

SUPPLIED FOR PUBLIC SERVICE.

GREENWICH
PHOTO-HELIOGRAPHIC RESULTS

1929

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RESULTS OF MEASURES
MADE AT THE
ROYAL OBSERVATORY, GREENWICH,
UNDER THE DIRECTION OF
SIR FRANK DYSON, K.B.E., Sc.D., LL.D., F.R.S.,
ASTRONOMER ROYAL,
OF
PHOTOGRAPHS OF THE SUN
TAKEN
AT GREENWICH, AT THE CAPE,
AND IN INDIA
IN THE YEAR
1929

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GREENWICH PHOTO-HELIOGRAPHIC RESULTS, 1929.

INTRODUCTION.

§1. *Positions and Areas of Sun Spots and Faculae for each Day in the Year 1929.*

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

The photographs of the Sun obtained at Greenwich were generally taken with, the Dallmeyer Photo-heliograph, of 4 inches aperture (usually stopped down to 2·9 inches). The Thompson Photo-heliograph of 9 inches aperture was used on occasions of good definition or during the winter months when the Sun's disc was reddish. The diameter of the Sun's image at the secondary focus in both instruments is $7\frac{1}{2}$ inches at the Earth's mean distance.

The photographs from the Cape Observatory were taken under the superintendence of His Majesty's Astronomer at the Cape, Dr. H. Spencer Jones, and those from Kodaikáanal under the superintendence of the Director, Dr. T. Royds. At the Cape Observatory the instrument employed was a Dallmeyer Photo-heliograph giving an image of the Sun about $7\frac{1}{2}$ inches in diameter ; at Kodaikáanal a Cooke photo-visual object-glass of 6 inches aperture was used, the image of the Sun being on about the same scale. The Cape instrument was dismounted from the astrographic mounting on June 6 and remounted on the 7-inch equatorial mounting.

Photographs of the Sun were available for measurement upon each day in 1929 except June 30 and November 6, those finally selected for measurement being supplied by the different observatories as under :

Greenwich	...	...	...	...	...	...	...	229
Cape	...	...	...	...	...	...	...	123
Kodaikānal	...	...	...	...	...	...	...	11
Total	...	...	...	...	...	...	...	363

The Director of the Yerkes Observatory, Washington kindly lent for measurement plates taken on June 30 and November 6. The measures made from these plates have been included in these *Results*, thus preserving the continuity of the daily measures of spots and faculæ.

The names of those persons who measured the photographs for the year 1929 are as follows :

H. W. Newton	S. Judd
H. Barton	H. Howes
Hilda Jackson	S. Clark
	E. Whybrow

At the principal focus of the Photo-heliographs, excepting that at Kodaikānal, 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 Photo-heliographs ; in the Kodaikānal Photo-heliograph there is one wire fixed parallel to the equator.

The zero of position-angles for the Photo-heliographs 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 photo-heliograph to this line was measured with the position-micrometer, and a small correction for the inclination of the Sun's path was then applied.

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 exactly at right angles to each other. From this angle, when corrected for the Sun's motion in declination, the correction for the zero of position of the wires can be inferred.

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

Determination of Zero of Position-Angles.

Month, 1929.	Greenwich.		Cape.	
	Photographic.	Visual.	Photographic.	Visual.
	° ' "	° ' "	° ' "	° ' "
January	...	+2 34	-0 24	-0 20
February	+2 28	33	14	20
March	31	33	20	18
April	24	30	09	12
May	30	28	19	15
June	30	24	+0 29	+0 30
July	25	29	27	31
August	35	30	26	27
September	28	32	26	26
October	25	33	17	29
November	24	33	28	31
December	...	32	28	29

Cape Photo-Heliograph remounted on June 6.

The zero-corrections used during the year 1929 in the reduction of the photographs taken at Greenwich were as follows :

4-inch Photo-heliograph—January 1 to May 31	...	...	...	...	...	+2.5
June 1 to July 31	...	...	...	...	...	+2.45
August 1 to December 31	...	...	...	...	...	+2.5
9-inch Photo-heliograph—January 1 to December 31	...	...	...	...	...	+2.3

The zero-corrections used in the reductions of the photographs taken at the Cape Observatory were as follows :

January 1 to March 31	...	...	...	...	...	-0.3
April 1 to June 6	...	...	...	...	...	-0.25
(Instrument remounted on June 6)						
June 7 to July 31	...	...	...	...	...	+0.5
August 7 to December 31	...	...	...	...	...	+0.45

The zero-corrections adopted during 1929 for the six Kodaikánal photographs were :

June to August, October $+0^{\circ}2$; November and December $0^{\circ}0$.

The measures of the photographs were made with a large position-micrometer constructed by Messrs. Troughton and Simms for the measurement of 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 avoided. The distance of a spot or facula from the centre of the disc is read off by means of a scale and vernier to 1-250th of an 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 are measured independently by two persons, and the means taken.

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

When required, corrections are applied to the measured distances and position-angles for differential refraction. The formula is given in the *Introduction for 1909*. It is seldom necessary, however, to apply this correction except to a few photographs taken at Greenwich in mid-winter.

The calculations of heliographic longitude and latitude are made by use of the formulæ given in "Researches on Solar Physics: Heliographical Positions and Areas of Sun Spots observed with the Kew Photo-heliograph 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 disc, 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 disc 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 disc, longitudes west of the centre being reckoned as positive, and χ the position-angle from the Sun's axis,

$$\begin{aligned} \sin \phi &= \cos \rho \sin D + \sin \rho \cos D \cos \chi \\ \sin l &= -\sin \chi \sin \rho \sec \phi. \end{aligned}$$

The position-angle ϕ is found from the position-angle from the North Point by subtracting P , the position-angle of the N end of the Sun's axis, measured eastward from the North Point of the disc. The heliographic longitude of the spot is $l+L$, where L is the heliographic longitude of the centre of the disc. 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. 540 of the *Nautical Almanac* for 1929.

The inclination of the Sun's axis to the ecliptic is assumed to be $82^{\circ}45'$, the longitude of the ascending node of the Sun's equator on the ecliptic for 1929.0 to be $74^{\circ}46'.2$, and the period of the Sun's sidereal rotation to be 25.38 days; the meridian which passed through the ascending node 1854 January 1, Greenwich Mean Noon, being taken as the zero meridian.

§ 2. General Catalogue of Groups of Sun Spots for 1929.

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 1928 and previous years. Groups seen only once are not included, but appear in the Daily Results with a distinctive numeration.

During the year 1929, a number of groups of spots, noted in the Catalogue as "Revivals," have been tabulated in series in a table following the Catalogue. The respective groups of each series are in the same heliographic position, and are seen in

consecutive rotations but with definite breaks in their history between each rotation. 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 Sun Spots for 1929.*

Ledger I.—Recurrent Groups.—This Ledger supersedes the Catalogue of Recurrent Groups of Sun Spots 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, 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 the Catalogue was searched some fifteen or sixteen days later, to ascertain whether a spot group of similar heliographic longitude and latitude was then near the east limb of the Sun. Both the search forward and the search backward have been made in the case of every spot group that was observed close to either the east or west limbs, in order that no possible case of identity might be overlooked. When there appeared to be a case of probable identity between spot groups observed in two consecutive rotations of the Sun, the character of the second group has been carefully compared with that of the first in each of the three elements—area, longitude, and latitude, before accepting it 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 Ledgers I and II, the formula adopted as representing the Sun's daily sidereal motion is $\xi = 14^\circ \cdot 37 - 2^\circ \cdot 60 \sin^2 \phi$, 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 Sun Spots and Faculæ for each day, and Mean Areas and Mean Heliographic Latitude of Sun Spots and Faculæ for each Rotation of the Sun, and for the year 1929.*

Particulars relating to this section are given in the headings on pages C 126 and 130-131.

F. W. DYSON.

*Royal Observatory, Greenwich,
1930, December 16.*

ROYAL OBSERVATORY, GREENWICH.

Positions and Areas of Sun Spots and Faculæ

For each Day in the Year

1929

GREENWICH PHOTO-HELIOGRAPHIC RESULTS 1929.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

- 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 observatory—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 the position angle of the Sun's axis from the north point : the heliographic longitude and latitude of the centre of the disc : the total areas of Spots and Faculæ for the day.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.
1929. 0.323		.940	286.9	°	°			426	1929. 3.322		.959	277.2	°	°			139
		.795	305.4					121			.935	305.1					220
	10828	.764	277.7	324.0	+ 3.8	10	55	129c			.825	293.4					102
	10830	.638	306.4	307.7	+19.6	10	36				.811	306.1					99
	10826	.312	305.5	289.6	+ 7.4	50	390			10830	.961	293.0	306.3	+20.9	23	67	354c
	1007a	.306	207.5	283.3	-18.8	2	7			10826	.856	280.6	293.1	+ 7.2	50	430	258c
	10827	.212	10.7	272.5	+ 8.9	12	98			10827	.682	285.2	276.7	+ 7.7	12	35	
	1007b	.343	24.1	266.5	+15.1	2	9			10831	.599	244.3	269.7	-17.9	8	17	
	10829	.597	103.1	238.7	-10.3	15	47			10829	.122	198.8	237.6	-10.1	3	12	
		.873	114.4					129		10834	.264	30.8	227.5	+ 9.6	4	24	
		.977	78.9					412		10833	.863	74.4	177.5	+11.5	49	275	630m
Jan. 1			(+2.1)	(274.8)	(- 3.1)	(101)	(642)	(1217)			.708	66.0					321
											.849	102.8					257
											.879	117.1					179
											.976	99.6					151
									Jan. 4			(+0.6)	(235.3)	(- 3.5)	(149)	(860)	(2710)
1.423		.932	245.4					181			.941	301.0					76
		.908	287.5					183			.923	290.2					195
		.904	276.1					287			.778	295.4					169
		.888	297.3					186			.773	282.8					377
		.845	309.1					156			.970	278.6	295.7	+ 7.4	34	135	761f
		.818	235.8					185			.857	281.2	278.5	+ 7.7	32	190	224c
	10830	.781	299.9	306.5	+20.6	30	117	179c		10826	.746	243.8	266.6	-21.7	2	3	
	10826	.547	288.4	291.7	+ 7.1	104	503			10827	.379	240.8	240.5	-14.0	1	2	
	10827	.353	306.7	276.9	+ 9.0	7	15			10831	.719	70.4	177.2	+11.3	42	275	512m
	10831	.306	204.8	268.1	-19.4	36	113			1007d	.379	240.8	240.5	-14.0	1	2	
	1007c	.177	339.1	263.9	+ 6.1	2	5			10833	.864	68.4	164.0	+16.6	2	8	58c
	10829	.383	108.1	238.7	- 9.8	11	37			10835	.930	101.2	152.3	-11.7	0	3	231s
	10832	.875	76.1	200.8	+10.4	2	9	343f		10836	.957	70.3					221
	10833	.990	77.3	179.7	+12.1	60	324	630f	Jan. 5			(0.0)	(220.7)	(- 3.6)	(113)	(616)	(2824)
Jan. 2		.968	101.3					135			.964	293.8					85
			(+1.5)	(260.3)	(- 3.3)	(252)	(1123)	(2465)			.894	303.9					89
											.869	283.6					616
											.869	249.6					232
2.301		.963	275.3					172			.732	241.0					277
		.956	295.0					141			.944	280.0	278.2	+ 8.1	32	234	465p
		.896	306.5					105			.574	64.6	176.7	+11.1	41	249	
		.862	279.0					123			.738	64.2	164.9	+16.0	4	13	73f
	10830	.874	296.5	305.4	+21.0	14	84	220c		10833	.797	102.4	156.0	-12.1	3	11	147f
	10826	.711	283.9	292.6	+ 7.4	79	519			10835	.907	68.1					411
	10827	.508	293.5	276.7	+ 8.6	2	10			10836	.945	99.8					223
	10831	.418	229.3	268.2	-19.0	12	46					(-0.4)	(208.5)	(- 3.7)	(80)	(507)	(2618)
	10829	.212	121.7	238.2	- 9.7	7	17		Jan. 6								
	10832	.763	73.4	200.9	+10.3	3	6	224f			.953	250.1					233
	10833	.952	76.7	177.9	+11.5	40	362	780nf			.945	302.5					112
		.936	100.1					94			.849	246.3					307
		.951	111.1					61									
Jan. 3			(+1.1)	(248.7)	(-3.4)	(157)	(1044)	(1920)									

Group 10831. Jan. 2-5. A short-lived group.
 Group 10832. Jan. 2-3. A tiny spot in faculae that adjoins that of Group 10833.
 Group 10833. Jan. 2-14. Return of Group 10813. A regular spot, not quite perfectly formed, diminishing rapidly after January 7.
 Group 10834. Jan. 4-10. On Jan. 4, a small stream of faint spots not seen on Jan. 5 and 6; on Jan. 7 a more definite stream appears.
 Group 10835. Jan. 5-9. A small group in the wake of Group 10833.
 Group 10836. Jan. 5-13. A small stream in constant change.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.	
1929. 6.329 C	10827 10834 10837 10833 10835 10836	.988 .566 .359 .407 .612 .658	280.9 293.5 277.9 52.2 55.5 103.2	275.7 227.3 216.4 176.7 164.0 155.0	+10.1 + 9.7 - 0.7 +10.8 +17.0 -11.5	13 27 11 35 11 14	25 98 70 221 40 45	932f	1929. 9.300		.981 .932 .931 .922 .976 .871 .667 .414 .145 .875 .875 .924 .960	258.8 305.4 248.7 235.5 279.0 271.0 293.7 308.8 166.2 67.3 105.5 81.0 113.2	° ° ° ° 233.0 216.9 195.1 175.7 154.6 99.0 95.8	° ° ° ° + 7.8 - 1.1 +12.3 +11.1 -12.2 +17.5 -15.5				
		.819 .858 .950 .978 .981	63.7 100.5 64.5 72.3 103.7					266 174 100 125 139		C	10834 10837 10838 10833 10836 10840 1007f	279.0 271.0 293.7 308.8 166.2 67.3 105.5	233.0 216.9 195.1 175.7 154.6 99.0 95.8	+ 7.8 - 1.1 +12.3 +11.1 -12.2 +17.5 -15.5	39 13 9 21 25 26 4	183 27 18 128 90 147 8	309c 226c 445c 96c 88 204 (1825)	
Jan. 7			(-0.9)	(195.7)	(- 3.8)	(111)	(499)	(2388)	Jan. 10			(-2.3)	(156.6)	(- 4.1)	(137)	(601)	(1825)	
7.361		.944 .890 .819	246.1 289.3 255.3					310 120 238	10.336		.960 .902 .833 .814	270.4 258.2 283.6 295.5					224 102 284 227	
C	10834 10837 10838 10833 10835 10836	.767 .562 .347 .274 .474 .464	285.0 273.8 321.8 22.0 40.2 106.4	230.5 216.1 194.7 176.1 163.5 155.3	+ 8.8 - 1.1 +11.9 +10.8 +17.5 -11.0	16 14 11 44 10 21	105 73 47 169 46 135		C	10833 10836 10839 10840 10841	.596 .247 .528 .752 .982 .881	295.4 233.7 108.8 61.8 82.3 116.6	176.0 154.6 112.1 99.0 64.7	+11.2 -12.5 -13.4 +17.8 + 6.7	13 9 2 27 39	102 53 8 146 241	138c 246f 233 93 112 107 (1766)	
Jan. 8		.885 .928 .958	59.2 102.6 71.5					136 202 284			.933 .945 .957	70.2 128.0 62.4					233 93 112 107 (1766)	
			(-1.4)	(182.1)	(- 3.9)	(116)	(575)	(1290)	Jan. 11			(-2.8)	(142.9)	(- 4.2)	(90)	(550)	(1766)	
8.342		.977 .962 .941 .911 .909 .870	245.7 286.9 260.3 236.1 298.3 250.5					281 191 272 132 126 277	Jan. 11		.972 .913 .859	258.1 285.2 299.3					88 485 184	
	10834 10837 10838 10833 10835 10836 10839 1007e 10840	.894 .749 .502 .287 .383 .284 .804 .857 .957	281.1 271.5 303.1 335.6 13.9 120.0 103.1 69.2 70.5	231.3 217.5 194.6 176.1 163.7 154.7 116.0 113.2 98.6	+ 8.0 - 1.5 +12.2 +11.1 +17.8 -12.0 -12.7 +15.5 +17.3	28 19 10 31 4 27 3 4 22	171 71 32 160 9 90 7 12 235	250c	C	10833 10836 10842 10843 10844 10840 10841	.746 .432 .403 .258 .486 .615 .928 .867 .878 .897 .938 .953	290.0 249.7 226.1 107.7 113.7 53.1 80.9 69.3 57.8 123.2 96.3 110.8	175.5 154.3 147.9 115.6 102.6 98.9 62.8	+11.8 -12.5 -20.3 - 8.6 -15.1 +17.9 + 6.8	14 15 2 13 2 14 69	57 84 9 72 17 88 596	388c 84 110 236 97 96 (1768)	
Jan. 9		.891 .940 .959	57.3 102.7 115.5					166 177 176	Jan. 12			(-3.3)	(129.9)	(- 4.3)	(129)	(923)	(1768)	
			(-1.9)	(169.2)	(- 4.0)	(148)	(787)	(2824)										

Group 10837. Jan. 7-10. A small stream resolving into a pair of spots.

Group 10838. Jan. 8-10. A pair of spots.

Group 10839. Jan. 9-11. A single spot on Jan. 9, and another on Jan. 11—probably related.

Group 10840. Jan. 9-19. When first seen a spot with a double umbra; between Jan. 10 and 11 the spot apparently divides into two parts that slightly separate. The leading part becomes a regular spot that breaks up into three portions between Jan. 16-17 and so disappears.

Group 10841. Jan. 11-23. A large complex stream of relatively short duration; the leader is at first a regular spot, but between Jan. 16-18 it merges into a composite spot which has developed immediately following it.

Group 10842. Jan. 12-13. One or two small spots of Group 10836.

Group 10843. Jan. 12-18. A cluster or stream with the largest and most stable spot in the rear.

Group 10844. Jan. 12-15. A feeble group of few spots.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.
1929. 12.319		.975	285.3	°	°			583	1929. 15.488		.978	256.3	°	°			212
		.942	298.4					140			.967	284.6					208
		.853	302.4					136			.959	249.0					82
	10833	.881	286.3	176.6	+12.1	4	26	369c			.950	276.5					186
	10836	.643	255.1	156.2	-12.9	5	23				.938	293.2					179
	10842	.555	238.4	147.0	-20.7	2	5				.900	247.0					177
	10845	.493	287.4	144.8	+4.5	10	39				.860	301.8					114
C	10843	.085	181.4	116.9	-9.2	26	110			10843	.648	260.0	115.3	-10.1	58	269	
	10844	.306	126.4	102.1	-14.7	7	22		G	10846	.609	238.0	109.0	-22.8	21	98	
	10840	.476	36.2	99.7	+18.2	31	178			10840	.543	316.0	98.4	+18.5	22	117	
	10841	.809	78.2	64.1	+6.9	116	732	451c		10847	.329	325.0	86.1	+10.8	1	9	
		.854	94.9					101		10841	.296	49.6	62.1	+6.3	201	1294	
		.855	128.4					213		1007g	.300	104.3	58.1	-8.9	2	7	
		.904	60.6					110		10848	.631	73.8	37.7	+6.3	6	8	
		.964	82.6					195		10849	.947	100.8	3.5	-11.8	101	447	712c
Jan. 13			(-3.8)	(116.8)	(-4.4)	(201)	(1135)	(2298)			.834	58.6					126
									Jan. 16		.971	81.6					176
												(-5.2)	(75.1)	(-4.8)	(412)	(2249)	(2172)
13.312		.948	297.4					147	16.314		.981	273.4					212
		.948	261.6					59			.973	293.4					145
		.927	252.0					78			.937	255.6					149
		.769	257.0					83			.892	294.4					134
	10833	.960	284.1	175.8	+12.2	0	7	309c			.780	297.8					143
	10845	.672	282.0	144.9	+4.6	9	36			10843	.772	261.0	114.7	-10.0	32	170	
C	10843	.228	245.6	115.9	-9.8	26	140			10846	.734	243.4	109.3	-22.6	9	22	290p
	10846	.342	198.8	110.7	-23.3	2	16		C	10840	.654	306.8	97.7	+19.0	14	53	
	10844	.183	171.0	102.1	-14.8	3	13			10847	.475	304.8	87.5	+11.2	2	3	
	10840	.400	13.2	98.3	+18.4	15	88			10841	.204	9.8	62.2	+6.7	173	1205	
	10841	.674	74.9	63.0	+6.7	88	676	88		10848	.471	68.0	38.3	+5.8	1	5	
		.846	81.0					273		10849	.870	100.7	3.6	-11.7	60	365	662c
		.950	80.6					72			.907	81.6					175
Jan. 14			(-4.2)	(103.8)	(-4.5)	(143)	(976)	(1037)			.959	74.6					191
									Jan. 17			(-5.6)	(64.2)	(-4.8)	(291)	(1823)	(2101)
14.364		.968	282.4					104	17.302		.958	291.7					182
		.903	257.9					339			.885	284.1					147
		.866	290.5					147			.883	297.1					129
		.846	279.5					49			.790	254.1					202
	10843	.436	255.3	115.2	-10.5	54	296			10843	.896	260.7	115.0	-10.5	19	66	497p
C	10846	.444	223.1	109.1	-23.2	10	47			10846	.854	246.1	108.9	-22.9	8	20	182c
	10844	.299	231.0	103.8	-15.3	2	7		C	10840	.789	299.2	97.9	+19.2	14	39	230c
	10840	.418	341.3	98.0	+18.7	19	108			10841	.287	316.9	62.5	+7.2	153	1100	
	10841	.492	67.9	62.7	+6.5	137	888			10849	.742	100.9	3.4	-11.3	83	497	363f
		.860	64.3					72			.770	78.6					112
		.860	80.0					225			.884	73.2					161
Jan. 15			(-4.7)	(89.9)	(-4.6)	(222)	(1346)	(936)	Jan. 18		.978	82.5					139
												(-6.1)	(51.2)	(-4.9)	(277)	(1722)	(2344)

Group 10845. Jan. 13-14. A diminutive stream.

Group 10846. Jan. 14-18. A pair of spots.

Group 10847. Jan. 16-20. One or two small spots not seen on Jan. 18 and 19.

Group 10848. Jan. 16-17. A small definite spot.

Group 10849. Jan. 16-28. A large and rather straggling stream undergoing frequent change. The leader, beginning as a nearly regular spot, increases and becomes composite; between Jan. 22 and 23, it breaks up, and the parts separate in the manner of a newly developing stream; the *nf* portion of the original leader is temporarily a regular spot. The area of associated faculae is considerable.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.
1929. 18.465		.982	259.8	°	°			557	1929. 21.324	10849	.171	228.5	5.8	-11.7	67	364	
		.959	246.8					94	C	10850	.578	73.3	324.7	+ 5.1	49	254	
		.957	298.4					117		10851	.866	81.1	299.3	+ 5.0	67	456	436c
		.956	286.8					198			.820	59.5					257
		.889	256.2					251			.929	67.3					56
		.839	284.2					88			.951	76.7					253
G	10840	.910	294.2	97.5	+19.6	4	10	229f	Jan. 22			(-7.9)	(358.3)	(- 5.3)	(250)	(1560)	(1523)
	10841	.507	293.5	63.7	+ 7.2	128	885										
	10849	.522	103.5	4.9	-11.2	149	726										
	10850	.950	83.2	325.0	+ 4.8	28	95	366c	22.340		.928	234.9					197
		.867	76.1					125			.913	296.5					166
		.953	68.8					134			.803	282.0					140
		.959	98.6					30		10841	.991	277.2	66.3	+ 6.4	40	213	808f
Jan. 19			(-6.6)	(35.9)	(- 5.0)	(309)	(1716)	(2189)	C	10852	.930	262.2	53.6	- 9.2	8	43	169c
										10849	.372	251.6	5.9	-11.7	84	426	
										10850	.387	61.6	325.0	+ 5.5	32	250	
										10851	.721	78.0	300.0	+ 4.8	52	433	187c
										10853	.831	74.2	290.8	+ 9.9	26	95	175c
									Jan. 23		.951	78.1					405
												(-8.4)	(344.9)	(- 5.4)	(242)	(1460)	(2247)
									23.329		.987	261.0					270
											.960	232.6					141
											.894	280.3					222
											.873	262.4					198
											.851	297.2					200
										10849	.573	258.9	6.7	-10.8	63	364	
									C	10850	.221	34.4	324.7	+ 5.0	42	177	
										10851	.563	71.0	299.7	+ 5.9	61	311	
										10853	.649	68.0	294.4	+ 9.7	47	230	
Jan. 20			(-7.1)	(22.8)	(- 5.1)	(241)	(1611)	(2194)			.859	75.8					516
											.911	64.7					146
									Jan. 24		.964	111.4					281
20.405		.979	280.5					163				(-8.8)	(331.9)	(- 5.5)	(213)	(1082)	(1974)
		.975	289.0					93									
		.895	241.1					164									
		.891	256.3					126									
		.825	282.1	64.5	+ 6.9	86	695	346c	24.349		.970	279.4					214
	10841	.825	282.1								.952	263.5					177
	10849	.147	140.4	4.9	-11.7	99	556				.944	302.3					126
	10850	.734	78.1	324.4	+ 5.0	52	292			10849	.727	259.0	5.0	-11.8	48	287	285p
	10851	.948	82.7	299.8	+ 5.2	59	276	778c		10850	.230	327.3	325.5	+ 5.6	21	116	
		.690	63.3					207		10851	.354	58.9	300.8	+ 5.2	27	189	
Jan. 21			(-7.5)	(10.4)	(- 5.2)	(296)	(1819)	(1877)	C	10853	.453	56.0	296.1	+ 9.4	49	230	
											.758	74.7					296
											.824	57.6					152
											.905	112.7					293
											.948	56.5					180
											.964	99.7					155
21.324		.911	266.1					50			.977	80.3					244
C	10841	.926	279.7	64.9	+ 6.9	60	464	414f	Jan. 25			(-9.3)	(318.4)	(- 5.6)	(145)	(822)	(2122)
	10852	.814	262.5	52.9	- 9.1	7	22	57c									

Group 10850. Jan. 19-29. A moderate-sized stream showing appreciable activity in its rearward portion. The leader, though small, persists until Jan. 25.

Group 10851. Jan. 20-28. A long, unstable stream diminishing rapidly after Jan. 25, when Group 10853 is developing in close juxtaposition to it. The leader is a small regular spot.

Group 10852. Jan. 22-23. A small group.

Group 10853. Jan. 23-Feb. 1. A group developing closely *nf* Group 10851 whose characteristic formation is a regular spot followed by numbers of tiny spots.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.
1929. 25.499			°	°	°				1929. 28.396			°	°	°			
	10849	.860 .838 .886	236.4 285.2 260.2					114 371 1211c		10850	.936 .929 .874 .775 .865 .614 .459 .858 .902 .933 .945 .952 .956	295.4 251.8 303.8 302.8 280.7 291.0 307.7 97.0 82.8 62.9 47.2 72.3 101.0					118 142 140 287 356p
	10850	.430	296.1	6.0	-11.3	94	319			10853	.614 .459 .858 .902 .933 .945 .952 .956	291.0 307.7 97.0 82.8 62.9 47.2 72.3 101.0	323.6 300.3 286.7	+ 6.1 + 7.9 + 10.8	15 28 2	62 170 4	
	10851	.188	11.6	301.1	+ 4.9	14	60		C	1008b							
	10853	.259 .783 .861 .897 .905 .916 .922 .927 .946	19.8 115.2 98.9 48.2 61.8 68.7 78.6 123.2 109.8	298.2	+ 8.5	42	208	241 88 96 50 74 426 99 236									57 109 63 51 380 71
G									Jan. 29			(-11.0)	(265.1)	(- 5.9)	(45)	(236)	(1774)
Jan. 26			(-9.8)	(303.3)	(- 5.6)	(156)	(614)	(3006)									
									29.342		.953 .890 .880 .844 .776 .212 .849 .870 .969	276.9 294.2 307.6 259.4 285.2 86.6 81.7 67.8 74.4					269 226 83 78
26.378		.953 .935 .889	278.9 303.7 289.1					III 74 109	C	10853 10854			301.6 240.5	+ 7.8 - 5.2	13 7	134 50	525p
	10849	.953	260.3	4.6	-11.0	52	278	1329c									70
	10850	.601	287.8	326.7	+ 5.9	6	13										363
	10851	.256	318.0	301.6	+ 5.3	9	48		Jan. 30			(-11.4)	(252.7)	(- 6.0)	(20)	(184)	(1845)
	10853	.267	336.9	297.8	+ 8.5	35	235										231
C	1008a	.737 .800 .826 .905 .921 .931 .945	99.4 121.7 74.9 109.7 54.1 126.9 88.0	244.2	-10.7	3	25	50c 70 473 362 140 108 255									
									30.350		.963 .913 .901 .897 .027 .969 .693 .829 .870 .951 .966	292.4 257.4 303.8 282.3 304.6 84.2 63.4 57.7 71.6 63.3 99.4					223 122 101 885c
Jan. 27			(-10.1)	(291.7)	(- 5.7)	(105)	(599)	(3081)	C	10853 10854 10855		301.5 240.7 164.5	+ 8.2 - 5.1 + 4.1	17 35 16	132 235 60		168c 76 113 202 170 112
27.327		.947 .859 .803	283.9 300.6 282.7					196 81 184	Jan. 31			(-11.8)	(239.4)	(- 6.0)	(68)	(427)	(2172)
	10849	.976	256.3	357.4	-14.6	4	25	849c									
	10851	.431	291.0	302.9	+ 3.6	2	12										
	10853	.394 .732 .803 .869 .879 .906 .915 .921 .963 .965	305.1 69.9 113.7 74.7 130.0 89.8 114.1 52.5 76.1 100.3	298.1	+ 7.5	41	238	200 175 169 193 198 187 201 340 118	31.319		.970 .943 .778 .973 .251 .877 .765 .883 .888 .961	255.2 298.2 289.0 279.8 270.0 82.2 67.3 99.2 59.0 79.7	301.9 241.2 166.4	+ 8.0 - 5.9 + 3.8	28 31 8	126 233 48	137 163 284 926c 254c 139 90 160 143
C									C	10853 10854 10855							
Jan. 28			(-10.5)	(279.2)	(- 5.8)	(47)	(275)	(3091)	Feb. 1			(-12.2)	(226.7)	(- 6.1)	(87)	(407)	(2296)

Group 10854. Jan. 30-Feb. 5. A moderate-sized stream of usual formation until Feb. 2, when its decay sets in rather rapidly.

Group 10855. Jan. 31-Feb. 3. A very small group not seen on Feb. 2.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.
1929. 32.342		.980	281.5	°	°			234	1929. 35.327	10858	.818	77.1	120.7	+ 6.8	28	51	93c
		.883	287.7					281	C	10859	.887	97.7	111.0	- 9.7	20	143	312c
	10854	.472	269.5	241.4	- 5.7	54	221				.936	61.4					74
	10856	.862	79.1	155.1	+ 6.1	13	27	284c	Feb. 5		.951	72.6	(-13.8)	(173.9)	(- 6.3)	(115)	(421)
		.735	77.9					108									(1796)
		.813	54.7					216									
		.953	65.3					104									
		.969	104.6					76									
Feb. 2			(-12.7)	(213.2)	(- 6.2)	(67)	(248)	(1303)	36.341		.977	265.0					205
		.960	279.7					366			.974	254.7					276
		.933	293.4					174			.951	285.0					203
		.893	307.3					112			.925	304.2					96
		.856	251.4					260			.908	251.4					205
		.759	237.8					129			.825	243.8					97
	10854	.685	267.3	242.8	- 6.4	26	135			10860	.669	243.8	200.7	-22.0	5	11	
	10857	.651	252.2	239.5	-16.2	7	22		C	10856	.243	29.5	153.6	+ 5.8	55	228	
	10855	.624	74.3	162.6	+ 4.7	4	15			10858	.655	72.4	121.7	+ 6.4	9	28	
	10856	.722	75.1	155.1	+ 6.3	12	42	85c		10859	.752	97.4	111.5	- 9.8	19	116	246f
		.773	64.0					112		10861	.967	100.6	84.5	-11.9	46	264	243c
		.913	62.8					206		10862	.985	93.8	80.2	- 4.9	31	166	118f
		.932	99.9					332			.862	106.2					128
Feb. 3			(-13.1)	(199.5)	(- 6.2)	(49)	(214)	(1776)	Feb. 6		.877	70.4					109
		.969	295.2					52			.930	78.6					138
		.933	250.3					192			.932	57.9	(-14.2)	(160.5)	(- 6.4)	(165)	(813)
		.880	243.5					101									(2381)
		.810	287.0					303									
	10854	.858	265.7	245.1	- 6.9	18	56	238c	37.346		.977	254.8					122
	10857	.829	254.6	241.9	-16.3	13	35	211c			.948	244.3					105
	10856	.553	68.5	154.8	+ 6.3	41	85				.948	233.5					99
	10858	.934	78.9	118.3	+ 7.9	6	12	94s			.926	273.8					200
	10859	.965	98.4	110.4	- 9.7	28	90	259p			.909	315.8					45
		.821	100.7					197			.833	286.7					286
		.852	53.9					180			.798	303.0					193
		.935	69.9					75		10863	.841	262.2	204.9	-10.1	16	39	116c
Feb. 4			(-13.5)	(185.8)	(- 6.3)	(106)	(278)	(1902)	C	10860	.810	248.5	201.0	-21.2	9	26	104c
		.951	246.4					210		10856	.271	326.2	156.0	+ 6.5	40	164	
		.905	284.2					259		10864	.334	106.5	128.3	-11.6	1	7	
		.853	233.8					101		10858	.452	61.7	123.8	+ 6.4	6	13	
		.792	244.2					121		10859	.571	97.6	112.4	- 9.7	21	142	
	10854	.939	265.4	244.1	- 6.5	6	33	261f		10861	.875	99.4	85.8	-11.4	104	584	237c
	10857	.930	255.1	242.9	-16.1	21	59	271f		10862	.916	92.6	80.8	- 5.0	26	203	166c
	1008c	.302	196.2	179.1	-23.1	7	10			10865	.964	80.2	74.2	+ 7.6	7	28	511c
	10856	.402	61.0	153.3	+ 5.3	33	125		Feb. 7		.894	54.4					200
											.958	117.2					91
											.975	93.0	(-14.6)	(147.3)	(- 6.5)	(230)	(1206)
																	(2802)

Group 10856. Feb. 2-12. A stream commencing on Feb. 2 with a single small spot as leader, that grows by accretion and lengthens out in an east to west direction.

Group 10857. Feb. 3-5. A small stream.

Group 10858. Feb. 4-10. A feeble stream of few spots.

Group 10859. Feb. 4-14. A composite spot with a train of small attendants from Feb. 7-11 and a distant companion *sp* on Feb. 12-13.

Group 10860. Feb. 6-7. A small distinct spot with a distant companion on Feb. 7.

Group 10861. Feb. 6-18. A stream of normal type in which the follower as well as the leader is a regular spot.

Group 10862. Feb. 6-17. A regular spot, with a "bridge" across its umbra, that has divided into three parts by Feb. 14; the largest and *nf* portion survives until Feb. 17.

Group 10863. Feb. 7-9. A small regular spot preceded by a companion.

Group 10864. Feb. 7-8. One or two tiny spots.

Group 10865. Feb. 7-12. Return of Group 10841. A close pair of very small spots in a conspicuous area of faculae.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.	
1929. 38.517		.943	268.6	°	°			52	1929. 40.408	10866	.612	89.0	69.3	- 4.6	26	118		
		.940	280.9					338	C	10867	.636	109.6	68.2	-17.5	8	37		
		.926	294.3					305		10868	.865	101.6	46.7	-13.3	36	139	400f	
		.919	247.9					103			.782	98.4					110	
		.802	296.1					362			.905	124.2					233	
	10863	.958	261.5	205.8	-10.0	28	82	126c			.920	80.6					129	
	10856	.482	297.5	157.3	+ 6.9	39	204				.971	95.0					182	
	10864	.096	145.3	128.7	-11.0	1	6		Feb. 10		(-15.8)	(107.0)	(- 6.6)	(309)	(1465)	(2182)		
	10858	.275	39.3	121.8	+ 5.9	7	20		41.363		.955	299.1					134	
	10859	.331	100.3	112.7	- 9.6	32	113				.948	273.7					62	
	10861	.714	99.5	86.2	-11.4	144	676				.862	296.5					208	
	10862	.779	91.3	80.7	- 5.1	31	194	122c		10856	.913	281.3	158.7	+ 7.4	10	92	474f	
	10865	.863	76.9	74.1	+ 7.8	4	13	904c		10859	.287	260.5	111.0	- 9.1	20	56		
	10866	.887	91.2	69.4	- 4.1	10	14	312c		10861	.115	120.7	88.7	-10.0	110	742		
	10867	.903	106.3	66.8	-17.5	0	5	44c	C	10862	.235	82.9	80.9	- 4.8	26	151		
	10868	.995	103.1	46.5	-13.7	0	81	122c		10866	.419	88.3	69.6	- 5.4	26	98		
		.886	61.9					74		10867	.473	115.5	67.9	-17.7	6	18		
		.934	121.9					185		10868	.735	101.2	46.9	-12.7	22	196	150f	
Feb. 8		.962	98.0					155			.907	92.6					125	
		(-15.1)	(131.9)	(- 6.5)		(296)	(1408)	(3204)	Feb. 11		.978	100.7	(-16.1)	(94.4)	(- 6.7)	(220)	(1353)	609
39.333		.974	248.6					148			(-16.1)	(94.4)	(- 6.7)	(220)	(1353)	(1762)		
		.970	279.8					149	42.455		.948	288.9					127	
		.951	294.2					379			.904	301.9					157	
		.871	290.1					214			.771	256.7					127	
		.824	304.5					153		10856	.987	278.5	159.4	+ 7.2	27	73	250f	
		.766	279.0					114		10859	.590	263.2	116.3	- 9.4	16	40		
	10863	.988	261.2	203.0	- 9.7	13	54	172p		10861	.169	246.9	89.1	-10.4	153	723		
	10856	.636	290.1	158.0	+ 7.3	35	174			10862	.045	328.2	81.4	- 4.5	27	136		
	10858	.209	4.1	120.2	+ 5.4	10	58		G	10865	.244	27.1	73.6	+ 5.9	5	12		
	10859	.160	106.5	112.2	- 9.1	32	141			10866	.168	79.8	70.5	- 4.9	23	99		
	10861	.562	99.0	86.9	-10.5	147	711			10867	.257	137.9	69.6	-17.6	5	9		
	10862	.649	90.0	80.6	- 5.0	34	190			10868	.549	102.5	46.8	-12.5	29	173		
	10865	.757	73.4	74.2	+ 8.0	5	8	865f		10869	.788	92.3	27.9	- 5.9	3	12	60c	
	10866	.784	90.2	69.5	- 4.3	27	74	292c			.883	99.5					364	
	10867	.795	107.1	68.5	-17.6	7	16	82f	Feb. 12		.969	100.7	(-16.5)	(80.0)	(- 6.7)	(288)	(1277)	251
	10868	.955	101.8	47.6	-13.2	13	70	413f	43.499		.962	298.5					124	
		.901	96.6					125			.908	257.9					251	
Feb. 9		.921	121.4	(-15.4)	(121.1)	(- 6.6)	(323)	(1496)			.842	283.6					200	
40.408		.961	293.8					225		10859	.780	263.1	117.8	- 9.6	14	64	167c	
		.958	285.6					248		10861	.387	258.6	88.9	-10.7	173	809		
		.896	303.4					155		10862	.266	279.3	81.5	- 4.1	18	90		
		.887	276.4					132		10866	.111	282.1	72.5	- 5.5	41	158		
	10856	.804	284.6	158.5	+ 7.6	29	132	298f	G	10868	.352	108.5	46.4	-12.8	37	120		
	1008d	.793	300.8	153.1	+19.4	2	7	70c			.759	99.6					330	
	10858	.323	309.2	121.5	+ 5.3	7	31				.904	101.9					604	
	10859	.092	244.6	111.8	- 8.8	21	108				.931	73.5					111	
	10861	.336	102.1	87.6	-10.3	147	712				.963	88.3					126	
C	10862	.443	88.2	80.7	- 5.1	33	181		Feb. 13		(-16.9)	(66.3)	(- 6.8)	(283)	(1241)	(1913)		

Group 10866. Feb. 8-18. A stream (f Group 10862) in which the development of a definite leader spot is delayed for several days.

Group 10867. Feb. 8-12. A small group.

Group 10868. Feb. 8-18. A composite spot with small followers.

Group 10869. Feb. 12-21. Intermittent. A diminutive group on Feb. 12; a pair of dots on Feb. 19, and a single small spot on Feb. 20 and 21.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.	
1929. 44.460		.973	253.8	°	°			64	1929. 47.398		.806	296.0	°	°			277	
		.936	279.0					182		10861	.961	262.1	89.7	- 9.5	97	671	464c	
		.916	292.4					107		10862	.929	268.5	83.3	- 4.0	5	12	} 562c	
	10870	.936	260.6	123.6	-11.2	89	203	218c		10866	.881	267.9	76.8	- 5.2	42	229		
	10859	.884	263.8	116.1	- 8.7	10	14	183f		1008g	.866	260.4	75.4	-11.8	9	17		47c
	10861	.576	261.6	88.9	-10.4	140	746		C	10874	.825	283.0	68.7	+ 6.6	8	18	590p	
	10862	.469	273.4	81.5	- 4.4	22	62			10868	.541	254.8	47.3	-14.1	5	10		
G	10866	.322	272.6	72.4	- 5.6	76	371			10873	.828	78.4	320.5	+ 5.5	15	82	465f	
	1008e	.046	24.8	52.5	- 4.4	2	4				.866	103.6					116	
	10868	.162	132.6	46.6	-13.0	14	72				.938	61.6					267	
		.829	103.0					576	Feb. 17			(-18.2)	(14.9)	(- 7.0)	(181)	(1039)	(2788)	
		.880	86.8					72										
		.892	71.8					76										
		.966	82.8					103										
Feb. 14			(-17.2)	(53.6)	(- 6.8)	(353)	(1472)	(1581)	48.511		.935	286.7					334	
											.905	252.9					208	
											.867	241.1					113	
											.832	230.4					98	
											.829	281.1					112	
											.817	261.9					127	
										10861	.983	259.1	80.7	-11.9	11	59	228c	
	10870	.989	259.3	122.4	-11.5	30	213	355c		10866	.977	265.9	78.3	- 5.5	30	260	508f	
	10861	.755	262.3	89.3	-10.3	128	704	314p	G	10874	.944	279.6	69.6	+ 6.6	9	34	551c	
	10862	.664	270.6	81.6	- 4.8	9	20			10868	.731	257.5	47.4	-13.9	5	7		
	10866	.558	270.3	74.0	- 5.6	62	366			1008h	.209	256.5	12.1	- 9.6	2	9		
G	10868	.161	227.9	47.0	-13.1	9	24			10873	.678	73.4	319.7	+ 5.9	21	130		
	10871	.328	96.3	20.8	- 8.6	1	6			10875	.917	105.3	293.1	-16.8	11	43	180c	
	10872	.612	100.7	2.2	-11.9	1	8				.815	56.9					300	
	1008f	.925	80.5	333.7	+ 6.0	3	17	434c			.877	77.0					460	
		.920	66.3					186	Feb. 18		.936	58.0	(-18.5)	(0.3)	(- 7.0)	(89)	(542)	(3478)
		.921	47.9					151									259	
		.966	110.9					49										
Feb. 15			(-17.5)	(40.0)	(- 6.9)	(243)	(1358)	(2359)	49.388		.986	278.2					248	
											.980	264.0					339	
											.973	285.6					236	
											.972	253.0					90	
											.940	241.4					123	
											.938	293.4					61	
											.914	279.4					83	
											.864	229.6					105	
	10861	.866	262.0	89.1	-10.1	107	669	362c			.859	258.8					393	
	10862	.806	270.4	82.3	- 3.7	3	13	51c	C	10876	.803	282.4	40.5	+ 5.6	23	69	89c	
	10866	.714	268.8	74.4	- 5.7	41	262			10869	.609	269.6	26.3	- 5.8	3	6		
	10868	.329	246.4	46.7	-14.1	5	15			10873	.506	65.8	321.2	+ 5.7	18	83		
	10871	.203	89.4	17.0	- 6.7	1	3			10875	.817	105.8	293.7	-16.9	15	40	154c	
	10872	.406	99.6	4.8	-10.2	1	3				.790	52.2					104	
	10873	.944	81.4	319.2	+ 5.7	14	51	299f			.879	75.4					106	
		.828	82.6					237			.916	50.7					153	
		.947	104.4					99			.946	85.9					155	
		.966	70.2					154			.964	74.1					324	
Feb. 16			(-17.8)	(28.7)	(- 6.9)	(172)	(1016)	(2073)	Feb. 19			(-18.8)	(348.7)	(- 7.0)	(59)	(198)	(2763)	

Group 10870. Feb. 14-15. A group forming at the west limb.

Group 10871. Feb. 15-16. One very small spot.

Group 10872. Feb. 15-16. One very small spot.

Group 10873. Feb. 16-26. A regular spot usually with a train of companions.

Group 10874. Feb. 17-18. A few small spots representing a feeble revival of activity in the region of faculae related to Group 10841 and 65.

Group 10875. Feb. 18-Mar. 1. A region of slight but persistent activity represented alternately by a small stream, cluster, and stream.

Group 10876. Feb. 19-21. A group forming near the west limb.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.
1929. 50.400		.935	256.7	°	°			409	1929. 52.427		.921	121.0	°	°			97
		.923	243.7					62	G		.993	82.0					440
	10876	.928	278.1	42.4	+ 4.8	69	325	230c	Feb. 22			(-19.7)	(308.7)	(- 7.1)	(133)	(626)	(3271)
	10869	.797	267.9	28.4	- 6.0	3	7	141f									
	1009a	.227	276.5	348.4	- 5.5	1	5										
	10873	.311	48.3	322.0	+ 4.9	30	100		53.367		.981	256.4					217
	10875	.675	108.5	293.4	-17.6	27	67				.937	320.1					121
	10877	.934	95.3	266.0	- 7.5	3	12	216f			.912	276.8					109
		.883	47.6					69			.910	289.0					127
		.894	77.7					238			.891	257.9					392
		.913	66.5					119		10873	.475	293.5	322.1	+ 4.5	21	135	
Feb. 20		.972	108.9					113		10880	.360	315.5	311.0	+ 8.0	2	11	
		(-19.1)	(335.4)	(- 7.1)		(133)	(516)	(1597)	C	10875	.208	149.4	290.0	-17.3	5	23	
51.411		.973	254.8					162		10878	.763	104.0	246.4	-15.2	13	74	228f
		.956	234.8					91		10879	.879	78.4	236.4	+ 6.7	56	330	207c
		.883	225.3					143		10881	.980	98.2	217.1	- 9.4	26	284	345c
		.803	254.4					208			.773	70.4					100
	10876	.984	276.4	40.8	+ 4.9	85	375	231c			.906	111.3					121
	10869	.912	266.4	28.1	- 6.2	2	5	194f			.918	57.6					94
	10873	.209	358.0	322.5	+ 4.9	29	98				.945	79.2					453
	10875	.512	112.6	292.5	-17.5	13	50		Feb. 23		.980	115.8					157
	10877	.829	94.4	265.8	- 7.7	8	15	101c				(-20.0)	(296.3)	(- 7.1)	(123)	(857)	(2671)
	10878	.966	103.7	246.0	-15.0	21	99	317f	54.451		.972	286.1					125
		.769	65.6					111			.945	255.3					575
		.804	78.3					77			.938	238.6					92
		.901	108.6					105			.885	281.2					201
		.902	58.6					106			.785	284.1					171
		.915	95.0					228		10873	.674	285.7	322.6	+ 5.0	21	92	
		.958	80.4					131		10880	.521	296.4	310.0	+ 7.1	2	5	
Feb. 21		.967	115.6					118		10882	.352	243.9	301.2	-15.6	2	5	
		(-19.4)	(322.1)	(- 7.1)		(158)	(642)	(2323)	C	10875	.242	220.3	291.5	-17.6	7	27	
52.427		.959	264.9					264		10878	.589	106.3	246.4	-15.2	13	72	
		.926	256.7					255		10879	.739	74.3	236.5	+ 6.5	67	271	
		.808	260.5					533		10883	.865	77.4	224.0	+ 7.2	4	6	342c
	10873	.314	310.3	322.5	+ 4.8	28	137			10881	.921	96.7	214.5	- 8.9	52	256	690c
	10875	.354	121.5	290.3	-17.4	9	36				.924	115.8					124
	10877	.664	93.2	266.9	- 7.5	6	9				.932	52.0					160
	1009b	.851	79.7	251.7	+ 4.9	2	7	50c	Feb. 24		.976	76.7					169
	10878	.881	103.4	246.3	-15.1	21	100	413f				(-20.3)	(282.1)	(- 7.1)	(168)	(734)	(2649)
	10879	.962	81.4	235.8	+ 6.3	67	337	470c	55.340		.974	253.8					163
		.726	69.2					125			.923	278.6					199
		.779	94.7					163			.901	293.4					117
		.798	111.7					129			.840	306.0					83
		.849	53.1					65		10873	.822	282.8	323.9	+ 6.2	8	15	146f
		.881	93.7					142		10882	.501	249.4	299.5	-16.4	1	3	
		.882	73.2					57		10875	.393	240.2	291.3	-17.9	10	51	
G		.919	63.8					68	C	10878	.427	110.7	246.1	-15.2	12	52	
										10879	.587	68.6	232.7	+ 6.3	59	313	

Group 10877. Feb. 20-Mar. 1. Intermittent. A small spot.

Group 10878. Feb. 21-Mar. 2. A slowly diminishing regular spot with tiny companions on Mar. 1 and 2.

Group 10879. Feb. 22-Mar. 4. A composite spot breaking apart on Feb. 23 to form a stream which begins almost at once to diminish, though a temporary revival takes place on March 2-3.

Group 10880. Feb. 23-24. One or two very small spots.

Group 10881. Feb. 23-Mar. 6. A regular spot with a variable train of tiny companions that die out as their leader is diminishing rapidly.

Group 10882. Feb. 24-28. A single spot on Feb. 24, 25 and 28; a very small group on Feb. 26-27.

Group 10883. Feb. 24-Mar. 3. A few faint but persistent spots f Group 10879.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.	
1929. 55.340 C	10883 10881	.748 .828 .837 .928 .961	° 72.3 96.0 114.8 72.0 111.2	° 224.5 214.1	+ 8.1 - 9.0	3 37	13 280	104c 247c 116 262 113	1929. 58.365 C		.824 .922 .939 .964	° 66.0 78.4 56.9 69.0	° ° ° °	° ° ° °			132 279 130 87	
Feb. 25			(-20.6)	(270.4)	(- 7.2)	(130)	(727)	(1550)	Feb. 28			(-21.4)	(230.5)	(- 7.2)	(96)	(328)	(1730)	
56.310		.975 .863 .816	277.7 300.7 283.6					104 230 556	59.401		.904 .872	281.7 293.4					122 155	
	10873 10882 10875 10878 10879 10883 10881	.930 .712 .584 .239 .401 .599 .663	279.8 254.3 251.2 126.7 56.1 62.0 96.0	324.6 303.0 292.7 246.2 238.1 225.2 215.8	+ 6.3 -16.2 -16.7 -15.2 + 6.1 +10.2 - 9.4	12 4 26 14 46 2 47	18 12 63 46 201 12 207	272f		10875 10877 10878 10879 10883 10881 10884	.972 .775 .490 .430 .331 .040 .998	253.9 263.4 250.3 301.1 316.7 194.9 99.9	294.6 268.1 245.4 238.5 230.1 217.5 129.3	-17.3 - 9.7 -15.8 + 6.1 + 6.9 - 9.4 -10.3	19 2 5 17 4 32 52	73 3 15 48 16 144 243	473c 75c	
Feb. 26		.859 .883 .863 .967	79.0 111.4 63.9 75.2	(-20.8)	(257.6)	(- 7.2)	(151)	(559)	Mar. 1		.832 .895 .899 .912 .968 .972	77.4 87.1 65.3 54.1 71.2 87.7	(-21.7)	(216.9)	(- 7.2)	(131)	(542)	(1755)
57.315		.987 .941 .916 .903 .901	275.3 299.2 309.4 291.0 279.9					291 162 111 209 342	60.401		.951 .929 .906	280.9 294.9 260.5					384 141 132	
	10882 10875 1009c 10878 10879 10883 10881	.854 .742 .560 .145 .245 .401 .473	254.9 252.9 211.8 191.9 23.5 48.1 97.0	303.4 292.1 265.3 246.1 238.7 226.8 216.0	-16.6 -17.5 -35.0 -15.3 + 5.7 + 8.6 - 9.7	12 31 1 7 28 2 37	41 128 5 22 151 6 210	129c 96p		1009d 10878 1009e 1009f 10879 10883 10881 10884 10885	.840 .672 .670 .641 .591 .519 .252 .955 .985	264.9 255.1 246.6 270.3 290.9 303.3 258.5 98.6 96.9	261.2 245.8 244.7 243.6 237.3 229.7 218.1 130.3 123.1	- 8.2 -15.3 -20.9 - 5.3 + 6.1 +10.1 - 9.8 -10.3 - 8.0	2 1 1 6 25 1 23 37 76	8 3 6 11 106 5 115 193 589	71c	
Feb. 27		.877 .895 .940 .963 .975	58.9 73.1 44.1 59.3 81.1	(-21.1)	(244.3)	(- 7.2)	(118)	(563)	Mar. 2		.914 .965	100.5 81.5	(-21.9)	(203.7)	(- 7.2)	(172)	(1036)	(2002)
58.365		.968 .964 .958	297.8 278.6 287.8					169 316 155	61.551		.969 .961 .887	261.8 297.5 286.9					153 97 98	
	10882 10875 10878 10879 10883 10881	.964 .876 .300 .275 .261 .225	255.4 253.9 240.7 326.4 6.3 101.0	306.2 292.2 246.2 239.3 228.9 217.6	-16.0 -17.5 -15.4 + 6.0 + 7.8 - 9.4	4 40 7 17 1 27	7 107 11 64 2 137	156f 306c		10879 10883 10886	.844 .843 .767 .680 .634	252.0 265.9 285.0 292.8 303.6	236.5 227.8 221.4	+ 6.6 + 9.7 +14.5	30 0 23	140 12 68	246c	

Group 10884. Mar. 1-13. A return of Group 10870. A regular spot with a train of small companions from Mar. 5-10, in the same general area of disturbance as Group 10885. A small part of the regular spot has broken away by Mar. 6.

Group 10885. Mar. 2-14. A large spot becoming composite in character, followed at first by a well-defined companion and, at its disappearance on Mar. 7, by small ephemeral spots.

Group 10886. Mar. 3-6. A moderate-sized stream.

Group 10887. Mar. 3-9. A dot on Mar. 3; on Mar. 5 a pair of spots that separate rapidly in longitude: the leader alone remains on Mar. 8 and 9.

Group 10888. Mar. 3-4. A very small spot in the *sf* region of the faculae *c* Groups 10884-5.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.
1929. 61.551 G	10881 1009g 10887 10884 10885 10888	.496 .284 .814 .847 .907 .949	263.6 136.0 104.6 97.8 95.4 101.2	218.3 176.5 133.7 130.2 123.0 116.1	— 9.4 — 18.8 — 16.0 — 10.4 — 7.9 — 12.9	20 4 2 36 104 3	89 8 3 183 590 11	153p 866c	1929. 64.476 G	10881 10887 10884 10885 10889 10890	.937 .273 .362 .430 .855 .913	262.9 127.9 100.8 92.5 97.5 91.2	220.1 137.1 128.9 124.4 90.8 84.0	— 9.2 — 16.7 — 10.7 — 7.7 — 10.1 — 4.1	6 16 24 97 212 5	13 38 142 492 1183 13	543f 356c 246c 150 (2418)
Mar. 3 62.308		.754 .874 .889	96.6 79.4 56.9						Mar. 6 65.623		.946 .953 .911 .879	74.0 261.1 286.1 301.4	(150.0)	(— 7.3)	(427)	(2100)	(2418)
		.947 .927 .872 .786	267.2 249.4 256.6 286.0							10891 10887 10884 10885	.746 .169 .120 .169	297.9 198.4 122.3 92.7	177.8 138.1 129.0 125.1	+15.1 — 16.4 — 10.9 — 7.7	7 8 28 100	20 20 143 426	303 250 228 62c
	10879 10886 10881 10884 10885 10888 10889	.857 .744 .673 .745 .817 .877 .993	282.5 297.3 263.8 97.3 94.5 101.0 98.8	235.8 221.6 221.1 130.1 123.5 116.7 94.5	+ 6.8 +14.7 — 9.5 — 10.3 — 7.9 — 13.1 — 9.6	12 30 9 26 86 4 85	49 101 23 193 558 9 513	355p 592c	G	10889 10892	.690 .988 .816 .890 .894 .955 .962	96.4 82.1 87.3 58.1 73.3 48.1 99.5	91.0 55.0 + 6.6	— 9.7 + 6.6	190 28	1244 82	294f 636 76 304 73 119
Mar. 4 63.515		.820 .856 .953	50.8 66.9 73.6						Mar. 7 66.389		.976 .951 .928 .865	258.5 297.4 285.6 307.4	(134.9)	(— 7.3)	(361)	(1935)	(2345)
		.977 .973 .941 .918 .885	255.1 279.4 265.8 279.9 248.8							10891 1009i 10887 10884 10885	.861 .470 .296 .097 .012	292.5 269.5 236.9 228.1 201.3	180.1 152.9 139.7 129.0 125.0	+15.2 — 6.6 — 16.3 — 10.9 — 7.8	13 2 5 18 100	69 13 8 103 518	177c
	10886 10881 1009h 10887 10884 10885 10889	.910 .857 .806 .453 .545 .620 .951	291.1 262.4 300.5 113.6 98.4 93.0 98.2	224.4 222.1 209.9 137.1 129.6 124.2 90.1	+15.8 — 10.2 +19.3 — 16.9 — 10.6 — 7.5 — 10.0	77 4 3 15 33 112 257	269 12 8 25 182 489 1133	240c 629f 32mf	G	10889 10892 10893	.542 .951 .990 .770 .839 .878 .884 .963	96.7 80.6 67.1 90.6 71.7 117.4 97.3 106.1	91.8 54.2 46.8 +21.3	— 9.7 + 6.6 +21.3	186 18 0	1014 56 7	751f 87c 162 259 86 88 152
Mar. 5 64.476		.865 .975	70.2 90.2						Mar. 8 67.487		.966 .957 .857 .850 .961 .508	279.7 300.5 282.7 293.7 287.7 250.4	181.3 140.0	+14.8 — 16.0	7 2	23 6	84 178 200 140 240f
	10886	.974	288.1	223.9	+15.7	67	219	300c	G	10891 10887							

Group 10889. Mar. 4-16. A stream led by a very large composite spot visible to the naked eye. The spot grows by accretion—two regular spots just touching one another absorb another spot developing behind; the resulting spot has become established by about Mar. 10, but three separate nuclei continue within it. A return of Group 10861.

Group 10890. Mar. 6-10. A single spot on Mar. 6 and a tiny cluster on Mar. 10, in a large area of faculae stretching northwards from that surrounding Group 10889.

Group 10891. Mar. 7-10. A group of feeble activity.

Group 10892. Mar. 7-17. A small regular spot with a distant follower on Mar. 9-11. Nothing is seen on Mar. 14, but a very small spot marks the place afterwards.

Group 10893. Mar. 8-14. A small group of feeble activity with its axis considerably inclined to the solar equator.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbra.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbra.	Whole Spots.	Faculae.
1929. 67.487 G	10884	.315	256.5	128.4	-11.1	21	III		1929. 70.399 G	1009j	.529	316.5	94.1	+15.8	4	8	
	10885	.249	266.0	124.8	-7.9	107	611			10889	.359	261.6	93.0	-9.7	195	1091	
	10889	.311	99.3	92.2	-9.7	183	1037			10892	.369	51.3	55.2	+6.4	7	11	
	10892	.849	77.3	54.0	+6.8	14	58	888f		10893	.660	42.8	43.0	+22.6	13	45	
	10893	.943	63.3	45.0	+22.2	19	38	171c		1009k	.571	66.8	40.2	+6.8	1	2	
		.877	105.3					185		10894	.642	92.9	31.9	-7.4	59	255	
		.935	125.6					167		10895	.745	102.4	23.6	-14.0	5	10	171f
		.983	99.7					263			.918	98.4					151
Mar. 9			(-23.5)	(110.3)	(-7.2)	(353)	(1884)	(2516)			.923	85.7					85
									Mar. 12		.944	107.8					126
68.448		.935	279.8					342			.956	71.4					129
		.878	294.2					217				(-24.0)	(72.0)	(-7.2)	(344)	(1784)	(2189)
	10891	.983	284.9	174.7	+13.1	0	11	104f									
	10884	.523	261.1	129.3	-10.8	16	91										
	10885	.456	266.5	124.9	-7.5	71	478		71.348		.965	254.1					130
	10889	.100	116.2	92.5	-9.7	178	1041				.922	245.8					110
G	10890	.233	64.5	85.6	-1.3	5	21				.894	285.5					148
	10892	.715	73.0	54.3	+6.8	11	55	908f		10884	.934	261.2	129.2	-10.8	12	68	} 659sf
	10893	.866	59.1	44.5	+22.1	18	67	244c		10885	.915	265.0	126.0	-7.5	42	269	
	10894	.907	95.3	32.2	-7.8	24	57	201c		10889	.560	263.5	93.6	-9.6	149	1151	
		.909	123.8					214		10892	.246	17.5	55.2	+6.3	5	7	
Mar. 10		.942	103.7					340	C	1009l	.295	42.0	48.0	+5.6	2	11	
69.407			(-23.7)	(97.7)	(-7.2)	(323)	(1821)	(2570)		10893	.601	29.6	40.4	+24.6	8	14	
		.963	289.2					121		10894	.446	92.2	32.8	-7.4	52	174	
		.953	277.3					143		10895	.589	103.7	23.4	-13.9	6	9	
		.942	265.9					103			.805	99.1					163
		.900	301.7					130			.876	70.2					100
		.799	256.5					345			.903	107.5					185
	10884	.701	261.9	129.8	-10.8	14	77		Mar. 13		.941	79.4					101
	10885	.651	266.5	125.8	-7.7	58	367					(-24.2)	(59.4)	(-7.2)	(276)	(1703)	(1596)
	10889	.141	249.7	92.7	-9.9	178	1132		72.294		.973	282.4					64
G	10892	.551	66.6	54.5	+6.4	9	33	235f		10885	.973	264.1	124.1	-7.4	75	358	733sf
	10893	.770	52.6	43.7	+22.5	14	55	251c		10889	.728	263.8	94.0	-9.4	150	993	
	10894	.792	93.7	32.4	-7.4	71	227	227c		10893	.540	11.8	40.1	+24.5	5	13	
	10895	.877	102.3	23.1	-14.2	4	9	337f	C	10894	.236	93.7	33.3	-7.9	40	161	
		.882	127.6					126		10895	.407	108.1	23.6	-13.9	2	5	
		.926	75.7					172			.831	74.0					111
		.941	110.5					112			.949	81.4					135
Mar. 11		.963	132.8					152	Mar. 14			(-24.4)	(47.0)	(-7.2)	(272)	(1530)	(1043)
		.982	99.7					158									
			(-23.9)	(85.0)	(-7.2)	(348)	(1900)	(2612)	73.320		.980	255.9					160
		.957	273.8					41		10889	.868	263.1	94.0	-9.5	173	1097	755c
70.399		.931	245.4					94		10896	.590	255.6	69.4	-14.2	8	32	
		.922	298.0					113	C	10892	.403	307.2	52.2	+7.4	1	8	
		.914	285.2					112		10894	.014	174.5	33.3	-7.9	23	92	
		.908	257.8					428		10895	.202	125.7	23.7	-13.7	2	9	
		.814	290.4					79		10897	.995	80.7	310.5	+8.5	29	125	
	10884	.843	261.6	129.9	-11.0	12	81	} 660f			.917	80.8					166
G	10885	.807	265.9	126.1	-7.5	48	281		Mar. 15		.979	76.3					103
												(-24.5)	(33.4)	(-7.1)	(236)	(1363)	(1184)

Group 10894. Mar. 10-17. A stream with marked separation in longitude between leader and follower.
 Group 10895. Mar. 11-15. A small very dark spot *sf* Group 10894.
 Group 10896. Mar. 15-18. A pair of spots.
 Group 10897. Mar. 15-27. A stream of normal type in which the rear spots soon disappear.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.
1929. 81.429		.961	259.6	°	°			97	1929. 85.422	1010d	.130	276.8	241.3	- 5.8	8	22	
		.957	291.0					59	G	1010e	.042	121.8	231.8	- 8.0	1	6	
		.907	250.8					177		10898	.281	113.2	218.6	-12.8	59	229	
		.887	291.7					178			.833	56.4					139
	10897	.468	301.7	310.1	+ 7.9	70	328				.877	71.0					170
G	10898	.943	101.0	215.2	-12.6	51	214	493c			.893	133.8					85
		.799	73.9					220			.931	51.1					84
		.836	96.5					181			.953	82.8					122
		.925	72.9					230			.962	69.6					83
Mar. 23			(-25.6)	(286.5)	(- 6.9)	(121)	(542)	(1635)	Mar. 27			(-26.0)	(233.9)	(- 6.7)	(142)	(523)	(2183)
82.423		.968	250.0					69			.982	279.3					161
		.946	279.4					100	86.406		.951	253.9					134
		.853	282.6					151			.874	277.9					135
	1010a	.913	261.9	339.8	-10.2	2	5	81p			.868	293.7					195
	10897	.644	290.8	310.6	+ 7.7	55	305				.817	261.6					175
G	1010b	.445	301.5	295.8	+ 7.0	1	2			1010f	.161	217.3	226.6	-14.0	1	4	
	10898	.830	100.5	216.9	-12.5	43	184	576c	G	10898	.114	163.8	219.0	-12.9	45	222	
		.821	68.7					177		1010g	.952	81.8	149.9	+ 5.7	0	6	157c
		.878	86.3					207			.884	81.1					146
		.951	120.5					78			.903	110.3					110
Mar. 24		.956	73.5					156			.916	67.9					123
			(-25.7)	(273.4)	(- 6.9)	(101)	(496)	(1595)	Mar. 28		.984	99.9					244
83.542		.992	260.2					69				(-26.1)	(220.9)	(- 6.7)	(46)	(232)	(1580)
		.933	277.8					97			.941	278.4					178
		.926	247.2					81	87.434		.938	293.1					159
	G	.843	306.8					163			.917	260.3					115
	10897	.809	284.6	310.7	+ 7.6	45	312	331c			.233	241.6	219.4	-12.8	40	241	
	10898	.652	101.4	218.0	-12.6	42	183		G	10898	.863	77.3					164
		.858	64.0					118			.870	61.2					153
Mar. 25			(-25.8)	(258.7)	(- 6.8)	(87)	(495)	(859)			.912	110.3					81
84.422		.886	296.1					248			.947	98.5					547
		.864	253.7					192	Mar. 29			(-26.1)	(207.3)	(- 6.6)	(40)	(241)	(1397)
		.848	309.5					125			.927	296.6					88
	G	.910	281.7	310.9	+ 7.7	48	276	848f			.846	249.8					166
	10897	.496	103.8	217.6	-12.7	43	249		88.411		.822	284.6					348
	10898	.922	60.1					127			.914	286.4	257.9	+12.1	10	25	102c
		.924	73.9					142			.429	254.0	219.3	-12.8	35	182	
Mar. 26			(-25.9)	(247.1)	(- 6.8)	(91)	(525)	(1682)			.466	306.5	216.7	+ 9.9	26	83	
85.422		.946	295.6					240	G	10899	.964	91.2	119.9	- 2.9	17	33	87f
		.946	254.8					173		10898	.809	100.6					490
		.939	309.1					153		10900	.930	60.8					126
		.853	253.3					142		10901	.935	74.3					129
		.845	282.6					82			.938	99.6					635
	10897	.979	279.6	310.7	+ 7.9	74	264	710f	Mar. 30			(-26.2)	(194.4)	(- 6.6)	(88)	(323)	(2171)
	1010c	.447	274.2	260.3	- 4.1	0	2										

Group 10898. Mar. 23-Apr. 3. A stream composed of a regular spot as leader and a train of very small spots. The leader diminishes considerably between Mar. 31 and Apr. 1.

Group 10899. Mar. 30-Apr. 3. A small group near the west limb.

Group 10900. Mar. 30-Apr. 3. A stream.

Group 10901. Mar. 30-Apr. 3. A single spot on Mar. 30 and Apr. 3; a close pair on the other three days.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.
1929. 89.451		.913	246.6	°	°			215	1929. 92.413		.825	104.6	°	°			691
		.827	284.2					147	G		.919	73.8					117
	10899	.977	283.9	256.3	+12.0	5	16	342f			.941	62.0					51
	10898	.640	257.4	220.4	-13.0	35	162				.948	102.3					96
G	10900	.651	293.4	217.9	+ 9.8	43	241		Apr. 3		.975	86.2	(-26.4)	(141.6)	(- 6.4)	(149)	(786)
	10901	.876	89.6	119.9	- 2.8	11	32	154sf									170
	10902	.994	99.4	96.3	-10.0	97	639	386c	93.468		.980	255.4					258
Mar. 31		.861	101.2	(-26.2)	(180.7)	(- 6.5)	(191)	(1090)			.969	289.0					109
								(1625)			.887	303.4					128
90.633		.948	281.7					96			.868	290.2					131
		.946	250.2					236		10903	.942	281.2	196.5	+ 8.3	32	156	254c
		.893	264.1					118		10902	.517	99.8	96.6	-10.4	77	373	
		.863	296.8					82	C	10904	.727	51.0	90.3	+22.1	1	7	
	10898	.804	257.7	218.8	-13.8	12	63	122c			.834	70.6					89
	10900	.823	287.1	217.9	+10.1	38	231	190c			.871	102.2					121
G	10903	.576	293.8	197.1	+ 7.9	0	7				.896	89.7					118
	1010h	.378	100.1	143.0	- 9.8	0	5				.927	79.2					405
	10901	.703	87.4	120.6	- 2.8	9	47	142f			.971	109.4					144
	10902	.923	98.9	97.3	-10.7	79	684	374c	Apr. 4		.979	99.1	(-26.4)	(127.7)	(- 6.3)	(110)	(536)
		.964	92.2					74									94
		.966	105.1					370									(1851)
		.977	65.1	(-26.3)	(165.1)	(- 6.5)	(138)	(1037)	94.451		.940	299.6					187
Apr. 1								(1845)			.928	287.2					202
91.446		.987	280.0					100		10903	.990	279.6	195.3	+ 8.5	24	106	198p
		.964	262.5					107		1010j	.387	244.0	135.9	-15.5	2	12	
		.922	292.5					91		1010k	.201	230.5	123.9	-13.5	1	14	
		.876	258.6					499		10905	.163	118.4	106.5	-10.6	2	5	
	10898	.911	257.7	220.6	-13.8	8	43	86f		10902	.331	103.4	95.8	-10.3	64	343	
	10900	.907	284.3	217.4	+10.1	41	152	178c		10906	.575	97.2	79.7	- 9.2	47	131	
	10903	.721	287.6	198.1	+ 7.9	1	12		G		.838	89.0					126
G	10901	.550	85.5	121.2	- 2.8	10	20				.842	75.8					407
	10902	.838	98.3	97.2	-10.4	89	612	293c			.857	61.0					96
	10904	.920	62.2	92.9	+22.5	7	39	109c			.930	97.2					277
		.902	104.3					498			.932	111.8					207
		.931	79.7					54			.946	78.0					508
		.932	71.3					49			.946	45.2					143
Apr. 2		.938	92.8	(-26.3)	(154.4)	(- 6.4)	(156)	(878)	Apr. 5		.972	61.6	(-26.4)	(114.8)	(- 6.2)	(140)	(611)
								(2228)									(2439)
92.413		.910	293.8					84	95.394		.977	297.0					97
	10898	.982	257.0	221.6	-13.9	5	23	634f			.926	288.2					59
	10900	.968	282.6	215.2	+10.5	37	152	401c		10905	.121	219.7	106.8	-11.5	3	10	
	10903	.845	283.8	197.4	+ 8.0	19	66	63c		10902	.136	124.7	95.8	-10.6	64	244	
	10901	.350	80.7	121.5	- 2.8	1	5			1010l	.207	140.4	94.5	-15.3	2	7	
	1010i	.399	107.8	118.8	-12.9	4	17			10907	.253	147.4	94.1	-18.4	27	46	
	10902	.709	98.2	96.3	-10.3	75	490			10906	.373	100.7	80.6	- 9.7	106	434	
G	10904	.849	57.6	90.6	+23.1	8	33	71c			.829	97.0					139
		.792	85.6					130	G		.848	113.7					147
											.876	74.5					372

Group 10902. Mar. 31-Apr. 12. Return of Group 10889. A fairly large composite spot (preceded by a cluster of small companions) that splits into two on Apr. 3, the rear portion remaining whilst the preceding portion dissolves into a cluster of small spots.

Group 10903. Apr. 1-5. A couple of tiny spots of which the following one shows a definite umbra and penumbra on Apr. 3.

Group 10904. Apr. 2-4. A small ephemeral group.

Group 10905. Apr. 5-12. Two or three small unstable spots (in front of Group 10902) that become a definite group on Apr. 10.

Group 10906. Apr. 5-14. A large stream of normal type.

Group 10907. Apr. 6-8. A small group s Group 10902.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.
1929. 95.394 G Apr. 6		.927 .964	. 92.4 107.2 (-26.4)	. (102.3)	. (- 6.2)	(202)		74 108 (1086)	1929 99.460 G		.913 .789 .860	. 268.0 302.6 259.0	. (108.3)	. -12.5 -10.9 - 9.4			237 135 169c 280np
96.432		.994 .954 .935 .882 .822 .793	285.9 273.9 292.6 283.3 263.4 249.3					198 139 156 187 276 165		10905 10902 10906 10910 10908 10909	.860 .716 .533 .254 .404 .939	259.0 260.5 261.6 173.0 113.5 81.6	108.3 94.5 80.9 46.8 26.3 339.9	-12.5 -10.9 - 9.4 -20.4 -14.7 + 5.7	41 26 165 0 5 89	78 80 689 5 20 525	501c (1921)
G	10902 10907 10906	.151 .233 .159	237.0 207.1 113.7	96.0 95.0 80.1	-10.7 -17.9 - 9.7	58 21 127	229 53 730		100.395		.943 .871 .817	267.1 299.7 254.1					53 117 169
		.742 .870 .884 .955	67.8 53.4 107.0 100.0					536 72 118 193		10905 10902 1010n 10906 10910 10908	.952 .877 .722 .697 .290 .248	259.1 260.9 248.2 262.2 209.9 131.0	109.0 97.9 81.5 80.6 45.1 25.2	-12.1 -10.8 -19.6 - 9.6 -20.2 -15.0	35 31 1 159 19 1	187 120 6 811 46 5	264c 313c
Apr. 7			(-26.4)	(88.6)	(- 6.1)	(206)	(1012)	(2040)	G	10909 10911	.837 .996 .947	79.1 81.3 69.2	340.8 312.5 (-26.3)	+ 5.8 + 8.1 (- 5.8)	96 59 (401)	541 213 (1929)	379c 243p 137 (1675)
97.503		.966 .919 .881 .750	278.6 262.3 253.0 259.4					80 247 293 359	Apr. 11		.933 .907 .905 .893	291.8 276.1 253.5 306.9					136 125 268 92
	1010m	.974	250.8	152.4	-20.0	9	20	55c		10905	.794 .979 .937	289.7 259.3 260.5	103.2 103.2 94.2	-11.7 -11.7 -11.0	22 13 13	84 52 768	630c 545c
G	10905 10902 10907 10906	.556 .373 .403 .114	256.6 257.0 240.0 238.6	108.0 96.1 95.8 80.1	-12.4 -10.4 -17.2 - 9.4	4 38 14 139	8 168 28 735		101.310		.893 .794 .979 .937 .836 .427 .269	306.9 289.7 259.3 260.5 262.1 233.1 340.5	81.2 45.4 29.4 45.4 29.4 341.3 312.8	- 9.8 -20.2 + 8.9 + 5.5 + 7.8 (-26.3)	130 56 2 75 37 (24.2)	768 271 9 415 204 (- 5.8)	
		.902 .905 .929 .953 .959	100.8 90.5 129.6 108.9 74.9					192 103 48 145 136	C	10905 10902 10906 10910 10912 10909 10911	.794 .979 .937 .836 .427 .269 .700	289.7 259.3 260.5 262.1 233.1 340.5 76.1	103.2 103.2 94.2 81.2 45.4 29.4 341.3	-11.7 -11.7 -11.0 - 9.8 -20.2 + 8.9 + 5.5	22 13 130 56 2 75	84 52 768 271 9 415	630c 545c 317f 578c
Apr. 8			(-26.4)	(74.5)	(- 6.0)	(204)	(959)	(1658)			.894 .914 .964	114.5 65.9 106.0	312.8 106.0 (-26.3)	+ 7.8 (-26.3)	37 (24.2)	204 (1803)	98 174 130 (3228)
98.594		.962 .871 .855 .749	257.8 258.0 271.5 259.6					362 401 139 176	Apr. 12								
G	10902 10906 10908 10909	.582 .349 .563 .982	260.1 259.7 108.0 83.6	95.6 80.4 26.6 341.9	-10.6 - 9.2 -15.0 + 5.1	26 115 8 75	137 681 24 324		102.332		.951 .911 .906 .798	253.1 299.5 288.1 281.8					229 92 73 219
		.811 .854 .867	82.4 109.4 68.8					236f 110 329 183		10906 10910 10912 10909 10911	.945 .596 .415 .524 .863	261.6 243.0 303.1 70.1 77.5	82.0 45.1 31.1 341.2 312.7	- 9.8 -20.4 + 7.8 + 5.3 + 7.7	113 58 2 79 39	660 305 7 423 224	508c 418c
Apr. 9			(-26.4)	(60.1)	(- 6.0)	(224)	(1166)	(1936)	C								
99.460 G		.938 .922	257.2 292.8					462 137									

Group 10908. Apr. 9-11. A very small cluster.

Group 10909. Apr. 9-21. A stream in which the following part has disappeared by Apr. 16. The leader, a large regular spot, shows minor changes in structure from day to day.

Group 10910. Apr. 10-16. A short-lived stream of normal type.

Group 10911. Apr. 11-23. Return of Group 10897. A steady regular spot to which a distant companion appears on Apr. 16-19.

Group 10912. Apr. 12-13. One or two tiny spots.

Group 10913. Apr. 13-24. A stream composed of a regular spot, a near companion sf, and a train of small evanescent spots scattered over a wide area marked by faculae.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.
1929. 102.332 C	10913	.987 .824 .889 .940	° 99.3 61.4 109.4 62.5	° 289.3	° -10.1	53	245	126f 136 95 133	1929. 106.395		.992 .970 .964 .928 802	° 248.2 279.2 302.4 253.6 257.6	° °	° °			145 81 50 209 195
Apr. 13			(-26.3)	(10.7)	(- 5.7)	(344)	1864)	(2029)		10909 1011a 10911 10913	.459 .263 .248 .425	292.0 352.1 21.1 99.0	342.3 319.2 311.9 292.1	+ 4.9 + 9.6 + 7.9 - 8.7	55 2 47 31	365 7 203 115	
103.420		.936 .927 .922 .794	271.3 294.3 282.5 218.4					108 116 268 310	G		.864 .875 .909 .911 .952 .955 .960	111.2 81.1 71.6 58.6 112.2 92.7 78.0					145 150 107 94 101 204 197
	10906 10914 10910 10909 10911 10913	.985 .839 .760 .313 .716 .927 .886 .940 .954	259.8 261.7 248.2 53.5 73.0 97.6 62.4 77.8 53.0	77.0 53.6 44.9 341.8 312.8 288.1	-11.0 -10.0 -20.1 + 5.2 + 8.0 - 9.1	37 8 40 65 31 52	192 28 202 381 211 299	682c 111c 165c 322f 610c 184 249 151	Apr. 17			(-26.0)	(317.1)	(- 5.4)	(135)	(690)	(1678)
Apr. 14			(-26.2)	(356.4)	(- 5.6)	(233)	(1313)	(3276)	107.400		.945 .866 .848 .843	257.3 288.9 259.8 249.4					128 266 126 155
104.456		.962 .888 .870	281.8 287.6 273.2					342 218 124		10909 10911 10915 10913	.647 .269 .185 .275	284.4 328.4 340.4 104.4	342.6 311.9 307.4 288.2	+ 5.1 + 7.9 + 4.7 - 9.0	55 37 10 26	390 201 43 13	
	10914 10910 10909 10911 10913	.953 .884 .192 .546 .818 .893 .908 .917	262.0 250.4 8.6 66.4 97.2 50.5 77.4 65.4	55.4 44.7 341.1 312.5 287.7	- 9.3 -19.8 + 5.4 + 7.9 - 9.0	21 33 58 31 57	98 205 351 199 244	276f 385c 890c 93 100 125	G		.743 .830 .875 .890 .930 .964 .969	75.2 112.6 74.4 92.4 123.6 102.4 77.8					249 180 277 256 115 124 223
Apr. 15			(-26.2)	(342.7)	(- 5.5)	(200)	(1097)	(2553)	Apr. 18			(-26.0)	(303.8)	(- 5.3)	(128)	(771)	(2099)
105.615		.977 .954 .928 .917 .908 .869	284.0 262.3 306.7 298.3 282.5 257.7					207 190 74 56 153 101	108.400		.959 .959 .950 .944 .864	251.5 278.2 260.8 290.3 250.9					117 101 149 127 155
	10910 10909 10911 10913	.976 .315 .348 .612 .801 .935 .939 .954 .962	250.9 304.3 49.1 98.1 68.7 60.0 110.5 92.9 78.1	45.7 342.5 312.1 289.7	-19.8 + 5.0 + 7.9 - 9.3	25 57 38 41	135 361 210 149	384sf 319f 214 93 130 166 315	G	10909 10911 10915 10913	.801 .436 .349 .081 .791 .802 .932 .935	280.6 301.5 295.9 147.3 93.0 74.3 101.7 75.7	342.6 312.6 308.9 288.1	+ 5.2 + 8.3 + 3.8 - 9.1	76 29 52 29	450 188 121 126	267c
Apr. 16			(-26.1)	(327.4)	(- 5.4)	(161)	(855)	(2402)	Apr. 19			(-25.9)	(290.6)	(- 5.2)	(186)	(885)	(2081)

Group 10914. Apr. 14-15. A group forming near the west limb.

Group 10915. Apr. 18-24. An active group forming immediately south of Group 10911.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.
1929. 109-374		°01	248.2	°	°			163	1929. 112-380	10913	°785	263.2	289.8	- 8.3	11	25	298c
		°795	296.2					130	C	10916	°246	335.0	244.0	+ 8.0	5	17	
	10909	°913	278.0	342.7	+ 5.1	81	541	489c		10917	°356	29.2	227.8	+13.3	2	10	
	10911	°609	291.2	312.6	+ 8.5	28	168				°913	59.3					102
	10915	°539	285.8	308.9	+ 4.1	95	578				°916	70.2					177
	10913	°183	244.2	287.3	- 9.6	24	141				°968	80.0					139
C	10916	°637	69.0	240.8	+ 9.1	17	36		Apr. 23			(-25.4)	(238.0)	(-4.8)	(217)	(1048)	(2390)
		°846	73.6					327									
		°878	103.6					408	113-360		°964	293.1					176
		°931	117.6					143			°940	304.1					125
		°968	67.9					122			°920	246.7					127
		°969	79.2					197			°886	316.5					164
Apr. 20			(-25.8)	(277.7)	(- 5.1)	(245)	(1464)	(1979)			°851	281.9					176
											°840	197.9					87
											°988	276.5	305.4	+ 5.6	57	413	458c
110-343		°884	298.1					323	G	10915	°916	264.2	291.6	- 7.2	6	11	1010f
		°856	287.2					216		10913	°394	304.1	244.3	+ 8.2	34	111	
	10909	°979	276.5	342.4	+ 5.3	71	483	521f		10916	°218	257.3	237.4	- 7.5	4	9	
	10911	°762	285.9	312.5	+ 8.6	31	153	} 223p		10918	°818	65.5					300
	10915	°708	281.8	308.8	+ 4.7	144	778				°899	92.3					97
C	10913	°344	255.3	284.5	- 9.7	19	106				°903	78.1					238
	10916	°457	59.9	241.4	+ 8.6	12	45				°953	67.3					73
		°768	71.4					285			°955	100.5					292
		°807	105.3					353	Apr. 24			(-25.3)	(225.1)	(- 4.8)	(101)	(544)	(3323)
		°904	78.5					244									
		°916	64.4					141			°947	260.6					587
Apr. 21			(-25.7)	(264.9)	(- 5.0)	(277)	(1565)	(2306)			°944	307.8					94
											°940	281.8					104
111-372		°959	274.2					117			°923	295.2					86
		°954	291.0					166			°599	289.8	245.6	+ 7.8	93	575	
		°952	283.0					235			°464	262.9	238.7	- 7.5	7	34	
		°911	264.6					95	G	10918	°966	75.1	138.0	+13.0	34	220	299f
		°858	252.0					164		10919	°764	74.8					121
		°854	299.8					128			°868	100.1					354
	10911	°890	282.4	312.7	+ 8.7	29	147	} 504c			°890	63.0					98
G	10915	°861	278.4	309.9	+ 4.6	121	833				°921	87.2					156
	10913	°589	262.0	287.4	- 8.6	12	33				°953	106.0					183
	10916	°277	33.0	242.7	+ 8.5	8	33		Apr. 25			(-25.2)	(211.1)	(- 4.7)	(134)	(829)	(2082)
	10917	°503	52.2	227.4	+13.4	3	6										
		°825	59.7					128			°983	259.2					109
		°904	74.6					423	115-643		°963	294.1					132
Apr. 22		°964	72.8					159			°943	307.8					74
			(-25.6)	(251.4)	(- 4.9)	(173)	(1052)	(2119)			°907	280.0					155
											°843	292.8					124
											°840	248.1					186
112-380		°944	293.7					159	G	10916	°795	283.6	245.9	+ 7.9	87	495	382c
		°924	255.5					156		10918	°704	264.1	239.6	- 7.4	5	16	
		°885	302.2					166		10919	°866	72.2	137.3	+12.9	41	223	497c
		°871	243.3					183			°818	107.0					314
		°821	315.6					125			°939	114.6					161
		°773	287.2					138			°945	100.3					347
	10911	°970	280.3	312.6	+ 8.7	44	162	} 747c			°989	75.2					112
C	10915	°957	276.6	310.3	+ 4.8	155	834		Apr. 26			(-25.0)	(194.9)	(- 4.5)	(133)	(734)	(2593)

Group 10916. Apr. 20-28. A few spots in an insignificant stream until Apr. 24 when a large spot suddenly forms as the leader.

Group 10917. Apr. 22-23. A few small spots f Group 10916.

Group 10918. Apr. 24-28. A small group.

Group 10919. Apr. 25-May 6. A fair-sized spot from which a portion in front breaks away on April 29.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.
1929. 116.410		.953	276.1					140	1929. 119.583	10919	.318	20.1	136.5	+13.2	19	153	
		.933	289.2					108	G	10922	.664	88.8	101.4	-2.3	26	169	
		.868	246.8					136		10920	.743	98.6	95.0	-9.1	79	413	731f
		.732	289.3					289		10921	.833	112.8	87.7	-21.2	41	201	227c
	10916	.895	281.1	247.0	+7.8	95	440	484c			.936	74.4					80
G	10918	.845	265.5	242.5	-6.2	7	13	167c			.938	95.2					177
	1011b	.570	124.5	154.3	-22.7	1	9				.950	83.9					136
	10919	.769	69.6	137.4	+12.5	46	249	359c			.957	106.0					211
	10920	.999	98.8	96.5	-9.0	51	203	271p			.981	77.2					113
		.876	102.9					256	Apr. 30			(-24.4)	(142.9)	(-4.2)	(165)	(936)	(2526)
		.949	73.3					68									
		.952	100.0					283	120.357		.970	253.9					206
Apr. 27			(-24.9)	(184.8)	(-4.5)	(200)	(914)	(2561)			.963	292.3					102
											.962	312.9					49
117.463		.956	248.1					54			.937	330.5					70
		.876	285.5					228			.936	181.3					238
		.792	256.3					204			.890	254.7					135
		.743	294.7					159			.779	300.3					197
	10916	.978	279.1	247.8	+7.9	57	264	412f		10919	.307	348.7	136.1	+13.4	20	103	
G	10918	.943	264.6	241.5	-6.6	12	34	235c	G	1011c	.286	108.8	116.8	-9.3	1	5	
	10919	.613	62.7	137.1	+12.7	37	226			10922	.505	86.6	102.5	-1.8	84	320	
	10920	.973	98.6	94.0	-9.4	64	418	494c		10920	.614	99.5	94.9	-9.1	58	346	
	10921	.993	109.7	86.8	-20.1	0	20	102c		10921	.734	115.7	87.5	-21.4	61	275	253c
		.835	71.6					86		10923	.929	75.9	66.0	+11.4	3	12	334f
		.853	112.3					48			.787	108.1					220
		.874	101.9					265			.804	98.7					351
		.923	94.8					365			.870	84.7					187
Apr. 28		.964	107.7					83			.896	108.5					367
			(-24.7)	(170.9)	(-4.4)	(170)	(962)	(2735)	May 1		.910	97.3					162
											.983	81.7					66
118.427		.988	263.0					265	121.355			(-24.3)	(132.6)	(-4.1)	(227)	(1061)	(2937)
		.957	283.4					143			.974	281.3					148
		.955	244.0					88			.890	292.5					221
		.857	286.5					153			.846	305.4					110
		.845	255.4					339		10919	.411	317.4	136.0	+13.7	25	144	
	10919	.460	50.4	136.9	+12.9	30	200			1011d	.214	131.1	110.0	-12.0	3	6	
C	10922	.849	90.4	100.1	-2.6	21	70	173s		10922	.279	80.5	103.5	-1.2	78	423	
	10920	.898	98.4	94.1	-9.4	81	434	365c		1011e	.376	111.4	98.6	-11.6	5	10	
	10921	.940	110.0	88.1	-20.2	8	27	328c		10920	.419	103.1	95.1	-9.0	68	329	
		.782	103.9					177		10921	.590	121.5	86.9	-21.2	48	211	
		.878	110.2					92	G	10924	.781	95.9	68.1	-7.1	3	11	109c
		.927	81.0					152		10923	.840	72.5	64.5	+12.3	17	46	199c
		.931	67.0					84			.802	109.1					225
Apr. 29			(-24.6)	(158.1)	(-4.3)	(140)	(731)	(2359)			.918	81.8					170
119.583		.970	283.8					160			.930	91.6					122
		.940	272.5					115			.951	108.9					272
		.933	255.8					232			.954	71.5					241
		.907	296.4					146			.978	117.5					160
G		.843	283.6					198	May 2		.985	81.1					192
												(-24.1)	(119.4)	(-4.0)	(247)	(1180)	(2169)

Group 10920. Apr. 27-May 10. Possible return of Group 10902. A regular spot followed at some distance by a spot with double umbra. These two umbræ slowly separate, and the spot divides into two on May 3. There are small companions to the leader on May 2-5.

Group 10921. Apr. '28-May 10. A long straggling stream of unstable spots.

Group 10922. Apr. 29-May 9. A stream of normal type, in which the follower soon disappears although other spots appear near the leader.

Group 10923, May 1-3. A small stream whose axis is highly inclined to the sun's equator.

Group 10923. May 1-3. A small stream whose axis is highly inclined.

Group 10924. May 2-4. A couple of tiny spots not seen on May 3.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbra.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbra.	Whole Spots.	Faculae.
1929. 122.351		.946	292.3	°	°			188	1929. 125.326		.948	251.7	°	°			166
		.923	303.9					III			.889	242.9					92
	10919	.565	301.9	135.8	+13.9	15	79				.834	256.1					337
	10922	.052	35.5	104.6	-1.5	81	388				.824	272.1					99
	10925	.342	22.1	98.7	+14.5	7	18			10919	.942	286.0	135.4	+13.8	6	19	558c
	10920	.219	115.5	94.8	-9.2	71	367			10922	.622	272.5	105.2	-1.3	62	354	
	10921	.420	134.1	87.6	-20.6	39	141			10925	.609	300.7	99.6	+15.0	77	379	
G	10923	.698	67.9	65.0	+12.2	13	28	158c		10920	.496	257.7	96.2	-9.2	49	241	
	10926	.953	110.6	33.9	-20.8	3	15	88c	C	10921	.438	230.3	87.8	-19.6	5	29	
		.796	79.3					213		1011f	.456	68.2	41.8	+6.4	1	2	
		.877	110.3					186		10927	.890	70.7	6.5	+15.3	29	108	189c
		.900	69.5					160		10928	.980	86.5	348.9	+2.7	27	98	306n
		.925	80.9					280			.803	104.4					185
		.934	120.3					250			.825	78.7					147
May 3		(-23.9)	(106.3)	(-3.9)		(229)	(1036)	(1634)			.879	92.2					121
123.319		.923	279.4					137	May 6		(-23.3)	(66.9)	(-3.6)	(256)	(1230)	(2422)	222
		.880	259.7					157									
		.879	247.8					97									
	10919	.715	293.9	135.7	+14.0	14	60		126.350		.986	285.7					251
	10922	.198	282.6	104.6	-1.3	70	357				.944	256.9					244
	10925	.335	340.2	100.2	+14.5	28	90				.941	242.5					99
	10920	.098	202.7	95.7	-9.0	64	300				.916	291.0					90
	10921	.303	163.1	88.1	-20.5	13	56				.842	262.5					470
C	10924	.443	97.7	67.3	-6.8	2	9				.820	252.0					168
	10926	.859	112.3	35.4	-21.0	4	26	70c		10922	.798	271.3	106.1	-1.1	59	313	262c
		.757	111.3					152		10925	.758	293.5	99.3	+15.1	86	384	251c
		.804	63.7					186		10920	.693	260.1	97.0	-9.3	39	194	
		.827	78.9					238	G	10921	.627	243.2	89.6	-19.2	9	58	
		.876	121.7					206		10929	.523	104.6	22.6	-10.5	21	38	
		.918	108.1					139		10927	.764	66.8	6.9	+15.0	19	86	
		.949	98.7					157		1011g	.874	65.1	356.3	+19.6	2	9	283c
May 4		(-23.7)	(93.5)	(-3.8)		(195)	(898)	(1539)		1011h	.868	81.0	354.1	+6.0	2	5	833nf
124.440		.968	259.9					139		10928	.906	85.3	349.0	+2.8	16	67	246
		.962	292.4					85	May 7		(-23.1)	(53.4)	(-3.5)	(253)	(1154)	(3197)	
		.869	260.3					78									
		.833	247.0					211									
	10919	.861	288.5	135.7	+13.8	11	39	520c									
	10922	.449	274.7	105.2	-1.2	68	348		127.356		.943	252.9					151
	10925	.475	312.3	99.9	+15.1	62	267				.940	277.4					83
	10920	.316	251.7	96.3	-9.2	64	275				.930	262.7					367
	10921	.328	208.0	88.1	-20.4	7	37				.864	255.6					117
	10927	.959	72.2	7.3	+15.8	23	70	298f		10922	.917	270.2	106.4	-1.1	51	290	280c
		.839	100.9					132		10925	.879	289.8	99.0	+15.6	63	347	283c
		.926	80.9					81		10920	.840	261.0	97.1	-9.3	37	187	438c
		.961	105.2					228		10921	.789	249.1	90.9	-18.4	7	22	251c
May 5		.998	83.1					66		10929	.322	113.2	22.7	-10.4	21	72	
		(-23.5)	(78.7)	(-3.7)		(235)	(1036)	(1838)	G	10927	.580	58.7	9.4	+14.7	21	95	

Group 10925. May 3-10. A stream in which the follower is the most important component.

Group 10926. May 3-4. A couple of small spots that have separated considerably in longitude within 24 hours.

Group 10927. May 5-16. A fair-sized spot with small ephemeral followers at various distances. Between May 10 and 13 the spot is of composite structure.

Group 10928. May 6-17. Return of Group 10909. A regular spot followed by a tiny cluster on May 9 and a single faint spot on May 11 and 12.

Group 10929. May 7-15. An unusual group. A pair of spots on May 7 that become a stream of formless spots by May 11. Two days later this stream has altered into a pair of large but imperfectly-formed spots.

Group 10930. May 8-9. A single small spot.

Group 10931. May 8-20. A regular spot followed by a large tract of bright faculae. A "bridge" has formed across the f end of the umbra on May 13, and the small portion of umbra and penumbra, thus separated from the main bulk of the spot, slowly shrinks and has disappeared by May 18.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.	
1929. 127.356 G	10928 10930 10931	.781 .978 .986	83.2 96.0 84.8	349.3 322.1 320.3	+ 3.2 - 6.5 + 4.5	16 5 53	98 12 239	658nf 112sf 282c	1929. 130.350 C		.822 .785 .397	279.9 297.5 247.9					151 157	
May 8		.955 .958	68.0 77.1					106 136	10929 10927 10928 10931		.397 .336 .217 .658	247.9 330.5 58.0 80.2	22.4 10.3 349.9 320.1	-11.3 +14.0 + 3.6 + 4.1	47 43 17 44	180 156 85 257	698f 148 247 631 165	
128.354		.976 .955 .810	263.7 255.6 259.0					122 95 332	May 11		.943 .946 .947	61.9 101.7 78.5	(-22.1)	(0.5)	(- 3.0)	(151)	(678)	(3588)
	10922 10925 10920 10921 1011i	.984 .958 .943 .913 .688	269.2 287.8 261.0 252.0 289.3	106.4 98.3 97.5 92.4 68.1	- 1.4 +16.0 - 9.6 -17.7 +10.7	51 65 27 2 1	212 259 175 17 6	354f 252c 417f 546sf	131.389		.992 .972 .968 .938 .898 .877 .814	279.1 292.1 247.1 278.5 252.0 293.1 240.5					172 84 78 153 176 196 150	
G	10929 10927 10928 10930 10931	.132 .409 .628 .903 .924	157.8 43.3 80.1 95.8 83.8	24.0 10.2 348.7 322.4 320.0	-10.1 +14.2 + 3.6 - 6.6 + 4.4	25 21 21 6 46	67 87 116 10 270		C	1012a 10929 10927 10928 10931	.831 .605 .491 .124 .460	281.8 255.5 305.1 335.1 75.4	41.8 23.3 11.1 349.8 320.4	+ 8.1 -11.0 +13.7 + 3.6 + 4.0	4 75 34 18 55	8 291 165 87 280	159c	
May 9		.849 .866 .911 .955	89.4 78.8 68.6 110.4					69 175 158 83		1012b 10929 10927 10928 10931	.860 .880 .913 .921 .943	95.7 104.5 55.3 79.2 66.5	287.6	- 6.4	2	7	350c 492 149 156 99	
129.352		.904 .829 .811 .809	259.3 281.3 246.2 291.9					548 287 135 178	May 12				(-21.9)	(346.8)	(- 2.9)	(188)	(838)	(2414)
	10925 10920 10921 10929 10927 10928 10931	.995 .991 .978 .212 .308 .418 .814	287.6 260.2 252.0 231.7 12.2 74.5 82.5	96.3 96.1 91.8 23.4 9.9 350.0 319.9	+17.1 -10.1 -18.3 -10.6 +14.4 + 3.6 + 4.2	34 25 5 28 33 20 55	96 83 16 86 116 84 261	107f 320f 530sf	132.591		.968 .937 .916 .801 .693 .607 .491 .353 .218 .705 .967 .864 .900 .979	289.0 280.2 243.0 259.0 293.4 311.8 255.6 287.6 54.8 104.8 94.6 94.8 79.1 80.2	23.7 11.6 359.8 359.6 350.5 320.7 286.8 255.7	-10.4 +13.8 +21.3 - 9.4 + 3.4 + 4.4 -12.4 - 5.2	124 34 1 5 17 54 6 10	705 169 3 26 63 276 13 27	106 257 209 350c	
G		.892 .936 .987	111.5 61.8 99.9					224 153 194	G	10929 10927 1012c 1012d 10928 10931 10932 10933	.801 .693 .607 .491 .353 .218 .705 .967 .864 .900 .979	259.0 293.4 311.8 255.6 287.6 54.8 104.8 94.6 94.8 79.1 80.2	23.7 11.6 359.8 359.6 350.5 320.7 286.8 255.7	-10.4 +13.8 +21.3 - 9.4 + 3.4 + 4.4 -12.4 - 5.2	124 34 1 5 17 54 6 10	705 169 3 26 63 276 13 27	106 257 209 350c	
May 10		.995 .976 .966 .927 .912 .878	276.7 245.9 258.7 280.8 293.1 247.5					158 261 445 280 149 98	May 13				(-21.6)	(330.9)	(- 2.8)	(251)	(1282)	(1695)
130.350																		
C																		

Group 10932. May 13-16. One or two small spots not seen on May 14.

Group 10933. May 13-20. A small regular spot rapidly dwindling and disappearing in company with a few tiny companions.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbra.	Whole Spots.	Facula.			Dist.	Pos. Angle.	Long.	Lat.	Umbra.	Whole Spots.	Facula.
1929. 133.391		.978	278.9	°	°			127	1929. 136.415		.988	261.2	°	°			158
		.959	243.1					190			.873	283.7					244
		.899	285.5					128			.762	278.0					219
		.853	271.0					97			.743	296.9					135
	10929	.897	259.5	23.9	-10.6	100	762	519c		10928	.947	274.5	351.1	+ 3.5	14	28	386c
	10927	.804	289.1	11.5	+13.5	41	171	314f		10931	.663	279.2	321.2	+ 4.4	37	177	
	10928	.516	281.0	350.7	+ 3.3	8	44			10936	.313	48.7	266.6	+ 9.6	19	57	
G	10931	.127	358.7	320.5	+ 4.5	51	272		G	10933	.415	99.5	256.1	- 6.0	8	18	
	1012e	.343	42.3	306.7	+12.0	0	7			10937	.588	68.1	246.7	+10.7	14	56	
	10933	.904	94.4	255.7	- 5.2	10	56	589sf		10934	.657	54.7	245.6	+20.4	6	12	
	1012f	.932	80.7	252.4	+ 7.7	7	15	580n			.739	73.3					138
	10934	.972	68.3	246.1	+20.4	10	10	89c			.863	72.3					157
		.848	81.0					133			.863	105.1					246
		.882	72.0					100			.891	57.9					105
May 14		.934	114.8					150			.942	106.3					160
		(-21.3)	(320.3)	(- 2.7)		(227)	(1337)	(3016)	May 17		.957	73.6					163
134.382		.943	277.6					61			(-20.5)	(280.3)	(- 2.3)	(98)	(348)	(2111)	
		.773	282.7					139									
	10929	.974	259.9	24.0	-10.4	91	714	625c			.965	281.6					205
	10927	.910	286.4	10.9	+13.7	38	173	364nf		137.480	.901	283.5					254
	10935	.822	260.3	2.2	- 9.4	8	16	167c			.868	297.1					87
	10928	.695	277.7	350.6	+ 3.4	12	41				.835	265.4					184
	10931	.262	297.3	320.6	+ 4.4	49	245			10931	.824	276.9	321.1	+ 4.4	20	177	339n
G	10932	.378	118.7	287.4	-12.9	3	12		G	10936	.205	356.8	266.9	+ 9.6	28	100	
	10933	.782	95.0	255.9	- 5.5	14	54	743sf		10933	.210	111.6	254.9	- 6.5	9	23	
	10934	.808	65.2	246.6	+20.9	10	16	109f		1012h	.278	124.6	252.8	-11.2	3	7	
		.850	76.2					611		10937	.382	56.8	247.3	+10.0	10	43	
		.895	56.9					97		10934	.504	42.3	245.2	+19.8	5	8	
		.895	115.4					127			.867	107.8					205
		.964	100.4					118	May 18		(-20.2)	(266.2)	(- 2.2)	(75)	(358)	(1274)	
May 15		.968	77.1					214									
		(-21.1)	(307.2)	(- 2.6)		(225)	(1271)	(3375)	138.419		.968	276.4					171
135.352		.923	250.0					103			.965	287.8					137
		.777	289.1					261			.931	262.1					123
	10927	.980	284.3	11.8	+13.5	22	123	412nf			.889	245.5					160
	10935	.943	261.2	4.8	- 9.1	8	24	175f			.839	304.1					280
	10928	.838	275.7	350.8	+ 3.4	13	42	469n	G		.834	290.5					164
	10931	.463	284.4	321.0	+ 4.5	40	211			10931	.801	265.0					151
	1012g	.267	294.2	308.5	+ 4.0	5	19			10936	.926	275.5	321.1	+ 4.3	28	173	812f
	10932	.211	151.0	288.4	-13.0	0	4			10933	.305	311.5	267.1	+ 9.6	19	72	
G	10936	.526	67.6	265.0	+ 9.4	3	4			10937	.095	183.8	254.2	- 7.5	3	14	
	10933	.621	96.2	256.2	- 5.7	12	38			10934	.260	31.5	245.9	+10.7	26	52	
	10937	.754	73.6	247.2	+10.6	7	18	146c	May 19		.399	21.8	244.8	+19.6	1	5	
	10934	.799	61.6	245.9	+20.7	7	19	153f			.971	71.3					66
		.883	75.6					164			(-19.9)	(253.8)	(- 2.1)	(77)	(316)	(2064)	
		.925	103.0					183	139.399		.935	265.3					101
		.949	75.4					151			.933	294.6					125
May 16		.959	86.8					99			.928	318.2					85
		(-20.8)	(294.4)	(- 2.4)		(117)	(502)	(2316)	G		.925	264.8					113
											.909	242.2					108

Group 10934. May 14-19. A slowly diminishing spot.

Group 10935. May 15-16. Two or three very small spots.

Group 10936. May 16-22. Two spots which drift widely apart in longitude; the follower has disappeared by May 21, but other small spots come behind the leader.

Group 10937. May 16-24. A stream of a few changing spots in a region already marked by fairly bright faculae.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.
1929. 139°39' G		.897 .848 .797 10931 .985 1012i .697 10936 .505 10933 .253 10937 .234 1012j .257 .892 .904 .940 .953 .980	226·9 305·8 263·4 274·9 255·2 293·8 245·6 337·0 77·0 64·6 98·0 71·8 79·0 100·0	° 320·4 284·1 268·7 254·2 246·1 226·4	° + 4·5 - II·7 + IO·0 - 7·9 + IO·4 + I·4			
						25 I 14 0 20 0	166 6 26 12 51 4	IO2 146 153 638f 96 190 106 104 123
		(-19·6)	(240·8)	(- 2·0)	(60)	(265)	(2190)	
May 20								
140°35'3		.981 .927 .911 .879 .870 10936 .688 10938 .314 10937 .362 1012k .525 .791 .871 .903 .937	276·1 300·5 236·9 255·9 281·5 287·5 254·7 305·3 70·7 59·0 71·5 81·0 103·9		+ IO·5 - 6·6 + IO·2 + 8·3	19 I II I	73 4 32 8	333 226 96 389 104 55 120 100 123
		(-19·3)	(228·2)	(- I·9)	(32)	(117)	(1546)	
May 21								
141°40'5		.956 .937 .921 .851 10936 .855 10937 .594 1012l .514 10939 .981 .794 .830 .925	292·3 256·9 305·7 260·1 284·0 291·3 244·7 76·4 69·6 107·4 100·2		+ II·0 + II·0 - 14·2 + 12·9	15 II I 68	38 42 3 368	96 321 102 76 357c 152f 102 219 53
		(-19·0)	(214·3)	(- I·8)	(95)	(451)	(1478)	
May 22								
1929. 142°36'6		.959 .935 .922 .863 .800 G 10937 .776 10938 .721 10939 .933 .911 .959	260·5 282·1 301·1 270·2 256·6 286·8 263·8 76·0 66·3 102·6	° 250·8 247·5 133·8	° + II·9 - 5·6 + 12·5			
		(-18·7)	(201·6)	(- I·6)	(124)	(742)	(2162)	
May 23								
143°51'2		.980 .889 .855 10937 .926 10938 .872 1012m .233 10940 .522 10939 .807 10941 .979 .806 .853 .890 .967	281·1 245·1 296·5 283·8 263·1 136·1 44·5 72·7 75·3 61·7 119·1 103·4 98·0		+ 12·1 - 6·7 - II·1 + 20·4 + 12·9 + 14·1	3 5 0 39 151 5	7 18 1 81 794 12	224 118 92 545f 582p 833c 281c 67 83 485 351
		(-18·3)	(186·4)	(- I·5)	(203)	(913)	(3661)	
May 24								
144°39'7		.947 .938 .929 .905 .789 10938 .963 10940 .408 1012n .335 10939 .684 10941 .921 10942 .981 .792 .885 .948 .955 .966	259·0 294·2 281·8 241·4 290·3 263·5 24·2 133·8 69·0 74·2 72·2 101·4 97·2 97·2 85·2 95·4 104·9		- 6·7 + 20·4 - 14·7 + 13·1 + 13·9 + 17·2	35 55 3 126 6 35	75 196 7 753 18 91	105 163 520 206 114 230c 342f 671c 206 476 99 151 693
		(-18·0)	(174·7)	(- I·4)	(260)	(1140)	(3976)	
May 25								

Group 10938. May 21-25. One or two small spots in a fairly large area of faculae; on May 25 a new group of spots and faculae is forming, but its subsequent development is lost by its disappearance around the sun's west limb.

Group 10939. May 22-June 3. A revival of Group 10919. A large spot, at first somewhat composite, but becoming regular by May 26, followed by a train of unstable spots which have died out by May 31.

Group 10940. May 24-30. A stream lengthening considerably in the first few days of its origin. The leader is a partially-formed regular spot.
Group 10941. May 24-29. A small but definite spot *p* Group 10942 in the same general area of faculae. There is a small distant companion on May 27.

Group 10942. May 25-June 1. Return of Group 10925. A regular spot in the same disturbed area with Group 10941.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1920.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.
1929. 145.495		.943	282.7	°	°			229	1929. 148.405		.906	252.8	°	°			223
		.940	242.7					67			.847	293.6					314
		.882	257.5					211		10940	.759	298.8	166.9	+20.7	39	117	
	10943	.742	290.2	205.8	+13.9	13	32	82c		10939	.360	315.3	136.8	+13.9	103	543	
	10940	.379	349.1	164.6	+20.4	55	247			10941	.344	38.6	108.9	+14.7	1	5	
	10939	.474	58.5	135.8	+13.1	123	617		C	10942	.496	52.4	97.6	+16.7	9	50	
	10941	.797	71.5	109.3	+13.8	4	7	374c			.765	107.4					156
	10942	.904	70.6	97.4	+16.9	21	97	350c			.781	121.0					288
		.738	97.7					337			.791	76.8					255
		.859	96.5					177			.937	69.6					152
		.886	82.8					78			.952	82.4					90
		.900	106.2					811	May 29		(-16.6)	(121.7)	(-0.9)	(152)	(715)	(1478)	
		.934	63.6					69			.979	252.7					55
		.971	83.6					139		149.405	.946	259.2					41
		.971	102.6					457			.946	287.9					132
		.983	113.8					213			.815	260.3					161
May 26		(-17.6)	(160.2)	(-1.3)		(216)	(1000)	(3594)		10940	.894	294.3	169.1	+21.2	10	30	377f
146.419		.962	286.5					103		10939	.516	299.8	135.8	+14.1	89	500	
		.926	253.7					343	G	10942	.350	30.7	97.7	+16.7	14	41	
		.835	240.7					144			.812	69.7					178
	10943	.859	287.5	205.5	+14.4	2	5	131c			.878	82.5					161
	10940	.463	323.3	165.1	+20.7	44	219				.914	111.1					62
	10939	.330	41.0	135.2	+13.3	107	712				.967	120.1					52
	10941	.695	69.1	106.3	+13.5	2	8				.968	102.3					412
	10942	.799	67.5	97.7	+17.0	19	90	298c	May 30		(-16.3)	(108.4)	(-0.8)	(113)	(571)	(1631)	
		.785	107.3					854			.951	280.5					102
		.792	90.3					112		150.562	.949	292.8					402
		.843	77.7					178			.918	255.2					129
		.883	61.3					157			.722	290.8	137.1	+14.4	125	633	
		.913	101.4					696		10939	.293	201.9	99.6	-16.4	1	6	
		.916	86.1					140		1012q	.209	201.9	97.6	+16.6	3	35	
		.935	113.9					418		10942	.309	345.8	88.2	-12.1	3	7	
		.975	77.4					110	G	1012r	.216	202.8	18.3	+12.6	14	45	209f
May 27		(-17.3)	(148.0)	(-1.1)		(174)	(1034)	(3684)		10944	.968	76.8					128
147.416		.967	254.8					181			.814	102.6					107
		.959	284.7					125			.833	76.4					201
		.943	277.6					93			.924	122.4					914
		.916	292.7					106	May 31		.929	102.6					2192
		.813	249.8					76			(-15.8)	(93.1)	(-0.7)	(146)	(726)		
	1012o	.705	294.0	176.7	+15.9	3	5		151.497		.983	291.7					133
	10940	.620	307.3	166.6	+21.1	36	164				.943	256.7					118
	10939	.252	355.2	136.0	+13.5	108	560				.858	242.1					145
	1012p	.402	99.5	111.5	-4.7	1	9			10939	.846	287.3	137.0	+14.2	98	575	781f
	10942	.656	62.6	97.5	+16.7	9	71			1012s	.692	257.3	123.7	-9.1	1	6	
		.745	88.2					127		10942	.409	315.4	98.1	+16.4	1	5	
		.840	106.6					373	G	1012t	.314	187.9	83.4	-18.5	1	6	
		.855	63.8					119		10944	.900	75.4	17.8	+12.8	11	26	313c
		.859	94.7					87			.839	63.6					73
		.865	119.0					424			.840	104.3					947
		.892	78.5					228			.848	127.3					133
May 28		.971	78.0					129	June 1		.975	83.1					91
		(-17.0)	(134.8)	(-1.0)		(157)	(809)	(2068)			(-15.5)	(80.8)	(-0.5)	(112)	(618)	(2734)	

Group 10943. May 26-27. One or two small ephemeral spots.

Group 10944. May 31-June 8. A small spot sometimes with a small follower.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1920.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.	
1929. 152°398			°	°	°				1929. 155°365			°	°	°				
		·963	245·7					49			·959	286·6					489	
		·919	296·5					204			·946	261·4					240	
		·818	256·9					261			·945	252·0					356	
	10939	·933	285·6	136·6	+14·3	86	616	728f			·882	248·6					208	
	10945	·738	115·7	24·3	-18·9	18	53	246f			·871	261·8					171	
	10944	·783	72·3	18·9	+13·5	11	24	310f			·806	235·6					236	
		·754	97·7					325		10947	·746	246·4	75·2	-17·4	13	58	360p	
		·919	107·9					222		10948	·690	284·4	72·1	+9·8	6	12		
		·922	69·5					216		10951	·181	182·2	30·0	-10·5	4	16		
		·940	80·3					293		10944	·313	36·9	18·5	+14·3	2	10		
		·964	87·5					117		10946	·868	100·4	330·0	-9·0	48	227	363m	
June 2			(-15·1)	(68·8)	(-0·4)	(115)	(693)	(2971)		1012u	·884	77·6	328·3	+10·8	0	7	405c	
										10949	·919	84·4	323·2	+5·1	20	113	77c	
										10950	·960	82·4	316·2	+7·3	39	173	503c	
153°473		·940	248·9					67			·741	77·6					125	
		·930	294·8					68			·758	65·4					116	
		·899	262·4					388			·827	89·3					135	
		·850	287·9					327			·890	67·8					245	
		·759	290·5					287			·966	97·8					95	
		·749	259·4					257	June 5			(-14·0)	(29·6)	(-0·1)	(132)	(616)	(4124)	
	10939	·990	284·5	135·8	+14·3	103	580	888f			·980	286·9					221	
	10945	·549	123·8	26·1	-17·9	5	25		156°308		·978	251·2					489	
	10944	·616	66·9	19·1	+13·7	7	43				·958	279·5					77	
	10946	·997	99·8	329·3	-9·8	12	110	103p			·943	263·8					207	
		·839	81·1					412			·926	272·8					73	
June 3		·958	78·2					229			·871	240·8					315	
			(-14·7)	(54·6)	(-0·3)	(127)	(758)	(3026)			·834	283·2					163	
154°442		·994	283·4					180		10947	·875	250·6	76·5	-16·9	52	319	484c	
		·968	262·9					261		10945	·356	201·5	25·0	-19·3	3	14		
		·925	278·9					164		10946	·740	102·0	330·2	-8·8	59	288	238c	
		·884	288·4					626		10949	·811	83·9	323·3	+4·9	17	90	87c	
		·871	251·2					567		10950	·875	81·7	316·6	+7·2	24	136	379c	
		·857	260·5					378		10952	·953	78·4	305·3	+11·0	0	16	289c	
		·817	303·1					95		10953	·990	108·8	295·9	-18·6	31	130		
		·727	284·4					318			·749	72·2					229	
	10947	·606	239·4	74·9	-18·1	1	3				·857	61·3					131	
	10948	·503	291·8	70·0	+10·5	14	27				·907	89·3					267	
	10945	·370	139·2	27·3	-16·4	3	5				·948	70·4					53	
	10944	·457	59·2	18·1	+13·3	6	13				·971	100·2					102	
	10946	·954	99·6	329·7	-9·2	37	194	375c	June 6			(-13·6)	(17·1)	(0·0)	(186)	(993)	(3804)	
	10949	·982	84·9	323·0	+4·9	18	101	109c			·952	243·8					192	
	10950	·996	82·8	317·2	+7·2	27	144		157°358		·927	283·0					227	
		·858	78·6					271			·924	235·8					124	
		·955	67·8					189		G	10947	·965	252·1	77·0	-17·2	75	417	504c
June 4		·959	79·2					418										
			(-14·4)	(41·8)	(-0·2)	(106)	(487)	(3951)										

Group 10945. June 2-6. A small group not seen on June 5.

Group 10946. June 3-15. A stream of unusual development. A regular spot with an increasing number of small companions north preceding it. By June 9, a cluster of these small spots has condensed into an unstable spot, whilst another cluster has joined on to the original regular spot, which thus becomes of composite formation and the follower of the resulting stream of unstable character.

Group 10947. June 4-8. A pair of moderately large spots of rapid development.

Group 10948. June 4-5. Two spots on June 4 of which the leader remains on June 5.

Group 10949. June 4-12. Return of Group 10931. A regular spot shrinking rapidly after June 10.

Group 10950. June 4-16. A stable regular spot with a small follower on June 5 and 6.

Group 10951. June 5-7. A tiny cluster.

Group 10952. June 6-14. Slight but sustained activity in the wake of Group 10950.

Group 10953. June 6-16. A regular spot dwindling to a dot. There is a tiny follower on June 10 and 12.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbra.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbra.	Whole Spots.	Faculae.
1929. 157.358 G	10951 10944 10946 10949 10950 10952 10953	.481 .352 .550 .651 .729 .860 .941	248.3 319.6 106.6 82.6 80.2 77.5 109.7	30.1 16.8 331.1 323.0 317.0 304.7 294.4	-10.0 +15.7 - 8.8 + 5.0 + 7.2 +10.8 -18.4	3 1 52 15 17 4 26	13 7 302 82 120 10 101		1929. 160.353 G	10950 10952 10953 10955 10954	.151 .357 .573 .600 .904	41.3 59.4 124.8 101.6 96.0	317.8 305.3 293.9 287.4 259.2	+ 7.0 +10.9 -18.6 - 6.5 - 5.2	21 4 20 10 0	105 10 101 29 6	
		.905 .918 .932	100.2 59.0 82.9					438p 345f 186 109 218			.765 .904 .941 .947 .961	74.3 78.0 110.6 97.5 76.4					404c 388 253 73 290 264
June 7			(-13.2)	(3.2)	(+ 0.2)	(193)	(1052)	(2343)	June 10			(-12.0)	(323.5)	(+ 0.5)	(155)	(782)	(3305)
158.361		.968 .966 .951 .921 .905	269.6 237.9 278.9 288.4 249.9					98 163 101 171 109	161.351		.959 .958 .951 .926 .880	262.9 252.4 236.3 286.4 249.8					127 268 91 293 67
	10947 10944 10946 10949 10950 10952 10953	.993 .503 .360 .457 .551 .701 .848	252.2 296.3 115.2 79.7 77.2 75.3 112.4	72.3 17.4 330.8 323.2 317.2 306.5 294.3	-17.6 +13.1 - 8.5 + 4.9 + 7.2 +10.4 -18.6	28 2 74 12 19 3 27	90 8 458 81 106 15 118	256c		10946 10949 10950 10952 10953 10955 10954	.399 .237 .176 .187 .426 .371 .764	247.0 287.4 309.4 23.4 141.8 110.8 95.8	332.0 323.4 318.1 306.0 294.2 289.9 260.9	- 8.3 + 4.6 + 6.9 +10.4 -18.9 - 6.9 - 4.0	107 8 21 9 18 1 6	479 17 111 29 95 5 14	
		.838 .919 .964	84.2 97.0 76.8					66 193 333		10954 1013a 10956 10957	.764 .830 .982 .990	95.8 99.3 76.3 101.2	260.9 254.8 231.6 229.1	- 4.0 - 7.4 +13.5 -11.0	6 0 23 17	14 4 78 48	296c 427f 164c 195sp
June 8			(-12.8)	(349.9)	(+ 0.3)	(165)	(876)	(1957)			.796 .883 .901	78.8 78.4 111.4					188 267 241
159.487		.938 .870 .845	242.5 282.9 257.0					33 158 340	June 11			(-11.6)	(310.3)	(+ 0.6)	(210)	(880)	(2847)
	10946 10949 10950 10952 10953 10954	.170 .220 .321 .498 .703 .969	159.7 69.1 68.1 67.7 117.5 95.5	331.6 323.2 317.6 307.1 294.0 259.6	- 8.7 + 4.9 + 7.2 +11.2 -18.6 - 5.2	92 13 17 1 19 10	510 56 107 6 106 18		162.386		.969 .925 .885 .858	285.9 254.9 277.8 294.7					157 191 382 136
		.861 .890 .967 .972	76.5 107.3 79.6 103.9					259c 270 145 212		10946 10949 10950 10952 10953 10955 10958 10954	.586 .457 .388 .253 .345 .174 .468	254.5 278.9 287.3 320.3 172.1 128.1 70.3	331.3 323.4 318.4 306.1 293.7 288.7 270.2	- 8.3 + 4.7 + 7.4 +11.9 -19.1 - 5.3 + 9.7	84 5 21 7 17 1 4	439 13 95 45 100 5 10	
June 9			(-12.3)	(335.0)	(+ 0.4)	(152)	(803)	(1775)	C		.581 .913 .935 .835 .838 .910 .911	98.9 74.9 101.5 102.2 77.0 57.7 89.9	261.6 231.5 228.2	- 4.5 +14.1 -10.4	16 22 19	36 120 57	
160.353		.948 .938 .930 .877 .840 .833	280.3 239.7 259.4 246.7 286.4 256.5					124 99 417 208 528 257		10946 10949	.209 .074	220.7 4.4	331.4 323.2	- 8.6 + 4.7	88 12	485 46	
	G								June 12			(-11.1)	(296.6)	(+ 0.8)	(196)	(920)	(2636)

Group 10954. June 9-15. One or two small spots in the *p* part of a moderately large area of faculae.

Group 10955. June 10-18. A region of slight but continuous activity.

Group 10956. June 11-23. A slowly diminishing regular spot with occasional small followers.

Group 10957. June 11-19. A regular spot which becomes a small cluster after June 15. There are one or two small companions preceding it on June 13 and June 15-18.

Group 10958. June 12-20. A few faint spots which have gone by the next day; on June 15 a small stream is forming, and this soon diminishes but re-forms again before passing around the west limb.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.
1929. 163·355		·962	281·4	°	°			198	1929. 165·396	10954	·156	220·8	262·7	— 5·7	3	7	
		·953	293·5					112	G	1013b	·176	353·6	257·9	+11·1	0	3	
		·941	262·7					161		10956	·470	61·6	231·7	+13·9	13	60	
		·900	278·7					261		10957	·510	114·7	228·7	—11·2	31	136	
	10946	·752	257·7	331·6	— 8·6	91	443	409p	June 15	10960	·883	108·7	196·6	—15·8	29	156	450f
	10950	·582	281·1	318·8	+ 7·2	21	95					(— 9·9)	(256·8)	(+ 1·1)	(172)	(679)	(2224)
	10959	·586	288·3	318·2	+11·3	6	10										
G	10952	·419	299·4	305·7	+12·7	3	10										
	10953	·387	206·5	294·3	—19·3	15	79										
	10955	·144	215·4	288·6	— 5·8	9	19		166·648		·964	269·5					118
	10954	·376	104·1	262·4	— 4·4	10	15				·930	243·9					99
	10956	·806	73·3	231·3	+13·9	15	113	385c			·929	297·7					86
	10957	·832	103·9	228·7	—11·0	24	91	272c			·910	281·3					305
	·922	111·9						93			·887	255·6					98
June 13	·948	80·2						99			·872	268·3					65
		(—10·7)	(283·8)	(+ 0·9)	(194)	(875)	(1990)			10950	·982	277·4	319·1	+ 7·5	18	70	228c
										10953	·835	245·9	293·8	—19·1	2	4	292c
164·354		·965	281·7					150	G	10955	·777	259·1	290·3	— 7·6	13	29	123c
		·888	276·1					104		10958	·566	283·7	273·9	+ 8·8	19	85	
		·868	287·3					263		10961	·159	14·5	237·9	+10·1	9	19	
	10946	·878	260·1	331·3	— 8·2	54	339	631c		10956	·261	34·6	231·5	+13·7	13	64	
	10959	·757	282·5	319·0	+10·0	11	39	71c		10957	·296	136·0	228·2	—11·0	27	85	
	10950	·751	278·7	318·8	+ 7·2	28	106	108sp		10960	·723	113·3	196·8	—15·6	33	129	260f
	10952	·600	290·3	305·7	+12·8	0	6				·855	68·9					92
	10953	·510	227·8	294·0	—19·0	13	70				·951	66·4					139
G	10955	·352	247·1	289·6	— 6·9	14	56				·960	75·1					121
	10954	·172	124·8	262·5	— 4·6	1	12				·962	100·1					61
	10956	·649	69·3	232·0	+14·0	20	82	205f	June 16		·970	109·8					93
	10957	·697	106·4	227·9	—10·5	19	96					(— 9·3)	(240·2)	(+ 1·3)	(134)	(485)	(2180)
	10960	·965	107·3	197·0	—16·4	26	190	367f									
		·837	79·3					157			·967	281·0					290
June 14		·880	101·9					124	167·362		·952	240·6					129
		·898	113·5					90			·947	258·4					123
		(—10·3)	(270·6)	(+ 1·0)	(186)	(996)	(2270)				·940	289·0					93
165·396		·975	276·3					102			·872	246·4					488
		·955	283·3					247			·869	301·4					253
		·943	255·0					68		10955	·892	261·2	293·2	— 7·2	2	6	378f
		·941	293·2					93	G	10958	·694	281·2	274·1	+ 8·7	17	75	
		·917	273·5					148		10961	·208	314·4	239·4	+ 9·7	19	38	
		·758	286·5					252		10956	·219	4·3	229·8	+13·9	16	66	
	10946	·957	261·3	329·3	— 7·9	27	102	464c		10957	·222	168·8	228·3	—11·1	17	72	
	10959	·904	281·2	321·0	+10·5	13	27	160f		10960	·613	117·8	196·7	—15·4	29	119	297f
	10950	·888	277·7	319·1	+ 7·4	19	86	240sf			·851	65·1					245
	10953	·665	239·0	293·8	—19·1	6	15				·904	109·3					146
	10955	·560	254·3	289·6	— 7·8	16	44				·920	73·9					160
G	10958	·299	298·9	272·1	+ 9·3	15	43		June 17		·953	65·1					121
												(— 9·0)	(230·8)	(+ 1·4)	(100)	(376)	(2723)

Group 10959. June 13-15. A couple of spots n Group 10950.

Group 10960. June 14-23. A regular spot that shows two umbrae on June 15 and divides into two parts, which after the initial separation remain about the same distance apart. There are distant faint companions on June 19-21.

Group 10961. June 16-22. A short stream with an appreciable spot as leader on June 19 and 20.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.	
1929. 168.353		.977	279.8	°	°			64	1929. 170.444	10966	.927	100.5	°	°			358c	
		.941	249.1					318	G		.963	73.1					243	
		.860	257.4					89			.985	102.7					116	
		.745	259.1					198	June 20		(— 7.7)	(190.0)	(+ 1.7)	(436)	(1904)	(4419)		
	10955	.960	262.9	290.8	— 6.4	16	56	364c			.980	261.4					170	
	10958	.846	279.2	275.0	+ 8.6	17	77	380c			.954	284.6					113	
G	10961	.412	290.1	240.6	+ 9.5	13	48		171.358		.816	253.2					451	
	10957	.306	222.4	229.7	— 11.5	9	48			10965	.914	261.1	243.2	— 7.5	20	72	277c	
	10956	.300	317.2	229.7	+ 14.1	17	71			10961	.897	279.8	241.3	+ 9.6	26	142	320c	
	10960	.449	129.8	196.7	— 15.2	23	103			10956	.759	288.6	225.9	+ 15.2	9	29	350c	
	10962	.987	99.0	137.4	— 8.7	133	803	583c		10960	.419	224.8	195.7	— 15.5	8	17		
	10963	.992	76.6	134.9	+ 13.5	95	657	430p		10967	.379	199.2	185.4	— 19.1	15	42		
		.822	65.5					376		10968	.364	51.2	160.9	+ 14.8	3	14		
June 18		.876	113.4	(— 8.6)	(217.6)	(+ 1.5)	(323)	(1863)	G	10962	.627	106.4	140.6	— 8.7	168	711		
								166		10963	.681	72.5	136.2	+ 13.1	90	516	568f	
169.357		.961	252.1					60		10964	.721	98.6	132.4	— 4.9	13	63		
		.955	283.1					95		10966	.847	101.8	121.0	— 9.0	26	126	291c	
		.873	260.3					240			.876	71.6					327	
		.837	282.3					142			.925	95.0					156	
		.782	260.1					174			.941	83.2					67	
	10958	.944	277.8	274.9	+ 7.9	40	156	352c			.955	107.6					335	
	10961	.620	282.7	242.0	+ 9.1	29	152		June 21		.971	73.6	(— 7.2)	(177.9)	(+ 1.8)	(378)	(1732)	(3614)
	10956	.467	298.7	229.3	+ 14.4	15	70											
	10957	.466	241.1	228.9	— 11.5	4	23		172.335		.918	255.6					522	
	10960	.327	155.1	196.2	— 15.6	18	75				.865	268.0					107	
	10962	.915	100.0	139.0	— 8.5	124	731	963c		10965	.975	261.6	241.4	— 7.7	4	31	228c	
	10963	.933	76.3	135.9	+ 13.4	82	560	919c		10961	.968	279.4	240.3	+ 9.6	14	53	327c	
	10964	.962	95.2	130.7	— 4.5	26	58	240c		10956	.848	288.1	221.8	+ 16.4	22	42	262c	
June 19		.922	113.3	(— 8.1)	(204.4)	(+ 1.6)	(338)	(1825)		10960	.604	241.2	198.0	— 15.2	7	14		
								118		10967	.484	226.6	186.4	— 17.5	31	155		
170.444		.929	260.3					486		10968	.236	13.7	161.6	+ 15.2	9	53		
		.919	280.9					238	C	10962	.445	115.2	140.9	— 9.1	164	761		
		.912	245.9					117		10963	.513	67.0	136.0	+ 13.3	86	480		
		.900	292.3					131		10964	.547	101.4	132.5	— 4.5	8	30		
	10958	.990	278.3	271.8	+ 8.5	40	139	274c		10966	.707	104.2	121.2	— 8.5	22	134		
	10965	.810	259.3	243.2	— 7.7	15	39	72c		10969	.993	107.6	82.9	— 17.2	37	220	251p	
	10961	.789	280.7	241.6	+ 9.4	56	258	200c			.768	66.4					203	
	10956	.686	288.5	231.9	+ 13.8	10	23				.833	93.1					203	
	10960	.315	199.1	196.1	— 15.5	13	26				.883	71.3					120	
	10962	.778	102.5	140.0	— 8.6	172	765	830c			.886	108.9					503	
	10963	.817	75.0	136.1	+ 13.2	87	495	1116c			.944	92.6					162	
G	10964	.855	96.7	131.8	— 4.8	20	97	238c	June 22		.947	76.4	(— 6.8)	(164.9)	(+ 2.0)	(404)	(1973)	(3159)

Group 10962. June 18–29. A stream of spots dominated by a large regular spot which becomes elongated along an axis inclined slightly to the sun's equator. The spot comes apparently from the fusion of a close pair of spots on June 18 and 19, and later there are usually one or two bright projections over the umbra.

Group 10963. June 18–30. Return of Group 10939. A large regular spot becoming appreciably elongated along an axis inclined about 45° to the sun's equator. There are two small distant companions on June 24.

Group 10964. June 19–26. A small subsidiary group *sf* Group 10962.

Group 10965. June 20–22. A small stream.

Group 10966. June 20–27. A stream of changing spots *f* Group 10962.

Group 10967. June 21–26. Usually a pair of unstable spots.

Group 10968. June 21–26. A short stream of which one component remains after June 24.

Group 10969. June 22–July 4. Probable return of Group 10947. A steady regular spot followed by an extensive area of faculae.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.
1929. 173.449			°	°	°				1929. 176.348			°	°	°			
	10956	.977	257.3					147		10967	.856	297.6					150
	10960	.943	287.1	220.2	+16.8	13	27	272c		10968	.982	253.3	189.5	-15.9	63	281	467sf
	10967	.775	248.7	198.4	-14.9	9	14			10962	.830	285.8	167.1	+14.4	2	4	235f
	10968	.665	241.5	187.7	-16.8	45	170			10963	.543	248.6	142.5	-9.3	142	656	
	10962	.290	317.5	161.8	+14.4	16	45			10964	.438	296.4	135.5	+13.4	85	465	
	10963	.254	140.5	140.8	-9.2	172	845			10966	.381	246.0	132.2	-6.6	3	25	
	10964	.312	51.5	135.7	+13.2	83	475			10966	.258	228.6	123.0	-7.5	29	83	
	10964	.323	110.9	132.7	-4.6	4	22		G	1013d	.358	55.8	94.1	+13.8	0	3	
	10966	.491	110.5	122.7	-8.0	67	242			10969	.580	124.2	81.8	-16.9	45	239	
	10969	.940	108.8	82.1	-16.8	41	241	646c		10971	.909	104.6	47.9	-12.1	6	17	167c
		.783	111.2					309		10972	.959	82.6	38.4	+7.8	0	9	129c
		.830	94.4					205		10973	.990	107.8	31.4	-17.2	31	96	242p
		.837	74.6					219			.834	131.4					393
		.849	62.9					82			.911	67.2					193
		.917	82.8					200			.959	95.9					71
		.935	95.1					103	June 26		(-5.0)	(111.8)	(+2.4)	(406)	(1878)	(2047)	
June 23			(-6.3)	(150.2)	(+2.1)	(450)	(2081)	(2183)	177.337		.939	294.8					147
											.905	247.2					223
											.890	286.2					358
174.606		.995	286.9					110		10962	.707	254.4	142.1	-9.1	138	704	
		.906	251.6					323		10963	.620	288.6	135.7	+13.4	72	464	
	10967	.841	249.5	189.7	-15.8	42	227	394c		10966	.459	248.1	124.0	-7.5	11	36	
	10968	.526	293.8	164.5	+14.1	8	12			10970	.345	160.2	91.7	-16.4	5	10	
	10962	.234	212.2	142.1	-9.2	173	770		C	10969	.432	139.6	81.8	-16.7	42	233	
	10963	.199	356.7	135.6	+13.7	87	497			1013e	.608	137.2	72.5	-24.1	4	10	
	10964	.140	157.7	131.9	-5.2	7	39			10971	.749	107.5	48.1	-12.2	4	11	257c
	10966	.280	128.4	122.2	-7.8	67	184			10972	.870	82.9	38.4	+7.4	5	9	130c
	1013c	.613	121.6	102.0	-16.9	0	4			10973	.947	109.2	29.4	-17.3	31	113	811c
	10970	.731	114.4	91.3	-16.0	1	9	111c			.904	95.8					204
	10969	.825	112.2	82.2	-16.8	40	235	1293sf	June 27		.965	73.7					60
		.801	81.0					248			(-4.6)	(98.7)	(+2.5)	(312)	(1590)	(2190)	
		.957	79.2					78	178.425		.974	295.1					54
June 24		.967	67.2					54			.973	285.5					145
			(-5.8)	(134.9)	(+2.2)	(425)	(1977)	(2611)			.956	247.9					181
											.841	239.1					233
175.367	10967	.921	251.7	189.9	-15.8	58	283	482c		10962	.860	257.8	142.4	-9.1	105	634	977c
	10968	.679	288.4	166.2	+14.0	5	11			10974	.840	277.5	141.3	+7.7	8	21	52c
	10962	.360	235.8	142.3	-9.4	155	718			10963	.785	285.1	135.3	+13.4	65	422	449c
	10963	.268	316.3	135.7	+13.4	100	507			10975	.429	269.1	109.6	+1.9	8	15	
	10964	.188	217.6	131.4	-6.3	5	23		C	10969	.337	171.5	81.3	-16.8	38	240	
	10966	.171	170.8	123.2	-7.4	44	118			10972	.742	81.9	36.7	+7.2	6	18	
	10969	.727	116.1	82.0	-16.9	44	245	950sf		10973	.847	112.1	29.3	-17.1	17	42	504c
	10971	.977	103.0	48.2	-12.1	5	16	80c		10976	.993	98.7	1.8	-8.3	8	28	123c
		.871	68.7					144			.842	95.0					162
		.938	82.3					190			.908	72.1					288
		.969	68.5					92			.969	81.1					82
June 25			(-5.5)	(124.8)	(+2.3)	(416)	(1921)	(1938)	June 28		.992	83.9					275
											(-4.1)	(84.3)	(+2.6)	(255)	(1420)	(3525)	

Group 10970. June 24-27. A tiny spot invisible on June 25 and 26.

Group 10971. June 25-27. A small spot.

Group 10972. June 26-July 4. A small spot that comes into brief prominence on June 29, when it is joined by a companion spot.

Group 10973. June 26-July 8. At first a couple of spots in rather wide spread faculae; these spots were not seen on June 30; on July 1-3 one or two tiny spots are present, and on July 5 a new development takes place.

Group 10974. June 28-29. A pair of spots.

Group 10975. June 28-29. One or two very small spots.

Group 10976. June 28-July 3. A pair of spots which separate widely in longitude. The leader alone remains on July 2 and 3.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.
1929. 179°370			°	°	°				1929. 182°364			°	°	°			
	10962	926	247.5					106			989	288.3					138
		962	260.0	145.0	- 8.8	III	460	1671f			964	251.3					257
	10974	933	277.5	140.6	+ 8.0	12	70	239c			954	275.9					113
	10963	896	283.2	135.2	+13.1	91	479	758nf			881	248.7					237
	10975	600	269.4	108.5	+ 1.9	1	17				867	283.7					365
	10969	368	206.0	81.4	-16.5	40	226			10969	790	246.7	81.1	-16.1	30	191	270c
	10972	598	80.2	35.4	+ 8.0	32	122			10979	293	204.3	39.3	-12.3	21	58	
	10973	705	117.5	31.2	-16.8	8	26	386f	G	10972	106	323.1	35.9	+ 7.9	8	23	
	10976	926	100.5	5.0	- 8.6	18	51	192c		10973	355	171.0	28.9	-17.3	3	11	
	10977	926	84.4	3.9	+ 6.3	33	76	423c		10976	445	114.9	8.3	- 7.9	1	4	
	10978	970	104.1	357.2	-12.9	0	14	228f		10977	445	80.8	6.1	+ 6.8	32	231	
		808	101.7					144		10980	807	102.4	339.6	- 8.1	136	976	1644c
		822	70.6					240		10981	924	79.4	324.7	+11.0	6	6	530f
		880	126.2					203			835	78.0					328
		931	111.2					108			952	67.7					105
		934	77.2					127	July 2			(-2.2)	(32.2)	(+3.1)	(237)	(1500)	(3987)
		963	68.0					178									
June 29			(-3.6)	(71.8)	(+ 2.8)	(346)	(1541)	(5003)									
									183°357								
	180°672	10963	986	282.9	135.2	+13.2	82	397			963	285.0					203
		1013f	965	264.6	128.8	- 4.5	4	9			940	275.0					117
		10969	541	233.2	81.3	-16.2	47	233			931	264.6					140
		10979	362	134.6	39.4	-11.9	3	8			827	236.1					370
		10972	342	74.3	35.3	+ 8.0	7	33		10969	904	250.2	81.3	-16.3	35	204	454c
	YERKES	10977	757	84.2	5.5	+ 6.3	36	144		10979	430	232.1	39.3	-12.3	25	59	
		10976	781	102.8	4.5	- 8.0	6	18		10972	310	285.6	36.6	+ 7.8	4	19	
		10978	871	106.9	356.0	-13.1	5	14		10973	410	198.8	27.1	-19.6	0	5	
		10980	967	98.8	340.2	- 7.8	85	519		1013g	306	204.9	26.7	-12.9	3	9	
			959	69.6				73		10976	274	134.6	7.8	- 7.9	3	7	
		980	80.4					288	G	10977	223	74.2	6.7	+ 6.5	52	204	
June 30			(-3.0)	(54.6)	(+ 2.9)	(275)	(1375)	(2865)		10980	661	106.6	339.4	- 8.4	127	743	766f
										10981	842	79.6	322.0	+10.4	2	11	312c
181°488											733	74.7					380
		984	261.9					115			786	90.0					134
		948	288.0					180			895	61.2					225
		899	272.9					52			903	101.5					199
		895	252.9					321			904	84.4					282
		787	286.9					206			941	76.4					388
		784	246.5					74			961	88.6					115
	10969	667	241.5	81.3	-16.1	44	235				980	99.7					199
	10979	277	161.9	38.8	-12.2	9	32				988	106.8					101
	10972	152	56.1	36.5	+ 7.8	9	45		July 3			(-1.8)	(19.1)	(+3.2)	(251)	(1261)	(4385)
	10973	426	144.6	28.9	-17.3	1	5										
	10977	599	83.5	7.2	+ 6.3	53	221										
	10976	666	104.9	3.5	- 7.6	9	28										
	10980	905	100.2	340.0	- 7.9	128	912	1022c	184°571		927	239.9					379
		793	110.9					66		10969	983	252.5	80.7	-16.5	48	226	306n
		862	62.9					140		10979	615	243.5	37.3	-13.2	9	35	
		911	79.1					374		10972	541	278.5	35.4	+ 7.4	1	12	
		986	81.1					123		10977	100	299.9	8.0	+ 6.1	31	160	
July 1			(-2.7)	(43.8)	(+ 3.0)	(253)	(1478)	(2673)		1013h	311	116.5	346.9	- 4.8	3	17	
									G	10980	433	116.3	340.0	- 8.0	103	535	

Group 10977. June 29-July 10. A regular spot with a train of small companions that have died out by July 8.

Group 10978. June 29-30. One or two tiny spots.

Group 10979. June 30-July 6. A pair of spots that diverge in longitude; the follower is left on July 4.

Group 10980. June 30-July 11. A large regular spot soon becoming composite and breaking up. A companion spot following it likewise dissolves as a cluster of faint markings. A large area of faculae accompanies the group.

Group 10981. July 2-6. Revival of Group 10950. One or two very small spots.

Group 10982. July 4-14. A pair of spots 3° apart in latitude of which the southern survives after July 9.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

[illegible]

Group 10983. July 6-7. One or two tiny spots in the wake of Group 10980.

Group 10983. July 8-9. One or two tiny spots in the
Group 10984. July 6-9. One or two very small spots.

Group 10985. July 7-16. A regular spot diminishing to a dot before extinction.

Group 19883. July 7-18. A regular spot diminishing to a dot before extinction.

Group 19886. July 8-17. A very large stream of rapid growth whose point of origin is represented by a tiny spot on July 8. The components of the stream are composite in character, the leader spot being large and changing considerably in appearance from day to day.

Group 10987. July 9-12. Revival of Group 10956. A very small but definite spot.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.
1929. 190'429		'976	259'0	°	°			155	1929. 193'358		'822	247'5	°	°			371
		'946	325'0					27	G		'816	259'0					213
		'866	295'5					86		10986	'584	256'9	281'3	- 4'1	221	1236	
		'773	282'7					277		10982	'527	273'9	278'5	+ 5'6	5	11	
	10977	'995	275'4	9'9	+ 5'7	24	134	553 ^{nf}		10985	'222	215'2	254'1	- 6'3	8	12	
G	10980	'847	258'3	342'1	- 7'8	24	92	1436 ^c		10989	'266	41'3	236'2	+15'6	3	5	
	10986	'188	152'6	280'5	- 5'7	115	417			10990	'606	81'1	209'6	+ 8'7	3	4	
	10982	'127	77'2	278'4	+ 5'5	14	26			10988	'803	113'5	196'9	-15'9	100	504	1249 ^f
	10985	'555	106'6	253'3	- 5'8	11	66				'947	67'5					99
	10987	'828	72'8	230'2	+16'4	4	8	528 ^f	July 13			(+2'7)	(246'7)	(+ 4'2)	(340)	(1772)	(3519)
		'749	111'2					379			'944	280'8					379
		'881	109'6					223			'924	257'5					401
July 10		'984	102'0					49			'911	243'2					187
		(+1'4)	(285'5)	(+ 3'9)		(192)	(743)	(3713)			'784	278'4					157
191'357		'894	281'6					390		10986	'761	260'3	281'8	- 4'5	192	988	285 ^p
		'787	279'7					281		10982	'709	273'6	278'3	+ 5'6	4	6	
		'855	296'7					249		10985	'402	242'5	254'1	- 6'6	10	14	
	10980	'945	260'9	343'1	- 7'2	8	42	1722 ^c	G	10989	'209	338'8	237'7	+15'4	7	14	
	10986	'202	216'3	280'1	- 5'4	245	1082			10990	'392	81'0	210'3	+ 7'5	5	12	
G	10982	'097	285'4	278'6	+ 5'5	9	21			10988	'662	120'0	196'8	-15'8	107	536	587 ^f
	10985	'378	117'2	253'5	- 6'1	10	45			10991	'990	82'8	152'0	+ 6'6	7	17	107 ^c
	10987	'696	70'4	230'3	+16'4	1	5	295 ^f		10992	'996	100'2	149'3	- 9'7	48	170	199 ^p
	10988	'981	107'8	196'4	-16'6	88	466	319 ^f			'916	68'5					390
		'864	117'0					187			'935	98'5					71
July 11		'933	107'0					190	July 14			(+3'2)	(233'2)	(+ 4'3)	(380)	(1757)	(2763)
		(+1'8)	(273'2)	+ 4'0		(361)	(1661)	(3633)			'976	283'6					92
192'353		'955	282'9					480			'954	254'6					194
		'953	263'9					670			'949	238'4					135
		'937	253'3					658			'853	280'0					436
		'893	296'7					330		10986	'892	263'0	281'9	- 4'2	175	1057	447 ^c
		'868	276'3					589		10985	'595	252'9	254'2	- 6'2	4	6	
		'756	281'7					378		10989	'338	307'0	235'7	+15'9	12	36	
G	10986	'371	245'8	279'8	- 4'9	255	1274		C	10990	'178	67'7	210'0	+ 8'2	1	3	
	10982	'320	275'3	278'6	+ 5'6	7	17			10988	'501	132'3	197'0	-15'6	79	495	
	10985	'214	145'6	253'0	- 6'0	14	57			10992	'947	101'4	149'6	- 9'3	48	186	508 ^c
	10987	'525	64'5	230'5	+16'6	3	7			10991	'949	84'3	147'8	+ 6'8	66	201	275 ^c
	10988	'915	109'9	196'5	-16'3	91	514	737 ^f		10993	'985	95'6	140'1	- 4'7	20	45	116 ^c
July 12		'830	108'6					370	July 15		'996	75'1	133'9	+15'2	27	48	511 ^p
		(+2'3)	(260'0)	(+ 4'1)		(370)	(1869)	(4212)			'846	70'7					179
193'358		'965	281'9					389			'949	278'7					454
		'953	259'5					337			'914	292'3					155
		'931	273'3					248			'875	254'3					171
G		'919	298'2					160			'845	267'5					90 ^c
		'870	282'3					453	G	10986	'973	264'1	282'9	- 4'7	124	900	671 ^c

Group 10988. July 11-23. A large regular spot becoming appreciably elongated, in a direction parallel to the sun's equator, between July 15 and 16.

There are usually some tiny attendant spots, and a considerable area of faculae follows.

Group 10989. July 13-19. A small stream forming in front of the position of Group 10987.

Group 10990. July 13-16. A diminutive stream.

Group 10991. July 14-25. A short stream with the largest component at the rear, this being a regular spot until July 19, after which it breaks up into a cluster.

Group 10992. July 14-26. A regular spot preceded by a small companion whose place is taken on July 20 by a small elongated cluster or stream that has disappeared by July 24. There is a broad bridge across the regular spot on July 19 and 21, but the spot remains intact.

Group 10993. July 15-25. A small regular spot with attendant dots on July 18-21.

Group 10994. July 15-21. A small regular spot preceded at some distance by a faint marking on July 18 and a faint cluster on July 20; the latter is all that remains of the group by the following day.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.	
1929. 196°354 G	10985 10989 10990 10988 10992 10991 10993 10994	747 499 081 386 860 860 925 961	256°9 294°6 322°3 153°2 103°7 84°7 96°7 75°5	254°0 235°1 210°0 196°7 149°4 147°7 140°2 132°8	— 6°7 +15°9 + 8°2 —15°7 — 9°4 + 6°8 — 4°4 +15°2	2 13 1 105 43 53 18 16	5 61 5 511 203 247 72 53	152c 653c 277c 320f 859p	1929. 199°355	10989 10988 10995 10992 10991 10993 1014f 10994 10996 10997	969 935 909 828 948 595 186 396 339 466 569 595 754 893	278°3 266°2 255°8 287°7 284°7 234°6 0°0 128°6 83°3 108°7 62°1 70°9 97°0 84°9	° ° ° ° 239°0 197°5 167°3 149°1 147°6 141°1 135°2 132°8 119°0 104°0	° ° ° ° +15°4 —16°0 +15°5 — 9°7 + 6°8 — 4°2 +19°4 +15°1 — 2°1 + 6°7	° ° ° ° 11 91 1 26 30 11 3 0	° ° ° ° 28 513 3 162 146 54 11 11 3 2	° ° ° ° 28 513 3 162 146 54 11 11 3 2	82 93 252 373 270f

Group 10995. July 18-20. A single dot on July 18 and 19: a pair on July 20.

Group 10996. July 18-24. A small disturbed area producing one or more tiny spots on each day except July 20.

Group 10997. July 19-23. One or two spots differing somewhat in their daily position but seemingly connected.

Group 10998. July 20-27. Return of Group 10969. A small well-defined spot fading from view on July 24, when one or two spots come near its place.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.	
1929. 201.469			°	°	°				1929. 204.389			°	°	°				
		.968	287.9					114			.962	250.9					131	
		.940	261.1					126			.960	261.8					88	
		.939	275.9					183			.954	237.9					157	
	10988	.876	248.7	197.2	-15.9	88	491	884f			.889	287.9					218	
	10992	.304	220.1	150.8	-8.5	54	230			10992	.770	254.0	149.0	-8.8	21	129	494nf	
	10991	.144	285.4	147.4	+7.1	33	96			10991	.745	276.1	148.9	+8.0	5	14	164c	
	10993	.149	193.7	141.4	-3.3	9	21			10993	.686	259.9	143.1	-3.0	3	8		
	10994	.165	359.1	139.6	+14.5	5	12			10996	.399	248.9	122.5	-3.4	1	3		
G	10996	.344	108.1	120.4	-1.4	3	5		G	10998	.468	135.6	81.0	-14.6	3	8		
	10997	.519	90.7	108.2	+4.0	17	52			10999	.555	85.3	67.0	+6.9	16	76		
	1014g	.843	89.7	82.1	+2.9	5	8	86c		11000	.914	114.5	38.7	-19.9	6	13	190f	
	10998	.870	109.6	8.8	-14.3	5	9	190c			.758	132.5					401	
	10999	.955	84.3	66.5	+6.9	24	92	266c			.813	109.7					156	
		.772	120.7					135			.944	102.5					189	
		.796	100.0					142			.970	82.0					83	
		.863	81.1					63			.973	112.9					400	
		.969	117.1					285	July 24			(+7.5)	(100.7)	(+5.2)	(55)	(251)	(2671)	
July 21			(+6.3)	(139.4)	(+5.0)	(243)	(1016)	(2474)	205.351		.966	288.1					209	
											.941	247.6					93	
202.560	10988	.965	252.0	197.2	-15.8	99	432	814sf			.930	268.6					108	
	10992	.482	241.4	150.1	-8.7	42	190				.878	237.4					119	
	10991	.399	276.3	148.4	+7.2	26	70				.817	248.5					174	
	10993	.336	244.6	142.5	-3.4	5	10				.776	291.2					276	
	1014h	.294	287.6	141.4	+10.0	3	9			10992	.889	257.2	149.1	-8.8	17	119	356nf	
	10996	.150	158.0	121.7	-2.8	5	32			10991	.868	274.0	148.3	+6.1	2	5	435c	
	10997	.273	95.0	109.2	+3.6	7	17			10993	.829	263.0	143.3	-2.8	2	6	76c	
G	1014i	.625	97.5	86.8	-0.6	1	3		G	10998	.371	162.1	81.2	-15.3	4	35		
	10998	.732	115.0	81.9	-14.2	5	13	133nf		10999	.360	82.3	67.0	+7.7	16	76		
	10999	.848	85.2	66.8	+6.7	26	135	317c		11001	.699	113.8	47.3	-12.4	4	6		
		.833	104.2					145		11000	.842	119.0	36.2	-20.8	43	154	292c	
		.896	119.0					340		11002	.915	115.8	26.3	-21.0	0	2	483c	
		.929	129.4					86			.819	132.8					136	
		.955	103.6					173			.827	101.2					91	
July 22			(+6.8)	(124.9)	(+5.1)	(219)	(911)	(2008)			.938	103.0					82	
203.561									July 25		.951	83.3	(+8.0)	(88.0)	(+5.3)	(88)	(403)	(3186)
		.966	289.4					87										
		.938	238.3					182										
		.798	291.2					138	206.418		.989	259.2					121	
	10988	.999	254.0	197.3	-15.7	91	182	480sf			.944	277.0					522	
	10992	.642	249.6	149.0	-8.7	24	139				.908	236.7					189	
	10991	.603	275.3	148.8	+7.3	11	33				.905	260.8					297	
	10993	.551	253.0	143.5	-4.8	3	9				.894	249.6					292	
	10996	.216	230.2	121.2	-2.8	5	9				.877	287.4					519	
G	1014j	.185	205.4	116.2	-4.4	3	5			10992	.974	259.8	149.5	-8.6	20	109	290np	
	10997	.158	88.2	102.6	+5.5	1	5		G	10998	.366	197.0	80.2	-15.0	3	10		
	10998	.589	123.4	81.3	-14.4	6	13			10999	.118	70.8	67.5	+7.5	14	80		
	10999	.703	85.5	67.0	+6.9	22	78	143c		11001	.493	125.8	49.9	-11.8	15	42		
		.801	128.2					329		11000	.727	125.8	34.9	-20.9	45	147		
		.897	107.0					335		11002	.810	120.8	27.4	-20.9	2	6	582c	
		.936	127.2					200			.866	101.8					322	
		.970	99.1					83			.875	83.6					460	
		.981	110.9					335			.982	96.8					308	
July 23			(+7.2)	(111.7)	(+5.2)	(166)	(473)	(2312)	July 26			(+8.4)	(73.9)	(+5.4)	(99)	(394)	(3902)	

Group 10999. July 21-Aug. 1. A stable regular spot with a tiny follower on July 21-23.
 Group 11000. July 24-Aug. 3. A stream, generally with the largest spot at the rear.
 Group 11001. July 25-Aug. 2. A stream of normal type passing rapidly through its phases.
 Group 11002. July 25-29. A diminutive stream in a fairly large area of faculae, closely following Group 11000.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbra.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbra.	Whole Spots.	Faculae.
1929. 207'354		'986	278°8	°	°			234	1929. 210'462		'901	248°7	°	°			214
		'958	257°8					375			'876	270°3					35
		'955	286°3					450			'790	234°1					185
		'930	295°8					149		10999	'722	275°1	66°7	+ 7°7	17	63	
		'859	261°0					324		11001	'604	245°1	54°0	-10°0	26	122	
		'836	287°4					184		11000	'491	206°3	33°8	-20°4	54	270	
		'811	243°2					269	G	10141	'145	108°0	12°5	+ 3°1	3	6	
	10998	'470	222°4	80°6	-15°0	5	12				'772	74°0					277
	10999	'110	288°8	67°5	+ 7°5	18	72				'808	112°1					289
	11001	'344	147°1	50°6	-11°3	55	229				'858	88°1					100
	11000	'612	135°6	34°3	-21°0	60	188				'917	75°2					298
	11002	'689	128°2	26°3	-20°7	10	22				'951	102°5					176
	11003	'717	84°3	15°6	+ 7°9	1	4	337f	July 30			(+10°1)	(20°4)	(+ 5°7)	(100)	(461)	(1574)
		'866	123°6					205			'961	271°6					140
		'941	99°2					645			'948	246°0					122
		'946	183°8					46			'945	254°9					136
		'976	81°6					234			'882	237°2					217
July 27		(+8°8)		(61°5)	(+ 5°5)	(149)	(527)	(3452)			'834	225°6					172
											'857	275°3	67°0	+ 7°5	17	56	223f
											'760	251°7	54°8	- 9°8	15	97	
											'526	246°1	36°8	- 7°2	2	17	
											'592	221°7	32°7	-20°9	48	292	
											'502	56°6	341°3	+21°2	22	47	
											'986	94°7	288°2	- 3°6	65	284	378c
											'846	74°7					408
											'912	119°1					204
											'927	106°1					185
											'981	80°1					101
												(+10°5)	(7°9)	(+ 5°8)	(169)	(793)	(2286)
									July 31		'942	241°1					263
											'899	226°2					220
											'955	276°0	67°1	+ 7°5	15	45	185f
											'884	254°5	54°0	-10°7	35	96	293f
											'709	249°3	36°3	-10°1	10	26	
											'733	233°8	33°3	-21°0	61	202	165p
											'451	280°3	20°8	+ 9°9	13	23	
											'218	155°3	348°9	- 5°5	1	5	
											'324	33°3	343°1	+21°4	19	53	
											'392	127°1	335°8	- 8°0	3	3	
											'436	64°7	330°0	+16°1	1	3	
											'612	73°8	316°9	+14°5	6	9	
											'910	96°5	289°4	- 3°4	57	253	669c
											'763	79°4					291
											'860	110°9					178
											'878	124°3					142
											'932	82°9					420
											'949	73°3					251
											'952	102°8					412
											'960	112°7					181
July 29		(+9°7)		(32°0)	(+ 5°6)	(100)	(467)	(3513)	Aug. 1			(+10°9)	(354°1)	(+ 5°9)	(221)	(718)	(3670)

Group 11003. July 27-29. One spot on July 27-28; a faint stream on July 29.

Group 11004. July 31-Aug. 2. A small ephemeral group.

Group 11005. July 31-Aug. 3. A short stream of which the leader remains after Aug. 1.

Group 11006. July 31-Aug. 11. Two regular spots not far apart in longitude; the leading and larger spot remains stable; the follower becomes composite and dissolves into a cluster.

Group 11007. Aug. 1-3. One or two small spots.

Group 11008. Aug. 1-4. A pair of small spots.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.
1929. 213'374		'980	242'3	°	°			123	1929. 216'381		'819	75'9	°	°			249
		'947	231'8					208			'913	104'0					180
	11001	'965	256'8	54'9	-11'1	17	60	279f			'937	72'3					123
	11004	'860	253'2	38'8	-11'2	2	7	191f	Aug. 5			(+12'4)	(302'1)	(+ 6'1)	(125)	(486)	(1902)
	11000	'835	239'2	32'2	-21'5	36	174	644c									
	11007	'659	277'7	23'2	+ 9'1	3	6										
	11005	'271	351'4	344'4	+21'3	11	28		217'369		'964	278'4					83
C	1015d	'268	184'6	343'1	- 9'6	9	20				'924	260'2					343
	11008	'413	70'1	318'5	+13'5	2	6				'806	202'0					91
	11006	'799	98'4	289'8	- 3'1	41	238	253f.			'804	261'9					223
		'854	86'7					167			'796	279'8					151
		'871	104'8					200			'770	248'0					144
		'886	75'7					193			'878	251'4	347'6	-13'1	9	19	170c
		'894	114'9					155	C	11011	'169	196'9	291'9	- 3'3	72	299	
		'972	100'6					94		11006	'122	38'2	284'7	+11'7	1	4	
Aug. 2			(+11'2)	(341'9)	(+ 5'9)	(121)	(539)	(2507)		11012	'359	113'6	270'0	- 2'3	20	61	
214'403		'927	257'5					124		11010	'905	116'9	229'4	-21'1	19	51	147c
		'802	237'0					127		11013	'970	101'4	214'8	- 9'4	28	160	248f
	11000	'941	245'8	34'3	-20'3	21	103	913c			'853	107'4					231
	11007	'759	278'1	17'8	+10'0	0	17	136p	Aug. 6		'920	70'6					222
	11005	'369	316'5	344'0	+21'2	5	12					(+12'8)	(289'1)	(+ 6'2)	(149)	(594)	(2053)
	11008	'188	51'6	319'7	+12'7	7	14										
	11006	'635	103'1	290'2	- 3'6	37	225				'969	258'6					545
		'910	101'8					274	218'523		'917	292'5					125
Aug. 3			(+11'7)	(328'3)	(+ 6'0)	(70)	(371)	(1574)			'901	280'4					205
215'489		'969	245'9					374			'895	266'4					200
		'965	259'3					86			'868	250'4					292
		'918	238'2					195			'837	291'4					205
		'877	274'9					490			'598	284'2	310'2	+13'5	6	12	
		'854	290'1					163	C	11009	'355	242'0	292'0	- 3'6	41	253	
	11008	'130	322'3	318'5	+11'9	1	5			11006	'304	199'2	279'6	-10'3	1	5	
	11009	'157	28'9	309'4	+13'9	1	5			1015e	'158	172'4	272'6	- 2'7	2	5	
	11006	'424	112'0	290'8	- 3'5	51	234			11010	'773	123'0	230'2	-20'3	13	99	159c
	11010	'707	99'5	269'8	- 2'3	29	77			11013	'872	104'4	215'2	- 9'3	27	200	216f
		'843	100'7					152		11014	'970	107'2	200'4	-15'0	28	145	299f
		'923	75'4					213			'753	68'8					134
		'951	100'3					139			'885	78'9					139
Aug. 4			(+12'1)	(313'9)	(+ 6'1)	(82)	(321)	(1812)	Aug. 7		'906	67'0					185
216'381		'962	244'5					214				(+13'2)	(273'8)	(+ 6'3)	(118)	(719)	(2704)
		'941	275'4					228	219'351		'965	280'7					111
		'932	289'5					150			'954	267'3					225
		'872	246'3					74			'926	288'7					254
		'836	260'0					308			'926	252'4					329
	11011	'748	245'9	346'5	-13'4	7	14	272c			'899	241'9					123
	11006	'253	129'5	290'9	- 3'2	61	312				'839	271'3					162
	11012	'260	79'0	287'2	+ 8'7	0	7				'823	283'8					245
	11010	'543	103'7	270'4	- 2'2	37	121			11006	'520	252'0	292'5	- 3'7	52	210	
G	11013	'976	114'1	228'5	-21'9	20	32	104c	G	11016	'365	279'3	284'2	+ 9'2	10	15	
										1015f	'381	244'6	283'0	- 3'4	1	5	

Group 11009. Aug. 4-10. Intermittent. A small marking on Aug. 4; a pair of spots on Aug. 7, 9 and 10.

Group 11010. Aug. 4-7. A small short-lived stream showing characteristic formation.

Group 11011. Aug. 5-6. A couple of small spots.

Group 11012. Aug. 5-6. A single spot on each day.

Group 11013. Aug. 5-11. A small stream led by a regular spot which survives on Aug. 10.

Group 11014. Aug. 6-17. A regular spot invaded by a narrow bright marking from the photosphere on Aug. 14.

Group 11015. Aug. 7-18. Return of Group 10988. A regular spot with small clusters of tiny spots, south-following, between Aug. 9 and 15.

Group 11016. Aug. 8-12. A short stream of which the leader remains on Aug. 11.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.	
1929. 219°35'1 G	II013 II014 II015	668 765 908	130°3 107°7 109°9	230°1 215°5 200°9	-20°2 - 9°2 -15°1	20 33 44	117 189 160	 252f 412f	1929. 222°45'6 G	II019 II014 II015 II017 II018	254 284 509 911 918	0°9 159°2 136°2 104°1 87°8	221°6 216°0 200°5 158°3 155°1	+21°2 - 8°9 -15°4 -10°0 + 4°6	25 45 45 6 23	59 254 156 11 71	 451c 570c 138	
Aug. 8		780 863 963 973	70°9 117°7 76°6 112°3					137 178 84 266			754 802 876 919 967	75°7 124°3 95°7 115°2 77°2					530 99 101 264 (3402)	
220°6'27		981 957 852	286°6 273°1 243°4					229 124 238	Aug. 11			(+14°7)	(221°8)	(+ 6°5)	(191)	(753)		
	II009 II006 II016 G II013 II014 II015	910 757 626 504 558 769	281°0 258°5 276°0 150°7 116°4 116°4	312°0 293°9 284°9 230°9 215°7 200°5	+12°7 - 4°4 + 8°7 -19°8 - 8°8 -15°5	25 38 23 12 44 26	84 186 65 31 241 177	248c 276f	223°3'69		969 957 955 940 879 875	265°4 257°3 247°9 286°4 255°0 264°4					340 224 106 116 100 136	
		848 863 930 957	105°2 78°0 116°0 76°5					90 89 745 109		II016 II019 II014 II015 1015g 1015h II017 II020 II018	972 333 285 394 180 717 805 823 826	275°2 320°2 202°8 157°5 74°4 125°6 107°8 102°5 89°8	286°3 222°8 216°1 200°8 199°6 171°6 158°8 156°0 154°0	+ 6°5 +21°1 - 8°7 -14°8 + 9°1 -19°5 -10°1 - 6°4 + 3°8	10 10 35 30 3 4 8 12 47	19 42 244 136 5 8 24 114	290w/f 581c 678c 219 110 164 157 79	
Aug. 9			(+14°0)	(246°0)	(+ 6°4)	(168)	(784)	(2148)	G									
221°4'03		956 948 932 850 767	273°9 289°1 248°1 270°1 247°2					153 149 242 97 418			920 939 946 958	120°4 100°4 73°4 109°0						
	II009 II006 II016 G II013 II014 II015 II017 II018	970 871 754 438 425 669 982 991	281°7 260°9 275°4 172°3 127°3 123°0 101°5 84°7	312°5 295°1 284°8 232°1 215°8 200°1 158°3 153°1	+12°9 - 4°7 + 8°3 -19°3 - 8°9 -16°1 - 9°9 + 6°1	28 27 19 5 32 40 13 0	114 157 82 19 233 177 23 66	392c 425f 211c 438p 412c	Aug. 12			(+15°0)	(209°7)	(+ 6°5)	(159)	(596)	(3300)	
		871 754 438 425 669 982 991 861 869 906	260°9 275°4 172°3 127°3 123°0 101°5 84°7 96°7 118°7 74°3						224°3'60		948 945 799 485 420 378 274 657 662 678	265°6 256°0 257°1 302°6 232°0 188°2 15°2 114°2 108°8 92°2						194 121 76c
Aug. 10			(+14°3)	(235°7)	(+ 6°4)	(164)	(871)	(4248)	G		1015i II019 II014 II015 II021 II017 II020 II018	799 485 420 378 274 657 662 678	257°1 302°6 232°0 188°2 15°2 114°2 108°8 92°2	248°0 222°5 216°1 199°8 192°1 159°2 157°6 154°0	- 6°2 +21°1 - 8°7 -15°3 +21°8 -10°4 - 7°2 + 3°4	4 5 45 27 3 1 39 26	7 19 218 145 7 6 153 109	
222°4'56		899 893 837 761	244°7 253°7 286°7 258°9					98 196 104 243			949 949 983	65°9 97°6 88°5					277 301 166 137 137 133	
	II006 II016 G II013	964 903 465	263°3 274°7 202°3	295°4 286°6 232°5	- 4°6 + 7°0 -19°0	26 16 5	165 31 6	402f 206c	Aug. 13			(+15°4)	(196°6)	(+ 6°6)	(150)	(664)	(1542)	

Group 11017. Aug. 10-13. Return of Group 10992. A tiny spot in conspicuous faculae: Group 11020 originates northwards on Aug. 13.
 Group 11018. Aug. 10-19. A stream in continuous change.
 Group 11019. Aug. 11-14. A small definite spot with a follower.
 Group 11020. Aug. 12-22. A large stream showing rapid development from a cluster of tiny spots on Aug. 12. The leader spot is duplex on Aug. 15; the follower breaks up into a cluster on Aug. 19-20.
 Group 11021. Aug. 13-19. An imperfectly formed spot becoming regular with a train of tiny companions.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.
1929. 225'366		'949	277'1	°	°			100	1929. 227'376		'943	277'9	°	°			115
		'924	263'1					280			'937	243'8					278
		'888	251'3					197			'898	287'8					304
		'882	283'7					139			'751	290'2					126
		'798	264'6					95		11014	'881	256'4	216'6	- 8'6	19	113	204 ^f
		'777	235'4					270		11015	'751	243'3	200'6	-14'9	14	70	168 ^c
		'772	249'9					160		11021	'633	297'8	193'9	+22'5	22	127	
	11019	'684	293'3	225'3	+20'6	1	5			11022	'587	223'2	182'9	-19'1	38	162	
	11014	'592	245'5	216'2	- 8'6	29	178			11020	'254	186'4	158'4	- 7'9	129	699	
	11015	'466	217'5	200'3	-15'3	20	121		C	11024	'215	9'5	154'7	+18'9	2	5	
	11021	'305	331'5	192'3	+22'1	15	52			11018	'068	145'8	154'6	+ 3'4	26	150	
	11015 ^j	'427	190'5	188'0	-18'1	1	6			11023	'117	80'0	150'2	+ 7'8	6	22	
G	11022	'427	175'9	181'5	-18'5	23	58			11026	'903	99'0	93'5	- 5'1	13	72	343 ^f
	11020	'484	119'1	158'2	- 7'6	108	442			11028	'957	106'8	86'3	-13'9	31	103	193 ^c
	11018	'486	95'5	154'4	+ 3'2	44	164			11027	'953	89'1	84'5	+ 2'9	57	210	300 ^c
	11023	'553	85'9	149'6	+ 7'8	5	38				'782	120'8					165
		'768	73'2					377			'784	75'3					147
		'835	58'4					123			'797	89'4					162
		'856	99'4					202			'865	112'0					89
		'862	113'3					101	Aug. 16			(+16'4)	(156'8)	(+ 6'7)	(357)	(1733)	(2594)
		'893	75'1					155			'973	245'0					58
		'913	126'3					138			'932	289'9					218
		'946	111'3					138			'927	280'9					75
		'946	89'9					330			'964	259'3	216'9	- 8'3	17	80	307 ^f
Aug. 14		976	75'9	(+15'7)	(183'3)	(+ 6'6)	(246)	(1064)	(2881)		'964	259'3	216'9	- 8'3	17	80	307 ^f
										11014	'869	248'5	200'4	-14'7	9	46	391 ^f
226'354		'964	283'9					148		11015	'786	294'3	194'9	+23'2	39	182	235 ^c
		'949	264'1					107		11021	'721	237'2	183'4	-17'8	55	241	
		'910	253'3					149		11022	'618	285'3	181'8	+14'7	3	10	
		'877	241'6					200	G	11029	'358	227'5	159'3	- 7'4	110	687	
		'784	291'9					142		11020	'204	257'8	155'4	+ 4'2	39	106	
	11014	'749	252'1	216'2	- 8'6	20	171	132 ^p		11018	'204	257'8	155'4	+ 4'2	39	106	
	11015	'603	234'1	200'5	-14'9	18	87			11024	'276	333'3	151'5	+21'0	1	3	
	11021	'478	306'8	194'7	+22'7	26	78			11023	'119	278'1	150'7	+ 7'8	2	9	
	11022	'460	204'8	182'0	-18'0	30	95			11026	'789	101'9	93'3	- 5'0	13	74	357 ^f
	11020	'320	139'9	158'4	- 7'5	148	749			11028	'872	109'9	86'6	-13'7	25	107	167 ^c
G	11018	'273	101'9	154'9	+ 3'2	48	216			11027	'858	91'1	85'0	+ 2'6	40	109	441 ^c
	11024	'344	49'4	154'3	+19'3	5	12		Aug. 17		'955	82'6					121
	11023	'351	83'9	149'7	+ 8'4	6	24				(+16'7)	(143'9)	(+ 6'8)	(353)	(1654)	(2370)	
	11025	'900	75'1	105'6	+16'3	6	10	77 ^f									
	11026	'979	96'9	93'1	- 5'3	22	60	113 ^c			'969	288'2					80
	11027	'988	88'6	89'2	+ 2'5	6	16	104 ^p	229'410		'800	230'3					204
		'778	101'6					180		11015	'955	252'0	199'7	-14'9	7	15	492 ^f
		'832	114'1					82		11021	'910	292'3	195'9	+23'1	30	142	410 ^f
		'858	91'2					398		11029	'809	282'1	184'2	+13'8	30	141	166 ^c
		'919	117'3					130		11022	'850	244'3	183'2	-17'6	59	242	635 ^c
Aug. 15		'941	104'9	(+16'1)	(170'3)	(+ 6'7)	(335)	(1518)	(2045)	C	11020	'534	244'6	158'9	- 7'3	108	644
										11018	'416	264'8	154'3	+ 4'1	21	66	

Group 11022. Aug. 14-20. A cluster of smallish spots lengthening to a stream in which the leader and follower, now widely separated in longitude, alone remain on Aug. 19 and 20.

Group 11023. Aug. 14-17. A small cluster *nf* Group 11018.

Group 11024. Aug. 15-17. One or two very small spots.

Group 11025. Aug. 15-26. A small ephemeral spot on Aug. 15; on Aug. 19 another small spot; on Aug. 20 a small stream led by a regular spot that remains on Aug. 25 after the disappearance of its companions.

Group 11026. Aug. 15-26. A small steady regular spot with companions on Aug. 18-20.

Group 11027. Aug. 15-23. A row of smallish spots.

Group 11028. Aug. 16-27. A pair of spots widely separated in longitude. The follower disappears after Aug. 19. when the leader shows a temporary increase.

Group 11029. Aug. 17-20. A small stream in which the leader, a regular spot, is predominant.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.
1929. 229°410 C	II026 II028 II027	.627 .737 .719 .884 .957 .960	106°7 115°8 92°5 84°6 119°4 103°5	93°0 87°0 84°1	— 4°9 — 13°7 + 3°0	14 21 34	51 60 82	233c 229c 95 343 236	1929. 232°495	II020 1015k II025 II026 II028 II027 II030 II031 II032	.965 .945 .910 .852 .833 .960 .691 .292 .220 .350 .076 .517 .393 .957 .813 .823 .854 .855 .874 .930 .943 .952 .963	265°7 248°0 271°2 286°3 256°9 260°5 290°9 300°6 198°0 186°5 141°1 146°7 121°9 80°5 104°7 119°5 83°6 70°7 132°3 105°9 118°1 88°9 69°7	° ° ° ° ° 161°4 132°1 104°1 93°0 91°4 86°4 71°7 69°6 15°3	— 7°1 + 19°3 + 15°2 — 5°2 — 13°4 + 3°6 — 18°9 — 5°4 + 11°1	74 1 34 11 14 3 18 1 3	482 5 150 26 87 10 87 3 12	205 172 672 130 144 593c
Aug. 18		(+17°1)	(129°9)	(+ 6°8)	(324)	(1443)	(3123)		G		(+18°1)	(89°1)	(+ 6°9)	(159)	(862)	(4071)	
230°120	II021 II029 II022 II020 K II018 II025 II026 II028 II027	.988 .862 .970 .906 .931 .662 .576 .341 .504 .628 .612 .810 .813 .877 .978	252°4 230°2 292°1 281°3 247°7 251°3 265°4 63°6 111°2 121°9 94°4 85°5 123°7 106°0 109°7	197°8 186°1 185°0 159°5 155°4 102°1 92°5 87°4 83°0	+ 23°0 + 13°1 — 17°7 — 6°9 + 2°9 + 15°1 — 4°5 — 13°7 + 2°8	30 24 55 103 5 1 22 25 13	180 184 244 698 20 4 67 101 54	255 171 333f 240c 795c	Aug. 21	II020 II025 II026 II028 II030 II031 II032	.971 .943 .922 .837 .987 .497 .353 .427 .439 .869 .745 .882 .906 .942	272°5 282°8 297°2 288°3 261°0 288°8 234°4 217°7 171°5 81°2 127°0 122°3 69°4 102°4	155°6 105°4 93°0 91°8 72°4 15°5	— 7°7 + 15°3 — 5°1 — 12°9 — 19°1 + 11°1	33 30 12 15 38 0	94 153 34 90 238 5	318 243 111 128 264c
Aug. 19		(+17°2)	(120°5)	(+ 6°8)	(278)	(1552)	(2481)		G		(+18°4)	(76°3)	(+ 7°0)	(128)	(614)	(2611)	
231°353	II029 II022 II020 II025 II026 II028 II027 II030 II031	.988 .952 .895 .894 .838 .784 .988 .995 .847 .145 .285 .410 .381 .621 .622	291°7 237°5 249°6 286°5 237°9 270°5 280°9 252°1 257°5 5°5 135°6 146°3 100°3 130°9 108°3	186°2 185°8 160°4 103°4 92°7 90°7 82°3 74°8 67°9	+ 11°8 — 16°9 — 6°8 + 15°2 — 4°9 — 13°1 + 2°5 — 17°9 — 5°7	28 32 77 24 14 20 3 12 4	186 178 552 88 43 106 9 36 7	257nf 555c 804c	Aug. 22	II020 II025 II026 II028 II030 II032	.934 .926 .897 .807 .804 .674 .526	249°0 286°7 260°2 247°9 269°3 285°2 247°9	106°1 93°1	+ 15°4 — 5°3	45 8	175 14	110 203 115 105 153
Aug. 20		(+17°7)	(104°2)	(+ 6°9)	(214)	(1205)	(5048)		G	II025 II026	.934 .926 .897 .807 .804 .674 .526	249°0 286°7 260°2 247°9 269°3 285°2 247°9	106°1 93°1	+ 15°4 — 5°3	45 8	175 14	110 203 115 105 153

Group 11030. Aug. 20-28. A pair of spots with small companions showing the usual drifting apart in longitude as the group is developing.

Group 11031. Aug. 20-28. A variable stream n Group 11030.

Group 11032. Aug. 21-26. A pair of small spots on Aug. 21 and 26; a single spot on Aug. 22.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.
1929. 234.400 G	11028 11027 11030 11031	.565 .382 .459 .250	234.9 256.9 198.3 200.5	92.1 85.6 72.6 68.9	-12.7 +1.5 -18.8 -6.5	16 1 59 9	92 5 293 25		1929. 237.347 G	11030 11031 11032 11033	.811 .745 .104 .543	240.5 256.3 61.0 115.5	73.0 71.4 19.7 355.5	-18.8 -5.3 +10.0 -7.3	41 36 2 6	241 208 7 21	431c
Aug. 23		.732 .818 .901	81.7 126.8 103.7					233 415 499			.837 .857 .872 .955 .962 .981	73.4 114.5 90.3 104.5 75.5 96.3					571 296 189 171 419 103
235.429		.956 .940 .932 .929 .903 .846	287.5 251.2 300.0 271.0 238.0 270.0					200 199 201 299 209 191		Aug. 26		(+19.5)	(25.0)	(+7.1)	(119)	(660)	(4180)
	11025 11026 11028 11030 11031	.834 .703 .722 .559 .387	283.6 255.0 244.6 219.6 233.2	107.2 93.1 92.1 72.3 68.4	+15.2 -5.3 -12.8 -19.0 -6.7	25 13 13 63 15	125 16 72 331 27	350c		238.348	.964 .842 .793 .763 .989 .994 .916 .888 .364 .859 .870 .953 .974	292.9 233.2 218.0 250.4 274.0 256.0 245.8 261.0 129.1 82.5 71.2 96.8 84.4					178 235 102 105 370sf 300nf 483c 302c
Aug. 24		.816 .848 .909 .928 .946 .958	133.8 108.4 93.4 84.7 74.9 102.8					285 482 130 66 284 267		Aug. 27		(+19.8)	(11.8)	(+7.1)	(118)	(410)	(3208)
236.363		.956 .945 .908 .772	271.3 242.1 231.0 268.6					173 165 183 395		239.348	.912 .879 .780 .730 .980 .967 .248 .463 .876 .901 .959	234.5 254.5 238.8 226.3 249.5 263.5 165.7 95.5 100.1 84.9 109.1					206 130 227 174 469c 335c
	11025 11026 11028 11030 11031 11033	.942 .834 .848 .689 .574 .716	283.2 258.4 250.2 232.2 249.6 108.8	109.3 92.9 92.6 73.1 70.6 355.0	+14.8 -5.6 -12.6 -19.1 -5.6 -8.1	21 4 13 41 39 6	94 13 62 268 110 10	425f 208f 181f 287sf		Aug. 28		(+20.1)	(358.6)	(+7.1)	(74)	(278)	(2578)
Aug. 25		.831 .892 .916 .940	93.2 74.2 109.7 88.8					650 657 407 199		240.353	.969 .967 .956 .885 .865 .855 .309 .271 .706	258.6 240.2 229.1 254.4 237.7 276.0 217.8 95.8 106.8					100 141 123 174 382 65
237.347		.981 .956 .904 .869	272.3 234.2 294.5 269.7					103 114 186 643									
	11025 11028 11026	.991 .942 .933	284.3 253.7 260.8	108.6 92.7 92.6	+15.1 -12.7 -5.9	18 13 3	83 97 3	386f 281f 287f		G	11033 11034 11035						

Group 11033. Aug. 25-31. A small stream or cluster.

Group 11034. Aug. 28-30. Two or three faint spots.

Group 11035. Aug. 29-31. One or two small spots.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.
1929. 240°353 G			°	°	°				1929. 243°352 G			°	°	°			
		774	101°7					224		11037	811	253°6					512
		789	87°2					165			803	241°6					123
		858	95°4					165			491	128°8	282°8	-11°2	5	21	186
		887	109°6					279			882	106°4					169
		954	94°8					120			892	78°9					166
Aug. 29			(+20°4)	(345°3)	(+ 7°2)	(24)	(106)	(1938)	Sept. 1		967	77°8					
												(+21°2)	(305°7)	(+ 7°2)	(5)	(21)	(2229)
241°364		959	258°7					47									
		952	279°7					52									
		951	243°5					334									
		846	291°7					110									
		844	236°8					507									
		806	278°2					435									
G	11033	470	241°2	356°3	- 6°5	23	70				983	247°1					133
	11036	506	226°4	354°0	-13°7	1	5				976	279°2					142
	11034	067	143°7	329°6	+ 4°1	4	14				956	290°6					69
	11035	505	111°8	304°0	- 4°4	3	5				952	233°6					182
		809	114°2					421			935	268°8					150
		904	97°9					184			928	258°8					661
Aug. 30			(+20°6)	(331°9)	(+ 7°2)	(31)	(94)	(2090)	G	11038	898	250°2					199
											824	263°0					129
											036	166°4	291°8	+ 5°2	9	20	
											098	74°4	286°8	+ 8°7	1	1	
											359	157°6	284°3	-12°2	5	10	
											827	79°1					104
242°349		988	245°5					170			867	111°6					108
		979	253°9					55			923	78°6					146
		954	277°9					167			928	35°5					76
		921	240°3					461			951	115°6					189
		917	291°5					113			960	126°2					72
		872	277°2					348			964	104°5					200
		854	225°1					168	Sept. 2			(+21°4)	(292°3)	(+ 7°2)	(15)	(31)	(2560)
		847	264°3					106									
		790	237°0					175									
		789	253°2					275									
G	11033	644	250°3	356°4	- 6°8	9	20										
	11036	608	237°1	350°4	-13°1	1	4				981	258°3					469
	11035	323	126°5	303°9	- 4°1	1	4				912	269°2					324
		868	55°9					86			909	257°3					121
		903	80°1					222			896	293°3					152
		905	102°4					153			860	281°9					220
		979	79°7					120			831	243°1					334
Aug. 31			(+20°9)	(318°9)	(+ 7°2)	(11)	(28)	(2619)	G	11038	213	261°6	291°5	+ 5°2	3	5	
											346	192°9	283°8	-12°4	5	28	
											11037	79°2	229°2	+12°9	4	8	
											11039	764	79°1	196°5	+21°7	35	164
											988	69°1					63nf
243°352		963	244°3					242			868	121°7					113n
		957	279°6					301			883	107°1					277
		944	231°6					118			883	72°5					260
		925	268°5					88			969	108°6					188
		869	291°6					114			989	77°1					271
		850	277°7					102				(+21°7)	(279°3)	(+ 7°2)	(47)	(205)	52
G		821	265°2					108	Sept. 3								(2844)

Group 11036. Aug. 30-31. A very small spot *sf* Group 11033.
 Group 11037. Sept. 1-4. A diminutive stream.
 Group 11038. Sept. 2-4. A diminutive stream of which the follower alone remains on Sept. 3.
 Group 11039. Sept. 3-4. A small definite spot.
 Group 11040. Sept. 3-13. Return of Group 11021. A regular spot disappearing rather suddenly.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae	Whole Spots.	Faculae.
1929. 246'408		'969	274'5					187	1929. 249'353		'963	261'4					382
		'926	252'8					259			'926	277'4					267
		'903	288'5					290			'891	249'0					371
		'887	237'9					150		11045	'720	278'1	272'7	+10'8	13	77	
		'866	273'1					285		11041	'636	253'8	264'0	-4'5	72	306	
	1016b	'742	280'5	313'5	+12'6	4	10		G	11042	'422	217'2	241'5	-12'6	4	13	
	11038	'437	267'5	291'2	+5'1	5	6			11043	'100	34'0	223'1	+11'9	2	7	
	11037	'478	227'7	286'4	-12'0	2	5			11040	'553	61'3	195'1	+21'5	15	79	
	11039	'583	77'0	229'7	+13'4	2	7			11044	'872	104'5	167'9	-8'9	14	65	952c
	11040	'932	69'3	195'7	+21'8	12	103	466n			'863	122'8					690
		'784	110'5					233			'917	84'4					465
		'819	126'0					102	Sept. 7			(+22'6)	(226'4)	(+7'2)	(120)	(547)	(3127)
		'903	110'7					626			'975	278'4					73
		'959	77'2					345			'961	254'6					188
		'979	108'4					528			'953	245'4					72
Sept. 4		(+21'9)	(265'3)	(+7'2)	(25)	(131)	(3471)				'936	263'9					179
247'364		'963	249'7					227			'837	269'6					80
		'959	289'7					176		11045	'887	278'0	275'2	+10'4	7	21	141f
		'954	272'6					130		11041	'804	260'0	264'5	-3'6	53	263	371c
		'946	239'8					76		11043	'161	318'5	218'5	+14'1	14	47	
		'911	260'7					140		11040	'373	48'4	194'9	+21'3	17	76	
		'881	249'3					123	C	11046	'666	102'1	171'7	-2'5	3	6	
		'879	282'1					199		11044	'734	109'6	167'9	-9'0	16	52	562f
		'764	255'7					381			'822	89'2					269
		'271	220'9	262'9	-4'6	55	166				'837	73'8					151
	G	'378	152'5	242'4	-12'4	2	5				'853	131'6					262
	11042	'545	77'0	219'8	+13'1	4	8				'919	108'0					301
	11043	'545	77'0	219'8	+13'1	4	8				'946	75'6					295
	11040	'837	68'7	195'9	+21'7	18	90	288nf				(+22'8)	(212'2)	(+7'3)	(110)	(465)	(2944)
	1016c	'947	110'6	185'1	-16'8	0	6	461f	Sept. 8								
		'819	117'2					435			'844	248'9					123
		'886	77'7					477			'812	279'7					116
		'910	112'1					396			'966	278'6	275'6	+10'1	4	10	151f
		'957	121'3					116		11041	'911	262'6	264'4	-3'7	52	302	583c
		'971	99'7					139		1016d	'407	259'0	223'3	+2'2	3	5	
Sept. 5		(+22'1)	(252'7)	(+7'2)	(85)	(275)	(3764)			11043	'332	293'4	218'0	+14'4	12	54	
248'355		'939	283'3					137		11040	'259	19'3	194'6	+21'2	18	71	
		'924	241'0					132		1016e	'571	145'5	179'6	-21'2	3	7	
		'884	258'6					510		11046	'479	110'6	173'2	-3'3	0	11	
		'823	276'1					216		11047	'484	68'9	171'8	+16'4	8	18	
		'767	246'4					216	G	11044	'589	116'6	167'7	-9'2	11	54	
	11041	'464	245'5	264'5	-4'5	68	393			11048	'636	107'6	162'4	-5'3	3	13	
	11042	'343	187'2	242'1	-12'6	8	17				'776	139'4					183
	11040	'708	66'4	195'5	+21'7	18	94	169nf			'777	124'2					107
	11044	'958	101'8	168'1	-9'1	12	71	750c			'883	108'2					157
		'809	116'6					377			'895	72'4					323
		'809	78'1					202			'961	97'6					85
		'931	116'5					521			'964	87'8					89
Sept. 6		'976	86'2					214	Sept. 9			(+23'0)	(199'8)	(+7'2)	(114)	(545)	(1917)
		(+22'4)	(239'6)	(+7'2)	(106)	(575)	(3444)										

- Group 11041. Sept. 5-10. A stream appearing suddenly with a predominant leader spot.
 Group 11042. Sept. 5-7. A pair of small spots.
 Group 11043. Sept. 5-10. An ephemeral spot on Sept. 5; a small stream near its place on Sept. 7-10.
 Group 11044. Sept. 6-13. Return of Group 11020. A decreasing regular spot, in considerable faculae, with a tiny follower on Sept. 9.
 Group 11045. Sept. 7-9. A very small cluster on Sept. 7 of which one component remains on Sept. 8 and 9.
 Group 11046. Sept. 8-9. One or two small faint spots.
 Group 11047. Sept. 9-16. Intermittent. A couple of small spots on Sept. 9 and 10; on Sept. 13 a small group appears in the same place.
 Group 11048. Sept. 9-13. One or two faint spots *nf* Group 11044.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.
1929. 252.468			°	°	°				1929. 255.412			°	°	°			
		.915	281.8					117			.960	256.3					139
		.858	265.1					121			.941	284.4					337
		.853	252.0					233			.902	246.4					577
	11041	.984	265.0	264.3	- 3.6	71	248	443c		1016f	.783	243.5					705
	11043	.583	281.8	221.0	+13.3	3	5			11040	.956	274.3	219.6	+ 6.2	8	27	246f
	11040	.285	328.8	194.4	+21.2	17	71			11047	.743	292.8	193.7	+21.7	1	7	
	11047	.251	50.8	173.7	+16.1	5	17			11044	.503	290.6	175.7	+16.4	8	52	
	11044	.409	133.4	167.8	- 9.4	8	28			11048	.458	233.2	168.1	- 9.1	3	6	
G	11048	.433	117.8	162.8	- 5.0	3	6		G	11048	.350	229.4	161.8	- 6.2	0	5	
	11049	.980	87.6	106.7	+ 3.8	5	12	223nf		11049	.618	90.2	108.2	+ 5.6	6	20	
		.789	70.2					188		11051	.874	75.3	84.8	+16.5	5	9	265f
		.861	89.0					167			.789	106.8					289
		.871	101.9					119			.828	94.3					201
		.880	60.0					119			.883	106.4					211
		.922	114.6					101			.949	98.2					462
		.976	76.0					101			.954	112.8					130
Sept. 10		(+23.2)	(185.3)	(+ 7.2)	(112)	(387)	(1932)		Sept. 13		(+23.8)	(146.4)	(+ 7.2)	(31)	(126)	(3562)	
253.358		.972	283.1					132			.991	275.8					162
		.940	254.0					197		256.377	.961	250.6					280
		.831	281.6					117			.920	277.6					86
		.815	232.6					113			.888	247.2					410
		.778	245.6					164			.851	293.3					162
	11040	.415	307.4	194.1	+21.3	9	42				.819	281.3					153
G	11044	.303	161.2	167.8	- 9.5	7	17				.806	243.0					294
	11048	.284	140.4	163.1	- 5.8	3	7				.769	227.6					555
	11050	.831	87.7	117.1	+ 5.9	6	12	132c		11047	.668	287.0	175.4	+16.7	3	6	
	11049	.908	87.0	108.1	+ 5.7	6	21	515nf		11050	.302	96.2	116.2	+ 5.0	4	14	
		.908	74.7					192	G	11049	.440	92.2	107.6	+ 5.5	6	34	
		.971	95.6					102		11051	.748	74.6	85.2	+16.3	2	4	145f
Sept. 11		.985	103.2					51		11052	.970	99.0	59.1	- 6.8	18	83	354p
		(+23.4)	(173.5)	(+ 7.2)	(31)	(99)	(1715)				.760	109.8					142
254.354		.906	235.7					119			.804	118.8					72
		.895	250.5					151			.862	99.0					394
		.861	283.2					239			.930	116.6					238
		.830	273.9					85			.944	87.0					94
		.778	242.0					228	Sept. 14		(+24.0)	(133.7)	(+ 7.2)	(33)	(141)	(3541)	
	11040	.579	297.6	193.7	+21.5	9	16				.954	251.4					551
	11044	.305	203.6	167.5	- 9.0	7	13				.938	292.8					206
	11048	.203	192.8	163.0	- 4.2	0	3		257.427		.930	283.4					232
	11050	.693	89.2	116.4	+ 5.9	1	8				.886	239.6					407
G	11049	.795	89.0	107.7	+ 5.2	11	19	615nf			.848	227.2					182
	11051	.966	75.2	84.2	+16.1	0	13	195nf			.826	263.3					249
		.843	71.8					183			.817	215.8					129
		.908	122.7					192			.769	236.4					107
		.914	96.8					270			.748	250.4					290
		.920	107.2					149		11047	.820	284.2	175.2	+15.7	11	65	202c
		.955	83.6					149		11050	.062	123.5	116.8	+ 5.2	1	5	
		.971	103.0					115	C	11049	.217	94.0	107.3	+ 6.1	4	23	
Sept. 12		.991	95.3					180									
		(+23.6)	(160.4)	(+ 7.2)	(28)	(72)	(2870)										

Group 11049. Sept. 10-17. One or sometimes two small spots followed by very bright faculae.
 Group 11050. Sept. 11-18. A slight but persistent centre of activity shown usually by a single small spot.
 Group 11051. Sept. 12-14. A small spot.
 Group 11052. Sept. 14-23. A decreasing regular spot with a tiny follower on Sept. 19.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.	
1929. 257.427 C	1016g 11052	.700 .891 .781 .846 .909 .959	° 104.2 101.8 110.1 121.0 111.4 121.8	° 77.1 58.5	° - 4.6 - 7.1	3 20	8 92	557f 120 185 79 146	1929. 260.369		.986 .970 .969 .946 .945 .852 .826	° 264.7 273.8 230.7 283.9 251.9 251.0 287.9	° ° ° ° ° ° °	° ° ° ° ° ° °			128 275 96 128 127 108 93	
Sept. 15		(+24.2)	(119.8)	(+ 7.2)		(39)	(193)	(3642)										
258.578		.957 .924 .898 .882 .848 .827	241.8 265.4 230.3 256.6 218.4 244.0					308 199 154 416 68 163			.937 .959 .962 .964	133.7 93.2 117.1 104.2						
G	11047 11053 1016h 11049 11052 11054	.942 .765 .281 .014 .745 .994	285.0 269.8 269.6 185.6 106.4 111.8	176.0 154.5 121.0 104.7 58.7 24.3	+16.6 + 4.5 + 6.8 + 6.4 - 7.1 -20.6	26 2 1 1 20 61	132 4 3 7 93 228	298c 213np 485f 94c 160 191 213 177	Sept. 18		(+24.7)	(81.0)	(+ 7.1)	(42)	(283)	(2504)		
		.900 .925 .934 .938	129.0 116.8 81.0 104.2					160 191 213 177	261.367		.962 .953 .890 .881 .879 .709	263.7 254.0 288.2 272.6 263.2 270.6						
Sept. 16		(+24.4)	(104.6)	(+ 7.2)		(111)	(467)	(3139)										
259.434		.986 .985 .978 .954 .953 .930 .873 .853	243.0 285.3 266.1 233.9 258.5 246.1 283.9 250.3					131 279 118 148 422 127 161 139			.917 .950 .896 .872 .844 .834	108.0 273.2 253.6 296.2 281.8 271.2						
		.900 .925 .934 .938	129.0 116.8 81.0 104.2					160 191 213 177	261.367		.962 .953 .890 .881 .879 .709	263.7 254.0 288.2 272.6 263.2 270.6						
Sept. 16		(+24.4)	(104.6)	(+ 7.2)		(111)	(467)	(3139)										
259.434		.986 .985 .978 .954 .953 .930 .873 .853	243.0 285.3 266.1 233.9 258.5 246.1 283.9 250.3					131 279 118 148 422 127 161 139			.917 .950 .896 .872 .844 .834	108.0 273.2 253.6 296.2 281.8 271.2						
	G	11053 11050 11049 11055 11052 11054	.887 .386 .253 .346 .613 .957	272.3 266.5 264.6 184.2 112.3 114.3	155.9 116.0 107.9 94.8 58.6 24.7	+ 5.3 + 5.3 + 5.6 -12.9 - 7.5 -20.7	5 1 1 5 9 37	15 5 5 7 84 260	293c 73 112 310 142 102 395 109	262.431		.950 .896 .872 .844 .834	273.2 253.6 296.2 281.8 271.2				196 101 160 142 186	
		.770 .835 .853 .860 .888 .894 .945	107.3 134.7 122.3 105.0 67.7 82.9 103.5					299f 73 112 310 142 102 395 109			.917 .950 .896 .872 .844 .834	108.0 273.2 253.6 296.2 281.8 271.2						
Sept. 17		(+24.5)	(93.3)	(+ 7.2)		(58)	(376)	(3360)	Sept. 20		(+25.0)	(53.8)	(+ 7.1)	(94)	(493)	(2008)		

Group 11053. Sept. 16-17. A single spot on Sept. 16; a pair on Sept. 17.

Group 11054. Sept. 16-27. A regular spot becoming elongated on Sept. 22-23, before breaking up and quickly disappearing.

Group 11055. Sept. 17-22. A small stream with the largest spot at the rear. The appearance of the group is preceded by a small spot on Sept. 17.

Group 11056. Sept. 19-23. One or sometimes two small spots.

Group 11057. Sept. 20-23. A pair of small spots on Sept. 20; a single spot on Sept. 23.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.
1929. 263°356			°	°	°				1929. 265°348			°	°	°			
		'952	242°9					159		11057	'320	280°4	33°9	+10°0	5	12	
		'936	285°3					148	G	11054	'494	198°7	25°0	-20°9	36	231	
		'890	233°9					124		11058	'563	172°7	10°7	-26°8	0	5	
		'844	277°0					184			'826	123°9					128
	1016i	'946	273°7	112°9	+ 5°8	6	36	460c			'832	75°5					182
	11055	'852	248°9	96°3	-13°8	32	150	188c			'896	93°1					171
	11056	'728	293°2	87°5	+21°7	12	39	111c			'932	102°7					306
	11052	'379	229°2	58°3	- 7°5	7	19				'961	80°1					207
	11054	'535	149°3	24°7	-20°5	45	213		Sept. 23			(+25°3)	(15°3)	(+ 7°0)	(45)	(259)	(2197)
	11058	'680	138°5	12°1	-24°4	10	48										
	1016j	'506	94°9	11°4	+ 3°7	2	9										
		'803	103°7					82			'974	288°7					148
		'830	65°1					75			'961	263°3					258
		'840	79°3					132			'925	240°3					263
		'904	136°5					158			'836	225°2					242
		'928	98°1					161			'802	253°1					327
		'930	108°7					124	G	11054	'587	218°2	24°9	-20°9	31	167	
		'945	68°2					166		11058	'529	196°5	11°5	-23°4	0	12	
Sept. 21			(+25°1)	(41°6)	(+ 7°1)	(114)	(514)	(2272)			'819	106°3					258
											'821	96°5					200
											'804	82°0					155
											'973	105°5					119
264°392		'953	279°2					249	Sept. 24			(+25°5)	(2°1)	(+ 7°0)	(31)	(179)	(1970)
		'923	264°8					130									
		'905	242°4					73			'969	242°7					155
		'804	278°2					104			'922	258°5					480
		'800	240°4					121			'917	231°0					160
		'799	266°6					54			'856	242°5					240
		'792	253°8					181			'832	280°1					116
	11055	'947	253°2	96°4	-13°4	33	120	260c			'712	275°4					130
	11056	'846	290°2	85°8	+20°7	4	15	124c			'716	230°8	24°8	-21°3	26	98	
	11052	'562	245°4	58°8	- 7°5	2	8				'796	82°3					110
	11054	'473	174°2	25°0	-21°0	49	259		G	11054	'912	107°6					189
	11058	'581	154°5	12°0	-24°8	12	46				'947	82°9					165
		'824	113°0					125			'971	96°8					283
		'882	69°0					106			'995	77°2					148
		'897	94°2					121				(+25°6)	(348°4)	(+ 6°9)	(26)	(98)	(2176)
		'897	135°0					121	Sept. 25								
		'929	119°6					126			'960	258°5					236
		'946	76°8					131			'951	293°1					90
		'973	97°6					192			'938	279°5					160
Sept. 22			(+25°2)	(27°9)	(+ 7°0)	(100)	(448)	(2218)			'925	228°6					226
											'922	244°6					262
265°348		'970	256°4					204			'877	216°1					58
		'958	272°7					108			'839	274°9					280
		'929	295°9					75			'733	224°1					439
		'913	284°5					104			'827	238°6	24°6	-21°0	11	27	265sf
		'905	251°1					230		11054	'248	76°7	321°5	+ 9°9	1	2	
		'903	263°5					143		1017a	'870	83°7	274°8	+ 8°9	9	27	181c
		'833	234°5					223		11059	'946	77°5	263°7	+14°0	6	20	395f
	11056	'934	289°5	85°3	+20°7	3	6	116nf									
G	11052	'721	253°3	59°2	- 6°9	1	5		G	11060							

Group 11058. Sept. 21-24. A small group *f* Group 11054.

Group 11059. Sept. 26-Oct. 6. A long stream of unstable spots. The composite leader on Oct. 3 appears to come from the fusion of two spots that are several degrees apart in longitude on Sept. 30.

Group 11060. Sept. 26-29. One or two very small spots.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.	
1929. 268°355 G		786	81°9	°	°			54	1929. 272°358		943	254°6	°	°			166	
		801	109°6					212			908	271°0					137	
		878	120°7					93			864	286°2					122	
Sept. 26		932	98°9					515		11059	111	58°4	277°2	+10°0	96	351		
			(+25°7)	(335°6)	(+6°9)	(27)	(76)	(3466)	G	1017c	510	238°3	256°7	-9°5	2	4		
269°364		983	248°8					154		11061	873	80°5	221°5	+11°5	32	79	} 455c	
		980	235°8					66		11062	928	79°2	214°0	+12°5	29	65		
		945	270°4					134	Sept. 30		925	108°0	(+26°0)	(282°7)	(+6°7)	(159)	(499)	(1127)
		941	279°5					253										
		939	257°6					144										
		925	213°6					87	273°355		968	256°6						76
		911	289°8					155			952	288°0						229
G		840	235°2					531			924	248°4						99
		836	222°0					81			861	233°5						103
	11054	925	243°6	24°8	-21°2	3	5	309f			836	289°1						136
	11059	718	83°4	276°2	+9°6	14	64	138c		11063	756	281°6	318°9	+13°2	2	5		
	11060	848	77°2	263°9	+14°5	0	4	429f	C	11059	166	295°7	278°3	+10°7	87	405		
		836	101°2					258		11061	753	80°9	220°5	+11°2	53	147	} 446c	
		939	103°2					186		11062	823	78°8	213°9	+13°0	19	131		
Sept. 27		942	65°7					137			884	112°3					302	
			(+25°8)	(322°3)	(+6°9)	(17)	(73)	(3062)			961	73°3					156	
270°355		974	245°6					184	Oct. 1		973	107°8	(+26°1)	(269°6)	(+6°7)	(161)	(688)	(1873)
		959	277°5					54										
		931	288°7					136	274°474		957	242°6						105
		914	238°7					470			953	277°8						139
		890	262°7					166			921	291°0						99
		875	225°5					234			877	264°0						142
G		845	248°6					292			854	253°8						329
	11059	541	83°1	276°4	+9°4	23	83				819	289°8						82
	11060	697	78°9	264°9	+12°6	6	19				891	280°2	318°3	+12°1	21	93	194c	
		802	76°5					158		G	11059	416	281°4	279°2	+10°7	90	419	
		883	107°0					201			11061	549	79°4	221°6	+11°3	72	272	
		932	72°9					137			11062	660	77°6	213°5	+13°1	20	91	
Sept. 28		975	85°1					124			783	117°8						335
			(+25°9)	(309°2)	(+6°8)	(29)	(102)	(2156)			905	113°5						336
271°363		979	243°7					365			940	75°1						162
		943	233°6					149			976	112°4						110
		931	251°2					266			978	92°6	(+26°2)	(254°8)	(+6°6)	(203)	(875)	(2127)
		816	249°3					106	Oct. 2									
	1017b	347	219°1	308°6	-8°9	1	4											
	11059	305	79°9	278°3	+9°6	45	261				948	256°4						220
	11060	519	77°1	264°8	+12°5	2	8				925	267°0						148
	11061	961	80°5	221°3	+11°0	19	55	} 424c	275°355		870	256°8						137
	11062	987	79°1	214°2	+11°8	12	39				953	281°7	316°3	+13°1	15	36	368p	
		898	87°4					172			616	279°5	281°3	+11°1	59	325		
Sept. 29		965	106°9					85	C		339	75°6	223°7	+11°0	116	578		
			(+25°9)	(295°9)	(+6°8)	(79)	(367)	(1567)										

Group 11061. Sept. 29-Oct. 10. A large stream undergoing rapid changes from day to day. The leader is a small partially-formed regular spot.
 Group 11062. Sept. 29-Oct. 5. An imperfectly formed spot in the wake of Group 11061.
 Group 11063. Oct. 1-3. A small spot with companions on Oct. 2.
 Group 11064. Oct. 3-8. A single small spot on Oct. 3-4; a small stream on Oct. 6-8.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.	
1929. 275°355 C	11062 11064	'505 '787 '812 '890 '896 '941 '956 '969	75°4 77°9 116°9 92°4 74°0 102°2 116°7 86°6	213°2 191°1	+13°0 +13°5	20 3	92 3	39c 344 131 250 207 276 131	1929. 279°388		'966 '944 '895 '584 '135 '414 '519 '797 '969 '986 '871 '889	260°4 281°2 251°0 280°7 13°8 125°4 116°4 119°9 86°7 102°2 68°0 87°0	° ° ° 225°7 188°1 170°2 162°1 143°2 114°2 111°4	° ° ° +11°3 +13°8 -7°9 -7°7 -19°1 +4°8 -10°8			127 384 248	
Oct. 3			(+26°2)	(243°2)	(+6°6)	(213)	(1034)	(2251)	G	11061 11064 11066 1017d 11065 11067 11068					118 12 2 1 36 24 79	658 54 2 2 77 61 508	165c 264c 202c 229 217 (1836)	
276°380		'961 '934 '857 '797 '115 '303 '644 '794 '809 '815 '885 '915 '931 '952	257°9 278°5 246°2 279°3 50°0 67°5 76°8 96°1 72°2 107°7 121°3 101°1 85°1 111°3					97 166 193 189c	Oct. 7			(+26°4)	(190°0)	(+6°3)	(272)	(1362)	(1836)	
	11059 11061 11062 11064	'797 '115 '303 '644 '794 '809 '815 '885 '915 '931 '952	279°3 50°0 67°5 76°8 96°1 72°2 107°7 121°3 101°1 85°1 111°3	282°8 224°6 213°1 189°7	+11°4 +10°7 +12°9 +13°5	42 120 13 1	247 623 64 3		280°341		'965 '938 '843 '757 '218 '664 '815 '876 '931 '825 '931 '954	281°8 251°8 230°8 280°0 309°5 128°7 89°4 88°4 104°2 65°4 73°6 83°0						156 172 90 376p
C								121 115 184 315 134 221 140	C	11061 11064 11065 1017e 11067 11068			226°8 187°3 144°2 122°8 116°2 110°9	+11°7 +14°1 -19°2 +4°1 +4°4 -10°8	108 10 54 8 38 132	732 29 190 19 112 612	125c 618c 934f 119 142 161 (2893)	
Oct. 4			(+26°3)	(229°7)	(+6°5)	(176)	(937)	(1875)	Oct. 8			(+26°4)	(177°4)	(+6°3)	(350)	(1694)	(2893)	
277°314	11059 11061 11062	'948 '907 '155 '128 '785 '829 '853 '854 '859 '933 '948 '971	251°4 279°9 300°4 30°2 105°3 129°0 86°9 115°9 73°9 105°1 127°7 112°7	283°0 225°2 213°6	+11°7 +11°0 +12°8	45 128 9	199 676 22	229 979c	281°575		'972 '900 '803 '911 '285 '501 '710 '796 '847 '950	263°0 251°4 244°6 280°0 213°2 148°2 89°8 108°3 78°8 67°8						36 63 178 741c
C								183 291 135 72 63 126 98 125	C	11061 11066 11065 11067 11068			227°2 170°1 144°9 115°9 111°1	+11°7 -7°6 -19°1 +4°5 -10°5	146 6 58 52 118	719 14 349 191 744	286f 765f 101 145 (2315)	
Oct. 5			(+26°3)	(217°4)	(+6°5)	(182)	(897)	(2301)	Oct. 9			(+26°4)	(161°1)	(+6°2)	(380)	(2017)	(2315)	
278°407	11059 11061 11064 11065	'905 '983 '396 '293 '882 '853 '900 '931 '971	259°7 281°0 283°0 62°6 115°5 136°4 88°0 71°0 86°2	283°1 225°9 187°4 145°8	+11°9 +11°0 +13°9 -18°9	46 99 19 19	251 597 70 43	165 512c	282°444		'900 '772 '973 '421 '443 '558 '673 '851 '911 '924	249°6 245°2 280°6 235°2 170°6 91°8 113°1 78°8 97°8 66°2						286 183 795f
C								100 74 142 133	C	11061 11066 11065 11067 11068			227°0 170°0 145°3 115°8 110°8	+11°7 -8°0 -19°6 +4°2 -10°5	111 30 103 67 146	676 67 615 285 745	287f 145 184 174 (2054)	
Oct. 6			(+26°4)	(202°9)	(+6°4)	(183)	(961)	(1289)	Oct. 10			(+26°4)	(149°7)	(+6°2)	(457)	(2388)	(2054)	

Group 11065. Oct. 6-17. A large complex stream.

Group 11066. Oct. 7-12. A dot on Oct. 7; a small stream on Oct. 9-12.

Group 11067. Oct. 7-18. A large stream. The leader coalesces with a companion spot closely following it on Oct. 12, and a "bridge" remains across the spot thus compounded. The follower is for a few days the largest component, but it begins to break up after Oct. 12.

Group 11068. Oct. 7-19. A very large spot, almost circular, crossed by a "bridge" until Oct. 15.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbra.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbra.	Whole Spots.	Faculae.
1929. 283.588		.971	283.2	°	°			172	1929. 286.387		.845	286.0	°	°			190
		.969	251.2					141	G	11065	.807	240.2	145.6	-19.7	136	1023	725 ^p
		.896	249.9					340		11067	.313	266.5	115.9	+ 4.5	88	520	
		.879	236.4					259		11068	.360	218.8	110.9	-10.5	149	841	
		.801	282.6					328			.788	71.8					112
	11066	.610	248.8	169.5	- 7.8	14	43				.845	83.4					176
G	1017 ^f	.435	291.2	159.3	+14.6	1	2				.885	114.6					195
	11065	.464	202.7	145.5	-19.3	192	1113				.914	68.8					204
	11067	.326	95.7	116.2	+ 3.9	115	527				.933	90.2					115
	11068	.485	124.8	110.8	-10.4	137	701				.978	115.5					132
		.945	93.5					118	Oct. 14			(+26.4)	(97.7)	(+ 5.9)	(373)	(2384)	(2923)
		.971	108.0					64									
Oct. 11			(+26.4)	(134.6)	(+ 6.1)	(459)	(2386)	(1422)									
284.382		.963	252.7					196			.968	284.3					106
		.954	244.0					200			.955	274.2					126
		.900	284.4					291			.950	228.7					172
		.848	263.1					198			.819	274.7					117
		.814	231.0					172			.911	244.3	144.8	-20.5	128	898	601 ^c
	11066	.778	254.6	173.1	- 8.0	2	6	124 ^c	C	11067	.547	268.9	116.9	+ 4.3	87	449	
G	11065	.545	218.6	145.2	-20.1	222	1123			11068	.522	238.6	110.6	-10.5	138	909	
	11067	.150	101.4	115.5	+ 4.2	106	679				.896	132.4					97
	11068	.360	141.7	111.0	-10.5	110	683				.900	118.5					549
		.909	107.2					137			.956	99.9					165
		.941	118.6					285	Oct. 15		.966	113.7					207
		.947	96.6					120				(+26.3)	(83.8)	(+ 5.8)	(353)	(2256)	(2140)
		.989	87.6					59									
Oct. 12			(+26.4)	(124.1)	(+ 6.0)	(440)	(2491)	(1782)									
285.560		.974	282.6					165			.891	288.5					84
		.958	267.4					150			.876	275.3					186
		.920	257.3					213			.976	247.4	145.0	-20.5	107	717	858 ^c
		.900	242.0					383			.736	270.4	118.3	+ 4.1	80	386	282 ^p
		.887	286.9					121			.683	247.9	110.8	-10.5	150	845	
		.882	228.8					125			.831	126.4					153
		.797	274.4					111			.856	104.7					265
	C	.695	233.4	144.8	-19.7	142	1190				.890	116.8					237
	11067	.124	258.0	115.6	+ 4.4	110	571				.951	108.0					170
	11068	.288	188.5	111.1	-10.5	102	681				.952	122.1					250
	1017 ^g	.322	148.2	98.7	-10.0	2	9		Oct. 16			(+26.3)	(70.9)	(+ 5.7)	(337)	(1948)	(2485)
		.930	79.8					170			.955	274.8					154
		.939	88.6					171			.937	250.6					140
		.945	69.9					148			.919	286.7					145
Oct. 13			(+26.4)	(108.6)	(+ 5.9)	(356)	(2451)	(1757)			.992	248.6	137.8	-20.3	15	76	126 ^{sf}
		.967	286.9					108			.887	271.4	120.5	+ 3.8	50	275	668 ^c
286.387		.966	254.0					89			.817	253.0	110.4	-10.4	146	894	704 ^f
		.948	243.3					338			.325	157.1	50.6	-11.8	7	23	
		.939	260.6					144			.742	133.5					278
		.908	228.5					210			.781	120.2					260
G		.894	274.2					185			.896	110.4					168
											.924	126.2					471
											.958	98.4					132
											.960	69.4					97
									Oct. 17			(+26.2)	(58.0)	(+ 5.6)	(218)	(1268)	(3343)

Group 11069. Oct. 17-23. A feeble stream.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.
1929 290°387			°	°	°				1929 294°436			°	°	°			
	11067	'945	284°2					36		11069	'921	256°0	56°7	-10°7	17	56	449f
	11068	'974	272°4	121°9	+ 3°7	60	304	829f		11072	'498	243°3	18°1	- 8°2	2	5	
	11069	'924	256°2	110°5	-10°4	165	890	1109sf	G	11073	'890	78°5	288°4	+12°6	20	101	625f
	1017h	'318	196°4	50°1	-12°1	4	14				'885	102°2					131
		'578	58°2	12°9	+22°5	2	5				'913	116°4					267
G		'799	131°8					211	Oct. 22			(+25°9)	(351°5)	(+ 5°2)	(39)	(162)	(1472)
		'802	115°8					276									
		'818	88°0					137									
		'899	132°6					345	295°545		'934	227°6					214
		'902	67°6					267			'925	247°3					150
		'910	104°0					158			'886	258°1					248
		'978	78°2					73			'884	280°8					269
Oct. 18			(+26°2)	(44°9)	(+ 5°6)	(231)	(1213)	(3441)			'812	235°8					315
291°459		'984	274°1					422	G	11069	'986	257°6	55°7	-11°3	12	49	276c
		'958	283°1					41		1018a	'615	237°5	9°2	-15°0	7	20	
		'931	237°7					74		11074	'283	345°3	341°3	+20°9	2	7	
		'851	267°1					122		11073	'715	78°4	288°3	+12°1	25	86	485f
		'817	257°6					104	Oct. 23		'942	78°8					523
	11068	'988	258°5	110°4	-10°4	173	873	931sf				(+25°8)	(336°9)	(+ 5°1)	(46)	(162)	(2210)
	11069	'452	231°3	51°8	-11°2	7	27										
	11070	'271	206°9	37°9	- 8°5	14	30										
G	1017i	'545	148°1	12°8	-22°2	2	4		296°415		'952	273°5					87
	11071	'905	79°3	325°6	+12°0	0	5	265f			'944	287°5					188
		'848	146°5					103			'941	259°7					226
		'849	134°2					141			'904	242°1					254
		'896	65°3					185			'804	255°5					72
		'907	95°7					208	C		'776	239°3					145
		'919	115°6					116			'746	225°0					94
Oct. 19		'937	102°9					264		11074	'381	318°3	341°1	+21°3	1	2	
292°106			(+26°1)	(30°8)	(+ 5°5)	(196)	(939)	(2976)		11073	'601	76°7	288°8	+12°0	8	72	
		'971	253°5					260	Oct. 24		'866	75°5					187
		'897	261°4					149				(+25°7)	(325°4)	(+ 5°1)	(9)	(74)	(1253)
	11069	'566	243°0	52°9	-10°2	13	40										
K	11070	'373	229°7	38°9	- 8°7	8	38		297°392		'914	271°2					211
		'878	79°7					181			'912	257°4					111
Oct. 20		'907	103°8					399			'904	243°2					455
293°387			(+26°1)	(22°2)	(+ 5°4)	(21)	(78)	(989)	G		'823	228°2					184
		'933	262°3					105			'761	241°2					102
		'880	248°9					173		11073	'422	73°5	288°2	+11°4	17	41	
	11069	'780	252°4	54°1	-10°1	30	83	136c	Oct. 25	11075	'970	81°3	236°1	+ 9°7	130	821	525f
	1017j	'328	191°6	46°8	- 7°5	1	2					(+25°6)	(312°5)	(+ 5°0)	(147)	(862)	(1498)
	11070	'626	248°6	41°3	- 8°9	3	8		298°430		'947	260°6					119
	11072	'293	222°0	16°6	- 7°4	5	7				'931	247°9					487
	11073	'972	78°0	288°3	+12°9	19	73	442p			'894	234°3					425
		'937	92°6					157			'890	221°5					191
Oct. 21		'956	104°6					111		11071	'467	281°1	326°4	+ 9°5	7	21	
			(+26°0)	(5°3)	(+ 5°3)	(58)	(173)	(1124)	G	11073	'230	57°3	287°4	+11°9	14	29	

Group 11070. Oct. 19-21. A small stream f Group 11069.

Group 11071. Oct. 19-30. A dot on Oct. 19; nothing is then seen until Oct. 26 when a fair-sized but short-lived spot appears.

Group 11072. Oct. 21-22. A very small spot.

Group 11073. Oct. 21-28. Return of Group 11059. A regular spot breaking up on Oct. 24-25 in company with a few tiny companions. Scattered faint spots continue on Oct. 27-28.

Group 11074. Oct. 23-24. A very small spot.

Group 11075. Oct. 25-Nov. 5. A very large stream of unusual formation that develops from three spots. The chief feature is the great activity shown about the following spot which, absorbing its near companion, has grown to a very large composite spot by Oct. 30. The leader is a relatively small but stable spot.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.
1929 298.430 G	11075	.885 .941 .947 .949	° 81.6 77.0 103.2 28.6	° 236.4	° + 9.7	134	874	778c 694 196 121	1929 302.437		.963 .949 .944 .930 .902 .849	° 265.4 255.8 236.7 297.0 246.3 277.4	° ° ° ° ° °	° ° ° ° ° °			101 214 116 74 71 79
Oct. 26		(+25.5)	(298.8)	(+ 4.9)	(155)	(924)	(3011)			11071 11076 11075 1018b 11078 11079 11080	.970 .357 .186 .421 .634 .899 .954	278.7 296.4 59.3 60.3 129.3 74.6 87.6	+ 9.5 +13.4 + 9.8 +16.1 -19.8 +15.8 + 3.7	4 83 196 2 1 31 7	8 443 1173 6 8 83 18	308c 214c 232f	
299.458		.968 .968 .951 .941 .854 .614 .121 .373 .752 .845 .908 .935	248.7 239.4 258.3 227.9 288.5 279.7 340.3 64.8 81.5 76.1 108.5 76.1	323.0 287.7 265.1 236.6	+ 9.7 +11.3 +13.7 + 9.5	37 4 81 125	133 18 300 805	122 165 123 257 205 334c 487 208 270	G		.770 .796 .843 .883 .895 .955 .973	112.2 72.7 82.1 122.3 98.1 112.1 73.6	(246.0)	(+ 4.5)	(324)	(1739)	(2526)
Oct. 27		(+25.3)	(285.3)	(+ 4.8)	(247)	(1256)	(2171)		Oct. 30		(+24.9)						
300.108		.958 .944 .920 .879 .899 .724 .174 .245 .651 .823 .900 .940 .964	237.9 226.3 289.3 252.1 257.1 279.1 305.7 50.5 80.4 75.1 115.0 81.5 107.1	339.1 323.0 284.9 265.5 236.2	- 9.4 + 9.8 +10.5 +13.8 + 9.8	11 17 2 95 117	27 104 25 481 869	105 177 89 74 65c 173p 435 168 133 603	303.393		.950 .861 .854 .540 .117 .717 .788 .855 .790 .886 .938 .940	275.4 247.3 281.4 288.4 331.4 71.8 73.0 88.1 126.2 114.3 72.7 120.7	265.1 236.6 188.4 182.0 174.7	+13.5 +10.3 +16.1 +16.0 + 3.9	78 214 6 37 12	417 1146 16 119 12	76 97 408 307c 351f 187 306 226 154
Oct. 28		(+25.3)	(276.7)	(+ 4.7)	(242)	(1506)	(2022)		Oct. 31		(+24.8)						
301.391		.943 .902 .871 .978 .892 .189 .417 .756 .981 .864 .900 .924 .935 .943	290.5 232.3 253.3 259.1 278.7 326.4 76.0 121.1 73.3 107.1 75.7 94.5 116.9 82.1	336.4 323.0 266.0 235.7 216.6 180.3	- 9.6 + 9.8 +13.6 +10.0 -19.6 +17.3	5 16 101 179 3 5	9 48 495 1200 11 10	59 131 293 60p 319c 194f 87sf 185 121 199 138 136	304.548		.950 .933 .870 .734 .357 .549 .640 .676 .776 .877 .917 .962	280.2 253.8 279.4 284.4 286.2 68.2 69.4 89.8 120.2 101.1 125.2 113.0	265.0 238.5 186.4 179.7 175.8	+13.4 + 9.6 +15.4 +16.4 + 3.3	54 156 89 21 3	341 947 285 56 9	124f 264 136 123 792 (2055)
Oct. 29		(+25.1)	(259.8)	(+ 4.6)	(309)	(1773)	(1922)		Nov. 1		(+24.6)						

Group 11076. Oct. 27-Nov. 3. A stream of normal type of rapid origin.
 Group 11077. Oct. 28-29. A pair of small spots on Oct. 28 of which one remains on Oct. 29.
 Group 11078. Oct. 29-30. A close pair of small spots on Oct. 29; a wide pair on Oct. 30.
 Group 11079. Oct. 29-Nov. 6. A pair of spots in front of which the large group No. 11081 begins to develop on Oct. 31.
 Group 11080. Oct. 30-Nov. 1. One small spot.
 Group 11081. Oct. 31-Nov. 10. A very large stream of usual type in appearance but whose early development is not quite normal.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.
1929 305.405		.946	282.5	°	°			134	1929 309.656		.957	282.6	°	°			411
		.905	272.5					123			.929	248.0					162
		.859	259.4					49			.805	250.5					323
	11076	.849	283.1	265.7	+13.3	58	261	194c	YERKES	11081	.645	288.4	189.9	+14.5	279	1443	
	11075	.524	281.2	239.1	+9.4	150	1026			11079	.470	300.6	175.7	+17.2	1	5	
	11081	.359	58.8	189.4	+14.7	129	731			11082	.666	110.8	111.6	-10.8	140	647	
	11079	.494	62.5	180.7	+16.9	29	98			11085	.983	102.8	72.7	-11.8	69	253	
G	1018c	.681	110.0	167.4	-10.3	6	15				.845	100.0					512
		.821	94.8					73	Nov. 6			(+23.6)	(150.8)	(+3.7)	(489)	(2348)	(1408)
		.844	110.8					338			.979	284.7					319
		.844	131.5					194			.979	252.1					103
		.889	83.8					202			.909	297.7					76
		.923	118.2					771			.808	256.4					249
Nov. 2		.981	83.8					360			.863	244.4					199
		(+24.4)	(207.8)	(+4.2)	(372)	(2131)	(2438)				.773	286.4	190.3	+14.9	284	1620	304p
									C	11086	.383	277.1	162.8	+6.0	9	18	
										1018c	.451	184.9	142.8	-23.0	2	8	
										11084	.276	85.6	124.4	+4.6	1	2	
306.429		.929	283.9	265.3	+12.8	41	232	486		11082	.534	117.4	111.6	-11.0	136	755	584c
	11076	.950	282.1	265.3	+12.8	41	232			11085	.946	104.7	71.0	-12.6	78	480	236
	11075	.714	279.2	238.7	+9.4	158	882				.752	101.9					154
	11081	.181	21.3	189.4	+13.7	152	936				.826	116.2					
G	11079	.324	46.8	179.1	+16.7	30	59		Nov. 7			(+23.5)	(140.4)	(+3.6)	(510)	(2883)	(2224)
	11082	.992	101.1	111.7	-10.4	202	783	269p									
		.775	86.1					130			.979	259.9					94
		.845	122.3					706			.969	250.1					161
Nov. 3		.932	86.9					679			.874	244.0					164
		(+24.3)	(193.3)	(+4.1)	(583)	(2892)	(2270)				.868	261.6					175
											.882	285.3	190.0	+15.1	280	1990	1135c
									C	11086	.561	275.8	162.5	+6.1	23	77	
307.507		.980	284.5	238.9	+9.1	97	636	185		11083	.537	290.6	159.6	+13.9	2	4	
	11075	.865	278.3	238.9	+9.1	97	636	450c		11087	.304	123.2	113.7	-6.1	1	14	
	11081	.253	314.3	189.8	+14.1	224	1278			11082	.381	130.5	111.4	-11.0	146	744	
C	11079	.224	0.9	178.9	+16.9	16	48			11085	.863	106.6	70.8	-12.4	75	423	666c
	11082	.934	102.9	111.5	-10.5	155	730	831c		11088	.993	100.1	46.3	-9.6	37	159	147c
		.860	82.7					647			.977	81.8					138
Nov. 4		(+24.1)	(179.1)	(+4.0)	(492)	(2692)	(2113)		Nov. 8			(+23.2)	(128.5)	(+3.5)	(564)	(3411)	(2680)
											.956	247.2					118
308.491	11075	.956	278.6	239.2	+9.3	111	669	1031nf	312.387		.951	275.9					62
	1018a	.663	249.0	205.1	-10.7	6	14				.949	261.8					96
	11081	.432	295.5	189.8	+14.2	215	1452				.882	271.5					110
	11079	.309	317.3	178.8	+16.9	14	48				.868	244.8					258
C	11083	.230	31.2	159.1	+15.1	9	31				.830	231.3					117
	11084	.670	87.3	124.2	+4.7	1	3	399sf		11081	.964	284.6	189.4	+15.1	294	2003	914c
	11082	.831	105.4	111.8	-10.5	182	804	584c		11086	.769	274.6	165.0	+5.7	14	25	140c
Nov. 5		.953	97.7					774	G	11087	.175	178.0	114.4	-6.7	14	38	
		(+23.9)	(166.2)	(+3.9)	(538)	(3021)	(2788)										

Group 11082. Nov. 3-16. Return of Group 11068. A very large regular spot that partly breaks up on Nov. 14.
 Group 11083. Nov. 5-10. Intermittent. One or two very small spots.
 Group 11084. Nov. 5-7. A small faint spot.
 Group 11085. Nov. 6-18. A regular spot shedding a portion from its northern edge on Nov. 16-17. From Nov. 7-9 there are two distant followers.
 Group 11086. Nov. 7-9. A small group.
 Group 11087. Nov. 8-14. A small group n Group 11082.
 Group 11088. Nov. 8-19. A regular spot passing to extinction. There is a tiny follower on Nov. 14.
 Group 11089. Nov. 9-21. A long stream with a predominant regular spot.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.
1929			°	°	°				1929			°	°	°			
312.387	11082	.256	166.9	111.4	-11.0	144	738		315.392	11090	.935	274.9	144.4	+ 5.7	6	13	89c
G	1018f	.392	166.5	109.3	-18.9	1	2		G	11087	.681	254.8	116.6	- 7.9	15	48	
	11085	.721	110.8	71.4	-12.4	86	361	380f		11082	.628	248.0	111.4	-11.1	141	595	
	11088	.935	102.1	46.9	-10.0	18	95	600f		11085	.247	166.6	71.9	-10.8	82	367	
	11089	.991	83.3	32.5	+ 7.1	87	260	69c		11088	.512	116.1	47.5	-10.2	21	84	118f
		.862	92.4				168			11091	.717	100.4	30.3	- 5.2	40	62	264f
		.910	110.2				94			11089	.713	82.9	29.9	+ 7.3	125	637	313
Nov. 9		.914	79.2				481		Nov. 12		.874	120.5					155
			(+23.0)	(114.8)	(+ 3.4)	(658)	(3522)	(3607)			.880	106.1					(1973)
												(+22.3)	(75.2)	(+ 3.1)	(430)	(1806)	
313.512		.942	247.8				187		316.386		.978	244.1					353
		.914	274.3				267				.948	282.5					282
		.895	232.1				223				.880	271.7					412
		.860	258.9				116				.805	282.8					225
		.830	245.3				214				.823	258.4	116.3	- 7.8	15	40	98c
		.770	233.0				287				.779	252.5	111.2	-11.5	142	676	482c
	11081	.990	284.3	182.1	+14.6	113	322	657nf		11087	.823	258.4	116.3	- 7.8	15	40	98c
	11083	.875	283.3	160.8	+13.2	4	27	67c		11082	.779	252.5	111.2	-11.5	142	676	482c
G	11090	.657	274.5	141.0	+ 5.5	12	23		C	11085	.295	213.4	71.6	-11.2	77	335	
	11087	.315	235.8	115.2	- 6.9	10	32			11088	.338	133.1	47.6	-10.4	14	75	
	11082	.312	218.3	111.3	-10.8	153	719			11092	.427	68.0	38.3	+11.9	6	20	
	1018g	.181	173.1	98.8	- 7.0	2	7			11089	.489	82.7	33.0	+ 6.2	105	475	
	11085	.528	118.6	71.9	-11.7	70	352			11091	.548	104.5	30.0	- 5.3	23	83	
	11088	.815	104.8	47.1	-10.0	11	92	451f		11093	.698	102.6	19.0	- 6.5	24	105	
	1018h	.790	71.5	48.8	+16.6	3	9	202f			.854	118.6					200
	11091	.933	97.8	31.9	- 6.0	12	25	579f	Nov. 13		.966	120.8					163
	11089	.944	83.3	29.4	+ 7.5	111	559	632c				(+22.0)	(62.1)	(+ 3.0)	(406)	(1809)	(2215)
Nov. 10		.775	81.1				190										
		.949	114.7				96										
			(+22.7)	(100.0)	(+ 3.3)	(501)	(2167)	(4168)									
314.365		.961	274.9				246		317.468		.952	271.4					356
		.958	234.8				165				.915	280.1					320
		.950	284.1				311				.908	293.3					72
		.921	252.0				267				.766	257.9					267
		.835	239.1				617				.757	243.4					74
	11090	.808	274.5	142.5	+ 5.5	8	39	102c		11087	.931	260.9	115.5	- 7.4	5	12	358c
	11087	.472	249.3	115.0	- 6.7	5	19			11082	.907	254.9	111.3	-12.4	179	1009	946s
C	11082	.446	237.5	111.1	-10.8	183	741			11085	.463	239.5	71.7	-10.9	68	333	
	11085	.379	131.3	71.9	-11.4	58	341		G	11088	.229	178.7	47.5	-10.3	14	68	
	11088	.685	108.3	47.5	-10.0	14	95	349f		11092	.203	41.6	39.9	+11.6	24	71	
	11091	.842	99.3	32.2	- 6.1	14	53	411c		11089	.252	76.6	33.6	+ 6.1	107	473	
	11089	.859	83.3	29.6	+ 7.4	113	588	546c		11091	.337	115.0	30.0	- 5.4	12	29	
		.854	65.4				82			11093	.482	108.4	20.5	- 6.1	40	220	
Nov. 11		.920	118.3				229				.748	124.8					127
			(+22.5)	(88.7)	(+ 3.2)	(395)	(1876)	(3325)			.902	72.3					87
315.392		.972	250.2				100		Nov. 14		.926	125.2					299
G		.930	241.1				444				.949	102.8					221
		.919	226.1				144				.957	76.4					88
		.804	278.3				346				.979	93.2					84
												(+21.8)	(47.8)	(+ 2.9)	(449)	(2215)	(3299)

Group 11090. Nov. 10-12. Two or three very small spots.

Group 11091. Nov. 10-16. A small spot joined by others in a stream.

Group 11092. Nov. 13-18. A small stream *np* Group 11089.

Group 11093. Nov. 13-22. A stream of normal type of rapid rise to maximum area.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbræ.	Whole Spots.	Faculæ.			Dist.	Pos. Angle.	Long.	Lat.	Umbræ.	Whole Spots.	Faculæ.
1929. 318.535			°	°					1929. 320.387			°	°				
		.985	279.2					110			.826	105.5					109
		.902	248.7					187			.882	90.3					112
		.886	260.3					360			.914	67.5					104
								929c			.959	79.3					230
	11082	.981	256.5	111.4	-12.7	224	1169					(+20.9)	(9.3)	(+2.5)	(290)	(1565)	(1880)
	11085	.647	249.9	71.7	-10.7	57	326		Nov. 17								
	11088	.332	226.9	47.9	-10.4	12	67										
	11092	.201	317.9	41.6	+11.2	31	80										
	11089	.060	335.6	35.1	+5.8	91	441										
	11091	.168	154.9	29.6	-6.0	8	26										
	11093	.258	126.8	21.8	-6.2	47	213		321.112		.916	248.3					522
		.800	106.3					171			.823	277.8					98
		.819	127.5					189		11085	.958	258.0	72.1	-10.8	48	239	271f
		.839	75.1					59		11088	.769	254.0	48.4	-10.6	14	60	
		.871	139.9					83		11092	.686	283.8	42.4	+11.1	11	39	
		.889	65.4					146		11089	.609	274.9	37.2	+4.9	71	343	
		.903	88.4					79		11093	.425	249.2	23.3	-6.4	96	475	
		.928	101.2					404		11094	.786	78.5	308.4	+10.5	63	310	97c
		.934	79.3					195			.916	77.5					319
		.936	129.3					182	Nov. 18			(+20.7)	(359.8)	(+2.4)	(303)	(1466)	(1307)
		.940	114.3					88									
Nov. 15			(+21.5)	(33.7)	(+2.7)	(470)	(2322)	(3182)									
									322.504		.975	251.3					141
		.946	297.2					52			.953	268.9					86
		.945	278.9					201			.928	278.9					136
		.928	246.6					148			.887	280.5					706
		.752	236.3					138			.830	240.6					99
	11082	.998	257.0	108.5	-12.8	96	442	379nf			.795	259.3					189
	11085	.768	253.8	71.5	-10.6	67	324	167c		11088	.930	257.6	48.7	-10.7	8	35	481sf
	11088	.470	242.0	47.9	-10.4	10	63			11089	.829	274.0	37.2	+4.6	72	356	380f
	11092	.350	296.0	41.7	+11.3	27	136			11093	.687	257.9	23.8	-6.6	79	371	
	11089	.230	282.6	36.1	+5.4	81	386			11094	.545	74.4	309.3	+10.3	69	243	
	11091	.188	215.2	29.3	-6.2	13	29				.739	76.3					158
	11093	.154	175.5	22.4	-6.2	89	376				.848	76.7					140
	11094	.970	80.0	307.1	+10.3	50	234	202c			.928	104.1					241
		.777	60.0					132			.930	91.4					130
		.844	81.8					183			.938	117.7					153
		.866	106.0					344	Nov. 19		.966	75.3					315
		.912	134.4					272				(+20.3)	(341.4)	(+2.2)	(228)	(1005)	(3355)
Nov. 16			(+21.2)	(23.1)	(+2.6)	(433)	(1990)	(2218)									
									323.540		.975	256.6					183
		.969	259.1					169			.962	281.2					146
		.961	276.8					106			.916	262.0					139
		.940	248.7					93			.940	274.1	37.7	+4.6	67	361	853f
		.885	232.9					80		11089	.853	260.7	25.6	-6.8	46	301	445c
		.858	246.1					372		11093	.100	188.9	328.7	-3.6	0	4	
	11085	.899	256.7	72.1	-10.8	49	296	208c		11094	.204	151.8	322.2	-8.2	1	2	
	11088	.655	250.8	48.1	-10.4	14	63			11095	.348	65.3	309.1	+10.3	62	347	
	11092	.550	286.7	41.6	+11.1	14	55				.788	110.1	278.2	-14.3	11	27	52c
	11089	.465	276.4	36.8	+5.2	65	365				.893	73.4					388
	11093	.282	237.7	23.1	-6.2	94	515				.987	80.0					342
	1018i	.663	81.0	328.1	+7.8	1	3										
	11094	.879	79.8	308.1	+10.1	53	268	297c	Nov. 20			(+20.0)	(327.8)	(+2.1)	(187)	(1042)	(2548)

Group 11094. Nov. 16-27. A moderate-sized stream.

Group 11095. Nov. 20-21. A few tiny spots.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.
1929. 324.465			°	°	°				1929. 327.465			°	°	°			
		'992	281.9					76	11096	'589	76.9	240.6	+ 9.0	17	103		
		'944	250.7					86	11097	'722	73.3	231.0	+13.1	163	999	565f	
		'940	240.1					136	11098	'896	113.8	215.2	-20.4	71	303	379c	
		'847	238.9					172	11099	'951	79.3	204.2	+10.7	58	266	425c	
	11089	'990	274.2	37.3	+ 4.4	58	268	707nf	11100	'980	73.7	197.8	+16.3	236	1277	400c	
	11093	'951	262.2	27.0	- 6.8	42	299	736f		'889	67.3					99	
G	11094	'177	36.4	309.5	+10.1	70	315		Nov. 24	'913	102.3	(+18.7)	(276.0)	(+ 1.6)	(581)	(3123)	(2915)
	11095	'671	115.7	276.9	-15.3	3	9										
	11096	'969	80.6	240.0	+ 9.6	26	183	762p									
	11097	'997	77.4	230.0	+12.7	165	858	218c									
		'782	70.8					258									
		'867	93.5					135	328.420	'950	291.1					74	
Nov. 21			(+19.7)	(315.6)	(+ 2.0)	(364)	(1932)	(3286)		'914	259.0					522	
										'904	275.1					172	
325.349		'983	279.6					181		'864	286.7					163	
		'942	245.4					78	11094	'764	282.4	312.5	+10.4	31	150		
	11093	'992	263.2	26.1	- 6.5	65	390	394f	11101	'277	59.2	249.5	+ 9.6	1	4		
	11094	'180	325.8	309.8	+10.4	85	285		1019d	'395	130.6	245.5	-13.4	1	4		
C	11096	'898	80.4	240.3	+ 9.4	24	168	678p	11096	'409	71.4	240.4	+ 8.9	12	96		
	11097	'958	77.1	230.8	+12.9	174	1005	740c	11097	'564	68.7	230.9	+13.1	142	940		
		'861	68.2					83	11098	'793	118.0	215.1	-20.8	63	335	280c	
		'926	95.0					62	11099	'848	78.2	205.9	+10.8	49	240	98c	
Nov. 22			(+19.4)	(303.9)	(+ 1.9)	(348)	(1848)	(2216)	11102	'904	77.6	199.2	+11.8	15	81	116c	
									11100	'913	73.0	198.3	+16.1	218	1150	353c	
326.340	11094	'362	294.2	310.4	+10.2	47	231		11103	'965	73.6	189.0	+16.2	15	56		
	11096	'772	79.7	240.8	+ 9.1	18	123		11104	'993	77.0	180.3	+13.1	45	248	658c	
	11097	'868	75.9	231.3	+13.1	154	862	581c	11105	'995	70.6	179.1	+19.4	19	91		
C	11098	'973	111.8	216.1	-20.7	55	322	294c		'868	103.4						
		'954	102.5					210	Nov. 25			(+18.4)	(263.4)	(+ 1.5)	(611)	(3395)	(2531)
Nov. 23			(+19.1)	(290.9)	(+ 1.8)	(274)	(1538)	(1085)									
327.465		'940	287.3					88									
		'923	235.0					219	11094	'898	281.1	313.1	+10.6	25	136	130	
		'917	252.7					76	11101	'155	4.9	248.8	+10.3	2	17	149	
		'865	294.9					60	11096	'211	50.6	240.1	+ 9.0	16	70	439f	
		'832	264.3					133	11106	'300	75.2	232.7	+ 5.7	9	17		
		'825	276.5					119	11097	'372	58.6	230.7	+12.5	166	821		
		'789	251.7					109	11098	'645	125.8	215.7	-20.9	64	274		
	11094	'598	285.1	311.8	+10.2	35	169		11099	'687	75.8	207.1	+10.7	63	236		
G	1019c	'425	51.6	255.7	+16.7	1	6		11102	'771	76.6	199.9	+11.2	23	86	106c	
									11100	'799	70.2	198.2	+16.6	239	1093	356c	

Group 11096. Nov. 21-Dec. 3. Return of Group 11075. A spot with double umbra; a tiny companion precedes it on Nov. 24 and 27, whilst others surround it on Nov. 28-30.

Group 11097. Nov. 21-Dec. 4. Two spots, at first very close together and composite in nature, becoming the chief components of a stream.

Group 11098. Nov. 23-Dec. 5. A regular spot from which apparently a portion breaks and drifts away on the following side between Nov. 25 and 26. There are usually a few small distant followers.

Group 11099. Nov. 24-Dec. 5. A pair of imperfectly-formed regular spots that coalesce between Nov. 26 and 27. A companion follows at a short distance. This group closely precedes Group 11102, that is an acolyte stream to the big spot of Group 11100.

Group 11100. Nov. 24-Dec. 6. Return of Group 11081. An unusually large regular spot.

Group 11101. Nov. 25-28. A few faint spots p Group 11096.

Group 11102. Nov. 25-Dec. 6. A stream of small unstable spots s Group 11100.

Group 11103. Nov. 25-Dec. 3. A small but persistent spot f Group 11100.

Group 11104. Nov. 25-Dec. 7. A regular spot in front of which a number of companions appear. The preceding part of the stream thus formed joins up with the preceding part of another stream, Group 11105, the two streams making a large > shaped formation directed towards the big spot, Group 11100.

Group 11105. Nov. 25-Dec. 7. An irregular stream of composite spots whose axis is at first highly inclined to the sun's equator: see note to Group 11104.

Group 11106. Nov. 26-29. A very small group s Group 11097.

Group 11107. Nov. 26-27. A tiny spot whose place is later occupied by the extending stream of Group 11104.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.	
1929. 329°47'1 G	III07 III03 III05 III04 1019e	'872 '882 '941 '944 '954	75°2 71°8 70°1 76°8 105°8	189°7 188°8 180°3 179°3 178°3	+13°5 +16°7 +19°1 +12°9 -14°6	4 23 77 47 3	11 74 223 249 7	} 1465c 123f 161 132 100	1929. 332°356		'961 '935 '851 '819	287°3 252°4 286°1 252°7					83 265 141 206	
		'832 '847 '954	111°2 97°8 86°0							III096 III06 III07 III08 III09		'485 '353 '374 '382 '166	287°1 282°9 300°8 190°1 12°9	239°5 231°7 230°7 215°7 209°5	+9°0 +5°4 +11°9 -21°0 +10°3	17 1 114 60 36	87 2 624 327 190	
Nov. 26			(+18°0)	(249°6)	(+1°4)	(761)	(3314)		(3161)									
330°419		'948 '858	280°2 282°0						501 364									
	III094 III101 III096 III106 III097 III098 III099 III102 III100 III107 III103 III105 III104 III108 III109	'972 '279 '144 '089 '221 '503 '505 '608 '660 '741 '760 '842 '850 '957 '992	280°8 307°3 339°1 40°9 26°9 138°6 70°7 72°5 66°5 73°3 69°4 69°0 75°6 73°3 84°0	313°3 250°1 240°1 233°8 231°2 216°3 208°2 201°0 198°2 190°5 189°5 181°4 179°7 164°5 154°5	+10°8 +11°0 +9°0 +5°2 +12°6 -20°9 +10°7 +11°5 +16°2 +13°1 +16°3 +18°2 +12°9 +16°4 +6°1	27 9 20 4 176 55 57 30 245	182 50 83 10 792 282 235 113 1096		} 176c 1083c 294c 588c 247c									
		'878 '878	107°0 86°4					313 113										
Nov. 27			(+17°6)	(237°1)	(+1°3)	(854)	(3751)	(3679)										
331°385		'956 '863 '825	280°1 284°9 249°3					356 121 145										
	III101 III096 III106 III097 III098 III099 III102 III100 III103 III105 III104 III108 III109	'480 '295 '145 '222 '407 '307 '424 '502 '608 '715 '711 '874 '949	293°1 299°7 300°3 327°5 159°3 57°9 64°1 57°9 64°1 66°1 72°5 70°9 83°9	251°1 239°4 231°6 231°4 215°6 209°1 201°6 198°2 189°8 181°3 180°5 164°9 153°0	+11°8 +9°4 +5°3 +11°8 -21°2 +10°4 +11°6 +16°4 +16°3 +17°6 +13°1 +17°1 +6°1	1 16 1 128 63 33 12 189 7 57 55 53 33	4 59 2 594 278 199 80 966 35 372 337 283 170											
		'802 '958 '974	85°9 109°5 93°9					97 218 423										
Nov. 28			(+17°3)	(224°4)	(+1°1)	(648)	(3379)	(2717)										

Group 11108. Nov. 27-Dec. 8. A regular spot breaking up on Dec. 3, followed at nearly a constant distance by a companion which dissolves into a cluster.

Group 11109. Nov. 27-Dec. 4. A diminishing regular spot.

Group 11110. Nov. 29-Dec. 3. A single small spot on Nov. 29 and Dec. 3.

Group 11111. Dec. 1-2. Two or three very small spots.

Group 11112. Dec. 1-13. Return of Group 11082: 3rd appearance. A regular spot, generally with one or more small companions; on Dec. 9 these are considerable.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.
1929. 334°281 K	II100 II103 II111 II104 II105 II108 II109 II112	'335 '279 '096 '231 '304 '449 '534 '977 '858 '892 '951	323'4 345'8 35'2 19'3 15'0 50'2 78'6 103'8 121'1 87'0 76'2	198'2 190'3 183'0 181'7 181'5 165'1 154'5 109'2	+16'3 +16'4 +5'3 +13'4 +17'8 +17'3 +6'7 -13'3	223 6 4 149 110 73 26 51	1050 16 10 723 838 413 121 225		1929. 336°368 C		'863 '939 '950 '957	120'9 102'0 112'4 84'4 (+15'4)	° ° ° ° (158'7)	° ° ° ° (+0'5)			316 275 275 116 (3957)
Dec. 1									Dec. 3								
335°377	II096 II097 II098 II099 II102 II100 II103 II111 II104 II105 II108 II109 II112	'863 '937 '867 '748 '640 '502 '508 '408 '216 '284 '341 '311 '316 '896 '763 '858 '948	273'1 279'2 283'8 240'0 285'0 289'6 302'6 312'2 291'6 319'9 329'2 21'1 68'8 105'5 87'2 76'9 117'2	241'0 231'0 215'7 210'5 200'4 198'2 190'1 183'4 182'6 182'3 165'1 154'6 109'4	+8'9 +12'2 -21'5 +10'0 +10'2 +16'4 +16'4 +5'1 +13'1 +17'6 +17'4 +7'1 -13'5	11 108 32 32 5 226 8 4 116 138 95 13 43	59 538 267 163 42 991 12 17 809 961 332 53 202	249 520p 881n	G								
C																	
Dec. 2									Dec. 4								
336°368																	
	II096 II097 II098 II099 II102 II100 II103 II104 II105 II108 II109 II110 II112	'917 '887 '796 '995 '957 '862 '794 '682 '669 '575 '476 '485 '308 '131 '250 '770 '842	291'5 256'2 295'0 278'4 282'8 243'6 282'2 286'3 294'6 298'9 298'8 307'2 338'1 30'9 104'4 108'2 85'6	242'7 231'3 215'0 210'5 200'4 197'9 190'2 184'0 182'5 170'0 165'6 154'8 144'7 110'1	+8'4 +12'4 -22'2 +9'9 +11'4 +16'5 +16'5 +13'7 +17'5 +17'0 +6'9 -3'1 -13'5	38 101 47 24 18 196 7 119 133 54 7 2 37	62 559 234 121 50 989 10 760 741 291 15 6 157	245f 497c 581f 185c	K								
C									Dec. 5								

Group 11113. Dec. 4-5. A pair of ephemeral spots & the big spot of Group 11100.
 Group 11114. Dec. 4-5. A pair of small spots.
 Group 11115. Dec. 4-6. A few small faint spots.
 Group 11116. Dec. 4-6. A diminutive stream.
 Group 11117. Dec. 4-5. A tiny spot.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.	
1929 339 ¹¹⁵			°	°	°				1929 341 ⁵⁶⁹ G Dec. 8			°	°					
		988	247°0					113			928	72°2				173		
		943	264°9					62			934	111°0				186		
		844	299°2					426				(+13°2)	(90°2)	(- 0°1)	(303)	(1458)	(4306)	
	11102	979	282°7	200°3	+12°5	0	38	}712c			985	287°5					369	
	11100	970	286°7	197°6	+16°2	220	949				980	277°1					271	
	11104	893	285°5	184°7	+13°9	107	720				967	251°5					131	
	11105	879	290°1	182°3	+17°6	84	414	602c			963	241°5					135	
K	11115	716	281°8	167°4	+ 8°5	1	4	486c			963	265°9					174	
	11108	711	294°1	165°0	+16°9	27	135				928	273°9					70	
	11116	151	185°0	123°3	- 8°5	8	16				915	280°5					203	
	11112	315	137°1	109°8	-13°1	32	151				875	263°2					250	
	1019g	372	142°9	109°0	-17°0	9	30				849	289°0					115	
	11118	983	85°1	43°3	+ 4°9	53	277	155c			848	241°3					209	
	11119	994	95°5	39°0	- 5°5	57	281	108p			833	281°3	135°5	+ 9°3	5	22	53c	
		803	101°5					233			11112	520	244°9	108°7	-12°9	59	382	
		879	115°5					366			11118	585	82°3	44°5	+ 4°3	74	350	
		928	76°8	(+14°3)	(122°5)	(+ 0°2)	(598)	(3015)			11119	713	98°3	34°9	- 6°0	180	999	
Dec. 6											785	80°5					295	
											798	99°5					496	
											981	91°5					101	
												(+12°9)	(79°9)	(- 0°2)	(318)	(1753)	(2872)	
340 ¹¹⁷		941	274°1					153									168	
		932	295°5					834				975	264°4				341	
		922	252°1					155				968	281°2				204	
		847	278°7					168				945	244°8				65	
	11104	970	284°1	184°6	+13°7	162	1223	}1620c				886	295°7				219	
	11105	951	289°2	180°1	+18°2	45	213		211c				865	280°0				268
	11108	835	289°8	164°1	+16°4	45	188					818	241°1				164	
	1019h	191	222°9	116°8	- 8°0	4	7				716	252°0	109°3	-13°1	42	201		
	11112	235	183°5	110°1	-13°5	32	139	270c			251	108°4	51°3	- 4°9	0	5		
	11118	916	84°5	43°3	+ 5°0	54	306	836c			371	76°6	44°0	+ 4°6	56	362		
	11119	967	95°5	34°3	- 5°5	206	1244				496	100°8	35°9	- 5°7	242	1183		
		887	70°9					107			978	84°0	347°5	+ 5°8	243	1207	527c	
		905	104°9					145			982	93°8	346°3	- 3°8	18	91	178f	
		983	82°4	(+13°9)	(109°3)	(0°0)	(548)	(3320)			984	100°5	345°7	-10°4	0	11	69s	
Dec. 7											997	69°4	340°3	+20°5	12	79	90s	
											907	92°8					64	
												(+12°4)	(65°1)	(- 0°4)	(613)	(3139)	(2357)	
341 ⁵⁶⁹		949	277°0					614									143	
		896	234°0					146				967	257°7				259	
		877	248°2					139				954	240°9				275	
		854	278°8					319				943	274°8				196	
		840	264°7					324				924	288°2					
	11108	977	287°1	167°2	+16°7	16	60	976f										
	11112	404	235°6	110°1	-13°2	36	154											
	11118	725	83°6	44°1	+ 4°6	76	273											
	11119	826	97°1	34°9	- 5°9	175	971	961c										
G		866	80°6					468										

- Group 11118. Dec. 6-18. A regular spot, with an extension on its southern edge on Dec. 10, preceded by small companions on Dec. 8-13.
- Group 11119. Dec. 6-19. A stream of considerable length consisting of two stable regular spots (at the front and end of the group respectively), a link of numerous small spots between them, and an irregularly-shaped spot that has a common origin with the following regular spot.
- Group 11120. Dec. 10-16. One or two small spots.
- Group 11121. Dec. 10-22. A large stream of normal type with a big regular leader. Groups 11121, 22, 23, 24, 26, 27, 31 and 33 are all on nearly the same meridian.
- Group 11122. Dec. 10-22. A stream immediately preceding Group 11127; the barest separation exists between the follower of Group 11122 and the leader of Group 11127.
- Group 11123. Dec. 10-14. A small spot, with one or two distant companions on Dec. 13-14, & Group 11122.
- Group 11124. Dec. 10-21. A small regular spot.
- Group 11125. Dec. 11-14. A small group.
- Group 11126. Dec. 11-20. A partly-formed regular spot with an occasional companion.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.
1929 344°508 C			°	°	°				1929 346°409 G			°	°	°			
		.849	273°1					95	III124	.735	60°4	343°5	+20°7	12	60	365f	
		.825	239°8					278	III126	.749	72°0	339°7	+12°8	13	88	240f	
	III112	.861	255°0	109°8	-13°1	36	150	1065p	III127	.764	93°5	336°8	-3°2	102	542	313c	
	III125	.528	277°4	82°9	+3°5	3	16		III128	.948	79°4	315°6	+9°8	14	54	306c	
	III120	.086	179°8	51°4	-5°5	4	10			.858	87°4					137	
	III118	.156	54°8	44°1	+4°6	56	277			.865	104°6					172	
	III119	.270	109°2	36°6	-5°5	219	1194		Dec. 13		(+11°1)	(26°4)	(-0°8)	(858)	(4269)	(3162)	
	III122	.905	94°1	346°8	-4°0	40	158	363c									
	III123	.915	101°4	345°8	-10°6	5	21	166c									
	III121	.919	83°1	345°0	+6°1	266	1545	1103c	347°301	.968	244°7					90	
	III124	.942	68°0	342°9	+20°4	16	44	421sf		.947	256°5					129	
	III126	.958	76°4	338°9	+12°8	22	72	319c		.837	257°9					163	
		.864	74°2					52		.799	243°3					237	
		.869	65°2					63	III125	.928	274°3	82°4	+3°6	11	61	190c	
		.967	120°6					89	1019j	.585	288°1	48°8	+9°7	2	11		
		.976	93°4					227	III118	.503	280°7	44°2	+4°5	59	257		
Dec. 11			(+12°0)	(51°4)	(-0°5)	(667)	(3487)	(5114)		III119	.378	255°2	36°1	-6°4	167	823	
									C	III123	.477	111°3	347°8	-10°8	2	10	
										III122	.463	95°3	347°2	-3°3	79	384	
										III121	.510	76°1	344°9	+6°2	310	1650	
										III124	.613	53°9	342°8	+20°4	8	41	
345°498		.954	273°7					100		III126	.601	66°8	340°2	+12°9	16	76	
		.895	243°4					366		III127	.615	93°9	336°8	-3°1	79	553	
	III112	.954	256°0	110°3	-13°5	36	156	657c		III128	.863	78°6	315°8	+9°3	13	31	234nf
	III125	.707	274°7	83°1	+2°9	12	57			III129	.942	75°7	305°2	+13°1	6	19	377f
	III120	.255	251°7	52°4	-5°2	5	20				.958	83°9				72	
	III118	.139	313°4	44°2	+4°9	54	309		Dec. 14		(+10°7)	(14°6)	(-0°9)	(752)	(3916)	(1492)	
	III119	.095	152°9	35°9	-5°4	234	1159										
	III122	.780	94°1	347°4	-3°6	38	190	342c									
G	III121	.809	81°8	344°9	+6°3	262	1685	821c	348°401	.993	274°4					155	
	III123	.812	102°3	344°9	-10°3	8	14	118c		.956	259°4					240	
	III124	.851	64°9	343°1	+20°7	23	81	581f		.896	246°1					449	
	III126	.871	74°5	339°1	+13°1	20	92	233c		.871	284°1					341	
	III127	.888	93°2	336°0	-3°1	79	332	426c		III118	.705	277°4	44°4	+4°5	41	233	140p
		.911	123°7					182	III119	.609	250°4	37°1	-6°6	119	635		
		.960	102°7					160	III122	.234	100°7	346°8	-3°4	98	531		
Dec. 12			(+11°5)	(38°4)	(-0°6)	(771)	(4095)	(3986)		III121	.283	63°4	345°4	+6°3	312	1585	
										III124	.463	37°7	342°6	+20°5	4	39	
										III126	.400	52°6	341°2	+13°1	17	90	
										III127	.394	95°2	337°1	-3°0	76	449	
										III128	.715	75°4	315°7	+9°7	8	30	
										III129	.846	73°0	303°9	+13°8	11	42	248c
346°409		.967	346°9					218	III130	.955	94°1	287°6	-4°2	35	136	243n	
		.917	256°0					237		.836	83°6					182	
		.898	282°9					134	Dec. 15		(+10°2)	(0°1)	(-1°0)	(721)	(3770)	(1998)	
		.765	256°1					317									
	III112	.994	256°6	109°9	-13°4	57	171	206n			.955	244°5				136	
	III125	.831	274°2	82°3	+3°0	20	91	259c		.910	284°1					225	
	III120	.451	260°0	52°8	-5°2	1	4			III120	.921	264°0	52°9	-6°0	11	43	887c
	III118	.322	285°9	44°4	+4°3	54	299		349°466	III119	.792	262°9	38°2	-6°4	114	509	
	III119	.192	241°6	36°1	-6°0	223	1119			III118	.859	275°6	44°9	+4°2	42	196	316c
	III122	.637	94°6	347°1	-3°6	69	309										
	III123	.651	106°3	347°0	-11°1	10	26		G								
G	III121	.664	80°0	344°3	+6°0	283	1506	258f									

Group 11127.	Dec. 12-22.	A stream approximately of normal type forming immediately behind Group 11122.
Group 11128.	Dec. 13-21.	Return of Group 11094. A small definite spot with a companion on Dec. 19 and 21.
Group 11129.	Dec. 14-24.	An insignificant stream until Dec. 19, when more definite spots appear, of which the leader becomes a regular spot.
Group 11130.	Dec. 15-26.	A regular spot with companions on Dec. 21, 22 and 23.
Group 11131.	Dec. 16-22.	A small stream <i>sp</i> Group 11122.
Group 11132.	Dec. 16-27.	A regular spot with companions to the north of it on Dec. 23 and 24.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.	
1929 349.466 G	III131	.200	209.2	351.8	-11.2	5	22		1929 351.377 C	III129	.362	43.3	306.2	+13.8	18	80		
	III122	.043	201.2	347.0	-3.5	122	628			III130	.561	95.1	287.0	-4.0	20	104		
	III121	.138	5.9	345.3	+6.7	343	1582			III135	.598	69.9	286.2	+10.7	11	37		
	III124	.381	9.4	342.3	+20.8	13	65			III132	.743	74.8	274.3	+10.3	14	53	303nf	
	III126	.263	17.9	341.4	+13.2	14	68			III134	.965	79.6	246.9	+9.6	39	158	655n	
	III127	.159	100.4	337.1	-2.8	130	503				.944	93.9					51	
	III128	.530	69.9	315.9	+9.4	10	18		Dec. 18		(+8.9)	(320.9)	(-1.4)	(579)	(3094)	(3011)		
	III129	.608	68.3	304.3	+14.0	12	41											
	III130	.862	94.3	286.8	-4.3	33	126	406f										
	III132	.961	78.8	272.9	+10.4	7	27	102n	352.475		.949	239.9					129	
Dec. 16		.855	105.1	(+9.7)	(346.1)	(-1.2)	(856)	(3828)		III119	.996	261.5	31.3	-8.6	21	90	562f	
								(2233)		III131	.711	254.9	350.8	-11.7	27	56		
										III121	.673	281.4	347.9	+6.5	265	1445		
										III122	.662	266.5	347.8	-3.4	87	447		
350.504		.947	283.9					192		III124	.660	305.0	341.7	+20.9	9	26		
		.841	277.7					267		III126	.613	294.6	341.3	+13.5	8	19		
		.825	290.5					155		III127	.534	267.6	338.6	-2.5	56	289		
	III118	.956	274.9	44.9	+4.3	44	239	273c	G	1020a	.450	279.2	332.8	+2.8	2	10		
	III119	.917	263.5	38.7	-6.5	83	412	1888c		III128	.248	317.8	316.2	+9.1	6	17		
	III131	.378	243.0	352.4	-11.1	9	43			III129	.270	357.3	307.2	+14.1	64	281		
	III122	.263	262.1	347.5	-3.3	116	579			III130	.330	97.6	287.4	-3.9	20	114		
	III121	.273	300.2	346.1	+6.6	322	1450			III135	.388	57.6	287.1	+10.5	39	158		
	III124	.410	337.2	342.1	+20.8	9	47			III132	.561	69.3	274.4	+10.1	16	78		
	III126	.303	329.4	341.5	+13.8	15	56			III134	.872	78.2	246.8	+9.5	32	135	624n	
G	III133	.249	218.2	341.4	-12.5	5	11			III136	.956	73.7	234.9	+15.1	37	166	310f	
	III127	.096	256.4	337.7	-2.6	91	424			III137	.965	82.9	232.3	+6.4	4	8	209np	
	III128	.330	56.2	316.3	+9.3	9	14		Dec. 19		.882	87.2					147	
	III129	.509	59.9	305.6	+13.5	5	15				(+8.3)	(306.5)	(-1.5)	(693)	(3339)	(1981)		
	III130	.717	94.2	286.8	-3.9	29	129	509f										
	III132	.865	77.4	273.6	+10.2	6	39	198n	353.437	III131	.829	256.4	349.1	-12.2	4	12	415p	
	III134	.998	80.3	246.6	+9.6	29	96	399p		III122	.814	267.0	348.1	-3.4	78	396	420c	
		.739	73.9					87		III121	.819	279.2	348.1	+6.5	270	1253	496c	
		.828	110.1					115		III124	.790	298.4	341.7	+20.9	7	32	202c	
		.933	109.3					141		III126	.761	288.9	341.3	+13.1	2	3	122p	
Dec. 17		.953	74.1	(+9.3)	(332.4)	(-1.3)	(772)	(3554)		III127	.722	268.6	339.8	-2.2	48	262		
								(4574)		III128	.429	294.7	316.9	+8.7	5	7		
351.377		.946	285.5					141	G	III129	.359	318.5	307.9	+13.9	41	269		
	III118	.994	274.5	44.3	+4.3	57	241	267f		III135	.236	28.0	287.4	+10.3	31	112		
	III119	.948	261.5	32.1	-8.5	29	209	1594c		III130	.119	110.7	287.4	-4.1	20	108		
	III131	.547	251.2	352.6	-11.3	9	25			III132	.392	59.4	273.9	+9.9	14	69		
	III122	.458	265.1	348.0	-3.5	77	466			III134	.742	76.0	247.2	+9.1	16	106	399c	
	III121	.460	286.9	347.1	+6.4	222	1290			III137	.823	81.0	239.2	+6.4	2	6	246f	
	III124	.503	318.4	341.7	+20.7	10	37			III136	.880	71.9	234.0	+15.0	31	184	127c	
	III126	.423	306.5	341.2	+13.2	9	28			III138	.992	110.9	211.1	-21.0	8	50	233p	
	III133	.381	239.5	340.5	-12.5	1	4			III139	.994	79.8	210.6	+10.0	75	382	480p	
	III127	.300	266.1	338.3	-2.5	59	354				.910	101.8					168	
C	III128	.198	23.0	316.4	+9.0	4	8		Dec. 20		.939	75.1					187	
											.948	66.0					184	
											.972	116.5	(+7.9)	(293.8)	(-1.7)	(652)	(3251)	(3752)

Group III133. Dec. 17-18. One or two very small spots s/ Group III122.

Group III134. Dec. 17-25. Revival of Group III096: A regular spot with companions on Dec. 22-24.

Group III135. Dec. 18-25. A small changing stream.

Group III136. Dec. 19-30. Probable return of Group III097. A regular spot with tiny companions on Dec. 20 and 21.

Group III137. Dec. 19-25. One or two spots differing somewhat in position from day to day but in the same slightly disturbed area.

Group III138. Dec. 20-26. One or two small spots not visible on Dec. 24 and 25.

Group III139. Dec. 20-31. Return or revival of Group III099. A large stream of very composite spots that decrease rapidly after about Dec. 25.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.
1929. 354.115		°864	287°0	°	°			175	1929. 355.436		°785	100°1	°	°			102
	III131	°931	258°2	353°2	-11°7	16	43	280c			°827	61°6					189
	III121	°899	277°8	348°3	+6°2	238	1027	820c			°853	120°9					136
	III22	°894	266°8	348°1	-3°7	62	374	318c			°924	100°7					299
	III24	°870	295°2	342°0	+20°7	6	16	342c			°962	65°1					475
	III27	°831	268°6	340°9	-2°2	35	179	189c	Dec. 22			(+6°9)	(267°5)	(-1°9)	(871)	(4537)	(7857)
	III28	°543	290°6	315°8	+9°4	5	11				°989	277°5					469
	III29	°472	305°4	308°2	+14°1	46	205		356.419		°985	267°5					226
	III30	°060	231°4	287°6	-3°9	21	102				°977	283°9					205
K	III35	°219	348°6	287°4	+10°5	22	55				°970	294°1					119
	III32	°278	43°0	273°9	+9°9	15	75				°943	254°7					194
	III34	°629	72°5	247°6	+9°4	17	85				°895	280°3					192
	III37	°737	78°9	238°3	+6°9	18	32	190f			°845	270°1					78
	III36	°795	68°7	234°8	+15°6	36	160	165c			°859	288°2	311°7	+14°5	25	136	254c
	III38	°963	111°0	211°1	-20°7	7	40	276sf		III29	°555	265°9	288°1	-4°0	15	85	
	III39	°972	79°0	209°4	+10°2	121	820	662c		III30	°560	291°7	286°3	+10°2	7	33	
	°889	72°4						163		III35	°392	301°3	274°3	+9°8	11	42	
	°900	111°4						256		III32	°296	334°1	262°1	+13°4	2	22	
	°902	63°4						181		III45	°237	25°3	248°6	+10°3	13	47	
	°911	79°8						103	C	III34	°252	51°8	243°0	+6°9	1	3	
	°931	100°8								III37	°446	48°9	234°2	+15°1	29	149	
Dec. 21		(+7°6)		(284°9)	(-1°8)	(665)	(3224)	(4386)		III36	°626	117°1	218°8	-18°1	5	19	
355.436		°954	285°6					271		III40	°729	117°7	210°9	-21°2	1	4	151f
	°940	295°0						336		III38	°717	72°1	210°6	+11°3	126	1124	
	°938	304°9						120		III39	°815	86°5	200°2	+1°7	18	54	203c
	°922	236°5						168		III41	°877	70°3	195°5	+16°1	108	707	
	°872	257°8						209		III42	°872	76°3	195°1	+10°9	81	460	916c
	III131	°993	257°9	350°7	-12°2	16	45	318f		III43	°921	84°5	187°9	+4°2	49	163	395c
	III121	°987	276°7	347°7	+6°3	196	1007	778c		III44	°951	70°8	184°4	+17°5	6	18	966p
	III22	°987	266°8	348°1	-3°4	91	321	827f		III46	°883	96°4					107
	III27	°970	268°5	343°3	-1°9	26	131		Dec. 23			(+6°5)	(254°5)	(-2°0)	(497)	(3066)	(4475)
	III29	°698	292°3	309°0	+13°9	30	156				°965	280°4					190
	III35	°401	302°3	287°6	+10°5	21	56		357.346		°949	304°4					60
	III30	°333	264°3	286°8	-3°7	20	103				°941	235°2					191
	III32	°231	331°1	274°0	+9°7	13	73				°885	278°0					90
	III34	°375	58°7	248°6	+9°4	25	86				°952	286°6	312°9	+15°0	24	116	584f
	III37	°486	71°6	239°9	+7°1	9	26			III29	°716	267°2	287°9	-3°6	21	85	
	III36	°603	61°7	234°3	+15°0	29	141			III30	°712	286°0	286°1	+9°7	3	9	
	III40	°772	111°7	218°8	-17°8	10	18	132c		III35	°567	292°3	274°4	+10°5	23	92	
	III38	°851	113°8	211°2	-21°0	6	16	217f		III32	°430	307°4	262°7	+13°0	18	53	
	III39	°857	76°5	209°8	+10°5	123	773	814c		III45	°231	327°5	249°5	+9°0	8	37	
	III41	°925	87°7	200°2	+1°4	17	39	541c		III34	°209	359°4	242°4	+9°8	2	4	
	III42	°958	72°7	195°8	+15°9	120	762	515c		III37	°328	25°5	233°9	+15°0	24	145	
	III43	°957	78°2	195°3	+10°7	82	592	637c		1020b	°410	47°5	224°2	+13°9	1	3	
	III44	°985	85°1	187°9	+4°5	37	192	536c		C	1020c	°421	60°4	220°6	+9°9	1	2
C		°746	75°1					237									

Group 11140. Dec. 22-23. An ephemeral spot *np* Group 11138.

Group 11141. Dec. 22-29. A small regular spot diminishing to a dot: there is a companion spot on Dec. 26.

Group 11142. Dec. 22, 1930-Jan. 3. Return of Group 11100: 3rd appearance. A large spot with multiple umbrae and a broad cleft across it that, on some days, practically divides the spot into two or three portions.

Group 11143. Dec. 22, 1930-Jan. 1. A pair of spots *s* of Group 11142. The leader, at first nearly circular, becomes drawn out in an E.-W. direction and has divided into two on Dec. 29.

Group 11144. Dec. 22-31. An incompletely-formed regular spot, small but stable, with numerous small companions in a stream southwards.

Group 11145. Dec. 23-28. A stream of tiny spots at first, but later of more definite components.

Group 11146. Dec. 23-29. Return of Group 11105. A small spot of remarkable persistence followed by a large tract of faculae behind Group 11142 and 43.

Group 11147. Dec. 24-26. A tiny spot.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbræ.	Whole Spots.	Faculæ.			Dist.	Pos. Angle.	Long.	Lat.	Umbræ.	Whole Spots.	Faculæ.
1929. 357'346 C	III39 1020d	'558	66'0	210'9	+10'7	139	817		1929. 359'443 G	III45	'777	288'5	263'6	+12'7	38	284	102c
		'697	70'4	200'3	+11'8	8	12			III36	'437	313'1	233'9	+15'0	34	160	
	III41	'675	85'4	200'2	+1'5	12	43	278f		III39	'246	15'7	210'8	+11'2	86	714	
	III43	'752	73'4	195'3	+10'8	64	344	287f		III38	'375	165'5	208'8	-23'6	3	12	
	III42	'767	67'0	195'3	+15'9	132	700			III41	'255	78'2	200'3	+0'7	2	14	
	III44	'826	83'4	187'2	+4'2	30	189	418c		III43	'398	54'5	195'5	+11'1	54	354	
	III46	'877	68'6	183'6	+17'5	8	13	1933f		III42	'458	46'3	194'6	+16'1	157	740	
	III47	'982	104'0	163'3	-14'1	5	16	130f		III44	'465	76'8	187'8	+4'0	38	216	
		'820	58'8					217		III46	'595	55'7	183'8	+17'5	4	7	
		'872	113'0					107		III47	'778	107'0	164'6	-14'7	3	7	361sf
		'920	39'4					139			'742	54'6					551
		'977	81'6					205			'799	78'3					266
		'985	73'0					209			'823	89'2					148
Dec. 24		(+6'0)		(243'3)	(-2'2)	(523)	(2680)	(5038)			'842	67'6					473
											'875	55'3					289
											'931	95'8					248
											'943	75'9					240
									Dec. 26		(+5'0)		(214'7)	(-2'4)	(449)	(2664)	(3523)
358'489		'973	286'3					366									
		'915	241'5					180									
	III30	'873	267'3	287'8	-3'5	40	97	480c									
	III35	'880	282'6	287'6	+9'9	14	27	474c									
	III32	'749	285'8	274'1	+10'1	18	71										
	III45	'630	294'1	263'2	+13'0	44	169										
	III34	'405	307'4	246'3	+12'0	2	19										
	III37	'330	312'5	241'5	+10'6	2	9		360'435		'988	286'9					1755
	III36	'322	339'3	233'9	+15'2	36	175				'967	267'1					187
	III39	'371	49'9	210'4	+11'6	97	986				'936	255'2					91
	III41	'456	81'8	200'5	+1'7	5	15			III32	'961	281'4	274'6	+10'3	23	34	169c
	III43	'568	66'0	195'4	+11'4	58	372			III45	'894	285'6	263'4	+12'7	66	319	398c
	III42	'605	58'8	194'7	+16'3	144	834			III36	'600	300'0	234'1	+15'3	27	139	
	III44	'644	80'7	187'8	+4'3	47	270			III39	'284	323'7	211'4	+10'7	107	528	
	III46	'739	63'2	183'5	+17'8	3	7	1400f		III41	'056	17'0	200'7	+0'5	1	8	
	III47	'900	105'2	163'6	-14'7	5	15	382f		III43	'254	22'9	195'8	+11'0	59	367	
		'769	81'9					168		III42	'338	19'7	194'8	+16'0	153	756	
		'897	80'5					333		III44	'242	65'3	188'9	+3'4	45	150	
		'920	93'3					231	G	III46	'450	41'0	183'7	+17'4	2	5	
		'937	70'3					340		III48	'546	56'6	173'5	+15'2	1	8	
		'954	59'1					282		1020e	'718	64'0	159'5	+16'4	0	6	205c
		'972	81'9					203			'737	50'2					248
Dec. 25		(+5'5)		(227'2)	(-2'3)	(515)	(3066)	(4839)			'749	81'5					178
											'838	94'7					279
											'865	70'9					332
											'877	85'9					115
											'894	52'9					324
359'443		'958	281'6					327			'928	115'5					114
		'948	256'1					167			'947	81'7					200
	III30	'961	267'1	288'5	-3'5	19	88	274f	Dec. 27		(+4'5)		(201'6)	(-2'5)	(484)	(2320)	(4595)
G	III32	'873	283'1	274'2	+10'1	11	68	77c									

Group 11148. Dec. 27-30. A faint spot.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

G.M.T.	Group No.	MEASURES.		POSITION.		AREA.			G.M.T.	Group No.	MEASURES.		POSITION.		AREA.		
		Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.			Dist.	Pos. Angle.	Long.	Lat.	Umbrae.	Whole Spots.	Faculae.
1929. 361°360			°	°	°				1929. 363°116			°	°	°			
		.927	297.1					125			.947	276.7					202
		.854	284.7					271			.913	256.9					183
	III45	.966	283.5	263.2	+12.3	51	278	758c			.872	247.3					153
	III36	.737	293.2	233.8	+15.0	25	147				.743	239.1					164
	III39	.439	300.3	212.0	+10.3	39	209			III36	.937	287.1	234.1	+15.0	11	118	588nf
	III41	.214	292.1	200.8	+2.1	1	2			III39	.754	286.1	213.5	+10.3	16	72	873p
	III43	.261	336.3	195.5	+11.2	44	271			III43	.533	297.0	195.2	+11.7	25	174	
	III42	.326	344.5	194.6	+15.6	128	770		K	III42	.547	304.7	194.0	+15.8	128	596	
	III44	.102	2.2	187.2	+3.2	23	98			III44	.404	286.0	189.1	+4.0	14	57	
	III46	.348	15.3	183.9	+16.9	2	4			III50	.450	328.3	180.8	+19.2	1	3	
	III48	.417	36.1	174.6	+17.1	0	3			III48	.392	328.1	178.7	+16.8	1	4	
	III49	.980	101.6	110.9	-11.9	5	20	208c		III51	.471	59.9	141.9	+11.2	5	14	
		.767	67.9					119		III49	.808	103.1	112.9	-12.1	3	7	272sf
		.857	79.7					172			.952	114.7					97
		.955	69.7					133	Dec. 30			(+3.3)	(166.3)	(-2.8)	(204)	(1045)	(2532)
Dec. 28			(+4.1)	(189.4)	(-2.6)	(318)	(1802)	(1786)									
362°454		.962	282.9					778			.970	291.9					349
		.863	278.0					165			.951	262.1					195
		.828	259.0					169			.944	247.9					228
		.800	247.8					255			.893	298.7					81
	III36	.875	288.9	233.7	+15.0	18	136	722nf			.850	241.0					195
	III39	.649	288.7	213.4	+9.8	28	134				.836	255.5					125
	III41	.453	279.9	201.4	+1.9	1	10				.784	274.1					290
	III43	.430	306.0	195.7	+11.9	45	282			C	.888	283.3	211.7	+10.4	4	9	1352c
	III42	.446	314.7	194.1	+15.5	119	624			III43	.733	289.7	195.2	+12.1	20	77	
	III44	.269	293.9	189.2	+3.5	14	67			III42	.732	294.9	193.9	+15.7	100	498	
	III46	.366	335.6	184.0	+16.6	1	3			III44	.635	279.8	189.2	+3.8	5	22	
	III50	.390	344.2	181.4	+19.1	2	6			III50	.621	307.5	181.9	+19.6	1	3	
	III49	.899	102.1	111.2	-12.1	5	15	678c		III51	.288	26.8	142.9	+11.9	7	38	
		.818	113.2					126			.838	116.9					192
		.910	77.0					159			.898	81.5					162
		.936	111.9					227			.954	102.5					346
Dec. 29			(+3.6)	(175.0)	(-2.8)	(233)	(1277)	(3279)	Dec. 31			(+2.7)	(150.5)	(-3.0)	(137)	(647)	(3515)

Group III49. Dec. 28-30. Return of Group III12: 4th appearance. A small spot in considerable faculae.

Group III50. Dec. 29-31. A single small spot.

Group III51. Dec. 30, 1930-Jan. 5. A short-lived stream.

ROYAL OBSERVATORY, GREENWICH.

General Catalogue of Groups
of Sun Spots
for the Year
1929

GREENWICH PHOTO-HELIOGRAPHIC RESULTS. 1929

GENERAL CATALOGUE of GROUPS of SUN SPOTS for the YEAR 1929.

Groups of Sun Spots, lasting for two or more days, are numbered in the *first* column in continuation of the Group-numbers given in 1928 and the previous years. Groups seen only once are not included in this Catalogue,

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

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

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

The Mean Areas for Umbræ and Whole Spots entered in the *eighth* and *ninth* columns are corrected for the effect of foreshortening and are expressed in millionths of the Sun's visible hemisphere.

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

The *twelfth* column gives reference to all Groups contained in Ledgers I. and 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.	Latitude. ...	...	Drift.
		<i>forwards.</i>			<i>backwards.</i>
0°	...	5°	20°	...	3°
5°	...	4·5	25°	...	7·5
10°	...	3	30°	...	12·5
15°	...	0·5	35°	...	18

GENERAL CATALOGUE OF SUN SPOTS.

No. of Group.	Time of Central Meridian Passage.	Duration in Days.	First Seen.		Last Seen.		Mean Area Corrected for Foreshortening.		Mean Position of Group.		Reference to Ledger.
			Date.	Longitude from Central Meridian.	Date.	Longitude from Central Meridian.	Umbræ.	Whole Spots.	Longitude.	Latitude.	
10831	1929. Jan. 1.8	4	1929. Jan. 2	° + 7.8	1929. Jan. 5	° +45.9	14	45	° 268.2	° -19.5	I. 1072 (2) II.
2	6.9	2	2	-59.5	3	-47.8	2	8	200.8	+10.4	
3	8.79	13	2	-80.6	14	+72.0	28	169	176.5	+11.4	
4	4.73	5/7	4	-7.8	10	+76.4	16	83	229.9	+8.8	
5	9.7	5	5	-56.7	9	-5.5	6	23	164.0	+17.0	
6	10.44	9	5	-68.4	13	+39.4	13	59	154.8	-12.0	
7	5.7	4	7	+20.7	10	+60.3	14	60	216.7	-1.1	
8	7.4	3	8	+12.6	10	+38.5	10	32	194.8	+12.1	
9	13.5	2/3	9	-53.2	11	-30.8	2	5	114.0	-13.0	
10840	14.72	11	9	-70.6	19	+61.6	19	110	98.5	+18.4	II.
1	17.38	13	11	-78.2	23	+81.4	110	791	63.4	+6.8	I. 1073 (1)
2	11.0	2	12	+18.0	13	+30.2	2	7	147.4	-20.5	II.
3	13.42	7	12	-14.3	18	+63.8	33	160	115.5	-9.8	
4	14.40	4	12	-27.3	15	+13.9	4	15	102.6	-15.0	
5	11.2	2	13	+28.0	14	+41.1	10	38	144.8	+4.6	
6	13.9	5	14	+6.9	18	+57.7	10	41	109.4	-23.0	
7	15.5	3/5	16	+11.0	20	+68.0	2	6	88.1	+10.8	
8	19.3	2	16	-37.4	17	-25.9	4	6	38.0	+6.0	
9	21.82	13	16	-71.6	28	+78.2	85	444	5.0	-11.4	II.
10850	24.84	10/11	19	-70.9	29	+58.5	25	128	325.1	+5.4	II.
1	26.70	9	20	-78.2	28	+23.7	36	223	300.6	+5.0	II.
2	18.2	2	22	+54.6	23	+68.7	8	32	53.2	-9.2	II.
3	26.89	10	23	-54.1	Feb. 1	+75.2	33	180	298.1	+8.5	
4	31.13	7	30	-12.2	5	+70.2	28	138	242.3	-6.0	
5	Feb. 6.0	3/4	31	-74.9	3	-36.9	7	31	164.5	+4.2	
6	6.66	11	Feb. 2	-58.1	12	+79.4	30	122	156.4	+6.6	
7	Jan. 31.2	3	3	+40.0	5	+69.0	14	39	241.4	-16.2	
8	Feb. 9.34	7	4	-67.5	10	+14.5	10	30	121.1	+6.3	
9	9.95	11	4	-75.4	14	+62.5	21	93	113.0	-9.4	
10860	3.3	2	6	+40.2	7	+53.7	7	18	200.8	-21.6	I. 1074 (1) II.
1	11.86	13	6	-76.0	18	+80.4	125	668	87.9	-10.6	
2	12.35	12	6	-80.3	17	+68.4	21	114	81.4	-4.6	
3	2.9	3	7	+57.6	9	+81.9	22	60	205.4	-10.0	
4	8.8	2	7	-19.0	8	-3.2	1	6	128.5	-11.3	
5	12.9	4/6	7	-73.1	12	-6.4	4	10	74.0	+7.3	
6	13.03	11	8	-62.5	18	+78.0	37	186	72.4	-5.1	
7	13.4	5	8	-65.1	12	-10.4	5	17	68.2	-17.6	
8	14.97	11	8	-85.4	18	+47.1	18	83	46.9	-13.3	II.
9	16.4	4/10	12	-52.1	21	+66.0	1	3	27.7	-6.0	II.
10870	9.1	2	14	+70.0	15	+82.4	89	203	123.6	-11.2	I. 1075 (1) II.
1	17.1	2	15	-19.2	16	-11.7	1	4	18.9	-7.6	
2	18.3	2	15	-37.8	16	-23.9	1	6	3.5	-11.0	
3	21.43	11	16	-69.5	26	+67.0	19	86	321.9	+5.4	
4	13.3	2	17	+53.8	18	+69.3	8	26	69.2	+6.6	
5	23.67	12	18	-67.2	Mar. 1	+77.7	18	59	292.3	-17.3	
6	15.4	3	19	+51.8	Feb. 21	+78.7	59	256	41.2	+5.1	
7	25.6	4/10	20	-69.4	Mar. 1	+51.2	2	4	266.7	-8.1	
8	27.18	10	21	-76.1	2	+42.1	11	49	246.1	-15.3	II.
9	27.85	11	22	-72.9	4	+57.2	39	183	237.3	+6.3	II.

GENERAL CATALOGUE OF SUN SPOTS—continued.

No. of Group.	Time of Central Meridian Passage.	Duration in Days.	First Seen.		Last Seen.		Mean Area Corrected for Foreshortening.		Mean Position of Group.		Reference to Ledger.
			Date.	Longitude from Central Meridian.	Date.	Longitude from Central Meridian.	Umbra.	Whole Spots.	Longitude.	Latitude.	
10880	1929. Feb. 22.3	2	1929. Feb. 23	+14.7	1929. Feb. 24	+27.9	2	8	310.5	+ 7.6	II.
1	Mar. 1.33	12	23	-79.2	Mar. 6	+70.1	27	135	217.7	- 9.4	
2	Feb. 22.9	5	24	+19.1	Feb. 28	+75.7	5	14	302.7	-16.2	II.
3	28.62	8	24	-58.1	Mar. 3	+39.3	2	9	227.1	+ 8.6	II.
4	Mar. 8.03	13	Mar. 1	-87.6	13	+69.8	23	131	129.5	-10.7	I. 1075 (2)
5	8.39	13	2	-80.6	14	+77.1	83	453	124.7	- 7.7	II.
6	Feb. 28.9	4	3	+32.9	6	+73.9	49	164	222.8	+15.2	II.
7	Mar. 7.42	6/7	3	-54.8	9	+29.7	7	14	137.6	-16.4	
8	9.0	2	3	-72.4	4	-61.9	4	10	116.4	-13.0	I. 1074 (2)
9	10.85	13	4	-84.1	16	+73.4	182	1084	92.4	- 9.7	
10890	11.4	2/5	6	-66.0	10	-12.1	2	7	84.8	- 2.7	II.
1	4.2	4	7	+42.9	10	+77.0	9	37	179.7	+15.0	
2	13.76	10/11	7	-79.9	17	+47.9	8	29	54.0	+ 6.7	II.
3	14.6	7	8	-78.0	14	- 6.9	11	34	43.4	+22.8	II.
4	15.28	8	10	-65.5	17	+35.9	36	128	34.0	- 7.8	II.
5	16.1	5	11	-61.9	15	- 9.7	4	8	23.5	-13.9	II.
6	12.5	4	15	+36.0	18	+77.9	19	70	70.2	-14.5	I. 1076 (1)
7	21.70	13	15	-82.9	27	+76.8	74	378	309.3	+ 8.1	
8	28.59	12	23	-71.3	Apr. 3	+80.0	38	179	218.5	-12.9	II.
9	25.7	2	30	+63.5	Mar. 31	+75.6	8	20	257.1	+12.0	II.
10900	28.7	5	30	+22.3	Apr. 3	+73.6	37	172	217.0	+10.1	
1	Apr. 5.0	5	30	-74.5	3	-20.1	10	27	120.6	- 2.8	II.
2	6.87	13	31	-84.4	12	+70.0	53	294	96.1	-10.6	I. 1074 (3)
3	Mar. 30.2	5	Apr. 1	+32.0	5	+80.5	13	60	197.3	+ 8.0	II.
4	Apr. 7.2	3	2	-61.5	4	-37.4	5	26	91.3	+22.6	
5	5.99	6/8	5	- 8.3	12	+79.0	12	41	107.7	-11.8	II.
6	8.04	10	5	-35.1	14	+80.6	122	627	80.6	- 9.5	II.
7	6.95	3	6	- 8.2	8	+21.3	21	42	95.0	-17.8	I. 1077 (1)
8	12.2	3	9	-33.5	11	-11.1	5	16	26.0	-14.9	
9	15.53	13	9	-78.2	21	+77.5	71	436	341.8	+ 5.3	II.
10910	10.71	7	10	- 1.9	16	+78.3	33	167	45.4	-20.1	
1	17.74	13	11	-83.8	23	+74.6	35	189	312.5	+ 8.2	I. 1076 (2)
2	11.9	2	12	+ 5.2	13	+20.4	2	8	30.2	+ 8.4	II.
3	19.55	12	13	-81.4	24	+66.5	28	126	288.6	- 8.9	
4	10.0	2	14	+57.2	15	+72.7	14	63	54.5	- 9.6	I. 1078 (1)
5	18.0	7	18	+ 3.6	24	+80.3	96	531	309.0	+ 4.4	
6	22.90	9	20	-36.9	28	+76.9	45	224	244.4	+ 8.2	II.
7	24.2	2	22	-24.0	23	-10.2	2	8	227.6	+13.4	II.
8	23.2	5	24	+12.3	28	+70.6	7	21	239.9	- 7.0	
9	May 1.06	12	25	-73.1	May 6	+68.5	25	143	136.5	+13.3	II.
10920	4.16	14	27	-88.3	10	+82.4	58	307	95.6	- 9.2	I. 1074 (4)
1	4.67	13	28	-84.1	10	+78.1	20	91	88.9	-19.9	II.
2	3.51	11	29	-58.0	9	+79.5	59	295	104.2	- 1.5	II.
3	6.5	3	May 1	-66.6	3	-41.3	11	29	65.2	+12.0	I. 1079 (1)
4	6.3	2/3	2	-51.3	4	-26.2	2	7	67.7	- 7.0	
5	3.88	8	3	- 7.6	10	+82.6	55	249	99.3	+15.1	II.
6	8.8	2	3	-72.4	4	-58.1	4	20	34.6	-20.9	
7	10.65	12	5	-71.4	16	+77.4	30	127	9.8	+14.3	II.
8	12.15	12	6	-78.0	17	+70.8	17	71	349.9	+ 3.3	I. 1077 (2)
9	9.63	9	7	-30.8	15	+76.8	59	324	23.3	-10.6	II.

GENERAL CATALOGUE OF SUN SPOTS—continued.

No. of Group.	Time of Central Meridian Passage.	Duration in Days.	First Seen.		Last Seen.		Mean Area Corrected for Foreshortening.		Mean Position of Group.		Reference to Ledger.
			Date.	Longitude from Central Meridian.	Date.	Longitude from Central Meridian.	Umbrae.	Whole Spots.	Longitude.	Latitude.	
10930	1929. May 14.2	2	1929. May 8	° -78.0	1929. May 9	° -64.5	6	11	° 322.2	° -6.6	
1	14.37	13	8	-79.8	20	+79.6	43	231	320.6	+4.4	I. 1078 (2)
2	16.9	3/4	13	-44.1	16	-6.0	2	7	287.5	-12.8	
3	19.30	8	13	-75.2	20	+13.4	8	30	255.4	-6.2	II.
4	20.0	6	14	-74.2	19	-9.0	6	12	245.7	+20.3	II.
5	11.1	2	15	+55.0	16	+70.4	8	20	3.5	-9.2	
6	18.34	7	16	-29.4	22	+57.5	17	53	268.0	+10.0	II.
7	19.86	9	16	-47.2	24	+66.6	13	36	247.9	+10.8	II.
8	19.9	4/5	21	+17.7	25	+74.2	10	23	247.3	-6.4	
9	28.35	13	22	-77.8	June 3	+81.2	111	637	135.7	+13.6	I. 1080 (1)
10940	26.07	7	24	-22.9	May 30	+60.7	40	151	165.8	+20.7	II.
1	30.4	5/6	24	-77.2	29	-12.8	3	8	108.5	+14.0	
2	31.22	8	25	-77.6	June 1	+17.3	14	60	97.6	+16.8	I. 1079 (2)
3	23.1	2	26	+45.6	May 27	+57.5	8	18	205.6	+14.2	
4	June 6.23	8/9	31	-74.8	June 8	+27.5	6	20	18.1	+13.6	II.
5	5.67	4/5	June 2	-44.5	6	+7.9	6	19	25.5	-18.1	
6	9.80	13	3	-85.3	15	+72.5	68	356	330.9	-8.6	II.
7	1.9	5	4	+33.1	8	+82.4	35	199	75.9	-17.4	I. 1081 (1)
8	2.2	2	4	+28.2	5	+42.5	10	20	71.0	+10.2	
9	10.38	9	4	-78.8	12	+26.8	13	67	323.2	+4.9	I. 1078 (3)
10950	10.78	13	4	-84.6	16	+78.9	22	109	317.9	+7.2	II.
1	5.3	2/3	5	+0.4	7	+26.9	2	10	30.0	-10.2	
2	11.69	9	6	-71.8	14	+35.1	3	16	305.8	+11.3	II.
3	12.58	11	6	-81.2	16	+53.6	16	79	294.0	-18.9	II.
4	15.06	7	9	-75.4	15	+5.9	7	15	261.3	-4.8	II.
5	12.90	9	10	-36.1	18	+73.2	9	28	289.8	-6.7	II.
6	17.49	13	11	-78.7	23	+70.0	16	65	229.1	+14.4	II.
7	17.53	9	11	-81.2	19	+24.5	19	76	228.6	-11.0	II.
8	14.16	7/9	12	-26.4	20	+81.8	14	56	273.1	+8.8	II.
9	10.7	3	13	+34.4	15	+64.2	10	25	319.4	+10.6	
10960	19.93	10	14	-73.6	23	+48.2	20	84	196.8	-15.5	II.
1	16.63	7	16	-2.3	22	+75.4	24	101	240.5	+9.6	II.
2	24.10	12	18	-80.2	29	+73.2	148	705	141.6	-9.0	I. 1082 (1)
3	24.54	13	18	-82.7	30	+80.6	84	487	135.7	+13.3	I. 1080 (2)
4	24.83	8	19	-73.7	26	+20.4	11	45	132.0	-5.2	II.
5	16.5	3	20	+53.2	22	+76.5	13	47	242.6	-7.6	I. 1083 (1)
6	25.54	8	20	-67.2	27	+25.3	36	123	122.5	-8.1	II.
7	20.6	6	21	+7.5	26	+77.7	42	193	188.1	-16.8	I. 1084 (1)
8	22.43	6	21	-17.0	26	+55.3	7	23	163.7	+14.5	
9	28.64	13	22	-82.0	July 4	+77.7	41	229	81.5	-16.6	I. 1081 (2)
10970	27.9	2/4	24	-43.6	June 27	-7.0	2	5	91.5	-16.2	
1	July 1.2	3	25	-76.6	27	-50.6	5	15	48.1	-12.1	
2	2.04	9	26	-73.4	July 4	+32.4	8	32	36.5	+7.7	II.
3	2.51	11/13	26	-80.4	8	+79.3	18	74	30.2	-18.7	II.
4	June 24.1	2	28	+57.0	June 29	+68.8	10	46	141.0	+7.8	
5	26.6	2	28	+25.3	29	+36.7	4	16	109.0	+1.9	
6	July 4.4	6	28	-82.5	July 3	-11.3	7	22	5.8	-8.0	II.
7	4.32	12	29	-67.9	10	+84.4	34	166	6.4	+6.2	II.
8	5.1	2	29	-74.6	June 30	-58.6	2	14	356.6	-13.0	
9	1.90	7	30	-15.2	July 6	+58.2	11	30	38.4	-12.6	II.

GENERAL CATALOGUE OF SUN SPOTS—continued.

No. of Group.	Time of Central Meridian Passage.	Duration in Days.	First Seen.		Last Seen.		Mean Area Corrected for Foreshortening.		Mean Position of Group.		Reference to Ledger.
			Date.	Longitude from Central Meridian.	Date.	Longitude from Central Meridian.	Umbræ.	Whole Spots.	Longitude.	Latitude.	
10980	1929. July 6.27	12	1929. June 30	° -74.4	1929. July 11	° +69.9			° 340.5	° - 8.0	II.
I	7.7	4/5	July 2	-67.5	6	-21.2	74	453	321.2	+10.4	II.
2	10.95	11	4	-84.4	14	+45.1	3	7	278.6	+ 6.2	II.
3	7.6	2	6	-14.5	7	- 2.8	19	69	323.5	- 9.7	
4	8.95	4	6	-35.2	9	+ 7.0	3	5	305.0	+ 7.0	
5	12.85	10	7	-72.8	16	+46.9	2	6	253.4	- 6.2	I. 1083(2)
6	10.78	10	8	-33.4	17	+80.8	10	41	280.7	- 5.1	I. 1085(1)
7	14.6	4	9	-69.5	12	-29.5	149	778	230.3	+16.4	
8	17.11	13	11	-76.8	23	+85.6	4	8	197.0	-15.9	I. 1084(2)
9	14.10	7	13	-10.5	19	+71.7	96	501	236.9	+15.7	II.
10990	16.13	4	13	-37.1	16	+ 2.9	10	29	210.0	+ 8.2	
I	20.82	12	14	-81.2	25	+60.3	2	6	148.0	+ 7.0	II.
2	20.70	13	14	-83.9	26	+75.6	30	128	149.6	- 9.0	I. 1082(2)
3	21.30	11	15	-79.4	25	+55.3	35	176	141.6	- 4.0	II.
4	21.84	7	15	-85.6	21	+ 0.2	10	34	134.4	+14.8	I. 1080(3)
5	19.36	3	18	-13.3	20	+13.1	10	29	167.3	+15.5	
6	22.86	6/7	18	-60.1	24	+21.8	2	5	120.9	- 2.6	
7	24.0	4/5	19	-63.3	23	- 9.1	3	8	106.0	+ 5.0	
8	25.86	8	20	-72.2	27	+19.1	5	15	81.2	-14.7	I. 1081(3)
9	26.94	12	21	-72.9	Aug. 1	+73.0	5	14	67.0	+ 7.3	II.
11000	29.39	11	24	-62.0	3	+66.0	18	76	34.6	-20.8	II.
I	28.07	9	25	-40.7	2	+73.0	41	174	52.1	-11.0	II.
2	30.0	5	25	-63.7	July 29	- 6.0	29	121	26.7	-21.0	
3	30.9	3	27	-45.9	29	-21.6	4	10	14.5	+ 8.0	
4	29.2	3	31	+28.9	Aug. 2	+56.9	3	14	37.3	- 9.5	
5	Aug. 2.28	4	31	-26.6	3	+15.7	5	17	343.2	+21.3	
6	6.17	12	31	-79.7	11	+73.6	14	35	291.7	- 3.7	I. 1085(2)
7	July 30.4	3	Aug. 1	+26.7	3	+49.5	47	235	20.6	+ 9.7	
8	Aug. 4.15	4	1	-37.2	4	+ 4.6	5	15	318.4	+13.2	
9	4.71	4/7	4	- 4.5	10	+76.8	4	8	311.0	+13.2	II.
11010	7.8	4	4	-44.1	7	- 1.2	9	31	270.7	- 2.4	
I	2.0	2	5	+44.4	6	+58.5	22	66	347.0	-13.2	
2	6.6	2	5	-14.9	6	- 4.4	8	16	286.0	+10.2	
3	10.80	7	5	-73.6	11	+10.7	1	6	230.5	-20.2	II.
4	11.90	12	6	-74.3	17	+73.0	13	51	215.9	- 8.8	II.
5	13.08	12	7	-73.4	18	+69.8	31	190	200.4	-15.2	I. 1084(3)
6	6.6	5	8	+21.3	12	+76.6	26	120	285.4	+ 7.9	
7	16.2	4	10	-77.4	13	-37.4	16	42	158.6	-10.1	I. 1082(3)
8	16.53	10	10	-82.6	19	+34.9	7	12	154.7	+ 3.6	II.
9	11.36	4	11	- 0.2	14	+42.0	31	113	223.0	+21.0	
11020	16.22	11	12	-53.7	22	+79.3	10	31	158.8	- 7.2	I. 1086(1)
I	13.52	7	13	- 4.5	19	+77.3	91	513	194.5	+22.6	I. 1087(1)
2	14.40	7	14	- 1.8	20	+81.6	24	110	182.8	-18.1	II.
3	16.89	4	14	-33.7	17	+ 6.8	43	174	150.0	+ 8.0	
4	16.62	3	15	-16.0	17	+ 7.6	5	23	153.5	+19.7	
5	20.26	9/12	15	-64.7	26	+83.6	3	7	105.4	+15.3	II.
6	21.20	12	15	-77.2	26	+67.6	17	73	93.0	- 5.2	II.
7	21.85	8/9	15	-81.1	23	+21.7	12	39	84.4	+ 2.7	II.
8	21.42	12	16	-70.5	27	+81.7	19	60	90.1	-13.2	II.
9	14.3	4	17	+37.9	20	+82.0	19	112	184.0	+13.9	

GENERAL CATALOGUE OF SUN SPOTS—*continued*.

No. of Group.	Time of Central Meridian Passage.	Duration in Days.	First Seen.		Last Seen.		Mean Area Corrected for Foreshortening.		Mean Position of Group.		Reference to Ledger.
			Date.	Longitude from Central Meridian.	Date.	Longitude from Central Meridian.	Umbrae.	Whole Spots.	Longitude.	Latitude.	
11030	1929. Aug. 22.71	9	1929. Aug. 20	—29.4	1929. Aug. 28	+75.1	37	189	73.0	—18.8	II.
	23.91	8/9	20	—36.3	28	+74.3	20	78	70.4	—5.5	II.
	27.0	3/6	21	—73.8	26	—5.3	1	4	16.8	+10.7	II.
	28.56	7	25	—43.0	31	+37.5	12	40	355.7	—7.0	II.
	30.5	3	28	—27.4	30	—2.3	3	11	330.2	+4.4	
	Sept. 1.5	3	29	—42.7	31	—15.0	3	5	303.5	—5.0	
	Aug. 28.8	2	30	+22.1	31	+31.5	1	4	352.2	—13.4	
	Sept. 2.97	4	Sept. 1	—22.9	Sept. 4	+21.1	4	16	284.3	—12.0	
	2.43	3	2	—0.5	4	+25.9	6	10	291.5	+5.2	
	7.1	2	3	—50.1	4	—35.6	3	8	229.4	+13.2	
11040	9.75	11	3	—82.8	13	+47.3	13	65	194.8	+21.5	I. 1087(2)
	4.5	6	5	+10.2	10	+79.0	62	280	264.1	—4.1	II.
	6.17	3	5	—10.3	7	+15.1	5	12	242.0	—12.5	
	7.83	5/6	5	—32.9	10	+35.7	6	20	220.1	+13.4	
	11.79	8	6	—71.5	13	+21.7	10	38	167.8	—9.2	I. 1086(2)
	3.7	3	7	+46.3	9	+75.8	8	36	274.5	+10.4	
	11.4	2	8	—40.5	9	—26.6	2	8	172.4	—2.9	
	11.28	6/8	9	—28.0	16	+71.4	8	36	174.6	+16.3	II.
	12.18	5	9	—37.4	13	+15.4	2	7	162.6	—5.3	II.
11050	16.38	8	10	—78.6	17	+14.6	5	18	107.3	+5.5	
	15.68	6/8	11	—56.4	18	+35.4	2	6	116.5	+5.5	II.
	18.1	3	12	—76.2	14	—48.5	2	9	84.7	+16.3	
	20.06	10	14	—74.6	23	+43.9	10	54	58.6	—7.4	II.
	12.7	2	16	+49.9	17	+62.6	4	10	155.2	+4.9	
	22.63	12	16	—80.3	27	+62.5	32	176	24.7	—20.9	II.
	17.2	4/6	17	+1.5	22	+68.5	18	70	96.0	—13.4	
	17.9	5	19	+20.7	23	+70.0	7	26	87.0	+21.3	
	22.06	2/4	20	—23.1	23	+18.6	1	7	32.3	+8.6	
11060	23.63	4	21	—29.5	24	+9.4	6	28	11.6	—24.8	
	30.66	11	26	—60.8	Oct. 6	+80.2	51	238	278.8	+10.3	I. 1088(1)
	Oct. 1.8	4	26	—71.9	Sept. 29	—31.1	4	13	264.3	+13.4	
	4.79	12	29	—74.6	Oct. 10	+77.3	94	484	224.2	+11.3	II.
	5.6	7	29	—81.7	5	—3.8	18	78	213.6	+12.9	II.
	Sept. 27.7	3	Oct. 1	+49.3	3	+73.1	13	45	317.8	+12.8	
	Oct. 7.48	5/6	3	—52.1	8	+9.9	8	26	188.7	+13.8	
	10.80	12	6	—57.1	17	+79.8	109	667	144.9	—19.6	II.
	8.86	5/6	7	—19.8	12	+49.0	9	22	170.6	—7.9	
11070	12.93	12	7	—75.8	18	+77.0	73	363	116.9	+4.2	II.
	13.39	13	7	—78.6	19	+79.6	134	764	110.8	—10.5	I. 1089(1)
	17.76	7	17	—7.4	23	+78.8	13	42	53.1	—11.1	II.
	Oct. 18.8	3	Oct. 19	+7.1	Oct. 21	+36.0	8	25	39.4	—8.7	
	24.53	6/12	19	—65.2	30	+76.2	7	27	323.9	+10.0	II.
	20.5	2	21	+11.2	22	+26.6	4	6	17.4	—7.8	
	27.27	8	21	—77.0	28	+8.2	14	56	287.8	+11.8	I. 1088(2)
	23.2	2	23	+4.4	24	+15.7	2	4	341.2	+21.1	
	31.09	12	25	—76.4	Nov. 5	+73.0	147	921	237.4	+9.6	I. 1090(1)
11080	28.97	8	27	—20.2	3	+72.0	74	371	265.4	+13.4	II.
	23.5	2	28	+62.4	Oct. 29	+76.6	8	18	337.8	—9.5	
	Nov. 1.7	2	29	—43.2	30	—31.3	2	10	215.6	—19.7	
	4.46	9	29	—79.5	Nov. 6	+24.9	20	58	179.7	+16.7	II.

GENERAL CATALOGUE OF SUN SPOTS—*continued.*

No. of Group.	Time of Central Meridian Passage.	Duration in Days.	First Seen.		Last Seen.		Mean Area Corrected for Foreshortening.		Mean Position of Group.		Reference to Ledger.
			Date.	Longitude from Central Meridian.	Date.	Longitude from Central Meridian.	Umbrae.	Whole Spots.	Longitude.	Latitude.	
	1929.		1929.	°	1929.	°			°	°	
IIO80	Nov. 4.8	3	Oct. 30	-72.5	Nov. 1	-42.4	7	13	174.7	+ 3.6	I. 1091(1) I. 1089(2)
1	3.74	11	31	-45.0	10	+82.1	195	1175	189.3	+14.8	
2	9.64	14	Nov. 3	-81.6	16	+85.4	160	777	111.4	-11.2	I. 1092(1)
3	5.97	3/6	5	- 7.1	10	+60.8	3	10	159.8	+14.1	
4	8.7	2/3	5	-42.0	7	-16.0	1	2	124.3	+ 4.6	II. II. I. 1093(1)
5	12.65	13	6	-78.1	18	+72.3	68	341	71.7	-11.4	
6	5.7	3	7	+22.4	9	+50.2	15	40	163.4	+ 5.9	I. 1093(1)
7	9.35	7	8	-14.8	14	+67.7	9	29	115.2	- 7.1	
8	14.47	12	8	-82.2	19	+67.3	14	72	47.7	-10.3	
9	15.50	13	9	-82.3	21	+81.8	92	453	34.1	+ 5.9	
IIO90	7.3	3	10	+41.0	12	+69.2	9	25	142.6	+ 5.6	II. I. 1094(1)
1	15.78	7	10	-68.1	16	+ 6.2	17	44	30.5	- 5.7	
2	14.99	6	13	-23.8	18	+42.6	19	67	40.9	+11.4	I. 1090(2) I. 1095(1) I. 1096(1) I. 1097(1)
3	16.35	10	13	-43.1	22	+82.2	62	319	22.9	- 6.5	
4	21.87	12	16	-76.0	27	+76.2	51	239	310.2	+10.4	I. 1091(2) II. II. I. 1098(1)
5	24.3	2	20	-49.6	21	-38.7	7	18	277.6	-14.8	
6	27.18	13	21	-75.6	Dec. 3	+84.0	17	92	240.2	+ 9.2	
7	27.88	14	21	-85.6	4	+82.0	141	744	231.0	+12.4	II. II.
8	29.06	13	23	-74.8	5	+78.4	54	275	215.5	-21.3	
9	29.56	12	24	-71.8	5	+75.1	39	183	208.9	+10.3	
IIIOO	30.38	13	24	-78.2	6	+75.1	220	1050	198.0	+16.3	II. II. II. I. 1098(1)
1	26.45	4	25	-13.9	Nov. 28	+26.7	3	19	249.9	+10.7	
2	30.17	12	25	-64.2	Dec. 6	+77.8	16	80	200.8	+11.4	I. 1092 (2) I. 1093 (2) I. 1099 (1)
3	Dec. 1.00	9	25	-74.4	3	+31.5	11	33	189.9	+16.4	
4	1.58	13	25	-83.1	7	+75.3	107	679	182.3	+13.3	I. 1092 (2) I. 1093 (2) I. 1099 (1)
5	1.63	13	25	-84.3	7	+70.8	95	544	181.6	+17.8	
6	Nov. 27.77	4	26	-16.9	Nov. 29	+20.1	4	8	232.4	+ 5.4	II. II.
7	Dec. 1.0	2	26	-59.9	27	-46.6	4	10	190.1	+13.3	
8	2.87	12	27	-72.6	Dec. 8	+77.0	51	256	165.2	+17.0	I. 1089 (3) I. 1092 (2) I. 1093 (2) I. 1099 (1)
9	3.71	8	27	-82.6	4	+10.7	19	95	154.1	+ 6.4	
IIIIIO	4.3	2/5	Dec. 29	-62.8	3	-14.0	1	4	146.8	- 2.8	I. 1089 (3)
1	1.51	2	1	- 3.2	2	+11.6	4	14	183.2	+ 5.2	
2	7.09	13	1	-77.0	13	+83.5	39	185	109.7	-13.2	I. 1092 (2) I. 1093 (2) I. 1099 (1)
3	Nov. 30.4	2	4	+54.9	5	+62.6	14	117	198.3	+20.8	
4	Dec. 2.8	2	4	+23.1	5	+31.2	10	22	166.7	+ 4.5	I. 1092 (2) I. 1093 (2) I. 1099 (1)
5	2.8	3	4	+22.5	6	+44.9	4	12	166.6	+ 8.9	
6	6.08	3	4	-20.8	6	+ 0.8	10	23	122.9	- 8.1	I. 1092 (2) I. 1093 (2) I. 1099 (1)
7	9.8	2	4	-69.9	5	-61.9	4	7	73.6	-11.0	
8	12.06	13	6	-79.2	18	+83.4	55	281	44.2	+ 4.6	I. 1100 (1) I. 1101 (1)
9	12.66	14	6	-83.5	19	+84.8	178	932	36.2	- 6.0	
IIII20	11.45	5/7	10	-13.8	16	+66.8	3	12	52.2	- 5.4	II. II. II. I. 1094 (2) II.
1	16.47	13	10	-77.6	22	+80.2	281	1456	346.1	+ 6.3	
2	16.37	13	10	-78.8	22	+80.6	74	379	347.3	- 3.5	II. II. II. I. 1094 (2) II.
3	16.5	5	10	-79.4	14	-26.8	5	16	346.2	-10.6	
4	16.75	12	10	-84.8	21	+57.1	11	44	342.4	+20.7	II. II. II. I. 1094 (2) II.
5	9.1	4	11	+31.5	14	+67.8	12	56	82.7	+ 3.2	
6	16.89	10	11	-72.5	20	+47.5	14	59	340.6	+13.2	
7	17.05	11	12	-62.4	22	+75.8	71	365	338.4	- 2.6	II. II. I. 1094 (2) II.
8	18.74	9	13	-70.8	21	+30.9	8	21	316.1	+ 9.3	
9	19.40	11	14	-69.4	24	+70.6	26	124	307.5	+14.0	

GENERAL CATALOGUE OF SUN SPOTS—continued.

No. of Group.	Time of Central Meridian Passage.	Duration in Days.	First Seen.		Last Seen.		Mean Area Corrected for Foreshortening.		Mean Position of Group.		Reference to Ledger.
			Date.	Longitude from Central Meridian.	Date.	Longitude from Central Meridian.	Umbrae.	Whole Spots.	Longitude.	Latitude.	
III 30	1929-30. Dec. 20'92	12	1929. Dec. 15	° -72'5	1929-30. Dec. 26	° +73'8	24	106	° 287'5	° - 3'9	II.
	16'0	7	16	+ 5'7	22	+83'2	12	34	351'6	-11'5	II.
	21'94	12	16	-73'2	27	+73'0	14	60	274'0	+10'1	II.
	16'9	2	17	+ 9'0	18	+19'6	3	8	341'0	-12'5	II.
	23'94	9	17	-85'8	25	+19'1	19	84	247'7	+ 9'8	II.
	20'96	8	18	-34'7	25	+60'4	18	61	287'0	+10'3	II.
	24'97	12	19	-71'6	30	+67'8	28	152	234'1	+15'1	I. 1095 (2)
	24'56	7	19	-74'2	25	+14'3	5	13	239'5	+ 7'7	I. 1096 (2)
	26'8	5/7	20	-82'7	26	- 5'9	3	12	210'5	-21'6	I. 1097 (2)
	26'70	12	20	-83'2	31	+61'2	81	562	211'3	+10'6	
III 40	26'1	2	22	-48'7	23	-35'7	8	18	218'8	-18'0	
	27'52	8	22	-67'3	29	+26'4	7	23	200'5	+ 1'5	II.
	27'97	13	22	-71'7	Jan. 3	+85'3	118	664	194'5	+15'9	I. 1091 (3)
	27'87	11	22	-72'2	1	+57'1	49	304	195'3	+11'4	II.
	28'45	10	22	-79'6	Dec. 31	+38'7	30	142	188'2	+ 3'9	II.
	22'8	6	23	+ 7'6	28	+73'8	36	188	263'0	+12'8	
	28'79	7	23	-70'1	29	+ 9'0	4	8	183'8	+17'3	I. 1098 (2)
	30'3	3	24	-79'0	26	-50'1	4	13	163'8	-14'5	
	29'41	3/4	27	-28'1	30	+12'4	1	4	175'6	+16'4	
III 50	Jan. 3'3	3	28	-78'5	30	-53'4	4	14	111'7	-12'0	I. 1089 (4)
	Dec. 29'0	3	29	+ 6'4	31	+31'4	1	4	181'4	+19'3	
I	31'74	7	30	-24'4	Jan. 5	+65'6	10	49	144'9	+11'1	II.

GENERAL CATALOGUE OF SUN SPOTS—*continued*.

REVIVAL GROUPS OF SUN SPOTS, 1929.

Groups of spots occupying the same heliographic position in consecutive rotations of the sun 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 forms part of a "Revival" series, a reference is given in the last column of the table. Groups which are given in detail in Ledger II. are also indicated.

Reference No.	Group No.	Central Meridian Passage.	No. of Rotation.	Duration.	First Seen.		Last Seen.		Mean Area.	Mean Position.		Reference to Ledger.
					Date.	Longitude from C.M.	Date.	Longitude from C.M.		Longitude.	Latitude.	
1	10826 53	1928-29. Dec. 31'24	1007 1008	12	1928-29. Dec. 25	° -84	1929. Jan. 5	° +75	325	° 289	+ 7	II. II.
		Jan. 26'89		10	Jan. 23	-54		Feb. 1	180	298	+ 9	
2	10828 50 73	Dec. 28'78	1007	5/6	Dec. 27	-20	Jan. 1	+49	44	322	+ 4	II. II. II.
		Jan. 24'84	1008	10/11	Jan. 19	-71	Jan. 29	+59	128	325	+ 5	
		Feb. 21'43	1009	11	Feb. 16	-70	Feb. 26	+67	86	322	+ 5	
3	10843 59	Jan. 13'42	1007	7	Jan. 12	-14	Jan. 18	+64	160	116	-10	II. II.
		Feb. 9'95	1008	11	Feb. 4	-75	Feb. 14	+63	93	113	- 9	
4	10849 72	Jan. 21'82	1007	13	Jan. 16	-72	Jan. 28	+78	444	5	-11	II. II.
		Feb. 18'3	1008	2	Feb. 15	-38	Feb. 16	-24	6	4	-11	
5	10857 78	Jan. 31'2	1008	3	Feb. 3	+40	Feb. 5	+69	39	241	-16	II. II.
		Feb. 27'18	1009	10	Feb. 21	-76	Mar. 2	+42	49	246	-15	
6	10862 90	Feb. 12'35	1008	12	Feb. 6	-80	Feb. 17	+68	114	81	- 5	II. II.
		Mar. 11'4	1009	2/5	Mar. 6	-66	Mar. 10	-12	7	85	- 3	
7	10869 94	Feb. 16'4	1008	4/10	Feb. 12	-52	Feb. 21	+66	3	28	- 6	II. II.
		Mar. 15'28	1009	8	Mar. 10	-66	Mar. 17	+36	128	34	- 8	
8	10880 897 911	Feb. 22'3	1009	2	Feb. 23	+15	Feb. 24	+28	8	310	+ 8	} I. 1076
		Mar. 21'70	1010	13	Mar. 15	-83	Mar. 27	+77	378	309	+ 8	
		Apr. 17'74	1011	13	Apr. 11	-84	Apr. 23	+75	189	312	+ 8	
9	10895 908	Mar. 16'1	1009	5	Mar. 11	-62	Mar. 15	-10	8	23	-14	II. II.
		Apr. 12'2	1010	3	Apr. 9	-34	Apr. 11	-11	16	26	-15	
10	10916 37	Apr. 22'90	1011	9	Apr. 20	-37	Apr. 28	+77	224	244	+ 8	II. II.
		May 19'86	1012	9	May 16	-47	May 24	+67	36	248	+11	
11	10918 38 65 85	Apr. 23'2	1011	5	Apr. 24	+12	Apr. 28	+71	21	240	- 7	} I. 1083
		May 19'9	1012	4/5	May 21	+18	May 25	+74	23	247	- 6	
		June 16'5	1013	3	June 20	+53	June 22	+77	47	243	- 8	
		July 12'85	1014	10	July 7	-73	July 16	+47	41	253	- 6	
12	10919 39 63 94	May 1'06	1011	12	Apr. 25	-73	May 6	+69	143	136	+13	} II. I. 1080
		May 28'35	1012	13	May 22	-78	June 3	+81	637	136	+14	
		June 24'54	1013	13	June 18	-83	June 30	+81	487	136	+13	
		July 21'84	1014	7	July 15	-86	July 21	0	29	134	+15	
13	10923 48	May 6'5	1011	3	May 1	-67	May 3	-41	29	65	+12	II. II.
		June 2'2	1012	2	June 4	+28	June 5	+43	20	71	+10	
14	10927 10944	May 10'65	1011	12	May 5	-71	May 16	+77	127	10	+14	II. II.
		June 6'23	1012	8/9	31	-75	June 8	+28	20	18	+14	

GENERAL CATALOGUE OF SUN SPOTS—continued.
REVIVAL GROUPS OF SUN SPOTS, 1929—continued.

Reference No.	Group No.	Central Meridian Passage.	No. of Rotation.	Duration.	First Seen.		Last Seen.		Mean Area.	Mean Position.		Reference to Ledger.
					Date.	Longitude from C.M.	Date.	Longitude from C.M.		Longitude.	Latitude.	
15	10929 51 79	1929. May 9.63 June 5.3 July 1.90	1011 1012 1013	9 2/3 7	1929. May 7 June 5 June 30	° -31 0 -15	1929. May 15 June 7 July 6	° +77 +27 +58	324 10 30	° 23 30 38	-11 -10 -13	II. II.
16	10930 46 80	May 14.2 June 9.80 July 6.27	1011 1012 1013	2 13 12	May 8 June 3 June 30	-78 -85 -74	May 9 June 15 July 11	-65 +73 +70	11 356 453	322 331 341	-7 -9 -8	II. II. II.
17	10933 54	May 19.30 June 15.06	1012 1013	8 7	May 13 June 9	-75 -75	May 20 June 15	+13 +6	30 15	255 261	-6 -5	II. II.
18	10936 58	May 18.34 June 14.16	1012 1013	7 7/9	May 16 June 12	-29 -26	May 22 June 20	+58 +82	53 56	268 273	+10 +9	II. II.
19	10950 59 81 11008	June 10.78 June 10.7 July 7.7 Aug. 4.15	1013 1013 1014 1015	13 3 4/5 4	June 4 June 13 July 2 Aug. 1	-85 +34 -68 -37	June 16 June 15 July 6 Aug. 4	+79 +64 -21 +5	109 25 7 8	318 319 321 318	+7 +11 +10 +13	II. II. II.
20	10956 87	June 17.49 July 14.6	1013 1014	13 4	June 11 July 9	-79 -70	June 23 July 12	+70 -30	65 8	229 230	+14 +16	II.
21	10968 95	June 22.43 July 19.36	1013 1014	6 3	June 21 July 18	-17 -13	June 26 July 20	+55 +13	23 5	164 167	+14 +15	II.
22	10971 11001	July 1.2 July 28.07	1013 1014	3 9	June 25 July 25	-77 -41	June 27 Aug. 2	-51 +73	15 121	48 52	-12 -11	II.
23	10973 11000	July 2.51 July 29.39	1013 1014	11/13 11	June 26 July 24	-80 -62	July 8 Aug. 3	+79 +66	74 174	30 35	-19 -21	II. II.
24	10974 91 11023	June 24.1 July 20.82 Aug. 16.89	1013 1014 1015	2 12 4	June 28 July 14 Aug. 14	+57 -81 -34	June 29 July 25 Aug. 17	+69 +60 +7	46 128 23	141 148 150	+8 +7 +8	II.
25	10977 11003	July 4.32 July 30.9	1013 1014	12 3	June 29 July 27	-68 -46	July 10 July 29	+84 -22	166 14	6 14	+6 +8	II.
26	10982 11016	July 10.95 Aug. 6.6	1014 1015	11 5	July 4 Aug. 8	-84 +21	July 14 Aug. 12	+45 +77	69 42	279 285	+6 +8	II.
27	10986 11006 35	July 10.78 Aug. 6.17 Sept. 1.5	1014 1015 1016	10 12 3	July 8 July 31 Aug. 29	-33 -80 -43	July 17 Aug. 11 Aug. 31	+81 +74 -15	778 235 5	281 292 303	-5 -4 -5	} I. 1085
28	11011 36	Aug. 2.0 Aug. 28.8	1015 1016	2 2	Aug. 5 Aug. 30	+44 +22	Aug. 6 Aug. 31	+59 +32	16 4	347 352	-13 -13	
29	11018 53	Aug. 16.53 Sept. 12.7	1015 1016	10 2	Aug. 10 Sept. 16	-83 +50	Aug. 19 Sept. 17	+35 +63	113 10	155 155	+4 +5	II.
30	11020 44 66	Aug. 16.22 Sept. 11.79 Oct. 8.86	1015 1016 1017	11 8 5/6	Aug. 12 Sept. 6 Oct. 7	-54 -72 -20	Aug. 22 Sept. 13 Oct. 12	+79 +22 +49	513 38 22	159 168 171	-7 -9 -8	} I. 1086

GENERAL CATALOGUE OF SUN SPOTS—*continued.*
REVIVAL GROUPS OF SUN SPOTS, 1929—*continued.*

Reference No.	Group No.	Central Meridian Passage.	No. of Rotation.	Duration.	First Seen.		Last Seen.		Mean Area.	Mean Position.		Reference to Ledger.
					Date.	Longitude from C.M.	Date.	Longitude from C.M.		Longitude.	Latitude.	
31	11028 55	1929. Aug. 21'42 Sept. 17'2	1015 1016	12 4/6	1929. Aug. 16	° -71	1929-30. Aug. 27	° +82	89	° 90	° -13	II.
					Sept. 17	+ 2	Sept. 22	+69	70	96	-13	
32	11043 61	Sept. 7'83 Oct. 4'79	1016 1017	5/6 12	Sept. 5	-33	Sept. 10	+36	20	220	+13	II.
					Sept. 29	-75	Oct. 10	+77	484	224	+11	
33	11045 59 73	Sept. 3'7 Sept. 30'66 Oct. 27'27	1016 1017 1018	3 11 8	Sept. 7	+46	Sept. 9	+76	36	275	+10	} I. 1088
					Sept. 26	-61	Oct. 6	+80	238	279	+10	
					Oct. 21	-77	Oct. 28	+ 8	56	288	+12	
34	11050 67 84	Sept. 15'68 Oct. 12'93 Nov. 8'7	1016 1017 1018	6/8 12 2/3	Sept. 11	-56	Sept. 18	+35	6	116	+ 5	II. II.
					Oct. 7	-76	Oct. 18	+77	363	117	+ 4	
					Nov. 5	-42	Nov. 7	-16	2	124	+ 5	
35	11060 76	Oct. 1'8 Oct. 28'97	1017 1018	4 8	Sept. 26	-72	Sept. 29	-31	13	264	+13	II.
					Oct. 27	-20	Nov. 3	+72	371	265	+13	
36	11063 71	Sept. 27'7 Oct. 24'53	1017 1018	3 6/12	Oct. 1	+49	Oct. 3	+73	45	318	+13	II.
					Oct. 19	-65	Oct. 30	+76	27	324	+10	
37	11064 81 11100 11142	Oct. 7'48 Nov. 3'74 Nov. 30'38 Dec. 27'98	1017 1018 1019 1020	5/6 11 13 13	Oct. 3	-52	Oct. 8	+10	26	189	+14	} I. 1091
					Oct. 31	-45	Nov. 10	+82	1175	189	+15	
					Nov. 24	-78	Dec. 6	+75	1050	198	+16	
					Dec. 22	-72	Jan. 3	+85	664	194	+16	
38	11072 93	Oct. 20'5 Nov. 16'35	1017 1018	2 10	Oct. 21	+11	Oct. 22	+27	6	17	- 8	II.
					Nov. 13	-43	Nov. 22	+82	319	23	- 6	
39	11075 96 134	Oct. 31'09 Nov. 27'18 Dec. 23'94	1018 1019 1020	12 13 9	Oct. 25	-76	Nov. 5	+73	921	237	+10	} I. 1090 II.
					Nov. 21	-76	Dec. 3	+84	92	240	+ 9	
					Dec. 17	-86	Dec. 25	+19	84	248	+10	
40	11078 98 11138	Nov. 1'7 Nov. 29'06 Dec. 26'8	1018 1019 1020	2 13 5/7	Oct. 29	-43	Oct. 30	-31	10	216	-20	} I. 1096
					Nov. 23	-75	Dec. 5	+78	275	215	-21	
					Dec. 20	-83	Dec. 26	- 6	12	211	-22	
41	11079 105 146	Nov. 4'46 Dec. 1'63 Dec. 28'79	1018 1019 1020	9 13 7	Oct. 29	-80	Nov. 6	+25	58	180	+17	II. } I. 1098
					Nov. 25	-84	Dec. 7	+71	544	182	+18	
					Dec. 23	-70	Dec. 29	+ 9	8	184	+17	
42	11080 111 144	Nov. 4'8 Dec. 1'51 Dec. 28'45	1018 1019 1020	3 2 10	Oct. 30	-73	Nov. 1	-42	13	175	+ 4	II.
					Dec. 1	- 3	Dec. 2	+12	14	183	+ 5	
					Dec. 22	-80	Dec. 31	+39	142	188	+ 4	
43	11086 114	Nov. 5'7 Dec. 2'8	1018 1019	3 2	Nov. 7	+22	Nov. 9	+50	40	163	+ 6	
					Dec. 4	+23	Dec. 5	+31	22	167	+ 5	
44	11087 116	Nov. 9'35 Dec. 6'08	1018 1019	7 3	Nov. 8	-15	Nov. 14	+68	29	115	- 7	II.
					Dec. 4	-21	Dec. 6	+ 1	23	123	- 8	
45	11091 119	Nov. 15'78 Dec. 12'66	1018 1019	7 14	Nov. 10	-68	Nov. 16	+ 6	44	30	- 6	I. 1099
					Dec. 6	-84	Dec. 19	+85	932	36	- 6	
46	11106 11137	Nov. 27'77 Dec. 24'56	1019 1020	4 7	Nov. 26	-17	Nov. 29	+20	8	232	+ 5	
					Dec. 19	-74	Dec. 25	+14	13	240	+ 8	
47	11107 143	Dec. 1'0 Dec. 27'87	1019 1020	2 11	Nov. 26	-60	Nov. 27	-47	10	190	+13	II.
					Dec. 22	-72	Jan. 1	+57	304	195	+11	

ROYAL OBSERVATORY, GREENWICH.

Ledgers of Groups of Sun Spots
for the Year
1929

Ledger I.—Recurrent Groups

LEDGER I.—RECURRENT GROUPS of SUN SPOTS for the YEAR 1929.

The Greenwich Mean Time 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 disc.

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 SUN SPOTS for the YEAR 1929.

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.	Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.		
	Umbræ	Whole Spots.	Umbræ	Whole Spots.					Umbræ	Whole Spots.	Umbræ	Whole Spots.					
No. 1072. Latitude +11°·7. Group 10813 in Rotation 1008. " 10833 " " 1009.								No. 1073. Group 10841—continued.									
Group 10813.—1928, December 9–18. At first a small stream of faint spots : fresh activity is shown after December 12, when a stream of larger spots develops.								d									
d																	
23·479 G	2	9	1	6	173·6	0·0	+12·0	-42·1	17·302 C	295	2117	153	1100	62·5	-3·3	+7·2	+11·3
22·408 C	9	56	5	32	177·5	+3·8	+12·4	-26·0	18·465 G	223	1535	128	885	63·7	-2·2	+7·2	+27·8
21·336 C	8	30	4	16	177·7	+3·9	+12·7	-13·6	19·457 C	101	1041	68	713	63·5	-2·6	+7·0	+40·7
20·446 C	0	0	0	0	...	...	...	...	20·405 C	99	795	86	695	64·5	-1·7	+6·9	+54·1
19·358 C	17	89	9	48	182·2	+8·3	+12·1	+17·6	21·324 C	46	354	60	464	64·9	-1·5	+6·9	+66·6
18·362 C	51	331	30	196	180·6	+6·6	+11·8	+29·2	22·340 C	11	59	40	213	66·3	...	+6·4	+81·4
17·333 C	78	392	55	274	181·4	+7·3	+11·7	+42·8	Means ...	...	...	110	791	63·4	...	+6·8	...
16·123 K	72	442	61	380	180·9	+6·7	+11·9	+52·7	Spot a.								
15·470 G	74	428	115	663	180·4	+6·1	+12·4	+69·9	10·336 C	15	93	39	241	64·7	0·0	+6·7	-78·2
14·384 C	8	59	(23	166	177·7	...	+11·9)	+79·3	11·323 C	44	388	56	497	63·7	-1·2	+6·7	-66·2
Means ...	...	...	31	179	179·3	...	+12·1	...	12·319 C	103	608	84	499	65·3	+0·3	+6·4	-51·5
Group 10833.—1929, January 2–14. A regular spot not quite perfectly formed —diminishing rapidly after January 7.								13·312 C									
1·423 G	19	103	60	324	179·7	...	+12·1	-80·6	93	667	60	434	65·0	-0·2	+6·3	-38·8	
2·301 C	25	225	40	362	177·9	+2·3	+11·5	-70·8	14·364 C	135	776	76	435	65·2	-0·1	+6·5	-24·7
3·322 C	50	281	49	275	177·5	+1·8	+11·5	-57·8	15·488 G	142	796	74	414	65·4	-0·1	+6·2	-9·7
4·433 C	59	382	42	275	177·2	+1·4	+11·3	-43·5	16·314 C	156	751	80	383	65·3	-0·3	+6·3	+1·1
5·355 C	68	409	41	249	176·7	+0·8	+11·1	-31·8	17·302 C	160	1477	83	768	64·3	-1·5	+6·6	+13·1
6·329 C	63	401	35	221	176·7	+0·8	+10·8	-19·0	18·465 G	161	1301	93	755	64·3	-1·6	+6·9	+28·4
7·361 C	84	325	44	169	176·1	+0·1	+10·8	-6·0	19·457 C	80	939	55	648	64·4	-1·7	+7·0	+41·6
8·342 C	59	308	31	160	176·1	0·0	+11·1	+6·9	20·405 C	87	742	77	653	64·5	-1·7	+6·9	+54·1
9·300 C	38	232	21	128	175·7	-0·5	+11·1	+19·1	21·324 C	46	354	60	464	64·9	-1·5	+6·9	+66·6
10·336 C	21	165	13	102	176·0	-0·3	+11·2	+33·1	22·340 C	11	59	40	213	66·3	...	+6·4	+81·4
11·323 C	19	76	14	57	175·5	-0·9	+11·8	+45·6	Spot d.								
12·319 C	4	26	4	26	176·6	+0·2	+12·1	+59·8	15·488 G	26	133	14	72	57·9	0·0	+9·4	-17·2
13·312 C	0	4	0	7	175·8	-0·7	+12·2	+72·0	16·314 C	23	112	12	58	58·4	+0·4	+9·7	-5·8
Means ...	...	...	28	169	176·5	...	+11·4	...	17·302 C	15	106	8	55	58·9	+0·7	+9·7	+7·7
No. 1073. Latitude +7°·0. Group 10841 in Rotation 1008. " 10865 " " 1009.								18·465 G									
Group 10841.—January 11–23. A large complex stream of relatively short duration : the leader a, is at first a regular spot, but between January 16–18 it merges into a composite spot, which has developed immediately following it. d is a small and fairly stable spot in the <i>nf</i> part of the stream.								19·457 C									
10·336 C	15	93	39	241	64·7	0·0	+6·7	-78·2	20·405 C	4	11	3	9	58·6	0·0	+9·8	+48·2
11·323 C	52	447	69	596	62·8	-2·1	+6·8	-67·1	Group 10865.—February 7–12. A close pair of very small spots in a conspicuous area of faculae.								
12·319 C	137	853	116	732	64·1	-0·9	+6·9	-52·7	37·346 C	4	15	7	28	74·2	+5·4	+7·6	-73·1
13·312 C	131	1000	88	676	63·0	-2·2	+6·7	-40·8	38·517 G	4	13	4	13	74·1	+5·1	+7·8	-57·8
14·364 C	238	1544	137	888	62·7	-2·6	+6·5	-27·2	39·333 C	6	11	5	8	74·2	+5·1	+8·0	-46·9
15·488 G	383	2468	201	1294	62·1	-3·4	+6·3	-13·0	40·408 C	0	0	0	0	...	...	...	...
16·314 C	339	2361	173	1205	62·2	-3·4	+6·7	-2·0	41·363 C	0	0	0	0	...	...	...	...
Means ...	...	...	...	...	...	...	...	...	42·455 G	9	24	5	12	73·6	+4·1	+5·9	-6·4
								Means ...									
								...									
								4									
								10									
								74·0									
								...									
								+7·3									
								...									

LEDGER I.—RECURRENT GROUPS of SUN SPOTS for the YEAR 1929—continued.

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.	Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.		
	Umbræ	Whole Spots.	Umbræ	Whole Spots.					Umbræ	Whole Spots.	Umbræ	Whole Spots.					
No. 1074. Latitude $-10^{\circ}0$. Group 10861 in Rotation 1008. " 10889 " " 1009. " 10902 " " 1010. " 10920 " " 1011.								No. 1074—continued. Group 10889.—March 4-16. A stream, led by a very large composite spot, <i>a</i> , visible to the naked eye. <i>a</i> grows by accretion—two regular spots just touching one another absorb another spot developing behind. The resulting spot has become established by about March 10, but three separate nuclei continue within it. <i>b</i> , the follower has died out by March 11.									
Group 10861.—February 6-18. A stream of normal type in which the follower <i>b</i> as well as the leader, <i>a</i> , is a regular spot.																	
d								d									
36°314 C	26	138	46	264	84°5	0°0	-11°9	-76°0	62°308 C	21	126	(85	513	94°5	...	-9°6)	-84°1
37°346 C	100	568	104	584	85°8	+1°2	-11°4	-61°5	63°515 G	155	687	257	1133	90°1	+2°6	-10°0	-72°6
38°517 G	203	952	144	676	86°2	+1°5	-11°4	-45°7	64°476 G	223	1189	212	1183	90°8	+3°1	-10°1	-59°2
39°333 C	243	1171	147	711	86°9	+2°1	-10°5	-34°2	65°623 G	271	1779	190	1244	91°0	+3°2	-9°7	-43°9
40°408 C	275	1336	147	712	87°6	+2°6	-10°3	-19°4	66°389 G	307	1686	186	1014	91°8	+3°9	-9°7	-33°0
41°363 G	218	1472	110	742	88°7	+3°6	-10°0	-5°7	67°487 G	347	1973	183	1037	92°2	+4°2	-9°7	-18°1
42°455 G	304	1428	153	723	89°1	+3°9	-10°4	+9°1	68°448 G	355	2075	178	1041	92°5	+4°4	-9°7	-5°2
43°499 G	317	1480	173	809	88°9	+3°6	-10°7	+22°6	69°407 G	350	2226	178	1132	92°7	+4°5	-9°9	+7°7
44°460 G	228	1221	140	746	88°9	+3°5	-10°4	+35°3	70°399 G	365	2028	195	1091	93°0	+4°7	-9°7	+21°0
45°498 G	165	920	128	704	89°3	+3°8	-10°3	+49°3	71°348 C	249	1920	149	1151	93°6	+5°2	-9°6	+34°2
46°351 C	107	671	107	669	89°1	+3°5	-10°1	+60°4	72°294 C	207	1366	150	993	94°0	+5°5	-9°4	+47°0
47°398 C	53	372	97	671	89°7	+4°0	-9°5	+74°8	73°320 C	173	1097	173	1097	94°0	+5°4	-9°5	+60°6
48°511 G	4	22	(11	59	80°7	...	-11°9)	+80°4	74°325 C	82	540	136	896	93°6	+4°8	-9°6	+73°4
Means ...	...	...	125	668	87°9	...	-10°6	...	Means ...	...	...	182	1084	92°4	...	-9°7	...
Spot <i>a</i> .								Spot <i>a</i> .									
36°341 C	15	49	23	74	88°8	0°0	-10°8	-71°7	62°308 C	21	126	85	513	94°5	...	-9°6	-84°1
37°346 C	45	299	41	275	89°8	+0°9	-10°4	-57°5	63°515 G	105	473	141	634	93°8	0°0	-9°7	-68°9
38°517 G	108	527	71	348	90°4	+1°4	-10°4	-41°5	64°476 G	162	723	143	636	93°8	-0°1	-10°0	-56°2
39°333 C	131	649	76	376	90°6	+1°5	-9°9	-30°5	65°623 G	151	959	100	633	94°0	0°0	-10°0	-40°9
40°408 C	159	861	83	448	90°7	+1°4	-9°5	-16°3	66°389 G	175	981	102	569	94°2	+0°1	-10°0	-30°6
41°363 C	134	967	67	484	92°0	+2°6	-9°3	-2°4	67°487 G	272	1682	141	875	93°5	-0°7	-9°7	-16°8
42°455 G	195	946	99	482	92°5	+3°0	-9°7	+12°5	68°448 G	308	1844	154	922	93°7	-0°7	-9°6	-4°0
43°499 G	213	966	119	541	92°4	+2°8	-10°0	+26°1	69°407 G	307	1973	157	1006	93°9	-0°6	-9°9	+8°9
44°460 G	165	816	104	514	91°9	+2°2	-9°9	+38°2	70°399 G	321	1830	173	988	94°0	-0°6	-9°7	+22°0
45°498 G	122	629	99	509	92°1	+2°3	-9°7	+52°1	71°348 C	232	1881	139	1129	93°6	-1°1	-9°6	+34°2
46°351 C	77	475	82	508	91°4	+1°5	-9°6	+62°7	72°294 C	194	1318	142	962	94°0	-0°8	-9°4	+47°0
47°398 C	40	266	81	537	91°5	+1°5	-9°0	+76°6	73°320 C	173	1097	173	1097	94°0	-0°9	-9°5	+60°6
Spot <i>b</i> .								Spot <i>b</i> .									
36°341 C	11	89	23	190	83°1	0°0	-12°4	-77°4	74°325 C	82	540	136	896	93°6	-1°4	-9°6	+73°4
37°346 C	47	252	55	292	81°9	-1°3	-12°5	-65°4	63°515 G	39	170	96	418	83°3	0°0	-11°2	-79°4
38°517 G	60	335	47	261	81°3	-2°0	-12°7	-50°6	64°476 G	28	311	35	389	82°7	-0°7	-11°2	-67°3
39°333 C	66	356	43	231	81°1	-2°3	-12°5	-40°0	65°623 G	59	364	47	291	82°9	-0°6	-11°4	-52°0
40°408 C	78	363	44	203	81°4	-2°2	-12°0	-25°6	66°389 G	53	289	36	194	82°8	-0°8	-10°9	-42°0
41°363 C	76	458	39	234	81°6	-2°1	-11°9	-12°8	67°487 G	53	201	30	113	82°9	-0°8	-10°6	-27°4
42°455 G	100	434	50	217	81°8	-2°0	-11°8	+1°8	68°448 G	29	119	15	62	83°6	-0°3	-10°2	-14°1
43°499 G	87	421	45	219	81°9	-2°0	-11°9	+15°6									
44°460 G	59	375	34	214	81°8	-2°2	-11°7	+28°2									
45°498 G	43	291	29	195	81°9	-2°2	-11°7	+41°9									
46°351 C	30	196	25	161	81°7	-2°5	-11°5	+53°0									
47°398 C	13	106	16	134	82°3	-2°0	-11°6	+67°4									
48°511 G	4	22	11	59	80°7	...	-11°9	+80°4									

LEDGER I.—RECURRENT GROUPS of SUN SPOTS for the YEAR 1920—*continued.*

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.				Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.			
	Umbræ	Whole Spots.	Umbræ	Whole Spots.								Umbræ	Whole Spots.	Umbræ	Whole Spots.						
No. 1075, Group 10884—continued.										No. 1076, Group 10897—continued.											
Spot a.										Spot b.											
d										d											
59°40'1 G	7	33	52	243	129°3	...	—10°3	—87°6		75°49'5 G	13	75	16	93	300°2	0°0	+ 8°5	—64°6			
60°40'1 G	22	116	37	193	130°3	0°0	—10°3	—73°4		76°40'2 G	18	62	16	54	300°2	—0°2	+ 8°6	—52°6			
61°55'1 G	39	197	36	183	130°2	—0°2	—10°4	—58°3		77°60'2 G	13	24	8	16	300°9	+0°4	+ 9°0	—36°1			
62°30'8 C	34	257	26	193	130°1	—0°4	—10°3	—48°5		78°43'2 G	7	22	4	13	300°7	+0°1	+ 9°0	—25°4			
63°51'5 G	52	290	31	171	130°0	—0°6	—10°4	—32°7													
64°47'6 G	35	241	19	128	129°7	—1°0	—10°5	—20°3													
65°62'3 G	44	228	22	114	129°7	—1°1	—10°7	— 5°2													
66°38'9 G	33	180	16	90	129°6	—1°3	—10°8	+ 4°8													
67°48'7 G	31	180	16	95	129°4	—1°6	—10°8	+19°1													
68°44'8 G	26	145	15	86	129°5	—1°6	—10°7	+31°8													
69°40'7 G	20	110	14	77	129°8	—1°4	—10°8	+44°8													
70°39'9 G	13	88	12	81	129°9	—1°4	—11°0	+57°9													
71°34'8 C	9	49	12	68	129°2	—2°2	—10°8	+69°8													
No. 1076. Latitude +8°1. Group 10897 in Rotation 1010. " 10911 " " 1011.										Group 10911.—April 11–23. A steady regular spot to which a distant companion appears on April 16–19.											
73°32'0 C	6	26	(29	125	310°5	...	+ 8°5)	—82°9		100°39'5 G	11	40	59	213	312°5	...	+ 8°1	—83°8			
74°32'5 C	50	247	87	437	308°4	0°0	+ 8°6	—71°8		101°31'0 C	22	123	37	204	312°8	+0°3	+ 7°8	—71°4			
75°49'5 G	118	621	117	620	307°5	—1°1	+ 8°4	—57°3		102°33'2 C	40	229	39	224	312°7	0°0	+ 7°7	—58°0			
76°40'2 G	130	572	99	429	307°3	—1°4	+ 8°2	—45°5		103°42'0 C	44	297	31	211	312°8	0°0	+ 8°0	—43°6			
77°60'2 G	150	717	89	427	308°3	—0°5	+ 8°6	—28°7		104°45'6 G	52	332	31	199	312°5	—0°5	+ 7°9	—30°2			
78°43'2 G	146	739	79	401	308°5	—0°5	+ 8°5	—17°6		105°61'5 G	72	395	38	210	312°1	—1°0	+ 7°9	—15°3			
79°60'2 G	115	735	60	383	309°4	+0°3	+ 8°2	— 1°2		106°39'5 G	89	390	47	203	311°9	—1°3	+ 7°9	— 5°2			
80°44'6 G	122	672	65	356	309°4	+0°2	+ 8°2	+ 9°9		107°40'0 G	71	386	37	201	311°9	—1°5	+ 7°9	+ 8°1			
81°42'9 G	122	575	70	328	310°1	+0°7	+ 7°9	+23°6		108°40'0 G	53	336	29	188	312°6	—0°9	+ 8°3	+22°0			
82°42'3 G	84	469	55	305	310°6	+1°1	+ 7°7	+37°2		109°37'4 C	44	266	28	168	312°6	—1°0	+ 8°5	+34°9			
83°54'2 G	53	367	45	312	310°7	+1°0	+ 7°6	+52°0		110°34'3 C	40	199	31	153	312°5	—1°3	+ 8°6	+47°6			
84°42'2 G	40	232	48	276	310°9	+1°1	+ 7°7	+63°8		111°37'2 G	27	135	29	147	312°7	—1°2	+ 8°7	+61°3			
85°42'2 G	31	110	74	264	310°7	+0°8	+ 7°9	+76°8		112°38'0 C	22	80	44	162	312°6	—1°4	+ 8°7	+74°6			
Means ...	...	...	74	378	309°3	...	+ 8°1	...		Means ...	...	...	35	189	312°5	...	+ 8°2	...			
Spot a.										No. 1077. Latitude +4°3. Group 10909 in Rotation 1011. " 10928 " " 1012.											
Spot a.										Group 10909.—April 9–21. A stream in which the following part b has disappeared by April 16. The leader, a large regular spot, a, shows minor changes in structure from day to day.											
73°32'0 C	6	26	29	125	310°5	...	+ 8°5	—82°9		98°59'4 G	29	125	(75	324	341°9	...	+ 5°1)	—78°2			
74°32'5 C	48	225	82	382	308°8	0°0	+ 8°8	—71°4		99°46'0 G	62	362	89	525	339°9	0°0	+ 5°7	—68°8			
75°49'5 G	92	493	87	468	308°6	—0°4	+ 8°5	—56°2		100°39'5 G	104	592	96	541	340°8	+0°7	+ 5°8	—55°5			
76°40'2 G	99	475	72	347	308°7	—0°4	+ 8°5	—44°1		101°31'0 C	106	592	75	415	341°3	+1°1	+ 5°5	—42°9			
77°60'2 G	119	623	70	368	309°2	0°0	+ 8°5	—27°8		102°33'2 C	134	717	79	423	341°2	+0°8	+ 5°3	—29°5			
78°43'2 G	119	647	64	349	309°3	—0°1	+ 8°5	—16°8		103°42'0 C	124	730	65	381	341°8	+1°2	+ 5°2	—14°6			
79°60'2 G	106	682	55	355	309°6	+0°1	+ 8°2	— 1°0		104°45'6 G	115	686	58	351	341°1	+0°3	+ 5°4	— 1°6			
80°44'6 G	115	632	61	335	309°8	+0°2	+ 8°0	+10°3		105°61'5 G	108	681	57	361	342°5	+1°6	+ 5°0	+15°1			
81°42'9 G	122	575	70	328	310°1	+0°3	+ 7°9	+23°6		106°39'5 G	99	652	55	365	342°3	+1°2	+ 4°9	+25°2			
82°42'3 G	84	469	55	305	310°6	+0°7	+ 7°7	+37°2		107°40'0 G	85	600	55	390	342°6	+1°3	+ 5°1	+38°8			
83°54'2 G	53	367	45	312	310°7	+0°6	+ 7°6	+52°0		108°40'0 G	92	542	76	450	342°6	+1°1	+ 5°2	+52°0			
84°42'2 G	40	232	48	276	310°9	+0°7	+ 7°7	+63°8		109°37'4 C	68	449	81	541	342°7	+1°1	+ 5°1	+65°0			
85°42'2 G	31	110	74	264	310°7	+0°4	+ 7°9	+76°8		110°34'3 C	29	201	71	483	342°4	+0°6	+ 5°3	+77°5			
Means ...	...	...	71	436	341°8	...	+ 5°3	...		Means ...	...	...	71	436	341°8	...	+ 5°3	...			

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.		Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.	
	Umbrae	Whole Spots.	Umbrae	Whole Spots.						Umbrae	Whole Spots.	Umbrae	Whole Spots.				
No. 1077, Group 10909—continued. Spot a.									No. 1077, Group 10928—continued. Spot a—continued.								
d									d								
98°594 G	29	125	75	324	341°9	0°0	+ 5°1	-78°2	135°352 G	14	46	13	42	350°8	+2°5	+ 3°4	+56°4
99°460 G	42	259	53	329	342°7	+0°6	+ 5°1	-66°0	136°415 G	9	18	14	28	351°1	+2°6	+ 3°5	+70°8
100°395 G	71	444	61	382	342°8	+0°6	+ 5°3	-53°5	No. 1078. Latitude +4°5. Group 10915 in Rotation 1011. " 10931 " " 1012. " 10949 " " 1013. Group 10915.—April 18-24. An active group forming immediately south of Group 10911.								
101°310 C	84	495	57	337	342°7	+0°3	+ 5°0	-41°5									
102°332 C	106	601	61	349	342°5	-0°1	+ 4°9	-28°2									
103°420 C	106	662	55	344	342°6	-0°2	+ 5°0	-13°8									
104°456 G	99	623	50	318	342°0	-0°9	+ 5°0	- 0°7									
105°615 G	108	681	57	361	342°5	-0°6	+ 5°0	+15°1	107°400 G	20	85	10	43	307°4	0°0	+ 4°7	+ 3°6
106°395 G	99	652	55	365	342°3	-1°0	+ 4°9	+25°2	108°400 G	98	226	52	121	308°9	+1°3	+ 3°8	+18°3
107°400 G	85	600	55	390	342°6	-0°9	+ 5°1	+38°8	109°374 C	159	972	95	578	308°9	+1°2	+ 4°1	+31°2
108°400 G	92	542	76	450	342°6	-1°0	+ 5°2	+52°0	110°313 C	201	1097	144	778	308°8	+0°9	+ 4°7	+43°9
109°374 C	64	436	77	528	342°7	-1°1	+ 5°0	+65°0	111°372 G	122	840	121	833	309°9	+1°8	+ 4°6	+58°5
110°343 C	22	172	52	404	342°1	-1°9	+ 5°0	+77°2	112°380 C	89	473	155	834	310°3	+2°0	+ 4°8	+72°3
Spot b.									113°360 G	18	131	(57)	413	305°4	...	+ 5°6)	+80°3
99°460 G	11	76	22	154	334°0	0°0	+ 7°2	-74°7	Means ...	...	...	96	531	309°0	...	+ 4°4	...
100°395 G	16	103	18	115	334°1	-0°1	+ 7°5	-62°2	Group 10931.—May 8-20. A regular spot followed by a large tract of bright faculae. A "bridge" has formed across the f end of the umbra on May 13, and the small portion of umbra and penumbra thus separated from the main bulk of the spot slowly shrinks and has disappeared by May 18.								
101°310 C	18	84	15	68	334°1	-0°2	+ 7°5	-50°1	127°356 G	18	82	53	239	320°3	+9°4	+ 4°5	-79°8
102°332 C	26	103	17	66	334°3	-0°2	+ 7°4	-36°4	128°354 G	36	209	46	270	320°0	+0°0	+ 4°4	-66°9
103°420 C	18	68	10	37	334°5	-0°2	+ 7°8	-21°9	129°352 G	64	304	55	261	319°9	+8°7	+ 4°2	-53°8
104°456 G	16	63	8	33	334°3	-0°6	+ 7°9	- 8°4	130°350 C	67	390	44	257	320°1	+8°7	+ 4°1	-40°4
Group 10928.—May 6-17. A regular spot, a, followed by a tiny cluster on May 9; and a single faint spot on May 11-12.									131°389 C	98	500	55	280	320°4	+8°8	+ 4°0	-26°4
125°326 C	11	40	27	98	348°9	+4°5	+ 2°7	-78°0	132°591 G	105	542	54	276	320°7	+8°9	+ 4°4	-10°2
126°350 G	14	57	16	67	349°0	+4°4	+ 2°8	-64°4	133°391 G	100	545	51	272	320°5	+8°6	+ 4°5	+ 0°2
127°356 G	20	123	16	98	349°3	+4°5	+ 3°2	-50°8	134°382 G	94	472	49	245	320°6	+8°5	+ 4°4	+13°4
128°354 G	32	182	21	116	348°7	+3°8	+ 3°6	-38°2	135°352 G	71	377	40	211	321°0	+8°7</		

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.		Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.	
	Umbræ	Whole Spots.	Umbræ	Whole Spots.						Umbræ	Whole Spots.	Umbræ	Whole Spots.				
No. 1079. Latitude +15°9. Group 10925 in Rotation 1011. „ 10942 „ „ 1012.									No. 1080. Latitude +13°9. Group 10939 in Rotation 1012. „ 10963 „ „ 1013. „ 10994 „ „ 1014.								
Group 10925.—May 3-10. A stream in which the follower, <i>b</i> , is the most important component. <i>a</i> is the leader.									Group 10939.—May 22-June 3. A large spot, <i>a</i> , at first somewhat composite but becoming regular by May 26, followed by <i>b</i> , a small regular spot, and a train of unstable spots which have died out by May 31.								
d									a								
122°351 G	14	34	7	18	98°7	0°0	+14°5	-7°6	141°405 G	27	146	(68	368	136°5	0°0	+12°9	-77°8
123°319 C	53	170	28	90	100°2	+1°5	+14°5	+6°7	142°366 G	73	504	105	700	133°8	0°0	+12°5	-67°8
124°440 C	109	470	62	267	99°9	+1°2	+15°1	+21°2	143°512 G	174	930	151	794	134°4	+0°6	+12°9	-52°0
125°326 C	123	600	77	379	99°6	+0°9	+15°0	+32°7	144°397 G	184	1099	126	753	133°9	0°0	+13°1	-40°8
126°350 G	111	499	86	384	99°3	+0°6	+15°1	+45°9	145°495 G	215	1083	123	617	135°8	+1°9	+13°1	-24°4
127°356 G	60	324	63	347	99°0	+0°3	+15°6	+58°9	146°419 G	203	1335	107	712	135°2	+1°2	+13°3	-12°8
128°354 G	35	134	65	259	98°3	-0°4	+16°0	+71°9	147°416 C	208	1076	108	560	136°0	+2°0	+13°5	+1°2
129°352 G	7	20	(34	96	96°3	...	+17°1)	+82°6	148°405 C	193	1009	103	543	136°8	+2°8	+13°9	+15°1
Means ...	...	...	55	249	99°3	...	+15°1	...	149°405 G	152	857	89	500	135°8	+1°7	+14°1	+27°4
Spot a.									Spot a.								
123°319 C	31	87	16	46	101°6	0°0	+14°5	+8°1	150°562 G	174	879	125	633	137°1	+3°0	+14°4	+44°0
124°440 C	31	167	18	97	103°1	+1°5	+13°9	+24°4	151°497 G	105	618	98	575	137°0	+2°8	+14°2	+56°2
125°326 C	27	210	18	139	104°0	+2°4	+13°8	+37°1	152°398 C	63	450	86	616	136°6	+2°4	+14°3	+67°8
126°350 G	27	138	23	117	105°2	+3°6	+13°9	+51°8	153°473 G	30	169	103	580	135°8	...	+14°3	+81°2
127°356 G	14	93	18	121	105°9	+4°3	+13°8	+65°8	Means ...	...	...	111	637	135°7	...	+13°6	...
128°354 G	5	27	16	89	106°9	...	+14°2	+80°0	Spot a.								
Spot b.									Spot a.								
123°319 C	13	27	7	14	97°7	0°0	+15°5	+4°2	141°405 G	27	146	68	368	136°5	0°0	+12°9	-77°8
124°440 C	38	192	21	108	97°0	-0°7	+16°5	+18°3	142°366 G	55	420	68	517	136°7	+0°2	+12°6	-64°9
125°326 C	56	281	35	174	96°7	-1°0	+16°4	+29°8	143°512 G	119	727	96	589	136°4	-0°2	+13°1	-50°0
126°350 G	57	268	42	196	95°3	-2°4	+16°5	+41°9	144°397 G	125	798	81	519	136°9	+0°3	+13°2	-37°8
127°356 G	36	195	35	189	96°4	-1°3	+16°7	+56°3	145°495 G	160	850	90	476	137°5	+0°8	+13°3	-22°7
128°354 G	23	93	36	146	96°3	-1°4	+17°0	+69°4	146°419 G	155	896	82	475	137°7	+1°0	+13°6	-10°3
129°352 G	7	20	34	96	96°3	-1°4											

LEDGER I.—RECURRENT GROUPS of SUN SPOTS for the YEAR 1929—*continued*.

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.	Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.		
	Umbrae	Whole Spots.	Umbrae	Whole Spots.					Umbrae	Whole Spots.	Umbrae	Whole Spots.					
No. 1080—continued.								No. 1081, Group 10969—continued.									
Group 10963.—June 18–30. A large regular spot becoming appreciably elongated along an axis inclined about 45° to the sun's equator. There are two small distant companions on June 24.								d									
168°353 G	25	172	95	657	134°9	...	+13°5	–82°7	175°367 G	60	336	44	245	82°0	+7°4	–16°9	–42°8
169°357 G	60	409	82	560	135°9	–1°7	+13°4	–68°5	176°348 G	74	391	45	239	81°8	+7°2	–16°9	–30°0
170°444 G	101	575	87	495	136°1	–1°5	+13°2	–53°9	177°337 C	77	423	42	233	81°8	+7°2	–16°7	–16°9
171°358 G	133	759	90	516	136°2	–1°5	+13°1	–41°7	178°425 C	72	452	38	240	81°3	+6°8	–16°8	–3°0
172°335 C	149	827	86	480	136°0	–1°7	+13°3	–28°9	179°370 G	74	419	40	226	81°4	+6°9	–16°5	+9°6
173°449 G	157	897	83	475	135°7	–2°1	+13°2	–14°5	180°672 Y	80	395	47	233	81°3	+6°8	–16°2	+26°7
174°606 G	170	976	87	497	135°6	–2°2	+13°7	+0°7	181°488 G	65	351	44	235	81°3	+6°8	–16°1	+37°5
175°367 G	193	975	100	507	135°7	–2°2	+13°4	+10°9	182°364 G	37	236	30	191	81°1	+6°6	–16°1	+48°9
176°348 G	152	830	85	465	135°5	–2°4	+13°4	+23°7	183°357 G	30	176	35	204	81°3	+6°8	–16°3	+62°2
177°337 C	113	725	72	464	135°7	–2°2	+13°4	+37°0	184°571 G	18	85	48	226	80°7	+6°3	–16°5	+77°7
178°425 C	81	527	65	422	135°3	–2°7	+13°4	+51°0	Means ...	...	...	41	229	81°5	...	–16°6	...
179°370 G	81	428	91	479	135°2	–2°8	+13°1	+63°4	Group 10998. July 20–27. A small well-defined spot fading from view on July 24, when one or two spots come near its place.								
180°672 Y	28	136	82	397	135°2	...	+13°2	+80°6	200°357 G	5	9	9	16	81°9	+7°7	–14°6	–72°2
Means ...	...	...	84	487	135°7	...	+13°3	...	201°469 G	5	9	5	9	81°8	+7°6	–14°3	–57°6
Group 10994.—July 15–21. A small regular spot, preceded at some distance by a faint marking on July 18 and a faint cluster on July 20; the latter is all that remains of the group by the following day.								202°560 G	7	18	5	13	81°9	+7°7	–14°2	–43°0	
195°415 C	5	9	27	48	133°9	...	+15°2	–85°6	203°561 G	9	21	6	13	81°3	+7°1	–14°4	–30°4
196°354 G	9	30	16	53	132°8	–5°9	+15°2	–74°3	204°389 G	5	14	3	8	81°0	+6°8	–14°6	–19°7
197°356 G	14	37	14	38	132°6	–6°1	+14°9	–61°2	205°351 G	7	64	4	35	81°2	+7°1	–15°3	–6°8
198°356 G	14	48	10	36	133°2	–5°6	+15°2	–47°4	206°418 G	5	18	3	10	80°2	+6°1	–15°0	+6°3
199°355 G	9	18	6	11	132°8	–6°0	+15°1	–34°5	207°354 G	9	21	5	12	80°6	+6°5	–15°0	+19°1
200°357 G	16	43	9	23	135°5	–3°4	+14°1	–18°6	Means ...	...	...	5	14	81°2	...	–14°7	...
201°469 G	9	23	5	12	139°6	+0°7	+14°5	+0°2	No. 1082. Latitude –9°2.								
Means ...	...	...	10	29	134°4	...	+14°8	...	Group 10962 in Rotation 1013.								
No. 1081. Latitude –16°3.								" 10992 " " 1014.									
Group 10947 in Rotation 1012.								" 11017 " " 1015.									
" 10969 " " 1013.								Group 10962.—June 18–29. A stream of spots dominated by a large regular spot, a, which becomes elongated along an axis inclined slightly to the sun's equator. The spot comes apparently from the fusion of a close pair on June 18 and 19, and later there are usually one or two bright projections over the umbra. b is a smallish spot at the rear.									
" 10998 " " 1014.								d									
Group 10947.—June 4–8. A pair of moderately large spots of rapid development.								168°353 G	47	257	133	803	137°4	...	–8°7	–80°2	
154°442 G	2	5	1	3	74°9	–0°0	–18°1	+33°1	169°357 G	99	584	124	731	139°0	0°0	–8°5	–65°4
155°365 C	18	77	13	58	75°2	+0°3	–17°4	+45°6	170°444 G	234	950	172	765	140°0	+0°9	–8°6	–50°0
156°308 C	48	294	52	319	76°5	+1°6	–16°9	+59°4	171°358 G	260	1106	168	711	140°6	+1°4	–8°7	–37°3
157°358 G	39	210	75	417	77°0	+2°1	–17°2	+73°8	172°335 C	293	1360	164	761	140°9	+1°5	–9°1	–24°0
158°361 C	7	22	(28)	90	72°3	...	–17°6)	+82°4	173°449 G	332	1636	172	845	140°8	+1°3	–9°2	–9°4
Means ...	...	...	35	199	75°9	...	–17°4	...	174°606 G	334	1488	173	770	142°1	+2°5	–9°2	+7°2
Group 10969.—June 22–July 4. A steady regular spot followed by an extensive area of faculae.								175°367 G	290	1336	155	718	142°3	+2°6	–9°4	+17°5	
172°335 C	9	54	37	220	82°9	...	–17°2	–82°0	176°348 G	240	1104	142	656	142°5	+2°6	–9°3	+30°7
173°449 G	28	166	41	241	82°1	+7°5	–16°8	–68°1	177°337 C	193	983	138	704	142°1	+2°1	–9°1	+43°4
174°606 G	46	267	40	235	82°2	+7°6	–16°8	–52°7	178°425 C	106	637	105	634	142°4	+2°3	–9°1	+58°1
								179°370 G	62	258	111	460	145°0	+4°8	–8°8	+73°2	
								Means ...	...	...	148	705	141°6	...	–9°0	...	

LEDGER I.—RECURRENT GROUPS of SUN SPOTS for the YEAR 1929—*continued.*

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.		Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.	
	Umbræ	Whole Spots.	Umbræ	Whole Spots.						Umbræ	Whole Spots.	Umbræ	Whole Spots.				
No. 1082, Group 10962—continued.									No. 1082, Group 10992—continued.								
Spot a.									Spot b (probably a of Group 10962).								
d									d								
170°444 G	124	566	93	425	142°8	0°0	— 9°0	—47°2	194°376 G	9	32	48	170	149°3	...	— 9°7	—83°9
171°358 G	179	784	111	486	143°4	+0°5	— 9°1	—34°5	195°415 C	23	108	36	171	149°1	+3°2	— 9°7	—70°4
172°335 C	192	913	106	502	143°4	+0°4	— 8°7	—21°5	196°354 G	35	185	35	183	149°0	+3°0	— 9°7	—58°1
173°449 G	189	975	96	497	143°6	+0°4	— 9°0	— 6°6	197°356 G	32	239	23	174	149°0	+2°9	— 9°8	—44°8
174°606 G	244	1104	127	574	143°8	+0°5	— 9°2	+ 8°9	198°356 G	44	281	27	171	148°9	+2°7	— 9°9	—31°7
175°367 G	230	1044	124	564	143°9	+0°5	— 9°1	+19°1	199°355 G	46	285	25	157	148°7	+2°3	— 9°8	—18°6
176°348 G	189	902	113	541	143°9	+0°4	— 9°2	+32°1	200°357 G	55	294	29	153	148°5	+2°0	— 9°8	— 5°6
177°337 C	154	782	112	571	144°0	+0°4	— 8°9	+45°3	201°469 G	51	253	27	132	148°5	+1°9	— 9°3	+ 9°1
178°425 C	81	538	83	549	144°1	+0°3	— 8°9	+59°8	202°560 G	51	248	29	139	148°5	+1°8	— 8°9	+23°6
179°370 G	60	246	108	443	145°0	+1°1	— 8°8	+73°2	203°561 G	37	207	24	135	148°9	+2°0	— 8°7	+37°2
									204°389 G	27	165	21	129	149°0	+2°0	— 8°8	+48°3
									205°351 G	16	110	17	119	149°1	+2°0	— 8°8	+61°1
									206°418 G	9	50	20	109	149°5	+2°3	— 8°6	+75°6
Spot b.									Group 11017.—August 10-13. A tiny spot in conspicuous faculæ; Group 11020 originates northwards on August 13.								
169°357 G	18	115	31	195	131°9	0°0	— 7°9	—72°5	221°403 G	5	9	13	23	158°3	+12°9	— 9°9	—77°4
170°444 G	34	184	33	178	131°8	—0°2	— 8°2	—58°2	222°456 G	5	9	6	11	158°3	+12°8	—10°0	—63°5
171°358 G	44	163	32	119	131°9	—0°2	— 8°1	—46°0	223°369 G	9	9	8	8	158°8	+13°2	—10°1	—50°9
172°335 C	23	90	14	55	131°4	—0°9	— 8°2	—33°5	224°360 G	2	9	1	6	159°2	+13°4	—10°4	—37°4
173°449 G	28	120	15	65	131°5	—0°9	— 8°2	—18°7	Means ...	...	...	7	12	158°6	...	—10°1	...
174°606 G	23	55	12	28	132°5	0°0	— 8°3	— 2°4	No. 1083. Latitude —6°6.								
175°367 G	14	28	7	14	132°8	+0°2	— 8°5	+ 8°0	Group 10965 in Rotation 1013.								
Group 10992.—July 14-26. A regular spot, b, preceded by a small companion, a, whose place is taken on July 20 by a small elongated cluster or stream that has disappeared by July 24. There is a broad "bridge" across b on July 19 and 21 but it remains intact.									,, 10985 ,, ,, 1014.								
194°376 G	9	32	48	170	149°3	...	— 9°7	—83°9	Group 10965.—June 20-22. A small stream.								
195°415 C	32	119	48	186	149°6	+7°4	— 9°3	—69°9	170°444 G	18	46	15	39	243°2	0°0	— 7°7	+53°2
196°354 G	44	208	43	203	149°4	+7°1	— 9°4	—57°7	171°358 G	16	58	20	72	243°2	—0°1	— 7°5	+65°3
197°356 G	46	271	32	195	149°9	+7°5	— 9°4	—43°9	172°335 C	2	14	4	31	241°4	—2°1	— 7°7	+76°5
198°356 G	62	306	37	185	149°2	+6°6	— 9°6	—31°4	Means ...	...	...	13	47	242°6	...	— 7°6	...
199°355 G	48	294	26	162	149°1	+6°4	— 9°7	—18°2	Group 10985.—July 7-16. A regular spot diminishing to a dot before extinction.								
200°357 G	113	526	59	271	150°2	+7°4	— 8°8	— 3°9	187°404 G	9	32	16	56	252°7	+6°9	— 5°9	—72°8
201°469 G	102	437	54	230	150°8	+7°9	— 8°5	+11°4	188°357 G	12	71	12	73	252°7	+6°7	— 6°0	—60°2
202°560 G	74	335	42	190	150°1	+7°0	— 8°7	+25°2	189°355 G	14	97	10	72	252°9	+6°7	— 5°9	—46°8
203°561 G	37	212	24	139	149°0	+5°8	— 8°7	+37°3	190°429 G	18	110	11	66	253°3	+7°0	— 5°8	—32°2
204°389 G	27	165	21	129	149°0	+5°7	— 8°8	+48°3	191°357 G	18	83	10	45	253°5	+7°0	— 6°1	—19°7
205°351 G	16	110	17	119	149°1	+5°7	— 8°8	+61°1	192°353 G	28	111	14	57	253°0	+6°4	— 6°0	— 7°0
206°418 G	9	50	20	109	149°5	+5°9	— 8°6	+75°6	193°358 G	16	23	8	12	254°1	+7°3	— 6°3	+ 7°4
Means ...	...	...	35	176	149°6	...	— 9°0	...	194°376 G	18	25	10	14	254°1	+7°2	— 6°6	+20°9
Spot a.									195°415 C	7	9	4	6	254°2	+7°1	— 6°2	+34°7
195°415 C	9	11	12	15	151°7	0°0	— 7°6	—67°8	196°354 G	2	7	2	5	254°0	+6°7	— 6°7	+46°9
196°354 G	9	23	8	20	152°8	+1°0	— 7°4	—54°3	Means ...	...	...	10	41	253°4	...	— 6°2	...
197°356 G	14	32	9	21	153°4	+1°5	— 7°7	—40°4									
198°356 G	18	25	10	14	154°1	+2°0	— 7°5	—26°5									
199°355 G	2	9	1	5	154°6	+2°4	— 7°7	—12°7									

LEDGER I.—RECURRENT GROUPS of SUN SPOTS for the YEAR 1929—continued.

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Lati- tude.	Long. from C.M.	Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Lati- tude.	Long. from C.M.																
	Umbræ	Whole Spots.	Umbræ	Whole Spots.					Umbræ	Whole Spots.	Umbræ	Whole Spots.																			
No. 1084. Latitude $-15^{\circ}8$. Group 10967 in Rotation 1013. " 10988 " " 1014. " 11015 " " 1015. Group 10967.—June 21-26. Usually a pair of unstable spots.								No. 1085. Latitude $-4^{\circ}4$. Group 10986 in Rotation 1014. " 11006 " " 1015. Group 10986.—July 8-17. A fairly large stream of rapid growth whose point of origin is represented by a tiny spot on July 8. The components of the stream are composite in character, the leader, <i>a</i> , being large and changing considerably in appearance from day to day; <i>d</i> is a spot in the <i>sf</i> part of the stream admitting of identification for a few days.																							
d								d																							
171°358 G	28	78	15	42	185°4	0°0	-19°1	+ 7°5	188°357 G	2	5	1	3	279°5	0°0	- 6°1	-33°4														
172°335 C	55	273	31	155	186°4	+1°0	-17°5	+21°5	189°355 G	32	83	17	45	278°9	-0°8	- 6°2	-20°8														
173°449 G	66	254	45	170	187°7	+2°3	-16°8	+37°5	190°429 G	222	813	115	417	280°5	+0°6	- 5°7	- 5°0														
174°606 G	46	246	42	227	189°7	+4°3	-15°8	+54°8	191°357 G	478	2121	245	1082	280°1	+0°1	- 5°4	+ 6°9														
175°367 G	45	216	58	283	189°9	+4°5	-15°8	+65°1	192°353 G	472	2356	255	1274	279°8	-0°4	- 4°9	+19°8														
176°348 G	20	88	63	281	189°5	+4°1	-15°9	+77°7	193°358 G	359	2008	221	1236	281°3	+0°9	- 4°1	+34°6														
Means ...	...	...	42	193	188°1	...	-16°8	...	194°376 G	250	1281	192	988	281°8	+1°2	- 4°5	+48°6														
Group 10988.—July 11-23. A large regular spot becoming appreciably elongated in a direction parallel to the sun's equator between July 15 and 16. There are usually some tiny attendant spots, and a considerable area of faculæ follows.								195°415 C								158	952	175	1057	281°9	+1°2	- 4°2	+62°4								
								196°354 G								61	434	124	900	282°9	+2°0	- 4°7	+75°8								
								197°356 G								5	18	(17	62	274°6	...	- 7°4	+80°8								
Means ...								...								...	149	778	280°7	...	- 5°1	...									
Spot <i>a</i> .																															
191°357 G								35	185	88	466	196°4	+11°1	-16°6	-76°8	190°429 G			110	511	56	261	281°8	0°0	- 5°5	- 3°7					
192°353 G								74	418	91	514	196°5	+11°2	-16°3	-63°5	191°357 G			256	1169	131	596	282°8	+0°8	- 4°5	+ 9°6					
193°358 G								120	607	100	504	196°9	+11°6	-15°9	-49°8	192°353 G			213	1150	117	633	283°7	+1°6	- 3°3	+23°7					
194°376 G								159	800	107	536	196°8	+11°5	-15°8	-36°4	193°358 G			175	980	112	627	285°0	+2°7	- 2°4	+38°3					
195°415 C								136	854	79	495	197°0	+11°7	-15°6	-22°5	194°376 G			124	676	103	561	285°5	+3°0	- 3°1	+52°3					
196°354 G								194	947	105	511	196°7	+11°4	-15°7	-10°4	195°415 C			79	499	97	614	285°1	+2°4	- 2°8	+65°6					
197°356 G								198	966	105	512	197°2	+11°9	-16°0	+ 3°4	196°354 G			32	226	83	585	285°7	+2°9	- 3°2	+78°6					
198°356 G								184	961	103	538	197°3	+12°0	-15°8	+16°7	Spot <i>d</i> .															
199°355 G								147	828	91	513	197°5	+12°2	-16°0	+30°2	190°429 G								57	159	30	83	276°7	0°0	- 7°2	- 8°8
200°357 G								124	672	92	497	197°3	+12°0	-15°8	+43°2	191°357 G								72	229	37	117	276°5	-0°4	- 8°2	+ 3°3
201°409 G								86	478	88	491	197°2	+11°9	-15°9	+57°8	192°353 G								49	213	26	113	276°6	-0°4	- 8°5	+16°6
202°560 G								53	230	99	432	197°2	+11°9	-15°8	+72°3	193°358 G								18	53	11	32	277°1	-0°1	- 9°2	+30°4
203°561 G								9	18	(91	182	197°3	+12°0	-15°7)	+85°6	Group 11006.—July 31-August 11. Two regular spots not far apart in longitude; the leading and larger spot, <i>a</i> , remains stable; the follower, <i>b</i> , becomes composite and dissolves into a cluster. These spots probably represent <i>a</i> of Group 10986.															
Means ...								...	...	96	501	197°0	...	-15°9	...	211°405 C								23	99	65	284	288°2	+4°7	- 3°6	-79°7
																212°448 G								48	213	57	253	289°4	+5°7	- 3°4	-64°7
																213°374 C								49	286	41	238	289°8	+5°9	- 3°1	-52°1
																214°403 C								56	346	37	225	290°2	+6°1	- 3°6	-38°1
																215°489 G								92	424	51	234	290°8	+6°6	- 3°5	-23°1
																216°381 G								117	607	61	312	290°9	+6°5	- 3°2	-11°2
																217°369 C								140	586	72	299	291°9	+7°3	- 3°3	+ 2°8
																218°523 C								76	472	41	253	292°0	+7°2	- 3°6	+18°2
Means ...								...	...	26	120	200°4	...	-15°2	...																

LEDGER I.—RECURRENT GROUPS of SUN SPOTS for the YEAR 1929—*continued.*

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.		Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.	
	Umbrae	Whole Spots.	Umbrae	Whole Spots.						Umbrae	Whole Spots.	Umbrae	Whole Spots.				
No. 1085, Group 11006—continued.									No. 1086, Group 11020—continued.								
Spot a.									Spot a.								
d									d								
219°351 G	89	360	52	210	292°5	+7°6	— 3°7	+29°6	224°360 G	36	173	23	112	159°1	0°0	— 7°2	—37°5
220°627 G	50	242	38	186	293°9	+8°8	— 4°4	+47°9	225°366 G	78	392	44	220	160°4	+1°2	— 7°5	—22°9
221°403 G	27	155	27	157	295°1	+9°8	— 4°7	+59°4	226°354 G	150	734	78	382	161°4	+2°0	— 7°8	— 8°9
222°456 G	14	89	26	165	295°4	+9°9	— 4°6	+73°6	227°376 C	130	683	68	355	162°8	+3°3	— 7°7	+ 6°0
Means ...	...	...	47	235	291°7	...	— 3°7	...	228°354 G	98	629	54	346	164°0	+4°4	— 6°8	+20°1
Spot a.									Spot b.								
211°405 C	14	54	35	136	289°8	+4°3	— 3°8	—78°1	225°366 G	82	260	48	153	154°8	0°0	— 7°5	—28°5
212°448 G	34	149	39	171	290°6	+4°9	— 3°7	—63°5	226°354 G	96	586	52	316	153°5	—1°4	— 7°4	—16°8
213°374 C	27	180	22	146	290°8	+5°0	— 3°0	—51°1	227°376 C	105	623	55	324	153°8	—1°3	— 7°8	— 3°0
214°403 C	34	216	22	138	291°4	+5°4	— 3°6	—36°9	228°354 G	105	643	56	341	154°1	—1°1	— 7°9	+10°2
215°489 G	55	277	30	152	292°3	+6°1	— 3°6	—21°6	229°410 C	72	508	41	290	154°1	—1°3	— 7°9	+24°2
216°381 G	60	318	31	162	292°8	+6°5	— 3°7	— 9°3									
217°369 C	77	358	39	183	293°4	+6°9	— 3°6	+ 4°3									
218°523 C	40	274	22	148	293°8	+7°1	— 4°1	+20°0									
219°351 G	57	260	34	153	294°0	+7°1	— 4°2	+31°1									
220°627 G	36	201	28	157	294°7	+7°6	— 4°6	+48°7									
221°403 G	27	155	27	157	295°1	+7°9	— 4°7	+59°4									
222°456 G	14	89	26	165	295°4	+8°0	— 4°6	+73°6									
Spot b.									Group 11044.—September 6-13. A decreasing regular spot, probably a of Group 11020, with a tiny follower on September 9. Considerable faculae surrounds the group.								
211°405 C	9	45	30	148	287°1	...	— 3°4	—80°8	248°355 G	7	41	12	71	168°1	+5°7	— 9°1	—71°5
212°448 G	14	64	18	82	287°7	+2°0	— 3°3	—66°4	249°353 G	14	64	14	65	167°9	+5°4	— 8°9	—58°5
213°374 C	22	106	19	92	287°6	+1°8	— 2°8	—54°3	250°431 C	22	71	16	52	167°9	+5°2	— 9°0	—44°3
214°403 C	22	130	15	87	288°0	+2°0	— 3°4	—40°3	251°369 G	18	87	11	54	167°7	+4°9	— 9°2	—32°1
215°489 G	37	147	21	82	288°1	+2°0	— 3°2	—25°8	252°468 G	14	50	8	28	167°8	+4°9	— 9°4	—17°5
216°381 G	57	289	30	150	288°7	+2°4	— 3°0	—13°4	253°358 G	14	32	7	17	167°8	+4°7	— 9°5	— 5°7
217°369 C	54	194	28	99	289°2	+2°7	— 2°4	+ 0°1	254°354 G	14	23	7	13	167°5	+4°3	— 9°0	+ 7°1
218°523 C	32	180	17	95	289°1	+2°4	— 2°9	+15°3	255°412 G	5	11	3	6	168°1	+4°8	— 9°1	+21°7
219°351 G	32	100	18	57	289°2	+2°3	— 3°0	+26°3	Means ...	...	...	10	38	167°8	...	— 9°2	...
No. 1086. Latitude —8°2. Group 11020 in Rotation 1015. " 11044 " " 1016.									No. 1087. Latitude +22°0. Group 11021 in Rotation 1015. " 11040 " " 1016.								
Group 11020. August 12-22. A large stream showing rapid development from a cluster of tiny spots on August 12. The leader, a, is duplex on August 15; b, the follower breaks up into a cluster on August 19-20.									Group 11021.—August 13-19. An imperfectly-formed spot becoming regular with a train of tiny companions.								
223°369 G	14	27	12	24	156°0	0°0	— 6°4	—53°7	224°360 G	5	14	3	7	192°1	0°0	+21°8	— 4°5
224°360 G	59	232	39	153	157°6	+1°5	— 7°2	—39°0	225°366 G	27	98	15	52	192°3	+0°4	+22°1	4 9°0
225°366 G	187	771	108	442	158°2	+1°9	— 7°6	—25°1	226°354 G	46	137	26	78	194°7	+3°0	+22°7	+24°4
226°354 G	280	1416	148	749	158°4	+2°0	— 7°5	—11°9	227°376 C	34	199	22	127	193°9	+2°3	+22°5	+37°1
227°376 C	246	1344	129	699	158°4	+1°9	— 7°9	+ 1°6	228°354 G	48	223	39	182	194°9	+3°5	+23°2	+51°0
228°354 G	203	1272	110	687	159°3	+2°6	— 7°4	+15°4	229°410 C	25	117	30	142	195°9	+4°7	+23°1	+66°0
229°410 C	180	1081	108	644	158°9	+2°1	— 7°3	+29°0	230°120 K	15	89	30	180	197°8	+6°7	+23°0	+77°3
230°120 K	151	1043	103	698	159°5	+2°6	— 6°9	+39°0	Means ...	...	...	24	110	194°5	...	+22°6	...
231°353 G	80	584	77	552	160°4	+3°3	— 6°8	+56°2									
232°495 G	41	271	74	482	161°4	+4°2	— 7°1	+72°3									
233°463 G	10	28	(33	94	155°6	...	— 7°7)	+79°3									

LEDGER I.—RECURRENT GROUPS OF SUN SPOTS for the YEAR 1929—continued.

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.		Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.	
	Umbræ	Whole Spots.	Umbræ	Whole Spots.						Umbræ	Whole Spots.	Umbræ	Whole Spots.				
No. 1087—continued.									No. 1088, Group 11059—continued Spot a_1 .								
Group 11040.—September 3-13. A regular spot disappearing rather suddenly.									d								
d																	
245°349 G	11	52	35	164	196°5	...	+21°7	-82°8	271°363 G	34	170	18	90	277°9	0°0	+9°9	-18°0
246°408 G	9	76	12	103	195°7	+7°5	+21°8	-69°6	272°358 G	34	152	17	76	278°5	+0°5	+9°7	-4°2
247°364 G	20	99	18	90	195°9	+7°9	+21°7	-56°8	273°355 C	50	263	26	134	280°7	+2°6	+10°8	+11°1
248°355 G	25	132	18	94	195°5	+7°7	+21°7	-44°1	274°474 G	45	167	26	95	283°1	+4°9	+10°7	+28°3
249°353 G	25	132	15	79	195°1	+7°4	+21°5	-31°3	Spot b.								
250°431 C	31	141	17	76	194°9	+7°4	+21°3	-17°3	271°363 G	31	139	17	75	273°6	0°0	+9°1	-22°3
251°369 G	34	136	18	71	194°6	+7°3	+21°2	-5°2	272°358 G	69	206	35	105	273°4	-0°3	+9°3	-9°3
252°468 G	32	136	17	71	194°4	+7°3	+21°2	+9°1	273°355 C	74	322	37	161	274°4	+0°6	+10°5	+4°8
253°358 G	16	77	9	42	194°1	+7°1	+21°3	+20°6	274°474 G	56	337	30	179	274°8	+0°9	+10°7	+20°0
254°354 G	14	27	9	16	193°7	+6°9	+21°5	+33°3	275°355 C	35	155	21	91	274°7	+0°7	+10°6	+31°5
255°412 G	2	9	1	7	193°7	+7°1	+21°7	+47°3	276°380 C	13	74	9	52	274°6	+0°5	+10°3	+44°9
Means ...	...	...	13	65	194°8	...	+21°5	...	277°314 C	11	37	10	34	274°5	+0°3	+10°2	+57°1
									278°407 C	4	15	6	23	274°7	+0°4	+10°0	+71°8
No. 1088. Latitude +11°1. Group 11059 in Rotation 1017. " 11073 " " 1018.									Group 11073.—October 21-28. A regular spot breaking up on October 24-25 in company with a few tiny companions. Scattered faint spots continue on October 27-28.								
Group 11059.—September 26-October 6. A long stream of unstable spots. The composite leader on October 3, appears to come from the fusion of two spots, a and a_1 , that are a few degrees apart in longitude on September 29. b is the follower.									d								
268°355 G	9	27	9	27	274°8	0°0	+8°9	-60°8	293°387 G	9	35	19	73	288°3	+4°9	+12°9	-77°0
269°364 G	20	89	14	64	276°2	+1°3	+9°6	-46°1	294°436 G	18	93	20	101	288°4	+4°9	+12°6	-63°1
270°355 G	38	141	23	83	276°4	+1°4	+9°4	-32°8	295°545 G	33	115	25	86	288°3	+4°7	+12°1	-48°6
271°363 G	85	493	45	261	278°3	+3°2	+9°6	-17°6	296°415 C	13	116	8	72	288°8	+5°1	+12°0	-36°6
272°358 G	192	698	96	351	277°2	+2°0	+10°0	-5°5	297°392 G	31	75	17	41	288°2	+4°5	+11°4	-24°3
273°355 C	170	797	87	405	278°3	+2°9	+10°7	+8°7	298°430 G	28	57	14	29	287°4	+3°6	+11°9	-11°4
274°474 G	161	758	90	419	279°2	+3°8	+10°7	+24°4	299°458 G	7	35	4	18	287°7	+3°8	+11°3	+2°4
275°355 C	92	506	59	325	281°3	+5°8	+11°1	+38°1	300°108 K	4	49	2	25	284°9	+0°9	+10°5	+8°2
276°380 C	50	296	42	247	282°8	+7°2	+11°4	+53°1	Means ...	...	...	14	56	287°8	...	+11°8	...
277°314 C	37	159	45	199	283°0	+7°4	+11°7	+65°6	No. 1089. Latitude -11°7. Group 11068 in Rotation 1017. " 11082 " " 1018. " 11112 " " 1019. " 11149 " " 1020.								
278°407 C	13	67	46	251	283°1	...	+11°9	+80°2	Group 11068.—October 7-19. A very large spot, almost circular, crossed by a "bridge" after October 15.								
Means ...	...	...	51	238	278°8	...	+10°3	...	279°388 G	27	174	79	508	111°4	0°0	-10°8	-78°6
Spot a .									280°341 C	98	453	132	612	110°9	-0°6	-10°8	-66°5
									281°575 C	144	907	118	744	111°1	-0°5	-10°5	-50°0
271°363 G	20	184	10	96	281°3	0°0	+10°1	-14°6	282°444 C	218	1112	146	745	110°8	-0°9	-10°5	-38°9
272°358 G	40	132	20	66	283°2	+1°8	+10°8	+0°5	283°588 G	240	1230	137	701	110°8	-0°9	-10°4	-23°8
273°355 C	33	175	17	91	284°7	+3°2	+11°2	+15°1	284°382 G	204	1265	110	683	111°0	-0°8	-10°5	-13°1
274°474 G	42	178	24	103	285°6	+4°0	+11°4	+30°8	285°560 C	197	1309	102	681	111°1	-0°8	-10°5	+2°5
275°355 C	53	342	36	229	285°4	+3°7	+11°5	+42°2	286°387 G	275	1558	149	841	110°9	-1°1	-10°5	+13°2
276°380 C	37	222	33	195	285°7	+3°9	+11°7	+56°0	287°435 C	234	1541	138	909	110°6	-1°5	-10°5	+26°8
277°314 C	26	122	35	165	286°4	+4°5	+12°1	+69°0	288°418 G	221	1242	150	845	110°8	-1°3	-10°5	+39°9
278°407 C	9	52	40	228	287°7	...	+12°2	+84°8	289°391 G	170	1039	146	894	110°4	-1°8	-10°4	+52°4
									290°387 G	128	690	165	890	110°5	-1°8	-10°4	+65°6
									291°459 G	55	277	173	873	110°4	-2°0	-10°4	+79°6
									Means ...	...	...	134	764	110°8	...	-10°5	...

LEDGER I.—RECURRENT GROUPS of SUN SPOTS for the YEAR 1929—*continued.*

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.	Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.		
	Umbrae	Whole Spots.	Umbrae	Whole Spots.					Umbrae	Whole Spots.	Umbrae	Whole Spots.					
No. 1089—continued								No. 1090, Group 11075—continued.									
Group 11082.—November 3-16. A very large regular spot that breaks up on November 14.								d									
d																	
306'429 G	53	205	202	783	111'7	...	-10'4	-81'6	299'458 G	167	1065	125	805	236'6	+0'3	+9'5	-48'7
307'507 C	112	529	155	730	111'5	-2'2	-10'5	-67'6	300'108 K	181	1320	117	869	236'2	-0'2	+9'8	-40'5
308'491 C	205	903	182	804	111'8	-2'0	-10'5	-54'4	301'391 G	328	2200	179	1200	235'7	-0'9	+10'0	-24'1
309'656 Y	209	966	140	647	111'6	-2'3	-10'8	-39'2	302'437 G	385	2301	196	1173	236'7	0'0	+9'8	-9'3
310'443 C	231	1280	136	755	111'6	-2'4	-11'0	-28'8	303'393 G	426	2286	214	1140	236'6	-0'2	+10'3	+3'2
311'351 C	270	1378	146	744	111'4	-2'7	-11'0	-17'1	304'548 G	292	1782	156	947	238'5	+1'5	+9'6	+20'3
312'387 G	276	1419	144	738	111'4	-2'7	-11'0	-3'4	305'405 G	252	1730	150	1026	239'1	+2'0	+9'4	+31'3
313'512 G	289	1356	153	719	111'3	-2'9	-10'8	+11'3	306'429 G	220	1233	158	882	238'7	+1'5	+9'4	+45'4
314'365 C	327	1323	183	741	111'1	-3'2	-10'8	+22'4	307'507 C	97	636	97	636	238'9	+1'5	+9'1	+59'8
315'392 G	221	929	141	595	111'4	-3'0	-11'1	+36'2	308'491 C	66	398	111	669	239'2	+1'8	+9'3	+73'0
316'386 C	180	856	142	676	111'2	-3'3	-11'5	+49'1	Means ...	...	...	147	921	237'4	...	+9'6	...
317'468 G	152	855	179	1009	111'3	-3'3	-12'4	+63'5	Spot a								
318'535 G	89	464	224	1164	111'4	-3'2	-12'7	+77'7	297'392 G	18	84	29	135	240'0	0'0	+8'9	-72'5
319'340 C	13	60	(96)	442	108'5	...	-12'8	+85'4	298'430 G	31	197	29	187	240'0	-0'1	+9'3	-58'8
Means ...	...	...	160	777	111'4	...	-11'2	...	299'458 G	40	238	28	167	241'0	+0'8	+9'3	-44'3
Group 11112.—December 1-13. A regular spot generally with one or more small companions; on December 9, these are considerable.								300'108 K									
334'281 K	22	98	51	225	109'2	-6'8	-13'3	-77'0	301'391 G	53	220	32	134	241'3	+1'0	+9'7	-35'4
335'377 C	38	180	43	202	109'4	-6'6	-13'5	-62'4	302'437 G	53	326	28	173	242'1	+1'6	+10'0	-17'7
336'368 C	47	201	37	157	110'1	-6'0	-13'5	-48'6	303'393 G	44	224	22	112	242'7	+2'1	+9'7	-3'3
337'535 G	63	254	39	157	109'5	-6'7	-13'3	-33'8	304'548 G	40	196	20	100	243'0	+2'3	+9'3	+9'6
338'110 K	50	249	29	142	109'6	-6'7	-13'2	-26'2	305'405 G	46	147	25	81	243'2	+2'3	+9'5	+25'0
339'115 K	60	285	32	151	109'8	-6'6	-13'1	-12'7	306'429 G	44	128	27	79	244'4	+3'4	+9'3	+36'6
340'117 K	62	273	32	139	110'1	-6'3	-13'5	+0'8	307'507 C	22	84	17	65	243'2	+2'1	+9'3	+49'9
341'569 G	65	280	36	154	110'1	-6'4	-13'2	+19'9	15	77	17	88	243'4	+2'2	+9'2	+64'3	
342'348 C	101	654	59	382	108'7	-7'9	-12'9	+28'8	Spot b								
343'472 G	59	280	42	201	109'3	-7'4	-13'1	+44'2	302'437 G	304	1954	155	997	236'5	0'0	+10'0	-9'5
344'508 C	38	154	36	150	109'8	-7'0	-13'1	+58'4	303'393 G	282	1597	141	798	237'0	+0'4	+10'3	+3'6
345'498 G	22	95	36	156	110'3	-6'6	-13'5	+71'9	304'548 G	169	1214	90	643	238'0	+1'2	+9'8	+19'8
346'409 G	13	39	57	171	109'9	...	-13'4	+83'5	305'405 G	183	1452	108	857	239'0	+2'1	+9'5	+31'2
Means ...	...	...	39	185	109'7	...	-13'2	...	306'429 G	185	1089	131	773	238'5	+1'5	+9'3	+45'2
Group 11149.—December 28-30. A small spot in considerable faculae.								307'507 C									
361'360 C	2	8	5	20	110'9	-7'3	-11'9	-78'5	82	559	80	548	238'7	+1'6	+9'1	+59'6	
362'454 G	4	13	5	15	111'2	-7'1	-12'1	-63'8	308'491 C	66	398	111	669	239'2	+2'0	+9'3	+73'0
363'116 K	4	8	3	7	112'9	-5'5	-12'1	-53'4	Group 11096.—November 21-December 3. A spot with a double umbra, representing b of Group 11075; a tiny companion precedes it on November 24 and 27, whilst others surround it on November 28-30.								
Means ...	...	...	4	14	111'7	...	-12'0	...	324'465 G	13	92	26	183	240'0	+0'8	+9'6	-75'6
No. 1090. Latitude +9'4. Group 11075 in Rotation 1018.								325'349 C									
" 11096 " " 1019.								326'340 C									
Group 11075.—October 25—November 5. A very large stream of unusual formation that develops from three spots. The chief feature is the great activity shown about the following spot which, absorbing its near companions, has grown to a very large composite spot, b, by October 30. The leader, a, is a relatively small but stable spot.								327'465 G									
297'392 G	66	405	130	821	236'1	0'0	+9'7	-76'4	328'420 C	21	174	12	96	240'4	+0'8	+8'9	-23'0
298'430 G	127	815	134	874	236'4	+0'2	+9'7	-62'4	329'471 G	31	137	16	70	240'1	+0'3	+9'0	-9'5
								330'419 G									
								331'385 C									
								332'356 C									
								333'487 G									
								334'281 K									
								335'377 C									
								336'368 C									
								Means ...									

LEDGER I.—RECURRENT GROUPS of SUN SPOTS for the YEAR 1929.

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.		Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.	
	Umbræ	Whole Spots.	Umbræ	Whole Spots.						Umbræ	Whole Spots.	Umbræ	Whole Spots.				
No. 1091. Latitude +15°.3. Group 11081 in Rotation 1018. " 11100 " " 1019. " 11142 " " 1020. " 11160 " " 1021.									No. 1091.—continued. Group 11142—December 22.—1930, January 3. A large spot with multiple umbræ and a broad cleft across it that on some days practically divides the spot into two or three portions.								
Group 11081.—October 31—November 10. A very large stream of usual type in appearance but whose early and very rapid development is not quite normal. <i>a</i> is leader for a few days.																	
<i>d</i>									<i>d</i>								
303.393 G	9	22	6	16	188.4	0.0	+16.1	-45.0	355.436 C	70	443	120	762	195.8	+2.9	+15.9	-71.7
304.548 G	149	478	89	285	186.4	-2.0	+15.4	-31.8	356.419 C	105	686	108	707	195.5	+2.6	+16.1	-59.0
305.405 G	242	1365	129	731	189.4	+1.0	+14.7	-18.4	357.346 C	169	897	132	700	195.3	+2.3	+15.9	-47.0
306.429 G	297	1835	152	936	189.4	+1.0	+13.7	-3.9	358.489 G	228	1324	144	834	194.7	+1.7	+16.3	-32.5
307.507 C	434	2477	224	1278	189.8	+1.4	+14.1	+10.7	359.443 G	281	1322	157	740	194.6	+1.6	+16.1	-20.1
308.491 C	383	2621	215	1452	189.8	+1.4	+14.2	+23.6	360.435 G	289	1426	153	756	194.8	+1.8	+16.0	-6.8
309.656 Y	425	2193	279	1443	189.9	+1.4	+14.5	+39.1	361.360 C	242	1454	128	770	194.6	+1.6	+15.6	+5.2
310.443 C	360	2058	284	1620	190.3	+1.8	+14.9	+49.9	362.454 G	212	1115	119	624	194.1	+1.1	+15.5	+19.1
311.351 C	256	1887	280	1990	190.0	+1.5	+15.1	+61.5	363.116 K	213	995	128	596	194.0	+1.0	+15.8	+27.7
312.387 G	171	1077	294	2003	189.4	+0.9	+15.1	+74.6	364.318 C	137	682	100	498	193.9	+0.9	+15.7	+43.4
313.512 G	33	94	(113)	322	182.1	...	+14.6	+82.1	365.311 C	76	500	73	480	193.5	+0.5	+15.8	+56.1
Means ...	...	...	195	1175	189.3	...	+14.8	...	366.525 G	33	281	58	507	193.6	+0.6	+16.0	+72.2
Spot <i>a</i> .									367.376 C	13	50	79	305	195.5	...	+15.6	+85.3
306.429 G	152	915	78	467	192.5	0.0	+13.9	-0.8	Means ...	...	...	118	664	194.5	...	+15.9	...
307.507 C	206	1221	107	635	193.8	+1.3	+14.2	+14.7	Group 11160.—1930, January 18–28. A nearly regular spot breaking up on January 23; the addition of small companions makes a temporary cluster or small stream.								
308.491 C	210	1012	122	587	195.1	+2.6	+14.7	+28.9	382.337 C	8	27	23	79	194.8	+1.6	+15.0	-78.4
309.656 Y	150	719	108	518	196.4	+3.9	+14.8	+45.6	383.427 C	19	106	25	137	194.0	+0.8	+15.1	-64.8
310.443 C	146	770	133	701	196.7	+4.2	+15.2	+56.3	384.427 C	25	135	22	116	194.5	+1.3	+14.6	-51.2
311.351 C	98	582	134	797	197.3	+4.8	+15.3	+68.8	385.423 G	34	182	23	124	194.6	+1.4	+14.8	-38.0
312.387 G	26	210	89	720	197.0	...	+15.2	+82.2	386.332 C	34	124	20	73	194.4	+1.2	+14.7	-26.2
Group 11100.—November 24–December 6. An unusually large regular spot, <i>a</i> of Group 11081.									387.356 C	17	78	9	43	194.2	+1.0	+14.5	-12.9
327.465 G	96	519	236	1277	197.8	+5.1	+16.3	-78.2	388.306 C	21	169	11	90	194.3	+1.1	+14.3	-0.3
328.420 C	180	950	218	1150	198.3	+5.6	+16.1	-65.1	389.334 C	25	106	14	58	194.8	+1.6	+14.1	+13.7
329.471 G	288	1317	239	1093	198.2	+5.5	+16.6	-51.4	390.373 C	42	135	25	81	195.3	+2.0	+13.2	+27.9
330.419 G	371	1661	245	1096	198.2	+5.5	+16.2	-38.9	391.478 C	11	21	8	16	197.5	+4.2	+12.5	+44.7
331.385 C	326	1666	189	966	198.2	+5.5	+16.4	-26.2	392.325 C	2	8	2	8	198.3	+5.0	+12.5	+56.6
332.356 C	449	2069	238	1097	198.0	+5.3	+16.2	-13.6	Means ...	...	...	17	75	195.2	...	+14.1	...
333.487 G	412	1853	214	964	198.3	+5.6	+16.3	+1.6	No. 1092. Latitude -11°.4. Group 11085 in Rotation 1018. " 11117 " " 1019.								
334.281 K	420	1982	223	1050	198.2	+5.4	+16.3	+12.0	Group 11085.—November 6–18. A regular spot shedding a portion from its northern edge on November 16–17. From November 7–9 there are two distant followers.								
335.377 C	390	1709	226	991	198.2	+5.4	+16.4	+26.4	309.656 Y	26	95	69	253	72.7	0.0	-11.8	-78.1
336.368 C	293	1476	196	989	197.9	+5.1	+16.5	+39.2	310.443 C	47	295	78	480	71.0	-1.8	-12.6	-69.4
337.535 G	226	1224	201	1089	197.8	+5.0	+16.3	+54.5	311.351 C	73	424	75	423	70.8	-2.0	-12.4	-57.7
338.110 K	193	858	212	944	197.5	+4.7	+16.3	+61.7	312.387 G	118	501	86	361	71.4	-1.5	-12.4	-43.4
339.115 K	109	470	220	949	197.6	+4.8	+16.2	+75.1	313.512 G	118	596	70	352	71.9	-1.1	-11.7	-28.1
Means ...	...	...	220	1050	198.0	...	+16.3	...	314.365 C	107	631	58	341	71.9	-1.2	-11.4	-16.8
									315.392 C	158	705	82	367	71.9	-1.3	-10.8	-3.3
									316.386 C	148	644	77	335	71.6	-1.7	-11.2	+9.5
									317.468 G	122	595	68	333	71.7	-1.7	-10.9	+23.9

LEDGER I.—RECURRENT GROUPS of SUN SPOTS for the YEAR 1920—*continued.*

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.				Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.																																
	Umbræ	Whole Spots.	Umbræ	Whole Spots.								Umbræ	Whole Spots.	Umbræ	Whole Spots.																																			
No. 1092. Group 11085—continued.																					No. 1093. Group 11089 Spot a.—continued.																													
a																					a																													
318.535 G	87	501	57	326	71.7	-1.8	-10.7	+38.0			319.340 C	141	698	72	356	36.6	+2.1	+5.1	+13.5																															
319.340 C	86	415	67	324	71.5	-2.1	-10.6	+48.4			320.387 C	115	648	64	363	36.9	+2.2	+5.2	+27.6																															
320.387 C	43	262	49	296	72.1	-1.5	-10.8	+62.8			321.112 K	113	545	71	343	37.2	+2.4	+4.9	+37.4																															
321.112 K	28	139	48	239	72.1	-1.6	-10.8	+72.3			322.504 C	81	400	72	356	37.2	+2.2	+4.6	+55.8																															
											323.540 G	46	249	67	361	37.7	+2.5	+4.6	+69.9																															
											324.465 G	17	78	58	268	37.3	...	+4.4	+81.7																															
Means ...	...	...	68	341	71.7	...	-11.4	...			Spot b.																																							
Group 11117.—December 4-5. A tiny spot.																					314.365 C																					26	133	30	153	24.4	0.0	+7.9	-64.3	
337.535 G	4	7	6	10	73.4	-1.8	-11.1	-69.9			315.392 G	31	201	25	161	23.7	-0.9	+8.2	-51.5																															
338.110 K	2	4	2	4	73.9	-1.3	-10.8	-61.9			316.386 C	39	141	25	90	23.6	-1.1	+7.9	-38.5																															
Means ...	...	...	4	7	73.6	...	-11.0	...			317.468 G	26	113	14	62	23.7	-1.2	+8.2	-24.1																															
											318.535 G	13	24	7	12	24.2	-0.9	+8.3	-9.5																															
											319.340 C	4	11	2	6	24.3	-0.9	+6.8	+1.2																															
No. 1093. Latitude +5°.0 Group 11089 in Rotation 1018. " 11118 " " 1019. " 11152 " " 1020.																					Group 11118.—December 6-18. A regular spot, a of Group 11089, with an extension on its southern edge on December 10, preceded by small companions on December 8-13.																													
Group 11089.—November 9-21. A long stream with a predominant regular spot a, and a smallish spot b, in the rearward cluster.																					339.115 K																					20	104	53	277	43.3	+5.4	+4.9	-79.2	
312.387 G	24	72	(87	260	32.5	...	+7.1	-82.3			340.117 K	44	249	54	306	43.3	+5.3	+5.0	-66.0																															
313.512 G	70	375	111	559	29.4	0.0	+7.5	-70.6			341.569 G	105	375	76	273	44.1	+5.8	+4.6	-46.1																															
314.365 C	113	605	113	588	29.6	+0.1	+7.4	-59.1			342.348 C	120	568	74	350	44.5	+6.1	+4.3	-35.4																															
315.392 G	176	893	125	637	29.9	+0.2	+7.3	-45.3			343.472 G	106	673	56	362	44.0	+5.4	+4.6	-21.1																															
316.386 C	181	824	105	475	33.0	+3.1	+6.2	-29.1			344.508 C	110	544	56	277	44.1	+5.3	+4.6	-7.3																															
317.468 G	207	911	107	473	33.6	+3.5	+6.1	-14.2			345.498 G	108	618	54	309	44.2	+5.3	+4.9	+5.8																															
318.535 G	179	880	91	441	35.1	+4.8	+5.8	+1.4			346.409 G	102	564	54	299	44.4	+5.3	+4.3	+18.0																															
319.340 C	158	756	81	386	36.1	+5.7	+5.4	+13.0			347.301 C	101	443	59	257	44.2	+4.9	+4.5	+29.6																															
320.387 C	117	652	65	365	36.8	+6.2	+5.2	+27.5			348.401 C	59	333	41	233	44.4	+5.0	+4.5	+44.3																															
321.112 K	113	545	71	343	37.2	+6.5	+4.9	+37.4			349.466 G	43	202	42	196	44.9	+5.3	+4.2	+58.8																															
322.504 C	81	400	72	356	37.2	+6.3	+4.6	+55.8			350.504 G	26	142	44	239	44.9	+5.1	+4.3	+72.5																															
323.540 G	46	249	67	361	37.7	+6.6	+4.6	+69.9			351.377 C	13	55	57	241	44.3	...	+4.3	+83.4																															
324.465 G	17	78	58	268	37.3	...	+4.4	+81.7			Means ...	...	...	55	281	44.2	...	+4.6	...																															
Means ...	...	...	92	453	34.1	...	+5.9	...			Group 11152.—1930, January 2-14. A stable regular spot, a of Group 11089.																																							
Spot a.																					366.525 G																					15	82	29	156	47.0	+4.5	+4.8	-74.4	
312.387 G	24	72	87	260	32.5	...	+7.1	-82.3			367.376 C	25	134	29	153	46.7	+4.1	+4.8	-63.5																															
313.512 G	44	274	55	340	33.5	0.0	+6.7	-66.5			368.413 G	43	174	34	136	46.9	+4.1	+4.9	-49.7																															
314.365 C	54	355	45	298	34.9	+1.3	+6.5	-53.8			369.484 G	54	233	33	144	46.8	+3.8	+4.8	-35.6																															
315.392 G	88	469	57	305	35.5	+1.7	+6.3	-39.7			370.403 G	54	273	30	150	46.9	+3.7	+4.5	-23.4																															
316.386 C	133	659	74	369	35.8	+1.8	+5.7	-26.3			371.246 K	54	268	28	139	46.9	+3.6	+4.8	-12.3																															
317.468 G	139	668	71	341	36.1	+1.9	+5.6	-11.7			372.424 C	61	338	31	172	46.7	+3.2	+4.5	+3.0																															
318.535 G	139	720	70	360	36.5	+2.1	+5.3	+2.8			373.467 G	39	246	21	130	46.7	+3.0	+4.6	+16.8																															
											374.351 C	38	224	22	128	46.2	+2.4	+4.4	+27.9																															
											375.493 G	35	160	24	110	46.3	+2.3	+4.4	+43.0																															
											376.393 C	30	135	26	119	46.1	+1.9	+4.2	+54.6																															
											377.410 C	19	97	26	131	45.8	+1.5	+4.2	+67.7																															
											378.376 C	6	46	22	166	47.0	...	+4.2	+81.7																															
											Means ...	...	...	18	139	46.6	...	+4.6	...																															

LEDGER I.—RECURRENT GROUPS of SUN SPOTS for the YEAR 1920—continued.

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.		Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.							
	Umbræ	Whole Spots.	Umbræ	Whole Spots.						Umbræ	Whole Spots.	Umbræ	Whole Spots.										
No. 1094. Latitude +9°·8.								No. 1094—continued.															
Group 11094 in Rotation 1019.								Group 11128.—December 13-21. A small definite spot, probably <i>a</i> of Group 11094, with a companion on December 19 and 21.															
" 11128 " " 1020.								d															
Group 11094.—November 16-27. A moderate-sized stream with <i>a</i> as leader and <i>b</i> as follower.																							
d																							
319·340 C	24	118	50	234	307°·1	0°·0	+10°·3	-76°·0	346·409 G	9	35	14	54	315°·6	+3°·4	+9°·8	-70°·8						
320·387 C	51	258	53	268	308°·1	+0°·9	+10°·1	-61°·2	347·301 C	13	32	13	31	315°·8	+3°·5	+9°·3	-58°·8						
321·112 K	78	380	63	310	308°·4	+1°·1	+10°·5	-51°·4	348·401 C	11	42	8	30	315°·7	+3°·3	+9°·7	-44°·4						
322·504 C	115	409	69	243	309°·3	+1°·8	+10°·3	-32°·1	349·466 G	17	30	10	18	315°·9	+3°·3	+9°·4	-30°·2						
323·540 G	117	652	62	347	309°·1	+1°·5	+10°·3	-18°·7	350·504 G	17	26	9	14	316°·3	+3°·6	+9°·3	-16°·1						
324·465 G	138	617	70	315	309°·5	+1°·8	+10°·1	-6°·1	351·377 C	8	15	4	8	316°·4	+3°·6	+9°·0	-4°·5						
325·349 C	164	558	85	285	309°·8	+2°·0	+10°·4	+5°·9	352·475 G	11	33	6	17	316°·2	+3°·3	+9°·1	+9°·7						
326·340 C	86	428	47	231	310°·4	+2°·5	+10°·2	+19°·5	353·437 G	9	13	5	7	316°·9	+3°·9	+8°·7	+23°·1						
327·465 G	57	271	35	169	311°·8	+3°·8	+10°·2	+35°·8	354·115 K	8	18	5	11	315°·8	+2°·7	+9°·4	+30°·9						
328·420 C	40	193	31	150	312°·5	+4°·4	+10°·4	+49°·1	Means ...	...	...	8	21	316°·1	...	+9°·3	...						
329·471 G	22	120	25	136	313°·1	+4°·8	+10°·6	+63°·5	No. 1095. Latitude +13°·8.														
330·419 G	13	87	27	182	313°·3	+4°·9	+10°·8	+76°·2	Group 11097 in Rotation 1019.														
Means ...	...	...	51	239	310°·2	...	+10°·4	...	" 11136 " " 1020.														
Spot a.								Group 11097.—November 21-December 4. Two spots, <i>a</i> and <i>b</i> at first very close together and composite in nature, becoming respectively leader and follower of a stream.															
319·340 C	11	75	19	133	309°·1	0°·0	+10°·3	-74°·0	324·465 G	35	173	165	858	230°·0	...	+12°·7	-85°·6						
320·387 C	30	151	29	146	310°·3	+1°·1	+9°·9	-59°·0	325·349 C	98	567	174	1005	230°·8	0°·0	+12°·9	-73°·1						
321·112 K	46																						

LEDGER I.—RECURRENT GROUPS of SUN SPOTS for the YEAR 1929—continued.

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.		Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.	
	Umbræ	Whole Spots.	Umbræ	Whole Spots.						Umbræ	Whole Spots.	Umbræ	Whole Spots.				
No. 1095, Group 11097—continued. Spot b.									No. 1096—continued. Group 11138.—December 20-26. One or two small spots not visible on December 24 and 25.								
d									d								
324.465 G	4	33	29	243	229.2	...	+12.4	-86.4	353.437 G	2	13	8	50	211.1	...	-21.0	-82.7
325.349 C	30	175	63	366	227.7	0.0	+11.7	-76.2	354.115 K	4	22	7	40	211.1	-0.7	-20.7	-73.8
326.340 C	40	290	44	322	228.0	+0.3	+11.9	-62.9	355.436 C	6	17	6	16	211.2	-0.4	-21.0	-56.3
327.465 G	89	567	68	431	227.6	-0.2	+12.2	-48.4	356.419 C	2	6	1	4	210.9	-0.5	-21.2	-43.6
328.420 C	59	411	37	259	227.6	-0.2	+11.6	-35.8	357.346 C	0	0	0	0	...	...	...	...
329.471 G	109	576	60	317	227.6	-0.3	+11.4	-22.0	358.489 G	0	0	0	0	...	...	...	...
330.419 G	122	623	63	324	227.3	-0.6	+11.2	-9.8	359.443 G	6	22	3	12	208.8	-2.1	-23.6	-5.9
331.385 C	91	420	46	214	227.1	-0.9	+10.9	+2.7	Means ...	...	...	3	12	210.5	...	-21.6	...
332.356 C	78	441	41	234	226.9	-1.1	+10.7	+15.3	No. 1097. Latitude + 10°.5. Group 11099 in Rotation 1019. " 11139 " " 1020. Group 11099.—November 24-December 5. A pair of imperfectly formed regular spots that coalesce between November 26 and 27. A companion follows at a short distance. This group closely precedes 11102.								
333.487 G	69	378	41	223	226.9	-1.1	+10.6	+30.2	327.465 G	34	159	58	266	204.2	0.0	+10.7	-71.8
334.281 K	56	334	38	224	227.0	-1.1	+10.8	+40.8	328.420 C	53	258	49	240	205.9	+1.6	+10.8	-57.5
335.377 C	34	191	30	168	226.7	-1.4	+11.0	+54.9	329.471 G	91	345	63	236	207.1	+2.7	+10.7	-42.5
336.368 C	17	138	23	186	226.5	-1.7	+10.8	+67.8	330.419 G	100	409	57	235	208.2	+3.7	+10.7	-28.9
337.535 G	9	20	32	72	225.3	...	+10.8	+82.0	331.385 C	64	382	33	199	209.1	+4.5	+10.4	-15.3
Group 11136.—December 19-30. A regular spot, probably a of Group 11097, with tiny companions on December 20 and 21.									332.356 C	70	373	36	190	209.5	+4.8	+10.3	-2.1
352.475 G	22	99	37	166	234.9	+2.0	+15.1	-71.6	333.487 G	84	367	44	190	210.1	+5.3	+10.4	+13.4
353.437 G	30	176	31	184	234.0	+1.0	+15.0	-59.8	334.281 K	72	370	41	206	210.4	+5.5	+10.4	+24.2
354.115 K	44	195	36	160	234.8	+1.8	+15.6	-50.1	335.377 C	49	250	32	163	210.5	+5.5	+10.0	+38.7
355.436 C	46	224	29	141	234.3	+1.2	+15.0	-33.2	336.368 C	29	146	24	121	210.5	+5.4	+9.9	+51.8
356.419 C	51	266	29	149	234.2	+1.1	+15.1	-20.3	337.535 G	17	78	22	102	210.6	+5.4	+9.5	+67.3
357.346 C	46	274	34	145	233.9	+0.8	+15.0	-8.4	338.110 K	4	26	8	51	210.9	+5.6	+9.7	+75.1
358.489 G	67	331	36	175	233.9	+0.7	+15.2	+6.7	Means ...	...	...	39	183	208.9	...	+10.3	...
359.443 G	60	285	34	160	233.9	+0.7	+15.0	+19.2	No. 1096. Latitude -21°.4. Group 11098 in Rotation 1019. " 11138 " " 1020. Group 11098.—November 23-December 5. A regular spot from which apparently a portion breaks and drifts away on the following side between November 25 and 26. There are usually a few small distant followers.								
360.435 G	43	223	27	139	234.1	+0.8	+15.3	+32.5	326.340 C	26	151	55	322	216.1	0.0	-20.7	-74.8
361.360 C	34	198	25	147	233.8	+0.5	+15.0	+44.4	327.465 G	59	268	71	303	215.2	-0.7	-20.4	-60.8
362.454 G	17	132	18	136	233.7	+0.3	+15.0	+58.7	328.420 C	76	409	63	335	215.1	-0.7	-20.8	-48.3
363.116 K	8	84	11	118	234.1	+0.7	+15.0	+67.8	329.471 G	98	421	64	274	215.7	+0.1	-20.9	-33.9
Group 11136.—December 19-30. A regular spot, probably a of Group 11097, with tiny companions on December 20 and 21.									330.419 G	94	485	55	282	216.3	+0.8	-20.9	-20.8
326.340 C	26	151	55	322	216.1	0.0	-20.7	-74.8	331.385 C	114	506	63	278	215.6	+0.3	-21.2	-8.8
327.465 G	59	268	71	303	215.2	-0.7	-20.4	-60.8	332.356 C	112	606	60	327	215.7	+0.5	-21.0	+4.1
328.420 C	76	409	63	335	215.1	-0.7	-20.8	-48.3	333.487 G	107	531	62	303	215.6	+0.6	-21.7	+18.9
329.471 G	98	421	64	274	215.7	+0.1	-20.9	-33.9	334.281 K	74	504	45	312	215.9	+1.0	-21.6	+29.7
330.419 G	94	485	55	282	216.3	+0.8	-20.9	-20.8	335.377 C	42	356	32	267	215.7	+1.0	-21.5	+43.9
331.385 C	114	506	63	278	215.6	+0.3	-21.2	-8.8	336.368 C	48	240	47	234	215.0	+0.5	-22.2	+56.3
332.356 C	112	606	60	327	215.7	+0.5	-21.0	+4.1	337.535 G	22	111	38	191	214.8	+0.4	-22.1	+71.5
333.487 G	107	531	62	303	215.6	+0.6	-21.7	+18.9	338.110 K	16	52	44	142	214.2	-0.1	-22.0	+78.4
334.281 K	74	504	45	312	215.9	+1.0	-21.6	+29.7	Means ...	...	...	54	275	215.4	...	-21.3	...
335.377 C	42	356	32	267	215.7	+1.0	-21.5	+43.9	353.437 G	17	87	75	382	210.6	...	+10.0	-83.2
336.368 C	48	240	47	234	215.0	+0.5	-22.2	+56.3	354.115 K	58	394	121	820	209.4	+2.4	+10.2	-75.5
337.535 G	22	111	38	191	214.8	+0.4	-22.1	+71.5	355.436 C	127	801	123	773	209.8	+2.7	+10.5	-57.7
338.110 K	16	52	44	142	214.2	-0.1	-22.0	+78.4	356.419 C	177	1578	126	1124	210.6	+3.4	+11.3	-43.9
Group 11136.—December 19-30. A regular spot, probably a of Group 11097, with tiny companions on December 20 and 21.									357.346 C	232	1358	139	817	210.9	+3.6	+10.7	-31.4
326.340 C	26	151	55	322	216.1	0.0	-20.7	-74.8	358.489 G	180	1826	97	986	210.4	+3.0	+11.6	-16.8
327.465 G	59	268	71	303	215.2	-0.7	-20.4	-60.8	359.443 G	168	1386	86	714	210.8	+3.3	+11.2	-3.9
328.420 C	76	409	63	335	215.1	-0.7	-20.8	-48.3	360.435 G	206	1015	107	528	211.4	+3.8	+10.7	+9.8
329.471 G	98	421	64	274	215.7	+0.1	-20.9	-33.9	361.360 C	70	376	39	209	212.0	+4.3	+10.3	+22.6
330.419 G	94	485	55	282	216.3	+0.8	-20.9	-20.8	362.454 G	43	203	28	134	213.4	+5.6	+9.8	+38.4
331.385 C	114	506	63	278	215.6	+0.3	-21.2	-8.8	363.116 K	32	94	16	72	213.5	+5.6	+10.3	+47.2
332.356 C	112	606	60	327	215.7	+0.5	-21.0	+4.1	364.318 C	4	8	4	9	211.7	+3.7	+10.4	+61.2
333.487 G	107	531	62	303	215.6	+0.6	-21.7	+18.9	Means ...	...	...	81	562	211.3	...	+10.6	...
334.281 K	74	504	45	312	215.9	+1.0	-21.6	+29.7	353.437 G	17	87	75	382	210.6	...	+10.0	-83.2
335.377 C	42	356	32	267	215.7	+1.0	-21.5	+43.9	354.115 K	58	394	121	820	209.4	+2.4	+10.2	-75.5
336.368 C	48	240	47	234	215.0	+0.5	-22.2	+56.3	355.436 C	127	801	123	773	209.8	+2.7	+10.5	-57.7
337.535 G	22	111	38	191	214.8	+0.4	-22.1	+71.5	356.419 C	177	1578	126	1124	210.6	+3.4	+11.3	-43.9
338.110 K	16	52	44	142	214.2	-0.1	-22.0	+78.4	357.346 C	232	1358	139	817	210.9	+3.6	+10.7	-31.4
Group 11136.—December 19-30. A regular spot, probably a of Group 11097, with tiny companions on December 20 and 21.									358.489 G	180	1826	97	986	210.4	+3.0	+11.6	-16.8
326.340 C	26	151	55	322	216.1	0.0	-20.7	-74.8	359.443 G	168	1386	86	714	210.8	+3.3	+11.2	-3.9
327.465 G	59	268	71	303	215.2	-0.7	-20.4	-60.8	360.435 G	206	1015	107	528	211.4	+3.8	+10.7	+9.8
328.420 C	76	409	63	335	215.1	-0.7	-20.8	-48.3	361.360 C	70	376	39	209	212.0	+4.3	+10.3	+22.6
329.471 G	98	421	64	274	215.7	+0.1	-20.9	-33.9	362.454 G	43	203	28	134	213.4	+5.6	+9.8	+38.4
330.419 G	94	485	55	282	216.3	+0.8	-20.9	-20.8	363.116 K	32	94	16	72	213.5	+5.6	+10.3	+47.2
331.385 C	114	506	63	278	215.6	+0.3	-21.2	-8.8	364.318 C	4	8	4	9	211.7	+3.7	+10.4	+61.2
332.356 C	112	606	60	327	215.7	+0.5	-21.0	+4.1	Means ...	...	...	81	562	211.3	...	+10.6	...
333.487 G	107	531	62	303	215.6	+0.6	-21.7	+18.9	353.437 G	17	87	75	382	210.6	...	+10.0	-83.2
334.281 K	74	504	45	312	215.9	+1.0	-21.6	+29.7	354.115 K	58	394	121	820	209.4	+2.4	+10.2	-75.5
335.377 C	42	356	32	267	215.7	+1.0	-21.5	+43.9	355.436 C	127	801	123	773	209.8	+2.7	+10.5	-57.7
336.368 C	48	240	47	234	215.0	+0.5	-22.2	+56.3	356.419 C	177	1578	126	1124	210.6	+3.4	+11.3	-43.9
337.535 G	22	111	38	191	214.8	+0.4	-22.1	+71.5	357.346 C	232	1358	139	817	210.9	+3.6	+10.7	-31.4
338.110 K	16	52	44	142	214.2	-0.1	-22.0	+78.4	358.489 G	180	1826	97	986	210.4	+3.0	+11.6	-16.8
Group 11136.—December 19-30. A regular spot, probably a of Group 11097, with tiny companions on December 20 and 21.									359.443 G	168	1386	86	714	210.8	+3.3	+11.2	-3.9
326.340 C	26	151	55	322	216.1	0.0	-20.7	-74.8	360.435 G	206	1015	107	528	211.4	+3.8	+10.7	+9.8
327.465 G	59	268	71	303	215.2	-0.7	-20.4	-60.8	361.360 C	70	376	39	209	212.0	+4.3	+10.3	+22.6
328.420 C	76	409	63	335	215.1	-0.7	-20.8	-48.3	362.454 G	43	203	28	134	213.4	+5.6	+9.8	+38.4
329.471 G	98	421	64	274	215.7	+0.1	-20.9	-33.9	363.116 K	32	94	16	72	213.5	+5.6	+10.3	+47.2
330.419 G	94	485	55	282	216.3	+0.8	-20.9	-20.8	364.318 C	4	8	4	9	211.7	+3.7	+10.4	+61.2
331.385 C	114	506	63	278	215.6	+0.3	-21.2										

LEDGER I.—RECURRENT GROUPS of SUN SPOTS for the YEAR 1929—*continued*.

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.		Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.	
	Umbræ	Whole Spots.	Umbræ	Whole Spots.						Umbræ	Whole Spots.	Umbræ	Whole Spots.				
No. 1098. Latitude $+17^{\circ}.6$. Group 11105 in Rotation 1019. " 11146 " " 1020. Group 11105.—November 25–December 7. An irregular stream of composite spots whose axis is at first highly inclined to the sun's equator. See note to Group 11104.									No. 1098—continued. Group 11146.—December 23–29. A small but persistent spot, followed by a large tract of faculæ behind Groups 11142 and 43.								
d									d								
328.420 C	4	19	(19	91	179.1	...	$+19^{\circ}.4$)	$-84^{\circ}.3$	356.419 C	4	11	6	18	184.4	$+5^{\circ}.4$	$+17^{\circ}.5$	$-70^{\circ}.1$
329.471 G	53	153	77	223	180.3	0.0	$+19^{\circ}.1$	$-69^{\circ}.3$	357.346 C	8	13	8	13	183.6	$+4^{\circ}.6$	$+17^{\circ}.5$	$-58^{\circ}.7$
330.419 G	74	314	67	288	181.4	$+1^{\circ}.1$	$+18^{\circ}.2$	$-55^{\circ}.7$	358.489 G	4	9	3	7	183.5	$+4^{\circ}.6$	$+17^{\circ}.8$	$-43^{\circ}.7$
331.385 C	80	518	57	372	181.3	$+1^{\circ}.1$	$+17^{\circ}.6$	$-43^{\circ}.1$	359.443 G	6	11	4	7	183.8	$+4^{\circ}.9$	$+17^{\circ}.5$	$-30^{\circ}.9$
332.356 C	144	785	88	477	180.9	$+0^{\circ}.7$	$+17^{\circ}.4$	$-30^{\circ}.7$	360.435 G	4	9	2	5	183.7	$+4^{\circ}.9$	$+17^{\circ}.4$	$-17^{\circ}.9$
333.487 G	256	1504	139	818	181.7	$+1^{\circ}.6$	$+17^{\circ}.4$	$-15^{\circ}.0$	361.360 C	4	8	2	4	183.9	$+5^{\circ}.1$	$+16^{\circ}.9$	$-5^{\circ}.5$
334.281 K	209	1588	110	838	181.5	$+1^{\circ}.4$	$+17^{\circ}.8$	$-4^{\circ}.7$	362.454 G	2	6	1	3	184.0	$+5^{\circ}.3$	$+16^{\circ}.6$	$+9^{\circ}.0$
335.377 C	262	1810	138	961	182.3	$+2^{\circ}.3$	$+17^{\circ}.6$	$+10^{\circ}.5$									
336.368 C	233	1298	133	741	182.5	$+2^{\circ}.5$	$+17^{\circ}.5$	$+23^{\circ}.8$									
337.535 G	148	1020	99	693	182.7	$+2^{\circ}.8$	$+17^{\circ}.7$	$+39^{\circ}.4$									
338.110 K	133	634	102	486	182.0	$+2^{\circ}.1$	$+17^{\circ}.8$	$+46^{\circ}.2$									
339.115 K	80	393	84	414	182.3	$+2^{\circ}.5$	$+17^{\circ}.6$	$+59^{\circ}.8$									
340.117 K	28	132	45	213	180.1	$+0^{\circ}.3$	$+18^{\circ}.2$	$+70^{\circ}.8$									
Means ...	...	...	95	544	181.6	...	$+17^{\circ}.8$	...	Means ...	...	...	4	8	183.8	...	$+17^{\circ}.3$	...

ROYAL OBSERVATORY, GREENWICH.

Ledgers of Groups of Sun Spots
for the Year
1929

Ledger II.—Non-Recurrent Groups

LEDGER II.—NON-RECURRENT GROUPS OF SUN SPOTS for the YEAR 1929.

The Greenwich Mean Time 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 Kodaikānal 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 disc.

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 SUN SPOTS for the YEAR 1929.

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.		Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.	
	Umbræ	Whole Spots.	Umbræ	Whole Spots.						Umbræ	Whole Spots.	Umbræ	Whole Spots.				
Group 10834.									Group 10843.								
January 4-10. On January 4, a small stream of faint spots not seen on January 5 and 6; on January 7 a more definite stream appears.									January 12-18. A cluster or stream with the largest and most stable spot in the rear.								
d									d								
3'322 C	8	46	4	24	227°5	0°0	+ 9°6	- 7°8	11'323 C	25	139	13	72	115°6	0°0	- 8°6	-14°3
4'433 C	0	0	0	0	...	...	...	...	12'319 C	53	219	26	110	116°9	+1°2	- 9°2	+ 0°1
5'355 C	0	0	0	0	...	...	...	...	13'312 C	51	274	26	140	115°9	+0°1	- 9°8	+12°1
6'329 C	44	160	27	98	227°3	-0°6	+ 9°7	+31°6	14'364 C	97	528	54	296	115°2	-0°7	-10°5	+25°3
7'361 C	21	135	16	105	230°5	+2°5	+ 8°8	+48°4	15'488 G	89	411	58	269	115°3	-0°8	-10°1	+40°2
8'342 C	25	154	28	171	231°3	+3°2	+ 8°0	+62°1	16'314 C	41	216	32	170	114°7	-1°5	-10°0	+50°5
9'300 C	17	76	39	183	233°0	+4°7	+ 7°8	+76°4	17'302 C	17	59	19	66	115°0	-1°3	-10°5	+63°8
Means ...	...	...	16	83	229°9	...	+ 8°8	...	Means ...	...	...	33	160	115°5	...	- 9°8	...
Group 10836.									Group 10849.								
January 5-13. A small stream in constant change.									January 16-28. A large and rather straggling stream undergoing frequent change. The leader, <i>a</i> , beginning as a nearly regular spot increases and becomes composite; between January 22 and 23, it breaks up and the parts separate in the manner of a newly developing stream; the <i>nf</i> portion of <i>a</i> is temporarily a regular spot, <i>b</i> . The area of associated faculæ is considerable.								
4'433 C	0	2	0	3	152°3	0°0	-11°7	-68°4	15'488 G	57	268	101	447	3°5	0°0	-11°8	-71°6
5'355 C	4	13	3	11	156°0	+3°6	-12°1	-52°5	16'314 C	58	354	60	365	3°6	0°0	-11°7	-60°6
6'329 C	21	68	14	45	155°0	+2°6	-11°5	-40°7	17'302 C	110	673	83	497	3°4	-0°3	-11°3	-47°8
7'361 C	38	241	21	135	155°3	+2°8	-11°0	-26°8	18'465 G	253	1237	149	726	4°9	+1°1	-11°2	-31°0
8'342 C	51	173	27	90	154°7	+2°1	-12°0	-14°5	19'457 C	230	1318	120	695	5°2	+1°4	-11°3	-17°6
9'300 C	49	177	25	90	154°6	+1°9	-12°2	- 2°0	20'405 C	195	1104	99	556	4°9	+1°0	-11°7	- 5°5
10'336 C	17	101	9	53	154°6	+1°9	-12°5	+11°7	21'324 C	131	715	67	364	5°8	+1°8	-11°7	+ 7°5
11'323 C	28	152	15	84	154°3	+1°5	-12°5	+24°4	22'340 C	155	794	84	426	5°9	+1°8	-11°7	+21°0
12'319 C	8	36	5	23	156°2	+3°3	-12°9	+39°4	23'329 C	104	595	63	364	6°7	+2°5	-10°8	+34°8
Means ...	...	...	13	59	154°8	...	-12°0	...	24'349 C	63	391	48	287	5°0	+0°7	-11°8	+46°6
Group 10840.									25'499 G	88	300	94	319	6°0	+1°6	-11°3	+62°7
January 9-19. When first seen, a spot with a double umbra; between January 10 and 11 the spot apparently divides into two parts that slightly separate. The leading part becomes a regular spot that breaks up into three portions between January 16-17 and so disappears.									26'378 C	31	171	52	278	4°6	+0°2	-11°0	+72°9
8'342 C	13	138	22	235	98°6	0°0	+17°3	-70°6	27'327 C	2	11	(4	25	357°4	...	-14°6)	+78°2
9'300 C	25	143	26	147	99°0	+0°5	+17°5	-57°6	Means ...	...	...	85	444	5°0	...	-11°4	...
10'336 C	36	192	27	146	99°0	+0°5	+17°8	-43°9	Spot <i>a</i> .								
11'323 C	23	139	14	88	98°9	+0°5	+17°9	-31°0	15'488 G	34	185	49	265	5°1	0°0	-11°2	-70°0
12'319 C	55	312	31	178	99°7	+1°4	+18°2	-17°1	16'314 C	32	232	30	218	5°9	+0°7	-10°7	-58°3
13'312 C	27	160	15	88	98°3	0°0	+18°4	- 5°5	17'302 C	46	348	32	244	7°0	+1°7	-10°1	-44°2
14'364 C	34	196	19	108	98°0	-0°2	+18°7	+ 8°1	18'465 G	125	641	71	365	6°8	+1°4	-11°2	-29°1
15'488 G	37	198	22	117	98°4	+0°3	+18°5	+23°3	19'457 C	127	831	66	432	7°5	+2°1	-11°3	-15°3
16'314 C	21	80	14	53	97°7	-0°3	+19°0	+33°5	20'405 C	127	690	64	345	7°2	+1°7	-11°6	- 3°2
17'302 C	17	47	14	39	97°9	-0°1	+19°2	+46°7	21'324 C	76	422	39	215	7°5	+1°9	-11°2	+ 9°2
18'465 G	4	8	4	10	97°5	-0°4	+19°6	+61°6	Spot <i>b</i> .								
Means ...	...	...	19	110	98°5	...	+18°4	...	22'340 C	63	295	34	159	7°2	0°0	-10°8	+22°3
									23'329 C	49	270	30	165	7°3	0°0	-10°5	+35°4
									24'349 C	27	203	21	154	7°5	+0°1	-10°7	+49°1
									25'499 G	19	123	22	140	7°9	+0°4	-10°9	+64°6
									26'378 C	19	91	35	168	6°8	-0°8	-10°5	+75°1

LEDGER II.—NON-RECURRENT GROUPS OF SUN SPOTS for the YEAR 1929.—*continued.*

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.		Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.	
	Umbræ	Whole Spots.	Umbræ	Whole Spots.						Umbræ	Whole Spots.	Umbræ	Whole Spots.				
Group 10850.									Group 10853.								
January 19-29. A moderate-sized stream showing appreciable activity in its rearward portion. The leader, <i>a</i> , though small, persists until January 25th.									January 23-February 1. A group (developing closely <i>nf</i> Group 10851) whose characteristic formation is a regular spot, <i>a</i> , followed by numbers of tiny spots.								
<i>a</i>									<i>a</i>								
18'465 G	17	58	28	95	325°0	0°0	+ 4°8	-70°9	22'340 C	29	106	26	95	290°8	0°0	+ 9°9	-54°1
19'457 C	29	127	27	121	325°0	-0°2	+ 4°9	-57°8	23'329 C	72	348	47	230	294°4	+3°5	+ 9°7	-37°5
20'405 C	72	395	52	292	324°4	-0°9	+ 5°0	-46°0	24'349 C	89	411	49	230	296°1	+5°0	+ 9°4	-22°3
21'324 C	79	416	49	254	324°7	-0°8	+ 5°1	-33°6	25'499 G	82	400	42	208	298°2	+7°0	+ 8°5	- 5°1
22'340 C	59	464	32	250	325°0	-0°6	+ 5°5	-19°9	26'378 C	66	452	35	235	297°8	+6°5	+ 8°5	+ 6°1
23'329 C	83	346	42	177	324°7	-1°1	+ 5°0	- 7°2	27'327 C	74	438	41	238	298°1	+6°6	+ 7°5	+18°9
24'349 C	41	228	21	116	325°5	-0°5	+ 5°6	+ 7°1	28'396 C	44	268	28	170	300°3	+8°7	+ 7°9	+35°2
25'499 G	11	49	6	27	326°0	-0°2	+ 5°7	+22°7	29'342 C	17	169	13	134	301°6	+9°9	+ 7°8	+48°9
26'378 C	9	21	6	13	326°7	+0°4	+ 5°9	+35°0	30'350 C	15	118	17	132	301°5	+9°6	+ 8°2	+62°1
27'327 C	0	0	0	0	...	...	...	...	31'319 C	13	59	28	126	301°9	+9°9	+ 8°0	+75°2
28'396 C	15	63	15	62	323°6	-3°1	+ 6°1	+58°5									
Means ...	...	...	25	128	325°1	...	+ 5°4	...	Means ...	...	...	33	180	298°1	...	+ 8°5	...
Spot <i>a</i> .									Spot <i>a</i> .								
18'465 G	4	9	6	13	327°3	0°0	+ 5°7	-68°6	23'329 C	42	226	27	147	295°5	0°0	+10°1	-36°4
19'457 C	8	22	7	19	328°5	+1°0	+ 6°2	-54°3	24'349 C	51	264	28	145	297°9	+2°3	+ 9°3	-20°5
20'405 C	21	55	14	37	329°2	+1°6	+ 6°3	-41°2	25'499 G	60	318	31	165	299°2	+3°4	+ 8°4	- 4°1
21'324 C	15	76	10	44	329°5	+1°7	+ 6°5	-28°8	26'378 C	36	260	19	135	300°3	+4°4	+ 7°9	+ 8°6
22'340 C	8	34	4	18	329°6	+1°7	+ 6°4	-15°3	27'327 C	61	295	34	162	300°5	+4°5	+ 7°7	+21°3
23'329 C	8	13	4	7	329°6	+1°5	+ 6°2	- 2°3	28'396 C	38	234	24	150	301°1	+4°9	+ 7°8	+36°0
24'349 C	6	13	3	7	330°0	+1°7	+ 6°1	+11°6	29'342 C	17	169	13	134	301°6	+5°3	+ 7°8	+48°9
									30'350 C	15	118	17	132	301°5	+5°1	+ 8°2	+62°1
									31'319 C	13	59	28	126	301°9	+5°3	+ 8°0	+75°2
Group 10851.									Group 10854.								
January 20-28. A long unstable stream diminishing rapidly after January 25, when Group 10853 is developing close to it. The leader, <i>a</i> , is a small regular spot.									January 30-February 5. A moderate-sized stream of usual formation until February 2, when its decay sets in rather rapidly. <i>a</i> is the leader spot.								
19'457 C	8	25	(20	63	304°6	...	+ 3°0)	-78°2	29'342 C	14	99	7	50	240°5	0°0	- 5°2	-12°2
20'405 C	38	178	59	276	299°8	0°0	+ 5°2	-70°6	30'350 C	69	468	35	235	240°7	0°0	- 5°1	+ 1°3
21'324 C	69	452	67	456	299°3	-0°7	+ 5°0	-59°0	31'319 C	99	450	51	233	241°2	+0°4	- 5°9	+14°5
22'340 C	72	589	52	433	300°0	-0°1	+ 4°8	-44°9	32'342 C	96	388	54	221	241°4	+0°4	- 5°7	+28°2
23'329 C	100	519	61	311	299°7	-0°6	+ 5°9	-32°2	33'383 C	39	196	26	135	242°8	+1°6	- 6°4	+43°3
24'349 C	50	352	27	189	300°8	+0°3	+ 5°2	-17°6	34'419 G	19	57	18	56	245°1	+3°8	- 6°9	+59°3
25'499 G	27	118	14	60	301°1	+0°4	+ 4°9	- 2°2	35'327 C	4	23	6	33	244°1	+2°6	- 6°5	+70°2
26'378 C	17	93	9	48	301°6	+0°8	+ 5°3	+ 9°9									
27'327 C	4	21	2	12	302°9	+1°9	+ 3°6	+23°7									
Means ...	...	...	36	223	300°6	...	+ 5°0	...	Means ...	...	...	28	138	242°3	...	- 6°0	...
Spot <i>a</i> .									Spot <i>a</i> .								
19'457 C	8	25	20	63	304°6	0°0	+ 3°0	-78°2	29'342 C	6	53	3	27	241°8	0°0	- 4°6	-10°9
20'405 C	13	51	16	62	305°0	+0°2	+ 3°0	-65°4	30'350 C	34	219	17	110	243°3	+1°3	- 5°2	+ 3°9
21'324 C	23	89	19	75	305°3	+0°4	+ 3°0	-53°0	31'319 C	40	157	21	83	244°7	+2°6	- 6°4	+18°0
22'340 C	17	97	11	64	305°4	+0°3	+ 2°9	-39°5	32'342 C	17	91	10	55	246°4	+4°1	- 7°1	+33°2
23'329 C	19	84	11	47	305°7	+0°4	+ 3°0	-26°2	33'383 C	6	34	4	25	247°0	+4°5	- 7°5	+47°5
24'349 C	8	61	4	32	306°1	+0°7	+ 2°7	-12°3	34'419 G	4	9	4	10	248°0	+5°4	- 7°3	+62°2
25'499 G	4	13	2	7	306°2	+0°6	+ 2°3	+ 2°9									

Group 10856.

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.	
	Umbræ	Whole Spots.	Umbræ	Whole Spots.				
Group 10856.								
February 2-12. A stream commencing on February 2 with a single small spot as leader that grows by accretion and lengthens out in an east to west direction.								
d								
32°342 C	13	28	13	27	155°1	0°0	+ 6°1	-58°1
33°383 C	17	59	12	42	155°1	-0°2	+ 6°3	-44°4
34°419 G	67	140	41	85	154°8	-0°6	+ 6°3	-31°0
35°327 C	62	229	33	125	153°3	-2°3	+ 5°3	-20°6
36°341 C	106	441	55	228	153°6	-2°1	+ 5°8	- 6°9
37°346 C	79	318	40	164	156°0	+0°1	+ 6°5	+ 8°7
38°517 G	69	359	39	204	157°3	+1°2	+ 6°9	+25°4
39°333 C	55	269	35	174	158°0	+1°8	+ 7°3	+36°9
40°408 C	34	157	29	132	158°5	+2°1	+ 7°6	+51°5
41°363 C	8	76	10	92	158°7	+2°2	+ 7°4	+64°3
42°455 G	9	24	27	73	159°4	+2°7	+ 7°2	+79°4
Means ...	...	...	30	122	156°4	...	+ 6°6	...

February 4-10. A feeble stream of few spots.

34'419 G	4	9	6	12	118'3	0'0	+ 7'9	-67'5
35'327 C	32	59	28	51	120'7	+2'3	+ 6'8	-53'2
36'341 C	15	42	9	28	121'7	+3'1	+ 6'4	-38'8
37'346 C	11	23	6	13	123'8	+5'0	+ 6'4	-23'5
38'517 G	13	39	7	20	121'8	+2'8	+ 5'9	-10'1
39'333 C	19	114	10	58	120'2	+1'1	+ 5'4	- 0'9
40'408 C	13	59	7	31	121'5	+1'2	+ 5'3	+14'5
Means ...	...	...	10	30	121'1	...	+ 6'3	...

February 4-14. A composite spot with a train of small attendants from February 7-11 and a distant companion *sp* on February 12-13.

34'419 G	15	48	28	90	110'4	0'0	- 9'7	-75'4
35'327 C	19	134	20	143	111'0	+0'5	- 9'7	-62'9
36'341 C	25	153	19	116	111'5	+0'9	- 9'8	-49'0
37'346 C	34	233	21	142	112'4	+1'6	- 9'7	-34'9
38'517 G	60	214	32	113	112'7	+1'8	- 9'6	-19'2
39'333 C	63	277	32	141	112'2	+1'2	- 9'1	- 8'9
40'408 C	42	216	21	108	111'8	+0'7	- 8'8	+ 4'8
41'363 C	38	108	20	56	111'0	-0'2	- 9'1	+16'6
42'455 G	26	65	16	40	116'3	+4'9	- 9'4	+36'3
43'499 G	17	80	14	64	117'8	+6'3	- 9'6	+51'5
44'460 G	9	13	10	14	116'1	+4'5	- 8'7	+62'5
Means ...	...	...	21	93	113'0	...	- 9'4	...

February 6-17. A regular spot, with a "bridge" across its umbra, that has divided into three parts by February 14. The largest and *nf* portion survives until February 17.

d								
36.341 C	11	59	31	166	80.2	...	- 4.9	-80.3
37.346 C	21	165	26	203	80.8	0.0	- 5.0	-66.5
38.517 G	39	246	31	194	80.7	-0.3	- 5.1	-51.2
39.333 C	51	288	34	190	80.6	-0.5	- 5.0	-40.5
40.408 C	59	324	33	181	80.7	-0.6	- 5.1	-26.3
41.363 C	51	297	26	151	80.9	-0.6	- 4.8	-13.5
42.455 G	54	273	27	136	81.4	-0.3	- 4.5	+ 1.4
43.499 G	35	174	18	90	81.5	-0.4	- 4.1	+15.2
44.460 G	39	108	22	62	81.5	-0.5	- 4.4	+27.9
45.498 G	13	30	9	20	81.6	-0.6	- 4.8	+41.6
46.351 C	4	15	3	13	82.3	-0.1	- 3.7	+53.6
47.398 C	4	9	5	12	83.3	+0.8	- 4.0	+68.4
Means ...	...	...	21	114	81.4	...	- 4.6	...

February 8-18. A stream (f Group 10862) in which the development of the leader spot, *a*, is delayed for several days.

38.517 G	9	13	10	14	69.4	0.0	- 4.1	-62.5
39.333 C	34	93	27	74	69.5	0.0	- 4.3	-51.6
40.408 C	42	187	26	118	69.3	-0.4	- 4.6	-37.7
41.363 C	47	178	26	98	69.6	-0.3	- 5.4	-24.8
42.455 G	46	195	23	99	70.5	+0.4	- 4.9	- 9.5
43.499 G	83	312	41	158	72.5	+2.3	- 5.5	+ 6.2
44.460 G	145	703	76	371	72.4	+2.0	- 5.6	+18.8
45.498 G	102	606	62	366	74.0	+3.4	- 5.6	+34.0
46.351 C	57	366	41	262	74.4	+3.7	- 5.7	+45.7
47.398 C	40	217	42	229	76.8	+5.9	- 5.2	+61.9
48.511 G	13	113	30	260	78.3	+7.2	- 5.5	+78.0
Means ...	...	...	37	186	72.4	...	- 5.1	...

Spot a.

43.499 G	48	182	24	93	74.6	0.0	- 5.3	+ 8.3
44.460 G	50	304	27	164	75.6	+0.8	- 5.3	+22.0
45.498 G	61	378	38	234	76.2	+1.3	- 5.2	+36.2
46.351 C	38	260	28	192	76.7	+1.6	- 5.2	+48.0
47.398 C	36	200	39	214	77.4	+2.1	- 5.0	+62.5
48.511 G	13	113	30	260	78.3	+2.8	- 5.5	+78.0

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1929.

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.	Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.		
	Umbræ	Whole Spots.	Umbræ	Whole Spots.					Umbræ	Whole Spots.	Umbræ	Whole Spots.					
Group 10868.								Group 10873—continued.									
February 8-18. A composite spot with small followers.								Spot a.									
d								d									
38°517 G	0	17	0	81	46°5	...	-13°7	-85°4	46°351 C	9	34	14	51	319°2	0°0	+ 5°7	-69°5
39°333 C	8	42	13	70	47°6	0°0	-13°2	-73°5	47°398 C	17	89	15	78	320°7	+1°3	+ 5°3	-54°2
40°408 C	36	140	36	139	46°7	-1°0	-13°3	-60°3	48°511 G	20	94	13	62	321°9	+2°3	+ 5°4	-38°4
41°363 C	30	269	22	196	46°9	-0°8	-12°7	-47°5	49°388 C	17	98	10	56	322°6	+2°9	+ 5°4	-26°1
42°455 G	48	289	29	173	46°8	-1°0	-12°5	-33°2	50°400 G	26	118	14	61	323°0	+3°1	+ 5°2	-12°4
43°499 G	69	226	37	120	46°4	-1°4	-12°8	-19°9	51°411 G	31	131	16	67	323°2	+3°2	+ 4°9	+ 1°1
44°460 G	28	141	14	72	46°6	-1°3	-13°0	- 7°0	52°427 G	26	139	14	74	323°4	+3°2	+ 5°2	+14°7
45°498 G	17	48	9	24	47°0	-0°9	-13°1	+ 7°0	53°367 C	15	90	9	51	323°0	+2°6	+ 5°6	+26°7
46°351 C	9	28	5	15	46°7	-1°3	-14°1	+18°0	54°451 C	17	68	12	47	323°6	+3°0	+ 6°1	+41°5
47°398 C	9	17	5	10	47°3	-0°7	-14°1	+32°4	55°340 C	9	17	8	15	323°9	+3°2	+ 6°2	+53°5
48°511 G	7	9	5	7	47°4	-0°7	-13°9	+47°1	56°310 C	9	13	12	18	324°6	+3°7	+ 6°3	+67°0
Means ...	...	...	18	83	46°9	...	-13°3	...									
Group 10869.								Group 10875.									
February 12-21. Intermittent. A diminutive group on February 12; a pair of dots on February 19 and a single spot on February 20 and 21.								February 18.-March 1. A region of slight but persistent activity represented alternately by a small stream, cluster, and stream.									
42°455 G	4	15	3	12	27°9	0°0	- 5°9	-52°1	48°511 G	9	35	11	43	293°1	0°0	-16°8	-67°2
43°499 G	0	0	0	0	...	...	...	...	49°388 C	17	47	15	40	293°7	+0°6	-16°9	-55°0
44°460 G	0	0	0	0	...	...	...	...	50°400 G	39	98	27	67	293°4	+0°4	-17°6	-42°0
45°498 G	0	0	0	0	...	...	...	...	51°411 G	22	87	13	50	292°5	-0°5	-17°5	-29°6
46°351 C	0	0	0	0	...	...	...	...	52°427 G	17	67	9	36	290°3	-2°6	-17°4	-18°4
47°398 C	0	0	0	0	...	...	...	...	53°367 C	9	45	5	23	290°0	-2°9	-17°3	- 6°3
48°511 G	0	0	0	0	...	...	...	...	54°451 C	13	51	7	27	291°5	-1°4	-17°6	+ 9°4
49°388 C	4	9	3	6	26°3	-2°7	- 5°8	+37°6	55°340 C	19	94	10	51	291°3	-1°5	-17°9	+20°9
50°400 G	4	9	3	7	28°4	-0°8	- 6°0	+53°0	56°310 C	43	103	26	63	292°7	-0°1	-16°7	+35°1
51°411 G	2	4	2	5	28°1	-1°3	- 6°2	+66°0	57°315 C	42	171	31	128	292°1	-0°6	-17°5	+47°8
									58°365 C	49	103	40	107	292°2	-0°5	-17°5	+61°7
									59°401 G	9	35	19	73	294°6	+1°9	-17°3	+77°7
Means ...	...	...	1	3	27°7	...	- 6°0	...	Means ...	...	...	18	59	292°3	...	-17°3	...
Group 10873.								Group 10878.									
February 16-26. A regular spot, a, usually with a train of companions.								February 21-March 2. A slowly diminishing regular spot with tiny companions on March 1 and 2.									
46°351 C	9	34	14	51	319°2	0°0	+ 5°7	-69°5	51°411 G	11	52	21	99	246°0	0°0	-15°0	-76°1
47°398 C	17	93	15	82	320°5	+0°9	+ 5°5	-54°4	52°427 G	20	95	21	100	246°3	+0°3	-15°1	-62°4
48°511 G	31	190	21	130	319°7	+0°1	+ 5°9	-40°6	53°367 C	17	96	13	74	246°4	+0°4	-15°2	-49°9
49°388 C	30	143	18	83	321°2	+1°5	+ 5°7	-27°5	54°451 C	21	116	13	72	246°4	+0°4	-15°2	-35°7
50°400 G	57	192	30	100	322°0	+2°1	+ 4°9	-13°4	55°340 C	21	94	12	52	246°1	+0°1	-15°2	-24°3
51°411 G	57	192	29	98	322°5	+2°5	+ 4°9	+ 0°4	56°310 C	28	90	14	46	246°2	+0°2	-15°2	-11°4
52°427 G	52	261	28	137	322°5	+2°3	+ 4°8	+13°8	57°315 C	13	43	7	22	246°1	0°0	-15°3	+ 1°8
53°367 C	36	240	21	135	322°1	+1°7	+ 4°5	+25°8	58°365 C	13	21	7	11	246°2	+0°1	-15°4	+15°7
54°451 C	30	136	21	92	322°6	+2°0	+ 5°0	+40°5	59°401 G	9	26	5	15	245°4	-0°7	-15°8	+28°5
55°340 C	9	17	8	15	323°9	+3°2	+ 6°2	+53°5	60°401 G	2	4	1	3	245°8	-0°3	-15°3	+42°1
56°310 C	9	13	12	18	324°6	+3°7	+ 6°3	+67°0	Means ...	...	...	11	49	246°1	...	-15°3	...
Means ...	...	...	19	86	321°9	...	+ 5°4	...									

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1920—continued.

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.		Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.	
	Umbræ	Whole Spots.	Umbræ	Whole Spots.						Umbræ	Whole Spots.	Umbræ	Whole Spots.				
Group 10879.																	
February 22.—March 4. A composite spot breaking apart on February 23 to form a stream which begins almost at once to diminish, though a temporary revival takes place on Mar. 2.																	
d									d								
52.427 G	37	187	67	337	235.8	0.0	+ 6.3	-72.9	54.451 C	4	6	4	6	224.0	0.0	+ 7.2	-58.1
53.367 C	54	317	56	330	236.4	+0.5	+ 6.7	-59.9	55.340 C	4	17	3	13	224.5	+0.4	+ 8.1	-45.9
54.451 C	90	366	67	271	236.5	+0.4	+ 6.5	-45.6	56.310 C	4	19	2	12	225.2	+1.0	+10.2	-32.4
55.340 C	96	509	59	313	237.2	+0.9	+ 6.3	-33.2	57.315 C	4	11	2	6	226.8	+2.4	+ 8.6	-17.5
56.310 C	85	366	46	201	238.1	+1.7	+ 6.1	-19.5	58.365 C	2	4	1	2	228.9	+4.4	+ 7.8	- 1.6
57.315 C	53	290	28	151	238.7	+2.1	+ 5.7	- 5.6	59.401 G	7	31	4	16	230.1	+5.4	+ 6.9	+13.2
58.365 C	32	124	17	64	239.3	+2.6	+ 6.0	+ 8.8	60.401 G	2	9	1	5	229.7	+4.9	+10.1	+26.0
59.401 G	31	87	17	48	238.5	+1.6	+ 6.1	+21.6	61.551 G	0	18	0	12	227.8	+2.9	+ 9.7	+39.3
60.401 G	40	173	25	106	237.3	+0.2	+ 6.1	+33.6	Means ...	...	...	2	9	227.1	...	+ 8.6	...
61.551 G	39	180	30	140	236.5	-0.8	+ 6.6	+48.0									
62.308 C	13	51	12	49	235.8	-1.6	+ 6.8	+57.2									
Means ...	...	...	39	183	237.3	...	+ 6.3	...									
Group 10881.																	
February 23.—March 6. A regular spot, a, with a variable train of tiny companions that die out. a is diminishing rapidly.																	
53.367 C	11	117	(26	284	217.1	...	- 9.4)	-79.2	60.401 G	26	218	76	589	123.1	...	- 8.0	-80.6
54.451 C	36	197	52	256	214.5	0.0	- 8.9	-67.6	61.551 G	88	499	104	590	123.0	0.0	- 7.9	-65.5
55.340 C	40	320	37	280	214.1	-0.5	- 9.0	-56.3	62.308 C	100	644	86	558	123.5	+0.4	- 7.9	-55.1
56.310 C	69	308	47	207	215.8	+1.1	- 9.4	-41.8	63.515 G	174	761	112	489	124.2	+0.9	- 7.5	-38.5
57.315 C	65	358	37	210	216.0	+1.2	- 9.7	-28.3	64.476 G	175	889	97	492	124.4	+1.0	- 7.7	-25.6
58.365 C	52	267	27	137	217.6	+2.6	- 9.4	-12.9	65.623 G	195	835	100	426	125.1	+1.5	- 7.7	- 9.8
59.401 G	64	287	32	144	217.5	+2.4	- 9.4	+ 0.6	66.389 G	201	1036	100	518	125.0	+1.3	- 7.8	+ 0.2
60.401 G	45	222	23	115	218.1	+2.9	- 9.8	+14.4	67.487 G	206	1176	107	611	124.8	+1.0	- 7.9	+14.5
61.551 G	36	153	20	89	218.3	+2.4	- 9.4	+29.8	68.448 G	127	856	71	478	124.9	+0.9	- 7.5	+27.2
62.308 C	13	34	9	23	221.1	+5.6	- 9.5	+42.5	69.407 G	88	556	58	367	125.8	+1.7	- 7.7	+40.8
63.515 G	4	13	4	12	222.1	+6.5	-10.2	+59.4	70.399 G	57	335	48	281	126.1	+1.8	- 7.5	+54.1
64.476 G	4	9	6	13	220.1	+4.4	- 9.2	+70.1	71.348 C	34	219	42	269	126.0	+1.6	- 7.5	+66.6
Means ...	...	...	27	135	217.7	...	- 9.4	...	72.294 C	35	168	75	358	124.1	-0.4	- 7.4	+77.1
Means ...	...	...	...	...	...	...	...	...	Means ...	...	...	83	453	124.7	...	- 7.7	...
Spot a.																	
53.367 C	9	111	22	273	217.1	0.0	- 9.2	-79.2	60.401 G	17	179	42	440	124.7	0.0	- 7.7	-79.0
54.451 C	17	139	20	161	216.9	-0.3	- 9.3	-65.2	61.551 G	70	394	78	437	124.8	-0.1	- 7.5	-63.7
55.340 C	21	238	17	195	217.2	-0.1	- 9.3	-53.2	62.308 C	81	507	67	421	125.4	+0.4	- 7.4	-53.2
56.310 C	43	227	28	148	217.6	+0.1	- 9.6	-40.0	63.515 G	137	641	86	404	125.2	+0.1	- 7.4	-37.5
57.315 C	56	312	31	175	217.9	+0.3	- 9.6	-26.4	64.476 G	153	823	84	453	125.3	0.0	- 7.5	-24.7
58.365 C	39	205	20	105	218.6	+0.9	- 9.8	-11.9	65.623 G	186	804	95	410	125.3	-0.1	- 7.5	- 9.6
59.401 G	48	222	24	111	219.4	+1.6	- 9.6	+ 2.5	66.389 G	188	972	94	486	125.3	-0.3	- 7.6	+ 0.5
60.401 G	37	192	19	100	220.0	+2.0	- 9.6	+16.3	67.487 G	175	1082	91	563	125.3	-0.4	- 7.9	+15.0
61.551 G	26	125	15	74	220.5	+2.4	- 9.3	+32.0	68.448 G	114	779	64	436	125.5	-0.4	- 7.8	+27.8
62.308 C	13	34	9	23	221.1	+2.9	- 9.5	+42.5	69.407 G	88	556	58	367	125.8	-0.2	- 7.7	+40.8
63.515 G	4	13	4	12	222.1	+3.8	-10.2	+59.4	70.399 G	53	326	45	274	126.1	0.0	- 7.5	+54.1
64.476 G	4	9	6	13	220.1	+1.7	- 9.2	+70.1	71.348 C	34	219	42	269	126.0	-0.3	- 7.5	+66.6

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1929.—*continued.*

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.	Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.		
	Umbræ	Whole Spots.	Umbræ	Whole Spots.					Umbræ	Whole Spots.	Umbræ	Whole Spots.					
Group 10885—continued. Spot b.								Group 10893.									
March 3-9. A dot on March 3; on March 5 a pair of spots that separate rapidly in longitude: the leader alone remains on March 8 and 9.								March 8-14. A small group of feeble activity with its axis considerably inclined to the solar equator.									
d								d									
60.401 G	9	39	34	149	120.1	0.0	-9.7	-83.6	66.389 G	0	2	0	7	46.8	0.0	+21.3	-78.0
61.551 G	18	105	26	153	117.7	-2.6	-9.2	-70.8	67.487 G	13	26	19	38	45.0	-1.6	+22.2	-65.3
62.308 C	19	137	19	137	117.8	-2.6	-9.3	-60.8	68.448 G	18	66	18	67	44.5	-1.9	+22.1	-53.2
63.515 G	33	105	23	74	117.6	-2.9	-8.5	-45.1	69.407 G	18	70	14	55	43.7	-2.5	+22.5	-41.3
64.476 G	22	66	13	39	117.8	-2.9	-8.2	-32.2	70.399 G	20	68	13	45	43.0	-3.0	+22.6	-29.0
65.623 G	9	31	5	16	118.1	-2.7	-7.9	-16.8	71.348 C	13	22	8	14	40.4	-5.4	+24.6	-19.0
								72.294 C									
								Means ...									
Group 10887.								Group 10894.									
March 3-9. A dot on March 3; on March 5 a pair of spots that separate rapidly in longitude: the leader alone remains on March 8 and 9.								March 10-17. A stream with marked separation in longitude between the leader, a, and the follower, b.									
61.551 G	2	4	2	3	133.7	0.0	-16.0	-54.8	68.448 G	20	48	24	57	32.2	0.0	-7.8	-65.5
62.308 C	0	0	0	0	...	...	...	...	69.407 G	85	274	71	227	32.4	+0.1	-7.4	-52.6
63.515 G	26	44	15	25	137.1	+3.4	-16.9	-25.6	70.399 G	94	404	59	255	31.9	-0.6	-7.4	-40.1
64.476 G	31	74	16	38	137.1	+3.4	-16.7	-12.9	71.348 C	93	311	52	174	32.8	+0.2	-7.4	-26.6
66.623 G	15	39	8	20	138.1	+4.5	-16.4	+3.2	72.294 C	76	311	40	161	33.3	+0.6	-7.9	-13.7
66.389 G	9	15	5	8	139.7	+6.1	-16.3	+14.9	73.320 C	46	184	23	92	33.3	+0.4	-7.9	-0.1
67.487 G	4	11	2	6	140.0	+6.4	-16.0	+29.7	74.325 C	22	89	12	46	35.2	+2.2	-8.0	+15.0
Means ...								75.495 G									
								Means ...									
Group 10892.								Spot a.									
March 7-17. A small regular spot, a, with a distant follower on March 9-11. Nothing is seen on March 14, but a very small spot marks the place afterwards.								Spot b.									
65.623 G	9	26	28	82	55.0	0.0	+6.6	-79.9	69.407 G	26	151	20	118	34.7	0.0	-7.2	-50.3
66.389 G	11	35	18	56	54.2	-0.9	+6.6	-70.6	70.399 G	37	158	21	88	37.1	+2.3	-6.5	-34.9
67.487 G	15	61	14	58	54.0	-1.3	+6.8	-56.3	71.348 C	30	112	16	59	38.5	+3.5	-7.1	-20.9
68.448 G	15	77	11	55	54.3	-1.1	+6.8	-43.4	72.294 C	28	127	14	65	38.9	+3.8	-8.2	-8.1
69.407 G	15	54	9	33	54.5	-1.1	+6.4	-30.5	73.320 C	22	80	11	40	39.9	+4.6	-8.5	+6.5
70.399 G	13	20	7	11	55.2	-0.5	+6.4	-16.8	74.325 C	13	50	7	26	40.2	+4.8	-8.5	+20.0
71.348 C	9	13	5	7	55.2	-0.7	+6.3	-4.2	75.495 G	7	13	4	8	40.7	+5.1	-8.5	+35.9
72.294 C	0	0	0	0	...	...	...	...									
73.320 C	2	15	1	8	52.2	-4.0	+7.4	+18.8									
74.325 C	0	9	0	5	52.5	-3.8	+6.4	+32.3									
75.495 G	0	9	0	7	52.7	-3.8	+6.9	+47.9									
Means ...																	
Spot a.								Spot b.									
65.623 G	9	26	28	82	55.0	0.0	+6.6	-79.9	69.407 G	22	48	20	44	27.8	0.0	-7.9	-57.2
66.389 G	11	35	18	56	54.2	-0.9	+6.6	-70.6	70.399 G	26	132	18	92	27.6	-0.3	-7.9	-44.4
67.487 G	13	57	12	53	54.5	-0.8	+6.8	-55.8	71.348 C	39	133	23	78	27.2	-0.9	-8.0	-32.2
68.448 G	13	70	9	50	54.9	-0.5	+6.7	-42.8	72.294 C	22	123	12	65	27.6	-0.6	-7.9	-19.4
69.407 G	15	50	9	30	55.1	-0.5	+6.4	-29.9	73.320 C	24	104	12	52	28.1	-0.3	-7.4	-5.3
70.399 G	13	20	7	11	55.2	-0.5	+6.4	-16.8	74.325 C	9	39	5	20	28.5	0.0	-7.2	+8.3
71.348 C	9	13	5	7	55.2	-0.7	+6.3	-4.2									

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1929—*continued.*

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.	Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.		
	Umbrae	Whole Spots.	Umbrae	Whole Spots.					Umbrae	Whole Spots.	Umbrae	Whole Spots.					
Group 10895.																	
March 11-15. A small, very dark spot of Group 10894.																	
69.407 G	4	9	4	9	23.1	0.0	-14.2	-61.9	88.411 G	9	18	17	33	119.9	0.0	-2.9	-74.5
70.399 G	7	13	5	10	23.6	+0.5	-14.0	-48.4	89.451 G	11	31	11	32	119.9	-0.2	-2.8	-60.8
71.348 C	9	15	6	9	23.4	+0.2	-13.9	-36.0	90.633 G	13	67	9	47	120.6	+0.3	-2.8	-44.5
72.294 C	4	9	2	5	23.6	+0.4	-13.9	-23.4	91.446 G	16	33	10	20	121.2	+0.7	-2.8	-33.2
73.320 C	4	17	2	9	23.7	+0.4	-13.7	-9.7	92.413 G	2	9	1	5	121.5	+0.9	-2.8	-20.1
Means ...	...	...	4	8	23.5	...	-13.9	...	Means ...	...	...	10	27	120.6	...	-2.8	...
Group 10898.																	
March 23-April 3. A stream composed of a regular spot, <i>a</i> , as leader and a train of very small spots. <i>a</i> diminishes considerably between March 31 and April 1.																	
81.429 G	35	146	51	214	215.2	0.0	-12.6	-71.3	94.451 G	4	9	2	5	106.5	0.0	-10.6	-8.3
82.423 G	48	207	43	184	216.9	+1.6	-12.5	-56.5	95.394 G	5	18	3	10	106.8	+0.2	-11.5	+4.5
83.542 G	62	278	42	183	218.0	+2.7	-12.6	-40.7	96.432 G	0	0	0	0	...	...	...	...
84.422 G	73	429	43	249	217.6	+2.2	-12.7	-29.5	97.503 G	7	13	4	8	108.0	+1.2	-12.4	+33.5
85.422 G	110	436	59	229	218.6	+3.2	-12.8	-15.3	98.594 G	0	0	0	0	...	...	...	...
86.406 G	89	444	45	222	219.0	+3.5	-12.9	-1.9	99.460 G	42	80	41	78	108.3	+1.4	-12.5	+59.6
87.434 G	78	466	40	241	219.4	+3.8	-12.8	+12.1	100.395 G	22	116	35	187	109.0	+2.0	-12.1	+72.7
88.411 G	62	328	35	182	219.3	+3.7	-12.8	+24.9	101.310 C	9	35	(22	84	103.2	...	-11.7)	+79.0
89.451 G	54	248	35	162	220.4	+4.7	-13.0	+39.7	Means ...	...	...	12	41	107.7	...	-11.8	...
90.633 G	13	75	12	63	218.8	+3.0	-13.8	+53.7	Group 10905.								
91.446 G	7	36	8	43	220.6	+4.8	-13.8	+66.2	April 5-12. Two or three unstable spots (in front of Group 10902) that become a definite group on April 10.								
92.413 G	2	9	5	23	221.6	...	-13.9	+80.0	94.451 G	76	214	47	131	79.7	0.0	-9.2	-35.1
Means ...	...	...	38	179	218.5	...	-12.9	...	95.394 G	196	808	106	434	80.6	+0.8	-9.7	-21.7
Spot <i>a</i> .																	
82.423 G	35	168	30	144	218.3	0.0	-12.4	-55.1	96.432 G	250	1449	127	730	80.1	+0.2	-9.7	-8.5
83.542 G	49	245	32	159	218.9	+0.5	-12.4	-39.8	97.503 G	274	1454	139	735	80.1	0.0	-9.4	+5.6
84.422 G	40	301	23	172	219.1	+0.7	-12.7	-28.0	98.594 G	217	1280	115	681	80.4	+0.2	-9.2	+20.3
85.422 G	59	312	31	162	220.0	+1.5	-12.8	-13.9	99.460 G	280	1164	165	689	80.9	+0.6	-9.4	+32.2
86.406 G	67	349	34	174	220.4	+1.9	-13.0	-0.5	100.395 G	228	1158	159	811	80.6	+0.2	-9.6	+44.3
87.434 G	62	346	32	180	220.8	+2.3	-13.1	+13.5	101.310 C	146	847	130	768	81.2	+0.7	-9.8	+57.0
88.411 G	44	235	25	132	220.8	+2.1	-13.1	+26.4	102.332 C	75	431	113	660	82.0	+1.4	-9.8	+71.3
89.451 G	36	186	24	123	221.0	+2.3	-13.4	+40.3	103.420 C	13	68	(37	192	77.0	...	-11.0)	+80.6
90.633 G	11	53	10	46	220.7	+1.9	-13.5	+55.6	Means ...	...	...	122	627	80.6	...	-9.5	...
91.446 G	7	36	8	43	220.6	+1.8	-13.8	+66.2	Group 10906.								
92.413 G	2	9	5	23	221.6	+2.7	-13.9	+80.0	April 5-14. A large stream of normal type with <i>a</i> as leader and <i>b</i> as follower.								
Spot <i>a</i> .																	
82.423 G	35	168	30	144	218.3	0.0	-12.4	-55.1	94.451 G	45	125	27	75	81.5	0.0	-9.2	-33.3
83.542 G	49	245	32	159	218.9	+0.5	-12.4	-39.8	95.394 G	107	500	57	265	82.2	+0.6	-9.5	-20.1
84.422 G	40	301	23	172	219.1	+0.7	-12.7	-28.0	96.432 G	147	809	74	404	82.7	+1.0	-9.2	-5.9
85.422 G	59	312	31	162	220.0	+1.5	-12.8	-13.9	97.503 G	152	818	77	417	82.9	+1.0	-8.7	+8.4
86.406 G	67	349	34	174	220.4	+1.9	-13.0	-0.5	98.594 G	125	653	67	353	83.4	+1.4	-8.7	+23.3
87.434 G	62	346	32	180	220.8	+2.3	-13.1	+13.5	99.460 G	129	660	79	403	83.3	+1.2	-8.7	+34.6
88.411 G	44	235	25	132	220.8	+2.1	-13.1	+26.4	100.395 G	105	618	77	451	83.6	+1.4	-8.9	+47.3
89.451 G	36	186	24	123	221.0	+2.3	-13.4	+40.3	101.310 C	62	444	60	431	83.8	+1.5	-9.1	+59.6
90.633 G	11	53	10	46	220.7	+1.9	-13.5	+55.6	102.332 C	35	198	61	345	84.7	+2.3	-8.9	+74.0
91.446 G	7	36	8	43	220.6	+1.8	-13.8	+66.2	Group 10900.								
92.413 G	2	9	5	23	221.6	+2.7	-13.9	+80.0	March 30-April 3. A stream.								
88.411 G	47	146	26	83	216.7	0.0	+9.9	+22.3	94.451 G	45	125	27	75	81.5	0.0	-9.2	-33.3
89.451 G	65	366	43	241	217.9	+1.1	+9.8	+37.2	95.394 G	107	500	57	265	82.2	+0.6	-9.5	-20.1
90.633 G	44	262	38	231	217.9	+1.0	+10.1	+52.8	96.432 G	147	809	74	404	82.7	+1.0	-9.2	-5.9
91.446 G	35	124	41	152	217.4	+0.4	+10.1	+63.0	97.503 G	152	818	77	417	82.9	+1.0	-8.7	+8.4
92.413 G	17	75	37	152	215.2	-1.9	+10.5	+73.6	98.594 G	125	653	67	353	83.4	+1.4	-8.7	+23.3
Means ...	...	...	37	172	217.0	...	+10.1	...	99.460 G	129	660	79	403	83.3	+1.2	-8.7	+34.6
Group 10900.																	
March 30-April 3. A stream.																	
88.411 G	47	146	26	83	216.7	0.0	+9.9	+22.3	100.395 G	105	618	77	451	83.6	+1.4	-8.9	+47.3
89.451 G	65	366	43	241	217.9	+1.1	+9.8	+37.2	101.310 C	62	444	60	431	83.8	+1.5	-9.1	+59.6
90.633 G	44	262	38	231	217.9	+1.0	+10.1	+52.8	102.332 C	35	198	61	345	84.7	+2.3	-8.9	+74.0
91.446 G	35	124	41	152	217.4	+0.4	+10.1	+63.0	Group 10900.								
92.413 G	17	75	37	152	215.2	-1.9	+10.5	+73.6	March 30-April 3. A stream.								
Means ...	...	...	37	172	217.0	...	+10.1	...	94.451 G	45	125	27	75	81.5	0.0	-9.2	-33.3
Group 10900.																	
March 30-April 3. A stream.																	
88.411 G	47	146	26	83	216.7	0.0	+9.9	+22.3	95.394 G	107	500	57	265	82.2	+0.6	-9.5	-20.1
89.451 G	65	366	43	241	217.9	+1.1	+9.8	+37.2	96.432 G	147	809	74	404	82.7	+1.0	-9.2	-5.9
90.633 G	44	262	38	231	217.9	+1.0	+10.1	+52.8	97.503 G	152	818	77	417	82.9	+1.0	-8.7	+8.4
91.446 G	35	124	41	152	217.4	+0.4	+10.1	+63.0	98.594 G	125	653	67	353	83.4	+1.4	-8.7	+23.3
92.413 G	17	75	37	152	215.2	-1.9	+10.5	+73.6	99.460 G	129	660	79	403	83.3	+1.2	-8.7	+34.6
Means ...	...	...	37	172	217.0	...	+10.1	...	100.395 G	105	618	77	451	83.6	+1.4	-8.9	+47.3
Group 10900.																	
March 30-April 3. A stream.																	
88.411 G	47	146	26	83	216.7	0.0	+9.9	+22.3	101.310 C	62	444	60	431	83.8	+1.5	-9.1	+59.6
89.451 G	65	366	43	241	217.9	+1.1	+9.8	+37.2	102.332 C	35	198	61	345	84.7	+2.3	-8.9	+74.0
90.633 G	44	262	38	231	217.9	+1.0	+10.1	+52.8	Group 10900.								
91.446 G	35	124	41	152	217.4	+0.4	+10.1	+63.0	March 30-April 3. A stream.								
92.413 G	17	75	37	152	215.2	-1.9	+10.5	+73.6	94.451 G	45	125	27	75	81.5	0.0	-9.2	-33.3
Means ...	...	...	37	172	217.0	...	+10.1	...	95.394 G	107	500	57	265	82.2	+0.6	-9.5	-20.1
Group 10900.																	
March 30-April 3. A stream.																	
88.411 G	47	146	26	83	216.7	0.0	+9.9	+22.3	96.432 G	147	809	74	404	82.7	+1.0	-9.2	-5.9
89.451 G	65	366	43	241	217.9	+1.1	+9.8	+37.2	97.503 G	152	818	77	417	82.9	+1.0	-8.7	+8.4
90.633 G	44	262	38	231	217.9	+1.0	+10.1	+52.8	98.594 G	125	653	67	353	83.4	+1.4	-8.7	+23.3
91.446 G	35	124	41	152	217.4	+0.4	+10.1	+63.0	99.460 G	129	660	79	403	83.3	+1.2	-8.7	+34.6
92.413 G	17	75	37	152	215.2	-1.9	+10.5	+73.6	100.395 G	105	618	77	451	83.6	+1.4	-8.9	+47.3
Means ...	...	...	37	172	217.0	...	+10.1	...	101.310 C	62	444	60	431	83.8	+1.5	-9.1	+59.6
Group 10900.																	
March 30-April 3. A stream.																	
88.411 G	47	146	26	83	216.7	0.0	+9.9	+22.3	102.332 C	35	198	61	345	84.7	+2.3	-8.9	+74.0
89.451 G	65	366	43	241	217.9	+1.1	+9.8	+37.2	Group 10900.								
90.633 G	44	262	38	231	217.9	+1.0	+10.1	+52.8	March 30-April 3. A stream.								
91.446 G	35	124	41	152	217.4	+0.4	+10.1	+63.0	94.451 G	45	125	27	75	81.5	0.0	-9.2	-33.3
92.413 G	17	75	37	152	215.2	-1.9	+10.5	+73.6	95.394 G	107	500	57	265	82.2	+0.6	-9.5	-20.1
Means ...	...	...	37	172	217.0	...	+10.1	...	96.432 G	147	809	74	404	82.7	+1.0	-9.2	-5.9
Group 10900.																	
March 30-April 3. A stream.																	
88.411 G	47	146	26	83	216.7	0.0	+9.9	+22.3	97.503 G	152	818	77	417	82.9	+1.0	-8.7	+8.4
89.451 G	65	366	43	241	217.9	+1.1	+9.8	+37.2	98.594 G	125	653	67	353	83.4	+1.4	-8.7	+23.3
90.633 G	44	262	38	231	217.9	+1.0	+10.1	+52.8	99.460 G	129	660	79	403	83.3	+1.2	-8.7	+34.6
91.446 G	35																

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1929.—*continued.*

Date G.M.T. Place.	Projected Area.		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.	Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.		
	Umbrae	Whole Spots.	Umbrae	Whole Spots.					Umbrae	Whole Spots.	Umbrae	Whole Spots.					
Group 10906—continued.								Group 10913—continued.									
Spot b.								Spot a.									
d								d									
96.432 G	103	640	53	326	76.8	0.0	-10.6	-11.8	102.332 C	13	55	38	161	289.8	0.0	-9.5	-80.9
97.503 G	91	473	46	236	76.5	-0.4	-10.5	+2.0	103.420 C	26	158	32	198	289.5	-0.4	-9.1	-66.9
98.594 G	56	404	29	210	76.6	-0.5	-10.5	+16.5	104.456 G	31	168	25	138	289.7	-0.4	-9.0	-53.0
99.460 G	80	283	45	158	76.3	-0.9	-10.4	+27.6	105.615 G	36	159	22	99	290.7	+0.5	-8.8	-36.7
100.395 G	54	254	35	165	75.9	-1.4	-10.4	+39.6	106.395 G	36	148	20	83	290.8	+0.5	-8.6	-26.3
								107.400 G	29	161	15	82	290.9	+0.5	-8.5	-12.9	
								108.400 G	31	134	16	67	291.1	+0.5	-8.3	+0.5	
								109.374 C	26	123	13	63	291.0	+0.3	-8.0	+13.3	
								110.343 C	18	77	10	43	291.0	+0.2	-7.8	+26.1	
								111.372 G	14	27	9	18	291.2	+0.2	-7.6	+39.8	
								112.380 C	11	22	9	18	291.1	0.0	-7.5	+53.1	
								113.360 G	5	9	6	11	291.6	+0.4	-7.2	+66.5	
Group 10910.								Group 10916.									
April 10-16. A short-lived stream of normal type of which <i>a</i> is the leader.								April 20-28. A few spots in an insignificant stream until April 24, when a large spot, <i>a</i> , suddenly forms as the leader.									
99.460 G	0	9	0	5	46.8	0.0	-20.4	-1.9	109.374 C	26	55	17	36	240.8	0.0	+9.1	-36.9
100.395 G	36	89	19	46	45.1	-1.6	-20.2	+8.8	110.343 C	22	80	12	45	241.4	+0.5	+8.6	-23.5
101.310 C	101	489	56	271	45.4	-1.2	-20.2	+21.2	111.372 G	16	63	8	33	242.7	+1.6	+8.5	-8.7
102.332 C	92	493	58	305	45.1	-1.4	-20.4	+34.4	112.380 C	9	33	5	17	244.0	+2.8	+8.0	+6.0
103.420 C	53	264	40	202	44.9	-1.4	-20.1	+48.5	113.360 G	63	203	34	111	244.3	+3.0	+8.2	+19.2
104.456 G	31	192	33	205	44.7	-1.5	-19.8	+62.0	114.418 G	148	921	93	575	245.6	+4.1	+7.8	+34.5
105.615 G	11	60	25	135	45.7	-0.4	-19.8	+78.3	115.643 G	106	601	87	495	245.9	+4.2	+7.9	+51.0
Means ...	...	...	33	167	45.4	...	-20.1	...	116.410 G	86	393	95	440	247.0	+5.2	+7.8	+62.2
Spot a.								Spot a.									
100.395 G	22	65	11	34	45.9	0.0	-19.9	+9.6	117.463 G	23	109	57	264	247.8	+5.9	+7.9	+76.9
101.310 C	59	332	33	186	46.5	+0.7	-19.6	+22.3	Means ...	...	...	45	224	244.4	...	+8.2	...
102.332 C	66	321	42	202	46.7	+1.0	-19.8	+36.0	Group 10919.								
103.420 C	31	180	24	140	46.1	+0.6	-19.5	+49.7	April 25-May 6. A fair-sized spot from which a portion in front breaks away on April 29.								
104.456 G	22	161	24	175	45.6	+0.2	-19.6	+62.9									
105.615 G	11	60	25	135	45.7	+0.4	-19.8	+78.3									
Group 10913.								Spot a.									
April 13-24. A stream composed of a regular spot, <i>a</i> , a near companion <i>sf</i> , and a train of small evanescent spots scattered over a wide area marked by faculae. <i>a</i> shows a steady drift equatorwards.																	
102.332 C	17	77	53	245	289.3	...	-10.1	-81.4	113.360 G	27	108	15	59	245.9	0.0	+7.2	+20.8
103.420 C	37	219	52	299	288.1	0.0	-9.1	-68.3	114.418 G	108	567	69	393	247.4	+1.4	+7.4	+36.3
104.456 G	64	278	57	244	287.7	-0.5	-9.0	-55.0	115.643 G	72	432	61	367	247.8	+1.6	+7.5	+52.9
105.615 G	65	233	41	149	289.7	+1.3	-9.3	-37.7	116.410 G	70	330	80	380	248.1	+1.8	+7.5	+63.3
106.395 G	56	202	31	115	292.1	+3.6	-8.7	-25.0	117.463 G	23	104	57	256	248.3	+1.8	+7.8	+77.4
107.400 G	50	262	26	137	288.2	-0.4	-9.0	-15.6	Group 10919.								
108.400 G	58	248	29	126	288.1	-0.6	-9.1	-2.5	April 25-May 6. A fair-sized spot from which a portion in front breaks away on April 29.								
109.374 C	46	277	24	141	287.3	-1.6	-9.6	+9.6									
110.343 C	35	196	19	106	284.5	-4.5	-9.7	+19.6									
111.372 G	20	54	12	33	287.4	-1.7	-8.6	+36.0									
112.380 C	13	31	11	25	289.8	+0.6	-8.3	+51.8									
113.360 G	5	9	6	11	291.6	+2.2	-7.2	+66.5									
Means ...	...	...	28	126	288.6	...	-8.9	...									
								Group 10919.									
								April 25-May 6. A fair-sized spot from which a portion in front breaks away on April 29.									

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1920—*continued.*

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Lati- tude.	Long. from C.M.	Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Lati- tude.	Long. from C.M.		
	Umbræ	Whole Spots.	Umbræ	Whole Spots.					Umbræ	Whole Spots.	Umbræ	Whole Spots.					
Group 10919—continued.									Group 10922—continued. Spot a.								
d								d									
118.427 C	53	358	30	200	136.9	-1.3	+12.9	-21.2	120.357 G	72	282	41	161	104.5	0.0	-1.4	-28.1
119.583 G	36	289	19	153	136.5	-1.8	+13.2	-6.4	121.355 G	79	497	41	258	105.7	+1.0	-0.9	-13.7
120.357 G	38	194	20	103	136.1	-2.2	+13.4	+3.5	122.351 G	95	488	48	244	106.8	+1.9	-1.0	+0.5
121.355 G	45	262	25	144	136.0	-2.4	+13.7	+16.6	123.319 C	78	444	40	226	106.8	+1.7	-0.9	+13.3
122.351 G	25	131	15	79	135.8	-2.6	+13.9	+29.5	124.440 C	67	428	38	244	106.8	+1.5	-1.1	+28.1
123.319 C	20	84	14	60	135.7	-2.8	+14.0	+42.2	125.326 C	54	321	35	209	106.7	+1.3	-1.0	+39.8
124.440 C	11	40	11	39	135.7	-2.8	+13.8	+57.0	126.350 G	54	302	45	254	107.0	+1.4	-0.8	+53.6
125.326 C	4	13	6	19	135.4	-3.2	+13.8	+68.5	127.356 G	32	191	41	243	107.0	+1.2	-1.0	+66.9
128.354 G									128.354 G	18	70	51	197	106.8	+0.8	-1.1	+79.9
Means ...	...	...	25	143	136.5	...	+13.3	...	Spot b.								
Group 10921.									120.357 G	50	201	30	121	99.3	0.0	-3.0	-33.3
April 28-May 10. A long straggling stream of unstable spots.									121.355 G	61	285	32	151	99.2	-0.3	-2.2	-20.2
117.463 G	0	5	0	20	86.8	...	-20.1	-84.1	122.351 G	38	181	19	90	99.3	-0.4	-2.3	-7.0
118.427 C	6	18	8	27	88.1	0.0	-20.2	-70.0	123.319 C	38	138	19	69	99.4	-0.5	-2.3	+5.9
119.583 G	45	224	41	201	87.7	-0.3	-21.2	-55.2	Group 10927.								
120.357 G	84	373	61	275	87.5	-0.4	-21.4	-45.1	May 5-16. A fair-sized spot, a, with small ephemeral followers at various distances. Between May 10 and 13 a is of composite structure.								
121.355 G	78	340	48	211	86.9	-0.9	-21.2	-32.5	124.440 C	13	40	23	70	7.3	0.0	+15.8	-71.4
122.351 G	70	255	39	141	87.6	-0.1	-20.6	-18.7	125.326 C	26	98	29	108	6.5	-0.8	+15.3	-60.4
123.319 C	24	107	13	56	88.1	+0.5	-20.5	-5.4	126.350 G	25	114	19	86	6.9	-0.5	+15.0	-46.5
124.440 C	13	69	7	37	88.1	+0.7	-20.4	+9.4	127.356 G	34	155	21	95	9.4	+2.0	+14.7	-30.7
125.326 C	9	51	5	29	87.8	+0.5	-19.6	+20.9	128.354 G	38	159	21	87	10.2	+2.8	+14.2	-16.7
126.350 G	14	91	9	58	89.6	+2.4	-19.2	+36.2	129.352 G	64	222	33	116	9.9	+2.4	+14.4	-3.8
127.356 G	9	27	7	22	90.9	+3.8	-18.4	+50.8	130.350 C	80	295	43	156	10.3	+2.8	+14.0	+9.8
128.354 G	2	14	2	17	92.4	+5.4	-17.7	+65.5	131.389 C	60	290	34	165	11.1	+3.6	+13.7	+24.3
129.352 G	2	7	5	16	91.8	+4.9	-18.3	+78.1	132.591 G	50	245	34	169	11.6	+4.0	+13.8	+40.7
Means ...	...	...	20	91	88.9	...	-19.9	...	133.391 G	50	204	41	171	11.5	+3.9	+13.5	+51.2
Group 10922.									134.382 G	32	145	38	173	10.9	+3.3	+13.7	+63.7
April 29-May 9. A stream of normal type in which the follower, b, soon disappears, although other spots appear near the leader, a.									135.352 G	9	50	22	123	11.8	+4.2	+13.5	+77.4
118.427 C	22	75	21	70	100.1	0.0	-2.6	-58.0	Spot a.								
119.583 G	39	251	26	169	101.4	+1.1	-2.3	-41.5	124.440 C	13	40	23	70	7.3	0.0	+15.8	-71.4
120.357 G	145	549	84	320	102.5	+2.0	-1.8	-30.1	125.326 C	18	69	19	72	8.1	+0.8	+15.2	-58.8
121.355 G	149	809	78	423	103.5	+2.8	-1.2	-15.9	126.350 G	18	91	13	67	8.9	+1.5	+14.7	-44.5
122.351 G	160	776	81	388	104.6	+3.8	-1.5	-1.7	127.356 G	25	132	15	81	9.8	+2.4	+14.5	-30.3
123.319 C	136	704	70	357	104.6	+3.6	-1.3	+11.1	128.354 G	36	150	20	82	10.6	+3.2	+14.0	-16.3
124.440 C	122	620	68	348	105.2	+4.0	-1.2	+26.5	129.352 G	50	186	26	97	10.7	+3.2	+14.1	-3.0
125.326 C	98	555	62	354	105.2	+3.8	-1.3	+38.3	130.350 C	67	268	36	142	10.9	+3.4	+13.8	+10.4
126.350 G	72	379	59	313	106.1	+4.5	-1.1	+52.7	131.389 C	58	281	33	160	11.4	+3.9	+13.6	+24.6
127.356 G	41	234	51	290	106.4	+4.6	-1.1	+66.3	132.591 G	45	236	31	163	11.8	+4.2	+13.7	+40.9
128.354 G	18	77	51	212	106.4	+4.4	-1.4	+79.5	133.391 G	41	177	34	149	11.8	+4.2	+13.6	+51.5
Means ...	...	...	59	295	104.2	...	-1.5	...	134.382 G	18	100	22	123	11.7	+4.1	+13.7	+64.5
									135.352 G	9	50	22	123	11.8	+4.2	+13.5	+77.4

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1929.—*continued.*

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.	Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.																																																																																																																																																																
	Umbrae	Whole Spots.	Umbrae	Whole Spots.					Umbrae	Whole Spots.	Umbrae	Whole Spots.																																																																																																																																																																			
Group 10929.								Group 10936.																																																																																																																																																																							
May 7-15. An unusual group. A pair of spots on May 7 that become a stream of formless spots by May 11. Two days later this stream has reverted to a pair of large but imperfectly-formed spots.								May 16-22. Two spots which drift widely apart in longitude. The follower, <i>b</i> , has disappeared by May 21 but other small spots come behind the leader <i>a</i> .																																																																																																																																																																							
<table><tr><td>d</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>I26.350 G</td><td>36</td><td>64</td><td>21</td><td>38</td><td>22.6</td><td>0.0</td><td>-10.5</td></tr><tr><td>I27.356 G</td><td>40</td><td>136</td><td>21</td><td>72</td><td>22.7</td><td>0.0</td><td>-10.4</td></tr><tr><td>I28.354 G</td><td>50</td><td>134</td><td>25</td><td>67</td><td>24.0</td><td>+1.2</td><td>-10.1</td></tr><tr><td>I29.352 G</td><td>54</td><td>168</td><td>28</td><td>86</td><td>23.4</td><td>+0.5</td><td>-10.6</td></tr><tr><td>I30.350 C</td><td>87</td><td>334</td><td>47</td><td>180</td><td>22.4</td><td>-0.6</td><td>-11.3</td></tr><tr><td>I31.389 C</td><td>118</td><td>463</td><td>75</td><td>291</td><td>23.3</td><td>+0.2</td><td>-11.0</td></tr><tr><td>I32.591 G</td><td>148</td><td>846</td><td>124</td><td>705</td><td>23.7</td><td>+0.5</td><td>-10.4</td></tr><tr><td>I33.391 G</td><td>90</td><td>684</td><td>100</td><td>762</td><td>23.9</td><td>+0.6</td><td>-10.6</td></tr><tr><td>I34.382 G</td><td>47</td><td>332</td><td>91</td><td>714</td><td>24.0</td><td>+0.6</td><td>-10.4</td></tr><tr><td>Means ...</td><td>...</td><td>...</td><td>59</td><td>324</td><td>23.3</td><td>...</td><td>-10.6</td></tr></table>								d								I26.350 G	36	64	21	38	22.6	0.0	-10.5	I27.356 G	40	136	21	72	22.7	0.0	-10.4	I28.354 G	50	134	25	67	24.0	+1.2	-10.1	I29.352 G	54	168	28	86	23.4	+0.5	-10.6	I30.350 C	87	334	47	180	22.4	-0.6	-11.3	I31.389 C	118	463	75	291	23.3	+0.2	-11.0	I32.591 G	148	846	124	705	23.7	+0.5	-10.4	I33.391 G	90	684	100	762	23.9	+0.6	-10.6	I34.382 G	47	332	91	714	24.0	+0.6	-10.4	Means ...	...	...	59	324	23.3	...	-10.6	<table><tr><td>d</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>I35.352 G</td><td>5</td><td>7</td><td>3</td><td>4</td><td>265.0</td><td>0.0</td><td>+9.4</td></tr><tr><td>I36.415 G</td><td>36</td><td>109</td><td>19</td><td>57</td><td>266.6</td><td>+1.5</td><td>+9.6</td></tr><tr><td>I37.480 G</td><td>55</td><td>196</td><td>28</td><td>100</td><td>266.9</td><td>+1.7</td><td>+9.6</td></tr><tr><td>I38.419 G</td><td>36</td><td>135</td><td>19</td><td>72</td><td>267.1</td><td>+1.8</td><td>+9.6</td></tr><tr><td>I39.399 G</td><td>23</td><td>44</td><td>14</td><td>26</td><td>268.7</td><td>+3.2</td><td>+10.0</td></tr><tr><td>I40.353 G</td><td>27</td><td>105</td><td>19</td><td>73</td><td>269.9</td><td>+4.3</td><td>+10.5</td></tr><tr><td>I41.405 G</td><td>15</td><td>39</td><td>15</td><td>38</td><td>271.8</td><td>+6.0</td><td>+11.0</td></tr><tr><td>Means ...</td><td>...</td><td>...</td><td>17</td><td>53</td><td>268.0</td><td>...</td><td>+10.0</td></tr></table>								d								I35.352 G	5	7	3	4	265.0	0.0	+9.4	I36.415 G	36	109	19	57	266.6	+1.5	+9.6	I37.480 G	55	196	28	100	266.9	+1.7	+9.6	I38.419 G	36	135	19	72	267.1	+1.8	+9.6	I39.399 G	23	44	14	26	268.7	+3.2	+10.0	I40.353 G	27	105	19	73	269.9	+4.3	+10.5	I41.405 G	15	39	15	38	271.8	+6.0	+11.0	Means ...	...	...	17	53	268.0	...	+10.0
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I26.350 G	36	64	21	38	22.6	0.0	-10.5																																																																																																																																																																								
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I40.353 G	27	105	19	73	269.9	+4.3	+10.5																																																																																																																																																																								
I41.405 G	15	39	15	38	271.8	+6.0	+11.0																																																																																																																																																																								
Means ...	...	...	17	53	268.0	...	+10.0																																																																																																																																																																								
Group 10933.								Spot <i>a</i> .																																																																																																																																																																							
May 13-20. A small regular spot rapidly dwindling and disappearing in company with a few tiny companions.								<table><tr><td>I36.415 G</td><td>18</td><td>50</td><td>9</td><td>26</td><td>268.2</td><td>0.0</td><td>+10.0</td></tr><tr><td>I37.480 G</td><td>23</td><td>73</td><td>12</td><td>37</td><td>270.5</td><td>+2.3</td><td>+10.5</td></tr><tr><td>I38.419 G</td><td>18</td><td>55</td><td>10</td><td>30</td><td>272.6</td><td>+4.2</td><td>+11.0</td></tr><tr><td>I39.399 G</td><td>9</td><td>21</td><td>6</td><td>13</td><td>274.1</td><td>+5.6</td><td>+11.3</td></tr><tr><td>I40.353 G</td><td>9</td><td>14</td><td>7</td><td>11</td><td>275.3</td><td>+6.7</td><td>+11.5</td></tr><tr><td>I41.405 G</td><td>5</td><td>14</td><td>6</td><td>15</td><td>276.3</td><td>+7.5</td><td>+11.2</td></tr></table>								I36.415 G	18	50	9	26	268.2	0.0	+10.0	I37.480 G	23	73	12	37	270.5	+2.3	+10.5	I38.419 G	18	55	10	30	272.6	+4.2	+11.0	I39.399 G	9	21	6	13	274.1	+5.6	+11.3	I40.353 G	9	14	7	11	275.3	+6.7	+11.5	I41.405 G	5	14	6	15	276.3	+7.5	+11.2																																																																																																																
I36.415 G	18	50	9	26	268.2	0.0	+10.0																																																																																																																																																																								
I37.480 G	23	73	12	37	270.5	+2.3	+10.5																																																																																																																																																																								
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I40.353 G	9	14	7	11	275.3	+6.7	+11.5																																																																																																																																																																								
I41.405 G	5	14	6	15	276.3	+7.5	+11.2																																																																																																																																																																								
<table><tr><td>I32.591 G</td><td>5</td><td>14</td><td>10</td><td>27</td><td>255.7</td><td>0.0</td><td>-5.2</td></tr><tr><td>I33.391 G</td><td>9</td><td>48</td><td>10</td><td>56</td><td>255.7</td><td>-0.1</td><td>-5.2</td></tr><tr><td>I34.382 G</td><td>18</td><td>68</td><td>14</td><td>54</td><td>255.9</td><td>-0.1</td><td>-5.5</td></tr><tr><td>I35.352 G</td><td>18</td><td>59</td><td>12</td><td>38</td><td>256.2</td><td>+0.1</td><td>-5.7</td></tr><tr><td>I36.415 G</td><td>14</td><td>32</td><td>8</td><td>18</td><td>256.1</td><td>-0.2</td><td>-6.0</td></tr><tr><td>I37.480 G</td><td>18</td><td>46</td><td>9</td><td>23</td><td>254.9</td><td>-1.6</td><td>-6.5</td></tr><tr><td>I38.419 G</td><td>5</td><td>27</td><td>3</td><td>14</td><td>254.2</td><td>-2.4</td><td>-7.5</td></tr><tr><td>I39.399 G</td><td>0</td><td>23</td><td>0</td><td>12</td><td>254.2</td><td>-2.6</td><td>-7.9</td></tr><tr><td>Means ...</td><td>...</td><td>...</td><td>8</td><td>30</td><td>255.4</td><td>...</td><td>-6.2</td></tr></table>								I32.591 G	5	14	10	27	255.7	0.0	-5.2	I33.391 G	9	48	10	56	255.7	-0.1	-5.2	I34.382 G	18	68	14	54	255.9	-0.1	-5.5	I35.352 G	18	59	12	38	256.2	+0.1	-5.7	I36.415 G	14	32	8	18	256.1	-0.2	-6.0	I37.480 G	18	46	9	23	254.9	-1.6	-6.5	I38.419 G	5	27	3	14	254.2	-2.4	-7.5	I39.399 G	0	23	0	12	254.2	-2.6	-7.9	Means ...	...	...	8	30	255.4	...	-6.2	Spot <i>b</i> .																																																																																															
I32.591 G	5	14	10	27	255.7	0.0	-5.2																																																																																																																																																																								
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I35.352 G	18	59	12	38	256.2	+0.1	-5.7																																																																																																																																																																								
I36.415 G	14	32	8	18	256.1	-0.2	-6.0																																																																																																																																																																								
I37.480 G	18	46	9	23	254.9	-1.6	-6.5																																																																																																																																																																								
I38.419 G	5	27	3	14	254.2	-2.4	-7.5																																																																																																																																																																								
I39.399 G	0	23	0	12	254.2	-2.6	-7.9																																																																																																																																																																								
Means ...	...	...	8	30	255.4	...	-6.2																																																																																																																																																																								
<table><tr><td>I36.415 G</td><td>18</td><td>59</td><td>10</td><td>31</td><td>265.3</td><td>0.0</td><td>+9.3</td></tr><tr><td>I37.480 G</td><td>32</td><td>123</td><td>16</td><td>63</td><td>264.6</td><td>-0.8</td><td>+8.7</td></tr><tr><td>I38.419 G</td><td>18</td><td>80</td><td>9</td><td>42</td><td>263.7</td><td>-1.8</td><td>+8.7</td></tr><tr><td>I39.399 G</td><td>14</td><td>23</td><td>8</td><td>13</td><td>263.4</td><td>-2.2</td><td>+8.7</td></tr></table>								I36.415 G	18	59	10	31	265.3	0.0	+9.3	I37.480 G	32	123	16	63	264.6	-0.8	+8.7	I38.419 G	18	80	9	42	263.7	-1.8	+8.7	I39.399 G	14	23	8	13	263.4	-2.2	+8.7	Group 10937.																																																																																																																																							
I36.415 G	18	59	10	31	265.3	0.0	+9.3																																																																																																																																																																								
I37.480 G	32	123	16	63	264.6	-0.8	+8.7																																																																																																																																																																								
I38.419 G	18	80	9	42	263.7	-1.8	+8.7																																																																																																																																																																								
I39.399 G	14	23	8	13	263.4	-2.2	+8.7																																																																																																																																																																								
Group 10934.								May 16-24. A stream of a few changing spots in a region already marked by fairly bright faculae.																																																																																																																																																																							
May 14-19. A slowly diminishing spot.								<table><tr><td>I35.352 G</td><td>9</td><td>23</td><td>7</td><td>18</td><td>247.2</td><td>0.0</td><td>+10.6</td></tr><tr><td>I36.415 G</td><td>23</td><td>91</td><td>14</td><td>56</td><td>246.7</td><td>-0.6</td><td>+10.7</td></tr><tr><td>I37.480 G</td><td>18</td><td>80</td><td>10</td><td>43</td><td>247.3</td><td>-0.1</td><td>+10.0</td></tr><tr><td>I38.419 G</td><td>50</td><td>100</td><td>26</td><td>52</td><td>245.9</td><td>-1.6</td><td>+10.7</td></tr><tr><td>I39.399 G</td><td>37</td><td>100</td><td>20</td><td>51</td><td>246.1</td><td>-1.5</td><td>+10.4</td></tr><tr><td>I40.353 G</td><td>20</td><td>60</td><td>11</td><td>32</td><td>245.6</td><td>-2.1</td><td>+10.2</td></tr><tr><td>I41.405 G</td><td>18</td><td>68</td><td>11</td><td>42</td><td>248.5</td><td>+0.7</td><td>+11.0</td></tr><tr><td>I42.366 G</td><td>16</td><td>27</td><td>12</td><td>22</td><td>250.8</td><td>+2.9</td><td>+11.9</td></tr><tr><td>I43.512 G</td><td>2</td><td>5</td><td>3</td><td>7</td><td>253.0</td><td>+5.0</td><td>+12.1</td></tr><tr><td>Means ...</td><td>...</td><td>...</td><td>13</td><td>36</td><td>247.9</td><td>...</td><td>+10.8</td></tr></table>								I35.352 G	9	23	7	18	247.2	0.0	+10.6	I36.415 G	23	91	14	56	246.7	-0.6	+10.7	I37.480 G	18	80	10	43	247.3	-0.1	+10.0	I38.419 G	50	100	26	52	245.9	-1.6	+10.7	I39.399 G	37	100	20	51	246.1	-1.5	+10.4	I40.353 G	20	60	11	32	245.6	-2.1	+10.2	I41.405 G	18	68	11	42	248.5	+0.7	+11.0	I42.366 G	16	27	12	22	250.8	+2.9	+11.9	I43.512 G	2	5	3	7	253.0	+5.0	+12.1	Means ...	...	...	13	36	247.9	...	+10.8																																																																																
I35.352 G	9	23	7	18	247.2	0.0	+10.6																																																																																																																																																																								
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I43.512 G	2	5	3	7	253.0	+5.0	+12.1																																																																																																																																																																								
Means ...	...	...	13	36	247.9	...	+10.8																																																																																																																																																																								

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1929—*continued*.

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.		Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.	
	Umbræ	Whole Spots.	Umbræ	Whole Spots.						Umbræ	Whole Spots.	Umbræ	Whole Spots.				
Group 10940. May 24-30. A stream lengthening considerably in the first few days of its origin. The leader, <i>a</i> , is a partially formed regular spot.									Group 10946—continued.								
<i>d</i>									<i>d</i>								
143.512 G	66	139	39	81	163.5	0.0	+20.4	–22.9	161.351 G	197	886	107	479	332.0	+1.4	–8.3	+21.7
144.397 G	100	362	55	196	164.5	+1.1	+20.4	–10.2	162.386 C	135	710	84	439	331.3	+0.6	–8.3	+34.7
145.495 G	102	456	55	247	164.6	+1.4	+20.4	+4.4	163.355 G	118	579	91	443	331.6	+0.7	–8.6	+47.8
146.419 G	77	387	44	219	165.1	+2.0	+20.7	+17.1	164.354 G	50	318	54	339	331.3	+0.3	–8.2	+60.7
147.416 C	58	257	36	164	166.6	+3.6	+21.1	+31.8	165.396 G	16	60	27	102	329.3	–1.8	–7.9	+72.5
148.405 C	50	151	39	117	166.9	+4.1	+20.7	+45.2	Means ...	...	...	68	356	330.9	...	–8.6	...
149.405 G	9	27	10	30	169.1	+6.4	+21.2	+60.7	Spot <i>a</i> .								
Means ...	...	...	40	151	165.8	...	+20.7	...	157.358 G	32	179	19	104	333.8	0.0	–7.5	–29.4
Spot <i>a</i> .									158.361 C	54	252	28	131	334.4	+0.5	–7.5	–15.5
143.512 G	34	80	20	46	164.9	0.0	+20.2	–21.5	159.487 G	73	323	36	162	335.6	+1.5	–7.5	+0.6
144.397 G	59	262	32	141	166.5	+1.7	+20.4	–8.2	160.353 G	55	307	29	160	335.9	+1.7	–7.8	+12.4
145.495 G	50	251	27	136	168.2	+3.6	+20.6	+8.0	161.351 G	69	307	39	172	336.5	+2.2	–7.5	+26.2
146.419 G	36	189	21	110	168.7	+4.2	+21.0	+20.7	162.386 C	47	190	31	125	336.8	+2.3	–7.4	+40.2
147.416 C	32	164	21	108	169.2	+4.8	+21.3	+34.4	163.355 G	50	188	42	160	337.2	+2.6	–7.3	+53.4
148.405 C	32	117	26	93	169.3	+5.1	+21.2	+47.6	164.354 G	14	82	19	109	338.1	+3.4	–7.1	+67.5
149.405 G	9	27	10	30	169.1	+5.0	+21.2	+60.7	Spot <i>c</i> .								
Group 10944. May 31–June 8. A small spot sometimes with a follower.									153.473 G	2	18	12	110	329.3	0.0	–9.8	–85.3
150.562 G	7	23	14	45	18.3	0.0	+12.6	–74.8	154.442 G	14	96	23	159	329.5	+0.1	–9.8	–72.3
151.497 G	9	23	11	26	17.8	–0.5	+12.8	–63.0	155.365 C	22	153	22	156	329.4	–0.1	–9.8	–60.2
152.398 C	14	29	11	24	18.9	+0.5	+13.5	–49.9	156.308 C	41	217	31	165	329.3	–0.4	–10.1	–47.8
153.473 G	11	69	7	43	19.1	+0.7	+13.7	–35.5	157.358 G	41	261	25	159	329.3	–0.5	–10.1	–33.9
154.442 G	11	23	6	13	18.1	–0.4	+13.3	–23.7	158.361 C	36	266	19	144	329.3	–0.6	–10.1	–20.6
155.365 C	4	18	2	10	18.5	0.0	+14.3	–11.1	159.487 G	73	552	37	282	329.0	–1.1	–9.3	–6.0
156.308 C	0	0	0	0	...	...	...	...	160.353 G	92	490	47	250	328.7	–1.5	–9.2	+5.2
157.358 G	2	14	1	7	16.8	–1.8	+15.7	+13.6	161.351 G	112	499	59	264	328.8	–1.5	–9.0	+18.5
158.361 C	4	14	2	8	17.4	–1.3	+13.1	+27.5	162.386 C	54	425	32	255	328.7	–1.8	–9.0	+32.1
Means ...	...	...	6	20	18.1	...	+13.6	...	163.355 G	57	357	41	257	329.2	–1.4	–9.1	+45.4
Group 10946. June 3–15. A stream of unusual development. A regular spot, <i>c</i> , with an increasing number of small companions, north-preceding it. By June 7 a cluster of these small spots has condensed into an unstable spot, <i>a</i> , whilst another cluster has joined on to <i>c</i> , which thus becomes of composite formation and the follower of the resulting stream of unstable character.									164.354 G	34	227	33	220	329.1	–1.6	–8.6	+58.5
153.473 G	2	18	12	110	329.3	...	–9.8	–85.3	165.396 G	16	60	27	102	329.3	–1.6	–7.9	+72.5
154.442 G	23	119	37	194	329.7	0.0	–9.2	–72.1	Group 10950. June 4–16. A stable regular spot with a small follower on June 5 and 6.								
155.365 C	49	227	48	217	330.0	+0.2	–9.0	–59.6	154.442 G	5	27	27	144	317.2	...	+7.2	–84.6
156.308 C	80	388	59	288	330.2	+0.3	–8.8	–46.9	155.365 C	22	101	39	173	316.2	0.0	+7.3	–73.4
157.358 G	87	504	52	302	331.1	+1.0	–8.8	–32.1	156.308 C	23	131	24	136	316.6	+0.3	+7.2	–60.5
158.361 C	140	856	74	458	330.8	+0.6	–8.5	–19.1	157.358 G	23	165	17	120	317.0	+0.5	+7.2	–46.2
159.487 G	183	1005	92	510	331.6	+1.2	–8.7	–3.4	158.361 C	32	176	19	106	317.2	+0.6	+7.2	–32.7
160.353 G	170	944	88	485	331.4	+0.9	–8.6	+7.9	159.487 G	32	202	17	107	317.6	+0.8	+7.2	–17.4
									160.353 G	41	206	21	105	317.8	+0.9	+7.0	–5.7
									161.351 G	41	208	21	111	318.1	+1.0	+6.9	+7.8
									162.386 G	38	176	21	95	318.4	+1.2	+7.4	+21.8
									163.355 G	34	156	21	95	318.8	+1.4	+7.2	+35.0
									164.354 G	37	142	28	106	318.8	+1.3	+7.2	+48.2
									165.396 G	18	80	19	86	319.1	+1.4	+7.4	+62.3
									166.648 G	7	27	18	70	319.1	+1.2	+7.5	+78.9
									Means ...	...	...	22	109	317.9	...	+7.2	...

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1929.—*continued.*

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.		Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.		
	Umbrae	Whole Spots.	Umbrae	Whole Spots.						Umbrae	Whole Spots.	Umbrae	Whole Spots.					
Group 10952.									Group 10955.									
June 6-14. Slight but sustained activity in the wake of Group 10950.									June 10-18. A region of slight but continuous activity.									
d									d									
156.308 C	0	11	0	16	305.3	0.0	+11.0	-71.8	160.353 G	16	46	10	29	287.4	0.0	-6.5	-36.1	
157.358 G	4	10	4	10	304.7	-0.7	+10.8	-58.5	161.351 G	2	9	1	5	289.9	+2.3	-6.9	-20.4	
158.361 C	4	22	3	15	306.5	+1.0	+10.4	-43.4	162.386 C	2	9	1	5	288.7	+1.0	-5.3	-7.9	
159.487 G	2	10	1	6	307.1	+1.5	+11.2	-27.9	163.355 G	18	37	9	19	288.6	+0.7	-5.8	+4.8	
160.353 G	7	18	4	10	305.3	-0.4	+10.9	-18.2	164.354 G	27	105	14	56	289.6	+1.6	-6.9	+19.0	
161.351 G	18	57	9	29	306.0	+0.2	+10.4	-4.3	165.396 G	27	73	16	44	289.6	+1.4	-7.8	+32.8	
162.386 C	14	86	7	45	306.1	+0.3	+11.9	+9.5	166.648 G	16	37	13	29	290.3	+2.0	-7.6	+50.1	
163.355 G	5	18	3	10	305.7	-0.2	+12.7	+21.9	167.362 G	2	5	2	6	293.2	+4.7	-7.2	+62.4	
164.354 G	0	9	0	6	305.7	-0.3	+12.8	+35.1	168.353 G	9	32	16	56	290.8	+2.2	-6.4	+73.2	
Means ...	...	...	3	16	305.8	...	+11.3	...	Means ...	...	...	9	28	289.8	...	-6.7	...	
Group 10953.									Group 10956.									
June 6-16. A regular spot dwindling to a dot. There is a tiny follower on June 10 and 12.									June 11-23. A slowly diminishing regular spot, a, with occasional small followers.									
156.308 C	9	38	31	130	295.9	...	-18.6	-81.2	161.351 G	9	30	23	78	231.6	0.0	+13.5	-78.7	
157.358 G	18	69	26	101	294.4	0.0	-18.4	-68.8	162.386 C	18	99	22	120	231.5	-0.1	+14.1	-65.1	
158.361 C	29	126	27	118	294.3	0.0	-18.6	-55.6	163.355 G	18	135	15	113	231.3	-0.4	+13.9	-52.5	
159.487 G	27	151	19	106	294.0	-0.2	-18.6	-41.0	164.354 G	30	124	20	82	232.0	+0.3	+14.0	-38.6	
160.353 G	32	165	20	101	293.9	-0.3	-18.6	-29.6	165.396 G	23	105	13	60	231.7	0.0	+13.9	-25.1	
161.351 G	32	172	18	95	294.2	+0.1	-18.9	-16.1	166.648 G	25	122	13	64	231.5	-0.2	+13.7	-8.7	
162.386 C	32	188	17	100	293.7	-0.3	-19.1	-2.9	167.362 G	30	129	16	66	229.8	-2.0	+13.9	-1.0	
163.355 G	27	147	15	79	294.3	+0.4	-19.3	+10.5	168.353 G	30	135	17	71	229.7	-2.1	+14.1	+12.1	
164.354 G	23	121	13	70	294.0	+0.2	-19.0	+23.4	169.357 G	26	124	15	70	229.3	-2.5	+14.4	+24.9	
165.396 G	9	23	6	15	293.8	+0.1	-19.1	+37.0	170.444 G	14	34	10	23	231.9	0.0	+13.8	+41.9	
166.648 G	2	5	2	4	293.8	+0.2	-19.1	+53.6	171.358 G	12	36	9	29	225.9	-6.0	+15.2	+48.0	
Means ...	...	...	16	79	294.0	...	-18.9	...	172.335 C	23	45	22	42	221.8	-10.1	+16.4	+56.9	
									173.449 G	9	18	13	27	220.2	-11.8	+16.8	+70.0	
Means ...	...	...	...	16	65	229.1	...	+14.4	Means ...	...	...	...	16	65	229.1	...	+14.4	...
Group 10954.									Spot a.									
June 9-15. One or two small spots in the p part of a moderately large area of faculae.																		
159.487 G	5	9	10	18	259.6	0.0	-5.2	-75.4	161.351 G	9	30	23	78	231.6	0.0	+13.5	-78.7	
160.353 G	0	5	0	6	259.2	-0.5	-5.2	-64.3	162.386 C	18	99	22	120	231.5	-0.1	+14.1	-65.1	
161.351 G	7	18	6	14	260.9	+1.0	-4.0	-49.4	163.355 G	16	128	13	106	231.8	+0.1	+13.9	-52.0	
162.386 C	27	59	16	36	261.6	+1.5	-4.5	-35.0	164.354 G	30	124	20	82	232.0	+0.3	+14.0	-38.6	
163.355 G	18	27	10	15	262.4	+2.1	-4.4	-21.4	165.396 G	23	105	13	60	231.7	0.0	+13.9	-25.1	
164.354 G	2	23	1	12	262.5	+2.1	-4.6	-8.1	166.648 G	23	119	12	62	231.7	0.0	+13.7	-8.5	
165.396 G	5	14	3	7	262.7	+2.1	-5.7	+5.9	167.362 G	23	97	12	49	231.8	0.0	+13.9	+1.0	
Means ...	...	...	7	15	261.3	...	-4.8	...	168.353 G	18	94	10	50	231.6	-0.2	+13.8	+14.0	
									169.357 G	21	92	12	53	231.8	0.0	+13.8	+27.4	
									170.444 G	14	34	10	23	231.9	0.0	+13.8	+41.9	
									171.358 G	7	18	6	16	232.0	+0.1	+14.0	+54.1	

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.		Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.	
	Umbræ	Whole Spots.	Umbræ	Whole Spots.						Umbræ	Whole Spots.	Umbræ	Whole Spots.				
Group 10957.									Group 10961.								
June 11-19. A regular spot which becomes a small cluster after June 15. There are one or two small companions preceding it on June 13, 15-18.									June 16-22. A short stream with an appreciable spot as leader on June 19 and 20.								
d									d								
161.351 G	5	14	17	48	229.1	...	-11.0	-81.2	166.648 G	18	37	9	19	237.9	0.0	+10.1	-2.3
162.386 C	14	41	19	57	228.2	0.0	-10.4	-68.4	167.362 G	37	74	19	38	239.4	+1.4	+9.7	+8.6
163.355 G	27	101	24	91	228.7	+0.4	-11.0	-55.1	168.353 G	23	87	13	48	240.6	+2.5	+9.5	+23.0
164.354 G	27	137	19	96	227.9	-0.5	-10.5	-42.7	169.357 G	46	239	29	152	242.0	+3.8	+9.1	+37.6
165.396 G	53	236	31	136	228.7	+0.2	-11.2	-28.1	170.444 G	69	318	56	258	241.6	+3.3	+9.4	+51.6
166.648 G	51	165	27	85	228.2	-0.4	-11.0	-12.0	171.358 G	23	127	26	142	241.3	+2.8	+9.6	+63.4
167.362 G	34	140	17	72	228.3	-0.4	-11.1	-2.5	172.335 C	7	27	14	53	240.3	+1.7	+9.6	+75.4
168.353 G	18	92	9	48	229.7	+0.9	-11.5	+12.1									
169.357 G	7	41	4	23	228.9	0.0	-11.5	+24.5									
Means ...	...	...	19	76	228.6	...	-11.0	...	Means ...	...	...	24	101	240.5	...	+9.6	...
Group 10958.									Group 10964.								
June 12-20. A few faint spots which have gone by the next day; on June 15 a small stream is forming, and this soon diminishes but re-forms again before passing round the west limb.									June 19-26. A small subsidiary group <i>sf</i> Group 10962.								
162.386 C	7	18	4	10	270.2	0.0	+9.7	-26.4	169.357 G	14	32	26	58	130.7	0.0	-4.5	-73.7
163.355 G	0	0	0	0	...	...	...	...	170.444 G	21	101	20	97	131.8	+0.9	-4.8	-58.2
164.354 G	0	0	0	0	...	...	...	...	171.358 G	18	87	13	63	132.4	+1.4	-4.9	-45.5
165.396 G	30	82	15	43	272.1	+1.5	+9.3	+15.3	172.335 C	14	50	8	30	132.5	+1.3	-4.5	-32.4
166.648 G	32	140	19	85	273.9	+3.2	+8.8	+33.7	173.449 G	7	41	4	22	132.7	+1.3	-4.6	-17.5
167.362 G	25	108	17	75	274.1	+3.3	+8.7	+43.3	174.606 G	14	78	7	39	131.9	+0.3	-5.2	-3.0
168.353 G	18	83	17	77	275.0	+4.0	+8.6	+57.4	175.357 G	9	46	5	23	131.4	-0.3	-6.3	+6.6
169.357 G	26	101	40	156	274.9	+3.8	+7.9	+70.5	176.348 G	5	46	3	25	132.2	+0.3	-6.6	+20.4
170.444 G	11	39	(40)	139	271.8	...	+8.5	+81.8									
Means ...	...	...	14	56	273.1	...	+8.8	...	Means ...	...	...	11	45	132.0	...	-5.2	...
Group 10960.									Group 10966.								
June 14-23. A regular spot that shows two umbræ on June 15 and divides into two parts, which after the initial separation remain about the same distance apart. There are distant faint companions on June 19-21.									June 20-27. A stream of changing spots <i>f</i> Group 10962.								
164.354 G	14	101	26	190	197.0	0.0	-16.4	-73.6	170.444 G	17	46	23	62	122.8	0.0	-9.1	-67.2
165.396 G	27	147	29	156	196.6	-0.4	-15.8	-60.2	171.358 G	28	134	26	126	121.0	-1.9	-9.0	-56.9
166.648 G	46	179	33	129	196.8	-0.2	-15.6	-43.4	172.335 C	32	19						

LEDGER II.—NON-RECURRENT GROUPS OF SUN SPOTS for the YEAR 1929—*continued.*

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.
	Umbræ	Whole Spots.	Umbræ	Whole Spots.			
Group 10972.							
June 26-July 4. A small spot that comes into brief prominence on June 29 when it is joined by a companion spot.							
d							
176-348 G	0	5	0	9	38°4	0°0	+ 7·8 -73·4
177-337 C	5	9	5	9	38·4	-0·1	+ 7·4 -60·3
178-425 C	9	27	6	18	36·7	-2·0	+ 7·2 -47·6
179-370 G	51	195	32	122	35·4	-3·4	+ 8·0 -36·4
180-672 Y	14	63	7	33	35·3	-3·7	+ 8·0 -19·3
181-488 G	18	88	9	45	36·5	-2·6	+ 7·8 - 7·3
182-364 G	16	46	8	23	35·9	-3·4	+ 7·9 + 3·7
183-357 G	7	35	4	19	36·6	-2·8	+ 7·8 +17·5
184-571 G	2	21	1	12	35·4	-4·2	+ 7·4 +32·4
Means ...	...	...	8	32	36·5	...	+ 7·7 ...
Group 10973.							
June 26-July 8. At first a couple of spots in rather wide-spread faculæ : these spots are not seen on June 30 ; on July 1-3 one or two tiny spots are present, and on July 5 a new development takes place.							
176-348 G	9	28	(31	96	31·4	...	-17·2) -80·4
177-337 C	20	73	31	113	29·4	0·0	-17·3 -69·3
178-425 C	19	45	17	42	29·3	0·0	-17·1 -55·0
179-370 G	11	37	8	26	31·2	+2·0	-16·8 -40·6
180-672 Y	0	0	0	0	...	...	...
181-488 G	2	9	1	5	28·9	-0·2	-17·3 -14·9
182-364 G	5	21	3	11	28·9	-0·1	-17·3 - 3·3
183-357 G	0	9	0	5	27·1	-1·8	-19·6 + 8·0
184-571 G	0	0	0	0	...	...	...
185-356 G	14	60	10	42	31·5	+2·7	-19·7 +38·9
186-395 G	62	294	56	270	31·5	+2·8	-20·3 +52·7
187-404 G	35	192	51	281	32·3	+3·7	-20·5 +66·8
188-357 C	10	26	33	87	32·2	+3·6	-21·3 +79·3
Means ...	...	...	18	74	30·2	...	-18·7 ...
Group 10976.							
June 28-July 3. A pair of spots which separate widely in longitude ; the leader alone remains on July 2 and 3.							
178-425 C	2	7	(8	28	1·8	...	- 8·3) -82·5
179-370 G	14	39	18	51	5·0	0·0	- 8·6 -66·8
180-672 Y	7	23	6	18	4·5	-0·7	- 8·0 -50·1
181-488 G	14	41	9	28	3·5	-1·8	- 7·6 -40·3
182-364 G	2	7	1	4	8·3	+2·9	- 7·9 -23·9
183-357 G	5	14	3	7	7·8	+2·2	- 7·9 -11·3
Means ...	...	...	7	22	5·8	...	- 8·0 ...

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.
	Umbræ	Whole Spots.	Umbræ	Whole Spots.			
Group 10977.							
June 29-July 10. A regular spot, <i>a</i> , with a train of small companions that have died out by July 8.							
d							
179-370 G	25	58	33	76	3°9	0°0	+ 6·3 -67·9
180-672 Y	47	189	36	144	5·5	+1·4	+ 6·3 -49·1
181-488 G	83	353	53	221	7·2	+3·0	+ 6·3 -36·6
182-364 G	58	413	32	231	6·1	+1·7	+ 6·8 -26·1
183-357 G	100	397	52	204	6·7	+2·2	+ 6·5 -12·4
184-571 G	62	318	31	160	8·0	+3·3	+ 6·1 + 5·0
185-356 G	49	303	26	157	8·5	+3·6	+ 5·9 +15·9
186-395 G	72	315	40	179	7·3	+2·3	+ 6·0 +28·5
187-404 G	44	225	30	154	8·5	+3·3	+ 6·0 +43·0
188-357 G	30	179	27	159	9·1	+3·8	+ 5·8 +56·2
189-355 G	14	99	20	139	9·1	+3·6	+ 5·7 +69·4
190-429 G	5	28	24	134	9·9	...	+ 5·7 +84·4
Means ...	...	...	34	166	6·4	...	+ 6·2 ...
Spot <i>a</i> .							
180-672 Y	28	131	21	97	7·1	0·0	+ 6·2 -47·5
181-488 G	51	286	32	177	8·0	+0·8	+ 6·2 -35·8
182-364 G	39	284	21	156	8·3	+0·9	+ 6·4 -23·9
183-357 G	58	305	30	156	8·4	+0·9	+ 6·1 -10·7
184-571 G	55	274	27	137	8·8	+1·1	+ 5·8 + 5·8
185-356 G	44	285	23	148	8·9	+1·1	+ 5·9 +16·3
186-395 G	60	269	34	153	8·3	+0·3	+ 5·8 +29·5
187-404 G	37	209	26	144	9·0	+0·8	+ 5·9 +43·5
188-357 G	30	179	27	159	9·1	+0·8	+ 5·8 +56·2
189-355 G	14	99	20	139	9·1	+0·6	+ 5·7 +69·4
190-429 G	5	28	24	134	9·9	...	+ 5·7 +84·4
Group 10979.							
June 30-July 6. A pair of spots that diverge in longitude ; the follower is left on July 4.							
180-672 Y	5	14	3	8	39·4	0·0	-11·9 -15·2
181-488 G	18	62	9	32	38·8	-0·7	-12·2 - 5·0
182-364 G	41	110	21	58	39·3	-0·2	-12·3 + 7·1
183-357 G	54	106	25	59	39·3	-0·3	-12·3 +20·2
184-571 G	14	55	9	35	37·3	-2·3	-13·2 +34·3
185-356 G	9	14	7	10	37·5	-2·2	-13·2 +44·9
186-395 G	5	9	5	9	37·0	-2·8	-13·1 +58·2
Means ...	...	...	11	30	38·4	...	-12·6 ...

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1929.—*continued.*

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.	Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.		
	Umbrae	Whole Spots.	Umbrae	Whole Spots.					Umbrae	Whole Spots.	Umbrae	Whole Spots.					
Group 10993.								Group 11001.									
July 15-25. A small regular spot with attendant dots on July 18-21.								July 25-August 2. A stream of normal type passing rapidly through its phases, α being the leader.									
d								d									
195.415 C	7	16	20	45	140.1	0.0	-4.7	-79.4	205.351 G	5	9	4	6	47.3	0.0	-12.4	-40.7
196.354 G	14	55	18	72	140.2	-0.1	-4.4	-66.9	206.418 G	27	73	15	42	49.9	+2.5	-11.8	-24.0
197.356 G	12	69	10	59	140.4	0.0	-4.5	-53.4	207.354 G	103	432	55	229	50.6	+3.1	-11.3	-10.9
198.356 G	18	83	12	55	140.7	+0.1	-4.2	-39.9	208.114 K	106	550	55	288	50.7	+3.1	-11.2	-0.8
199.355 G	19	97	11	54	141.1	+0.3	-4.2	-26.2	209.582 G	66	270	37	150	52.9	+5.2	-10.5	+20.9
200.357 G	25	64	13	34	141.6	+0.6	-4.3	-12.5	210.462 G	42	194	26	122	54.0	+6.2	-10.0	+33.6
201.469 G	18	41	9	21	141.4	+0.2	-3.3	+2.0	211.405 C	20	126	15	97	54.8	+6.9	-9.8	+46.9
202.560 G	9	18	5	10	142.5	+1.1	-3.4	+17.6	212.448 G	32	89	35	96	54.0	+6.0	-10.7	+59.9
203.561 G	5	16	3	9	143.5	+2.0	-4.8	+31.8	213.374 C	9	32	17	60	54.9	+6.8	-11.1	+73.0
204.389 G	5	11	3	8	143.1	+1.4	-3.0	+42.4	Means ...	...	...	29	121	52.1	...	-11.0	...
205.351 G	2	7	2	6	143.3	+1.4	-2.8	+55.3									
Means ...	...	...	10	34	141.6	...	-4.0	...	Spot α.								
Group 10999.								Group 11009.									
July 21-August 1. A stable regular spot with a tiny follower on July 21-23.								August 4-10. Intermittent. A small marking on August 4; a pair of spots on August 7, 9 and 10.									
201.469 G	14	55	24	92	66.5	0.0	+6.9	-72.9	207.354 G	51	244	27	129	52.8	0.0	-10.7	-8.7
202.560 G	28	143	26	135	66.8	+0.1	+6.7	-58.1	208.114 K	66	325	34	169	53.5	+0.6	-10.4	+2.0
203.561 G	30	111	22	78	67.0	+0.2	+6.9	-44.7	209.582 G	55	224	31	125	54.2	+1.2	-10.0	+22.2
204.389 G	27	126	16	76	67.0	+0.1	+6.9	-33.7	210.462 G	37	185	23	117	54.3	+1.2	-9.8	+33.9
205.351 G	30	140	16	76	67.0	-0.1	+7.7	-21.0	211.405 C	20	126	15	97	54.8	+1.6	-9.8	+46.9
206.418 G	27	160	14	80	67.5	+0.3	+7.5	-6.4	212.448 G	18	62	20	68	55.2	+1.9	-10.1	+61.1
207.354 G	37	143	18	72	67.5	+0.1	+7.5	+6.0	213.374 C	9	32	17	60	54.9	+1.5	-11.1	+73.0
208.114 K	21	135	11	70	67.4	-0.1	+7.5	+15.9									
209.582 G	27	117	16	71	66.9	-0.8	+7.4	+34.9									
210.462 G	23	87	17	63	66.7	-1.1	+7.7	+46.3									
211.405 C	18	58	17	56	67.0	-1.0	+7.5	+59.1									
212.448 G	9	27	15	45	67.1	-1.0	+7.5	+73.0									
Means ...	...	...	18	76	67.0	...	+7.3	...	Group 11013.								
Group 11000.								August 5-11. A small stream led by a regular spot which survives on August 10.									
July 24-August 3. A stream, generally with the largest spot at the rear.																	
204.389 G	5	11	6	13	38.7	0.0	-19.9	-62.0	216.381 G	9	14	20	32	228.5	0.0	-21.9	-73.6
205.351 G	46	165	43	154	36.2	-2.4	-20.8	-51.8	217.369 C	16	43	19	51	229.4	+1.0	-21.1	-59.7
206.418 G	64	202	45	147	34.9	-3.5	-20.9	-39.0	218.523 C	15	124	13	99	230.2	+2.0	-20.3	-43.6
207.354 G	97	298	60	188	34.3	-4.0	-21.0	-27.2	219.351 G	29	176	20	117	230.1	+2.0	-20.2	-32.8
208.114 K	66	287	39	167	35.3	-2.9	-21.0	-16.2	220.627 G	20	45	12	31	230.9	+2.9	-19.8	-15.1
209.582 G	69	364	39	203	34.8	-3.2	-20.7	+2.8	221.403 G	9	34	5	19	232.1	+4.2	-19.3	-3.6
210.462 G	96	472	54	270	33.8	-4.1	-20.4	+13.4	222.456 G	9	11	5	6	232.5	+4.7	-19.0	+10.7
211.405 C	76	470	48	292	32.7	-5.0	-20.9	+24.8	Means ...	...	...	13	51	230.5	...	-20.2	...
212.448 G	82	272	61	202	33.3	-4.3	-21.0	+39.2									
213.374 C	39	191	36	174	32.2	-5.3	-21.5	+50.3									
214.403 C	13	67	21	103	34.3	-3.0	-20.3	+66.0									
Means ...	...	...	41	174	34.6	...	-20.8	...									

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1929—continued.

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.	Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.		
	Umbræ	Whole Spots.	Umbræ	Whole Spots.					Umbræ	Whole Spots.	Umbræ	Whole Spots.					
Group 11014.								Group 11025.									
August 6-17. A regular spot invaded by a narrow bright marking from the photo- sphere on August 14.								August 15-26. A small ephemeral spot on August 15, on August 19 another small spot; on August 20 a small stream led by a regular spot, <i>a</i> , that remains on August 25 after the disappearance of its companions.									
d								d									
217.369 C	14	79	28	160	214.8	0.0	-9.4	-74.3	226.354 G	5	9	6	10	105.6	0.0	+16.3	-64.7
218.523 C	27	198	27	200	215.2	+0.3	-9.3	-58.6	227.376 C	0	0	0	0	...	...	...	...
219.351 G	43	246	33	189	215.5	+0.4	-9.2	-47.4	228.354 G	0	0	0	0	...	...	...	...
220.627 G	73	401	44	241	215.7	+0.5	-8.8	-30.3	229.410 C	0	0	0	0	...	...	...	...
221.403 G	59	424	32	233	215.8	+0.5	-8.9	-19.9	230.120 K	2	8	1	4	102.1	-3.5	+15.1	-18.4
222.456 G	87	488	45	254	216.0	+0.5	-8.9	-5.8	231.353 G	48	173	24	88	103.4	-2.2	+15.2	-0.8
223.369 G	68	470	35	244	216.1	+0.5	-8.7	+6.4	232.495 G	66	287	34	150	104.1	-1.6	+15.2	+15.0
224.360 G	82	397	45	218	216.1	+0.4	-8.7	+19.5	233.463 G	52	264	30	153	105.4	-0.3	+15.3	+29.1
225.366 G	46	287	29	178	216.2	+0.4	-8.6	+32.9	234.400 G	68	259	45	175	106.1	+0.4	+15.4	+42.2
226.354 G	27	228	20	171	216.2	+0.2	-8.6	+45.9	235.429 G	28	137	25	125	107.2	+1.5	+15.2	+56.9
227.376 C	18	108	19	113	216.6	+0.5	-8.6	+59.8	236.363 G	14	64	21	94	109.3	+3.6	+14.8	+71.3
228.354 G	9	43	17	80	216.9	+0.7	-8.3	+73.0	237.347 G	5	23	18	83	108.6	...	+15.1	+83.6
Means ...	...	...	31	190	215.9	...	-8.8	...	Means ...	...	...	17	73	105.4	...	+15.3	...
Group 11018.								Spot <i>a</i> .									
August 10-19. A stream in continuous change.																	
221.403 G	0	18	0	66	153.1	...	+6.1	-82.6	232.495 G	27	178	14	94	106.3	0.0	+15.1	+17.2
222.456 G	18	54	23	71	155.1	0.0	+4.6	-66.7	233.463 G	27	196	16	116	107.1	+0.8	+15.4	+30.8
223.369 G	53	128	47	114	154.0	-1.3	+3.8	-55.7	234.400 G	36	173	25	121	108.3	+2.0	+15.5	+44.4
224.360 G	37	159	26	109	154.0	-1.4	+3.4	-42.6	235.429 G	23	119	21	111	108.6	+2.3	+15.2	+58.3
225.366 G	77	287	44	164	154.4	-1.2	+3.2	-28.9	236.363 G	14	64	21	94	109.3	+3.0	+14.8	+71.3
226.354 G	93	413	48	216	154.9	-0.9	+3.2	-15.4	237.347 G	5	23	18	83	108.6	...	+15.1	+83.6
227.376 C	54	302	26	150	154.6	-1.4	+3.4	-2.2									
228.354 G	75	205	39	106	155.4	-0.8	+4.2	+11.5									
229.410 C	38	119	21	66	154.3	-2.1	+4.1	+24.4									
230.120 K	8	32	5	20	155.4	-1.1	+2.9	+34.9									
Means ...	...	...	31	113	154.7	...	+3.6	...									
Group 11022.								Group 11026.									
August 14-20. A cluster of smallish spots lengthening to a stream of which the leader and follower, now widely separated in longitude, alone remain on August 19 and 20.								August 15-26. A small steady regular spot with companions on August 18-20.									
225.366 G	41	104	23	58	181.5	0.0	-18.5	-1.8	226.354 G	9	25	22	60	93.1	0.0	-5.3	-77.2
226.354 G	54	169	30	95	182.0	+0.6	-18.0	+11.7	227.376 C	11	63	13	72	93.5	+0.2	-5.1	-63.3
227.376 C	62	262	38	162	181.9	+0.5	-19.1	+25.1	228.354 G	16	91	13	74	93.3	-0.1	-5.0	-50.6
228.354 G	77	336	55	241	183.4	+2.1	-17.8	+39.5	229.410 C	22	80	14	51	93.0	-0.6	-4.9	-36.9
229.410 C	62	255	59	242	183.2	+1.9	-17.6	+53.3	230.120 K	38	115	22	67	92.5	-1.2	-4.5	-28.0
230.120 K	41	182	55	244	185.0	+3.8	-17.7	+64.5	231.353 G	27	84	14	43	92.7	-1.2	-4.9	-11.5
231.353 G	7	37	32	178	185.8	...	-16.9	+81.6	232.495 G	21	50	11	26	93.0	-1.1	-5.2	+3.9
Means ...	...	...	43	174	182.8	...	-18.1	...	233.463 G	23	64	12	34	93.0	-1.3	-5.1	+16.7
								234.400 G	14	23	8	14	93.1	-1.4	-5.3	+29.2	
								235.429 G	18	23	13	16	93.1	-1.5	-5.3	+42.8	
								236.363 G	5	14	4	13	92.9	-1.9	-5.6	+54.9	
								237.347 G	2	2	3	3	92.6	-2.4	-5.9	+67.6	
								Means ...	...	...	12	39	93.0	...	-5.2	...	

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1929—*continued.*

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.		Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.	
	Umbræ	Whole Spots.	Umbræ	Whole Spots.						Umbræ	Whole Spots.	Umbræ	Whole Spots.				
Group 11027.									Group 11028—continued.								
August 15-23. A row of smallish spots.									Spot b.								
d									d								
226·354 G	2	5	(6	16	89°·2	...	+ 2°·5)	-81°·1	227·376 C	4	13	11	35	80°·2	0°·0	-16°·2	-76°·6
227·376 C	34	123	57	210	84°·5	0°·0	+ 2°·9	-72°·3	228·354 G	9	30	12	39	80°·1	-0°·2	-15°·9	-63°·8
228·354 G	42	110	40	109	85°·0	+0°·3	+ 2°·6	-58°·9	229·410 C	9	22	8	19	79°·7	-0°·6	-16°·1	-50°·2
229·410 C	49	114	34	82	84°·1	-0°·8	+ 3°·0	-45°·8	230·120 K	13	34	9	25	79°·3	-1°·0	-16°·4	-41°·2
230·120 K	21	85	13	54	83°·0	-2°·0	+ 2°·8	-37°·5	Group 11030.								
231·353 G	5	16	3	9	82°·3	-2°·9	+ 2°·5	-21°·9	August 20-28. A pair of spots with small companions showing the usual drifting apart in longitude whilst the group is developing.								
232·495 G	7	21	3	10	86°·4	+1°·0	+ 3°·6	- 2°·7	231·353 G	19	57	12	36	74°·8	0°·0	-17°·9	-29°·4
233·463 G	0	0	0	0	...	...	...	...	232·495 G	32	148	18	87	71°·7	-3°·0	-18°·9	-17°·4
234·400 G	2	9	1	5	85°·6	-0°·2	+ 1°·5	+21°·7	233·463 G	68	424	38	238	72°·4	-2°·2	-19°·1	- 3°·9
Means ...	...	...	19	60	84°·4	...	+ 2°·7	...	234·400 G	105	518	59	293	72°·6	-2°·0	-18°·8	+ 8°·7
Group 11028.									235·429 G	103	547	63	331	72°·3	-2°·2	-19°·0	+22°·0
August 16-27. A pair of spots widely separated in longitude. The follower, b, disappears after August 19, when the leader, a, shows a temporary increase.									236·363 G	60	392	41	268	73°·1	-1°·3	-19°·1	+35°·1
227·376 C	17	58	31	103	86°·3	0°·0	-13°·9	-70°·5	237·347 G	49	282	41	241	73°·0	-1°·3	-18°·8	+48°·0
228·354 G	23	103	25	107	86°·6	+0°·2	-13°·7	-57°·3	238·348 G	27	109	35	137	73°·6	-0°·6	-18°·8	+61°·8
229·410 C	27	80	21	60	87°·0	+0°·6	-13°·7	-42°·9	239·348 G	9	27	25	70	73°·7	-0°·5	-18°·4	+75°·1
230·120 K	28	157	25	101	87°·4	+1°·0	-13°·7	-33°·1	Means ...	...	...	37	189	73°·0	...	-18°·8	...
231·353 G	36	192	20	106	90°·7	+4°·2	-13°·1	-13°·5	Group 11031.								
232·495 G	27	164	14	87	91°·4	+4°·8	-13°·4	+ 2°·3	August 20-28. A variable stream n Group 11030.								
233·463 G	27	164	15	90	91°·8	+5°·2	-12°·9	+15°·5	231·353 G	7	11	4	7	67°·9	0°·0	- 5°·7	-36°·3
234·400 G	27	153	16	92	92°·1	+5°·4	-12°·7	+28°·2	232·495 G	2	5	1	3	69°·6	+1°·5	- 5°·4	-19°·5
235·429 G	18	98	13	72	92°·1	+5°·4	-12°·8	+41°·8	233·463 G	0	0	0	0	...	...	...	...
236·363 C	14	66	13	62	92°·6	+5°·8	-12°·6	+54°·6	234·400 G	18	48	9	25	68°·9	+0°·5	- 6°·5	+ 5°·0
237·347 G	9	66	13	97	92°·7	+5°·9	-12°·7	+67°·7	235·429 G	27	50	15	27	68°·4	-0°·2	- 6°·7	+18°·1
238·348 G	5	14	22	61	93°·5	...	-13°·0	+81°·7	236·363 G	64	180	39	110	70°·6	+1°·9	- 5°·6	+32°·6
Means ...	...	...	19	89	90°·1	...	-13°·2	...	237·347 G	48	278	36	208	71°·4	+2°·5	- 5°·3	+46°·4
Spot a.									238·348 G	34	143	37	156	73°·2	+4°·1	- 4°·6	+61°·4
227·376 C	13	45	20	68	88°·6	0°·0	-12°·7	-68°·2	239·348 G	19	79	37	164	72°·9	+3°·7	- 4°·4	+74°·3
228·354 G	14	73	13	68	89°·4	+0°·7	-12°·5	-54°·5	Means ...	...	...	20	78	70°·4	...	- 5°·5	...
229·410 C	18	58	13	41	89°·7	+1°·0	-12°·8	-40°·2	Group 11033.								
230·120 K	25	123	16	76	89°·7	+1°·0	-12°·8	-30°·8	August 25-31. A small stream or cluster.								
231·353 G	36	192	20	106	90°·7	+1°·9	-13°·1	-13°·5	236·363 G	9	14	6	10	355°·0	0°·0	- 8°·1	-43°·0
232·495 G	27	164	14	87	91°·4	+2°·5	-13°·4	+ 2°·3	237·347 G	11	36	6	21	355°·5	+0°·4	- 7°·3	-29°·5
233·463 G	27	164	15	90	91°·8	+2°·9	-12°·9	+15°·5	238·348 G	32	62	17	33	355°·4	+0°·1	- 6°·4	-16°·4
234·400 G	27	153	16	92	92°·1	+3°·1	-12°·7	+28°·2	239·348 G	18	59	9	31	355°·1	-0°·4	- 6°·7	- 3°·5
235·429 G	18	98	13	72	92°·1	+3°·1	-12°·8	+41°·8	240·353 G	32	175	17	93	356°·2	+0°·6	- 7°·2	+10°·9
236·363 G	14	66	13	62	92°·6	+3°·5	-12°·6	+54°·6	241·364 G	41	123	23	70	356°·3	+0°·5	- 6°·5	+24°·4
237·347 G	9	66	13	97	92°·7	+3°·6	-12°·7	+67°·7	242·349 G	14	30	9	20	356°·4	+0°·5	- 6°·8	+37°·5
238·348 G	5	14	22	61	93°·5	...	-13°·0	+81°·7	Means ...	...	...	12	40	355°·7	...	- 7°·0	...

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1929—*continued*.

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Lati- tude.	Long. from C.M.		Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Lati- tude.	Long. from C.M.	
	Umbræ	Whole Spots.	Umbræ	Whole Spots.						Umbræ	Whole Spots.	Umbræ	Whole Spots.				
Group 11041.									Group 11050.								
September 5-10. A stream appearing suddenly with a predominant leader spot, a.									September 11-18. A slight but persistent centre of activity shown usually by a single small spot.								
d									d								
247.364 G	106	318	55	166	262.9	0.0	- 4.6	+10.2	253.358 G	7	14	6	12	117.1	0.0	+ 5.9	-56.4
248.355 G	120	694	68	393	264.5	+1.4	- 4.5	+24.9	254.354 G	2	11	1	8	116.4	-0.9	+ 5.9	-44.0
249.353 G	111	472	72	306	264.0	+0.7	- 4.5	+37.6	255.412 G	0	0	0	0	...	...	...	...
250.431 C	64	314	53	263	264.5	+1.1	- 3.6	+52.3	256.377 G	7	27	4	14	116.2	-1.4	+ 5.0	-17.5
251.369 G	43	248	52	302	264.4	+0.8	- 3.7	+64.6	257.427 C	2	9	1	5	116.8	-1.0	+ 5.2	- 3.0
252.468 G	27	90	71	248	264.3	+0.5	- 3.6	+79.0	258.578 G	0	0	0	0	...	...	...	...
Means ...	...	...	62	280	264.1	...	- 4.1	...	259.434 G	2	9	1	5	116.0	-2.1	+ 5.3	+22.7
									260.369 C	2	9	1	5	116.4	-1.9	+ 5.6	+35.4
Spot a.									Means ...								
									...	...	...	2	6	116.5	...	+ 5.5	...
Group 11047.									Group 11052.								
September 9-16. Intermittent. A couple of small spots on September 9 and 10 ; on September 13 a small group appears in the same place.									September 14-23. A decreasing regular spot with a tiny follower on September 19.								
248.355 G	77	558	44	318	265.4	0.0	- 4.4	+25.8	256.377 G	9	41	18	83	59.1	0.0	- 6.8	-74.6
249.353 G	84	338	55	223	266.0	+0.4	- 4.3	+39.6	257.427 C	18	84	20	92	58.5	-0.8	- 7.1	-61.3
250.431 C	40	217	34	187	266.0	+0.2	- 3.2	+53.8	258.578 G	27	124	20	93	58.7	-0.7	- 7.1	-45.9
251.369 G	20	159	26	204	266.1	+0.2	- 3.0	+66.3	259.434 G	14	133	9	84	58.6	-0.9	- 7.5	-34.7
252.468 G	11	45	35	142	265.7	-0.4	- 2.8	+80.4	260.369 C	13	119	7	67	58.6	-1.1	- 7.7	-22.4
Group 11049.									261.367 C								
September 10-17. One or sometimes two small spots followed by very bright faculæ.									262.431 G								
251.369 G	14	32	8	18	171.8	0.0	+16.4	-28.0	263.356 C	13	35	7	19	58.3	-1.7	- 7.8	+ 4.5
252.468 G	9	32	5	17	173.7	+1.9	+16.1	-11.6	264.392 G	4	14	2	8	58.8	-1.5	- 7.5	+30.9
253.358 G	0	0	0	0	...	...	...	...	265.348 G	2	7	1	5	59.2	-1.2	- 6.9	+43.9
254.354 G	0	0	0	0	...	...	...	...	Means ...	...	...	10	54	58.6	...	- 7.4	...
255.412 G	14	90	8	52	175.7	+4.0	+16.4	+29.3	Group 11054.								
256.377 G	5	9	3	6	175.4	+3.7	+16.7	+41.7	September 16-27. A regular spot becoming elongated on September 22-23 before breaking up and quickly disappearing.								
257.427 C	13	75	11	65	175.2	+3.5	+15.7	+55.4	258.578 G	14	52	61	228	24.3	...	-20.6	-80.3
258.578 G	18	90	26	132	176.0	+4.3	+16.6	+71.4	259.434 G	22	153	37	260	24.7	0.0	-20.7	-68.6
Means ...	...	...	8	36	174.6	...	+16.3	...	260.369 C	31	198	34	211	24.5	-0.1	-20.7	-56.5
Group 11049.									261.367 C								
September 10-17. One or sometimes two small spots followed by very bright faculæ.									262.431 G								
252.468 G	2	5	5	12	106.7	0.0	+ 3.8	-78.6	263.356 C								
253.358 G	5	18	6	21	108.1	+1.3	+ 5.7	-65.4	264.392 G								
254.354 G	14	23	11	19	107.7	+0.7	+ 5.2	-52.7	265.348 G								
255.412 G	9	32	6	20	108.2	+1.0	+ 5.6	-38.2	266.345 G								
256.377 G	11	61	6	34	107.6	+0.2	+ 5.5	-26.1	267.379 G								
257.427 C	8	44	4	23	107.3	-0.2	+ 6.1	-12.5	268.355 G								
258.578 G	2	14	1	7	104.7	-3.0	+ 6.4	+ 0.1	269.364 G								
259.434 G	2	9	1	5	107.9	0.0	+ 5.6	+14.6	Means ...	...	...	32	176	24.7	...	-20.9	...
Means ...	...	...	5	18	107.3	...	+ 5.5	...									

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1929—*continued.*

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.	Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.		
	Umbræ	Whole Spots.	Umbræ	Whole Spots.					Umbræ	Whole Spots.	Umbræ	Whole Spots.					
Group 11061.																	
September 29–October 10. A large stream undergoing rapid changes from day to day. The leader, <i>a</i> , is a partially formed regular spot.																	
d																	
271.363 G	11	31	19	55	221.3	...	+11.0	−74.6	282.444 C	184	1100	103	615	145.3	−0.1	−19.6	−4.4
272.358 G	31	76	32	79	221.5	0.0	+11.5	−61.2	283.588 G	340	1972	192	1113	145.5	+0.2	−19.3	+10.9
273.355 C	70	193	53	147	220.5	−1.1	+11.2	−49.1	284.382 G	371	1870	222	1123	145.2	0.0	−20.1	+21.1
274.474 G	120	457	72	272	221.6	−0.1	+11.3	−33.2	285.560 C	203	1707	142	1190	144.8	−0.3	−19.7	+36.2
275.355 C	218	1086	116	578	223.7	+1.9	+11.0	−19.5	286.387 G	160	1219	136	1023	145.6	+0.6	−19.7	+47.9
276.380 C	237	1236	120	623	224.6	+2.7	+10.7	−5.1	287.435 C	105	748	128	898	144.8	−0.1	−20.5	+61.0
277.314 C	254	1337	128	676	225.2	+3.3	+11.0	+7.8	288.418 G	46	316	107	717	145.0	+0.2	−20.5	+74.1
278.407 C	180	1094	99	597	225.9	+3.9	+11.0	+23.0	289.391 G	4	20	(15	76	137.8	...	−20.3	+79.8
279.388 G	188	1059	118	658	225.7	+3.6	+11.3	+35.7	Means ...	...	...	109	667	144.9	...	−19.6	...
280.341 C	142	951	108	732	226.8	+4.6	+11.7	+49.4	Spot <i>b</i> .								
281.575 C	118	580	146	719	227.2	+4.9	+11.7	+66.1	280.341 C	44	133	31	93	141.7	0.0	−20.2	−35.7
282.444 C	48	299	111	676	227.0	+4.6	+11.7	+77.3	281.575 C	39	283	23	167	141.1	−0.5	−19.3	−20.0
Means ...	...	...	94	484	224.3	...	+11.3	...	282.444 C	57	392	32	220	140.9	−0.6	−18.7	−8.8
Spot <i>a</i> .																	
275.355 C	61	280	32	146	227.8	0.0	+11.1	−15.4	283.588 G	47	255	26	140	139.8	−1.6	−19.0	+5.2
276.380 C	100	532	50	266	228.1	+0.2	+10.5	−1.6	284.382 G	58	235	33	134	139.6	−1.7	−19.2	+15.5
277.314 C	126	700	64	357	231.8	+3.8	+10.6	+14.4	285.560 C	13	193	8	125	139.2	−2.0	−19.5	+30.6
278.407 C	92	554	52	310	229.6	+1.5	+11.1	+26.7	286.387 G	13	71	10	53	138.4	−2.7	−20.0	+40.7
279.388 G	112	562	73	365	229.7	+1.5	+11.3	+39.7	287.435 C	11	56	11	55	138.5	−2.5	−19.9	+54.7
280.341 C	74	567	60	459	229.6	+1.4	+11.6	+52.2	288.418 G	9	27	14	42	138.6	−2.3	−20.2	+67.7
281.575 C	74	366	100	494	230.0	+1.7	+11.8	+68.9	289.391 G	4	20	15	76	137.8	−3.0	−20.3	+79.8
282.444 C	31	166	80	430	229.5	+1.1	+11.9	+79.8	Group 11067.								
October 7–18. A large stream. The leader, <i>a</i> , coalesces with a companion spot closely following it on October 12, and a 'bridge' remains across the spot thus compounded. The follower, <i>b</i> , is for a few days the largest component, but it begins to break up after October 12.																	
279.388 G	11	29	24	61	114.2	0.0	+4.8	−75.8	279.388 G	11	29	24	61	114.2	0.0	+4.8	−75.8
280.341 C	35	109	38	112	116.2	+1.8	+4.4	−61.2	280.341 C	35	109	38	112	116.2	+1.8	+4.4	−61.2
281.575 C	74	268	52	191	115.9	+1.3	+4.5	−45.2	281.575 C	74	268	52	191	115.9	+1.3	+4.5	−45.2
282.444 C	113	475	67	285	115.8	+1.1	+4.2	−33.9	282.444 C	113	475	67	285	115.8	+1.1	+4.2	−33.9
283.588 G	215	992	115	527	116.2	+1.3	+3.9	−18.4	283.588 G	215	992	115	527	116.2	+1.3	+3.9	−18.4
284.382 G	211	1343	106	679	115.7	+0.4	+4.2	−8.4	284.382 G	211	1343	106	679	115.7	+0.4	+4.2	−8.4
285.560 C	219	1133	110	571	115.6	+0.3	+4.4	+7.0	285.560 C	219	1133	110	571	115.6	+0.3	+4.4	+7.0
286.387 G	164	986	88	520	115.9	+0.5	+4.5	+18.2	286.387 G	164	986	88	520	115.9	+0.5	+4.5	+18.2
287.435 C	143	749	87	449	116.9	+1.3	+4.3	+33.1	287.435 C	143	749	87	449	116.9	+1.3	+4.3	+33.1
288.418 G	108	522	80	386	118.3	+2.5	+4.1	+47.4	288.418 G	108	522	80	386	118.3	+2.5	+4.1	+47.4
289.391 G	48	256	52	275	120.5	+4.5	+3.8	+62.5	289.391 G	48	256	52	275	120.5	+4.5	+3.8	+62.5
290.387 G	27	139	60	304	121.9	+5.8	+3.7	+77.0	290.387 G	27	139	60	304	121.9	+5.8	+3.7	+77.0
Means ...	...	...	73	363	116.9	...	+4.2	...	Means ...	...	...	73	363	116.9	...	+4.2	...
Spot <i>a</i> .																	
279.388 G	4	13	7	22	117.0	0.0	+4.1	−73.0	279.388 G	4	13	7	22	117.0	0.0	+4.1	−73.0
280.341 C	22	83	22	81	118.0	+0.8	+4.2	−59.4	280.341 C	22	83	22	81	118.0	+0.8	+4.2	−59.4
281.575 C	31	109	20	72	119.7	+2.3	+4.5	−41.4	281.575 C	31	109	20	72	119.7	+2.3	+4.5	−41.4
282.444 C	41	179	23	103	120.1	+2.6	+4.2	−29.6	282.444 C	41	179	23	103	120.1	+2.6	+4.2	−29.6
283.588 G	44	218	23	113	120.6	+2.9	+4.2	−14.0	283.588 G	44	218	23	113	120.6	+2.9	+4.2	−14.0

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1929.—*continued.*

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.	Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.		
	Umbræ	Whole Spots.	Umbræ	Whole Spots.					Umbræ	Whole Spots.	Umbræ	Whole Spots.					
Group 11067—continued. Spot a—continued.								Group 11071—continued.									
d								d									
284.382 G	40	238	20	119	120.9	+3.0	+ 4.2	- 3.2	299.458 G	59	211	37	133	323.0	-3.5	+ 9.7	+37.7
285.560 C	95	438	48	223	120.7	+2.6	+ 3.8	+12.1	300.108 K	24	145	17	104	323.0	-3.6	+ 9.8	+46.3
286.387 G	75	380	41	205	120.9	+2.7	+ 4.0	+23.2	301.391 G	15	44	16	48	323.0	-3.7	+ 9.8	+63.2
287.435 C	87	367	55	231	121.5	+3.1	+ 3.9	+37.7	302.437 G	2	4	4	8	322.2	-4.6	+ 9.5	+76.2
288.418 C	64	301	51	238	121.7	+3.1	+ 3.8	+50.8	Means ...	...	...	7	27	323.9	...	+10.0	...
289.391 G	35	212	39	237	121.8	+3.0	+ 3.8	+63.8									
290.387 G	27	135	60	298	122.1	+3.2	+ 3.6	+77.2									
Spot b.								Group 11076.									
								October 27–November 3. A stream of normal type of rapid origin; a is the leader spot and b the follower.									
282.444 C	48	209	30	130	113.0	0.0	+ 4.8	-36.7	299.458 G	150	557	81	300	265.1	0.0	+13.7	-20.2
283.588 G	120	568	65	307	112.8	-0.4	+ 4.4	-21.8	300.108 K	185	929	95	481	265.5	+0.4	+13.8	-11.2
284.382 G	118	799	60	407	112.8	-0.5	+ 4.6	-11.3	301.391 G	198	970	101	495	266.0	+0.8	+13.6	+ 6.2
285.560 C	122	686	61	343	113.3	-0.2	+ 4.5	+ 4.7	302.437 G	154	821	83	443	265.1	-0.1	+13.4	+19.1
286.387 G	80	579	42	301	112.7	-1.0	+ 4.8	+15.0	303.393 G	132	701	78	417	265.1	-0.2	+13.5	+31.7
287.435 C	56	382	32	218	112.6	-1.3	+ 4.8	+28.8	304.548 G	73	462	54	341	265.0	-0.4	+13.4	+46.8
288.418 G	44	221	29	148	112.7	-1.4	+ 4.6	+41.8	305.405 G	61	269	58	261	265.7	+0.3	+13.3	+57.9
289.391 G	13	44	11	38	112.6	-1.6	+ 4.7	+54.6	306.429 G	26	141	41	232	265.3	-0.1	+12.8	+72.0
290.387 G	0	4	0	6	114.9	+0.5	+ 5.9	+70.0	Means ...	...	...	74	371	265.4	...	+13.4	...
Group 11069.								Spot a.									
October 17–23. A feeble stream.																	
289.391 G	13	44	7	23	50.6	0.0	-11.8	- 7.4	299.458 G	75	277	40	147	267.2	0.0	+13.2	-18.1
290.387 G	7	27	4	14	50.1	-0.6	-12.1	+ 5.2	300.108 K	110	557	56	284	267.8	+0.6	+13.1	- 8.9
291.459 G	13	48	7	27	51.8	+1.0	-11.2	+21.0	301.391 G	119	640	61	326	268.5	+1.2	+12.8	+ 8.7
292.106 K	21	66	13	40	52.9	+2.0	-10.2	+30.7	302.437 G	79	506	43	278	268.4	+1.1	+12.7	+22.4
293.387 G	37	103	30	83	54.1	+3.1	-10.1	+48.8	303.393 G	70	464	43	283	268.1	+0.7	+12.8	+34.7
294.436 G	13	44	17	56	56.7	+5.6	-10.7	+65.2	304.548 G	55	330	42	254	267.5	0.0	+13.0	+49.3
295.545 G	4	16	12	49	55.7	+4.5	-11.3	+78.8	305.405 G	48	229	48	229	268.1	+0.6	+12.8	+60.3
Means ...	...	...	13	42	53.1	...	-11.1	...	306.429 G	22	128	37	218	266.7	-0.8	+12.6	+73.4
Group 11071.								Spot b.									
October 19–30. A dot on October 19; nothing is seen until October 26, when a fair-sized but short-lived spot appears.																	
291.459 G	0	4	0	5	325.6	0.0	+12.0	-65.2	299.458 G	62	207	34	114	262.2	0.0	+14.1	-23.1
292.106 K	0	0	0	0	...	...	...	...	300.108 K	59	286	31	152	261.5	-0.7	+14.7	-15.2
293.387 G	0	0	0	0	...	...	...	...	301.391 G	53	211	27	108	260.2	-2.1	+15.1	+ 0.4
294.436 G	0	0	0	0	...	...	...	...	302.437 G	53	240	28	125	259.4	-2.9	+14.8	+13.4
295.545 G	0	0	0	0	...	...	...	...	303.393 G	40	158	22	88	258.5	-3.9	+14.7	+25.1
296.415 C	0	0	0	0	...	...	...	...	304.548 G	18	132	12	87	258.4	-4.1	+15.0	+40.2
297.392 G	0	0	0	0	...	...	...	...	305.405 G	13	40	10	32	258.2	-4.3	+15.3	+50.4
298.430 G	13	37	7	21	326.4	0.0	+9.5	+27.6	306.429 G	4	13	4	14	256.7	-5.8	+15.2	+63.4

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1929—*continued.*

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long from C.M.		Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.	
	Umbrae	Whole Spots.	Umbrae	Whole Spots.						Umbrae	Whole Spots.	Umbrae	Whole Spots.				
Group 11079.									Group 11093.								
October 29–November 6. A pair of spots in front of which the large group No. 11081 begins to develop on Oct 31.									November 13–22. A stream of normal type of rapid rise to maximum area. <i>a</i> is the leader spot.								
d									d								
301.391 G	2	4	5	10	180.3	0.0	+17.3	−79.5	316.386 C	34	150	24	105	19.0	0.0	−6.5	−43.0
302.437 G	26	73	31	83	182.0	+1.8	+15.8	−64.0	317.468 G	70	384	40	220	20.5	+1.3	−6.1	−27.3
303.393 G	46	147	37	119	182.0	+1.8	+16.0	−51.4	318.535 G	91	413	47	213	21.8	+2.5	−6.2	−11.9
304.548 G	33	86	21	56	179.7	−0.5	+16.4	−38.5	319.340 C	175	737	89	376	22.4	+2.9	−6.2	−0.7
305.405 G	51	170	29	98	180.7	+0.5	+16.9	−27.1	320.387 C	179	984	94	515	23.1	+3.5	−6.2	+13.8
306.429 G	55	110	30	59	179.1	−1.1	+16.7	−14.2	321.112 K	174	861	96	475	23.3	+3.6	−6.4	+23.5
307.507 C	30	95	16	48	178.9	−1.2	+16.9	−0.2	322.504 C	113	528	79	371	23.8	+3.8	−6.6	+42.4
308.491 C	26	90	14	48	178.8	−1.3	+16.9	+12.6	323.540 G	48	311	46	301	25.6	+5.5	−6.8	+57.8
309.656 Y	2	9	1	5	175.7	−4.4	+17.2	+24.9	324.465 G	26	187	42	299	27.0	+6.7	−6.8	+71.4
Means ...	...	...	20	58	179.7	...	+16.7	...	325.349 C	17	102	65	390	26.1	...	−6.5	+82.2
Group 11087.									Spot <i>a</i> .								
November 8–14. A small group <i>n</i> Group 11082.																	
311.351 C	2	26	1	14	113.7	0.0	−6.1	−14.8	319.340 C	73	321	37	164	25.1	0.0	−6.1	+2.0
312.387 G	28	74	14	38	114.4	+0.5	−6.7	−0.4	320.387 C	96	633	51	335	25.6	+0.3	−6.1	+16.3
313.512 G	18	61	10	32	115.2	+1.2	−6.9	+15.2	321.112 K	103	562	58	314	26.0	+0.6	−6.3	+26.2
314.365 C	9	34	5	19	115.0	+0.8	−6.7	+26.3	322.504 C	66	383	48	276	26.3	+0.7	−6.4	+44.9
315.392 G	22	70	15	48	116.6	+2.3	−7.9	+41.4	323.540 G	37	270	37	267	26.8	+1.0	−6.4	+59.0
316.386 C	17	45	15	40	116.3	+1.8	−7.8	+54.2	324.465 G	26	187	42	299	27.0	+1.1	−6.8	+71.4
317.468 G	4	9	5	12	115.5	+0.9	−7.4	+67.7	325.349 C	17	102	65	390	26.1	+0.1	−6.5	+82.2
Means ...	...	...	9	29	115.2	...	−7.1	...									
Group 11088.									Group 11102.								
November 8–19. A regular spot passing to extinction. There is a tiny follower on November 14.									November 25–December 6. A stream of small unstable spots <i>sf</i> Group 11100.								
311.351 C	9	39	37	159	46.3	...	−9.6	−82.2	328.420 C	13	70	15	81	199.2	0.0	+11.8	−64.2
312.387 G	13	68	18	95	46.9	0.0	−10.0	−67.9	329.471 G	30	109	23	86	199.9	+0.6	+11.2	−49.7
313.512 G	13	107	11	92	47.1	+0.1	−10.0	−52.9	330.419 G	48	179	30	113	201.0	+1.6	+11.5	−36.1
314.365 C	21	139	14	95	47.5	+0.4	−10.0	−41.2	331.385 C	21	146	12	80	201.6	+2.1	+11.6	−22.8
315.392 G	37	145	21	84	47.5	+0.3	−10.2	−27.7	332.356 C	34	204	18	106	201.8	+2.3	+11.0	−9.8
316.386 C	26	141	14	75	47.6	+0.3	−10.4	−14.5	333.487 G	46	208	23	106	200.7	+1.1	+11.0	+4.0
317.468 G	28	133	14	68	47.5	0.0	−10.3	−0.3	334.281 K	20	171	10	89	200.9	+1.2	+11.3	+14.7
318.535 G	22	126	12	67	47.9	+0.3	−10.4	+14.2	335.377 C	8	72	5	42	200.4	+0.6	+10.2	+28.6
319.340 C	17	111	10	63	47.9	+0.3	−10.4	+24.8	336.368 C	25	74	18	50	200.4	+0.5	+11.4	+41.7
320.387 C	21	96	14	63	48.1	+0.3	−10.4	+38.8	337.535 G	22	95	20	91	200.7	+0.7	+12.2	+57.4
321.112 K	18	77	14	60	48.4	+0.6	−10.6	+48.6	338.110 K	18	64	23	83	202.5	+2.4	+11.5	+66.7
322.504 C	6	26	8	35	48.7	+0.7	−10.7	+67.3	339.115 K	0	38	0	38	200.3	+0.1	+12.5	+77.8
Means ...	...	...	14	72	47.7	...	−10.3	...	Means ...	...	...	16	80	200.8	...	+11.4	...

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1929—continued.

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.	Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.								
	Umbrae	Whole Spots.	Umbrae	Whole Spots.					Umbrae	Whole Spots.	Umbrae	Whole Spots.											
Group 11103.								Group 11108.															
November 25–December 3. A small but persistent spot <i>f</i> Group 11100.								November 27–December 8. A regular spot, <i>a</i> , breaking up on December 3, followed at nearly a constant distance by a companion, <i>b</i> , which dissolves into a cluster.															
d								d															
328.420 C	8	30	15	56	189.0	0.0	+16.2	−74.4	330.419 G	20	56	34	94	164.5	0.0	+16.4	−72.6						
329.471 G	22	70	23	74	188.8	−0.2	+16.7	−60.8	331.385 C	51	273	53	283	164.9	+0.4	+17.1	−59.5						
330.419 G	26	72	20	55	189.5	+0.5	+16.3	−47.6	332.356 C	89	661	70	506	164.8	+0.4	+17.3	−46.8						
331.385 C	11	55	7	35	189.8	+0.9	+16.3	−34.6	333.487 G	113	707	69	436	165.0	+0.6	+17.4	−31.7						
332.356 C	17	32	10	18	190.0	+1.1	+16.2	−21.6	334.281 K	130	743	73	413	165.1	+0.7	+17.3	−21.1						
333.487 G	13	33	7	17	190.4	+1.5	+16.3	−6.3	335.377 C	181	634	95	332	165.1	+0.8	+17.4	−6.7						
334.281 K	12	30	6	16	190.3	+1.4	+16.4	+4.1	336.368 C	103	551	54	291	165.6	+1.3	+17.0	+6.9						
335.377 C	15	21	8	12	190.1	+1.2	+16.4	+18.3	337.535 G	78	374	44	212	165.4	+1.1	+17.0	+22.1						
336.368 C	11	17	7	10	190.2	+1.3	+16.5	+31.5	338.110 K	55	205	35	124	165.8	+1.5	+17.0	+30.0						
Means ...	...	...	11	33	189.9	...	+16.4	...	339.115 K	38	191	27	135	165.0	+0.8	+16.9	+42.5						
								340.117 K								50	207	45	188	164.1	−0.1	+16.4	+54.8
								341.569 G								7	26	16	60	167.2	+3.1	+16.7	+77.0
								Means ...								...	...	51	256	165.2	...	+17.0	...
Group 11104.								Spot a.															
November 25–December 7. A regular spot, <i>b</i> , in front of which a number of companions appear. The preceding part of the stream thus formed joins up with the preceding part of another stream, Group 11105, the two streams making a large > shaped formation directed towards the big spot, Group 11100.								331.385 C								30	167	29	164	166.2	0.0	+17.5	−58.2
								332.356 C								34	428	25	317	166.4	+0.2	+17.3	−45.2
								333.487 G								67	421	40	253	166.9	+0.8	+17.5	−29.8
								334.281 K								74	486	41	267	166.7	+0.6	+17.5	−19.5
								335.377 C								117	411	61	214	166.9	+0.8	+17.5	−4.9
								336.368 C								59	373	31	198	166.7	+0.7	+17.0	+8.0
								337.535 G								52	278	30	158	166.4	+0.4	+16.7	+23.1
								338.110 K								44	147	27	90	166.6	+0.6	+16.9	+30.8
								339.115 K								30	113	22	81	166.5	+0.5	+16.7	+44.0
								340.117 K								20	94	19	91	166.8	+0.9	+16.3	+57.5
								341.569 G								7	26	16	60	167.2	+1.3	+16.7	+77.0
								Spot b.															
								332.356 C								55	233	45	189	161.8	0.0	+17.3	−49.8
								333.487 G								46	286	29	183	161.7	−0.1	+17.5	−35.0
								334.281 K								56	257	32	146	161.7	0.0	+17.3	−24.5
								335.377 C								64	223	34	118	161.8	+0.1	+17.2	−10.0
Spot b.								Group 11109.															
November 27–December 4. A diminishing regular spot.								330.419 G								11	39	42	149	154.5	...	+6.1	−82.6
								331.385 C								21	108	33	170	153.0	0.0	+6.1	−71.4
								332.356 C								25	170	24	160	153.8	+0.6	+6.0	−57.8
								333.487 G								48	213	33	145	154.3	+1.0	+6.4	−42.4
								334.281 K								44	205	26	121	154.5	+1.0	+6.7	−31.7
								335.377 C								25	100	13	53	154.6	+1.0	+7.1	−17.2
								336.368 C								13	30	7	15	154.8	+1.0	+6.9	−3.9
								337.535 G								0	4	0	2	154.0	0.0	+5.3	+10.7
								Means ...								...	...	19	95	154.1	...	+6.4	...

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1929—*continued.*

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.		Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.	
	Umbræ	Whole Spots.	Umbræ	Whole Spots.						Umbræ	Whole Spots.	Umbræ	Whole Spots.				
Group III24. December 10-21. A small regular spot.									Group III27—continued. Spot a.								
d									d								
343.472 G	2	13	12	79	340.3	...	+20.5	-84.8	345.498 G	43	195	44	201	337.6	0.0	-3.3	-60.8
344.508 C	11	30	16	44	342.9	0.0	+20.4	-68.5	346.409 G	78	425	58	314	339.0	+1.2	-3.6	-47.4
345.498 G	24	85	23	81	343.1	+0.3	+20.7	-55.3	347.301 C	87	481	53	293	339.8	+1.9	-3.5	-34.8
346.409 G	17	82	12	60	343.5	+0.9	+20.7	-42.9	348.401 C	82	435	43	231	340.9	+2.8	-3.1	-19.2
347.301 C	13	65	8	41	342.8	+0.3	+20.4	-31.8	349.466 G	112	456	56	228	341.7	+3.4	-2.8	-4.4
348.401 C	8	70	4	39	342.6	+0.2	+20.5	-17.5	350.504 G	84	417	43	213	342.1	+3.6	-2.5	+9.7
349.466 G	24	120	13	65	342.3	+0.1	+20.8	-3.8	351.377 C	59	395	32	213	343.2	+4.5	-2.5	+22.3
350.504 G	17	86	9	47	342.1	0.0	+20.8	+9.7	352.475 G	50	294	31	182	342.6	+3.7	-2.2	+36.1
351.377 C	17	63	10	37	341.7	-0.3	+20.7	+20.8	353.437 G	46	252	35	192	342.6	+3.5	-2.1	+48.8
352.475 G	13	39	9	26	341.7	-0.1	+20.9	+35.2	354.115 K	28	149	27	142	343.1	+3.9	-2.0	+58.2
353.437 G	9	39	7	32	341.7	0.0	+20.9	+47.9	355.436 C	13	65	26	131	343.3	+3.9	-1.9	+75.8
354.115 K	6	16	6	16	342.0	+0.4	+20.7	+57.1									
Means ...	...	...	11	44	342.4	...	+20.7	...									
Group III26. December 11-20. A partly formed regular spot with an occasional companion.									Spot b.								
344.508 C	13	42	22	72	338.9	0.0	+12.8	-72.5	345.498 G	30	111	35	131	333.5	0.0	-2.2	-64.9
345.498 G	20	91	20	92	339.1	+0.1	+13.1	-59.3	346.409 G	52	271	44	228	332.9	-0.8	-2.6	-53.5
346.409 G	17	117	13	88	339.7	+0.7	+12.8	-46.7	347.301 C	38	382	26	260	332.4	-1.4	-2.7	-42.2
347.301 C	25	122	16	76	340.2	+1.1	+12.9	-34.4	348.401 C	42	335	24	188	332.5	-1.5	-2.7	-27.6
348.401 C	31	165	17	90	341.2	+2.1	+13.1	-18.9	349.466 G	103	460	53	235	332.4	-1.8	-2.7	-13.7
349.466 G	26	131	14	68	341.4	+2.2	+13.2	-4.7	350.504 G	80	374	40	187	332.4	-2.0	-2.6	0.0
350.504 G	28	106	15	56	341.5	+2.3	+13.8	+9.1	351.377 C	51	270	26	138	332.4	-2.2	-3.0	+11.5
351.377 C	17	51	9	28	341.2	+1.9	+13.2	+20.3	352.475 G	39	173	22	97	332.8	-2.0	-3.0	+26.3
352.475 G	13	30	8	19	341.3	+2.0	+13.5	+34.8	353.437 G	15	82	10	52	332.8	-2.2	-3.2	+39.0
353.437 G	2	4	2	3	341.3	+1.9	+13.1	+47.5	354.115 K	8	36	6	27	333.5	-1.6	-3.6	+48.6
Means ...	...	...	14	59	340.6	...	+13.2	...									
Group III27. December 12-22. A stream approximately of normal type, forming immediately behind Group III22. 'a' and 'b' are the leader and follower respectively.									Group III29. December 14-24. An insignificant stream until December 19, when more definite spots appear of which the leader becomes a regular spot.								
345.498 G	73	306	79	332	336.0	0.0	-3.1	-62.4	347.301 C	4	13	6	19	305.2	0.0	+13.1	-69.4
346.409 G	130	606	102	542	336.8	+0.6	-3.2	-49.6	348.401 C	12	44	11	42	303.9	-1.3	+13.8	-56.2
347.301 C	125	863	79	553	336.8	+0.5	-3.1	-37.8	349.466 G	17	58	12	41	304.3	-1.0	+14.0	-41.8
348.401 C	141	825	76	449	337.1	+0.6	-3.0	-23.0	350.504 G	9	26	5	15	305.6	+0.3	+13.5	-26.8
349.466 G	256	994	130	503	337.1	+0.4	-2.8	-9.0	351.377 C	34	148	18	80	306.2	+0.8	+13.8	-14.7
350.504 G	179	839	91	424	337.7	+0.8	-2.6	+5.3	352.475 G	123	542	64	281	307.2	+1.8	+14.1	+0.7
351.377 C	111	671	59	354	338.3	+1.2	-2.5	+17.4	353.437 G	76	497	41	269	307.9	+2.5	+13.9	+14.1
352.475 G	95	484	56	289	338.6	+1.3	-2.5	+32.1	354.115 K	80	362	46	205	308.2	+2.7	+14.1	+23.3
353.437 G	65	362	48	262	339.8	+2.3	-2.2	+46.0	355.436 C	44	219	30	156	309.0	+3.5	+13.9	+41.5
354.115 K	38	199	35	179	340.9	+3.3	-2.2	+56.0	356.419 C	25	137	25	136	311.7	+6.2	+14.5	+57.2
355.436 C	13	65	26	131	343.3	+5.5	-1.9	+75.8	357.346 C	15	72	24	116	312.9	+7.3	+15.0	+70.6
Means ...	...	...	71	365	338.4	...	-2.6	...	Means ...	...	...	26	124	307.5	...	+14.0	...

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1929—*continued*.

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.		Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.	
	Umbræ	Whole Spots.	Umbræ	Whole Spots.						Umbræ	Whole Spots.	Umbræ	Whole Spots.				
Group 11130.									Group 11135.								
December 15-26. A regular spot with companions on December 21, 22 and 23.									December 18-25. A small changing stream.								
d									d								
348.401 C	21	82	35	136	287.6	0.0	-4.2	-72.5	351.377 C	17	59	11	37	286.2	0.0	+10.7	-34.7
349.466 G	34	129	33	126	286.8	-1.0	-4.3	-59.3	352.475 G	71	289	39	158	287.1	+0.8	+10.5	-19.4
350.504 G	41	181	29	129	286.8	-1.2	-3.9	-45.6	353.437 G	61	217	31	112	287.4	+1.0	+10.3	-6.4
351.377 C	34	173	20	104	287.0	-1.1	-4.0	-33.9	354.115 K	44	108	22	55	287.4	+0.9	+10.5	+2.5
352.475 G	37	216	20	114	287.4	-0.9	-3.9	-19.1	355.436 C	38	101	21	56	287.6	+1.0	+10.5	+20.1
353.437 G	39	217	20	108	287.4	-1.1	-4.1	-6.4	356.419 C	11	55	7	33	286.3	-0.4	+10.2	+31.8
354.115 K	42	203	21	102	287.6	-1.0	-3.9	+2.7	357.346 C	4	13	3	9	286.1	-0.7	+9.7	+43.8
355.436 C	38	194	20	103	286.8	-2.1	-3.7	+19.3	358.489 G	13	26	14	27	287.6	+0.6	+9.9	+60.4
356.419 C	25	141	15	85	288.1	-0.9	-4.0	+33.6	Means ...	...	...	18	61	287.0	...	+10.3	...
357.346 C	30	120	21	85	287.9	-1.3	-3.6	+45.6									
358.489 G	39	95	40	97	287.8	-1.6	-3.5	+60.6									
359.443 G	11	50	19	88	288.5	-1.1	-3.5	+73.8									
Means ...	...	...	24	106	287.5	...	-3.9	...									
Group 11132.									Group 11141.								
December 16-27. A regular spot with companions to the north of it on December 23 and 24.									December 22-29. A small regular spot diminishing to a dot; there is a companion spot on December 26.								
349.466 G	4	15	7	27	272.9	0.0	+10.4	-73.2	355.436 C	13	30	17	39	200.2	0.0	+1.4	-67.3
350.504 G	6	39	6	39	273.6	+0.6	+10.2	-58.8	356.419 C	21	63	18	54	200.2	-0.2	+1.7	-54.3
351.377 C	19	72	14	53	274.3	+1.2	+10.3	-46.6	357.346 C	17	63	12	43	200.2	-0.4	+1.5	-42.1
352.475 G	26	130	16	78	274.4	+1.2	+10.1	-32.1	358.489 G	9	26	5	15	200.5	-0.3	+1.7	-26.7
353.437 G	26	128	14	69	273.9	+0.6	+9.9	-19.9	359.443 G	4	26	2	14	200.3	-0.7	+0.9	-14.4
354.115 K	28	145	15	75	273.9	+0.5	+9.9	-11.0	360.435 G	2	15	1	8	200.7	-0.4	+0.5	-0.9
355.436 C	25	143	13	73	274.0	+0.4	+9.7	+6.5	361.360 C	2	4	1	2	200.8	-0.5	+2.1	+11.4
356.419 C	21	78	11	42	274.3	+0.6	+9.8	+19.8	362.454 G	2	17	1	10	201.4	-0.1	+1.9	+26.4
357.346 C	38	152	23	92	274.4	+0.6	+10.5	+32.1	Means ...	...	...	7	23	200.5	...	+1.5	...
358.489 G	24	95	18	71	274.1	+0.2	+10.1	+46.9									
359.443 G	11	67	11	68	274.2	+0.2	+10.1	+59.5									
360.435 G	13	19	23	34	274.6	+0.5	+10.3	+73.0									
Means ...	...	...	14	60	274.0	...	+10.1	...									
Group 11134.									Group 11143.								
December 17-25. Revival of Group 11096. A regular spot with companions on December 22-24.									December 22-1930, January 1. Revival of Groups 11102 and 11103. A pair of spots s of Group 11142. The leader, a, at first nearly circular becomes drawn out in an E-W direction, and has divided into two on December 29.								
350.504 G	4	13	29	96	246.6	...	+9.6	-85.8	355.436 C	49	342	82	592	195.3	0.0	+10.7	-72.2
351.377 C	21	84	39	158	246.9	0.0	+9.6	-74.0	356.419 C	80	453	81	460	195.1	-0.3	+10.9	-59.4
352.475 G	32	134	32	135	246.8	-0.2	+9.5	-59.7	357.346 C	85	456	64	344	195.3	-0.2	+10.8	-47.0
353.437 G	22	143	16	106	247.2	+0.1	+9.1	-46.6	358.489 G	95	610	58	372	195.4	-0.2	+11.4	-31.8
354.115 K	26	133	17	85	247.6	+0.4	+9.4	-37.3	359.443 G	99	650	54	354	195.5	-0.2	+11.1	-19.2
355.436 C	47	160	25	86	248.6	+1.2	+9.4	-18.9	360.435 G	114	706	59	367	195.8	+0.1	+11.0	-5.8
356.419 C	25	91	13	47	248.6	+1.1	+10.3	-5.9	361.360 C	84	521	44	271	195.5	-0.3	+11.2	+6.1
357.346 C	15	72	8	37	249.5	+1.9	+9.0	+7.2	362.454 G	82	510	45	282	195.7	-0.2	+11.9	+20.7
358.489 G	4	34	2	19	246.3	-1.4	+12.0	+19.1	363.116 K	42	293	25	174	195.2	-0.8	+11.7	+28.9
Means ...	...	...	19	84	247.7	...	+9.8	...	364.318 C	27	106	20	77	195.2	-0.9	+12.1	+44.7
									365.311 C	4	55	4	53	194.5	-1.7	+12.1	+57.1
Means ...	...	...	...	...	...	...	...	...	Means ...	...	...	49	304	195.3	...	+11.4	...

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1929--*continued.*

Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.	Date G.M.T. Place.	Projected Area		Corrected Area		Longitude and Proper Motion.	Latitude.	Long. from C.M.		
	Umbræ	Whole Spots.	Umbræ	Whole Spots.					Umbræ	Whole Spots.	Umbræ	Whole Spots.					
Group III43—continued.								Group III44—continued.									
Spot a.								Spot a.									
d								d									
355·436 C	32	165	50	256	197°0	0°0	+10°5	-70°5	361·360 C	46	196	23	98	187°2	-1°8	+3°2	-2°2
356·419 C	44	219	42	210	196·9	-0·2	+10·8	-57·6	362·454 G	26	129	14	67	189·2	+0·1	+3·5	+14·2
357·346 C	51	245	37	179	196·8	-0·4	+10·7	-45·5	363·116 K	24	104	14	57	189·1	-0·2	+4·0	+22·8
358·489 G	52	318	31	191	196·9	-0·4	+11·1	-30·3	364·318 C	8	34	5	22	189·2	-0·3	+3·8	+38·7
359·443 G	56	315	30	170	197·2	-0·2	+11·0	-17·5	Means ...	...	...	30	142	188·2	...	+3·9	...
360·435 G	73	365	38	190	197·4	0·0	+11·1	-4·2	Spot a.								
361·360 C	44	238	23	124	197·9	+0·4	+11·0	+8·5	356·419 C	21	82	27	104	188·0	0·0	+5·2	-66·5
362·454 G	43	147	24	82	198·1	+0·5	+11·7	+23·1	357·346 C	19	87	17	76	187·8	-0·4	+5·3	-54·5
Spot b.								258·489 G	24	114	16	74	188·2	-0·2	+5·3	-39·0	
356·419 C	36	234	39	250	193·3	0·0	+11·1	-61·2	359·443 G	30	112	17	63	188·5	0·0	+5·2	-26·2
357·346 C	34	211	27	165	193·6	+0·2	+10·9	-48·7	360·435 G	35	136	18	71	188·7	0·0	+5·0	-12·9
358·489 G	43	292	27	181	193·7	+0·2	+11·7	-33·5	361·360 C	21	97	10	48	188·8	-0·1	+4·9	-0·6
359·443 G	43	335	24	184	194·0	+0·4	+11·1	-20·7	362·454 G	13	60	7	31	188·9	-0·2	+5·0	+13·9
360·435 G	24	311	12	162	193·8	+0·1	+11·4	-7·8	363·116 K	10	60	6	33	189·0	-0·2	+5·2	+22·7
361·360 C	36	272	19	141	193·8	+0·1	+11·4	+4·4	364·318 C	8	17	5	11	188·7	-0·7	+4·8	+38·2
362·454 G	39	363	21	200	194·1	+0·3	+11·8	+19·1	Group III51.								
Group III44.								December 30-1930, January 5. A short-lived stream.									
December 22-31. An incompletely formed, regular spot, a, small but stable, with numerous small companions in a stream southwards.								363·116 K	8	24	5	14	141·9	0·0	+11·2	-24·4	
355·436 C	13	68	37	192	187·9	0·0	+4·5	-79·6	364·318 C	13	74	7	38	142·9	+0·9	+11·9	-7·6
356·419 C	38	128	49	163	187·9	-0·2	+4·2	-66·6	365·311 C	42	266	22	138	144·2	+2·1	+10·9	+6·8
357·346 C	34	214	30	189	187·2	-1·0	+4·2	-55·1	366·525 G	43	182	24	103	144·8	+2·6	+11·0	+23·4
358·489 G	71	415	47	270	187·8	-0·6	+4·3	-39·4	367·376 C	10	53	6	34	145·1	+2·8	+10·5	+34·9
359·443 G	67	382	38	216	187·8	-0·8	+4·0	-26·9	368·413 G	7	13	6	11	147·2	+4·8	+10·8	+50·6
360·435 G	86	289	45	150	188·9	+0·1	+3·4	-12·7	369·484 G	2	4	3	5	148·0	+5·5	+11·5	+65·6
								Means ...	...	...	10	49	144·9	...	+11·1	...	

ROYAL OBSERVATORY, GREENWICH.

Total Areas of Sun Spots and Faculæ

Projected and Corrected for Foreshortening
for each Day, and

Mean Areas and Mean Heliographic
Latitude of Sun Spots and Faculæ

for each Rotation of the Sun
and for the Year

1929

GREENWICH PHOTO-HELIOGRAPHIC RESULTS, 1929.

TOTAL AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929.

The Greenwich Mean Time 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 disc.

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

Greenwich Mean Time.	Place.	Projected Area.			Area Corrected for Foreshortening.			Greenwich Mean Time.	Place.	Projected Area.			Area Corrected for Foreshortening.		
		Umbrae.	Whole Spots.	Faculae.	Umbrae.	Whole Spots.	Faculae.			Umbrae.	Whole Spots.	Faculae.	Umbrae.	Whole Spots.	Faculae.
1929. ^a								1929. ^a							
January 1.323	C	176	1166	914	101	642	1217	February 8.517	G	414	1911	2746	296	1408	3204
2.423	G	339	1421	2041	252	1123	2465	9.333	C	491	2301	2980	323	1496	3380
3.301	C	193	1186	1564	157	1044	1920	10.408	C	516	2484	1931	309	1465	2182
4.322	C	160	912	2548	149	860	2710	11.363	C	403	2432	1349	220	1353	1762
5.433	C	116	664	2704	113	616	2824	12.455	G	509	2330	1066	288	1277	1336
6.355	C	99	595	2398	80	507	2618	13.499	G	521	2272	1822	283	1241	1913
7.329	C	170	829	1696	111	499	2388	14.460	G	517	2342	1461	353	1472	1581
8.361	C	204	992	1035	116	575	1290	15.498	G	312	1706	1736	243	1358	2359
9.342	C	207	961	2137	148	787	2824	16.351	C	190	1126	1698	172	1016	2073
10.300	C	159	690	1381	137	601	1825	17.398	C	141	746	2572	181	1039	2788
11.336	C	93	564	1497	90	550	1766	18.511	G	74	409	2856	89	542	3478
12.323	C	155	1000	1425	129	923	1768	19.388	C	79	282	1996	59	198	2763
13.319	C	291	1563	1864	201	1135	2298	20.400	G	156	561	1270	133	516	1597
14.312	C	232	1546	752	143	976	1037	21.411	G	132	489	1809	158	642	2323
15.364	C	390	2365	855	222	1346	936	22.427	G	137	630	2623	133	626	3271
16.488	G	613	3545	1421	412	2249	2172	23.367	C	131	836	2014	123	857	2671
17.314	C	478	3055	1762	291	1823	2101	24.451	C	202	890	2077	168	734	2649
18.302	C	447	2917	2297	277	1722	2344	25.340	C	191	1057	1394	130	727	1550
19.465	G	352	2838	1456	309	1716	2189	26.310	C	244	918	1638	151	559	1813
20.457	C	372	2524	1581	241	1611	2194	27.315	C	192	935	1555	118	563	2055
21.405	C	404	2472	1598	296	1819	1877	28.365	C	140	523	1248	96	328	1730
22.324	C	333	1962	1439	250	1560	1523								
23.340	C	332	2044	1655	242	1460	2247								
24.329	C	359	1808	1580	213	1082	1974	March 1.401	G	129	502	1315	131	542	1755
25.349	C	243	1382	1802	145	822	2122	2.401	G	150	777	1325	172	1036	2002
26.499	G	208	867	2912	156	614	3006	3.551	G	248	1178	2222	222	1104	2304
27.378	C	127	771	2562	105	599	3081	4.308	C	225	1256	2087	252	1446	2137
28.327	C	80	470	2370	47	275	3091	5.515	G	484	2047	2441	501	2118	2998
29.396	C	63	339	1544	45	236	1774	6.476	G	512	2540	2094	427	2100	2418
30.342	C	31	268	1750	20	184	1845	7.623	G	554	2990	2258	361	1935	2345
31.350	C	92	616	1885	68	427	2172	8.389	G	582	3072	1802	342	1788	2516
								9.487	G	629	3471	1906	353	1884	2516
								10.448	G	572	3322	2381	323	1821	2570
								11.407	G	580	3299	2425	348	1900	2612
February 1.319	C	120	556	1854	87	407	2296	12.399	G	578	2973	2129	344	1784	2189
2.342	C	109	416	1140	67	248	1303	13.348	C	420	2571	1437	276	1703	1596
3.383	C	73	312	1553	49	214	1776	14.294	C	331	1876	662	272	1530	1043
4.419	G	120	293	1845	106	278	1902	15.320	C	244	1391	1063	236	1363	1184
5.327	C	145	506	1579	115	421	1796	16.325	C	188	1047	2337	261	1509	2919
6.341	C	191	850	1760	165	813	2381	17.495	G	154	729	3228	152	729	3752
7.346	C	279	1407	2187	230	1206	2802								

TOTAL AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929—continued.

Greenwich Mean Time.	Place.	Projected Area.			Area Corrected for Foreshortening.			Greenwich Mean Time.	Place.	Projected Area.			Area Corrected for Foreshortening.		
		Umbrae.	Whole Spots.	Faculae.	Umbrae.	Whole Spots.	Faculae.			Umbrae.	Whole Spots.	Faculae.	Umbrae.	Whole Spots.	Faculae.
1929. d								1929. d							
March 18.402	G	137	594	2628	112	473	2751	May 9.354	G	236	1045	3002	265	1219	3678
19.602	G	150	717	1522	89	427	1854	10.352	G	234	896	3382	200	742	4041
20.432	G	146	739	1797	79	401	2828	11.350	C	267	1184	2853	151	678	3588
21.602	G	115	735	1413	60	383	1667	12.389	C	317	1443	2078	188	838	2414
22.446	G	122	672	1820	65	356	2165	13.591	G	360	1833	1412	251	1282	1695
23.429	G	157	721	1361	121	542	1635	14.391	G	273	1586	2459	227	1337	3016
24.423	G	136	684	1462	101	496	1595	15.382	G	232	1131	3030	225	1271	3375
25.542	G	115	645	830	87	495	859	16.352	G	149	644	2062	117	502	2316
26.422	G	113	661	1625	91	525	1682	17.415	G	146	532	1929	98	348	2111
27.422	G	160	607	1639	142	523	2183	18.480	G	128	551	1228	75	358	1274
28.406	G	91	455	1187	46	232	1580	19.419	G	114	403	1946	77	316	2064
29.434	G	78	466	1066	40	241	1397	20.399	G	71	242	1760	60	265	2190
30.411	G	126	438	1976	88	323	2171	21.353	G	51	186	1221	32	117	1546
31.451	G	154	805	1260	191	1090	1625	22.405	G	62	258	1299	95	451	1478
								23.366	G	100	559	1827	124	742	2162
April 1.633	G	132	948	1549	138	1037	1845	24.512	G	249	1099	3181	203	913	3661
2.446	G	164	910	1926	156	878	2228	25.397	G	327	1564	3154	260	1140	3976
3.413	G	163	920	1993	149	786	2508	26.495	G	358	1675	3123	216	1000	3594
4.468	C	154	751	1315	110	536	1851	27.419	G	309	1848	3569	174	1034	3684
5.451	G	213	950	1833	140	611	2439	28.416	C	286	1464	1891	157	809	2068
6.394	G	387	1416	923	202	741	1086	29.405	C	261	1255	1570	152	715	1478
7.432	G	408	2007	1961	206	1012	2040	30.405	G	188	962	1386	113	571	1631
8.503	G	381	1841	1482	204	959	1658	31.562	G	193	993	1616	146	726	2192
9.594	G	301	1668	1713	224	1166	1936								
10.460	G	429	1763	1673	326	1397	1921	June 1.497	G	120	669	2746	112	618	2734
11.395	G	434	2129	1374	401	1929	1675	2.398	C	102	551	2886	115	693	2971
12.310	C	397	2141	2746	335	1803	3228	3.473	G	52	297	2574	127	758	3026
13.332	C	362	1960	1716	344	1864	2029	4.442	G	78	270	3283	106	487	3951
14.420	C	280	1609	2559	233	1313	3276	5.365	C	125	570	3546	132	616	4124
15.456	G	275	1548	2286	200	1097	2553	6.308	C	185	995	3144	186	993	3804
16.615	G	256	1369	1845	161	855	2402	7.358	G	201	1119	1758	193	1052	2343
17.395	G	248	1257	1255	135	690	1678	8.361	C	238	1360	1324	165	876	1957
18.400	G	226	1333	1962	128	771	2099	9.487	G	274	1487	1624	152	803	1775
19.400	G	301	1352	1787	186	885	2081	10.353	G	289	1476	2708	155	782	3305
20.374	C	343	2019	1778	245	1464	1979	11.351	G	327	1443	2510	210	880	2847
21.343	C	327	1773	2208	277	1565	2306	12.386	C	286	1409	2147	196	920	2636
22.372	G	190	1103	1830	173	1052	2119	13.355	G	274	1216	1846	194	875	1990
23.380	C	137	635	2078	217	1048	2390	14.354	G	224	1131	2088	186	996	2270
24.360	G	93	361	2810	101	544	3323	15.396	G	219	848	1834	172	679	2224
25.418	G	179	1097	1549	134	829	2082	16.648	G	197	712	1849	134	485	2180
26.643	G	154	849	2276	133	734	2593	17.362	G	174	645	2477	100	376	2723
27.410	G	159	760	2340	200	914	2561	18.353	G	211	1042	2204	323	1863	2968
28.463	G	121	683	2158	170	962	2735	19.357	G	312	1671	2517	338	1825	3303
29.427	C	150	824	1951	140	731	2359	20.444	G	490	2157	3924	436	1904	4419
30.583	G	222	1307	2199	165	936	2526	21.358	G	537	2440	3464	378	1732	3614
								22.335	C	613	2977	2544	404	1973	3159
May 1.357	G	361	1679	2706	227	1061	2937	23.449	G	756	3538	1880	450	2081	2183
2.355	G	430	2099	1696	247	1180	2169	24.606	G	754	3450	2553	425	1977	2611
3.351	G	427	1963	1469	229	1036	1634	25.367	G	693	3164	1851	416	1921	1938
4.319	C	369	1709	1525	195	898	1539	26.348	G	562	2677	1692	406	1878	2047
5.440	C	390	1760	1440	235	1036	1838	27.337	C	448	2324	1892	312	1590	2190
6.326	C	358	1780	2062	256	1230	2422	28.425	C	312	1745	3313	255	1420	3525
7.350	G	332	1497	2939	253	1154	3197	29.370	G	329	1520	4555	346	1541	5003
8.356	G	265	1288	2949	274	1362	3264	30.672	Y	233	1108	1497	275	1375	2865

TOTAL AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929—*continued.*

Greenwich Mean Time.	Place.	Projected Area.			Area Corrected for Foreshortening.			Greenwich Mean Time.	Place.	Projected Area.			Area Corrected for Foreshortening.		
		Umbrae.	Whole Spots.	Faculae.	Umbrae.	Whole Spots.	Faculae.			Umbrae.	Whole Spots.	Faculae.	Umbrae.	Whole Spots.	Faculae.
1929. July	d							1929. August	d						
1:488	G	308	1675	2283	253	1478	2673	24:429	G	194	855	2781	129	571	3163
2:364	G	324	1979	3661	237	1500	3987	25:363	G	166	730	3904	124	557	3930
3:357	G	384	1885	4158	251	1261	4385	26:347	G	129	701	3608	119	660	4180
4:571	G	295	1532	1725	228	1246	2107	27:348	G	100	335	2506	118	410	3208
5:356	G	233	1226	1649	162	743	2061	28:348	G	51	188	2118	74	278	2578
6:395	G	340	1781	3224	226	1159	3361	29:353	G	42	198	1805	24	106	1938
7:404	G	254	1268	2486	191	963	2749	30:364	G	57	168	2103	31	94	2090
8:357	G	185	942	2109	150	711	2482	31:349	G	18	44	2286	11	28	2619
9:355	G	134	603	2808	97	467	2986								
10:429	G	305	1110	3631	192	743	3713	September 1:352	G	9	36	1970	5	21	2229
11:357	G	556	2466	3134	361	1661	3633	2:365	G	29	61	1858	15	31	2560
12:353	G	593	2929	3477	370	1869	4212	3:349	G	30	124	2269	47	205	2844
13:358	G	514	2672	3152	340	1772	3519	4:408	G	31	121	2665	25	131	3471
14:376	G	466	2203	2393	380	1757	2763	5:364	G	141	444	3238	85	275	3764
15:415	C	411	2159	2101	432	2077	2893	6:355	G	166	899	3020	106	575	3444
16:354	G	401	2048	3293	375	2057	4059	7:353	G	180	812	2722	120	547	3127
17:356	G	354	1728	2072	234	1128	2357	8:431	C	155	648	2858	110	465	2944
18:356	G	347	1746	1938	209	1035	2015	9:369	G	149	670	1807	114	545	1917
19:355	G	296	1560	2074	182	933	2314	10:468	G	94	333	1513	112	387	1932
20:357	G	354	1691	2281	218	1030	2484	11:358	G	47	155	1431	31	99	1715
21:469	G	338	1340	2229	243	1016	2474	12:354	G	44	96	2541	28	72	2870
22:560	G	249	990	1887	219	911	2008	13:412	G	40	176	3261	31	126	3562
23:561	G	124	467	1818	166	473	2312	14:377	G	34	143	3315	33	141	3541
24:389	G	78	350	2414	55	251	2671	15:427	C	45	223	3312	39	193	3642
25:351	G	108	502	2878	88	403	3186	16:578	G	65	290	2767	111	467	3139
26:418	G	134	610	3231	99	394	3902	17:434	G	54	332	2573	58	376	3360
27:354	G	252	931	2747	149	527	3452	18:369	C	46	326	1878	42	283	2504
28:114	K	206	1011	1409	113	549	1620	19:367	C	80	409	2486	56	294	2621
29:582	G	175	826	3466	100	467	3513	20:431	G	142	755	2001	94	493	2008
30:462	G	166	764	1603	100	461	1574	21:356	C	163	717	1976	114	514	2272
31:405	C	179	863	1828	169	793	2286	22:392	G	132	630	1910	100	448	2218
								23:348	G	76	447	1791	45	259	2197
August 1:448	G	263	811	3063	221	718	3670	24:345	G	50	290	1799	31	179	1970
2:374	C	147	628	2310	121	539	2507	25:379	G	36	138	1710	26	98	2176
3:403	C	92	484	1355	70	371	1574	26:355	G	28	75	3174	27	76	3466
4:489	G	137	553	1455	82	321	1812	27:364	G	22	97	2692	17	73	3062
5:381	G	196	856	1727	125	486	1902	28:355	G	47	168	1795	29	102	2156
6:369	C	217	848	1859	149	594	2053	29:363	G	106	557	983	79	367	1567
7:523	C	147	904	2235	118	719	2704	30:358	G	249	830	933	159	499	1127
8:351	G	217	955	2364	160	696	2778								
9:627	G	233	1086	1760	168	787	2148	October 1:355	C	264	1146	1596	161	688	1873
10:403	G	198	1064	3630	164	871	4248	2:474	G	332	1438	1896	203	875	2127
11:456	G	271	1058	3154	191	753	3402	3:355	C	358	1776	1761	213	1034	2251
12:369	G	233	988	2845	159	596	3300	4:380	C	315	1658	1749	176	937	1875
13:360	G	249	1123	1245	150	664	1542	5:314	C	308	1540	2101	182	897	2301
14:366	G	427	1843	2786	246	1064	2881	6:407	C	248	1335	944	183	961	1289
15:354	G	565	2608	1872	335	1518	2045	7:388	G	298	1470	1382	272	1362	1836
16:376	C	511	2637	2356	357	1733	2594	8:341	C	381	1875	2439	350	1694	2893
17:354	G	514	2468	2180	353	1654	2370	9:575	C	447	2384	2353	380	2017	2315
18:410	C	443	2020	2884	324	1443	3123	10:444	C	618	3108	1821	457	2388	2054
19:120	K	335	1867	2020	278	1552	2481	11:588	G	819	4267	1212	459	2386	1422
20:353	G	238	1213	4258	214	1205	5048	12:382	G	788	4490	1456	440	2491	1782
21:495	G	200	960	3359	159	862	4071	13:560	C	623	4166	1378	356	2451	1757
22:463	G	180	949	2245	128	614	2611	14:387	G	599	3763	2619	373	2384	2923
23:400	G	234	1010	1885	138	604	1833								

TOTAL AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1929—continued.

Greenwich Mean Time.	Place.	Projected Area.			Area Corrected for Foreshortening.			Greenwich Mean Time.	Place.	Projected Area.			Area Corrected for Foreshortening.		
		Umbrae.	Whole Spots.	Faculae.	Umbrae.	Whole Spots.	Faculae.			Umbrae.	Whole Spots.	Faculae.	Umbrae.	Whole Spots.	Faculae.
1929. ^d October								1929. ^d November							
15.435	C	482	3038	1682	353	2256	2140	23.340	C	290	1589	767	274	1538	1085
16.418	G	375	2080	2019	337	1948	2485	24.465	G	500	2772	2523	581	3123	2915
17.391	G	235	1359	3328	218	1268	3343	25.420	C	644	3726	1979	611	3395	2531
18.387	G	166	865	3150	231	1213	3441	26.471	G	1011	4441	2661	761	3314	3161
19.459	G	98	393	2121	196	939	2976	27.419	G	1240	5461	3166	854	3751	3679
20.106	K	35	136	772	21	78	989	28.385	C	1046	5397	2167	648	3379	2717
21.387	G	61	168	873	58	173	1124	29.356	C	1358	6907	2199	784	4021	2498
22.436	G	35	146	1297	39	162	1472	20.487	G	1548	7651	2336	863	4261	2673
23.545	G	52	175	1984	46	162	2210								
24.415	C	15	129	1136	9	74	1253								
25.392	G	97	480	1188	147	862	1498	December 1.281	K	1480	7980	1639	872	4632	2117
26.430	G	168	909	2409	155	924	3011	2.377	C	1354	7281	3423	831	4446	3529
27.458	G	383	1868	1949	247	1256	2171	3.368	C	1081	5717	3638	783	3995	3957
28.108	K	404	2467	1665	242	1506	2022	4.535	G	842	4799	4022	670	3731	4745
29.391	G	549	3237	1668	309	1773	1922	5.110	K	670	3602	2748	607	3193	3267
30.437	G	577	3232	1954	324	1739	2526	6.115	K	450	2248	2797	598	3015	3464
31.393	G	626	3169	2068	347	1710	2112	7.117	K	374	2043	3357	548	3320	4831
								8.569	G	379	1782	3692	303	1458	4306
								9.348	C	485	2636	2348	318	1753	2872
								10.472	G	698	3554	1554	613	3139	2357
November 1.548	G	551	2821	1731	323	1638	2055	11.508	C	857	4458	4083	667	3487	5114
2.405	G	615	3556	2148	372	2131	2438	12.498	G	1107	5847	3737	771	4095	3986
3.429	G	651	3524	1878	583	2892	2270	13.409	G	1298	6561	3142	858	4269	3162
4.507	C	673	3737	1828	492	2692	2113	14.301	C	1268	6604	1227	752	3916	1492
5.491	C	708	4097	2487	538	3021	2788	15.401	C	1259	6507	1712	721	3770	1998
6.656	Y	662	3263	1298	489	2348	1408	16.466	G	1494	6728	2236	856	3828	2233
7.443	C	661	3686	1833	510	2883	2224	17.504	G	1255	5771	4002	772	3554	4574
8.351	C	653	3888	2229	564	3411	2680	18.377	C	854	4672	2028	579	3094	3011
9.387	G	649	3246	3166	658	3522	3607	19.475	G	954	4512	1287	693	3339	1981
10.512	G	580	2692	3391	501	2167	4168	20.437	G	765	3812	3510	652	3251	3752
11.365	C	601	2837	3136	395	1876	3325	21.115	K	685	3107	3853	665	3224	4386
12.392	G	675	2839	1904	430	1806	1973	22.436	C	656	3312	5698	871	4537	7857
13.386	C	636	2835	2013	406	1809	2215	23.419	C	599	3771	3142	497	3066	4475
14.468	G	653	3080	2834	449	2215	3299	24.346	C	746	3842	4124	523	2680	5038
15.535	G	543	2592	2408	470	2322	3182	25.489	G	811	5085	4378	515	3066	4839
16.340	C	550	2510	1944	433	1990	2218	26.443	G	765	4569	3530	449	2664	3523
17.387	C	436	2348	1605	290	1565	1880	27.435	G	819	4010	3293	484	2320	4595
18.112	K	427	2059	1089	303	1466	1307	28.360	C	510	2916	1420	318	1802	1786
19.504	C	315	1363	3005	228	1005	3355	29.454	G	392	2136	3013	233	1277	3279
20.540	G	226	1258	2142	187	1042	2548	30.116	K	325	1616	2590	204	1045	2532
21.465	G	233	1160	2464	364	1932	3286	31.318	C	191	908	3000	137	647	3515
22.349	C	300	1376	1505	348	1848	2216								

MEAN AREAS of SUN SPOTS and FACULÆ for each ROTATION of the SUN, from 1928, December 26 to 1929, December 15.

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 disc, 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 1873-1928 printed in the Greenwich Observations for 1884 and succeeding years) correspond to the synodic rotation of the Sun, and the commencement of each is defined by the coincidence of the assumed prime meridian with the central meridian, the assumed prime meridian being that meridian which passed through the ascending node at mean noon on January 1, 1854, and the assumed period of the Sun's sidereal rotation being 25.38 days. The numeration of the rotations is in continuation of Carrington's series (*Observations of Solar Spots made at Redhill* by R. C. Carrington, F.R.S.), No. 1 being the rotation commencing 1853 November 9. The dates of commencement of the rotations are given in Greenwich Mean Time, reckoning from midnight.

No. of Rotation.	Date of Commencement of each Rotation.	No. of Days on which Photographs were taken.	Mean of Daily Areas.					
			Projected.			Corrected for Foreshortening.		
			Umbrae.	Whole Spots.	Faculae.	Umbrae.	Whole Spots.	Faculae.
1007	December 25.85	27	241	1437	1753	171	1006	2148
1008	January 22.19	28	250	1247	1916	174	875	2255
1009	February 18.53	27	303	1562	1879	231	1187	2270
1010	March 17.86	27	212	1050	1622	157	786	1942
1011	April 14.14	28	262	1314	2175	198	999	2549
1012	May 11.39	27	187	915	2284	147	739	2625
1013	June 7.60	27	373	1800	2449	274	1342	2848
1014	July 4.80	27	287	1362	2494	208	976	2837
1015	August 1.01	27	253	1169	2505	181	836	2858
1016	August 28.24	28	78	348	2331	60	273	2681
1017	September 24.50	27	309	1641	1850	221	1172	2176
1018	October 21.79	27	496	2569	2043	362	1869	2372
1019	November 18.10	28	812	4171	2540	619	3082	3042

MEAN AREAS of SUN SPOTS and FACULÆ for the YEAR 1929.

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

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

Year.	No. of Days on which Photographs were taken.	Mean of Daily Areas.					
		Projected.			Corrected for Foreshortening.		
		Umbrae.	Whole Spots.	Faculae.	Umbrae.	Whole Spots.	Faculae.
1929	365	334	1695	2190	245	1242	2567

MEAN HELIOGRAPHIC LATITUDE of SUN SPOTS for each ROTATION of the SUN, from 1928, December 26 to 1929, December 15.

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

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

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

No. of Rotation.	Date of Commencement of each Rotation.	No. of Days on which Photographs were taken.	Spots North of the Equator.		Spots South of the Equator.		Mean Heliographic Latitude of entire Spotted Area.	Mean Distance from Equator of all Spots.
			Mean of Daily Areas.	Mean Heliographic Latitude.	Mean of Daily Areas.	Mean Heliographic Latitude.		
1007	December 25.85	27	785	8°65	221	11°46	+ 4°23	9°27
1008	January 22.19	28	249	6°55	627	9°49	— 4°93	8°66
1009	February 18.53	27	226	8°28	961	9°57	— 6°17	9°33
1010	March 17.86	27	285	7°73	501	10°97	— 4°18	9°79
1011	April 14.14	28	599	8°02	401	8°72	+ 1°31	8°30
1012	May 11.39	27	544	12°07	195	11°38	+ 5°88	11°89
1013	June 7.60	27	465	11°60	877	10°46	— 2°81	10°85
1014	July 4.80	27	172	7°76	804	10°55	— 7°33	10°06
1015	August 1.01	27	174	11°78	661	10°24	— 5°65	10°56
1016	August 28.24	28	68	16°21	205	12°14	— 5°10	13°15
1017	September 24.50	27	510	9°04	663	14°40	— 4°21	12°07
1018	October 21.79	27	1210	11°60	658	10°74	+ 3°73	11°30
1019	November 18.10	28	2306	12°47	776	8°93	+ 7°09	11°58

MEAN HELIOGRAPHIC LATITUDE of SUN SPOTS for the YEAR 1929.

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.		
1929	365	656	10°73	586	10°27	+ 0°82	10°51

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1929