364	34.8	129.6	+17.2	22	238	
	16329	.254	110.9	128.4	− 5.3	49	434	
	16332	.368	54.6	124.3	+12.1	7	56	
	1287h	.456	50.1	120.8	+16.7	2	17	
		.819	76.6					114
		.837	107.6					178
		.906	68.8					408
		.969	96.2					195
Dec. 9			(+12.8)	(142.1)	(− 0.2)	(343)	(2837)	(2724)

Group 16328. Dec. 5 - 11. One or two variable spots with a sudden increase to maximum area on December 9.
Group 16329. Dec. 5 - 15. A stream of changing spots.
Group 16330. Dec. 5 - 8. A small equatorial spot.
Group 16331. Dec. 7 - 8. A tiny spot on December 7; a pair on the next day.
Group 16332. Dec. 7 - 16. A stream of 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
1949			°	°	°			
343.412		.963	265.7					179
G		.921	305.1					234
		.847	283.1					141
		.834	247.2					293
		.784	293.2					139
	16326	.990	294.0	209.3	+23.6	51	425	375 *c*
	16321	.945	293.9	197.6	+22.3	33	187	154 *c*
	16323	.925	259.7	195.9	− 9.7	34	133	130 *c*
	16328	.910	298.8	190.9	+25.8	24	121	306 *c*
	16325	.445	254.7	154.2	− 7.1	60	242	
	16327	.296	356.0	129.9	+16.7	39	177	
	16329	.092	174.0	128.1	− 5.6	65	361	
	16332	.231	20.9	123.9	+11.4	18	74	
	16333	.881	54.8	72.4	+30.3	0	4	139 *c*
	16334	.985	95.7	48.9	− 5.7	37	195	156 *c*
		.780	68.3					113
		.902	96.4					137
		.952	104.9					174
		.964	73.2					240
Dec. 10			(+12.4)	(128.7)	(− 0.4)	(361)	(1919)	(2910)
344.419		.933	266.1					148
G		.923	282.4					252
		.911	247.5					312
		.899	289.7					208
		.789	251.0					211
	16321	.989	292.0	195.9	+21.7	13	82	327 *c*
	16328	.970	297.0	189.3	+26.0	8	44	
	16323	.986	260.2	195.5	− 9.7	20	114	178 *c*
	16335	.847	276.6	173.0	+ 5.3	2	8	125 *c*
	1287 i	.839	301.6	167.7	+25.7	2	6	270 *p*
	16325	.626	259.4	153.6	− 7.0	24	232	
	16327	.391	320.8	130.4	+17.1	22	184	
	16329	.258	250.0	129.5	− 5.5	36	361	
	16332	.265	326.9	124.0	+12.3	10	60	
	1287 j	.317	2.4	114.7	+17.9	6	41	
	16333	.789	50.0	71.4	+30.1	0	3	87 *c*
	16334	.923	96.0	48.4	− 5.7	27	153	190 *c*
	16336	.944	105.7	45.6	−15.0	6	50	310 *f*
	16337	.974	95.8	38.9	− 5.7	4	37	226 *c*
		.802	97.3					198
		.828	117.5					125
		.881	107.1					136

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
		.901	75.7					222
		.904	67.3					202
		.954	84.7					213
Dec. 11			(+11.9)	(115.5)	(− 0.5)	(180)	(1375)	(3940)
345.432		.953	288.3					160
G		.940	251.3					315
		.918	299.9					299
		.908	262.7					166
		.860	242.0					147
	16335	.941	275.0	171.9	+ 4.5	28	128	181 *c*
	16338	.834	252.9	157.3	−14.5	10	32	89 *c*
	16325	.789	261.6	153.7	− 6.9	15	106	176 *c*
	16339	.710	293.6	144.5	+16.0	6	27	
	16327	.548	302.4	130.8	+16.4	26	136	
	16329	.449	259.2	128.3	− 5.3	50	291	
	16332	.437	300.6	124.6	+12.3	10	42	
	16340	.291	50.0	89.1	+10.1	2	11	
	1287k	.741	66.5	57.1	+16.7	1	8	205 *f*
	16334	.803	96.7	49.0	− 5.7	25	128	206 *c*
	16336	.849	107.0	45.2	−14.7	10	43	144 *f*
	16341	.898	81.6	38.8	+ 7.2	42	201	244 *c*
	16337	.897	95.5	38.6	− 5.2	7	47	166 *c*
		.855	74.5					167
		.891	61.9					261
		.916	101.0					173
		.939	112.2					281
Dec. 12			(+11.5)	(102.1)	(− 0.6)	(232)	(1200)	(3380)
346.292		.957	297.0					196
C		.921	242.6					199
	16335	.983	274.3	169.9	+ 4.1	21	138	172 *c*
	16338	.910	254.3	155.4	−14.5	7	45	178 *p*
	16325	.890	262.7	153.4	− 6.8	11	65	326 *c*
	16339	.825	289.9	144.3	+15.8	7	37	150 *c*
	16327	.681	294.2	130.8	+15.6	30	170	
	16329	.615	261.7	128.3	− 5.6	25	211	
	16332	.587	291.6	124.5	+11.8	0	21	
	16340	.188	0.7	90.7	+10.1	7	29	
	16334	.671	97.3	49.0	− 5.4	17	131	
	16336	.736	109.1	45.1	−14.4	3	30	152 *f*
	16337	.786	95.5	39.3	− 4.8	8	45	154 *c*

Group 16333. Dec. 10 - 11. A tiny spot.
Group 16334. Dec. 10 - 21. A diminishing regular spot with a few small companions until December 16.
Group 16335. Dec. 11 - 13. One or two small spots.
Group 16336. Dec. 11 - 19. Return of Group 16307. A small spot until December 14; later there are several.
Group 16337. Dec. 11 - 16. A small group.
Group 16338. Dec. 12 - 13. A pair of small spots.
Group 16339. Dec. 12 - 15. A pair of small spots until December 13; a single spot afterwards.
Group 16340. Dec. 12 - 13. A tiny spot.
Group 16341. Dec. 12 - 23. A small composite spot, slowly dinimishing after December 14.

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
1949			°	°	°			
	16341	.802	79.9	38.2	+ 7.7	49	403	88 *c*
	16342	.989	85.3	9.7	+ 4.5	40	232	184 *c*
		.891	113.1					205
		.962	70.4					187
Dec. 13			(+11.1)	(90.8)	(- 0.7)	(225)	(1557)	(2191)
347.462		.974	252.8					165
G		.974	263.4					282
		.950	241.8					171
		.861	283.7					149
	16339	.951	288.3	146.0	+17.0	3	14	208 *c*
	16327	.868	289.9	133.6	+16.7	7	82	180 *c*
	16329	.846	265.0	132.9	- 4.7	30	204	369 *c*
	16332	.774	286.6	124.6	+12.1	16	164	169 *c*
	16343	.767	297.6	121.6	+20.1	10	102	127 *c*
	16334	.456	100.0	48.7	- 5.3	13	161	
	16336	.546	115.6	45.0	-14.4	7	23	
	16337	.577	98.0	40.5	- 5.3	4	29	
	16341	.624	75.4	38.0	+ 8.3	60	468	
	16342	.930	84.6	7.4	+ 4.6	59	449	235 *c*
		.919	62.9					136
		.920	73.8					164
Dec. 14			(+10.6)	(75.4)	(- 0.9)	(209)	(1696)	(2355)
348.407		.924	256.4					126
G	16339	.996	286.8	147.0	+16.6	0	48	170 *c*
	16329	.956	266.2	135.6	- 3.9	34	187	749 *f*
	16327	.954	287.5	134.1	+16.3	11	49	192 *c*
	16332	.881	284.2	123.5	+12.0	30	152	283 *c*
	16343	.873	293.8	120.9	+20.0	27	121	333 *c*
	16334	.251	107.8	49.1	- 5.3	18	127	
	16336	.405	125.4	43.1	-14.5	7	30	
	16337	.376	101.6	41.3	- 5.2	6	58	
	16341	.446	70.7	37.9	+ 7.5	60	366	
	12871	.736	56.9	21.0	+22.9	1	13	223 *f*
	16342	.823	83.6	8.0	+ 4.6	65	302	344 *c*
		.860	71.0					115
		.908	61.0					192
Dec. 15			(+10.2)	(62.9)	(- 1.0)	(259)	(1453)	(2727)
349.254		.954	254.6					120
C		.946	265.9					477

U. T.	Group No.	MEASURES		POSITION		AREA		
		Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ
1949			°	°	°			
	16332	.966	282.6	126.0	+11.8	8	48	208 *n*
	16343	.949	291.6	121.5	+20.1	13	96	146 *c*
	16334	.086	147.8	49.2	- 5.2	19	100	
	16344	.119	44.9	47.0	+ 3.7	1	11	
	16336	.276	147.0	42.9	-14.4	4	37	
	16337	.169	110.2	42.7	- 4.4	3	40	
	16341	.281	58.2	37.9	+ 7.4	72	359	
	16342	.697	81.8	8.2	+ 4.9	47	357	
	16345	.782	61.1	4.7	+21.4	2	10	120 *c*
	16346	.958	82.2	339.0	+ 7.1	3	17	141 *c*
		.961	101.5					258
		.969	113.2					125
Dec. 16			(+ 9.8)	(51.8)	(- 1.1)	(172)	(1075)	(1595)
350.463		.955	264.2					163
G		.952	289.2					227
	16347	.702	317.7	68.8	+30.1	16	122	
	16334	.251	252.8	49.7	- 5.5	12	72	
	16344	.211	296.4	46.7	+ 4.1	19	94	
	16336	.241	202.5	41.2	-14.1	1	10	
	16341	.144	349.9	37.3	+ 6.8	47	328	
	16342	.480	77.9	7.8	+ 4.6	36	294	
	16345	.634	51.7	3.5	+21.9	13	70	
	16346	.835	81.0	339.9	+ 6.7	2	14	368 *n*
		.861	105.2					298
		.931	115.5					323
Dec. 17			(+ 9.2)	(35.8)	(- 1.3)	(146)	(1004)	(1379)
351.261		.941	313.2					166
C		.915	283.4					166
		.878	293.0					98
	16347	.788	310.6	68.7	+29.7	22	168	200 *c*
	16334	.421	259.8	49.8	- 5.5	17	81	
	16344	.363	285.4	45.7	+ 4.2	5	32	
	16336	.378	228.8	42.4	-15.7	1	8	
	16341	.249	304.0	37.2	+ 6.6	24	193	
	16342	.323	71.0	7.5	+ 4.7	25	148	
	16345	.496	41.8	4.7	+20.3	3	17	
	16348	.995	69.6	302.3	+20.1	19	148	193 *c*
		.867	119.2					250
Dec. 18			(+8.8)	(25.3)	(- 1.4)	(116)	(795)	(1073)

Group 16342. Dec. 13 - 21. A small composite spot, preceded by a tiny companion. On December 19 it begins to break up.
Group 16343. Dec. 14 - 16. A few small spots.
Group 16344. Dec. 16 - 21. A small group with a brief maximum on December 17.
Group 16345. Dec. 16 - 20. One or two small spots.
Group 16346. Dec. 16 - 27. A tiny spot on December 16 and 17; nothing is seen on the next day. On December 19 a pair of small spots appears and develops into a bi-polar group, the leader of which is a regular spot and the longest-lived. The follower, a composite spot, and at first the largest component, undergoes slight changes and then dies out.
Group 16347. Dec. 17 - 21. A group of changing spots, appearing in the western hemisphere.
Group 16348. Dec. 18 - 30. Return of Group 16308. A stable regular spot, the umbra of which is divided into two by a bright 'bridge'.

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
1949			°	°	°			
352.469		.932	252.7					133
G		.915	286.7					214
	16347	.901	304.8	68.0	+30.1	23	291	247 *c*
	16334	.658	263.1	50.3	− 5.7	9	63	
	16344	.607	279.7	46.1	+ 4.6	1	13	
	16336	.588	243.9	42.6	−16.2	0	12	
	16341	.487	285.9	37.4	+ 6.3	20	187	
	16342	.117	27.6	6.3	+ 4.4	18	182	
	16345	.380	12.3	4.5	+20.2	1	6	
	16346	.519	74.6	339.3	+ 6.6	1	23	
	16348	.939	68.1	301.7	+19.9	40	184	354 *c*
		.837	59.7					158
		.939	103.5					251
Dec. 19			(+8.3)	(9.4)	(− 1.5)	(113)	(961)	(1357)
353.439		.952	263.8					174
G		.931	246.7					117
		.861	286.4					213
		.824	295.7					172
		.758	251.9					82
	16347	.966	301.9	68.0	+30.2	28	416	299 *c*
	16334	.808	264.3	50.3	− 5.6	11	58	178 *c*
	16344	.768	276.3	46.3	+ 3.8	2	7	113 *c*
	16341	.664	281.3	37.4	+ 6.3	19	182	
	16342	.201	300.6	6.5	+ 4.3	13	118	
	16345	.414	348.1	1.9	+22.2	1	8	
	16346	.329	65.4	339.2	+ 6.3	11	50	
	16348	.853	65.3	301.3	+19.9	19	159	254 *c*
	16349	.933	94.1	287.9	− 4.4	3	21	79 *c*
		.895	107.0					216
		.943	68.5					321
		.953	79.0					124
		.953	99.2					176
Dec. 20			(+7.8)	(356.6)	(− 1.6)	(107)	(1019)	(2518)
354.409		.959	243.5					132
G		.956	254.7					128
		.929	289.4					174
		.910	281.8					168
		.856	252.1					271
		.834	260.0					176
	16347	.994	299.2	65.4	+28.8	31	189	121 *c*
	16334	.919	264.5	50.4	− 5.7	11	30	372 *f*
	16344	.898	273.2	47.4	+ 2.1	2	12	187 *c*

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
	16341	.809	278.8	37.1	+ 6.0	17	109	365 *c*
	16342	.407	283.8	7.0	+ 3.9	8	72	
	16346	.171	32.0	338.6	+ 6.5	57	331	
	16350	.531	61.8	315.2	+12.9	4	18	
	16348	.732	60.4	301.4	+19.8	39	190	68 *f*
	16351	.729	103.0	297.7	−10.7	0	7	
	16349	.807	94.0	290.2	− 4.3	4	21	135 *c*
		.870	78.0					176
		.873	99.6					265
		.887	65.1					349
		.931	86.2					146
		.958	70.1					150
		.974	77.4					213
Dec. 21			(+7.4)	(343.8)	(− 1.8)	(173)	(979)	(3596)
355.500		.961	263.5					306
G		.947	255.0					249
		.930	241.4					146
		.897	248.1					146
	16341	.931	277.3	37.5	+ 6.1	12	85	316 *c*
	16346	.213	311.1	338.7	+ 6.1	69	412	
	16352	.145	203.5	332.8	− 9.5	5	16	
	16353	.236	116.3	317.2	− 7.8	9	44	
	16350	.360	43.5	314.8	+13.2	5	29	
	16348	.587	51.3	300.5	+19.8	36	154	
	16351	.540	104.3	297.6	− 9.3	4	17	
	16349	.607	95.4	292.3	− 4.8	1	7	
	1288a	.682	90.0	286.7	− 1.4	1	6	
	16354	.886	76.4	268.4	+11.1	24	118	190 *c*
		.898	66.7					208
		.953	112.3					158
		.982	83.7					111
Dec. 22			(+6.9)	(329.5)	(− 1.9)	(166)	(888)	(1830)
356.286		.975	258.5					230
C		.952	247.3					335
		.781	277.1					166
	16341	.979	275.3	36.9	+ 4.8	14	65	320 *c*
	16346	.370	292.3	339.1	+ 6.2	67	489	
	16352	.275	242.0	333.3	− 9.3	4	22	
	16353	.111	163.7	317.3	− 8.1	9	84	
	16350	.280	18.3	313.9	+13.4	1	10	
	16348	.478	39.2	300.5	+19.8	21	165	
	16351	.381	111.1	298.1	− 9.7	1	11	

Group 16349. Dec. 20 - 31. One or two tiny spots until December 23. On the next day a moderate-sized composite spot appears which increases to a maximum on December 27.

Group 16350. Dec. 21 - 23. A small spot on December 21 and 23; a pair of December 22.

Group 16351. Dec. 21 - 27. One or two small spots.

Group 16352. Dec. 22 - 24. A pair of small spots, of which only the leader remains on December 24.

Group 16353. Dec. 22 - 29. Intermittent. A pair of small spots until December 25. Three days later a new group appears which is growing as it passes out of sight.

Group 16354. Dec. 22-1950Jan. 2. A bi-polar group, whose leader is a stable regular spot. The follower, composite in structure, begins to break up on December 27 and at the limb has declined to a tiny spot.

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
1949			°	°	°			
	16349	.438	97.7	293.4	- 5.1	1	13	
	16354	.782	74.5	269.2	+10.7	47	318	145 c
		.820	63.1					144
		.887	83.5					134
		.968	64.1					265
		.969	75.5					249
Dec. 23			(+6.5)	(319.1)	(- 2.0)	(165)	(1177)	(1988)
357.285 C		.899	277.6					446
		.857	297.0					120
	16346	.569	284.2	339.6	+ 6.3	71	421	
	16352	.526	256.0	337.0	- 9.1	2	10	
	16353	.243	243.4	318.6	- 8.3	6	39	
	16348	.383	13.8	300.5	+19.6	22	174	
	16351	.179	133.2	298.4	- 9.1	2	12	
	16349	.239	98.8	292.4	- 4.1	45	242	
	16354	.626	70.1	269.4	+10.5	84	634	
	16355	.990	66.4	226.0	+23.0	34	206	231 p
		.923	58.6					121
		.950	77.7					395
Dec. 24			(+6.0)	(306.0)	(- 2.1)	(266)	(1738)	(1313)
358.283 C		.969	275.1					173
		.945	293.6					204
		.886	259.0					111
	16346	.742	280.7	339.8	+ 6.4	41	284	95 c
	1288b	.681	300.0	331.0	+18.1	3	22	
	16353	.459	258.1	319.6	- 7.4	3	14	
	16348	.390	343.0	299.7	+19.6	27	217	
	16351	.137	207.2	296.4	- 9.1	7	53	
	16349	.029	160.7	292.2	- 3.7	88	562	
	16354	.441	61.3	269.8	+10.2	138	980	
	16356	.949	52.3	227.3	+34.5	6	52	304 f
	16355	.937	64.3	226.5	+23.0	30	217	380 c
		.801	76.7					224
		.827	52.1					183
Dec. 25			(+5.5)	(292.8)	(- 2.2)	(343)	(2401)	(1674)
359.382 C		.910	253.5					198
		.851	261.1					89
		.845	291.0					97
		.841	239.8					124
		.801	250.8					95

U. T.	Group No.	MEASURES		POSITION		AREA		
		Dist.	Pos. Angle	Long.	Lat.	Umbræ	Whole Spots	Faculæ
1949			°	°	°			
	16346	.878	278.4	338.9	+ 6.2	46	224	245 c
	16348	.505	316.6	299.8	+19.2	24	179	
	16351	.342	248.3	297.1	- 9.3	4	27	
	16349	.245	261.5	292.3	- 4.4	84	567	
	16357	.202	352.0	279.9	+ 9.1	0	8	
	16354	.265	34.6	269.5	+10.2	141	749	
	16355	.841	60.6	225.9	+22.8	30	199	250 f
	16356	.880	48.0	225.9	+34.5	6	38	272 f
	16358	.944	65.4	210.5	+22.2	0	6	205 c
		.863	72.2					132
		.953	56.7					119
		.966	95.5					217
Dec. 26			(+5.0)	(278.3)	(- 2.4)	(335)	(1997)	(2043)
360.279 C		.953	258.4					254
		.932	290.4					155
		.926	243.2					204
		.863	236.6					153
		.793	262.0					145
	16346	.968	277.6	341.3	+ 6.7	17	143	272 c
	16348	.632	305.2	299.5	+19.2	20	164	
	16351	.525	256.4	297.5	- 9.2	1	8	
	16349	.439	265.6	292.4	- 4.2	68	669	
	16357	.325	308.2	281.4	+ 9.1	1	14	
	16354	.227	344.2	270.1	+10.1	99	709	
	16355	.734	54.7	226.0	+23.1	39	197	96 f
	16356	.803	42.3	225.7	+34.5	3	27	165 f
	16358	.865	62.0	210.9	+22.5	6	42	354 f
		.844	94.3					106
		.941	97.6					273
		.952	55.0					335
		.967	99.2					181
		.973	71.5					132
Dec. 27			(+4.6)	(266.5)	(- 2.5)	(254)	(1973)	(2825)
361.284 C		.986	288.7					152
		.979	277.5					125
		.972	256.1					196
		.949	242.8					342
		.881	292.3					208
	16353	.910	264.4	318.7	- 6.2	40	139	191 s
	16348	.769	297.7	299.2	+19.1	37	156	148 c
	16349	.638	266.4	292.8	- 4.3	64	436	
	16354	.361	307.8	270.1	+10.3	88	554	

Group 16355. Dec. 24-1950Jan. 5. A regular spot, with occasional distant companions.
Group 16356. Dec. 25 - 30. A small spot.
Group 16357. Dec. 26 - 27. A tiny spot.
Group 16358. Dec. 26-1950Jan. 6. Return of Group 16326. A stream of small unstable spots until December 30; the next day a large composite spot begins to develop. This reaches maximum area on January 3, after which it disintegrates.

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
1949			°	°	°			
	16355	.607	44.5	225.8	+23.3	35	166	
	16356	.719	33.8	224.5	+34.3	3	11	
	16358	.759	57.2	209.9	+22.3	16	66	237 c
	16359	.965	85.7	178.9	+ 3.4	19	180	443 c
		.835	98.7					206
		.871	53.1					420
		.937	109.9					220
		.938	72.0					283
		.939	60.5					599
		.949	48.7					179
Dec. 28			(+4.1)	(253.3)	(- 2.6)	(302)	(1708)	(3949)
362.410 G		.894	301.7					97
		.875	252.4					101
		.873	260.2					244
		.789	298.9					141
	16353	.986	264.0	318.9	- 6.4	50	506	272 c
	16348	.892	293.1	298.6	+19.1	43	198	359 c
	16349	.819	264.7	293.3	- 5.9	70	506	218 c
	16354	.569	292.5	270.7	+10.3	112	560	
	16355	.479	27.3	224.8	+22.5	37	201	
	16356	.634	20.2	223.3	+33.7	5	17	
	16360	.458	40.2	220.5	+17.8	2	10	
	16358	.613	47.8	209.3	+21.9	19	96	
	16359	.867	84.4	178.9	+ 3.4	50	163	410 c
	16361	.887	82.4	176.7	+ 5.5	4	16	
		.803	44.5					234
		.809	112.1					148
		.904	53.3					252
		.913	69.2					184
		.954	95.3					177
Dec. 29			(+3.5)	(238.5)	(- 2.7)	(392)	(2273)	(2837)
363.422 G		.953	299.1					194
		.938	258.0					358

U. T.	Group No.	MEASURES Dist.	MEASURES Pos. Angle	POSITION Long.	POSITION Lat.	AREA Umbræ	AREA Whole Spots	AREA Faculæ
1949			°	°	°			
		.933	248.6					163
		.878	283.2					407
		.852	297.6					453
	16348	.970	290.1	298.9	+18.7	40	250	248 c
	16349	.931	266.7	293.6	- 4.1	27	246	299 c
	16354	.728	287.5	269.8	+10.5	69	454	
	16355	.434	0.9	224.7	+22.7	28	163	
	16356	.604	3.7	222.4	+34.1	1	6	
	16360	.358	12.1	220.6	+17.5	0	4	
	16358	.487	30.6	209.7	+21.9	26	156	
	16359	.731	82.2	178.8	+ 3.7	27	149	501 c
	16361	.762	78.7	176.5	+ 6.7	2	7	
		.832	48.0					312
		.858	94.0					242
		.888	62.8					106
		.922	109.6					195
		.948	98.4					370
		.966	73.4					268
Dec. 30			(+3.0)	(225.1)	(- 2.9)	(220)	(1435)	(4116)
364.403 C		.955	294.4					276
		.951	279.0					250
		.951	256.8					266
	16349	.991	266.6	294.4	- 3.8	14	152	315 c
	16354	.862	284.4	270.2	+10.8	61	425	391 c
	16355	.480	334.8	224.9	+22.7	25	174	
	16358	.423	9.3	208.0	+21.6	31	262	
	16362	.450	55.4	190.0	+11.9	3	19	
	16359	.554	78.2	179.4	+ 4.0	21	134	
	16361	.581	74.2	178.1	+ 6.5	2	20	
		.861	70.0					326
		.864	98.8					185
		.954	89.6					187
		.975	72.2					323
Dec. 31			(+2.6)	(212.2)	(- 3.0)	(157)	(1186)	(2519)

Group 16359. Dec. 28-1950Jan. 7. A small regular spot which becomes composite as it declines.
Group 16360. Dec. 29 - 30. A tiny spot.
Group 16361. Dec. 29-1950Jan. 8. A small bi-polar group, immediately north of Group 16359. The leader, a regular spot, alone remains by January 5.
Group 16362. Dec. 31-1950Jan. 1. A pair of small spots.

ROYAL GREENWICH OBSERVATORY

General Catalogue of Groups of Sunspots

For the year 1949

GREENWICH PHOTO-HELIOGRAPHIC RESULTS, 1949

GENERAL CATALOGUE OF GROUPS OF SUNSPOTS FOR THE YEAR 1949.

Groups of sunspots, lasting for two or more days, are numbered in the *first* column in continuation of the group-numbers given in 1948 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 104-105.

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	Long. from Central Meridian	Date	Long. from Central Meridian	Umbræ	Whole Spots	Longitude	Latitude	
		1948-49		1949	°	1949	°			°	°	
15850	..	Dec. 31.1	2	Jan. 1	+17	Jan. 2	+29	2	16	353.5	-10.4	
51	9585	Jan. 6.44	6	1	-66	6	+ 2	4	22	270.3	- 7.8	II
52	86	8.84	12	3	-71	14	+72	22	132	238.6	- 6.6	I 1533 (5)
53	88	8.58	10	3	-71	12	+55	13	72	242.1	+ 3.8	II
54	89	10.39	13	4	-78	16	+79	31	148	218.2	-10.3	I 1537 (2)
15855	9591	9.94	8	5	-64	12	+37	24	115	224.1	- 7.9	I 1537 (2)
56	94	12.76	13	6	-84	18	+72	19	92	187.1	-18.5	I 1538 (2)
57	93	10.43	8	7	-42	14	+51	31	195	217.8	-15.5	II
58	95	13.34	6	8	-65	13	+ 2	21	117	179.4	-12.2	II
59	98	15.5	6	9	-79	14	-18	8	47	151.4	-14.3	I 1539 (2)
15860	..	15.68	7	11	-57	17	+23	4	21	148.7	+11.3	II
61	9599	16.91	12	11	-74	22	+74	48	262	132.4	+13.6	II
62	9600	10.8	4/5	12	+21	16	+75	2	9	213.2	- 4.9	
63	01	17.60	8	13	-54	20	+36	13	63	123.3	+22.4	II
64	02	17.8	2/3	13	-56	15	-33	2	11	120.8	+16.4	
15865	9603	19.78	14	13	-82	26	+84	89	524	94.7	-11.9	I 1540 (2)
66	04	19.89	12	14	-74	25	+71	14	87	93.2	- 7.4	I 1541 (1)
67	05	12.3	4	15	+39	18	+82	9	45	193.5	-12.2	
68	06	16.00	8	15	-12	22	+81	64	425	144.4	-16.8	I 1542 (1)
69	07	20.51	10	15	-66	24	+49	11	51	85.0	+14.6	II
15870	..	15.3	2/4	16	+14	19	+53	1	5	153.8	-13.6	
71	9609	22.89	14	16	-79	29	+72	323	2213	53.7	+22.9	I 1543 (1)
72	08	18.10	7	17	-11	23	+72	16	88	116.7	-17.5	II
73	10	23.46	10	17	-81	26	+36	10	47	46.2	+15.2	II
74	..	23.1	2	18	-63	19	-51	4	14	50.6	-11.4	
15875	9611	24.38	11	18	-80	28	+51	17	116	34.0	+15.4	II
76	..	20.56	3	19	-18	21	+11	1	8	84.3	-18.5	
77	12	22.35	6	19	-40	24	+25	9	47	60.8	-13.6	II
78	..	24.54	6/7	19	-69	25	+12	2	12	32.0	- 4.9	II
79	..	19.2	2	21	+29	22	+42	8	25	102.9	- 9.4	
15880	9613	22.65	7	22	- 5	28	+77	31	234	56.9	+14.9	II
81	..	23.0	6	23	+ 6	28	+65	4	26	51.9	-11.6	II
82	..	20.5	2	24	+49	25	+64	3	16	85.1	-11.4	
83	14	25.38	7	25	- 2	31	+78	10	54	20.9	+22.1	II
84	15	29.6	2	25	-56	26	-45	2	9	324.8	+16.2	
15885	9616	31.46	13	25	-84	Feb. 6	+79	57	322	300.8	- 4.7	II
86	..	28.7	2	26	-32	Jan. 27	-19	2	14	337.2	-11.6	
87	18	Feb. 2.36	13	27	-81	Feb. 8	+83	73	479	275.8	- 8.3	II
88	17 / 28	1.08	7/10	28	-51	6	+70	14	66	292.7	+11.1	II
89	19	Jan. 29.79	6	29	- 7	3	+64	6	33	322.8	-10.4	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	Long. from Central Meridian	Date	Long. from Central Meridian	Umbræ	Whole Spots	Longitude	Latitude	
		1949		1949	°	1949	°			°	°	
15890	9620	Feb. 1.2	2	Jan. 29	-38	Jan. 30	-23	2	8	290.5	- 1.9	
91	21} 30}	4.94	12	30	-74	Feb. 10	+69	89	548	241.8	+ 4.8	II
92	22	5.35	14	30	-79	12	+86	276	1586	236.4	- 9.6	I 1544 (1)
93	24	Jan. 29.2	3	Feb. 1	+43	3	+69	6	26	330.9	+25.9	
94	27	30.4	5	1	+27	5	+80	13	58	314.2	- 4.4	
15895	9626	Feb. 7.31	11	1	-78	11	+55	9	47	210.6	+ 9.0	II
96	..	7.5	2	2	-68	3	-54	2	17	207.6	+ 6.4	
97	..	8.4	2	3	-65	4	-53	0	5	196.4	+20.2	
98	33	8.90	12	3	-74	14	+77	7	44	189.8	+15.9	II
99	32	8.90	12	3	-77	14	+73	56	302	189.6	- 1.1	II
15900	9629	7.21	7	4	-39	10	+44	24	154	211.9	-11.8	II
01	34	11.32	7	5	-77	11	+ 1	16	91	157.9	+17.6	II
02	31	8.45	9	6	-30	14	+80	27	143	195.7	-11.0	I 1545 (1)
03	35	11.95	13	6	-76	18	+87	41	307	149.5	-15.5	I 1542 (2)
04	36	5.5	4	7	+26	10	+64	7	31	234.9	+23.8	
15905	9639	12.26	7	7	-62	13	+17	5	27	145.4	+12.5	II
06	40	13.57	13	7	-82	19	+76	20	115	128.2	-15.2	II
07	38	10.98	6	8	-33	13	+33	4	24	162.3	-15.6	II
08	42	14.48	13	8	-75	20	+81	55	335	116.3	-15.1	I 1546 (1)
09	41	13.6	5	9	-54	13	- 3	2	10	127.5	+18.5	
15910	9644	9.7	7	10	+ 7	16	+84	39	236	178.8	+ 8.4	II
11	43	12.20	7	10	-23	16	+56	15	75	146.2	+15.4	II
12	45	16.2	3	10	-77	12	-50	5	27	93.8	- 5.6	I 1541 (2)
13	46	16.25	12	10	-83	21	+72	98	625	92.9	+14.1	II
14	48	16.79	13	11	-75	23	+80	132	699	85.8	-12.0	I 1547 (1)
15915	9653	17.95	6/7	12	-75	18	+ 7	4	19	70.6	- 9.6	II
16	49	11.7	5	13	+23	17	+74	19	80	153.0	+ 4.6	
17	54	19.35	13	13	-78	25	+78	138	811	52.1	+21.3	I 1543 (2)
18	52	16.28	4	14	-26	17	+15	0	5	92.5	-15.5	
19	55	19.94	12	14	-77	25	+73	20	97	44.3	+14.8	II
15920	9656	20.98	14	14	-85	27	+85	126	745	30.6	-16.9	I 1548 (1)
21	50	14.6	3	15	+ 8	17	+37	4	23	114.2	- 7.6	
22	57	20.96	10/11	15	-76	25	+60	5	29	30.8	+15.6	II
23	58	18.84	4	17	-18	20	+20	4	22	58.8	-14.1	
24	60	21.73	6	18	-45	23	+20	10	31	20.8	-24.1	II
15925	9661	21.69	6	18	-46	23	+20	9	48	21.3	+12.2	II
26	64	23.75	10/11	18	-71	28	+61	3	15	354.2	+27.6	II
27	63	15.2	2	19	+53	20	+70	10	50	106.6	+13.2	
28	68	21.91	3/7	19	-33	25	+46	2	7	18.4	+19.9	
29	62	25.06	12	19	-76	Mar. 2	+69	23	119	336.9	+ 8.1	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	Long. from Central Meridian	Date	Long. from Central Meridian	Umbræ	Whole Spots	Longitude	Latitude	
		1949		1949	°	1949	°			°	°	
15930	9659	Feb. 18.8	5	Feb. 20	+19	Feb. 24	+78	20	83	59.4	+19.1	
31	65	19.0	2	20	+19	21	+34	10	29	56.7	-19.4	
32	67	28.76	14	22	-83	Mar. 7	+81	116	619	288.2	+ 6.8	I 1549 (1)
33	69	25.17	2	24	- 9	Feb. 25	+ 4	4	32	335.4	+10.7	
34	70	27.29	10	24	-36	Mar. 5	+81	113	805	307.5	+12.5	I 1550 (1)
15935	9671	Mar. 4.33	12	26	-78	9	+68	61	367	241.1	- 6.6	I 1544 (2)
36	73	4.48	13	26	-81	10	+79	48	271	239.2	+ 8.0	II
37	..	Feb. 28.36	4	27	-14	2	+26	4	19	293.4	+20.0	
38	75	Mar. 3.85	11	27	-60	9	+74	6	19	247.5	- 9.9	II
39	76	3.95	11	27	-64	9	+76	68	547	246.1	+ 4.5	II
15940	9677	6.52	11/13	28	-77	12	+78	18	114	212.2	-17.1	II
41	78	6.7	5	Mar. 1	-71	5	-18	6	24	209.7	+ 6.3	
42	79	7.08	8	1	-76	8	+17	8	40	204.8	-11.4	I 1545 (2)
43	82	8.31	13	2	-79	14	+79	83	504	188.8	+15.8	I 1551 (1)
44	83	9.24	13	3	-76	15	+79	31	195	176.5	+20.4	II
15945	9684	9.9	3	5	-60	7	-33	1	8	168.4	- 8.6	
46	85	10.45	7	5	-68	11	+14	7	25	160.4	-15.1	II
47	80	2.8	2	6	+46	7	+60	3	26	261.6	+ 4.7	
48	91 } 9711 }	13.41	13	7	-79	19	+78	72	433	121.5	+15.4	II
49	9692	13.71	13	7	-84	19	+74	28	160	117.5	-17.2	I 1546 (2)
15950	9688	6.2	4	8	+26	11	+69	11	63	216.2	+ 7.9	
51	90	11.08	10	8	-40	17	+84	44	231	152.3	-12.1	I 1552 (1)
52	87	6.0	4	9	+46	12	+86	54	249	219.6	- 9.6	I 1553 (1)
53	93	14.01	8	9	-60	16	+28	9	39	113.6	+17.9	II
54	97	15.63	13	9	-81	21	+76	75	399	92.2	-10.1	I 1547 (2)
15955	9698	16.37	13	10	-79	22	+79	76	416	82.4	+ 6.8	I 1554 (1)
56	99	10.9	3	11	+ 8	13	+34	2	8	154.5	-16.4	
57	9701	14.5	2	11	-40	12	-29	2	10	106.8	+12.1	
58	03	17.95	8	12	-74	19	+19	13	62	61.7	+19.8	II
59	00	13.99	4	13	- 8	16	+32	8	35	113.8	- 8.2	
15960	9704	18.1	4	13	-63	16	-21	6	26	60.0	- 9.0	
61	05	18.82	12	13	-72	24	+75	113	683	50.1	- 6.2	I 1555 (1)
62	06	19.44	13	13	-77	25	+79	155	1096	42.0	+22.4	I 1543 (3)
63	13	15.63	8	14	-17	21	+76	16	132	92.3	-13.4	II
64	08	20.41	13	14	-80	26	+78	56	343	29.2	-15.8	I 1548 (2)
15965	9710	20.94	14	14	-85	27	+84	46	317	22.2	-22.0	II
66	12	14.9	6	15	+ 4	20	+73	25	158	102.2	- 9.1	II
67	07	19.81	11	15	-57	25	+73	21	110	37.2	+16.3	II
68	16	12.9	2	17	+58	18	+71	6	30	127.9	-16.9	
69	17 } 26 }	22.08	6/11	18	-52	28	+83	14	110	7.2	-21.3	I 1556 (1)

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	Long. from Central Meridian	Date	Long. from Central Meridian	Umbræ	Whole Spots	Longitude	Latitude	
		1949		1949	°	1949	°			°	°	
15970	9718	Mar. 24.11	9	Mar. 19	-64	Mar. 27	+40	8	33	340.5	- 7.6	II
71	21	17.1	2	20	+41	21	+56	7	36	72.2	+16.8	
72	22	17.7	3	20	+34	22	+60	6	26	64.5	+14.4	
73	23	18.6	5	20	+24	24	+76	25	126	53.7	+11.4	
74	24	26.06	11	20	-75	30	+56	34	199	314.7	+11.9	I 1550 (2)
15975	9725	21.6	3	21	- 2	23	+21	5	17	13.9	-19.5	
76	27	27.31	13	21	-77	Apr. 2	+80	35	180	298.3	+ 8.7	I 1549 (2)
77	30	29.1	2	23	-77	Mar. 24	-62	3	20	274.8	- 7.7	
78	32	29.80	13	24	-75	Apr. 5	+84	12	66	265.4	- 7.0	II
79	33	30.38	13	24	-79	5	+79	50	266	257.7	+ 1.6	I 1557 (1)
15980	9734	26.54	3	25	-13	Mar. 27	+13	1	4	308.3	+ 8.0	
81	29 } 44 }	27.82	6/9	25	-33	Apr. 2	+74	5	32	291.4	+ 6.0	II
82	31	29.5	2	26	-42	Mar. 27	-27	3	18	269.8	+ 3.4	
83	37	Apr. 1.94	13	26	-85	Apr. 7	+71	16	91	224.0	- 9.4	I 1553 (2)
84	35	Mar. 31.31	5/6	27	-50	1	+14	6	26	245.2	+26.5	
15985	9736	31.7	4	27	-58	Mar. 30	-20	4	23	240.0	+14.7	
86	39	Apr. 3.24	12	28	-76	Apr. 8	+67	25	136	206.8	+15.0	II
87	40	3.80	8	28	-83	4	+ 9	22	117	199.4	-14.6	II
88	38 } 48 }	Mar. 29.97	7/8	29	- 8	5	+82	6	35	263.1	-13.4	II
89	41pt.	Apr. 3.77	11	29	-73	8	+61	18	94	199.8	+11.8	II
15990	9743	4.96	12	30	-64	10	+82	20	143	195.5	+ 9.0	II
91	41pt.	4.39	12	30	-66	10	+75	43	261	191.7	+13.0	I 1551 (2)
92	45 } 55 }	6.54	12	Apr. 1	-68	12	+74	24	150	163.3	+ 9.5	II
93	46	6.93	11	1	-72	11	+57	16	89	158.0	-10.5	I 1552 (2)
94	47	Mar. 29.3	3	2	+54	4	+83	16	111	272.2	+ 3.5	
15995	9750	Apr. 6.49	7	2	-54	8	+22	8	48	163.9	+13.4	II
96	51	8.36	12	2	-80	13	+68	16	76	139.2	+11.4	II
97	..	Mar. 29.9	3	3	+58	5	+83	10	42	263.8	-11.2	
98	49	Apr. 4.49	7	4	- 1	10	+79	60	328	190.3	-24.7	I 1558 (1)
99	52	5.6	2	4	-14	5	- 4	2	14	175.4	+23.5	
16000	9753	10.1	5	4	-74	8	-23	2	10	115.8	-17.6	I 1546 (3)
01	58	12.47	13	6	-82	18	+79	40	186	85.0	+ 6.7	I 1554 (2)
02	57	11.70	10	8	-46	17	+78	45	242	95.1	- 8.7	II
03	60	14.50	9	8	-82	16	+26	8	41	58.2	- 2.8	II
04	59	10.72	7	9	-16	15	+64	3	18	108.1	-13.3	II
16005	..	14.5	3	9	-66	11	-41	5	26	57.9	- 6.5	I 1555 (2)
06	9762	16.23	9	10	-76	18	+27	60	385	35.3	+23.0	I 1543 (4)
07	63	16.67	7	11	-72	17	+10	24	120	29.5	+ 8.5	II
08	64	17.38	13	11	-80	23	+79	39	193	20.2	-17.7	II
09	66	17.68	12	12	-69	23	+72	57	325	16.2	+22.2	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	Long. from Central Meridian	Date	Long. from Central Meridian	Umbræ	Whole Spots	Longitude	Latitude	
		1949		1949	°	1949	°			°	°	
16010	9765	Apr. 18.10	13	Apr. 12	-75	Apr. 24	+84	49	253	10.7	-22.0	I 1556 (2)
11	..	15.99	2	15	- 7	16	+ 4	2	8	38.5	+16.2	
12	69	16.49	4	15	-15	18	+25	2	16	32.0	+29.4	
13	70	21.99	11	16	-75	26	+62	23	113	319.3	-16.8	II
14	71	13.9	3	17	+46	19	+72	9	58	66.7	+ 9.7	
16015	9774	23.25	12	17	-79	28	+64	22	118	302.6	+ 5.7	II
16	75	23.64	13	17	-81	29	+77	30	168	297.4	+ 9.0	I 1549 (3)
17	76	25.22	13	19	-78	May 1	+82	60	328	276.6	-10.4	I 1559 (1)
18	77	25.93	13	19	-82	1	+74	68	394	267.2	+15.4	II
19	78	16.5	2	20	+51	Apr. 21	+64	2	24	31.6	-13.3	
16020	9782	21.0	3	21	+ 4	23	+31	9	43	332.7	+25.5	
21	80	26.4	5	21	-67	25	-14	5	18	260.8	+10.7	
22	79	26.50	7	21	-68	27	+12	2	10	259.7	+ 1.3	I 1557 (2)
23	81	19.0	3	22	+44	24	+71	5	21	358.9	- 9.6	
24	84	22.8	2	23	+ 7	24	+22	4	20	308.7	-13.2	
16025	9785	28.92	7	23	-74	29	+ 6	10	51	227.6	+ 9.5	II
26	..	26.17	3	24	-24	26	+ 5	2	13	264.1	-14.3	
27	86	27.56	10	24	-47	May 3	+80	38	219	245.7	- 6.2	II
28	87	30.02	12	24	-72	5	+69	15	72	213.2	+19.8	II
29	88	26.74	6	25	-16	Apr. 30	+47	18	74	256.4	-14.3	II
16030	9789	May 1.45	13	25	-78	May 7	+76	32	181	194.2	-23.9	I 1558 (2)
31	90	Apr. 29.2	2	26	-37	Apr. 27	-24	1	8	223.8	+21.1	
32	92	26.9	2	28	+18	29	+33	4	20	254.7	- 9.7	
33	94	May 5.21	13	29	-77	May 11	+81	35	180	144.6	+18.4	II
34	96	Apr. 28.4	3	30	+25	2	+53	6	31	234.9	- 7.2	
16035	9797	May 1.76	7	May 1	- 8	7	+74	35	186	190.2	+17.6	II
36	98	3.13	7	1	-25	7	+55	25	133	172.1	+10.8	II
37	99	5.62	11	1	-62	11	+82	72	394	139.1	+ 5.9	I 1560 (1)
38	9800	7.1	4	1	-77	4	-36	1	12	119.2	- 5.1	
39	02	7.54	10/11	2	-68	12	+67	8	40	113.8	+12.7	II
16040	9803	7.6	4	4	-45	7	- 4	7	42	112.6	+21.3	
41	04	9.66	11	4	-70	14	+62	11	52	85.7	+ 7.3	I 1554 (3)
42	09	11.52	13	5	-82	17	+77	65	359	61.1	-16.4	I 1561 (1)
43	07	8.13	2/3	6	-24	8	+ 4	3	14	106.0	-10.7	
44	06	7.45	6	7	- 4	12	+67	20	70	115.0	- 4.7	II
16045	9805	6.7	5	8	+22	12	+75	40	186	124.9	-14.0	
46	11	12.4	2	8	-53	9	-39	4	16	50.0	+15.8	
47	12	8.4	2	11	+40	12	+53	12	36	102.8	-16.0	
48	15	18.22	12	12	-79	23	+70	36	210	332.5	- 4.1	I 1562 (1)
49	16	18.65	7	13	-68	19	+ 9	14	73	326.9	+24.8	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	Long. from Central Meridian	Date	Long. from Central Meridian	Umbræ	Whole Spots	Longitude	Latitude	
		1949		1949	°	1949	°			°	°	
16050	..	May 15.29	3	May 14	-15	May 16	+17	5	28	11.3	+ 9.0	
51	9820	19.18	10	15	-52	24	+68	20	86	319.8	+ 3.5	II
52	22	22.27	12	16	-78	27	+66	22	124	278.9	-10.1	I 1559 (2)
53	..	13.1	2	17	+58	18	+68	4	17	40.4	+19.4	
54	18	16.9	7	17	+ 4	23	+81	47	272	349.4	+24.0	II
16055	9828	21.40	5/9	17	-54	25	+53	1	6	290.5	- 6.8	
56	23	23.66	12	17	-81	28	+62	22	102	260.5	-24.4	II
57	17	16.9	2	20	+57	21	+70	6	24	0.7	-13.4	
58	..	21.76	4/6	20	-17	25	+46	1	8	285.7	-11.6	
59	21	21.0	7	21	+ 4	27	+82	31	158	296.4	- 1.3	I 1563 (1)
16060	9824	23.62	3/8	22	-16	29	+74	0	4	261.1	-12.0	
61	25	23.81	7	23	- 8	29	+77	18	102	258.6	+ 4.5	II
62	30	27.7	3	23	-57	25	-33	0	13	206.9	+11.4	
63	26	28.80	11	23	-74	June 2	+63	20	94	192.5	+16.0	II
64	34	23.5	3/5	24	+11	May 28	+65	2	10	262.6	+27.7	
16065	9829	24.1	3	24	+ 2	26	+30	10	47	254.1	+14.9	
66	31	29.89	12	24	-74	June 4	+74	19	85	178.1	- 4.9	II
67	33	22.2	2	25	+39	May 26	+56	1	15	279.4	+29.6	
68	37	31.58	8	26	-67	June 2	+24	7	31	155.8	+14.8	II
69	36	31.56	12	26	-75	6	+79	111	652	156.0	+ 3.8	I 1560 (2)
16070	9838	June 1.88	11	27	-72	6	+58	17	96	138.6	+22.6	II
71	41	1.64	9	29	-47	6	+66	17	82	141.7	-13.1	II
72	40	3.51	12	29	-73	9	+80	47	240	117.0	+14.6	II
73	42 43 {	5.60	11	June 1	-55	11	+77	62	427	89.3	+12.3	I 1564 (1)
74	44	7.93	13	1	-82	13	+72	9	38	58.5	-15.0	I 1561 (2)
16075	9846	May 31.8	4	3	+33	6	+75	7	31	152.3	+22.6	
76	45	June 2.6	5	4	+21	8	+84	11	55	129.6	- 3.5	I 1565 (1)
77	48	9.4	4/5	4	-70	8	- 9	2	12	38.8	+16.9	
78	49	10.98	6	6	-60	11	+ 5	4	20	18.2	+ 7.1	II
79	40	14.1	2	8	-73	9	-62	10	46	336.9	-18.8	
16080	9851	14.4	3/5	8	-76	12	-28	3	14	333.4	- 4.1	I 1562 (2)
81	54	8.6	5	10	+23	14	+76	21	111	49.8	+16.1	
82	53	16.49	13	10	-80	22	+80	86	460	305.1	-14.5	I 1566 (1)
83	52	16.59	13	10	-82	22	+79	41	242	303.8	- 3.4	I 1563 (2)
84	56	13.91	4	11	-34	14	+ 6	11	32	339.4	- 8.0	
16085	9862	14.68	7/10	11	-47	20	+76	9	36	329.1	+21.7	II
86	57	10.4	5	12	+26	16	+78	4	23	26.4	- 4.3	
87	58	11.9	2	12	+ 5	13	+20	5	16	6.2	- 4.6	
88	59	11.4	4/5	13	+24	17	+80	8	31	12.3	+12.3	
89	60	11.9	3/4	13	+18	16	+60	2	13	6.0	-17.1	

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	Long. from Central Meridian	Date	Long. from Central Meridian	Umbræ	Whole Spots	Longitude	Latitude	
		1949		1949	°	1949	°			°	°	
16090	9861	June 14.6	2	June 13	-17	June 14	- 3	0	13	330.6	- 5.2	
91	65	22.82	9	16	-84	24	+19	11	42	221.4	+21.5	II
92	66	19.36	2	18	-13	19	0	2	13	267.2	+14.0	
93	67	23.27	8	18	-64	25	+27	13	52	215.5	+17.6	II
94	68	24.15	12	18	-76	29	+71	21	126	203.8	- 6.3	II
16095	9870	25.96	13	20	-75	July 2	+84	45	224	179.9	+ 6.3	II
96	71	26.2	2	20	-79	June 21	-64	4	14	176.4	+12.0	
97	73	27.07	12	21	-75	July 2	+70	62	354	165.1	+10.5	II
98	72	27.09	13	21	-77	3	+84	61	334	164.8	+ 3.4	I 1560 (3)
99	75pt.	28.45	13	22	-81	4	+79	120	647	146.9	- 6.8	I 1567 (1)
16100	9874	28.2	3/4	23	-64	June 26	-23	1	8	150.5	+16.2	
01	75pt.	29.54	9/11	23	-84	July 3	+52	13	76	132.5	- 4.3	I 1565 (2)
02	76	25.11	8	24	-11	1	+80	16	80	191.1	+10.7	II
03	77	30.42	10	24	-81	3	+39	15	69	120.8	+12.2	II
04	78	July 2.15	12	26	-76	7	+74	34	223	97.9	+14.5	I 1564 (2)
16105	9880	June 24.3	4	27	+39	June 30	+82	56	297	201.5	+15.6	
06	79	24.9	4	27	+28	30	+79	41	227	193.2	+15.2	
07	85	27.46	5/7	27	- 4	July 3	+79	31	150	160.0	-12.5	
08	81	July 2.95	8	28	-59	5	+30	12	70	87.3	+14.4	II
09	83	3.6	4	28	-70	1	-30	10	35	78.8	+12.2	
16110	9882	3.8	5	28	-72	2	-20	24	132	76.5	-20.0	
11	87 88 {	3.98	12	28	-74	9	+67	5	28	73.7	-15.3	II
12	86	2.3	2	29	-39	June 30	-22	2	12	96.0	- 5.5	
13	89	6.32	10/12	30	-78	July 11	+66	6	24	42.8	-30.4	II
14	92	5.7	4/5	July 1	-56	5	- 5	0	6	51.1	+16.5	
16115	9891	June 27.9	2	3	+72	4	+83	0	8	154.0	+11.5	
16	93	July 2.3	3/4	4	+28	7	+71	4	19	96.3	-26.0	
17	..	1.0	2	5	+56	6	+72	0	12	113.2	+13.4	
18	98	9.1	3	5	-49	7	-19	6	26	6.2	-33.4	
19	94	11.00	9	5	-75	13	+31	13	58	340.8	-24.1	II
16120	9896	5.0	5	6	+17	10	+71	43	292	60.2	-17.6	I 1568 (1)
21	97	7.45	3	6	-15	8	+15	0	8	27.8	+ 8.4	
22	95	11.7	4	6	-71	9	-31	14	64	331.6	-18.1	
23	99	13.57	13	7	-78	19	+75	27	155	306.7	-13.8	I 1566 (2)
24	9901	15.50	12	10	-70	21	+82	79	483	281.2	+18.3	I 1569 (1)
16125	9900	10.2	2	11	+17	12	+28	2	9	351.4	+22.4	
26	03	14.91	9	11	-47	19	+62	11	57	289.0	- 4.8	II
27	02	12.2	5	12	0	16	+56	5	24	325.0	- 5.2	
28	05	14.94	9	12	-36	20	+76	9	53	288.6	+15.1	II
29	04	9.0	2	13	+57	14	+73	35	150	7.5	- 6.6	

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	Long. from Central Meridian	Date	Long. from Central Meridian	Umbræ	Whole Spots	Longitude	Latitude	
		1949		1949	°	1949	°			°	°	
16130	9908	July 21.07	14	July 14	-87	July 27	+81	19	110	207.5	+14.3	II
31	10	21.40	12	15	-79	26	+64	17	88	203.1	-26.5	II
32	09	21.62	13	15	-82	27	+76	25	144	200.2	+11.7	II
33	11	22.67	12	16	-82	27	+62	22	112	186.3	+20.1	II
34	12	23.0	5	18	-58	22	- 8	4	18	182.2	+ 6.9	
16135	9913	23.36	8	18	-64	25	+28	9	39	177.2	-25.2	II
36	14	23.86	3/8	18	-69	25	+18	2	5	170.6	+ 1.9	I 1560 (4)
37	15	24.5	5	18	-78	22	-30	6	26	161.7	+13.7	
38	17	22.74	10	19	-48	28	+75	80	572	185.5	+13.4	I 1570 (1)
39	18	25.34	13	19	-81	31	+80	43	252	151.0	- 5.0	I 1567 (2)
16140	9916	16.8	3	20	+47	22	+73	34	222	263.8	+12.9	
41	21	21.95	8	20	-23	27	+74	4	22	195.8	+16.6	II
42	22	22.80	6	22	-10	27	+66	7	27	184.6	- 7.4	II
43	20	27.69	10	22	-72	31	+54	30	161	120.0	+11.6	II
44	24	22.4	2	24	+26	25	+38	2	11	190.0	- 4.4	
16145	9923pt.	30.20	7	24	-76	30	+ 1	11	38	86.8	+18.6	II
46	25	30.64	13	24	-83	Aug. 5	+76	150	972	80.8	-12.0	I 1571 (1)
47	23pt.	30.7	2	25	-71	July 26	-58	6	17	80.1	+22.0	
48	27pt.	Aug. 1.07	13	26	-75	Aug. 7	+79	201	1328	61.9	-19.8	I 1568 (2)
49	27pt.	1.94	11	27	-74	6	+64	24	129	50.5	-21.6	II
16150	9928	2.6	4	28	-70	July 31	-31	18	80	41.6	+15.2	
51	..	July 31.59	4	29	-29	Aug. 1	+10	4	13	68.4	-15.5	
52	31	Aug. 3.79	10/11	29	-73	8	+58	9	48	26.0	- 3.2	II
53	32	4.1	3	29	-76	July 31	-50	4	19	21.7	-22.3	
54	30	July 29.8	6	30	+ 7	Aug. 4	+74	10	39	92.6	+12.8	II
16155	9935	Aug. 4.9	2	Aug. 1	-47	2	-33	4	24	11.4	-10.0	
56	41	1.4	3/5	2	+13	6	+70	1	6	57.5	+15.7	
57	36	5.27	9	2	-41	10	+71	14	73	6.4	+ 9.1	II
58	39	9.9	2	4	-73	5	-60	6	30	305.5	-14.0	I 1566 (3)
59	43	8.1	2/3	5	-36	7	-11	0	4	328.6	- 5.9	
16160	9940	11.67	13	5	-84	17	+74	43	240	281.8	+18.6	I 1569 (2)
61	42	4.5	2	8	+51	9	+64	10	41	16.8	+13.3	
62	46	14.83	11	10	-58	20	+72	24	139	240.0	+ 9.1	I 1572 (1)
63	..	7.4	2	11	+52	12	+64	1	10	338.0	-23.0	
64	47	9.1	4	12	+41	15	+79	32	153	315.2	-10.8	
16165	9948	18.30	11	12	-81	22	+52	22	126	194.2	+12.7	I 1570 (2)
66	51	11.0	4	13	+29	16	+72	6	24	291.0	+13.2	
67	50pt.	15.14	5/7	13	-21	19	+52	4	16	236.0	+14.1	
68	50pt.	15.69	5	13	-33	17	+22	11	46	228.7	+13.6	
69	49	19.40	13	13	-79	25	+81	112	842	179.7	+14.1	I 1573 (1)

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	Long. from Central Meridian	Date	Long. from Central Meridian	Umbræ	Whole Spots	Longitude	Latitude	
		1949		1949	°	1949	°			°	°	
16170	9950pt.	Aug. 15.90	4	Aug. 14	-19	Aug. 17	+19	15	75	225.9	+10.7	
71	53	20.20	12	15	-70	26	+86	52	284	169.1	+10.4	II
72	54	21.30	12	15	-80	26	+67	6	35	154.6	- 6.1	I 1567 (3)
73	56	16.0	6	17	+17	22	+81	31	190	224.3	- 5.7	II
74	..	20.9	4	17	-48	20	- 7	10	33	159.2	+10.9	
16175	9955	23.14	13	17	-77	29	+84	104	554	130.2	+10.2	I 1574 (1)
76	58 } 73 }	24.81	14	18	-81	31	+86	37	257	108.2	+19.5	II
77	62	19.9	5	20	+ 4	24	+60	6	28	173.2	-16.0	
78	60	23.94	11	20	-48	30	+85	101	704	119.6	+15.4	II
79	64	26.70	13	20	-82	Sept. 1	+75	40	233	83.2	-11.4	I 1571 (2)
16180	9967	18.4	4	21	+44	Aug. 24	+77	10	50	192.8	+ 6.7	
81	65	27.17	13	21	-75	Sept. 2	+79	49	289	77.0	-15.2	I 1575 (1)
82	66	27.99	14	21	-87	3	+82	27	129	66.1	+17.1	II
83	69	24.04	6	22	-25	Aug. 27	+46	6	32	118.3	-14.1	II
84	68pt.	28.25	12	22	-78	Sept. 2	+68	26	153	62.8	-20.0	I 1568 (3)
16185	9968pt.	28.47	13	22	-80	3	+77	14	69	59.8	-17.5	II
86	..	23.1	2/3	26	+44	Aug. 28	+71	2	9	130.8	-22.5	
87	71	31.50	8	26	-70	Sept. 2	+28	4	21	19.8	+13.8	II
88	72pt.	Sept. 1.08	11	26	-77	5	+59	18	75	12.2	+ 8.0	II
89	72pt.	1.67	10	26	-83	4	+35	32	184	4.4	+10.8	II
16190	9974	1.9	4	28	-60	Aug. 31	-19	12	45	1.4	-20.6	
91	76	Aug. 31.23	8	29	-29	Sept. 5	+71	39	234	23.3	- 6.8	II
92	77	Sept. 4.96	11	30	-73	9	+53	14	73	320.8	-10.9	II
93	78	5.49	13	30	-81	11	+79	65	396	313.8	+ 9.5	II
94	80	4.66	9	31	-57	8	+48	21	103	324.9	- 3.3	II
16195	99B2	5.79	12	31	-72	11	+71	40	190	309.9	-18.1	II
96	81	6.59	12	31	-85	11	+68	19	110	299.3	+11.9	II
97	79 } 88 }	Aug. 30.0	3/4	Sept. 1	+32	4	+70	2	11	40.0	+ 8.6	
98	83	Sept. 8.24	13	1	-84	13	+65	25	126	277.6	+18.9	I 1569 (3)
99	84	8.5	4	2	-81	5	-42	6	36	274.0	+23.9	
16200	9986	4.55	8	3	-14	10	+77	13	78	326.2	- 8.2	II
01	87	9.29	13	3	-77	15	+77	143	846	263.7	-13.4	I 1576 (1)
02	90	9.5	3	4	-68	6	-43	9	41	260.9	-22.6	
03	93	11.4	3	5	-80	7	-54	4	18	236.3	- 8.4	
04	94	11.07	12	5	-81	16	+75	19	100	240.2	+ 6.3	I 1572 (2)
16205	9992	8.47	4	6	-29	9	+13	1	10	274.5	+26.7	
06	96	12.99	11	8	-63	18	+70	25	120	214.8	-24.7	II
07	95	13.4	4	8	-68	11	-27	13	42	208.8	+12.2	
08	97	15.20	10	9	-78	18	+41	29	170	185.6	+14.3	I 1573 (2)
09	..	12.42	4	10	-28	13	+12	3	14	222.4	+ 9.4	

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	Long. from Central Meridian	Date	Long. from Central Meridian	Umbræ	Whole Spots	Longitude	Latitude	
		1949		1949	°	1949	°			°	°	
16210	10001	Sept.17.06	14	Sept.10	-81	Sept.23	+83	192	1311	161.2	-13.6	I 1577 (1)
11	03	9.5	4	11	+24	14	+67	8	33	261.4	+19.1	
12	02	17.42	12	11	-82	22	+67	38	206	156.4	+15.7	II
13	06	19.16	12	13	-76	24	+69	14	68	133.4	+ 9.3	I 1574 (2)
14	07	14.6	3/5	15	+13	19	+63	2	7	193.9	+11.3	
16215	10009	20.81	12	15	-72	26	+77	76	406	111.6	-12.4	II
16	11	21.14	7/8	15	-76	22	+16	10	52	107.2	+ 6.7	II
17	12	22.4	5	16	-81	20	-27	3	12	90.4	+28.4	
18	13	22.83	8	16	-84	23	+ 9	12	65	85.0	+12.7	II
19	15	19.52	4	17	-31	20	+13	4	16	128.6	+18.4	
16220	10014	23.59	11/12	18	-70	29	+82	30	162	74.9	-15.5	I 1575 (2)
21	17	16.6	2	19	+36	20	+49	3	14	167.0	+11.6	
22	18	25.63	10	19	-81	28	+32	22	131	48.0	+ 8.2	II
23	16	19.7	6	20	+ 7	25	+77	18	76	125.9	- 9.2	II
24	19	26.52	13	20	-85	Oct. 2	+78	50	330	36.2	- 6.3	II
16225	10020	27.4	5	22	-67	Sept.26	-15	11	51	24.3	-27.8	
26	..	27.2	2	23	-50	24	-38	2	20	26.6	-15.0	
27	21	21.5	3	25	+51	27	+80	12	56	102.8	+11.7	
28	22	30.7	3	26	-59	28	-32	3	13	340.7	+10.9	
29	24	30.58	5	28	-34	Oct. 2	+28	4	20	342.7	- 9.0	
16230	10025	Oct. 6.14	13	30	-77	12	+79	96	565	269.3	-14.4	I 1576 (2)
31	28	4.60	10	Oct. 1	-48	10	+79	25	144	289.6	- 9.5	II
32	27pt.	7.33	13	1	-79	13	+80	149	961	253.7	+ 7.8	II
33	29	3.39	7	2	-14	8	+67	9	42	305.6	-29.3	II
34	26	6.3	5	2	-53	6	0	7	31	266.6	+17.6	
16235	10027pt.	6.90	11	2	-61	12	+77	48	244	259.3	+10.3	II
36	30	6.80	11	2	-61	12	+76	64	388	260.6	+21.9	II
37	33	Sept.30.5	4	3	+41	6	+82	7	24	344.0	+17.3	
38	34	Oct. 2.1	3	3	+19	5	+44	1	4	322.4	+11.1	
39	35 } 41 }	8.22	11/12	3	-62	14	+83	21	132	241.9	+23.9	II
16240	10038	5.32	7	4	-14	10	+67	15	80	280.1	+ 2.0	II
41	37	Sept.30.6	2	5	+64	6	+77	28	148	342.7	- 9.8	
42	39	Oct. 1.6	3	5	+49	7	+78	14	73	329.2	+24.0	
43	44	12.22	10	7	-56	16	+52	9	42	189.2	-34.9	II
44	46 } 53 }	13.10	10/11	7	-76	17	+65	4	20	177.4	-16.6	II
16245	10043	13.42	12	7	-79	18	+66	48	317	173.2	+19.8	II
46	45	13.90	12	8	-74	19	+75	26	150	167.0	-11.1	I 1577 (2)
47	47pt.	16.60	13	10	-85	22	+75	21	131	131.3	+20.1	II
48	47pt.	16.78	4	11	-68	14	-31	4	23	128.9	+24.2	
49	48	16.66	9	11	-70	19	+38	14	74	130.6	-10.5	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	Long. from Central Meridian	Date	Long. from Central Meridian	Umbræ	Whole Spots	Longitude	Latitude	
		1949		1949	°	1949	°			°	°	
16250	10049	Oct. 17.24	13	Oct. 11	-75	Oct. 23	+81	61	405	122.9	+14.6	II
51	51	14.35	7	12	-26	18	+52	2	17	161.0	-19.1	II
52	54	18.0	4	12	-74	15	-36	10	42	112.3	-24.3	
53	50	17.38	4/8	13	-54	20	+41	1	6	121.1	-12.0	
54	..	19.2	2	13	-75	14	-64	2	12	97.4	+10.7	
16255	..	15.09	2	14	- 9	15	+ 4	1	6	151.2	+17.8	
56	100 55 56	18.78	10/11	14	-61	24	+74	14	106	102.5	- 5.0	I 1578 (1)
57	57	19.8	6	20	+ 8	25	+75	39	251	89.3	+11.3	II
58	58	25.33	12	20	-64	31	+80	17	98	16.2	+10.1	II
59	59	26.25	11	21	-65	31	+75	12	68	4.8	- 5.2	II
16260	10060	18.3	2	22	+53	23	+66	12	63	108.8	-12.3	
61	61	22.71	6	22	- 9	27	+65	7	44	50.7	+12.7	II
62	62	28.63	13	22	-82	Nov. 3	+76	47	265	332.7	+12.3	I 1579 (1)
63	..	18.9	2	23	+57	Oct. 24	+73	12	66	100.6	+11.4	
64	63	28.1	4	24	-48	27	- 8	4	19	340.2	-20.3	
16265	10064	30.84	10	25	-73	Nov. 3	+46	11	75	303.5	+ 7.0	II
66	65	23.8	2	27	+47	Oct. 28	+60	5	18	36.3	+18.6	
67	66	31.0	2	27	-46	28	-35	0	4	302.0	-20.6	
68	67	Nov. 2.34	8	27	-79	Nov. 3	+14	4	24	270.6	+ 8.8	II
69	68	Oct. 29.6	2	28	-17	Oct. 29	- 4	2	12	319.4	+ 5.0	
16270	10072	Nov. 1.31	5	29	-40	Nov. 2	+15	3	25	284.2	-11.1	
71	71	4.11	12	29	-78	9	+73	51	329	247.2	+24.8	II
72	73	3.5	2	30	-54	Oct. 31	-42	4	33	254.8	- 7.9	
73	76pt.	4.8	5	30	-72	Nov. 3	-19	11	66	238.4	+22.6	
74	78	Oct. 31.88	8	31	- 2	7	+83	31	234	289.8	+19.2	I 1580 (1)
16275	10081	29.0	2	Nov. 1	+45	2	+60	1	8	328.0	-21.3	
76	77	29.6	4	1	+36	4	+76	6	46	319.4	- 7.0	
77	80	29.8	2	1	+34	2	+50	1	8	317.8	+ 8.6	
78	86 89	Nov. 7.60	12	2	-70	13	+76	53	371	201.2	+21.1	I 1581 (1)
79	87	8.48	13	2	-79	14	+77	104	737	189.6	-10.0	I 1582 (1)
16280	10088	5.74	10	3	-29	12	+82	64	412	225.7	+25.9	I 1583 (1)
81	90	9.1	5	3	-78	7	-19	4	22	181.7	+ 3.7	
82	91	9.87	8	4	-74	11	+19	6	22	171.3	-12.2	I 1577 (3)
83	92	9.21	8	7	-28	14	+73	20	88	179.9	+14.6	II
84	93	13.80	12	8	-71	19	+74	15	92	119.5	- 8.1	II
16285	10094	14.22	9	8	-76	16	+31	48	345	114.0	+ 9.9	II
86	95pt.	14.8	3	8	-82	10	-59	5	32	106.2	- 6.0	I 1578 (2)
87	95pt.	14.9	6	9	-75	14	- 6	4	18	104.4	- 2.9	I 1578 (2)
88	96	16.4	5	10	-81	14	-24	8	46	85.1	+18.2	
89	97	11.6	2/4	12	+10	15	+52	0	4	148.8	+27.4	

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	Long. from Central Meridian	Date	Long. from Central Meridian	Umbræ	Whole Spots	Longitude	Latitude	
		1949		1949	°	1949	°			°	°	
16290	10099	Nov. 18.64	13	Nov. 12	-80	Nov. 24	+74	63	398	55.7	+11.6	II
91	98	16.30	10	13	-40	22	+82	54	405	86.5	+ 9.9	II
92	10102	19.7	7	13	-82	19	- 6	4	17	41.4	+18.9	II
93	05	19.4	3	13	-82	15	-51	6	22	45.8	+14.8	
94	04	14.2	4	14	+ 3	17	+47	6	39	114.8	+14.0	
16295	10103	14.1	6	15	+17	20	+82	121	913	115.2	- 2.1	II
96	01	14.4	5	15	+12	19	+66	3	21	111.0	- 7.5	
97	07, 12, 14	20.64	8/9	15	-68	23	+37	4	36	29.3	+ 8.2	II
98	06	14.9	5	16	+20	20	+72	31	188	104.8	+12.5	
99	09	21.5	2	16	-67	17	-51	2	18	17.6	- 4.2	
16300	10110	22.33	10	16	-78	25	+41	7	40	7.1	+14.7	II
01	08	16.7	6	17	+13	22	+74	18	113	81.0	+16.5	II
02	13	21.36	9	18	-43	26	+67	17	91	19.8	+20.4	II
03	16	24.74	13	18	-83	30	+74	36	177	335.3	-21.9	II
04	15	24.95	13	19	-73	Dec. 1	+83	17	89	332.6	+13.7	I 1579 (2)
16305	10118	24.85	10	19	-73	Nov. 28	+46	8	40	333.8	+ 6.1	II
06	20	19.4	5	20	+12	24	+65	2	11	45.3	+15.9	
07	21	20.2	6	21	+18	26	+80	58	357	35.6	-14.4	I 1584 (1)
08	19	26.97	13	21	-73	Dec. 3	+81	150	870	305.9	+18.1	I 1585 (1)
09	29	28.54	6/8	23	-66	Nov. 30	+24	3	22	285.2	+19.8	I 1580 (2)
16310	10123	29.14	12	23	-77	Dec. 4	+70	14	69	277.2	+ 4.8	II
11	..	20.0	2	24	+57	Nov. 25	+69	0	6	37.7	+ 5.8	
12	26	24.93	8	24	- 8	Dec. 1	+79	55	348	332.7	-10.0	II
13	25	22.8	2	25	+32	Nov. 26	+48	6	30	1.4	+ 6.6	
14	27	Dec. 1.16	9	25	-79	Dec. 3	+27	13	74	250.6	+12.0	II
16315	10128	Nov. 28.04	7	26	-26	2	+57	4	13	291.8	- 7.9	II
16	32	Dec. 3.4	5/6	27	-79	2	-14	7	42	221.4	+10.2	
17	34	Nov. 27.8	3	28	+ 8	Nov. 30	+38	3	17	295.2	-31.9	
18	31	28.99	8	28	- 8	Dec. 5	+84	23	147	279.2	- 9.8	II
19	30, 43	Dec. 1.75	7/9	28	-42	6	+60	4	29	242.9	+23.9	II
16320	10133	4.27	10	28	-75	7	+41	38	268	209.7	+25.1	I 1583 (2)
21	35	4.99	14	28	-84	11	+80	26	173	200.1	+22.8	I 1581 (2)
22	36	3.56	6	29	-54	4	+10	6	44	219.0	-15.2	II
23	37	5.32	13	29	-74	11	+80	22	144	195.9	-10.0	I 1582 (2)
24	38	6.1	3	30	-73	2	-52	2	14	185.3	- 6.6	
16325	10141	8.44	11	Dec. 3	-71	13	+63	35	237	154.7	- 6.8	II
26	40	4.1	7	4	+ 4	10	+81	50	383	211.8	+22.1	I 1586 (1)
27	42	10.27	12	4	-78	15	+71	22	147	130.6	+17.1	II
28	..	5.65	7	5	- 2	11	+74	10	72	191.4	+25.6	II
29	45	10.39	11	5	-67	15	+73	35	250	129.0	- 5.0	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	Long. from Central Meridian	Date	Long. from Central Meridian	Umbræ	Whole Spots	Longitude	Latitude	
		1949		1949	°	1949	°			°	°	
16330	10146	Dec. 10.7	2	Dec. 5	-70	Dec. 6	-58	2	13	124.8	- 0.4	
31	44	2.9	2	7	+62	8	+69	2	20	227.8	+ 9.4	
32	47	10.72	10	7	-43	16	+74	11	67	124.6	+11.9	II
33	..	14.7	2	10	-56	11	-44	0	4	71.9	+30.2	
34	53pt.	16.43	12	10	-80	21	+67	18	108	49.4	- 5.5	II
16335	10150	7.2	3	11	+58	13	+79	17	91	171.6	+ 4.6	
36	54	16.87	9	11	-70	19	+33	4	27	43.7	-14.8	I 1584 (2)
37	53pt.	17.1	6	11	-77	16	- 9	5	43	40.2	- 5.1	II
38	56	8.3	2	12	+55	13	+65	8	38	156.4	-14.5	
39	57	9.2	4	12	+42	15	+84	5	26	144.9	+16.3	
16340	10158	13.4	2	12	-13	13	0	4	20	89.9	+10.1	
41	55	17.33	12	12	-63	23	+78	36	246	37.6	+ 6.8	II
42	62	19.63	9	13	-81	21	+23	34	240	7.3	+ 4.5	II
43	61	11.0	3	14	+46	16	+70	17	106	121.3	+20.1	
44	..	16.65	6	16	- 5	21	+64	5	28	46.5	+ 3.8	II
16345	101 64 69	19.89	5	16	-47	20	+ 5	4	22	3.9	+21.2	
46	66	21.75	11/12	16	-73	27	+75	32	201	339.4	+ 6.5	II
47	63	15.0	5	17	+33	21	+82	22	249	68.4	+30.0	
48	67	24.73	13	18	-83	30	+74	31	182	300.1	+19.5	I 1585 (2)
49	68	25.34	12	20	-69	31	+82	41	299	292.1	- 4.5	II
16350	10170	23.6	3	21	-29	23	- 5	3	19	314.6	+13.2	
51	71	24.92	7	21	-46	27	+31	3	19	297.5	- 9.5	II
52	72	22.1	3	22	+ 3	24	+31	4	16	334.4	- 9.3	
53	73 82	23.35	6/8	22	-12	29	+80	10	46	318.3	- 7.6	II
54	75	27.04	12	22	-61	Jan. 2	+80	83	512	269.7	+10.5	I 1587 (1)
16355	10177	30.43	13	24	-80	5	+79	29	167	225.0	+23.0	II
56	76	30.4	6	25	-66	Dec. 30	- 3	4	25	224.8	+34.3	II
57	79	26.2	2	26	+ 2	27	+15	0	11	280.6	+ 9.1	
58	80	31.58	12	26	-68	Jan. 6	+76	61	465	209.9	+21.8	I 1586 (2)
59	81	Jan. 2.92	11	28	-74	7	+57	22	113	179.1	+ 3.7	II
16360	10183	Dec. 30.8	2	29	-18	Dec. 30	- 4	1	7	220.6	+17.6	
61	85	Jan. 2.78	11	29	-62	Jan. 8	+75	21	106	180.9	+ 5.5	II
62	84	2.0	2	31	-22	1	- 6	2	14	191.2	+10.4	

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	
				Umbræ	Whole Spots	Longitude	Latitude
	1949	°	1948-49			°	°
1275a	Jan. 1	+65.1	Dec. 27.5	5	24	41.0	+11.6
b	5	- 0.7	Jan. 5.4	0	6	284.6	+31.5
c	7	-13.5	8.3	0	4	245.6	+ 7.4
d	9	+66.0	4.4	10	35	296.6	- 5.3
e	10	- 7.2	10.8	1	5	212.3	- 6.0
f	13	- 4.0	13.8	5	27	173.7	+17.4
1276a	Feb. 1	+63.0	Jan. 27.7	6	34	350.6	+26.7
b	1	+ 3.4	Feb. 1.2	0	4	291.0	-15.7
c	8	-17.4	9.8	4	17	177.4	-18.6
d	13	+ 6.6	12.9	6	31	137.0	-18.8
e	14	-15.9	15.5	0	3	102.4	+13.8
f	18	-27.3	20.5	2	6	37.3	+ 9.4
1277a	Feb. 28	-53.9	Mar. 4.5	2	7	239.0	+23.1
b	Mar. 6	-22.4	8.0	1	4	192.3	+ 5.6
c	6	-27.9	8.4	3	12	186.8	- 9.8
d	9	+13.5	8.4	4	20	186.9	+ 4.7
e	9	-15.3	10.6	0	2	158.1	+16.0
f	9	-29.4	11.7	2	18	144.0	-29.8
g	12	+70.3	7.0	8	51	206.4	-13.1
h	13	-49.4	17.2	2	7	71.7	+ 9.3
i	14	+58.8	9.9	0	6	168.1	-10.4
j	16	-17.1	17.6	1	10	66.3	-27.6
k	18	+75.1	12.6	4	33	132.0	+11.4
l	18	+14.5	17.2	3	15	71.4	+12.3
m	19	+46.0	15.9	3	14	88.8	+17.0
n	19	+43.9	16.0	2	6	86.7	+25.0
o	22	+56.2	18.0	4	16	60.4	+23.0
1278a	Mar. 30	-18.7	Mar. 31.7	2	10	240.0	+ 1.3
b	Apr. 6	-52.0	Apr. 10.3	2	9	113.9	- 7.7
c	13	+59.3	9.0	0	13	130.9	+23.0
d	13	+48.5	9.8	0	2	120.1	+20.2
e	14	+67.9	9.2	0	9	128.1	-20.1
f	14	+48.0	10.7	5	19	108.2	- 3.4
g	14	+26.6	12.3	3	13	86.8	+21.0
h	15	+67.4	10.3	6	15	114.2	+ 9.6
i	17	-59.7	21.9	2	11	320.7	-11.2
j	18	+62.7	13.7	0	7	69.2	-13.2
1279a	Apr. 30	+66.9	Apr. 25.3	3	14	276.1	+ 3.7
b	May 11	-58.1	May 15.8	4	20	4.2	-23.1
c	13	+70.9	8.0	9	52	108.1	-13.8
1280a	May 23	+58.1	May 18.9	8	24	323.1	+26.0
b	24	+58.2	20.0	0	15	309.6	- 0.4
c	31	-28.2	June 2.5	5	21	130.0	+21.1
d	June 4	-38.5	7.3	0	3	67.4	-19.6
e	5	+65.8	May 31.4	3	9	158.2	+13.7
f	11	+22.5	June 9.6	3	10	35.9	+17.9
1281a	June 15	-35.9	June 18.0	6	16	284.7	-10.8
b	16	+ 8.6	15.7	4	17	315.9	+26.7
c	16	-11.1	17.2	1	10	296.2	+19.3
d	20	+76.0	14.6	4	18	330.5	+ 6.3
e	23	+74.8	17.7	4	53	289.1	+16.9
f	24	-47.0	27.9	0	4	154.6	+ 4.5
g	27	-49.8	July 1.1	0	2	112.0	+13.8
h	30	-50.6	4.4	0	6	67.5	-13.2
i	July 1	-14.9	2.5	3	19	93.9	+ 9.3
j	3	+55.2	June 29.2	0	2	137.0	+26.6
k	3	-23.3	July 5.1	0	1	58.5	+14.5
1282a	July 16	+67.9	July 11.3	0	8	337.4	-23.3
b	20	-31.1	22.7	0	3	186.0	-18.1
c	23	- 6.9	23.9	3	9	170.7	+14.8
d	25	+32.3	22.9	3	15	183.5	+ 5.6
e	26	+22.3	24.6	4	12	160.3	+15.6
f	Aug. 2	+76.1	27.7	0	36	120.1	+12.4
g	3	+10.9	Aug. 2.5	1	6	42.9	+16.1
h	3	- 0.1	3.3	1	7	31.9	+16.1
1283a	Aug. 9	+54.0	Aug. 5.2	2	9	6.8	+13.8
b	9	-21.1	10.9	4	22	291.7	+14.5
c	12	+78.0	6.4	7	30	351.1	-21.3
d	15	-63.0	20.1	2	9	170.3	-15.7
e	18	+66.7	13.5	9	26	257.5	+17.8
f	20	+ 7.2	19.9	1	6	173.3	+ 2.3
g	22	-23.9	24.1	3	9	117.5	+11.9
h	22	-66.3	27.3	3	16	75.1	-17.0
i	31	-67.0	Sept. 5.4	7	16	314.8	-12.7

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: Umbræ	Area Corrected for Foreshortening: Whole Spots	Position of Group: Longitude	Position of Group: Latitude
	1949	°	1949			°	°
1284a	Sept. 10	−15.0	Sept. 11.5	0	5	234.5	− 9.0
b	13	−71.5	18.8	3	13	138.1	+16.6
c	17	−67.8	22.5	6	29	89.8	−19.1
d	22	−52.3	26.3	3	11	39.0	+14.7
e	25	−30.6	27.7	1	6	20.8	−23.5
f	27	+70.3	22.1	3	10	94.0	+ 9.7
1285a	Oct. 3	−49.7	Oct. 7.4	2	6	252.9	−18.6
b	4	+ 2.0	4.2	4	19	294.7	+ 7.1
c	7	+50.5	3.6	2	15	302.3	−22.8
d	7	−50.2	11.3	0	3	201.6	+16.7
e	7	−72.1	12.2	0	6	179.7	+12.7
f	11	+ 7.6	11.1	1	6	204.3	+ 7.9
g	13	+80.8	7.2	19	145	254.7	+18.1
h	13	+26.4	11.4	2	13	200.3	+16.7
i	15	−42.3	18.6	0	3	104.9	+11.5
j	16	+14.8	15.2	3	11	149.4	+13.0
1286a	Oct. 27	−17.8	Oct. 28.7	1	5	331.3	+24.6
b	28	−55.2	Nov. 1.5	2	12	281.0	−16.1
1286c	Nov. 1	+17.2	Oct. 31.1	0	4	299.7	−17.5
d	1	+ 5.0	Nov. 1.1	4	17	287.5	− 5.6
e	2	+ 6.4	2.0	1	5	275.1	−15.7
f	11	+15.4	10.1	3	10	167.8	+16.6
1287a	Nov. 27	−55.1	Dec. 1.6	4	21	244.7	+24.0
b	Dec. 2	+51.6	Nov. 28.4	0	3	287.4	−11.9
c	4	+15.4	Dec. 3.2	6	34	223.2	+21.6
d	4	−58.4	8.8	0	11	149.4	− 8.2
e	7	+64.7	2.6	3	12	232.3	+31.9
f	7	+12.5	6.5	1	4	180.1	−18.6
g	8	−32.2	10.7	0	23	124.5	− 7.5
h	9	−21.3	11.0	2	17	120.8	+16.7
i	11	+52.2	7.5	2	6	167.7	+25.7
j	11	− 0.8	11.5	6	41	114.7	+17.9
k	12	−45.0	15.8	1	8	57.1	+16.7
l	15	−41.9	18.6	1	13	21.0	+22.9
1288a	Dec. 22	−42.8	Dec. 25.7	1	6	286.7	− 1.4
b	25	+38.2	22.4	3	22	331.0	+18.1

Greenwich Number	Mt. Wilson Number
1275a	9584
b	87
c	92
1276a	9623
b	25
c	37
e	51
1277b	9681
c	86
d	94
e	96
g	9702
i	09
j	15
l	14
m	20
n	19
1278b	9742
c	54
g	67
h	68

Greenwich Number	Mt. Wilson Number
1278j	9773
k	72
1279a	9795
c	9814
1280a	9827
b	32
d	47
f	55
1281a	9863
b	64
d	69
h	84
1282a	9906
b	19
g	37
h	38
1283b	9944
c	45
d	52

Greenwich Number	Mt. Wilson Number
1283e	9957
f	61
g	63
1284a	9999
f	10023
1285b	10040
d	42
g	52
1286a	10069
c	83
d	79
e	84
1287c	10139
f	49
i	51
l	52
1288a	10174
b	78

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	Long. from Central Meridian	Date	Long. from Central Meridian		Longitude	Latitude	
		1949			1949	°	1949	°		°	°	
1	15853	Jan. 8.58	1275	10	Jan. 3	-71	Jan. 12	+55	72	242	+ 4	II
	891	Feb. 4.94	1276	12	Jan. 30	-74	Feb. 10	+69	548	242	+ 5	II
	939	Mar. 3.95	1277	11	Feb. 27	-64	Mar. 9	+76	547	246	+ 4	II
2	15865	Jan. 19.78	1275	14	Jan. 13	-82	Jan. 26	+84	524	95	-12	I 1540 (2)
	914	Feb. 16.79	1276	13	Feb. 11	-75	Feb. 23	+80	699	86	-12	I 1547
	954	Mar. 15.63	1277	13	Mar. 9	-81	Mar. 21	+76	399	92	-10	
	16002	Apr. 11.70	1278	10	Apr. 8	-46	Apr. 17	+78	242	95	- 9	II
3	15867	Jan. 12.3	1275	4	Jan. 15	+39	Jan. 18	+82	45	193	-12	
	902	Feb. 8.45	1276	9	Feb. 6	-30	Feb. 14	+80	143	196	-11	I 1545
	942	Mar. 7.08	1277	8	Mar. 1	-76	Mar. 8	+17	40	205	-11	
4	15872	Jan. 18.10	1275	7	Jan. 17	-11	Jan. 23	+72	88	117	-17	II
	908	Feb. 14.48	1276	13	Feb. 8	-75	Feb. 20	+81	335	116	-15	I 1546
	949	Mar. 13.71	1277	13	Mar. 7	-84	Mar. 19	+74	160	117	-17	
	16000	Apr. 10.1	1278	5	Apr. 4	-74	Apr. 8	-23	10	116	-18	
5	15873	Jan. 23.46	1275	10	Jan. 17	-81	Jan. 26	+36	47	46	+15	II
	919	Feb. 19.94	1276	12	Feb. 14	-77	Feb. 25	+73	97	44	+15	II
	967	Mar. 19.81	1277	11	Mar. 15	-57	Mar. 25	+73	110	37	+16	II
	16011	Apr. 15.99	1278	2	Apr. 15	- 7	Apr. 16	+ 4	8	38	+16	
6	15875	Jan. 24.38	1275	11	Jan. 18	-80	Jan. 28	+51	116	34	+15	II
	922	Feb. 20.96	1276	10/11	Feb. 15	-76	Feb. 25	+60	29	31	+16	II
7	15877	Jan. 22.35	1275	6	Jan. 19	-40	Jan. 24	+25	47	61	-14	II
	881	Jan. 23.0	1275	6	Jan. 23	+ 6	Jan. 28	+65	26	52	-12	II
	923	Feb. 18.84	1276	4	Feb. 17	-18	Feb. 20	+20	22	59	-14	
8	15895	Feb. 7.31	1276	11	Feb. 1	-78	Feb. 11	+55	47	211	+ 9	II
	950	Mar. 6.2	1277	4	Mar. 8	+26	Mar. 11	+69	63	216	+ 8	
9	15896	Feb. 7.5	1276	2	Feb. 2	-68	Feb. 3	-54	17	208	+ 6	
	941	Mar. 6.7	1277	5	Mar. 1	-71	Mar. 5	-18	24	210	+ 6	
10	15898	Feb. 8.90	1276	12	Feb. 3	-74	Feb. 14	+77	44	190	+16	II
	943	Mar. 8.31	1277	13	Mar. 2	-79	Mar. 14	+79	504	189	+16	I 1551
	991	Apr. 4.39	1278	12	Mar. 30	-66	Apr. 10	+75	261	192	+13	

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	Long. from Central Meridian	Date	Long. from Central Meridian		Longitude	Latitude	
		1949			1949	°	1949	°		°	°	
11	15903	Feb. 11.95	1276	13	Feb. 6	-76	Feb. 18	+87	307	150	-16	I 1542 (2)
	956	Mar. 10.9	1277	3	Mar. 11	+ 8	Mar. 13	+34	8	155	-16	
12	15906	Feb. 13.57	1276	13	Feb. 7	-82	Feb. 19	+76	115	128	-15	II
	968	Mar. 12.9	1277	2	Mar. 17	+58	Mar. 18	+71	30	128	-17	
13	15907	Feb. 10.98	1276	6	Feb. 8	-33	Feb. 13	+33	24	162	-16	II
	946	Mar. 10.45	1277	7	Mar. 5	-68	Mar. 11	+14	25	160	-15	II
14	15918	Feb. 16.28	1276	4	Feb. 14	-26	Feb. 17	+15	5	93	-16	
	963	Mar. 15.63	1277	8	Mar. 14	-17	Mar. 21	+76	132	92	-13	II
15	15921	Feb. 14.6	1276	3	Feb. 15	+ 8	Feb. 17	+37	23	114	- 8	
	959	Mar. 13.99	1277	4	Mar. 13	- 8	Mar. 16	+32	35	114	- 8	
16	15924	Feb. 21.73	1276	6	Feb. 18	-45	Feb. 23	+20	31	21	-24	II
	965	Mar. 20.94	1277	14	Mar. 14	-85	Mar. 27	+84	317	22	-22	II
17	15927	Feb. 15.2	1276	2	Feb. 19	+53	Feb. 20	+70	50	107	+13	
	957	Mar. 14.5	1277	2	Mar. 11	-40	Mar. 12	-29	10	107	+12	
18	15930	Feb. 18.8	1276	5	Feb. 20	+19	Feb. 24	+78	83	59	+19	
	958	Mar. 17.95	1277	8	Mar. 12	-74	Mar. 19	+19	62	62	+20	II
19	15947	Mar. 2.8	1277	2	Mar. 6	+46	Mar. 7	+60	26	262	+ 5	
	982	Mar. 29.5	1278	2	Mar. 26	-42	Mar. 27	-27	18	270	+ 3	
20	15977	Mar. 29.1	1278	2	Mar. 23	-77	Mar. 24	-62	20	275	- 8	
	16017	Apr. 25.22	1279	13	Apr. 19	-78	May 1	+82	328	277	-10	{ I 1559
	052	May 22.27	1280	12	May 16	-78	May 27	+66	124	279	-10	
21	15981	Mar. 27.82	1278	6/9	Mar. 25	-33	Apr. 2	+74	32	291	+ 6	II
	16015	Apr. 23.25	1279	12	Apr. 17	-79	Apr. 28	+64	118	303	+ 6	II
22	15988	Mar. 29.97	1278	7/8	Mar. 29	- 8	Apr. 5	+82	35	263	-13	II
	16026	Apr. 26.17	1279	3	Apr. 24	-24	Apr. 26	+ 5	13	264	-14	
	029	Apr. 26.74	1279	6	Apr. 25	-16	Apr. 30	+47	74	256	-14	II {
	060	May 23.62	1280	3/8	May 22	-16	May 29	+74	4	261	-12	
23	15992	Apr. 6.54	1278	12	Apr. 1	-68	Apr. 12	+74	150	163	+10	II
	16036	May 3.13	1279	7	May 1	-25	May 7	+55	133	172	+11	II
24	16004	Apr. 10.72	1278	7	Apr. 9	-16	Apr. 15	+64	18	108	-13	II
	043	May 8.13	1279	2/3	May 6	-24	May 8	+ 4	14	106	-11	

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	Long. from Central Meridian	Date	Long. from Central Meridian		Longitude	Latitude	
		1949			1949	°	1949	°		°	°	
25	16020	Apr. 21.0	1279	3	Apr. 21	+ 4	Apr. 23	+31	43	333	+25	
	049	May 18.65	1280	7	May 13	-68	May 19	+ 9	73	327	+25	II
26	16035	May 1.76	1279	7	May 1	- 8	May 7	+74	186	190	+18	II
	063	May 28.80	1280	11	May 23	-74	June 2	+63	94	193	+16	II
	105	June 24.3	1281	4	June 27	+39	June 30	+82	297	201	+16	
	106	June 24.9	1281	4	June 27	+28	June 30	+79	227	193	+15	{
	141	July 21.95	1282	8	July 20	-23	July 27	+74	22	196	+17	II
27	16038	May 7.1	1279	4	May 1	-77	May 4	-36	12	119	- 5	
	076	June 2.6	1280	5	June 4	+21	June 8	+84	55	130	- 4	{ I 1565
	101	June 29.54	1281	9/11	June 23	-84	July 3	+52	76	132	- 4	
28	16039	May 7.54	1279	10/11	May 2	-68	May 12	+67	40	114	+13	II
	072	June 3.51	1280	12	May 29	-73	June 9	+80	240	117	+15	II
29	16046	May 12.4	1279	2	May 8	-53	May 9	-39	16	50	+16	
	081	June 8.6	1280	5	June 10	+23	June 14	+76	111	50	+16	
	114	July 5.7	1281	4/5	July 1	-56	July 5	- 5	6	51	+16	
	156	Aug. 1.4	1282	3/5	Aug. 2	+13	Aug. 6	+70	6	58	+16	
30	16050	May 15.29	1279	3	May 14	-15	May 16	+17	28	11	+ 9	
	078	June 10.98	1280	6	June 6	-60	June 11	+ 5	20	18	+ 7	II
31	16068	May 31.58	1280	8	May 26	-67	June 2	+24	31	156	+15	II
	100	June 28.2	1281	3/4	June 23	-64	June 26	-23	8	150	+16	
32	16074	June 7.93	1280	13	June 1	-82	June 13	+72	38	59	-15	I 1561 (2)
	120	July 5.0	1281	5	July 6	+17	July 10	+71	292	60	-18	} I 1568
	148	Aug. 1.07	1282	13	July 26	-75	Aug. 7	+79	1328	62	-20	
	184	Aug. 28.25	1283	12	Aug. 22	-78	Sept. 2	+68	153	63	-20	
33	16079	June 14.1	1280	2	June 8	-73	June 9	-62	46	337	-19	
	122	July 11.7	1281	4	July 6	-71	July 9	-31	64	332	-18	
34	16087	June 11.9	1281	2	June 12	+ 5	June 13	+20	16	6	- 5	
	129	July 9.0	1282	2	July 13	+57	July 14	+73	150	8	- 7	
35	16092	June 19.36	1281	2	June 18	-13	June 19	0	13	267	+14	
	140	July 16.8	1282	3	July 20	+47	July 22	+73	222	264	+13	
36	16095	June 25.96	1281	13	June 20	-75	July 2	+84	224	180	+ 6	II
	134	July 23.0	1282	5	July 18	-58	July 22	- 8	18	182	+ 7	
37	16103	June 30.42	1281	10	June 24	-81	July 3	+39	69	121	+12	II
	143	July 27.69	1282	10	July 22	-72	July 31	+54	161	120	+12	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	Long. from Central Meridian	Date	Long. from Central Meridian		Longitude	Latitude	
		1949			1949	°	1949	°		°	°	
38	16108	July 2.95	1281	8	June 28	-59	July 5	+30	70	87	+14	II
	154	July 29.8	1282	6	July 30	+ 7	Aug. 4	+74	39	93	+13	II
39	16111	July 3.98	1281	12	June 28	-74	July 9	+67	28	74	-15	II
	151	July 31.59	1282	4	July 29	-29	Aug. 1	+10	13	68	-16	
40	16119	July 11.00	1282	9	July 5	-75	July 13	+31	58	341	-24	II
	163	Aug. 7.4	1283	2	Aug. 11	+52	Aug. 12	+64	10	338	-23	
41	16127	July 12.2	1282	5	July 12	0	July 16	+56	24	325	- 5	
	159	Aug. 8.1	1283	2/3	Aug. 5	-36	Aug. 7	-11	4	329	- 6	
42	16128	July 14.94	1282	9	July 12	-36	July 20	+76	53	289	+15	II
	166	Aug. 11.0	1283	4	Aug. 13	+29	Aug. 16	+72	24	291	+13	
	196	Sept. 6.59	1284	12	Aug. 31	-85	Sept.11	+68	110	299	+12	II
43	16157	Aug. 5.27	1282	9	Aug. 2	-41	Aug. 10	+71	73	6	+ 9	II
	189	Sept. 1.67	1283	10	Aug. 26	-83	Sept. 4	+35	184	4	+11	II
44	16161	Aug. 4.5	1283†	2	Aug. 8	+51	Aug. 9	+64	41	17	+13	
	187	Aug. 31.50	1283	8	Aug. 26	-70	Sept. 2	+28	21	20	+14	II
45	16164	Aug. 9.1	1283	4	Aug. 12	+41	Aug. 15	+79	153	315	-11	
	192	Sept. 4.96	1284	11	Aug. 30	-73	Sept. 9	+53	73	321	-11	II
46	16165	Aug. 18.30	1283	11	Aug. 12	-81	Aug. 22	+52	126	194	+13	I 1570 (2)
	214	Sept.14.6	1284	3/5	Sept.15	+13	Sept.19	+63	7	194	+11	
47	16170	Aug. 15.90	1283	4	Aug. 14	-19	Aug. 17	+19	75	226	+11	
	209	Sept.12.42	1284	4	Sept.10	-28	Sept.13	+12	14	222	+ 9	
48	16171	Aug. 20.20	1283	12	Aug. 15	-70	Aug. 26	+86	284	169	+10	II
	221	Sept.16.6	1284	2	Sept.19	+36	Sept.20	+49	14	167	+12	
49	16193	Sept. 5.49	1284	13	Aug. 30	-81	Sept.11	+79	396	314	+ 9	II
	238	Oct. 2.1	1285	3	Oct. 3	+19	Oct. 5	+44	4	322	+11	
50	16197	Aug. 30.0	1283	3/4	Sept. 1	+32	Sept. 4	+70	11	40	+ 9	
	222	Sept.25.63	1284	10	Sept.19	-81	Sept.28	+32	131	48	+ 8	II
51	16211	Sept. 9.5	1284	4	Sept.11	+24	Sept.14	+67	33	261	+19	
	236	Oct. 6.80	1285	11	Oct. 2	-61	Oct. 12	+76	388	261	+22	II
52	16212	Sept.17.42	1284	12	Sept.11	-82	Sept.22	+67	206	156	+16	II
	255	Oct. 15.09	1285	2	Oct. 14	- 9	Oct. 15	+ 4	6	151	+18	

† Group 16161 does not appear until after Rotation 1282 has ended.

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	Long. from Central Meridian	Date	Long. from Central Meridian		Longitude	Latitude	
		1949-50			1949-50	°	1949-50	°		°	°	
53	16215	Sept.20.81	1284	12	Sept.15	-72	Sept.26	+77	406	112	-12	II
	253	Oct. 17.38	1285	4/8	Oct. 13	-54	Oct. 20	+41	6	121	-12	
	260	Oct. 18.3	1285	2	Oct. 22	+53	Oct. 23	+66	63	109	-12	
54	16218	Sept.22.83	1284	8	Sept.16	-84	Sept.23	+ 9	65	85	+13	II
	257	Oct. 19.8	1285	6	Oct. 20	+ 8	Oct. 25	+75	251	89	+11	II
55	16219	Sept.19.52	1284	4	Sept.17	-31	Sept.20	+13	16	129	+18	
	247	Oct. 16.60	1285	13	Oct. 10	-85	Oct. 22	+75	131	131	+20	II
56	16223	Sept.19.7	1284	6	Sept.20	+ 7	Sept.25	+77	76	126	- 9	II
	249	Oct. 16.66	1285	9	Oct. 11	-70	Oct. 19	+38	74	131	-11	II
57	16227	Sept.21.5	1284	3	Sept.25	+51	Sept.27	+80	56	103	+12	
	254	Oct. 19.2	1285	2	Oct. 13	-75	Oct. 14	-64	12	97	+11	
	263	Oct. 18.9	1285	2	Oct. 23	+57	Oct. 24	+73	66	101	+11	
	298	Nov. 14.9	1286	5	Nov. 16	+20	Nov. 20	+72	188	105	+12	
58	16239	Oct. 8.22	1285	11/12	Oct. 3	-62	Oct. 14	+83	132	242	+24	II
	273	Nov. 4.8	1286	5	Oct. 30	-72	Nov. 3	-19	66	238	+23	
59	16264	Oct. 28.1	1286	4	Oct. 24	-48	Oct. 27	- 8	19	340	-20	
	303	Nov. 24.74	1287	13	Nov. 18	-83	Nov. 30	+74	177	335	-22	II
60	16266	Oct. 23.8	1286	2	Oct. 27	+47	Oct. 28	+60	18	36	+19	
	292	Nov. 19.7	1286	7	Nov. 13	-82	Nov. 19	- 6	17	41	+19	II
61	16271	Nov. 4.11	1286	12	Oct. 29	-78	Nov. 9	+73	329	247	+25	II
	319	Dec. 1.75	1287	7/9	Nov. 28	-42	Dec. 6	+60	29	243	+24	II
62	16291	Nov. 16.30	1286	10	Nov. 13	-40	Nov. 22	+82	405	86	+10	II
	340	Dec. 13.4	1287	2	Dec. 12	-13	Dec. 13	0	20	90	+10	
	366	Jan. 9.72	1288	11	Jan. 5	-56	Jan. 15	+74	194	89	+13	II (1950)
63	16295	Nov. 14.1	1286	6	Nov. 15	+17	Nov. 20	+82	913	115	- 2	II
	330	Dec. 10.7	1287	2	Dec. 5	-70	Dec. 6	-58	13	125	0	
64	16297	Nov. 20.64	1286	8/9	Nov. 15	-68	Nov. 23	+37	36	29	+ 8	II
	311	Nov. 20.0	1287†	2	Nov. 24	+57	Nov. 25	+69	6	38	+ 6	
	341	Dec. 17.33	1287	12	Dec. 12	-63	Dec. 23	+78	246	38	+ 7	II
	370	Jan. 13.8	1288	2	Jan. 11	-33	Jan. 12	-19	34	36	+ 8	
	372	Jan. 13.73	1288	8	Jan. 12	-17	Jan. 19	+74	56	37	+ 6	II (1950)
65	16305	Nov. 24.85	1287	10	Nov. 19	-73	Nov. 28	+46	40	334	+ 6	II
	346	Dec. 21.75	1288	11/12	Dec. 16	-73	Dec. 27	+75	201	339	+ 6	II

† Group 16311 does not appear until after Rotation 1286 has ended.

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	Long. from Central Meridian	Date	Long. from Central Meridian		Longitude	Latitude	
		1949-50			1949-50	°	1949-50	°		°	°	
66	16312	Nov. 24.93	1287	8	Nov. 24	- 8	Dec. 1	+79	348	333	-10	II
	352	Dec. 22.1	1288	3	Dec. 22	+ 3	Dec. 24	+31	16	334	- 9	
67	16313	Nov. 22.8	1287†	2	Nov. 25	+32	Nov. 26	+48	30	1	+ 7	
	342	Dec. 19.63	1287	9	Dec. 13	-81	Dec. 21	+23	240	7	+ 4	II
68	16315	Nov. 28.04	1287	7	Nov. 26	-26	Dec. 2	+57	13	292	- 8	II
	351	Dec. 24.92	1288	7	Dec. 21	-46	Dec. 27	+31	19	298	- 9	II
69	16327	Dec. 10.27	1287	12	Dec. 4	-78	Dec. 15	+71	147	131	+17	II
	365	Jan. 6.6	1288	2	Jan. 5	-14	Jan. 6	- 2	11	131	+20	
70	16335	Dec. 7.2	1287	3	Dec. 11	+58	Dec. 13	+79	91	172	+ 5	
	359	Jan. 2.92	1288	11	Dec. 28	-74	Jan. 7	+57	113	179	+ 4	II }
	361	Jan. 2.78	1288	11	Dec. 29	-62	Jan. 8	+75	106	181	+ 6	II }
	391	Jan. 29.7	1289	5	Jan. 24	-68	Jan. 28	-18	34	187	+ 3	}
	392	Jan. 29.6	1289	2	Jan. 24	-69	Jan. 25	-57	20	187	+ 5	}
	393	Jan. 29.7	1289	2	Jan. 24	-69	Jan. 25	-58	12	187	+ 7	}
	415	Feb. 26.07	1290	12	Feb. 20	-78	Mar. 3	+71	279	186	+ 9	{ I 1595
	449	Mar. 25.09	1291	12	Mar. 19	-76	Mar. 30	+73	106	190	+ 9	{ I 1595
71	16337	Dec. 17.1	1287	6	Dec. 11	-77	Dec. 16	- 9	43	40	- 5	II
	368	Jan. 13.1	1288	4	Jan. 7	-76	Jan. 10	-36	33	46	- 4	
72	16350	Dec. 23.6	1288	3	Dec. 21	-29	Dec. 23	- 5	19	315	+13	
	378	Jan. 19.99	1289	10	Jan. 16	-52	Jan. 25	+72	446	314	+15	II (1950)
73	16355	Dec. 30.43	1288	13	Dec. 24	-80	Jan. 5	+79	167	225	+23	II }
	360	Dec. 30.8	1288	2	Dec. 29	-18	Dec. 30	- 4	7	221	+18	}
	386	Jan. 27.17	1289	13	Jan. 21	-75	Feb. 2	+80	560	220	+20	II (1950)
74	16362	Jan. 2.0	1288	2	Dec. 31	-22	Jan. 1	- 6	14	191	+10	
	390	Jan. 29.28	1289	9	Jan. 24	-66	Feb. 1	+40	128	192	+12	II (1950)

† Group 16313 does not appear until after Rotation 1286 has ended.

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ROYAL GREENWICH OBSERVATORY

Ledgers of Groups of Sunspots

For the year 1949

Ledger 1:

Recurrent Groups

GREENWICH PHOTO-HELIOGRAPHIC RESULTS, 1949

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949.

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 and Kodaikanal by the letters C and K respectively.

The projected area of the umbrae and whole spots, given in the *second* and *third* columns, is the area as it is measured on the photograph, uncorrected for the effect of foreshortening, and expressed in millionths of the Sun's apparent disk.

The area corrected for foreshortening given in the *fourth* and *fifth* columns is expressed in millionths of the Sun's visible hemisphere.

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

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

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

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

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

No. 1541. Latitude -6°.5

Group 15866 in Rotation 1275
" 15912 " " 1276

Group 15866. Jan. 14-25. A small regular spot, immediately *n* Group 15865.

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.
					°	°	°	°
13.287 C	8	71	14	128	92.6	0.0	- 7.8	-74.3
14.286 C	15	111	16	115	92.3	-0.5	- 7.9	-61.5
15.423 C	19	121	14	87	92.5	-0.4	- 7.9	-46.3
16.306 C	29	140	18	85	92.8	-0.3	- 7.7	-34.4
17.308 C	27	167	15	90	93.1	-0.1	- 7.5	-20.9
18.286 C	33	155	16	78	93.4	0.0	- 7.2	- 7.7
19.501 G	35	197	18	100	93.4	-0.2	- 7.3	+ 8.3
20.288 C	25	161	13	85	93.6	-0.1	- 7.4	+18.9
21.409 G	20	95	12	57	93.5	-0.4	- 7.2	+33.5
22.461 G	17	111	13	82	94.0	0.0	- 7.2	+47.9
23.289 C	15	94	14	89	93.8	-0.4	- 7.0	+58.6
24.289 C	4	29	6	44	93.2	-1.1	- 7.0	+71.1
Means	..	..	14	87	93.2	..	- 7.4	..

Group 15912. Feb. 10-12. A small spot.

40.426 G	4	26	8	54	92.9	-4.0	- 6.1	-76.7
41.470 G	4	15	4	16	93.7	-3.3	- 5.5	-62.2
42.354 C	2	13	2	10	94.7	-2.5	- 5.3	-49.5
Means	..	..	5	27	93.8	..	- 5.6	..

No. 1542. Latitude -16°.1

Group 15868 in Rotation 1275
" 15903 " " 1276

Group 15868. Jan. 15-22. A group which forms near the C.M. and steadily increases in area throughout its transit.

14.286 C	25	182	13	95	141.7	0.0	-18.1	-12.1
15.423 C	61	353	32	181	143.8	+2.1	-17.3	+ 5.0
16.306 C	102	449	55	240	143.3	+1.6	-17.4	+16.1
17.308 C	88	535	52	317	144.2	+2.5	-17.2	+30.2
18.286 C	108	579	75	407	145.1	+3.4	-16.6	+44.0
19.501 G	86	714	90	742	146.2	+4.5	-15.5	+61.1
20.288 C	85	656	130	996	146.7	+5.1	-15.4	+72.0
21.409 G	11	63	(33	191	141.2	..	-16.0)	+81.2
Means	..	..	64	425	144.4	..	-16.8	..

No. 1542 - *continued*

Group 15903. Feb. 6-18. A stream of small spots of which the leader, *a*, alone remains by February 13. On the next day this spot begins to grow, and then it becomes composite.

					°	°	°	°
36.315 C	33	235	65	459	147.9	+6.4	-16.3	-75.8
37.466 G	83	410	84	418	147.6	+6.1	-16.0	-61.0
38.511 G	73	492	52	350	149.3	+7.8	-15.7	-45.5
39.461 G	75	530	46	318	149.2	+7.7	-16.2	-33.1
40.426 G	76	748	40	400	149.4	+7.9	-15.2	-20.2
41.470 G	70	551	37	283	148.7	+7.2	-15.7	- 7.2
42.354 C	59	336	30	171	149.3	+7.9	-15.7	+ 5.1
43.405 G	46	214	25	116	150.5	+9.1	-15.4	+20.1
44.323 C	21	174	12	103	150.1	+8.7	-15.2	+31.8
45.300 C	38	265	27	188	150.7	+9.3	-15.0	+45.3
46.393 C	40	393	39	385	151.0	+9.6	-14.9	+60.0
47.363 G	26	311	40	494	150.8	+9.4	-14.7	+72.5
48.402 G	2	18	12	110	151.4	..	-13.8	+86.8
Means	..	..	41	307	149.5	..	-15.5	..

Spot *a*

36.315 C	25	155	40	250	150.7	0.0	-15.4	-73.0
37.466 G	59	254	55	236	150.4	-0.3	-15.2	-58.2
38.511 G	54	360	37	248	150.8	+0.1	-15.2	-44.0
39.461 G	54	421	32	248	150.5	-0.2	-15.2	-31.8
40.426 G	59	617	31	327	150.4	-0.3	-14.5	-19.2
41.470 G	54	447	28	228	150.6	-0.1	-15.0	- 5.3
42.354 C	55	294	28	150	150.4	-0.2	-15.2	+ 6.2
43.405 G	46	214	25	116	150.5	-0.1	-15.4	+20.1
44.323 C	21	174	12	103	150.1	-0.5	-15.2	+31.8
45.300 C	38	265	27	188	150.7	+0.1	-15.0	+45.3
46.393 C	40	393	39	385	151.0	+0.4	-14.9	+60.0
47.363 G	22	287	35	462	151.3	+0.7	-14.4	+73.0
48.402 G	2	18	12	110	151.4	..	-13.8	+86.8

No. 1543. Latitude +22°.4

Group 15871 in Rotation 1275
" 15917 " " 1276
" 15962 " " 1277
" 16006 " " 1278

Group 15871. Jan. 16-29. A giant group, in which the leader, *a*, is an elongated composite spot, with its umbra divided into two by a bright "bridge". This spot takes on a more circular shape for two or three days, before becoming elongated again. The follower, *b*, is a smaller composite spot which is breaking up as it passes from view. An intense solar flare (magnitude 3+) was recorded on January 23 at 02h U.T. A great geomagnetic storm began forty hours later.

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

No. 1543. Group 15871 - *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.
					°	°	°	°
15.423 C	59	368	(194	1207	60.2	..	+22.2)	-78.6
16.306 C	174	1231	314	2342	56.8	0.0	+23.3	-70.4
17.308 C	420	2169	471	2454	56.9	+0.3	+23.1	-57.1
18.286 C	412	2418	345	2054	56.0	-0.4	+23.2	-45.1
19.501 G	663	3631	444	2417	54.9	-1.3	+23.3	-30.2
20.288 C	550	4017	339	2468	55.0	-1.1	+23.3	-19.7
21.409 G	545	3863	313	2222	54.2	-1.6	+23.5	- 5.8
22.461 G	578	4045	331	2319	53.8	-1.8	+23.0	+ 7.7
23.289 C	554	4099	333	2471	53.4	-2.1	+22.6	+18.2
24.289 C	390	3305	262	2216	52.0	-3.3	+22.4	+29.9
25.286 C	272	2640	220	2115	51.9	-3.2	+22.4	+42.9
26.290 C	250	1716	279	1919	50.3	-4.6	+22.7	+54.6
27.290 C	105	826	220	1560	49.0	-5.7	+22.1	+66.5
28.409 G	11	82	(23	175	39.8	..	+24.6)	+72.0
Means	..	..	323	2213	53.7	..	+22.9	..

Spot *a*

15.423 C	59	368	194	1207	60.2	0.0	+22.2	-78.6
16.306 C	153	1016	242	1605	59.3	-0.7	+22.3	-67.9
17.308 C	320	1611	320	1611	59.2	-0.6	+22.2	-54.8
18.286 C	293	1582	226	1218	58.9	-0.8	+22.0	-42.2
19.501 G	445	2551	280	1607	58.2	-1.2	+22.1	-26.9
20.288 C	366	2782	216	1641	58.7	-0.6	+22.1	-16.0
21.409 G	345	2398	193	1343	58.1	-1.0	+21.7	- 1.9
22.461 G	378	2639	215	1504	57.9	-1.0	+21.7	+11.8
23.289 C	330	2646	201	1614	57.4	-1.3	+21.1	+22.2
24.289 C	265	2224	183	1535	57.5	-1.0	+21.2	+35.4
25.286 C	178	1605	153	1380	57.5	-0.9	+21.0	+48.5
26.290 C	173	1198	213	1474	57.3	-0.9	+21.0	+61.6
27.290 C	82	506	193	1189	56.7	-1.3	+21.3	+74.2

Spot *b*′

16.306 C	21	215	72	737	48.9	0.0	+25.2	-78.3
17.308 C	100	558	151	843	48.1	-0.6	+25.2	-65.9
18.286 C	119	836	119	836	47.7	-0.8	+25.2	-53.4
19.501 G	218	1080	164	810	46.6	-1.7	+25.5	-38.5
20.288 C	184	1235	123	827	46.2	-2.0	+25.3	-28.5
21.409 G	200	1465	120	879	45.3	-2.6	+25.5	-14.7
22.461 G	200	1406	116	815	44.7	-3.0	+25.7	- 1.4
23.289 C	224	1453	132	857	43.8	-3.8	+25.6	+ 8.6
24.289 C	125	1081	79	681	43.3	-4.1	+25.7	+21.2
25.286 C	94	1035	67	735	42.6	-4.6	+25.6	+33.6
26.290 C	77	518	66	445	41.5	-5.5	+25.3	+45.8
27.290 C	23	320	27	371	40.7	-6.1	+25.6	+58.2
28.409 G	11	82	23	175	39.8	-6.8	+24.6	+72.0

Group 15917. Feb. 13-25. A big regular spot. On February 16 it begins to shed pieces of its penumbra to form companions, the largest of which precedes it.

No. 1543. Group 15917 - *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.
					°	°	°	°
43.405 G	35	190	115	623	52.8	-2.2	+22.2	-77.6
44.323 C	61	342	88	492	53.5	-1.3	+21.8	-64.8
45.300 C	97	561	93	539	53.3	-1.3	+21.7	-52.1
46.393 C	145	911	106	665	52.8	-1.6	+21.5	-38.2
47.363 G	188	1099	118	692	52.6	-1.6	+21.5	-25.7
48.402 G	276	1459	160	846	52.5	-1.5	+21.3	-12.1
49.381 G	322	1695	183	962	52.5	-1.3	+20.9	+ 0.8
50.415 G	276	1796	162	1055	52.3	-1.4	+20.8	+14.2
51.607 G	208	1487	136	970	51.6	-1.8	+20.7	+29.2
52.423 G	206	1355	153	1008	51.3	-2.0	+20.8	+39.7
53.289 C	168	873	154	808	50.7	-2.4	+21.0	+50.5
54.590 G	92	532	151	877	51.0	-1.9	+20.9	+67.9
55.402 G	51	281	178	1004	50.4	-2.3	+21.2	+78.0
Means	..	..	138	811	52.1	..	+21.3	..

Group 15962. Mar. 13-25. A large spot, roughly circular.

71.439 G	29	235	91	740	44.2	-5.5	+22.5	-76.9
72.331 C	81	567	122	856	43.7	-5.9	+22.3	-65.6
73.389 G	164	981	159	952	43.2	-6.2	+22.5	-52.2
74.300 C	164	1244	126	958	42.6	-6.6	+22.2	-40.8
75.305 C	199	1352	131	892	41.8	-7.2	+22.3	-28.3
76.308 C	220	1474	132	884	41.7	-7.1	+22.2	-15.2
77.382 G	267	1744	152	994	41.5	-7.1	+22.5	- 1.3
78.317 C	276	1941	163	1145	41.3	-7.1	+22.5	+10.9
79.379 G	345	2279	221	1459	41.2	-7.0	+22.4	+24.8
80.306 C	223	1870	163	1365	41.1	-7.0	+22.5	+36.9
81.305 C	160	1457	147	1340	40.9	-7.0	+22.6	+49.9
82.388 G	142	1090	200	1537	41.1	-6.6	+22.0	+64.3
83.517 G	51	278	208	1131	41.3	-6.2	+22.5	+79.4
Means	..	..	155	1096	42.0	..	+22.4	..

Group 16006. Apr. 10-18. A composite spot which disintegrates.

99.323 C	35	237	93	630	37.7	-6.8	+23.0	-75.6
100.318 C	72	443	97	598	37.0	-7.3	+23.0	-63.2
101.317 C	52	527	48	485	36.8	-7.3	+23.1	-50.2
102.486 G	103	668	73	474	35.7	-8.2	+23.1	-35.9
103.344 G	132	815	83	513	35.2	-8.6	+23.3	-25.0
104.360 G	119	515	69	299	34.8	-8.8	+23.0	-12.0
105.411 G	98	614	55	348	34.0	-9.4	+23.2	+ 1.1
106.362 G	27	179	16	105	33.4	-9.8	+23.1	+13.0
107.414 G	6	23	4	15	33.5	-9.5	+22.5	+27.0
Means	..	..	60	385	35.3	..	+23.0	..

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

No. 1544. Latitude -8°1

Group 15892 in Rotation 1276
" 15935 " " 1277

Group 15892. Jan. 30-Feb. 12. A notable group. A rapidly-developing composite spot, *a*, which, by February 3, has begun to divide into three main portions. Later, the leading part is a very large circular spot with a multiple umbra and the other two parts are composite. The latter both diminish as the group passes round the limb. Two intense solar flares (both of magnitude 3+) are associated with this group, viz., on February 1 at $12^h.4$ (maximum) and on February 11 at $11^h.2$ (maximum).

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.
					°	°	°	°
29.467 G	14	106	34	259	234.5	0.0	-10.1	-79.4
30.319 C	40	309	50	396	235.1	+0.5	- 9.0	-67.6
31.464 G	196	1277	158	1031	235.8	+1.0	- 9.0	-51.8
32.388 G	356	1886	227	1210	236.1	+1.2	- 9.6	-39.3
33.400 G	572	2991	316	1648	237.8	+2.8	- 9.6	-24.3
34.394 G	788	4118	406	2120	237.5	+2.3	- 9.6	-11.5
35.316 C	979	4490	490	2248	236.1	+0.8	- 9.7	- 0.8
36.315 C	735	4025	378	2078	237.1	+1.7	- 9.9	+13.4
37.466 G	656	3496	376	2003	236.4	+0.8	-10.1	+27.8
38.511 G	513	3134	350	2116	237.0	+1.3	- 9.7	+42.2
39.461 G	320	2201	283	1913	237.3	+1.4	- 9.6	+55.0
40.426 G	196	1554	249	2013	236.1	+0.1	- 9.7	+66.5
41.470 G	87	472	275	1561	236.0	..	- 9.1	+80.1
42.354 C	0	15	(0	80	229.8	..	-10.0)	+85.6
Means	..	..	276	1586	236.4	..	- 9.6	..

Spot *a*

29.467 G	7	50	14	101	237.5	0.0	- 8.5	-76.4
30.319 C	23	136	26	154	238.3	+0.7	- 9.0	-64.4
31.464 G	33	181	24	134	239.9	+2.1	- 8.7	-47.7
32.388 G	166	783	101	478	239.6	+1.7	- 9.3	-35.8
33.400 G	358	1973	193	1065	238.9	+0.9	- 9.2	-23.2
34.394 G	443	2609	226	1331	239.9	+1.7	- 9.5	- 9.1
35.316 C	494	2497	247	1248	240.2	+1.9	- 9.8	+ 3.3
36.315 C	449	2717	233	1413	240.1	+1.7	- 9.7	+16.4
37.466 G	380	2070	224	1221	240.2	+1.6	- 9.8	+31.6
38.511 G	354	1838	251	1305	240.2	+1.5	- 9.4	+45.4
39.461 G	233	1393	217	1295	240.2	+1.3	- 9.4	+57.9
40.426 G	137	1245	188	1706	239.0	0.0	- 9.1	+69.4
41.470 G	52	313	212	1274	239.7	..	- 8.7	+83.8

Group 15935. Feb. 26-Mar. 9. A regular spot, with occasional companions.

56.399 G	39	204	90	469	241.2	0.0	- 6.5	-78.1
57.396 G	70	381	80	438	241.3	-0.1	- 6.4	-64.8
58.397 G	123	664	98	531	241.5	0.0	- 6.5	-51.4
59.388 G	141	878	90	562	241.3	-0.3	- 6.6	-38.6

No. 1544. Group 15935 - *continued*

					°	°	°	°
60.302 C	153	941	86	527	241.0	-0.8	- 6.9	-26.8
61.304 C	121	808	62	412	240.8	-1.1	- 6.9	-13.9
62.308 C	110	630	55	315	240.7	-1.3	- 7.0	- 0.7
63.336 C	78	598	40	305	240.8	-1.4	- 6.7	+12.9
64.334 C	81	507	45	284	240.7	-1.6	- 6.8	+26.0
65.303 C	49	329	31	211	240.9	-1.6	- 6.8	+38.9
66.304 C	55	271	45	220	241.1	-1.5	- 6.4	+52.3
67.468 G	11	101	14	132	241.5	-1.2	- 6.1	+68.1
Means	..	..	61	367	241.1	..	- 6.6	..

No. 1545. Latitude -11°2

Group 15902 in Rotation 1276
" 15942 " " 1277

Group 15902. Feb. 6-14. A wide pair of spots until February 11; later, a short growing stream.

36.315 C	8	32	4	19	193.9	0.0	-11.0	-29.8
37.466 G	22	70	12	36	193.2	-0.8	-11.0	-15.4
38.511 G	11	74	6	38	194.3	+0.2	-11.0	- 0.5
39.461 G	18	111	10	56	192.9	-1.3	-11.1	+10.6
40.426 G	9	52	5	28	191.7	-2.6	-10.8	+22.1
41.470 G	22	79	15	53	197.4	+3.0	-11.2	+41.5
42.354 C	33	195	29	171	199.8	+5.3	-11.0	+55.6
43.405 G	46	283	63	388	199.6	+5.0	-11.1	+69.2
44.323 C	36	179	96	498	198.2	+3.6	-10.9	+79.9
Means	..	..	27	143	195.7	..	-11.0	..

Spot *a*

40.426 G	0	4	0	2	199.6	0.0	-11.1	+30.0
41.470 G	20	70	14	48	199.0	-0.7	-11.4	+43.1
42.354 C	29	166	26	148	200.7	+0.9	-11.2	+56.5
43.405 G	22	137	33	208	202.1	+2.2	-11.2	+71.7
44.323 C	15	88	51	302	201.0	..	-11.2	+82.7

Group 15942. Mar. 1-8. A small spot.

59.388 G	4	33	8	62	204.3	+3.0	-11.4	-75.6
60.302 C	13	68	14	74	204.2	+2.8	-11.7	-63.6
61.304 C	11	59	8	45	204.9	+3.4	-11.4	-49.8
62.308 C	11	61	7	38	204.8	+3.2	-11.2	-36.6
63.336 C	21	78	11	42	204.7	+3.0	-11.4	-23.2
64.334 C	8	34	4	17	205.0	+3.2	-11.0	- 9.7
65.303 C	15	32	8	16	205.4	+3.5	-11.4	+ 3.4
66.304 C	11	53	6	28	205.4	+3.4	-11.5	+16.6
Means	..	..	8	40	204.8	..	-11.4	..

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

No. 1546. Latitude -16°.8

Group 15908 in Rotation 1276
" 15949 " " 1277
" 16000 " " 1278

Group 15908. Feb. 8-20. A few small spots, developing into a stream of normal type by February 11. The follower breaks up and dies out by February 17, the leader, *a*, remaining a stable 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.
					°	°	°	°
38.511 G	9	45	16	85	119.5	0.0	-15.1	-75.3
39.461 G	54	260	66	329	114.5	-5.0	-15.2	-67.8
40.426 G	78	661	67	572	115.2	-4.3	-15.2	-54.4
41.470 G	142	761	96	516	114.0	-5.4	-15.2	-41.9
42.354 C	139	787	81	455	115.2	-4.2	-15.2	-29.0
43.405 G	150	874	79	463	115.0	-4.4	-15.1	-15.4
44.323 C	59	704	30	354	115.8	-3.6	-15.0	- 2.5
45.300 C	96	597	50	308	115.7	-3.7	-15.1	+10.3
46.393 C	90	550	51	311	116.4	-2.9	-15.1	+25.4
47.363 G	68	381	44	246	117.3	-2.0	-14.9	+39.0
48.402 G	46	228	38	189	118.1	-1.2	-15.1	+53.5
49.381 G	37	158	45	193	118.5	-0.8	-14.9	+66.8
50.415 G	11	77	31	217	119.4	..	-15.1	+81.3
Means	..	..	55	335	116.3	..	-15.1	..

Spot *a*

40.426 G	54	443	44	363	116.7	0.0	-15.0	-52.9
41.470 G	74	399	47	255	117.4	+0.7	-14.8	-38.5
42.354 C	78	483	44	270	117.7	+1.0	-14.8	-26.5
43.405 G	81	395	42	205	118.8	+2.2	-14.7	-11.6
44.323 C	46	462	23	231	118.4	+1.8	-14.7	+ 0.1
45.300 C	69	397	36	206	118.1	+1.5	-14.8	+12.7
46.393 C	80	466	46	266	118.1	+1.5	-14.9	+27.1
47.363 G	66	346	43	225	117.9	+1.3	-14.8	+39.6
48.402 G	46	228	38	189	118.1	+1.6	-15.1	+53.5
49.381 G	37	158	45	193	118.5	+2.0	-14.9	+66.8
50.415 G	11	77	31	217	119.4	..	-15.1	+81.3

Group 15949. Mar. 7-19. A small regular spot.

65.303 C	8	51	27	175	118.5	..	-17.6	-83.5
66.304 C	30	153	42	216	118.3	+2.2	-17.5	-70.5
67.468 G	42	242	37	211	117.9	+1.8	-17.5	-55.5
68.424 G	59	306	40	208	118.0	+1.9	-17.5	-42.8
69.487 G	57	255	32	145	118.5	+2.4	-17.3	-28.3
70.305 C	53	309	28	164	117.8	+1.8	-17.3	-18.3
71.439 G	48	301	24	154	117.6	+1.6	-17.3	- 3.5
72.331 C	68	302	35	154	117.4	+1.4	-17.2	+ 8.1
73.389 G	40	250	22	138	117.1	+1.1	-17.3	+21.7
74.300 C	32	194	19	116	116.7	+0.7	-17.1	+33.3
75.305 C	21	171	15	125	116.7	+0.8	-17.0	+46.6

No. 1546. Group 15949 - *continued*

					°	°	°	°
76.308 C	24	133	24	130	116.9	+1.0	-16.9	+60.0
77.382 G	13	95	22	162	117.0	+1.1	-16.9	+74.2
Means	..	..	28	160	117.5	..	-17.2	..

Group 16000. Apr. 4-8. A small spot.

93.574 C	2	11	3	19	115.2	-0.3	-17.6	-74.0
94.316 C	2	11	2	12	116.2	+0.7	-17.6	-63.2
95.343 C	2	9	2	7	116.1	+0.6	-17.6	-49.8
96.316 C	2	9	1	6	115.9	+0.4	-17.6	-37.1
97.393 C	2	9	1	5	115.7	+0.3	-17.6	-23.1
Means	..	..	2	10	115.8	..	-17.6	..

No. 1547. Latitude -11°.0

Group 15914 in Rotation 1276
" 15954 " " 1277

Group 15914. Feb. 11-23. A fairly large stream developing from a pair of small spots on February 11. The leader, at first a small regular spot, becomes complex on February 17 and 18 before reforming into a regular spot. The follower has developed into a fairly stable regular spot by February 17, while the intermediate spots have become composite by February 18, before breaking up and dying out as the group passes round the limb.

41.470 G	11	51	19	90	81.3	0.0	-13.5	-74.6
42.354 C	38	225	39	234	82.4	+1.0	-13.4	-61.8
43.405 G	94	460	67	330	84.5	+3.0	-12.2	-45.9
44.323 C	65	418	39	250	85.3	+3.7	-11.9	-33.0
45.300 C	59	429	31	228	87.5	+5.8	-11.6	-17.9
46.393 C	122	798	62	402	87.4	+5.6	-11.2	- 3.6
47.363 G	283	2038	143	1033	85.6	+3.7	-11.7	+ 7.3
48.402 G	499	2223	268	1192	85.6	+3.6	-11.6	+21.0
49.381 G	452	2281	280	1410	87.5	+5.4	-11.3	+35.8
50.415 G	274	1601	212	1238	87.3	+5.2	-12.2	+49.2
51.607 G	157	704	197	890	86.8	+4.5	-11.7	+64.4
52.423 G	101	457	229	1095	88.4	+6.1	-11.9	+76.8
53.289 C	8	82	(20	207	80.3	..	-15.0)	+80.1
Means	..	..	132	699	85.8	..	-12.0	..

Group 15954. Mar. 9-21. A regular spot, whose umbra becomes divided by bright "bridges", firstly into two, and then into three. There are occasional small companions.

67.468 G	37	163	104	460	92.6	..	-10.0	-80.8
68.424 G	90	429	118	562	92.4	+8.5	-10.0	-68.4

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

No. 1547. Group 15954 - *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.
					°	°	°	°
69.487 G	136	680	114	571	92.7	+8.7	-10.0	-54.1
70.305 C	143	726	99	501	92.5	+8.5	-10.1	-43.6
71.439 G	128	770	73	439	92.3	+8.2	-10.0	-28.8
72.331 C	153	846	80	440	92.2	+8.0	-10.0	-17.1
73.389 G	144	767	72	384	92.1	+7.8	-10.2	- 3.3
74.300 C	136	682	69	348	91.8	+7.4	-10.3	+ 8.4
75.305 C	124	734	67	396	91.8	+7.3	-10.3	+21.7
76.308 C	94	518	57	316	92.1	+7.5	-10.0	+35.2
77.382 G	82	396	62	301	92.5	+7.8	- 9.8	+49.7
78.317 C	54	295	56	304	91.9	+7.1	-10.0	+61.5
79.379 G	18	115	35	222	92.4	+7.5	-10.1	+76.0
Means	..	..	75	399	92.2	..	-10.1	..

No. 1548. Latitude -16°.4

Group 15920 in Rotation 1276
" 15964 " " 1277

Group 15920. Feb. 14-27. A stream, of which the leader, *a*, soon becomes a regular spot. The following part remains a collection of small variable spots which die out as the limb is reached.

44.323 C	8	57	33	232	33.5	..	-16.7	-84.8
45.300 C	47	445	60	841	29.2	0.0	-16.6	-76.2
46.393 C	61	580	59	570	31.2	+2.0	-16.4	-59.8
47.363 G	119	955	87	704	31.0	+1.8	-16.1	-47.3
48.402 G	210	1160	127	702	32.2	+3.1	-16.6	-32.4
49.381 G	326	1502	174	808	32.0	+2.9	-16.5	-19.7
50.415 G	289	1726	148	884	31.0	+1.9	-16.7	- 7.1
51.607 G	250	1610	128	821	29.9	+0.8	-17.0	+ 7.5
52.423 G	322	1704	172	911	30.5	+1.4	-17.2	+18.9
53.289 C	310	1371	181	794	29.7	+0.6	-17.2	+29.5
54.590 G	177	940	131	689	30.0	+1.0	-17.5	+46.9
55.402 G	124	674	115	630	30.1	+1.1	-17.5	+57.7
56.399 G	85	397	127	587	30.2	+1.2	-17.8	+70.9
57.396 G	13	130	64	639	31.1	..	-17.5	+85.0
Means	..	..	126	745	30.6	..	-16.9	..

Spot *a*

44.323 C	8	57	33	232	33.5	..	-16.7	-84.8
45.300 C	32	315	52	513	32.1	0.0	-16.6	-73.3
46.393 C	48	441	44	406	33.2	+1.1	-16.7	-57.8
47.363 G	88	721	62	512	33.4	+1.3	-16.4	-44.9
48.402 G	151	858	89	506	33.9	+1.9	-16.7	-30.7
49.381 G	276	1189	146	630	33.7	+1.7	-16.9	-18.0
50.415 G	210	1334	107	680	32.8	+0.8	-17.1	- 5.3
51.607 G	182	1299	93	662	32.0	0.0	-17.3	+ 9.6

continued

No. 1548. Group 15920. Spot *a* - *continued*

					°	°	°	°
52.423 G	237	1222	128	660	32.2	+0.2	-17.4	+20.6
53.289 C	251	871	148	514	32.1	+0.1	-17.2	+31.9
54.590 G	149	747	112	560	31.7	-0.2	-17.5	+48.6
55.402 G	96	556	92	534	31.7	-0.2	-17.4	+59.3
56.399 G	74	331	114	510	31.6	-0.3	-17.2	+72.3
67.396 G	11	112	59	596	32.9	..	-16.9	+86.8

Group 15964. Mar. 14-26. An elongated spot, with a broken outline between March 17 and 23.

72.331 C	23	119	55	286	29.7	-1.9	-16.7	-79.6
73.389 G	49	206	58	243	29.6	-2.0	-16.0	-65.8
74.300 C	58	360	49	302	29.4	-2.2	-16.1	-54.0
75.305 C	81	490	53	323	29.2	-2.4	-16.0	-40.9
76.308 C	94	507	54	289	29.3	-2.3	-15.9	-27.6
77.382 G	91	636	47	331	29.6	-2.0	-15.2	-13.2
78.317 C	113	805	58	411	29.9	-1.6	-15.5	- 0.5
79.379 G	161	875	84	455	29.5	-2.0	-15.6	+13.1
80.306 C	120	935	67	524	29.2	-2.3	-15.9	+25.0
81.305 C	94	636	59	401	28.8	-2.7	-15.2	+37.8
82.388 G	60	435	48	348	28.7	-2.8	-15.5	+51.9
83.517 G	42	213	51	258	28.5	-3.0	-15.4	+66.6
84.388 G	20	129	44	285	28.7	-2.7	-16.4	+78.3
Means	..	..	56	343	29.2	..	-15.8	..

No. 1549. Latitude +8°.2

Group 15932 in Rotation 1277
" 15978 " " 1278
" 16016 " " 1279

Group 15932. Feb. 22-Mar. 7. A stream of normal type. By March 5 only the leader, *a*, and follower, *b*, both regular spots, remain.

52.423 G	4	15	(21	80	288.2	..	+ 8.7)	-83.4
53.289 C	49	263	95	517	286.4	0.0	+ 7.2	-73.8
54.590 G	156	974	145	914	287.7	+1.1	+ 7.2	-55.4
55.402 G	171	1042	125	769	287.8	+1.1	+ 6.9	-44.6
56.399 G	223	1249	134	760	287.9	+1.1	+ 6.9	-31.4
57.396 G	263	1334	144	726	288.3	+1.3	+ 6.5	-17.8
58.397 G	300	1342	156	698	288.0	+0.9	+ 6.7	- 4.9
59.388 G	236	1260	124	659	288.9	+1.7	+ 6.8	+ 9.0
60.302 C	216	986	119	549	289.1	+1.7	+ 6.5	+21.3
61.304 C	168	736	106	466	289.1	+1.6	+ 6.6	+34.4
62.308 C	78	659	62	518	288.7	+1.1	+ 6.7	+47.3
63.336 C	75	360	86	407	289.0	+1.2	+ 6.8	+61.1
64.334 C	38	195	93	447	287.7	-0.2	+ 6.7	+73.0
65.303 C	6	47	(21	161	282.7	..	+ 5.7)	+80.7
Means	..	..	116	619	288.2	..	+ 6.8	..

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

No. 1549. Group 15932 - *continued*

Spot *a*

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.
					°	°	°	°
52.423 G	4	15	21	80	288.2	..	+ 8.7	-83.4
53.289 C	32	162	53	269	289.1	0.0	+ 7.9	-71.1
54.590 G	99	591	85	508	290.3	+1.0	+ 7.4	-52.8
55.402 G	112	622	77	429	291.1	+1.7	+ 7.5	-41.3
56.399 G	140	701	81	407	291.8	+2.3	+ 7.4	-27.5
57.396 G	134	710	71	376	292.1	+2.4	+ 7.4	-14.0
58.397 G	138	648	72	337	292.5	+2.7	+ 7.1	- 0.4
59.388 G	128	605	68	321	293.1	+3.2	+ 6.9	+13.2
60.302 C	123	589	70	336	293.2	+3.1	+ 6.7	+25.4
61.304 C	106	485	70	320	292.3	+2.1	+ 7.2	+37.6
62.308 C	57	413	48	351	293.3	+3.0	+ 7.4	+51.9
63.336 C	47	216	61	279	293.7	+3.2	+ 7.5	+65.8
64.334 C	23	100	72	315	294.3	+3.7	+ 7.7	+79.6

Spot *b*

53.289 C	17	101	42	248	283.0	0.0	+ 6.5	-77.2
54.590 G	57	383	60	406	282.6	-0.6	+ 6.5	-60.5
55.402 G	59	420	48	340	282.2	-1.1	+ 6.6	-50.2
56.399 G	57	261	37	170	281.0	-2.4	+ 5.3	-38.3
57.396 G	59	274	34	156	281.1	-2.5	+ 5.1	-25.0
58.397 G	61	276	32	144	281.2	-2.5	+ 4.9	-11.7
59.388 G	62	308	32	157	281.6	-2.2	+ 5.0	+ 1.7
60.302 C	68	248	36	131	281.7	-2.3	+ 5.0	+13.9
61.304 C	51	206	30	119	281.8	-2.3	+ 5.4	+27.1
62.308 C	21	246	14	167	282.0	-2.2	+ 6.0	+40.6
63.336 C	28	144	25	128	282.2	-2.2	+ 6.1	+54.3
64.334 C	15	95	21	132	282.5	-2.0	+ 6.1	+67.8
65.303 C	6	47	21	161	282.7	..	+ 5.7	+80.7

Group 15976. Mar.21-Apr.2. A regular spot with a few companions between March 29 and 31.

79.379 G	11	66	27	162	299.4	+6.7	+ 8.0	-77.0
80.306 C	24	148	31	191	298.6	+5.8	+ 7.9	-65.6
81.305 C	30	208	26	177	298.8	+5.9	+ 8.1	-52.2
82.388 G	53	304	35	201	298.6	+5.5	+ 8.3	-38.2
83.517 G	69	324	39	185	298.2	+5.0	+ 8.5	-23.7
84.388 G	64	366	34	194	298.5	+5.1	+ 8.7	-11.9
85.332 C	69	342	36	178	297.7	+4.2	+ 8.8	- 0.2
86.453 C	62	303	33	164	297.8	+4.2	+ 9.2	+14.7
87.305 C	58	325	34	188	297.6	+3.8	+ 9.1	+25.7
88.308 C	69	312	47	212	297.9	+4.0	+ 9.4	+39.2
89.309 C	37	159	32	137	298.0	+4.0	+ 9.3	+52.5
90.319 C	32	129	42	168	298.0	+3.8	+ 9.5	+65.8
91.358 C	9	49	31	168	298.8	..	+ 9.4	+80.4
Means	..	..	35	180	298.3	..	+ 8.7	..

No. 1549 - *continued*

Group 16016. Apr. 17-29. A small stream of normal type. The leader, *a*, a regular spot, is the only surviving component after April 23.

					°	°	°	°
106.362 G	11	43	(38	147	299.8	..	+ 8.6)	-80.6
107.414 G	27	148	43	244	295.9	-0.6	+ 8.8	-70.6
108.347 G	54	269	54	271	296.2	-0.4	+ 8.6	-58.0
109.319 C	67	475	50	356	295.8	-1.0	+ 9.2	-45.5
110.349 G	81	461	49	282	295.9	-1.0	+ 8.8	-31.8
111.315 C	57	326	31	178	297.0	0.0	+ 8.8	-18.0
112.356 G	48	265	26	138	296.9	-0.3	+ 9.0	- 4.3
113.422 G	40	196	21	104	298.6	+1.3	+ 8.9	+11.5
114.358 G	38	171	21	96	298.6	+1.1	+ 9.1	+23.8
115.477 G	25	153	16	101	298.5	+0.9	+ 9.2	+38.5
116.344 G	23	111	19	90	298.7	+1.0	+ 9.3	+50.2
117.322 C	11	61	13	70	298.4	+0.5	+ 9.4	+62.8
118.343 G	9	36	21	83	298.7	+0.7	+ 9.0	+76.6
Means	..	..	30	168	297.4	..	+ 9.0	..

Spot *a*

106.362 G	11	43	38	147	299.8	..	+ 8.6	-80.6
107.414 G	18	92	24	125	299.3	+2.8	+ 9.0	-67.2
108.347 G	25	130	22	117	299.8	+3.2	+ 8.9	-54.4
109.319 C	28	146	19	101	299.9	+3.1	+ 9.0	-41.4
110.349 G	38	164	22	97	299.5	+2.6	+ 9.0	-28.2
111.315 C	31	159	17	86	299.4	+2.4	+ 8.9	-15.6
112.356 G	32	171	17	89	299.0	+1.8	+ 8.9	- 2.2
113.422 G	40	196	21	104	298.6	+1.3	+ 8.9	+11.5
114.358 G	38	171	21	96	298.6	+1.1	+ 9.1	+23.8
115.477 G	25	153	16	101	298.5	+0.9	+ 9.2	+38.5
116.344 G	23	111	19	90	298.7	+1.0	+ 9.3	+50.2
117.322 C	11	61	13	70	298.4	+0.5	+ 9.4	+62.8
118.343 G	9	36	21	83	298.7	+0.7	+ 9.0	+76.6

No. 1550. Latitude +12°.2

Group 15934 in Rotation 1277
" 15974 " " 1278

Group 15934. Feb.24-Mar.5. A big bi-polar group, developing from a pair of small spots appearing *p* Group 15932. Both leader, *a*, and follower, *b*, become composite in structure.

54.590 G	13	48	8	32	307.0	0.0	+12.4	-36.1
55.402 G	61	270	36	158	308.0	+0.9	+12.4	-24.4
56.399 G	180	953	97	519	308.1	+1.0	+12.9	-11.2
57.396 G	241	1535	128	814	307.6	+0.4	+12.7	+ 1.5
58.397 G	280	1892	155	1041	307.5	+0.2	+12.3	+14.6
59.388 G	286	2031	174	1226	307.4	0.0	+12.2	+27.5
60.302 C	185	1395	128	972	307.0	-0.4	+12.1	+39.2
61.304 C	146	1225	133	1114	306.9	-0.6	+12.6	+52.2

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

No. 1550. Group 15934 - *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.
					°	°	°	°
62.308 C	112	959	158	1373	308.3	+0.7	+12.6	+66.9
63.336 C	34	301	134	1174	309.1	..	+12.7	+81.2
Means	..	..	113	805	307.5	..	+12.5	..

Spot *a*

54.590 G	11	39	7	26	307.8	0.0	+12.5	-35.3
55.402 G	46	193	27	112	309.4	+1.5	+12.5	-23.0
56.399 G	112	539	60	291	310.8	+2.9	+12.9	- 8.5
57.396 G	145	786	77	417	311.0	+3.0	+12.9	+ 4.9
58.397 G	155	979	87	548	311.0	+2.9	+12.8	+18.1
59.388 G	152	957	96	603	311.5	+3.3	+12.9	+31.6
60.302 C	83	638	61	472	311.3	+3.1	+12.8	+43.5
61.304 C	72	568	71	562	311.4	+3.1	+13.0	+56.7
62.308 C	53	522	85	835	310.8	+2.4	+12.9	+69.4
63.336 C	11	93	67	567	311.5	..	+12.5	+83.6

Spot *b*

54.590 G	2	9	1	6	303.9	0.0	+11.7	-39.2
55.402 G	15	77	9	46	304.7	+0.7	+12.1	-27.7
56.399 G	68	414	37	228	304.6	+0.6	+12.9	-14.7
57.396 G	96	749	51	397	304.3	+0.2	+12.2	- 1.8
58.397 G	125	913	68	493	303.9	-0.3	+11.8	+11.0
59.388 G	134	1074	78	623	304.3	0.0	+11.8	+24.4
60.302 C	102	757	67	500	304.4	+0.1	+11.8	+36.6
61.304 C	74	657	62	552	304.9	+0.5	+12.1	+50.2
62.308 C	59	437	73	538	304.8	+0.3	+12.4	+63.4
63.336 C	23	208	67	607	306.1	+1.6	+12.7	+78.2

Group 15974. Mar. 20-30. A diminishing regular spot.

78.317 C	11	141	25	324	315.0	+5.4	+12.5	-75.4
79.379 G	40	203	47	238	314.3	+4.7	+12.5	-62.1
80.306 C	47	276	39	229	314.5	+4.8	+12.4	-49.7
81.305 C	120	419	79	277	314.5	+4.7	+12.4	-36.5
82.388 G	89	464	51	264	314.4	+4.5	+12.3	-22.4
83.517 G	78	453	41	240	314.4	+4.5	+12.2	- 7.5
84.388 G	53	446	28	236	314.8	+4.8	+11.8	+ 4.4
85.332 C	45	299	25	164	314.7	+4.6	+11.5	+16.8
86.453 C	32	191	20	118	315.2	+5.0	+11.4	+32.1
87.305 C	28	97	20	70	314.8	+4.6	+11.1	+42.9
88.308 C	4	34	4	33	315.1	+4.8	+11.1	+56.4
Means	..	..	34	199	314.7	..	+11.9	..

No. 1551. Latitude +14°.4

Group 15943 in Rotation 1277
" 15991 " " 1278

Group 15943. Mar. 2-14. A regular spot, with variable companions after March 7.

					°	°	°	°
60.302 C	8	119	26	390	189.2	0.0	+16.8	-78.6
61.304 C	49	257	69	360	189.1	-0.1	+16.7	-65.6
62.308 C	74	428	69	398	188.6	-0.7	+16.6	-52.8
63.336 C	110	511	78	363	188.8	-0.5	+16.6	-39.1
64.334 C	161	689	98	420	188.9	-0.4	+16.4	-25.8
65.303 C	182	945	103	530	188.9	-0.4	+16.2	-13.1
66.304 C	180	1247	99	686	188.6	-0.8	+16.3	- 0.2
67.468 G	169	987	94	553	188.3	-1.1	+16.0	+14.9
68.424 G	191	948	118	588	188.9	-0.5	+15.2	+28.1
69.487 G	180	913	133	676	189.0	-0.5	+14.8	+42.2
70.305 C	85	869	76	773	187.9	-1.6	+14.8	+51.8
71.439 G	44	339	66	512	189.0	-0.5	+13.9	+67.9
72.331 C	13	87	45	298	188.6	-0.9	+15.0	+79.3
Means	..	..	83	504	188.8	..	+15.8	..

Group 15991. Mar.30-Apr.10. A small regular spot, *a*, until April 5. On the next day a stream appears, of which the largest and most stable component is the leader.

88.308 C	19	71	26	96	192.8	+2.8	+12.2	-65.9
89.309 C	37	80	33	71	192.6	+2.6	+12.4	-52.9
90.319 C	41	178	28	123	193.0	+2.9	+12.7	-39.2
91.358 C	24	92	14	54	193.0	+2.9	+12.7	-25.4
92.296 C	24	106	13	57	193.3	+3.2	+12.3	-12.8
93.574 C	15	80	8	42	192.0	+1.8	+12.5	+ 2.8
94.316 C	11	48	6	26	193.4	+3.2	+12.5	+14.0
95.343 C	86	473	51	276	190.9	+0.7	+13.4	+25.0
96.316 C	82	516	55	351	190.9	+0.7	+13.6	+37.9
97.393 C	123	823	110	725	190.6	+0.3	+13.5	+51.8
98.592 C	61	413	88	603	189.1	-1.2	+14.0	+66.1
99.323 C	30	236	88	713	188.5	-1.8	+13.9	+75.2
Means	..	..	43	261	191.7	..	+13.0	..

Spot *a*

88.308 C	19	71	26	96	192.8	+2.8	+12.2	-65.9
89.309 C	37	80	33	71	192.6	+2.6	+12.4	-52.9
90.319 C	41	178	28	123	193.0	+2.9	+12.7	-39.2
91.358 C	24	92	14	54	193.0	+2.9	+12.7	-25.4
92.296 C	24	106	13	57	193.3	+3.2	+12.3	-12.8
93.574 C	15	80	8	42	192.0	+1.8	+12.5	+ 2.8
94.316 C	11	48	6	26	193.4	+3.2	+12.5	+14.0
95.343 C	52	283	31	167	192.4	+2.2	+12.7	+26.5

continued

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

No. 1551. Group 15991. Spot *a* - *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.
					°	°	°	°
96.316 C	50	324	34	224	192.9	+2.7	+12.7	+39.9
97.393 C	99	559	90	509	192.5	+2.2	+12.8	+53.7
98.592 C	35	252	57	411	193.1	+2.8	+12.9	+70.1
99.323 C	17	143	65	546	194.2	..	+12.8	+80.9

No. 1552. Latitude -11°.3

Group 15951 in Rotation 1277
" 15993 " " 1278

Group 15951. Mar. 8-17. A stream developing from a tiny spot on March 8. The leader, *a*, a regular spot, is the most stable component.

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.
66.304 C	0	6	0	4	148.8	0.0	-12.7	-40.0
67.468 G	46	301	25	164	150.7	+1.8	-12.5	-22.7
68.424 G	123	457	63	233	152.4	+3.4	-11.8	- 8.4
69.487 G	112	491	57	252	153.5	+4.4	-12.0	+ 6.7
70.305 C	117	673	61	350	152.5	+3.3	-12.1	+16.4
71.439 G	82	434	50	263	154.3	+5.0	-12.0	+33.2
72.331 C	51	282	37	201	154.2	+4.9	-11.1	+44.9
73.389 G	69	396	64	357	151.1	+1.7	-12.5	+55.7
74.300 C	29	168	43	252	152.8	+3.3	-12.1	+69.4
75.305 C	6	42	34	207	153.9	..	-11.5	+83.8
Means	..	..	44	231	152.3	..	-12.1	..

Spot *a*

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.
67.468 G	9	55	5	29	157.1	0.0	-12.8	-16.3
68.424 G	64	290	33	148	153.7	-3.5	-11.7	- 7.1
69.487 G	70	339	36	176	155.8	-1.5	-11.5	+ 9.0
70.305 C	68	347	36	184	156.2	-1.2	-11.3	+20.1
71.439 G	64	315	40	195	157.2	-0.3	-11.5	+36.1
72.331 C	38	196	28	145	157.3	-0.2	-11.1	+48.0
73.389 G	31	152	33	161	158.0	+0.4	-11.0	+62.6
74.300 C	19	113	32	192	157.2	-0.5	-10.7	+73.8
75.305 C	4	21	29	155	157.5	-0.3	-10.4	+87.4

Group 15993. Apr. 1-11. A small regular spot with a preceding companion until April 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.
90.319 C	28	150	44	237	160.2	+1.0	- 9.4	-72.0
91.358 C	32	189	31	180	159.6	+0.3	- 9.6	-58.8
92.296 C	26	117	19	86	159.4	+0.1	-10.0	-46.7
93.574 C	32	151	19	89	157.6	-1.8	-10.3	-31.6
94.316 C	26	153	14	82	158.0	-1.5	-10.6	-21.4
95.343 C	19	138	10	70	157.7	-1.9	-10.9	- 8.2
96.316 C	22	117	11	58	157.3	-2.4	-11.0	+ 4.3
97.393 C	19	82	10	43	157.2	-2.6	-11.1	+18.4
98.592 C	15	117	9	70	157.1	-2.8	-10.7	+34.1

No. 1552. Group 15993 - *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.
					°	°	°	°
99.323 C	11	50	8	34	157.1	-2.9	-10.8	+43.8
100.318 C	7	33	6	30	157.3	-2.8	-10.8	+57.1
Means	..	..	16	89	158.0	..	-10.5	..

No. 1553. Latitude -9°.5

Group 15952 in Rotation 1277
" 15983 " " 1278

Group 15952. Mar. 9-12. A pair of spots appearing fairly near 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.
67.468 G	55	242	39	169	218.9	0.0	- 9.7	+45.5
68.424 G	63	306	60	291	219.3	+0.3	- 9.6	+58.5
69.487 G	35	163	63	288	220.6	+1.5	- 9.6	+73.8
70.305 C	6	43	32	229	221.9	..	- 9.6	+85.8
Means	..	..	54	249	219.6	..	- 9.6	..

Group 15983. Mar. 26-Apr. 7. A single small spot until April 1. On the next day another component appears forming a fairly widely-separated pair.

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.
84.388 G	2	13	11	69	225.0	..	- 7.5	-85.4
85.332 C	4	24	7	39	224.9	+3.9	- 8.7	-73.0
86.453 C	13	45	12	42	225.0	+3.8	- 8.3	-58.1
87.305 C	19	41	14	30	225.1	+3.8	- 8.5	-46.8
88.308 C	6	67	4	40	225.0	+3.6	- 8.4	-33.7
89.309 C	6	34	3	18	224.9	+3.4	- 8.5	-20.6
90.319 C	9	24	4	12	225.0	+3.4	- 8.5	- 7.2
91.358 C	16	82	8	40	223.1	+1.4	-10.4	+ 4.7
92.296 C	50	184	27	97	223.6	+1.7	-10.9	+17.5
93.574 C	56	406	33	242	222.0	0.0	-10.4	+32.8
94.316 C	47	249	32	172	222.8	+0.7	-10.3	+43.4
95.343 C	26	151	24	137	222.5	+0.3	-10.4	+56.6
96.316 C	17	144	26	225	224.2	+1.9	- 9.2	+71.2
Means	..	..	16	91	224.0	..	- 9.4	..

No. 1554. Latitude +6°.9

Group 15955 in Rotation 1277
" 16001 " " 1278
" 16041 " " 1279

Group 15955. Mar. 10-22. A stable 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.
68.424 G	29	163	88	494	81.4	0.0	+ 6.7	-79.4
69.487 G	75	354	92	435	82.2	+0.6	+ 6.7	-64.6

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

No. 1554. Group 15955 - *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.
					°	°	°
70.305 C	87	518	77	456	82.1	+0.4	+ 6.5	-54.0
71.439 G	101	658	67	434	82.2	+0.3	+ 6.7	-38.9
72.331 C	192	754	111	437	82.3	+0.3	+ 6.7	-27.0
73.389 G	139	804	74	426	82.4	+0.2	+ 6.8	-13.0
74.300 C	128	737	67	383	82.3	0.0	+ 6.8	- 1.1
75.305 C	156	817	83	433	82.5	+0.1	+ 6.9	+12.4
76.308 C	113	708	64	404	82.6	0.0	+ 7.1	+25.7
77.382 G	99	568	67	386	82.9	+0.1	+ 7.2	+40.1
78.317 C	68	437	58	371	82.6	-0.3	+ 6.9	+52.2
79.379 G	49	270	64	354	82.7	-0.4	+ 6.9	+66.3
80.306 C	28	135	82	394	83.3	+0.1	+ 6.9	+79.1
Means	..	..	76	416	82.4	..	+ 6.8	..

Group 16001. Apr. 6-18. A stable regular spot.

95.343 C	9	71	34	271	84.2	..	+ 7.1	-81.7
96.316 C	37	136	53	194	84.6	-1.0	+ 6.6	-68.4
97.393 C	48	229	42	202	84.7	-1.1	+ 6.5	-54.1
98.592 C	54	254	36	168	84.5	-1.5	+ 6.5	-38.5
99.323 C	69	319	40	185	84.7	-1.4	+ 6.8	-28.6
100.318 C	59	308	31	163	84.7	-1.5	+ 6.7	-15.5
101.317 C	76	388	39	198	85.0	-1.4	+ 6.7	- 2.0
102.486 G	81	309	43	164	85.2	-1.4	+ 6.8	+13.6
103.344 G	74	291	42	166	85.2	-1.5	+ 6.8	+25.0
104.360 G	58	273	38	180	85.2	-1.7	+ 6.8	+38.4
105.411 G	49	213	42	181	85.4	-1.6	+ 6.8	+52.5
106.362 G	29	139	35	168	85.0	-2.2	+ 6.6	+64.6
107.414 G	16	92	45	259	85.6	-1.7	+ 6.7	+79.1
Means	..	..	40	186	85.0	..	+ 6.7	..

Group 16041. May 4-14. A persistent small spot.

123.328 C	9	42	14	63	86.2	-3.5	+ 6.8	-70.0
124.370 C	22	95	20	88	85.8	-4.1	+ 6.9	-56.7
125.345 G	18	118	13	84	85.9	-4.1	+ 7.1	-43.7
126.345 C	24	123	14	73	85.7	-4.5	+ 7.3	-30.6
127.367 G	23	104	12	55	85.3	-5.1	+ 7.5	-17.5
128.417 C	18	75	9	38	85.5	-5.0	+ 7.2	- 3.4
129.356 G	18	112	9	58	85.6	-5.1	+ 7.4	+ 9.1
130.434 C	22	66	12	36	85.6	-5.2	+ 7.4	+23.3
131.391 C	13	53	8	33	85.7	-5.3	+ 7.6	+36.1
132.326 C	9	35	7	27	85.5	-5.6	+ 7.7	+48.3
133.336 C	2	18	2	20	86.2	-5.1	+ 7.5	+62.3
Means	..	..	11	52	85.7	..	+ 7.3	..

No. 1555. Latitude -6°.4

Group 15961 in Rotation 1277
" 16005 " " 1278

Group 15961. Mar. 13-24. A bi-polar group. The leader, *a*, is a regular spot, whose umbra has divided into two by March 22. The follower, *b*, is less stable and is breaking up by March 20.

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.
					°	°	°	°
71.439 G	31	247	49	395	49.2	0.0	- 6.0	-71.9
72.331 C	121	739	116	722	50.0	+0.7	- 6.7	-59.3
73.389 G	149	1059	106	757	49.8	+0.3	- 6.3	-45.6
74.300 C	189	1192	114	723	49.3	-0.4	- 6.1	-34.1
75.305 C	227	1438	121	770	49.5	-0.3	- 6.3	-20.6
76.308 C	274	1614	138	816	49.6	-0.4	- 6.1	- 7.3
77.382 G	238	1438	120	727	50.2	+0.1	- 6.0	+ 7.4
78.317 C	199	1635	106	867	50.2	-0.1	- 6.1	+19.8
79.379 G	239	1211	143	731	50.3	-0.2	- 6.1	+33.9
80.306 C	186	922	134	662	50.3	-0.3	- 6.4	+46.1
81.305 C	101	548	101	548	51.1	+0.3	- 6.3	+60.1
82.388 G	54	242	107	477	52.2	+1.3	- 6.4	+75.4
Means	..	..	113	683	50.1	..	- 6.2	..

Spot *a*

71.439 G	20	139	28	192	51.7	0.0	- 7.0	-69.4
72.331 C	87	447	79	407	52.3	+0.5	- 7.6	-57.0
73.389 G	80	586	54	398	52.6	+0.6	- 7.3	-42.8
74.300 C	87	547	50	317	53.2	+1.0	- 7.4	-30.2
75.305 C	116	700	60	364	53.0	+0.7	- 7.2	-17.1
76.308 C	126	743	63	372	53.1	+0.6	- 6.9	- 3.8
77.382 G	141	771	72	393	53.0	+0.4	- 6.6	+10.2
78.317 C	133	875	72	472	52.7	-0.1	- 6.9	+22.3
79.379 G	133	720	82	446	52.4	-0.6	- 6.7	+36.0
80.306 C	105	522	78	386	52.3	-0.8	- 6.8	+48.1
81.305 C	71	396	73	408	52.5	-0.8	- 6.4	+61.5
82.388 G	47	195	96	400	53.4	0.0	- 6.6	+76.6

Spot *b*

71.439 G	11	108	21	203	46.1	0.0	- 4.5	-75.0
72.331 C	34	292	37	315	46.4	+0.2	- 5.2	-62.9
73.389 G	69	473	52	359	46.0	-0.4	- 4.8	-49.4
74.300 C	102	645	64	406	46.1	-0.5	- 5.1	-37.3
75.305 C	111	738	61	406	46.1	-0.6	- 5.3	-24.0
76.308 C	148	871	75	444	46.6	-0.3	- 5.5	-10.3
77.382 G	97	667	48	334	47.1	+0.1	- 4.8	+ 4.3
78.317 C	66	760	34	395	47.1	-0.1	- 5.2	+16.7
79.379 G	106	491	61	285	47.2	-0.2	- 5.0	+30.8
80.306 C	81	400	56	276	47.9	+0.4	- 4.8	+43.7
81.305 C	30	152	28	140	48.4	+0.7	- 5.0	+57.4
82.388 G	7	47	11	77	49.4	+1.6	- 5.3	+72.6

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

No. 1555 - *continued*

Group 16005. Apr. 9-11. A small 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.
					°	°	°	°
98.592 C	7	33	8	39	57.4	+1.4	- 6.9	-65.6
99.323 C	7	33	6	29	57.2	+1.1	- 6.8	-56.1
100.318 C	2	17	1	11	59.1	+2.8	- 5.8	-41.1
Means	..	..	5	26	57.9	..	- 6.5	..

No. 1556. Latitude -21°.7

Group 15969 in Rotation 1277
" 16010 " " 1278

Group 15969. Mar. 18-28. A tiny spot on March 18. Nothing is then seen until March 24, when a growing cluster appears.

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.
76.308 C	2	11	2	9	5.1	0.0	-22.9	-51.8
77.382 G	0	0	0	0	..	..	..	..
78.317 C	0	0	0	0	..	..	..	..
79.379 G	0	0	0	0	..	..	..	..
80.306 C	0	0	0	0	..	..	..	..
81.305 C	0	0	0	0	..	..	..	..
82.388 G	9	80	5	46	5.6	-0.5	-21.1	+28.8
83.517 G	71	366	51	260	7.5	+1.2	-20.2	+45.6
84.388 G	51	502	48	472	8.4	+2.0	-21.4	+58.0
85.332 C	24	215	36	318	9.4	+2.8	-21.1	+71.5
86.453 C	6	34	(20	112	6.4	..	-22.5)	+83.3
Means	..	..	14	110	7.2	..	-21.3	..

Group 16010. Apr. 12-24. A stable regular spot with small variable companions until April 21.

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.
101.317 C	26	117	48	216	11.6	+2.3	-22.1	-75.4
102.486 G	49	274	49	277	11.0	+1.6	-22.5	-60.6
103.344 G	89	341	68	265	11.1	+1.5	-22.2	-49.1
104.360 G	90	408	57	258	11.3	+1.5	-22.3	-35.5
105.411 G	90	517	50	290	10.7	+0.8	-22.1	-22.2
106.362 G	96	592	51	313	10.2	+0.1	-22.0	-10.2
107.414 G	103	558	54	290	10.3	0.0	-21.5	+ 3.8
108.347 G	103	445	55	240	10.5	+0.1	-21.3	+16.3
109.319 C	61	388	37	233	10.6	0.0	-22.0	+29.3
110.349 G	61	335	43	234	10.5	-0.3	-21.8	+42.8
111.315 C	50	229	44	204	10.3	-0.6	-21.9	+55.3
112.356 G	27	155	37	214	10.3	-0.8	-21.9	+69.1
113.422 G	14	99	53	378	10.9	..	-21.9	+83.8
Means	..	..	49	253	10.7	..	-22.0	..

No. 1557. Latitude +1°.5

Group 15979 in Rotation 1278
" 16022 " " 1279

Group 15979. Mar. 24-Apr. 5. An equatorial regular spot with occasional close 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.
					°	°	°	°
82.388 G	27	113	74	310	257.6	0.0	+ 1.8	-79.2
83.517 G	47	233	56	277	257.2	-0.6	+ 1.8	-64.7
84.388 G	55	331	47	278	257.6	-0.4	+ 1.5	-52.8
85.332 C	86	557	57	368	257.8	-0.4	+ 1.5	-40.1
86.453 C	103	563	58	315	257.6	-0.8	+ 1.7	-25.5
87.305 C	120	630	62	328	257.5	-1.0	+ 1.7	-14.4
88.308 C	123	542	63	276	257.6	-1.1	+ 1.8	- 1.1
89.309 C	88	486	46	253	257.9	-1.0	+ 1.9	+12.4
90.319 C	84	449	47	251	258.0	-1.1	+ 1.7	+25.8
91.358 C	71	355	47	234	258.0	-1.3	+ 1.6	+39.6
92.296 C	45	255	37	209	258.2	-1.3	+ 1.4	+52.1
93.574 C	19	138	26	186	257.0	-2.7	+ 1.4	+67.8
94.316 C	11	63	30	173	258.6	-1.2	+ 1.4	+79.2
Means	..	..	50	266	257.7	..	+ 1.6	..

Group 16022. Apr. 21-27. A small 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.
110.349 G	2	11	3	15	259.5	-3.4	+ 1.7	-68.2
111.315 C	4	17	4	15	259.5	-3.5	+ 1.2	-55.5
112.356 G	0	7	0	5	259.4	-3.8	+ 1.1	-41.8
113.422 G	2	14	1	8	259.4	-4.0	+ 1.1	-27.7
114.358 G	4	16	2	8	259.7	-3.9	+ 1.1	-15.1
115.477 G	2	11	1	6	259.9	-3.9	+ 1.3	- 0.1
116.344 G	5	25	3	13	260.2	-3.8	+ 1.5	+11.7
Means	..	..	2	10	259.7	..	+ 1.3	..

No. 1558. Latitude -24°.3

Group 15998 in Rotation 1278
" 16030 " " 1279

Group 15998. Apr. 4-10. A stream, appearing suddenly near the C.M. The leader, *a*, soon becomes regular and is the most stable component; the following part is a rapidly-declining train of spots.

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.
93.574 C	57	400	30	210	187.8	0.0	-24.1	- 1.4
94.316 C	125	680	67	364	189.0	+1.4	-24.7	+ 9.6
95.343 C	110	650	64	376	190.3	+2.9	-25.3	+24.4
96.316 C	131	620	87	408	189.9	+2.8	-25.1	+36.9
97.393 C	73	440	61	371	190.6	+3.8	-24.8	+51.8

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

No. 1558. Group 15998 - *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.
					°	°	°	°
98.592 C	37	184	53	265	191.5	+ 5.0	-24.5	+68.5
99.323 C	19	100	59	301	192.7	+ 6.3	-24.1	+79.4
Means	..	..	60	328	190.3	..	-24.7	..
Spot *a*								
93.574 C	35	253	18	132	189.1	0.0	-24.0	- 0.1
94.316 C	73	335	39	181	192.6	+ 3.7	-24.6	+13.2
95.343 C	80	410	47	242	193.4	+ 4.7	-24.6	+27.5
96.316 C	71	328	49	226	193.9	+ 5.5	-24.1	+40.9
97.393 C	43	268	39	241	194.4	+ 6.3	-24.1	+55.6
98.592 C	30	145	46	224	195.1	+ 7.3	-23.8	+72.1
99.323 C	17	85	56	279	196.3	..	-23.8	+83.0
Group 16030. Apr.25-May 7. A regular spot.								
114.358 G	18	106	42	249	196.4	+12.5	-23.3	-78.4
115.477 G	43	248	50	288	195.9	+12.3	-23.6	-64.1
116.344 G	66	303	57	261	195.5	+12.1	-23.6	-53.0
117.322 C	50	361	34	249	195.3	+12.1	-23.6	-40.3
118.343 G	86	402	51	237	194.8	+11.9	-23.7	-27.3
119.318 C	64	390	35	214	194.6	+11.9	-23.8	-14.6
120.322 G	75	393	40	208	194.4	+12.0	-23.9	- 1.6
121.307 G	70	337	38	182	193.9	+11.7	-24.0	+11.0
122.325 C	51	328	30	190	193.5	+11.6	-24.0	+24.0
123.328 C	37	205	24	135	192.9	+11.2	-23.8	+36.7
124.370 C	15	101	12	83	192.9	+11.5	-24.0	+50.4
125.345 G	2	41	2	46	192.3	+11.1	-24.0	+62.7
126.345 C	0	7	0	14	192.2	+11.3	-25.3	+75.9
Means	..	..	32	181	194.2	..	-23.9	..

No. 1559. Latitude -10°.2

Group 16017 in Rotation 1279
" 16052 " " 1280

Group 16017. Apr.19-May 1. A regular spot, *a*, closely followed by a large diminishing companion. On April 27 other small spots appear ahead of it.

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.
108.347 G	33	222	77	536	276.1	0.0	- 9.9	-78.1
109.319 C	72	357	86	420	275.9	- 0.3	-10.0	-65.4
110.349 G	97	554	79	445	276.2	- 0.1	-10.0	-51.5
111.315 C	109	689	70	441	276.1	- 0.3	- 9.9	-38.9
112.356 G	130	628	72	348	276.0	- 0.5	-10.2	-25.2
113.422 G	135	677	69	346	276.3	- 0.4	-10.2	-10.8
114.358 G	130	621	65	310	276.6	- 0.2	-10.3	+ 1.8

No. 1559. Group 16017 - *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.
					°	°	°	°
115.477 G	90	513	47	271	276.9	0.0	-10.3	+16.9
116.344 G	95	443	54	252	277.3	+0.3	-11.0	+28.8
117.322 C	51	338	34	226	277.2	+0.1	-11.1	+41.6
118.343 G	39	203	34	178	277.4	+0.2	-11.0	+55.3
119.318 C	22	127	29	168	277.3	0.0	-10.8	+68.1
120.322 G	9	63	31	216	278.2	..	-10.7	+82.2
Means	..	..	60	328	276.6	..	-10.4	..
Spot *a*								
108.347 G	22	128	45	262	277.6	0.0	-10.0	-76.6
109.319 C	39	211	44	236	277.3	-0.4	-10.0	-64.0
110.349 G	52	340	41	265	277.1	-0.7	-10.0	-50.6
111.315 C	74	456	47	287	277.3	-0.6	-10.0	-37.7
112.356 G	76	376	42	207	277.3	-0.7	-10.2	-23.9
113.422 G	79	423	40	216	277.3	-0.9	-10.3	- 9.8
114.358 G	90	416	45	208	277.4	-0.9	-10.3	+ 2.6
115.477 G	74	385	39	204	277.4	-1.0	-10.5	+17.4
116.344 G	77	330	44	188	277.5	-1.0	-10.8	+29.0
117.322 C	31	226	21	151	277.3	-1.3	-10.8	+41.7
118.343 G	32	167	28	147	277.7	-1.0	-10.8	+55.6
119.318 C	22	127	29	168	277.3	-1.5	-10.8	+68.1
120.322 G	9	63	31	216	278.2	..	-10.7	+82.2

Group 16052. May 16-27. A small stream developing from a single spot at the east limb. On May 23 only the leader and follower remain and on the next day only the follower.

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.
135.457 G	11	80	26	192	277.6	-3.0	-10.6	-78.2
136.335 G	21	109	25	134	278.5	-2.2	-10.4	-65.7
137.340 G	46	296	37	241	279.2	-1.6	-10.2	-51.7
138.429 G	77	419	49	266	279.9	-1.0	- 9.7	-36.6
139.422 G	66	364	37	201	279.2	-1.8	- 9.4	-24.2
140.326 G	48	280	25	144	280.2	-0.9	- 9.4	-11.2
141.354 G	53	248	28	127	281.0	-0.2	- 9.3	+ 3.2
142.326 C	29	162	15	85	280.4	-0.9	- 9.7	+15.4
143.353 C	16	67	9	38	277.7	-3.7	-10.5	+26.3
144.325 C	9	29	6	19	277.7	-3.8	-10.6	+39.2
145.342 C	4	20	3	17	277.5	-4.1	-10.8	+52.4
146.357 G	5	14	6	18	277.8	-3.9	-10.6	+66.2
Means	..	..	22	124	278.9	..	-10.1	..

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

No. 1560. Latitude +3°.7

Group 16037 in Rotation 1279
" 16069 " " 1280
" 16098 " " 1281
" 16136 " " 1282

Group 16037. May 1-11. A stream, developing from a tiny spot when first seen. The leader, *a*, is the most stable component 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.
					°	°	°	°
120.322 G	5	23	5	25	133.9	0.0	+ 5.9	-62.1
121.307 G	5	23	4	18	134.3	+ 0.2	+ 5.6	-48.6
122.325 C	46	269	27	162	137.2	+ 2.9	+ 5.3	-32.3
123.328 C	124	665	66	352	138.7	+ 4.3	+ 5.2	-17.5
124.370 C	178	975	91	497	140.4	+ 5.8	+ 5.6	- 2.1
125.345 G	226	1417	117	733	140.4	+ 5.6	+ 5.5	+10.8
126.345 C	217	1281	122	710	140.1	+ 5.1	+ 5.6	+23.8
127.367 G	190	1010	123	655	140.8	+ 5.6	+ 6.3	+38.0
128.417 C	104	590	90	507	141.4	+ 6.3	+ 6.5	+52.5
129.356 G	57	213	76	284	143.6	+ 8.1	+ 7.2	+67.1
130.434 C	22	134	79	484	144.0	..	+ 6.6	+81.7
Means	..	..	72	394	139.1	..	+ 5.9	..
Spot *a*								
122.325 C	24	161	14	95	139.0	0.0	+ 5.0	-30.5
123.328 C	84	403	44	210	141.0	+ 1.8	+ 5.3	-15.2
124.370 C	114	724	58	369	142.0	+ 2.6	+ 5.7	- 0.5
125.345 G	170	1003	88	522	142.8	+ 3.4	+ 6.0	+13.2
126.345 C	147	799	84	455	143.3	+ 3.6	+ 6.4	+27.0
127.367 G	129	701	86	470	143.4	+ 3.5	+ 6.8	+40.6
128.417 C	84	480	75	427	143.8	+ 3.7	+ 7.1	+54.9
129.356 G	55	202	74	273	144.0	+ 3.7	+ 7.3	+67.5
130.434 C	22	134	79	484	144.0	..	+ 6.6	+81.7

Group 16069. May 26-June 6. A stream, in which both leader, *a*, and follower, *b*, soon become regular spots, the former being the larger.

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.
145.342 C	53	307	102	588	150.5	+ 7.4	+ 5.2	-74.6
146.357 G	73	456	75	474	151.2	+ 7.9	+ 5.3	-60.4
147.349 C	131	688	96	505	152.2	+ 8.7	+ 5.1	-46.3
148.346 C	152	1081	92	652	153.8	+10.1	+ 3.9	-31.5
149.326 C	313	1481	165	779	155.9	+12.1	+ 3.2	-16.4
150.392 G	227	1845	114	927	156.6	+12.6	+ 3.6	- 1.6
151.659 G	263	1397	138	733	157.6	+13.3	+ 3.6	+16.1
152.325 G	245	1287	136	713	158.2	+13.8	+ 3.3	+25.5
153.332 C	146	919	95	596	158.3	+13.7	+ 3.2	+39.0
154.347 G	152	719	129	612	159.4	+14.7	+ 3.1	+53.5
155.367 G	55	415	73	546	159.6	+14.7	+ 3.2	+67.2
156.374 G	36	211	118	695	158.5	+13.4	+ 3.3	+79.4
Means	..	..	111	652	156.0	..	+ 3.8	..

No. 1560. Group 16069 - *continued*

Spot *a*

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.
					°	°	°	°
145.342 C	24	147	37	228	154.1	+11.0	+ 4.1	-71.0
146.357 G	34	176	31	160	155.2	+11.9	+ 3.7	-56.4
147.349 C	64	293	44	199	156.5	+13.0	+ 3.8	-42.0
148.346 C	87	599	50	341	156.5	+12.8	+ 3.0	-28.8
149.326 C	226	1061	118	552	157.6	+13.8	+ 2.8	-14.7
150.392 G	179	1424	90	712	158.9	+14.9	+ 2.8	+ 0.7
151.659 G	185	1026	98	544	160.0	+15.7	+ 2.9	+18.5
152.325 G	197	1010	110	566	160.2	+15.8	+ 2.9	+27.5
153.332 C	122	768	81	507	160.3	+15.7	+ 2.8	+41.0
154.347 G	131	632	114	550	160.7	+16.0	+ 2.5	+54.8
155.367 G	50	369	68	502	160.9	+16.0	+ 3.0	+68.5
156.374 G	27	158	103	604	161.6	..	+ 3.1	+82.5
Spot *b*								
145.342 C	29	160	65	360	148.1	+ 5.0	+ 5.7	-77.0
146.357 G	39	280	44	314	148.5	+ 5.2	+ 5.5	-63.1
147.349 C	60	362	47	282	148.7	+ 5.2	+ 6.0	-49.8
148.346 C	27	300	17	189	148.8	+ 5.1	+ 6.0	-36.5
149.326 C	87	420	47	227	150.5	+ 6.7	+ 5.2	-21.8
150.392 G	48	421	24	215	150.9	+ 6.9	+ 4.7	- 7.3
151.659 G	57	261	29	133	150.9	+ 6.6	+ 4.6	+ 9.4
152.325 G	39	250	21	132	151.1	+ 6.7	+ 4.8	+18.4
153.332 C	24	151	14	89	150.8	+ 6.2	+ 4.5	+31.5
154.347 G	21	87	15	62	151.0	+ 6.3	+ 4.5	+45.1
155.367 G	5	46	5	44	151.0	+ 6.1	+ 4.3	+58.6
156.374 G	9	53	15	91	152.1	+ 7.0	+ 4.3	+73.0

Group 16098. June 21-July 3. A stable 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.
171.320 G	25	152	56	342	164.0	+16.2	+ 3.0	-77.2
172.380 C	49	299	53	326	164.5	+16.5	+ 3.3	-62.7
173.357 G	71	421	55	324	163.4	+15.3	+ 3.4	-50.9
174.318 G	97	550	61	346	164.6	+16.3	+ 3.4	-37.0
175.319 G	113	589	62	324	164.7	+16.2	+ 3.4	-23.6
176.348 G	138	695	70	354	164.8	+16.1	+ 3.3	- 9.9
177.320 G	150	623	75	312	164.8	+16.0	+ 3.3	+ 3.0
178.319 G	118	684	61	356	165.0	+16.0	+ 3.3	+16.4
179.381 G	90	591	52	343	165.1	+15.9	+ 3.3	+30.6
180.626 G	90	464	67	343	165.5	+16.1	+ 3.4	+47.4
181.322 G	67	358	62	329	165.8	+16.2	+ 3.7	+57.0
182.321 G	37	206	55	305	166.0	+16.3	+ 3.7	+70.4
183.366 G	14	81	61	356	165.4	..	+ 3.9	+83.6
Means	..	..	61	334	164.8	..	+ 3.4	..

Group 16136. July 18-25. A small equatorial spot seen only on July 18, 19 and 25.

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.
198.610 G	5	12	7	17	171.2	+18.5	+ 2.3	-68.9
199.292 G	2	12	2	12	171.5	+18.7	+ 2.3	-59.5

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

No. 1560. Group 16136 - *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.
					°	°	°	°
200.345 G	0	0	0	0	..	..	..	..
201.419 G	0	0	0	0	..	..	..	..
202.327 G	0	0	0	0	..	..	..	..
203.331 G	0	0	0	0	..	..	..	..
204.372 G	0	0	0	0	..	..	..	..
205.322 G	7	25	4	13	169.1	+15.2	+ 1.0	+17.9
Means	..	..	2	5	170.6	..	+ 1.9	..

No. 1561. Latitude -15°.7

Group 16042 in Rotation 1279
" 16074 " " 1280

Group 16042. May 5-17. A composite spot which quickly breaks up; the largest part soon becomes regular and it is the sole survivor at the west limb. On May 10, with its maximum at 20h.2, an intense solar flare (magnitude 3+) was recorded. A great geomagnetic storm began 34.5 hours later.

124.370 C	31	191	102	626	60.5	..	-16.6	-82.0
125.345 G	88	377	120	513	61.0	0.0	-16.7	-68.6
126.345 C	92	563	82	501	60.9	- 0.1	-16.7	-55.4
127.367 G	130	667	89	460	60.8	- 0.2	-16.3	-42.0
128.417 C	128	675	75	391	61.1	+ 0.1	-16.4	-27.8
129.356 G	126	740	67	393	61.0	0.0	-16.7	-15.5
130.434 C	150	795	76	408	61.1	+ 0.1	-16.3	- 1.2
131.391 C	110	685	58	357	61.2	+ 0.2	-16.4	+11.6
132.326 C	101	612	56	343	60.6	- 0.4	-16.6	+23.4
133.336 C	64	442	41	284	61.5	+ 0.5	-16.1	+37.6
134.449 C	49	269	41	224	61.4	+ 0.4	-16.1	+52.2
135.457 G	41	200	50	242	61.2	+ 0.2	-16.1	+65.4
136.335 G	11	87	24	192	61.2	+ 0.2	-15.8	+77.0
Means	..	..	65	359	61.1	..	-16.4	..

Group 16074. June 1-13. A persistent small spot.

151.659 G	5	25	19	96	59.2	..	-15.6	-82.3
152.325 G	9	44	16	79	59.3	- 1.7	-15.5	-73.4
153.332 C	9	91	9	96	58.7	- 2.3	-15.4	-60.6
154.347 G	21	80	16	61	59.2	- 1.8	-15.4	-46.7
155.367 G	21	55	13	34	58.7	- 2.3	-15.1	-33.7
156.374 G	21	64	12	35	58.7	- 2.3	-15.3	-20.4
157.472 C	20	84	10	44	58.3	- 2.7	-15.1	- 6.2
158.580 G	7	32	4	17	58.4	- 2.6	-14.9	+ 8.5
159.389 G	14	64	8	35	57.8	- 3.2	-14.8	+18.6
160.444 G	9	23	6	14	58.2	- 2.8	-14.7	+33.0
161.339 G	5	16	4	12	58.3	- 2.7	-14.6	+44.9

No. 1561. Group 16074 - *continued*

					°	°	°	°
162.360 G	9	18	9	18	58.2	-2.8	-14.5	+58.4
163.327 G	2	7	3	12	58.7	-2.3	-14.5	+71.7
Means	..	..	9	38	58.5	..	-15.0	..

No. 1562. Latitude -4°.1

Group 16048 in Rotation 1280
" 16080 " " 1281

Group 16048. May 12-23. A regular spot, *a*, accompanied by a number of variable companions in its rear from May 15 to May 22.

131.391 C	13	79	33	199	330.8	0.0	- 3.6	-78.8
132.326 C	20	132	24	158	331.7	+0.7	- 3.0	-65.5
133.336 C	31	252	25	202	332.8	+1.7	- 3.0	-51.1
134.449 C	55	331	35	207	332.3	+1.0	- 3.8	-36.9
135.457 G	91	568	50	313	331.1	-0.4	- 5.2	-24.7
136.335 G	103	638	52	327	331.6	-0.1	- 5.2	-12.6
137.340 G	105	507	53	254	331.8	-0.1	- 4.6	+ 0.9
138.429 G	89	411	46	213	332.6	+0.6	- 4.6	+16.1
139.422 G	69	374	40	215	333.1	+0.9	- 4.8	+29.7
140.326 G	51	226	34	153	334.0	+1.6	- 4.1	+42.6
141.354 G	28	153	25	138	334.1	+1.5	- 3.5	+56.3
142.326 C	13	100	19	143	334.5	+1.8	- 4.0	+69.5
Means	..	..	36	210	332.5	..	- 4.1	..

Spot *a*

131.391 C	13	79	33	199	330.8	0.0	- 3.6	-78.8
132.326 C	20	132	24	158	331.7	+0.7	- 3.0	-65.5
133.336 C	31	252	25	202	332.8	+1.7	- 3.0	-51.1
134.449 C	40	276	25	171	333.4	+2.1	- 3.2	-35.8
135.457 G	59	292	32	158	333.6	+2.1	- 3.3	-22.2
136.335 G	59	333	30	170	333.7	+2.0	- 3.5	-10.5
137.340 G	55	306	28	153	334.0	+2.1	- 3.6	+ 3.1
138.429 G	66	290	34	151	334.2	+2.2	- 3.5	+17.7
139.422 G	50	292	29	169	334.3	+2.1	- 3.7	+30.9
140.326 G	46	205	31	139	334.4	+2.0	- 3.7	+43.0
141.354 G	23	139	21	126	334.5	+1.9	- 3.2	+56.7
142.326 C	13	100	19	143	334.5	+1.8	- 4.0	+69.5

Group 16080. June 8-12. Intermittent. A pair of tiny spots.

158.580 G	4	18	10	39	333.8	-1.8	- 3.7	-76.1
159.389 G	2	16	3	19	334.1	-1.7	- 3.6	-65.1
160.444 G	0	0	0	0	..	..	..	..

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

No. 1562. Group 16080 - *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.
					°	°	°	°
161.339 G	0	0	0	0	..	..	..	..
162.360 G	7	21	4	12	332.3	-4.0	- 4.9	-27.5
Means	..	..	3	14	333.4	..	- 4.1	..

No. 1563. Latitude -2°.4

Group 16059 in Rotation 1280
" 16083 " " 1281

Group 16059. May 21-27. Two small spots, appearing near the C.M. and both quickly taking on regular outline.

140.326 G	16	61	8	30	295.1	0.0	- 1.5	+ 3.7
141.354 G	30	119	16	62	295.5	+0.2	- 1.3	+17.7
142.326 C	31	151	18	88	295.6	+0.1	- 1.4	+30.6
143.353 C	47	342	33	242	296.2	+0.5	- 1.2	+44.8
144.325 C	58	291	57	284	297.3	+1.5	- 1.1	+58.8
145.342 C	29	128	56	243	298.6	+2.6	- 1.3	+73.5
146.357 G	2	11	(7	40	293.6	..	- 1.1)	+82.0
Means	..	..	31	158	296.4	..	- 1.3	..

Group 16083. June 10-22. A small nearly-regular spot preceded by a few unstable spots until June 15. On June 16 these companions have disappeared and a new formation has appeared at the rear.

160.444 G	16	160	62	589	303.6	..	- 3.2	-81.6
161.339 G	38	302	54	444	303.5	+4.5	- 3.3	-69.9
162.360 G	67	412	61	376	303.1	+3.9	- 3.3	-56.7
163.327 G	84	395	57	272	303.7	+4.3	- 3.3	-43.3
164.335 C	74	390	43	228	304.1	+4.5	- 3.3	-29.6
165.322 G	46	271	24	143	303.8	+4.1	- 3.0	-16.8
166.332 G	125	596	63	299	302.0	+2.1	- 3.7	- 5.3
167.646 G	92	557	48	289	302.3	+2.1	- 3.3	+12.4
168.438 C	74	428	41	234	303.1	+2.8	- 3.2	+23.7
169.327 C	56	323	35	202	304.1	+3.6	- 3.4	+36.5
170.318 G	37	214	29	169	304.8	+4.1	- 3.6	+50.3
171.320 G	21	131	24	151	305.3	+4.4	- 3.4	+64.1
172.380 C	7	40	18	101	306.2	+5.1	- 4.6	+79.0
Means	..	..	41	242	303.8	..	- 3.4	..

No. 1564. Latitude +13°.4

Group 16073 in Rotation 1280
" 16104 " " 1281

Group 16073. June 1-11. A stream of variable spots which increases in area and becomes a scattered cluster. From June 7, the leading portion takes the form of two composite spots.

					°	°	°	°
151.659 G	13	103	12	94	86.1	0.0	+11.1	-55.4
152.325 G	46	195	34	145	86.3	+ 0.2	+10.5	-46.4
153.332 C	24	148	14	89	87.6	+ 1.4	+11.1	-31.7
154.347 G	96	337	52	182	87.7	+ 1.5	+12.1	-18.2
155.367 G	134	694	69	356	89.4	+ 3.1	+12.6	- 3.0
156.374 G	170	788	88	414	89.8	+ 3.5	+12.7	+10.7
157.472 C	168	859	96	497	91.0	+ 4.6	+13.0	+26.5
158.580 G	121	1005	84	693	91.8	+ 5.4	+13.3	+41.9
159.389 G	96	1213	81	999	90.3	+ 3.8	+13.4	+51.1
160.444 G	71	512	95	663	91.6	+ 5.1	+13.1	+66.4
161.339 G	21	229	60	566	90.4	+ 3.8	+12.8	+77.0
Means	..	..	62	427	89.3	..	+12.3	..

Group 16104. June 28-July 7. A stream consisting of a large number of small variable spots. The only stable component is a small regular spot near the centre and this is the only survivor at the west limb.

176.348 G	18	92	38	186	99.1	+11.8	+14.8	-75.6
177.320 G	30	149	33	165	99.3	+11.9	+14.7	-62.5
178.319 G	58	282	47	233	97.5	+10.1	+15.0	-51.1
179.381 G	58	388	37	254	96.0	+ 8.5	+15.3	-38.5
180.626 G	58	496	32	272	95.8	+ 8.3	+15.0	-22.3
181.322 G	87	573	45	300	97.4	+ 9.8	+15.1	-11.4
182.321 G	85	764	43	390	97.1	+ 9.5	+13.8	+ 1.5
183.366 G	86	674	46	356	97.2	+ 9.5	+13.7	+15.4
184.323 G	67	430	38	248	97.6	+ 9.9	+13.7	+28.5
185.321 G	35	187	23	130	98.8	+11.0	+13.9	+42.9
186.334 G	21	76	19	69	98.3	+10.5	+14.4	+55.8
187.571 G	7	39	12	69	100.3	+12.4	+14.8	+74.1
Means	..	..	34	223	97.9	..	+14.5	..

No. 1565. Latitude -3°.9

Group 16076 in Rotation 1280
" 16101 " " 1281

Group 16076. June 4-8. One or two small spots.

154.347 G	7	18	4	10	126.9	0.0	- 3.8	+21.0
155.367 G	21	82	13	51	128.3	+ 1.2	- 3.4	+35.9
156.374 G	14	57	11	45	129.5	+ 2.2	- 3.3	+50.4

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

No. 1565. Group 16076 - *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.
					°	°	°	°
157.472 C	11	82	15	115	133.6	+6.1	- 3.6	+69.1
158.580 G	5	21	22	92	133.4	..	- 3.3	+83.5
Means	..	..	11	55	129.6	..	- 3.5	..

Group 16101. June 23-July 3. A small spot, not seen on June 30 or July 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.
173.357 G	7	25	34	120	130.5	..	- 4.0	-83.8
174.318 G	21	135	30	196	132.3	+1.8	- 4.0	-69.3
175.319 G	39	186	35	168	133.1	+2.5	- 4.1	-55.2
176.348 G	34	186	23	128	131.7	+0.9	- 3.8	-43.0
177.320 G	34	200	20	116	132.0	+1.0	- 3.7	-29.8
178.319 G	30	182	16	95	132.4	+1.2	- 3.5	-16.2
179.381 G	16	83	8	42	132.7	+1.3	- 3.6	- 1.8
180.626 G	0	0	0	0	..	..	..	..
181.322 G	0	0	0	0	..	..	..	..
182.321 G	2	16	1	10	132.1	+0.2	- 5.7	+36.5
183.366 G	0	5	0	4	133.4	+1.3	- 6.3	+51.6
Means	..	..	13	76	132.5	..	- 4.3	..

No. 1566. Latitude -14.°1

Group 16082 in Rotation 1281
" 16123 " " 1282
" 16158 " " 1282

Group 16082. June 10-22. A regular spot, *a*, followed by a string of small companions until June 17; two of these reappear on June 21.

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.
160.444 G	30	126	88	368	305.5	0.0	-14.7	-79.7
161.339 G	78	492	114	731	304.3	-1.2	-14.5	-69.1
162.360 G	106	725	98	661	304.3	-1.3	-14.5	-55.5
163.327 G	189	773	135	549	304.0	-1.6	-14.4	-43.0
164.335 C	192	946	115	568	303.8	-1.8	-14.4	-29.9
165.322 G	179	978	98	533	304.1	-1.6	-14.2	-16.5
166.332 G	166	985	86	515	303.8	-1.9	-14.8	- 3.5
167.646 G	109	632	59	341	306.0	+0.2	-14.2	+16.1
168.438 C	129	551	75	320	306.2	+0.4	-14.4	+26.8
169.327 C	85	520	57	348	306.3	+0.5	-14.2	+38.7
170.318 G	60	345	51	293	306.8	+0.9	-14.3	+52.3
171.320 G	41	234	51	298	306.2	+0.3	-14.8	+65.0
172.380 C	13	76	41	239	307.2	..	-14.8	+80.0
Means	..	..	86	460	305.1	..	-14.5	..

No. 1566. Group 16082 - *continued*

Spot *a*

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.
					°	°	°	°
160.444 G	30	126	88	368	305.5	0.0	-14.7	-79.7
161.339 G	69	419	95	578	305.5	0.0	-14.5	-67.9
162.360 G	92	651	82	579	305.6	0.0	-14.4	-54.2
163.327 G	145	630	100	435	305.7	+0.1	-14.5	-41.3
164.335 C	147	736	87	434	305.8	+0.2	-14.3	-27.9
165.322 G	117	764	63	413	305.9	+0.2	-14.2	-14.7
166.332 G	131	713	68	371	306.1	+0.4	-14.4	- 1.2
167.646 G	104	616	56	333	306.1	+0.3	-14.2	+16.2
168.438 C	129	551	75	320	306.2	+0.4	-14.4	+26.8
169.327 C	85	520	57	348	306.3	+0.5	-14.2	+38.7
170.318 G	60	345	51	293	306.8	+0.9	-14.3	+52.3
171.320 G	37	209	47	268	306.9	+1.0	-14.5	+65.7
172.380 C	13	76	41	239	307.2	..	-14.8	+80.0

Group 16123. July 7-19. A stable 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.
187.571 G	16	85	44	233	308.0	+1.5	-14.2	-78.2
188.557 G	23	146	30	190	307.4	+0.9	-13.9	-65.7
189.324 G	25	176	24	165	307.5	+1.0	-14.1	-55.4
190.338 C	42	232	30	165	307.9	+1.3	-14.1	-41.6
191.479 G	58	271	34	160	307.0	+0.4	-13.9	-27.4
192.323 G	37	237	20	130	306.7	+0.1	-13.8	-16.5
193.339 C	47	308	25	163	306.3	-0.4	-13.9	- 3.5
194.444 G	48	324	26	175	306.3	-0.4	-13.7	+11.1
195.437 G	48	205	28	119	306.1	-0.7	-13.7	+24.1
196.389 G	34	205	22	135	306.3	-0.5	-13.7	+36.8
197.457 G	23	156	19	129	305.5	-1.3	-13.6	+50.2
198.610 G	14	97	19	129	306.0	-0.9	-13.5	+65.9
199.292 G	12	60	26	128	305.8	-1.1	-13.2	+74.8
Means	..	..	27	155	306.7	..	-13.8	..

Group 16158. Aug. 4-5. A small 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.
215.359 C	4	20	8	39	305.7	-1.8	-14.1	-72.8
216.361 G	5	18	5	20	305.3	-2.2	-14.0	-59.9
Means	..	..	6	30	305.5	..	-14.0	..

No. 1567. Latitude -8.°0

Group 16099 in Rotation 1281
" 16139 " " 1282
" 16172 " " 1283

Group 16099. June 22-July 4. A regular spot with a few close companions. From June 26 to 29 the spot is extended in longitude.

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

No. 1567. Group 16099 - *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.
					°	°	°	°
172.380 C	27	174	89	571	146.1	..	- 7.1	-81.1
173.357 G	104	439	141	597	146.3	0.0	- 7.1	-68.0
174.318 G	124	835	110	743	146.3	-0.2	- 7.1	-55.3
175.319 G	168	982	114	668	146.5	-0.1	- 7.2	-41.8
176.348 G	230	1230	133	713	146.5	-0.3	- 6.9	-28.2
177.320 G	278	1375	145	715	146.6	-0.3	- 6.7	-15.2
178.319 G	226	1252	115	639	146.8	-0.3	- 6.6	- 1.8
179.381 G	238	1153	124	600	146.8	-0.5	- 6.7	+12.3
180.626 G	206	1291	119	749	146.9	-0.6	- 6.7	+28.8
181.322 G	185	975	120	634	146.9	-0.7	- 6.9	+38.1
182.321 G	118	767	97	629	147.4	-0.4	- 6.7	+51.8
183.366 G	102	464	128	580	147.6	-0.3	- 6.6	+65.8
184.323 G	32	182	88	499	148.1	0.0	- 6.5	+79.0
Means	..	..	120	647	146.9	..	- 6.8	..

Group 16139. July 19-31. A stable regular spot, with a slow drift towards the equator.

199.292 G	12	97	39	318	150.3	..	- 5.6	-80.7
200.345 G	30	191	39	246	150.6	-0.1	- 5.6	-66.5
201.419 G	44	262	37	217	150.6	-0.2	- 5.3	-52.3
202.327 G	60	405	40	267	151.1	+0.1	- 5.4	-39.8
203.331 G	60	492	34	280	151.2	0.0	- 5.2	-26.4
204.372 G	87	508	45	264	151.2	-0.1	- 5.0	-12.6
205.322 G	83	506	42	258	151.0	-0.5	- 5.0	- 0.2
206.326 G	87	456	45	237	151.2	-0.4	- 4.8	+13.2
207.326 G	76	465	43	265	150.7	-1.1	- 4.8	+26.0
208.324 G	64	380	42	251	151.1	-0.9	- 4.7	+39.6
209.332 C	74	283	63	241	151.5	-0.6	- 4.5	+53.3
210.329 C	33	193	42	247	151.3	-1.0	- 4.4	+66.3
211.352 C	22	100	67	303	151.5	..	- 4.2	+80.0
Means	..	..	43	252	151.0	..	- 5.0	..

Group 16172. Aug. 15-26. A small persistent spot.

226.344 G	5	39	15	118	153.4	-1.5	- 5.0	-79.9
227.248 G	5	48	7	65	153.7	-1.3	- 5.5	-67.6
228.343 G	18	71	15	61	153.8	-1.4	- 5.7	-53.0
229.559 G	21	78	13	50	154.3	-1.1	- 5.7	-36.5
230.336 C	11	51	6	29	154.6	-0.9	- 5.9	-25.9
231.425 G	9	55	5	29	154.8	-0.9	- 6.0	-11.3
232.406 G	7	36	4	18	154.9	-1.0	- 6.1	+ 1.8
233.295 G	9	23	5	12	155.0	-1.0	- 6.4	+13.6
234.395 C	4	13	2	8	155.5	-0.7	- 6.5	+28.6
235.321 C	4	18	3	12	155.4	-0.9	- 6.5	+40.8
236.641 G	2	11	2	11	156.0	-0.6	- 6.9	+58.8
237.436 G	0	9	0	12	153.9	-2.8	- 7.4	+67.2
Means	..	..	6	35	154.6	..	- 6.1	..

No. 1568. Latitude -19°.1

Group 16120 in Rotation 1281
" 16148 " " 1282
" 16184 " " 1283

Group 16120. July 6-10. A short stream of changing spots, appearing suddenly in the western hemisphere.

					°	°	°	°
186.334 G	55	201	31	114	59.4	0.0	-18.4	+16.9
187.571 G	92	483	60	312	59.8	+0.5	-17.6	+33.6
188.557 G	51	492	41	399	60.5	+1.3	-17.7	+47.4
189.324 G	44	308	47	322	60.6	+1.5	-17.5	+57.7
190.338 C	18	170	34	314	60.7	+1.7	-16.9	+71.2
Means	..	..	43	292	60.2	..	-17.6	..

Group 16148. July 26-Aug. 7. A large stream, in which both leader and follower are composite. The former undergoes considerable changes, while, by August 4, its rear portion breaks off to form a small regular spot. The follower, *b*, slowly diminishes throughout. A solar flare of magnitude 3+ was recorded on August 5 with its maximum at $08^h.1$.

206.326 G	62	412	169	1169	62.8	+5.2	-19.3	-75.2
207.326 G	129	1088	169	1421	60.7	+3.1	-19.6	-64.0
208.324 G	230	1523	202	1347	61.3	+3.8	-19.8	-50.2
209.332 C	321	1954	222	1349	61.5	+4.1	-19.6	-36.7
210.329 C	377	2495	228	1515	62.1	+4.8	-19.3	-22.9
211.352 C	446	2773	252	1564	62.6	+5.4	-19.9	- 8.9
212.339 C	352	2788	195	1551	62.6	+5.5	-19.8	+ 4.2
213.431 G	369	2393	218	1412	61.9	+4.9	-20.2	+17.9
214.339 G	326	1667	212	1085	62.2	+5.3	-19.8	+30.2
215.359 C	245	1443	191	1123	61.9	+5.1	-19.8	+43.4
216.361 G	105	1012	111	1064	61.5	+4.7	-20.0	+56.3
217.533 G	110	629	243	1332	62.1	+5.4	-20.2	+72.3
218.325 C	20	160	(78	624	58.1	..	-19.6)	+78.8
Means	..	..	201	1328	61.9	..	-19.8	..

Spot *b*

206.326 G	14	112	67	536	56.3	..	-19.4	-81.7
207.326 G	53	435	81	661	57.4	0.0	-19.8	-67.3
208.324 G	92	682	87	648	57.8	+0.5	-19.4	-53.7
209.332 C	123	749	89	539	58.3	+1.1	-18.9	-39.9
210.329 C	175	1141	108	707	58.3	+1.2	-18.8	-26.7
211.352 C	231	1237	132	705	58.0	+1.0	-18.7	-13.5
212.339 C	144	1023	79	563	57.6	+0.6	-18.4	- 0.8
213.431 G	140	779	80	444	58.2	+1.3	-18.2	+14.2
214.339 G	108	554	66	338	58.2	+1.4	-18.1	+26.2
215.359 C	98	508	70	361	57.9	+1.2	-17.8	+39.4
216.361 G	30	339	28	312	57.7	+1.1	-17.7	+52.5
217.533 G	21	158	34	259	58.9	+2.4	-17.8	+69.1
218.325 C	7	73	28	297	59.9	..	-17.5	+80.6

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

No. 1568 - *continued*

Group 16184. Aug. 22-Sept. 2. A small spot, suddenly developing on August 29 into a composite spot which is apparently declining rapidly as it passes 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.
					°	°	°	°
233.295 G	9	36	30	118	63.4	+8.1	-19.9	-78.0
234.395 C	11	130	15	177	62.9	+7.7	-19.9	-64.0
235.321 C	29	205	27	191	62.9	+7.8	-20.1	-51.7
236.641 G	30	217	21	150	63.1	+8.1	-20.1	-34.1
237.436 G	41	223	25	138	63.0	+8.1	-20.1	-23.7
238.327 C	42	235	24	134	62.6	+7.8	-19.5	-12.3
239.425 G	36	223	20	125	62.6	+7.9	-19.8	+ 2.2
240.353 G	73	347	42	201	62.8	+8.2	-19.9	+14.6
241.373 G	61	361	39	231	62.5	+7.9	-20.1	+27.8
242.350 G	59	277	44	209	62.4	+7.9	-20.1	+40.6
243.426 G	22	121	22	123	62.3	+7.9	-20.4	+54.7
244.350 G	5	27	8	43	63.0	+8.7	-19.9	+67.6
Means	..	..	26	153	62.8	..	-20.0	..

No. 1569. Latitude +18°.6

Group 16124 in Rotation 1282
" 16160 " " 1283
" 16198 " " 1284

Group 16124. July 10-21. A bi-polar group of which the leader, *a*, soon becomes a stable regular spot. The follower, *b*, grows into a composite spot and then breaks up rapidly.

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.
190.338 C	7	40	10	58	279.6	0.0	+18.4	-69.9
191.479 G	58	375	52	332	279.5	0.0	+18.7	-54.9
192.323 G	87	566	62	399	280.3	+0.8	+18.6	-42.9
193.339 C	169	1046	98	617	280.8	+1.4	+18.7	-29.0
194.444 G	184	1560	96	827	280.6	+1.3	+18.6	-14.6
195.437 G	288	1508	148	777	280.4	+1.2	+18.2	- 1.6
196.389 G	187	1447	98	760	280.1	+1.0	+18.0	+10.6
197.457 G	152	782	88	451	281.3	+2.2	+17.8	+26.0
198.610 G	120	630	85	441	283.1	+4.1	+18.2	+43.0
199.292 G	72	382	62	322	282.7	+3.8	+18.1	+51.7
200.345 G	53	253	68	326	284.6	+5.8	+18.2	+67.5
201.419 G	23	87	70	264	284.4	..	+18.3	+81.5
Means	..	..	79	483	281.2	..	+18.3	..

Spot *a*

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.
191.479 G	30	200	25	166	282.0	0.0	+18.8	-52.4
192.323 G	53	315	36	211	283.0	+1.1	+18.7	-40.2
193.339 C	127	618	72	352	283.9	+2.0	+18.4	-25.9
194.444 G	124	796	64	414	285.0	+3.2	+18.1	-10.2
195.437 G	143	708	73	361	285.0	+3.3	+17.8	+ 3.0

continued

No. 1569. Group 16124. Spot *a* - *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.
					°	°	°	°
196.389 G	129	688	68	365	284.9	+3.3	+17.7	+15.4
197.457 G	108	518	64	306	284.5	+2.9	+17.6	+29.2
198.610 G	104	506	75	364	285.0	+3.5	+17.9	+44.9
199.292 G	67	336	58	289	284.9	+3.5	+18.1	+53.9
200.345 G	53	253	68	326	284.6	+3.3	+18.2	+67.5
201.419 G	23	87	70	264	284.4	..	+18.3	+81.5

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.
191.479 G	28	175	27	166	276.6	0.0	+18.7	-57.8
192.323 G	34	251	26	188	276.5	0.0	+18.6	-46.7
193.339 C	42	428	26	265	276.3	-0.2	+18.5	-33.5
194.444 G	60	764	32	413	276.5	+0.1	+18.7	-18.7
195.437 G	145	800	75	416	276.1	-0.2	+18.4	- 5.9
196.389 G	58	759	30	395	276.1	-0.1	+18.2	+ 6.6
197.457 G	44	264	24	145	275.0	-1.2	+18.2	+19.7
198.610 G	16	124	10	77	275.2	-0.9	+18.0	+35.1
199.292 G	5	46	4	33	274.9	-1.1	+18.1	+43.9

Group 16160. Aug. 5-17. A stable 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.
216.361 G	14	92	51	332	281.5	..	+18.2	-83.7
217.533 G	34	183	43	232	282.2	+2.2	+18.6	-67.6
218.325 C	38	313	35	285	282.5	+2.5	+18.4	-56.8
219.322 G	64	371	45	260	282.3	+2.4	+18.7	-43.8
220.327 G	78	410	46	242	282.1	+2.3	+18.8	-30.7
221.325 C	91	511	49	276	282.0	+2.2	+18.8	-17.6
222.322 G	62	372	32	190	281.9	+2.2	+18.8	- 4.5
223.329 G	75	458	39	238	281.9	+2.3	+18.7	+ 8.8
224.323 G	64	369	35	203	281.7	+2.2	+18.8	+21.7
225.418 C	71	444	45	280	281.5	+2.0	+18.4	+36.0
226.344 G	59	299	44	224	281.4	+2.0	+18.5	+48.1
227.248 G	53	221	52	217	281.1	+1.8	+18.3	+59.8
228.343 G	27	132	46	227	281.2	+2.0	+18.4	+74.4
Means	..	..	43	240	281.8	..	+18.6	..

Group 16198. Sept. 1-13. A regular spot, preceded by a few companions until September 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.
243.426 G	5	23	17	79	284.1	..	+19.9	-83.5
244.350 G	30	127	54	227	280.2	+2.2	+18.8	-75.2
245.392 G	36	211	37	220	279.9	+1.9	+18.8	-61.7
246.287 C	57	279	45	219	279.4	+1.5	+19.0	-50.4
247.321 G	54	222	34	141	278.9	+1.1	+19.3	-37.2
248.344 G	41	236	23	132	278.0	+0.3	+18.8	-24.6
249.332 G	43	252	22	131	277.4	-0.3	+18.8	-12.2
250.345 G	41	238	21	121	277.1	-0.5	+18.7	+ 0.9
251.341 G	38	235	20	122	276.7	-0.8	+18.6	+13.7
252.363 G	27	129	15	74	276.6	-0.8	+18.8	+27.1
253.368 G	16	99	11	65	276.2	-1.2	+18.9	+39.9

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

No. 1569. Group 16198 - *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.
					°	°	°	°
254.396 G	11	52	9	43	276.1	-1.2	+19.0	+53.4
255.383 G	5	18	6	21	275.0	-2.2	+19.0	+65.4
Means	..	..	25	126	277.6	..	+18.9	..

No. 1570. Latitude +13°.0

Group 16138 in Rotation 1282
" 16165 " " 1283

Group 16138. July 19-28. A bi-polar group of which the leader, *a*, is first a small composite spot and from July 23 a regular spot. The follower, *b*, grows into a composite spot, but begins to break up and diminish after July 24.

199.292 G	5	18	4	14	183.3	0.0	+13.9	-47.7
200.345 G	58	325	35	194	184.5	+1.1	+13.2	-32.6
201.419 G	95	492	51	263	184.6	+1.2	+13.4	-18.3
202.327 G	128	950	66	484	184.2	+0.7	+13.2	- 6.7
203.331 G	173	1378	88	702	184.8	+1.3	+13.3	+ 7.2
204.372 G	253	1718	138	936	185.5	+1.9	+13.5	+21.7
205.322 G	216	1315	134	814	187.2	+3.5	+13.3	+36.0
206.326 G	160	1138	126	873	186.9	+3.2	+13.7	+48.9
207.326 G	69	707	77	756	187.1	+3.3	+13.2	+62.4
208.324 G	36	318	82	680	186.5	+2.7	+13.2	+75.0
Means	..	..	80	572	185.5	..	+13.4	..

Spot *a*

200.345 G	37	205	22	121	185.4	0.0	+12.9	-31.7
201.419 G	37	244	20	129	186.8	+1.3	+13.2	-16.1
202.327 G	64	416	33	212	187.5	+2.0	+12.9	- 3.4
203.331 G	97	681	49	347	188.5	+2.9	+13.1	+10.9
204.372 G	145	828	81	464	189.4	+3.8	+13.0	+25.6
205.322 G	136	761	87	487	189.9	+4.2	+12.9	+38.7
206.326 G	110	586	90	481	190.5	+4.7	+12.9	+52.5
207.326 G	48	380	57	452	190.4	+4.6	+13.0	+65.7
208.324 G	25	185	66	492	191.7	..	+13.0	+80.2

Spot *b*

200.345 G	21	120	13	73	182.7	0.0	+13.8	-34.4
201.419 G	58	248	31	134	182.1	-0.7	+13.7	-20.8
202.327 G	64	534	33	272	182.1	-0.7	+13.3	- 8.8
203.331 G	76	697	39	355	181.9	-1.0	+13.5	+ 4.3
204.372 G	108	890	57	472	182.4	-0.5	+13.6	+18.6
205.322 G	80	554	47	327	182.5	-0.5	+13.7	+31.3
206.326 G	50	552	36	392	183.1	0.0	+14.2	+45.1
207.326 G	21	327	20	304	182.7	-0.4	+13.7	+58.0
208.324 G	11	133	16	188	181.5	-1.7	+13.5	+70.0

No. 1570 - *continued*

Group 16165. Aug. 12-22. A stream of small spots, of which the only stable member is a small regular spot near the centre; this alone remains after August 18.

					°	°	°	°
223.329 G	12	84	34	240	192.5	..	+12.9	-80.6
224.323 G	34	183	42	227	193.2	+6.4	+13.1	-66.8
225.418 C	49	290	40	237	192.8	+5.9	+13.0	-52.7
226.344 G	91	454	57	289	195.2	+8.3	+12.6	-38.1
227.248 G	55	470	31	262	195.3	+8.3	+12.8	-26.0
228.343 G	52	210	27	108	194.8	+7.7	+12.5	-12.0
229.559 G	32	173	16	87	194.1	+7.0	+12.9	+ 3.3
230.336 C	9	38	5	20	194.0	+6.8	+12.1	+13.5
231.425 G	5	25	3	14	194.0	+6.8	+12.6	+27.9
232.406 G	2	14	1	9	194.5	+7.2	+12.5	+41.4
233.295 G	2	11	2	9	193.9	+6.6	+12.7	+52.5
Means	..	..	22	126	194.2	..	+12.7	..

No. 1571. Latitude -11°.7

Group 16146 in Rotation 1282
" 16179 " " 1283

Group 16146. July 24-Aug. 5. At first a regular spot, *a*, followed by a few small companions. On July 27 the whole group rapidly increases in area; the leader becomes elongated and, by August 2, splits into two regular spots, a^1 and a^2. The follower, *b*, a composite spot, dies out fairly rapidly after August 1.

204.372 G	0	5	0	27	80.4	..	-11.8	-83.4
205.322 G	30	191	50	304	80.4	0.0	-12.1	-70.8
206.326 G	81	410	78	396	81.1	+0.6	-11.8	-56.9
207.326 G	135	1193	98	884	80.0	-0.6	-11.8	-44.7
208.324 G	353	1710	215	1051	80.7	+0.1	-11.9	-30.8
209.332 C	336	2215	186	1226	81.3	+0.6	-11.9	-16.9
210.329 C	482	2877	255	1525	81.0	+0.2	-12.2	- 4.0
211.352 C	333	2766	179	1482	80.9	0.0	-12.1	+ 9.4
212.339 C	271	2081	155	1190	80.4	-0.6	-12.4	+22.0
213.431 G	225	1383	150	923	80.4	-0.7	-12.0	+36.4
214.339 G	214	1156	177	957	80.9	-0.2	-12.1	+48.9
215.359 C	109	690	138	859	81.7	+0.5	-11.8	+63.2
216.361 G	43	317	120	872	81.4	+0.1	-12.3	+76.2
Means	..	..	150	972	80.8	..	-12.0	..

Spot *a*

205.322 G	23	163	35	244	82.5	0.0	-12.1	-68.7
206.326 G	60	298	54	271	83.7	+1.1	-11.8	-54.3
207.326 G	64	419	44	289	84.7	+2.0	-11.8	-40.0

continued

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

No. 1571. Group 16146. Spot *a* - *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.
					°	°	°
208.324 G	211	870	124	513	84.0	+1.3	-12.2	-27.5
209.332 C	198	1238	107	669	84.6	+1.8	-12.2	-13.6
210.329 C	278	1454	147	771	84.6	+1.7	-12.3	- 0.4
211.352 C	218	1645	118	888	84.1	+1.1	-12.2	+12.6
Spot a^1								
212.339 C	82	622	48	367	85.6	0.0	-11.1	+27.2
213.431 G	87	561	61	393	85.4	-0.3	-11.2	+41.4
214.339 G	94	469	84	417	85.4	-0.4	-11.2	+53.4
215.359 C	62	340	85	466	85.4	-0.5	-10.8	+66.9
216.361 G	25	163	82	535	85.0	-0.9	-10.8	+79.8
Spot a^2								
212.339 C	89	693	52	402	82.2	0.0	-12.8	+23.8
213.431 G	76	398	51	267	81.6	-0.7	-13.4	+37.6
214.339 G	60	419	49	344	81.1	-1.3	-13.7	+49.1
215.359 C	31	246	37	290	80.9	-1.6	-13.7	+62.4
216.361 G	9	87	22	214	81.4	-1.1	-14.7	+76.2
Spot *b*								
207.326 G	50	616	39	480	77.2	0.0	-11.4	-47.5
208.324 G	142	840	91	538	76.7	-0.6	-11.5	-34.8
209.332 C	138	977	79	557	76.5	-0.9	-11.9	-21.7
210.329 C	204	1423	108	754	77.2	-0.2	-11.8	- 7.8
211.352 C	115	1121	61	594	76.3	-1.2	-12.0	+ 4.8
212.339 C	100	766	55	421	76.2	-1.4	-12.2	+17.8
213.431 G	62	424	38	263	75.7	-2.0	-11.5	+31.7
214.339 G	60	268	44	196	75.7	-2.1	-11.9	+43.7
215.359 C	16	104	16	103	75.9	-2.0	-11.2	+57.4
216.361 G	7	44	12	73	75.9	-2.0	-11.4	+70.7

Group 16179. Aug. 20-Sept. 1. A stable regular spot with occasional small 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.
231.425 G	2	9	10	43	83.8	..	-11.5	-82.3
232.406 G	28	164	41	245	84.9	+0.2	-10.8	-68.2
233.295 G	39	208	39	207	84.2	-0.6	-11.0	-57.2
234.395 C	53	304	39	222	83.8	-1.1	-11.1	-43.1
235.321 C	62	403	38	250	83.4	-1.6	-11.3	-31.2
236.641 G	80	593	43	320	83.1	-2.0	-11.1	-14.1
237.436 G	98	572	52	304	82.2	-3.0	-11.4	- 4.5
238.327 C	81	460	43	244	82.3	-2.9	-11.7	+ 7.4
239.425 G	75	408	43	233	82.7	-2.6	-11.7	+22.3
240.353 G	52	325	34	211	82.7	-2.7	-11.8	+34.5
241.373 G	34	241	28	195	83.1	-2.4	-11.6	+48.4

No. 1571. Group 16179 - *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.
					°	°	°	°
242.350 G	32	154	36	174	82.9	-2.7	-11.7	+61.1
243.426 G	20	84	44	186	82.6	-3.1	-11.5	+75.0
Means	..	..	40	233	83.2	..	-11.4	..

No. 1572. Latitude +7°.7

Group 16162 in Rotation 1283
" 16204 " " 1284

Group 16162. Aug. 10-20. A small spot until August 12, after which a bi-polar group develops rapidly. The whole is dying out as it passes 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.
221.325 C	2	9	2	8	241.3	0.0	+ 9.3	-58.3
222.322 G	0	7	0	5	238.8	-2.6	+ 9.5	-47.6
223.329 G	5	23	3	14	238.1	-3.5	+ 9.7	-35.0
224.323 G	16	116	9	61	240.4	-1.3	+ 9.9	-19.6
225.418 C	139	643	69	322	240.6	-1.3	+ 9.1	- 4.9
226.344 G	107	617	55	312	240.5	-1.5	+ 9.2	+ 7.2
227.248 G	80	619	42	329	240.4	-1.7	+ 8.7	+19.1
228.343 G	77	417	46	249	240.2	-2.1	+ 8.9	+33.4
229.559 G	39	175	30	135	240.4	-2.1	+ 8.5	+49.6
230.336 C	9	60	9	60	241.1	-1.5	+ 9.1	+60.6
231.425 G	0	23	0	36	238.4	-4.3	+ 8.3	+72.3
Means	..	..	24	139	240.0	..	+ 9.1	..

Group 16204. Sept. 5-16. Possibly only a revival of Group 16162. A string of spots, except on September 15, when the leader is by itself.

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.
247.321 G	0	5	0	15	235.1	..	+ 8.3	-81.0
248.344 G	18	63	21	73	237.7	-7.5	+ 7.2	-64.9
249.332 G	31	173	25	141	237.6	-7.7	+ 7.3	-52.0
250.345 G	52	219	32	137	239.1	-6.3	+ 6.7	-37.1
251.341 G	36	253	19	137	240.9	-4.7	+ 5.7	-22.1
252.363 G	29	256	14	128	241.3	-4.4	+ 6.0	- 8.2
253.368 G	59	337	30	168	239.5	-6.4	+ 6.0	+ 3.2
254.396 G	48	250	25	129	237.6	-8.4	+ 6.7	+14.9
255.383 G	25	145	15	83	238.8	-7.4	+ 6.1	+29.2
256.408 C	9	41	7	30	244.2	-2.1	+ 5.4	+48.1
257.551 G	16	43	16	43	240.6	-5.9	+ 6.2	+59.6
258.422 G	2	14	4	27	244.9	-1.7	+ 5.6	+75.4
Means	..	..	19	100	240.2	..	+ 6.3	..

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

No. 1573. Latitude +14°.2

Group 16169 in Rotation 1283
" 16208 " " 1284

Group 16169. Aug. 13-25. A large cluster of which the main part forms a gamma-type spot between August 18 and 20, but on August 21 begins to break up again, quickly dying out. The much smaller leading part of the group consists of three main nuclei which remain just separated and begin to die out after August 23.

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.
					°	°	°	°
224.323 G	39	241	87	569	181.4	0.0	+12.9	-78.6
225.418 C	122	555	139	647	180.4	-1.0	+13.8	-65.1
226.344 G	245	1160	204	966	180.3	-1.2	+14.5	-53.0
227.248 G	184	1468	123	983	179.7	-1.8	+14.2	-41.6
228.343 G	235	2063	131	1163	179.1	-2.4	+14.4	-27.7
229.559 G	256	2394	133	1241	179.8	-1.8	+14.2	-11.0
230.336 C	250	2104	126	1052	179.8	-1.8	+14.4	- 0.7
231.425 G	189	2075	99	1079	179.3	-2.3	+14.7	+13.2
232.406 G	243	1757	137	981	179.2	-2.5	+14.1	+26.1
233.295 G	142	1375	91	875	179.2	-2.5	+14.1	+37.8
234.395 C	52	424	43	351	179.0	-2.7	+13.8	+52.1
235.321 C	31	177	36	202	179.5	-2.3	+14.1	+64.9
236.641 G	2	21	5	58	178.0	..	+12.8	+80.8
Means	..	..	112	842	179.7	..	+14.1	..

Group 16208. Sept. 9-18. A regular spot leading a small stream; the whole 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.
251.341 G	11	61	25	135	184.8	+2.5	+14.0	-78.2
252.363 G	32	190	35	210	185.3	+3.0	+14.4	-64.2
253.368 G	45	265	35	202	186.7	+4.3	+14.2	-49.6
254.396 G	71	348	44	215	186.7	+4.3	+14.4	-36.0
255.383 G	75	431	41	236	186.1	+3.7	+14.5	-23.5
256.408 C	64	419	34	215	185.8	+3.3	+14.0	-10.3
257.551 G	65	407	34	207	185.1	+2.6	+14.4	+ 4.1
258.422 G	48	297	26	156	185.4	+2.9	+14.6	+15.9
259.324 G	18	139	10	78	185.3	+2.7	+14.3	+27.7
260.310 C	13	63	9	42	185.3	+2.7	+14.2	+40.7
Means	..	..	29	170	185.6	..	+14.3	..

No. 1574. Latitude +9°.7

Group 16175 in Rotation 1283
" 16213 " " 1284

Group 16175. Aug. 17-29. A regular spot. The umbra is elongated and becomes divided into three parts on August 25 and 26.

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.
228.343 G	48	253	100	529	129.8	0.0	+10.0	-77.0
229.559 G	128	609	129	613	130.0	+0.1	+10.4	-60.8

No. 1574. Group 16175 - *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.
					°	°	°	°
230.336 C	124	676	95	521	130.5	+0.5	+10.2	-50.0
231.425 G	153	942	93	575	130.2	0.0	+10.1	-35.9
232.406 G	207	1106	112	597	130.1	-0.2	+10.1	-23.0
233.295 G	207	1265	106	645	130.0	-0.4	+10.1	-11.4
234.395 C	209	1157	104	578	129.9	-0.6	+10.2	+ 3.0
235.321 C	187	1080	97	552	129.9	-0.7	+10.1	+15.3
236.641 G	176	1090	106	654	130.3	-0.5	+10.4	+33.1
237.436 G	185	720	128	497	130.3	-0.6	+10.1	+43.6
238.327 C	95	572	83	498	130.5	-0.5	+10.1	+55.6
239.425 G	62	269	89	387	130.8	-0.3	+10.0	+70.4
240.353 G	18	116	69	443	131.8	..	+ 9.8	+83.6
Means	..	..	104	554	130.2	..	+10.2	..

Group 16213. Sept. 13-24. A small 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.
255.383 G	14	56	28	111	133.2	+0.3	+10.2	-76.4
256.408 C	13	78	14	83	133.2	+0.1	+10.1	-62.9
257.551 G	23	129	17	95	133.0	-0.2	+10.3	-48.0
258.422 G	23	127	14	79	133.0	-0.3	+ 9.8	-36.5
259.324 G	22	151	12	83	133.0	-0.4	+ 9.6	-24.6
260.310 C	37	124	19	63	133.0	-0.5	+ 9.1	-11.6
261.331 G	16	124	8	62	133.1	-0.5	+ 8.7	+ 2.0
262.344 G	29	126	15	66	133.5	-0.2	+ 8.5	+15.7
263.310 C	24	102	14	58	133.7	-0.2	+ 8.6	+28.7
264.351 G	20	76	14	52	133.9	-0.1	+ 8.8	+42.6
265.451 G	11	40	10	36	133.8	-0.3	+ 8.7	+57.1
266.372 G	4	20	5	27	133.8	-0.4	+ 8.8	+69.2
Means	..	..	14	68	133.4	..	+ 9.3	..

No. 1575. Latitude -15°.3

Group 16181 in Rotation 1283
" 16220 " " 1284

Group 16181. Aug. 21-Sept. 2. A regular spot until August 27; on the next day small companions appear. These grow and merge with the regular spot to form a composite spot by August 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.
232.406 G	9	52	21	120	78.2	0.0	-15.4	-74.9
233.295 G	11	84	14	104	78.1	-0.1	-15.5	-63.3
234.395 C	35	167	29	139	78.3	+0.1	-15.2	-48.6
235.321 C	35	202	24	137	78.0	-0.2	-15.2	-36.6
236.641 G	57	340	32	194	77.6	-0.6	-15.1	-19.6
237.436 G	59	326	32	179	77.3	-0.9	-15.0	- 9.4
238.327 C	112	367	60	198	77.0	-1.3	-15.2	+ 2.1
239.425 G	100	538	56	301	76.9	-1.4	-15.1	+16.5
240.353 G	120	493	74	306	76.7	-1.6	-15.2	+28.5
241.373 G	85	499	63	367	76.4	-1.9	-15.0	+41.7
242.350 G	95	590	92	566	76.7	-1.6	-14.9	+54.9

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

No. 1575. Group 16181 - *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.
					°	°	°	°
243.426 G	59	382	91	585	75.7	-2.6	-15.0	+68.1
244.350 G	16	163	55	559	74.6	-3.7	-15.6	+79.2
Means	..	..	49	289	77.0	..	-15.2	..

Group 16220. Sept. 18-29. A cluster of tiny spots until September 20. Nothing is seen on the next day, but on September 22 a growing cluster reappears, the most stable component being a small composite spot. An intense solar flare (magnitude 3+) was associated with this group on September 18 with its maximum at $09^{h}.8$.

260.310 C	7	41	12	68	75.0	-3.5	-15.4	-69.6
261.331 G	11	68	12	72	73.2	-5.3	-16.1	-57.9
262.344 G	11	63	8	47	74.9	-3.6	-15.1	-42.9
263.310 C	0	0	0	0	..	..	..	..
264.351 G	50	160	28	91	72.8	-5.7	-14.8	-18.5
265.451 G	101	472	56	256	73.9	-4.6	-15.2	- 2.8
266.372 G	52	447	29	247	75.1	-3.4	-15.5	+10.5
267.370 G	96	550	58	329	75.5	-3.0	-15.6	+24.1
268.304 C	84	425	57	289	75.6	-2.9	-15.7	+36.5
269.471 G	45	204	42	190	76.2	-2.3	-15.5	+52.5
270.308 C	22	152	29	196	76.5	-2.0	-15.7	+63.8
271.651 G	0	4	0	18	76.4	..	-14.8	+81.5
Means	..	..	30	162	74.9	..	-15.5	..

No. 1576. Latitude -13°.9

Group 16201 in Rotation 1284
" 16230 " " 1285

Group 16201. Sept. 3-15. A stream, led by a stable regular spot, *a*. The following part becomes composite by September 7 but again breaks up by September 10 into a train of variable spots. These die out as the group reaches the limb.

245.392 G	7	114	19	312	264.3	0.0	-13.4	-77.3
246.287 C	52	313	81	473	262.8	-1.5	-13.7	-67.0
247.321 G	123	815	116	742	263.8	-0.6	-13.2	-52.3
248.344 G	227	1124	157	780	263.4	-1.0	-13.1	-39.2
249.332 G	245	1598	148	954	263.8	-0.7	-12.8	-25.8
250.345 G	377	2114	209	1173	262.9	-1.6	-13.4	-13.3
251.341 G	258	2014	139	1081	263.0	-1.5	-13.8	0.0
252.363 G	302	1661	169	924	263.7	-0.9	-13.7	+14.2
253.368 G	315	1600	193	983	264.5	-0.1	-13.3	+28.2
254.396 G	274	1452	203	1068	264.5	-0.2	-13.7	+41.8
255.383 G	176	944	174	926	263.9	-0.8	-13.7	+54.3
256.408 C	63	427	109	730	263.6	-1.1	-13.6	+67.5
257.551 G	10	39	(30	130	257.6	..	-15.7)	+76.6
Means	..	..	143	846	263.7	..	-13.4	..

No. 1576. Group 16201 - *continued*

Spot *a*

					°	°	°	°
245.392 G	7	114	19	312	264.3	0.0	-13.4	-77.3
246.287 C	37	240	48	312	265.0	+0.7	-12.9	-64.8
247.321 G	66	577	56	490	265.5	+1.1	-12.6	-50.6
248.344 G	152	738	100	487	266.3	+1.9	-11.9	-36.3
249.332 G	127	981	72	559	267.0	+2.5	-11.9	-22.6
250.345 G	175	1074	94	580	267.6	+3.1	-12.1	- 8.6
251.341 G	154	1119	82	593	267.9	+3.4	-12.4	+ 4.9
252.363 G	212	1055	119	591	267.9	+3.3	-12.7	+18.4
253.368 G	188	983	118	619	268.1	+3.5	-12.7	+31.8
254.396 G	181	870	139	670	268.3	+3.6	-12.9	+45.6
255.383 G	138	712	142	733	267.5	+2.8	-12.9	+57.9
256.408 C	52	342	95	626	267.9	+3.2	-13.1	+71.8

Group 16230. Sept.30-Oct.12. A stream, in which the follower, *b*, splits into a pair of regular spots by October 10. From September 30 the leading portion of the group grows rapidly, forming another composite spot by October 5. This part slowly declines as it crosses the disk.

272.449 G	13	136	34	362	267.4	+2.0	-14.9	-77.0
273.329 G	51	347	66	449	268.7	+3.3	-14.3	-64.1
274.431 G	78	588	66	496	268.9	+3.4	-14.4	-49.3
275.620 G	180	829	117	537	269.1	+3.6	-14.4	-33.5
276.368 G	279	1222	164	721	269.4	+3.9	-14.3	-23.3
277.368 G	265	1439	143	777	270.9	+5.3	-14.0	- 8.6
278.425 G	252	1113	135	597	271.5	+5.9	-14.2	+ 5.9
279.464 G	141	1305	79	737	270.4	+4.7	-14.4	+18.6
280.382 G	229	1101	144	691	269.8	+4.1	-14.5	+30.1
281.395 G	125	790	94	594	269.1	+3.4	-14.4	+42.7
282.348 G	62	504	57	502	269.6	+3.8	-14.4	+55.8
283.644 G	33	240	75	524	269.7	+3.9	-14.5	+73.0
284.351 G	24	115	76	362	266.2	+0.3	-14.7	+78.8
Means	..	..	96	565	269.3	..	-14.4	..

Spot *b*

272.449 G	11	125	30	342	267.2	+1.8	-14.8	-77.2
273.329 G	47	325	62	426	268.1	+2.7	-14.4	-64.7
274.431 G	65	488	56	420	267.5	+2.0	-14.7	-50.7
275.620 G	140	611	92	403	267.3	+1.8	-14.7	-35.3
276.368 G	172	796	103	478	267.3	+1.8	-15.0	-25.4
277.368 G	127	651	70	358	266.6	+1.0	-14.7	-12.9
278.425 G	107	435	57	231	266.4	+0.8	-14.2	+ 0.8
279.464 G	94	642	52	353	266.0	+0.3	-14.3	+14.2
280.382 G	129	586	77	352	265.8	+0.1	-14.4	+26.1
281.395 G	76	471	53	330	266.1	+0.4	-14.3	+39.7
282.348 G	47	295	41	260	265.6	-0.2	-14.7	+51.8
283.644 G	24	182	38	288	265.8	0.0	-14.5	+69.1
284.351 G	24	115	76	362	266.2	+0.3	-14.7	+78.8

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

No. 1577. Latitude -12°.3

Group 16210 in Rotation 1284
" 16246 " " 1285
" 16282 " " 1286

Group 16210. Sept. 10-23. A very large composite spot, *b*, which undergoes very little change in shape except for a longitudinal elongation for a few days. It is closely preceded by a regular spot, *a*, with a few companions until September 21.

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.
					°	°	°	°
252.363 G	7	56	27	214	168.9	..	-12.8	-80.6
253.368 G	65	368	125	706	164.3	0.0	-13.1	-72.0
254.396 G	142	943	159	1074	163.0	-1.4	-12.9	-59.7
255.383 G	280	1844	227	1523	161.1	-3.3	-13.1	-48.5
256.408 C	240	2243	158	1483	161.4	-3.1	-13.7	-34.7
257.551 G	387	3038	220	1726	161.3	-3.3	-13.5	-19.7
258.422 G	385	2760	207	1487	161.4	-3.3	-13.7	- 8.1
259.324 G	320	3120	173	1685	160.9	-3.8	-14.1	+ 3.3
260.310 C	493	2655	273	1470	160.4	-4.4	-13.9	+15.8
261.331 G	442	2316	273	1431	160.8	-4.1	-13.9	+29.7
262.344 G	318	1804	238	1336	160.3	-4.6	-13.8	+42.5
263.310 C	116	1149	111	1079	159.2	-5.8	-13.8	+54.2
264.351 G	88	477	136	735	159.8	-5.3	-13.5	+68.5
265.451 G	20	99	122	604	159.9	..	-14.1	+83.2
Means	..	..	192	1311	161.2	..	-13.6	..

Spot *a*

252.363 G	7	56	27	214	168.9	..	-12.8	-80.6
253.368 G	29	167	42	244	168.9	0.0	-13.1	-67.4
254.396 G	38	179	35	165	168.8	-0.2	-12.5	-53.9
255.383 G	63	199	45	141	168.5	-0.5	-12.2	-41.1
256.408 C	37	279	22	167	168.0	-1.1	-12.7	-28.1
257.551 G	50	312	28	172	167.6	-1.6	-12.5	-13.4
258.422 G	66	346	35	183	168.1	-1.2	-12.8	- 1.4
259.324 G	32	254	17	137	168.5	-0.8	-12.7	+10.9
260.310 C	35	190	20	110	168.7	-0.7	-12.9	+24.1
261.331 G	25	142	17	97	168.9	-0.6	-12.9	+37.8
262.344 G	16	58	14	50	169.3	-0.2	-12.8	+51.5
263.310 C	9	44	11	51	167.0	-2.6	-12.7	+62.0

Spot *b*

253.368 G	36	201	83	462	161.1	0.0	-13.3	-75.2
254.396 G	104	764	124	909	160.4	-0.8	-13.8	-62.3
255.383 G	217	1645	182	1382	159.7	-1.5	-13.4	-49.9
256.408 C	203	1964	136	1316	159.8	-1.5	-13.9	-36.3
257.551 G	337	2726	192	1554	159.9	-1.5	-13.7	-21.1
258.422 G	319	2414	172	1304	160.7	-0.8	-14.1	- 8.8
259.324 G	288	2866	156	1548	160.1	-1.4	-14.2	+ 2.5
260.310 C	421	2267	232	1247	159.5	-2.1	-13.8	+14.9
261.331 G	367	1969	224	1201	159.5	-2.2	-14.0	+28.4

continued

No. 1577. Group 16210. Spot *b* - *continued*

					°	°	°	°
262.344 G	259	1613	189	1177	159.6	-2.1	-14.1	+41.8
263.310 C	107	1105	100	1028	159.1	-2.7	-13.9	+54.1
264.351 G	88	477	136	735	159.8	-2.1	-13.5	+68.5
265.451 G	20	99	122	604	159.9	..	-14.1	+83.2

Group 16246. Oct. 8-19. A stream in which the only stable component is the leader, a small regular spot; this splits into two on October 16.

280.382 G	6	17	12	36	166.2	+3.2	-11.2	-73.5
281.395 G	24	115	28	134	164.6	+1.5	-12.2	-61.8
282.348 G	18	134	14	110	164.7	+1.5	-11.6	-49.1
283.644 G	62	368	39	228	165.2	+1.9	-11.2	-31.5
284.351 G	94	442	53	249	166.2	+2.9	-11.0	-21.2
285.368 G	62	426	32	223	167.0	+3.6	-10.6	- 6.9
286.424 G	35	295	19	156	167.9	+4.4	-10.9	+ 7.9
287.393 G	42	254	23	141	167.9	+4.4	-11.0	+20.7
288.351 C	45	261	29	165	167.5	+3.9	-11.0	+32.9
289.544 G	38	164	31	131	167.4	+3.7	-11.2	+48.5
290.300 C	11	113	12	120	168.7	+4.9	-10.8	+59.8
291.341 G	7	53	15	113	170.2	+6.4	-10.3	+75.0
Means	..	..	26	150	167.0	..	-11.1	..

Group 16282. Nov. 4-11. A small spot.

307.295 C	4	17	8	32	171.3	+6.3	-11.9	-73.5
308.294 C	11	38	12	41	170.8	+5.7	-12.2	-60.8
309.417 G	4	31	3	23	171.2	+6.1	-12.1	-45.6
310.411 G	9	28	6	17	171.4	+6.2	-12.2	-32.3
311.479 G	15	50	8	28	171.2	+5.9	-12.1	-18.4
312.293 C	11	42	6	22	171.1	+5.8	-12.2	- 7.8
313.386 G	7	15	4	8	171.5	+6.1	-12.4	+ 7.0
314.302 C	2	11	1	6	171.8	+6.3	-12.5	+19.4
Means	..	..	6	22	171.3	..	-12.2	..

No. 1578. Latitude -4°.6

Group 16256 in Rotation 1285
" 16286 } " " 1286
" 16287 } " "

Group 16256. Oct. 14-24. A few small spots, not seen on October 17 and with maximum area on October 23.

286.424 G	4	20	4	21	99.4	0.0	- 6.7	-60.6
287.393 G	4	11	3	8	100.4	+0.8	- 6.0	-46.8
288.351 C	6	19	4	12	100.8	+1.1	- 5.9	-33.8

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

No. 1578. Group 16256 - *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.
					°	°	°	°
289.544 G	0	0	0	0	..	..	..	..
290.300 C	0	13	0	7	104.0	+3.9	- 3.8	- 4.9
291.341 G	4	31	2	16	102.9	+2.6	- 4.5	+ 7.7
292.311 C	9	49	5	27	104.1	+3.7	- 5.7	+21.7
293.561 G	33	216	22	140	104.0	+3.4	- 3.9	+38.1
294.356 C	50	405	38	311	104.0	+3.2	- 4.0	+48.6
295.294 C	47	328	49	334	102.8	+1.9	- 4.5	+59.8
296.393 C	15	149	28	289	102.9	+1.8	- 4.9	+74.4
Means	..	..	14	106	102.5	..	- 5.0	..

Group 16286. Nov. 8-10. One or two tiny spots.

311.479 G	0	7	0	27	107.4	..	- 5.7	-82.2
312.293 C	4	30	6	50	106.9	+3.0	- 6.2	-72.0
313.386 G	4	13	4	13	105.4	+1.3	- 5.8	-59.1
Means	..	..	5	32	106.2	..	- 6.0	..

Group 16287. Nov. 9-14. A single small spot until November 13; a small stream on the next day.

312.293 C	4	17	8	32	104.3	+0.4	- 2.9	-74.6
313.386 G	4	24	4	25	104.0	-0.1	- 2.6	-60.5
314.302 C	6	23	5	17	104.2	0.0	- 2.6	-48.2
315.384 G	4	18	2	11	104.3	-0.1	- 2.4	-33.8
316.430 G	2	9	1	5	104.8	+0.2	- 2.4	-19.5
317.474 G	4	31	2	16	104.9	+0.1	- 4.4	- 5.7
Means	..	..	4	18	104.4	..	- 2.9	..

No. 1579. Latitude +13°.0

Group 16262 in Rotation 1286
" 16304 " " 1287

Group 16262. Oct. 22-Nov. 3. A regular spot which has divided into two parts by October 29. The following part has died out by November 2.

294.356 C	11	90	36	295	333.3	..	+12.2	-82.1
295.294 C	45	248	67	367	332.1	0.0	+12.1	-70.9
296.393 C	79	390	71	349	332.3	+0.1	+12.1	-56.2
297.398 G	97	484	66	331	332.3	+0.1	+11.8	-43.0
298.301 C	72	581	42	337	332.7	+0.4	+12.0	-30.7
299.381 G	103	618	55	328	332.5	+0.2	+12.1	-16.6
300.359 G	115	579	59	295	332.5	+0.1	+12.3	- 3.7
301.318 C	94	520	48	265	332.6	+0.1	+12.2	+ 9.0

No. 1579. Group 16262 - *continued*

					°	°	°	°
302.410 G	86	403	47	222	332.7	+0.2	+12.7	+23.5
303.418 G	40	310	25	195	332.9	+0.3	+12.7	+37.0
304.436 G	42	213	33	168	333.1	+0.5	+12.7	+50.6
305.483 G	15	143	17	164	333.3	+0.6	+12.5	+64.6
306.393 G	15	79	31	162	333.1	+0.3	+12.8	+76.4
Means	..	..	47	265	332.7	..	+12.3	..

Group 16304. Nov. 19-Dec. 1. A small, fairly stable regular spot.

322.405 G	7	63	12	106	332.9	-0.8	+14.1	-72.7
323.309 C	15	76	15	78	333.1	-0.7	+14.2	-60.6
324.531 G	35	133	25	96	332.8	-1.0	+13.9	-44.8
325.407 G	26	146	16	89	332.9	-1.0	+13.6	-33.1
326.291 C	38	202	21	111	333.0	-0.9	+13.4	-21.4
327.291 C	32	174	17	90	332.9	-1.1	+13.5	- 8.3
328.290 C	19	134	10	68	332.7	-1.3	+13.7	+ 4.7
329.293 C	29	120	16	65	332.6	-1.5	+13.5	+17.8
330.433 G	33	142	20	87	332.5	-1.7	+13.6	+32.7
331.431 G	15	117	11	85	332.0	-2.2	+13.7	+45.4
332.609 G	20	70	21	73	331.7	-2.6	+13.5	+60.6
333.517 G	11	72	18	121	331.5	-2.9	+13.8	+72.4
334.286 C	4	21	16	85	332.0	..	+13.5	+83.0
Means	..	..	17	89	332.6	..	+13.7	..

No. 1580. Latitude +19°.5

Group 16274 in Rotation 1286
" 16309 " " 1287

Group 16274. Oct. 31-Nov. 7. A growing stream, developing from a pair of small spots near to the C.M.

303.418 G	6	35	3	17	293.4	0.0	+19.1	- 2.5
304.436 G	29	141	15	74	289.0	-4.3	+19.0	+ 6.5
305.483 G	29	220	16	121	288.8	-4.4	+19.1	+20.1
306.393 G	46	261	28	159	288.5	-4.6	+19.4	+31.8
307.295 C	22	231	16	164	288.3	-4.7	+19.7	+43.5
308.294 C	70	366	74	371	290.5	-2.4	+19.0	+58.9
309.417 G	30	370	65	733	290.4	-2.4	+18.9	+73.6
310.411 G	20	92	(72	332	286.5	..	+20.1)	+82.8
Means	..	..	31	234	289.8	..	+19.2	..

Group 16309. Nov. 23-30. Possibly only a revival of Group 16274. A pair of small spots, not seen on November 25 and 26.

326.291 C	2	21	2	26	288.4	-2.7	+20.5	-66.0
327.291 C	8	40	7	37	285.2	-5.8	+20.5	-56.0

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

No. 1580. Group 16309 - *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.
					°	°	°	°
328.290 C	0	0	0	0	..	..	..	..
329.293 C	0	0	0	0	..	..	..	..
330.433 G	11	72	6	39	285.7	-5.0	+19.1	-14.1
331.431 G	2	24	1	13	285.7	-4.9	+19.3	- 0.9
332.609 G	11	87	6	47	282.5	-8.0	+19.9	+11.4
333.517 G	2	30	1	18	283.5	-6.9	+19.5	+24.4
Means	..	..	3	22	285.2	..	+19.8	..

No. 1581. Latitude +22°.0

Group 16278 in Rotation 1286
" 16321 " " 1287

Group 16278. Nov. 2-13. A pair of tiny spots when first seen. These develop into a moderately sized cluster with maximum area on November 11.

305.483 G	2	17	3	25	198.7	0.0	+23.0	-70.0
306.393 G	10	51	9	46	201.8	+3.3	+21.6	-54.9
307.295 C	10	81	7	57	202.3	+3.9	+22.0	-42.5
308.294 C	66	374	40	229	200.7	+2.5	+21.3	-30.9
309.417 G	61	528	33	287	201.3	+3.3	+21.7	-15.5
310.411 G	97	460	51	242	200.7	+2.9	+21.2	- 3.0
311.479 G	71	409	38	218	202.2	+4.5	+20.2	+12.6
312.293 C	139	821	79	466	202.0	+4.5	+20.3	+23.1
313.386 G	177	1184	116	775	201.9	+4.6	+20.1	+37.4
314.302 C	103	1020	81	821	201.6	+4.4	+20.4	+49.2
315.384 G	90	628	104	739	201.4	+4.4	+20.7	+63.3
316.430 G	33	249	72	544	200.3	+3.5	+20.8	+76.0
Means	..	..	53	371	201.2	..	+21.1	..

Group 16321. Nov. 28-Dec. 11. A small regular spot with a close companion which is eventually absorbed. On December 7 a tiny and more distant companion appears.

331.431 G	2	13	10	62	202.6	..	+22.7	-84.0
332.609 G	20	157	30	237	201.8	+7.8	+23.4	-69.3
333.517 G	28	299	29	303	200.9	+7.1	+23.0	-58.2
334.286 C	25	211	20	168	201.6	+7.9	+22.8	-47.4
335.285 C	25	232	16	151	201.7	+8.2	+23.0	-34.1
336.286 C	42	265	24	154	201.3	+8.0	+22.8	-21.3
337.413 G	39	229	21	124	200.9	+7.8	+22.7	- 6.9
338.442 G	35	224	19	123	200.5	+7.6	+23.0	+ 6.3
339.282 C	38	205	22	117	200.3	+7.5	+22.8	+17.2
340.465 G	43	193	27	123	199.3	+6.7	+22.8	+31.7
341.288 C	27	180	20	130	198.4	+6.0	+22.3	+41.7
342.394 G	48	272	46	260	197.3	+5.1	+22.6	+55.2

No. 1581. Group 16321 - *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.
					°	°	°	°
343.412 G	22	124	33	187	197.6	+5.5	+22.3	+68.9
344.419 G	4	26	13	82	195.9	..	+21.7	+80.4
Means	..	..	26	173	200.1	..	+22.8	..

No. 1582. Latitude -10°.0

Group 16279 in Rotation 1286
" 16323 " " 1287

Group 16279. Nov. 2-14. A stream of normal type in which the follower, a composite spot, is at first the largest component but which is reduced to a tiny spot at the west limb. The leader, *a*, is stable throughout.

305.483 G	52	436	140	1233	189.7	0.0	- 9.7	-79.0
306.393 G	137	757	183	1062	189.7	-0.1	- 9.9	-67.0
307.295 C	118	1219	101	1137	189.1	-0.8	- 9.9	-55.7
308.294 C	248	1473	172	1027	190.0	0.0	- 9.8	-41.6
309.417 G	175	1692	100	984	189.1	-1.0	-10.0	-27.7
310.411 G	267	1693	143	906	189.4	-0.9	- 9.9	-14.3
311.479 G	251	1641	129	846	188.7	-1.7	-10.5	- 0.9
312.293 C	218	1256	114	658	189.2	-1.3	-10.2	+10.3
313.386 G	137	839	78	483	190.7	+0.1	-10.3	+26.2
314.302 C	89	654	59	434	190.7	0.0	- 9.8	+38.3
315.384 G	75	460	65	391	190.2	-0.6	-10.3	+52.1
316.430 G	29	171	40	235	190.6	-0.3	-10.3	+66.3
317.474 G	8	54	26	180	187.6	-3.4	-10.0	+77.0
Means	..	..	104	737	189.6	..	-10.0	..

Spot *a*

305.483 G	35	260	72	533	193.7	0.0	- 8.6	-75.0
306.393 G	86	374	98	426	193.8	0.0	- 8.4	-62.9
307.295 C	95	570	77	462	194.0	+0.1	- 8.0	-50.8
308.294 C	140	778	91	506	193.2	-0.8	- 8.3	-38.4
309.417 G	101	572	56	315	194.8	+0.7	- 8.2	-22.0
310.411 G	107	541	56	281	194.6	+0.3	- 8.5	- 9.1
311.479 G	105	537	54	274	194.4	0.0	- 8.7	+ 4.8
312.293 C	72	462	38	245	194.2	-0.3	- 8.7	+15.3
313.386 G	77	449	45	265	194.1	-0.5	- 8.9	+29.6
314.302 C	72	494	49	336	193.4	-1.3	- 8.9	+41.0
315.384 G	48	243	44	221	193.7	-1.1	- 8.8	+55.6
316.430 G	22	118	33	178	194.1	-0.8	- 9.4	+69.8
317.474 G	4	28	19	134	194.0	..	- 9.6	+83.4

Group 16323. Nov. 29-Dec. 11. A slowly-diminishing regular spot.

332.609 G	13	94	24	177	197.0	+0.3	-10.1	-74.1
333.517 G	37	145	42	165	195.7	-1.1	-10.2	-63.4

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

No. 1582. Group 16323 - *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.
					°	°	°	°
334.286 C	29	194	25	165	195.9	-1.0	-10.3	-53.1
335.285 C	33	228	22	150	196.0	-1.0	-10.3	-39.8
336.286 C	46	278	26	158	195.7	-1.4	-10.4	-26.9
337.413 G	41	286	21	149	195.7	-1.6	-10.0	-12.1
338.442 G	33	219	17	112	195.8	-1.6	- 9.8	+ 1.6
339.282 C	27	265	14	138	195.6	-1.9	-10.1	+12.5
340.465 G	26	197	15	114	195.9	-1.7	- 9.6	+28.3
341.288 C	15	192	10	125	195.6	-2.1	- 9.8	+38.9
342.394 G	20	166	17	141	195.7	-2.1	- 9.3	+53.6
343.412 G	26	102	34	133	195.9	-2.0	- 9.7	+67.2
344.419 G	7	39	20	114	195.5	..	- 9.7	+80.0
Means	..	..	22	144	195.9	..	-10.0	..

No. 1583. Latitude +25°.5

Group 16280 in Rotation 1286
" 16320 " " 1287

Group 16280. Nov. 3-12. A stream forming immediately behind Group 16271. The follower, *b*, becomes a regular spot and the only stable component.

306.393 G	2	9	1	5	227.9	0.0	+25.6	-28.8
307.295 C	16	133	8	74	228.9	+1.3	+25.5	-15.9
308.294 C	69	309	37	166	229.0	+1.7	+25.5	- 2.6
309.417 G	73	781	40	431	226.0	-1.0	+25.9	+ 9.2
310.411 G	156	787	91	457	225.9	-0.8	+26.0	+22.2
311.479 G	166	931	109	617	225.1	-1.3	+26.1	+35.5
312.293 C	124	823	95	641	224.3	-1.9	+26.2	+45.4
313.386 G	119	708	127	756	222.6	-3.3	+26.2	+58.1
314.302 C	42	378	65	558	222.0	-3.6	+26.4	+69.6
315.384 G	22	118	(72	387	219.9	..	+27.5)	+81.8
Means	..	..	64	412	225.7	..	+25.9	..

Spot *b*

309.417 G	24	249	13	137	222.9	0.0	+27.0	+ 6.1
310.411 G	70	283	40	161	221.9	-0.7	+27.2	+18.2
311.479 G	94	488	60	312	221.3	-1.0	+27.3	+31.7
312.293 C	80	407	58	297	220.7	-1.4	+27.6	+41.8
313.386 G	66	410	62	385	219.7	-2.0	+27.4	+55.2
314.302 C	34	323	45	423	218.7	-2.8	+27.3	+66.3
315.384 G	22	118	72	387	219.9	..	+27.5	+81.8

Group 16320. Nov.28-Dec.7. Two spots, close together, which slowly diminish.

331.431 G	24	245	49	502	211.6	-4.9	+25.3	-75.0
332.609 G	70	397	75	425	211.7	-4.4	+25.3	-59.4

No. 1583. Group 16320 - *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.
					°	°	°	°
333.517 G	76	516	63	428	210.5	-5.4	+25.3	-48.6
334.286 C	73	489	51	342	210.6	-5.0	+25.2	-38.4
335.285 C	65	456	40	278	210.1	-5.2	+25.1	-25.7
336.286 C	65	464	36	260	209.3	-5.8	+25.0	-13.3
337.413 G	54	334	30	184	208.7	-6.0	+25.1	+ 0.9
338.442 G	24	208	14	119	208.3	-6.1	+25.0	+14.1
339.282 C	23	132	14	81	208.1	-6.1	+25.0	+25.0
340.465 G	15	87	11	64	208.2	-5.6	+25.0	+40.6
Means	..	..	38	268	209.7	..	+25.1	..

No. 1584. Latitude -14°.6

Group 16307 in Rotation 1286
" 16336 " " 1287

Group 16307. Nov. 21-26. A pair of spots which grow fairly rapidly.

324.531 G	11	29	6	16	35.5	0.0	-13.9	+17.9
325.407 G	22	78	13	47	35.8	+0.3	-13.5	+29.8
326.291 C	54	424	37	297	36.1	+0.6	-14.2	+41.7
327.291 C	113	592	105	544	35.8	+0.2	-14.7	+54.6
328.290 C	90	515	135	749	35.7	+0.1	-14.2	+67.7
329.293 C	14	147	51	487	34.6	-1.0	-15.8	+79.8
Means	..	..	58	357	35.6	..	-14.4	..

Group 16336. Dec. 11-19. A small spot until December 14; later there are several.

344.419 G	4	33	6	50	45.6	+9.6	-15.0	-69.9
345.432 G	11	46	10	43	45.2	+9.2	-14.7	-56.9
346.292 C	4	40	3	30	45.1	+9.1	-14.4	-45.7
347.462 G	11	39	7	23	45.0	+8.9	-14.4	-30.4
348.407 G	13	56	7	30	43.1	+7.0	-14.5	-19.8
349.254 C	8	71	4	37	42.9	+6.8	-14.4	- 8.9
350.463 G	2	20	1	10	41.2	+5.1	-14.1	+ 5.4
351.261 C	2	15	1	8	42.4	+6.2	-15.7	+17.1
352.469 G	0	20	0	12	42.6	+6.4	-16.2	+33.2
Means	..	..	4	27	43.7	..	-14.8	..

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

No. 1585. Latitude +19°.2

Group 16308 in Rotation 1287
" 16348 " " 1288
" 16379 " " 1289

Group 16308. Nov. 21-Dec. 3. A big elongated spot whose umbra divides into two by November 27. There are a few close companions immediately following.

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.
					°	°	°	°
324.531 G	116	597	200	1027	304.7	0.0	+17.2	-72.9
325.407 G	150	754	156	784	305.4	+0.8	+17.2	-60.6
326.291 C	206	1243	161	970	306.1	+1.6	+17.4	-48.3
327.291 C	246	1480	157	947	305.8	+1.4	+17.9	-35.4
328.290 C	296	1840	166	1030	306.3	+1.9	+18.1	-21.7
329.293 C	244	1930	129	1023	306.6	+2.3	+18.4	- 8.2
330.433 G	307	1821	163	965	306.2	+2.0	+18.5	+ 6.4
331.431 G	234	1577	131	881	305.9	+1.8	+18.7	+19.3
332.609 G	259	1186	165	756	305.9	+1.9	+18.5	+34.8
333.517 G	195	961	150	740	306.2	+2.3	+18.5	+47.1
334.286 C	123	709	118	681	306.1	+2.3	+18.5	+57.1
335.285 C	69	426	102	630	305.2	+1.5	+18.5	+69.4
336.286 C	8	75	27	257	303.8	..	+18.2	+81.2
Means	..	..	150	870	305.9	..	+18.1	..

Group 16348. Dec. 18-30. A stable regular spot, the umbra of which is divided into two by a bright "bridge".

351.261 C	4	31	19	148	302.3	..	+20.1	-83.0
352.469 G	28	128	40	184	301.7	-0.5	+19.9	-67.7
353.439 G	20	167	19	159	301.3	-0.8	+19.9	-55.3
354.409 G	54	260	39	190	301.4	-0.6	+19.8	-42.4
355.500 G	58	248	36	154	300.5	-1.4	+19.8	-29.0
356.286 C	37	289	21	165	300.5	-1.3	+19.8	-18.6
357.285 C	40	322	22	174	300.5	-1.2	+19.6	- 5.5
358.283 C	50	401	27	217	299.7	-1.9	+19.6	+ 6.9
359.382 C	42	308	24	179	299.8	-1.7	+19.2	+21.5
360.279 C	31	256	20	164	299.5	-1.9	+19.2	+33.0
361.284 C	48	200	37	156	299.2	-2.2	+19.1	+45.9
362.410 G	39	180	43	198	298.6	-2.7	+19.1	+60.1
363.422 G	20	124	40	250	298.9	-2.3	+18.7	+73.8
Means	..	..	31	182	300.1	..	+19.5	..

Group 16379. 1950 Jan. 16-26. A single small spot until January 20. Nothing is then seen until January 24, when a pair of spots appears.

15.463 G	2	11	3	16	293.4	-6.2	+19.8	-67.3
16.283 C	10	33	10	34	293.3	-6.2	+20.1	-56.6
17.390 G	4	15	3	11	292.9	-6.5	+19.8	-42.4
18.487 G	11	30	7	19	292.3	-7.0	+20.3	-28.6

No. 1585. Group 16379 - *continued*

					°	°	°	°
19.427 C	2	10	1	6	291.8	-7.4	+19.7	-16.7
20.489 G	0	0	0	0	..	..	..	..
21.303 C	0	0	0	0	..	..	..	..
22.384 G	0	0	0	0	..	..	..	..
23.388 G	7	59	5	41	292.1	-6.8	+20.1	+35.7
24.286 C	19	75	16	62	291.8	-7.0	+19.8	+47.2
25.584 G	2	9	3	12	292.5	-6.2	+20.2	+65.0
Means	..	..	4	18	292.5	..	+20.0	..

No. 1586. Latitude +21°.9

Group 16326 in Rotation 1287
" 16358 " " 1288

Group 16326. Dec. 4-10. A variable stream which is still growing as it passes round the limb.

337.413 G	16	107	9	56	211.3	0.0	+19.8	+ 3.5
338.442 G	35	180	19	101	211.2	+0.1	+22.0	+17.0
339.282 C	31	278	18	169	211.1	+0.1	+22.3	+28.0
340.465 G	87	574	69	446	212.4	+1.6	+22.9	+44.8
341.288 C	44	444	45	443	212.5	+1.9	+22.7	+55.8
342.394 G	72	611	138	1089	212.5	+2.1	+23.0	+70.4
343.412 G	15	124	(51	425	209.3	..	+23.6)	+80.6
Means	..	..	50	383	211.8	..	+22.1	..

Group 16358. Dec. 26-1950 Jan. 6. Perhaps a revival and not a true return of Group 16326. A stream of small unstable spots until December 30; the next day a large composite spot begins to develop. This reaches maximum area on January 3, after which it disintegrates.

359.382 C	0	4	0	6	210.5	+3.0	+22.2	-67.8
360.279 C	6	42	6	42	210.9	+3.5	+22.5	-55.6
361.284 C	21	85	16	66	209.9	+2.7	+22.3	-43.4
362.410 G	31	151	19	96	209.3	+2.3	+21.9	-29.2
363.422 G	46	272	26	156	209.7	+2.9	+21.9	-15.4
364.403 C	56	477	31	262	208.0	+1.3	+21.6	- 4.2
0.450 G	186	1605	105	900	208.1	+1.6	+22.1	+ 9.7
1.271 C	194	1760	115	1042	208.0	+1.7	+21.5	+20.4
2.301 C	232	1587	160	1084	210.5	+4.3	+21.4	+36.5
3.291 C	132	903	115	780	210.1	+4.1	+21.1	+49.1
4.601 G	49	437	78	681	213.7	+7.9	+21.0	+69.9
5.398 G	13	96	(40	299	209.1	..	+21.5)	+75.8
Means	..	..	61	465	209.9	..	+21.8	..

LEDGER I. - RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

No. 1587. Latitude +10°.1

Group 16354 in Rotation 1288
" 16380 " " 1289

Group 16354. Dec. 22-1950 Jan. 2. A bi-polar group, whose leader, *a*, is a stable regular spot. The follower, composite in structure, begins to break up on December 27 and at the limb has declined to a tiny 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.
					°	°	°	°
355.500 G	23	110	24	118	268.4	0.0	+11.1	-61.1
356.286 C	58	398	47	318	269.2	+0.7	+10.7	-49.9
357.285 C	131	984	84	634	269.4	+0.8	+10.5	-36.6
358.283 C	247	1754	138	980	269.8	+1.1	+10.2	-23.0
359.382 C	273	1456	141	749	269.5	+0.7	+10.2	- 8.8
360.279 C	191	1375	99	709	270.1	+1.2	+10.1	+ 3.6
361.284 C	164	1038	88	554	270.1	+1.1	+10.3	+16.8
362.410 G	184	927	112	560	270.7	+1.5	+10.3	+32.2
363.422 G	93	611	69	454	269.8	+0.5	+10.5	+44.7
364.403 C	60	420	61	425	270.2	+0.8	+10.8	+58.0
0.450 G	41	192	74	349	271.4	+1.9	+10.8	+73.0
1.271 C	13	67	62	299	267.4	-2.2	+10.8	+79.8
Means	..	..	83	512	269.7	..	+10.5	..

Spot *a*

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.
355.500 G	17	60	17	61	270.4	0.0	+11.2	-59.1
356.286 C	29	227	22	173	271.3	+0.8	+10.5	-47.8
357.285 C	75	510	46	316	272.0	+1.4	+10.4	-34.0
358.283 C	141	976	78	537	272.7	+2.0	+10.1	-20.1

continued

No. 1587. Group 16354. Spot *a* - *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.
					°	°	°	°
359.382 C	154	792	79	404	272.8	+2.0	+10.0	- 5.5
360.279 C	123	790	64	411	272.9	+2.0	+10.3	+ 6.4
361.284 C	131	720	71	389	272.8	+1.8	+10.2	+19.5
362.410 G	143	634	89	393	272.9	+1.7	+10.3	+34.4
363.422 G	63	427	48	325	272.4	+1.1	+10.5	+47.3
364.403 C	56	364	58	379	272.2	+0.8	+10.4	+60.0
0.450 G	39	181	72	335	271.8	+0.3	+10.8	+73.4
1.271 C	13	59	62	283	270.8	..	+10.5	+83.2

Group 16380. 1950 Jan. 17-28. A stable regular spot until January 22; on the next day it splits into two and then slowly dies 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.
16.283 C	13	125	33	315	272.5	-0.7	+10.1	-77.4
17.390 G	65	280	73	314	273.4	0.0	+ 9.8	-61.9
18.487 G	50	401	38	309	273.4	-0.1	+10.3	-47.5
19.427 C	86	489	55	313	273.5	-0.1	+ 9.7	-35.0
20.489 G	85	540	48	302	273.5	-0.2	+ 9.9	-21.0
21.303 C	96	548	51	290	273.3	-0.5	+ 9.8	-10.5
22.384 G	50	528	26	275	273.3	-0.6	+ 9.3	+ 3.7
23.388 G	78	344	42	186	273.1	-0.9	+ 9.7	+16.7
24.286 C	52	268	31	158	273.0	-1.1	+ 9.7	+28.4
25.584 G	28	143	21	106	272.8	-1.5	+ 9.8	+45.3
26.496 G	4	41	4	40	272.6	-1.8	+ 9.8	+57.2
27.288 C	2	15	3	20	271.6	-2.8	+ 9.3	+66.6
Means	..	..	35	219	273.0	..	+ 9.8	..

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ROYAL GREENWICH OBSERVATORY

Ledgers of Groups of Sunspots

For the year 1949

Ledger 11:

Non-Recurrent Groups

GREENWICH PHOTO-HELIOGRAPHIC RESULTS, 1949

LEDGER II. – NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949.

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 and Kodaikanal by the letters C and K respectively.

The projected area of the umbræ and whole spots, given in the *second* and *third* columns, is the area as it is measured on the photograph uncorrected for the effect of foreshortening, and expressed in millionths of the Sun's apparent disk.

The area corrected for foreshortening given in the *fourth* and *fifth* columns is expressed in millionths of the Sun's visible hemisphere.

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

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

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

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

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

Group 15851.

Jan. 1-6. A few tiny spots.

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.
					°	°	°	°
0.457 G	10	54	12	65	270.2	0.0	- 7.7	-65.7
1.277 C	4	37	4	34	268.5	-1.8	- 7.3	-56.6
2.502 C	4	15	3	10	267.6	-2.9	- 7.8	-41.4
3.534 G	2	11	1	6	267.9	-2.7	- 8.2	-27.5
4.299 C	4	19	2	10	273.5	+2.8	- 8.2	-11.8
5.287 C	0	12	0	6	274.0	+3.1	- 7.6	+ 1.7
Means	..	..	4	22	270.3	..	- 7.8	..

Group 15853.

Jan. 3-12. A small spot, except between January 5 and January 9, when there is 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.
2.502 C	2	12	3	19	238.1	0.0	+ 4.9	-70.9
3.534 G	19	73	17	65	240.3	+2.0	+ 4.6	-55.1
4.299 C	35	233	25	166	240.4	+2.0	+ 4.1	-44.9
5.287 C	33	193	20	113	241.3	+2.7	+ 4.7	-31.0
6.286 C	37	221	20	117	240.8	+2.0	+ 4.0	-18.3
7.289 C	38	206	20	104	240.9	+1.9	+ 3.7	- 5.0
8.451 G	30	134	15	69	241.4	+2.2	+ 3.4	+10.8
9.293 C	12	69	7	39	245.6	+6.3	+ 2.3	+26.1
10.490 G	4	24	3	16	246.1	+6.6	+ 2.8	+42.3
11.440 G	4	13	4	11	246.2	+6.5	+ 3.3	+54.9
Means	..	..	13	72	242.1	..	+ 3.8	..

Group 15857.

Jan. 7-14. A bi-polar group which forms immediately s Group 15854, and dies out before reaching 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.
6.286 C	8	34	6	24	217.0	0.0	-15.0	-42.1
7.289 C	24	104	14	60	216.8	-0.2	-15.1	-29.1
8.451 G	117	496	61	260	218.1	+1.1	-15.0	-12.5
9.293 C	54	482	28	246	217.1	+0.1	-15.3	- 2.4
10.490 G	102	730	53	384	218.2	+1.2	-15.9	+14.4
11.440 G	72	555	41	318	218.3	+1.3	-16.1	+27.0
12.473 G	43	285	28	190	218.4	+1.4	-15.8	+40.7
13.287 C	17	96	14	78	218.3	+1.3	-16.0	+51.4
Means	..	..	31	195	217.8	..	-15.5	..

Group 15858.

Jan. 8-13. A spot of rapid growth and decay.

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.
					°	°	°	°
7.289 C	10	79	12	93	180.6	0.0	-11.4	-65.3
8.451 G	76	339	62	275	179.1	-1.6	-11.6	-51.5
9.293 C	50	322	33	214	179.3	-1.4	-12.1	-40.2
10.490 G	20	121	11	68	178.5	-2.3	-11.9	-25.3
11.440 G	10	82	5	43	179.2	-1.7	-12.8	-12.1
12.473 G	4	17	2	9	179.8	-1.2	-13.2	+ 2.1
Means	..	..	21	117	179.4	..	-12.2	..

Group 15860.

Jan. 11-17. One or two small faint spots.

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.
10.490 G	4	19	4	18	146.6	0.0	+11.5	-57.2
11.440 G	4	22	3	16	147.8	+1.1	+12.1	-43.5
12.473 G	11	52	7	32	147.0	+0.2	+11.6	-30.7
13.287 C	8	67	4	36	149.6	+2.7	+10.6	-17.3
14.286 C	10	46	5	24	150.3	+3.4	+10.3	- 3.5
15.423 C	4	25	2	13	148.8	+1.8	+11.9	+10.0
16.306 C	2	8	1	5	150.5	+3.4	+11.2	+23.3
Means	..	..	4	21	148.7	..	+11.3	..

Group 15861.

Jan. 11-22. A group of small changing spots. The leading part becomes composite 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.
10.490 G	20	126	38	239	130.2	0.0	+13.9	-73.6
11.440 G	45	337	49	367	130.7	+0.5	+13.4	-60.6
12.473 G	69	383	54	296	131.1	+0.8	+13.2	-46.6
13.287 C	59	308	39	202	131.0	+0.7	+13.4	-35.9
14.286 C	51	393	29	223	132.4	+2.0	+13.5	-21.4
15.423 C	136	832	72	442	132.0	+1.6	+14.1	- 6.8
16.306 C	128	723	68	383	132.3	+1.8	+14.0	+ 5.1
17.308 C	100	585	55	328	132.8	+2.3	+14.2	+18.8
18.286 C	94	326	59	205	133.8	+3.2	+13.6	+32.7
19.501 G	65	222	53	182	134.7	+4.1	+13.0	+49.6
20.288 C	42	155	45	164	134.1	+3.4	+13.3	+59.4
21.409 G	7	59	14	117	133.6	+2.9	+13.1	+73.6
Means	..	..	48	262	132.4	..	+13.6	..

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

Group 15863.

Jan. 13-20. Small changing spots with maximum area on January 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.
					°	°	°	°
12.473 G	6	24	6	24	123.4	0.0	+23.9	-54.3
13.287 C	12	44	10	35	123.3	+0.1	+23.9	-43.6
14.286 C	19	117	12	74	124.7	+1.6	+20.9	-29.1
15.423 C	53	318	31	183	123.6	+0.8	+23.8	-15.2
16.306 C	42	155	24	86	124.3	+1.6	+20.9	- 2.9
17.308 C	14	80	8	46	123.7	+1.2	+21.2	+ 9.7
18.286 C	21	42	13	25	121.8	-0.5	+22.3	+20.7
19.501 G	4	41	3	29	121.3	-0.8	+22.7	+36.2
Means	..	..	13	63	123.3	..	+22.4	..

Group 15869.

Jan. 15-24. A stream of small changing spots.

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.
14.286 C	4	35	5	47	87.4	0.0	+13.7	-66.4
15.423 C	22	121	20	105	87.1	-0.3	+14.1	-51.7
16.306 C	38	102	27	72	86.3	-1.2	+14.4	-40.9
17.308 C	14	69	8	41	85.1	-2.4	+13.9	-28.9
18.286 C	27	135	15	75	83.8	-3.7	+14.7	-17.3
19.501 G	28	156	15	82	84.6	-2.9	+14.7	- 0.5
20.288 C	35	127	18	67	85.1	-2.5	+14.4	+10.4
21.409 G	4	28	2	16	83.6	-4.0	+14.7	+23.6
22.461 G	0	4	0	3	82.7	-4.9	+16.5	+36.6
23.289 C	0	8	0	6	84.6	-3.0	+15.2	+49.4
Means	..	..	11	51	85.0	..	+14.6	..

Group 15872.

Jan. 17-23. A comparatively short-lived stream of small changing spots.

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.
16.306 C	6	33	3	17	115.9	0.0	-18.7	-11.3
17.308 C	19	148	10	75	116.2	+0.3	-17.6	+ 2.2
18.286 C	46	201	24	106	116.2	+0.4	-17.6	+15.1
19.501 G	42	307	25	183	116.2	+0.4	-17.3	+31.1
20.288 C	40	172	27	117	116.7	+1.0	-16.4	+42.0
21.409 G	18	89	17	82	117.1	+1.4	-17.5	+57.1
22.461 G	4	24	7	39	118.6	+3.0	-17.1	+72.5
Means	..	..	16	88	116.7	..	-17.5	..

Group 15873.

Jan. 17-26. A small spot with a distant companion on January 20.

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.
					°	°	°	°
16.306 C	2	10	8	41	46.0	..	+16.1	-81.2
17.308 C	10	44	15	65	46.3	0.0	+16.3	-67.7
18.286 C	15	63	14	59	46.7	+0.4	+15.9	-54.4
19.501 G	28	125	20	88	45.7	-0.6	+15.9	-39.4
20.288 C	27	75	16	46	46.9	+0.6	+15.3	-27.8
21.409 G	13	59	7	32	46.6	+0.3	+15.1	-13.4
22.461 G	13	67	7	36	46.4	0.0	+14.7	+ 0.3
23.289 C	15	52	8	28	45.9	-0.5	+14.6	+10.7
24.289 C	6	25	3	14	45.7	-0.7	+14.3	+23.6
25.286 C	4	25	3	17	45.5	-0.9	+14.8	+36.5
Means	..	..	10	47	46.2	..	+15.2	..

Group 15875.

Jan. 18-28. A small regular spot which begins to disintegrate on January 23 and dies out before reaching the limb. On January 26, however, there is a temporary increase in area.

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.
17.308 C	10	79	34	271	34.0	..	+15.1	-80.0
18.286 C	19	121	27	174	33.7	0.0	+15.0	-67.4
19.501 G	32	184	28	162	33.1	-0.6	+15.1	-52.0
20.288 C	46	236	33	168	33.5	-0.2	+14.7	-41.2
21.409 G	33	245	20	147	33.3	-0.4	+14.8	-26.7
22.461 G	26	265	14	146	33.2	-0.5	+15.4	-12.9
23.289 C	17	192	9	104	33.9	+0.2	+15.5	- 1.3
24.289 C	21	115	12	63	34.4	+0.7	+15.7	+12.3
25.286 C	36	257	22	154	35.7	+2.0	+16.1	+26.7
26.290 C	8	48	6	34	35.3	+1.5	+15.5	+39.6
27.290 C	0	6	0	5	33.8	0.0	+16.3	+51.3
Means	..	..	17	116	34.0	..	+15.4	..

Group 15877.

Jan. 19-24. A short stream of small spots, of which only one remains on January 23.

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.
18.286 C	16	56	10	37	61.2	0.0	-13.7	-39.9
19.501 G	30	201	17	111	60.9	-0.4	-12.9	-24.2
20.288 C	29	107	15	56	61.0	-0.3	-13.2	-13.7
21.409 G	15	116	8	59	61.2	-0.1	-13.5	+ 1.2
22.461 G	4	24	2	12	60.2	-1.2	-13.7	+14.1
23.289 C	2	15	1	8	60.1	-1.3	-14.3	+24.9
Means	..	..	9	47	60.8	..	-13.6	..

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

Group 15878.

Jan. 19–25. A tiny spot, except on January 20 when three spots are present. Nothing is seen on January 23.

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.
					°	°	°	°
18.286 C	0	4	0	5	32.5	0.0	- 5.1	-68.6
19.501 G	8	58	7	50	30.8	-1.9	- 4.7	-54.3
20.288 C	2	8	2	6	26.2	-6.6	- 5.7	-48.5
21.409 G	2	13	1	7	34.2	+1.2	- 4.9	-25.8
22.461 G	0	0	0	0	..	..	..	..
23.289 C	2	10	1	5	33.4	0.0	- 4.6	- 1.8
24.289 C	4	27	2	14	34.6	+1.1	- 4.5	+12.5
Means	..	..	2	12	32.0	..	- 4.9	..

Group 15880.

Jan. 22–28. A short stream appearing immediately *s* the leader of Group 15871.

21.409 G	30	133	16	71	55.4	0.0	+14.2	- 4.6
22.461 G	24	289	13	156	55.4	0.0	+14.5	+ 9.3
23.289 C	83	427	47	245	57.2	+1.8	+14.8	+22.0
24.289 C	65	564	42	372	57.0	+1.5	+14.9	+34.9
25.286 C	37	402	31	324	56.4	+0.9	+15.4	+47.4
26.290 C	43	240	52	288	57.3	+1.8	+15.5	+61.6
27.290 C	6	71	16	184	59.3	+3.8	+15.2	+76.8
Means	..	..	31	234	56.9	..	+14.9	..

Group 15881.

Jan. 23–28. A few small variable spots, *f* Group 15877, with which it may be associated.

22.461 G	16	108	8	55	52.4	0.0	-11.1	+ 6.3
23.289 C	23	123	12	64	52.3	-0.2	-11.0	+17.1
24.289 C	0	26	0	15	52.6	0.0	-11.7	+30.5
25.286 C	2	10	2	8	55.4	+2.8	-11.2	+46.4
26.290 C	0	6	0	5	51.5	-1.2	-12.4	+55.8
27.290 C	2	8	2	9	47.4	-5.4	-12.1	+64.9
Means	..	..	4	26	51.9	..	-11.6	..

Group 15883.

Jan. 25–31. One or two small changing spots.

24.289 C	6	40	3	22	20.6	0.0	+21.9	- 1.5
25.286 C	21	113	13	65	21.1	+0.7	+22.3	+12.1

Group 15883 - *continued*

					°	°	°	°
26.290 C	16	88	10	56	20.9	+0.7	+22.6	+25.2
27.290 C	4	19	3	14	19.5	-0.6	+23.1	+37.0
28.409 G	18	58	17	56	20.8	+0.9	+21.3	+53.0
29.467 G	6	35	10	59	21.9	+2.2	+21.7	+68.0
30.319 C	4	28	16	108	21.2	+1.7	+21.8	+78.5
Means	..	..	10	54	20.9	..	+22.1	..

Group 15885.

Jan. 25–Feb. 6. A regular spot whose umbra, on January 29, has divided into two parts. On the next day these parts begin to separate, the whole eventually forming a bi-polar group which dies out as it passes round the limb.

24.289 C	13	71	62	340	297.9	..	- 3.4	-84.2
25.286 C	38	291	55	425	298.8	0.0	- 3.8	-70.2
26.290 C	69	416	63	379	298.7	-0.3	- 3.9	-57.0
27.290 C	117	631	81	435	299.1	0.0	- 4.5	-43.4
28.409 G	169	818	96	466	299.7	+0.4	- 4.6	-28.1
29.467 G	137	857	70	437	300.2	+0.7	- 4.6	-13.7
30.319 C	119	872	60	436	300.3	+0.6	- 4.9	- 2.4
31.464 G	155	722	80	371	300.4	+0.5	- 4.9	+12.8
32.388 G	117	531	66	297	301.1	+1.1	- 5.5	+25.7
33.400 G	80	343	52	224	302.1	+1.9	- 5.2	+40.0
34.394 G	41	179	35	152	303.1	+2.7	- 5.2	+54.1
35.316 C	10	90	13	121	303.7	+3.2	- 4.6	+66.8
36.315 C	4	37	14	117	302.7	+2.0	- 4.6	+79.0
Means	..	..	57	322	300.8	..	- 4.7	..

Group 15887.

Jan. 27–Feb. 8. A stream of variable spots, of which the leading portion coalesces into a large composite structure *a*, while the following portion diminishes to a small spot.

26.290 C	8	52	23	147	275.1	..	- 8.7	-80.6
27.290 C	29	165	37	212	275.3	0.0	- 8.0	-67.2
28.409 G	65	387	53	319	275.6	+0.1	- 7.9	-52.2
29.467 G	102	627	65	402	274.9	-0.7	- 7.9	-39.0
30.319 C	123	558	68	312	275.2	-0.5	- 8.3	-27.5
31.464 G	185	1108	95	568	274.8	-1.1	- 8.7	-12.8
32.388 G	214	1349	106	674	275.3	-0.7	- 8.7	- 0.1
33.400 G	272	1260	141	654	276.0	-0.1	- 8.5	+13.9
34.394 G	161	1205	90	673	276.2	-0.1	- 8.6	+27.2
35.316 C	115	1081	74	699	276.4	0.0	- 8.3	+39.5
36.315 C	44	615	36	508	276.3	-0.2	- 8.4	+52.6

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

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 15887 - *continued*								
					°	°	°	°
37.466 G	30	180	41	246	277.8	+1.1	- 8.4	+69.2
38.511 G	2	9	(7	32	277.5	..	- 6.3)	+82.7
Means	..	..	73	479	275.8	..	- 8.3	..
Spot *a*								
31.464 G	96	759	49	387	275.8	0.0	- 8.2	-11.8
32.388 G	177	1105	88	552	276.2	+0.3	- 8.5	+ 0.8
33.400 G	246	1162	128	604	276.4	+0.3	- 8.3	+14.3
34.394 G	148	1118	83	626	276.7	+0.5	- 8.5	+27.7
35.316 C	105	1016	68	660	277.0	+0.7	- 8.3	+40.1
36.315 C	40	594	33	493	277.1	+0.6	- 8.4	+53.4
37.466 G	28	171	39	236	278.1	+1.5	- 8.2	+69.5
Group 15888.								
Jan.28-Feb.6. A small spot on January 28 and 29; nothing is then seen until February 2 when a short stream appears, led by a small regular spot.								
27.290 C	4	21	3	18	291.6	0.0	+11.4	-50.9
28.409 G	2	9	1	6	292.4	+0.7	+11.1	-35.4
29.467 G	0	0	0	0	..	..	..	..
30.319 C	0	0	0	0	..	..	..	..
31.464 G	0	0	0	0	..	..	..	..
32.388 G	37	104	20	57	290.9	-1.2	+11.5	+15.5
33.400 G	67	314	41	190	292.1	-0.1	+11.5	+30.0
34.394 G	46	216	34	160	292.8	+0.5	+10.7	+43.8
35.316 C	13	120	13	124	295.3	+2.9	+10.5	+58.4
36.315 C	14	65	23	108	293.9	+1.5	+10.7	+70.2
Means	..	..	14	66	292.7	..	+11.1	..
Group 15889.								
Jan.29-Feb.3. A pair of small spots of which the leader alone remains by February 2.								
28.409 G	11	52	6	26	320.7	0.0	- 9.9	- 7.1
29.467 G	28	141	14	71	320.9	+0.1	-10.8	+ 7.0
30.319 C	10	55	5	29	320.7	-0.2	-11.3	+18.0
31.464 G	11	42	7	26	323.1	+2.1	-10.7	+35.5
32.388 G	4	26	3	20	325.5	+4.4	-10.1	+50.1
33.400 G	4	24	4	27	326.0	+4.8	- 9.7	+63.9
Means	..	..	6	33	322.8	..	-10.4	..

Date U.T. Place	Projected Area Umbræ	Projected Area Whole Spots	Corrected Area Umbræ	Corrected Area Whole Spots	Longitude and Proper Motion		Lati-tude	Long. from C.M.
Group 15891.								
Jan.30-Feb.10. A large elongated spot, *a*, when first seen. During the next few days other spots appear in its rear to form a stream which undergoes considerable change as it dies out. The whole is inclined fairly steeply to the equator.								
					°	°	°	°
29.467 G	59	427	109	790	240.3	0.0	+ 4.6	-73.6
30.319 C	69	655	78	742	240.1	-0.3	+ 5.0	-62.6
31.464 G	205	1025	157	783	240.4	-0.2	+ 4.5	-47.2
32.388 G	270	1408	166	867	241.3	+0.5	+ 3.8	-34.1
33.400 G	220	1147	118	616	242.1	+1.1	+ 4.5	-20.0
34.394 G	207	1252	106	642	243.5	+2.4	+ 4.0	- 5.5
35.316 C	186	1319	95	675	243.2	+1.9	+ 4.4	+ 6.3
36.315 C	149	1004	81	547	243.8	+2.3	+ 4.2	+20.1
37.466 G	126	701	79	440	243.5	+1.8	+ 4.6	+34.9
38.511 G	52	367	41	287	243.5	+1.6	+ 5.4	+48.7
39.461 G	22	96	23	100	241.3	-0.7	+ 6.2	+59.0
40.426 G	9	59	12	90	238.8	-3.4	+ 6.8	+69.2
Means	..	..	89	548	241.8	..	+ 4.8	..
Spot *a*								
30.319 C	31	251	32	261	242.0	0.0	+ 3.4	-60.7
31.464 G	87	458	63	330	242.5	+0.3	+ 3.2	-45.1
32.388 G	198	957	119	574	242.6	+0.2	+ 2.7	-32.8
33.400 G	157	894	83	474	243.7	+1.2	+ 2.9	-18.4
34.394 G	146	964	74	492	244.7	+2.0	+ 3.2	- 4.3
35.316 C	97	626	49	319	246.1	+3.2	+ 3.7	+ 9.2
36.315 C	92	586	51	322	246.5	+3.5	+ 3.9	+22.8
37.466 G	80	397	52	258	246.9	+3.7	+ 4.4	+38.3
38.511 G	30	206	25	173	247.5	+4.1	+ 4.6	+52.7
39.461 G	7	37	9	46	247.6	+4.0	+ 4.5	+65.3
40.426 G	0	7	0	18	247.8	+4.1	+ 4.8	+78.2
Group 15895.								
Feb. 1-11. A small diminishing regular spot.								
31.464 G	2	17	5	47	209.4	0.0	+ 9.1	-78.2
32.388 G	15	63	19	80	210.1	+0.6	+ 9.1	-65.3
33.400 G	15	96	13	81	210.9	+1.3	+ 9.6	-51.2
34.394 G	13	100	9	66	210.8	+1.0	+ 9.5	-38.2
35.316 C	23	136	13	79	211.1	+1.2	+ 9.1	-25.8
36.315 C	27	97	14	51	211.0	+1.0	+ 9.0	-12.7
37.466 G	15	65	8	34	210.6	+0.4	+ 8.9	+ 2.0
38.511 G	9	50	5	27	210.4	+0.1	+ 8.5	+15.6
39.461 G	11	37	6	22	210.8	+0.4	+ 8.6	+28.5
40.426 G	7	26	5	18	210.8	+0.3	+ 8.9	+41.2
41.470 G	2	9	2	8	211.1	+0.4	+ 8.9	+55.2
Means	..	..	9	47	210.6	..	+ 9.0	..

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

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 15898.							
Feb. 3-14. A few persistent faint spots.							
					°	°	°	°
33.400 G	0	4	0	9	187.9	0.0	+15.9	-74.2
34.394 G	13	54	15	63	188.2	+0.3	+16.0	-60.8
35.316 C	4	25	4	23	184.9	-3.0	+17.3	-52.0
36.315 C	27	135	18	94	186.2	-1.7	+17.9	-37.5
37.466 G	7	33	4	19	186.5	-1.4	+17.8	-22.1
38.511 G	9	78	5	42	190.4	+2.5	+15.7	- 4.4
39.461 G	24	161	13	89	190.2	+2.3	+16.3	+ 7.9
40.426 G	18	135	10	78	190.4	+2.5	+16.7	+20.8
41.470 G	13	98	9	66	191.9	+4.0	+14.9	+36.0
42.354 C	2	15	2	12	191.5	+3.6	+15.0	+47.3
43.405 G	2	7	2	9	193.8	+6.0	+13.7	+63.4
44.323 C	2	8	5	21	195.3	+7.5	+13.7	+77.0
Means	..	..	7	44	189.8	..	+15.9	..
Group 15899.								
Feb. 3-14. A stream in which the leader, *a*, becomes a stable regular spot and alone remains after February 10.								
33.400 G	29	109	60	233	185.3	0.0	- 2.2	-76.8
34.394 C	63	314	73	361	186.1	+0.6	- 1.7	-62.9
35.316 C	80	543	61	416	188.2	+2.5	- 1.7	-48.7
36.315 C	97	531	60	327	188.3	+2.4	- 1.2	-35.4
37.466 G	100	540	53	288	189.4	+3.3	- 0.8	-19.2
38.511 G	118	640	60	320	190.8	+4.5	- 1.0	- 4.0
39.461 G	98	630	49	320	190.1	+3.7	- 1.0	+ 7.8
40.426 G	80	548	43	295	190.9	+4.3	- 0.9	+21.3
41.470 G	92	429	57	266	191.4	+4.6	- 0.8	+35.5
42.354 C	82	386	61	286	191.6	+4.6	- 0.8	+47.4
43.405 G	52	244	55	259	192.0	+4.8	- 0.7	+61.6
44.323 C	21	147	37	259	191.7	+4.3	- 0.8	+73.4
Means	..	..	56	302	189.6	..	- 1.1	..
Spot *a*								
33.400 G	22	76	40	137	188.1	0.0	- 2.1	-74.0
34.394 G	31	161	31	161	189.1	+0.8	- 1.1	-59.9
35.316 C	61	410	45	303	189.9	+1.4	- 1.1	-47.0
36.315 C	80	405	48	243	190.6	+1.9	- 1.0	-33.1
37.466 G	80	464	42	246	190.8	+1.9	- 0.9	-17.8
38.511 G	111	605	56	302	191.2	+2.1	- 1.0	- 3.6
39.461 G	85	565	43	288	191.3	+2.1	- 1.1	+ 9.0
40.426 G	78	528	42	285	191.2	+1.8	- 0.8	+21.6
41.470 G	92	429	57	266	191.4	+1.8	- 0.8	+35.5
42.354 C	82	386	61	286	191.6	+1.8	- 0.8	+47.4
43.405 G	52	244	55	259	192.0	+2.0	- 0.7	+61.6
44.323 C	21	147	37	259	191.7	+1.5	- 0.8	+73.4
Group 15900.								
Feb. 4-10. A stream of changing spots with a brief maximum on February 7.								
					°	°	°	°
34.394 G	9	39	6	25	210.4	0.0	-11.2	-38.6
35.316 C	6	80	3	45	211.3	+0.8	-11.0	-25.6
36.315 C	53	375	28	193	212.0	+1.4	-11.4	-11.7
37.466 G	109	586	54	295	212.7	+2.1	-11.6	+ 4.1
38.511 G	34	473	18	248	212.0	+1.3	-12.1	+17.2
39.461 G	62	309	35	178	211.9	+1.1	-12.6	+29.6
40.426 G	37	142	25	96	213.2	+2.3	-12.4	+43.6
Means	..	..	24	154	211.9	..	-11.8	..
Group 15901.								
Feb. 5-11. A small spot, with a companion on February 7 and 8.								
35.316 C	2	25	5	68	159.9	0.0	+16.7	-77.0
36.315 C	19	80	25	107	159.1	-0.8	+17.4	-64.6
37.466 G	30	169	27	150	157.6	-2.2	+17.6	-51.0
38.511 G	37	182	26	126	157.5	-2.2	+17.7	-37.3
39.461 G	26	155	16	95	157.0	-2.7	+17.7	-25.3
40.426 G	20	133	11	74	157.0	-2.7	+17.8	-12.6
41.470 G	7	26	4	14	157.2	-2.4	+18.1	+ 1.3
Means	..	..	16	91	157.9	..	+17.6	..
Group 15905.								
Feb. 7-13. A few tiny spots.								
37.466 G	4	15	4	17	146.7	0.0	+12.4	-61.9
38.511 G	11	48	9	41	144.6	-2.2	+12.9	-50.2
39.461 G	6	37	4	25	145.6	-1.2	+12.9	-36.7
40.426 G	2	11	1	6	145.6	-1.3	+12.4	-24.0
41.470 G	17	78	9	42	144.9	-2.1	+12.5	-11.0
42.354 C	12	78	6	41	143.0	-4.0	+12.4	- 1.2
43.405 G	7	33	4	18	147.6	+0.5	+12.2	+17.2
Means	..	..	5	27	145.4	..	+12.5	..
Group 15906.								
Feb. 7-19. A small stable regular spot.								
37.466 G	9	50	27	152	126.7	..	-15.1	-81.9
38.511 G	26	108	32	133	127.8	0.0	-15.3	-67.0
39.461 G	26	187	22	159	127.9	+0.1	-15.2	-54.4

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

Group 15906 - *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.
					°	°	°	°
40.426 G	22	181	15	121	128.1	+0.3	-15.2	-41.5
41.470 G	35	207	20	118	128.3	+0.5	-15.4	-27.6
42.354 C	48	216	25	114	128.1	+0.3	-15.4	-16.1
43.405 G	41	235	21	120	128.3	+0.4	-15.0	- 2.1
44.323 C	27	193	14	98	128.2	+0.3	-15.0	+ 9.9
45.300 C	34	216	19	119	128.3	+0.4	-15.1	+22.9
46.393 C	21	149	13	94	128.1	+0.2	-15.2	+37.1
47.363 G	22	142	17	109	128.1	+0.2	-15.2	+49.8
48.402 G	18	94	20	104	128.6	+0.7	-15.5	+64.0
49.381 G	11	46	22	90	128.2	+0.3	-15.4	+76.5
Means	..	..	20	115	128.2	..	-15.2	..

Group 15907.

Feb. 8-13. A small spot.

38.511 G	11	76	7	46	161.7	0.0	-14.8	-33.1
39.461 G	9	59	5	32	161.4	-0.3	-16.0	-20.9
40.426 G	7	41	4	21	162.0	+0.3	-16.0	- 7.6
41.470 G	4	26	2	13	162.4	+0.7	-15.8	+ 6.5
42.354 C	2	23	1	12	162.9	+1.2	-15.8	+18.7
43.405 G	4	31	2	19	163.3	+1.6	-15.4	+32.9
Means	..	..	4	24	162.3	..	-15.6	..

Group 15910.

Feb. 10-16. A stream in which the leader is the most stable component.

40.426 G	22	139	12	73	177.0	0.0	+ 8.1	+ 7.4
41.470 G	85	442	48	249	178.9	+1.8	+ 8.2	+23.0
42.354 C	69	504	44	327	180.6	+3.3	+ 8.2	+36.4
43.405 G	61	451	50	373	180.7	+3.3	+ 8.6	+50.3
44.323 C	48	197	53	215	178.5	+1.0	+ 8.6	+60.2
45.300 C	14	96	26	178	177.2	-0.5	+ 8.4	+71.8
46.393 C	0	10	(0	53	174.8	..	+ 5.8)	+83.8
Means	..	..	39	236	178.8	..	+ 8.4	..

Group 15911.

Feb. 10-16. A short stream led by a small regular spot.

40.426 G	4	22	2	13	146.6	0.0	+15.7	-23.0
41.470 G	44	205	24	114	145.6	-1.0	+16.2	-10.3
42.354 C	46	245	25	133	145.6	-1.0	+15.7	+ 1.4

Group 15911 - *continued*

					°	°	°	°
43.405 G	46	260	26	146	146.0	-0.6	+15.5	+15.6
44.323 C	19	98	12	61	146.5	-0.1	+15.2	+28.2
45.300 C	15	67	11	48	146.7	+0.1	+14.7	+41.3
46.393 C	2	10	2	10	146.6	0.0	+14.7	+55.6
Means	..	..	15	75	146.2	..	+15.4	..

Group 15913.

Feb. 10-21. A large stream of normal type, whose leader, *a*, becomes a regular spot and is the longest-lived. The follower undergoes minor changes and dies out after February 18.

40.426 G	0	7	0	37	86.9	..	+14.5	-82.7
41.470 G	56	325	76	451	89.9	0.0	+14.2	-66.0
42.354 C	111	666	102	605	91.3	+1.4	+13.9	-52.9
43.405 G	173	1016	119	705	92.5	+2.5	+14.1	-37.9
44.323 C	189	1764	113	1052	92.9	+2.9	+14.4	-25.4
45.300 C	230	1394	127	765	93.2	+3.2	+14.5	-12.2
46.393 C	230	1435	124	774	92.8	+2.7	+14.4	+ 1.8
47.363 G	202	1608	112	894	93.1	+3.0	+14.1	+14.8
48.402 G	151	950	93	585	94.0	+3.9	+14.1	+29.4
49.381 G	123	582	90	428	93.3	+3.1	+14.0	+41.6
50.415 G	66	333	68	338	94.3	+4.1	+13.8	+56.2
51.607 G	26	134	54	278	94.7	+4.4	+14.1	+72.3
Means	..	..	98	625	92.9	..	+14.1	..

Spot *a*

41.470 G	17	81	19	92	95.0	0.0	+13.6	-60.9
42.354 C	50	334	42	277	94.8	-0.2	+14.0	-49.4
43.405 G	107	545	71	360	95.6	+0.5	+14.1	-34.8
44.323 C	109	115	63	647	96.0	+0.9	+14.2	-22.3
45.300 C	130	867	70	468	96.5	+1.4	+14.1	- 8.9
46.393 C	124	865	67	467	96.4	+1.2	+14.0	+ 5.4
47.363 G	136	990	76	554	96.2	+1.0	+13.9	+17.9
48.402 G	107	626	67	394	96.3	+1.1	+13.7	+31.7
49.381 G	88	418	67	318	96.1	+0.8	+13.8	+44.4
50.415 G	59	276	62	290	96.5	+1.2	+13.7	+58.4
51.607 G	24	125	51	266	96.4	+1.0	+14.0	+74.0

Group 15915.

Feb. 12-18. A small spot not seen on February 16.

42.354 C	4	27	7	49	69.2	0.0	- 9.2	-75.0
43.405 G	4	28	4	28	70.0	+0.7	- 9.1	-60.4
44.323 C	10	34	7	25	70.4	+1.0	- 9.5	-47.9

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

Group 15915 - *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.
					°	°	°	°
45.300 C	6	25	4	15	70.9	+1.4	- 9.9	-34.5
46.393 C	0	0	0	0	..	..	..	..
47.363 G	4	22	2	11	71.3	+1.5	- 9.6	- 7.0
48.402 G	2	13	1	6	71.7	+1.8	-10.6	+ 7.1
Means	..	..	4	19	70.6	..	- 9.6	..

Group 15919.

Feb. 14-25. A small regular spot until February 18; on the next day other spots appear in the rear to form a stream of which only a single small component remains by February 22.

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.
44.323 C	2	6	5	16	41.3	0.0	+14.8	-77.0
45.300 C	6	48	7	58	42.9	+1.6	+14.9	-62.5
46.393 C	27	120	22	97	43.4	+2.1	+15.2	-47.6
47.363 G	31	145	20	94	44.6	+3.2	+15.3	-33.7
48.402 G	28	134	16	76	45.3	+3.9	+15.3	-19.3
49.381 G	85	449	47	245	43.3	+1.9	+14.8	- 8.4
50.415 G	53	265	29	143	44.3	+2.9	+14.5	+ 6.2
51.607 G	37	174	21	102	45.3	+3.9	+14.3	+22.9
52.423 G	28	127	18	83	46.0	+4.5	+14.3	+34.4
53.289 C	12	110	9	86	45.8	+4.3	+14.3	+45.6
54.590 G	22	81	27	99	44.5	+3.0	+14.7	+61.4
55.402 G	7	31	17	67	45.0	+3.5	+14.6	+72.6
Means	..	..	20	97	44.3	..	+14.8	..

Group 15922.

Feb. 15-25. One or two small spots, not seen on February 19.

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.
45.300 C	4	32	10	83	29.0	0.0	+15.5	-76.4
46.393 C	6	29	7	36	28.4	-0.6	+15.5	-62.6
47.363 G	7	39	6	34	27.8	-1.2	+15.8	-50.5
48.402 G	9	57	6	39	28.3	-0.7	+15.8	-36.3
49.381 G	0	0	0	0	..	..	..	..
50.415 G	2	11	1	6	31.5	+2.5	+16.4	- 6.6
51.607 G	2	9	1	5	32.8	+3.8	+15.4	+10.4
52.423 G	9	35	5	20	32.4	+3.4	+15.5	+20.8
53.289 C	17	85	11	55	33.7	+4.7	+15.0	+33.5
54.590 G	4	24	3	20	32.4	+3.4	+15.7	+49.3
55.402 G	4	22	4	24	32.1	+3.1	+15.2	+59.7
Means	..	..	5	29	30.8	..	+15.6	..

Group 15924.

Feb. 18-23. A pair of spots, of which only one remains by February 21.

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.
					°	°	°	°
48.402 G	22	62	16	45	19.6	0.0	-24.3	-45.0
49.381 G	26	107	16	66	20.7	+1.3	-24.3	-31.0
50.415 G	22	82	12	45	21.3	+2.2	-24.1	-16.8
51.607 G	11	24	6	12	21.4	+2.6	-24.0	- 1.0
52.423 G	11	20	6	11	21.2	+2.6	-24.1	+ 9.6
53.289 C	2	15	1	8	20.6	+2.2	-23.9	+20.4
Means	..	..	10	31	20.8	..	-24.1	..

Group 15925.

Feb. 18-23. A few variable spots.

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.
48.402 G	11	35	9	27	18.7	0.0	+12.9	-45.9
49.381 G	29	199	18	124	20.2	+1.4	+12.3	-31.5
50.415 G	11	92	6	51	23.6	+4.8	+12.8	-14.5
51.607 G	15	48	8	25	23.1	+4.2	+11.6	+ 0.7
52.423 G	17	74	9	40	22.2	+3.2	+11.7	+10.6
53.289 C	4	38	2	21	19.9	+0.8	+12.2	+19.7
Means	..	..	9	48	21.3	..	+12.2	..

Group 15926.

Feb. 18-28. One or two small, faint but persistent spots which are not seen on February 24.

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.
48.402 G	0	7	0	15	354.0	0.0	+28.8	-70.6
49.381 G	0	11	0	13	355.0	+1.4	+27.4	-56.7
50.415 G	4	16	4	15	352.6	-0.7	+28.2	-45.5
51.607 G	0	7	0	5	356.2	+3.4	+26.9	-26.2
52.423 G	18	59	11	37	355.8	+3.3	+27.1	-15.8
53.289 C	6	32	4	20	350.6	-1.6	+29.9	- 9.6
54.590 G	0	0	0	0	..	..	..	..
55.402 G	4	22	3	15	354.1	+2.7	+27.1	+21.7
56.399 G	4	18	3	14	354.9	+3.8	+26.1	+35.6
57.396 G	7	33	7	31	354.9	+4.2	+26.1	+48.8
58.397 G	0	4	0	5	353.7	+3.4	+28.0	+60.8
Means	..	..	3	15	354.2	..	+27.6	..

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

Group 15929.

Feb. 19-Mar. 2. A small stable 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.
					°	°	°	°
49.381 G	18	107	40	241	335.9	0.0	+ 8.6	-75.8
50.415 G	37	155	41	170	336.9	+0.9	+ 8.5	-61.2
51.607 G	31	155	23	116	336.7	+0.5	+ 8.2	-45.7
52.423 G	50	201	32	129	336.4	+0.1	+ 8.0	-35.2
53.289 C	40	198	23	113	336.6	+0.2	+ 8.0	-23.6
54.590 G	39	210	20	109	337.0	+0.4	+ 8.1	- 6.1
55.402 G	31	217	16	113	337.1	+0.4	+ 8.0	+ 4.7
56.399 G	35	180	19	99	337.2	+0.3	+ 8.2	+17.9
57.396 G	24	127	15	77	337.2	+0.2	+ 8.2	+31.1
58.397 G	26	105	19	77	337.2	+0.1	+ 8.0	+44.3
59.388 G	18	86	18	84	337.3	0.0	+ 8.0	+57.4
60.302 C	8	66	12	99	336.9	-0.5	+ 7.8	+69.1
Means	..	..	23	119	336.9	..	+ 8.1	..

Group 15936.

Feb. 26-Mar. 10. A regular spot, with occasional companions. Between March 4 and 7 it almost becomes attached to the rear of Group 15939, which immediately precedes it.

56.399 G	26	110	99	420	238.0	..	+ 8.4	-81.3
57.396 G	52	243	72	336	239.0	0.0	+ 8.4	-67.1
58.397 G	90	368	82	335	238.5	-0.6	+ 8.6	-54.4
59.388 G	90	526	63	368	238.6	-0.7	+ 8.7	-41.3
60.302 C	93	549	56	329	238.4	-1.0	+ 8.4	-29.4
61.304 C	131	687	71	371	238.5	-1.0	+ 8.4	-16.2
62.308 C	70	697	36	362	238.7	-1.0	+ 8.3	- 2.7
63.336 C	91	583	48	309	239.1	-0.7	+ 8.0	+11.2
64.334 C	81	470	46	268	239.1	-0.9	+ 7.7	+24.4
65.303 C	49	237	32	156	239.9	-0.2	+ 7.7	+37.9
66.304 C	42	248	35	208	240.2	0.0	+ 7.5	+51.4
67.468 G	11	112	15	151	240.2	-0.2	+ 7.3	+66.8
68.424 G	7	22	20	64	239.9	-0.6	+ 6.9	+79.1
Means	..	..	48	271	239.2	..	+ 8.0	..

Group 15938.

Feb. 27-Mar. 9. A small persistent spot, with a pair of tiny companions on February 28.

57.396 G	11	37	11	36	246.2	0.0	-11.0	-59.9
58.397 G	11	31	8	22	247.0	+0.7	-11.0	-45.9
59.388 G	7	20	4	12	248.4	+2.0	-10.7	-31.5
60.302 C	8	19	4	10	248.6	+2.1	-10.6	-19.2
61.304 C	4	13	2	6	248.4	+1.8	-10.8	- 6.3
62.308 C	2	19	1	10	248.4	+1.6	-10.8	+ 7.0
63.336 C	13	45	7	23	245.9	-1.0	- 9.1	+18.0

Group 15938 - *continued*

					°	°	°	°
64.334 C	13	42	8	25	246.9	-0.1	- 8.6	+32.2
65.303 C	23	34	16	24	247.4	+0.3	- 8.8	+45.4
66.304 C	6	32	6	30	247.6	+0.4	- 8.7	+58.8
67.468 G	0	4	0	7	247.8	+0.5	- 8.9	+74.4
Means	..	..	6	19	247.5	..	- 9.9	..

Group 15939.

Feb. 27-Mar. 9. A stream consisting of two composite spots developing from a small spot on February 27. Between March 4 and 7 the following part almost joins up with Group 15936. From March 7, the group declines rapidly and consists of a regular spot, *a*, and companion by the time the limb is reached.

57.396 G	4	15	5	17	242.6	0.0	+ 4.5	-63.5
58.397 G	22	130	17	102	244.3	+1.5	+ 4.6	-48.6
59.388 G	44	288	28	178	246.3	+3.4	+ 4.8	-33.6
60.302 C	85	517	46	283	246.6	+3.5	+ 4.6	-21.2
61.304 C	205	1609	105	829	245.9	+2.6	+ 4.9	- 8.8
62.308 C	155	1957	79	998	246.4	+2.9	+ 4.4	+ 5.0
63.336 C	248	1809	134	976	246.1	+2.5	+ 4.6	+18.2
64.334 C	174	1439	106	868	246.0	+2.2	+ 4.7	+31.3
65.303 C	89	946	66	697	246.8	+2.8	+ 4.2	+44.8
66.304 C	106	645	115	665	247.6	+3.5	+ 4.4	+58.8
67.468 G	19	172	45	404	249.0	+4.6	+ 3.8	+75.6
Means	..	..	68	547	246.1	..	+ 4.5	..

Spot *a*

58.397 G	11	53	8	40	246.2	0.0	+ 4.8	-46.7
59.388 G	24	200	15	122	247.2	+0.8	+ 4.8	-32.7
60.302 C	49	350	26	189	248.2	+1.7	+ 4.2	-19.6
61.304 C	91	778	46	397	247.9	+1.2	+ 4.2	- 6.8
62.308 C	81	958	41	489	248.7	+1.8	+ 3.8	+ 7.3
63.336 C	146	880	80	484	249.2	+2.1	+ 3.3	+21.3
64.334 C	108	644	67	399	250.1	+2.9	+ 3.2	+35.4
65.303 C	51	494	40	385	251.0	+3.6	+ 3.0	+49.0
66.304 C	83	367	94	415	251.7	+4.1	+ 3.3	+62.9
67.468 G	15	130	39	337	251.6	+3.8	+ 3.5	+78.2

Group 15940.

Feb. 28-Mar. 12. One or two small spots until March 2. Nothing is then seen until March 5 when a stream begins to develop,

continued

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

Group 15940 - *continued*

consisting of a regular spot with a double umbra and followed by a train of small companions which die 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		Lati-tude	Long. from C.M.
					°	°	°	°
58.397 G	4	33	8	67	215.6	0.0	-18.3	-77.3
59.388 G	11	50	12	57	215.0	-0.6	-17.7	-64.9
60.302 C	4	21	4	17	213.9	-1.6	-18.0	-53.9
61.304 C	0	0	0	0	..	..	..	..
62.308 C	0	0	0	0	..	..	..	..
63.336 C	2	15	1	8	208.0	-7.4	-16.7	-19.9
64.334 C	28	163	15	83	208.4	-7.0	-16.7	- 6.3
65.303 C	78	475	41	245	210.7	-4.7	-17.0	+ 8.7
66.304 C	87	621	48	342	210.8	-4.5	-17.0	+22.0
67.468 G	62	343	40	222	212.6	-2.7	-16.7	+39.2
68.424 G	29	268	23	212	211.7	-3.5	-16.4	+50.9
69.487 G	20	95	24	118	214.0	-1.2	-16.7	+67.2
70.305 C	6	55	13	117	213.9	-1.3	-16.4	+77.8
Means	..	..	18	114	212.2	..	-17.1	..

Group 15944.

Mar. 3-15. A cluster, which coalesces into a composite spot on March 9. On the next day it has broken up again and is diminishing as it passes round the limb.

61.304 C	10	85	27	236	178.9	0.0	+20.3	-75.8
62.308 C	28	174	38	235	178.1	-0.7	+20.9	-63.3
63.336 C	42	261	38	238	177.7	-0.9	+20.7	-50.2
64.334 C	59	456	42	328	177.6	-0.9	+20.5	-37.1
65.303 C	70	348	44	219	177.1	-1.3	+20.7	-24.9
66.304 C	55	413	32	240	176.4	-1.9	+20.6	-12.4
67.468 G	73	585	41	328	176.2	-1.9	+19.8	+ 2.8
68.424 G	86	369	50	217	176.4	-1.6	+20.2	+15.6
69.487 G	35	211	23	139	176.8	-1.1	+20.4	+30.0
70.305 C	19	121	14	90	175.6	-2.2	+20.4	+39.5
71.439 G	9	46	9	46	174.9	-2.7	+20.1	+53.8
72.331 C	9	49	13	69	174.0	-3.5	+20.5	+64.7
73.389 G	7	38	27	145	174.7	-2.7	+20.4	+79.3
Means	..	..	31	195	176.5	..	+20.4	..

Group 15946.

Mar. 5-11. A small spot until March 8, after which small companions appear and a short stream is formed.

63.336 C	2	11	3	14	160.2	0.0	-14.1	-67.7
64.334 C	4	15	3	13	160.8	+0.6	-13.9	-53.9
65.303 C	4	15	3	10	161.4	+1.2	-14.0	-40.6
66.304 C	4	15	2	9	160.9	+0.7.	-13.9	-27.9

Group 15946 - *continued*

					°	°	°	°
67.468 G	4	26	2	14	159.6	-0.7	-15.5	-13.8
68.424 G	55	163	28	83	159.1	-1.2	-17.8	- 1.7
69.487 G	20	57	11	30	161.0	+0.7	-16.2	+14.2
Means	..	..	7	25	160.4	..	-15.1	..

Group 15948.

Mar. 7-19. A double spot which soon becomes an elongated spot with a triple umbra. On March 15 it is again divided into two.

65.303 C	13	123	43	403	123.2	0.0	+15.1	-78.8
66.304 C	64	396	88	546	123.1	-0.1	+15.1	-65.7
67.468 G	103	546	92	486	122.1	-1.1	+15.4	-51.3
68.424 G	119	653	83	457	122.1	-1.1	+15.2	-38.7
69.487 G	145	750	87	450	122.4	-0.8	+15.3	-24.4
70.305 C	162	843	91	472	121.2	-2.0	+15.2	-14.9
71.439 G	143	937	77	506	121.2	-2.0	+15.1	+ 0.1
72.331 C	124	780	68	429	120.7	-2.5	+15.4	+11.4
73.389 G	144	696	86	418	121.2	-2.1	+15.4	+25.8
74.300 C	87	562	60	388	120.7	-2.6	+15.6	+37.3
75.305 C	77	526	67	458	120.6	-2.7	+15.7	+50.5
76.308 C	47	293	60	375	120.5	-2.8	+15.7	+63.6
77.382 G	9	75	28	236	121.1	-2.2	+16.4	+78.3
Means	..	..	72	433	121.5	..	+15.4	..

Group 15953.

Mar. 9-16. A few small changing spots, of which only one remains after March 13.

67.468 G	7	26	8	30	113.8	0.0	+18.0	-59.6
68.424 G	22	70	18	58	113.9	+0.2	+18.6	-46.9
69.487 G	37	159	24	105	114.7	+1.0	+18.2	-32.1
70.305 C	22	108	13	64	114.2	+0.6	+17.6	-21.9
71.439 G	8	51	4	28	113.7	+0.1	+17.9	- 7.4
72.331 C	4	23	2	13	114.1	+0.6	+18.4	+ 4.8
73.389 G	4	18	2	10	112.8	-0.7	+18.8	+17.4
74.300 C	4	11	2	7	111.3	-2.1	+15.6	+27.9
Means	..	..	9	39	113.6	..	+17.9	..

Group 15958.

Mar. 12-19. A small spot.

70.305 C	4	23	9	54	61.9	0.0	+19.4	-74.2
71.439 G	13	77	15	89	61.9	+0.1	+19.6	-59.2

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

Group 15958 - *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.
					°	°	°	°
72.331 C	23	92	20	78	61.8	+0.1	+19.8	-47.5
73.389 G	22	104	15	71	61.6	0.0	+19.8	-33.8
74.300 C	21	117	13	71	61.5	0.0	+19.8	-21.9
75.305 C	24	118	14	67	61.5	+0.1	+19.8	- 8.6
76.308 C	13	66	7	37	61.6	+0.3	+20.0	+ 4.7
77.382 G	22	53	13	31	61.6	+0.5	+20.1	+18.8
Means	..	..	13	62	61.7	..	+19.8	..

Group 15963.

Mar. 14-21. A few small spots until March 18 and then a composite mass.

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.
72.331 C	6	36	3	19	92.1	0.0	-14.3	-17.2
73.389 G	4	24	2	12	91.7	-0.5	-13.2	- 3.7
74.300 C	8	34	4	18	90.9	-1.3	-13.7	+ 7.5
75.305 C	15	62	8	34	92.2	0.0	-13.8	+22.1
76.308 C	13	86	8	53	93.0	+0.7	-13.5	+36.1
77.382 G	69	349	53	269	92.9	+0.5	-13.0	+50.1
78.317 C	26	351	27	365	92.6	+0.2	-12.9	+62.2
79.379 G	11	148	22	290	92.8	+0.3	-12.8	+76.4
Means	..	..	16	132	92.3	..	-13.4	..

Group 15965.

Mar. 14-27. A regular spot with variable companions; on March 22 the principal component begins to break up.

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.
72.331 C	11	94	42	359	24.7	..	-21.9	-84.6
73.389 G	49	272	76	416	22.9	0.0	-21.3	-72.5
74.300 C	62	383	61	375	23.7	+1.0	-21.9	-59.7
75.305 C	92	413	67	301	23.9	+1.3	-22.1	-46.2
76.308 C	109	586	66	357	23.6	+1.2	-22.3	-33.3
77.382 G	97	656	53	361	23.2	+1.0	-22.1	-19.6
78.317 C	71	758	37	394	22.5	+0.5	-21.9	- 7.9
79.379 G	80	709	42	369	21.2	-0.7	-21.8	+ 4.8
80.306 C	98	798	53	431	21.5	-0.2	-22.0	+17.3
81.305 C	58	492	35	295	21.2	-0.3	-22.2	+30.2
82.388 G	40	337	29	239	21.2	-0.1	-22.0	+44.4
83.517 G	24	171	23	166	21.3	+0.2	-21.5	+59.4
84.388 G	7	71	10	99	20.5	-0.5	-23.2	+70.1
85.332 C	6	45	22	162	22.0	..	-22.4	+84.1
Means	..	..	46	317	22.2	..	-22.0	..

Group 15966.

Mar. 15-20. A stream of increasing area.

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.
					°	°	°	°
73.389 G	11	33	6	16	99.5	0.0	- 9.4	+ 4.1
74.300 C	15	81	8	43	100.8	+1.2	- 9.4	+17.4
75.305 C	15	84	9	49	100.6	+0.9	- 9.1	+30.5
76.308 C	49	271	36	198	103.5	+3.6	- 8.8	+46.6
77.382 G	59	309	62	330	105.0	+5.0	- 8.9	+62.2
78.317 C	16	176	27	314	103.8	+3.7	- 9.0	+73.4
Means	..	..	25	158	102.2	..	- 9.1	..

Group 15967.

Mar. 15-25. A few spots in the form of a stream; the follower is the largest component and alone remains by March 23.

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.
73.389 G	11	27	11	27	38.6	0.0	+14.9	-56.8
74.300 C	4	26	3	20	39.3	+0.7	+14.4	-44.1
75.305 C	6	28	4	17	38.8	+0.2	+15.1	-31.3
76.308 C	30	167	17	96	38.5	-0.1	+15.6	-18.4
77.382 G	76	484	42	264	38.4	-0.1	+15.9	- 4.4
78.317 C	75	451	41	248	37.1	-1.4	+16.0	+ 6.7
79.379 G	64	312	37	182	37.5	-1.0	+16.3	+21.1
80.306 C	60	273	39	179	37.0	-1.5	+16.5	+32.8
81.305 C	24	103	19	80	34.7	-3.8	+18.3	+43.7
82.388 G	11	51	12	55	34.6	-3.9	+18.3	+57.8
83.517 G	4	22	8	45	34.5	-3.9	+18.5	+72.6
Means	..	..	21	110	37.2	..	+16.3	..

Group 15970.

Mar. 19-27. One or two small spots.

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.
77.382 G	15	64	17	71	338.6	0.0	- 7.5	-64.2
78.317 C	17	88	13	67	340.8	+2.1	- 7.6	-49.6
79.379 G	17	51	11	31	340.9	+2.0	- 7.2	-35.5
80.306 C	11	49	6	26	342.5	+3.5	- 7.3	-21.7
81.305 C	4	26	2	13	343.4	+4.2	- 6.7	- 7.6
82.388 G	0	9	0	4	343.1	+3.8	- 7.8	+ 6.3
83.517 G	16	58	8	30	338.1	-1.4	- 8.2	+16.2
84.388 G	18	76	10	43	339.0	-0.6	- 8.6	+28.6
85.332 C	2	13	1	8	337.9	-1.8	- 7.9	+40.0
Means	..	..	8	33	340.5	..	- 7.6	..

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

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 15978.								
Mar. 24-Apr. 5. One or two small spots until April 2, after which a short stream develops. The follower is the largest component and is the sole survivor after April 3.								
					°	°	°	°
82.388 G	2	7	4	13	261.4	0.0	- 6.8	-75.4
83.517 G	13	71	13	72	261.0	-0.6	- 6.6	-60.9
84.388 G	4	31	3	23	262.6	+0.9	- 6.1	-47.8
85.332 C	11	49	6	30	262.7	+0.9	- 7.4	-35.2
86.453 C	8	47	4	25	264.5	+2.5	- 7.5	-18.6
87.305 C	0	9	0	4	267.2	+5.1	- 7.8	- 4.7
88.308 C	0	9	0	5	267.0	+4.7	- 7.2	+ 8.3
89.309 C	2	13	1	7	271.0	+8.6	- 7.4	+25.5
90.319 C	6	22	4	14	272.1	+9.5	- 7.2	+39.9
91.358 C	28	122	21	92	267.1	+4.3	- 6.8	+48.7
92.296 C	54	264	53	259	265.6	+2.7	- 6.8	+59.5
93.574 C	19	140	33	244	263.0	-0.1	- 6.8	+73.8
94.316 C	9	43	40	189	263.8	..	- 6.9	+84.4
Means	..	..	12	66	265.4	..	- 7.0	..
Group 15981.								
Mar. 25-Apr. 2. One or two small spots, not seen between March 28 and March 30.								
83.517 G	18	122	11	74	289.1	0.0	+ 6.5	-32.8
84.388 G	9	40	5	22	291.4	+2.2	+ 6.3	-19.0
85.332 C	4	17	2	9	293.6	+4.2	+ 5.7	- 4.3
86.453 C	0	0	0	0	..	..	..	..
87.305 C	0	0	0	0	..	..	..	..
88.308 C	0	0	0	0	..	..	..	..
89.309 C	9	41	7	30	290.9	+0.9	+ 5.9	+45.4
90.319 C	22	108	22	108	290.8	+0.6	+ 6.0	+58.6
91.358 C	0	24	0	49	292.8	+2.4	+ 5.6	+74.4
Means	..	..	5	32	291.4	..	+ 6.0	..
Group 15986.								
Mar. 28-Apr. 8. A slowly-diminishing regular spot.								
86.453 C	11	60	26	144	207.5	0.0	+15.1	-75.6
87.305 C	17	116	22	148	207.9	+0.4	+15.0	-64.0
88.308 C	37	209	32	182	207.7	+0.2	+14.9	-51.0
89.309 C	34	217	23	150	207.3	-0.2	+14.7	-38.2
90.319 C	62	213	37	126	207.0	-0.6	+14.7	-25.2
91.358 C	43	314	24	173	206.6	-1.0	+14.8	-11.8
92.296 C	41	229	22	124	206.9	-0.7	+14.8	+ 0.8
93.574 C	43	268	24	150	205.4	-2.2	+15.2	+16.2
94.316 C	37	192	23	117	206.3	-1.3	+15.2	+26.9
95.343 C	28	145	20	103	206.4	-1.2	+15.2	+40.5
Group 15986 - *continued*								
					°	°	°	°
96.316 C	26	106	24	96	206.1	-1.6	+15.3	+53.1
97.393 C	13	80	19	116	206.0	-1.7	+15.0	+67.2
Means	..	..	25	136	206.8	..	+15.0	..
Group 15987.								
Mar. 28-Apr. 4. A small regular spot, dying out just past the C.M.								
86.453 C	11	67	40	242	199.7	..	-14.3	-83.4
87.305 C	19	90	29	140	199.6	0.0	-14.7	-72.3
88.308 C	37	206	35	196	199.7	+0.1	-14.7	-59.0
89.309 C	32	224	23	161	199.7	0.0	-14.7	-45.8
90.319 C	49	267	29	160	199.3	-0.4	-14.6	-32.9
91.358 C	39	166	21	88	199.5	-0.2	-14.3	-18.9
92.296 C	32	114	16	58	199.8	+0.1	-14.7	- 6.3
93.574 C	4	35	2	18	198.5	-1.3	-14.8	+ 9.3
Means	..	..	22	117	199.4	..	-14.6	..
Group 15988.								
Mar. 29-Apr. 5. A pair of small spots until April 1. Nothing is seen on April 2, after which a small growing regular spot appears.								
87.305 C	2	20	1	11	264.2	0.0	-12.1	- 7.7
88.308 C	6	35	3	18	263.7	-0.6	-11.9	+ 5.0
89.309 C	6	22	3	12	262.8	-1.5	-13.9	+17.3
90.319 C	4	19	2	11	264.3	-0.1	-13.5	+32.1
91.358 C	0	0	0	0	..	..	..	..
92.296 C	13	63	12	57	262.7	-1.7	-14.2	+56.6
93.574 C	15	89	23	134	260.8	-3.7	-14.7	+71.6
94.316 C	13	54	43	177	261.9	..	-15.1	+82.5
Means	..	..	6	35	263.1	..	-13.4	..
Group 15989.								
Mar. 29-Apr. 8. A small, nearly regular spot, with a few companions from March 31 to April 2.								
87.305 C	19	77	36	145	199.1	0.0	+11.1	-72.8
88.308 C	24	114	25	120	199.6	+0.4	+11.5	-59.1
89.309 C	30	146	23	112	199.4	+0.1	+11.8	-46.1
90.319 C	41	284	26	179	199.4	+0.1	+11.7	-32.8
91.358 C	37	243	21	136	199.7	+0.3	+11.8	-18.7

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

Group 15989 - *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.
					°	°	°
92.296 C	35	190	19	101	200.0	+0.5	+11.7	- 6.1
93.574 C	19	132	10	70	199.2	-0.4	+11.8	+10.0
94.316 C	24	89	13	50	200.4	+0.7	+12.1	+21.0
95.343 C	17	82	11	52	200.7	+0.9	+12.0	+34.8
96.316 C	15	58	12	46	200.6	+0.8	+12.2	+47.6
97.393 C	4	24	5	27	200.2	+0.3	+12.2	+61.4
Means	..	..	18	94	199.8	..	+11.8	..

Group 15990.

Mar.30-Apr.10. A pair of small spots until April 1. Then there appears a cluster which has become composite by April 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.
88.308 C	4	35	5	44	194.3	0.0	+ 9.7	-64.4
89.309 C	12	41	10	34	194.6	+0.2	+ 9.4	-50.9
90.319 C	11	75	7	48	196.6	+2.0	+ 8.7	-35.6
91.358 C	2	11	1	6	196.3	+1.6	+ 8.5	-22.1
92.296 C	30	97	16	51	195.1	+0.3	+ 8.3	-11.0
93.574 C	30	257	16	134	194.6	-0.4	+ 8.5	+ 5.4
94.316 C	19	181	10	98	195.6	+0.5	+ 8.5	+16.2
95.343 C	60	395	36	237	196.0	+0.8	+ 8.7	+30.1
96.316 C	54	426	38	302	195.8	+0.5	+ 9.4	+42.8
97.393 C	43	337	42	330	196.1	+0.7	+ 9.6	+57.3
98.592 C	22	158	40	289	195.6	0.0	+10.0	+72.6
99.323 C	7	50	31	220	195.4	..	+10.5	+82.1
Means	..	..	20	143	195.5	..	+ 9.0	..

Group 15992.

Apr. 1-12. Small spots which undergo considerable 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.
90.319 C	0	15	0	22	163.7	0.0	+ 7.8	-68.5
91.358 C	43	228	40	213	162.7	-1.1	+ 7.9	-55.7
92.296 C	52	214	37	153	163.2	-0.7	+ 8.0	-42.9
93.574 C	41	259	24	152	161.7	-2.4	+ 8.0	-27.5
94.316 C	59	272	32	147	162.8	-1.4	+ 8.5	-16.6
95.343 C	62	339	33	176	163.6	-0.7	+ 8.8	- 2.3
96.316 C	53	322	29	172	163.9	-0.5	+10.0	+10.9
97.393 C	37	454	22	266	164.2	-0.3	+11.0	+25.4
98.592 C	41	282	29	199	163.9	-0.8	+11.1	+40.9
99.323 C	42	202	36	177	165.3	+0.5	+11.4	+52.0
100.318 C	10	93	12	113	163.4	-1.5	+11.6	+63.2
101.317 C	0	4	0	8	161.3	-3.7	+10.0	+74.3
Means	..	..	24	150	163.3	..	+ 9.5	..

Group 15995.

Apr. 2-8. A stream of small changing spots.

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.
					°	°	°	°
91.358 C	6	28	6	26	164.4	0.0	+13.7	-54.0
92.296 C	12	64	8	46	164.6	+0.2	+12.9	-41.5
93.574 C	23	142	14	83	163.9	-0.6	+12.0	-25.3
94.316 C	22	153	12	84	164.3	-0.2	+12.8	-15.1
95.343 C	22	130	12	69	164.8	+0.2	+13.5	- 1.1
96.316 C	6	35	3	19	164.3	-0.3	+13.1	+11.3
97.393 C	4	11	2	6	160.7	-4.0	+15.5	+21.9
Means	..	..	8	48	163.9	..	+13.4	..

Group 15996.

Apr. 2-13. A diminishing 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.
91.358 C	11	69	40	249	138.0	..	+12.0	-80.4
92.296 C	24	110	34	154	139.0	0.0	+11.7	-67.1
93.574 C	13	138	11	119	137.7	-1.4	+11.9	-51.5
94.316 C	30	151	21	106	138.8	-0.4	+11.8	-40.6
95.343 C	37	179	22	106	138.9	-0.4	+11.7	-27.0
96.316 C	30	166	16	90	139.4	0.0	+11.4	-13.6
97.393 C	39	164	20	85	139.5	+0.1	+11.2	+ 0.7
98.592 C	22	122	12	67	139.5	-0.1	+11.1	+16.5
99.323 C	17	95	10	55	139.5	-0.1	+11.1	+26.2
100.318 C	7	17	5	12	139.8	+0.1	+11.0	+39.6
101.317 C	17	33	15	29	139.7	-0.1	+11.1	+52.7
102.486 G	4	11	6	16	139.4	-0.5	+11.0	+67.8
Means	..	..	16	76	139.2	..	+11.4	..

Group 16002.

Apr. 8-17. A stream in which the leader, *a*, soon becomes a regular spot and alone remains after April 14.

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.
97.393 C	51	238	36	170	92.8	0.0	- 8.7	-46.0
98.592 C	89	408	52	236	93.3	+0.3	- 8.9	-29.7
99.323 C	81	483	43	259	93.9	+0.8	- 8.7	-19.4
100.318 C	86	516	43	259	94.3	+1.1	- 8.7	- 5.9
101.317 C	102	699	52	355	94.5	+1.2	- 8.5	+ 7.5
102.486 G	83	428	46	235	95.5	+2.0	- 8.9	+23.9
103.344 G	120	457	74	282	95.4	+1.8	- 8.8	+35.2
104.360 G	54	343	42	264	96.5	+2.8	- 8.6	+49.7
105.411 G	40	179	45	200	96.8	+3.0	- 8.8	+63.9
106.362 G	9	74	20	164	98.0	+4.0	- 8.5	+77.6
Means	..	..	45	242	95.1	..	- 8.7	..

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

Group 16002 - *continued*

Spot *a*

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.
					°	°	°	°
97.393 C	32	160	22	112	93.9	0.0	- 8.4	-44.9
98.592 C	61	295	35	168	94.7	+0.6	- 8.3	-28.3
99.323 C	50	339	26	180	95.3	+1.1	- 8.2	-18.0
100.318 C	69	395	34	198	95.8	+1.5	- 8.2	- 4.4
101.317 C	63	597	32	304	95.8	+1.4	- 8.1	+ 8.8
102.486 G	72	376	40	207	96.4	+1.8	- 8.4	+24.8
103.344 G	114	428	71	265	96.4	+1.7	- 8.5	+36.2
104.360 G	54	343	42	264	96.5	+1.7	- 8.6	+49.7
105.411 G	40	179	45	200	96.8	+1.9	- 8.8	+63.9
106.362 G	9	74	20	164	98.0	+2.9	- 8.5	+77.6

Group 16003

Apr. 8-16. A small equatorial spot.

97.393 C	4	26	13	85	57.3	..	- 3.0	-81.5
98.592 C	11	54	13	65	57.1	0.0	- 3.2	-65.9
99.323 C	13	82	12	73	57.4	+0.2	- 3.1	-55.9
100.318 C	13	95	9	65	57.8	+0.4	- 2.9	-42.4
101.317 C	13	65	7	37	58.0	+0.4	- 2.7	-29.0
102.486 G	13	72	7	37	58.4	+0.6	- 2.8	-13.2
103.344 G	20	47	10	24	58.6	+0.6	- 2.4	- 1.6
104.360 G	13	36	7	18	58.9	+0.7	- 2.5	+12.1
105.411 G	4	18	2	10	59.2	+0.8	- 2.7	+26.3
Means	..	..	8	41	58.2	..	- 2.8	..

Group 16004.

Apr. 9-15. One or two tiny spots.

98.592 C	0	7	0	4	106.5	0.0	-13.2	-16.5
99.323 C	4	22	2	11	107.4	+0.9	-12.7	- 5.9
100.318 C	0	11	0	6	108.6	+2.0	-13.0	+ 8.4
101.317 C	11	41	6	22	108.4	+1.8	-14.1	+21.4
102.486 G	7	38	4	24	107.8	+1.1	-13.0	+36.2
103.344 G	9	65	7	47	107.3	+0.6	-13.9	+47.1
104.360 G	2	9	2	10	110.9	+4.1	-13.0	+64.1
Means	..	..	3	18	108.1	..	-13.3	..

Group 16007.

Apr. 11-17. Two tiny spots, which in two days become a composite structure. On the next day this has broken up into a stream which in turn quickly dies out. This group goes through its whole life-history in seven days.

Group 16007 - *continued*

					°	°	°	°
100.318 C	0	8	0	15	28.5	0.0	+ 9.3	-71.7
101.317 C	15	72	15	71	29.3	+0.7	+ 9.1	-57.7
102.486 G	83	410	58	287	29.2	+0.4	+ 8.5	-42.4
103.344 G	53	344	32	207	29.5	+0.6	+ 8.5	-30.7
104.360 G	47	255	26	139	29.9	+0.9	+ 8.4	-16.9
105.411 G	36	152	18	79	30.0	+0.8	+ 7.9	- 2.9
106.362 G	31	81	16	42	30.1	+0.8	+ 8.0	+ 9.7
Means	..	..	24	120	29.5	..	+ 8.5	..

Group 16008.

Apr. 11-23. A regular spot, *a*, followed by a slightly smaller companion which is the first to break up and die out.

100.318 C	24	137	70	388	19.9	..	-18.2	-80.3
101.317 C	58	239	77	313	20.0	0.0	-17.8	-67.0
102.486 G	90	439	73	364	19.8	-0.1	-18.1	-51.8
103.344 G	67	424	45	281	20.5	+0.6	-17.8	-39.7
104.360 G	76	361	43	205	20.7	+0.9	-17.8	-26.1
105.411 G	79	387	42	202	20.2	+0.4	-17.6	-12.7
106.362 G	86	397	45	202	20.3	+0.6	-17.6	- 0.1
107.414 G	81	368	43	194	20.3	+0.6	-17.5	+13.8
108.347 G	69	338	39	191	20.1	+0.5	-17.3	+25.9
109.319 C	41	266	27	173	20.4	+0.8	-17.8	+39.1
110.349 G	20	101	17	84	20.4	+0.9	-17.6	+52.7
111.315 C	9	61	10	71	19.9	+0.4	-17.6	+64.9
112.356 G	2	14	5	33	19.8	+0.4	-17.6	+78.6
Means	..	..	39	193	20.2	..	-17.7	..

Spot *a*

100.318 C	15	89	33	193	22.4	0.0	-17.8	-77.8
101.317 C	30	135	34	153	22.6	+0.2	-17.6	-64.4
102.486 G	65	251	50	193	22.5	+0.2	-17.5	-49.1
103.344 G	40	260	26	166	22.3	+0.1	-17.3	-37.9
104.360 G	47	278	26	156	21.9	-0.3	-17.4	-24.9
105.411 G	54	271	28	141	21.4	-0.7	-17.5	-11.5
106.362 G	54	291	28	148	21.1	-1.0	-17.7	+ 0.7
107.414 G	72	325	38	172	20.9	-1.1	-17.7	+14.4
108.347 G	58	264	33	150	20.7	-1.3	-17.5	+26.5
109.319 C	41	266	27	173	20.4	-1.5	-17.8	+39.1
110.349 G	20	101	17	84	20.4	-1.5	-17.6	+52.7
111.315 C	9	61	10	71	19.9	-2.0	-17.6	+64.9
112.356 G	2	14	5	33	19.8	-2.0	-17.6	+78.6

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

Group 16009.

Apr. 12-23. At first a regular spot followed by a train of small variable companions. The whole undergoes considerable changes and is breaking up after April 20.

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.
					°	°	°	°
101.317 C	7	41	11	68	18.0	0.0	+21.0	-69.0
102.486 G	49	217	48	212	18.8	+1.0	+21.5	-52.8
103.344 G	54	258	41	198	18.9	+1.3	+22.0	-41.3
104.360 G	118	502	76	322	18.7	+1.3	+22.1	-28.1
105.411 G	130	721	76	423	17.6	+0.3	+22.3	-15.3
106.362 G	134	845	76	481	17.5	+0.4	+21.7	- 2.9
107.414 G	140	933	81	536	15.6	-1.3	+21.8	+ 9.1
108.347 G	177	952	107	575	14.8	-1.9	+22.5	+20.6
109.319 C	105	824	72	560	14.1	-2.5	+22.6	+32.8
110.349 G	74	385	63	322	13.4	-3.0	+23.0	+45.7
111.315 C	26	120	29	140	13.6	-2.6	+23.0	+58.6
112.356 G	4	28	8	61	12.8	-3.2	+23.0	+71.6
Means	..	..	57	325	16.2	..	+22.2	..

Group 16013.

Apr. 16-26. At first a regular spot with a small companion to the south. On April 18 the companion is joined by other small spots and this whole portion rotates in a clockwise direction to form a small variable stream.

105.411 G	0	16	0	30	317.7	0.0	-17.5	-75.2
106.362 G	29	181	30	184	319.6	+1.9	-16.7	-60.8
107.414 G	56	248	41	183	319.9	+2.3	-16.5	-46.6
108.347 G	51	228	31	140	319.9	+2.3	-16.2	-34.3
109.319 C	83	293	45	161	319.7	+2.1	-16.3	-21.6
110.349 G	78	346	39	178	319.3	+1.7	-16.7	- 8.4
111.315 C	44	212	23	108	319.0	+1.5	-16.4	+ 4.0
112.356 G	36	202	20	109	318.9	+1.4	-17.0	+17.7
113.422 G	15	124	9	75	319.6	+2.1	-17.6	+32.5
114.358 G	16	101	11	70	317.1	-0.3	-19.1	+42.3
115.477 G	0	7	0	7	321.6	+4.2	-14.5	+61.6
Means	..	..	23	113	319.3	..	-16.8	..

Group 16015.

Apr. 17-28. Two or three small fluctuating spots until April 20, after which there is a variable cluster which dies out rapidly.

106.362 G	4	18	12	53	301.0	0.0	+ 6.1	-79.4
107.414 G	25	148	30	174	302.7	+1.5	+ 5.7	-63.8
108.347 G	29	179	24	149	302.8	+1.5	+ 6.0	-51.4
109.319 C	22	92	14	61	303.1	+1.6	+ 6.4	-38.2
110.349 G	47	194	26	109	303.0	+1.3	+ 5.6	-24.7

Group 16015 - *continued*

					°	°	°	°
111.315 C	48	246	25	128	302.9	+1.1	+ 5.9	-12.1
112.356 G	47	218	24	111	303.4	+1.4	+ 5.9	+ 2.2
113.422 G	61	338	32	179	303.5	+1.3	+ 4.9	+16.4
114.358 G	52	344	30	200	304.2	+1.9	+ 4.8	+29.4
115.477 G	25	164	18	115	303.7	+1.2	+ 5.0	+43.7
116.344 G	34	151	29	127	301.4	-1.2	+ 5.1	+52.9
117.322 C	4	13	5	15	300.0	-2.8	+ 6.5	+64.4
Means	..	..	22	118	302.6	..	+ 5.7	..

Group 16018.

Apr. 19-May 1. A stream, led by a stable regular spot, *a*. The follower is a collection of variable spots and becomes the largest component though it is also the first to die out.

108.347 G	7	34	(31	149	272.3	..	+15.0)	-81.9
109.319 C	32	222	72	503	267.9	0.0	+16.3	-73.4
110.349 G	65	490	78	590	266.6	-1.3	+16.3	-61.1
111.315 C	104	667	85	560	266.2	-1.7	+16.0	-48.8
112.356 G	133	709	88	470	266.4	-1.5	+15.1	-34.8
113.422 G	133	774	77	445	266.2	-1.7	+15.6	-20.9
114.358 G	140	855	75	458	266.6	-1.3	+15.2	- 8.2
115.477 G	178	929	95	496	266.2	-1.7	+15.2	+ 6.2
116.344 G	143	792	80	444	266.7	-1.2	+15.5	+18.2
117.322 C	108	346	68	218	267.3	-0.7	+15.8	+31.7
118.343 G	55	271	44	214	268.3	+0.3	+15.0	+46.2
119.318 C	26	162	28	177	268.5	+0.5	+14.9	+59.3
120.322 G	9	70	22	157	269.6	+1.6	+14.5	+73.6
Means	..	..	68	394	267.2	..	+15.4	..

Spot *a*

108.347 G	7	34	31	149	272.3	..	+15.0	-81.9
109.319 C	15	102	23	154	272.8	0.0	+14.9	-68.5
110.349 G	25	184	24	175	272.3	-0.5	+14.7	-55.4
111.315 C	48	233	35	170	272.6	-0.2	+14.7	-42.4
112.356 G	54	241	33	147	272.4	-0.4	+14.7	-28.8
113.422 G	50	288	28	158	272.4	-0.4	+14.9	-14.7
114.358 G	68	299	36	158	272.5	-0.3	+14.8	- 2.3
115.477 G	52	243	28	131	272.5	-0.3	+14.7	+12.5
116.344 G	59	264	34	153	272.4	-0.4	+14.7	+23.9
117.322 C	53	151	35	100	272.0	-0.9	+14.7	+36.4
118.343 G	36	167	30	139	271.9	-1.0	+14.7	+49.8
119.318 C	20	118	23	137	271.6	-1.3	+14.6	+62.4
120.322 G	9	61	22	146	272.6	-0.3	+14.5	+76.6

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

Group 16025.

Apr. 23-29. A small diminishing 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.
					°	°	°	°
112.356 G	9	61	17	118	227.4	0.0	+ 9.9	-73.8
113.422 G	20	97	21	100	227.8	+0.3	+ 9.7	-59.3
114.358 G	20	97	15	74	227.8	+0.2	+ 9.8	-47.0
115.477 G	14	50	9	30	227.5	-0.3	+ 9.6	-32.5
116.344 G	9	43	5	24	227.4	-0.5	+ 9.3	-21.1
117.322 C	4	15	2	8	227.7	-0.3	+ 9.0	- 7.9
118.343 G	0	7	0	4	227.9	-0.2	+ 8.9	+ 5.8
Means	..	..	10	51	227.6	..	+ 9.5	..

Group 16027.

Apr. 24-May 3. A stream of changing spots. The leader, *a*, has become a regular spot by April 28 and it then remains stable. The following part is variable and dies out as the limb is approached.

113.422 G	32	126	24	92	240.4	0.0	- 6.6	-46.7
114.358 G	38	255	22	152	241.4	+0.9	- 6.9	-33.4
115.477 G	25	129	13	66	244.0	+3.3	- 7.4	-16.0
116.344 G	66	267	33	133	245.5	+4.6	- 6.5	- 3.0
117.322 C	101	475	51	241	247.1	+6.1	- 6.0	+11.5
118.343 G	135	858	74	472	246.3	+5.1	- 6.0	+24.2
119.318 C	87	497	55	315	246.7	+5.4	- 6.3	+37.5
120.322 G	56	325	45	263	247.7	+6.2	- 5.6	+51.7
121.307 G	32	188	39	235	248.7	+7.0	- 5.3	+65.8
122.325 C	11	83	29	222	249.0	+7.2	- 5.5	+79.5
Means	..	..	38	219	245.7	..	- 6.2	..

Spot *a*

117.322 C	59	379	30	193	248.4	0.0	- 5.6	+12.8
118.343 G	70	479	39	268	248.9	+0.3	- 4.9	+26.8
119.318 C	46	300	30	195	249.3	+0.6	- 4.9	+40.1
120.322 G	38	235	32	197	249.9	+1.0	- 5.0	+53.9
121.307 C	25	163	32	210	250.4	+1.4	- 4.9	+67.5
122.325 G	9	70	25	197	249.5	..	- 4.8	+80.0

Group 16028.

Apr. 24-May 5. A small, slowly-diminishing regular spot with occasional companions.

113.422 G	9	52	17	100	214.9	0.0	+19.3	-72.2
114.358 G	25	94	28	107	214.6	-0.2	+19.9	-60.2
115.477 G	29	133	23	106	214.3	-0.4	+20.1	-45.7

Group 16028 - *continued*

					°	°	°	°
116.344 G	34	163	23	109	213.9	-0.7	+20.4	-34.6
117.322 C	18	160	11	94	213.8	-0.7	+20.5	-21.8
118.343 G	36	165	20	92	213.7	-0.7	+20.2	- 8.4
119.318 C	22	134	12	74	213.4	-0.9	+20.3	+ 4.2
120.322 G	25	111	14	64	213.3	-0.9	+20.2	+17.3
121.307 G	19	77	12	48	211.1	-2.9	+18.7	+28.2
122.325 C	7	40	5	30	211.5	-2.4	+18.8	+42.0
123.328 C	7	26	7	26	212.1	-1.7	+19.6	+55.9
124.370 C	2	11	3	18	211.7	-2.0	+19.6	+69.2
Means	..	..	15	72	213.2	..	+19.8	..

Group 16029.

Apr. 25-30. A short string of small spots, of which the follower is the largest component.

114.358 G	9	63	5	33	258.4	0.0	-13.4	-16.4
115.477 G	54	168	28	86	256.9	-1.5	-14.0	- 3.1
116.344 G	45	221	23	112	256.2	-2.3	-14.5	+ 7.7
117.322 C	55	176	30	95	256.1	-2.4	-14.5	+20.5
118.343 G	23	136	14	83	255.3	-3.2	-14.8	+33.2
119.318 C	7	44	5	32	255.8	-2.8	-14.6	+46.6
Means	..	..	18	74	256.4	..	-14.3	..

Group 16033.

Apr. 29-May 11. A stable regular spot.

118.343 G	14	77	38	211	144.8	0.0	+18.7	-77.3
119.318 C	22	127	29	165	144.7	0.0	+18.5	-64.5
120.322 G	47	219	41	193	144.7	0.0	+18.5	-51.3
121.307 G	54	287	37	198	144.8	+0.2	+18.4	-38.1
122.325 C	51	387	31	232	144.6	+0.1	+18.3	-24.9
123.328 C	64	332	35	183	144.7	+0.2	+18.5	-11.5
124.370 C	62	295	33	159	144.7	+0.3	+18.4	+ 2.2
125.345 G	68	334	38	187	144.7	+0.4	+18.4	+15.1
126.345 C	70	290	43	177	144.4	+0.2	+18.5	+28.1
127.367 G	52	213	37	153	144.3	+0.1	+18.5	+41.5
128.417 C	29	158	28	152	144.2	+0.1	+18.4	+55.3
129.356 G	18	101	26	147	144.2	+0.2	+18.2	+67.7
130.434 C	13	55	47	199	143.0	..	+18.2	+80.7
Means	..	..	35	180	144.6	..	+18.4	..

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

Group 16035.

May 1-7. A short-lived group of variable spots.

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.
					°	°	°	°
120.322 G	36	141	20	77	187.6	0.0	+18.2	- 8.4
121.307 G	46	197	25	107	189.6	+2.0	+17.5	+ 6.7
122.325 C	142	704	81	405	189.4	+1.9	+17.9	+19.9
123.328 C	95	561	62	367	189.9	+2.4	+17.6	+33.7
124.370 C	48	259	41	216	191.7	+4.3	+17.2	+49.2
125.345 G	16	93	19	113	192.3	+4.9	+17.3	+62.7
126.345 C	0	7	0	15	190.6	+3.3	+17.3	+74.3
Means	..	..	35	186	190.2	..	+17.6	..

Group 16036.

May 1-7. A scattered cluster, developing from a pair of small spots and disappearing suddenly before reaching the limb.

120.322 G	9	30	5	17	170.9	0.0	+10.3	-25.1
121.307 G	19	73	11	38	171.8	+0.8	+10.5	-11.1
122.325 C	35	154	18	80	171.9	+0.8	+10.8	+ 2.4
123.328 C	35	280	21	168	173.2	+2.0	+10.5	+17.0
124.370 C	76	404	49	261	173.0	+1.7	+11.3	+30.5
125.345 G	63	333	45	237	172.2	+0.8	+11.0	+42.6
126.345 C	26	143	24	133	171.6	+0.1	+11.2	+55.3
Means	..	..	25	133	172.1	..	+10.8	..

Group 16039.

May 2-12. A small spot with an occasional companion; nothing is seen on May 11.

121.307 G	2	9	3	13	114.4	0.0	+13.2	-68.5
122.325 C	20	88	19	83	113.7	-0.8	+12.8	-55.8
123.328 C	36	165	26	118	113.4	-1.1	+12.6	-42.8
124.370 C	22	167	13	101	113.1	-1.5	+12.5	-29.4
125.345 G	16	75	9	40	113.0	-1.7	+12.8	-16.6
126.345 C	18	55	9	29	113.1	-1.6	+12.9	- 3.2
127.367 G	7	32	4	17	112.7	-2.1	+13.0	+ 9.9
128.417 C	2	11	1	6	113.1	-1.8	+12.5	+24.2
129.356 G	2	14	1	9	114.6	-0.3	+13.3	+38.1
130.434 C	0	0	0	0	..	..	..	..
131.391 C	2	15	3	20	116.4	+1.4	+11.2	+66.8
Means	..	..	8	40	113.8	..	+12.7	..

Group 16044.

May 7-12. A short-lived variable 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.
					°	°	°	°
126.345 C	15	51	8	26	112.5	0.0	- 4.2	- 3.8
127.367 G	16	73	9	38	115.7	+3.0	- 4.9	+12.9
128.417 C	93	217	51	121	115.1	+2.2	- 5.0	+26.2
129.356 G	50	250	32	160	115.3	+2.3	- 4.6	+38.8
130.434 C	22	63	18	52	115.0	+1.8	- 4.8	+52.7
131.391 C	2	18	2	23	116.2	+2.8	- 4.8	+66.6
Means	..	..	20	70	115.0	..	- 4.7	..

Group 16049.

May 13-19. One or two small spots.

132.326 C	13	82	20	134	329.3	0.0	+24.7	-67.9
133.336 C	28	148	28	153	328.6	-0.4	+24.8	-55.3
134.449 C	18	95	14	74	326.2	-2.5	+24.8	-43.0
135.457 G	19	84	12	55	325.7	-2.8	+24.6	-30.1
136.335 G	16	60	10	35	325.1	-3.1	+24.8	-19.1
137.340 G	16	73	9	41	327.6	-0.4	+24.6	- 3.3
138.429 G	5	30	3	17	325.7	-2.0	+25.2	+ 9.2
Means	..	..	14	73	326.9	..	+24.8	..

Group 16051.

May 15-24. A small stream of variable spots which undergoes its whole life-history on the disk.

134.449 C	7	22	6	18	317.0	0.0	+ 4.8	-52.2
135.457 G	21	107	13	68	318.1	+0.9	+ 3.8	-37.7
136.335 G	50	192	28	108	319.0	+1.7	+ 3.4	-25.2
137.340 G	52	228	26	117	320.6	+3.1	+ 3.2	-10.3
138.429 G	45	217	23	108	320.6	+2.9	+ 3.3	+ 4.1
139.422 G	45	171	24	90	321.6	+3.7	+ 3.2	+18.2
140.326 G	42	129	24	76	320.9	+2.8	+ 3.0	+29.5
141.354 G	55	240	38	166	321.1	+2.9	+ 3.3	+43.3
142.326 C	20	100	18	88	320.3	+1.9	+ 2.3	+55.3
143.353 C	4	18	5	24	319.1	+0.5	+ 4.4	+67.7
Means	..	..	20	86	319.8	..	+ 3.5	..

Group 16054.

May 17-23. A small stream of normal type appearing near the C.M.

136.335 G	20	78	11	44	348.6	0.0	+24.0	+ 4.4
137.340 G	98	456	57	267	348.9	+0.5	+23.9	+18.0

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

Group 16054 - *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.
					°	°	°	°
138.429 G	92	472	62	318	349.4	+1.3	+24.1	+32.9
139.422 G	71	499	58	412	350.2	+2.3	+23.8	+46.8
140.326 G	44	260	48	281	349.2	+1.6	+23.8	+57.8
141.354 G	23	148	47	310	350.0	+2.6	+24.6	+72.2
142.326 C	9	38	(37	155	346.4	..	+24.5)	+81.4
Means	..	..	47	272	349.4	..	+24.0	..

Spot *a*

136.335 G	11	39	6	22	350.0	0.0	+23.0	+ 5.8
137.340 G	48	223	28	132	351.6	+1.8	+23.1	+20.7
138.429 G	46	278	32	192	352.4	+2.9	+23.3	+35.9
139.422 G	43	328	37	282	352.8	+3.5	+23.2	+49.4
140.326 G	25	157	30	185	353.0	+4.0	+23.3	+61.6
141.354 G	16	112	37	258	353.2	+4.4	+24.2	+75.4

Spot *b*

136.335 G	9	39	5	22	347.1	0.0	+24.6	+ 2.9
137.340 G	50	233	29	135	346.3	-0.6	+24.8	+15.4
138.429 G	39	169	25	110	345.5	-1.1	+25.3	+29.0
139.422 G	23	148	17	112	345.0	-1.4	+25.1	+41.6
140.326 G	14	82	13	76	344.0	-2.1	+25.0	+52.6
141.354 G	7	36	10	52	344.3	-1.6	+25.4	+66.5
142.326 C	9	38	37	155	346.4	..	+24.5	+81.4

Group 16056.

May 17-28. A pair of small spots, of which the leader is the longest-lived.

136.335 G	7	52	21	158	263.6	..	-24.0	-80.6
137.340 G	32	171	48	254	261.1	0.0	-24.5	-69.8
138.429 G	48	224	47	217	260.8	0.0	-24.6	-55.7
139.422 G	55	258	41	191	260.6	0.0	-24.6	-42.8
140.326 G	41	224	26	141	260.6	+0.3	-25.1	-30.8
141.354 G	55	162	31	92	260.6	+0.5	-24.9	-17.2
142.326 C	18	131	10	71	260.5	+0.7	-24.6	- 4.5
143.353 C	13	104	7	57	260.2	+0.6	-24.4	+ 8.8
144.325 C	16	40	9	23	260.1	+0.8	-24.1	+21.6
145.342 C	18	75	12	50	260.6	+1.5	-23.6	+35.5
146.357 G	9	21	7	17	260.4	+1.6	-24.0	+48.8
147.349 C	2	7	2	8	260.1	+1.5	-24.2	+61.6
Means	..	..	22	102	260.5	..	-24.4	..

Group 16061.

May 23-29. A stream of variable spots, appearing suddenly near the C.M. Only the leader remains by May 28.

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.
					°	°	°	°
142.326 C	69	301	35	154	256.6	0.0	+ 4.6	- 8.4
143.353 C	55	475	28	239	256.4	-0.4	+ 4.9	+ 5.0
144.325 C	48	252	25	134	257.0	+0.1	+ 4.8	+18.5
145.342 C	31	155	18	94	258.2	+1.1	+ 4.5	+33.1
146.357 G	19	75	14	56	259.2	+1.9	+ 4.5	+47.6
147.349 C	4	22	4	24	260.9	+3.4	+ 4.0	+62.4
148.346 C	2	7	4	15	261.9	+4.3	+ 4.4	+76.6
Means	..	..	18	102	258.6	..	+ 4.5	..

Group 16063.

May 23-June 2. A small diminishing regular spot, *a*, with a distant companion until May 29.

142.326 C	15	76	33	166	190.8	0.0	+16.6	-74.2
143.353 C	31	142	34	156	190.7	-0.1	+16.6	-60.7
144.325 C	31	187	25	148	190.5	-0.3	+16.5	-48.0
145.342 C	44	215	28	138	190.4	-0.4	+16.4	-34.7
146.357 G	39	209	21	117	191.0	+0.2	+16.1	-20.6
147.349 C	40	200	21	105	191.5	+0.7	+16.0	- 7.0
148.346 C	49	198	26	104	192.9	+2.1	+16.0	+ 7.6
149.326 C	36	91	20	51	193.8	+3.0	+15.2	+21.5
150.392 G	9	53	6	34	193.9	+3.2	+15.5	+35.7
151.659 G	2	9	2	8	196.5	+5.8	+15.1	+55.0
152.325 G	2	9	2	10	195.7	+5.0	+16.2	+63.0
Means	..	..	20	94	192.5	..	+16.0	..

Spot *a*

142.326 C	11	56	19	97	193.0	0.0	+15.7	-72.0
143.353 C	22	104	22	105	192.7	-0.3	+15.8	-58.7
144.325 C	20	131	15	98	192.6	-0.4	+15.6	-45.9
145.342 C	31	153	19	95	192.8	-0.2	+15.7	-32.3
146.357 G	30	173	16	95	192.8	-0.2	+15.4	-18.8
147.349 C	33	173	17	90	193.3	+0.3	+15.2	- 5.2
148.346 C	47	182	25	96	193.5	+0.5	+15.5	+ 8.2
149.326 C	36	91	20	51	193.8	+0.8	+15.2	+21.5
150.392 G	9	53	6	34	193.9	+1.0	+15.5	+35.7
151.659 G	2	9	2	8	196.5	+3.6	+15.1	+55.0
152.325 G	2	9	2	10	195.7	+2.8	+16.2	+63.0

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

Group 16066.

May 24-June 4. A small regular spot, followed by one or two companions until May 29.

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.
					°	°	°	°
143.353 C	9	38	16	67	177.6	0.0	- 4.4	-73.8
144.325 C	27	154	29	164	176.3	-1.5	- 4.5	-62.2
145.342 C	40	200	30	151	176.6	-1.3	- 4.7	-48.5
146.357 G	71	235	43	143	177.1	-1.0	- 4.9	-34.5
147.349 C	36	235	19	125	177.0	-1.3	- 4.8	-21.5
148.346 C	40	218	20	109	177.1	-1.4	- 5.1	- 8.2
149.326 C	36	138	18	69	178.8	+0.2	- 5.1	+ 6.5
150.392 G	30	133	16	72	179.0	+0.2	- 5.2	+20.8
151.659 G	18	69	11	43	179.3	+0.3	- 5.4	+37.8
152.325 G	14	48	10	35	179.3	+0.2	- 5.2	+46.6
153.332 C	4	27	4	27	179.3	0.0	- 5.4	+60.0
154.347 G	5	11	9	20	179.7	+0.2	- 4.6	+73.8
Means	..	..	19	85	178.1	..	- 4.9	..

Group 16068.

May 26-June 2. A few small variable spots.

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.
145.342 C	2	16	3	21	158.3	0.0	+13.9	-66.8
146.357 G	5	16	4	14	159.2	+0.9	+13.1	-52.4
147.349 C	14	80	10	58	154.0	-4.3	+15.8	-44.5
148.346 C	9	56	5	34	155.7	-2.7	+14.6	-29.6
149.326 C	27	80	15	44	154.6	-3.8	+15.5	-17.7
150.392 G	26	108	14	56	156.4	-2.0	+14.5	- 1.8
151.659 G	5	16	3	8	151.6	-6.8	+15.8	+10.1
152.325 G	9	27	5	15	156.8	-1.6	+14.9	+24.1
Means	..	..	7	31	155.8	..	+14.8	..

Group 16070.

May 27-June 6. A small regular spot, slowly petering 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.
146.357 G	11	105	19	186	139.8	0.0	+22.4	-71.8
147.349 C	24	151	25	160	139.7	+0.1	+22.6	-58.8
148.346 C	44	184	34	144	139.6	+0.2	+22.5	-45.7
149.326 C	29	202	19	131	139.6	+0.4	+22.6	-32.7
150.392 G	39	199	23	115	139.0	0.0	+22.5	-19.2
151.659 G	30	176	16	95	138.4	-0.4	+22.6	- 3.1
152.325 G	30	165	16	91	138.0	-0.6	+22.5	+ 5.3
153.332 C	13	113	7	64	137.6	-0.8	+22.8	+18.3
154.347 G	16	48	10	31	137.8	-0.4	+22.5	+31.9
155.367 G	18	30	14	23	137.4	-0.7	+22.6	+45.0
156.374 G	2	11	2	11	137.5	-0.4	+22.5	+58.4
Means	..	..	17	96	138.6	..	+22.6	..

Group 16071.

May 29-June 6. A stream of small variable spots.

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.
					°	°	°	°
148.346 C	7	33	5	25	137.9	0.0	-12.8	-47.4
149.326 C	36	135	22	82	139.9	+1.9	-13.4	-32.4
150.392 G	50	307	28	171	140.2	+2.2	-12.9	-18.0
151.659 G	54	249	28	128	140.1	+2.0	-12.9	- 1.4
152.325 G	46	185	24	96	141.6	+3.5	-12.5	+ 8.9
153.332 C	15	105	8	59	143.4	+5.2	-13.2	+24.1
154.347 G	27	129	18	83	143.3	+5.1	-13.2	+37.4
155.367 G	11	67	10	56	144.1	+5.8	-13.5	+51.7
156.374 G	5	27	7	34	144.6	+6.2	-13.6	+65.5
Means	..	..	17	82	141.7	..	-13.1	..

Group 16072.

May 29-June 9. A diminishing regular spot, *a*, followed by a train of tiny companions until June 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.
148.346 C	51	249	91	465	112.4	0.0	+15.0	-72.9
149.326 C	111	442	122	471	111.8	-0.6	+14.7	-60.5
150.392 G	80	504	57	369	113.1	+0.6	+14.5	-45.1
151.659 G	69	375	39	211	117.2	+4.7	+14.5	-24.3
152.325 G	96	410	51	218	117.2	+4.7	+14.4	-15.5
153.332 C	58	340	30	177	119.0	+6.5	+14.5	- 0.3
154.347 G	62	327	33	173	118.1	+5.5	+14.5	+12.2
155.367 G	55	305	32	177	119.2	+6.6	+14.5	+26.8
156.374 G	44	254	30	172	118.9	+6.3	+14.4	+39.8
157.472 C	31	180	28	160	119.2	+6.6	+14.4	+54.7
158.580 G	24	101	35	146	119.1	+6.4	+14.5	+69.2
159.389 G	7	50	20	141	118.7	+6.0	+14.7	+79.5
Means	..	..	47	240	117.0	..	+14.6	..

Spot *a*

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.
148.346 C	44	200	71	322	114.4	0.0	+15.5	-70.9
149.326 C	67	291	64	276	115.6	+1.2	+15.0	-56.7
150.392 G	62	344	43	237	116.6	+2.1	+14.6	-41.6
151.659 G	62	330	35	185	118.1	+3.6	+14.8	-23.4
152.325 G	80	364	42	193	118.5	+4.0	+14.7	-14.2
153.332 C	58	340	30	177	119.0	+4.5	+14.5	- 0.3
154.347 G	57	300	30	159	119.1	+4.5	+14.7	+13.2
155.367 G	55	305	32	177	119.2	+4.6	+14.5	+26.8
156.374 G	44	247	30	168	119.2	+4.6	+14.5	+40.1
157.472 C	31	180	28	160	119.2	+4.6	+14.4	+54.7
158.580 G	24	101	35	146	119.1	+4.4	+14.5	+69.2
159.389 G	7	50	20	141	118.7	+4.0	+14.7	+79.5

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

Group 16078.

June 6-11. A single spot on June 6, 7 and 10; a pair on June 8, 9 and 11.

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.
					°	°	°	°
156.374 G	2	11	2	11	19.4	0.0	+ 6.4	-59.7
157.472 C	2	11	1	8	20.7	+1.1	+ 6.9	-43.8
158.580 G	11	62	6	37	17.1	-2.6	+ 6.9	-32.8
159.389 G	14	80	8	43	17.3	-2.6	+ 6.8	-21.9
160.444 G	5	14	3	7	16.5	-3.5	+ 8.6	- 8.7
161.339 G	5	22	2	11	18.0	-2.1	+ 7.2	+ 4.6
Means	..	..	4	20	18.2	..	+ 7.1	..

Group 16085.

June 11-20. Intermittent. An unstable group of tiny spots.

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.
161.339 G	2	14	2	11	326.6	0.0	+25.4	-46.8
162.360 G	0	0	0	0	..	..	..	..
163.327 G	7	41	4	23	328.5	+2.2	+21.8	-18.5
164.335 C	0	0	0	0	..	..	..	..
165.322 G	0	0	0	0	..	..	..	..
166.332 G	18	41	10	23	329.6	+3.8	+21.2	+22.3
167.646 G	41	134	29	92	329.7	+4.1	+21.4	+39.8
168.438 C	18	72	15	59	329.6	+4.2	+21.2	+50.2
169.327 C	17	83	19	91	329.3	+4.0	+21.1	+61.7
170.318 G	7	28	15	59	330.4	+5.3	+19.9	+75.9
Means	..	..	9	36	329.1	..	+21.7	..

Group 16091.

June 16-24. A small 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.
166.332 G	5	39	24	187	223.3	...	+21.9	-84.0
167.646 G	14	58	19	78	222.9	0.0	+21.9	-67.0
168.438 C	18	71	17	69	222.5	-0.3	+21.7	-56.9
169.327 C	18	74	14	56	221.7	-0.9	+21.3	-45.9
170.318 G	18	87	11	55	221.3	-1.2	+21.2	-33.2
171.320 G	18	76	10	43	220.9	-1.4	+21.2	-20.3
172.380 C	16	36	8	19	220.7	-1.4	+21.3	- 6.5
173.357 G	5	16	3	8	220.6	-1.4	+21.8	+ 6.3
174.318 G	5	14	3	8	220.6	-1.2	+21.8	+19.0
Means	..	..	11	42	221.4	..	+21.5	..

Group 16093.

June 18-25. A few variable spots.

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.
					°	°	°	°
168.438 C	2	13	2	15	215.6	0.0	+17.5	-63.8
169.327 C	13	69	11	59	215.1	-0.5	+17.7	-52.5
170.318 G	18	55	12	36	215.0	-0.5	+17.5	-39.5
171.320 G	19	89	11	51	215.7	+0.2	+17.3	-25.5
172.380 C	58	142	31	75	216.2	+0.8	+17.5	-11.0
173.357 G	37	195	19	102	215.3	-0.1	+17.6	+ 1.0
174.318 G	16	65	9	35	215.4	+0.1	+17.8	+13.8
175.319 G	10	68	6	39	215.6	+0.3	+17.9	+27.3
Means	..	..	13	52	215.5	..	+17.6	..

Group 16094.

June 18-29. A slowly-diminishing 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.
168.438 C	18	105	39	228	203.0	0.0	- 6.2	-76.4
169.327 C	31	212	36	248	203.3	+0.2	- 6.4	-64.3
170.318 G	32	228	26	185	203.2	-0.1	- 6.3	-51.3
171.320 G	46	292	29	187	203.2	-0.3	- 6.5	-38.0
172.380 C	45	270	25	148	203.5	-0.1	- 6.3	-23.7
173.357 G	55	262	28	134	203.7	-0.1	- 6.1	-10.6
174.318 G	34	304	17	155	203.7	-0.2	- 6.1	+ 2.1
175.319 G	48	221	25	115	203.6	-0.5	- 6.0	+15.3
176.348 G	16	76	9	44	203.7	-0.6	- 6.4	+29.0
177.320 G	14	51	9	34	203.2	-1.2	- 6.9	+41.4
178.319 G	7	28	6	26	205.1	+0.5	- 6.2	+56.5
179.381 G	0	7	0	11	205.8	+1.1	- 6.7	+71.3
Means	..	..	21	126	203.8	..	- 6.3	..

Group 16095.

June 20-July 2. A regular spot, closely followed by a companion.

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.
170.318 G	37	166	73	325	179.1	0.0	+ 6.8	-75.4
171.320 G	53	248	56	263	179.4	+0.1	+ 6.8	-61.8
172.380 C	74	345	55	257	179.4	0.0	+ 6.5	-47.8
173.357 G	117	496	71	301	179.5	-0.1	+ 6.5	-34.8
174.318 G	81	538	44	291	179.9	+0.2	+ 6.4	-21.7
175.319 G	92	493	47	251	180.1	+0.2	+ 6.3	- 8.2
176.348 G	83	527	42	264	179.9	-0.2	+ 6.1	+ 5.2
177.320 G	81	423	43	223	179.7	-0.5	+ 6.0	+17.9
178.319 G	62	289	36	170	180.2	-0.2	+ 6.0	+31.6
179.381 G	39	208	28	150	180.3	-0.2	+ 5.9	+45.8
180.626 G	12	99	13	107	180.7	0.0	+ 6.1	+62.6
181.322 G	18	58	28	90	180.2	-0.6	+ 6.2	+71.4
182.321 G	2	18	10	86	179.8	..	+ 6.0	+84.2
Means	..	..	45	224	179.9	..	+ 6.3	..

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

Group 16097.

June 21-July 2. A variable stream, the leading and following portions of which coalesce into composite spots for a few days. On June 28 the whole group has broken up into a large number of small spots.

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.
					°	°	°	°
171.320 G	7	37	14	73	165.9	0.0	+10.0	-75.3
172.380 C	87	324	94	359	164.5	-1.5	+10.4	-62.7
173.357 G	94	658	73	515	164.2	-1.9	+10.2	-50.1
174.318 G	71	729	46	465	163.8	-2.4	+10.5	-37.8
175.319 G	145	817	80	451	164.6	-1.7	+ 9.9	-23.7
176.348 G	152	911	78	464	164.9	-1.5	+10.4	- 9.8
177.320 G	156	783	80	399	165.5	-1.0	+10.3	+ 3.7
178.319 G	206	1131	109	598	165.0	-1.6	+10.7	+16.4
179.381 G	159	722	94	427	165.4	-1.3	+10.7	+30.9
180.626 G	46	348	34	263	166.4	-0.5	+10.2	+48.3
181.322 G	37	229	36	214	164.8	-2.1	+10.9	+56.0
182.321 G	5	16	7	23	165.8	-1.2	+11.8	+70.2
Means	..	..	62	354	165.1	..	+10.5	..

Group 16102.

June 24-July 1. A few small variable spots.

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.
174.318 G	12	41	7	21	190.6	0.0	+10.7	-11.0
175.319 G	12	52	6	26	189.9	-0.8	+10.1	+ 1.6
176.348 G	39	125	21	66	190.2	-0.6	+10.3	+15.5
177.320 G	44	283	25	163	190.9	0.0	+10.8	+29.1
178.319 G	25	157	17	108	191.8	+0.8	+11.0	+43.2
179.381 G	7	30	7	28	192.0	+0.9	+10.6	+57.5
180.626 G	14	81	26	148	192.5	+1.3	+11.3	+74.4
181.322 G	0	5	0	14	189.1	..	+11.7	+80.3
Means	..	..	16	80	191.1	..	+10.7	..

Group 16103.

June 24-July 3. A small 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.
174.318 G	5	51	15	155	120.9	..	+11.7	-80.7
175.319 G	16	99	20	127	121.3	0.0	+11.8	-67.0
176.348 G	28	124	24	105	121.0	-0.4	+12.2	-53.7
177.320 G	30	159	20	107	120.4	-1.0	+12.2	-41.4
178.319 G	49	155	28	88	120.8	-0.7	+12.5	-27.8
179.381 G	28	157	15	82	120.7	-0.9	+12.1	-13.8
180.626 G	14	79	7	40	120.9	-0.8	+12.2	+ 2.8
181.322 G	23	71	12	37	120.5	-1.2	+12.6	+11.7
182.321 G	7	41	4	22	121.2	-0.6	+12.3	+25.6
183.366 G	4	23	2	15	120.6	-1.3	+11.8	+38.8
Means	..	..	15	69	120.8	..	+12.2	..

Group 16108.

June 28-July 5. A few variable spots.

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.
					°	°	°	°
178.319 G	21	120	20	118	89.4	0.0	+13.3	-59.2
179.381 G	32	145	23	104	89.2	-0.2	+13.3	-45.3
180.626 G	26	178	15	104	88.4	-1.1	+13.6	-29.7
181.322 G	30	132	16	71	88.1	-1.4	+13.7	-20.7
182.321 G	16	106	9	56	85.9	-3.6	+14.9	- 9.7
183.366 G	12	60	7	31	85.2	-4.3	+15.0	+ 3.4
184.323 G	10	107	6	57	86.0	-3.6	+15.5	+16.9
185.321 G	5	35	3	21	86.4	-3.2	+15.8	+30.5
Means	..	..	12	70	87.3	..	+14.4	..

Group 16111.

June 28-July 9. One or two small spots with a brief maximum on July 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.
178.319 G	7	35	14	70	74.4	0.0	-15.0	-74.2
179.381 G	5	18	5	19	75.3	+0.9	-15.0	-59.2
180.626 G	2	9	1	6	76.8	+2.4	-14.4	-41.3
181.322 G	0	24	0	15	74.8	+0.4	-14.2	-34.0
182.321 G	7	37	4	21	76.6	+2.2	-17.1	-19.0
183.366 G	37	174	20	93	72.7	-1.7	-14.1	- 9.1
184.323 G	16	115	9	60	72.2	-2.3	-14.3	+ 3.1
185.321 G	7	40	4	22	71.9	-2.6	-14.1	+16.0
186.334 G	5	18	3	11	70.3	-4.2	-14.5	+27.8
187.571 G	5	14	4	11	73.8	-0.7	-17.9	+47.6
188.557 G	0	5	0	6	75.7	+1.2	-17.5	+62.6
189.324 G	0	5	0	7	69.7	-4.8	-15.5	+66.8
Means	..	..	5	28	73.7	..	-15.3	..

Group 16113.

June 30-July 11. A small spot followed by a tiny companion until July 7; a single spot on July 10 and 11.

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.
180.626 G	0	2	0	6	40.5	0.0	-30.4	-77.6
181.322 G	5	28	8	43	43.0	+2.8	-30.5	-65.8
182.321 G	12	28	12	28	43.7	+4.0	-30.1	-51.9
183.366 G	16	92	12	70	44.2	+5.0	-30.1	-37.6
184.323 G	16	81	11	54	43.4	+4.7	-30.1	-25.7
185.321 G	20	65	12	40	43.2	+4.9	-30.4	-12.7
186.334 G	21	55	13	33	41.1	+3.3	-30.3	- 1.4
187.571 G	0	7	0	4	44.8	+7.6	-30.6	+18.6
188.557 G	0	0	0	0	..	..	..	..
189.324 G	0	0	0	0	..	..	..	..
190.338 C	0	7	0	7	42.8	+6.9	-30.2	+53.3
191.479 G	0	5	0	8	40.8	+5.5	-31.5	+66.4
Means	..	..	6	24	42.8	..	-30.4	..

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

Group 16119.

July 5-13. A small regular spot followed by a distant companion until July 10.

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.
					°	°	°	°
185.321 G	9	42	22	110	340.6	0.0	-24.0	-75.3
186.334 G	21	79	27	100	340.6	+0.2	-23.9	-61.9
187.571 G	26	122	22	101	340.3	+0.2	-23.8	-45.9
188.557 G	23	134	16	91	340.7	+0.9	-23.6	-32.4
189.324 G	18	81	11	50	340.3	+0.7	-24.5	-22.6
190.338 C	20	47	11	27	341.2	+1.8	-24.4	- 8.3
191.479 G	9	37	5	21	341.4	+2.3	-24.3	+ 7.0
192.323 G	5	12	3	7	340.9	+2.0	-24.5	+17.7
193.339 C	2	16	1	11	341.1	+2.5	-24.1	+31.3
Means	..	..	13	58	340.8	..	-24.1	..

Group 16126.

July 11-19. Small variable spots.

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.
191.479 G	2	7	2	5	287.3	0.0	- 5.2	-47.1
192.323 G	5	23	3	14	287.4	0.0	- 5.1	-35.8
193.339 C	18	110	10	62	286.6	-1.0	- 5.6	-23.2
194.444 G	18	83	9	42	286.8	-1.0	- 5.4	- 8.4
195.437 G	18	208	10	106	288.1	+0.1	- 4.4	+ 6.1
196.389 G	40	226	21	122	290.4	+2.3	- 4.4	+20.9
197.457 G	48	159	30	99	290.0	+1.7	- 4.7	+34.7
198.610 G	14	57	12	47	291.0	+2.5	- 4.6	+50.9
199.292 G	2	12	2	13	293.3	+4.7	- 4.1	+62.3
Means	..	..	11	57	289.0	..	- 4.8	..

Group 16128.

July 12-20. A stream of small unstable spots with a brief maximum on July 15, forming immediately s of the leader of Group 16124.

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.
192.323 G	7	28	4	18	286.7	0.0	+14.3	-36.5
193.339 C	11	67	6	37	286.7	0.0	+14.8	-23.1
194.444 G	32	195	17	100	286.8	+0.1	+15.0	- 8.4
195.437 G	44	294	22	150	286.8	+0.1	+14.8	+ 4.8
196.389 G	21	119	12	64	286.9	+0.1	+14.1	+17.4
197.457 G	7	23	4	14	289.1	+2.3	+13.9	+33.8
198.610 G	12	60	9	47	290.6	+3.8	+17.2	+50.5
199.292 G	5	28	5	28	290.9	+4.1	+17.1	+59.9
200.345 G	2	9	4	17	292.9	+6.1	+14.7	+75.8
Means	..	..	9	53	288.6	..	+15.1	..

Group 16130.

July 14-27. A stable 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.
					°	°	°	°
194.444 G	2	23	15	169	208.0	..	+14.8	-87.2
195.437 G	12	67	21	115	208.4	0.0	+15.0	-73.6
196.389 G	14	101	15	105	207.9	-0.5	+14.9	-61.6
197.457 G	25	145	19	109	207.4	-1.1	+14.9	-47.9
198.610 G	35	198	21	119	207.7	-0.8	+14.7	-32.4
199.292 G	39	172	21	95	207.6	-0.9	+14.5	-23.4
200.345 G	41	251	21	128	207.0	-1.6	+14.1	-10.1
201.419 G	42	219	21	112	207.0	-1.6	+14.0	+ 4.1
202.327 G	34	226	18	119	207.2	-1.4	+13.8	+16.3
203.331 G	30	166	17	96	207.4	-1.2	+13.8	+29.8
204.372 G	25	131	17	90	207.4	-1.3	+13.9	+43.6
205.322 G	14	126	13	113	207.6	-1.1	+13.8	+56.4
206.326 G	14	85	19	116	207.3	-1.4	+13.9	+69.3
207.326 G	5	23	15	67	205.9	..	+14.3	+81.2
Means	..	..	19	110	207.5	..	+14.3	..

Group 16131.

July 15-26. A small diminishing regular spot, with one or two companions until July 18.

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.
195.437 G	5	30	18	108	203.3	0.0	-26.8	-78.7
196.389 G	23	111	37	175	203.5	+0.5	-26.9	-66.0
197.457 G	34	158	32	152	204.0	+1.4	-26.7	-51.3
198.610 G	23	159	17	116	204.3	+2.0	-26.4	-35.8
199.292 G	37	182	24	120	204.0	+2.0	-26.4	-27.0
200.345 G	32	186	19	112	203.4	+1.7	-26.4	-13.7
201.419 G	28	124	16	72	203.0	+1.7	-26.2	+ 0.1
202.327 G	21	133	13	80	202.4	+1.4	-26.6	+11.5
203.331 G	14	67	9	44	202.4	+1.7	-26.6	+24.8
204.372 G	9	37	7	28	202.5	+2.1	-26.5	+38.7
205.322 G	7	18	7	17	202.4	+2.3	-26.4	+51.2
206.326 G	7	18	10	26	202.0	+2.3	-26.4	+64.0
Means	..	..	17	88	203.1	..	-26.5	..

Group 16132.

July 15-27. A stable 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.
195.437 G	14	67	48	230	199.8	..	+10.8	-82.2
196.389 G	18	110	26	160	199.2	0.0	+10.8	-70.3
197.457 G	32	172	28	153	199.1	-0.2	+11.2	-56.2
198.610 G	53	246	35	162	199.7	+0.3	+11.4	-40.4
199.292 G	53	253	31	149	199.8	+0.4	+11.4	-31.2
200.345 G	62	310	33	164	199.8	+0.3	+11.4	-17.3
201.419 G	44	244	22	122	200.1	+0.5	+11.7	- 2.8
202.327 G	39	283	20	144	200.2	+0.5	+11.8	+ 9.3

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

Group 16132 - *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.
					°	°	°	°
203.331 G	46	283	25	156	200.5	+0.7	+11.9	+22.9
204.372 G	34	177	21	112	200.7	+0.8	+12.2	+36.9
205.322 G	23	166	18	128	201.0	+1.1	+12.3	+49.8
206.326 G	18	142	20	155	201.3	+1.3	+12.3	+63.3
207.326 G	9	62	18	123	200.9	+0.8	+12.4	+76.2
Means	..	..	25	144	200.2	..	+11.7	..

Group 16133.

July 16-27. A small bi-polar group, developing from a pair of tiny spots at the east limb. The leader is the most stable component and the longest-lived.

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.
196.389 G	0	5	0	16	187.2	..	+18.4	-82.3
197.457 G	7	25	9	36	185.6	0.0	+19.4	-69.7
198.610 G	9	48	8	42	185.9	+0.4	+20.4	-54.2
199.292 G	30	156	22	113	185.8	+0.4	+20.6	-45.2
200.345 G	60	292	37	176	186.6	+1.3	+20.4	-30.5
201.419 G	53	317	29	170	187.2	+2.1	+20.5	-15.7
202.327 G	65	389	34	202	186.8	+1.8	+20.2	- 4.1
203.331 G	67	347	36	183	186.5	+1.6	+20.1	+ 8.9
204.372 G	60	278	34	154	185.9	+1.1	+19.9	+22.1
205.322 G	25	141	16	89	185.8	+1.1	+19.9	+34.6
206.326 G	20	50	15	38	186.4	+1.8	+19.7	+48.4
207.326 G	5	25	5	26	186.8	+2.4	+19.5	+62.1
Means	..	..	22	112	186.3	..	+20.1	..

Group 16135.

July 18-25. A few small changing spots, of which only one remains by July 23.

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.
198.610 G	12	44	17	62	176.1	0.0	-25.6	-64.0
199.292 G	9	53	9	56	176.3	+0.4	-25.5	-54.7
200.345 G	11	62	8	49	176.4	+0.8	-25.2	-40.7
201.419 G	35	110	22	71	176.4	+1.1	-25.0	-26.5
202.327 G	12	88	7	52	176.4	+1.3	-25.8	-14.5
203.331 G	14	30	8	17	178.5	+3.7	-25.0	+ 0.9
204.372 G	2	9	1	5	179.1	+4.6	-24.6	+15.3
205.322 G	0	5	0	3	178.7	+4.5	-24.8	+27.5
Means	..	..	9	39	177.2	..	-25.2	..

Group 16141.

July 20-27. A few variable small spots.

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.
					°	°	°	°
200.345 G	0	5	0	3	194.4	0.0	+16.1	-22.7
201.419 G	2	12	1	6	196.7	+2.3	+16.0	- 6.2
202.327 G	0	9	0	5	197.4	+3.0	+17.5	+ 6.5
203.331 G	9	46	5	24	194.7	+0.4	+16.1	+17.1
204.372 G	14	76	8	44	194.4	+0.1	+16.2	+30.6
205.322 G	5	37	3	25	194.4	+0.1	+15.7	+43.2
206.326 G	4	14	4	13	196.1	+1.8	+18.3	+58.1
207.326 G	7	34	12	58	198.7	+4.5	+16.9	+74.0
Means	..	..	4	22	195.8	..	+16.6	..

Group 16142.

July 22-27. One or two small spots.

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.
202.327 G	2	9	1	5	180.6	0.0	- 8.8	-10.3
203.331 G	18	55	10	28	182.0	+1.3	- 8.7	+ 4.4
204.372 G	33	122	18	66	182.1	+1.2	- 7.1	+18.3
205.322 G	12	49	7	30	184.6	+3.6	- 7.1	+33.4
206.326 G	2	9	2	7	187.7	+6.5	- 7.2	+49.7
207.326 G	2	21	3	26	190.5	+9.2	- 5.3	+65.8
Means	..	..	7	27	184.6	..	- 7.4	..

Group 16143.

July 22-31. A stream, led by a small regular spot, until July 27, after which the whole declines.

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.
202.327 G	5	28	8	43	119.1	0.0	+12.0	-71.8
203.331 G	44	186	43	185	117.2	-2.0	+12.1	-60.4
204.372 G	71	396	52	288	117.6	-1.7	+11.8	-46.2
205.322 G	71	524	42	312	118.7	-0.7	+11.7	-32.5
206.326 G	110	463	59	246	118.6	-0.8	+11.9	-19.4
207.326 G	73	485	37	244	118.8	-0.7	+12.0	- 5.9
208.324 G	53	350	28	179	118.7	-0.9	+12.1	+ 7.2
209.332 C	18	78	10	43	123.3	+3.6	+11.1	+25.1
210.329 C	20	87	13	55	122.0	+2.2	+11.1	+37.0
211.352 C	9	22	8	19	125.7	+5.8	+10.6	+54.2
Means	..	..	30	161	120.0	..	+11.6	..

Group 16145.

July 24-30. A single small 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.
204.372 G	11	25	22	49	87.7	0.0	+18.1	-76.1
205.322 G	14	48	16	54	87.5	-0.1	+18.1	-63.7

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

Group 16145 - *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.
					°	°	°	°
206.326 G	16	48	13	38	87.1	-0.5	+18.2	-50.9
207.326 G	16	78	10	51	86.5	-1.0	+18.5	-38.2
208.324 G	14	53	8	30	86.2	-1.2	+18.8	-25.3
209.332 C	9	49	5	26	86.2	-1.1	+19.1	-12.0
210.329 C	9	29	5	15	86.1	-1.2	+19.4	+ 1.1
Means	..	..	11	38	86.8	..	+18.6	..

Group 16149.

July 27-Aug. 6. A composite spot, immediately *f* Group 16148, which soon breaks up and dies out on the disk.

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.
207.326 G	14	73	31	161	51.2	0.0	-22.0	-73.5
208.324 G	50	309	59	365	51.5	+0.5	-22.6	-60.0
209.332 C	60	402	50	338	51.6	+0.7	-22.2	-46.6
210.329 C	80	276	55	190	51.8	+1.1	-22.2	-33.2
211.352 C	35	113	22	68	50.8	+0.3	-22.4	-20.7
212.339 C	4	24	2	14	48.2	-2.2	-22.0	-10.2
213.431 G	14	99	8	56	49.6	-0.6	-21.4	+ 5.6
214.339 G	22	133	12	78	48.8	-1.3	-20.9	+16.8
215.359 C	11	77	8	51	48.4	-1.5	-21.2	+29.9
216.361 G	11	89	9	72	50.2	+0.5	-20.6	+45.0
217.533 G	5	21	7	28	53.6	+4.1	-20.5	+63.8
Means	..	..	24	129	50.5	..	-21.6	..

Group 16152.

July 29-Aug. 8. A stream of small changing spots, not seen on August 7.

Date U.T. Place	Projected Area Umbræ	Projected Area Whole Spots	Corrected Area Umbræ	Corrected Area Whole Spots	Longitude and Proper Motion		Latitude	Long. from C.M.
209.332 C	0	11	0	19	25.6	0.0	- 4.0	-72.6
210.329 C	4	18	4	19	23.1	-2.7	- 3.4	-61.9
211.352 C	22	91	16	68	24.1	-1.9	- 3.8	-47.4
212.339 C	26	122	16	74	25.2	-0.9	- 3.6	-33.2
213.431 G	55	211	30	113	25.4	-0.9	- 3.2	-18.6
214.339 G	36	247	19	126	26.1	-0.4	- 2.8	- 5.9
215.359 C	20	127	10	65	27.4	+0.7	- 2.3	+ 8.9
216.361 G	7	39	4	21	28.9	+2.0	- 2.2	+23.7
217.533 G	5	18	3	12	29.9	+2.8	- 3.4	+40.1
218.325 C	0	0	0	0	..	..	..	..
219.322 G	0	7	0	7	24.3	-3.1	- 3.2	+58.2
Means	..	..	9	48	26.0	..	- 3.2	..

Group 16154.

July 30-Aug. 4. A pair of small spots, of which only one remains on August 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.
					°	°	°	°
210.329 C	11	62	6	31	91.6	0.0	+13.2	+ 6.6
211.352 C	13	35	7	19	93.3	+1.6	+12.8	+21.8
212.339 C	11	51	6	31	92.1	+0.4	+12.9	+33.7
213.431 G	20	85	16	65	93.4	+1.6	+12.2	+49.4
214.339 G	14	42	15	43	93.0	+1.2	+13.0	+61.0
215.359 C	4	27	7	47	92.3	+0.4	+13.0	+73.8
Means	..	..	10	39	92.6	..	+12.8	..

Group 16157.

Aug. 2-10. A small changing stream, with maximum area on August 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.
213.431 G	14	34	9	22	2.8	0.0	+10.0	-41.2
214.339 G	14	44	8	25	2.9	0.0	+ 9.6	-29.1
215.359 C	13	75	7	38	4.9	+1.9	+ 9.4	-13.6
216.361 G	43	231	22	116	6.6	+3.4	+ 9.4	+ 1.4
217.533 G	62	358	32	189	6.7	+3.4	+ 9.4	+16.9
218.325 C	33	193	19	108	6.5	+3.1	+ 9.5	+27.2
219.322 G	16	114	10	75	7.6	+4.1	+ 8.7	+41.5
220.327 G	16	71	15	64	9.0	+5.3	+ 8.6	+56.2
221.325 C	2	16	3	24	10.7	+6.9	+ 7.6	+71.1
Means	..	..	14	73	6.4	..	+ 9.1	..

Group 16171.

Aug. 15-26. A stream led by a regular spot, *a*. This spot becomes the largest and most stable component and alone remains on August 25.

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.
226.344 G	7	35	10	49	163.7	0.0	+11.0	-69.6
227.248 G	23	110	20	96	165.8	+2.0	+11.0	-55.5
228.343 G	38	214	24	136	168.6	+4.7	+10.4	-38.2
229.559 G	44	303	24	161	170.2	+6.2	+10.5	-20.6
230.336 C	108	533	55	273	169.6	+5.5	+10.0	-10.9
231.425 G	166	1122	82	560	169.8	+5.6	+10.4	+ 3.7
232.406 G	210	789	110	414	170.3	+6.0	+10.4	+17.2
233.295 G	135	773	78	440	169.8	+5.4	+10.1	+28.4
234.395 C	95	539	67	376	170.1	+5.6	+10.0	+43.2
235.321 C	84	382	75	344	170.1	+5.5	+10.3	+55.5
236.641 G	14	150	26	278	172.4	+7.6	+10.2	+75.2
237.436 G	9	59	48	314	172.7	..	+10.4	+86.0
Means	..	..	52	284	169.1	..	+10.4	..

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

Group 16171 - *continued*

Spot *a*

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.
					°	°	°	°
226.344 G	2	14	3	18	165.8	0.0	+10.9	-67.5
227.248 G	16	76	13	62	168.2	+2.3	+10.9	-53.1
228.343 G	27	150	17	93	170.5	+4.5	+10.3	-36.3
229.559 G	30	244	16	129	171.7	+5.6	+10.4	-19.1
230.336 C	33	219	17	112	171.8	+5.6	+10.4	- 8.7
231.425 G	125	716	62	358	171.8	+5.5	+10.4	+ 5.7
232.406 G	128	579	68	307	172.1	+5.7	+10.3	+19.0
233.295 G	96	461	56	267	172.2	+5.7	+10.3	+30.8
234.395 C	84	455	60	323	172.3	+5.7	+ 9.3	+45.4
235.321 C	73	334	67	307	172.2	+5.5	+10.2	+57.6
236.641 G	14	150	26	278	172.4	+5.5	+10.2	+75.2
237.436 G	9	59	48	314	172.7	..	+10.4	+86.0

Group 16173.

Aug. 17-22. A small stream in which the follower is the largest and longest-lived component.

228.343 G	5	25	3	14	223.7	0.0	- 6.7	+16.9
229.559 G	52	267	33	166	225.5	+1.6	- 5.6	+34.7
230.336 C	60	301	44	217	224.8	+0.8	- 5.5	+44.3
231.425 G	45	342	45	335	224.1	-0.1	- 5.4	+58.0
232.406 G	20	137	31	217	223.6	-0.8	- 5.2	+70.5
233.295 G	5	39	16	128	222.0	..	- 4.6	+80.6
Means	..	..	31	190	224.3	..	- 5.7	..

Group 16176.

Aug. 18-31. A regular spot, leading a train of small variable companions.

229.559 G	11	68	28	176	110.2	..	+19.2	-80.6
230.336 C	20	141	29	202	109.9	0.0	+19.0	-70.6
231.425 G	34	310	31	281	109.0	-0.8	+19.2	-57.1
232.406 G	84	424	60	299	108.6	-1.1	+19.3	-44.5
233.295 G	62	538	37	324	108.5	-1.1	+19.3	-32.9
234.395 C	62	488	33	264	109.1	-0.4	+19.5	-17.8
235.321 C	57	480	29	245	108.8	-0.6	+19.4	- 5.8
236.641 G	57	597	30	310	107.7	-1.6	+19.6	+10.5
237.436 G	78	497	43	272	107.1	-2.1	+20.1	+20.4
238.327 C	57	358	35	218	107.8	-1.3	+19.6	+32.9
239.425 G	66	408	49	298	107.1	-1.9	+19.5	+46.7
240.353 G	43	259	40	245	106.7	-2.2	+19.5	+58.5
241.373 G	18	82	29	131	107.9	-0.9	+20.1	+73.2
242.350 G	7	50	31	220	107.6	..	+19.9	+85.8
Means	..	..	37	257	108.2	..	+19.5	..

Group 16178.

Aug. 20-30. One or two small spots appearing immediately *f* Group 16175 and quickly developing into a large complex mass which begins to decline after August 26.

					°	°	°	°
231.425 G	2	14	2	10	117.8	0.0	+16.1	-48.3
232.406 G	27	89	17	54	119.8	+2.0	+17.3	-33.3
233.295 G	35	196	19	107	118.8	+1.0	+15.8	-22.6
234.395 C	68	425	34	217	119.7	+1.9	+15.9	- 7.2
235.321 C	205	1000	104	509	120.1	+2.3	+14.8	+ 5.5
236.641 G	334	2654	185	1458	120.6	+2.8	+14.7	+23.4
237.436 G	403	2467	242	1477	120.0	+2.2	+15.0	+33.3
238.327 C	216	1910	153	1357	120.1	+2.3	+14.8	+45.2
239.425 G	142	969	139	945	120.1	+2.2	+14.8	+59.7
240.353 G	77	620	113	911	119.4	+1.5	+14.3	+71.2
241.373 G	23	136	101	597	119.8	..	+14.7	+85.1
Means	..	..	101	704	119.6	..	+15.4	..

Group 16182.

Aug. 21-Sept. 3. A regular spot.

232.406 G	5	27	30	165	66.1	..	+16.5	-87.0
233.295 G	14	89	24	155	66.8	0.0	+16.9	-74.6
234.395 C	31	169	31	169	66.3	-0.5	+17.2	-60.6
235.321 C	46	207	34	155	66.3	-0.4	+16.9	-48.3
236.641 G	48	258	28	152	66.2	-0.5	+17.3	-31.0
237.436 G	52	237	28	128	66.1	-0.6	+17.3	-20.6
238.327 C	59	255	30	130	66.2	-0.4	+17.2	- 8.7
239.425 G	71	249	36	127	66.2	-0.4	+17.0	+ 5.8
240.353 G	52	207	28	110	66.3	-0.3	+17.0	+18.1
241.373 G	36	211	21	124	66.2	-0.3	+17.1	+31.5
242.350 G	32	154	22	108	66.0	-0.5	+17.1	+44.2
243.426 G	18	98	17	91	65.7	-0.7	+17.2	+58.1
244.350 G	16	68	22	94	65.4	-1.0	+17.1	+70.0
245.392 G	5	39	16	123	64.1	..	+17.3	+82.5
Means	..	..	27	129	66.1	..	+17.1	..

Group 16183.

Aug. 22-27. A pair of small spots.

233.295 G	2	7	1	4	116.4	0.0	-15.1	-25.0
234.395 C	7	33	4	18	118.8	+2.4	-13.6	- 8.1
235.321 C	35	165	19	89	118.1	+1.6	-13.9	+ 3.5
236.641 G	16	101	9	58	118.1	+1.6	-14.2	+20.9
237.436 G	4	36	2	23	118.2	+1.7	-13.9	+31.5
238.327 C	0	4	0	3	120.4	+3.8	-14.1	+45.5
Means	..	..	6	32	118.3	..	-14.1	..

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

Group 16185.

Aug. 22-Sept. 3. A regular spot, with a distant companion at a lower latitude on August 26 and 27.

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.
					°	°	°	°
233.295 G	2	14	8	53	61.4	..	-17.0	-80.0
234.395 C	15	53	22	77	60.6	0.0	-17.0	-66.3
235.321 C	13	95	12	91	60.7	+0.1	-17.2	-53.9
236.641 G	27	144	19	101	60.1	-0.4	-17.2	-37.1
237.436 G	32	168	20	104	60.5	0.0	-16.7	-26.2
238.327 C	26	123	15	70	60.1	-0.3	-17.1	-14.8
239.425 G	25	139	14	76	59.6	-0.8	-17.9	- 0.8
240.353 G	23	134	13	75	59.6	-0.7	-17.8	+11.4
241.373 G	20	102	12	62	59.8	-0.5	-17.8	+25.1
242.350 G	20	86	14	61	59.6	-0.6	-17.8	+37.8
243.426 G	9	48	8	44	59.4	-0.8	-17.6	+51.8
244.350 G	9	34	12	45	59.2	-1.0	-17.6	+63.8
245.392 G	2	9	6	25	58.4	-1.7	-18.1	+76.8
Means	..	..	14	69	59.8	..	-17.5	..

Group 16187.

Aug. 26-Sept. 2. A few small variable spots within an extended area.

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.
237.436 G	2	11	3	15	16.9	0.0	+15.0	-69.8
238.327 C	2	9	2	8	17.7	+0.8	+14.9	-57.2
239.425 G	5	34	3	22	21.8	+4.8	+12.8	-38.6
240.353 G	9	64	5	37	17.4	+0.4	+13.7	-30.8
241.373 G	16	78	9	40	20.9	+3.8	+12.6	-13.8
242.350 G	9	44	5	22	18.1	+1.0	+14.0	- 3.7
243.426 G	5	34	3	18	21.8	+4.6	+14.0	+14.2
244.350 G	2	9	1	5	23.6	+6.4	+13.8	+28.2
Means	..	..	4	21	19.8	..	+13.8	..

Group 16188.

Aug. 26-Sept. 5. A small spot with a double umbra. By September 1 it begins to break up 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		Latitude	Long. from C.M.
237.436 G	9	39	18	79	10.1	0.0	+ 8.5	-76.6
238.327 C	26	77	29	85	11.0	+0.8	+ 8.7	-63.9
239.425 G	27	121	21	92	11.2	+0.8	+ 8.5	-49.2
240.353 G	34	166	21	103	11.7	+1.2	+ 8.2	-36.5
241.373 G	39	220	21	119	12.0	+1.3	+ 8.0	-22.7
242.350 G	43	218	22	111	12.2	+1.4	+ 8.0	- 9.6
243.426 G	43	202	22	101	12.4	+1.5	+ 7.9	+ 4.8
244.350 G	43	89	22	46	12.5	+1.4	+ 7.8	+17.1
245.392 G	9	52	5	30	12.6	+1.4	+ 7.4	+31.0

Group 16188 - *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.
					°	°	°	°
246.287 C	4	18	3	12	13.3	+2.0	+ 8.4	+43.5
247.321 G	11	48	10	46	14.8	+3.3	+ 6.4	+58.7
Means	..	..	18	75	12.2	..	+ 8.0	..

Group 16189.

Aug. 26-Sept. 4. A small regular spot with one or two close companions. The whole begins to disintegrate after September 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.
237.436 G	11	55	38	189	3.9	..	+11.4	-82.8
238.327 C	26	229	38	339	3.7	0.0	+11.0	-71.2
239.425 G	68	308	61	277	3.5	-0.3	+10.7	-56.9
240.353 G	82	390	57	273	3.8	-0.1	+10.6	-44.4
241.373 G	82	461	48	267	4.0	0.0	+10.9	-30.7
242.350 G	57	306	30	159	4.4	+0.3	+10.7	-17.4
243.426 G	43	288	22	144	4.7	+0.5	+10.8	- 2.9
244.350 G	45	184	23	94	5.1	+0.7	+10.8	+ 9.7
245.392 G	11	129	6	71	5.3	+0.9	+10.9	+23.7
246.287 C	9	46	5	28	5.0	+0.5	+10.7	+35.2
Means	..	..	32	184	4.4	..	+10.8	..

Group 16191.

Aug. 29-Sept. 5. A regular spot followed by a train of small variable spots which are dying out as the limb is approached.

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.
240.353 G	11	64	6	38	19.4	0.0	- 6.7	-28.8
241.373 G	11	71	6	37	19.8	+0.2	- 7.2	-14.9
242.350 G	120	456	62	237	22.6	+2.9	- 7.0	+ 0.8
243.426 G	130	644	69	345	23.7	+3.8	- 6.8	+16.1
244.350 G	77	606	45	355	23.5	+3.5	- 6.9	+28.1
245.392 G	52	474	38	337	25.2	+5.0	- 6.7	+43.6
246.287 C	46	281	45	270	25.3	+5.0	- 6.4	+55.5
247.321 G	25	150	41	256	27.2	+6.7	- 6.7	+71.1
Means	..	..	39	234	23.3	..	- 6.8	..

Group 16192.

Aug. 30-Sept. 9. A small regular spot until September 3. On the next day some small companions appear, and the whole group declines rapidly after reaching its maximum area on September 7.

Date U.T. Place	Projected Area Umbræ	Projected Area Whole Spots	Corrected Area Umbræ	Corrected Area Whole Spots	Longitude and Proper Motion		Latitude	Long. from C.M.
241.373 G	9	43	17	81	322.1	0.0	-11.2	-72.6
242.350 G	20	86	21	90	322.6	+0.4	-10.8	-59.2

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

Group 16192 - *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.
					°	°	°	°
243.426 G	18	104	14	78	322.6	+0.3	-11.4	-45.0
244.350 G	23	111	14	70	322.6	+0.2	-11.0	-32.8
245.392 G	16	116	9	65	322.7	+0.2	-11.2	-18.9
246.287 C	27	156	15	82	320.7	-1.9	-10.8	- 9.1
247.321 G	19	64	10	33	321.8	-0.9	-10.8	+ 5.7
248.344 G	28	159	16	87	320.9	-1.9	- 9.8	+18.3
249.332 G	27	191	16	115	319.1	-3.8	-10.1	+29.5
250.345 G	30	124	21	88	318.0	-5.0	-10.7	+41.8
251.341 G	2	18	2	16	316.1	-7.0	-11.9	+53.1
Means	..	..	14	73	320.8	..	-10.9	..

Group 16193.

Aug.30-Sept.11. A nearly-regular spot, *a*, with a double umbra, followed by a companion until September 7.

241.373 G	18	220	55	667	313.3	..	+ 9.1	-81.4
242.350 G	70	488	96	663	312.6	0.0	+ 9.4	-69.2
243.426 G	112	731	96	625	313.0	+0.3	+ 9.4	-54.6
244.350 G	152	794	101	535	312.8	0.0	+ 9.5	-42.6
245.392 G	122	865	69	489	313.3	+0.3	+ 9.6	-28.3
246.287 C	151	883	79	462	313.2	+0.1	+ 9.4	-16.6
247.321 G	129	835	64	418	313.8	+0.6	+ 9.5	- 2.3
248.344 G	118	624	61	318	314.0	+0.7	+ 9.3	+11.4
249.332 G	96	558	53	306	314.2	+0.8	+ 9.3	+24.6
250.345 G	86	495	54	312	314.2	+0.6	+ 9.4	+38.0
251.341 G	38	325	30	260	314.7	+1.0	+ 9.3	+51.7
252.363 G	29	170	34	199	315.0	+1.2	+ 9.6	+65.5
253.368 G	18	68	42	160	315.0	+1.1	+ 9.9	+78.7
Means	..	..	65	396	313.8	..	+ 9.5	..

Spot *a*

241.373 G	18	220	55	667	313.3	..	+ 9.1	-81.4
242.350 G	54	393	70	507	313.9	0.0	+ 9.5	-67.9
243.426 G	82	579	68	481	313.9	-0.1	+ 9.6	-53.7
244.350 G	125	615	82	406	314.0	-0.1	+ 9.5	-41.4
245.392 G	104	695	58	389	314.3	0.0	+ 9.8	-27.3
246.287 C	114	733	59	381	314.3	-0.1	+ 9.5	-15.5
247.321 G	93	731	46	366	314.6	+0.1	+ 9.2	- 1.5
248.344 G	107	558	55	285	314.6	0.0	+ 9.3	+12.0
249.332 G	89	506	49	278	314.7	0.0	+ 9.3	+25.1
250.345 G	86	495	54	312	314.2	-0.7	+ 9.4	+38.0
251.341 G	38	325	30	260	314.7	-0.3	+ 9.3	+51.7
252.363 G	29	170	34	199	315.0	-0.1	+ 9.6	+65.5
253.368 G	18	68	42	160	315.0	-0.2	+ 9.9	+78.7

Group 16194.

Aug.31-Sept.8. A stream, growing rapidly from a tiny spot on August 31, in which the follower is the only stable component and alone remains on September 6. This group undergoes its whole life-history on the disk.

					°	°	°	°
242.350 G	5	16	5	15	325.1	0.0	- 4.6	-56.7
243.426 G	57	286	40	202	324.1	-1.2	- 3.8	-43.5
244.350 G	84	436	49	259	325.0	-0.5	- 3.5	-30.4
245.392 G	57	379	30	202	324.9	-0.8	- 3.3	-16.7
246.287 C	60	292	30	149	325.1	-0.7	- 3.2	- 4.7
247.321 G	50	103	26	53	325.6	-0.4	- 3.2	+ 9.5
248.344 G	7	50	4	28	324.8	-1.4	- 3.2	+22.2
249.332 G	7	27	4	17	324.4	-2.0	- 2.4	+34.8
250.345 G	2	7	2	5	324.7	-1.9	- 2.9	+48.5
Means	..	..	21	103	324.9	..	- 3.3	..

Group 16195.

Aug.31-Sept.11. A stream of small spots.

242.350 G	4	16	8	34	309.8	0.0	-19.3	-72.0
243.426 G	12	63	12	69	309.5	-0.2	-18.8	-58.1
244.350 G	48	139	39	111	310.6	+0.9	-18.2	-44.8
245.392 G	22	220	14	144	310.8	+0.8	-17.8	-30.8
246.287 C	48	347	28	203	311.4	+1.8	-17.8	-18.4
247.321 G	48	245	26	135	312.4	+2.9	-17.5	- 3.7
248.344 G	73	359	41	201	311.0	+1.6	-17.7	+ 8.4
249.332 G	96	411	56	243	310.2	+0.8	-17.9	+20.6
250.345 G	62	324	42	216	309.2	-0.1	-18.1	+33.0
251.341 G	50	320	40	258	308.0	-1.3	-18.2	+45.0
252.363 G	86	280	95	316	308.2	-1.0	-18.0	+58.7
253.368 G	39	172	78	344	307.2	-1.9	-17.8	+70.9
Means	..	..	40	190	309.9	..	-18.1	..

Group 16196.

Aug.31-Sept.11. A stream of small spots undergoing changes from day to day and declining to a single tiny spot by September 10.

242.350 G	10	34	41	141	296.8	..	+13.1	-85.0
243.426 G	18	139	26	207	296.4	0.0	+13.2	-71.2
244.350 G	46	193	43	182	296.7	+0.2	+13.2	-58.7
245.392 G	27	304	19	211	296.9	+0.3	+13.0	-44.7
246.287 C	33	187	20	111	296.7	+0.1	+13.4	-33.1
247.321 G	56	254	29	135	297.6	+0.9	+12.7	-18.5
248.344 G	43	268	21	136	299.6	+2.8	+12.7	- 3.0
249.332 G	41	243	22	123	297.8	+0.9	+11.5	+ 8.2
250.345 G	27	82	15	45	299.6	+2.7	+11.8	+23.4
251.341 G	5	25	3	16	302.8	+5.8	+10.3	+39.8

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

Group 16196 - *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.
					°	°	°	°
252.363 G	14	25	12	21	304.0	+6.9	+ 9.9	+54.5
253.368 G	2	14	3	18	304.5	+7.3	+ 9.6	+68.2
Means	..	..	19	110	299.3	..	+11.9	..

Group 16200.

Sept. 3-10. A small unstable 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.
245.392 G	2	14	1	8	327.5	0.0	- 8.3	-14.1
246.287 C	9	73	5	38	327.9	+0.3	- 8.3	- 1.9
247.321 G	7	48	4	25	328.0	+0.2	- 7.4	+11.9
248.344 G	27	77	15	43	324.3	-3.6	- 8.3	+21.7
249.332 G	32	202	20	127	324.4	-3.6	- 8.4	+34.8
250.345 G	30	166	24	133	325.4	-2.8	- 8.4	+49.2
251.341 G	11	118	13	136	325.5	-2.8	- 8.2	+62.5
252.363 G	9	45	23	113	326.9	-1.6	- 8.3	+77.4
Means	..	..	13	78	326.2	..	- 8.2	..

Group 16206.

Sept. 8-18. A regular spot, followed by a small companion until September 13.

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.
250.345 G	7	16	10	22	213.6	0.0	-25.0	-62.6
251.341 G	16	84	15	79	213.5	+0.2	-25.1	-49.5
252.363 G	47	206	35	153	213.5	+0.4	-25.3	-36.0
253.368 G	52	229	33	146	214.6	+1.8	-25.0	-21.7
254.396 G	63	248	38	148	215.3	+2.8	-25.3	- 7.4
255.383 G	59	302	35	179	215.4	+3.1	-24.8	+ 5.8
256.408 C	33	196	21	123	216.2	+4.2	-24.3	+20.1
257.551 G	36	183	26	132	215.7	+4.0	-24.4	+34.7
258.422 G	27	129	23	112	215.4	+3.9	-24.3	+45.9
259.324 G	9	99	10	112	214.7	+3.5	-24.0	+57.1
260.310 C	13	59	25	114	214.7	+3.7	-23.8	+70.1
Means	..	..	25	120	214.8	..	-24.7	..

Group 16212.

Sept. 11-22. A diminishing composite spot, followed by a few tiny companions until September 15.

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.
253.368 G	36	147	95	433	153.9	..	+16.4	-82.4
254.396 G	52	292	64	363	154.9	0.0	+15.9	-67.8
255.383 G	93	479	78	400	155.7	+0.8	+16.1	-53.9
256.408 C	88	510	58	334	155.4	+0.5	+15.5	-40.7

Group 16212 - *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.
					°	°	°	°
257.551 G	93	540	52	303	155.9	+1.0	+15.8	-25.1
258.422 G	95	472	49	245	156.1	+1.2	+15.5	-13.4
259.324 G	42	461	21	235	156.0	+1.1	+15.5	- 1.6
260.310 C	85	419	45	218	155.6	+0.7	+15.6	+11.0
261.331 G	40	173	22	97	157.0	+2.1	+15.7	+25.9
262.344 G	25	63	16	41	157.1	+2.2	+15.6	+39.3
263.310 C	4	22	3	18	157.9	+3.0	+15.2	+52.9
264.351 G	4	11	5	14	158.5	+3.6	+15.8	+67.2
Means	..	..	38	206	156.4	..	+15.7	..

Group 16215.

Sept. 15-26. A stream of normal type, led by a stable regular spot, *a*, which alone remains after September 23.

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.
257.551 G	41	249	82	492	108.8	0.0	-13.2	-72.2
258.422 G	86	450	100	523	108.7	-0.2	-13.1	-60.8
259.324 G	86	614	71	513	108.5	-0.4	-12.8	-49.1
260.310 C	157	818	105	542	108.9	-0.1	-13.1	-35.7
261.331 G	168	801	96	459	110.1	+1.0	-12.4	-21.0
262.344 G	173	796	93	429	110.8	+1.7	-12.1	- 7.0
263.310 C	103	724	55	386	110.9	+1.7	-12.1	+ 5.9
264.351 G	118	572	69	338	112.2	+2.9	-11.5	+20.9
265.451 G	93	436	62	294	113.3	+3.9	-11.9	+36.6
266.372 G	78	329	66	280	115.5	+6.1	-11.7	+50.9
267.370 G	47	253	59	319	115.7	+6.2	-12.1	+64.3
268.304 C	22	117	55	295	115.7	+6.1	-12.5	+76.6
Means	..	..	76	406	111.6	..	-12.4	..

Spot *a*

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.
257.551 G	32	199	54	334	111.6	0.0	-12.9	-69.4
258.422 G	59	319	61	332	111.0	-0.7	-12.5	-58.5
259.324 G	61	398	47	306	111.8	+0.1	-11.8	-45.8
260.310 C	78	421	48	261	112.6	+0.8	-11.4	-32.0
261.331 G	101	466	56	256	113.3	+1.4	-11.5	-17.8
262.344 G	110	542	58	287	114.0	+2.1	-11.4	- 3.8
263.310 C	81	517	43	274	114.1	+2.1	-11.2	+ 9.1
264.351 G	104	475	60	276	114.9	+2.8	-11.0	+23.6
265.451 G	86	398	58	271	115.2	+3.0	-11.4	+38.5
266.372 G	78	329	66	280	115.5	+3.3	-11.7	+50.9
267.370 G	47	253	59	319	115.7	+3.4	-12.1	+64.3
268.304 C	22	117	55	295	115.7	+3.3	-12.5	+76.6

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

Group 16215 - *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.
					°	°	°	°
257.551 G	9	50	28	158	102.4	0.0	-14.3	-78.6
258.422 G	27	131	39	191	102.4	-0.1	-14.7	-67.1
259.324 G	25	216	24	207	102.7	+0.2	-14.6	-54.9
260.310 C	57	268	42	196	102.7	+0.1	-14.7	-41.9
261.331 G	56	288	34	176	103.1	+0.4	-14.5	-28.0
262.344 G	61	245	34	137	103.3	+0.6	-14.2	-14.5
263.310 C	20	192	11	104	103.4	+0.6	-14.1	- 1.6
264.351 G	14	97	9	62	103.5	+0.6	-14.2	+12.2
265.451 G	7	38	4	23	103.3	+0.3	-14.6	+26.6

Group 16216.

Sept. 15-22. A stream of small changing spots, not seen on September 16.

257.551 G	2	9	4	18	105.0	0.0	+ 6.1	-76.0
258.422 G	0	0	0	0	..	..	..	..
259.324 G	8	47	6	39	104.9	-0.4	+ 6.7	-52.7
260.310 C	21	111	13	71	106.5	+1.1	+ 6.6	-38.1
261.331 G	52	241	28	132	107.6	+2.0	+ 6.8	-23.5
262.344 G	34	151	17	75	109.2	+3.5	+ 6.8	- 8.6
263.310 C	13	92	6	46	110.2	+4.3	+ 6.7	+ 5.2
264.351 G	14	76	8	39	107.2	+1.1	+ 7.1	+15.9
Means	..	..	10	52	107.2	..	+ 6.7	..

Group 16218.

Sept. 18-23. A small, diminishing regular spot with one or two tiny companions on September 22 and 23.

258.422 G	5	36	20	147	85.1	..	+13.0	-84.4
259.324 G	11	79	18	126	84.7	0.0	+12.9	-72.9
260.310 C	24	140	24	137	84.6	-0.2	+12.7	-60.0
261.331 G	18	81	13	58	84.7	-0.1	+13.1	-46.4
262.344 G	14	65	8	39	84.9	0.0	+12.9	-32.9
263.310 C	15	68	8	36	85.2	+0.2	+12.9	-19.8
264.351 G	16	61	8	31	84.8	-0.2	+12.7	- 6.5
265.451 G	11	50	6	26	85.9	+0.8	+11.7	+ 9.2
Means	..	..	12	65	85.0	..	+12.7	..

Group 16222.

Sept. 19-28. A variable stream in which first the leader, and then the follower,. is the largest component.

261.331 G	7	43	21	130	49.9	..	+ 7.8	-81.2
262.344 G	38	162	51	219	49.0	0.0	+ 8.0	-68.8
263.310 C	37	266	33	233	49.3	+0.2	+ 8.2	-55.7

Group 16222 - *continued*

					°	°	°	°
264.351 G	41	236	27	156	50.0	+0.7	+ 8.3	-41.3
265.451 G	38	210	21	119	49.2	-0.2	+ 8.1	-27.5
266.372 G	20	188	11	97	49.3	-0.3	+ 8.2	-15.3
267.370 G	45	296	22	148	47.2	-2.5	+ 8.5	- 4.2
268.304 C	46	278	24	140	46.3	-3.5	+ 8.2	+ 7.2
269.471 G	22	105	12	57	46.6	-3.4	+ 7.8	+22.9
270.308 C	2	15	1	9	44.8	-5.3	+ 8.3	+32.1
Means	..	..	22	131	48.0	..	+ 8.2	..

Group 16223.

Sept. 20-25. A stream of small spots, forming immediately preceding Group 16215.

262.344 G	25	70	13	37	124.9	0.0	- 9.3	+ 7.1
263.310 C	45	214	25	119	124.5	-0.5	- 9.5	+19.5
264.351 G	49	185	31	118	125.2	+0.1	- 9.4	+33.9
265.451 G	29	101	24	81	125.1	-0.2	- 9.1	+48.4
266.372 G	10	81	12	94	126.8	+1.4	- 9.2	+62.2
267.370 G	0	4	0	10	128.7	+3.2	- 9.0	+77.3
Means	..	..	18	76	125.9	..	- 9.2	..

Group 16224.

Sept. 20-Oct. 2. A composite spot which divides into two by September 23. At the same time other small spots appear, the whole forming a stream in which the leading and central portions are the largest components.

262.344 G	7	47	52	346	32.6	..	- 6.9	-85.2
263.310 C	22	164	35	257	34.7	0.0	- 6.5	-70.3
264.351 G	65	405	61	381	35.0	+0.1	- 6.8	-56.3
265.451 G	83	486	57	335	35.1	+0.1	- 7.1	-41.6
266.372 G	101	970	60	575	35.3	+0.1	- 6.7	-29.3
267.370 G	124	1028	67	551	35.6	+0.3	- 6.8	-15.8
268.304 C	174	896	90	462	35.8	+0.3	- 6.3	- 3.3
269.471 G	128	818	68	429	36.7	+1.0	- 6.3	+13.0
270.308 C	120	645	68	366	37.0	+1.2	- 6.1	+24.3
271.651 G	64	349	46	247	37.3	+1.3	- 6.3	+42.4
272.449 G	33	221	28	192	37.8	+1.6	- 6.0	+53.4
273.329 G	15	121	18	149	37.9	+1.6	- 5.3	+65.1
274.431 G	0	4	0	10	36.2	-0.3	- 5.6	+78.0
Means	..	..	50	330	36.2	..	- 6.3	..

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

Group 16231.

Oct. 1-10. A diminishing regular spot, *a*, followed by a small distant companion.

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.
					°	°	°	°
273.329 G	18	103	14	82	285.2	0.0	-11.2	-47.6
274.431 G	36	417	23	259	286.9	+1.6	-10.4	-31.3
275.620 G	69	384	37	205	287.9	+2.4	- 9.6	-14.7
276.368 G	58	350	31	182	288.9	+3.3	- 9.8	- 3.8
277.368 G	64	299	34	158	289.6	+3.9	- 9.7	+10.1
278.425 G	44	223	25	129	290.9	+5.1	- 9.2	+25.3
279.464 G	29	183	20	123	289.9	+4.0	- 9.5	+38.1
280.382 G	25	109	21	93	291.9	+5.9	- 8.8	+52.2
281.395 G	16	69	21	90	292.5	+6.3	- 8.6	+66.1
282.348 G	7	42	20	118	292.5	+6.2	- 8.5	+78.7
Means	..	..	25	144	289.6	..	- 9.5	..

Spot *a*

274.431 G	29	303	18	185	288.0	0.0	- 9.9	-30.2
275.620 G	60	337	32	179	289.2	+1.1	- 9.4	-13.4
276.368 G	51	317	27	165	290.0	+1.8	- 9.2	- 2.7
277.368 G	60	259	32	137	290.8	+2.5	- 9.1	+11.3
278.425 G	40	201	23	117	291.6	+3.1	- 8.9	+26.0
279.464 G	25	147	17	100	291.7	+3.1	- 8.7	+39.9
280.382 G	25	109	21	93	291.9	+3.2	- 8.8	+52.2
281.395 G	16	69	21	90	292.5	+3.7	- 8.6	+66.1
282.348 G	7	42	20	118	292.5	+3.6	- 8.5	+78.7

Group 16232.

Oct. 1-13. A large complex spot, of which the main nucleus is nearly regular after October 5; the whole group declines slowly from that day.

273.329 G	31	372	76	915	253.8	0.0	+ 8.1	-79.0
274.431 G	120	1032	134	1156	254.2	+0.2	+ 8.3	-64.0
275.620 G	283	2005	212	1504	253.9	-0.2	+ 8.1	-48.7
276.368 G	341	2067	218	1323	253.6	-0.6	+ 7.8	-39.1
277.368 G	415	2441	230	1354	253.0	-1.4	+ 7.7	-26.5
278.425 G	363	2132	186	1092	253.0	-1.5	+ 7.8	-12.6
279.464 G	293	2190	148	1095	253.5	-1.2	+ 7.7	+ 1.7
280.382 G	341	1911	177	992	253.2	-1.6	+ 7.8	+13.5
281.395 G	299	1425	167	795	253.4	-1.5	+ 7.8	+27.0
282.348 G	142	1021	92	662	253.8	-1.3	+ 7.8	+40.0
283.644 G	87	566	81	526	254.5	-0.8	+ 7.3	+57.8
284.351 G	93	468	115	580	254.2	-1.2	+ 7.4	+66.8
285.368 G	36	189	96	503	253.7	-1.8	+ 7.6	+79.8
Means	..	..	149	961	253.7	..	+ 7.8	..

Group 16233.

Oct. 2-8. A pair of small spots.

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.
					°	°	°	°
274.431 G	2	18	1	12	303.9	0.0	-29.3	-14.3
275.620 G	25	148	15	92	306.2	+2.8	-29.2	+ 3.6
276.368 G	36	139	23	89	306.7	+3.6	-29.5	+14.0
277.368 G	18	71	13	49	305.8	+3.2	-29.5	+26.3
278.425 G	8	22	6	18	305.2	+3.0	-29.3	+39.6
279.464 G	4	29	4	32	304.9	+3.2	-29.2	+53.1
280.382 G	0	2	0	3	306.6	+5.3	-28.8	+66.9
Means	..	..	9	42	305.6	..	-29.3	..

Group 16235.

Oct. 2-12. A stream of unstable spots, immediately north of Group 16232, which goes through its complete life-history on the disk.

274.431 G	2	25	2	25	257.2	0.0	+10.5	-61.0
275.620 G	45	303	32	212	257.9	+0.6	+10.3	-44.7
276.368 G	74	339	44	203	258.9	+1.5	+10.1	-33.8
277.368 G	123	533	66	286	259.1	+1.6	+10.8	-20.4
278.425 G	183	874	91	439	258.8	+1.2	+11.0	- 6.8
279.464 G	125	865	114	440	259.5	+1.8	+10.4	+ 7.7
280.382 G	156	979	82	519	258.5	+0.7	+10.7	+18.8
281.395 G	85	454	51	272	258.3	+0.4	+10.9	+31.9
282.348 G	31	257	23	183	260.0	+2.0	+ 9.9	+46.2
283.644 G	18	76	20	83	259.3	+1.1	+ 9.7	+62.6
284.351 G	2	9	4	20	264.8	+6.5	+ 8.9	+77.4
Means	..	..	48	244	259.3	..	+10.3	..

Group 16236.

Oct. 2-12. A stream developing from one or two tiny spots first seen on October 2. The leader, *a*, becomes composite and is the most stable component.

274.431 G	4	36	4	37	256.8	0.0	+23.0	-61.4
275.620 G	51	289	37	210	257.5	+0.9	+23.1	-45.1
276.368 G	94	404	58	253	259.0	+2.5	+22.9	-33.7
277.368 G	127	772	70	427	259.9	+3.6	+22.5	-19.6
278.425 G	196	948	103	498	260.2	+4.1	+22.4	- 5.4
279.464 G	153	1180	81	624	260.7	+4.8	+22.1	+ 8.9
280.382 G	254	1173	142	654	261.5	+5.7	+21.7	+21.8
281.395 G	161	963	101	609	261.5	+5.9	+21.7	+35.1
282.348 G	51	610	38	464	261.6	+6.2	+21.0	+47.8
283.644 G	38	251	48	314	263.8	+8.6	+20.2	+67.1
284.351 G	13	91	25	176	263.6	+8.5	+20.2	+76.2
Means	..	..	64	388	260.6	..	+21.9	..

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

Group 16236 - *continued*

Spot *a*

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.
					°	°	°	°
277.368 G	80	435	43	235	263.0	0.0	+21.0	-16.5
278.425 G	127	598	66	311	263.2	+0.4	+21.1	- 2.4
279.464 G	120	939	64	498	262.7	+0.1	+21.3	+10.9
280.382 G	207	943	116	528	261.8	-0.7	+21.2	+22.1
281.395 G	118	809	76	518	263.2	+0.9	+21.0	+36.8
282.348 G	36	548	28	422	263.0	+0.9	+20.7	+49.2
283.644 G	38	251	48	314	263.8	+1.9	+20.2	+67.1
284.351 G	13	91	25	176	263.6	+1.8	+20.2	+76.2

Group 16239.

Oct. 3-14. At first a small spot, not seen on October 5. On October 7 other spots appear in the form of a stream which is declining as it passes round the limb.

275.620 G	2	7	2	8	240.1	0.0	+25.8	-62.5
276.368 G	0	2	0	2	238.8	-1.1	+26.4	-53.9
277.368 G	0	0	0	0	..	..	..	..
278.425 G	0	7	0	4	241.4	+2.0	+24.0	-24.2
279.464 G	7	51	4	27	241.7	+2.5	+24.0	-10.1
280.382 G	65	337	34	175	243.2	+4.2	+23.1	+ 3.5
281.395 G	83	535	46	292	243.6	+4.9	+23.1	+17.2
282.348 G	52	526	31	313	243.0	+4.5	+23.0	+29.2
283.644 G	52	357	38	261	242.7	+4.5	+23.1	+46.0
284.351 G	61	242	54	215	242.0	+4.0	+22.8	+54.6
285.368 G	15	113	21	152	242.4	+4.6	+23.3	+68.5
286.424 G	0	4	0	13	243.0	..	+22.5	+83.0
Means	..	..	21	132	241.9	..	+23.9	..

Group 16240.

Oct. 4-10. A stream of small spots, appearing near the C.M. and dying out before reaching the limb.

276.368 G	4	27	2	14	279.1	0.0	+ 2.2	-13.6
277.368 G	38	140	18	70	279.4	+0.1	+ 1.5	- 0.1
278.425 G	54	241	28	126	281.1	+1.6	+ 1.9	+15.5
279.464 G	40	286	23	164	280.5	+0.8	+ 1.9	+28.7
280.382 G	36	214	24	140	279.9	0.0	+ 2.1	+40.2
281.395 G	9	40	8	34	279.7	-0.3	+ 2.3	+53.3
282.348 G	0	8	0	11	281.0	+0.8	+ 1.9	+67.2
Means	..	..	15	80	280.1	..	+ 2.0	..

Group 16243.

Oct. 7-16. Two or three small spots, of which only one remains by October 13.

					°	°	°	°
279.464 G	8	45	10	58	195.5	0.0	-34.9	-56.3
280.382 G	17	65	17	64	194.9	0.0	-34.9	-44.8
281.395 G	29	105	24	86	193.0	-1.2	-34.5	-33.4
282.348 G	25	131	18	94	191.8	-1.8	-34.5	-22.0
283.644 G	16	109	11	73	188.2	-4.5	-34.5	- 8.5
284.351 G	7	29	5	19	187.5	-4.8	-34.6	+ 0.1
285.368 G	2	9	1	6	184.8	-6.8	-35.2	+10.9
286.424 G	2	9	1	7	183.9	-7.0	-35.6	+23.9
287.393 G	0	4	0	3	185.0	-5.3	-35.0	+37.8
288.351 C	0	11	0	13	187.0	-2.6	-35.4	+52.4
Means	..	..	9	42	189.2	..	-34.9	..

Group 16244.

Oct. 7-17. A few variable spots, not seen on October 11.

279.464 G	0	4	0	10	175.6	0.0	-16.1	-76.2
280.382 G	0	7	0	9	176.2	+0.6	-17.1	-63.5
281.395 G	4	11	4	10	175.5	-0.1	-17.1	-50.9
282.348 G	7	27	5	19	175.3	-0.2	-17.9	-38.5
283.644 G	0	0	0	0	..	..	..	..
284.351 G	11	69	6	38	175.4	-0.1	-14.4	-12.0
285.368 G	0	9	0	5	174.7	-0.8	-16.3	+ 0.8
286.424 G	11	102	6	58	176.7	+1.3	-16.4	+16.7
287.393 G	15	64	9	41	179.0	+3.6	-16.5	+31.8
288.351 C	9	28	7	23	182.5	+7.1	-16.9	+47.9
289.544 G	2	9	3	12	183.5	+8.1	-17.0	+64.6
Means	..	..	4	20	177.4	..	-16.6	..

Group 16245.

Oct. 7-18. A composite spot, which soon begins to break up and decline.

279.464 G	2	11	4	25	173.2	0.0	+19.6	-78.6
280.382 G	51	256	65	325	172.3	-0.8	+19.3	-67.4
281.395 G	118	633	101	544	172.2	-0.8	+19.9	-54.2
282.348 G	113	864	77	588	172.5	-0.4	+20.4	-41.3
283.644 G	100	795	56	446	172.9	+0.2	+20.3	-23.8
284.351 G	155	936	83	502	172.6	-0.1	+19.9	-14.8
285.368 G	82	860	43	444	172.7	+0.1	+20.1	- 1.2
286.424 G	56	424	29	223	172.9	+0.5	+19.9	+12.9
287.393 G	64	418	37	239	172.9	+0.6	+19.9	+25.7
288.351 C	59	310	40	206	174.3	+2.1	+19.3	+39.7

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

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 16245 - *continued*								
					°	°	°	°
289.544 G	38	190	34	170	174.8	+2.7	+19.6	+55.9
290.300 C	8	68	11	87	175.4	+3.4	+19.6	+66.5
Means	..	..	48	317	173.2	..	+19.8	..
Group 16247.								
Oct. 10-22. A small composite spot with a few tiny following companions.								
282.348 G	0	4	0	16	129.2	..	+19.9	-84.6
283.644 G	2	16	2	19	130.7	0.0	+20.9	-66.0
284.351 G	34	160	32	146	131.0	+0.4	+20.4	-56.4
285.368 G	51	371	35	256	131.4	+0.9	+20.2	-42.5
286.424 G	48	389	28	227	131.9	+1.5	+20.1	-28.1
287.393 G	75	378	40	202	131.5	+1.2	+20.2	-15.7
288.351 C	66	304	34	158	131.6	+1.5	+20.2	- 3.0
289.544 G	49	279	26	148	130.7	+0.7	+20.7	+11.8
290.300 C	26	216	15	121	131.7	+1.8	+20.1	+22.8
291.341 G	27	159	18	103	132.8	+3.0	+20.1	+37.6
292.311 C	9	103	7	79	131.2	+1.5	+19.4	+48.8
293.561 G	9	80	10	93	130.7	+1.2	+19.7	+64.8
294.356 C	2	11	4	20	130.2	+0.8	+19.1	+74.8
Means	..	..	21	131	131.3	..	+20.1	..
Group 16249.								
Oct. 11-19. Small unstable spots.								
283.644 G	20	104	33	169	126.5	0.0	-11.3	-70.2
284.351 G	22	95	25	103	126.9	+0.3	-11.4	-60.5
285.368 G	15	71	11	53	129.3	+2.6	-11.0	-44.6
286.424 G	13	69	7	41	130.4	+3.6	-11.0	-29.6
287.393 G	20	86	11	46	129.9	+3.0	-10.5	-17.3
288.351 C	46	269	24	140	132.3	+5.3	-10.3	- 2.3
289.544 G	22	130	12	70	133.2	+6.1	- 9.9	+14.3
290.300 C	4	40	2	23	133.3	+6.1	- 9.7	+24.4
291.341 G	4	38	2	25	133.5	+6.2	- 9.8	+38.3
Means	..	..	14	74	130.6	..	-10.5	..
Group 16250.								
Oct. 11-23. A stream led by a fairly stable regular spot, *a*, which alone remains after October 21.								
283.644 G	24	114	44	205	121.3	0.0	+15.2	-75.4
284.351 G	40	298	49	355	121.7	+0.4	+14.9	-65.7
Group 16250 - *continued*								
					°	°	°	°
285.368 G	85	580	68	460	123.0	+1.7	+14.4	-50.9
286.424 G	115	897	73	568	122.7	+1.3	+14.6	-37.3
287.393 G	219	1081	121	597	122.8	+1.4	+14.6	-24.4
288.351 C	201	1067	103	551	122.6	+1.2	+15.0	-12.0
289.544 G	144	820	74	419	123.1	+1.7	+14.5	+ 4.2
290.300 C	74	786	39	415	124.0	+2.5	+14.2	+15.1
291.341 G	50	584	29	338	124.5	+3.0	+14.3	+29.3
292.311 C	77	520	52	346	123.2	+1.7	+14.3	+40.8
293.561 G	48	325	44	298	123.1	+1.6	+14.4	+57.2
294.356 C	28	238	36	307	123.2	+1.6	+14.4	+67.8
295.294 C	19	135	52	370	123.6	..	+14.5	+80.6
Means	..	..	61	405	122.9	..	+14.6	..
Spot *a*								
283.644 G	22	107	39	189	121.9	0.0	+15.2	-74.8
284.351 G	31	249	35	281	123.0	+1.1	+15.0	-64.4
285.368 G	78	533	61	416	123.5	+1.6	+14.5	-50.4
286.424 G	84	664	52	412	124.3	+2.3	+14.2	-35.7
287.393 G	117	694	63	375	125.1	+3.1	+14.4	-22.1
288.351 C	150	743	76	379	125.3	+3.3	+14.2	- 9.3
289.544 G	113	645	58	329	125.2	+3.2	+14.0	+ 6.3
290.300 C	68	713	36	378	125.0	+2.9	+14.1	+16.1
291.341 G	46	546	27	317	125.6	+3.5	+14.2	+30.4
292.311 C	71	479	48	321	124.0	+1.9	+14.1	+41.6
293.561 G	46	316	42	291	123.3	+1.2	+14.3	+57.4
294.356 C	28	238	36	307	123.2	+1.0	+14.4	+67.8
295.294 C	19	135	52	370	123.6	..	+14.5	+80.6
Group 16251.								
Oct. 12-18. One or two small spots.								
284.351 G	2	18	1	11	161.4	0.0	-16.9	-26.0
285.368 G	4	51	2	29	161.4	+0.1	-18.3	-12.5
286.424 G	7	40	4	22	161.2	0.0	-17.9	+ 1.2
287.393 G	7	33	4	19	160.3	-0.8	-20.6	+13.1
288.351 C	4	24	2	15	160.5	-0.5	-20.4	+25.9
289.544 G	2	11	2	8	161.3	+0.4	-19.9	+42.4
290.300 C	2	13	2	12	161.2	+0.3	-19.8	+52.3
Means	..	..	2	17	161.0	..	-19.1	..
Group 16257.								
Oct. 20-25. A stream developing from a tiny spot just past the C.M. The only stable component is a small regular spot to the rear.								
292.311 C	2	21	1	11	90.8	0.0	+10.6	+ 8.4
293.561 G	38	245	21	133	88.4	-2.5	+11.7	+22.5

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

Group 16257 - *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.
					°	°	°
294.356 C	93	595	55	354	87.8	-3.2	+11.2	+32.4
295.294 C	88	516	65	376	89.7	-1.4	+10.7	+46.7
296.393 C	44	269	43	274	89.1	-2.1	+11.7	+60.6
297.398 G	26	156	51	360	89.9	-1.4	+12.0	+74.6
Means	..	..	39	251	89.3	..	+11.3	..

Group 16258.

Oct. 20-31. A stream in which the follower becomes a small regular spot and alone remains 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	Latitude	Long. from C.M.
292.311 C	4	18	4	21	18.2	0.0	+10.7	-64.2
293.561 G	26	139	19	102	18.4	+0.1	+10.4	-47.5
294.356 C	26	196	16	123	18.4	0.0	+ 9.7	-37.0
295.294 C	58	281	32	156	17.1	-1.4	+10.3	-25.9
296.393 C	81	429	43	221	16.7	-1.9	+10.4	-11.8
297.398 G	62	321	31	160	16.6	-2.2	+10.2	+ 1.3
298.301 C	46	210	23	108	16.1	-2.8	+10.0	+12.7
299.381 G	31	260	17	143	14.3	-4.7	+10.1	+25.2
300.359 G	22	148	14	95	14.7	-4.4	+10.1	+38.5
301.318 C	4	36	3	28	14.5	-4.7	+ 9.4	+50.9
302.410 G	2	11	2	13	13.9	-5.4	+10.0	+64.7
303.418 G	0	4	0	11	15.7	-3.7	+ 9.6	+79.8
Means	..	..	17	98	16.2	..	+10.1	..

Group 16259.

Oct. 21-31. A pair of small spots until October 26, when others appear in the form of a stream which is declining as it reaches 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.
293.561 G	4	22	5	27	1.2	0.0	- 6.1	-64.7
294.356 C	4	28	4	24	2.2	+0.9	- 5.7	-53.2
295.294 C	28	124	20	86	0.7	-0.8	- 5.6	-42.3
296.393 C	11	49	6	28	2.1	+0.4	- 5.6	-26.4
297.398 G	30	79	16	40	5.3	+3.5	- 5.1	-10.0
298.301 C	14	168	7	85	4.9	+2.9	- 5.2	+ 1.5
299.381 G	22	224	12	119	4.9	+2.7	- 5.2	+15.8
300.359 G	62	215	36	125	5.7	+3.4	- 4.9	+29.5
301.318 C	15	130	10	90	6.7	+4.2	- 5.3	+43.1
302.410 G	13	88	13	87	7.9	+5.2	- 4.4	+58.7
303.418 G	2	20	4	39	10.7	+7.8	- 3.8	+74.8
Means	..	..	12	68	4.8	..	- 5.2	..

Group 16261.

Oct. 22-27. One or two small spots.

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.
					°	°	°	°
294.356 C	2	41	1	21	46.3	0.0	+12.2	- 9.1
295.294 C	6	26	3	13	48.7	+2.3	+12.4	+ 5.7
296.393 C	21	92	11	50	50.0	+3.6	+12.5	+21.5
297.398 G	27	154	17	96	51.7	+5.2	+12.9	+36.4
298.301 C	4	58	3	45	53.7	+7.1	+13.1	+50.3
299.381 G	7	31	8	36	53.9	+7.3	+12.9	+64.8
Means	..	..	7	44	50.7	..	+12.7	..

Group 16265.

Oct. 25-Nov. 3. A small regular spot, which begins to break up on October 28.

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.
297.398 G	13	90	22	151	302.1	0.0	+ 7.5	-73.2
298.301 C	28	164	28	164	303.1	+0.9	+ 7.7	-60.3
299.381 G	33	240	24	173	302.7	+0.3	+ 7.6	-46.4
300.359 G	35	208	21	125	303.1	+0.6	+ 7.5	-33.1
301.318 C	17	108	9	57	303.6	+0.9	+ 7.5	-20.0
302.410 G	6	35	3	17	304.4	+1.5	+ 7.2	- 4.8
303.418 G	8	49	4	25	304.3	+1.3	+ 6.4	+ 8.4
304.436 G	2	15	1	8	304.7	+1.5	+ 6.4	+22.2
305.483 G	2	26	1	16	304.2	+0.9	+ 6.3	+35.5
306.393 G	2	15	1	11	303.2	-0.3	+ 6.4	+46.5
Means	..	..	11	75	303.5	..	+ 7.0	..

Group 16268.

Oct. 27-Nov. 3. One or two faint spots.

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.
299.381 G	0	9	0	23	269.7	0.0	+10.1	-79.4
300.359 G	9	51	12	68	268.1	-1.7	+ 9.3	-68.1
301.318 C	2	15	2	12	271.8	+1.9	+ 9.7	-51.8
302.410 G	7	26	4	16	272.5	+2.4	+ 8.9	-36.7
303.418 G	7	57	4	31	272.1	+1.9	+ 7.4	-23.8
304.436 G	4	22	2	11	271.0	+0.6	+ 8.3	-11.5
305.483 G	4	46	2	23	269.4	-1.1	+ 7.3	+ 0.7
306.393 G	4	15	2	8	270.4	-0.2	+ 9.1	+13.7
Means	..	..	4	24	270.6	..	+ 8.8	..

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

Group 16271.

Oct. 29-Nov. 9. A long stream, in which both leader, *a*, and follower, *b*, are regular spots. The intermediate spots die out by November 6, and the follower by November 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.
					°	°	°	°
301.318 C	18	115	42	264	245.6	0.0	+25.0	-78.0
302.410 G	60	392	69	452	246.0	+0.7	+24.6	-63.2
303.418 G	55	620	45	502	247.2	+2.2	+24.8	-48.7
304.436 G	135	740	89	484	246.9	+2.1	+24.5	-35.6
305.483 G	82	739	48	434	245.8	+1.3	+25.1	-22.9
306.393 G	128	658	70	357	246.2	+2.0	+24.8	-10.5
307.295 C	93	658	50	357	245.8	+1.8	+24.8	+ 1.0
308.294 C	95	464	52	259	246.8	+3.1	+25.3	+15.2
309.417 G	86	499	54	313	245.9	+2.5	+24.7	+29.1
310.411 G	59	293	44	222	247.8	+4.8	+25.0	+44.1
311.479 G	26	140	29	154	251.4	+8.5	+24.5	+61.8
312.293 C	15	87	25	146	251.5	+8.8	+24.7	+72.6
Means	..	..	51	329	247.2	..	+24.8	..

Spot *a*

301.318 C	9	68	17	131	247.9	0.0	+24.6	-75.7
302.410 G	29	185	29	183	250.6	+3.0	+24.2	-58.6
303.418 G	24	310	18	229	251.3	+4.0	+24.5	-44.6
304.436 G	66	361	41	224	252.0	+4.9	+24.7	-30.5
305.483 G	31	301	17	169	252.0	+5.2	+24.6	-16.7
306.393 G	70	359	37	190	251.9	+5.4	+24.3	- 4.8
307.295 C	49	350	26	189	252.2	+5.9	+24.3	+ 7.4
308.294 C	57	299	32	170	251.9	+5.9	+24.5	+20.3
309.417 G	57	352	37	229	251.5	+5.8	+24.5	+34.7
310.411 G	46	234	36	185	251.7	+6.2	+24.5	+48.0
311.479 G	26	140	29	154	251.4	+6.2	+24.5	+61.8
312.293 C	15	87	25	146	251.5	+6.5	+24.7	+72.6

Spot *b*

301.318 C	9	47	25	133	242.7	..	+25.2	-80.9
302.410 G	31	207	40	269	242.0	0.0	+24.9	-67.2
303.418 G	31	310	27	273	242.1	+0.4	+25.0	-53.8
304.436 G	51	251	36	176	241.2	-0.3	+25.4	-41.3
305.483 G	44	381	27	232	240.4	-0.8	+25.7	-28.3
306.393 G	51	255	29	143	239.6	-1.3	+25.9	-17.1
307.295 C	38	242	21	133	237.8	-2.9	+26.5	- 7.0
308.294 C	34	146	18	79	236.7	-3.7	+26.2	+ 5.1
309.417 G	29	147	17	84	235.8	-4.3	+25.5	+19.0
310.411 G	13	59	8	37	235.8	-4.1	+25.1	+32.1

Group 16283.

Nov. 7-14. A variable stream, appearing suddenly, of which only one component is left by November 11.

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.
					°	°	°	°
310.411 G	99	366	57	212	175.7	0.0	+15.4	-28.0
311.479 G	72	324	38	169	176.7	+1.0	+15.3	-12.9
312.293 C	43	165	22	84	178.0	+2.3	+15.2	- 0.9
313.386 G	35	141	18	74	179.2	+3.4	+14.8	+14.7
314.302 C	21	152	12	88	181.6	+5.8	+14.2	+29.2
315.384 G	11	64	8	45	182.0	+6.2	+13.9	+43.9
316.430 G	4	13	4	13	183.0	+7.1	+13.9	+58.7
317.474 G	2	11	3	18	183.2	+7.3	+13.7	+72.6
Means	..	..	20	88	179.9	..	+14.6	..

Group 16284.

Nov. 8-19. A stream of small spots.

311.479 G	2	7	3	11	118.8	0.0	- 7.9	-70.8
312.293 C	4	13	4	13	119.7	+0.8	- 8.2	-59.2
313.386 G	15	61	11	44	119.3	+0.2	- 8.2	-45.2
314.302 C	6	44	4	26	120.9	+1.7	- 9.3	-31.5
315.384 G	51	232	28	127	118.7	-0.6	- 9.0	-19.4
316.430 G	55	304	28	155	118.9	-0.6	- 8.3	- 5.4
317.474 G	45	427	24	220	119.3	-0.3	- 8.0	+ 8.7
318.463 G	59	370	32	201	118.6	-1.2	- 7.5	+21.1
319.531 G	16	122	10	77	119.8	-0.1	- 7.8	+36.3
320.586 G	26	126	21	100	119.9	-0.2	- 7.5	+50.4
321.292 C	12	72	13	76	120.8	+0.6	- 7.8	+60.6
322.405 G	2	26	3	50	119.4	-0.9	- 7.5	+73.8
Means	..	..	15	92	119.5	..	- 8.1	..

Group 16285.

Nov. 8-18. A composite spot, showing very little change until November 12, when it begins to break up and die out.

311.479 G	42	201	87	421	114.0	0.0	+10.1	-75.6
312.293 C	40	390	48	464	113.4	-0.7	+10.2	-65.5
313.386 G	101	543	80	429	113.7	-0.5	+10.2	-50.8
314.302 C	70	785	45	502	114.1	-0.2	+10.5	-38.3
315.384 G	90	587	50	323	113.1	-1.3	+ 9.8	-25.0
316.430 G	129	874	66	447	114.4	-0.2	+10.0	- 9.9
317.474 G	59	725	30	366	114.6	-0.1	+ 9.5	+ 4.0
318.463 G	35	233	18	122	114.0	-0.8	+ 9.6	+16.5
319.531 G	7	57	4	34	114.4	-0.5	+ 9.1	+30.9
Means	..	..	48	345	114.0	..	+ 9.9	..

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

Group 16290.

Nov. 12-24. A regular spot, with a close companion until November 22.

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.
					°	°	°	°
315.384 G	13	50	35	133	58.5	0.0	+10.9	-79.6
316.430 G	51	298	67	390	56.3	-2.3	+12.1	-68.0
317.474 G	68	516	58	441	56.3	-2.4	+11.8	-54.3
318.463 G	118	750	79	502	56.5	-2.3	+11.4	-41.0
319.531 G	105	794	60	453	56.1	-2.8	+11.4	-27.4
320.586 G	116	637	60	331	55.8	-3.1	+11.4	-13.7
321.292 C	147	972	75	496	55.3	-3.7	+11.5	- 4.9
322.405 G	113	900	58	459	55.1	-4.0	+11.7	+ 9.5
323.309 C	99	964	53	521	54.8	-4.4	+11.6	+21.1
324.531 G	113	665	72	426	54.8	-4.5	+11.5	+37.2
325.407 G	85	477	65	367	54.7	-4.7	+11.5	+48.7
326.291 C	76	357	78	364	54.8	-4.6	+11.8	+60.4
327.291 C	34	166	60	294	54.9	-4.6	+11.7	+73.7
Means	..	..	63	398	55.7	..	+11.6	..

Group 16291.

Nov. 13-22. A bi-polar group, in which the leader, a composite spot, is the longest-lived component.

316.430 G	37	162	24	106	84.8	0.0	+11.2	-39.5
317.474 G	88	738	49	411	85.1	+0.2	+10.8	-25.5
318.463 G	185	1094	95	563	85.2	+0.2	+10.2	-12.3
319.531 G	126	1415	64	715	85.7	+0.5	+ 9.8	+ 2.2
320.586 G	200	1034	106	543	85.9	+0.6	+10.0	+16.4
321.292 C	118	924	67	522	86.0	+0.7	+ 9.7	+25.8
322.405 G	46	528	32	360	86.8	+1.3	+ 9.6	+41.2
323.309 C	21	193	19	172	88.5	+2.9	+ 9.2	+54.8
324.531 G	17	153	28	254	90.1	+4.4	+ 8.7	+72.5
325.407 G	0	7	0	25	88.3	..	+ 9.5	+82.3
Means	..	..	54	405	86.5	..	+ 9.9	..

Group 16292.

Nov. 13-19. A small spot.

316.430 G	2	11	7	36	42.6	..	+19.0	-81.7
317.474 G	7	20	9	27	42.8	0.0	+18.4	-67.8
318.463 G	9	24	8	21	42.5	-0.2	+18.4	-55.0
319.531 G	2	20	1	14	42.1	-0.5	+18.4	-41.4
320.586 G	4	20	2	12	42.2	-0.3	+18.5	-27.3
321.292 C	2	13	1	7	39.4	-3.1	+20.0	-20.8
322.405 G	4	37	2	20	39.2	-3.2	+19.6	- 6.4
Means	..	..	4	17	41.4	..	+18.9	..

Group 16295.

Nov. 15-20. A composite spot, appearing suddenly on November 15 and growing rapidly to its maximum area. A flare of magnitude 3+ with its maximum at $10^{h}.5$ was associated with this group on November 19.

					°	°	°	°
318.463 G	81	364	43	193	114.7	0.0	- 1.8	+17.2
319.531 G	214	1419	126	837	115.4	+0.5	- 2.0	+31.9
320.586 G	273	1742	197	1254	115.6	+0.5	- 1.9	+46.1
321.292 C	172	1455	151	1280	115.4	+0.2	- 2.1	+55.2
322.405 G	61	695	88	1001	115.1	-0.3	- 2.8	+69.5
323.309 C	19	193	73	737	116.1	..	- 2.8	+82.4
Means	..	..	121	913	115.2	..	- 2.1	..

Group 16297.

Nov. 15-23. A few small spots, not seen on November 16.

318.463 G	4	28	5	37	29.5	0.0	+ 7.5	-68.0
319.531 G	0	0	0	0	..	..	..	..
320.586 G	0	7	0	5	29.1	-0.7	+ 7.8	-40.4
321.292 C	10	86	6	52	27.5	-2.4	+ 8.1	-32.7
322.405 G	24	236	12	124	28.4	-1.6	+ 8.3	-17.2
323.309 C	10	107	5	53	29.1	-1.1	+ 8.5	- 4.6
324.531 G	11	83	6	42	29.6	-0.7	+ 8.4	+12.0
325.407 G	2	11	1	6	30.3	-0.2	+ 8.5	+24.3
326.291 C	2	15	1	9	31.0	+0.4	+ 8.4	+36.6
Means	..	..	4	36	29.3	..	+ 8.2	..

Group 16300.

Nov. 16-25. Two or three faint small spots until November 20, after which there is a wide pair.

319.531 G	0	4	0	9	5.7	0.0	+12.5	-77.8
320.586 G	4	30	4	35	5.5	-0.2	+14.8	-64.0
321.292 C	6	46	5	40	5.7	0.0	+14.2	-54.5
322.405 G	2	15	1	9	8.8	+3.0	+13.1	-36.8
323.309 C	2	13	1	7	9.0	+3.2	+13.0	-24.7
324.531 G	29	139	15	74	7.1	+1.3	+15.4	-10.5
325.407 G	28	122	15	63	6.1	+0.3	+16.4	+ 0.1
326.291 C	36	208	19	111	7.1	+1.2	+16.2	+12.7
327.291 C	12	52	6	30	6.9	+1.0	+16.3	+25.7
328.290 C	6	27	4	18	8.8	+2.9	+14.8	+40.8
Means	..	..	7	40	7.1	..	+14.7	..

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

Group 16301.

Nov. 17-22. A stream of small spots, appearing immediately north of the follower of Group 16291.

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.
					°	°	°	°
320.586 G	46	192	24	102	82.2	0.0	+16.9	+12.7
321.292 C	50	326	28	180	81.2	-1.0	+16.9	+21.0
322.405 G	28	196	18	123	80.8	-1.4	+17.0	+35.2
323.309 C	35	258	26	194	80.7	-1.4	+16.7	+47.0
324.531 G	11	59	13	70	81.4	-0.7	+16.3	+63.8
325.407 G	0	4	0	7	79.8	-2.3	+15.1	+73.8
Means	..	..	18	113	81.0	..	+16.5	..

Group 16302.

Nov. 18-26. A sparse stream, led by a small regular spot which alone remains after November 23.

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.
321.292 C	8	52	6	38	17.1	0.0	+21.4	-43.1
322.405 G	37	207	21	122	18.6	+1.6	+21.2	-27.0
323.309 C	54	360	29	196	18.9	+2.1	+20.1	-14.8
324.531 G	48	208	26	111	19.4	+2.7	+20.3	+ 1.8
325.407 G	35	175	19	96	18.8	+2.2	+20.9	+12.8
326.291 C	48	204	28	120	20.3	+3.8	+20.4	+25.9
327.291 C	15	84	10	58	21.6	+5.3	+20.0	+40.4
328.290 C	15	61	13	54	21.8	+5.6	+19.6	+53.8
329.293 C	4	19	5	25	21.4	+5.3	+19.6	+66.6
Means	..	..	17	91	19.8	..	+20.4	..

Group 16303.

Nov. 18-30. A regular spot followed by a distant companion until November 28. Two new small spots appear in the rear on November 30.

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.
321.292 C	4	38	19	182	337.6	..	-21.3	-82.6
322.405 G	31	146	59	261	334.8	0.0	-21.5	-70.8
323.309 C	21	200	22	205	336.3	+1.7	-21.8	-57.4
324.531 G	57	327	43	247	335.3	+0.9	-21.7	-42.3
325.407 G	67	327	42	211	334.3	0.0	-21.8	-31.7
326.291 C	197	609	113	352	335.1	+1.0	-21.9	-19.3
327.291 C	84	376	47	208	335.2	+1.2	-21.9	- 6.0
328.290 C	40	240	22	132	335.4	+1.6	-21.6	+ 7.4
329.293 C	42	241	25	142	336.4	+2.8	-21.9	+21.6
330.433 G	24	151	16	103	335.6	+2.2	-22.3	+35.8
331.431 G	17	126	14	105	334.3	+1.1	-22.0	+47.7
332.609 G	11	52	15	71	337.5	+4.5	-22.3	+66.4
333.517 G	8	38	17	83	333.0	+0.1	-21.9	+73.9
Means	..	..	36	177	335.3	..	-21.9	..

Group 16305.

Nov. 19-28. Two or three small spots, of which only one remains by November 26.

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.
					°	°	°	°
322.405 G	2	13	3	22	332.4	0.0	+ 7.2	-73.2
323.309 C	13	69	13	68	334.1	+1.5	+ 6.9	-59.6
324.531 G	17	85	12	60	333.5	+0.8	+ 6.8	-44.1
325.407 G	10	41	6	23	335.1	+2.2	+ 6.3	-30.9
326.291 C	39	182	20	99	333.8	+0.8	+ 6.1	-20.6
327.291 C	32	129	17	66	332.3	-0.9	+ 5.9	- 8.9
328.290 C	12	71	6	36	332.9	-0.4	+ 5.9	+ 4.9
329.293 C	8	32	4	17	334.9	+1.4	+ 5.6	+20.1
330.433 G	0	7	0	2	335.4	+1.7	+ 5.2	+35.6
331.431 G	0	4	0	3	333.1	-0.8	+ 5.0	+46.5
Means	..	..	8	40	333.8	..	+ 6.1	..

Group 16310.

Nov. 23-Dec. 4. A small regular spot, with an occasional companion.

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.
326.291 C	6	36	14	81	277.1	0.0	+ 4.9	-77.3
327.291 C	17	88	21	109	275.3	-2.0	+ 5.2	-65.9
328.290 C	29	138	24	111	276.0	-1.4	+ 5.2	-52.0
329.293 C	29	122	18	77	277.2	-0.4	+ 4.5	-37.6
330.433 G	35	194	19	105	277.4	-0.4	+ 4.2	-22.4
331.431 G	22	165	11	84	277.3	-0.7	+ 4.6	- 9.3
332.609 G	39	161	19	80	277.3	-0.9	+ 4.5	+ 6.2
333.517 G	20	113	11	60	277.9	-0.4	+ 5.0	+18.8
334.286 C	13	67	7	38	277.8	-0.7	+ 4.9	+28.8
335.285 C	10	31	7	21	277.6	-1.0	+ 4.9	+41.8
336.286 C	6	40	5	35	277.8	-1.0	+ 4.6	+55.2
337.413 G	4	17	6	25	277.7	-1.3	+ 4.6	+69.9
Means	..	..	14	69	277.2	..	+ 4.8	..

Group 16312.

Nov. 24-Dec. 1. A small stream, developing from a single spot when first seen near the C.M. The leader quickly becomes regular in outline.

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.
327.291 C	6	34	3	18	333.7	0.0	-10.3	- 7.5
328.290 C	83	411	42	210	331.6	-2.2	- 9.6	+ 3.6
329.293 C	88	569	47	303	331.3	-2.6	- 9.0	+16.5
330.433 G	126	673	77	409	332.5	-1.6	- 9.3	+32.7
331.431 G	104	662	77	498	333.3	-0.9	-10.0	+46.7
332.609 G	72	433	82	488	333.4	-0.9	-10.7	+62.3
333.517 G	26	241	56	511	333.4	-1.0	-11.0	+74.3
334.286 C	8	54	(20	153	328.1	..	-10.1)	+79.1
Means	..	..	55	348	332.7	..	-10.0	..

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

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 16314.							
Nov. 25-Dec. 3. Two small spots which coalesce and die out.							
					°	°	°	°
328.290 C	6	59	16	153	249.1	0.0	+12.8	-78.9
329.293 C	23	74	28	89	249.7	+0.5	+12.6	-65.1
330.433 G	28	116	22	92	249.9	+0.6	+12.5	-49.9
331.431 G	24	145	15	91	250.4	+1.1	+12.4	-36.2
332.609 G	33	181	18	98	251.2	+1.8	+12.0	-19.9
333.517 G	22	139	11	71	251.5	+2.0	+11.7	- 7.6
334.286 C	10	102	5	52	252.0	+2.4	+11.3	+ 3.0
335.285 C	6	31	3	16	251.8	+2.2	+11.4	+16.0
336.286 C	0	13	0	7	249.8	+0.1	+11.6	+27.2
Means	..	..	13	74	250.6	..	+12.0	..
Group 16315.								
Nov. 26-Dec. 2. A small spot.								
329.293 C	10	65	6	36	288.8	0.0	- 6.1	-26.0
330.433 G	4	13	2	7	291.1	+2.1	- 7.7	- 8.7
331.431 G	17	33	9	17	292.1	+3.0	- 7.7	+ 5.5
332.609 G	4	13	2	7	292.6	+3.3	- 8.0	+21.5
333.517 G	7	15	4	9	293.0	+3.6	- 8.1	+33.9
334.286 C	4	13	3	9	292.6	+3.1	- 8.7	+43.6
335.285 C	2	6	2	6	292.4	+2.8	- 8.8	+56.6
Means	..	..	4	13	291.8	..	- 7.9	..
Group 16318.								
Nov. 28-Dec. 5. A stream of small variable spots.								
331.431 G	19	63	10	33	278.2	0.0	-10.5	- 8.4
332.609 G	35	161	18	82	279.0	+0.7	-10.0	+ 7.9
333.517 G	24	141	13	76	278.3	-0.1	-10.5	+19.2
334.286 C	36	234	21	138	278.9	+0.4	- 9.9	+29.9
335.285 C	35	207	25	146	280.2	+1.6	- 8.9	+44.4
336.286 C	36	335	33	313	279.7	+0.9	- 9.1	+57.1
337.413 G	24	144	40	240	280.0	+1.1	- 9.6	+72.2
338.442 G	2	22	(10	105	277.9	..	-11.0)	+83.7
Means	..	..	23	147	279.2	..	- 9.8	..
Group 16319.								
Nov. 28-Dec. 6. A pair of small spots, not seen on December 4 and 5.								
331.431 G	7	28	5	20	244.7	0.0	+23.8	-41.9
332.609 G	4	26	2	16	243.8	-0.6	+24.0	-27.3
333.517 G	11	65	6	38	242.0	-2.2	+24.3	-17.1
Group 16319 - *continued*								
					°	°	°	°
334.286 C	20	148	11	80	241.9	-2.1	+24.3	- 7.1
335.285 C	14	59	7	33	241.6	-2.2	+24.1	+ 5.8
336.286 C	8	60	4	35	242.5	-1.0	+23.3	+19.9
337.413 G	0	0	0	0	..	..	..	..
338.442 G	0	0	0	0	..	..	..	..
339.282 C	4	32	4	35	243.6	+0.8	+23.2	+60.5
Means	..	..	4	29	242.9	..	+23.9	..
Group 16322.								
Nov. 29-Dec. 4. Two or three small spots.								
332.609 G	7	33	6	29	217.1	0.0	-14.2	-54.0
333.517 G	9	86	6	59	219.5	+2.4	-14.8	-39.6
334.286 C	23	103	13	61	220.3	+3.2	-15.2	-28.7
335.285 C	12	105	6	57	220.1	+3.0	-15.0	-15.7
336.286 C	6	52	3	27	219.1	+2.0	-16.1	- 3.5
337.413 G	8	59	4	32	218.2	+1.0	-16.1	+10.4
Means	..	..	6	44	219.0	..	-15.2	..
Group 16325.								
Dec. 3-13. A stream, developing from two tiny spots, whose follower, at first double, soon becomes a composite spot - the largest component. The whole group undergoes its whole life-history on the disk.								
336.286 C	2	17	3	27	151.9	0.0	- 7.9	-70.7
337.413 G	43	270	35	217	156.6	+4.5	- 6.5	-51.2
338.442 G	104	547	66	350	156.1	+3.9	- 6.6	-38.1
339.282 C	81	640	46	362	156.5	+4.1	- 6.6	-26.6
340.465 G	126	649	65	335	156.0	+3.5	- 6.5	-11.6
341.288 C	53	637	26	318	154.7	+2.0	- 6.7	- 2.0
342.394 G	61	682	32	352	154.8	+2.0	- 6.6	+12.7
343.412 G	108	433	60	242	154.2	+1.2	- 7.1	+25.5
344.419 G	37	356	24	232	153.6	+0.4	- 7.0	+38.1
345.432 G	18	130	15	106	153.7	+0.4	- 6.9	+51.6
346.292 C	10	60	11	65	153.4	0.0	- 6.8	+62.6
Means	..	..	35	237	154.7	..	- 6.8	..
Group 16327.								
Dec. 4-15. A small regular spot with unstable companions between December 8 and 13.								
337.413 G	9	50	22	123	130.0	0.0	+17.8	-77.8
338.442 G	20	119	25	149	129.0	-1.0	+18.1	-65.2

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

Group 16327 - *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.
					°	°	°	°
339.282 C	15	119	13	105	129.6	-0.3	+18.0	-53.5
340.465 G	50	254	34	170	129.4	-0.5	+17.9	-38.2
341.288 C	17	305	10	180	129.7	-0.2	+17.5	-27.0
342.394 G	40	441	22	238	129.6	-0.2	+17.2	-12.5
343.412 G	72	336	39	177	129.9	+0.1	+16.7	+ 1.2
344.419 G	41	341	22	184	130.4	+0.6	+17.1	+14.9
345.432 G	45	226	26	136	130.8	+1.1	+16.4	+28.7
346.292 C	43	247	30	170	130.8	+1.1	+15.6	+40.0
347.462 G	7	82	7	82	133.6	+4.0	+16.7	+58.2
348.407 G	7	30	11	49	134.1	+4.5	+16.3	+71.2
Means	..	..	22	147	130.6	..	+17.1	..

Group 16328.

Dec. 5-11. One or two variable spots with a sudden increase to maximum area on December 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.
338.442 G	7	43	4	24	192.7	0.0	+25.8	- 1.5
339.282 C	2	19	1	11	192.2	-0.3	+25.9	+ 9.1
340.465 G	4	26	2	16	191.9	-0.2	+25.7	+24.3
341.288 C	6	56	4	38	191.7	-0.2	+25.1	+35.0
342.394 G	35	294	30	250	191.3	-0.2	+25.2	+49.2
343.412 G	20	102	24	121	190.9	-0.3	+25.8	+62.2
344.419 G	4	22	8	44	189.3	-1.6	+26.0	+73.8
Means	..	..	10	72	191.4	..	+25.6	..

Group 16329.

Dec. 5-15. A stream of changing spots.

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.
338.442 G	11	57	15	73	127.5	0.0	- 4.9	-66.7
339.282 C	6	107	6	94	128.0	+0.4	- 4.9	-55.1
340.465 G	59	306	39	206	125.7	-2.1	- 4.8	-41.9
341.288 C	54	564	31	328	127.2	-0.8	- 4.9	-29.5
342.394 G	94	835	49	434	128.4	+0.2	- 5.3	-13.7
343.412 G	128	720	65	361	128.1	-0.2	- 5.6	- 0.6
344.419 G	69	699	36	361	129.5	+1.0	- 5.5	+14.0
345.432 G	89	517	50	291	128.3	-0.4	- 5.3	+26.2
346.292 C	38	330	25	211	128.3	-0.5	- 5.6	+37.5
347.462 G	31	214	30	204	132.9	+3.9	- 4.7	+57.5
348.407 G	20	111	34	187	135.6	+6.4	- 3.9	+72.7
Means	..	..	35	250	129.0	..	- 5.0	..

Group 16332.

Dec. 7-16. A stream of small spots.

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.
					°	°	°	°
340.465 G	13	46	9	32	124.4	0.0	+11.8	-43.2
341.288 C	4	33	2	19	126.4	+1.9	+11.5	-30.3
342.394 G	13	104	7	56	124.3	-0.3	+12.1	-17.8
343.412 G	34	143	18	74	123.9	-0.7	+11.4	- 4.8
344.419 G	18	115	10	60	124.0	-0.7	+12.3	+ 8.5
345.432 G	18	76	10	42	124.6	-0.2	+12.3	+22.5
346.292 C	0	34	0	21	124.5	-0.4	+11.8	+33.7
347.462 G	20	209	16	164	124.6	-0.4	+12.1	+49.2
348.407 G	29	145	30	152	123.5	-1.5	+12.0	+60.6
349.254 C	4	25	8	48	126.0	+0.9	+11.8	+74.2
Means	..	..	11	67	124.6	..	+11.9	..

Group 16334.

Dec. 10-21. A diminishing regular spot with a few small companions until December 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.
343.412 G	13	69	37	195	48.9	0.0	- 5.7	-79.8
344.419 G	21	120	27	153	48.4	-0.7	- 5.7	-67.1
345.432 G	30	154	25	128	49.0	-0.2	- 5.7	-53.1
346.292 C	25	196	17	131	49.0	-0.4	- 5.4	-41.8
347.462 G	24	286	13	161	48.7	-0.9	- 5.3	-26.7
348.407 G	35	245	18	127	49.1	-0.6	- 5.3	-13.8
349.254 C	38	199	19	100	49.2	-0.7	- 5.2	- 2.6
350.463 G	24	139	12	72	49.7	-0.4	- 5.5	+13.9
351.261 C	31	148	17	81	49.8	-0.4	- 5.5	+24.5
352.469 G	13	95	9	63	50.3	-0.1	- 5.7	+40.9
353.439 G	13	69	11	58	50.3	-0.3	- 5.6	+53.7
354.409 G	9	24	11	30	50.4	-0.3	- 5.7	+66.6
Means	..	..	18	108	49.4	..	- 5.5	..

Group 16337.

Dec. 11-18. A small group.

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.
344.419 G	2	17	4	37	38.9	0.0	- 5.7	-76.6
345.432 G	6	41	7	47	38.6	-0.5	- 5.2	-63.5
346.292 C	10	56	8	45	39.3	+0.1	- 4.8	-51.5
347.462 G	6	48	4	29	40.5	+1.1	- 5.3	-34.9

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

Group 16337 - *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.
					°	°	°	°
348.407 G	11	108	6	58	41.3	+1.7	- 5.2	-21.6
349.254 C	6	79	3	40	42.7	+3.0	- 4.4	- 9.1
Means	..	..	5	43	40.2	..	- 5.1	..

Group 16341.

Dec. 12-23. A small composite spot, slowly diminishing after December 14.

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.
345.432 G	37	178	42	201	38.8	0.0	+ 7.2	-63.3
346.292 C	59	485	49	403	38.2	-0.7	+ 7.7	-52.6
347.462 G	93	731	60	468	38.0	-1.1	+ 8.3	-37.4
348.407 G	108	653	60	366	37.9	-1.4	+ 7.5	-25.0
349.254 C	138	690	72	359	37.9	-1.5	+ 7.4	-13.9
350.463 G	93	644	47	328	37.3	-2.3	+ 6.8	+ 1.5
351.261 C	46	372	24	193	37.2	-2.5	+ 6.6	+11.9
352.469 G	35	328	20	187	37.4	-2.5	+ 6.3	+28.0
353.439 G	28	271	19	182	37.4	-2.6	+ 6.3	+40.8
354.409 G	20	128	17	109	37.1	-3.1	+ 6.0	+53.3
355.500 G	9	63	12	85	37.5	-2.9	+ 6.1	+68.0
356.286 C	6	27	14	65	36.9	-3.6	+ 4.8	+77.8
Means	..	..	36	246	37.6	..	+ 6.8	..

Group 16342.

Dec. 13-21. A small composite spot, preceded by a tiny companion. On December 19 it begins to break up.

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.
346.292 C	12	69	40	232	9.7	..	+ 4.5	-81.1
347.462 G	44	332	59	449	7.4	0.0	+ 4.6	-68.0
348.407 G	74	343	65	302	8.0	+0.4	+ 4.6	-54.9
349.254 C	69	515	47	357	8.2	+0.5	+ 4.9	-43.6
350.463 G	63	518	36	294	7.8	-0.1	+ 4.6	-28.0
351.261 C	48	280	25	148	7.5	-0.6	+ 4.7	-17.8
352.469 G	37	365	18	182	6.3	-2.0	+ 4.4	- 3.1
353.439 G	26	232	13	118	6.5	-1.9	+ 4.3	+ 9.9
354.409 G	15	130	8	72	7.0	-1.6	+ 3.9	+23.2
Means	..	..	34	240	7.3	..	+ 4.5	..

Group 16344.

Dec. 16-21. A small group with a brief maximum on December 17.

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.
					°	°	°	°
349.254 C	2	21	1	11	47.0	0.0	+ 3.7	- 4.8
350.463 G	37	184	19	94	46.7	-0.5	+ 4.1	+10.9
351.261 C	10	60	5	32	45.7	-1.7	+ 4.2	+20.4
352.469 G	2	20	1	13	46.1	-1.5	+ 4.6	+36.7
353.439 G	2	9	2	7	46.3	-1.4	+ 3.8	+49.7
354.409 G	2	11	2	12	47.4	-0.5	+ 2.1	+63.6
Means	..	..	5	28	46.5	..	+ 3.8	..

Group 16346.

Dec. 16-27. A tiny spot on December 16 and 17; nothing is seen on the next day. On December 19 a pair of small spots appears and develops into a bi-polar group, the leader of which is a regular spot, *a*, and the longest-lived. The follower, *b*, a composite spot, and at first the largest component, undergoes slight changes and then dies 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.
349.254 C	2	10	3	17	339.0	0.0	+ 7.1	-72.8
350.463 G	2	15	2	14	339.9	+0.7	+ 6.7	-55.9
351.261 C	0	0	0	0	..	..	..	..
352.469 G	2	39	1	23	339.3	-0.2	+ 6.6	-30.1
353.439 G	20	96	11	50	339.2	-0.5	+ 6.3	-17.4
354.409 G	111	649	57	331	338.6	-1.2	+ 6.5	- 5.2
355.500 G	136	801	69	412	338.7	-1.3	+ 6.1	+ 9.2
356.286 C	125	911	67	489	339.1	-1.0	+ 6.2	+20.0
357.285 C	117	695	71	421	339.6	-0.7	+ 6.3	+33.6
358.283 C	54	379	41	284	339.8	-0.6	+ 6.4	+47.0
359.382 C	42	208	46	224	338.9	-1.7	+ 6.2	+60.6
360.279 C	8	68	17	143	341.3	+0.6	+ 6.7	+74.8
Means	..	..	32	201	339.4	..	+ 6.5	..

Spot *a*

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.
352.469 G	0	15	0	9	341.5	0.0	+ 7.0	-27.9
353.439 G	7	50	4	26	340.2	-1.5	+ 6.8	-16.4
354.409 G	37	206	19	105	341.1	-0.7	+ 6.9	- 2.7
355.500 G	43	313	22	163	341.9	-0.1	+ 6.9	+12.4
356.286 C	48	324	26	178	342.0	-0.1	+ 6.3	+22.9
357.285 C	46	279	29	176	342.7	+0.4	+ 6.7	+36.7

continued

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

Group 16348 - *continued*

Spot *a* - *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.
					°	°	°	°
358.283 C	29	206	23	163	342.7	+0.3	+ 6.7	+49.9
359.382 C	25	110	30	131	342.9	+0.3	+ 6.4	+64.6
360.279 C	6	56	14	126	343.3	+0.6	+ 6.6	+76.8

Spot *b*

352.469 G	2	24	1	14	337.7	0.0	+ 6.1	-31.7
353.439 G	13	46	7	24	337.9	0.0	+ 5.9	-18.7
354.409 G	74	443	38	226	337.6	-0.4	+ 6.1	- 6.2
355.500 G	93	488	47	249	337.0	-1.2	+ 5.8	+ 7.5
356.286 C	77	587	41	311	337.3	-1.0	+ 6.1	+18.2
357.285 C	71	416	42	245	337.8	-0.7	+ 5.9	+31.8
358.283 C	25	173	18	121	336.5	-2.1	+ 6.3	+43.7
359.382 C	17	98	16	93	335.9	-2.9	+ 5.9	+57.6
360.279 C	2	12	3	17	335.3	-3.6	+ 7.0	+68.8

Group 16349.

Dec. 20-31. One or two tiny spots until December 23. On the next day a moderate-sized composite spot appears which increases to a maximum on December 27.

353.439 G	2	15	3	21	287.9	0.0	- 4.4	-68.7
354.409 G	4	24	4	21	290.2	+2.1	- 4.3	-53.6
355.500 G	2	11	1	7	292.3	+4.0	- 4.8	-37.2
356.286 C	2	23	1	13	293.4	+5.0	- 5.1	-25.7
357.285 C	87	470	45	242	292.4	+3.8	- 4.1	-13.6
358.283 C	177	1123	88	562	292.2	+3.5	- 3.7	- 0.6
359.382 C	162	1090	84	567	292.3	+3.4	- 4.4	+14.0
360.279 C	121	1194	68	669	292.4	+3.3	- 4.2	+25.9
361.284 C	98	670	64	436	292.8	+3.5	- 4.3	+39.5
362.410 G	80	582	70	506	293.3	+3.8	- 5.9	+54.8
363.422 G	20	182	27	246	293.6	+4.0	- 4.1	+68.5
364.403 C	4	42	14	152	294.4	..	- 3.8	+82.2
Means	..	..	41	299	292.1	..	- 4.5	..

Group 16351.

Dec. 21-27. One or two small spots.

354.409 G	0	9	0	7	297.7	0.0	-10.7	-46.1
355.500 G	6	28	4	17	297.6	-0.2	- 9.3	-31.9

Group 16351 - *continued*

					°	°	°	°
356.286 C	2	21	1	11	298.1	+0.2	- 9.7	-21.0
357.285 C	4	23	2	12	298.4	+0.4	- 9.1	- 7.6
358.283 C	14	104	7	53	296.4	-1.8	- 9.1	+ 3.6
359.382 C	8	50	4	27	297.1	-1.2	- 9.3	+18.8
360.279 C	2	14	1	8	297.5	-0.9	- 9.2	+31.0
Means	..	..	3	19	297.5	..	- 9.5	..

Group 16353.

Dec. 22-29. Intermittent. A pair of small spots until December 25. Three days later a new group appears which is growing as it passes out of sight.

355.500 G	17	85	9	44	317.2	0.0	- 7.8	-12.3
356.286 C	18	166	9	84	317.3	0.0	- 8.1	- 1.8
357.285 C	12	75	6	39	318.6	+1.1	- 8.3	+12.6
358.283 C	6	25	3	14	319.6	+2.0	- 7.4	+26.8
359.382 C	0	0	0	0	..	..	..	..
360.279 C	0	0	0	0	..	..	..	..
361.284 C	33	115	40	139	318.7	+0.7	- 6.2	+65.4
362.410 G	18	191	50	506	318.9	..	- 6.4	+80.4
Means	..	..	10	46	318.3	..	- 7.6	..

Group 16355.

Dec. 24-1950 Jan. 5. A regular spot, with occasional distant companions.

357.285 C	10	60	34	206	226.0	..	+23.0	-80.0
358.283 C	21	154	30	217	226.5	0.0	+23.0	-66.3
359.382 C	33	216	30	199	225.9	-0.4	+22.8	-52.4
360.279 C	54	270	39	197	226.0	-0.1	+23.1	-40.5
361.284 C	56	264	35	166	225.8	-0.1	+23.3	-27.5
362.410 G	65	352	37	201	224.8	-0.8	+22.5	-13.7
363.422 G	50	295	28	163	224.7	-0.7	+22.7	- 0.4
364.403 C	44	306	25	174	224.9	-0.3	+22.7	+12.7
0.450 G	47	268	29	165	224.2	-0.8	+22.8	+25.8
1.271 C	31	232	21	162	224.1	-0.7	+22.8	+36.5
2.301 C	52	188	47	169	224.8	+0.2	+23.3	+50.8
3.291 C	8	71	11	95	225.3	+0.9	+23.6	+64.3
4.601 G	4	30	13	98	222.6	-1.6	+23.2	+78.8
Means	..	..	29	167	225.0	..	+23.0	..

LEDGER II. - NON-RECURRENT GROUPS OF SUNSPOTS FOR THE YEAR 1949

Group 16356.

Dec. 25-30. A small 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.
					°	°	°
358.283 C	4	33	6	52	227.3	0.0	+34.5	-65.5
359.382 C	6	37	6	38	225.9	-0.7	+34.5	-52.4
360.279 C	4	33	3	27	225.7	-0.3	+34.5	-40.8
361.284 C	4	15	3	11	224.5	-0.9	+34.3	-28.8
362.410 G	7	26	5	17	223.3	-1.4	+33.7	-15.2
363.422 G	2	9	1	6	222.4	-1.6	+34.1	- 2.7
Means	..	..	4	25	224.8	..	+34.3	..

Group 16359.

Dec. 28-1950 Jan. 7. A small regular spot which becomes composite as it declines.

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.
361.284 C	10	96	19	180	178.9	0.0	+ 3.4	-74.4
362.410 G	50	163	50	163	178.9	-0.2	+ 3.4	-59.6
363.422 G	37	204	27	149	178.8	-0.5	+ 3.7	-46.3
364.403 C	35	223	21	134	179.4	-0.1	+ 4.0	-32.8
0.450 G	48	216	25	114	179.2	-0.4	+ 3.9	-19.2
1.271 C	61	230	31	117	179.2	-0.6	+ 3.7	- 8.4
2.301 C	42	192	21	98	179.1	-0.9	+ 3.7	+ 5.1
3.291 C	54	238	29	126	179.3	-0.9	+ 3.9	+18.3
4.601 G	20	156	12	97	179.2	-1.2	+ 3.6	+35.4

Group 16359 - *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.
					°	°	°	°
5.398 G	9	78	7	57	179.4	-1.1	+ 3.7	+46.1
6.283 C	2	13	2	12	178.6	-2.1	+ 3.6	+57.0
Means	..	..	22	113	179.1	..	+ 3.7	..

Group 16361.

Dec. 29-1950 Jan. 8. A small bi-polar group, immediately north of Group 16359. The leader, a regular spot, alone remains by January 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.
362.410 G	4	15	4	16	176.7	0.0	+ 5.5	-61.8
363.422 G	2	9	2	7	176.5	-0.4	+ 6.7	-48.6
364.403 C	4	33	2	20	178.1	+1.1	+ 6.5	-34.1
0.450 G	97	378	51	201	180.4	+3.2	+ 5.9	-18.0
1.271 C	61	380	31	194	180.4	+3.1	+ 5.4	- 7.2
2.301 C	75	343	39	175	181.6	+4.1	+ 5.3	+ 7.6
3.291 C	46	253	25	138	182.1	+4.4	+ 5.3	+21.1
4.601 G	35	156	23	103	183.5	+5.6	+ 4.6	+39.7
5.398 G	26	140	21	112	183.7	+5.7	+ 5.0	+50.4
6.283 C	15	117	16	126	183.4	+5.2	+ 5.2	+61.8
7.280 C	10	36	20	73	183.7	+5.4	+ 5.1	+75.2
Means	..	..	21	106	180.9	..	+ 5.5	..

ROYAL GREENWICH OBSERVATORY

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

1949

GREENWICH PHOTO-HELIOGRAPHIC RESULTS, 1949

TOTAL AREAS OF SUNSPOTS AND FACULÆ FOR EACH DAY IN THE YEAR 1949

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.

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		
			Umbræ	Whole Spots	Faculæ	Umbræ	Whole Spots	Faculæ
1949	d							
January	1.457	G	320	1988	1253	212	1263	1553
	2.277	C	261	1921	1467	166	1214	1751
	3.502	C	224	1370	1206	191	1182	1373
	4.534	G	157	893	984	192	1076	1242
	5.299	C	156	967	1905	155	936	2349
	6.287	C	207	1199	1560	151	906	1612
	7.286	C	198	1200	1904	142	818	2174
	8.289	C	271	1464	1469	170	918	1975
	9.451	G	570	2176	1448	338	1307	1692
	10.293	C	309	1778	872	175	1018	1211
	11.490	G	322	1761	1621	205	1143	2121
	12.440	G	251	1635	1511	167	1121	1806
	13.473	G	299	1672	2044	314	1609	2196
	14.287	C	262	1359	2278	265	1335	2425
	15.286	C	278	1996	1809	218	1584	2236
	16.423	C	552	3115	1986	517	2960	2626
	17.306	C	711	3972	2633	641	3981	3042
	18.308	C	927	5015	2005	797	4338	2665
	19.286	C	985	5280	2257	699	3832	2507
	20.501	G	1247	7061	2743	835	4771	2828
	21.288	C	1045	6748	2687	727	4734	3178
	22.409	G	802	5460	2245	506	3427	2933
	23.461	G	764	5514	1595	457	3281	2143
	24.289	C	795	5461	1473	507	3445	1722
	25.289	C	546	4453	1201	447	3482	1528
	26.286	C	428	3837	1849	388	3381	2185
	27.290	C	396	2581	2402	434	2836	2926
	28.290	C	267	1747	2267	362	2437	2421
	29.409	G	280	1419	2056	199	1056	2329
	30.467	G	348	2210	1713	303	2027	2472
	31.319	C	365	2477	2403	277	2023	3164
February	1.464	G	766	4270	2386	514	2901	2750
	2.388	G	1032	5454	2177	523	3281	2207
	3.400	G	1300	6444	1252	780	3822	1436
	4.394	G	1359	7566	1799	795	4369	2209
	5.316	C	1422	7928	1659	782	4549	2018
	6.315	C	1210	7231	1345	746	4608	1760
	7.466	G	1193	6326	2300	770	4105	2777
	8.511	G	938	5885	3059	650	3967	3909
	9.461	G	762	4819	3258	589	3683	3413
	10.426	G	595	4503	3673	514	4010	4374
	11.470	G	698	3794	3204	701	3873	3789
1949	d							
February	12.354	C	651	3756	1974	456	2714	2253
	13.405	G	783	4426	2126	644	3650	2566
	14.323	C	612	4427	1774	571	3741	2579
	15.300	C	698	4482	2635	503	3586	3239
	16.393	C	775	5150	2741	512	3540	3081
	17.363	G	960	6789	3339	600	4374	3882
	18.402	G	1289	6504	2137	774	3969	2499
	19.381	G	1442	7231	1501	923	4635	1842
	20.415	G	1086	6329	1906	748	4318	2302
	21.607	G	770	4459	1490	596	3296	1712
	22.423	G	793	4139	1971	679	3493	2599
	23.289	C	633	3139	1869	519	2714	2471
	24.590	G	525	2924	2037	534	2967	2488
	25.402	G	472	2666	2859	506	2843	3390
	26.399	G	592	3111	1873	569	2868	2685
	27.396	G	689	3850	2299	528	3123	3158
	28.397	G	874	4654	1884	554	2929	1962
March	1.388	G	851	5231	2277	536	3269	2569
	2.302	C	786	4721	1546	507	3287	2069
	3.304	C	851	5502	2406	587	3856	2962
	4.308	C	644	5618	1928	507	4268	2267
	5.336	C	724	4597	2873	585	3876	3415
	6.334	C	663	4107	2036	469	2819	2459
	7.303	C	590	3604	1453	438	2864	1907
	8.304	C	654	4178	2023	527	3240	2275
	9.468	G	667	4043	4213	574	3459	5396
	10.424	G	891	4233	2167	726	3540	2632
	11.487	G	862	4183	2145	669	3270	2356
	12.305	C	718	4362	2725	525	3342	3333
	13.439	G	679	4301	2981	551	3726	4115
	14.331	C	904	4918	2321	765	4457	3064
	15.389	G	1024	5733	1703	790	4404	1988
	16.300	C	945	5832	2067	642	4027	2438
	17.305	C	1049	6301	2011	679	4096	2085
	18.308	C	1094	6501	2256	678	4047	2652
	19.382	G	1143	6892	1195	743	4483	1360
	20.317	C	969	7350	1764	639	4979	2208
	21.379	G	1123	6611	1225	793	4750	1584
	22.306	C	850	5659	1540	656	4207	1978
	23.305	C	619	3996	1852	501	3255	2188
	24.388	G	496	3194	1543	584	3625	1983
	25.517	G	435	2318	2599	510	2742	3262

TOTAL AREAS OF SUNSPOTS AND FACULÆ FOR EACH DAY IN THE YEAR 1949

U.T.		Place	Projected Area			Area Corrected for Foreshortening		
			Umbræ	Whole Spots	Faculæ	Umbræ	Whole Spots	Faculæ
1949	d							
March	26.388	G	291	2041	2878	245	1745	3790
	27.332	C	267	1652	2192	205	1352	2583
	28.453	C	256	1349	1592	220	1192	2278
	29.305	C	293	1452	1258	225	1094	1630
	30.308	C	343	1734	1076	252	1280	1159
	31.309	C	317	1534	1214	218	1027	1287
April	1.319	C	399	1996	1462	298	1498	1945
	2.358	C	376	2056	1440	318	1780	1754
	3.296	C	468	2165	1122	346	1640	1307
	4.574	C	398	2718	2399	286	2001	3300
	5.316	C	437	2374	2235	352	1884	3124
	6.343	C	480	2773	2226	321	1889	2907
	7.316	C	475	2655	1491	355	1967	2056
	8.393	C	460	2917	1513	383	2431	1647
	9.592	C	359	2032	1551	340	2005	2094
	10.323	C	335	1909	2019	428	2687	2783
	11.318	C	280	1678	2429	274	1660	3463
	12.317	C	377	2226	1247	318	1802	1725
	13.486	G	562	2879	2553	407	2105	2594
	14.344	G	629	3094	1836	410	2024	1978
	15.360	G	592	2758	1467	372	1737	1640
	16.411	G	532	2870	2128	333	1794	2909
	17.362	G	464	2602	1881	345	1898	2431
	18.414	G	467	2612	1221	355	1991	1654
	19.347	G	529	2712	2272	429	2334	2622
	20.319	C	485	2954	2484	405	2496	2965
	21.349	G	544	2974	3218	412	2336	3922
	22.315	C	485	2694	2342	345	1935	2844
	23.356	G	469	2458	1878	321	1724	2712
	24.422	G	474	2574	1384	333	1883	1720
	25.358	G	504	2779	2217	324	1786	2924
	26.477	G	491	2541	2789	303	1593	2934
	27.344	G	522	2530	2996	327	1572	3556
	28.322	C	411	1989	1325	253	1240	1481
	29.343	G	404	2184	2747	300	1591	2697
	30.318	C	263	1540	1610	202	1185	1896
May	1.322	G	282	1455	2747	230	1279	3395
	2.307	G	256	1232	2578	177	877	3121
	3.325	C	365	2066	1991	242	1414	2450
	4.328	C	420	2359	1771	265	1475	2018
	5.370	C	473	2617	1793	375	2126	2391
	6.345	G	509	2835	2226	370	1979	2673
	7.345	C	471	2568	1903	307	1704	2181
	8.367	G	461	2334	1749	299	1513	2583
	9.417	C	464	2153	1441	311	1487	1952
	10.356	G	333	1751	2794	258	1295	3158
	11.434	C	297	1350	2585	296	1420	2966
	12.391	C	169	965	1166	150	820	1389
	13.326	C	149	894	1364	116	714	1955
	14.336	C	134	979	1225	101	722	1439
	15.449	C	140	746	1489	102	538	1674
	16.457	G	188	1053	2289	154	877	2678
	17.335	G	230	1236	1630	173	1017	2271
	18.340	G	354	1747	2679	237	1197	3273
	19.429	G	356	1773	2453	230	1139	2751
May	20.422	G	315	1696	1778	208	1134	2212
	21.326	G	255	1257	1767	175	883	2313
	22.354	G	253	1132	1539	190	927	1952
	23.326	C	213	1115	1666	194	1000	2003
	24.353	C	193	1349	1687	142	920	2227
	25.325	C	239	1160	2033	181	901	2413
	26.342	C	237	1181	2207	261	1344	2592
	27.357	G	234	1142	2075	196	1065	2907
	28.349	C	253	1401	2632	179	1006	3059
	29.346	C	354	2035	2298	277	1564	3009
	30.326	C	588	2569	1121	381	1627	1291
	31.392	G	470	3183	2932	263	1765	3261
June	1.659	G	459	2419	1282	268	1416	1712
	2.325	G	497	2370	1351	294	1402	1765
	3.332	C	271	1759	1333	168	1118	1583
	4.347	G	401	1757	2609	284	1250	3003
	5.367	G	338	1729	2815	248	1327	3187
	6.374	G	296	1438	1969	271	1430	2559
	7.472	C	232	1216	2618	150	824	3361
	8.580	G	181	1290	2645	175	1089	3755
	9.389	G	140	1457	3346	128	1276	3866
	10.444	G	133	842	2440	255	1645	3019
	11.339	G	166	1155	2433	247	1824	3527
	12.360	G	250	1364	1725	206	1172	1913
	13.327	G	389	1666	2668	279	1210	2867
	14.335	C	308	1599	1595	221	1174	2045
	15.322	G	249	1327	2095	143	744	2364
	16.332	G	341	1787	2871	210	1152	3651
	17.646	G	256	1386	991	155	815	1216
	18.438	C	263	1271	2051	191	941	2425
	19.327	C	224	1299	1962	174	1014	2595
	20.318	G	213	1139	3230	226	1158	3760
	21.320	G	232	1268	3429	253	1418	4388
	22.380	C	376	1706	1873	414	2095	2645
	23.357	G	494	2557	2600	430	2175	3392
	24.318	G	468	3274	3030	344	2425	3838
	25.319	G	643	3507	1725	395	2169	2208
	26.348	G	740	3978	1495	439	2331	2140
	27.320	G	880	4273	2566	489	2374	2834
	28.319	G	991	5111	3499	643	3260	3783
	29.381	G	826	4366	2610	567	3040	3221
	30.626	G	568	3708	2461	439	2923	3109
July	1.322	G	585	2968	2725	431	2138	3272
	2.321	G	347	2348	2263	303	1971	2899
	3.366	G	290	1697	3418	333	1821	4242
	4.323	G	155	994	2264	177	1055	2966
	5.321	G	76	396	1858	64	345	2541
	6.334	G	160	594	3223	135	522	3488
	7.571	G	173	914	2759	168	881	3298
	8.557	G	109	847	2863	96	734	3339
	9.324	G	101	616	2343	91	573	2781
	10.338	C	87	496	970	85	571	1189
	11.479	G	129	713	2059	94	536	2283
	12.323	G	164	947	1944	104	610	2338
	13.339	C	266	1643	1026	153	963	1140

TOTAL AREAS OF SUNSPOTS AND FACULÆ FOR EACH DAY IN THE YEAR 1949

U.T.		Place	Projected Area			Area Corrected for Foreshortening		
			Umbræ	Whole Spots	Faculæ	Umbræ	Whole Spots	Faculæ
1949	d							
July	14.444	G	324	2365	1622	231	1589	1913
	15.437	G	436	2423	2427	300	1636	3106
	16.389	G	337	2338	3233	231	1553	4165
	17.457	G	328	1620	2104	229	1143	2576
	18.610	G	311	1606	3575	253	1268	4341
	19.292	G	290	1471	3004	259	1415	3620
	20.345	G	408	2337	2254	307	1745	2885
	21.419	G	402	2097	1415	304	1519	1679
	22.327	G	389	2658	1644	242	1607	2207
	23.331	G	480	3068	1886	278	1724	2362
	24.372	G	599	3487	1300	363	2066	1582
	25.322	G	524	3220	3288	367	2216	3626
	26.326	G	593	3280	3731	569	3339	4499
	27.326	G	540	4254	3974	518	4082	4842
	28.324	G	818	4740	2964	662	4042	3648
	29.332	C	851	5146	1561	566	3394	1923
	30.329	C	1058	6148	1355	637	3676	1603
	31.352	C	901	5988	1055	564	3577	1234
August	1.339	C	673	5113	1308	381	2895	1660
	2.431	G	701	4257	1786	433	2649	2234
	3.339	G	632	3329	2324	446	2336	2468
	4.359	C	406	2459	2065	369	2222	2492
	5.361	G	228	1807	2897	322	2503	3825
	6.533	G	218	1220	1912	331	1808	2389
	7.325	C	93	679	1422	133	1024	1918
	8.322	G	82	503	1030	57	351	1201
	9.327	G	119	599	1306	85	410	1487
	10.325	C	95	536	633	54	308	908
	11.322	G	64	393	1573	34	208	1943
	12.329	G	98	625	1447	85	561	2057
	13.323	G	210	1178	2760	214	1260	3372
	14.418	C	490	2465	3169	400	1978	3417
	15.344	G	624	3030	2645	467	2294	3007
	16.248	G	441	3218	1310	299	2103	1652
	17.343	G	573	3634	1584	437	2638	1942
	18.559	G	615	4157	1266	430	2698	1667
	19.336	C	598	3946	1923	373	2398	1931
	20.425	G	630	5028	1016	383	3022	1331
	21.406	G	866	4687	2360	578	3175	2907
	22.295	G	695	4771	3097	485	3267	3643
	23.395	C	659	3992	2640	440	2688	2960
	24.321	C	799	4467	3927	519	2875	4296
	25.641	G	843	6176	2495	506	3744	3141
	26.436	G	985	5426	2532	681	3737	3178
	27.327	C	742	4599	1661	512	3284	1839
	28.425	G	686	3709	1516	543	2942	1732
	29.353	G	619	3272	2180	524	3029	2484
	30.373	G	468	2779	1489	460	2955	2099
	31.350	G	599	3034	3326	543	2855	4337
September	1.426	G	576	3267	4666	506	2909	5402
	2.350	G	605	3027	2202	507	2707	2967
	3.392	G	373	2960	1590	275	2280	2355
	4.287	C	513	2963	1936	377	2152	2362
	5.321	G	549	2896	2361	390	2113	2826

U.T.		Place	Projected Area			Area Corrected for Foreshortening		
			Umbræ	Whole Spots	Faculæ	Umbræ	Whole Spots	Faculæ
1949	d							
September	6.344	G	588	3005	1862	365	1839	2223
	7.332	G	622	3680	1397	369	2175	1701
	8.345	G	740	3864	1806	460	2327	2066
	9.341	G	475	3492	2338	315	2273	2717
	10.363	G	609	3154	3152	476	2439	3466
	11.368	G	658	3353	2055	651	3254	2824
	12.396	G	699	3739	3356	566	3132	3632
	13.383	G	747	4305	2792	620	3544	2890
	14.408	C	512	3929	2126	403	3016	2415
	15.551	G	682	4675	3221	486	3165	3723
	16.422	G	673	4312	2384	444	2804	2675
	17.324	G	522	4744	2273	328	2914	2708
	18.310	C	863	4504	1286	533	2769	1578
	19.331	G	769	3906	3486	483	2479	3974
	20.344	G	703	3428	3207	529	2686	3680
	21.310	C	379	2801	2661	290	2232	3139
	22.351	G	471	2284	2889	394	1986	3406
	23.451	G	411	2009	1778	383	1866	2212
	24.372	G	278	2139	1838	194	1403	2180
	25.370	G	339	2250	2014	225	1441	2598
	26.304	C	357	1857	1528	257	1322	2010
	27.471	G	210	1204	2679	156	861	3282
	28.308	C	146	847	1877	99	592	2250
	29.651	G	87	435	1635	58	309	2065
	30.449	G	55	397	2664	67	575	2860
October	1.329	G	119	970	2654	176	1609	3414
	2.431	G	253	2198	2821	239	2056	3260
	3.620	G	688	4079	1953	474	2842	1974
	4.368	G	909	4645	1439	555	2844	1624
	5.368	G	1097	5918	1450	620	3325	1868
	6.425	G	1136	5720	3344	626	3185	3775
	7.464	G	813	6233	2141	508	3484	2604
	8.382	G	1180	6171	2955	718	3701	3672
	9.395	G	953	5140	2164	645	3460	2523
	10.348	G	508	4128	3142	375	3080	3601
	11.644	G	458	3036	4186	453	2889	4888
	12.351	G	569	3034	3119	549	2879	3831
	13.368	G	380	2836	2518	349	2380	3616
	14.424	G	310	2338	2231	185	1407	2565
	15.393	G	456	2386	2310	254	1332	2403
	16.351	C	442	2314	985	246	1294	1104
	17.544	G	295	1603	2960	182	958	3421
	18.300	C	125	1249	1980	81	785	2322
	19.341	G	92	865	2011	66	595	2652
	20.311	C	103	724	1734	70	493	1875
	21.561	G	158	1027	1394	121	793	1655
	22.356	C	229	1696	1208	201	1536	1445
	23.294	C	309	1739	1786	309	1789	2408
	24.393	C	272	1463	1577	228	1327	2111
	25.398	G	263	1324	1958	209	1166	2376
	26.301	C	168	1209	766	105	756	1044
	27.381	G	200	1409	2893	119	839	3385
	28.359	G	264	1291	1724	158	777	2046
	29.318	C	150	941	2034	114	726	2529
	30.410	G	201	1110	3102	171	990	3089
	31.418	G	140	1300	1903	101	969	2210

TOTAL AREAS OF SUNSPOTS AND FACULÆ FOR EACH DAY IN THE YEAR 1949

U.T.		Place	Projected Area			Area Corrected for Foreshortening		
			Umbræ	Whole Spots	Faculæ	Umbræ	Whole Spots	Faculæ
1949	d							
November	1.436	G	261	1404	1947	171	912	2112
	2.483	G	215	1796	1386	247	2135	1760
	3.393	G	365	1982	1738	346	1945	2491
	4.295	C	267	2395	1887	195	1914	2375
	5.294	C	561	3032	2756	389	2099	2931
	6.417	G	431	3910	2200	296	2776	2315
	7.411	G	714	3745	2584	468	2402	3097
	8.479	G	645	3710	2366	441	2491	3102
	9.293	C	602	3644	2352	407	2576	2857
	10.386	G	599	3532	2957	442	2619	3625
	11.302	C	353	3162	991	286	2563	1061
	12.384	G	375	2223	2521	379	2207	3129
	13.430	G	355	2153	2487	323	2022	3242
	14.474	G	291	2577	3338	209	1720	4250
	15.463	G	551	3158	3022	314	1805	3640
	16.531	G	530	4170	1811	299	2339	2237
	17.586	G	743	4145	1928	460	2611	2154
	18.292	C	586	4329	1943	411	3120	1980
	19.405	G	374	3276	2146	327	2877	3018
	20.309	C	312	2561	2184	291	2430	3122
	21.531	G	469	2500	1961	448	2436	2392
	22.407	G	429	2164	2366	336	1733	3364
	23.291	C	708	3520	2208	497	2556	2193
	24.291	C	599	3227	2624	450	2414	3071
	25.290	C	619	3595	1984	451	2623	2482
	26.293	C	491	3325	1344	329	2268	1863
	27.433	G	581	3253	2247	356	1957	2909
	28.431	G	495	3276	2278	350	2461	2714
	29.609	G	618	3147	2616	498	2657	3076
	30.517	G	482	2903	2910	433	2721	3746

U.T.		Place	Projected Area			Area Corrected for Foreshortening		
			Umbræ	Whole Spots	Faculæ	Umbræ	Whole Spots	Faculæ
1949	d							
December	1.286	C	368	2351	2705	310	1979	3188
	2.285	C	275	1841	2393	233	1527	2489
	3.286	C	219	1599	2948	161	1273	3685
	4.413	G	249	1568	2573	194	1195	3628
	5.442	G	273	1630	2638	192	1172	3425
	6.282	C	229	1807	2299	140	1122	2591
	7.465	G	427	2352	3026	275	1526	3128
	8.288	C	222	2474	1745	151	1640	2137
	9.394	G	387	3436	2332	343	2837	2724
	10.412	G	438	2157	2223	361	1919	2910
	11.419	G	222	1866	3155	180	1375	3940
	12.432	G	297	1561	3017	232	1200	3380
	13.292	C	236	1705	1766	225	1557	2191
	14.462	G	251	2082	2006	209	1696	2355
	15.407	G	325	1836	2495	259	1453	2727
	16.254	C	277	1684	1044	172	1075	1595
	17.463	G	264	1801	1173	146	1004	1379
	18.261	C	174	1145	937	116	795	1073
	19.469	G	139	1262	1097	113	961	1357
	20.439	G	128	1102	2179	107	1019	2518
	21.409	G	229	1308	3169	173	979	3596
	22.500	G	273	1441	1329	166	888	1830
	23.286	C	258	1896	1414	165	1177	1988
	24.285	C	405	2646	958	266	1738	1313
	25.283	C	577	4006	1445	343	2401	1674
	26.382	C	566	3384	1778	335	1997	2043
	27.279	C	419	3279	2172	254	1973	2825
	28.284	C	434	2483	3016	302	1708	3949
	29.410	G	482	2604	2572	392	2273	2837
	30.422	G	270	1713	3614	220	1435	4116
	31.403	C	209	1534	1809	157	1186	2519

MEAN AREAS OF SUNSPOTS AND FACULÆ FOR EACH ROTATION OF THE SUN, FROM 1948 DECEMBER 31 TO 1949 DECEMBER 19.

The mean areas have been formed by taking the means of the areas for each day of observation throughout each rotation of the Sun, the projected areas being the areas as measured on the photographs and expressed in millionths of the Sun's apparent disk, and the areas corrected for foreshortening being expressed in millionths of the Sun's visible hemisphere.

The rotations adopted in the following table (which is in continuation of those for the years 1873–1948 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
1275	1948 December 30.63	27	490	3006	1726	363	2228	2072
1276	1949 January 26.97	28	837	4839	2229	592	3485	2678
1277	February 23.31	27	809	4877	2141	603	3667	2622
1278	March 22.63	27	422	2355	1793	341	1930	2277
1279	April 18.91	27	389	2083	2077	280	1520	2504
1280	May 16.14	27	291	1573	2134	220	1221	2650
1281	June 12.35	28	382	2070	2435	286	1558	2972
1282	July 9.55	27	477	2926	2177	343	2107	2646
1283	August 5.76	27	500	3014	2107	373	2242	2527
1284	September 2.00	27	537	3160	2300	392	2288	2736
1285	September 29.27	28	444	2674	2182	310	1887	2606
1286	October 26.56	27	407	2653	2242	302	2001	2723
1287	November 22.86	27	365	2311	2214	273	1739	2665

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
1949	365	485	2873	2140	356	2129	2597

MEAN HELIOGRAPHIC LATITUDE OF SUNSPOTS FOR EACH ROTATION OF THE SUN,
FROM 1948 DECEMBER 31 TO 1949 DECEMBER 19.

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 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		
				°		°	°	°
1275	1948 December 30.63	27	1312	19.96	916	11.86	+6.88	16.63
1276	1949 January 26.97	28	1258	14.57	2226	10.87	-1.68	12.21
1277	February 23.31	27	2328	13.22	1338	11.95	+4.03	12.76
1278	March 22.63	27	1215	13.28	715	15.33	+2.69	14.04
1279	April 18.91	27	808	13.25	712	14.21	+0.39	13.70
1280	May 16.14	27	812	10.98	409	9.93	+3.98	10.63
1281	June 12.35	28	709	10.32	849	10.31	-0.92	10.31
1282	July 9.55	27	768	15.04	1338	15.26	-4.21	15.18
1283	August 5.76	27	1702	13.39	540	14.11	+6.77	13.57
1284	September 2.00	27	605	12.39	1683	13.13	-6.38	12.94
1285	September 29.27	28	1344	13.46	543	13.06	+5.83	13.34
1286	October 26.56	27	1314	16.74	688	8.18	+8.18	13.80
1287	November 22.86	27	1128	16.93	611	9.90	+7.50	14.46

MEAN HELIOGRAPHIC LATITUDE OF SUNSPOTS FOR THE YEAR

Year	No. of Days on which Photographs were taken	Spots North of the Equator		Spots South of the Equator		Mean Heliographic Latitude of Entire Spotted Area	Mean Distance from Equator of all Spots
		Mean of Daily Areas	Mean Heliographic Latitude	Mean of Daily Areas	Mean Heliographic Latitude		
			°		°	°	°
1949	365	1178	14.30	951	12.14	+2.49	13.33

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ROYAL GREENWICH OBSERVATORY

Observations of Solar Flocculi and Solar Flares

Made with the Spectrohelioscope

in the year 1949

GREENWICH PHOTO-HELIOGRAPHIC RESULTS, 1949

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OBSERVATIONS OF SOLAR FLOCCULI MADE WITH THE SPECTROHELIOSCOPE IN THE YEAR 1949

The following observations relate to (1) absorption filaments or dark flocculi visible on the Sun's disk in the light of $H\alpha$ in the immediate vicinity of sunspots*, and (2) solar flares otherwise known as bright chromospheric eruptions.

The observations were made at the Royal Observatory, Greenwich, with a spectroheliosoope 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 $H\alpha$. 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 $H\alpha$. The zero of the $H\alpha$ line is determined from measures of the darkest part of the line in an undisturbed portion of the Sun near the centre of the disk. The purpose of the observations being to locate large radial velocities*, measured displacements are interpreted as being due to Doppler effects.

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

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

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

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

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

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

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

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

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

Notes have been added of unusual features seen at the time of observation. Flocculi which were apparently descending into sunspots with progressive velocities and which showed a definite curvature of shape are also noted.

OBSERVATIONS OF SOLAR FLOCCULI MADE WITH THE SPECTROHELIOSCOPE IN THE YEAR

Dark Hα Flocculi						Associated Group of Sunspots				
Ref. No.	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. 20 12.5	0	2.0	0.5	c	15871	−31	Jan. 22.89	+23	2213
2	22. 11.0	−32	1.2	2.5	p	71	− 6			
3	22 11.2	+ 1	0.3	1.3	p	71	− 6			
4	27 10.1	− 3	0.8	0.5	c	71	+60			
5	27 12.3	+47	1.5	2.0	c	71	+61			
6	Feb. 1 12.8	−45 to +75	2.0	0.3	c	15892	−50	Feb. 5.35	−10	1586
7	3 11.2	−44 to +26	1.7	1.3	c	91	−19	4.94	+ 5	548
8	3 12.5	−37 to +76	1.0	..	nf	91	−19			
9	4 10.3	−37 to +29	0.6	0.5	c	99	−59	8.90	− 1	302
10	4 11.6	−68 to +52	1.8	0.2	c	92	−11	5.35	−10	1586
11	Feb. 4 14.6	−40 to +27	0.6	0.3	c	15892	−10	Feb. 5.35	−10	1586
12	5 10.8	−12 to +28	1.0	0.3	c	99	−46	8.90	− 1	302
13	16 10.1	− 6	2.5	0.6	f	917	−39	19.35	+21	811
14	17 12.6	−19	3.0	0.9	n	17	−24			
15	17 12.6	+ 7	1.3	0.5	s	17	−24			
16	Feb. 18 9.6	− 2	1.7	0.3	s	15917	−13	Feb. 19.35	+21	811
17	18 9.6	− 4	2.2	0.8	f	17	−13			
18	19 10.3	−37 to +13	3.7	2.3	n	20	−20	20.98	−17	745
19	22 10.4	− 1	5.5	0.5	n	17	+41	19.35	+21	811
20	22 10.5	0	6.5	1.5	f	20	+19	20.98	−17	745
21	Mar. 2 11.7	0	3.0	1.4	f	15935	−24	Mar. 4.33	− 7	367
22	15 10.5	− 2	1.0	0.7	p	62	−53	19.44	+22	1096
23	19 10.4	+ 1	2.4	1.6	p	62	0			
24	24 10.0	−37	1.3	1.2	n	64	+52	20.41	−16	343
25	24 10.0	− 4	1.0	1.0	f	64	+52			
26	Mar. 24 10.3	+55	1.4	1.8	n	15964	+53	Mar. 20.41	−16	343
27	Apr. 19 8.8	− 4	5.2	1.5	p	16009	+22	Apr. 17.68	+22	325
28	19 9.1	− 3	1.8	0.5	c	16	−56	23.64	+ 9	168
29	20 8.6	0	5.0	1.2	p	09	+35	17.68	+22	325
30	22 8.8	− 1	1.8	0.2	f	15	−12	23.25	+ 6	118
31	Apr. 23 8.6	0	2.2	1.3	f	16018	−34	Apr. 25.93	+15	394
32	23 8.6	− 1	1.0	1.0	n	18	−34			
33	May 5 15.6	−24 to +42	1.6	..	f	37	0	May 5.62	+ 6	394
34	5 16.4	+ 6	0.6	0.3	c	36	+34	3.13	+11	133
35	6 10.1	+22	2.0	0.2	s	37	+11	5.62	+ 6	394
36	May 13 11.2	− 2	1.5	1.7	sf	16048	−63	May 18.22	− 4	210
36*	16 14.2	−12 to +31	1.0	1.1	c	48	−21	18.22	− 4	210
37	17 15.0	−36	1.8	0.7	f	56	−80	23.66	−24	102
38	18 9.2	−13 to +42	1.7	..	c	54	+19	16.9	+24	272
39	25 10.0	−37 to +60	2.0	0.3	c	59	+59	21.0	− 1	158
40	30 15.4	+33	1.3	0.3	p	69	−12	31.56	+ 4	652
41	June 2 15.8	−40	1.5	0.6	c	16069	+28	May 31.56	+ 4	652
42	2 16.2	−21	0.8	3.4	f	69	+28			
43	16 8.3	−27 to +40	0.8	1.1	f	83	− 3	June 16.59	− 3	242
44	16 9.9	−23 to +29	1.8	..	c	83	− 2			
45	23 8.6	−11 to +38	1.3	..	c	99	−67	28.45	− 7	647

OBSERVATIONS OF SOLAR FLOCCULI MADE WITH THE SPECTROHELIOSCOPE IN THE YEAR

Dark Hα Flocculi						Associated Group of Sunspots				
Ref. No.	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	°	
46	June 27 13.5	−15 to +29	1.2	0.5	*f*	16098	+ 6	June 27.09	+ 3	334
47	28 10.2	−16 to +33	1.6	2.0	*s*	105	+54	24.3	+16	297
48	July 1 8.4	−30 to +27	1.3	..	..	10	−32	July 3.8	−20	132
49	1 8.4	−14 to +21	1.7	..	..	10	−32			
50	1 8.5	−25 to +21	2.1	0.6	*f*	04	−11	2.15	+14	223
51	July 1 8.7	−16 to +29	1.4	0.7	*nf*	16099	+39	June 28.45	− 7	647
52	1 9.0	−11 to +17	1.0	0.2	*c*	107	+52	27.46	−12	150
53	1 13.4	− 5 to +23	0.5	0.7	*f*	07	+54			
54	4 8.6	−15 to +18	2.3	1.0	*nf*	04	+29	July 2.15	+14	223
55	4 10.8	−22 to +34	0.6	1.6	*f*	13	−25	6.32	−30	24
56	July 11 10.2	*−42* to *+41*	1.1	..	*c*	16124	−54	July 15.50	+18	483
57	15 10.2	+39	0.4	0.3	*c*	31	−79	21.40	−26	88
58	21 8.4	−10 to *+57*	0.7	..	*c*	38	−18	22.74	+13	572
59	22 10.4	−21 to *+38*	0.8	..	*c*	38	− 4			
60	27 10.6	*−48* to *+55*	2.0	..	*c*	46	−43	30.64	−12	972
61	July 28 9.1	−60 to + 3	0.4	1.2	*f b*	16148	−49	Aug. 1.07	−20	1328
62	28 11.1	−22 to +21	0.5	1.4	*sf b*	48	−48			
63	28 11.4	− 8 to +49	0.6	0.5	*sf b*	48	−48			
64	29 11.4	+37	1.6	1.5	*n b*	48	−34			
65	30 11.2	−23	2.5	1.2	*s*	48	−21			
66	Aug. 3 8.6	*−14* to +25	2.0	..	*c*	16148	+30	Aug. 1.07	−20	1328
67	4 8.8	−56 to −11	0.6	0.2	*p*	46	+62	July 30.64	−12	972
68	4 11.7	−25	1.5	0.8	*s*	48	+45	Aug. 1.07	−20	1328
69	4 14.1	−34 to +16	1.2	0.3	*c*	48	+46			
70	5 8.6	+38	1.2	0.2	*c*	48	+57			
71	Aug. 5 13.3	+ 3	2.4	0.8	*f*	16148	+59	Aug. 1.07	−20	1328
72	15 7.9	+35	1.0	2.5	*n*	69	−54	19.40	+14	842
73	19 8.4	+40	0.8	1.0	*n*	75	−50	23.14	+10	554
74	Sept. 2 8.7	−42 to − 2	0.4	0.5	*f*	98	−78	Sept. 8.24	+19	126
75	12 13.2	+52	0.6	0.8	*p*	201	+43	9.29	−13	846
76	Sept. 13 11.4	−27	0.6	0.3	*p*	16201	+55	Sept. 9.29	−13	846
77	13 11.8	+36	0.7	0.6	*s*	01	+55			
78	19 11.7	−17 to +102	6.0	2.0	*s*	10	+32	17.06	−14	1311
79	Oct. 1 10.4	+36	0.8	0.3	*f*	32	−78	Oct. 7.33	+ 8	961
80	3 11.6	−15 to +17	1.0	0.7	*sp*	32	−51			
81	Oct. 4 8.8	−13 to +49	1.8	0.2	*p*	16230	−23	Oct. 6.14	−14	565
82	5 11.4	−59 to +25	0.3	2.6	*f*	32	−24	7.33	+ 8	961
83	6 11.8	−43 to +42	2.2	1.8	*nf*	32	−11			
84	12 12.1	−15 to +19	0.7	1.2	*c*	45	−12	13.42	+20	317
85	15 8.4	− 5 to +20	1.3	0.5	*p*	45	+25			
86	Oct. 15 10.8	*−33* to +35	1.6	..	*c*	16245	+27	Oct. 13.42	+20	317
87	15 11.3	−24	0.4	0.6	*n*	45	+27			
88	15 11.3	−31 to *+82*	2.0	..	*c*	45	+27			
89	21 14.0	−35 to +50	0.7	0.2	*s*	50	+57	17.24	+15	405
90	21 15.1	−14	0.7	1.0	*s*	50	+58			

OBSERVATIONS OF SOLAR FLOCCULI MADE WITH THE SPECTROHELIOSCOPE IN THE YEAR

Dark Hα Flocculi						Associated Group of Sunspots				
Ref. No.	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	°	
91	Nov. 10 12.5	-10 to +38	0.5	..	c	16278	+38	Nov. 7.60	+21	371
92	19 10.7	-56 to +33	1.5	..	f	95	+70	14.1	- 2	913
93	19 10.8	-58 to +17	1.0	..	p	95	+70			
94	19 10.9	-32	2.5	1.3	f	95	+70			
95	19 12.0	+27	1.5	1.0	f	95	+71			
96	Dec. 14 10.2	-34 to +36	1.1	0.2	p	16343	+45	Dec. 11.0	+20	106
97	19 11.4	-28	1.0	2.3	p	42	- 2	19.63	+ 4	240

NOTES

Ref. No.

5. Associated with a flare 1.

8. Associated with a flare 1. This marking flows anti-clockwise into the rear spot of the group.

9. Associated with a flare 2.

15. Further measures were as follows:-

$12^h.6$ +38 km./sec.
12.7 +7 to +82 "
12.9 +45 "

34. Associated with a flare 1.

41. Associated with a flare 2. A further measure at $15^h.9$ gave -27 to +47 km./sec.

43. A further measure at $8^h.5$ gave -36 to +58 km./sec.

44. Associated with a flare 1.

56. Flowing between the leader and follower of a small group.

60. Associated with a flare 1. The marking joins the leader and follower spots.

66. Moving clockwise into a small spot near the centre of the group.

Ref. No.

70. Associated with a flare 3. Further measures were as follows:-

$8^h.9$ -65 to +139 km./sec.
10.4 -68 to +129 "

75. Associated with a flare 2. Further measures were as follows:-

$13^h.4$ +43 km./sec.
13.7 -34 "
13.8 -34 "

78. Associated with the end of a flare. A further measure at $11^h.8$ gave -30 to +61 km./sec.

82. Associated with a flare 2.

83. Associated with a flare 2. Another measure at $12^h.1$ gave -109 to +13 km./sec.

90. Associated with a flare 1.

91. Associated with a flare 1.

92., 93. } Associated with a flare 3.

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OBSERVATIONS OF SOLAR FLARES MADE WITH THE SPECTROHELIOSCOPE IN THE YEAR 1949

Observations in $H\alpha$-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 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 $H\alpha$.

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 $H\alpha$
0.00 to 0.28	23
0.29 to 0.50	24
0.51 to 0.66	25
0.67 to 0.77	26
0.78 to 0.86	27
0.87 to 0.95	28
0.96 to 1.00	29

The value for the centre of the Sun's disk indicates the presence of scattered light of about 9 per cent; the intensities given in Column 12 incorporate the appropriate correction according to the procedure given in *Monthly Notices*, **96**, 5, 1935. No correction is made for finite slit-width since such correction, for the centre of the $H\alpha$-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 $H\alpha$-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

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	
	1949	h m	h m		°	°	h m			h m				
1	Jan. 27	12 11	12 20	.90	25 N	59 W	<12 11	170	1	12 12	59	15871	n b	5
2	Feb. 1	12 40	12 53	.77	9 S	51 E	<12 40	330	2	12 44	49	15892	c	6
3	Feb. 3	11 04	11 22	.45	7 N	23 E	11 05	250	1	11 06	44	15891	c	7
4	Feb. 3	12 23	12 37	.46	9 N	23 E	<12 24		1	12 24	45	15891	c	8
5	Feb. 4	10 02	10 22	.88	2 S	63 E			2	10 07	91	15899	c	9
6	Feb. 4	11 06	11 20	.90	20 N	60 E	11 09	300	2	11 08	71	15892	c	10
7	Feb. 4	11 33	11 34	.23	9 S	13 E			1			15892	c	
8	Feb. 4	13 05	13 16	.21	9 S	12 E		320	1	13 07	78	15892	c	
9	Feb. 11	11 09	11 39	.98	10 S	80 W			2	11 26	64	15892	c	
10	Apr. 14	10 18	10 35	.60	23 N	24 E	10 25	100	1	10 22	51	16006	c	
11	Apr. 29	13 31	13 38	.83	10 S	57 W		80	1			16017	c	
12	May 5	16 05	16 27	.60	9 N	35 W	16 12		1	16 12	63	16036	c	34
13	May 16	13 51	14 10	.40	5 S	23 E	13 58	100	1	13 58	45	16048	c	36*
14	June 2	15 39	16 25	.43	5 N	25 W	15 50	300	2	15 50	71	16069	c	41, 42
15	June 16	09 35	10 03	.16	5 S	6 E	<09 35		1	09 38	54	16083	c	44
16	July 8	10 51	10 54	.75	20 S	42 E			1			16122	c	
17	July 27	10 33	10 43	.67	11 S	40 E	<10 42		1	10 42	53	16146	c	60
18	July 28	08 00	08 40	.90	20 S	61 E	<08 00		1	08 03	60	16148	f	
19	July 28	11 08	11 48	.90	21 S	60 E	11 16	200	2	11 16	*118*	16148	c	63
20	July 28	15 28	15 55	.81	19 S	50 E	<15 28		1	15 35	76	16148	c	
21	July 29	08 21	08 32	.77	21 S	45 E	08 30		1	08 30	59	16148	f b	
22	Aug. 2	10 21	10 33	.55	20 S	23 W	<10 21	150	1	10 21	56	16148	s a	
23	Aug. 3	13 33	13 50	.83	12 S	55 W	13 35	100	1			16146	s a	
24	Aug. 4	08 35	08 46	.94	8 S	70 W			1	08 38	55	16146	n a	
25	Aug. 4	08 56	09 10	.93	10 S	68 W			1	08 57	57	16146	c	
26	Aug. 4	14 00	14 20	.93	10 S	69 W	<14 00	200	1	14 00	68	16146	c	69
27	Aug. 5	07 54	11 50	.86	22 S	55 W	08 09	1200	3+	08 09	186	16148	c	70
28	Sept. 1	10 21	10 50	.25	12 N	13 W	<10 21	400	1	10 21	53	16187	np	
29	Sept. 2	10 41	11 05	.99	18 S	87 W	<10 41	1200	2			16181	c	
30	Sept. 2	14 12	14 35	1.00	18 S	90 W	14 16		1			16181	c	
31	Sept. 5	08 28	10 20	.32	11 N	18 E	08 34	>500	2	08 34	66	16196	c	
32	Sept. 12	13 05	13 50	.79	12 S	50 W	13 17	550	2	13 17	*101*	16201	sp a	75
33	Sept. 13	11 12	11 35	.90	12 S	62 W	<11 12		1	11 19	62	16201	p a	76, 77
34	Sept. 13	13 16	13 55	.90	12 S	63 W	<13 16	500	3	13 18	*174*	16201	c	
35	Sept. 19	11 40	11 54	.70	15 S	40 W	<11 40		1	11 45	43	16210	p a	78
36	Oct. 1	10 18	10 26	.99	9 N	85 E			1?			16232	c	79
37	Oct. 4	13 23	13 42	.58	13 N	36 E	<13 23	500	2	13 24	54	16232	n	
38	Oct. 5	11 14	11 26	.42	9 N	25 E	11 19	230	2	11 19	51	16232	c	82
39	Oct. 6	11 36	12 03	.21	11 N	11 E	11 40	450	2	11 40	62	16232	c	83
40	Oct. 6	13 38	13 48	.16	6 N	9 E	<13 38	500	1	13 43	32	16232	s	
41	Oct. 12	11 40	12 20	.27	19 N	9 E	11 53	200	1	11 53	62	16245	c	84
42	Oct. 15	10 55	11 25	.50	19 N	27 W	11 01	150	2	11 01	73	16245	c	86
43	Oct. 21	15 00	15 18	.64	7 S	38 W	15 12	150	1	15 12	51	16250	f	90
44	Oct. 28	08 28	08 40	1.00	22 N	90 E			?					
45	Nov. 10	12 10	12 35	.66	21 N	39 W	12 15	150	1	12 15	37	16278	c	91
46	Nov. 15	14 12	14 30	.79	11 N	52 E	<14 12	150	1	14 18	55	16290	f	
47	Nov. 17	12 30	12 37	.72	3 S	46 W	<12 30		2	12 32	54	16295	c	
48	Nov. 19	10 37	11 30	.94	2 S	70 W	<10 37	1100	3	10 38	102	16295	c	92, 93
49	Dec. 9	12 43	13 15	.92	23 N	66 W	12 50	800	2	12 50	*84*	16321	p	

NOTES

Ref. No.

2. A geomagnetic crochet ($\Delta H = -40\gamma$) was recorded at Abinger at $12^h\ 20^m$.

9. A geomagnetic crochet ($\Delta H = -39\gamma$) was recorded at Abinger at $10^h\ 59^m$.

27. For details see *The Observatory*, **69**, 235, 1949.

30. Eruptive prominence. Tiny point beyond limb, very intense at $14^h\ 19^m$.

34. A geomagnetic crochet ($\Delta H = -14\gamma$) was recorded at Abinger at $13^h\ 05^m$.

Ref. No.

35. A geomagnetic crochet ($\Delta H = -10\gamma$) was recorded at Abinger at $11^h\ 25^m$.

41. Rear of flare fading from $12^h\ 12^m$.

44. Eruptive prominence.

48. A geomagnetic crochet ($\Delta H = -26\gamma$) was recorded at Abinger at $10^h\ 30^m$.

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